Supporting Information

Benzyl bromides as aroyl surrogates in substrate directed Pd catalysed *o*-aroylation

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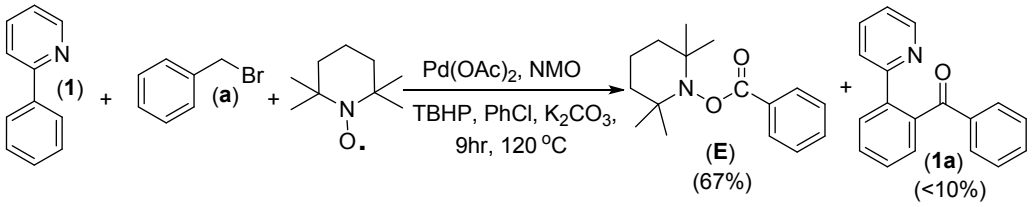
General information:

All the reagents were of commercial grade and purified according to the established procedures. Organic extracts were dried over anhydrous sodium sulphate. Solvents were removed in a rotary evaporator under reduced pressure. Silica gel (60–120 mesh size) was used for the column chromatography. Reactions were monitored by TLC on silica gel 60 F_{254} (0.25 mm). NMR spectra were recorded in $CDCl_3$ with tetramethylsilane as the internal standard for ^1H NMR (400 MHz and 600 MHz) $CDCl_3$ solvent as the internal standard for ^{13}C NMR (100 MHz and 150 MHz). Mass spectra were recorded using MS spectra were recorded using ESI mode. IR spectra were recorded in KBr or neat.

Mechanistic investigation in the presence of radical scavenger TEMPO: An oven-dried reaction flask was charged with 2-phenylpyridine (**1**) (77.5 mg, 0.5 mmol) $Pd(OAc)_2$ (5.6 mg, 5 mol %), benzyl bromide (256.5 mg, 1.5 mmol), NMO (3 mmol, 351 mg), TEMPO (0.234 g, 1.5 mmol), chlorobenzene (2 mL), K_2CO_3 (0.75 mmol, 103.5 mg) and TBHP in decane (5–6 M) (600 μL, 3 mmol). The flask was fitted to a condenser and the resultant reaction mixture was stirred in a preheated oil bath maintained at 120 ^oC. The reaction after a period of 9 h

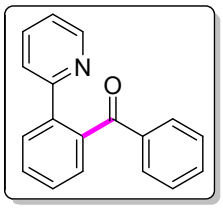
afforded the benzoyl-TEMPO adduct 2,2,6,6-tetramethylpiperidin-1-yl benzoate (**E**) (67% yield) and the desired product (<10%) was observed.



Scheme S1: Trapping the intermediate with TEMPO

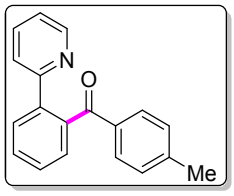
Spectral Data

Phenyl(2-(pyridin-2-yl)phenyl)methanone (1a):



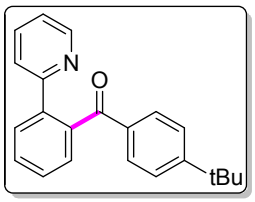
Brown solid; M.p. 100-102 ^{o}C; R_f (10% EtOAc/hexane) 0.12; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 6.99–7.03 (m, 1H), 7.26 (t, 2H, *J* = 8.0 Hz), 7.38 (t, 1H, *J* = 7.6 Hz), 7.49 (d, 1H, *J* = 7.6 Hz), 7.52–7.56 (m, 3H), 7.58–7.63 (m, 1H), 7.68 (d, 2H, *J* = 8.0 Hz), 7.77 (d, 1H, *J* = 7.6 Hz), 8.36 (d, 1H, *J* = 4.0 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 122.1, 122.9, 128.2, 128.7, 128.9, 129.3, 129.7, 130.4, 132.5, 136.5, 138.1, 139.7, 139.9, 149.3, 157.0, 198.5; IR (KBr): 2922, 1665, 1587, 1448, 1313, 1281, 1116, 928, 745, 713, 698, 643 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{13}NO$ (MH^+) 260.1070; found 260.1079.

(2-(Pyridin-2-yl)phenyl)(p-tolyl)methanone (1b):



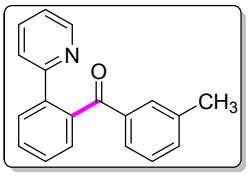
Light yellow solid solid; M.p. 90-92 ^{o}C; R_f (10% EtOAc/hexane) 0.10; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 2.31 (s, 3H), 7.01–7.04 (m, 1H), 7.07 (d, 2H, *J* = 8.4 Hz), 7.47–7.48 (m, 1H), 7.51 (d, 2H, *J* = 7.8 Hz), 7.54–7.58 (m, 1H), 7.58–7.61 (m, 3H), 7.76 (d, 1H, *J* = 7.8 Hz), 8.39 (d, 1H, *J* = 3.6 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 21.7, 122.1, 122.9, 128.5, 128.9, 129.0, 129.1, 129.9, 130.2, 135.4, 136.4, 139.7, 139.9, 143.3, 149.2, 157.1, 198.1; IR (KBr): 2922, 2846, 1663, 1605, 1586, 1469, 1439, 1310, 1281, 1149, 1115, 1021, 921, 751, 687, 602 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{15}NO$ (MH^+) 274.1226; found 274.1231.

(4-(^{t}Butyl)phenyl)(2-(pyridin-2-yl)phenyl)methanone (1c):



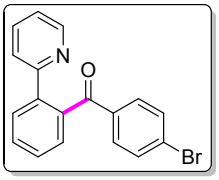
Yellow gummy; R_f (10% EtOAc/hexane) 0.16; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 1.27 (s, 9H), 7.01–7.04 (m, 1H), 7.32 (d, 2H, *J* = 8.4 Hz), 7.46 (d, 1H, *J* = 8.4 Hz), 7.50 (d, 2H, *J* = 6.8 Hz), 7.56–7.61 (m, 2H), 7.64 (d, 2H, *J* = 8.4 Hz), 7.76 (d, 1H, *J* = 8.0 Hz), 8.39–8.40 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 31.0, 35.0, 121.8, 122.9, 125.0, 128.3, 128.9, 129.0, 129.6, 130.0, 135.1, 136.2, 139.7, 139.8, 149.1, 156.0, 157.0, 197.9; IR (KBr): 2961, 2866, 1663, 1466, 1433, 1365, 1277, 1194, 1110, 1018, 930, 849, 752, 697, 666 cm^{-1}; HRMS (ESI): calcd. for $C_{22}H_{21}NO$ (MH^+) 316.1696; found 316.1702.

2-(pyridine-2-yl)phenyl(m-tolyl)methanone (1d):



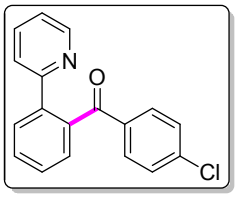
Red gummy; R_f (10% EtOAc/hexane) 0.14; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.27 (s, 3H), 6.99–7.03 (m, 1H), 7.14 (t, 1H, *J* = 7.2 Hz), 7.19–7.24 (m, 1H), 7.45–7.48 (m, 2H), 7.50–7.54 (m, 3H), 7.55–7.58 (m, 1H,), 7.59–7.61 (m, 1H), 7.75 (d, 1H, *J* = 7.6 Hz), 8.36–8.38 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 21.3, 122.1, 122.9, 127.1, 128.1, 128.6, 128.7, 129.0, 129.2, 130.1, 130.3, 133.4, 136.4, 137.9, 139.7, 139.9, 149.2, 157.1, 198.5; IR (KBr): 2922, 2859, 1736, 1665, 1587, 1434, 1287, 1206, 1127, 999, 957, 896, 643, 482.cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{15}NO$ (MH^+) 274.1226; found 274.1222.

(4-Bromophenyl)(2-(pyridin-2-yl)phenyl)methanone (1e):



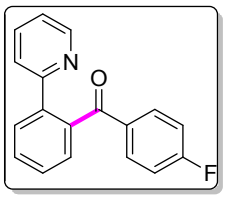
Brown solid; M.p. 86-88 ^{o}C ; R_f (10% EtOAc/hexane) 0.16; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.05 (t, 1H, *J* = 6.0 Hz), 7.24 (d, 1H, *J*= 8.0 Hz), 7.40 (d, 2H, *J* = 8.4 Hz), 7.47–7.55 (m, 4H), 7.60 (d, 2H, *J* = 7.6 Hz), 7.77 (d, 1H, *J* = 7.6 Hz), 8.34 (d, 1H, *J* = 4.4 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 122.3, 122.6, 127.5, 128.7, 128.9, 129.2, 130.6, 131.5, 131.8, 136.7, 137.0, 139.2, 139.6, 149.2, 156.6, 197.3; IR (KBr): 2925, 1638, 1590, 1473, 1396, 1281,1068, 927, 748, 649 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}BrNO$ (MH^+) 338.0175; found 338.0193.

(4-Chlorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1f):



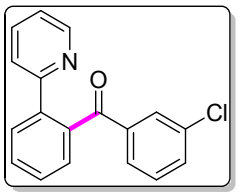
Brown gummy ; R_f (10% EtOAc/hexane) 0.17; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 7.03–7.05 (m, 1H), 7.22–7.24 (m, 2H), 7.51–7.53 (m, 3H), 7.58–7.62 (m, 4H), 7.77 (d, 1H, *J* = 7.8 Hz), 8.34 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 122.3, 122.6, 128.4, 128.5, 128.7, 128.8, 129.2, 130.5, 130.9, 136.6, 138.7, 139.2, 139.6, 149.1, 156.6, 197.2; IR (KBr): 2928, 2850, 1665, 1640, 1587, 1439, 1308, 1284, 1145, 1089, 929, 838, 793, 667, 528.cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}ClNO$ (MH^+) 294.0680; found 294.0672.

(4-Fluorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1g):



Brown gummy; R_f (10% EtOAc/hexane) 0.16; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 6.91–6.94 (m, 2H), 7.02–7.05 (m, 1H), 7.50 (d, 1H, *J* = 7.8 Hz), 7.53 (d, 2H, *J* = 4.8 Hz), 7.57–7.63 (m, 2H), 7.69–7.71 (m, 2H), 7.77 (d, 1H, *J* = 7.8 Hz), 8.36 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 115.3 (d, *J* = 22.5 Hz), 122.2, 122.8, 128.8, 128.9, 129.2, 130.5, 132.2 (d, *J* = 9.0 Hz), 134.6, 136.6, 139.4, 139.7, 149.3, 156.9, 166.2, 196.9; IR (KBr): 2922, 1666, 1597, 1469, 1427, 1281, 1147, 930, 849, 751, 688, 602 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}FNO$ (MH^+) 278.0976; found 278.0981

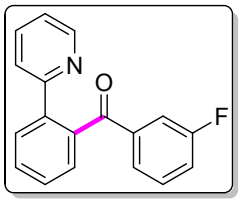
(3-Chlorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1h):



Brown gummy; R_f (10% EtOAc/hexane) 0.21; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 7.02–7.04 (m, 1H), 7.19 (t, 1H, *J* = 7.8 Hz), 7.33–7.34 (m, 1H), 7.51–7.55 (m, 4H), 7.59–7.63 (m, 2H), 7.66–7.67 (m, 1H), 7.77 (d, 1H, *J* = 7.8 Hz), 8.33 (d, 1H, *J* = 5.4 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 122.3, 122.5, 127.6, 127.8, 128.8, 128.9, 129.3, 129.5,

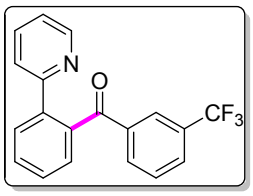
130.7, 132.3, 134.4, 136.7, 139.1, 139.7, 139.9, 149.1, 156.5, 196.9; IR (KBr): 3063, 2360, 1669, 1577, 1468, 1289, 1253, 1155, 1082, 992, 894, 749, 634 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}ClNO$ (MH^+) 294.0680; found 294.0681.

(3-Fluorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1i):



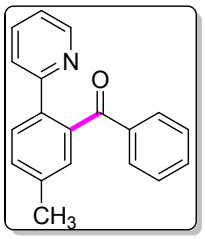
Yellow gummy; R_f (10% EtOAc/hexane) 0.19; ^1H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.00–7.05 (m, 1H), 7.06–7.09 (m, 1H), 7.18–7.23 (m, 1H), 7.39–7.42 (m, 2H), 7.53–7.55 (m, 3H), 7.58–7.63 (m, 2H), 7.77 (d, 1H, J = 7.2 Hz), 8.32–8.34 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 115.6 (d, J = 22.5 Hz), 119.0 (d, J = 21.0 Hz), 125.0, 128.4, 128.6, 129.0, 129.5, 129.54, 130.3, 136.4, 138.9, 139.4, 140.2 (d, J = 6.0 Hz), 148.8, 156.3, 161.5, 163.1, 196.7; IR (KBr): 2925, 1955, 1669, 1587, 1477, 1438, 1283, 1207, 1154, 1119, 1017, 962, 869, 793, 685, 642 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}FNO$ (MH^+) 278.0976; found 278.0972.

(2-(Pyridin-2-yl)phenyl)(3-(trifluoromethyl)phenyl)methanone (1j):



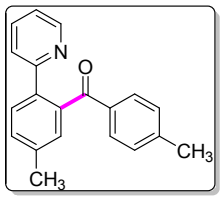
Light yellow gummy; R_f (10% EtOAc/hexane) 0.21; ^1H NMR (400 MHz, $CDCl_3$): δ (ppm) 6.98–7.01 (m, 1H), 7.37 (t, 1H, J = 7.6 Hz), 7.53–7.66 (m, 6H), 7.78 (d, 1H, J = 7.2 Hz), 7.82 (d, 1H, J = 7.6 Hz), 7.92 (s, 1H), 8.27–8.28 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 122.3, 122.5, 122.9, 124.8, 126.0, 128.6, 128.7, 128.8, 129.1, 129.5, 130.8 (q, J = 34.5 Hz), 132.5, 136.8, 138.8, 139.0, 139.8, 149.1, 156.5, 196.9; IR (KBr): 3064, 1672.0, 1591.6, 1435.9,1333.5, 1248.2, 1128.2, 1072.1, 993.3, 800.9, 750.7, 659.1, 514.5, cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{12}F_3NO$ (MH^+) 328.0944; found 328.0949.

5-Methyl-2-(pyridin-2-yl)phenyl)(phenyl)methanone (2a):



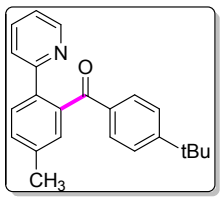
Yellow solid; M.p. 133-135 ^{o}C ; R_f (10% EtOAc/hexane) 0.20; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.45 (s, 3H), 6.97 (d, 1H, *J* = 6.0 Hz), 7.24 (d, 2H, *J*= 7.2 Hz), 7.36 (d, 2H, *J*= 9.2 Hz), 7.41 (d, 1H, *J* = 8.0Hz), 7.46 (d, 1H, *J* = 7.6 Hz), 7.53 (t, 1H, *J* = 7.2 Hz), 7.67 (d, 3H, *J* = 7.2 Hz), 8.34 (s, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.3, 121.8, 122.6, 128.2, 128.8, 129.6, 129.8, 131.1, 132.4, 136.4, 136.9, 138.2, 138.9, 139.6, 149.1, 156.9, 198.6; IR (KBr): 2921.9, 2853.3, 2059.0, 1662.8, 1461.1, 1285.8, 1210.5, 1172.3, 1027.3, 965.4, 839.3, 787.6, 742.5, 699.6, 650.3, 520.0 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{15}NO$ (MH^+) 274.1226; found 274.1223.

5-Methyl-2-(pyridin-2-yl)phenyl)(p-tolyl)methanone (2b):



Brown gummy; R_f (10% EtOAc/hexane) 0.21; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.30 (s, 3H), 2.43 (s, 3H), 6.98 (t, 1H, *J* = 5.2 Hz), 7.06 (d, 2H, *J* = 8.0 Hz), 7.31 (s, 1H), 7.39 (d, 1H, *J* = 8.4 Hz), 7.44 (d, 1H, *J* = 8.0 Hz), 7.52 (t, 1H, *J* = 7.2 Hz), 7.59 (d, 2H, *J* = 8.0 Hz), 7.66 (d, 1H, *J* = 8.0 Hz), 8.36 (d, 1H, *J* = 4.0 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 21.3, 21.7, 110.2, 121.8, 122.7, 128.9, 129.6, 129.9, 130.9, 135.5, 136.3, 136.9, 138.7, 139.8, 143.2, 149.1, 157.0, 198.4; IR (KBr) 2922, 2854, 1663, 1606, 1588, 1465, 1398, 1284, 1209, 1116, 1027, 966, 832, 785, 602, 568 cm^{-1}; HRMS (ESI): calcd.for $C_{20}H_{17}NO$ (MH^+) 288.1383; found 288.1389.

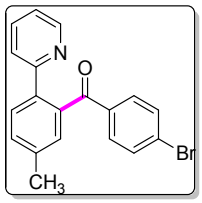
(4-(^{t}Butyl)phenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2c):



Yellow gummy; R_f (10% EtOAc/hexane) 0.29; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 1.25 (s, 9H), 2.41 (s, 3H), 6.94–6.97 (m, 1H), 7.24–7.29 (m, 3H), 7.36–7.38 (m, 1H), 7.42 (d, 1H,

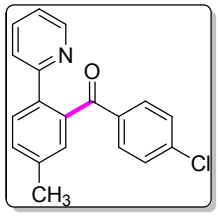
J= 8.0 Hz), 7.48–7.53 (m, 1H), 7.60–7.65 (m, 3H), 8.34–8.35 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.3, 31.2, 35.1, 121.7, 122.8, 125.1, 129.0, 129.6, 129.7, 130.9, 135.4, 136.3, 137.1, 138.5, 139.8, 149.2, 156.1, 157.1, 198.3; IR (KBr): 3055, 2961, 2869, 1924, 1665, 1600, 1465, 1388, 1287, 1151, 1106, 1026, 965, 847, 736, 684, 549 cm^{-1}; HRMS (ESI): calcd. for $C_{23}H_{23}NO$ (MH^+) 330.1852; found 330.1849.

(4-Bromophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2e):



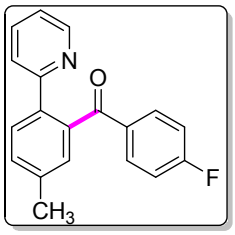
Light yellow gummy; R_f (10% EtOAc/hexane) 0.20; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.44 (s, 3H), 6.99–7.02 (m, 1H), 7.31 (s, 1H), 7.37–7.42 (m, 3H), 7.45–7.59 (m, 4H), 7.66 (d, 1H, *J* = 8.0 Hz), 8.30 (d, 1H, *J* = 4.4 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 21.4, 122.0, 122.3, 127.4, 128.6, 129.7, 131.0, 131.3, 131.5, 131.8, 136.6, 136.8, 137.2, 139.1, 149.1, 156.5, 197.6; IR (KBr): 2924, 2846, 1665, 1586, 1467, 1428, 1308, 1285, 1122, 1068, 967, 834, 788 676, 526.cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}BrNO$ (MH^+) 352.0332; found 352.0327.

(4-Chlorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2f):



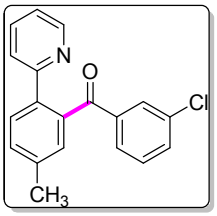
Yellow solid; M.p. 100-102 ^{o}C; R_f (10% EtOAc/hexane) 0.27; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.45 (s, 3H), 7.00 (t, 1H, *J* = 5.6 Hz), 7.22 (d, 2H, *J* = 8.4 Hz), 7.32 (s, 1H), 7.41 (d, 1H, *J* = 7.6 Hz), 7.49 (d, 1H, *J* = 8.4 Hz), 7.56 (d, 1H, *J* = 8.0 Hz), 7.61 (d, 2H, *J* = 8.4 Hz), 7.67 (d, 1H, *J* = 7.6 Hz), 8.31 (d, 1H, *J* = 5.2 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.4, 122.0, 122.4, 128.5, 128.7, 129.8, 130.9, 131.2, 136.6, 136.7, 136.8, 138.6, 139.1, 139.2, 149.1, 156.6, 197.4; IR (KBr): 2924, 2864, 1668, 1573, 1469, 1427, 1288, 1152, 1073, 987, 895, 800, 748, 676, 641, 513 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}ClNO$ (MH^+) 308.0837; found 308.0841.

(4-Fluorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2g):



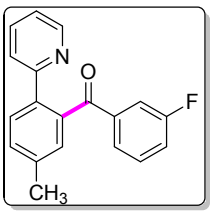
Brown gummy; R_f (10% EtOAc/hexane) 0.13; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.45 (s, 3H), 6.91 (t, 2H, *J*= 8.4 Hz), 7.00 (t, 1H, *J* = 7.2 Hz), 7.33 (s, 1H), 7.41 (d, 1H, *J* = 8.4 Hz), 7.46 (d, 1H, *J* = 7.6 Hz), 7.56 (t, 1H, *J* = 7.6 Hz), 7.65–7.70 (m, 3H), 8.33 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.4, 115.3 (d, *J* = 21.0 Hz), 122.0, 122.6, 128.8, 129.7, 131.2, 132.1 (d, *J* = 9.0 Hz), 134.7, 136.5, 136.9, 139.0, 139.3, 149.1, 156.8, 197.2; IR (KBr): 2923, 2854, 1666, 1596, 1503, 1466, 1284, 1153, 1096, 965, 848, 787, 768, 607, 560 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}FNO$ (MH^+) 292.1132; found 292.1127.

(3-Chlorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2h):



Brown gummy; R_f (10% EtOAc/hexane) 0.29; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.44 (s, 3H), 6.96–6.99 (m, 1H), 7.14–7.18 (m, 1H), 7.31 (d, 2H, *J* = 7.2 Hz), 7.40 (d, 1H, *J* = 7.6 Hz), 7.49–7.50 (m, 2H), 7.54–7.58 (m, 1H), 7.64 (d, 2H, *J* = 8.0 Hz), 8.27–8.28 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 21.3, 122.0, 122.3, 124.9, 127.5, 128.6, 129.1, 129.5, 129.8, 131.4, 132.1, 134.3, 134.4, 136.6, 139.1, 139.9, 148.9, 156.4, 197.2; IR (KBr): 3064, 2924, 2846, 1668, 1573, 1469, 1427, 1288, 1252, 1152, 1073, 1020, 987, 943, 895, 800, 748, 676, 641, 513 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}ClNO$ (MH^+) 308.0837; found 308.0843.

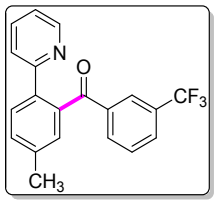
(3-Fluorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2i):



Yellow solid; M.p. 94-96 °C; R_f (10% EtOAc/hexane) 0.22; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.44 (s, 3H), 6.96–6.99 (m, 1H), 7.02–7.07 (m, 1H), 7.07–7.22 (m, 1H), 7.33 (s, 1H),

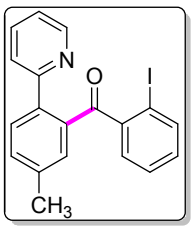
7.38–7.41 (m, 3H), 7.51 (d, 1H, *J* = 8.0 Hz), 7.54–7.58 (m, 1H), 7.67 (d, 1H, *J* = 7.6 Hz), 8.29–8.30 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.3, 115.8 (d, *J* = 22.5 Hz), 119.2 (d, *J* = 21.0Hz), 122.0, 122.2, 125.2, 128.5, 129.8 (t, *J* = 7.5 Hz), 131.3, 136.6, 136.8, 139.1 (d, *J* = 3.0 Hz), 140.6 (d, *J* = 4.5 Hz), 149.0, 156.4, 161.8, 163.4, 197.2; IR (KBr): 3064, 2923, 2860, 2360, 1950, 1718, 1671, 1590, 1438, 1297, 1181, 1149, 1110, 1028, 988, 896, 788, 755, 678, 650, 506, 459 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}FNO$ (MH^+) 292.1132; found 292.1129.

(5-Methyl-2-(pyridin-2-yl)phenyl)(3-(trifluoromethyl)phenyl)methanone (2j):



Light yellow gummy; R_f (10% EtOAc/hexane) 0.27; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.47 (s, 3H), 6.96 (t, 1H, *J* = 5.6 Hz), 7.36 (t, 2H, *J* = 7.6 Hz), 7.44 (d, 1H, *J* = 7.6 Hz), 7.53 (t, 1H, *J* = 7.6 Hz), 7.58 (t, 2H, *J* = 7.6 Hz), 7.68 (d, 1H, *J* = 8.0 Hz), 7.81 (d, 1H, *J* = 7.6 Hz), 7.91 (s, 1H), 8.24 (d, 1H, *J* = 4.0 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.3, 121.2, 122.1 (d, *J* = 25.5), 123.0, 124.8, 125.9, 128.45(t, *J* = 4.5 Hz), 128.7, 130.0, 130.6 (q, *J* = 65.2 Hz), 131.5, 132.4, 136.6, 136.9, 138.7, 139.1, 139.3, 148.9, 156.3, 197.0; IR (KBr): 3396, 2924, 1672, 1597, 1465, 1432, 1332, 1284, 1166, 1129, 1073, 982, 915, 828, 772, 702, 661, 521 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{14}F_3NO$ (MH^+) 342.1100; found 342.1108.

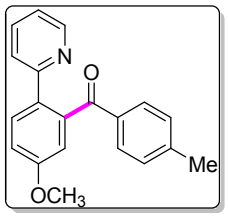
(2-Iodophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2k):



Brown gummy; R_f (10% EtOAc/hexane) 0.17; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.46 (s, 3H), 6.89 (t, 1H, *J* = 7.6 Hz), 6.99 (t, 1H, *J* = 7.2 Hz), 7.07 (t, 1H, *J* = 7.6 Hz), 7.17 (d, 1H, *J* = 7.2 Hz), 7.42 (t, 2H, *J* = 7.6 Hz), 7.49 (s, 1H,), 7.57–7.58 (m, 2H), 7.81 (d, 1H, *J* = 8.0 Hz), 8.55 (d, 1H, *J* = 3.2 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 20.9, 94.4, 121.3, 122.4, 126.9, 128.9, 130.7, 131.0, 131.4, 131.7, 136.0, 137.8, 138.0, 138.5, 140.9, 141.5, 148.9, 156.8, 197.4; IR (KBr): 3054, 2922, 2856, 1928, 1671, 1586, 1461, 1428, 1293, 1154, 1094,

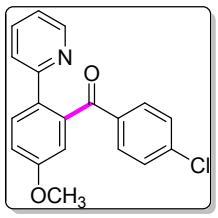
1018, 964, 897, 839, 786, 745, 657, 527, 481 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}INO$ (MH^+) 400.0193; found 400.0202.

(5-Methoxy-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone (3b):



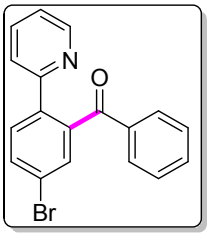
Yellow gummy; R_f (10% EtOAc/hexane) 0.10; ^1H NMR (600 MHz, $CDCl_3$): δ (ppm) 2.29 (s, 3H), 3.85 (s, 3H), 6.94–6.96 (m, 1H), 7.01 (d, 1H, *J* = 2.4 Hz), 7.05 (d, 2H, *J* = 7.8 Hz), 7.09–7.11 (m, 1H), 7.41 (d, 1H, *J* = 7.8 Hz), 7.49–7.52 (m, 1H), 7.60 (d, 2H, *J* = 7.8 Hz), 7.70 (d, 1H, *J* = 8.4 Hz), 8.32 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.7, 55.7, 114.0, 116.1, 121.5, 122.4, 128.9, 129.8, 130.2, 132.0, 135.3, 136.3, 141.1, 143.3, 149.0, 156.6, 159.9, 197.8; IR (KBr): 2923, 2850, 1602, 1506, 1461, 1424, 1285, 1231, 1177, 1111, 1045, 962, 841, 753, 578, 526 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{17}NO_2$ (MH^+) 304.1332; found 304.1335.

(4-Chlorophenyl)(5-methoxy-2-(pyridin-2-yl)phenyl)methanone (3f):



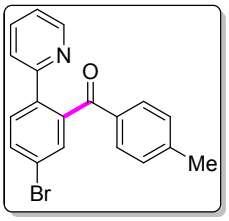
Brown gummy; R_f (10% EtOAc/hexane) 0.20; ^1H NMR (600 MHz, $CDCl_3$): δ (ppm) 3.88 (s, 3H), 7.02 (d, 1H, *J* = 2.4 Hz), 7.12–7.13 (m, 1H), 7.21–7.23 (m, 2H), 7.25–7.29 (m, 1H), 7.47 (d, 1H, *J* = 8.4 Hz), 7.54–7.56 (m, 1H), 7.61–7.63 (m, 2H), 7.72 (d, 1H, *J* = 8.4 Hz), 8.28 (d, 1H, *J* = 5.4 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 55.8, 114.2, 116.4, 121.7, 121.9, 128.5, 130.0, 130.8, 131.9, 136.5, 136.6, 138.7, 140.6, 148.9, 156.2, 160.2, 196.8; IR (KBr): 2923, 2853, 1659, 1591, 1462, 1418, 1285, 1231, 1086, 1015, 965, 838, 761, 679, 580 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}ClNO_2$ (MH^+) 324.0786; found 324.0793.

(5-Bromo-2-(pyridin-2-yl)phenyl)(phenyl)methanone (4a):



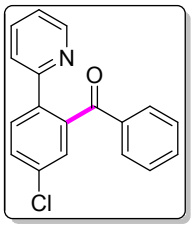
White solid; M.p. 95-97 ^{o}C; R_f (10% EtOAc/hexane) 0.15; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.01–7.05 (m, 1H), 7.29 (d, 2H, *J* = 7.6 Hz), 7.39–7.43 (m, 1H), 7.48 (d, 1H, *J* = 8.0 Hz), 7.56–7.61 (m, 1H), 7.64–7.68 (m, 4H), 7.72–7.75 (m, 1H), 8.33–8.35 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 122.4, 122.6, 123.1, 128.4, 129.6, 130.4, 132.0, 132.9, 133.3, 136.7, 137.5, 138.6, 141.3, 149.3, 155.8, 196.7; IR (KBr): 3059, 2925, 2848, 1666, 1587, 1460, 1385, 1276, 1157, 1092, 1024, 946, 886, 836, 786, 698, 648, 518, 457 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}BrNO$ (MH^+) 338.0175; found 338.0186.

(5-Bromo-2-(pyridin-2-yl)phenyl)(p-tolyl)methanone (4b):



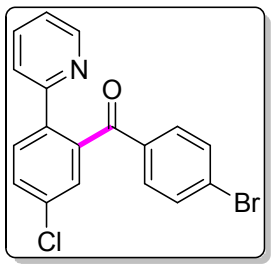
Yellow solid; M.p. 87-89 ^{o}C; R_f (10% EtOAc/hexane) 0.17; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 2.31 (s, 3H), 7.03–7.05 (m, 1H), 7.09 (d, 2H, *J* = 7.8 Hz), 7.46 (d, 1H, *J* = 7.8 Hz), 7.55–7.59 (m, 3H), 7.62–7.65 (m, 2H), 7.70–7.72 (m, 1H), 8.37 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.8, 122.4, 122.7, 123.0, 129.1, 129.9, 130.5, 131.9, 133.2, 134.9, 136.6, 138.5, 141.6, 143.8, 149.4, 156.0, 196.4; IR (KBr): 3385, 3055, 2921, 2857, 2360, 1922, 1664, 1599, 1461, 1428, 1385, 1154, 1092, 1024, 887, 758, 683, 606, 521, 479 cm^{-1}; HRMS (ESI): calcd. for $C_{19}H_{14}BrNO$ (MH^+) 352.0332; found 352.0323.

(5-Chloro-2-(pyridin-2-yl)phenyl)(phenyl)methanone (5a):



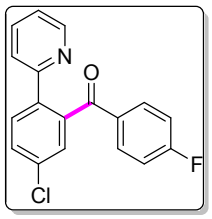
White solid; M.p. 92-94 °C; R_f (10% EtOAc/hexane) 0.17; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 7.01–7.03 (m, 1H), 7.28 (t, 2H, *J* = 7.8 Hz), 7.41 (t, 1H, *J* = 7.8 Hz), 7.48 (d, 1H, *J* = 7.8 Hz), 7.51 (s, 1H), 7.57–7.58 (m, 2H), 7.68 (d, 2H, *J* = 7.8 Hz), 7.72 (d, 1H, *J* = 7.8 Hz), 8.34 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 122.4, 122.6, 128.4, 129.2, 129.6, 130.2, 130.4, 132.8, 135.0, 136.7, 137.5, 138.1, 141.2, 149.3, 155.8, 196.8; IR (KBr): 3058, 2920, 2849, 1963, 1667, 1589, 1456, 1428, 1387, 1313, 1277, 1155, 1104, 1066, 1027, 994, 887, 784, 696, 676, 648 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{12}ClNO$ (MH^+) 294.0680; found 294.0682.

(4-Bromophenyl)(5-chloro-2-(pyridin-2-yl)phenyl)methanone (5e):



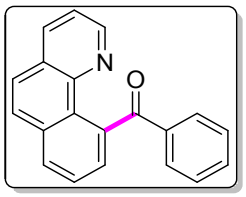
Light yellow solid; M.p. 89-91 °C; R_f (10% EtOAc/hexane) 0.24; ^{1}H NMR (600 MHz, $CDCl_3$): δ (ppm) 7.04–7.06 (m, 1H), 7.41 (d, 2H, *J* =8.4 Hz), 7.48 (s, 1H), 7.50–7.54 (m, 3H), 7.57 (d, 1H, *J* = 8.4 Hz), 7.61 (t, 1H, *J* = 7.8 Hz), 7.72 (d, 1H, *J* = 8.4 Hz), 8.31 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 122.3, 122.6, 127.8, 129.1, 130.0, 130.5, 130.9, 131.7, 135.2, 136.5, 136.9, 137.9, 140.7, 149.2, 155.3, 195.7; IR (KBr): 3059, 2924, 2854, 1916, 1671, 1585, 1465, 1428, 1395, 1274, 1161, 1102, 1067, 1011, 952, 887, 839, 755, 673, 603, 492 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{11}BrClNO$ (MH^+) 371.9785; found 371.9788.

(4-Fluorophenyl)(5-chloro-2-(pyridin-2-yl)phenyl)methanone (5g):



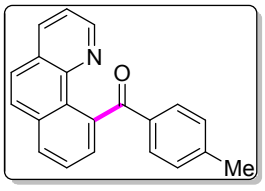
Brown solid; M.p. 113-115 ^{o}C; R_f (10% EtOAc/hexane) 0.20; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 6.93 (t, 2H, *J* = 8.4 Hz), 7.01–7.04 (m, 1H), 7.47 (d, 2H, *J* = 7.6 Hz), 7.54–7.59 (m, 2H), 7.65–7.71 (m, 3H), 8.31 (d, 1H, *J* = 4.8 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 115.5 (d, *J* = 22.1), 122.6 (d, *J* = 4.6 Hz), 129.1, 130.2, 130.5, 132.1 (d, *J* = 9.1 Hz), 135.2, 136.8, 138.0, 140.9, 149.3, 155.6, 166.8, 195.3; IR (KBr): 3063, 2920, 2844, 1668, 1594, 1502, 1463, 1422, 1276, 1237, 1154, 1099, 1019, 953, 888, 846, 773, 676, 604, 513 cm^{-1}; HRMS (ESI): calcd. for $C_{18}H_{11}ClFNO$ (MH^+) 312.0586; found 312.0595.

Benzo[*h*]quinolin-10-yl(phenyl)methanone (6a):



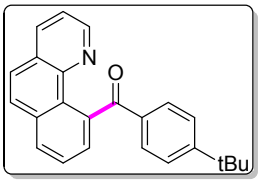
Yellow solid; M.p. 130-132 ^{o}C; R_f (10% EtOAc/hexane) 0.20; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.26–7.32 (m, 3H), 7.39 (t, 1H, *J* = 7.6 Hz), 7.61 (d, 1H, *J* = 7.2 Hz), 7.71–7.74 (m, 3H), 7.77 (d, 1H, *J* = 8.0 Hz), 7.88 (d, 1H, *J* = 8.8 Hz), 8.03 (d, 1H, *J* = 8.0 Hz), 8.07 (d, 1H, *J* = 8.0 Hz), 8.48–8.49 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 121.8, 126.3, 126.6, 127.2, 127.9, 128.0, 128.3, 128.9, 129.2, 129.4, 131.9, 134.0, 135.5, 139.1, 139.4, 144.8, 147.3, 198.8; IR (KBr): 3055, 2932, 1668, 1597, 1580, 1511, 1492, 1422, 1313, 1273, 1175, 1120, 1005, 892, 792, 707, 690, 624, 489 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{13}NO$ (MH^+) 284.1070; found 284.1068.

Benzo[*h*]quinolin-10-yl(p-tolyl)methanone (6b):



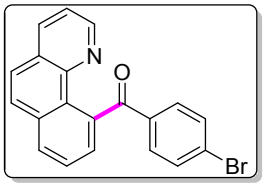
Brown solid; M.p. 145-147 °C; R_f (10% EtOAc/hexane) 0.22; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 2.33 (s, 3H), 7.10 (d, 2H, *J* = 7.6 Hz), 7.33–7.36 (m, 1H), 7.59–7.61 (m, 1H), 7.65 (d, 2H, *J* = 8.0 Hz), 7.73–7.80 (m, 2H), 7.90 (d, 1H, *J* = 8.8 Hz), 8.03–8.05 (m, 1H), 8.09–8.12 (m, 1H), 8.52–8.54 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 21.8, 121.8, 126.3, 126.6, 127.2, 127.9, 128.0, 129.02, 129.06, 129.1, 129.4, 134.1, 135.5, 136.9, 139.4, 142.5, 145.0, 147.4, 198.7; IR (KBr): 3045, 2921, 2595, 1665, 1607, 1510, 1461, 1274, 1209, 1176, 1117, 1007, 893, 837, 742, 688, 605, 545, 488 cm^{-1}; HRMS (ESI): calcd. for $C_{21}H_{15}NO$ (MH^+) 298.1226; found 298.1235.

Benzo[*h*]quinolin-10-yl(4-(tert-butyl)phenyl)methanone (6c):



Brown solid; M.p. 105-107 °C; R_f (10% EtOAc/hexane) 0.20; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 1.28 (s, 9H), 7.29–7.34 (m, 2H), 7.39 (d, 1H, *J* = 8.4 Hz), 7.58-7.60 (m, 1H), 7.70 (d, 2H, *J* = 8.4 Hz), 7.74-7.78 (m, 2H), 7.89 (d, 1H, *J* = 8.8 Hz), 8.03 (d, 1H, *J* = 8.0 Hz), 8.07–8.10 (m, 1H), 8.54–8.55 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 31.3, 35.1, 121.7, 125.2, 125.6, 126.2, 126.5, 127.0, 127.8, 127.9, 128.9, 129.0, 134.0, 135.4, 136.7, 139.4, 144.9, 147.4, 155.4, 198.7; IR (KBr): 3417, 3050, 2961, 2869, 2245, 1928, 1799, 1668, 1608, 1573, 1512, 1467, 1414, 1365, 1303, 1273, 1213, 1188, 1048, 1009, 897, 764, 696, 629, 582, 485 cm^{-1}; HRMS (ESI): calcd. for $C_{24}H_{21}NO$ (MH^+) 340.1696; found 340.1699.

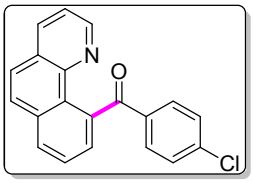
Benzo[*h*]quinolin-10-yl(4-bromophenyl)methanone (6e):



Brown solid; M.p. 133-135 °C; R_f (10% EtOAc/hexane) 0.23; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.32–7.35 (m, 1H), 7.40 (d, 2H, *J* = 8.8 Hz), 7.56–7.60 (m, 3H), 7.73–7.75 (m, 1H), 7.78 (d, 1H, *J* = 8.0 Hz), 7.88 (d, 1H, *J* = 8.0 Hz), 8.04 (d, 1H, *J* = 8.4 Hz), 8.09–8.11 (m,

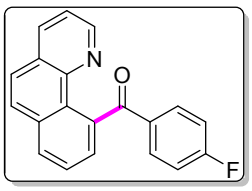
1H), 8.47–8.48 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 122.0, 126.4, 126.6, 126.8, 127.2, 128.0, 129.3, 129.4, 130.3, 131.6, 134.0, 135.6, 138.4, 138.5, 144.7, 147.3, 197.6; IR (KBr): 3048, 2924, 2853, 1920, 1670, 1583, 1511, 1481, 1396, 1272, 1206, 1169, 1113, 1067, 1004, 891, 836, 739, 677, 624, 546, 485 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{12}BrNO$ (MH^+) 362.0175; found 362.0177.

