Electronic Supplementary Material (ESI) for Green Chemistry
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Supplementary Information

Clean and efficient assembly of functionalized benzofuro[2,3-*c*]pyridines *via* metal-free one-pot domino reactions†

Yin Rao, Zhexian Li and Guodong Yin*

Hubei Collaborative Innovation Center for Rare Metal Chemistry, College of Chemistry and Chemical Engineering, Hubei Normal University, Huangshi 435002, China.
E-mail: gdyin@hbnu.edu.cn

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Characterization data for all new compounds

2-(2-Benzoyl-2,3-dihydrobenzofuran-3-yl)-1-phenylethanone (5aa).
White solid, 298 mg, yield 87%; mp 100–101 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.39 (dd, J_a = 8.1 Hz, J_b = 17.8 Hz, 1H), 3.60 (dd, J_1 = 6.0 Hz, J_2 = 17.8 Hz, 1H), 4.51–4.59 (m, 1H), 5.65 (d, J = 5.5 Hz, 1H), 6.83–6.90 (m, 2H), 7.11–7.22 (m, 2H), 7.39–7.59 (m, 6H), 7.90–7.93 (m, 2H), 8.06–8.08 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 39.4, 43.9, 87.4, 109.8, 121.3, 124.7, 128.0, 128.5, 128.6, 128.69, 128.73, 129.2, 133.4, 133.5, 134.8, 136.2, 158.4, 194.6, 197.7; IR (KBr, cm^{-1}): 681, 757, 986, 1158, 1220, 1292, 1365, 1475, 1591, 1686, 2891, 2974, 3056, 3358; HRMS *m/z* (ESI) calcd for $C_{23}H_{19}O_3$ $[M+H]^+$ 343.1329, found 343.1321.

1,3-Diphenylbenzofuro[2,3-*c*]pyridine (6aa).
White solid, 254 mg, yield 79%; mp 178–179 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.41–7.74 (m, 9H), 8.10 (d, J = 7.7 Hz, 1H), 8.23–8.27 (m, 3H), 8.62–8.65 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.6, 112.6, 121.9, 122.6, 123.4, 127.0, 128.4, 128.5, 128.7, 128.8, 129.3, 129.8, 133.2, 136.4, 139.7, 141.3, 149.8, 150.8, 157.0; IR (KBr, cm^{-1}): 684, 738, 1020, 1066, 1185, 1409, 1453, 1488, 1571, 1626, 2855, 2923, 3060, 3441; HRMS *m/z* (ESI) calcd for $C_{23}H_{16}NO$ $[M+H]^+$ 322.1226, found 322.1231.

3-(4-Methoxyphenyl)-1-phenylbenzofuro[2,3-*c*]pyridine (6ab).
White solid, 274 mg, yield 78%; mp 174–175 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.90 (s, 3H), 7.04–7.07 (m, 2H), 7.40–7.72 (m, 6H), 8.06–8.09 (m, 1H), 8.17–8.20 (m, 3H), 8.60–8.63 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.4, 109.8, 112.5, 114.1, 121.9, 122.7, 123.3, 128.2, 128.5, 128.7, 129.3, 129.7, 132.5, 133.2, 136.5, 141.1, 149.5, 150.5, 157.0, 160.0; IR (KBr, cm^{-1}): 684, 742, 1023, 1107, 1187, 1249, 1412, 1458, 1508, 1622, 3442; HRMS *m/z* (ESI) calcd for $C_{24}H_{18}NO_2$ $[M+H]^+$ 352.1332, found 352.1337.

3-(3,4-Dimethoxyphenyl)-1-phenylbenzofuro[2,3-*c*]pyridine (6ac).
White solid, 286 mg, yield 75%; mp 174–175 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.95 (s, 3H), 4.04 (s, 3H), 6.97 (d, J = 8.4 Hz, 1H), 7.37–7.71 (m, 7H), 7.84 (d, J = 2.0 Hz, 1H), 8.03 (d, J = 7.7 Hz, 1H), 8.11 (s, 1H), 8.57–8.60 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.9, 56.0, 109.9, 110.3, 111.1, 112.5, 119.3, 121.8, 122.5, 123.3, 128.5, 128.6, 129.2, 129.7, 132.7, 133.2, 136.4, 141.0, 149.1, 149.49, 149.51, 150.4, 156.9; IR (KBr, cm^{-1}): 685, 741, 1027, 1132, 1189, 1260, 1412, 1458, 1515, 1570, 1621, 2358, 2925, 3439; HRMS *m/z* (ESI) calcd for $C_{25}H_{20}NO_3$ $[M+H]^+$ 382.1438, found 382.1439.

3-(4-Fluorophenyl)-1-phenylbenzofuro[2,3-*c*]pyridine (6ad).
Pale red solid, 261 mg, yield 77%; mp 202–203 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.18–7.24 (m, 2H), 7.42–7.66 (m, 5H), 7.72 (d, J = 8.3 Hz, 1H), 8.07 (d, J = 7.7 Hz, 1H),

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8.18–8.23 (m, 3H), 8.58–8.62 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.3, 112.6, 115.6 (d, $^{2}J_{C-F}$ = 21.4 Hz), 121.9, 122.5, 123.5, 128.6, 128.7, 128.8 (d, $^{3}J_{C-F}$ = 8.2 Hz), 129.4, 129.9, 133.3, 135.9 (d, $^{4}J_{C-F}$ = 3.1 Hz), 136.3, 141.4, 149.7, 149.8, 157.1, 163.2 (d, $^{1}J_{C-F}$ = 246.1 Hz); IR (KBr, cm^{-1}): 690, 739, 831, 1055, 1101, 1192, 1412, 1506, 1576, 1626, 3066, 3441; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}FNO$ $[M+H]^+$ 340.1132, found 340.1138.

3-(4-Chlorophenyl)-1-phenylbenzofuro[2,3-*c*]pyridine (6ae).
White solid, 260 mg, yield 73%; mp 185–186 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.39–7.70 (m, 8H), 8.03 (dd, J_1 = 1.7 Hz, J_2 = 7.7 Hz, 1H), 8.11–8.16 (m, 3H), 8.57 (d, J = 8.3 Hz, 1H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.3, 112.5, 121.8, 122.4, 123.4, 128.1, 128.5, 128.6, 128.7, 129.4, 129.8, 133.2, 134.4, 136.1, 138.0, 141.2, 149.2, 149.7, 156.9; IR (KBr, cm^{-1}): 686, 745, 828, 1013, 1095, 1191, 1413, 1489, 1575, 1627, 3053, 3435; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}ClNO$ $[M+H]^+$ 356.0837, found 356.0836.

3-(4-Bromophenyl)-1-phenylbenzofuro[2,3-*c*]pyridine (6af).
Pale brown solid, 303 mg, yield 76%; mp 191–192 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.41–7.72 (m, 8H), 8.04–8.11 (m, 3H), 8.19 (s, 1H), 8.57–8.60 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.2, 112.5, 121.8, 122.3, 122.7, 123.4, 128.4, 128.5, 128.7, 129.4, 129.8, 131.7, 133.2, 136.1, 138.4, 141.3, 149.2, 149.8, 156.9; IR (KBr, cm^{-1}): 686, 745, 824, 1008, 1062, 1191, 1412, 1454, 1575, 1627, 3441; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}BrNO$ $[M+H]^+$ 400.0332, found 400.0322.

3-(Naphthalen-2-yl)-1-phenylbenzofuro[2,3-*c*]pyridine (6ag).
Yellow solid, 252 mg, yield 68%; mp 193–194 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.41–7.53 (m, 4H), 7.60–7.72 (m, 4H), 7.88–7.99 (m, 2H), 8.09 (d, J = 7.7 Hz, 1H), 8.36 (d, J = 0.9 Hz, 1H), 8.40 (dd, J_1 = 1.8 Hz, J_2 = 7.8 Hz, 1H), 8.64–8.67 (m, 3H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.9, 112.5, 121.9, 122.6, 123.4, 125.0, 126.0, 126.1, 126.2, 127.7, 128.3, 128.5, 128.6, 128.8, 129.3, 129.8, 133.2, 133.4, 133.6, 136.4, 137.0, 141.4, 149.8, 150.5, 157.0; IR (KBr, cm^{-1}): 686, 747, 1020, 1050, 1108, 1183, 1273, 1409, 1449, 1486, 1573, 1627, 3056, 3438; HRMS *m/z* (ESI) calcd for $C_{27}H_{18}NO$ $[M+H]^+$ 372.1383, found 372.1380.

3-(Furan-2-yl)-1-phenylbenzofuro[2,3-*c*]pyridine (6ah).
White solid, 230 mg, yield 74%; mp 144–145 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 6.54 (dd, J_1 = 1.8 Hz, J_2 = 3.3 Hz, 1H), 7.14–7.16 (m, 1H), 7.31–7.36 (m, 1H), 7.47–7.61 (m, 6H), 7.93–7.96 (m, 1H), 8.09 (s, 1H), 8.50–8.53 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 107.7, 108.8, 112.0, 112.4, 121.9, 122.4, 123.3, 128.5, 128.7, 129.3, 129.7, 132.8, 136.0, 141.5, 142.5, 143.2, 149.2, 154.3, 156.8; IR (KBr, cm^{-1}): 690, 742, 870, 1188, 1399, 1458, 1491, 1570, 1629, 3444; HRMS *m/z* (ESI) calcd for $C_{21}H_{14}NO_2$ $[M+H]^+$ 312.1019, found 312.1010.

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1-Phenyl-3-(thiophen-2-yl)benzofuro[2,3-*c*]pyridine (6ai).
Pale green solid, 236 mg, yield 72%; mp 181–182 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.15 (dd, J_1 = 3.6 Hz, J_2 = 5.2 Hz, 1H), 7.39–7.70 (m, 8H), 8.04–8.07 (m, 1H), 8.12 (s, 1H), 8.58–8.61 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 108.9, 112.6, 122.0, 122.4, 123.4, 123.6, 126.9, 127.9, 128.6, 128.7, 129.4, 129.9, 133.2, 135.9, 141.2, 145.6, 146.2, 149.4, 157.1; IR (KBr, cm^{-1}): 699, 742, 858, 1042, 1187, 1399, 1447, 1491, 1568, 1626, 3059, 3423; HRMS *m/z* (ESI) calcd for $C_{21}H_{14}NOS$ $[M+H]^+$ 328.0791, found 328.0787.

3-(2-Methylprop-1-en-1-yl)-1-phenylbenzofuro[2,3-*c*]pyridine (6aj).
Pale brown solid, 191 mg, yield 64%; mp 90–91 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 2.01 (d, *J* = 1.1 Hz, 3H), 2.27 (d, *J* = 1.1 Hz, 3H), 6.53–6.54 (m, 1H), 7.34–7.66 (m, 7H), 7.97 (d, *J* = 7.7 Hz, 1H), 8.48–8.52 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 20.0, 27.5, 112.4, 113.9, 121.8, 122.5, 123.2, 124.8, 128.5, 128.6, 129.1, 129.6, 132.5, 136.5, 139.2, 141.0, 148.5, 150.9, 156.8; IR (KBr, cm^{-1}): 685, 742, 871, 1034, 1189, 1356, 1402, 1449, 1491, 1568, 1627, 2915, 2968, 3061, 3440; HRMS *m/z* (ESI) calcd for $C_{21}H_{18}NO$ $[M+H]^+$ 300.1383, found 300.1387.

3-Methyl-1-phenylbenzofuro[2,3-*c*]pyridine (6ak).
Pale brown solid, 155 mg, yield 60%; mp 81–82 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 2.69 (s, 3H), 7.23–7.28 (m, 1H), 7.41–7.56 (m, 6H), 7.81 (d, *J* = 7.7 Hz, 1H), 8.39–8.42 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 24.4, 112.2, 113.0, 121.6, 122.1, 122.9, 128.4, 128.5, 128.9, 129.4, 132.5, 136.2, 141.0, 148.7, 151.1, 156.6; IR (KBr, cm^{-1}): 679, 738, 847, 1035, 1187, 1411, 1449, 1575, 1626, 2920, 3061, 3443; HRMS *m/z* (ESI) calcd for $C_{18}H_{14}NO$ $[M+H]^+$ 260.1070, found 260.1078.

6-Chloro-1,3-diphenylbenzofuro[2,3-*c*]pyridine (6al).
Pale red solid, 280 mg, yield 79%; mp 188–189 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.44–7.66 (m, 8H), 8.05–8.06 (m, 1H), 8.20–8.23 (m, 3H), 8.58–8.61 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.5, 113.6, 121.7, 124.0, 127.0, 128.57, 128.58, 128.7, 128.8, 129.0, 129.5, 129.9, 132.3, 136.0, 139.4, 141.6, 150.3, 151.0, 155.2; IR (KBr, cm^{-1}): 693, 796, 857, 1063, 1193, 1411, 1449, 1491, 1575, 1632, 3444; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}ClNO$ $[M+H]^+$ 356.0837, found 356.0842.

6-Bromo-1,3-diphenylbenzofuro[2,3-*c*]pyridine (6am).
Pale brown solid, 312 mg, yield 78%; mp 181–182 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.44–7.63 (m, 7H), 7.71 (dd, J_1 = 2.0 Hz, J_2 = 8.8 Hz, 1H), 8.19–8.22 (m, 4H), 8.57–8.60 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.5, 114.1, 116.3, 124.6, 124.7, 127.0, 128.56, 128.58, 128.69, 128.74, 129.5, 132.1, 132.6, 136.0, 139.4, 141.6, 150.1, 151.0, 155.6; IR (KBr, cm^{-1}): 687, 798, 858, 1047, 1188, 1410, 1448, 1492, 1572, 1626, 3068, 3442; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}BrNO$ $[M+H]^+$ 400.0332, found 400.0343.

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7-Methoxy-1,3-diphenylbenzofuro[2,3-c]pyridine (6an).
White solid, 263 mg, yield 75%; mp 167–168 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.85 (s, 3H), 6.93 (dd, J_1= 2.2 Hz, J_2 = 8.6 Hz, 1H), 7.09 (d, J = 2.2 Hz, 1H), 7.40–7.59 (m, 6H), 7.81 (d, J = 8.6 Hz, 1H), 8.04 (s, 1H), 8.17–8.20 (m, 2H), 8.55–8.58 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.7, 96.5, 109.9, 112.2, 115.4, 122.1, 127.0, 128.3, 128.4, 128.6, 128.7, 129.1, 133.3, 136.4, 139.8, 140.5, 150.0, 150.6, 158.5, 161.8; IR (KBr, cm^{-1}): 687, 798, 858, 1047, 1188, 1410, 1448, 1492, 1572, 1626, 3068, 3442; HRMS *m/z* (ESI) calcd for $C_{24}H_{18}NO_2$ $[M+H]^+$ 352.1332, found 352.1341.

1-(4-Methoxyphenyl)-3-phenylbenzofuro[2,3-*c*]pyridine (6ba).
White solid, 253 mg, yield 72%; mp 161–162 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.92 (s, 3H), 7.11–7.14 (m, 2H), 7.40–7.64 (m, 5H), 7.69–7.72 (m, 1H), 8.07 (d, J = 7.7 Hz, 1H), 8.19–8.24 (m, 3H), 8.60–8.63 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.3, 109.8, 112.5, 113.9, 121.8, 122.7, 123.3, 127.0, 128.3, 128.6, 129.1, 129.6, 130.1, 132.9, 139.8, 141.1, 149.4, 150.5, 156.9, 160.5; IR (cm^{-1}): 687, 743, 833, 1026, 1184, 1249, 1416, 1458, 1508, 1576, 1620, 2836, 3059, 3435; HRMS *m/z* (ESI) calcd for $C_{24}H_{18}NO_2$ $[M+H]^+$ 352.1332, found 352.1336.

3-(4-Fluorophenyl)-1-(4-methoxyphenyl)benzofuro[2,3-*c*]pyridine (6bb).
White solid, 280 mg, yield 76%; mp 181–182 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.92 (s, 3H), 7.10–7.22 (m, 4H), 7.40–7.45 (m, 1H), 7.58–7.71 (m, 2H), 8.05 (d, J = 7.7 Hz, 1H), 8.11 (s, 1H), 8.16–8.21 (m, 2H), 8.56–8.61 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.3, 109.5, 112.5, 113.9, 115.5 (d, $^{2}J_{C–F}$ = 21.4 Hz), 121.8, 122.6, 123.3, 128.7 (d, $^{3}J_{C–F}$ = 8.1 Hz), 128.9, 129.7, 130.1, 133.0, 135.9 (d, $^{4}J_{C–F}$ = 2.9 Hz), 141.1, 149.3, 149.5, 156.9, 160.6, 163.2 (d, $^{1}J_{C–F}$ = 245.8 Hz); IR (KBr, cm^{-1}): 749, 832, 1102, 1183, 1250, 1394, 1510, 1631, 3442; HRMS *m/z* (ESI) calcd for $C_{24}H_{17}FNO_2$ $[M+H]^+$ 370.1238, found 370.1247.

3-(Furan-2-yl)-1-(4-methoxyphenyl)benzofuro[2,3-*c*]pyridine (6bc).
Pale brown solid, 266 mg, yield 78%; mp 155–156 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.92 (s, 3H), 7.10–7.19 (m, 3H), 7.41–7.46 (m, 1H), 7.56–7.71 (m, 3H), 8.06 (d, J = 7.7 Hz, 1H), 8.17 (s, 1H), 8.53–8.56 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.4, 107.7, 108.2, 112.0, 112.5, 113.9, 122.0, 122.7, 123.4, 128.8, 129.7, 130.2, 132.7, 141.6, 142.6, 143.3, 149.0, 154.5, 156.9, 160.7; IR (cm^{-1}): 738, 824, 1025, 1181, 1249, 1396, 1460, 1506, 1571, 1618, 2929, 3450; HRMS *m/z* (ESI) calcd for $C_{22}H_{16}NO_3$ $[M+H]^+$ 342.1125, found 342.1138.

1-(4-Methoxyphenyl)-3-(thiophen-2-yl)benzofuro[2,3-*c*]pyridine (6bd).
Yellow solid, 261 mg, yield 73%; mp 194–195 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.90 (s, 3H), 7.08–7.14 (m, 3H), 7.35–7.40 (m, 2H), 7.54–7.65 (m, 3H), 7.97–8.00 (m, 2H), 8.52–8.57 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.3, 108.0, 112.4, 113.9, 121.8, 122.4, 123.3, 123.4, 126.8, 127.9, 128.6, 129.7, 130.1, 132.9, 140.9, 145.8, 146.0, 149.0,

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156.9, 160.6; IR (KBr, cm^{-1}): 699, 743, 830, 1027, 1182, 1248, 1398, 1450, 1508, 1575, 1622, 3444; HRMS *m/z* (ESI) calcd for $C_{22}H_{16}NO_2S$ $[M+H]^+$ 358.0896, found 358.0905.

1-(4-Chlorophenyl)-3-phenylbenzofuro[2,3-c]pyridine (6ca).

Pale red solid, 248 mg, yield 70%; mp 206–207 °C; ^1H NMR ($CDCl_3$, 300MHz): 7.38–7.66 (m, 8H), 8.01 (d, *J* = 7.7 Hz, 1H), 8.15–8.17 (m, 3H), 8.54 (d, *J* = 8.6 Hz, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.8, 112.5, 121.9, 122.4, 123.5, 127.0, 128.5, 128.6, 128.7, 129.88, 129.92, 133.3, 134.7, 135.2, 139.5, 139.8, 149.6, 150.7, 156.9; IR (KBr, cm^{-1}): 687, 744, 837, 1087, 1191, 1417, 1458, 1490, 1576, 1627, 3062, 3431; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}ClNO$ $[M+H]^+$ 356.0837, found 356.0837.

1-(4-Chlorophenyl)-3-(4-methoxyphenyl)benzofuro[2,3-*c*]pyridine (6cb).

White solid, 266 mg, yield 69%; mp 223–224 °C; ^1H NMR ($CDCl_3$, 300MHz): 3.90 (s, 3H), 7.05 (d, *J* = 8.8 Hz, 2H), 7.41–7.46 (m, 1H), 7.53–7.70 (m, 4H), 8.05 (d, *J* = 7.7 Hz, 1H), 8.13–8.16 (m, 3H), 8.56 (d, *J* = 8.6 Hz, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.4, 110.1, 112.5, 114.1, 121.9, 122.5, 123.5, 128.2, 128.7, 129.9, 130.0, 132.2, 133.4, 134.9, 135.2, 139.8, 149.3, 150.6, 157.0, 160.1; IR (KBr, cm^{-1}): 747, 831, 1020, 1095, 1185, 1248, 1394, 1418, 1459, 1505, 1621, 3442; HRMS *m/z* (ESI) calcd for $C_{24}H_{17}ClNO_2$ $[M+H]^+$ 386.0942, found 386.0955.

1,3-Bis(4-chlorophenyl)benzofuro[2,3-*c*]pyridine (6cc).

Pale red solid, 280 mg, yield 72%; mp 203–204 °C; ^1H NMR ($CDCl_3$, 300MHz): 7.36–7.63 (m, 7H), 7.94 (d, *J* = 7.7 Hz, 1H), 8.02 (s, 1H), 8.03 (d, *J* = 8.4 Hz, 2H), 8.45 (d, *J* = 8.4 Hz, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.5, 112.5, 121.8, 122.2, 123.5, 128.1, 128.6, 128.8, 129.8, 130.0, 133.3, 134.4, 134.5, 135.3, 137.7, 139.8, 149.2, 149.5, 156.8; IR (KBr, cm^{-1}): 742, 827, 1009, 1188, 1389, 1421, 1488, 1580, 1629, 3441; HRMS *m/z* (ESI) calcd for $C_{23}H_{14}Cl_2NO$ $[M+H]^+$ 390.0447, found 390.0448.

1-(4-Chlorophenyl)-3-(furan-2-yl)benzofuro[2,3-*c*]pyridine (6cd).

Brown solid, 262 mg, yield 76%; mp 199–200 °C; ^1H NMR ($CDCl_3$, 300MHz): 6.57 (dd, J_1 = 1.8 Hz, J_2 = 3.3 Hz, 1H), 7.15 (d, *J* = 3.3 Hz, 1H), 7.40–7.45 (m, 1H), 7.52–7.68 (m, 5H), 8.03 (d, *J* = 7.7 Hz, 1H), 8.17 (s, 1H), 8.49 (d, *J* = 8.8 Hz, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 107.9, 109.1, 112.1, 112.5, 122.0, 122.4, 123.6, 128.7, 129.9, 130.0, 133.1, 134.4, 135.4, 140.3, 142.7, 143.3, 149.1, 154.2, 156.9; IR (KBr, cm^{-1}): 739, 824, 868, 1006, 1089, 1184, 1228, 1284, 1393, 1486, 1632, 3445; HRMS *m/z* (ESI) calcd for $C_{21}H_{13}ClNO_2$ $[M+H]^+$ 346.0629, found 346.0636.

1-(4-Fluorophenyl)-3-phenylbenzofuro[2,3-*c*]pyridine (6da).