Benzo[*h*]quinolin-10-yl(4-chlorophenyl)methanone (6f):



Red solid; M.p. 113-115 ^{o}C; R_f (10% EtOAc/hexane) 0.23; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.26 (d, 2H, *J* = 8.0 Hz), 7.34–7.37 (m, 1H), 7.61 (d, 1H, *J* = 7.2 Hz), 7.67 (d, 2H, *J* = 8.0 Hz), 7.74–7.81 (m, 2H), 7.90 (d, 1H, *J* = 8.4 Hz), 8.06 (d, 1H, *J* = 8.0 Hz), 8.12 (d, 1H, *J* = 7.6 Hz), 8.49 (d, 1H, *J* = 1.6 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 122.0, 126.4, 126.6, 127.2, 128.0, 128.6, 129.3, 129.4, 130.2, 134.0, 135.6, 137.9, 138.1, 138.6, 144.7, 147.3, 197.5; IR (KBr): 2920, 2846, 1667, 1623, 1509, 1488, 1422, 1398, 1135, 1088, 1004, 892, 832, 747, 733, 682, 617, 507 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{12}ClNO$ (MH^+) 318.0680; found 318.0673

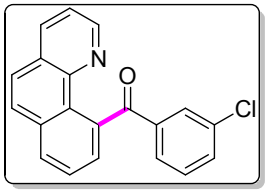
Benzo[*h*]quinolin-10-yl(4-fluorophenyl)methanone (6g):



Yellow gummy; R_f (10% EtOAc/hexane) 0.18; ^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 6.96 (t, 2H, *J* = 8.8 Hz), 7.34–7.37 (m, 1H), 7.61 (d, 1H, *J* = 7.6 Hz), 7.75 (t, 3H, *J* = 8.8 Hz), 7.80 (d, 1H, *J* = 8.0 Hz), 7.91 (d, 1H, *J* = 8.4 Hz), 8.05 (d, 1H, *J* = 8.0 Hz), 8.12 (d, 1H, *J* = 8.0 Hz), 8.50 (d, 1H, *J* = 4.0 Hz); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 115.3 (d, *J* = 21.0 Hz), 121.9, 126.4, 126.5, 127.2, 128.0 (d, *J* = 6.0Hz), 129.3 (d, *J* = 12.0 Hz), 131.3 (d, *J* = 9.0 Hz), 134.0, 135.1, 135.9, 138.8, 144.8, 147.3, 164.2, 166.0, 197.3; IR (KBr): 2920, 2850, 1664,

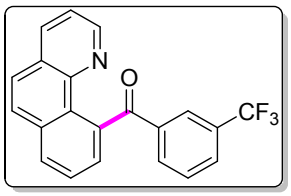
1633, 1595, 1505, 1427, 1272, 1237, 1150, 1084, 891, 838, 748, 687, 503 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{12}FNO$ (MH^+) 302.0976; found 302.0999.

Benzo[*h*]quinolin-10-yl(3-chlorophenyl)methanone (6h):



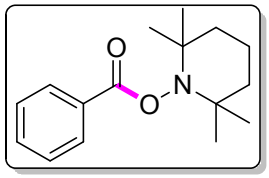
Brown solid; M.p. 135-137 °C; R_f (10% EtOAc/hexane) 0.23; ^1H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.21 (t, 1H, *J* = 8.0 Hz), 7.35–7.39 (m, 2H), 7.56 (d, 1H, *J* = 8.0 Hz), 7.61–7.63 (m, 1H), 7.75–7.82 (m, 3H), 7.92 (d, 1H, *J* = 8.8 Hz), 8.06–8.08 (m, 1H), 8.11–8.14 (m, 1H), 8.50–8.52 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 122.0, 126.4, 126.6, 126.9, 127.3, 128.0, 128.6, 129.3, 129.5, 129.6, 131.8, 134.1, 134.5, 135.6, 138.3, 141.3, 144.7, 147.2, 197.3; IR (KBr): 3053, 2920, 2837, 1673, 1575, 1508, 1417, 1270, 1156, 1121, 1077, 1012, 899, 838, 793, 737, 674, 625, 544, 465 cm^{-1}; HRMS (ESI): calcd. for $C_{20}H_{12}ClNO$ (MH^+) 318.0680; found 318.0683.

Benzo[*h*]quinolin-10-yl(3-(trifluoromethyl)phenyl)methanone (6j):



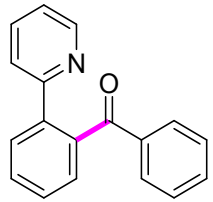
Brown solid; M.p. 163-165 °C; R_f (10% EtOAc/hexane) 0.28; ^1H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.34–7.39 (m, 2H), 7.65 (t, 2H, *J* = 7.2 Hz), 7.74 (t, 1H, *J* = 8.0 Hz), 7.79 (d, 1H, *J* = 6.4 Hz), 7.83 (d, 1H, *J* = 7.6 Hz), 7.93 (d, 1H, *J* = 8.8 Hz), 8.08–8.14 (m, 2H), 8.18 (s, 1H), 8.46–8.47 (m, 1H); ^{13}C NMR (150 MHz, $CDCl_3$): δ (ppm) 122.0, 123.2, 124.9, 125.2 (t, *J* = 4.5 Hz), 126.6 (d, *J* = 24.0Hz), 126.8, 127.3, 128.0 (d, *J* = 4.5 Hz), 128.2, 128.8, 129.3, 129.6, 131.0 (q, *J* = 65.2 Hz), 132.0, 134.1, 135.7, 138.1, 140.3, 144.5, 147.2, 197.2; IR (KBr): 3081, 2936, 1670, 1611, 1512, 1419, 1332, 1269, 1165, 1123, 1066, 917, 839, 743, 689, 627, 541 cm^{-1}; HRMS (ESI): calcd. for $C_{21}H_{12}F_3NO$ (MH^+) 352.0944; found 352.0950.

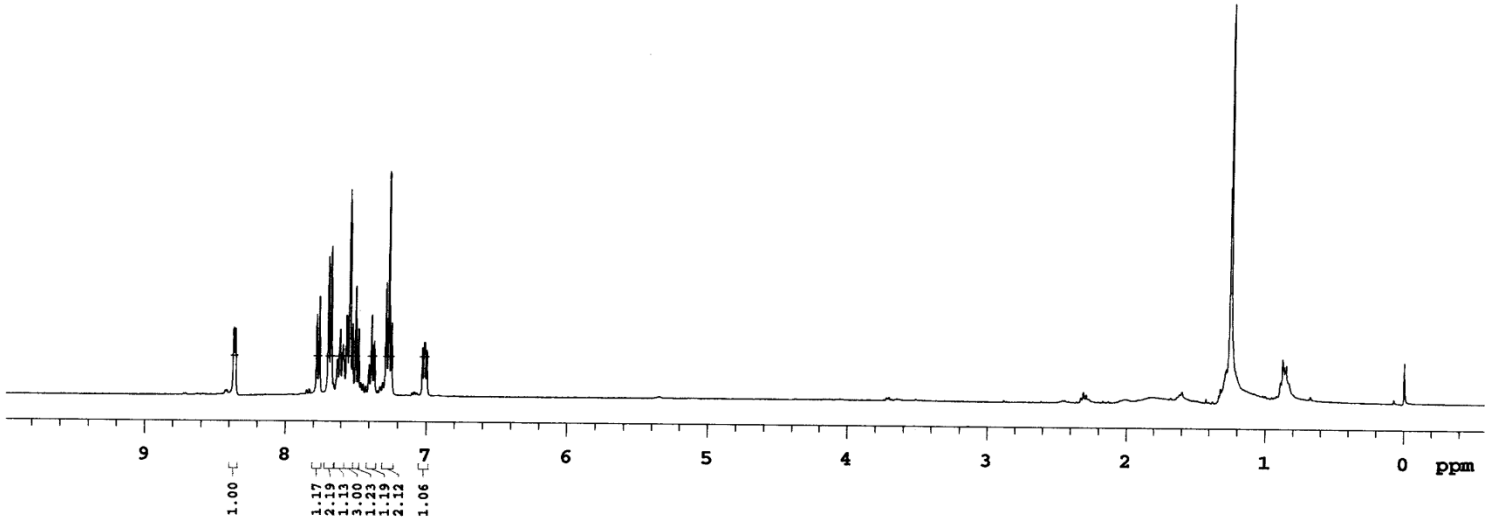
2,2,6,6-Tetramethylpiperidin-1-yl benzoate (E):



White solid; M.p. 90-92 ^{o}C; R_f (10% EtOAc/hexane) 0.48; ^{1}H NMR (400 MHz, $CDCl_3$):δ (ppm) 1.10 (s, 6H), 1.26 (s, 6H), 1.41–1.45 (m, 1H), 1.55–1.58 (m, 2H), 1.65–1.80 (m, 3H), 7.44 (t, 2H, *J* = 8.0 Hz), 7.55 (t, 1H, *J* = 7.2 Hz), 8.06 (d, 2H, *J* = 8.4 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ (ppm) 17.1, 21.0, 32.1, 39.2, 60.5, 128.6, 129.7, 129.8, 133.0, 166.5; IR (KBr): 3010, 2980, 2866, 1743, 1601, 1450, 1376, 1256, 1176, 1066, 1023, 993, 909, 871, 801, 712, 581, 506 cm^{-1}; HRMS (ESI): calcd. for $C_{16}H_{23}NO_2$ (MH^+) 262.1802; found 262.1796.

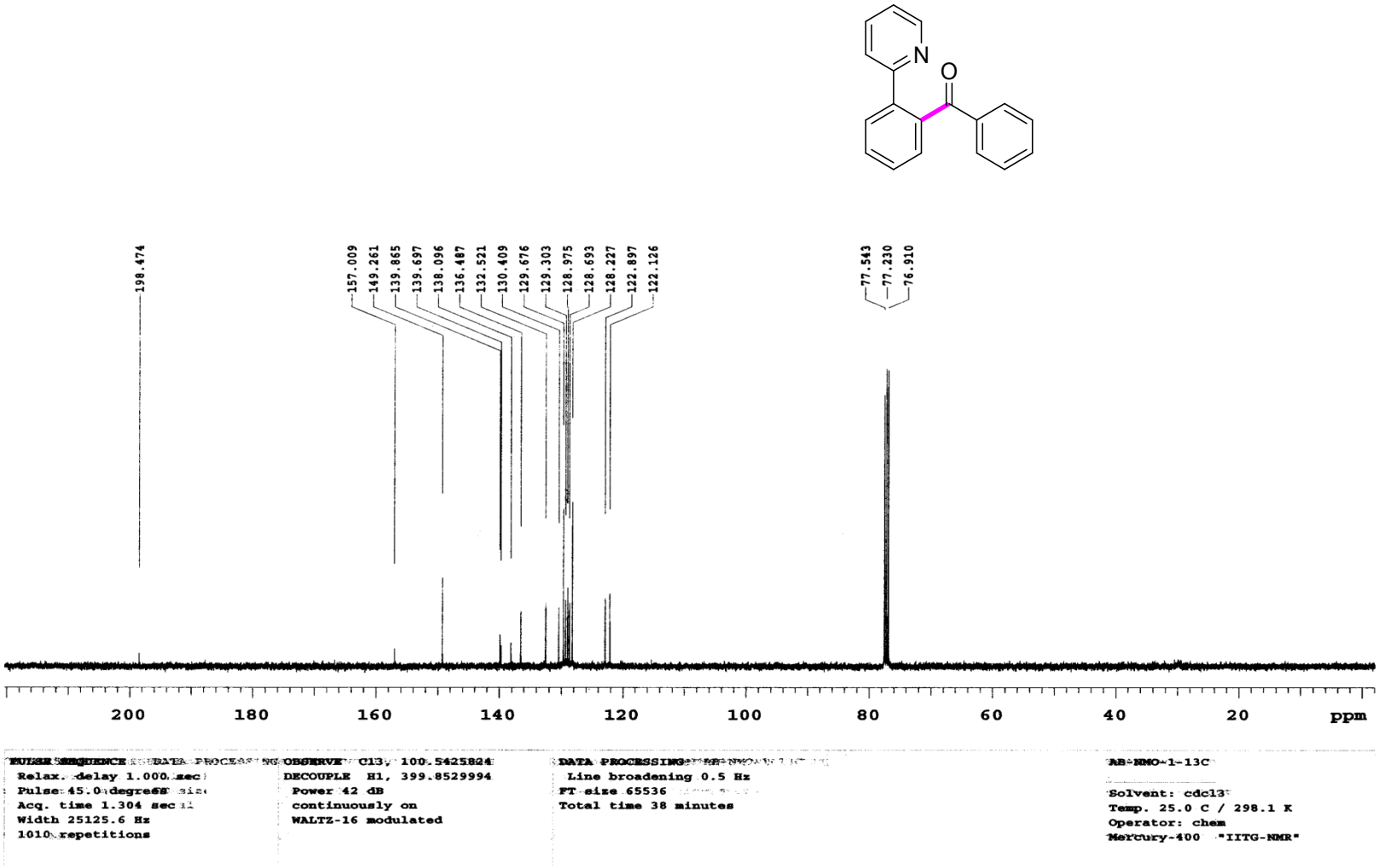
Phenyl(2-(pyridin-2-yl)phenyl)methanone (1a): ^{1}H NMR (400 MHz, $CDCl_3$)



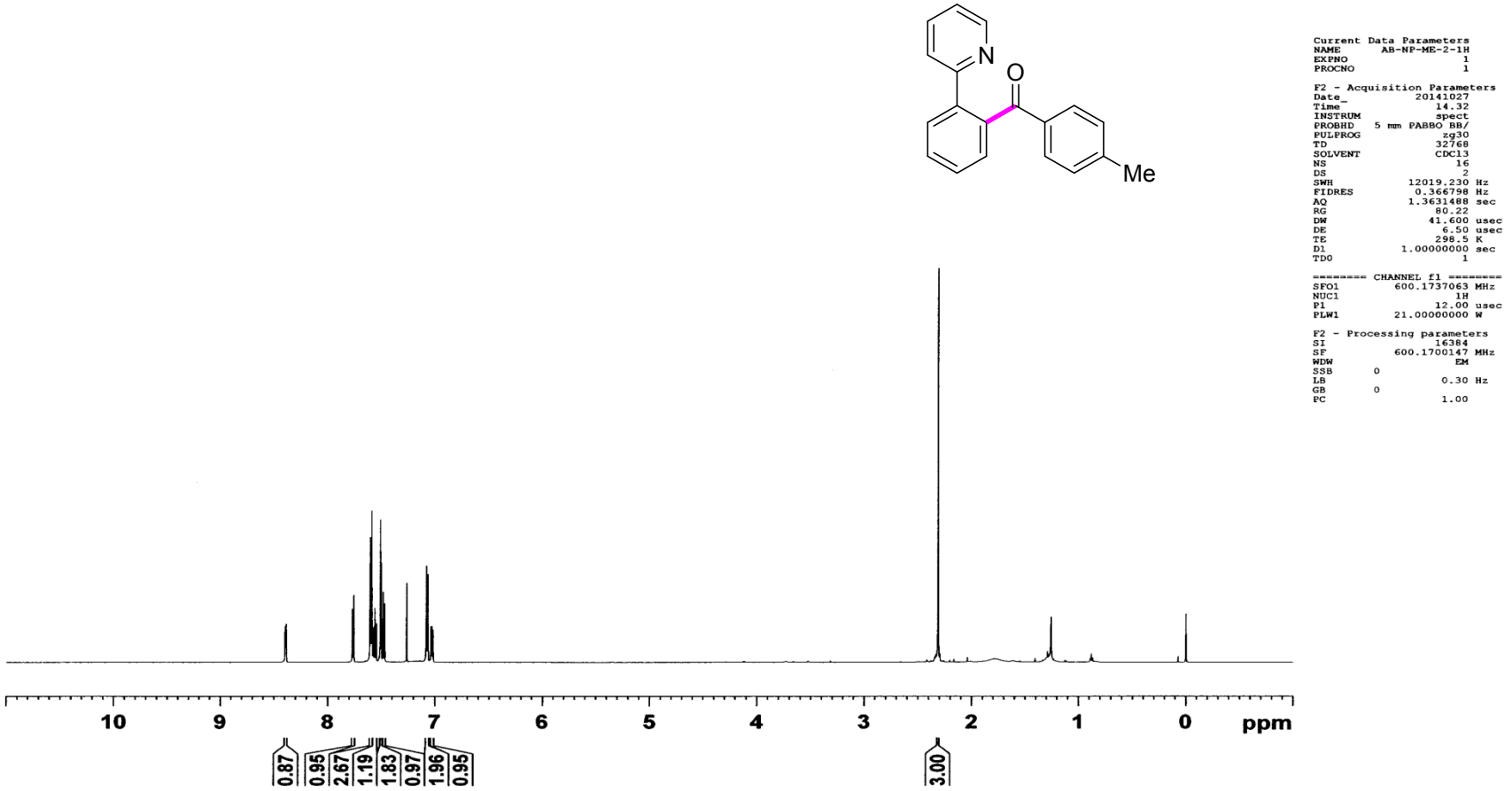


PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509617	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-NMO-DM-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

Phenyl(2-(pyridin-2-yl)phenyl)methanone (1a): ^{13}C NMR (100 MHz, $CDCl_3$)



(2-(Pyridin-2-yl)phenyl)(p-tolyl)methanone (1b): ^{1}H NMR (600 MHz, $CDCl_3$)

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PROCNO                   1

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DW                41.600 usec
DE                 6.50 usec
TE                298.5 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
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P1                 12.00 usec
PLW1          21.00000000 W

F2 - Processing parameters
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SF            600.1700147 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                 1.00
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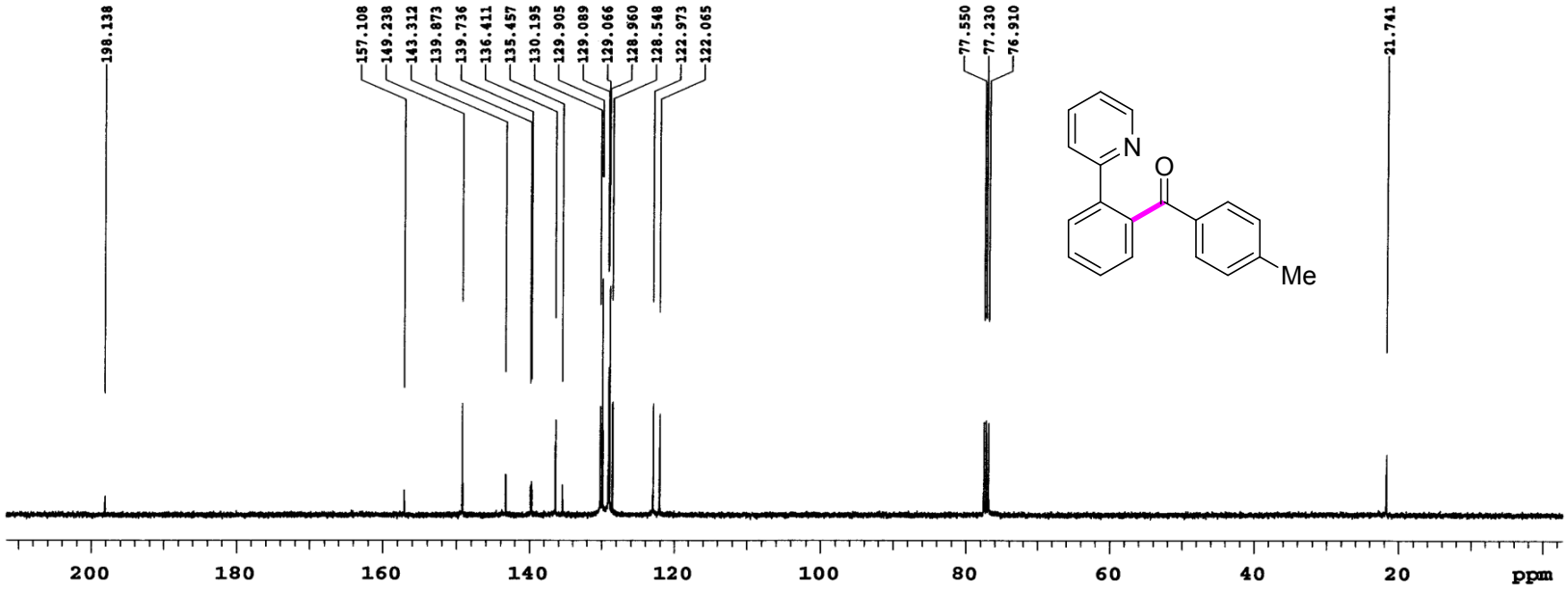
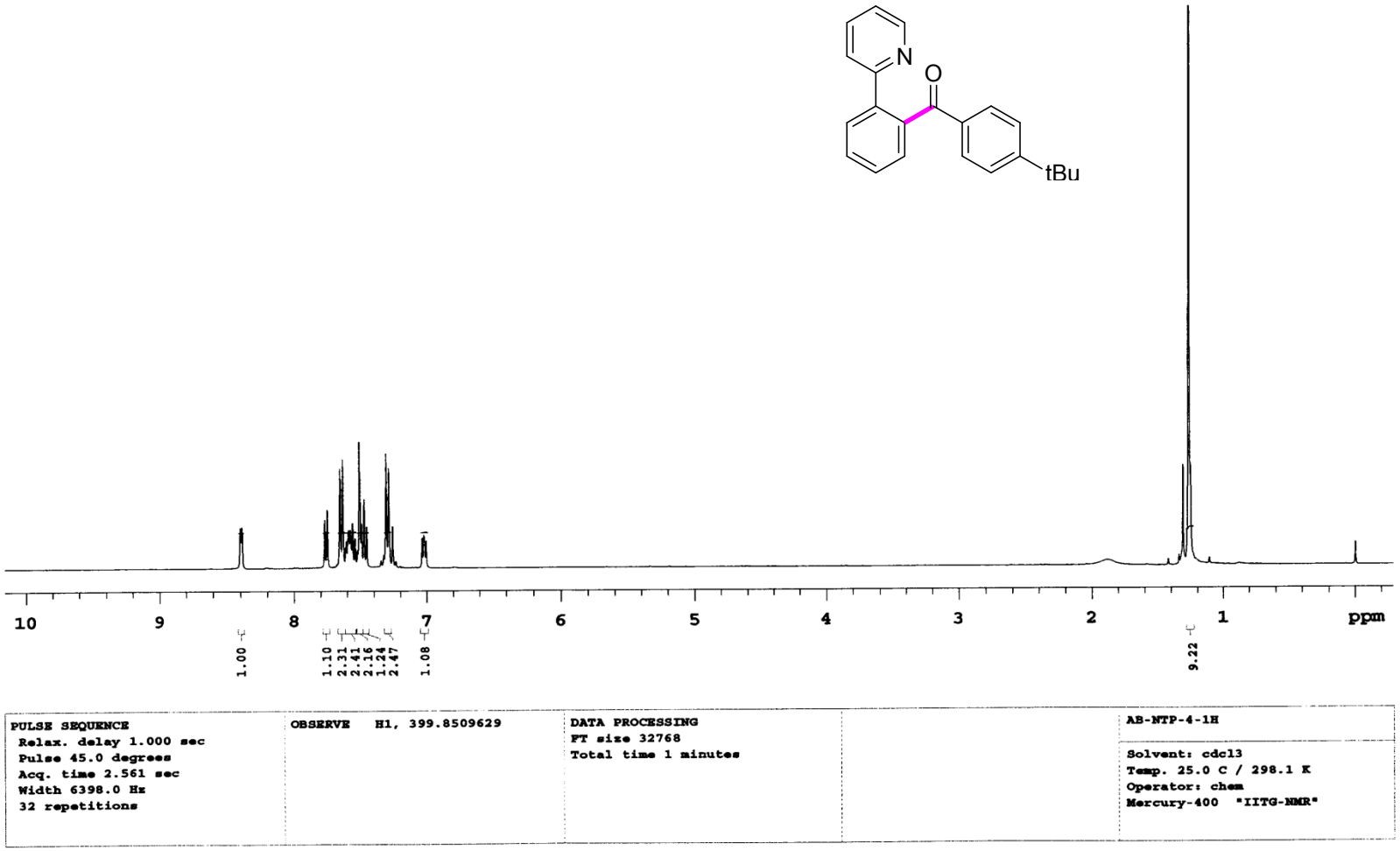
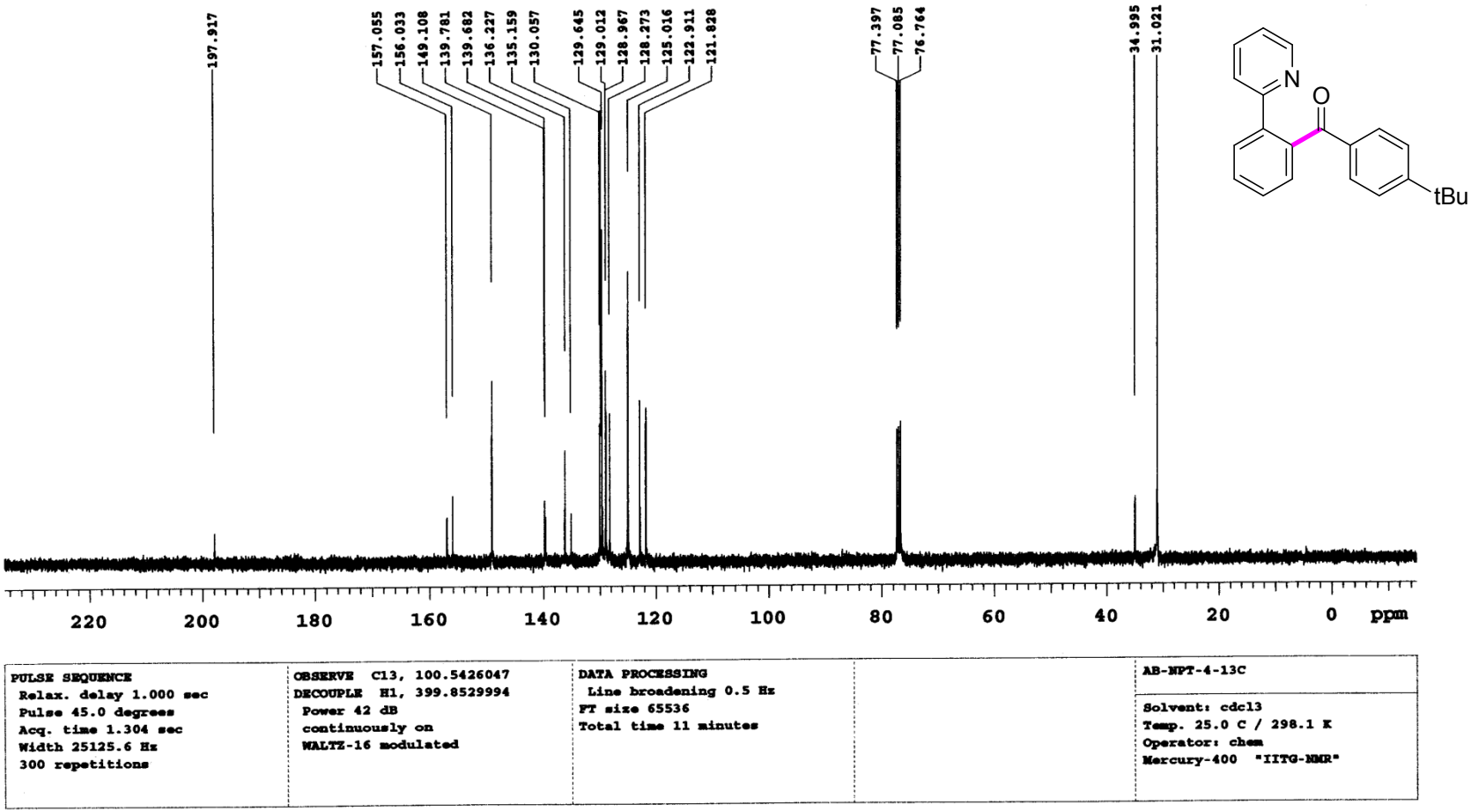
(2-(Pyridin-2-yl)phenyl)(p-tolyl)methanone (1b): ^{13}C NMR (100 MHz, $CDCl_3$)



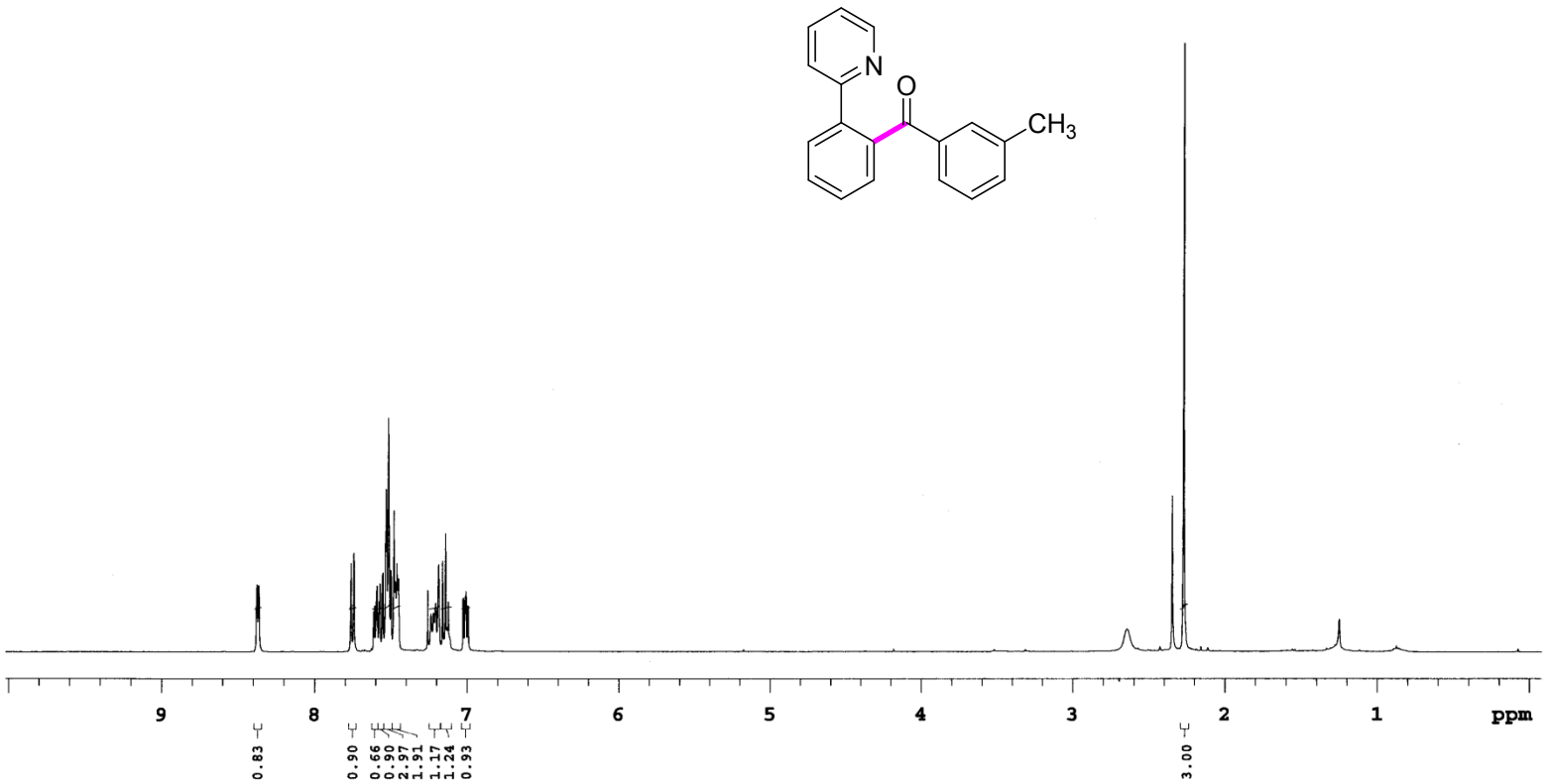
(4-(^{t}-Butyl)phenyl)(2-(pyridin-2-yl)phenyl)methanone (1c): ^{1}H NMR (400 MHz, $CDCl_3$)



(4-(^{t}Butyl)phenyl)(2-(pyridin-2-yl)phenyl)methanone (1c): ^{13}C NMR (100 MHz, $CDCl_3$)

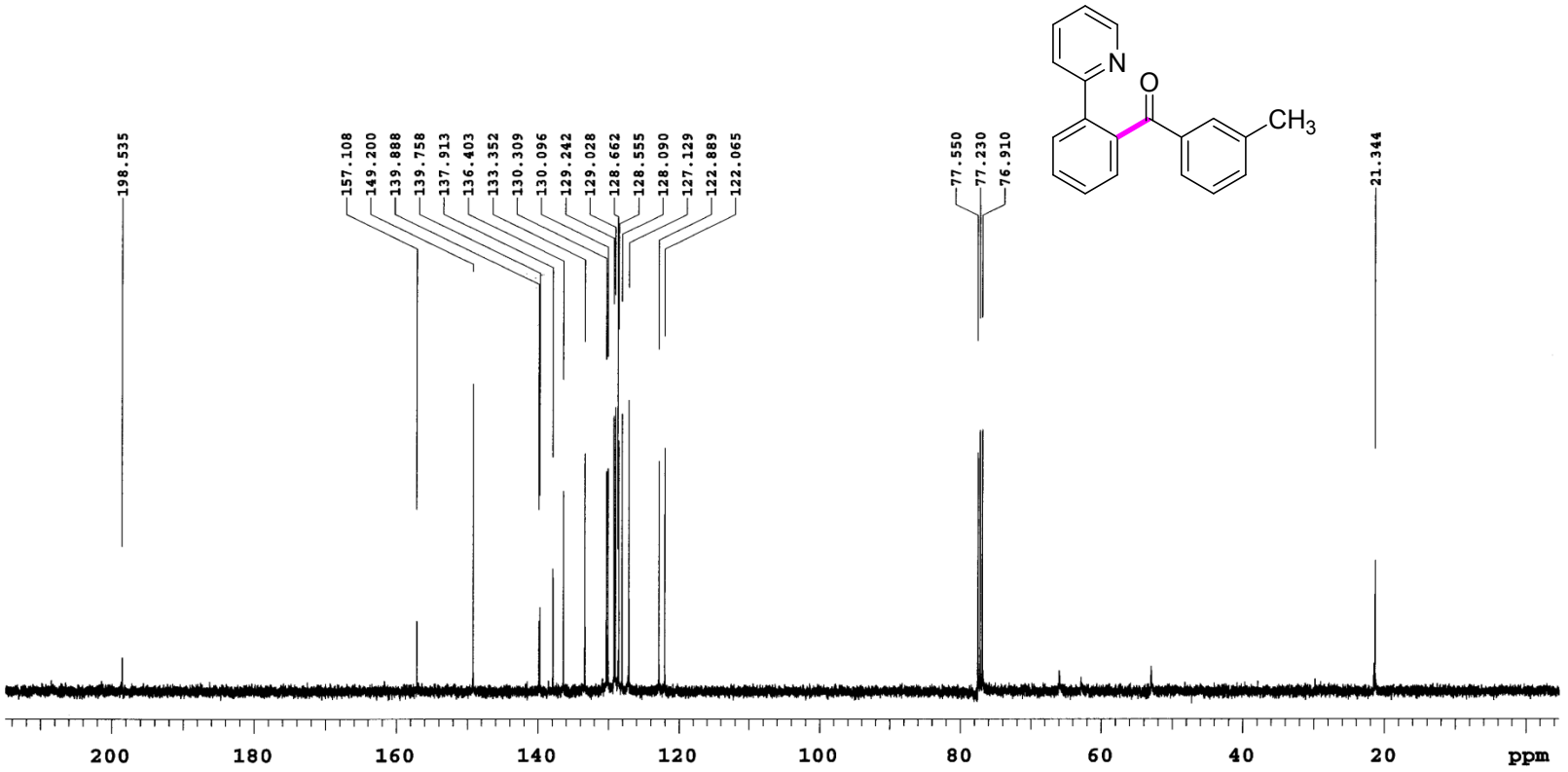


2-(pyridine-2-yl)phenyl(*m*-tolyl)methanone (1d): ^{1}H NMR (400 MHz, $CDCl_3$)



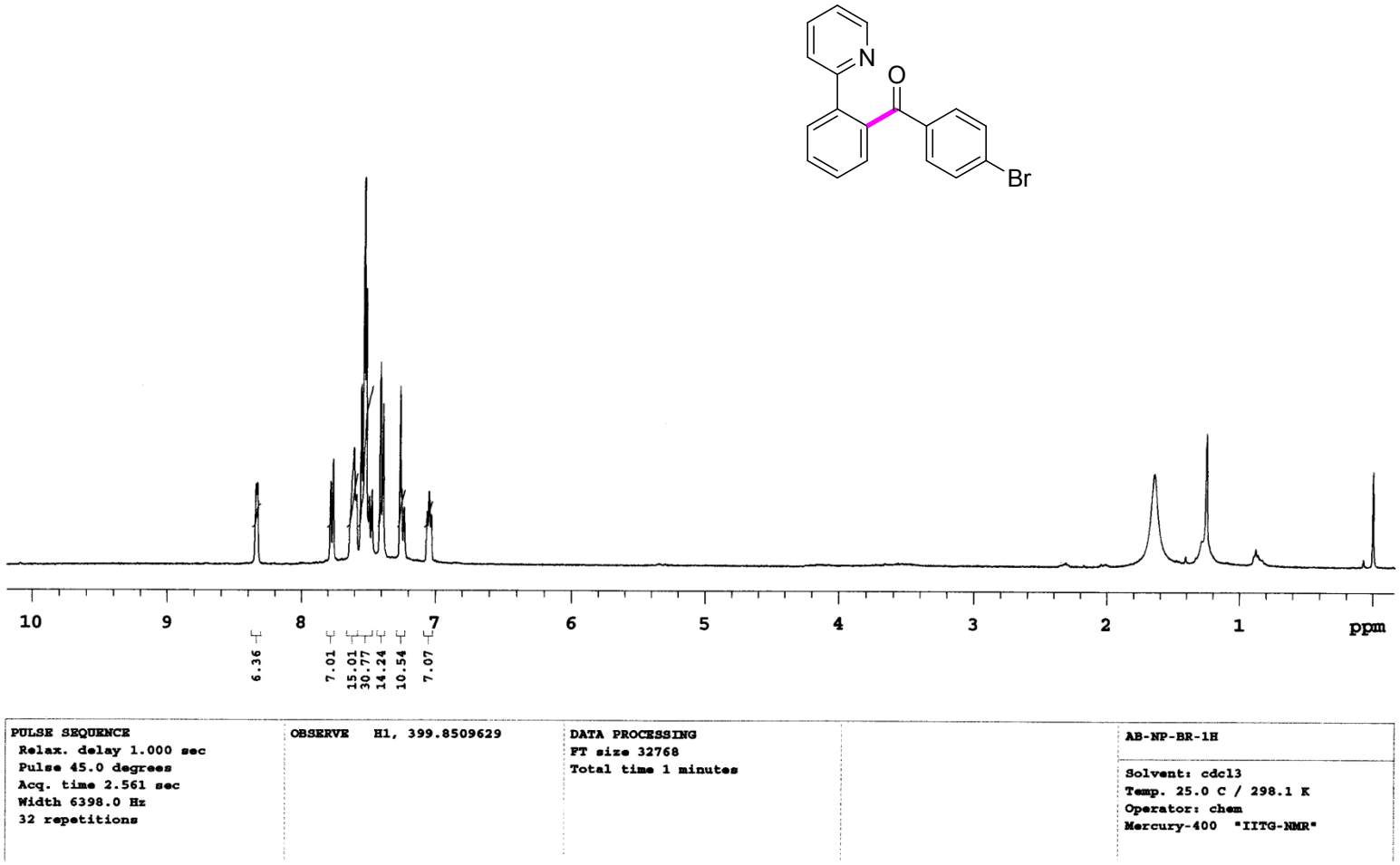
PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509614	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-NMR-3-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

2-(pyridine-2-yl)phenyl(*m*-tolyl)methanone (1d): ^{13}C NMR (100 MHz, $CDCl_3$)

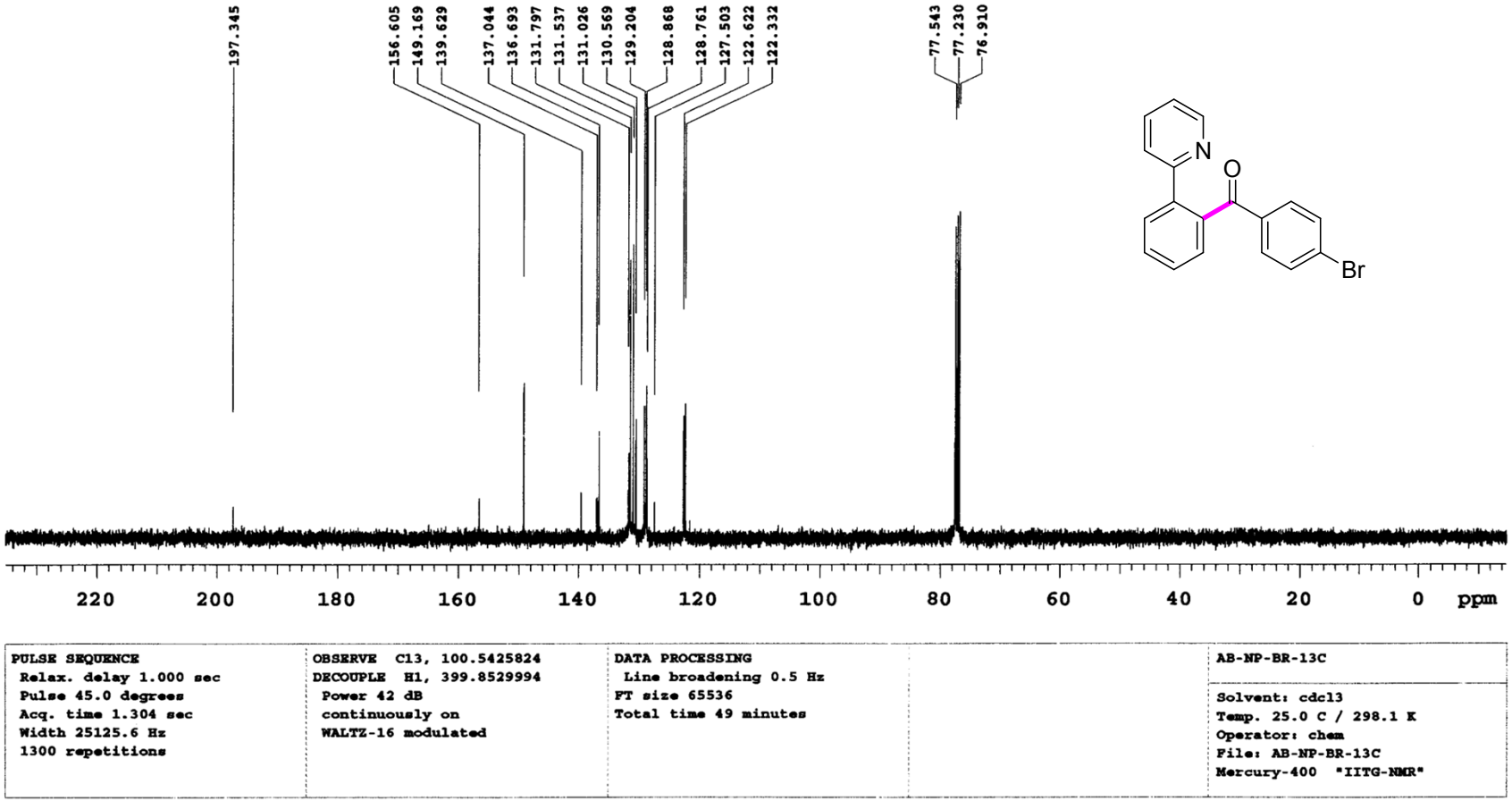


PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 1.304 sec Width 25125.6 Hz 500 repetitions	OBSERVE C13, 100.5425878 DECOUPLE H1, 399.8529994 Power 42 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 19 minutes		AB-NME-3-13C Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

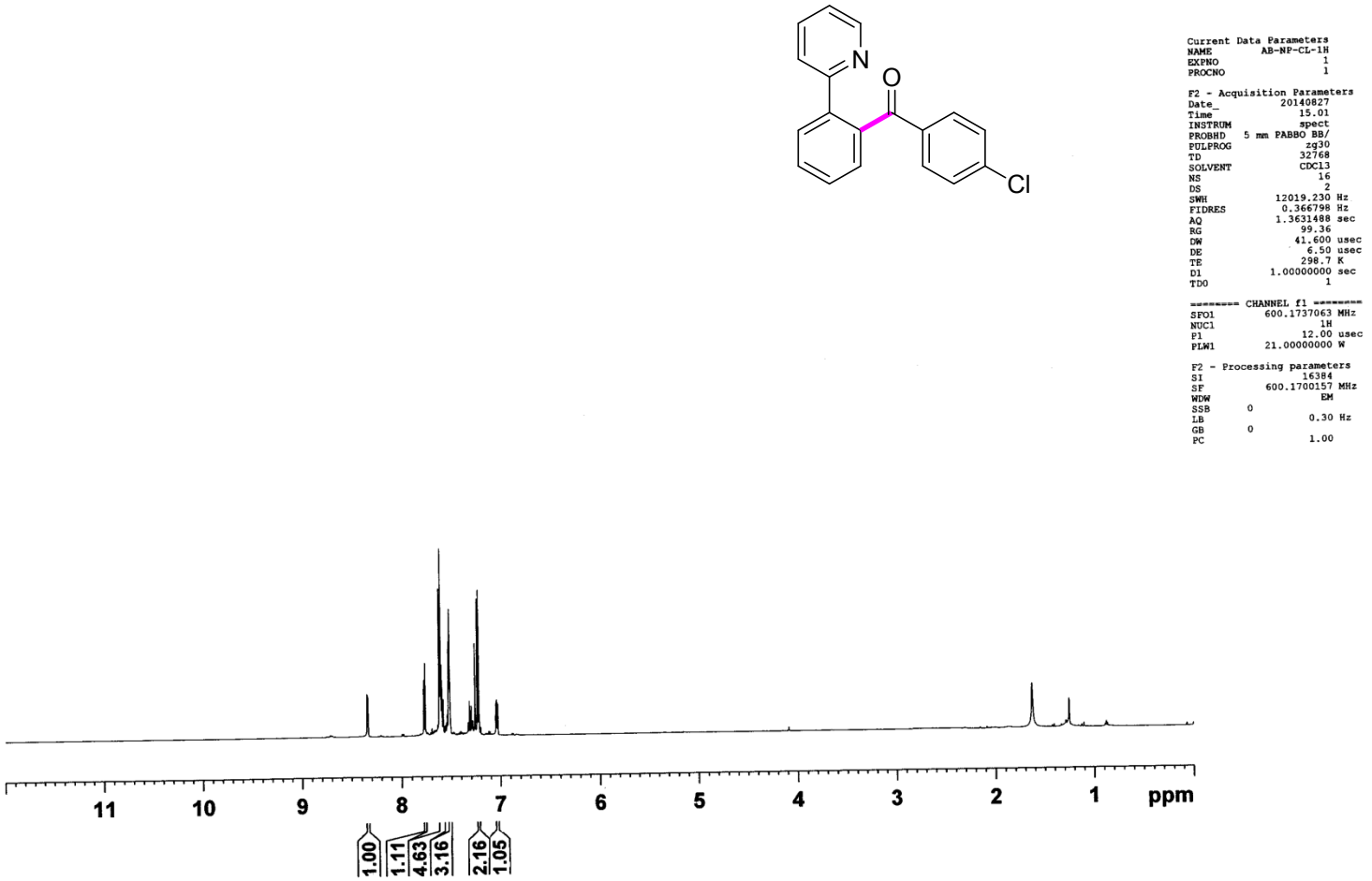
(4-Bromophenyl)(2-(pyridin-2-yl)phenyl)methanone (1e):^{1}H NMR (400 MHz, $CDCl_3$)



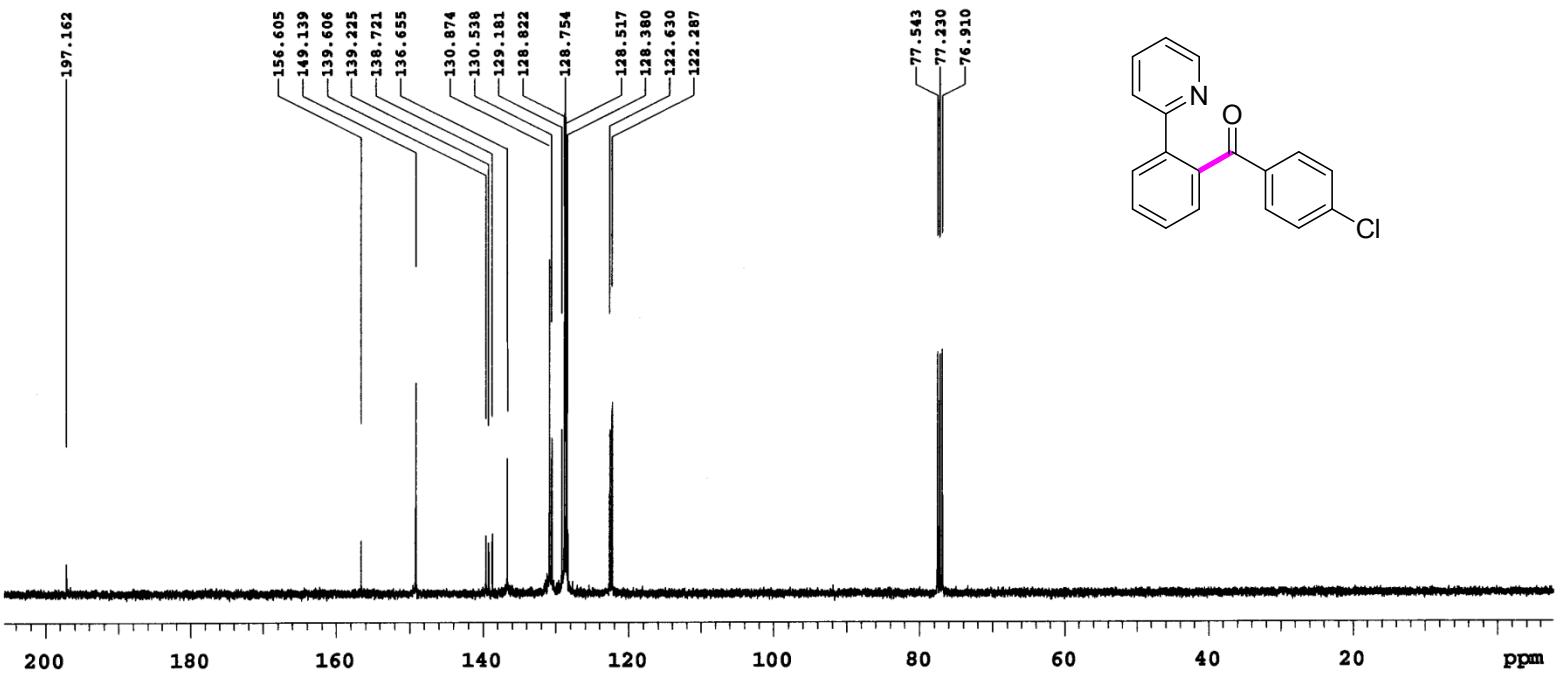
(4-Bromophenyl)(2-(pyridin-2-yl)phenyl)methanone (1e):^{13}C NMR (100 MHz, $CDCl_3$)



(4-Chlorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1f): ^{1}H NMR (600 MHz, $CDCl_3$)

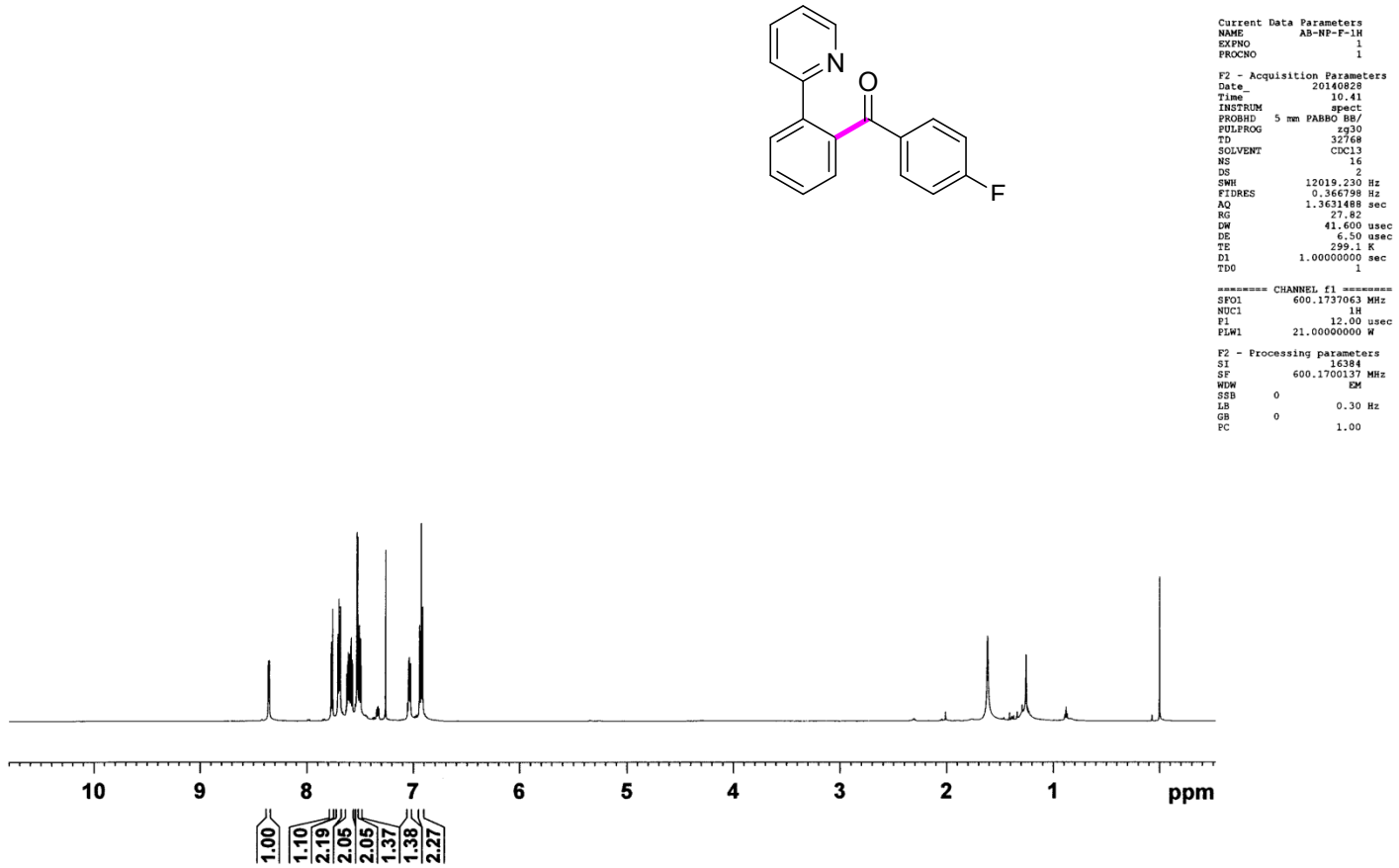


(4-Chlorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1f): ^{13}C NMR (100 MHz, $CDCl_3$)

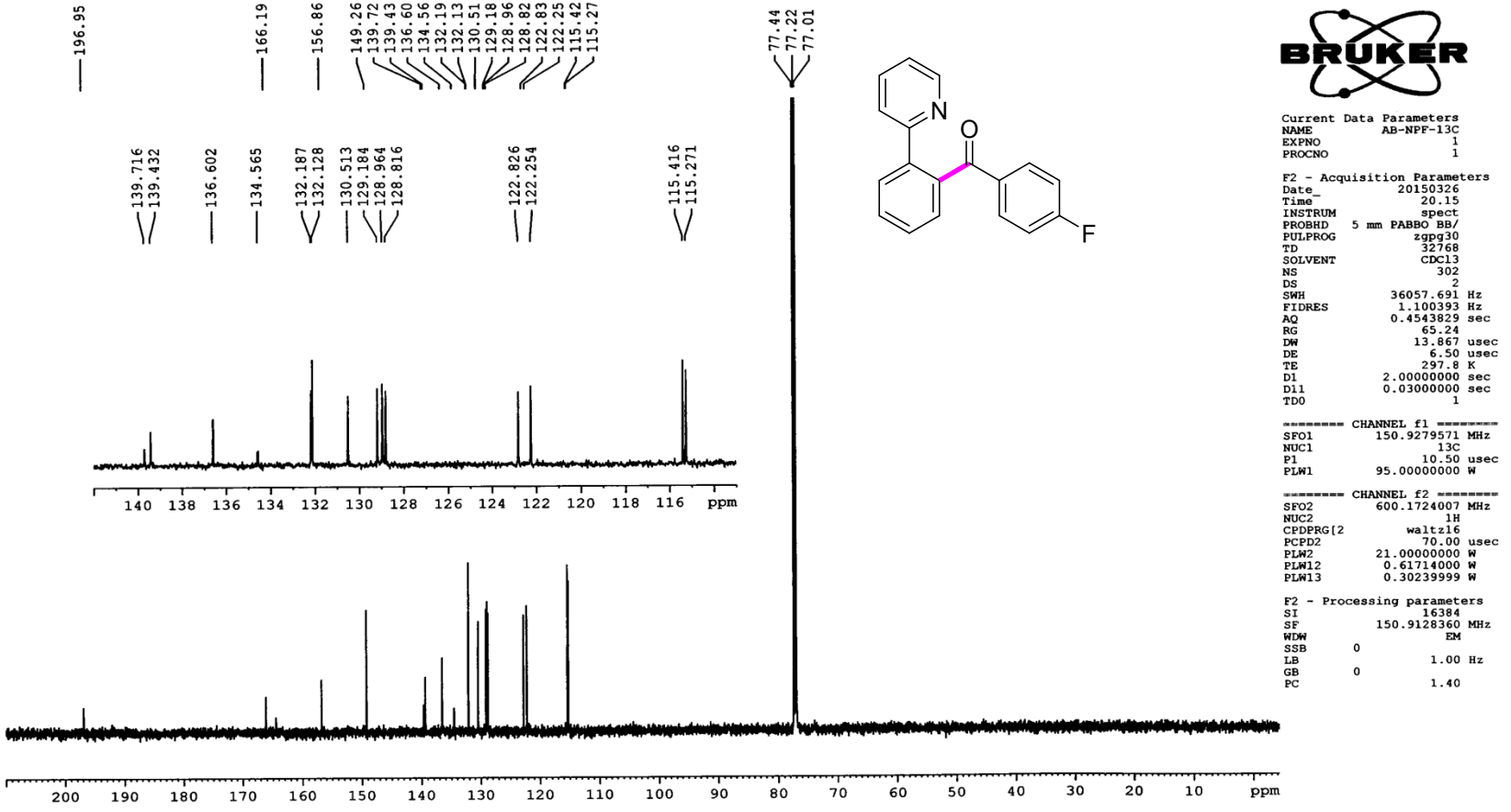


PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 1.304 sec Width 25125.6 Hz 1380 repetitions	OBSERVE C13, 100.5425893 DECOUPLE H1, 399.8529994 Power 42 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 53 minutes		AB-NP-CL Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem File: AB-NP-CL Mercury-400 "IITG-NMR"

(4-Fluorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1g): ^{1}H NMR (600 MHz, $CDCl_3$)



(4-Fluorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1g): ^{13}C NMR (150 MHz, $CDCl_3$)



BRUKER

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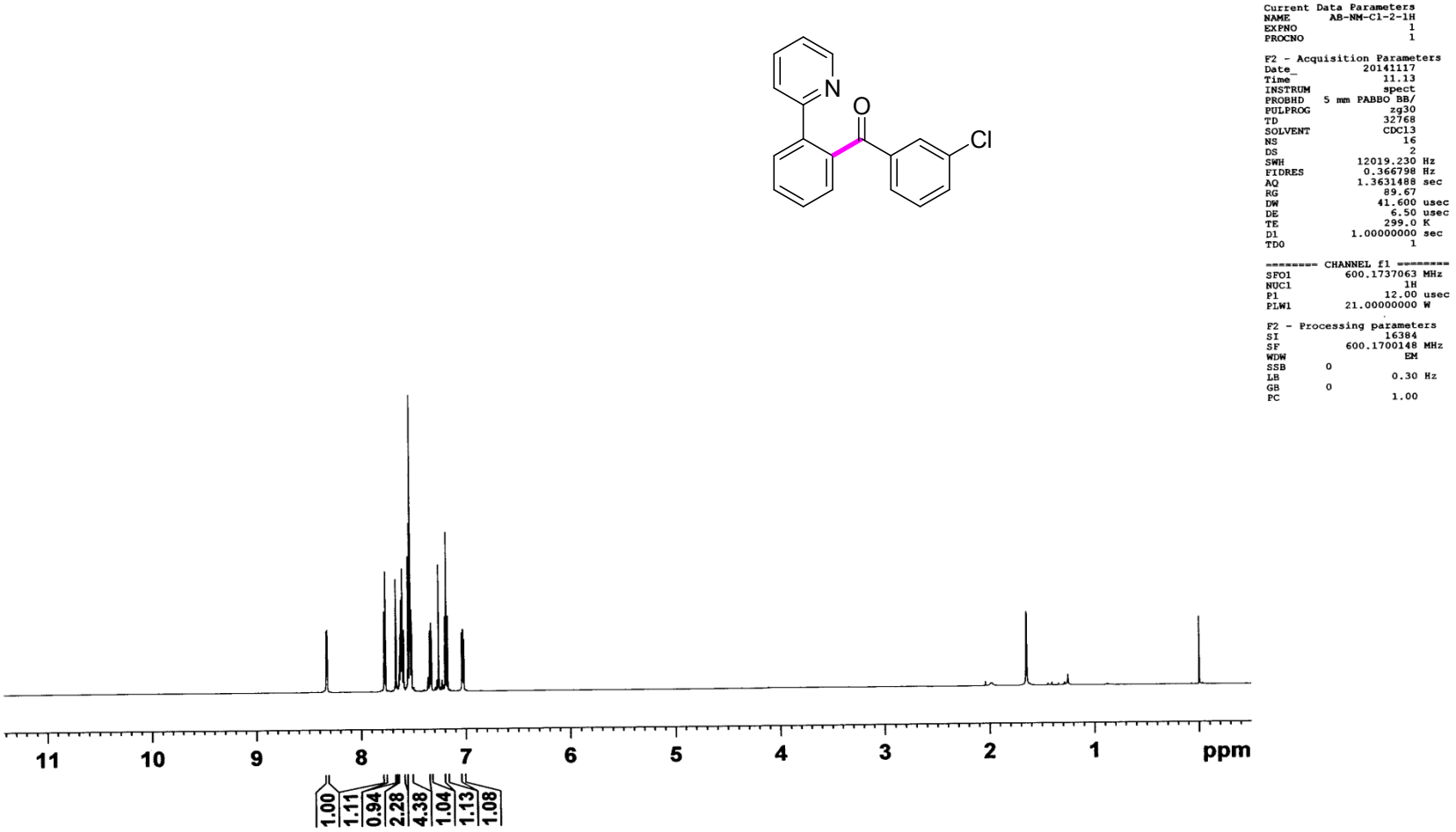
PC 1.40

(3-Chlorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1h): ^{1}H NMR (600 MHz, $CDCl_3$)

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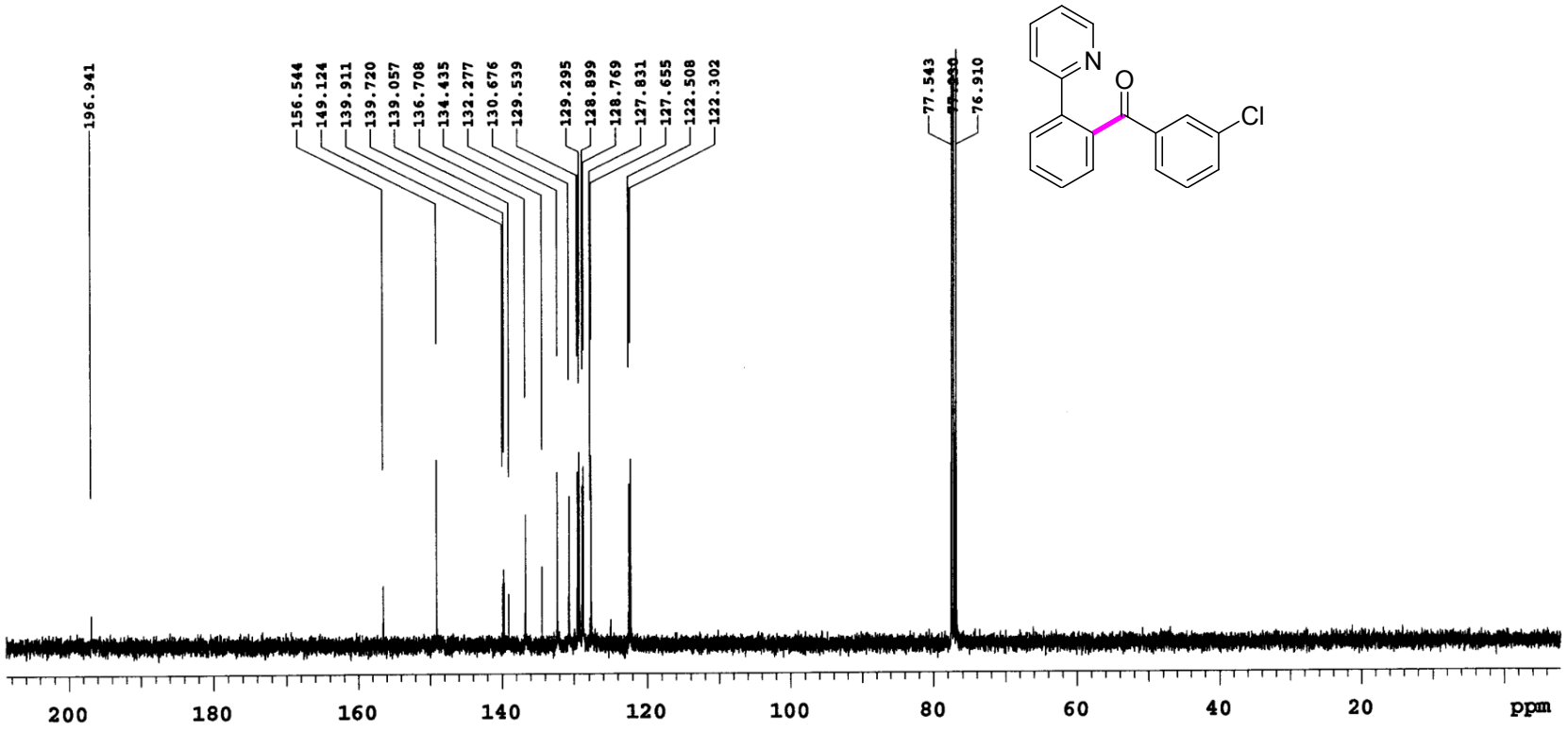
Current Data Parameters
NAME        AB-NM-Cl-2-1H
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20141117
Time                11.13
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            12019.230 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 89.67
DW                41.600 usec
DE                 6.50 usec
TE                299.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          600.1737063 MHz
NUC1                  1H
P1                 12.00 usec
PLW1          21.00000000 W

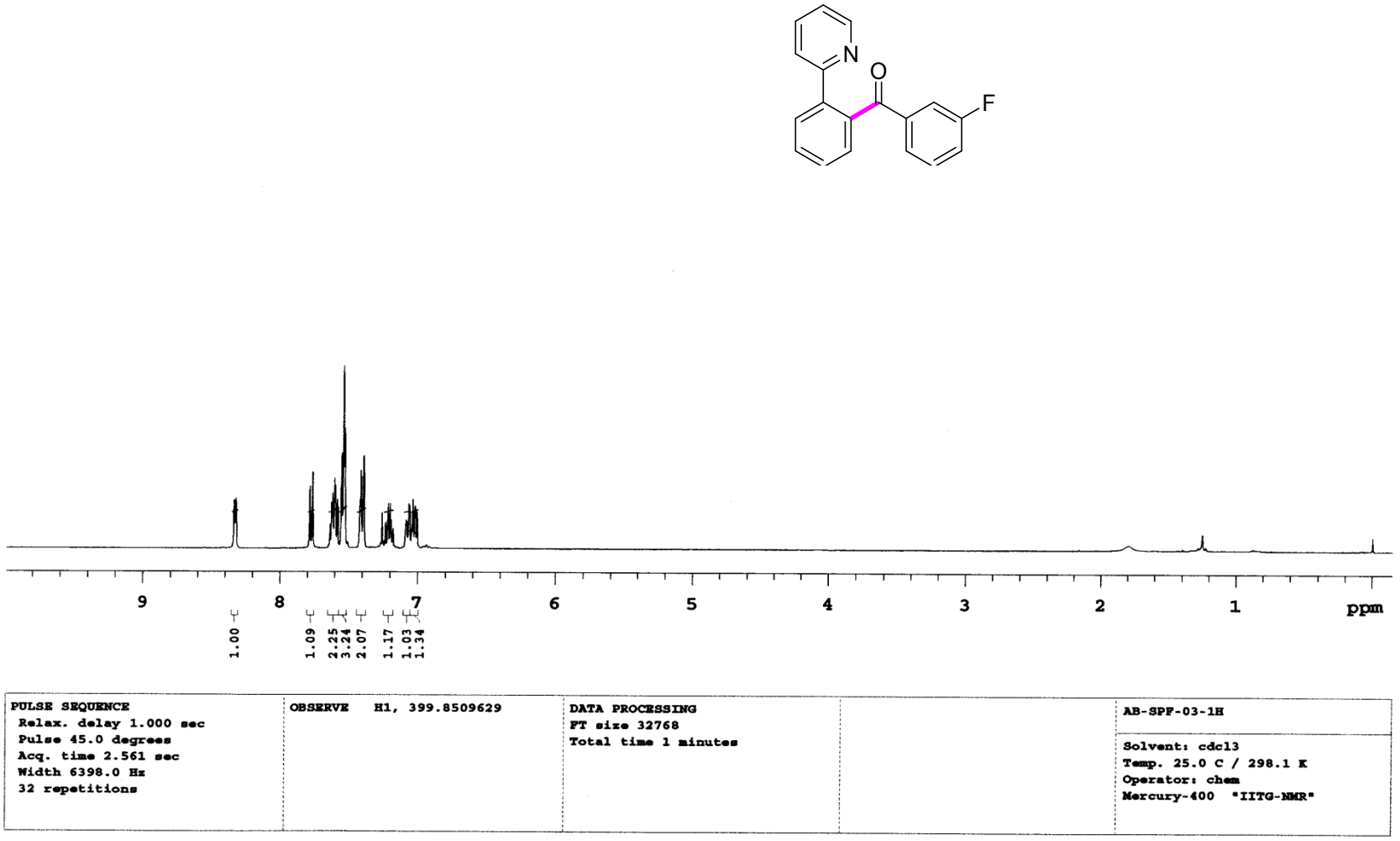
F2 - Processing parameters
SI                 16384
SF            600.1700148 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00
```

(3-Chlorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1h): ^{13}C NMR (100 MHz, $CDCl_3$)

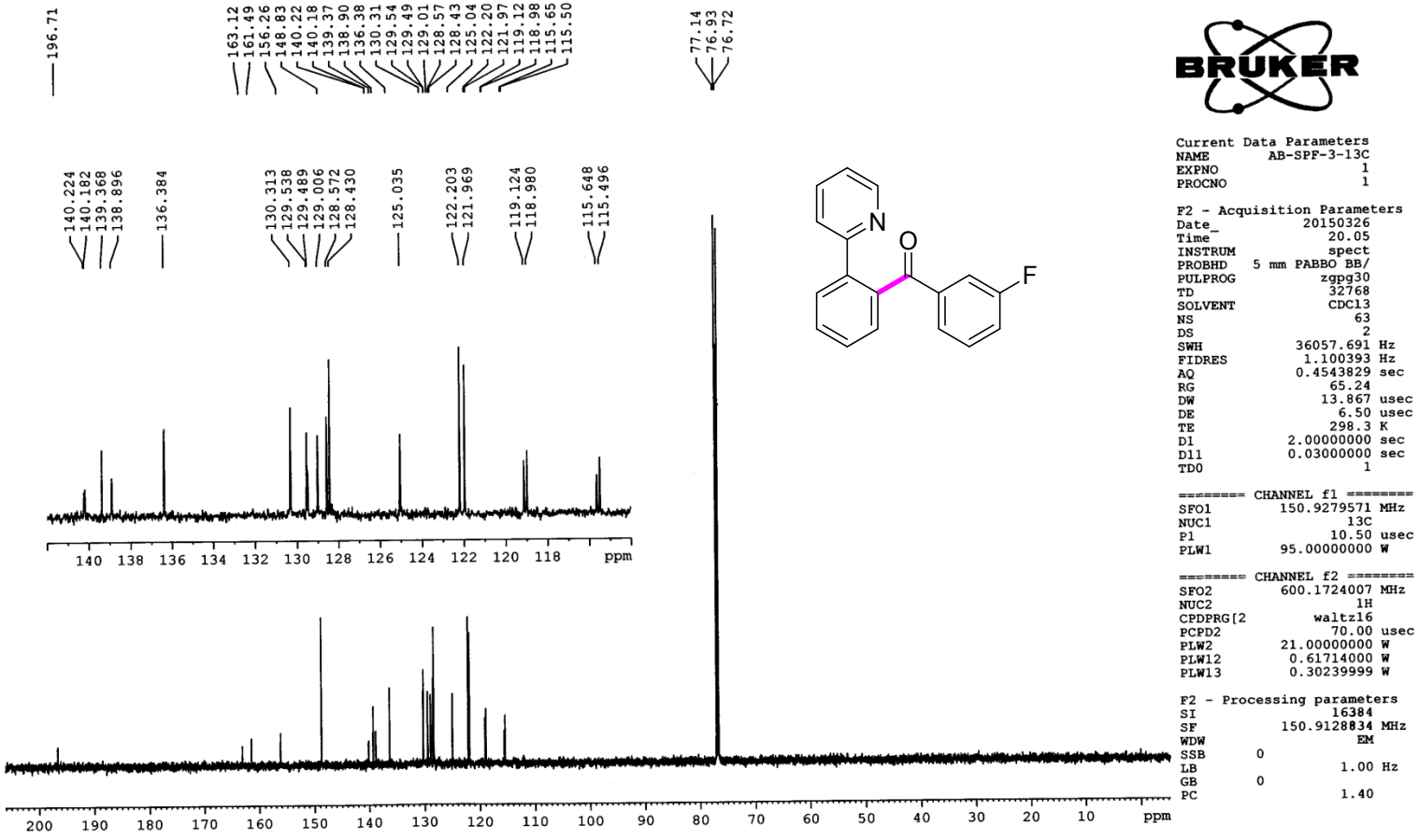


PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 1.304 sec Width 25125.6 Hz 790 repetitions	OBSERVE C13, 100.5425840 DECOUPLE H1, 399.8529994 Power 42 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 30 minutes		AB-NM-CL-2-13C Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem File: AB-NM-CL-2-13C Mercury-400 "IITG-NMR"

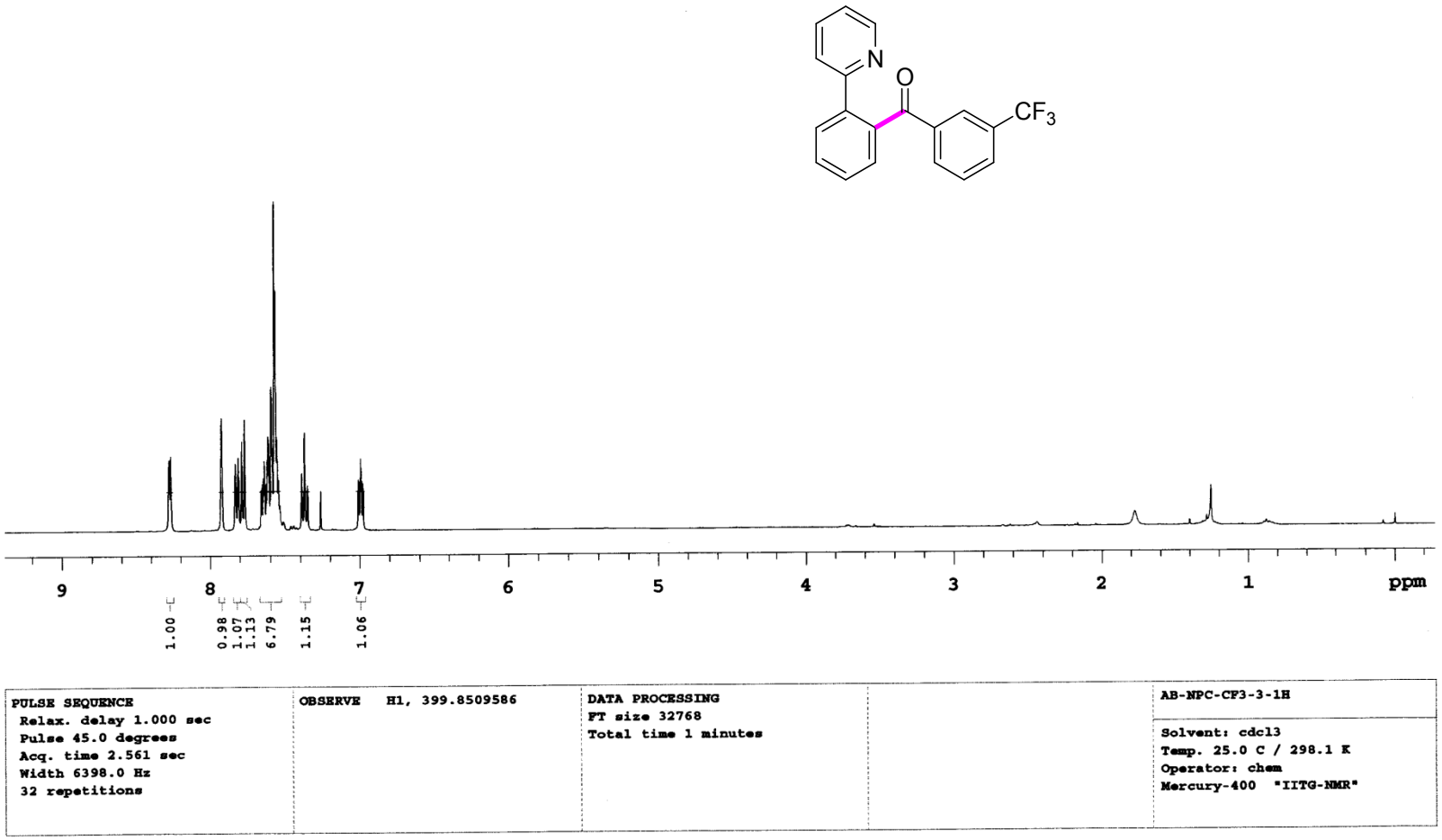
(3-Fluorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1i): ^{1}H NMR (400 MHz, $CDCl_3$)



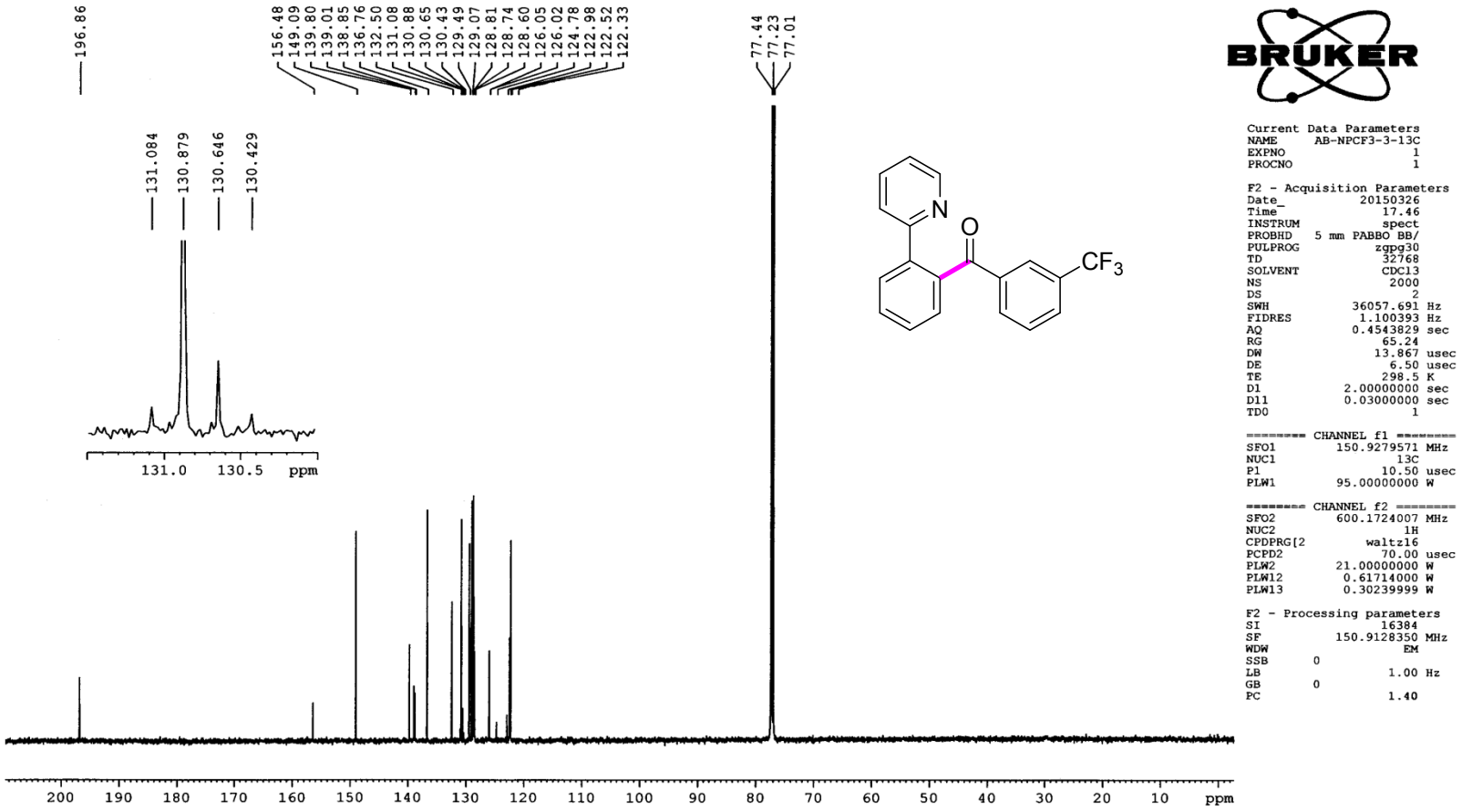
(3-Fluorophenyl)(2-(pyridin-2-yl)phenyl)methanone (1i): ^{13}C NMR (150 MHz, $CDCl_3$)



(2-(Pyridin-2-yl)phenyl)(3-(trifluoromethyl)phenyl)methanone (1j): ^{1}H NMR (400 MHz, $CDCl_3$)



(2-(Pyridin-2-yl)phenyl)(3-(trifluoromethyl)phenyl)methanone (1j): ^{13}C NMR (150 MHz, $CDCl_3$)



BRUKER