Pale red solid, 237 mg, yield 70%; mp 193–194 °C; ^1H NMR ($CDCl_3$, 300MHz): 7.24–7.30 (m, 2H), 7.41–7.46 (m, 2H), 7.50–7.71 (m, 4H), 8.06 (d, *J* = 7.8 Hz, 1H), 8.19–8.21 (m, 3H), 8.61–8.65 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.5, 112.5, 115.4 (d, $^2J_{C-F}$ = 21.3 Hz), 121.9, 122.5, 123.4, 127.0, 128.5, 128.7, 129.8, 130.6 (d, $^3J_{C-F}$ =

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8.3 Hz), 132.5 (d, $^{4}J_{C-F}$ = 3.1 Hz), 133.2, 139.5, 140.1, 149.5 (d, $^{5}J_{C-F}$ = 0.7 Hz), 150.6, 156.9, 163.5 (d, $^{1}J_{C-F}$ = 247.6 Hz); IR (KBr, cm^{-1}): 687, 744, 843, 1061, 1190, 1225, 1418, 1506, 1589, 1629, 3444; HRMS *m/z* (ESI) calcd for $C_{23}H_{15}FNO$ $[M+H]^{+}$ 340.1132, found 340.1139.

1-(4-Fluorophenyl)-3-(4-methoxyphenyl)benzofuro[2,3-*c*]pyridine (6db).
White solid, 251 mg, yield 68%; mp 192–193 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 3.89 (s, 3H), 7.03 (d, *J* = 8.9 Hz, 2H), 7.23–7.29 (m, 2H), 7.38–7.44 (m, 1H), 7.57–7.68 (m, 2H), 8.02 (d, *J* = 7.7 Hz, 1H), 8.11–8.15 (m, 3H), 8.58–8.63 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 55.3, 109.6, 112.4, 114.0, 115.4 (d, $^{2}J_{C-F}$ = 21.3 Hz), 121.8, 122.5, 123.3, 128.1, 129.7, 130.5 (d, $^{3}J_{C-F}$ = 8.3 Hz), 132.2, 132.5 (d, $^{4}J_{C-F}$ = 3.1 Hz), 133.2, 139.8, 149.1, 150.3, 156.8, 160.0, 163.4 (d, $^{1}J_{C-F}$ = 247.4 Hz); IR (KBr, cm^{-1}): 742, 823, 1021, 1186, 1226, 1291, 1424, 1509, 1597, 2832, 2947, 3063, 3442; HRMS *m/z* (ESI) calcd for $C_{24}H_{17}FNO_2$ $[M+H]^{+}$ 370.1238, found 370.1239.

1,3-Bis(4-fluorophenyl)benzofuro[2,3-*c*]pyridine (6dc).
White solid, 232 mg, yield 65%; mp 206–207 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.17–7.30 (m, 4H), 7.44–7.47 (m, 1H), 7.63–7.69 (m, 2H), 8.04–8.07 (m, 1H), 8.14–8.19 (m, 3H), 8.58–8.63 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.2, 112.5, 115.5 (d, $^{2}J_{C-F}$ = 21.3 Hz), 115.6 (d, $^{2}J_{C-F}$ = 21.4 Hz), 121.9, 122.4, 123.5, 128.7 (d, $^{3}J_{C-F}$ = 8.2 Hz), 129.9, 130.6 (d, $^{3}J_{C-F}$ = 8.3 Hz), 132.3 (d, $^{4}J_{C-F}$ = 3.1 Hz), 133.3, 135.7 (d, $^{4}J_{C-F}$ = 3.1 Hz), 140.2, 149.4, 149.7, 156.9, 163.2 (d, $^{1}J_{C-F}$ = 246.2 Hz), 163.5 (d, $^{1}J_{C-F}$ = 247.8 Hz); IR (KBr, cm^{-1}): 746, 835, 1155, 1190, 1227, 1289, 1427, 1507, 1592, 3438; HRMS *m/z* (ESI) calcd for $C_{23}H_{14}F_2NO$ $[M+H]^{+}$ 358.1038 found 358.1037.

1-(4-Fluorophenyl)-3-(thiophen-2-yl)benzofuro[2,3-*c*]pyridine (6dd).
Pale green solid, 228 mg, yield 66%; mp 195–196 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 7.13–7.16 (m, 1H), 7.22–7.28 (m, 2H), 7.38–7.43 (m, 2H), 7.60–7.66 (m, 3H), 8.00–8.06 (m, 2H), 8.56–8.60 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 108.8, 112.5, 115.5 (d, $^{2}J_{C-F}$ = 21.4 Hz), 122.0, 122.3, 123.5, 123.6, 127.0, 127.9, 130.0, 130.6 (d, $^{3}J_{C-F}$ = 8.3 Hz), 132.0 (d, $^{4}J_{C-F}$ = 3.0 Hz), 133.3, 140.0, 145.5, 146.2, 149.1, 157.0, 163.6 (d, $^{1}J_{C-F}$ = 247.8 Hz); IR (KBr, cm^{-1}): 704, 746, 843, 1158, 1192, 1229, 1404, 1449, 1507, 1576, 1619, 3443; HRMS *m/z* (ESI) calcd for $C_{21}H_{13}FNOS$ $[M+H]^{+}$ 346.0696, found 346.0703.

1-(Furan-2-yl)-3-phenylbenzofuro[2,3-*c*]pyridine (6ea).
Pale red solid, 214 mg, yield 69%; mp 123–124 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 6.60 (dd, J_1 = 1.7 Hz, J_2 = 3.5 Hz, 1H), 7.20–7.27 (m, 1H), 7.35–7.54 (m, 6H), 7.68 (dd, J_1 = 0.8 Hz, J_2 = 1.7 Hz, 1H), 7.82 (d, *J* = 7.7 Hz, 1H), 7.93 (s, 1H), 8.07–8.11 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 110.1, 111.8, 112.2, 112.6, 121.6, 122.2, 123.2, 127.0, 128.3, 128.5, 129.6, 132.5, 133.5, 139.4, 143.8, 147.3, 149.9, 150.8, 156.8; IR (KBr, cm^{-1}): 695, 735, 814, 1009, 1189, 1423, 1489, 1568, 1629, 3053; HRMS *m/z* (ESI) calcd for $C_{21}H_{14}NO_2$

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$[M+H]^+$ 312.1019, found 312.1028.

1,3-Di(furan-2-yl)benzofuro[2,3-*c*]pyridine (6eb).

Pale brown solid, 216 mg, yield 72%; mp 148–149 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 6.52 (dd, J_1 = 1.7 Hz, J_2 = 3.3 Hz, 1H), 6.59 (dd, J_1 = 1.7 Hz, J_2 = 3.4 Hz, 1H), 7.11 (d, J = 3.3 Hz, 1H), 7.20–7.26 (m, 1H), 7.40–7.51 (m, 4H), 7.68–7.69 (m, 1H), 7.78–7.80 (m, 1H), 7.89–7.90 (m, 1H); ^{13}C NMR ($CDCl_3$, 75MHz): 107.9, 108.3, 111.7, 111.8, 112.1, 112.9, 121.6, 122.0, 123.2, 129.6, 132.2, 133.6, 142.5, 143.1, 143.8, 146.8, 149.4, 153.7, 156.7; IR (KBr, cm^{-1}): 743, 819, 857, 1005, 1190, 1423, 1491, 1579, 1630, 3118, 3443; HRMS *m/z* (ESI) calcd for $C_{19}H_{12}NO_3$ $[M+H]^+$ 302.0812, found 302.0814.

1-(Furan-2-yl)-3-(thiophen-2-yl)benzofuro[2,3-*c*]pyridine (6ec).

Pale brown solid, 231 mg, yield 73%; mp 140–141 °C; ^{1}H NMR ($CDCl_3$, 300MHz): 6.64 (dd, J_1 = 1.8 Hz, J_2 = 3.4 Hz, 1H), 7.12 (dd, J_1 = 3.7 Hz, J_2 = 5.0 Hz, 1H), 7.34–7.40 (m, 2H), 7.49 (d, J = 3.4 Hz, 1H), 7.54–7.73 (m, 4H), 7.95–7.98 (m, 2H); ^{13}C NMR ($CDCl_3$, 75MHz): 108.6, 111.9, 112.5, 112.9, 121.9, 122.2, 123.5, 123.9, 126.9, 127.9, 129.9, 132.7, 133.6, 144.1, 145.0, 146.3, 147.1, 149.7, 157.1; IR (KBr, cm^{-1}): 703, 748, 850, 1009, 1196, 1407, 1448, 1487, 1574, 1630, 3068, 3117, 3444; HRMS *m/z* (ESI) calcd for $C_{19}H_{12}NO_2S$ $[M+H]^+$ 318.0583, found 318.0585.

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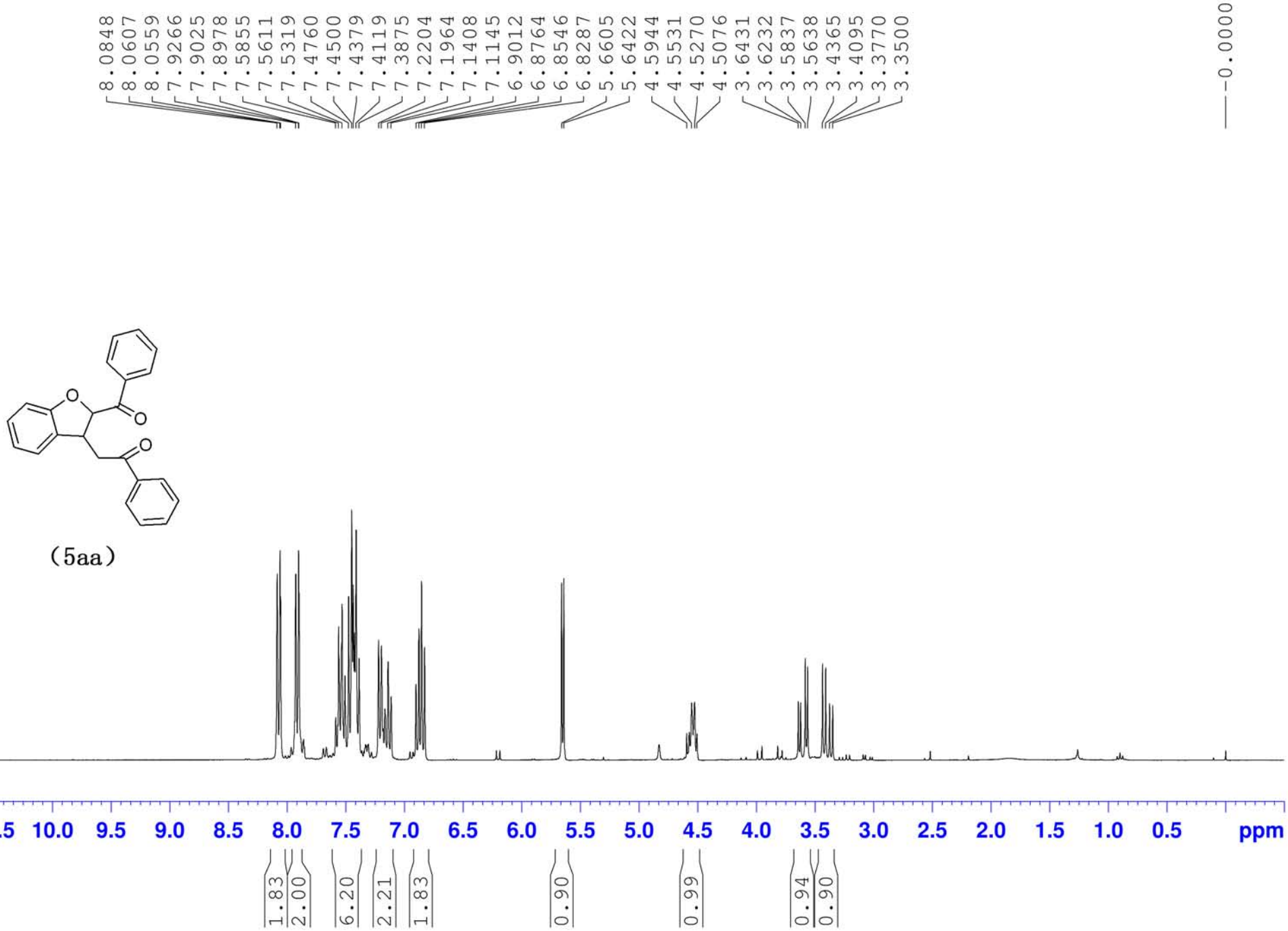

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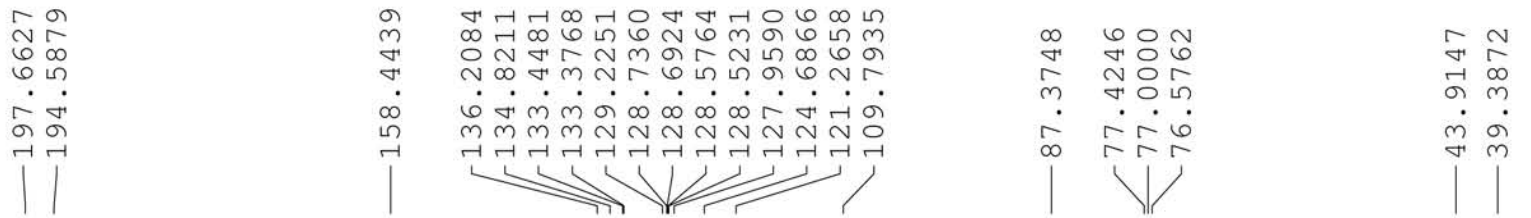

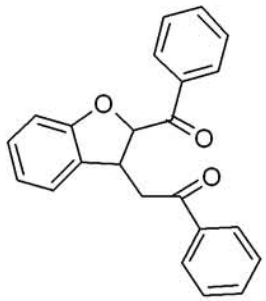

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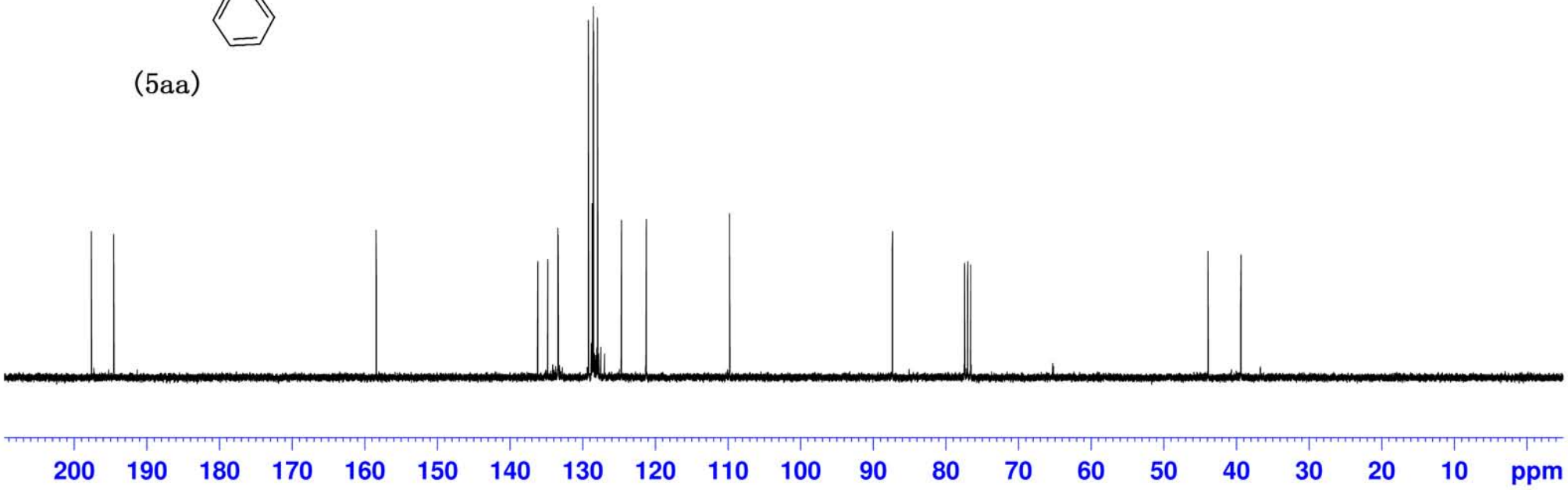

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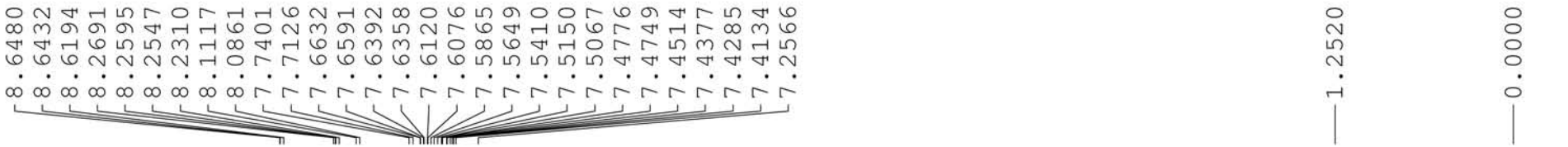

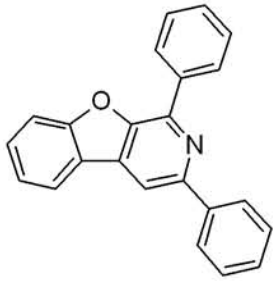

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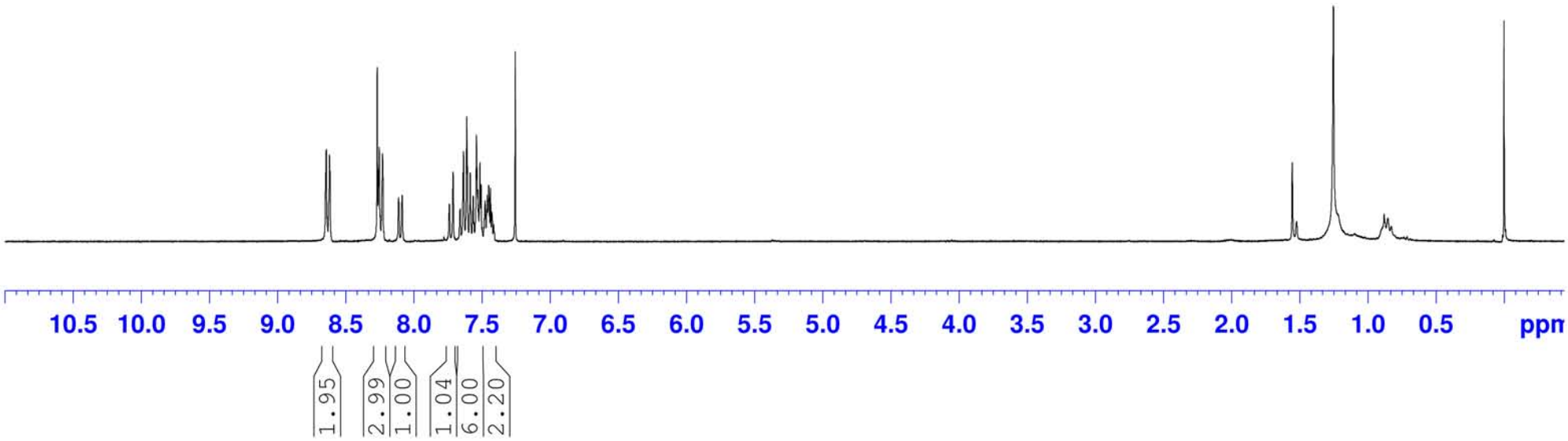

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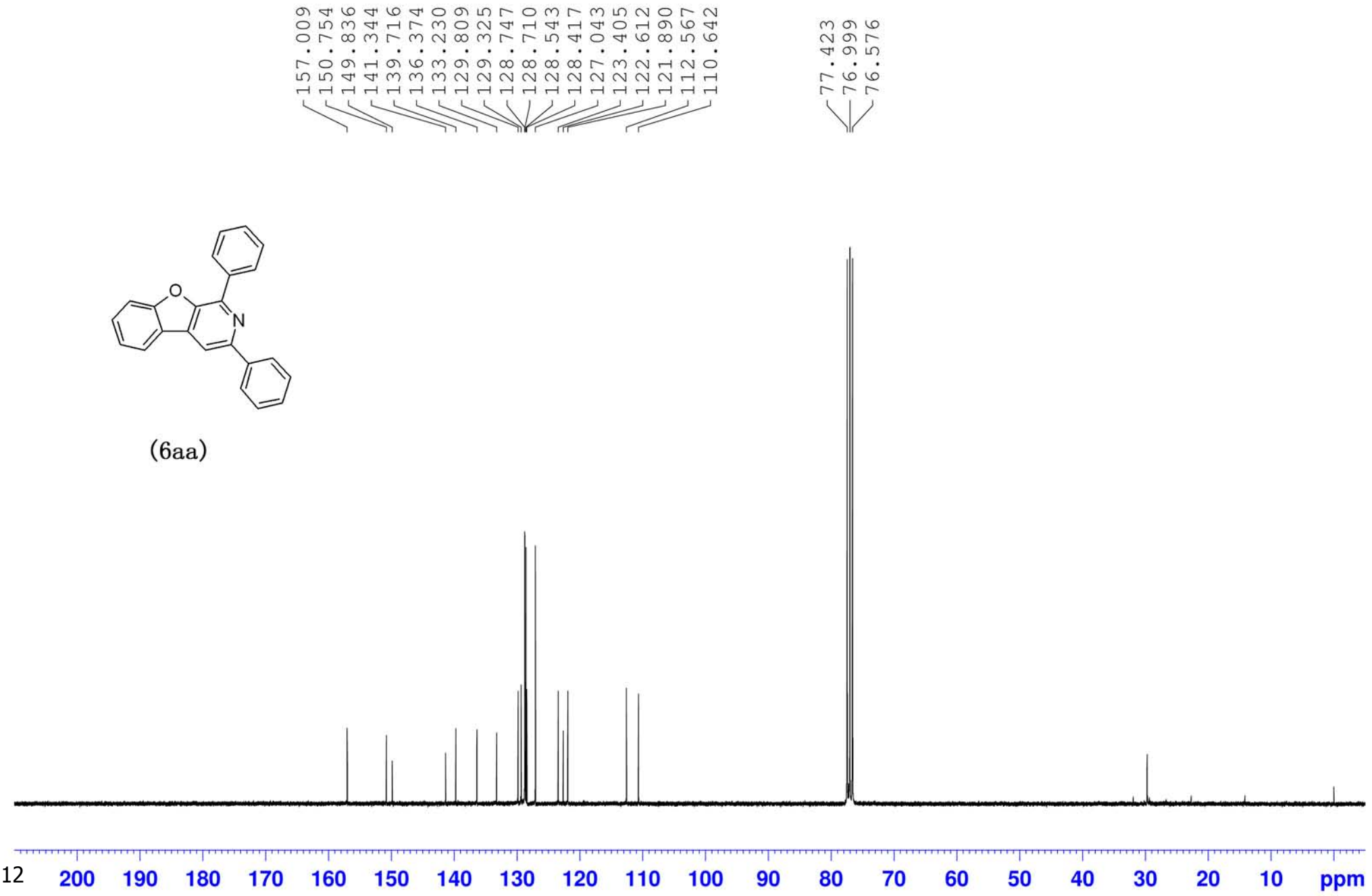

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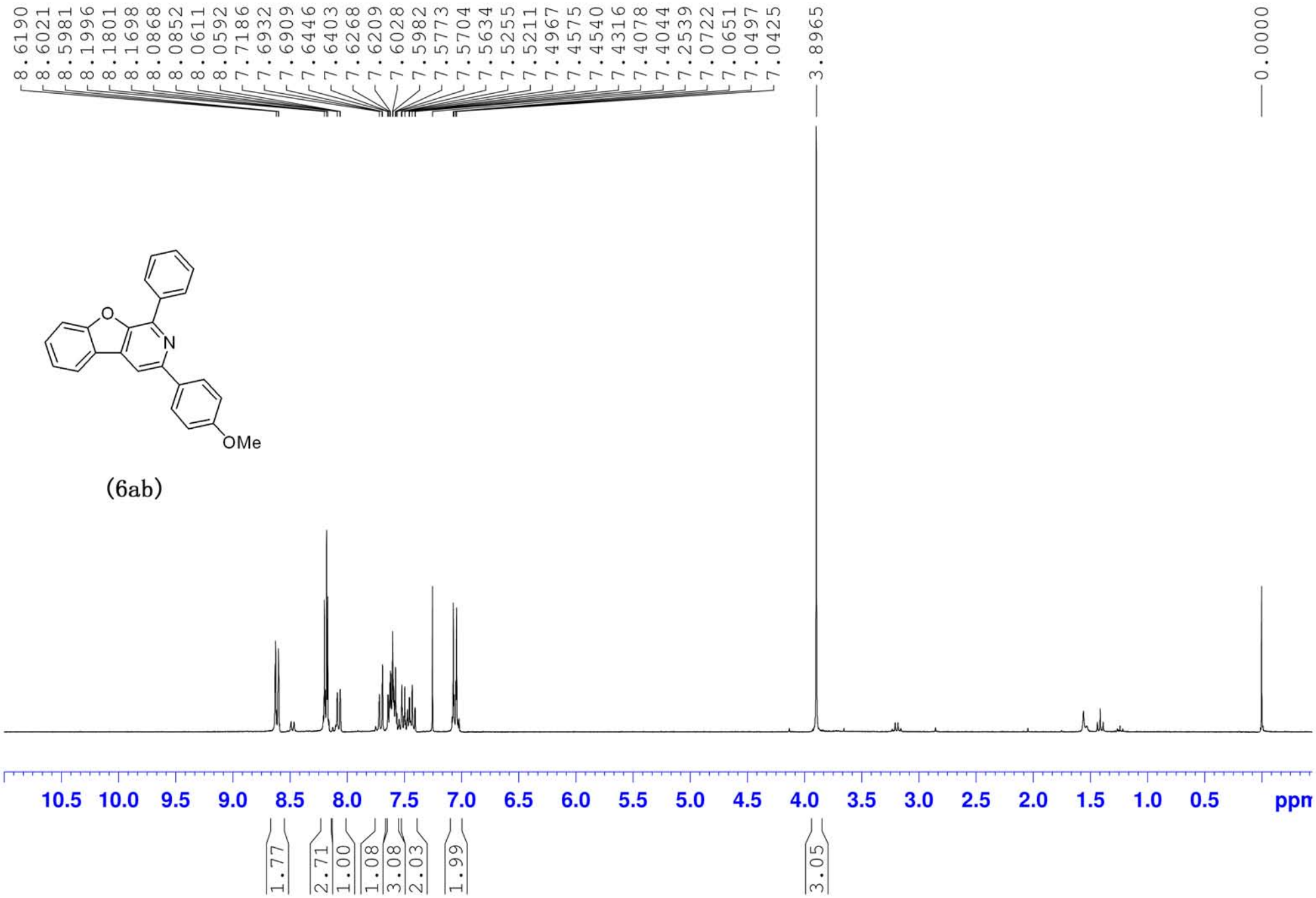

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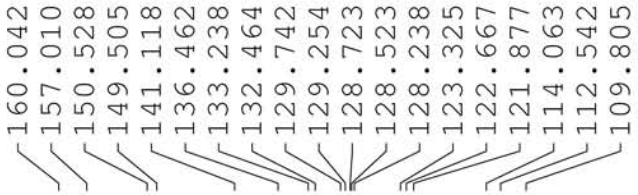

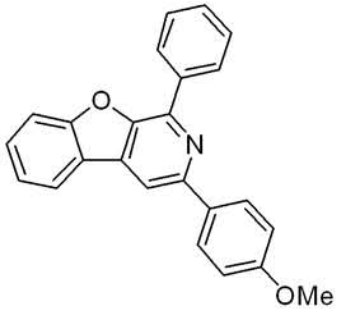

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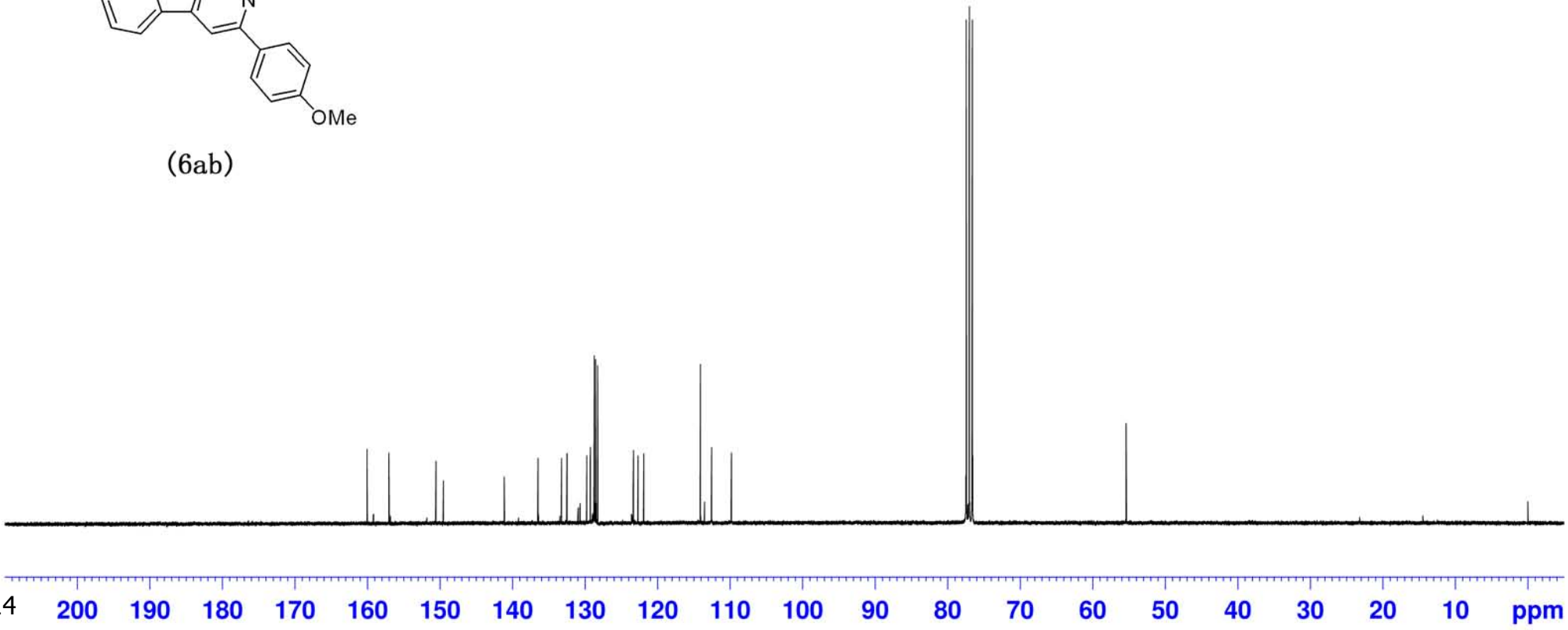

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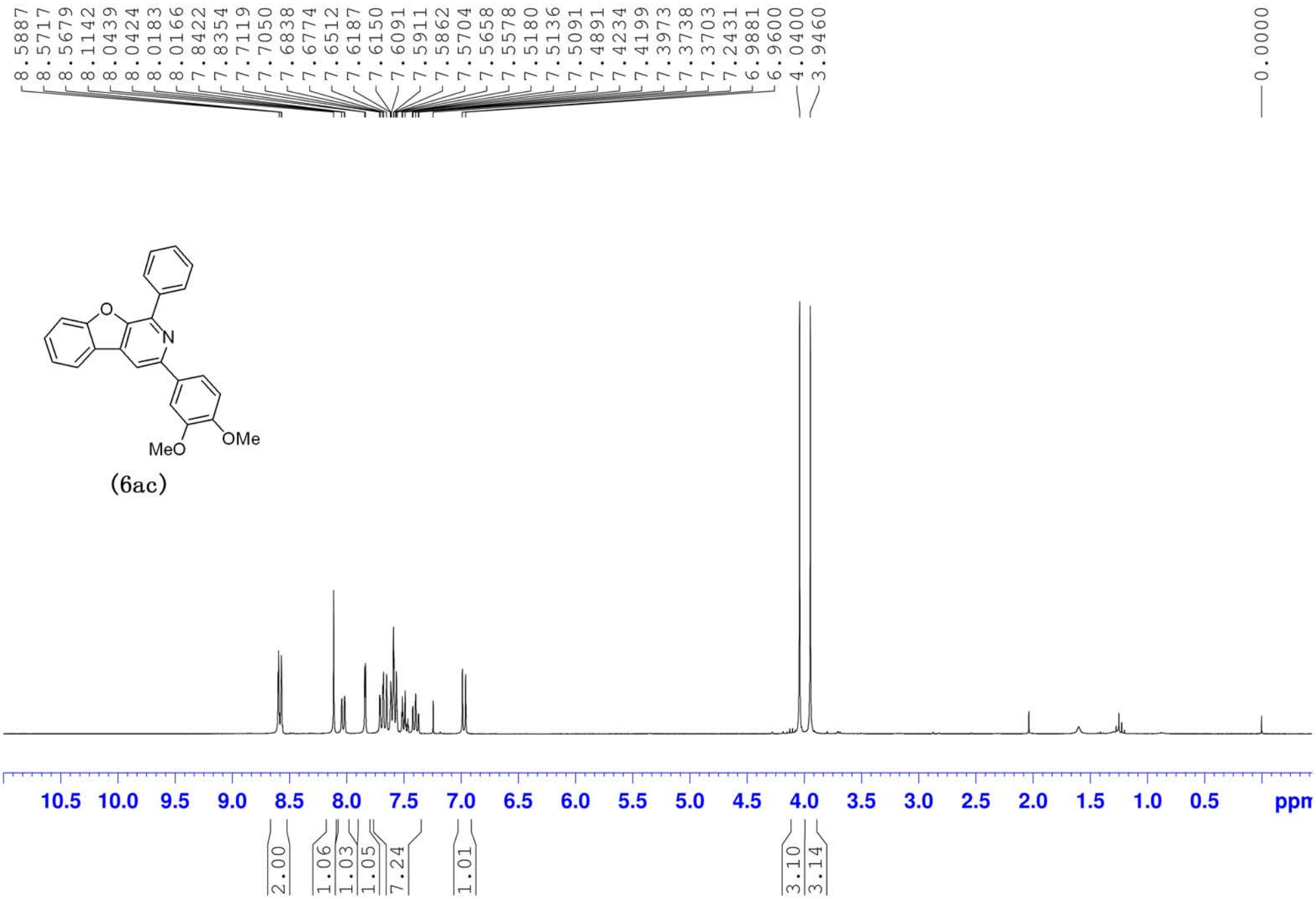

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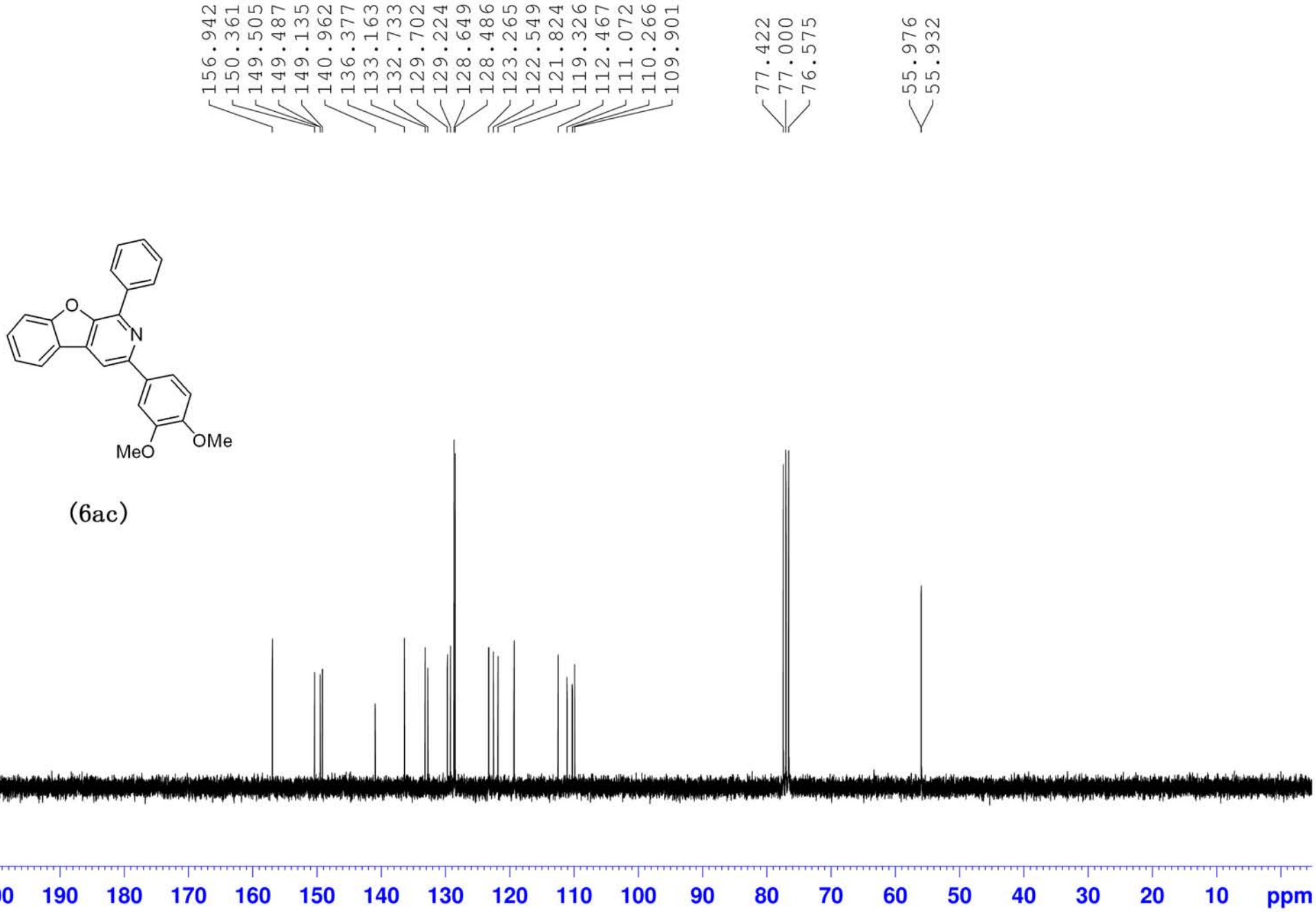

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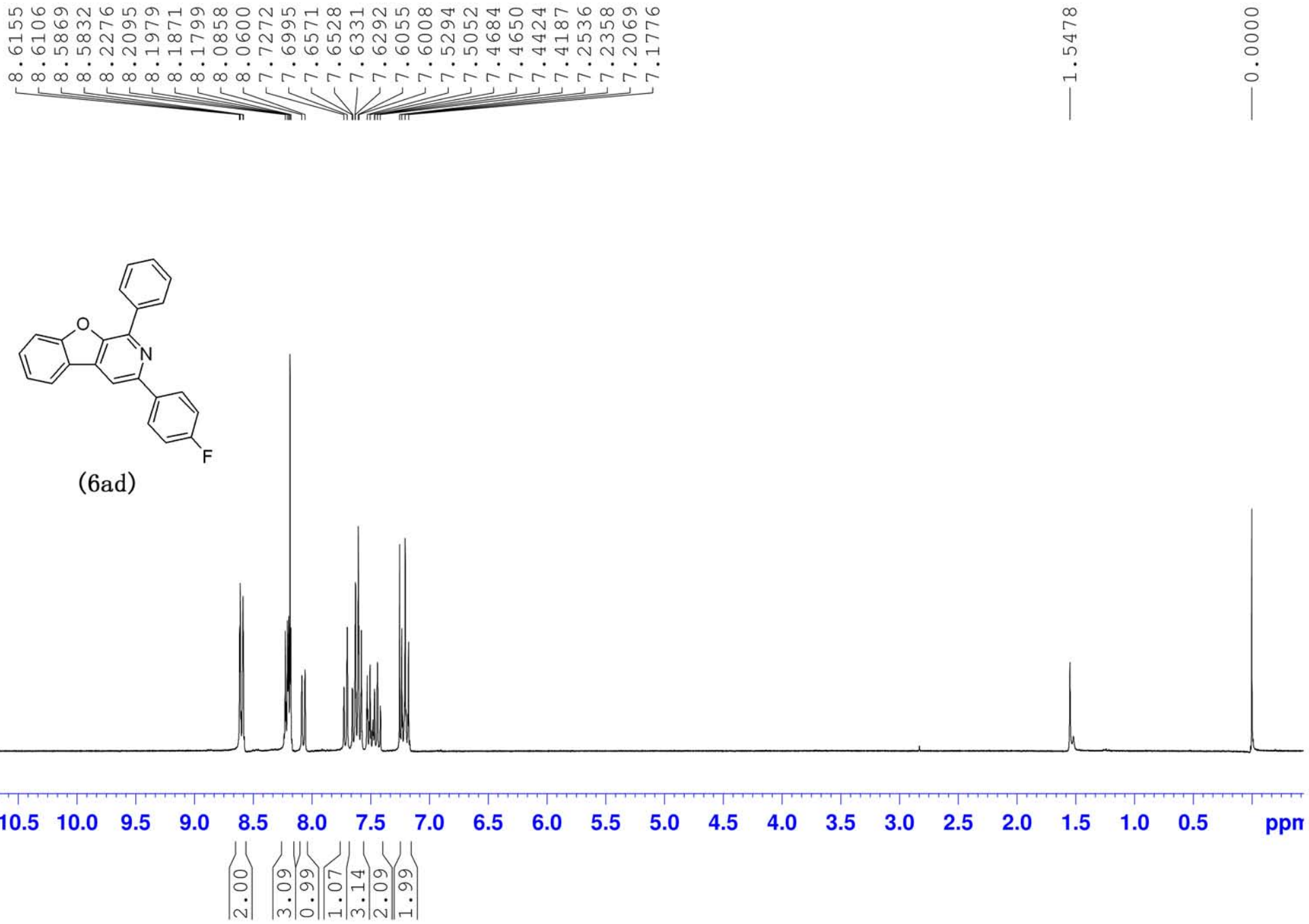

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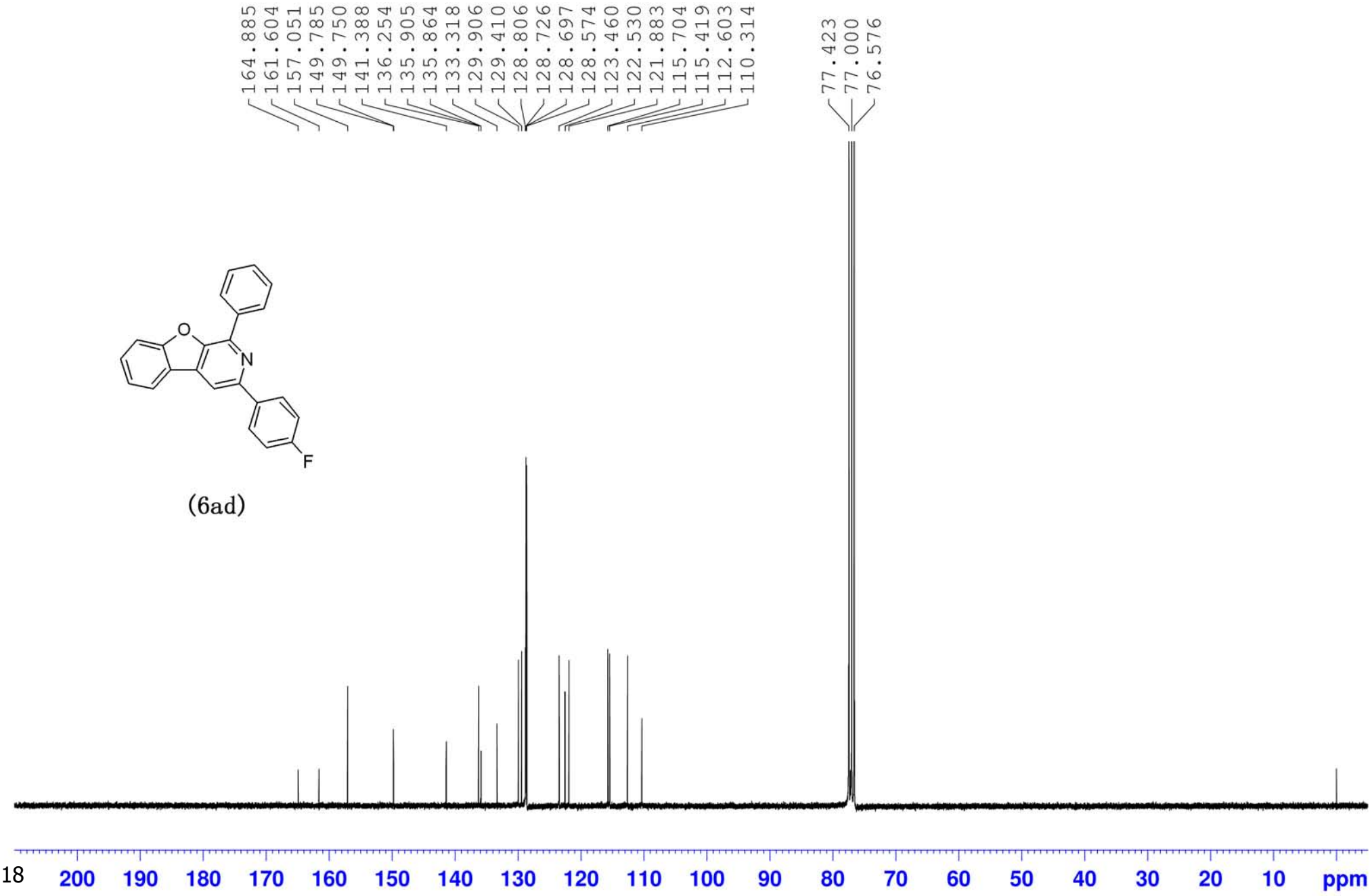