```
Current Data Parameters
NAME      AB-NPCF3-3-13C
EXPNO                  1
PROCNO                 1

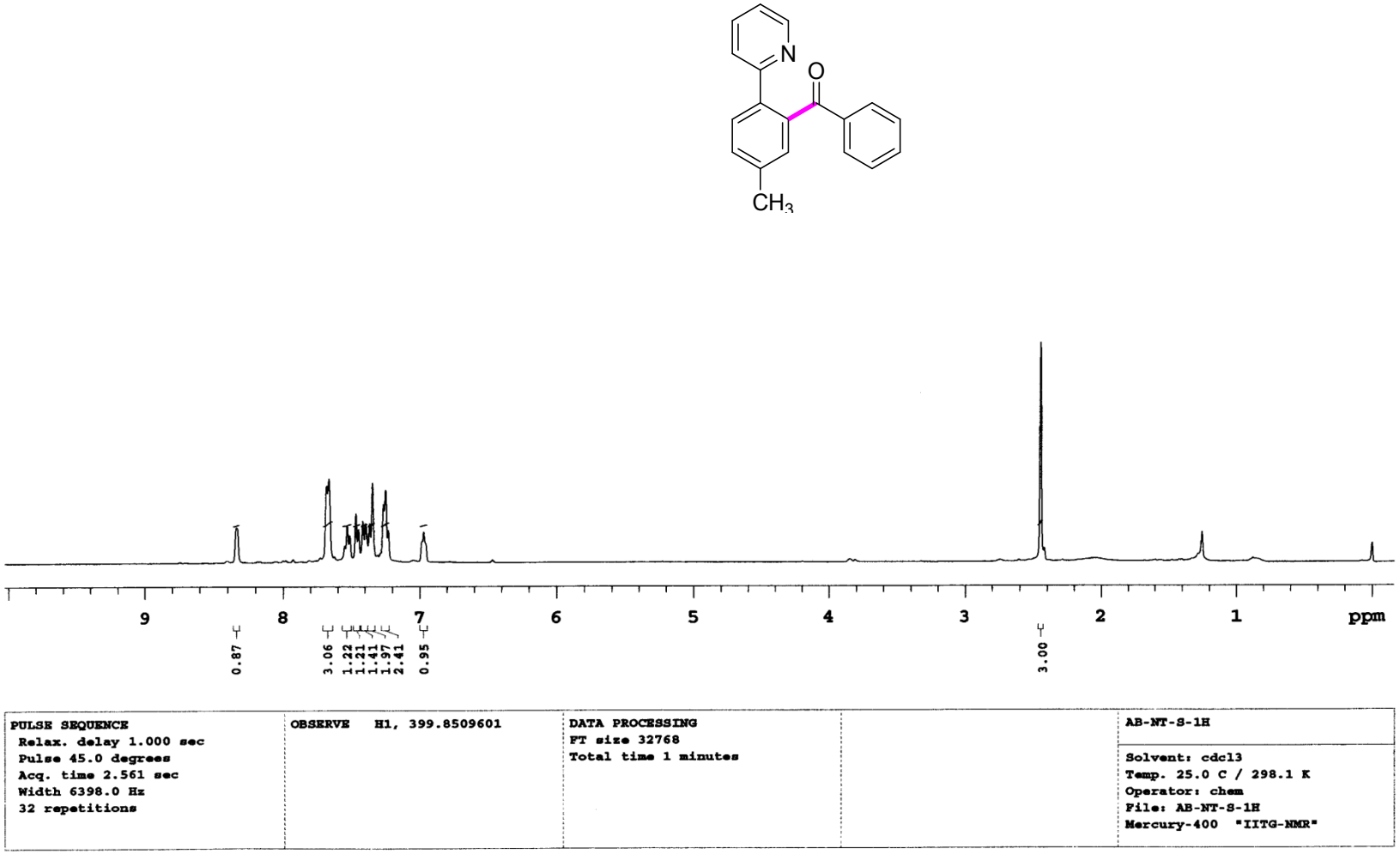
F2 - Acquisition Parameters
Date_           20150326
Time              17.46
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD              32768
SOLVENT           CDCl3
NS                2000
DS                   2
SWH           36057.691 Hz
FIDRES         1.100393 Hz
AQ            0.4543829 sec
RG                65.24
DW               13.867 usec
DE                6.50 usec
TE               298.5 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
SFO1        150.9279571 MHz
NUC1               13C
P1               10.50 usec
PLW1        95.00000000 W

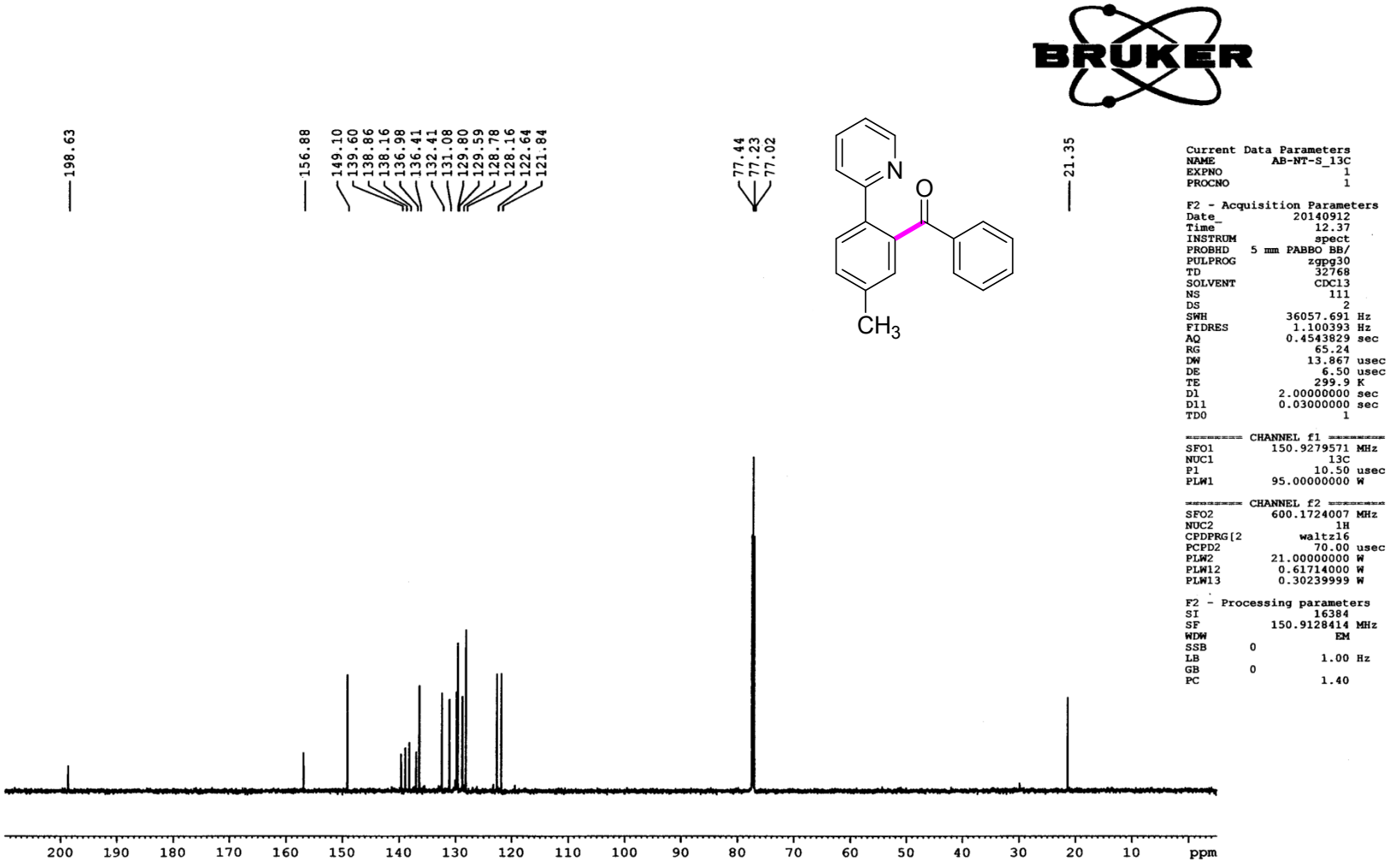
======== CHANNEL f2 ========
SFO2        600.1724007 MHz
NUC2               1H
CPDPRG[2         waltz16
PCPD2            70.00 usec
PLW2        21.00000000 W
PLW12        0.61714000 W
PLW13        0.30239999 W

F2 - Processing parameters
SI                16384
SF          150.9128350 MHz
WDW                EM
SSB       0
LB               1.00 Hz
GB        0
PC               1.40
```

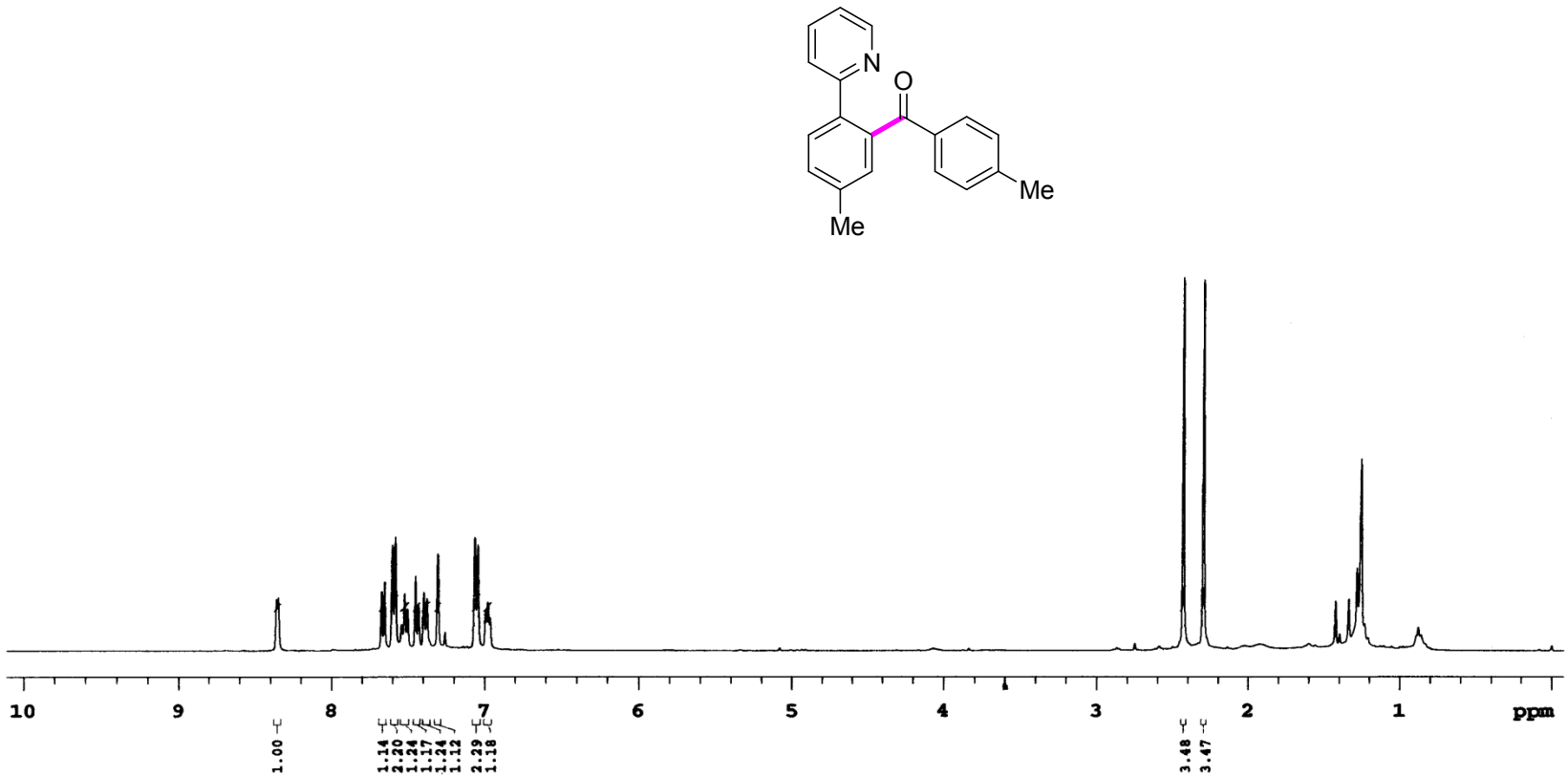
5-Methyl-2-(pyridin-2-yl)phenyl)(phenyl)methanone (2a): ^{1}H NMR (400 MHz, $CDCl_3$)



5-Methyl-2-(pyridin-2-yl)phenyl)(phenyl)methanone (2a): ^{13}C NMR (150 MHz, $CDCl_3$)

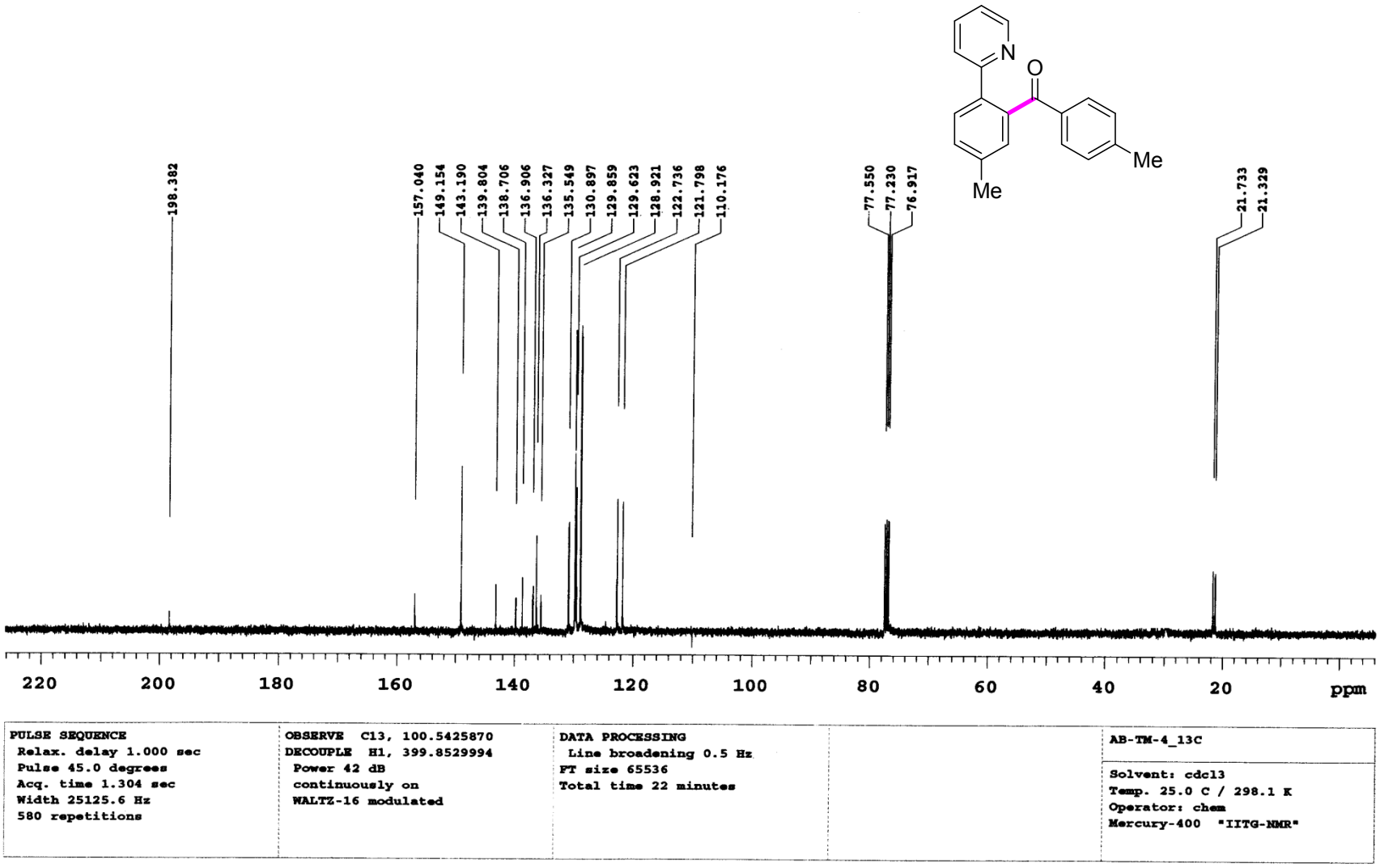


5-Methyl-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone (2b): ^{1}H NMR (400 MHz, $CDCl_3$)

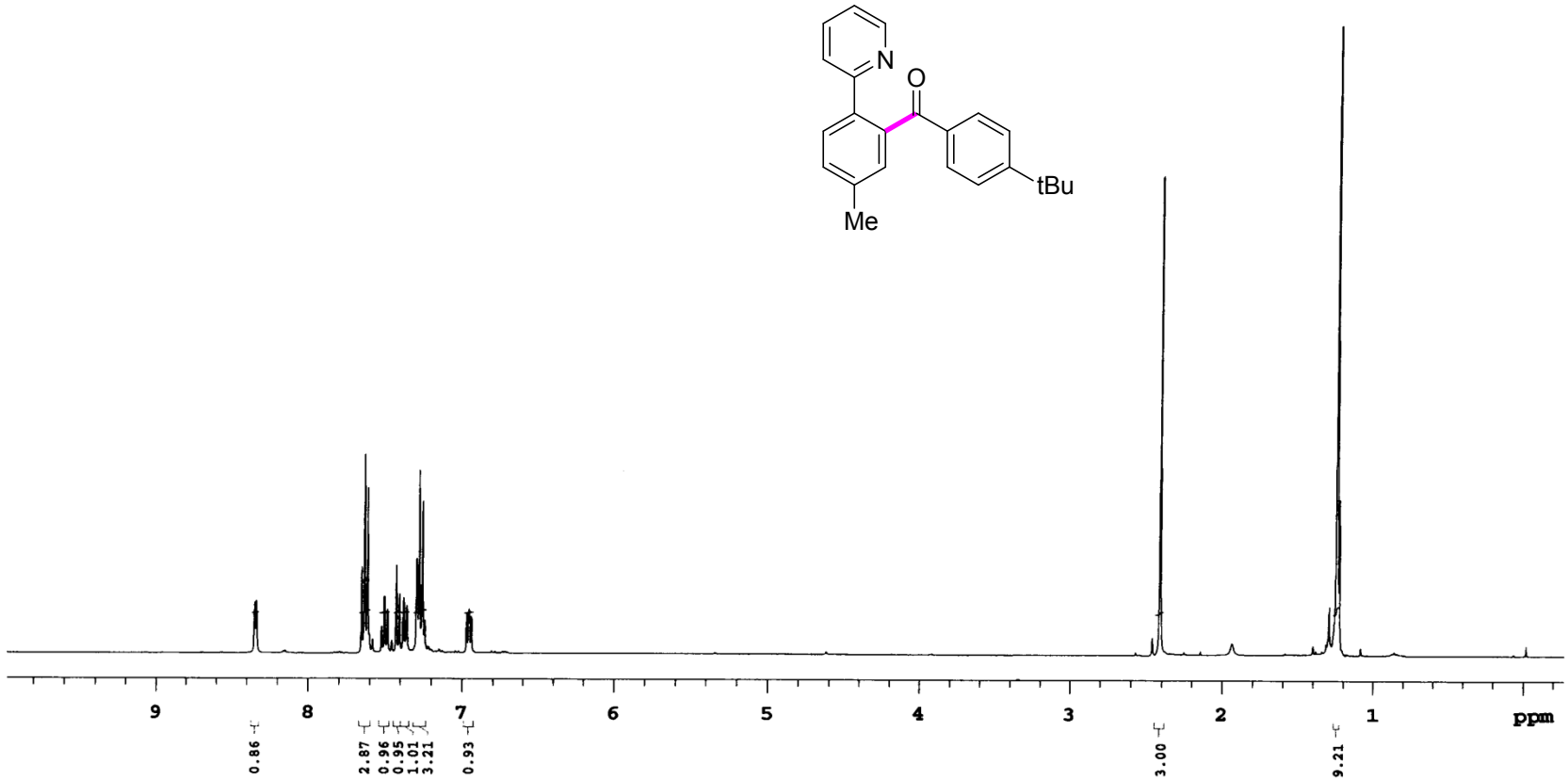


PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509641	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-TM4-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

5-Methyl-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone (2b): ^{13}C NMR (100 MHz, $CDCl_3$)

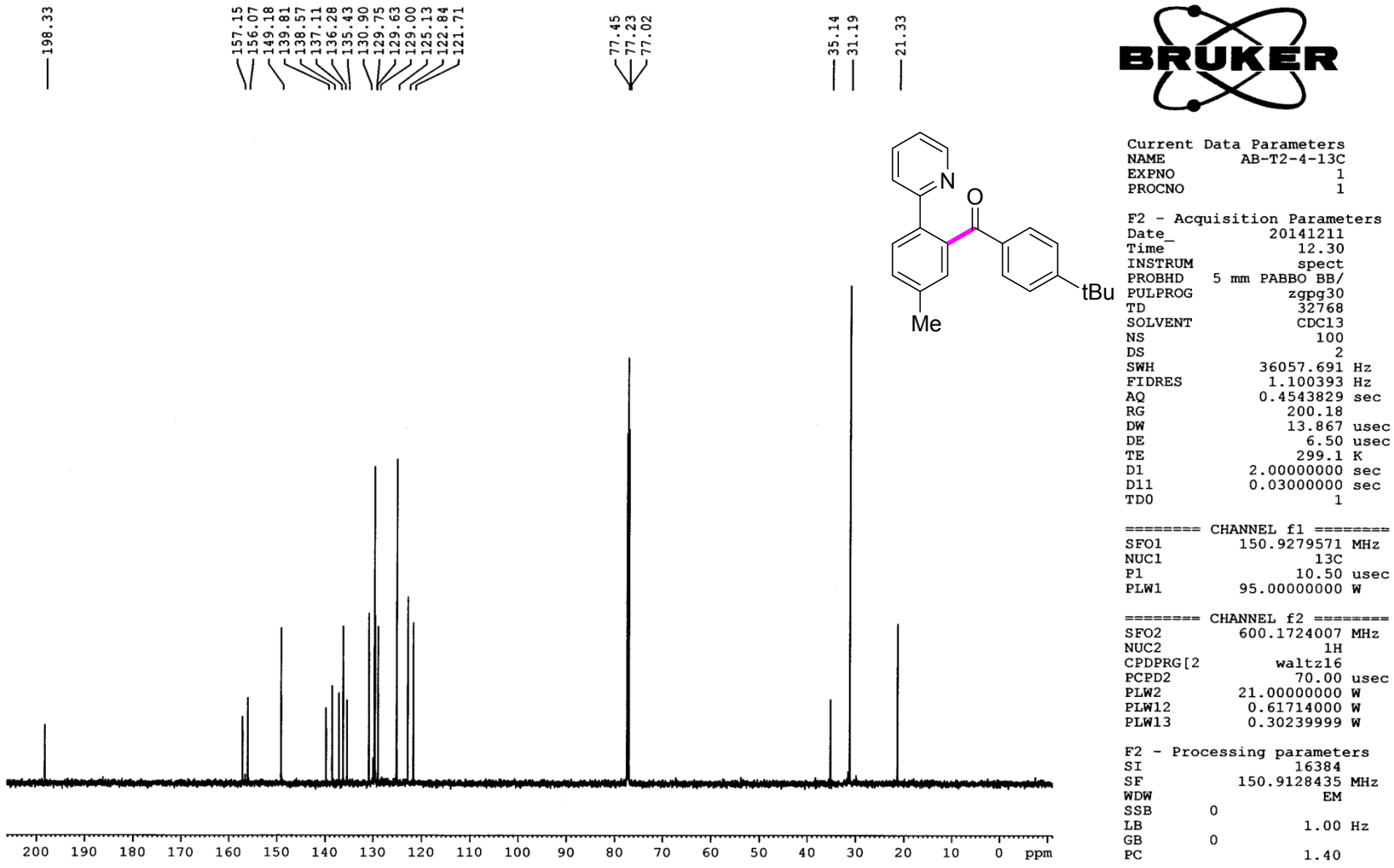


(4-(Tert-butyl)phenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2c): ^{1}H NMR (400 MHz, $CDCl_3$)



PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509692	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-T2-4-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

(4-(Tert-butyl)phenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2c): ^{13}C NMR (150 MHz, $CDCl_3$)

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Current Data Parameters
NAME          AB-T2-4-13C
EXPNO                   1
PROCNO                  1

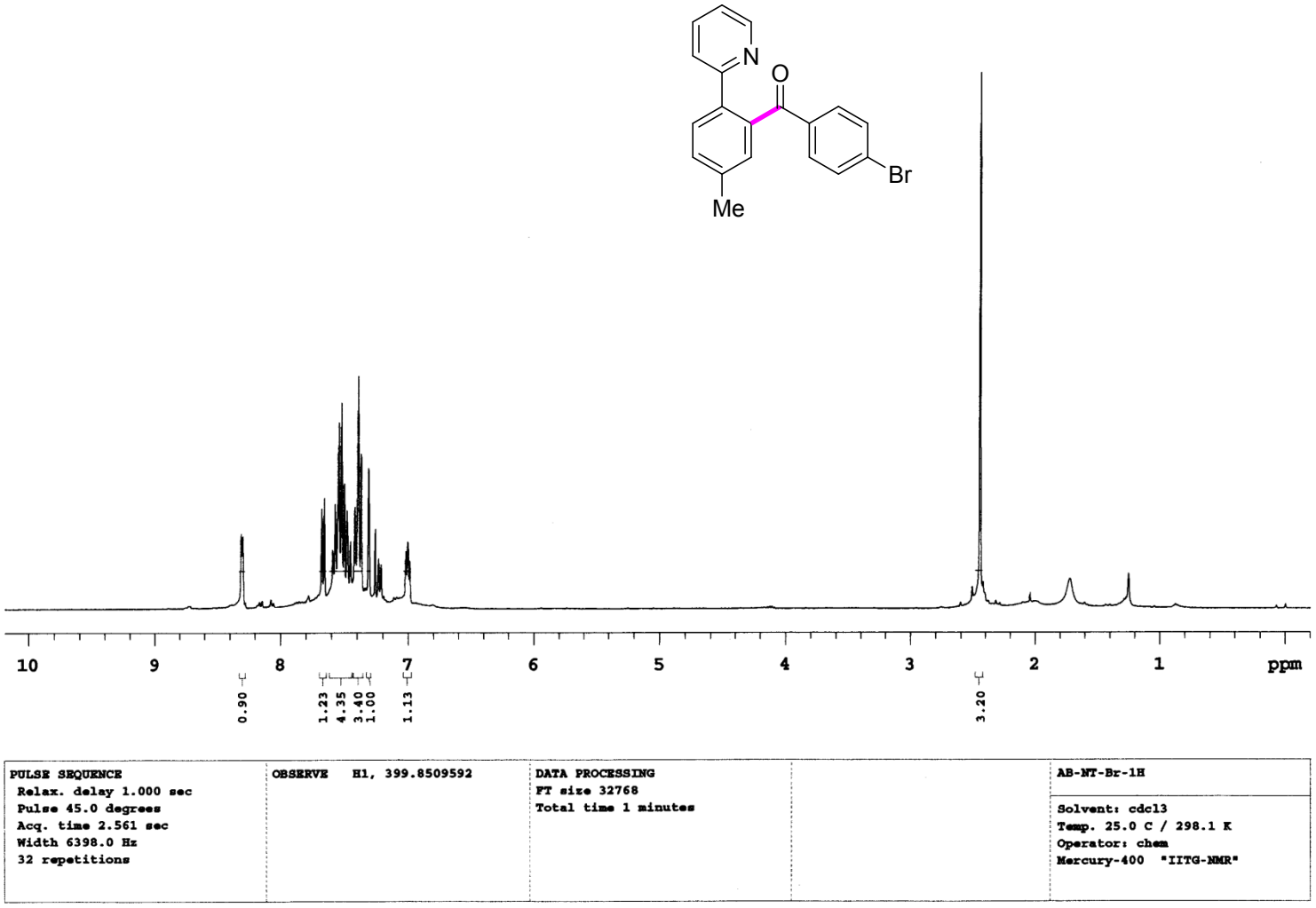
F2 - Acquisition Parameters
Date_            20141211
Time                12.30
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   100
DS                     2
SWH            36057.691 Hz
FIDRES          1.100393 Hz
AQ             0.4543829 sec
RG                200.18
DW                13.867 usec
DE                 6.50 usec
TE                299.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         150.9279571 MHz
NUC1                13C
P1                10.50 usec
PLW1         95.00000000 W

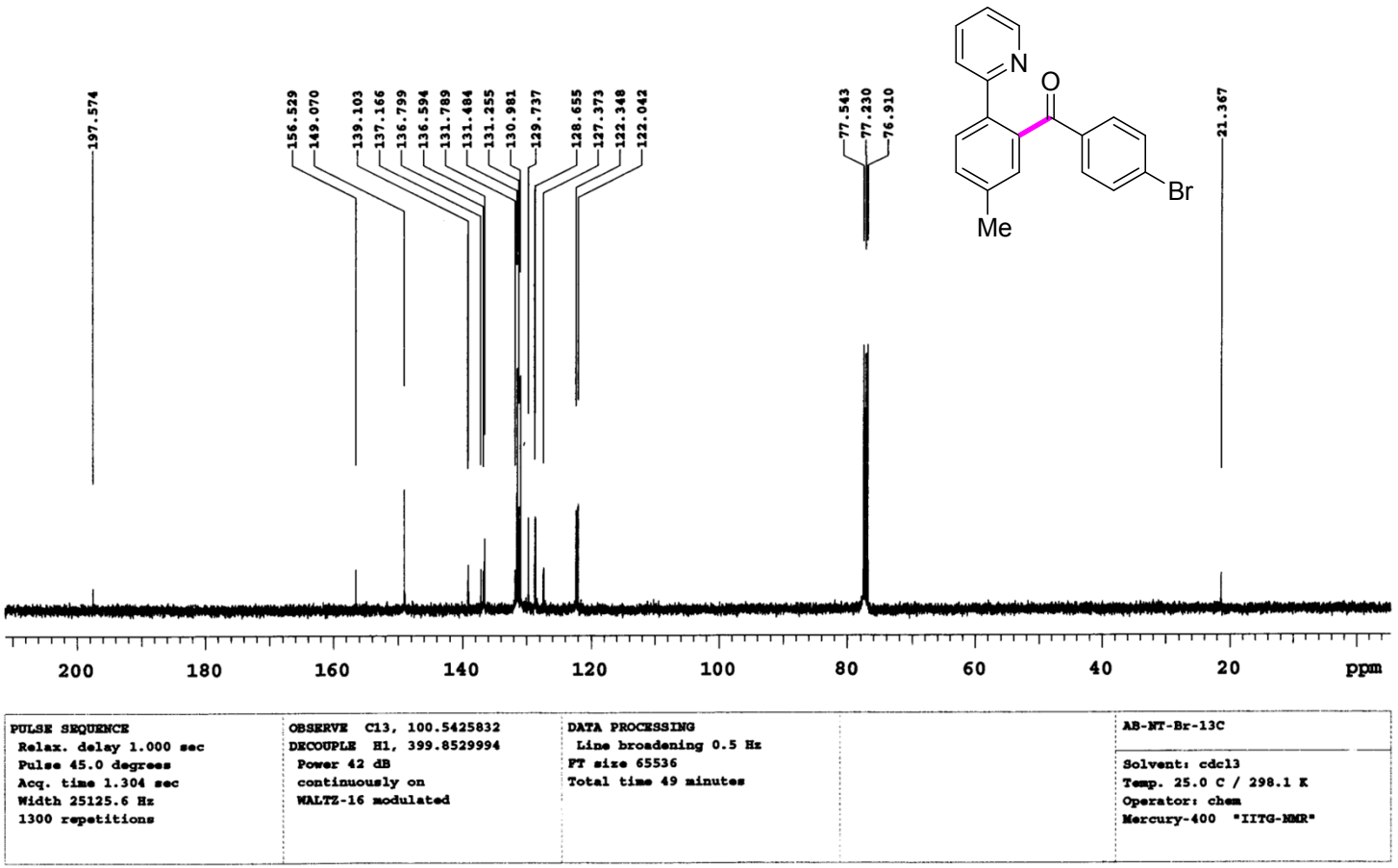
======== CHANNEL f2 ========
SFO2         600.1724007 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             70.00 usec
PLW2         21.00000000 W
PLW12         0.61714000 W
PLW13         0.30239999 W

F2 - Processing parameters
SI                 16384
SF           150.9128435 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

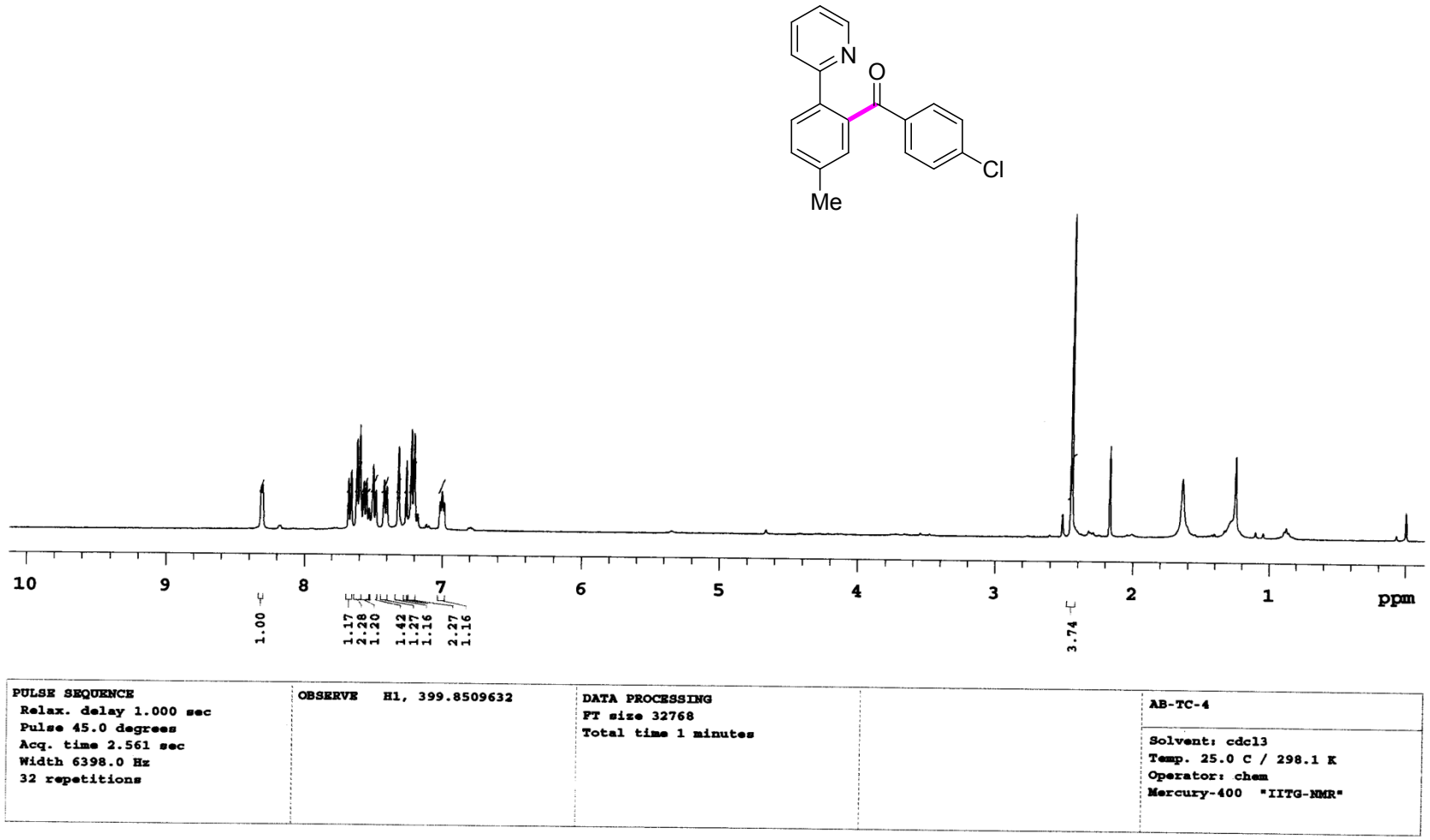
(4-Bromophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2e): ^{1}H NMR (400 MHz, $CDCl_3$)



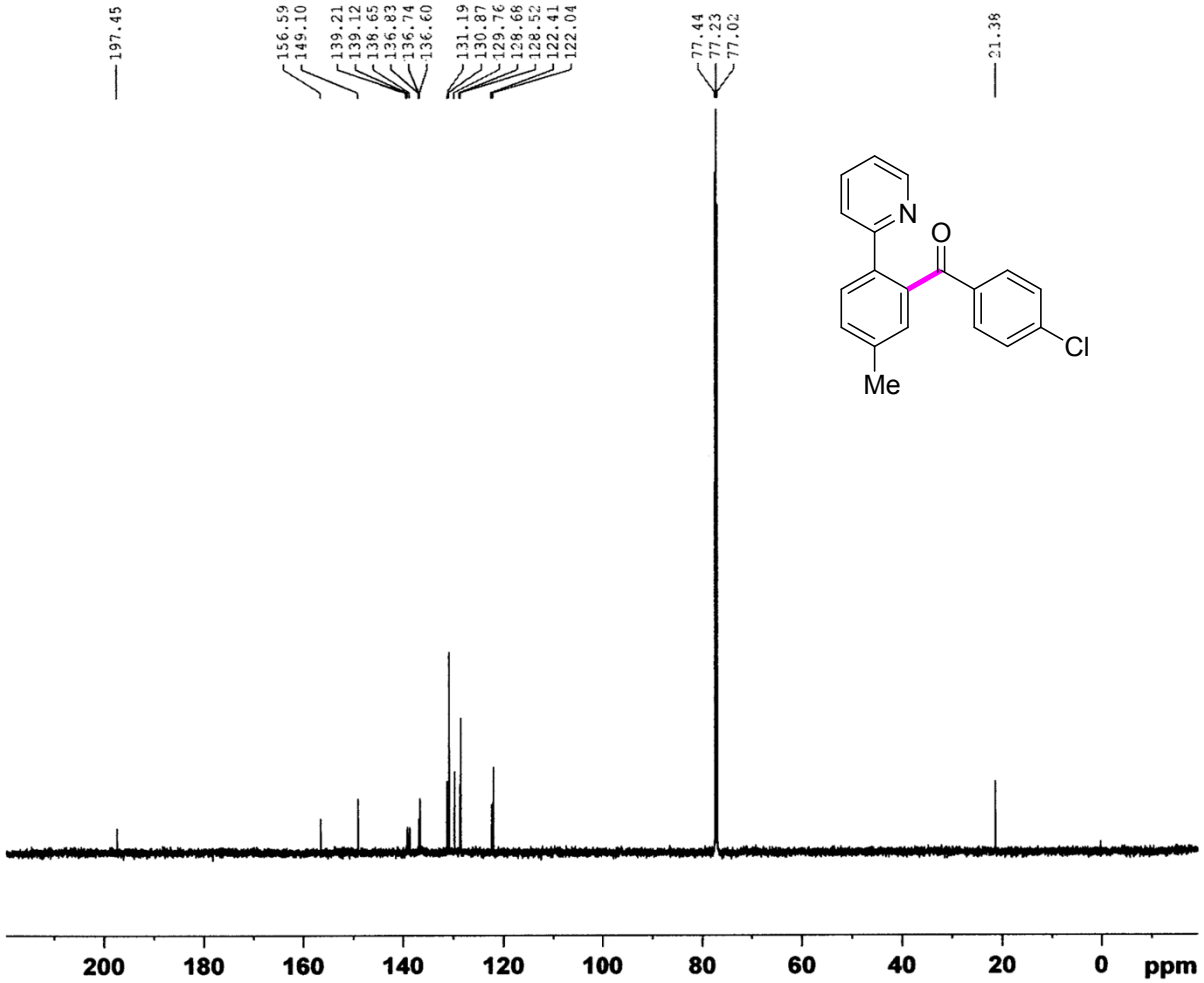
(4-Bromophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2e): ^{13}C NMR (100 MHz, $CDCl_3$)



(4-Chlorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2f): ^{1}H NMR (400 MHz, $CDCl_3$)



(4-Chlorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2f): ^{13}C NMR (150 MHz, $CDCl_3$)




```
Current Data Parameters
NAME          AB-TC-4-13C
EXPNO                   1
PROCNO                  1