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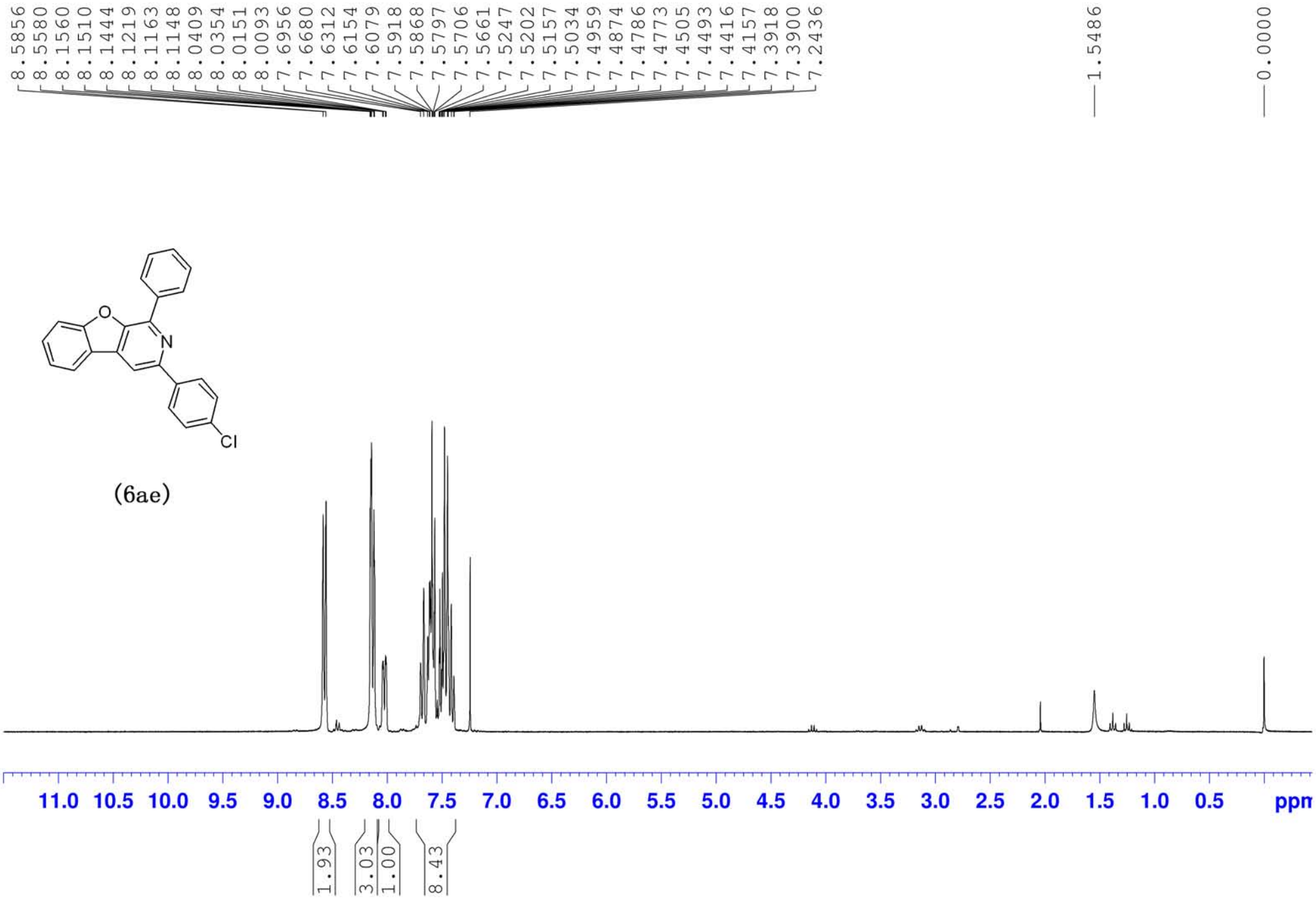

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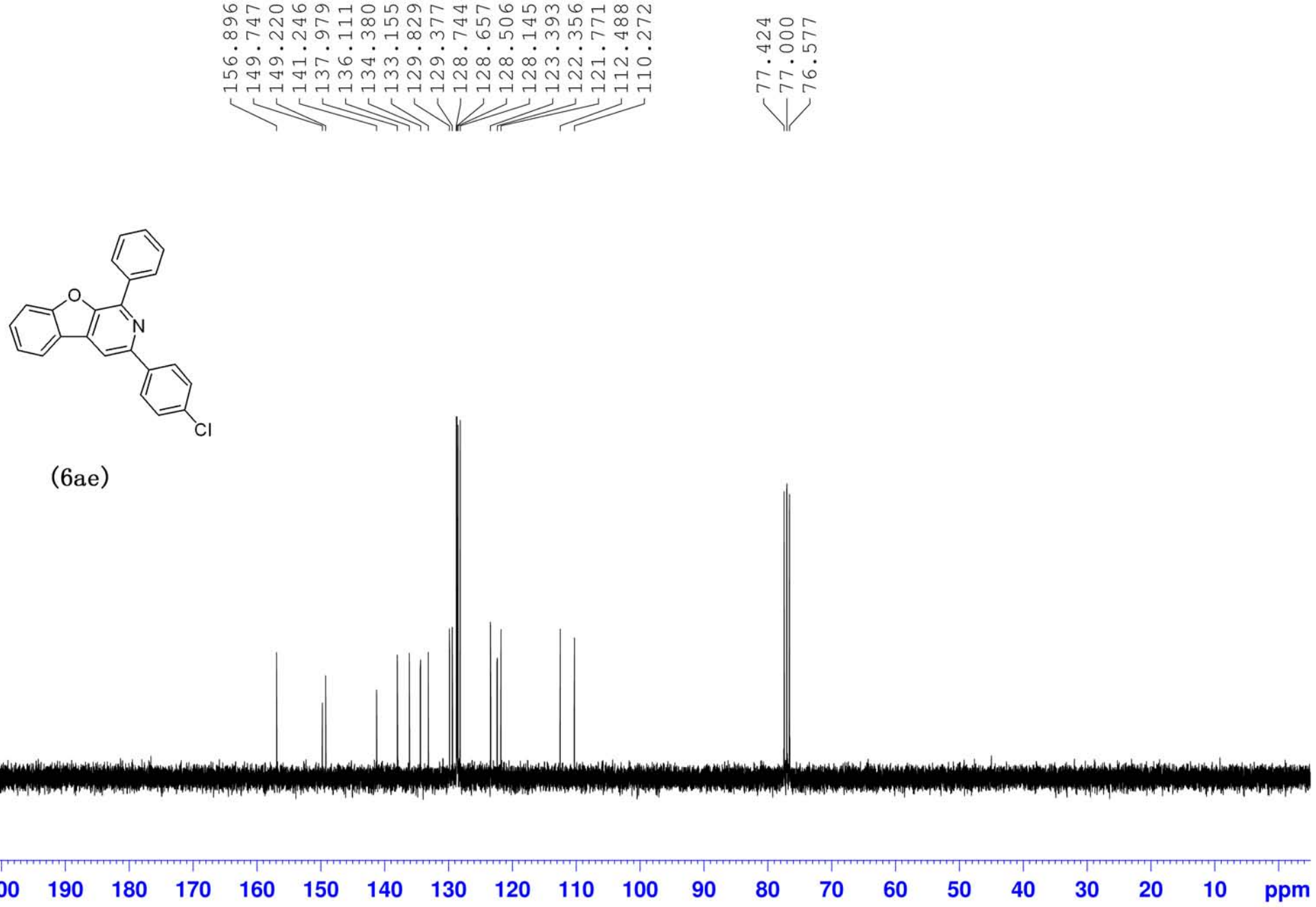

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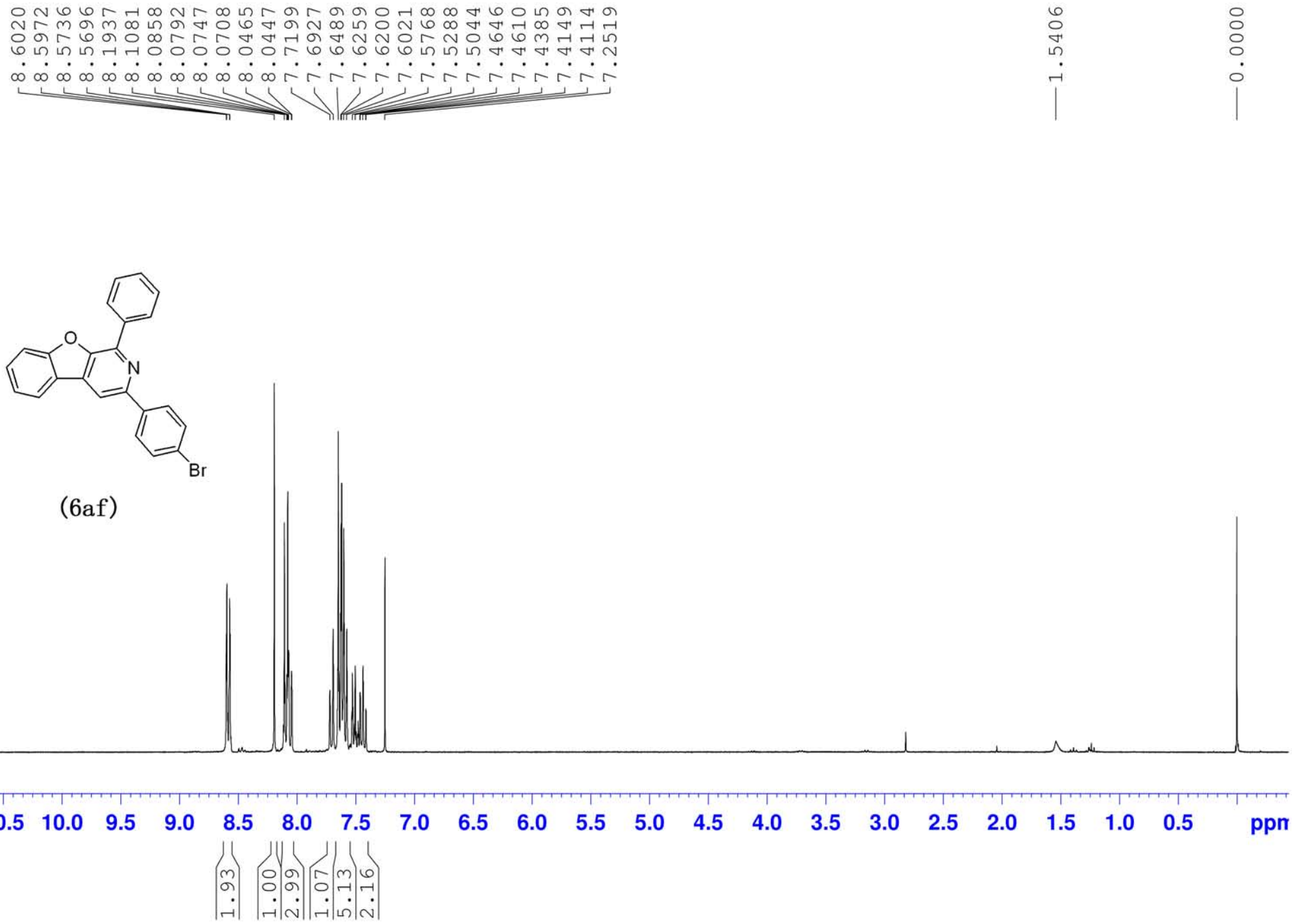

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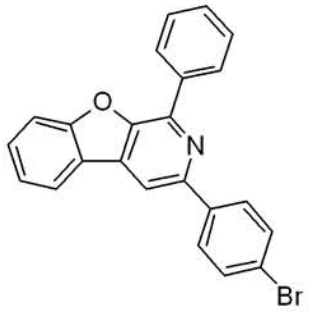

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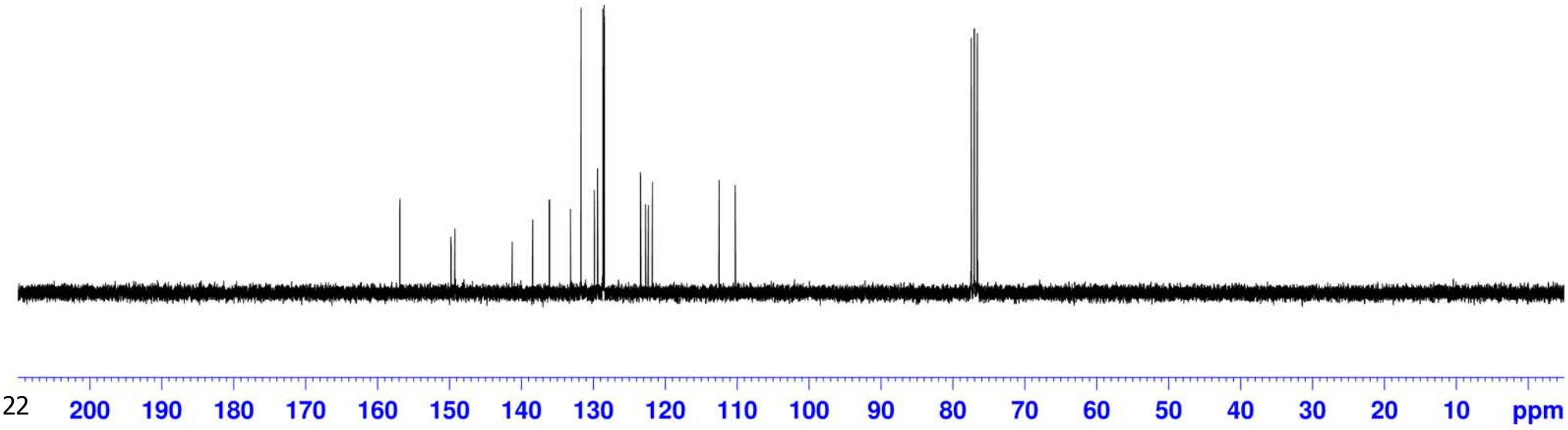

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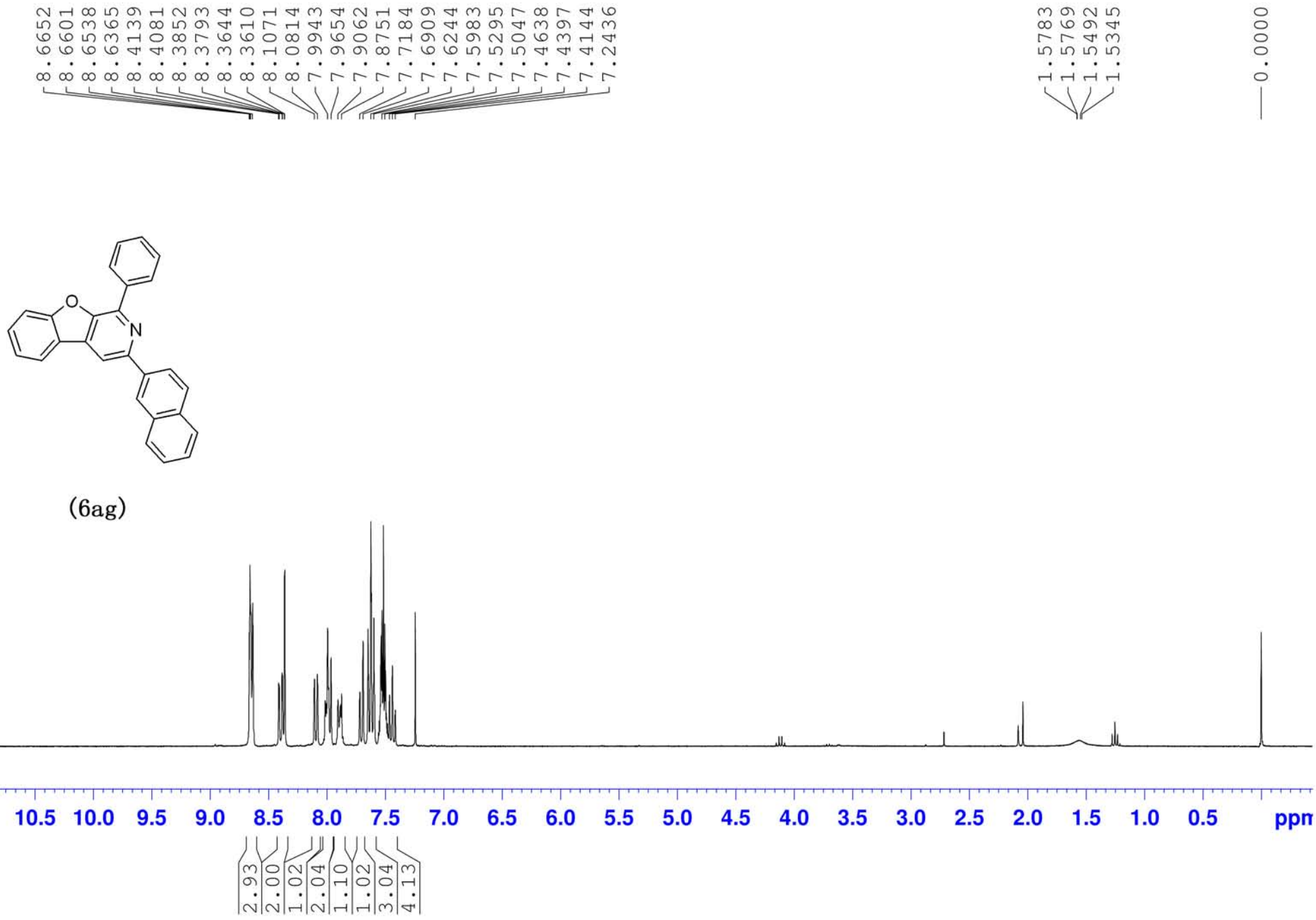

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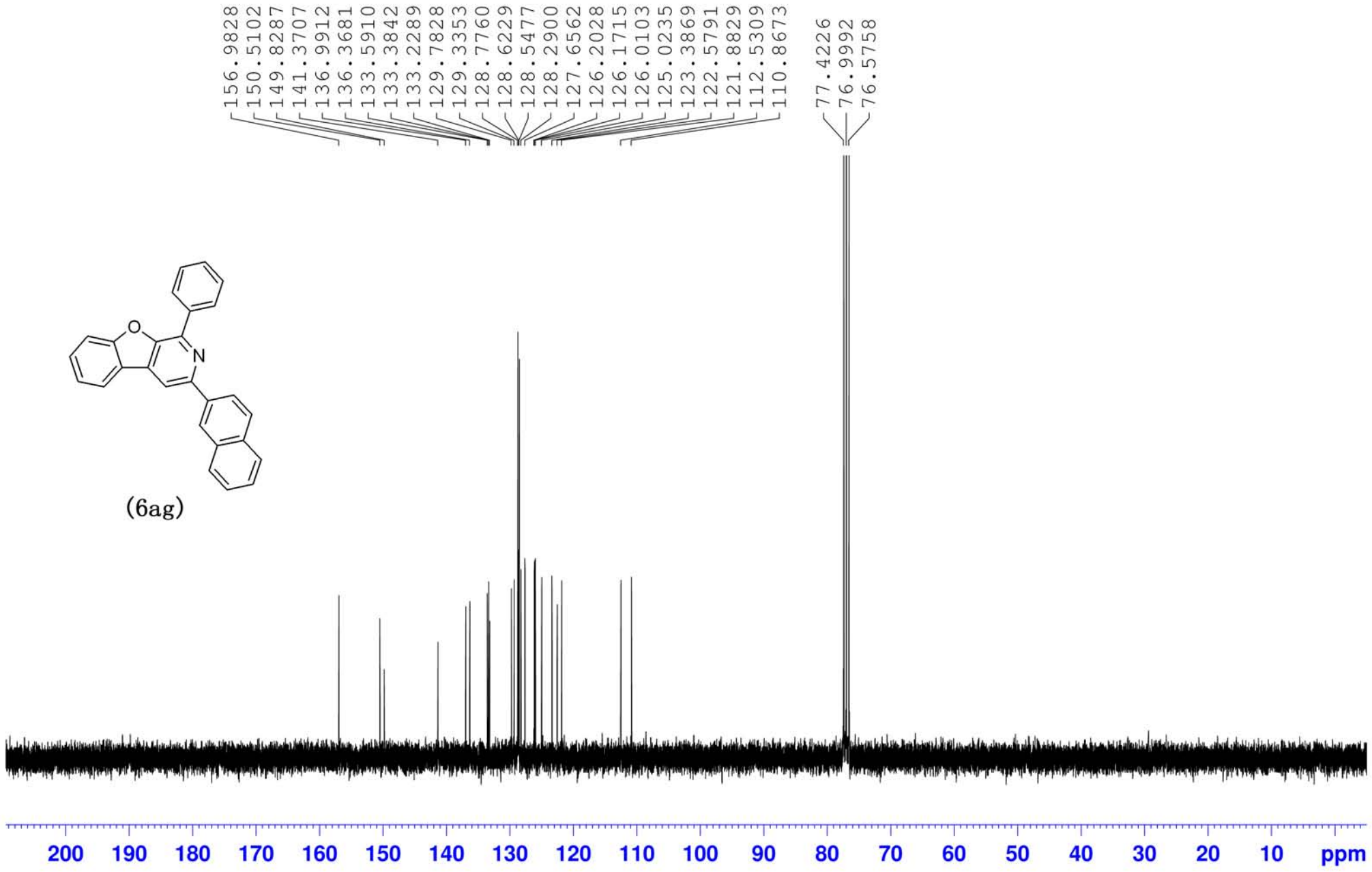

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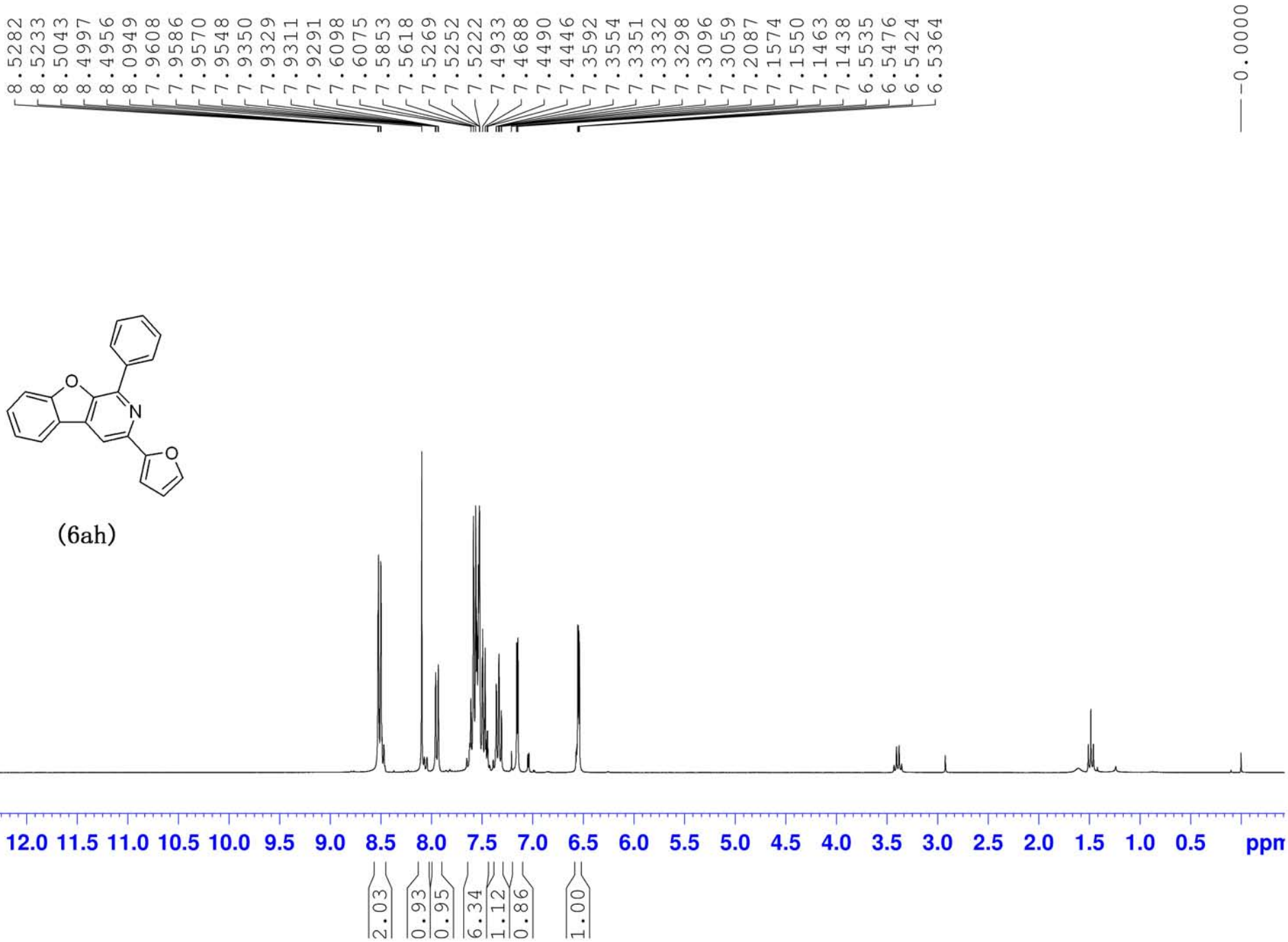

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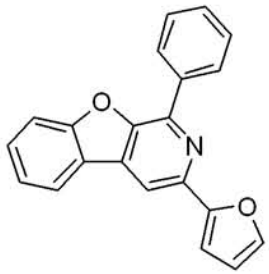

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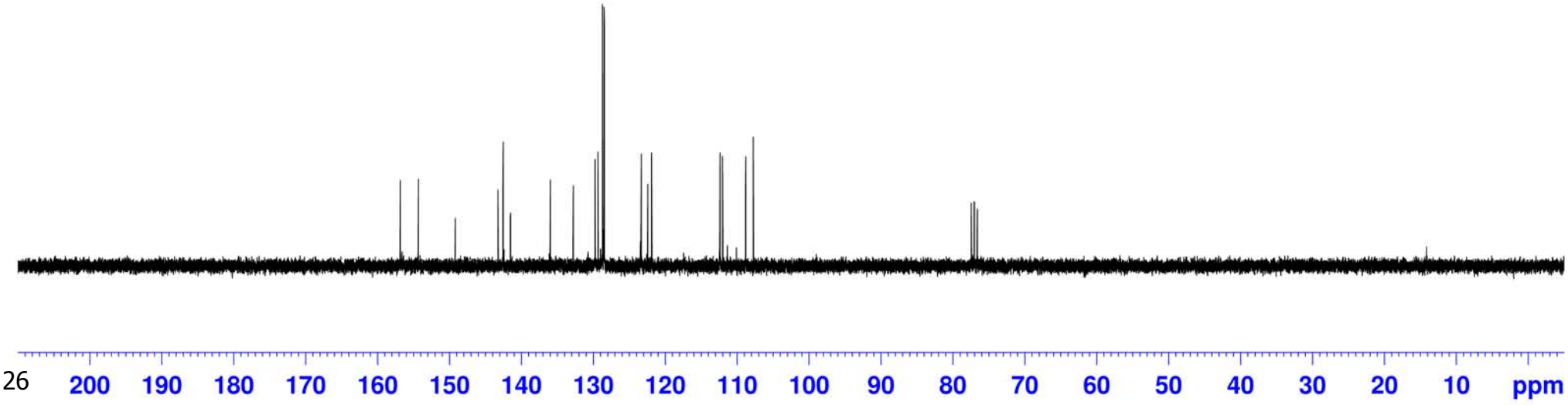

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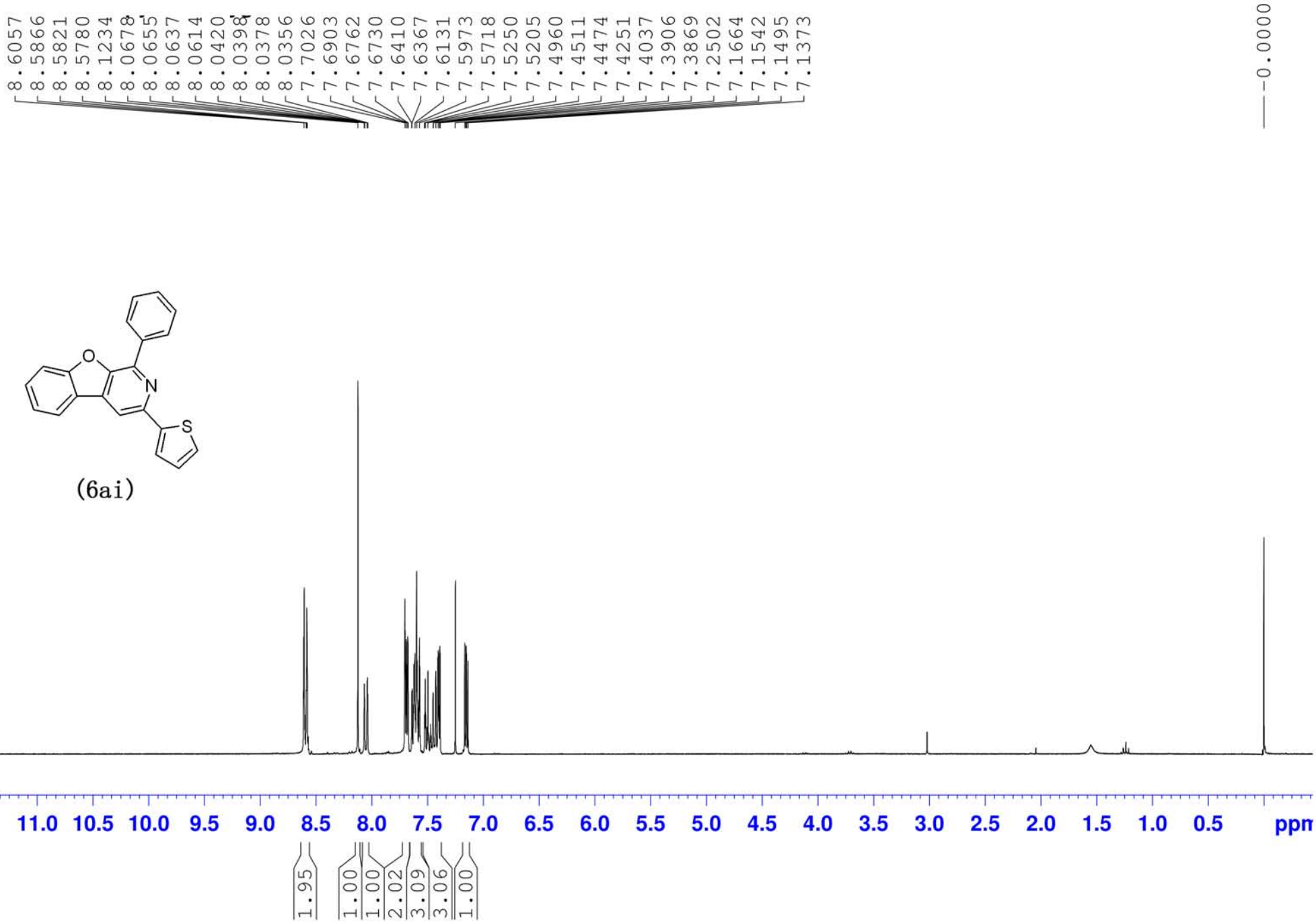

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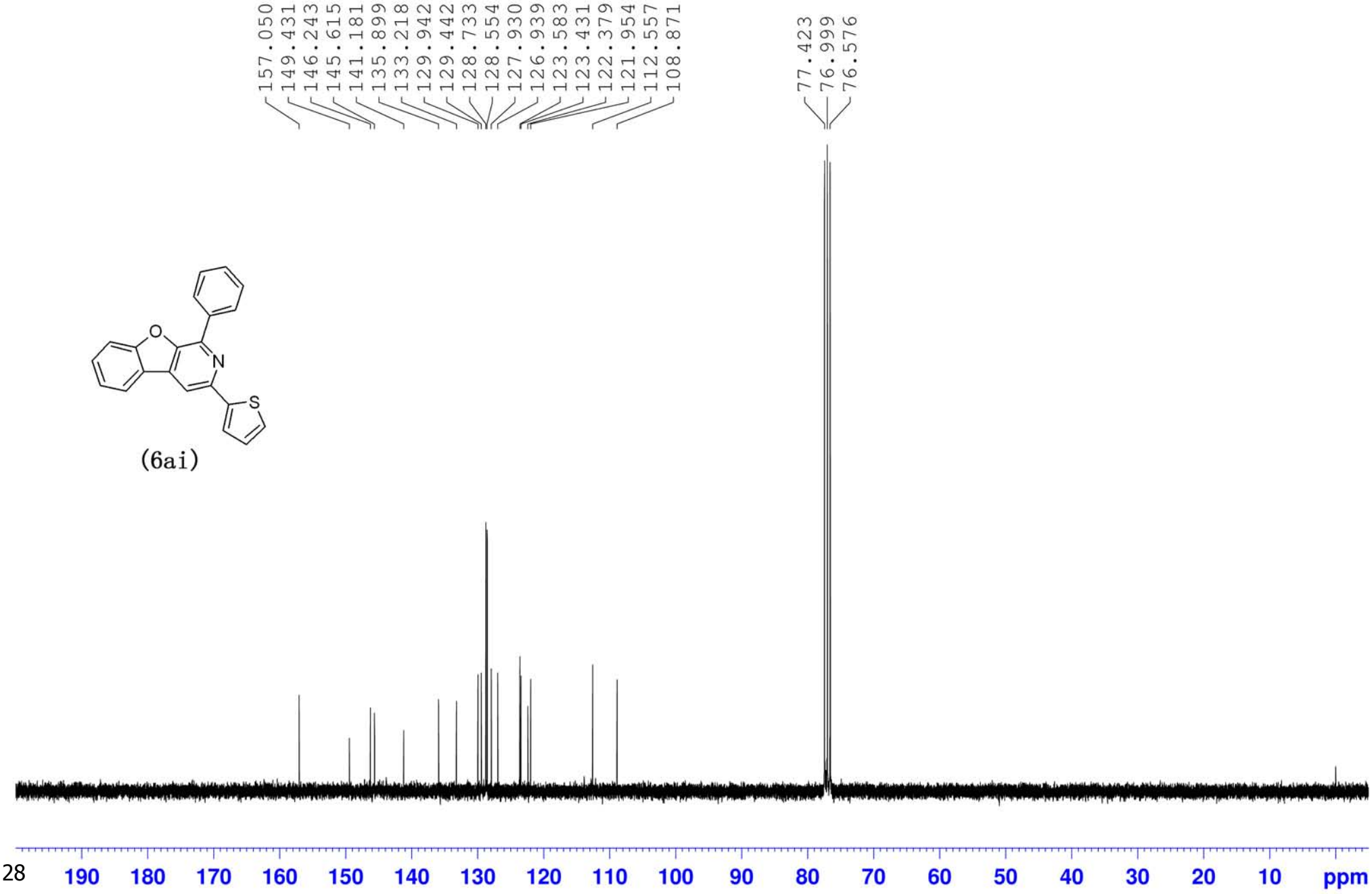

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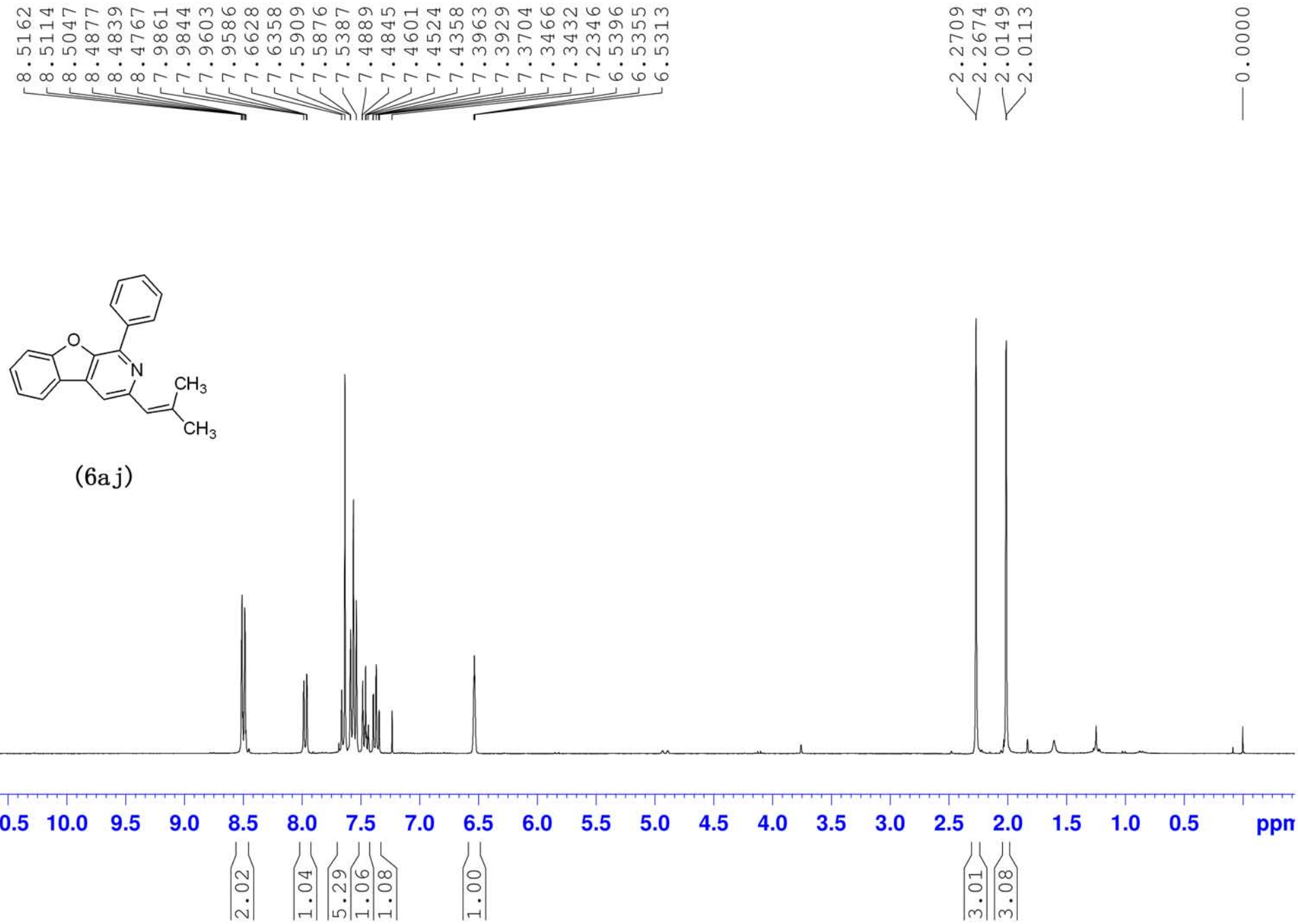

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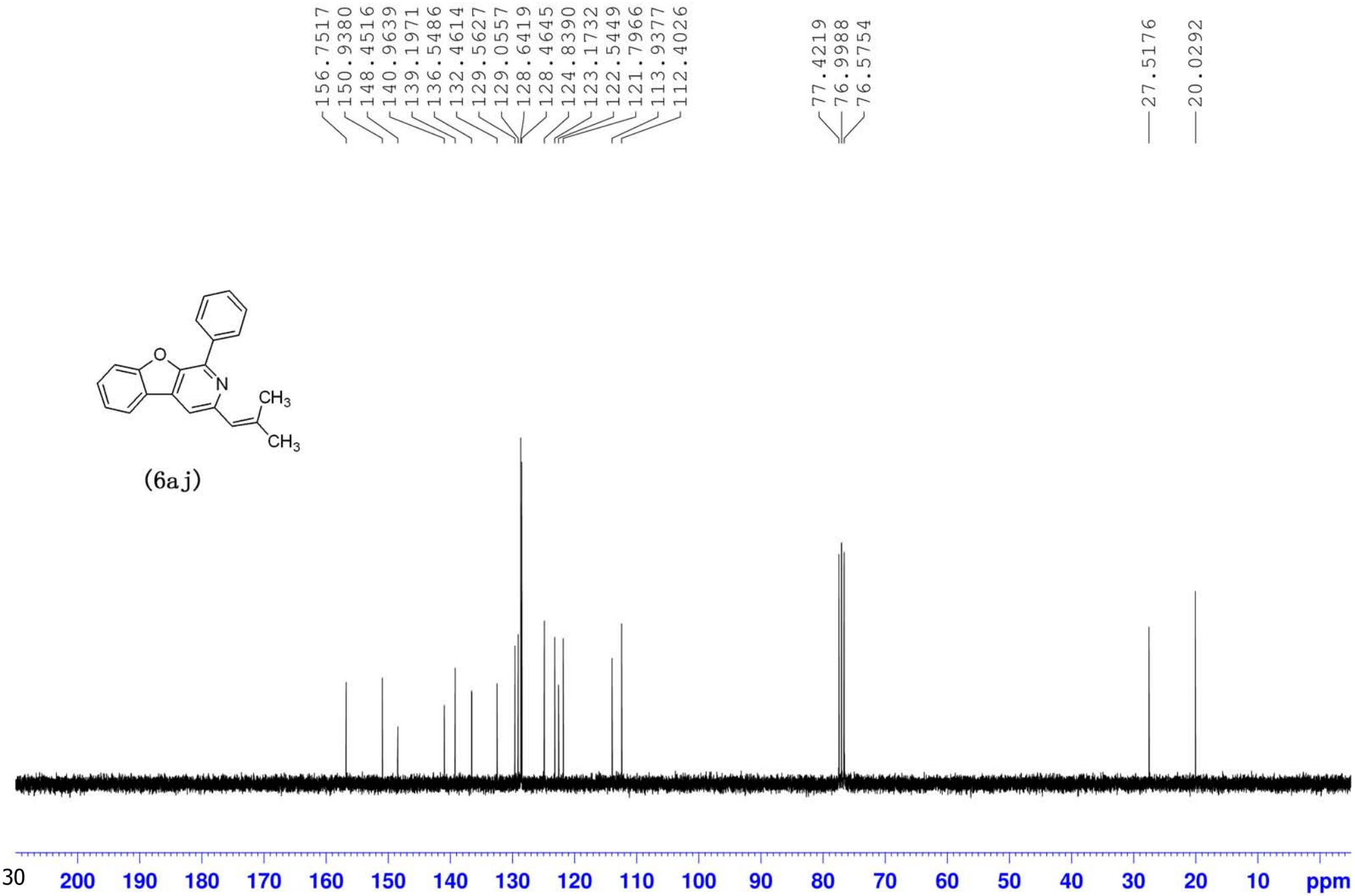

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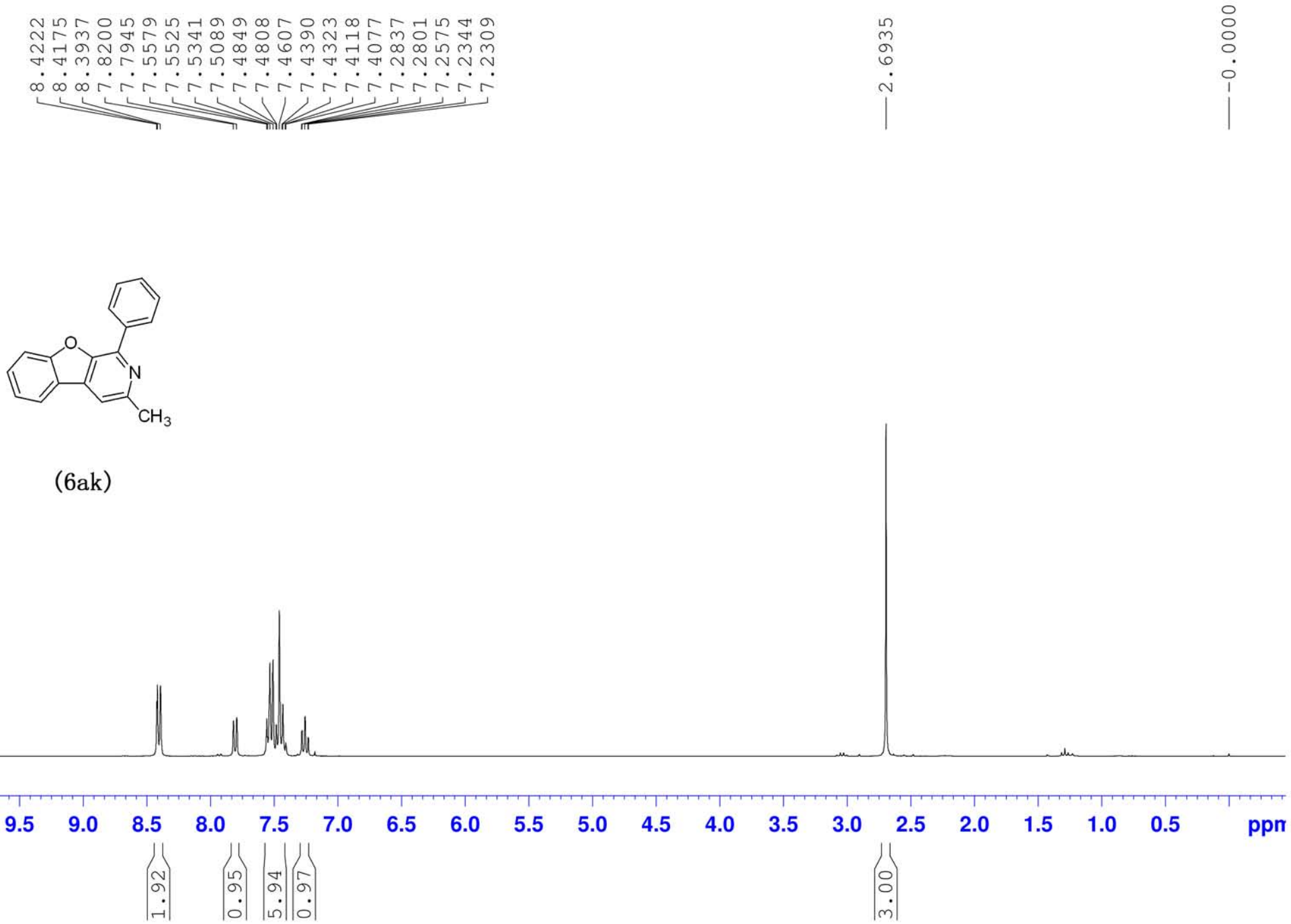