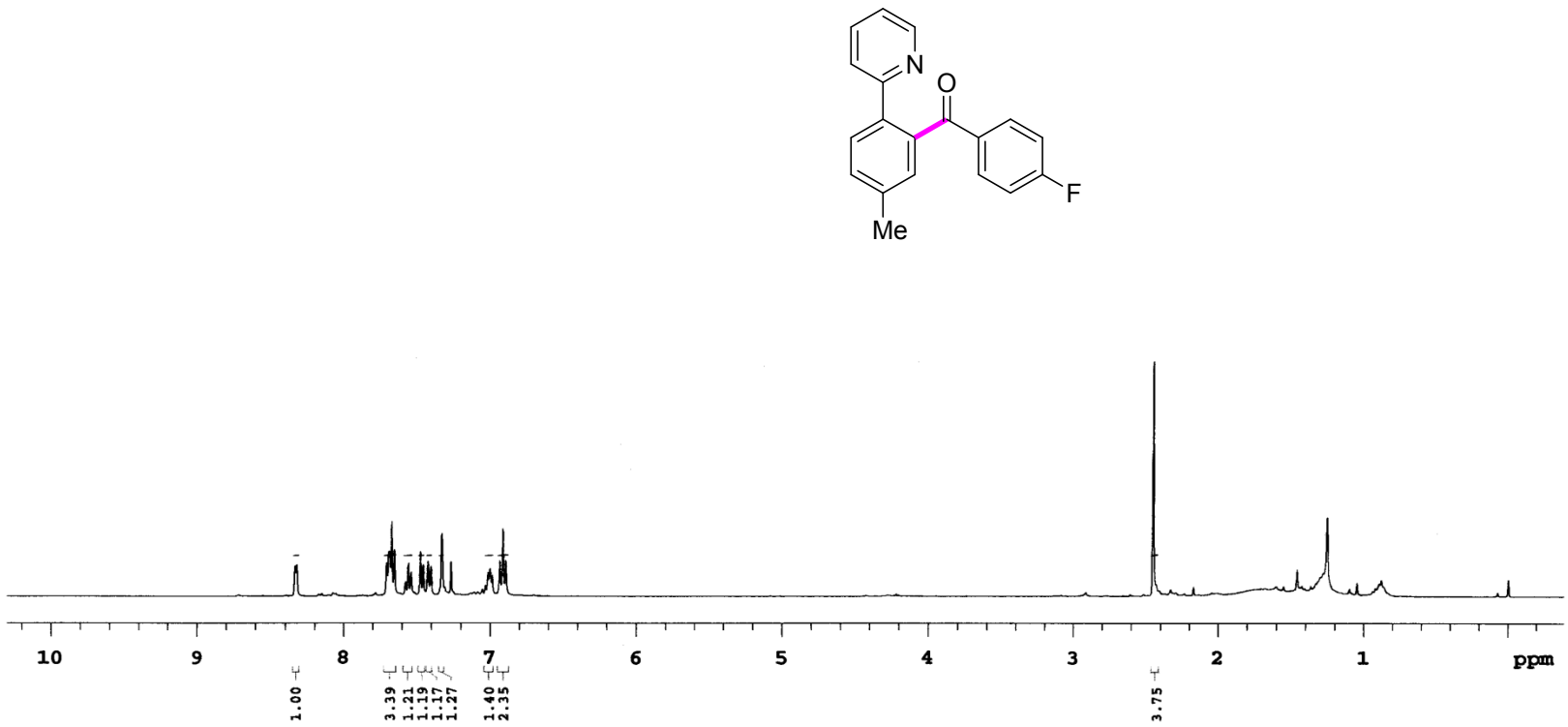
F2 - Acquisition Parameters
Date_            20141030
Time                11.17
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   290
DS                     2
SWH            36057.691 Hz
FIDRES          1.100393 Hz
AQ             0.4543829 sec
RG                 65.24
DW                13.867 usec
DE                 6.50 usec
TE                299.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         150.9279571 MHz
NUC1                13C
P1                10.50 usec
PLW1         95.00000000 W

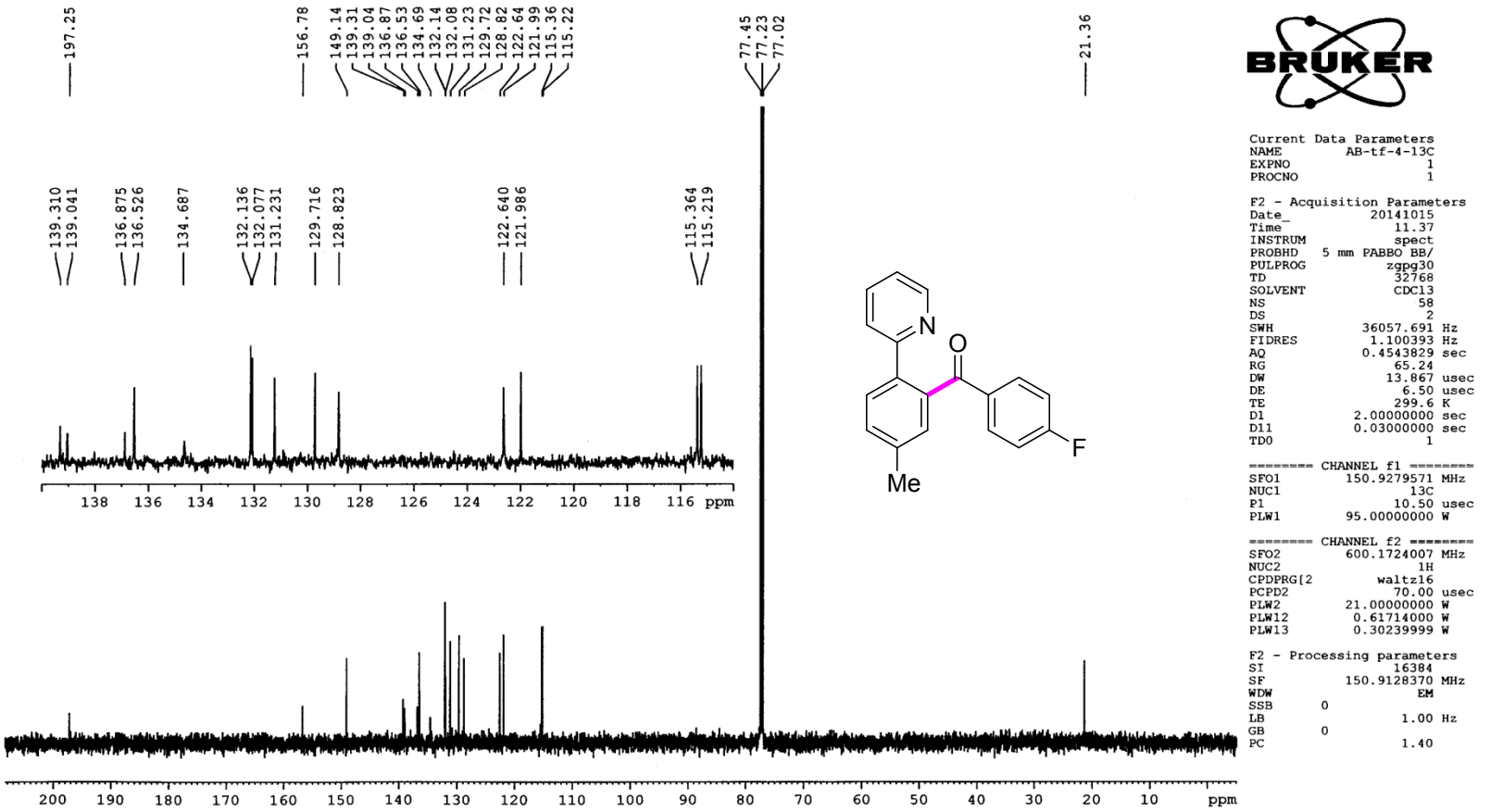
======== CHANNEL f2 ========
SFO2         600.1724007 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             70.00 usec
PLW2         21.00000000 W
PLW12         0.61714000 W
PLW13         0.30239999 W

F2 - Processing parameters
SI                 16384
SF           150.9128348 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

(4-Fluorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2g): ^{1}H NMR (400 MHz, $CDCl_3$)



(4-Fluorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2g): ^{13}C NMR (150 MHz, $CDCl_3$)




```
Current Data Parameters
NAME          AB-tf-4-13C
EXPNO                   1
PROCNO                  1

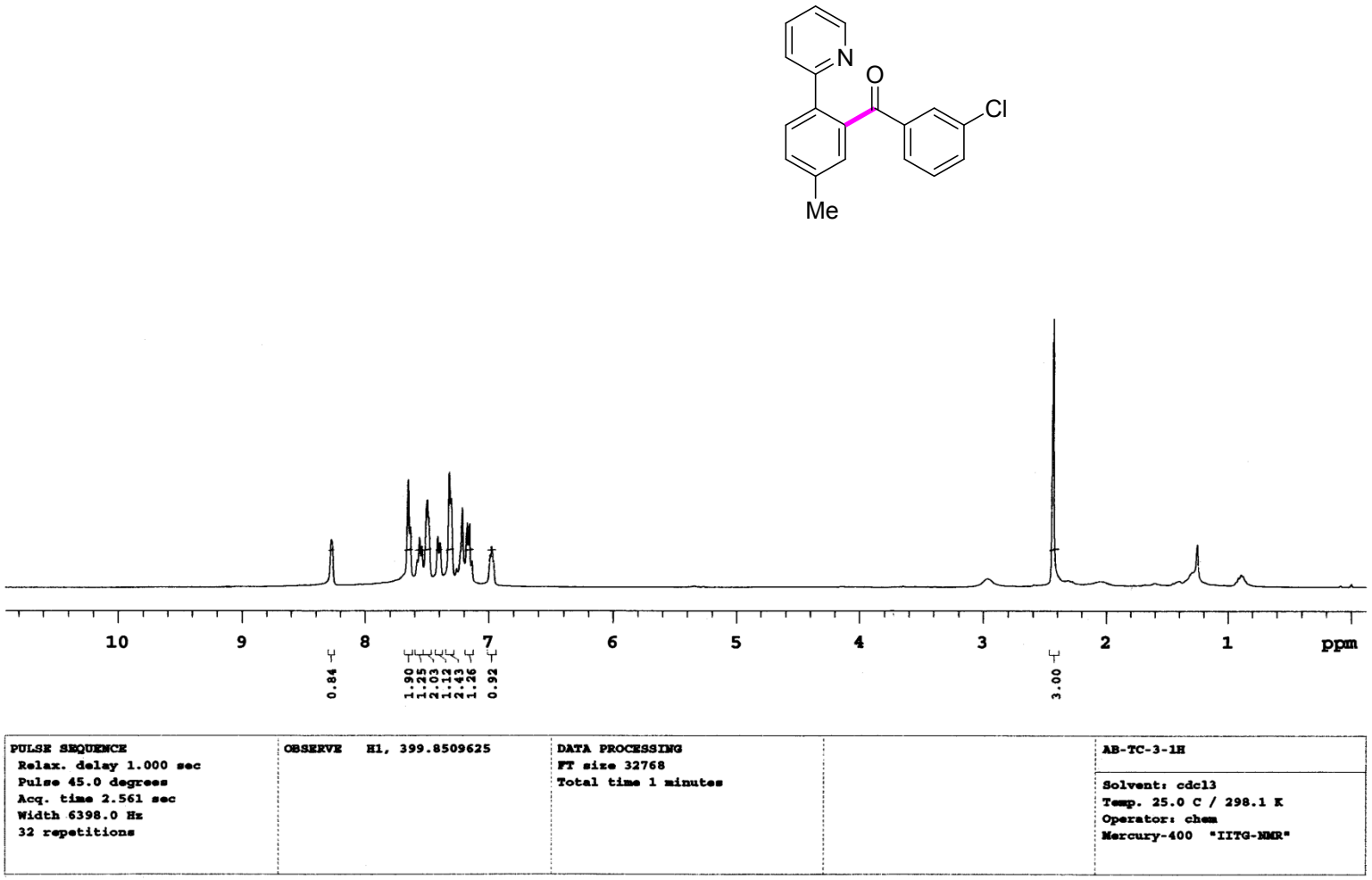
F2 - Acquisition Parameters
Date_              20141015
Time                  11.37
INSTRUM               spect
PROBHD   5 mm PABBO BB/
PULPROG            zgpg30
TD                  32768
SOLVENT             CDCl3
NS                     58
DS                      2
SWH             36057.691 Hz
FIDRES           1.100393 Hz
AQ               0.4543829 sec
RG                   65.24
DW                 13.867 usec
DE                   6.50 usec
TE                 299.6 K
D1              2.00000000 sec
D11             0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          150.9279571 MHz
NUC1                   13C
P1                   10.50 usec
PLW1          95.00000000 W

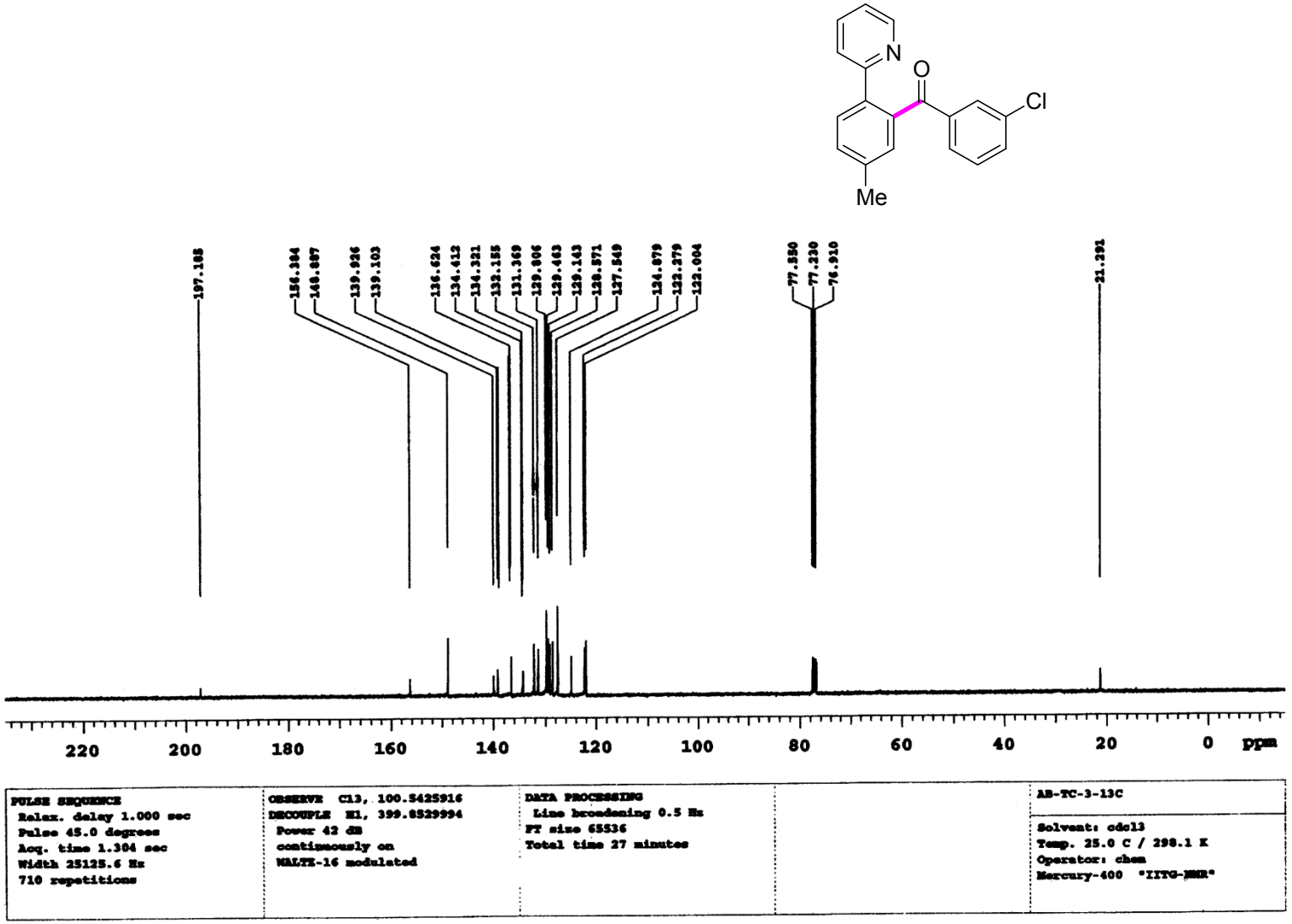
======== CHANNEL f2 ========
SFO2          600.1724007 MHz
NUC2                   1H
CPDPRG[2           waltz16
PCPD2                70.00 usec
PLW2          21.00000000 W
PLW12          0.61714000 W
PLW13          0.30239999 W

F2 - Processing parameters
SI                    16384
SF            150.9128370 MHz
WDW                     EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```

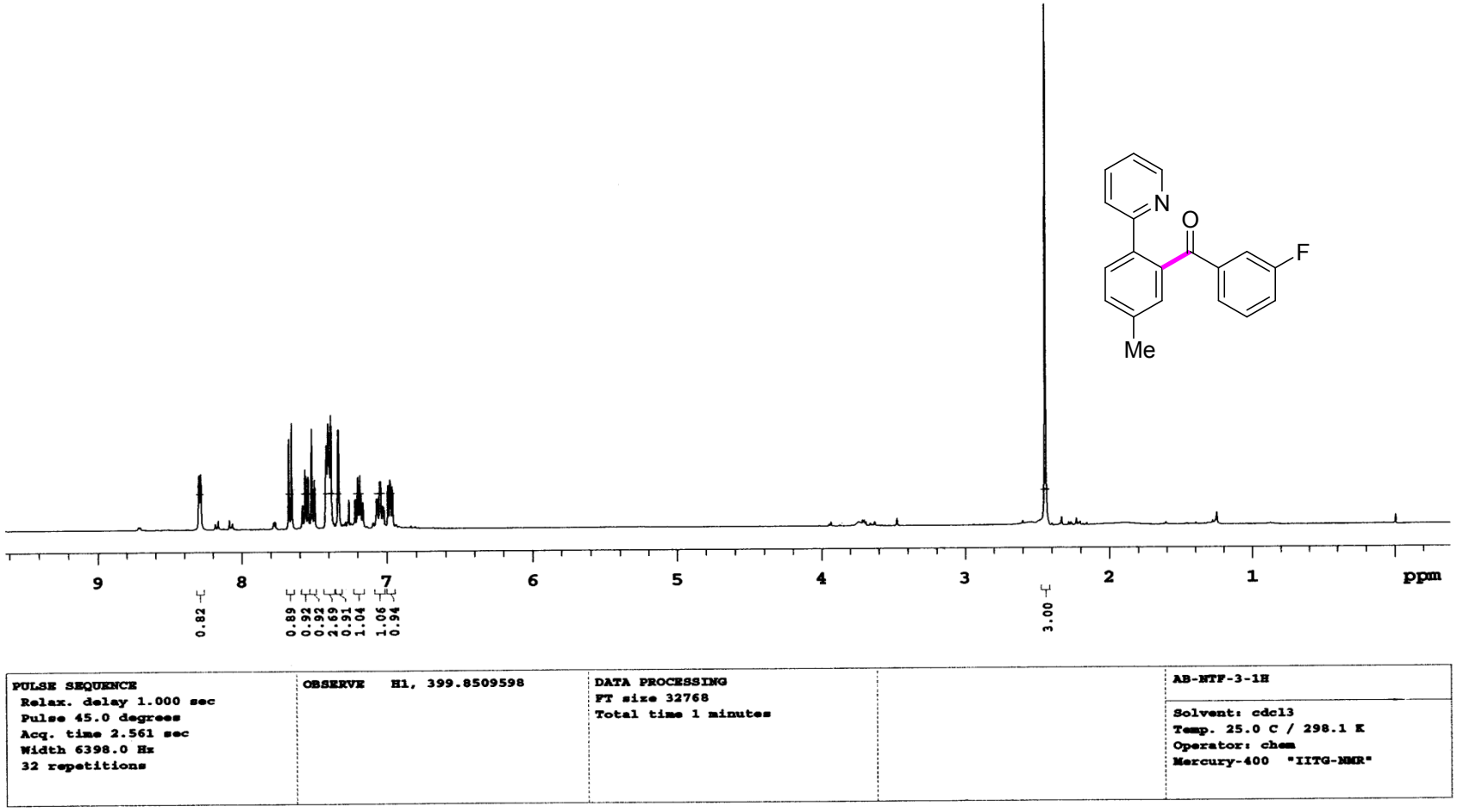
(3-Chlorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2h): ^{1}H NMR (400 MHz, $CDCl_3$)



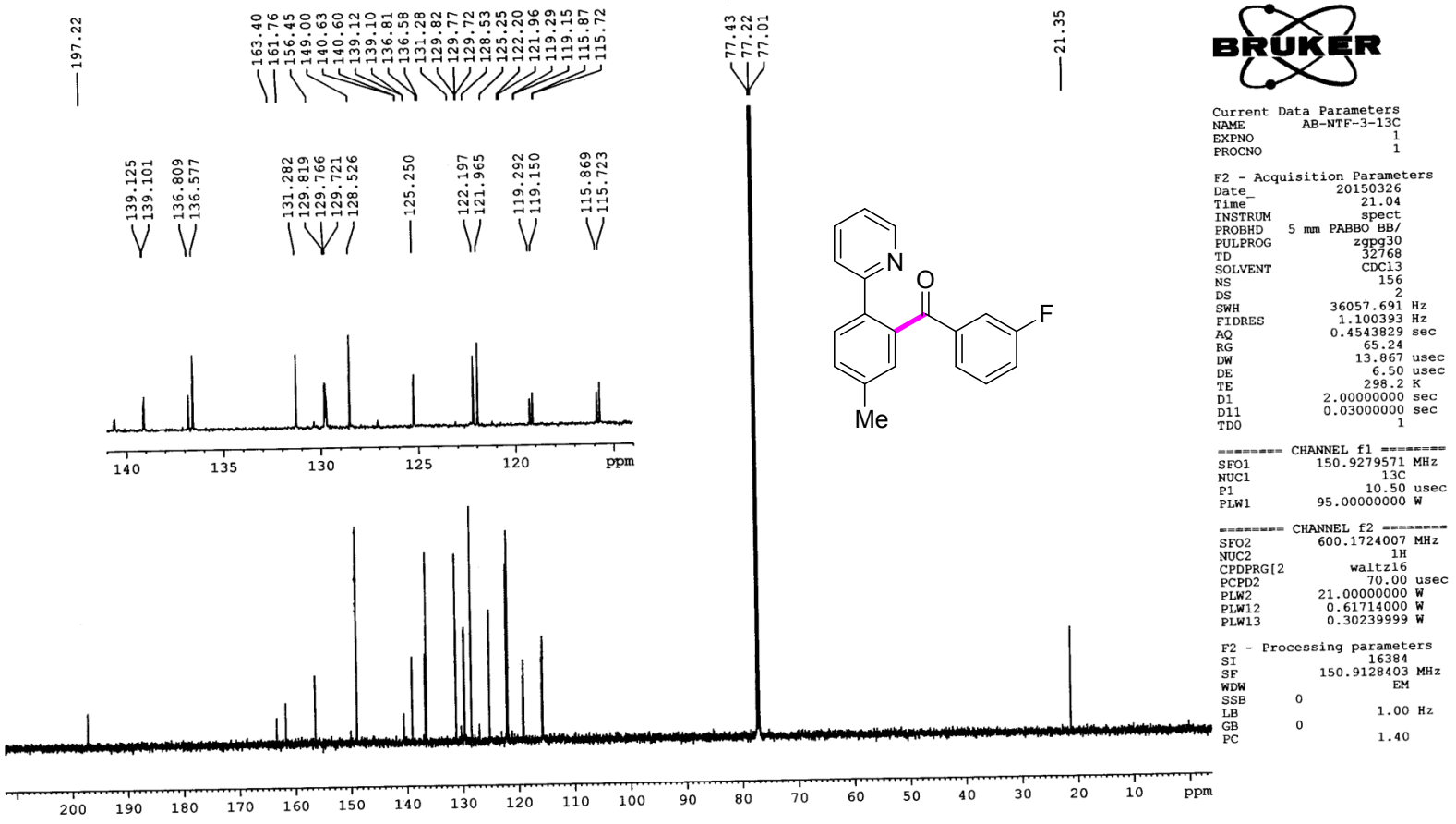
(3-Chlorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2h): ^{13}C NMR (100 MHz, $CDCl_3$)



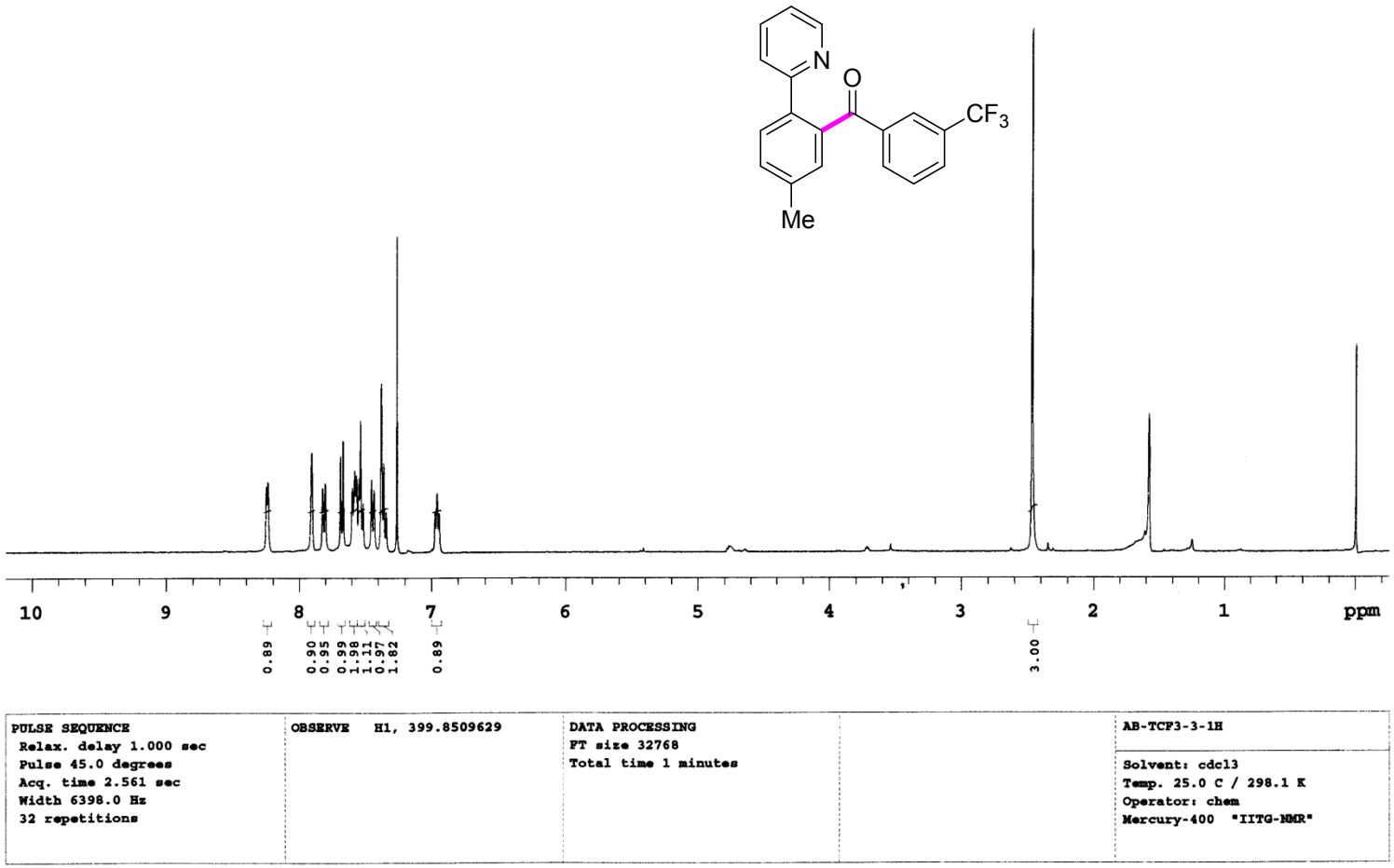
3-Fluorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2i): ^{1}H NMR (400 MHz, $CDCl_3$)



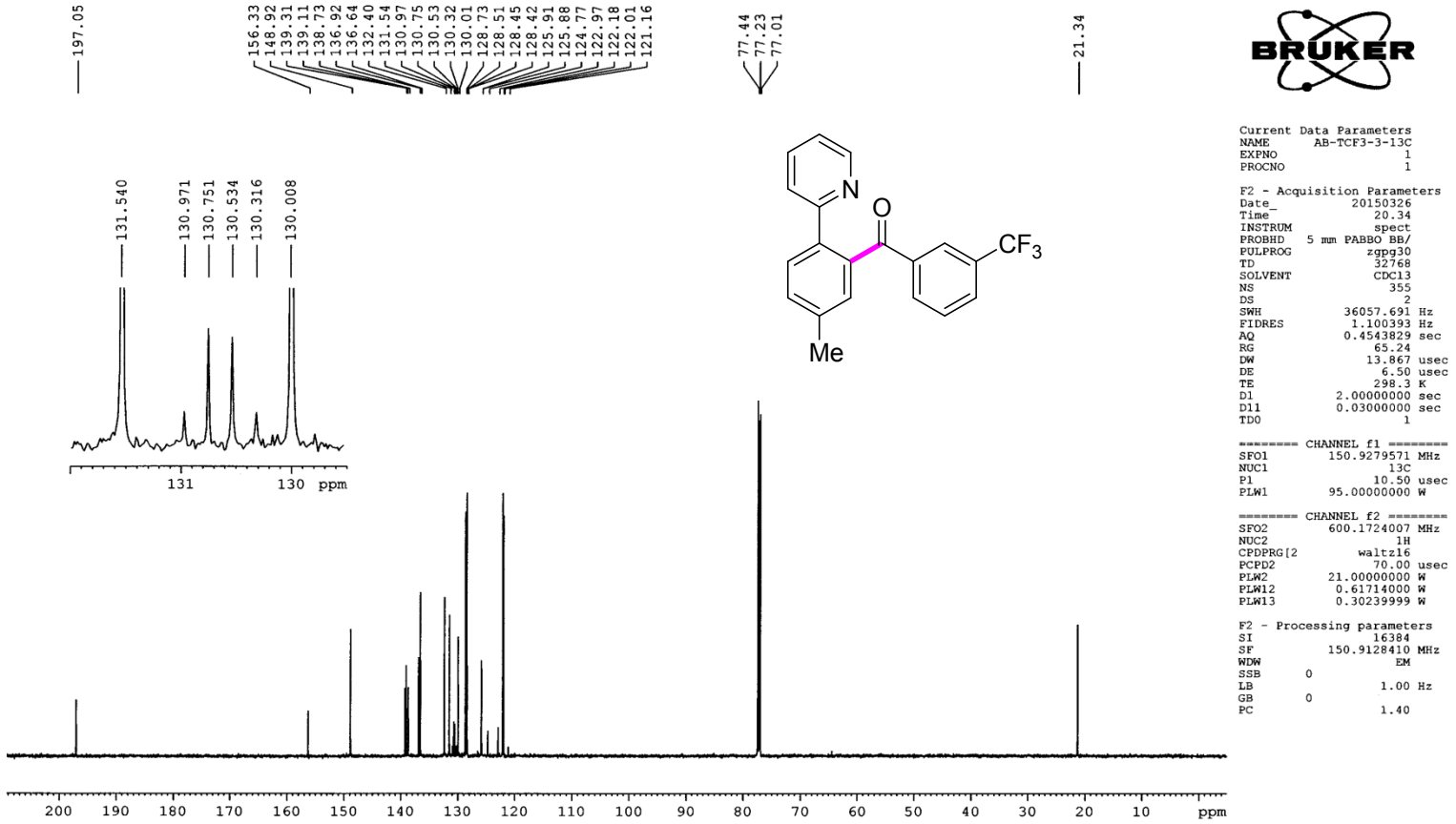
3-Fluorophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2i): ^{13}C NMR (100 MHz, $CDCl_3$)



(5-Methyl-2-(pyridin-2-yl)phenyl)(3-(trifluoromethyl)phenyl)methanone (2j): ^{1}H NMR (400 MHz, $CDCl_3$)



(5-Methyl-2-(pyridin-2-yl)phenyl)(3-(trifluoromethyl)phenyl)methanone (2j): ^{13}C NMR (150 MHz, $CDCl_3$)

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Current Data Parameters
NAME       AB-TCF3-3-13C
EXPNO                  1
PROCNO                 1

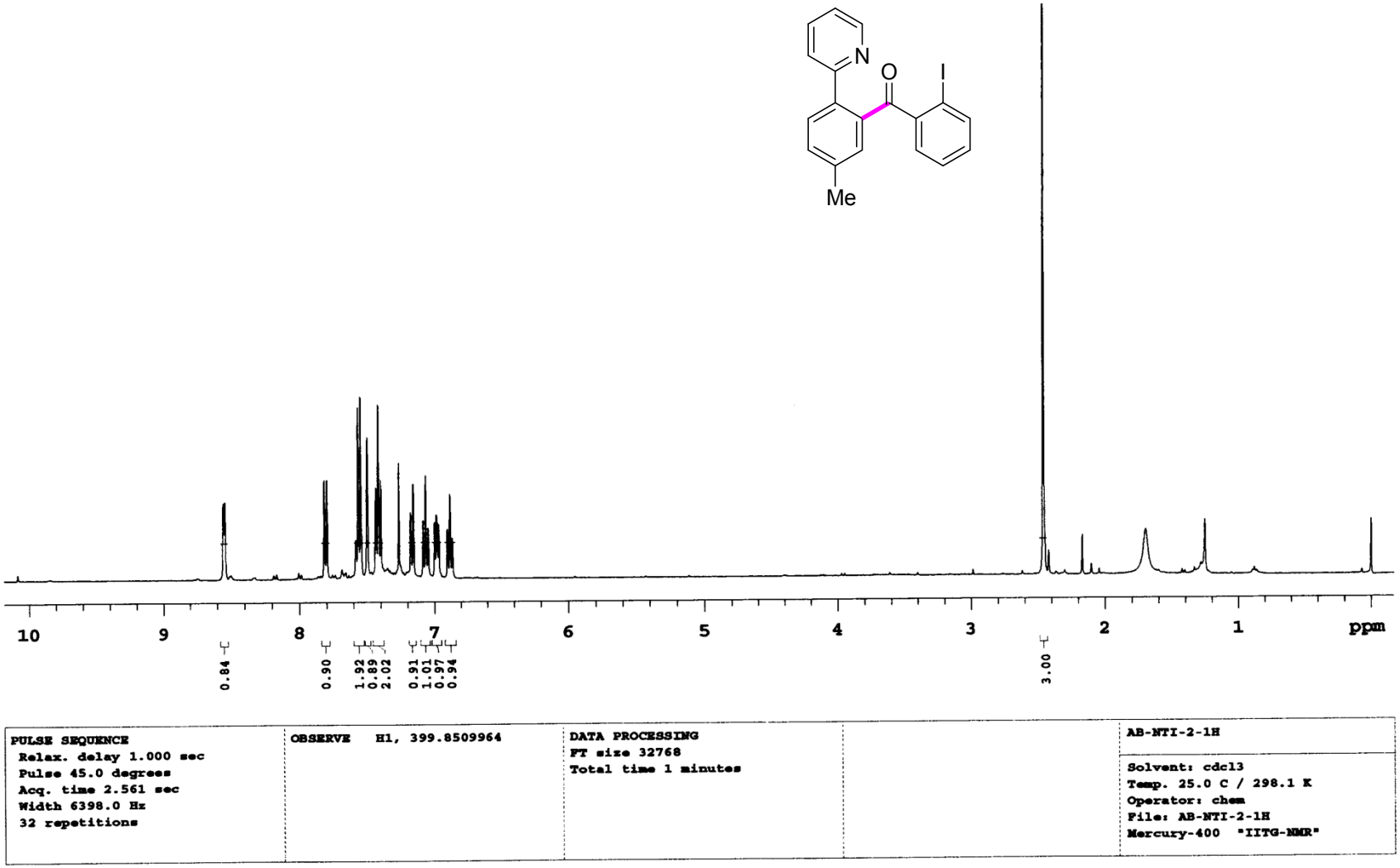
F2 - Acquisition Parameters
Date_           20150326
Time              20.34
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD              32768
SOLVENT           CDC13
NS                  355
DS                    2
SWH           36057.691 Hz
FIDRES         1.100393 Hz
AQ             0.4543829 sec
RG                65.24
DW               13.867 usec
DE                6.50 usec
TE                298.3 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        150.9279571 MHz
NUC1              13C
P1              10.50 usec
PLW1        95.00000000 W

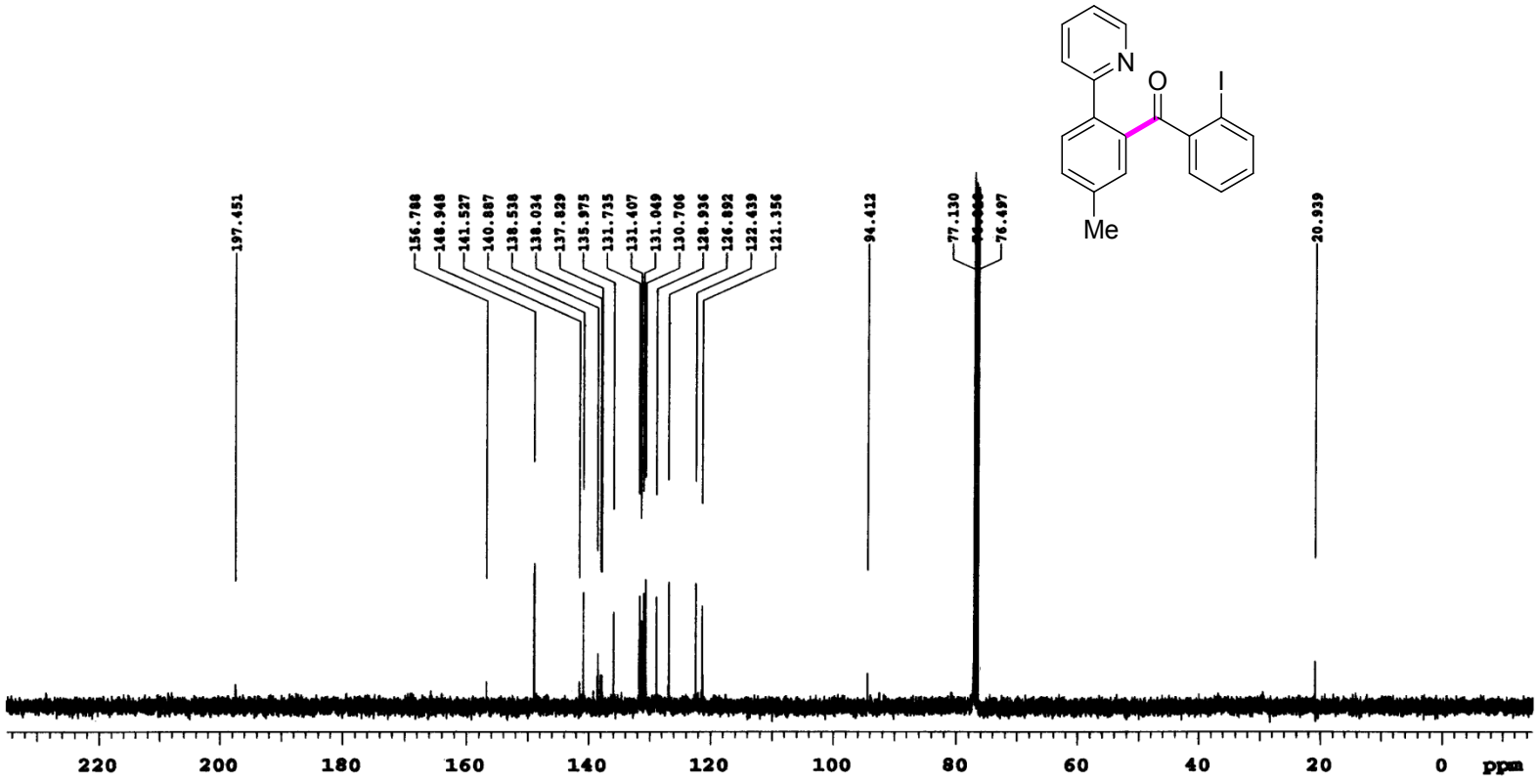
======== CHANNEL f2 ========
SFO2        600.1724007 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2            70.00 usec
PLW2        21.00000000 W
PLW12        0.61714000 W
PLW13        0.30239999 W

F2 - Processing parameters
SI                16384
SF          150.9128410 MHz
WDW                EM
SSB       0
LB               1.00 Hz
GB        0
PC               1.40
```