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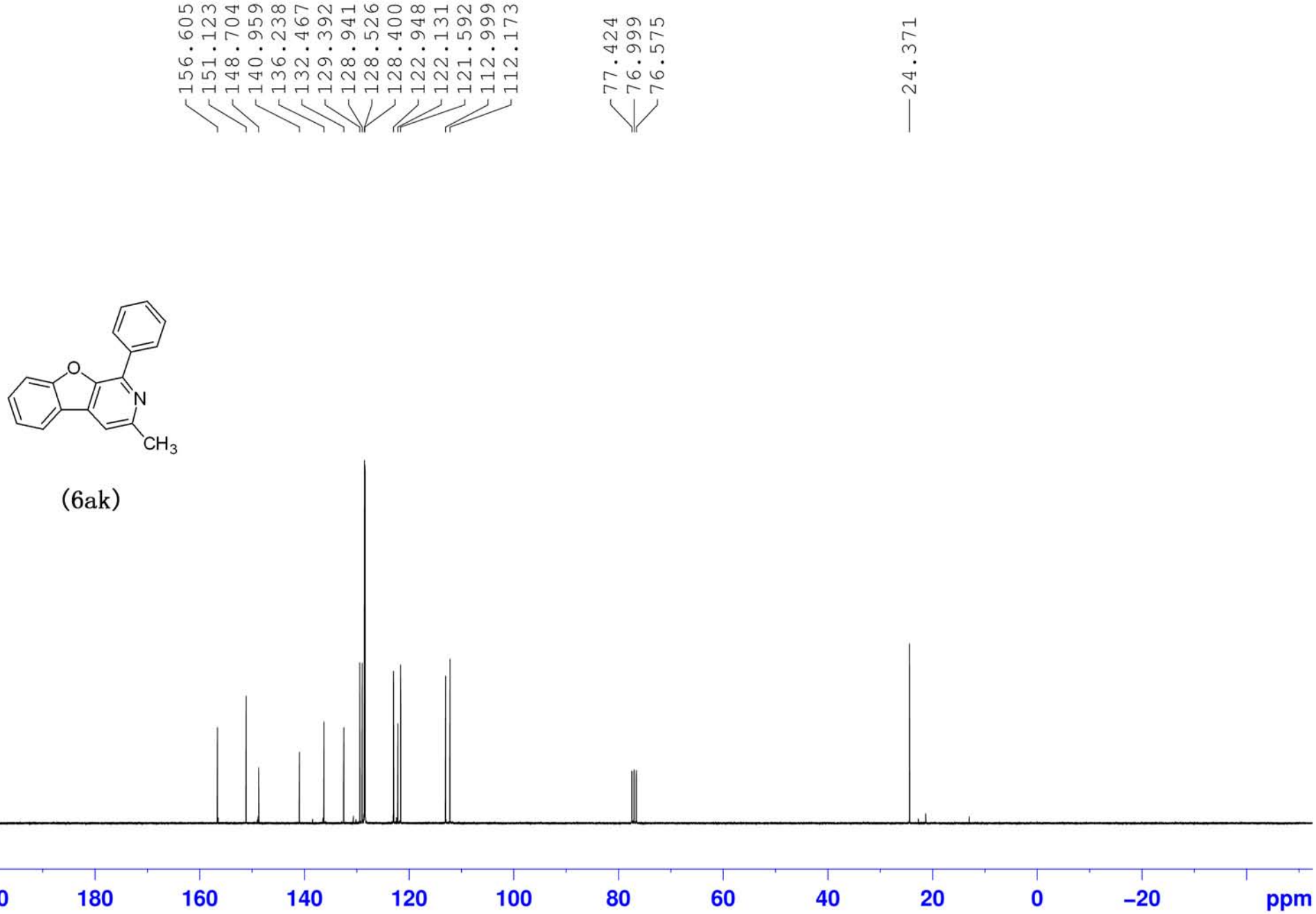

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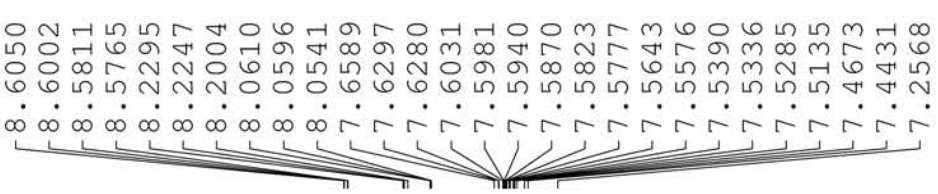

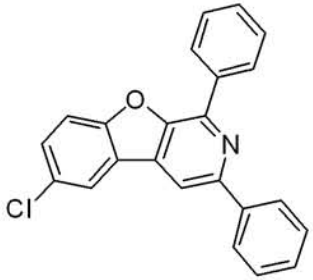

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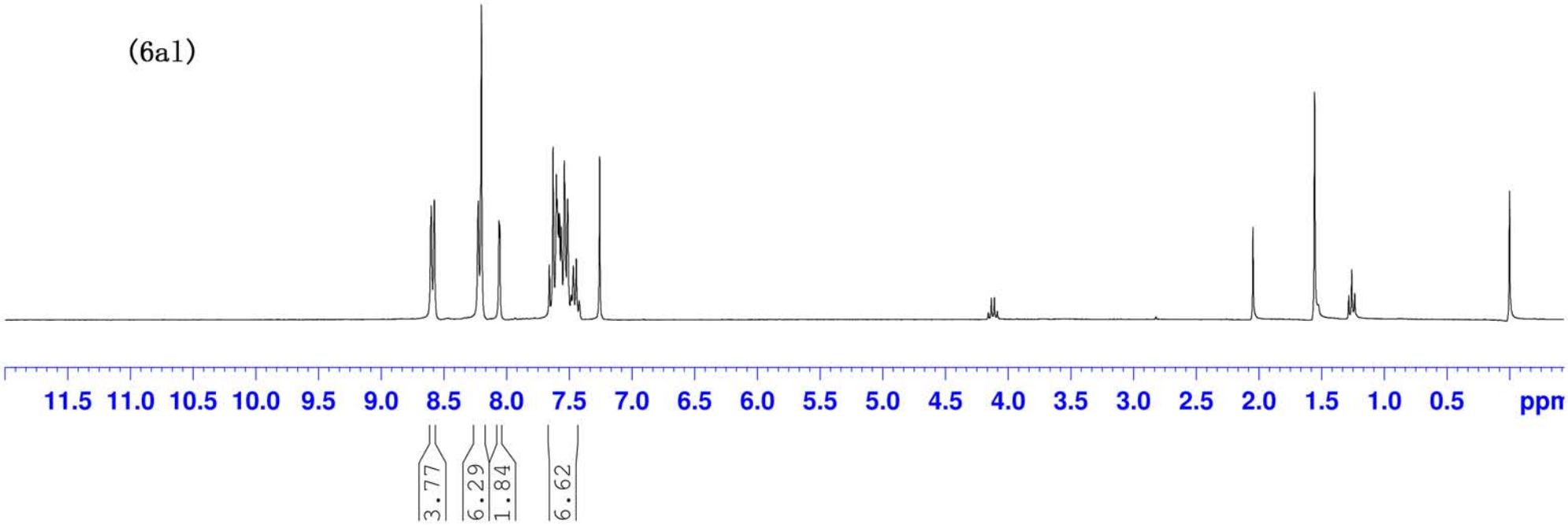

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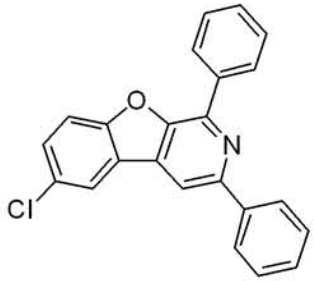

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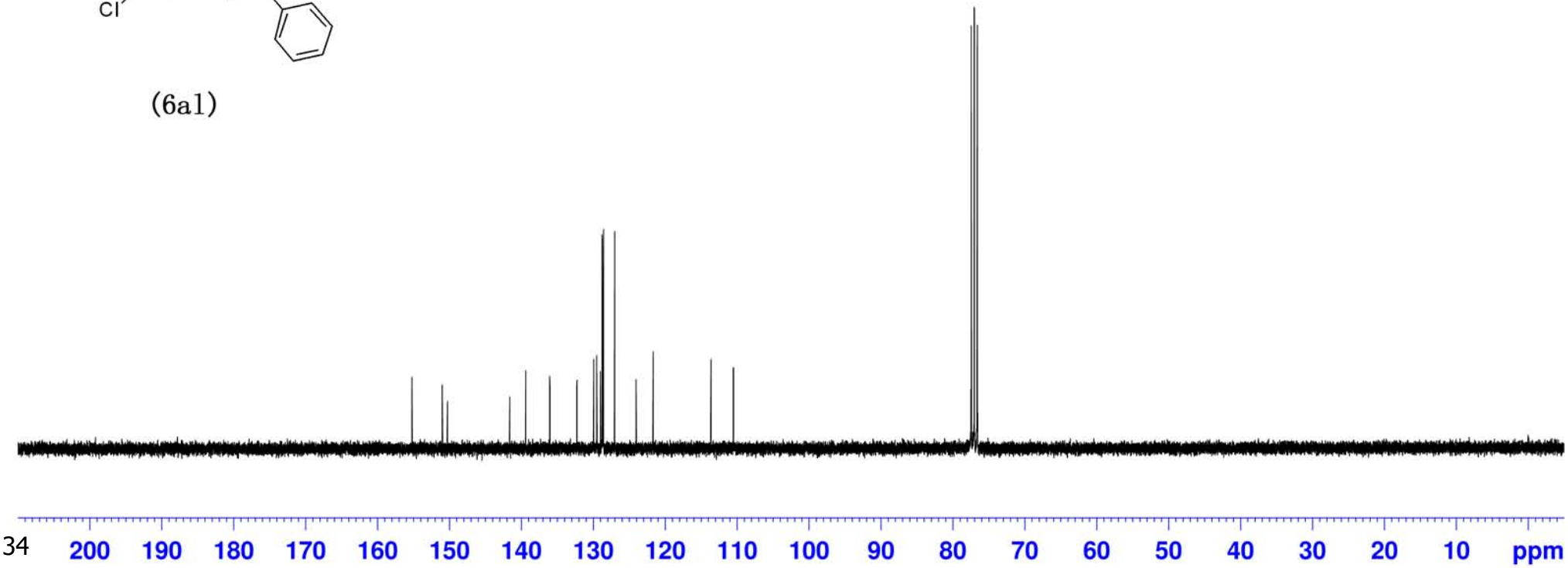

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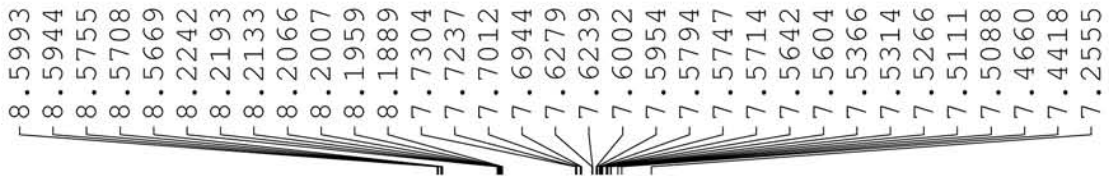

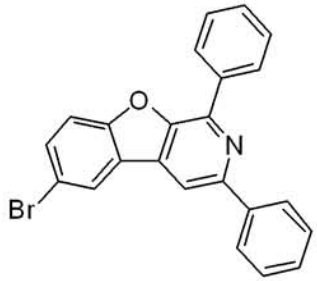

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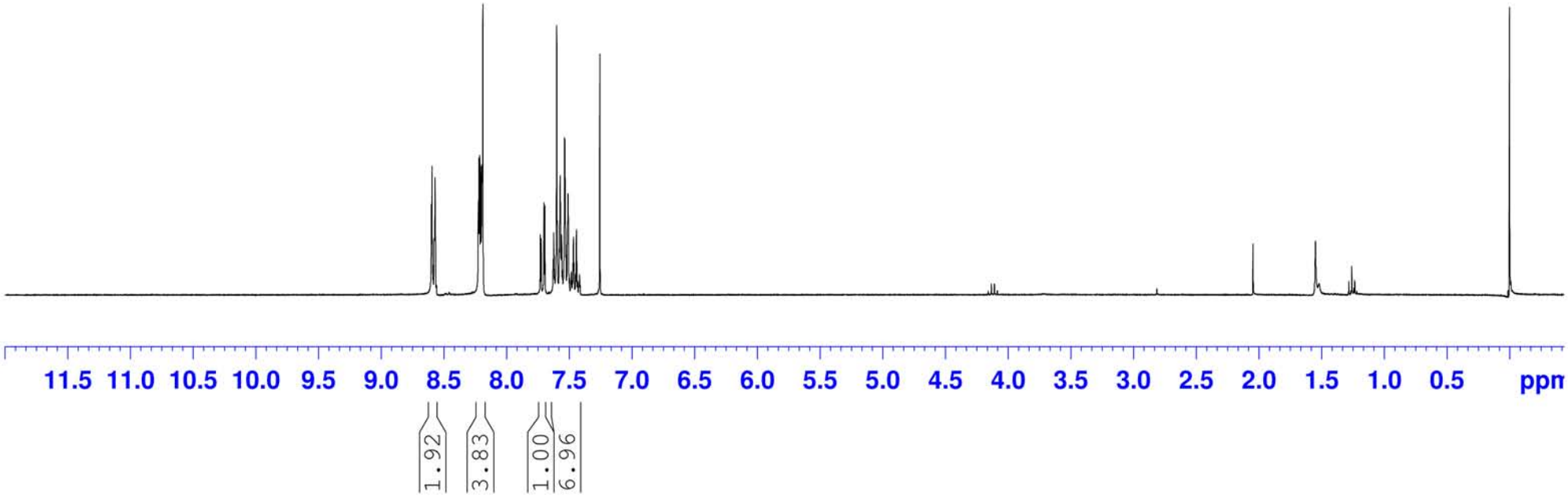

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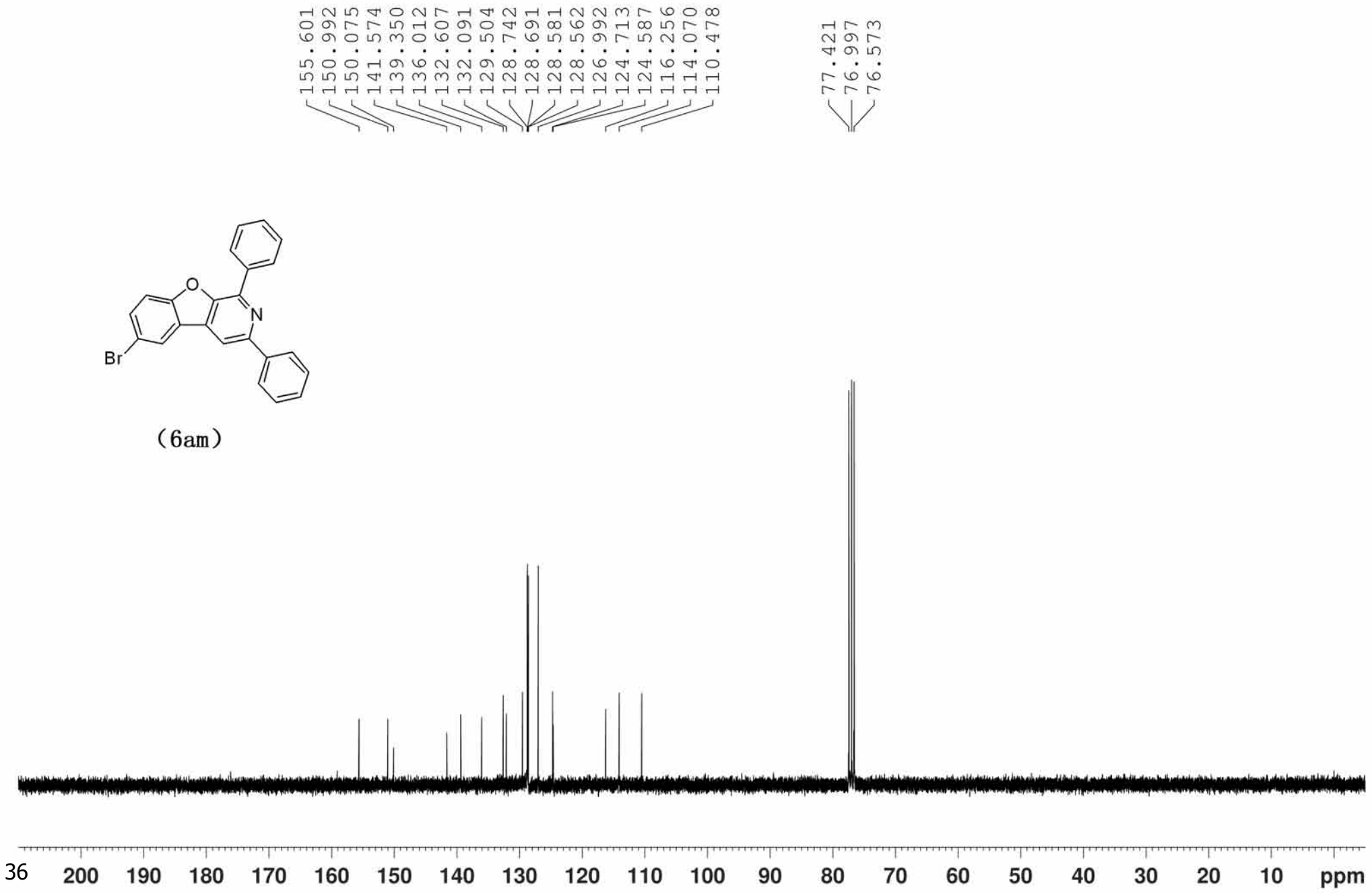

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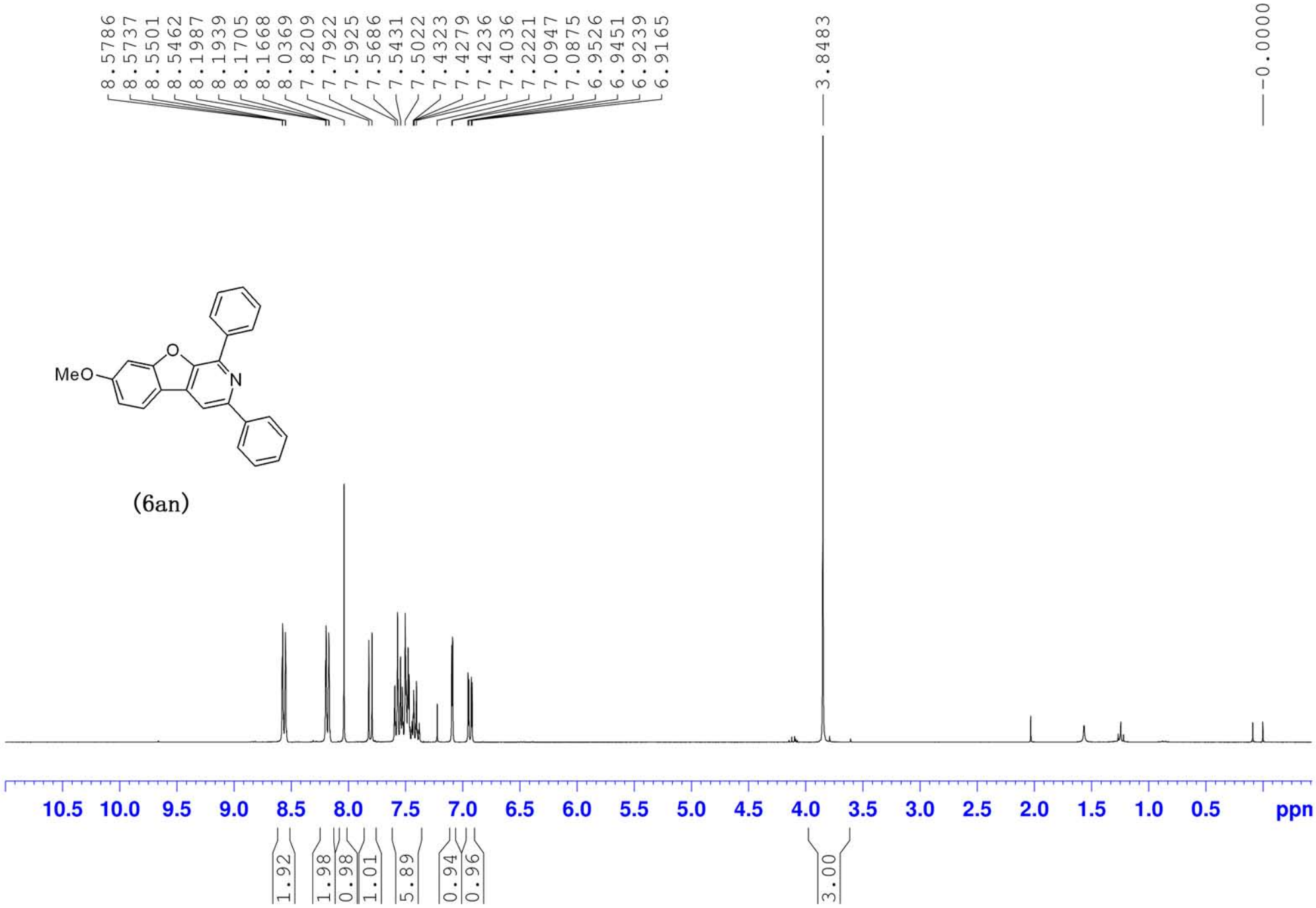

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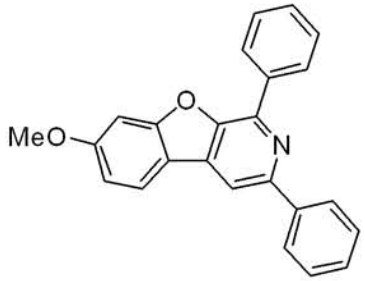

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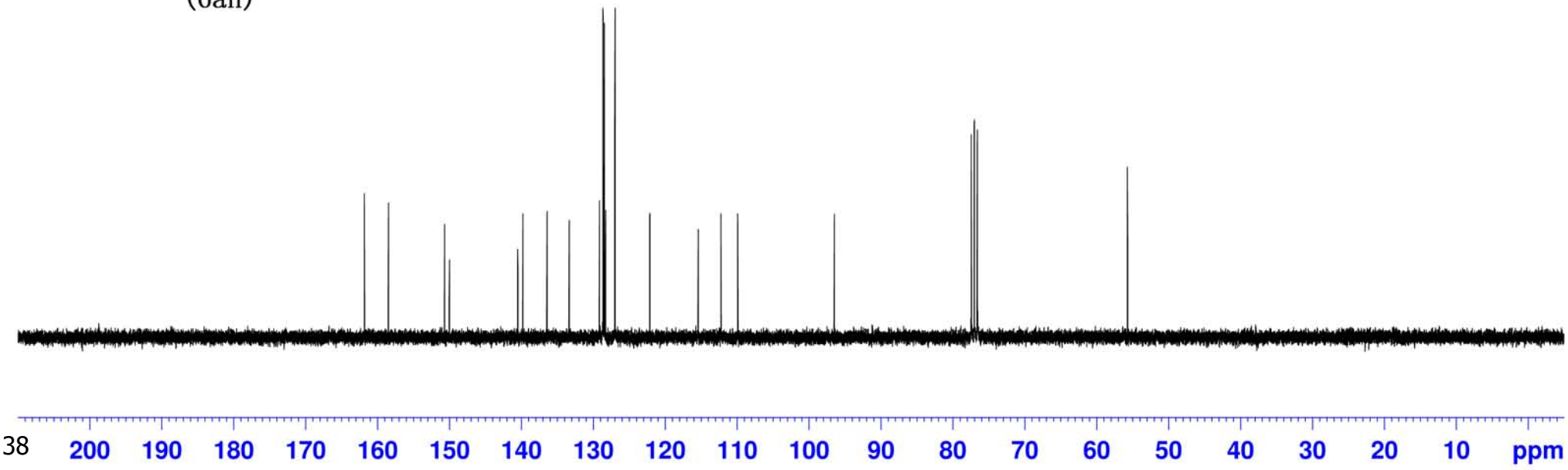