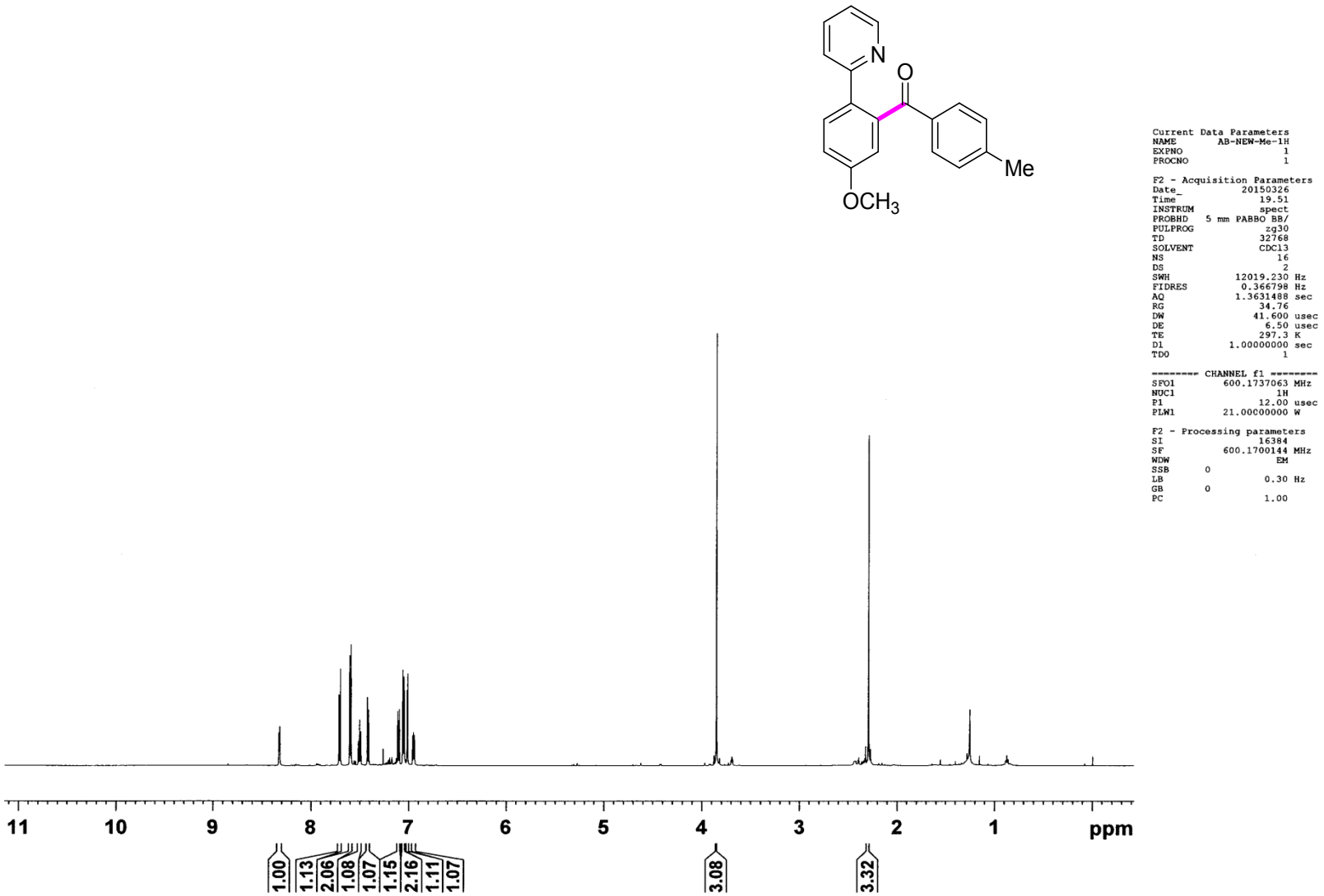
(2-Iodophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2k): ^{1}H NMR (400 MHz, $CDCl_3$)



(2-Iodophenyl)(5-methyl-2-(pyridin-2-yl)phenyl)methanone (2k): ^{13}C NMR (100 MHz, $CDCl_3$)



(5-Methoxy-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone(3b): ^{1}H NMR (600 MHz, $CDCl_3$)

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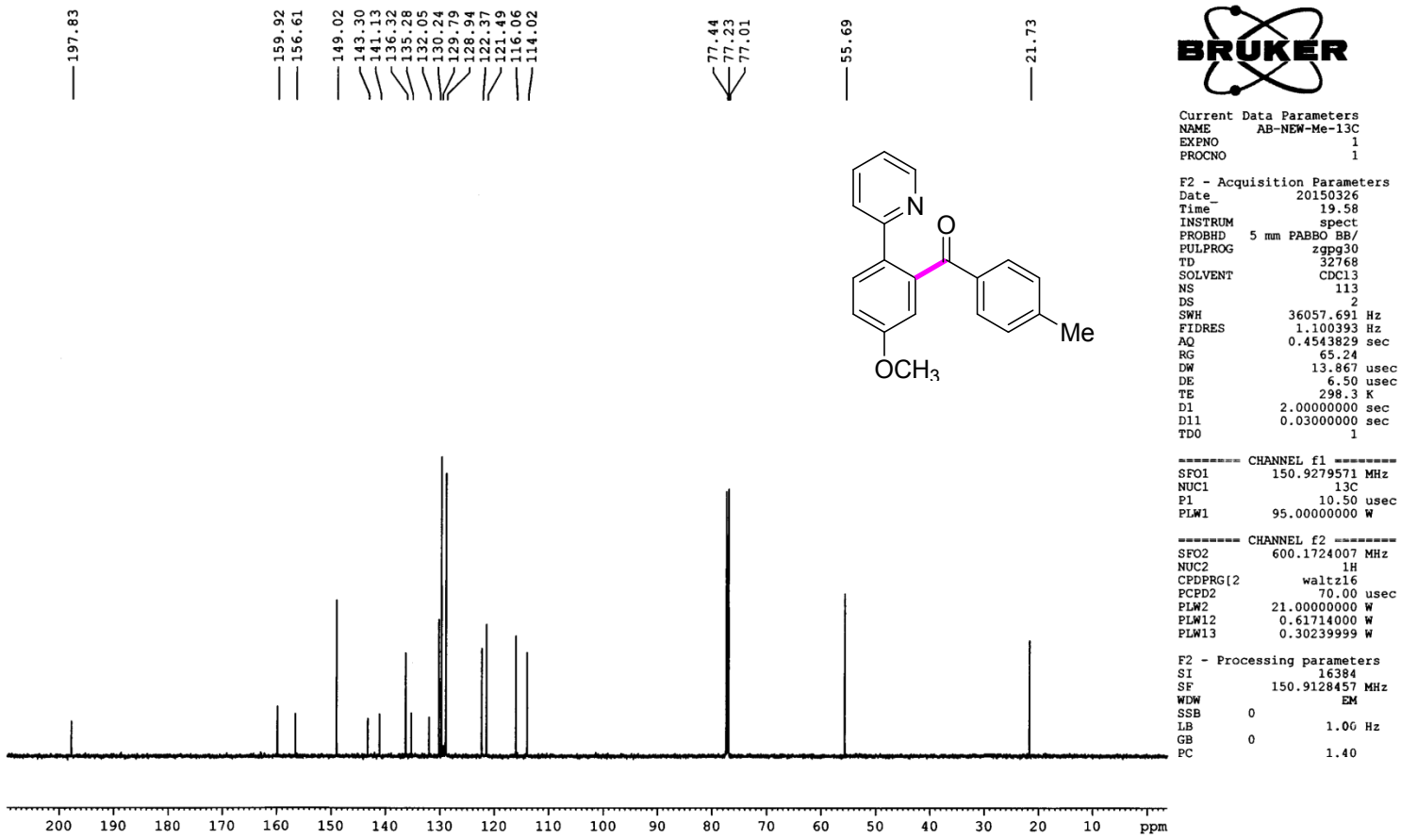
Current Data Parameters
NAME          AB-NEW-Me-1H
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_             20150326
Time                 19.51
INSTRUM              spect
PROBHD    5 mm PABBO BB/
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     16
DS                      2
SWH              12019.230 Hz
FIDRES           0.366798 Hz
AQ               1.3631488 sec
RG                  34.76
DW                 41.600 usec
DE                  6.50 usec
TE                 297.3 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1            600.1737063 MHz
NUC1                    1H
P1                   12.00 usec
PLW1           21.00000000 W

F2 - Processing parameters
SI                   16384
SF              600.1700144 MHz
WDW                     EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.00
```

(5-Methoxy-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone(3b): ^{13}C NMR (150 MHz, $CDCl_3$)

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Current Data Parameters
NAME       AB-NEW-Me-13C
EXPNO                  1
PROCNO                 1

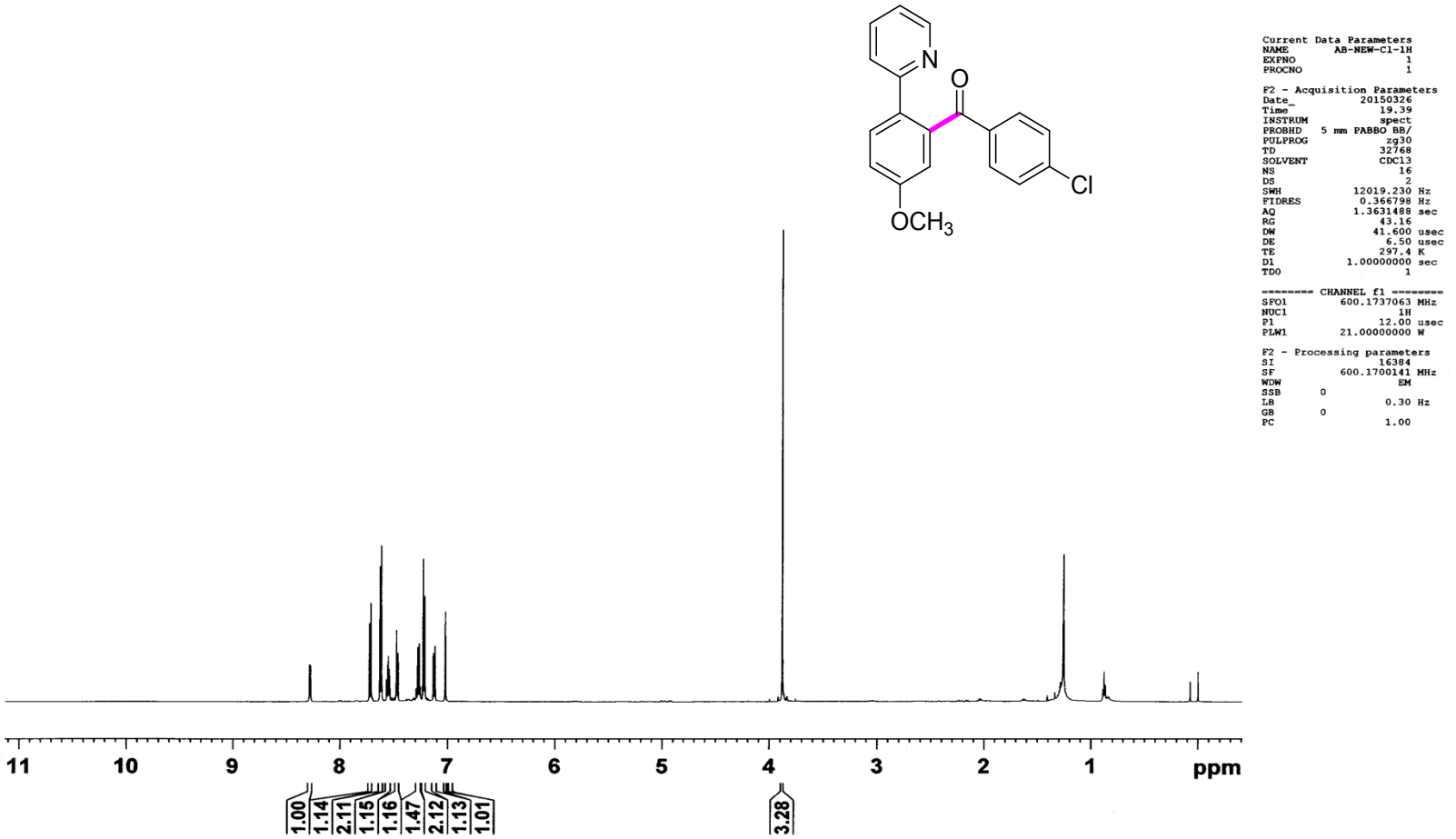
F2 - Acquisition Parameters
Date_           20150326
Time              19.58
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD              32768
SOLVENT           CDCl3
NS                  113
DS                    2
SWH           36057.691 Hz
FIDRES         1.100393 Hz
AQ            0.4543829 sec
RG                65.24
DW               13.867 usec
DE                6.50 usec
TE               298.3 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        150.9279571 MHz
NUC1               13C
P1               10.50 usec
PLW1        95.00000000 W

======== CHANNEL f2 ========
SFO2        600.1724007 MHz
NUC2               1H
CPDPRG[2        waltz16
PCPD2            70.00 usec
PLW2        21.00000000 W
PLW12        0.61714000 W
PLW13        0.30239999 W

F2 - Processing parameters
SI                16384
SF          150.9128457 MHz
WDW                EM
SSB       0
LB               1.00 Hz
GB        0
PC                1.40
```

(4-Chlorophenyl)(5-methoxy-2-(pyridin-2-yl)phenyl)methanone (3f): ^{1}H NMR (600 MHz, $CDCl_3$)

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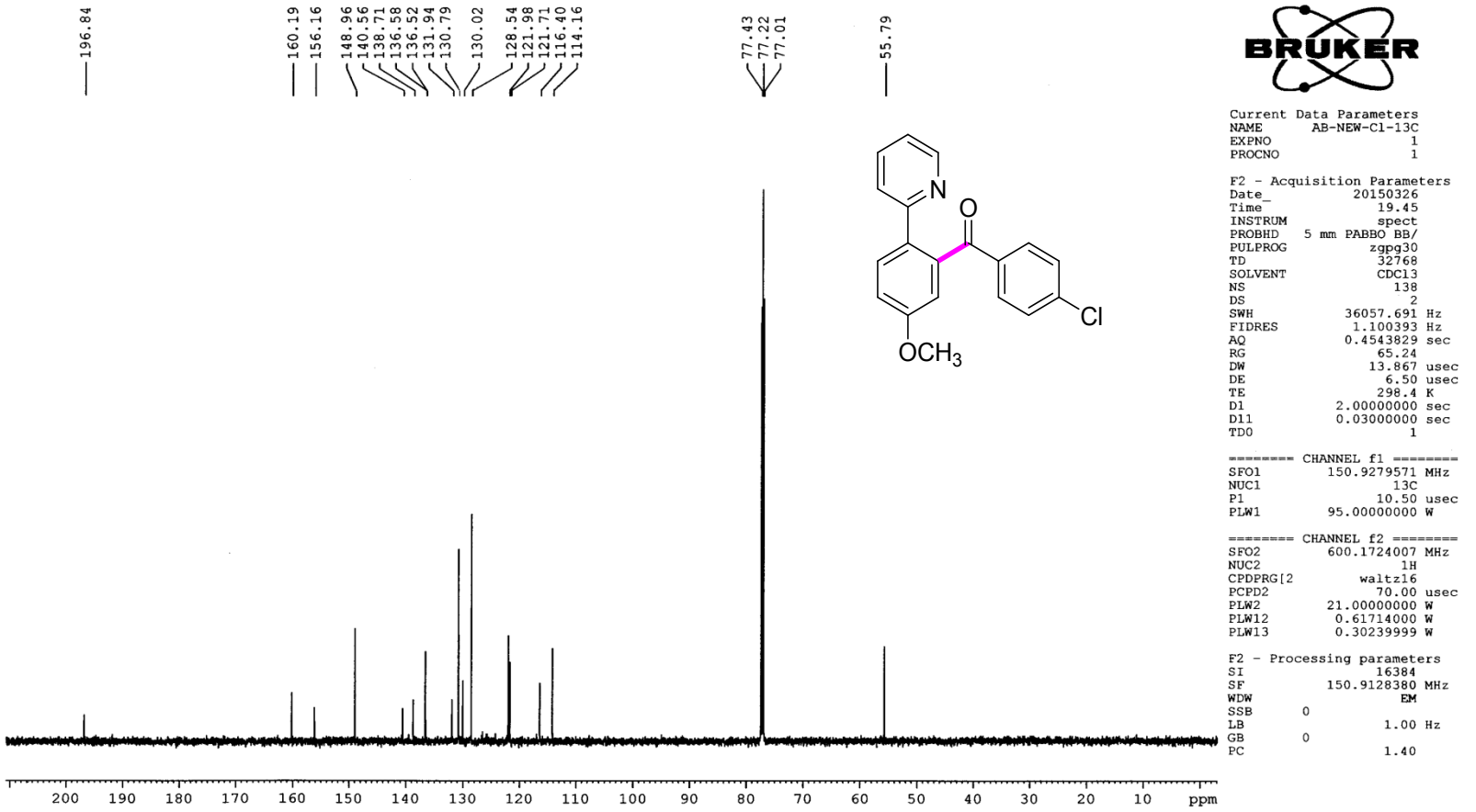
Current Data Parameters
NAME        AB-NEW-Cl-1H
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20150326
Time               19.39
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           12019.230 Hz
FIDRES        0.366798 Hz
AQ            1.3631488 sec
RG                43.16
DW               41.600 usec
DE                6.50 usec
TE               297.4 K
D1            1.00000000 sec
TD0                    1

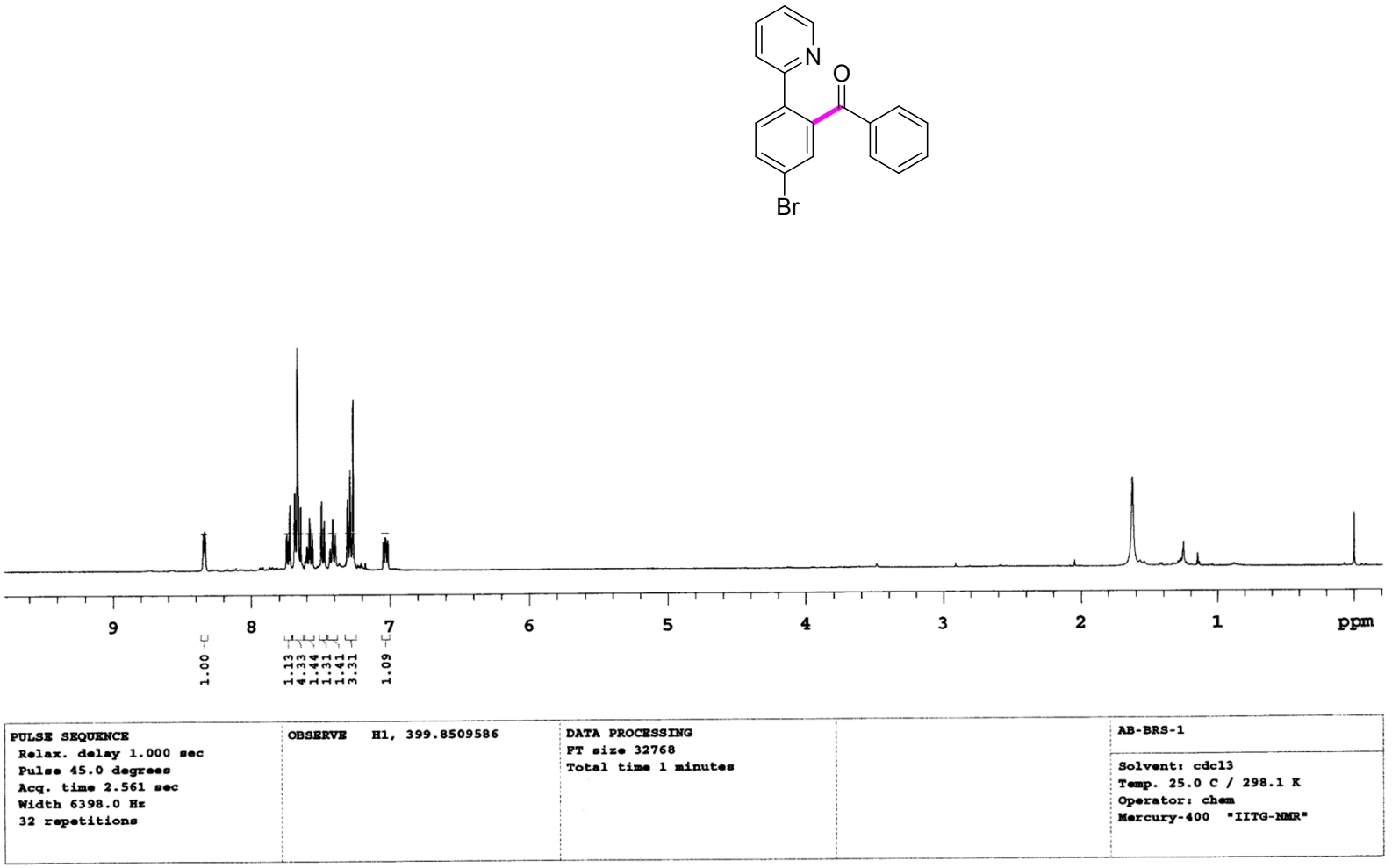
======== CHANNEL f1 ========
SFO1         600.1737063 MHz
NUC1                   1H
P1                 12.00 usec
PLW1        21.00000000 W

F2 - Processing parameters
SI                 16384
SF            600.1700141 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```

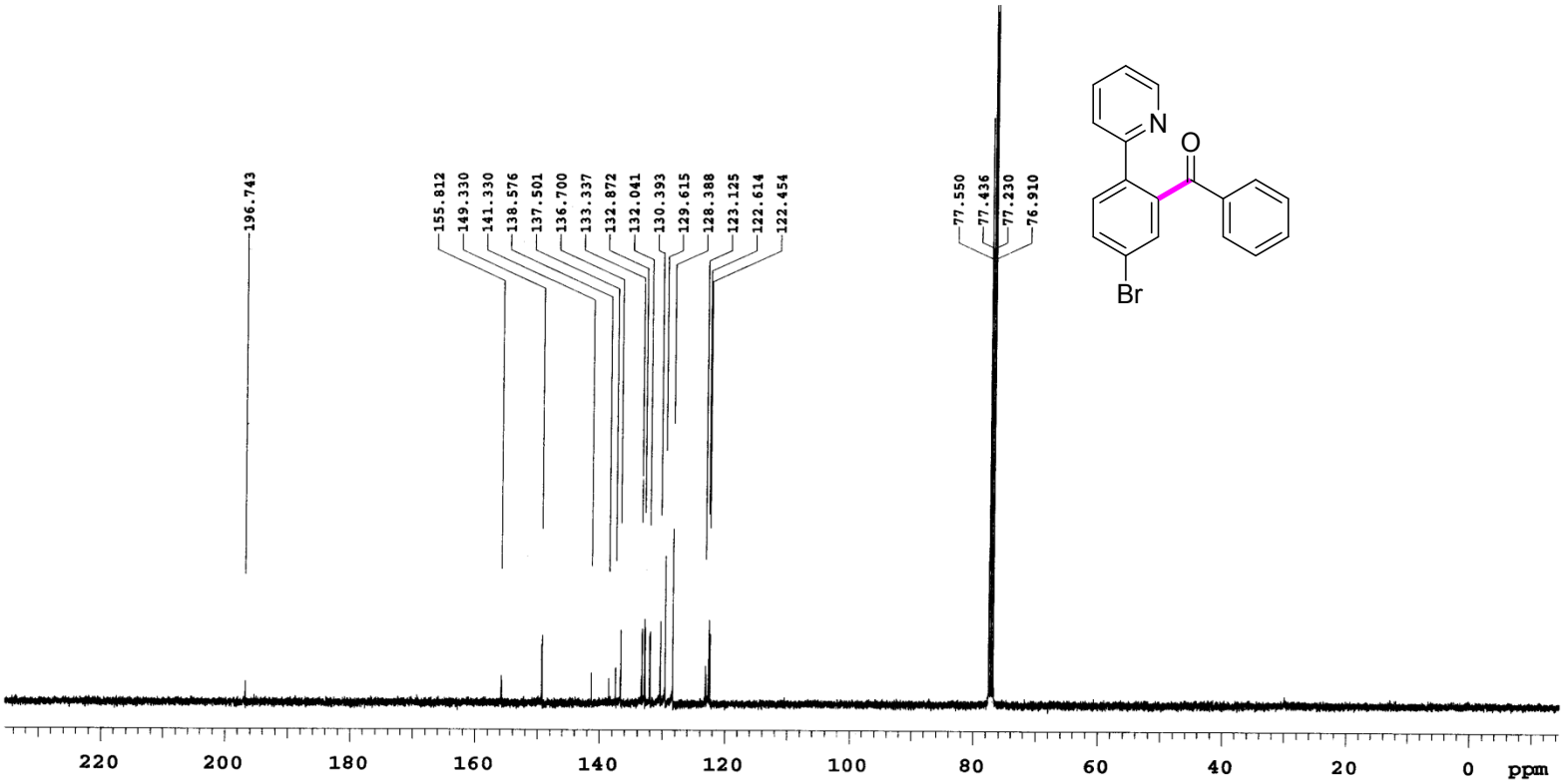
(4-Chlorophenyl)(5-methoxy-2-(pyridin-2-yl)phenyl)methanone (3f): ^{13}C NMR (150 MHz, $CDCl_3$)



(5-Bromo-2-(pyridin-2-yl)phenyl)(phenyl)methanone (4a): ^{1}H NMR (400 MHz, $CDCl_3$)

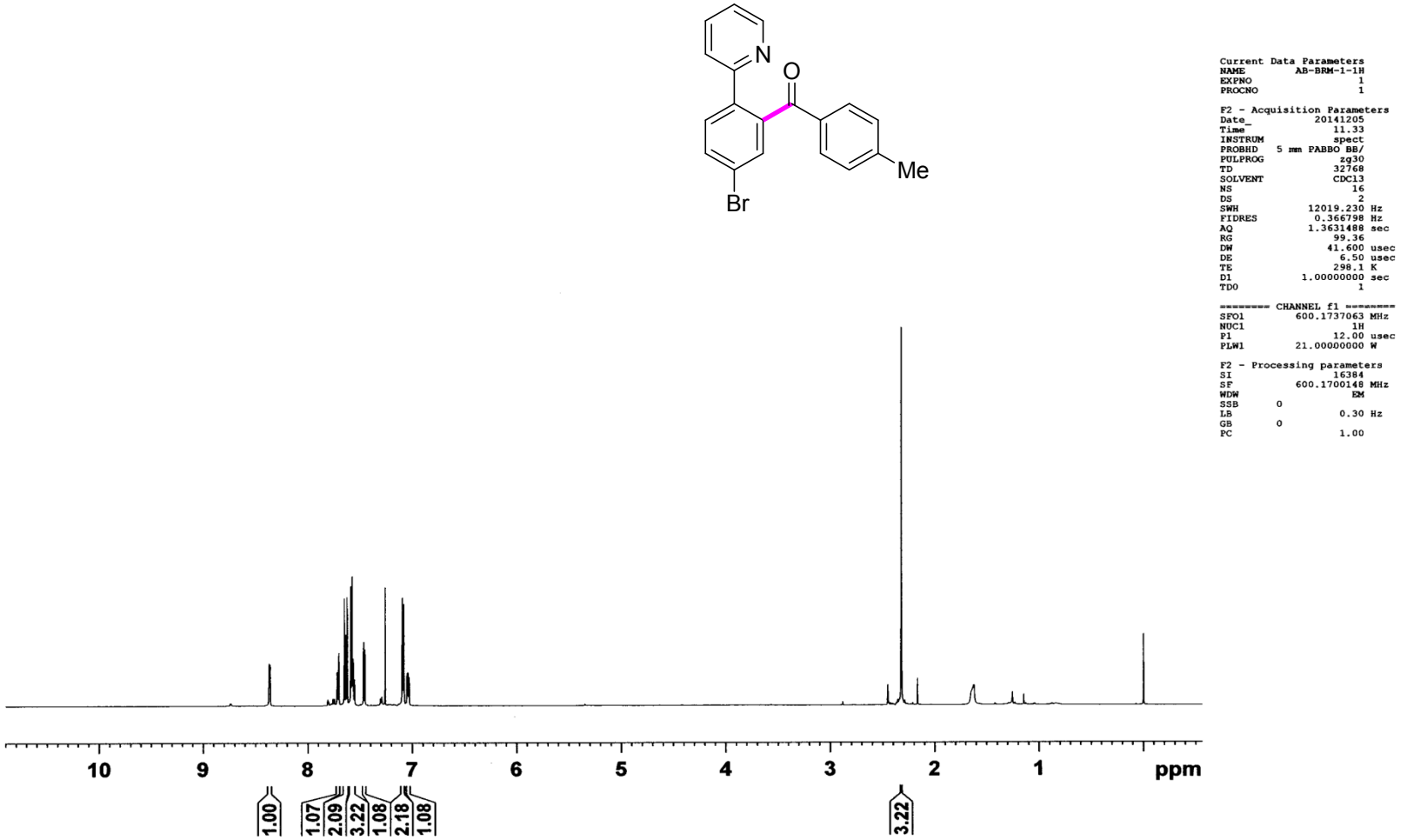


(5-Bromo-2-(pyridin-2-yl)phenyl)(phenyl)methanone (4a): ^{13}C NMR (100 MHz, $CDCl_3$)



PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 1.304 sec Width 25125.6 Hz 6350 repetitions	OBSERVE C13, 100.5425579 DECOUPLE H1, 399.8529994 Power 42 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 4.1 hours	AB-BRS-12-13C Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

(5-Bromo-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone (4b): ^{1}H NMR (600 MHz, $CDCl_3$)



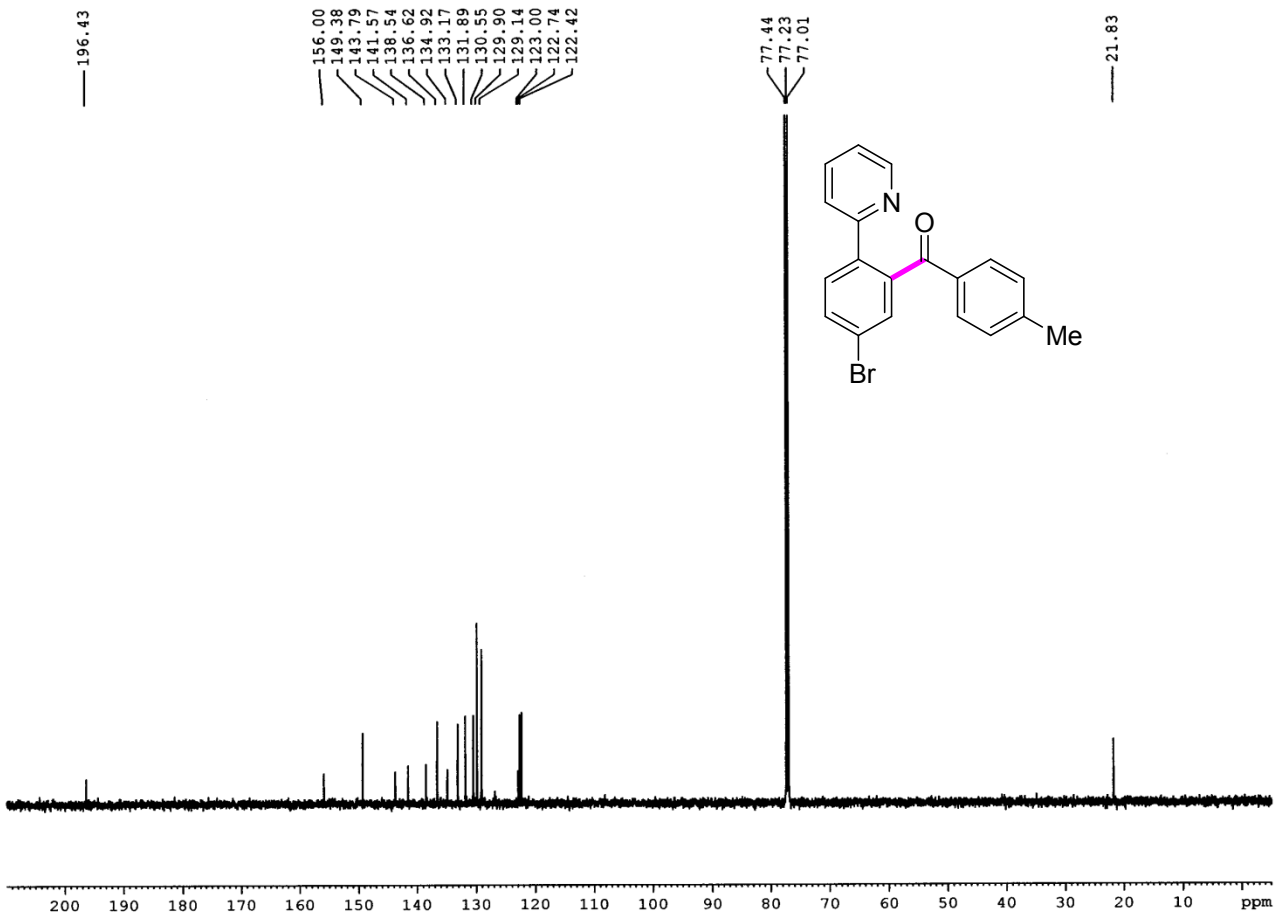

```
Current Data Parameters
NAME          AB-BRM-1-1H
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20141205
Time                11.33
INSTRUM             spect
PROBHD   5 mm PABBO BB/
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            12019.230 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 99.36
DW                41.600 usec
DE                 6.50 usec
TE                298.1 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          600.1737063 MHz
NUC1                  1H
P1                 12.00 usec
PLW1          21.00000000 W

F2 - Processing parameters
SI                 16384
SF            600.1700148 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```

(5-Bromo-2-(pyridin-2-yl)phenyl)(*p*-tolyl)methanone (4b): ^{13}C NMR (150 MHz, $CDCl_3$)




```
Current Data Parameters
NAME        AB-BRM-1-13C
EXPNO                  1
PROCNO                 1

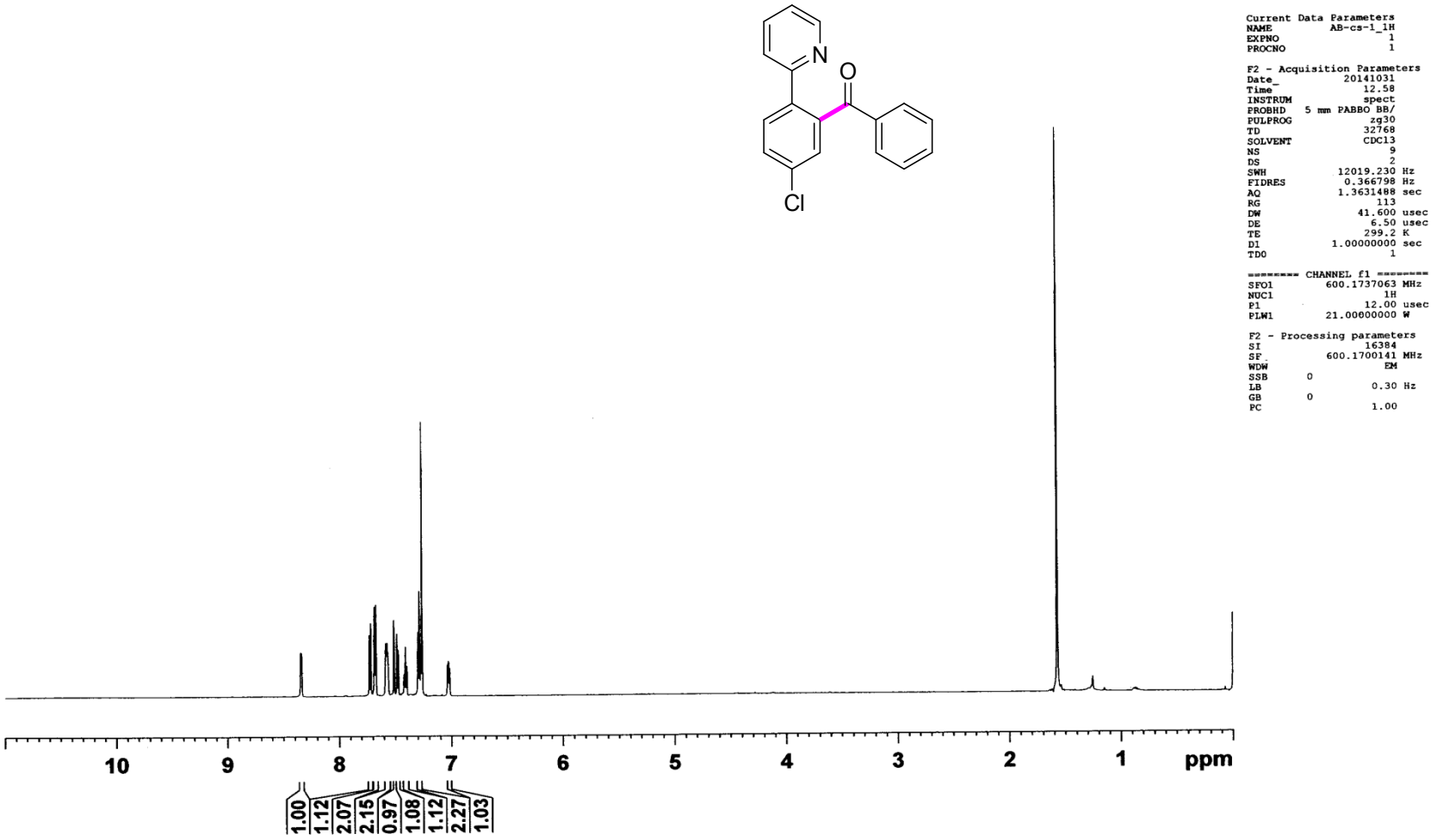
F2 - Acquisition Parameters
Date_           20141205
Time               11.38
INSTRUM            spect
PROBHD   5 mm PABBO BB/
PULPROG          zgpg30
TD                32768
SOLVENT           CDCl3
NS                  204
DS                    2
SWH           36057.691 Hz
FIDRES         1.100393 Hz
AQ            0.4543829 sec
RG                65.24
DW               13.867 usec
DE                6.50 usec
TE               299.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1         150.9279571 MHz
NUC1                13C
P1                10.50 usec
PLW1         95.00000000 W

======== CHANNEL f2 ========
SFO2         600.1724007 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             70.00 usec
PLW2         21.00000000 W
PLW12         0.61714000 W
PLW13         0.30239999 W

F2 - Processing parameters
SI                 16384
SF           150.9128370 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

(5-Chloro-2-(pyridin-2-yl)phenyl)(phenyl)methanone (5a): ^{1}H NMR (600 MHz, $CDCl_3$)



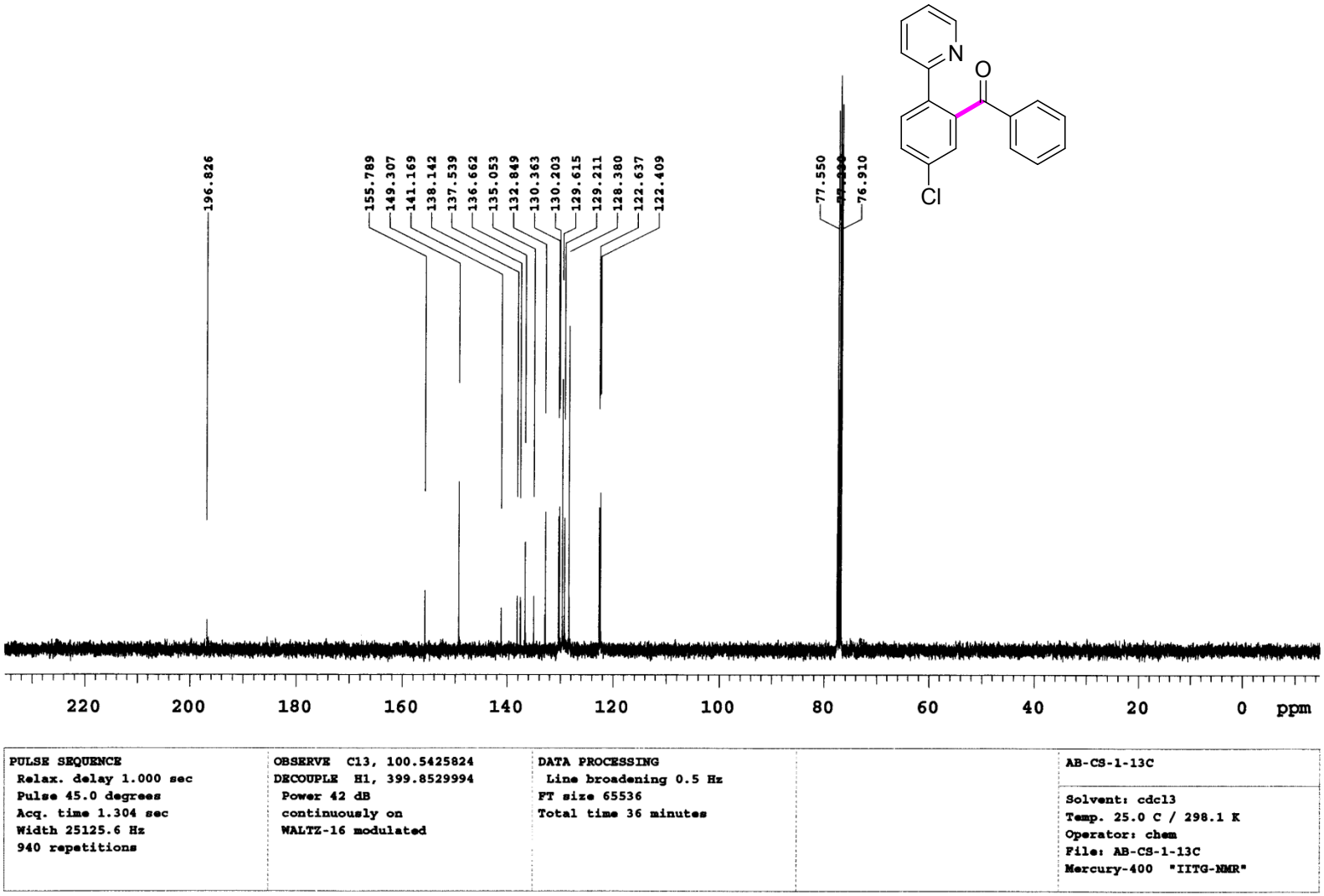

```
Current Data Parameters
NAME          AB-cs-1_1H
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20141031
Time              12.58
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   9
DS                   2
SWH           12019.230 Hz
FIDRES        0.366798 Hz
AQ            1.3631488 sec
RG                 113
DW               41.600 usec
DE                6.50 usec
TE               299.2 K
D1          1.00000000 sec
TD0                  1

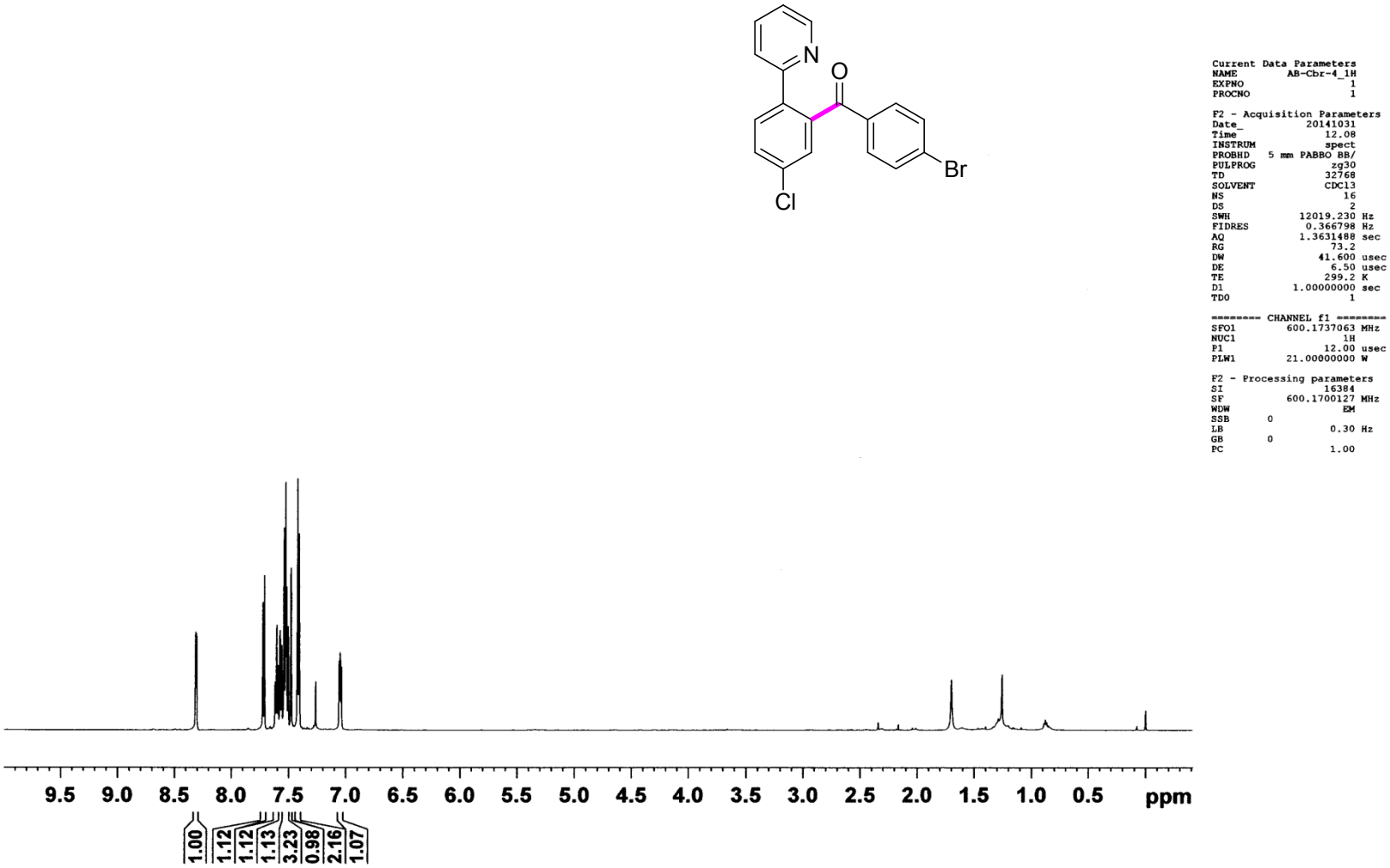
======== CHANNEL f1 ========
SFO1        600.1737063 MHz
NUC1               1H
P1               12.00 usec
PLW1        21.00000000 W

F2 - Processing parameters
SI                16384
SF          600.1700141 MHz
WDW                EM
SSB       0
LB               0.30 Hz
GB        0
PC               1.00
```

(5-Chloro-2-(pyridin-2-yl)phenyl)(phenyl)methanone (5a): ^{13}C NMR (100 MHz, $CDCl_3$)



(4-Bromophenyl)(5-chloro-2-(pyridin-2-yl)phenyl)methanone (5e): ^{1}H NMR (600 MHz, $CDCl_3$)



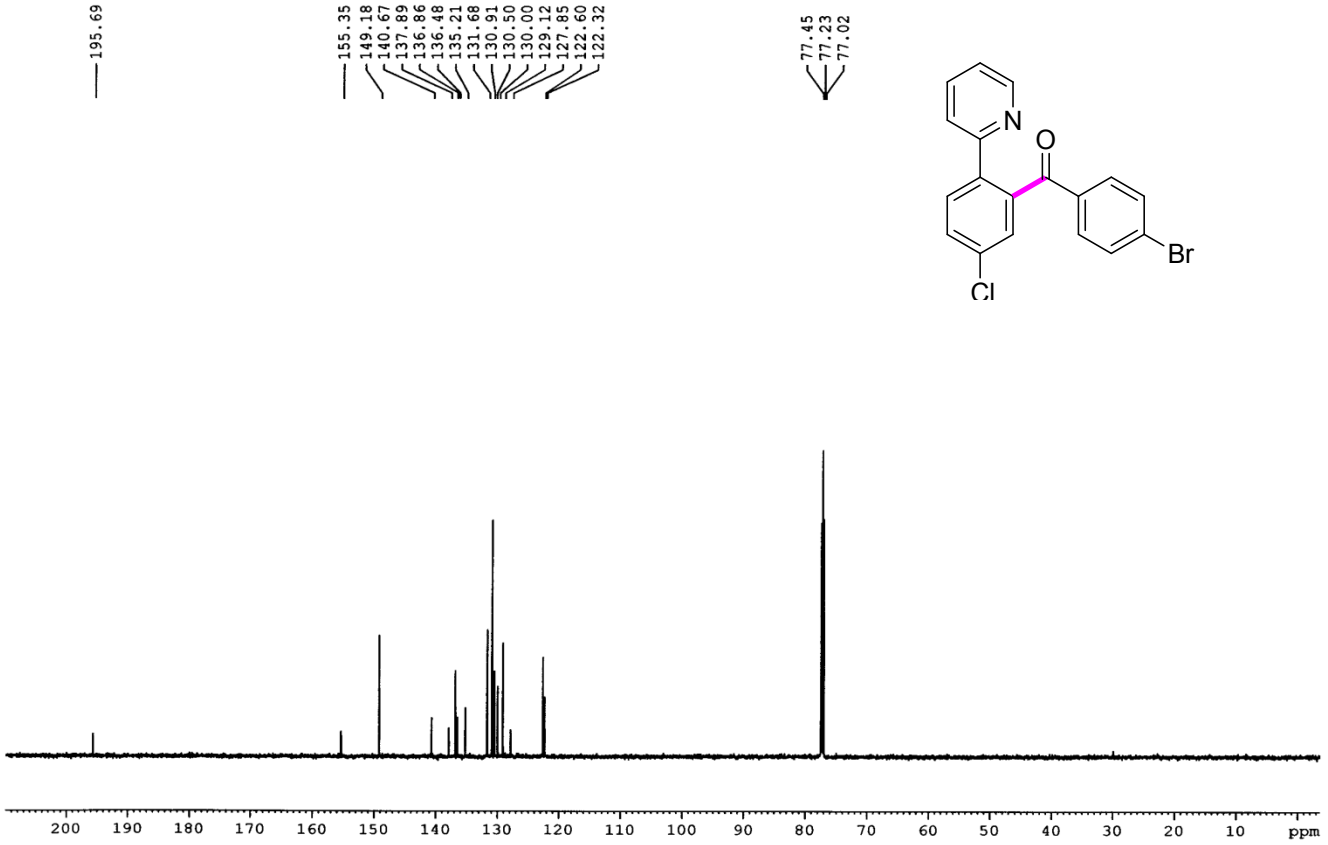

```
Current Data Parameters
NAME          AB-Cbr-4_1H
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_              20141031
Time                  12.08
INSTRUM               spect
PROBHD   5 mm PABBO BB/
PULPROG               zg30
TD                   32768
SOLVENT              CDCl3
NS                      16
DS                       2
SWH               12019.230 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                    73.2
DW                  41.600 usec
DE                   6.50 usec
TE                  299.2 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1           600.1737063 MHz
NUC1                   1H
P1                  12.00 usec
PLW1           21.00000000 W

F2 - Processing parameters
SI                   16384
SF             600.1700127 MHz
WDW                    EM
SSB       0
LB                   0.30 Hz
GB        0
PC                   1.00
```

(4-Bromophenyl)(5-chloro-2-(pyridin-2-yl)phenyl)methanone (5e): ^{13}C NMR (150 MHz, $CDCl_3$)




```
Current Data Parameters
NAME          AB-Cbr-4_13C
EXPNO                    1
PROCNO                   1

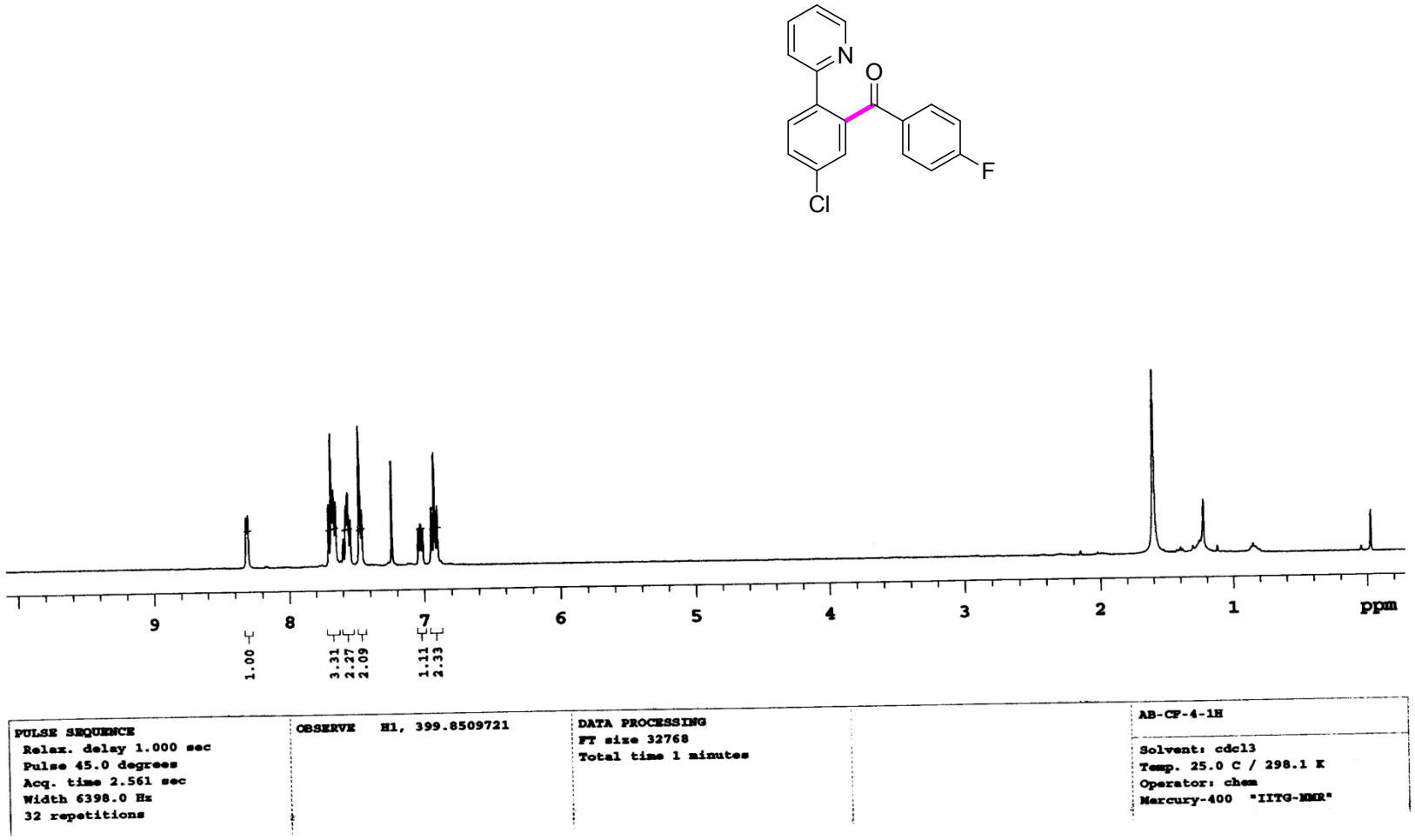
F2 - Acquisition Parameters
Date_              20141031
Time                  12.11
INSTRUM               spect
PROBHD   5 mm PABBO BB/
PULPROG             zgpg30
TD                   32768
SOLVENT              CDCl3
NS                     106
DS                       2
SWH              36057.691 Hz
FIDRES           1.100393 Hz
AQ               0.4543829 sec
RG                   65.24
DW                  13.867 usec
DE                    6.50 usec
TE                  299.3 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1         150.9279571 MHz
NUC1                  13C
P1                  10.50 usec
PLW1         95.00000000 W

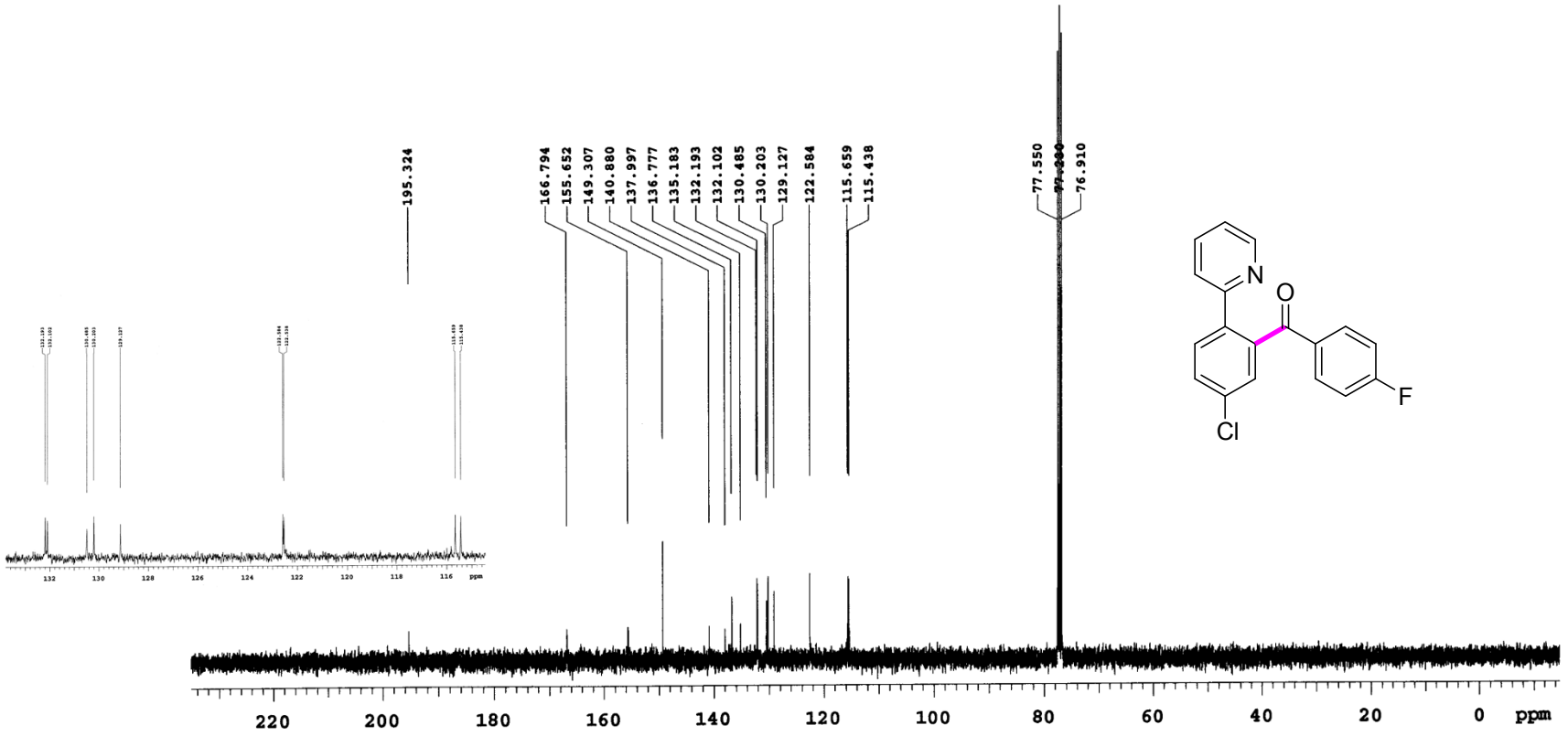
======== CHANNEL f2 ========
SFO2         600.1724007 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2                70.00 usec
PLW2         21.00000000 W
PLW12         0.61714000 W
PLW13         0.30239999 W

F2 - Processing parameters
SI                   16384
SF           150.9128392 MHz
WDW                     EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```

(4-Fluorophenyl)(5-chloro-2-(pyridin-2-yl)phenyl)methanone (5g): ^{1}H NMR (400 MHz, $CDCl_3$)

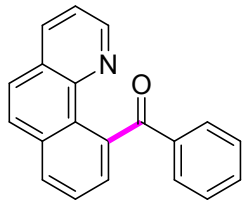


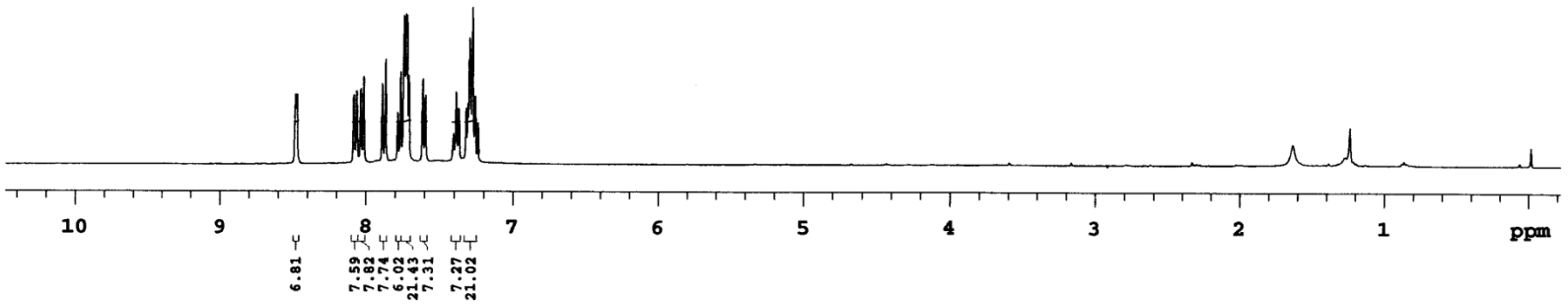
(4-Fluorophenyl)(5-chloro-2-(pyridin-2-yl)phenyl)methanone (5g): ^{13}C NMR (100 MHz, $CDCl_3$)



PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 1.304 sec Width 25125.6 Hz 770 repetitions	OBSERVE C13, 100.5425817 DECOUPLE H1, 399.8529994 Power 42 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 29 minutes		AB-CF-4-13C Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem File: AB-CF-4-13C Mercury-400 "IITG-NMR"

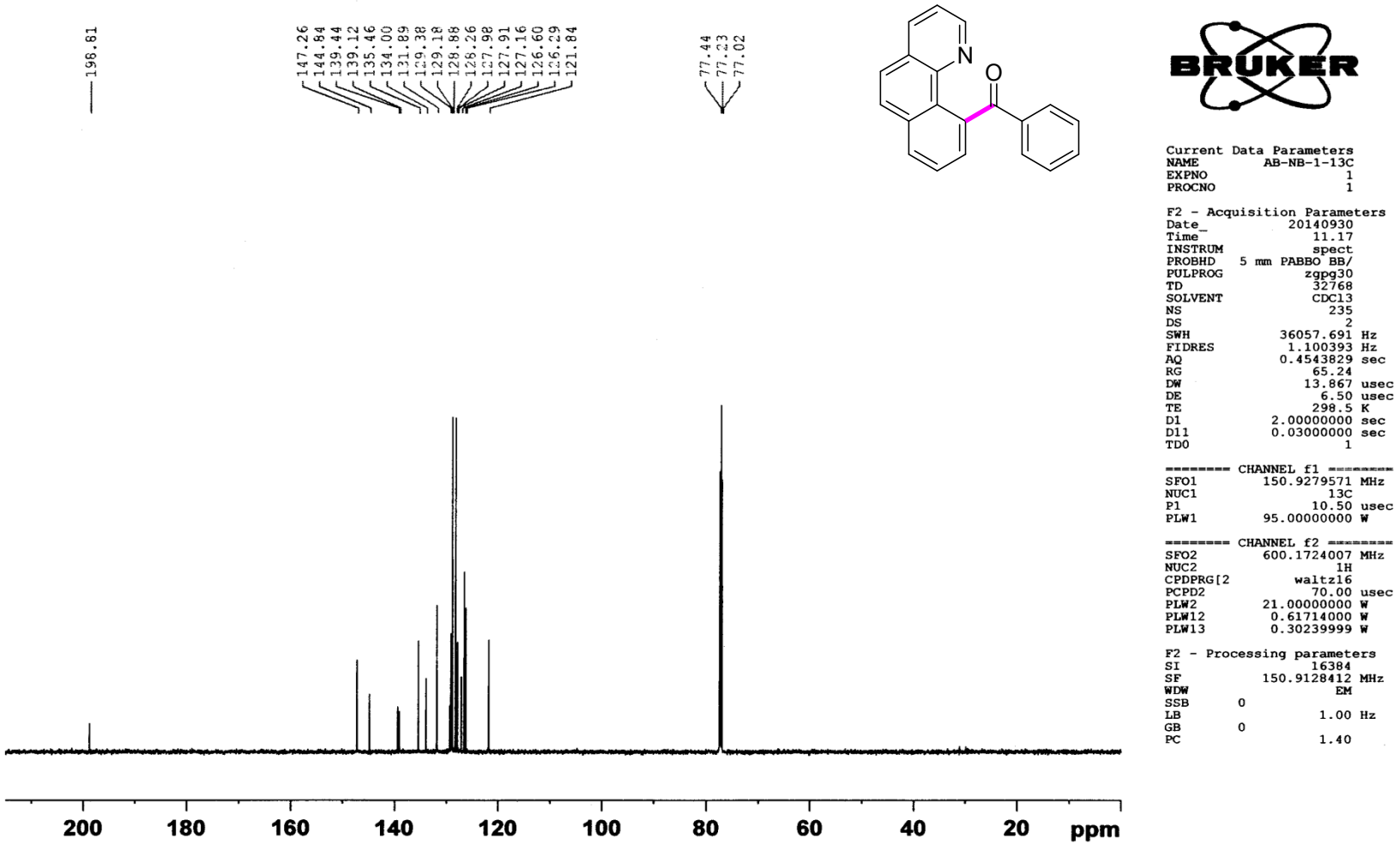
Benzo[*h*]quinolin-10-yl(phenyl)methanone (6a): ^{1}H NMR (400 MHz, $CDCl_3$)





PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509713	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-NB-1-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem File: AB-NB-1-1H Mercury-400 "IITG-NMR"

Benzo[*h*]quinolin-10-yl(phenyl)methanone (6a): ^{13}C NMR (150 MHz, $CDCl_3$)



BRUKER

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Current Data Parameters
NAME                  AB-NB-1-13C
EXPNO                           1
PROCNO                          1

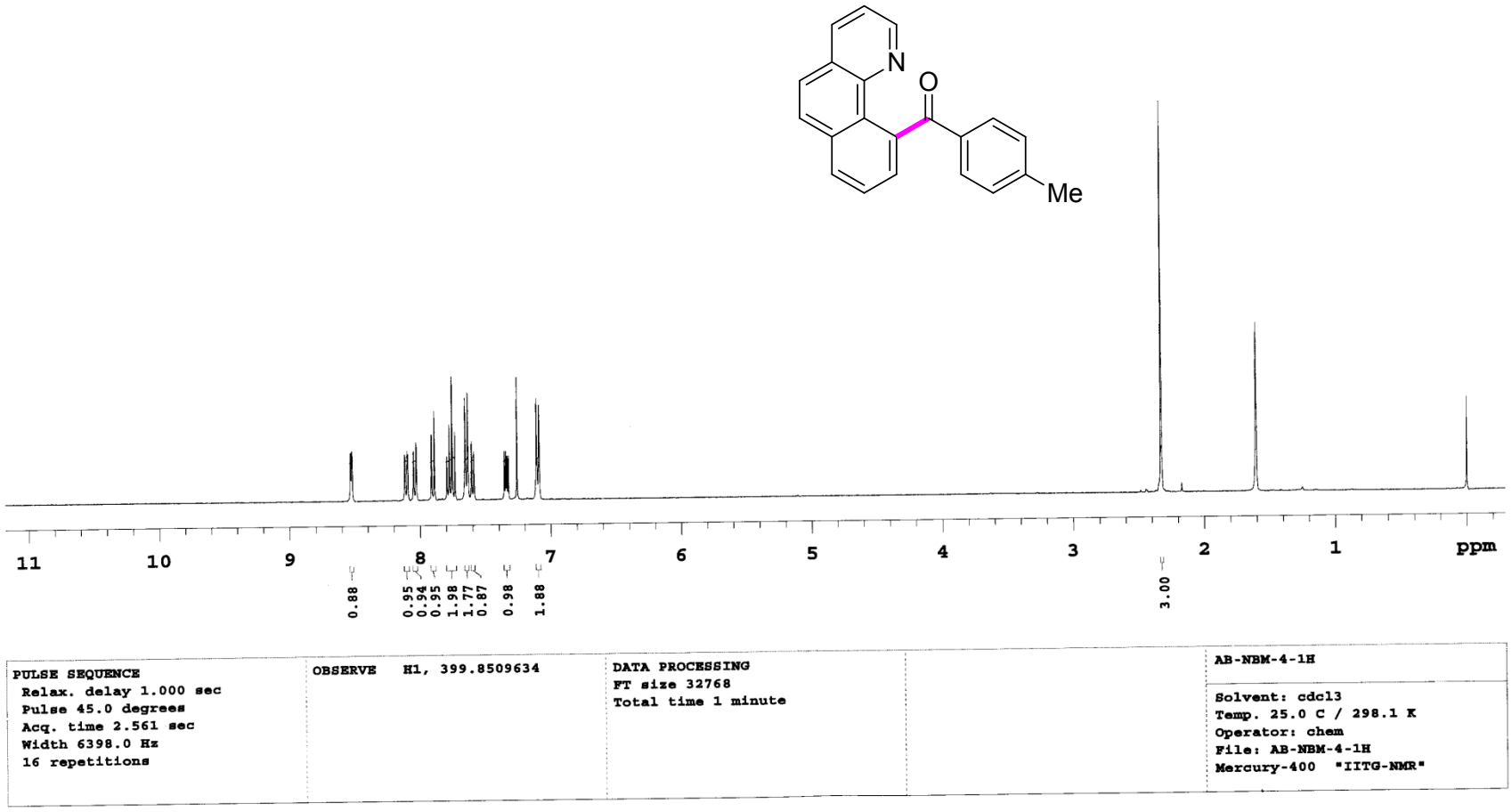
F2 - Acquisition Parameters
Date_                    20140930
Time                        11.17
INSTRUM                     spect
PROBHD          5 mm PABBO BB/
PULPROG                   zgpg30
TD                         32768
SOLVENT                    CDCl3
NS                           235
DS                             2
SWH                    36057.691 Hz
FIDRES                  1.100393 Hz
AQ                      0.4543829 sec
RG                          65.24
DW                         13.867 usec
DE                          6.50 usec
TE                         298.5 K
D1                     2.00000000 sec
D11                    0.03000000 sec
TD0                            1

======== CHANNEL f1 ========
SFO1                150.9279571 MHz
NUC1                        13C
P1                         10.50 usec
PLW1                95.00000000 W

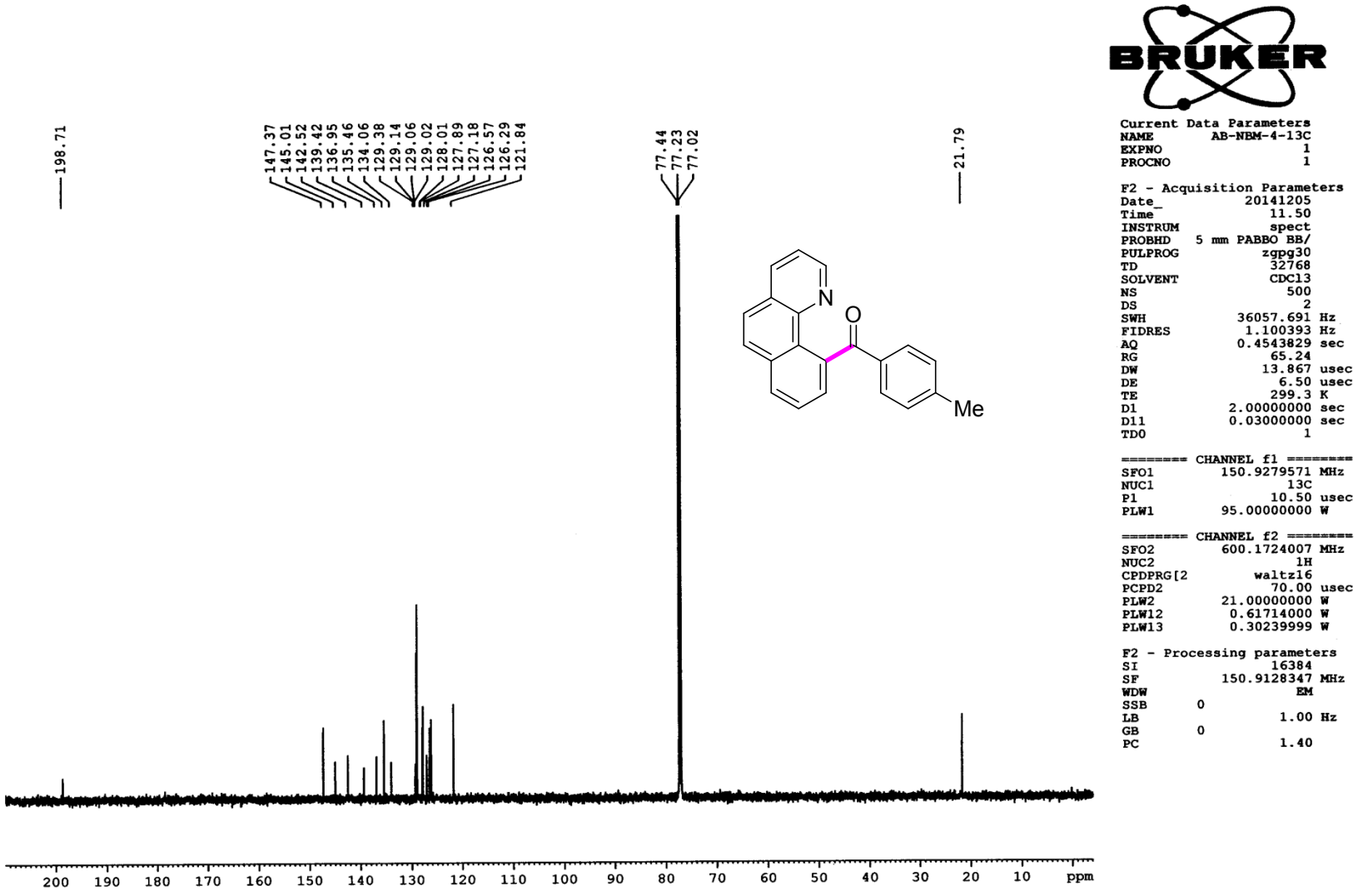
======== CHANNEL f2 ========
SFO2                600.1724007 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                      70.00 usec
PLW2                21.00000000 W
PLW12                0.61714000 W
PLW13                0.30239999 W

F2 - Processing parameters
SI                         16384
SF                  150.9128412 MHz
WDW                           EM
SSB                0
LB                          1.00 Hz
GB                 0
PC                          1.40
```

Benzo[*h*]quinolin-10-yl(p-tolyl)methanone (6b): ^{1}H NMR (400 MHz, $CDCl_3$



Benzo[*h*]quinolin-10-yl(p-tolyl)methanone (6b): ^{13}C NMR (150 MHz, $CDCl_3$



BRUKER

Current Data Parameters
NAME AB-NBM-4-13C
EXPNO 1
PROCNO 1

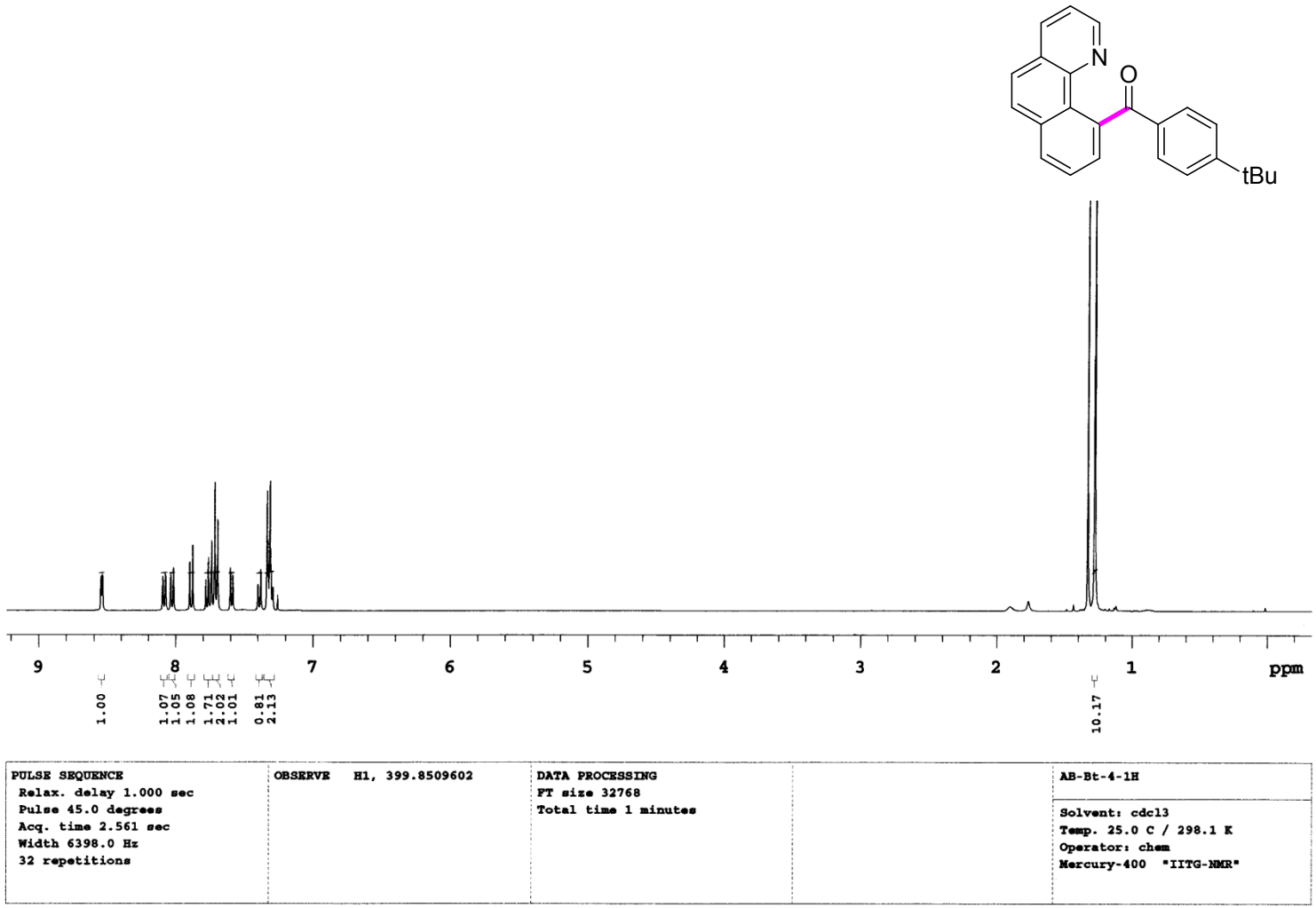
F2 - Acquisition Parameters
Date_ 20141205
Time 11.50
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 500
DS 2
SWH 36057.691 Hz
FIDRES 1.100393 Hz
AQ 0.4543829 sec
RG 65.24
DW 13.867 usec
DE 6.50 usec
TE 299.3 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 150.9279571 MHz
NUC1 13C
P1 10.50 usec
PLW1 95.00000000 W

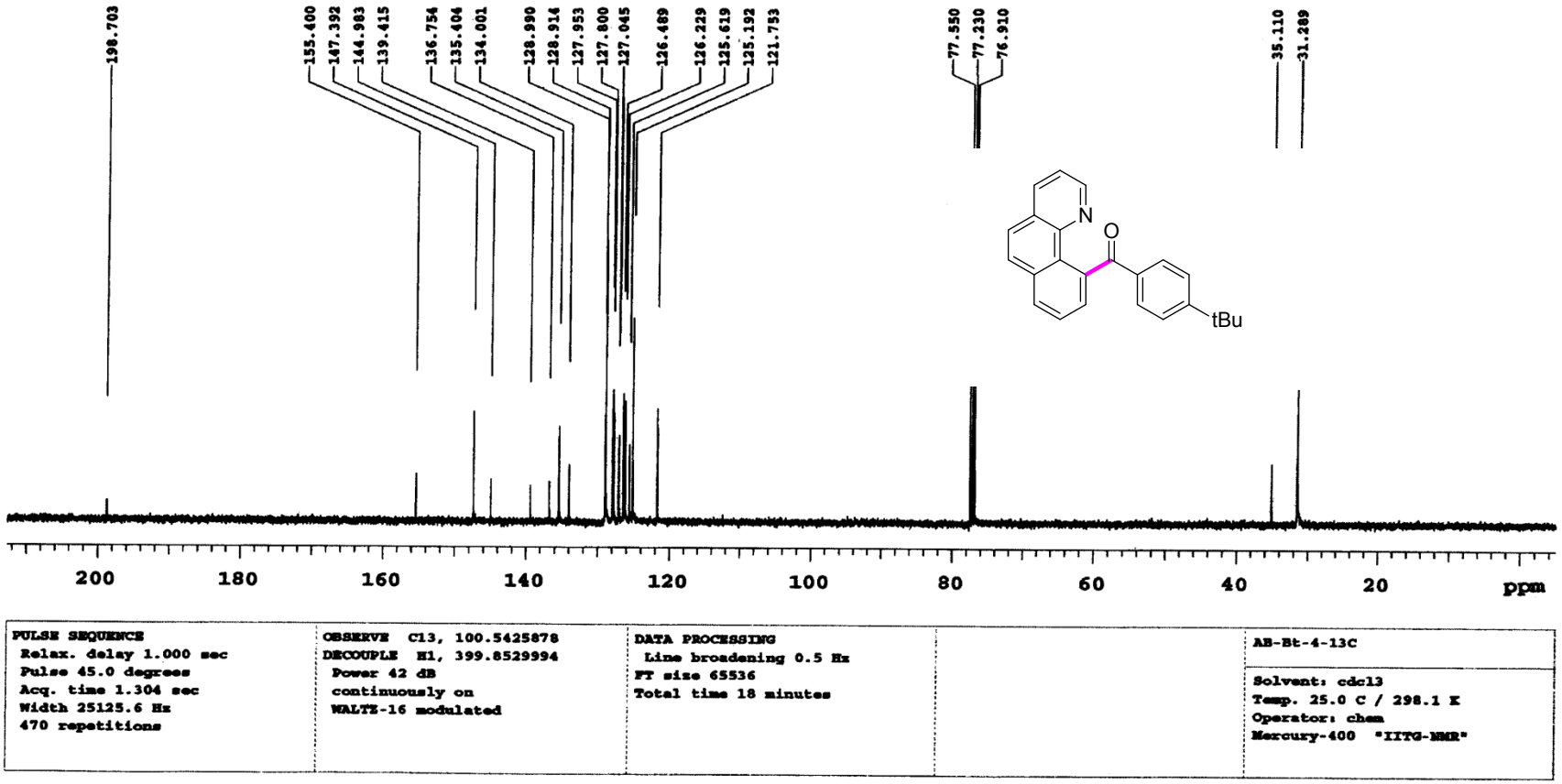
======== CHANNEL f2 ========
SFO2 600.1724007 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 70.00 usec
PLW2 21.00000000 W
PLW12 0.61714000 W
PLW13 0.30239999 W

F2 - Processing parameters
SI 16384
SF 150.9128347 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

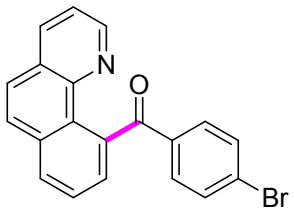
Benzo[*h*]quinolin-10-yl(4-(tert-butyl)phenyl)methanone (6c): ^{1}H NMR (400 MHz, $CDCl_3$):