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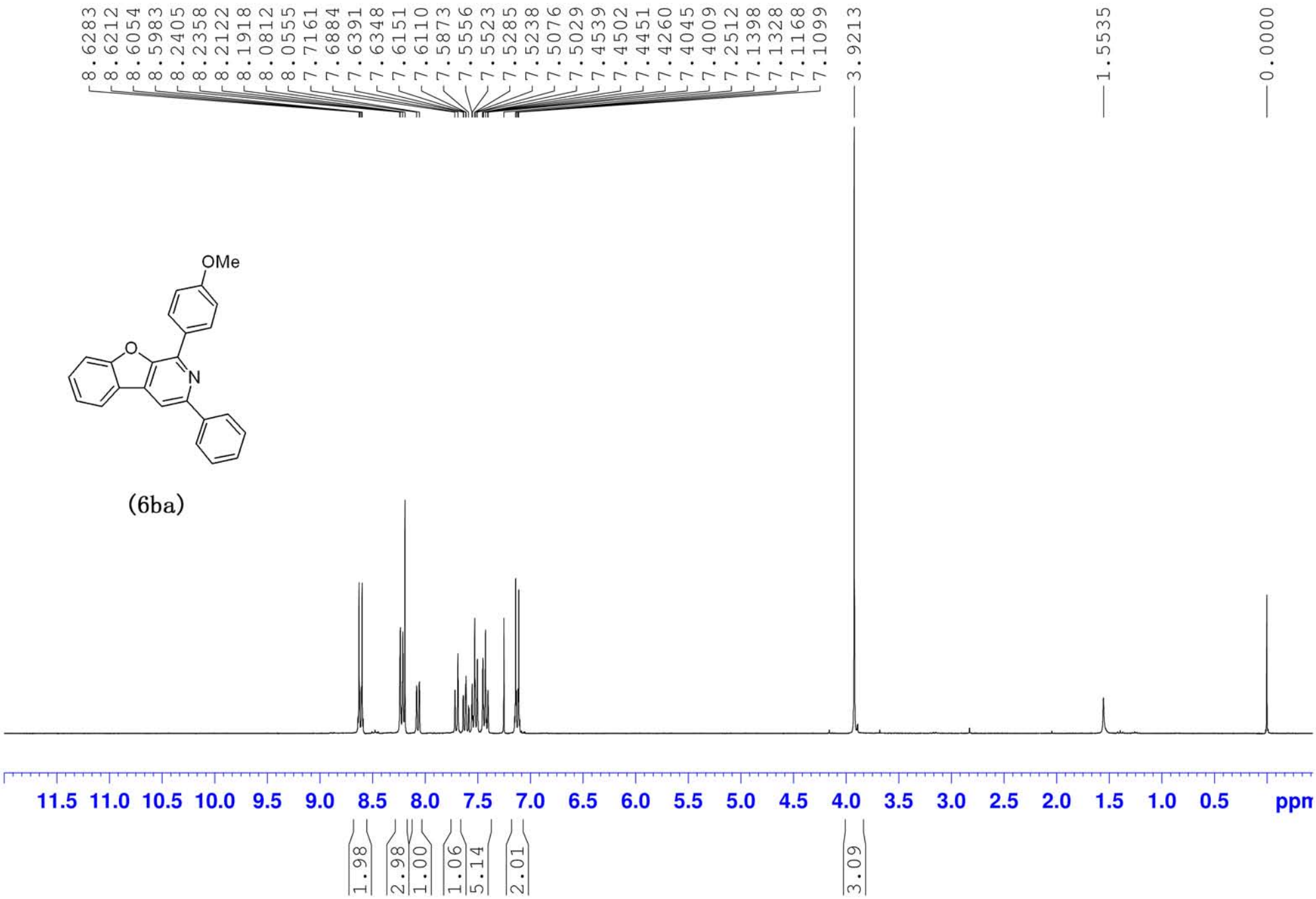

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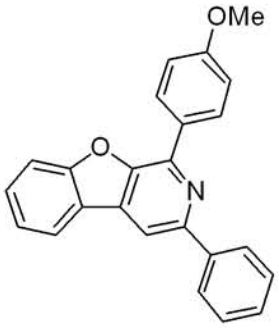

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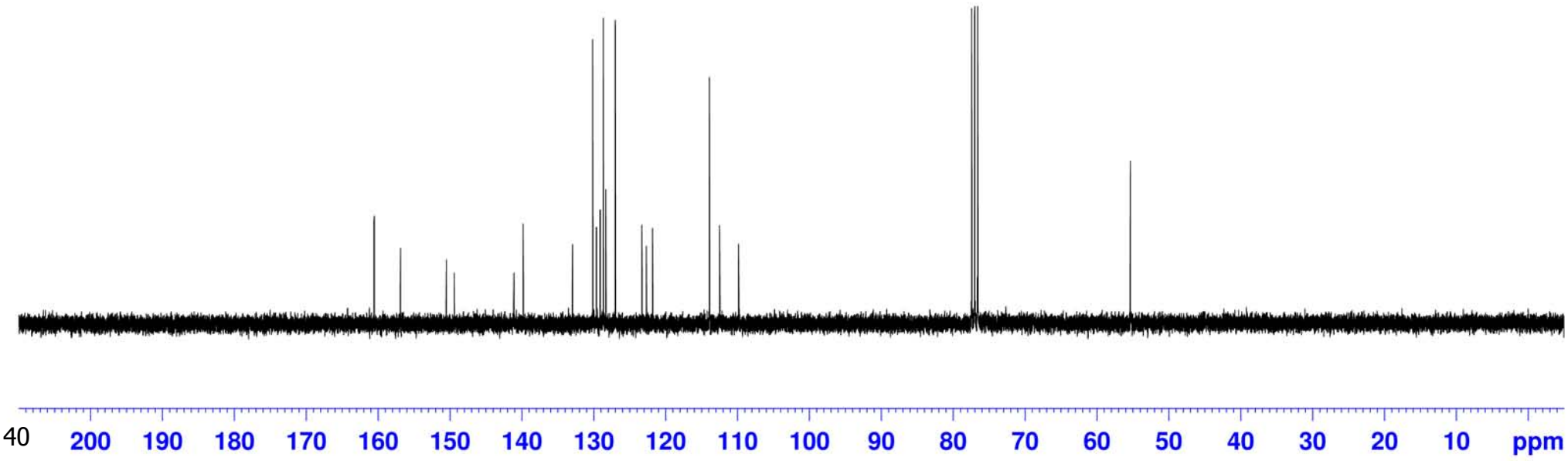

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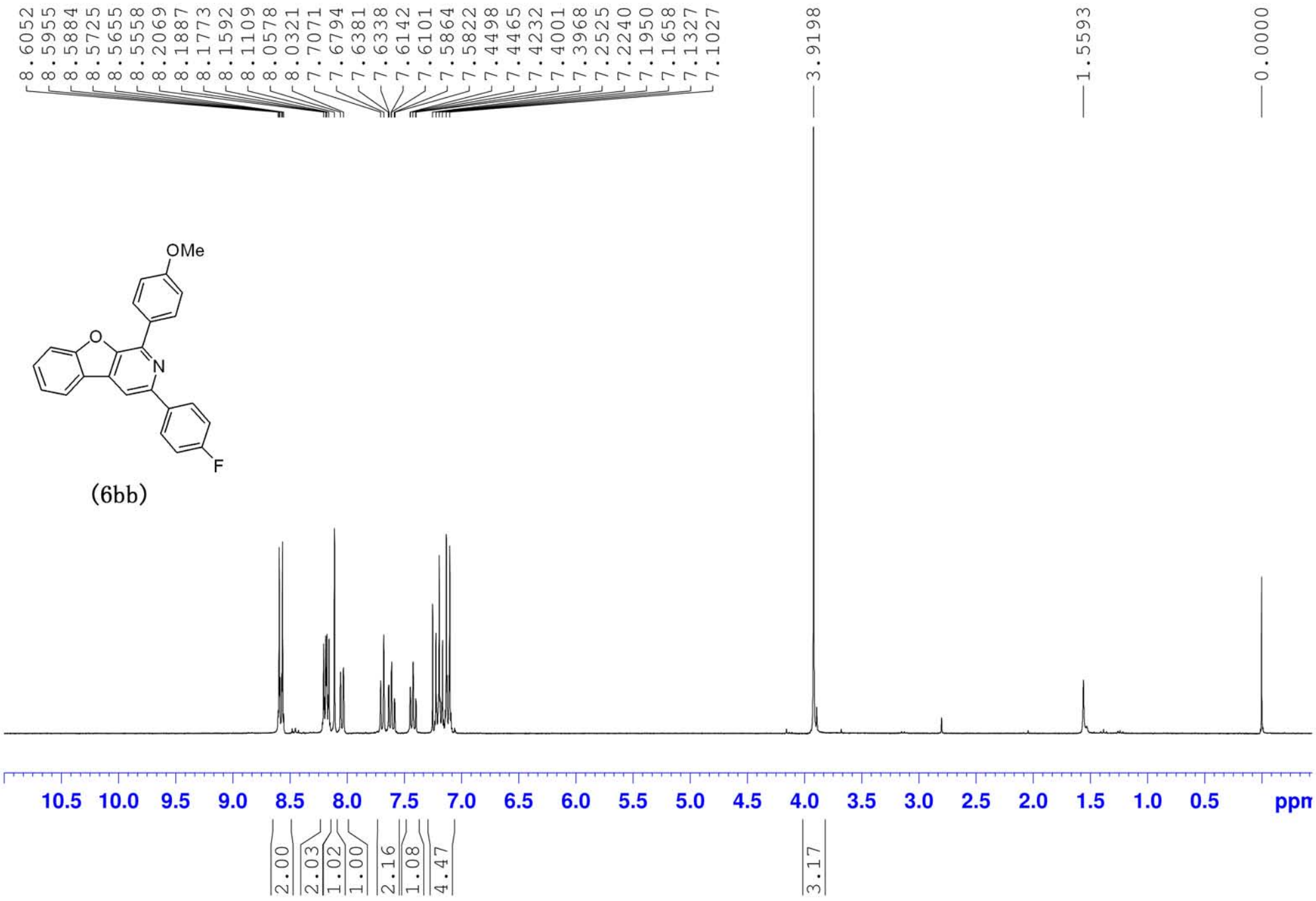

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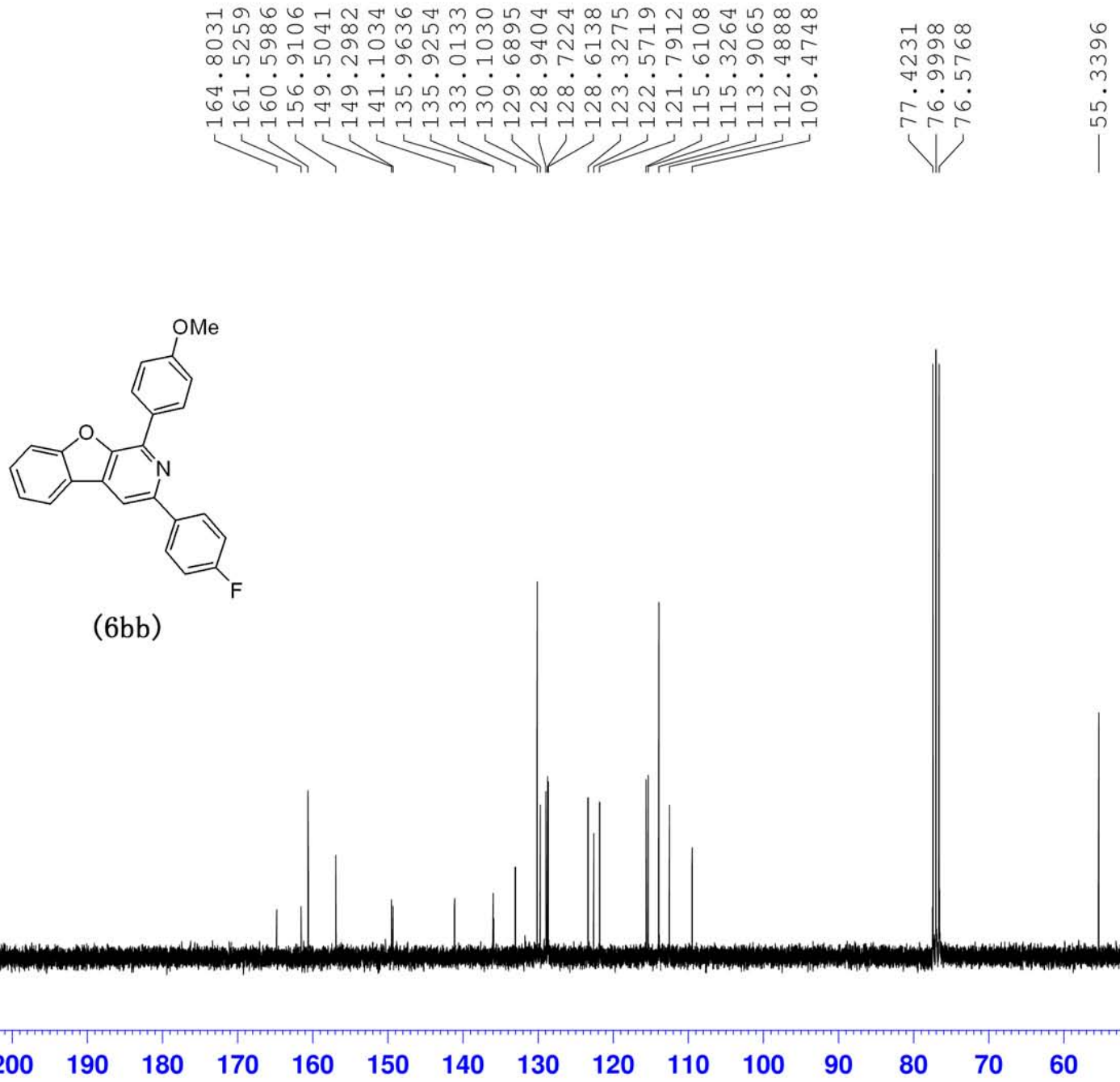

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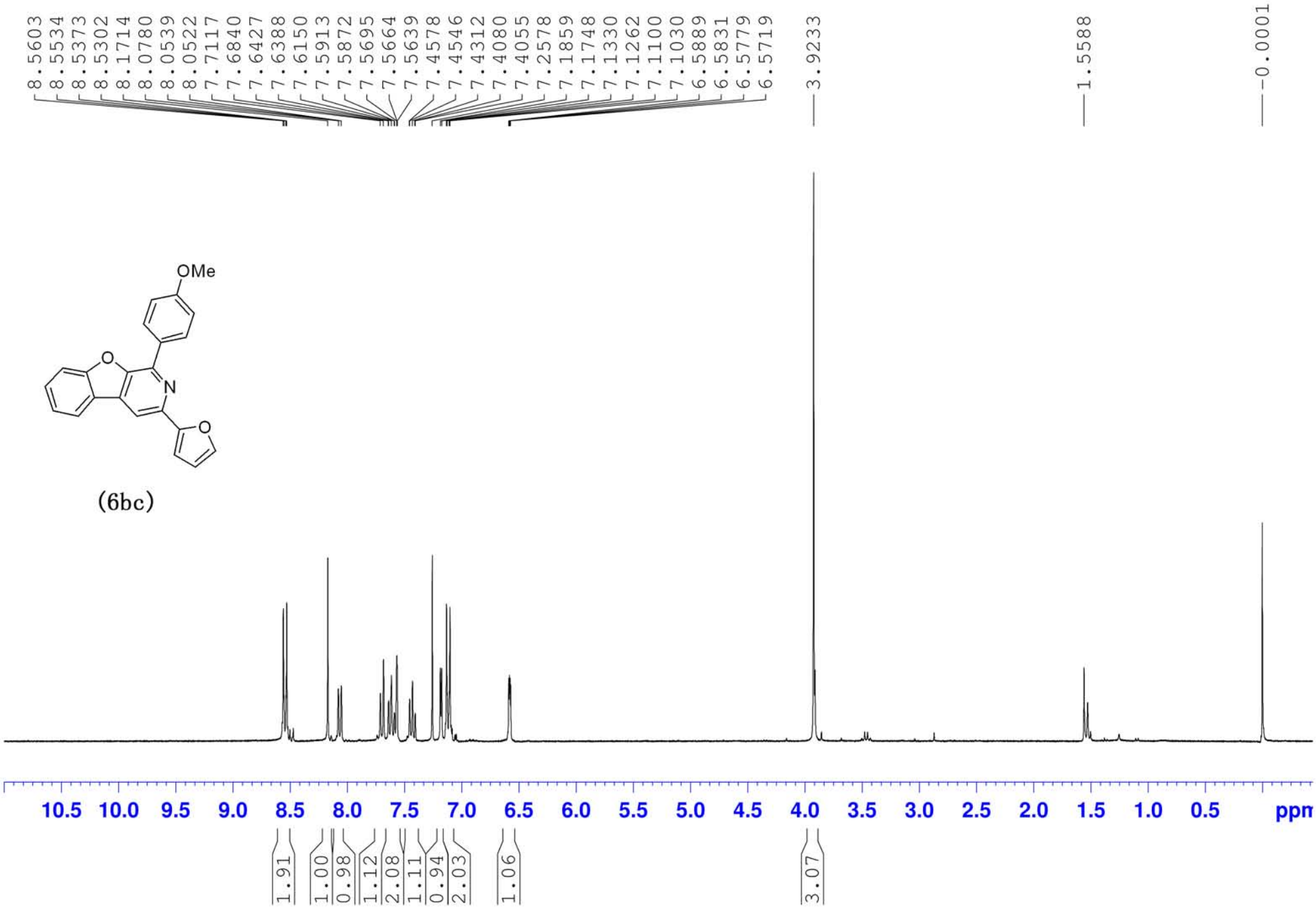

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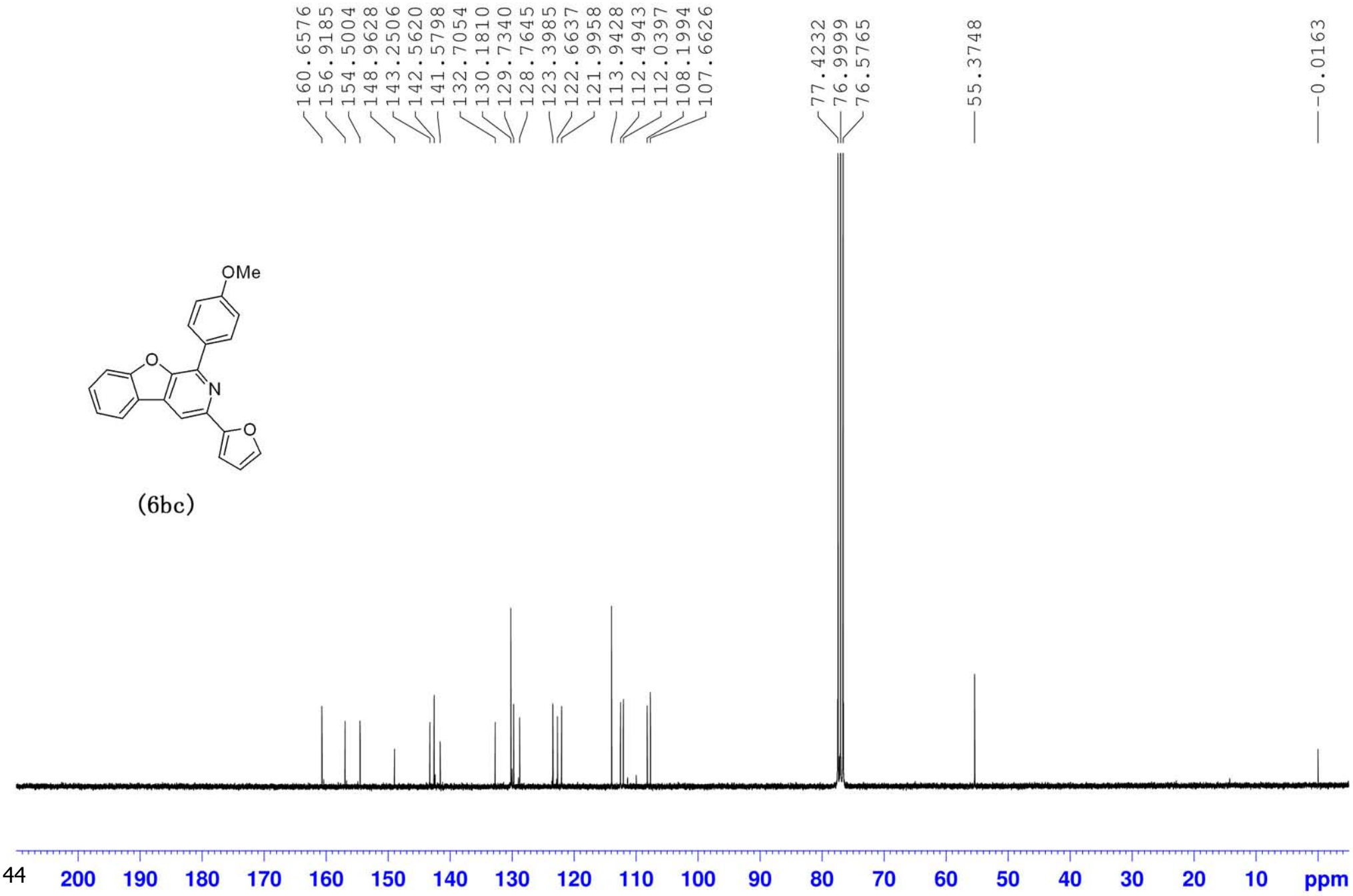