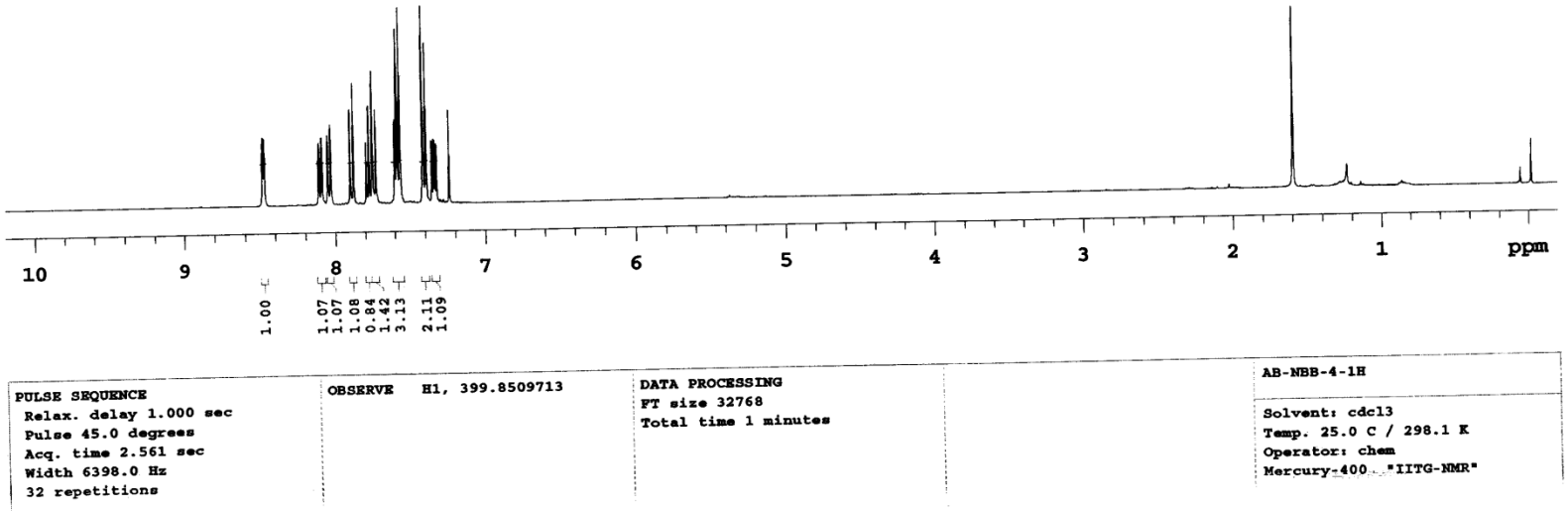


Benzo[*h*]quinolin-10-yl(4-(tert-butyl)phenyl)methanone (6c): ^{13}C NMR (100 MHz, $CDCl_3$)

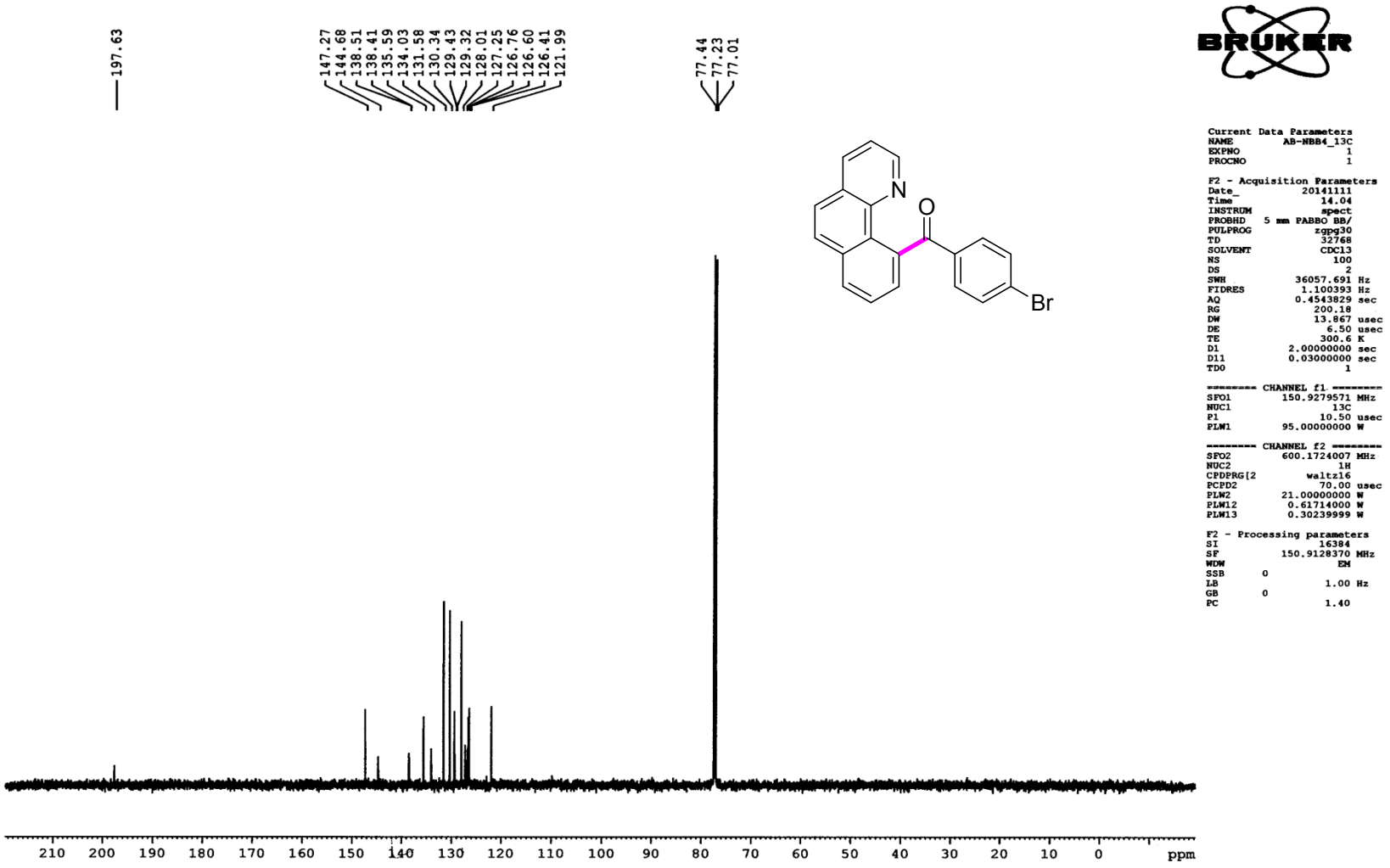


Benzo[*h*]quinolin-10-yl(4-bromophenyl)methanone (6e): ^{1}H NMR (400 MHz, $CDCl_3$)





Benzo[*h*]quinolin-10-yl(4-bromophenyl)methanone (6e): ^{13}C NMR (150 MHz, $CDCl_3$)

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Current Data Parameters
NAME          AB-NBB4_13C
EXPNO                   1
PROCNO                  1

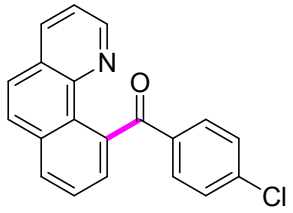
F2 - Acquisition Parameters
Date_          20141111
Time_             14.04
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD              32768
SOLVENT         CDCl3
NS                100
DS                  2
SWH           36057.691 Hz
FIDRES         1.100393 Hz
AQ             0.4543829 sec
RG                200.18
DW               13.867 usec
DE                6.50 usec
TE               300.6 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0                     1

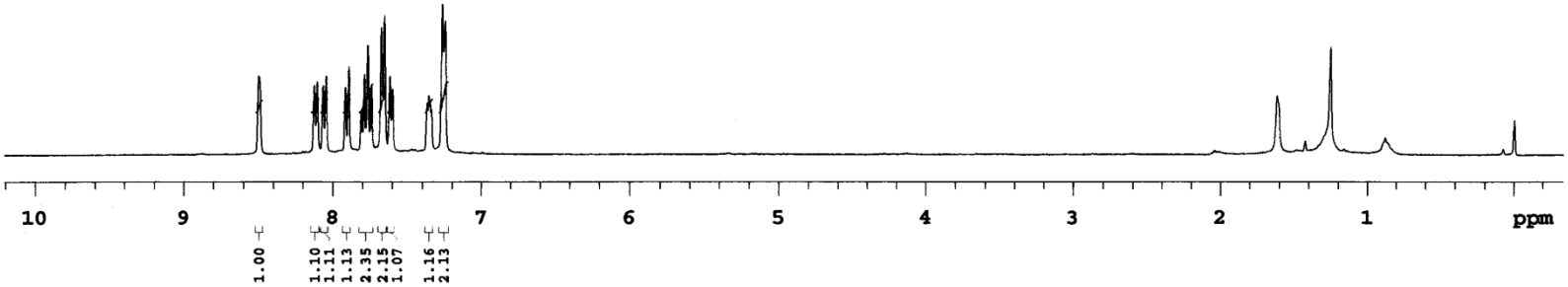
======== CHANNEL f1 ========
SFO1         150.9279571 MHz
NUC1                13C
P1                10.50 usec
PLW1          95.00000000 W

======== CHANNEL f2 ========
SFO2         600.1724007 MHz
NUC2                1H
CPDPRG[2          waltz16
PCPD2             70.00 usec
PLW2          21.00000000 W
PLW12          0.61714000 W
PLW13          0.30239999 W

F2 - Processing parameters
SI                16384
SF           150.9128370 MHz
WDW                 EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

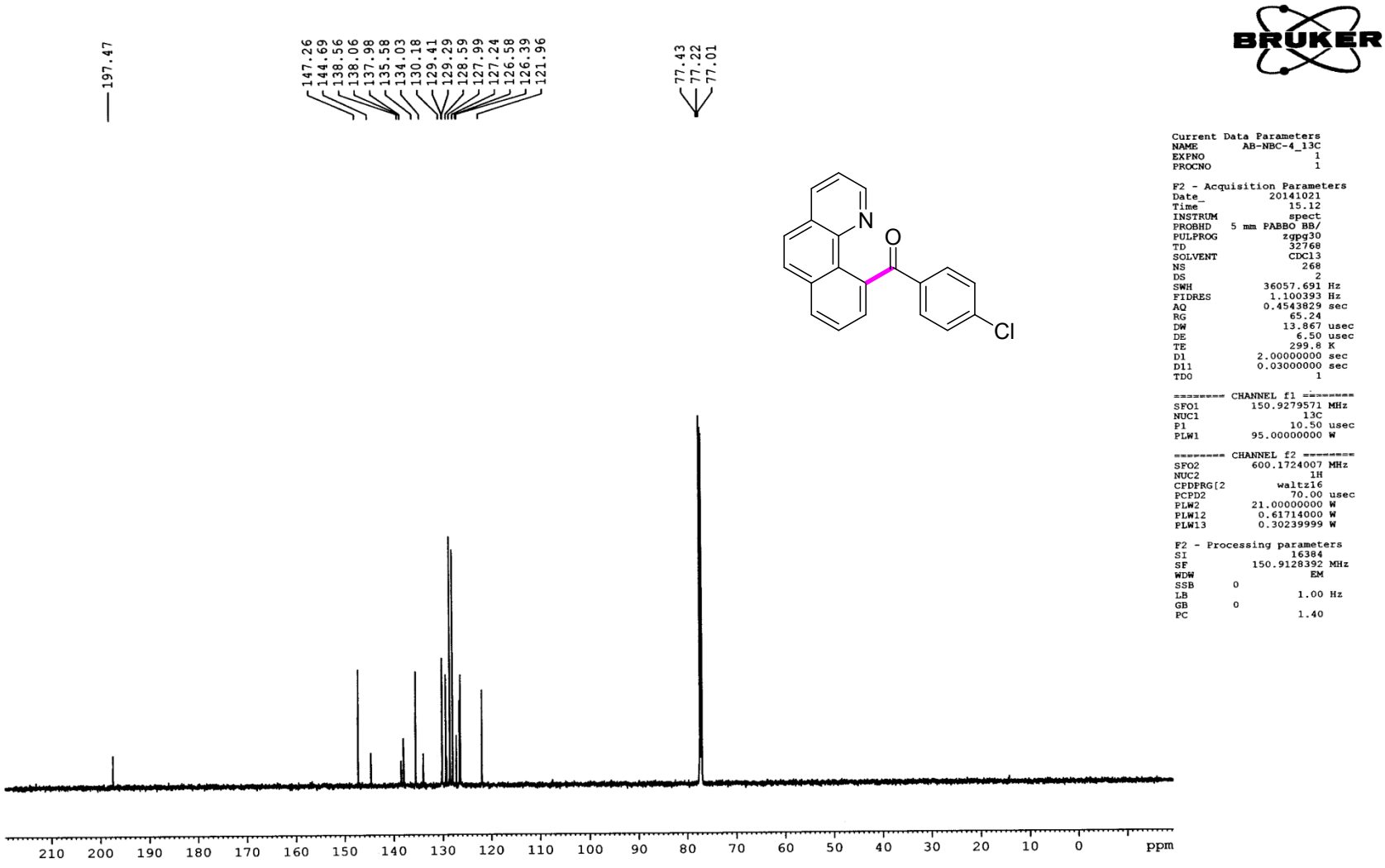
Benzo[*h*]quinolin-10-yl(4-chlorophenyl)methanone (6f): ^{1}H NMR (400 MHz, $CDCl_3$)





PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509652	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-NBC-4-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

Benzo[*h*]quinolin-10-yl(4-chlorophenyl)methanone (6f): ^{13}C NMR (150 MHz, $CDCl_3$)

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Current Data Parameters
NAME          AB-NBC-4_13C
EXPNO                    1
PROCNO                   1

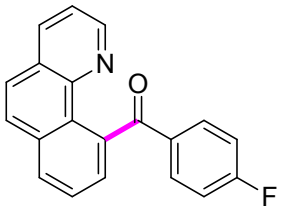
F2 - Acquisition Parameters
Date_              20141021
Time                 15.12
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   268
DS                     2
SWH            36057.691 Hz
FIDRES          1.100393 Hz
AQ              0.4543829 sec
RG                  65.24
DW                 13.867 usec
DE                  6.50 usec
TE                 299.8 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1

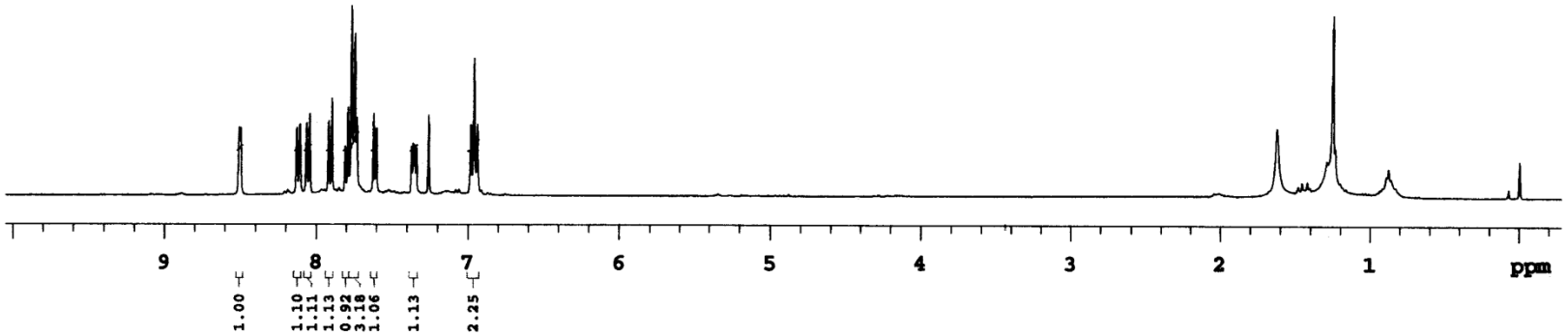
======== CHANNEL f1 ========
SFO1          150.9279571 MHz
NUC1                 13C
P1                 10.50 usec
PLW1          95.00000000 W

======== CHANNEL f2 ========
SFO2          600.1724007 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2              70.00 usec
PLW2          21.00000000 W
PLW12          0.61714000 W
PLW13          0.30239999 W

F2 - Processing parameters
SI                   16384
SF            150.9128392 MHz
WDW                    EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```

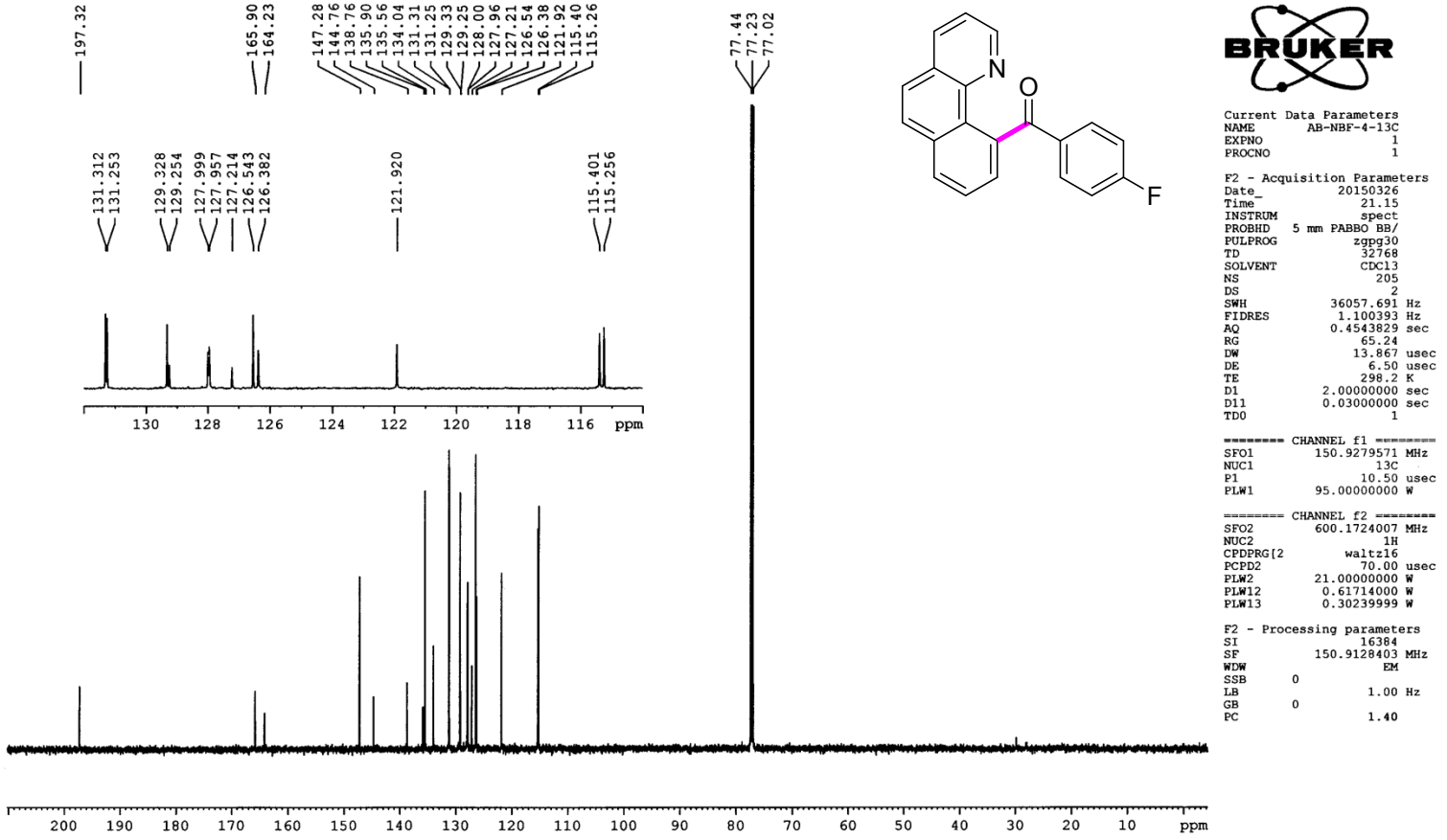
Benzo[*h*]quinolin-10-yl(4-fluorophenyl)methanone (6g): ^{1}H NMR (400 MHz, $CDCl_3$)





PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509640	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-NBF-4 Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

Benzo[*h*]quinolin-10-yl(4-fluorophenyl)methanone (6g): ^{13}C NMR (150 MHz, $CDCl_3$)



BRUKER

```
Current Data Parameters
NAME        AB-NBF-4-13C
EXPNO                 1
PROCNO                1

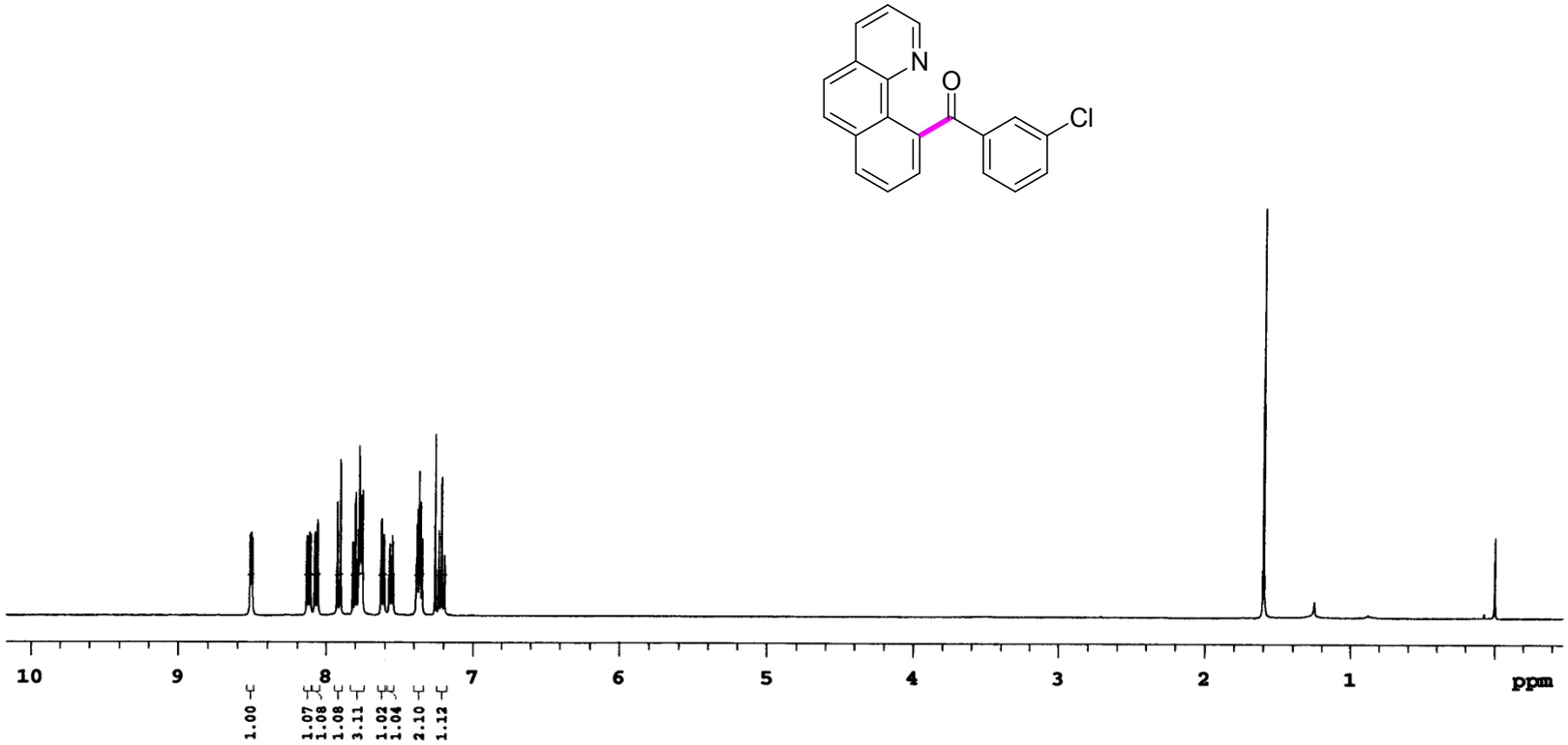
F2 - Acquisition Parameters
Date_          20150326
Time              21.15
INSTRUM           spect
PROBHD   5 mm PABBO BB/
PULPROG         zgpg30
TD              32768
SOLVENT           CDC13
NS                  205
DS                    2
SWH           36057.691 Hz
FIDRES         1.100393 Hz
AQ            0.4543829 sec
RG                65.24
DW               13.867 usec
DE                6.50 usec
TE               298.2 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
SFO1        150.9279571 MHz
NUC1                13C
P1                10.50 usec
PLW1         95.00000000 W

======== CHANNEL f2 ========
SFO2        600.1724007 MHz
NUC2                1H
CPDPRG[2         waltz16
PCPD2             70.00 usec
PLW2         21.00000000 W
PLW12         0.61714000 W
PLW13         0.30239999 W

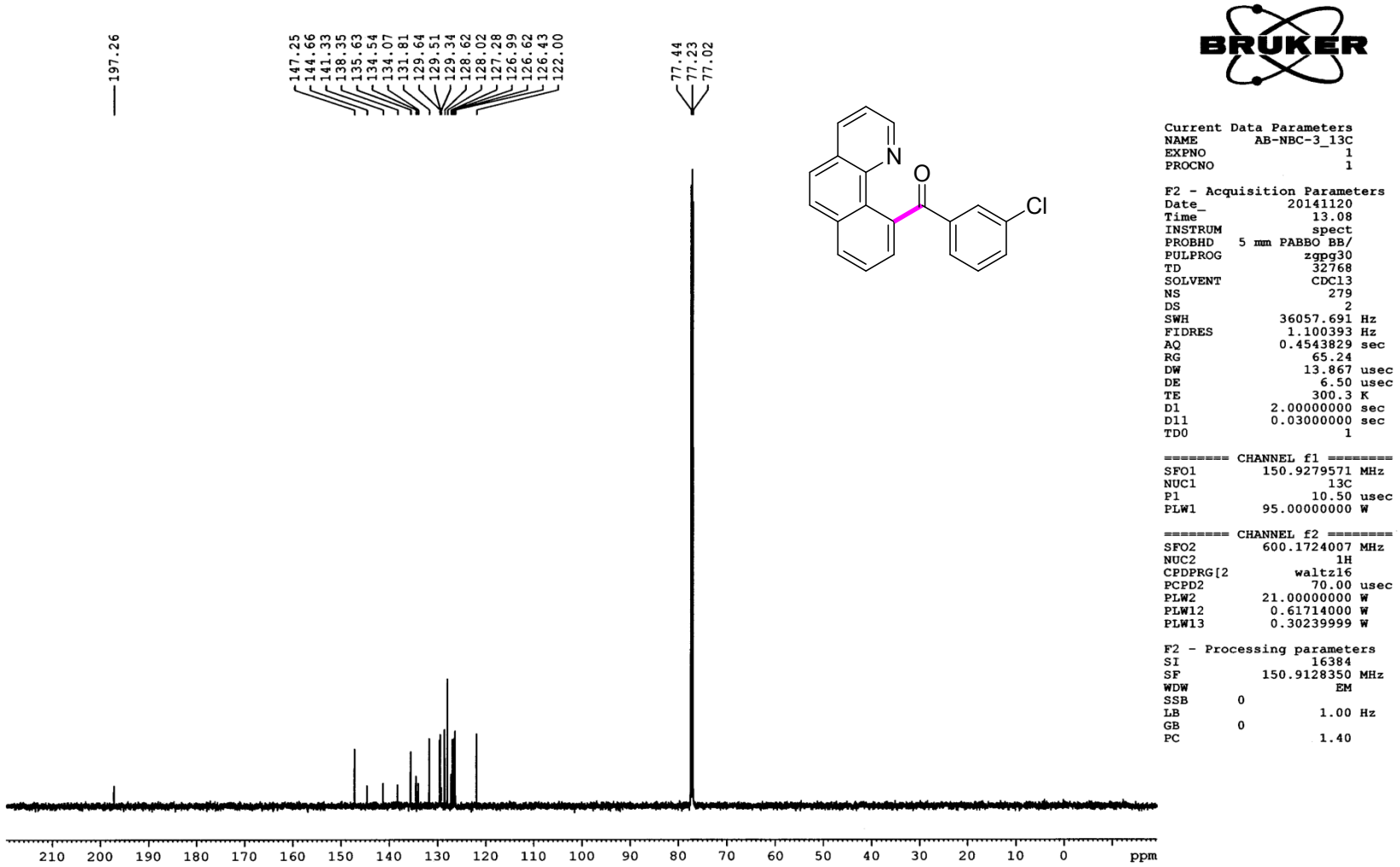
F2 - Processing parameters
SI                 16384
SF          150.9128403 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

Benzo[*h*]quinolin-10-yl(3-chlorophenyl)methanone (6h): ^{1}H NMR (400 MHz, $CDCl_3$)



PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509629	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-NBC-3-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem Mercury-400 "IITG-NMR"

Benzo[*h*]quinolin-10-yl(3-chlorophenyl)methanone (6h): ^{13}C NMR (150 MHz, $CDCl_3$)




```
Current Data Parameters
NAME          AB-NBC-3_13C
EXPNO                    1
PROCNO                   1

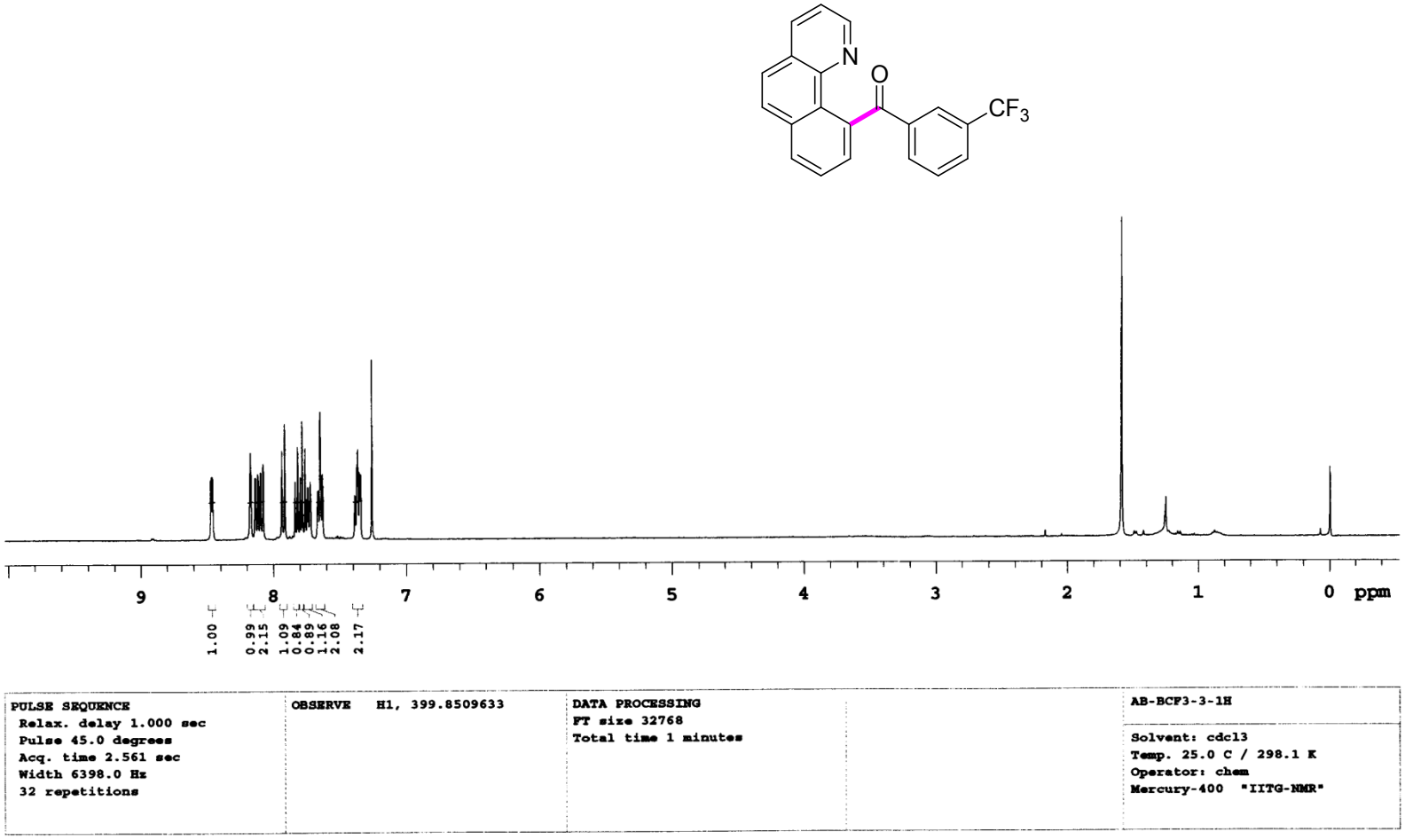
F2 - Acquisition Parameters
Date_              20141120
Time                 13.08
INSTRUM              spect
PROBHD   5 mm PABBO BB/
PULPROG           zgpg30
TD                 32768
SOLVENT            CDCl3
NS                   279
DS                     2
SWH            36057.691 Hz
FIDRES          1.100393 Hz
AQ              0.4543829 sec
RG                 65.24
DW                13.867 usec
DE                 6.50 usec
TE                300.3 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          150.9279571 MHz
NUC1                 13C
P1                10.50 usec
PLW1          95.00000000 W

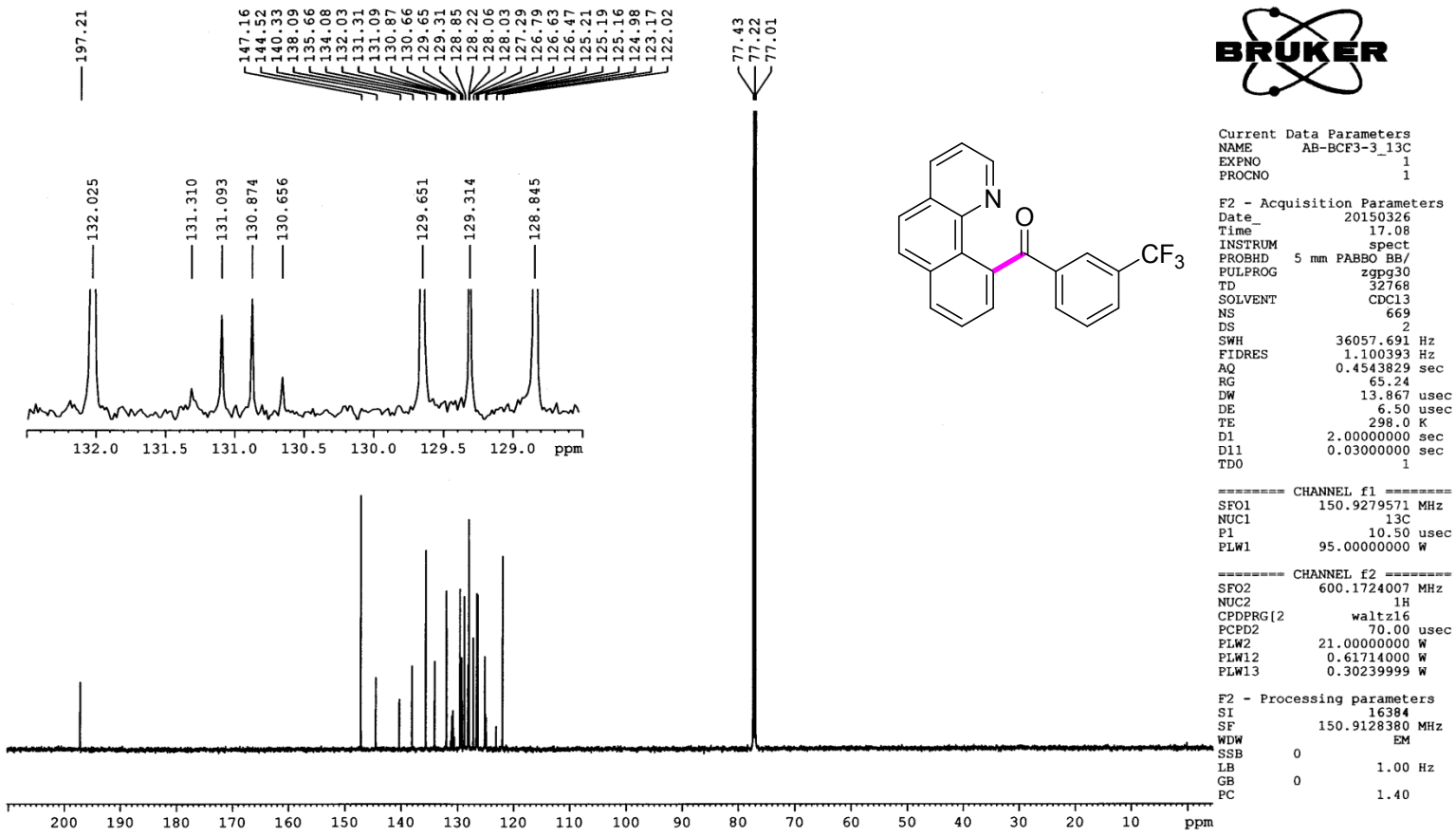
======== CHANNEL f2 ========
SFO2          600.1724007 MHz
NUC2                 1H
CPDPRG[2          waltz16
PCPD2             70.00 usec
PLW2          21.00000000 W
PLW12          0.61714000 W
PLW13          0.30239999 W

F2 - Processing parameters
SI                   16384
SF            150.9128350 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

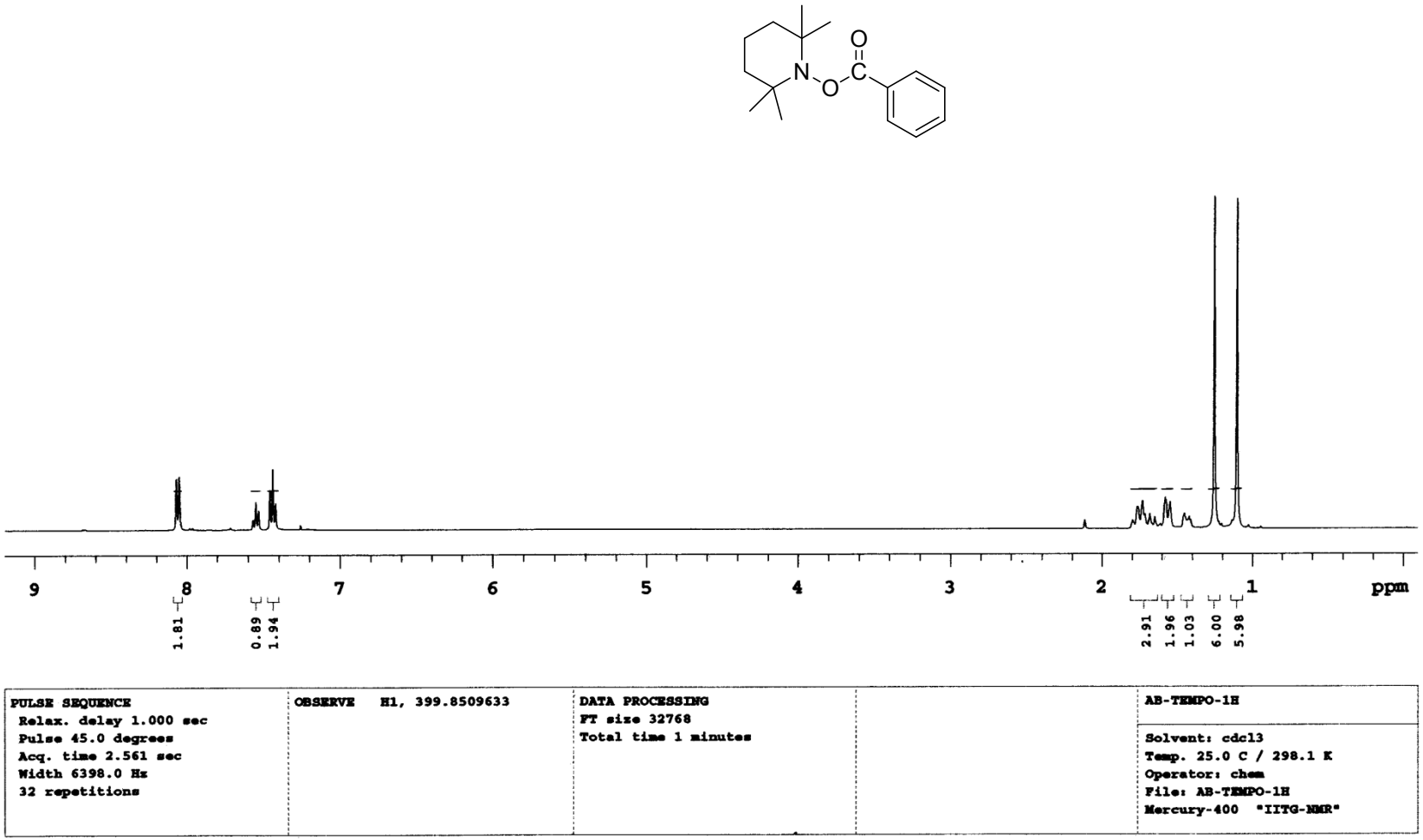
Benzo[*h*]quinolin-10-yl(3-(trifluoromethyl)phenyl)methanone (6j): ^{1}H NMR (400 MHz, $CDCl_3$)



Benzo[*h*]quinolin-10-yl(3-(trifluoromethyl)phenyl)methanone (6j): ^{13}C NMR (150 MHz, $CDCl_3$)



2,2,6,6-Tetramethylpiperidin-1-yl benzoate (E): ^{1}H NMR (400 MHz, $CDCl_3$)



PULSE SEQUENCE Relax. delay 1.000 sec Pulse 45.0 degrees Acq. time 2.561 sec Width 6398.0 Hz 32 repetitions	OBSERVE H1, 399.8509633	DATA PROCESSING FT size 32768 Total time 1 minutes		AB-TEMPO-1H Solvent: cdcl3 Temp. 25.0 C / 298.1 K Operator: chem File: AB-TEMPO-1H Mercury-400 "IITG-NMR"

2,2,6,6-Tetramethylpiperidin-1-yl benzoate (E): ^{13}C NMR (100 MHz, $CDCl_3$)