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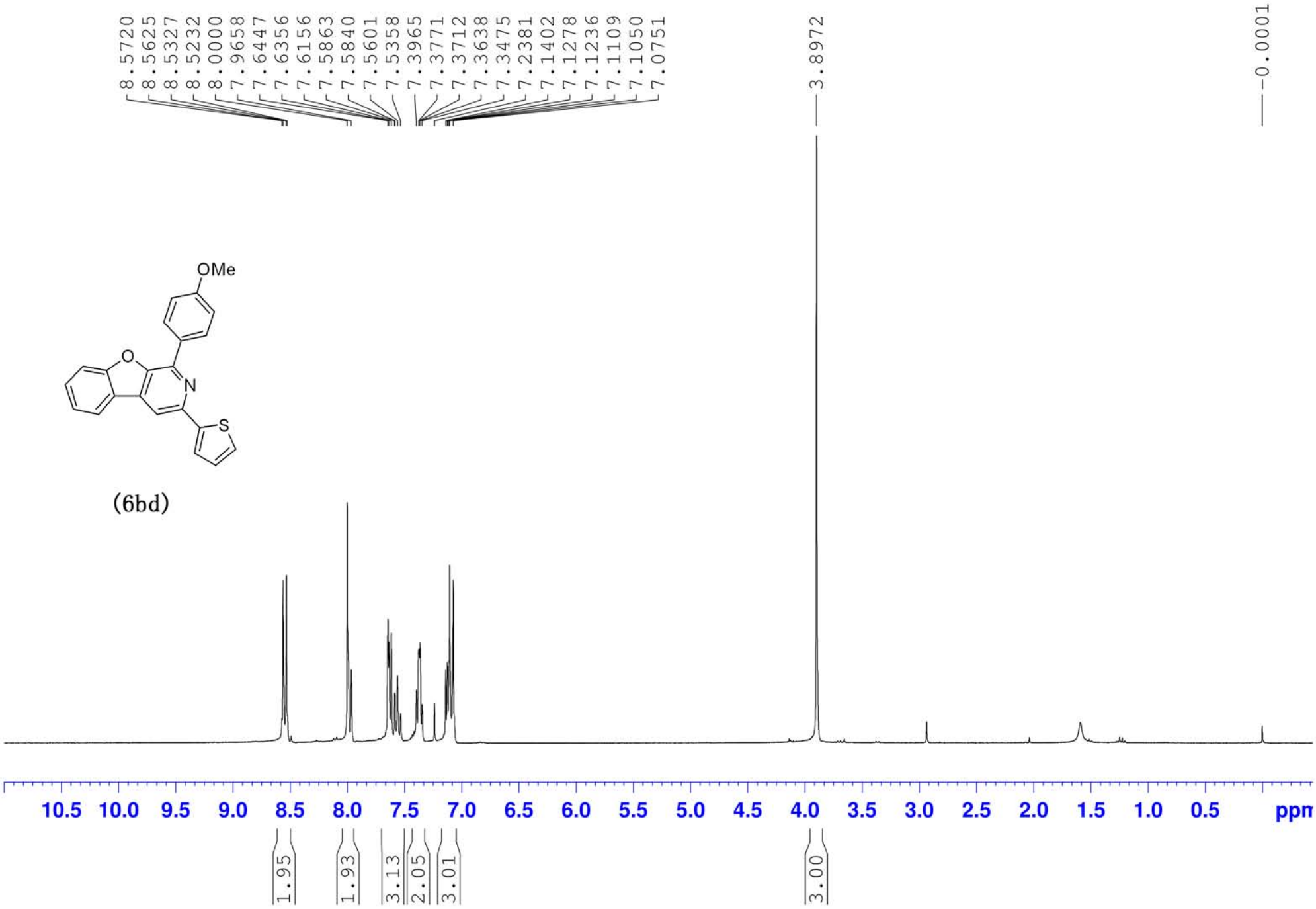

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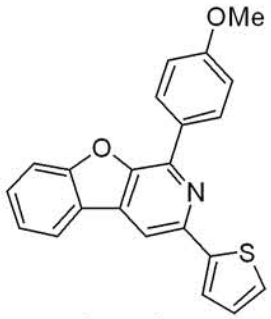

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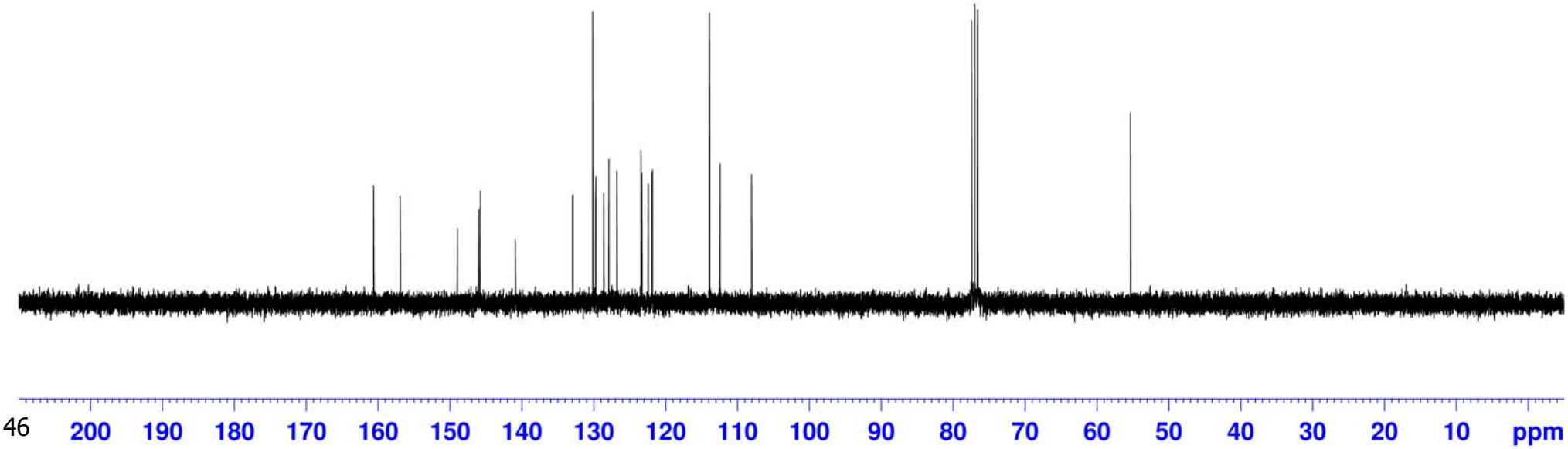

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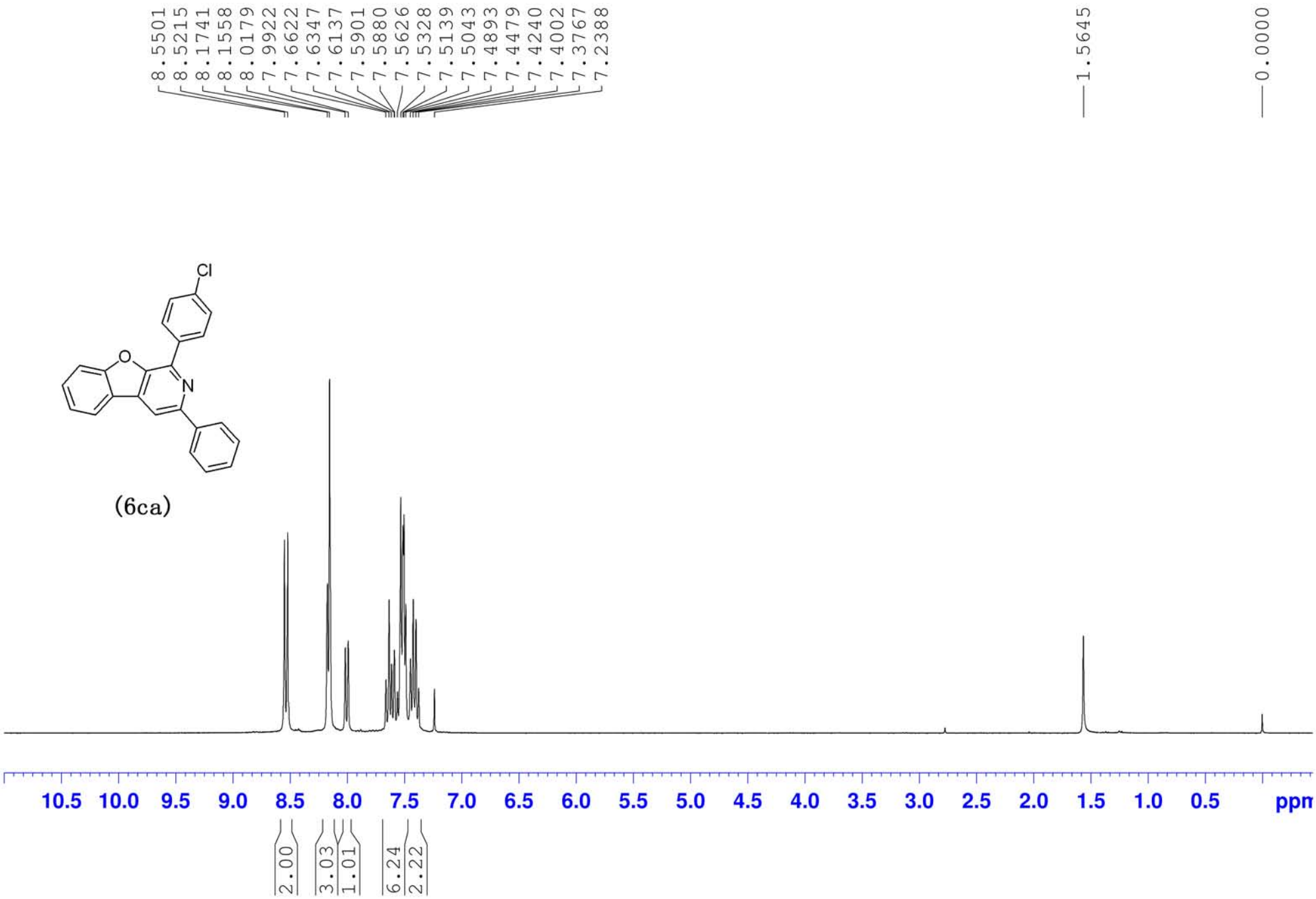

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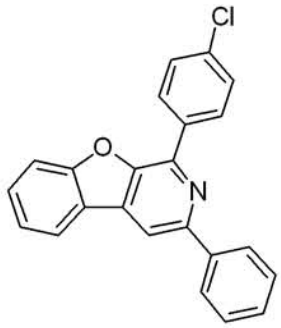

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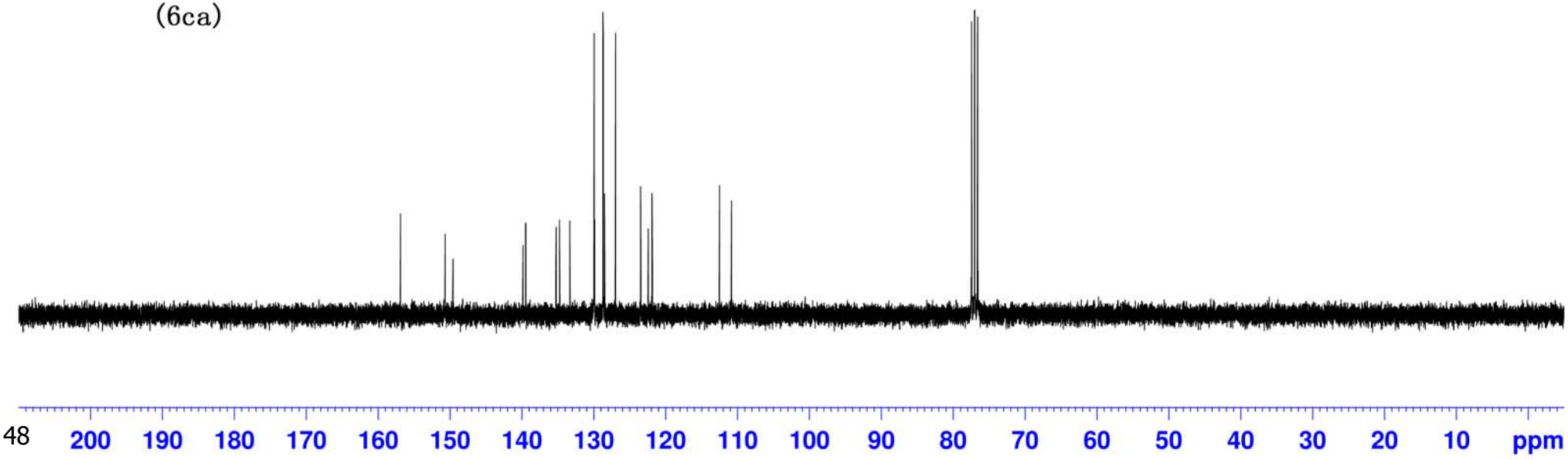

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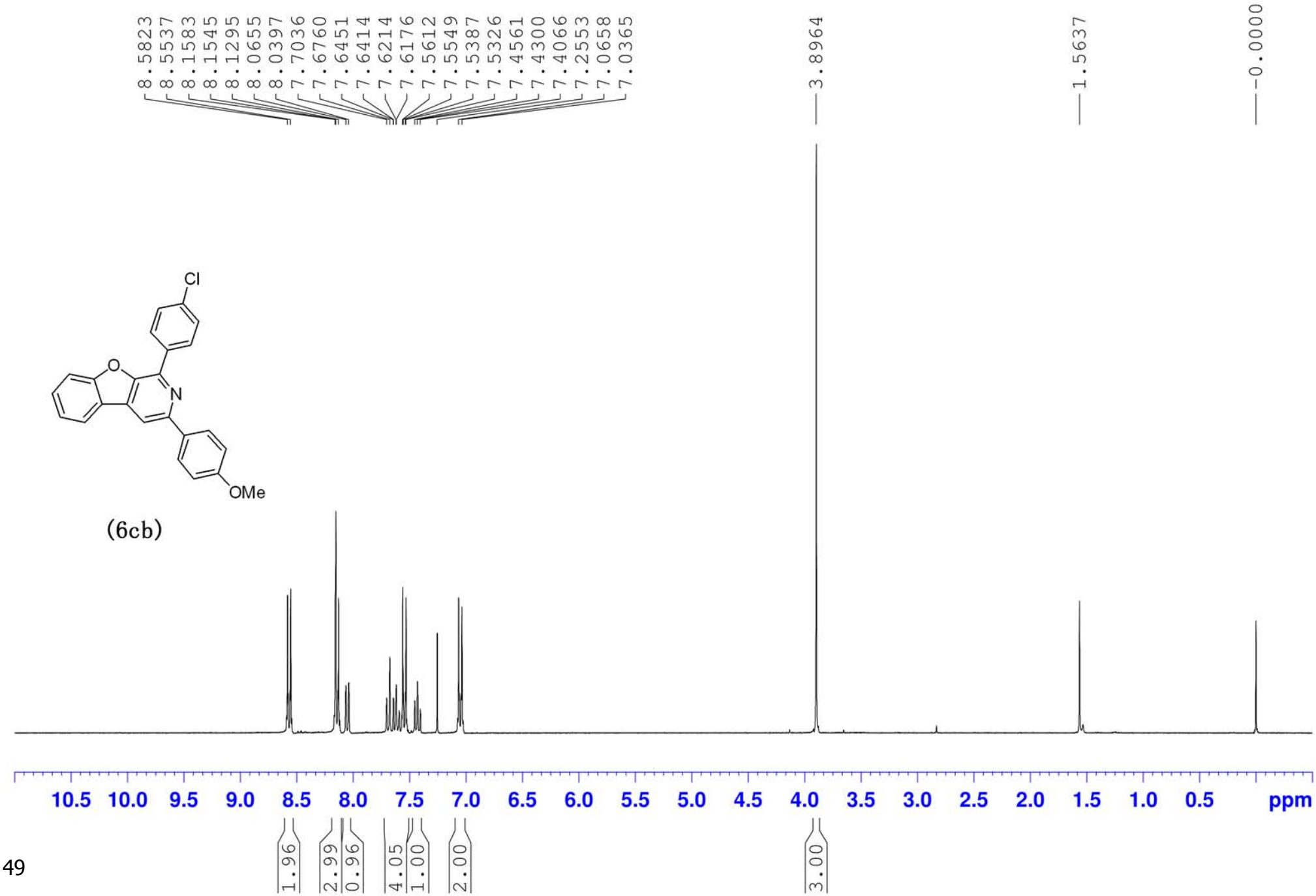

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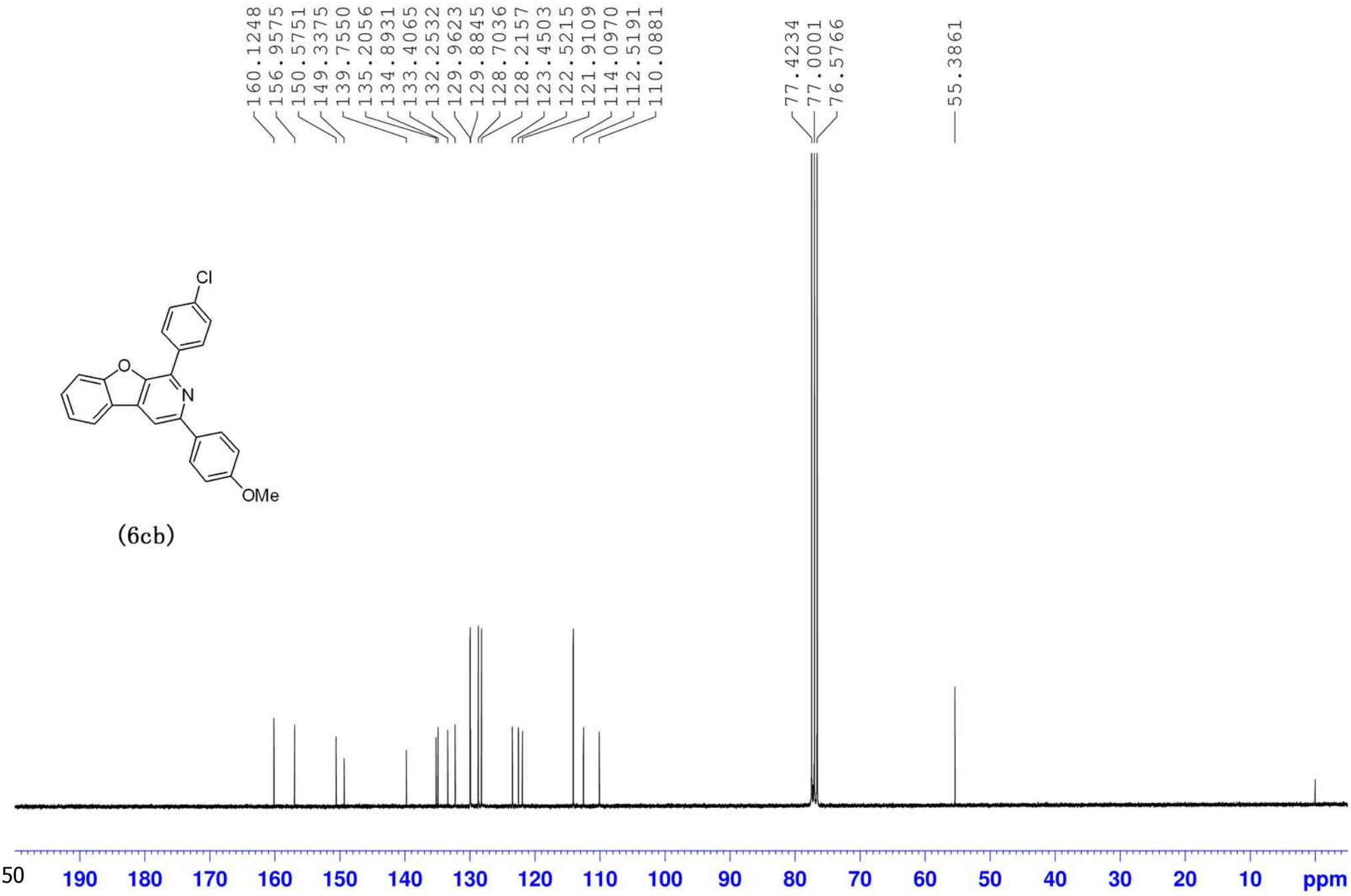

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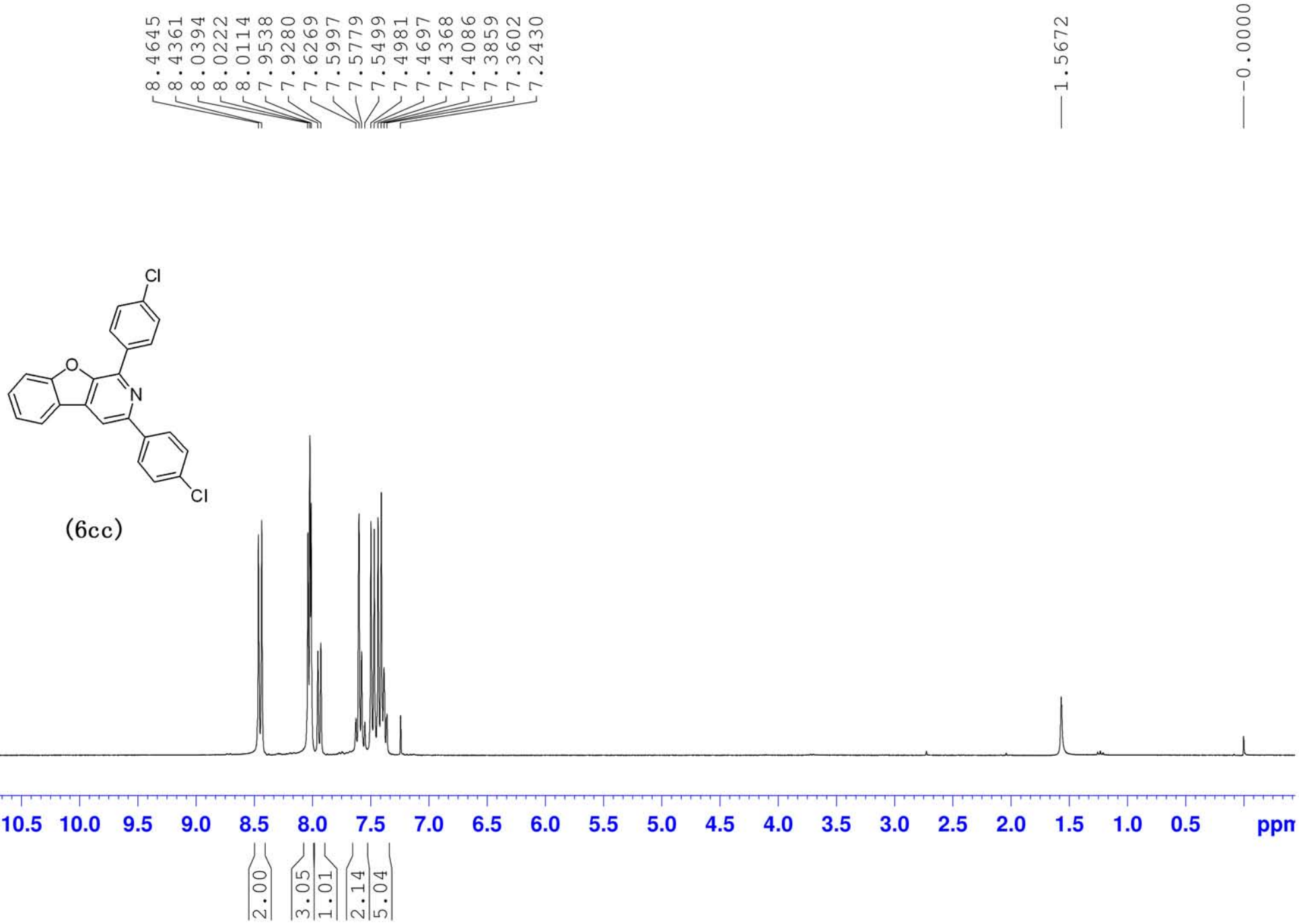

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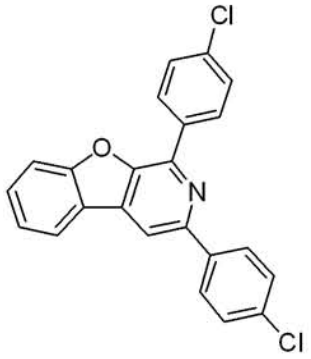

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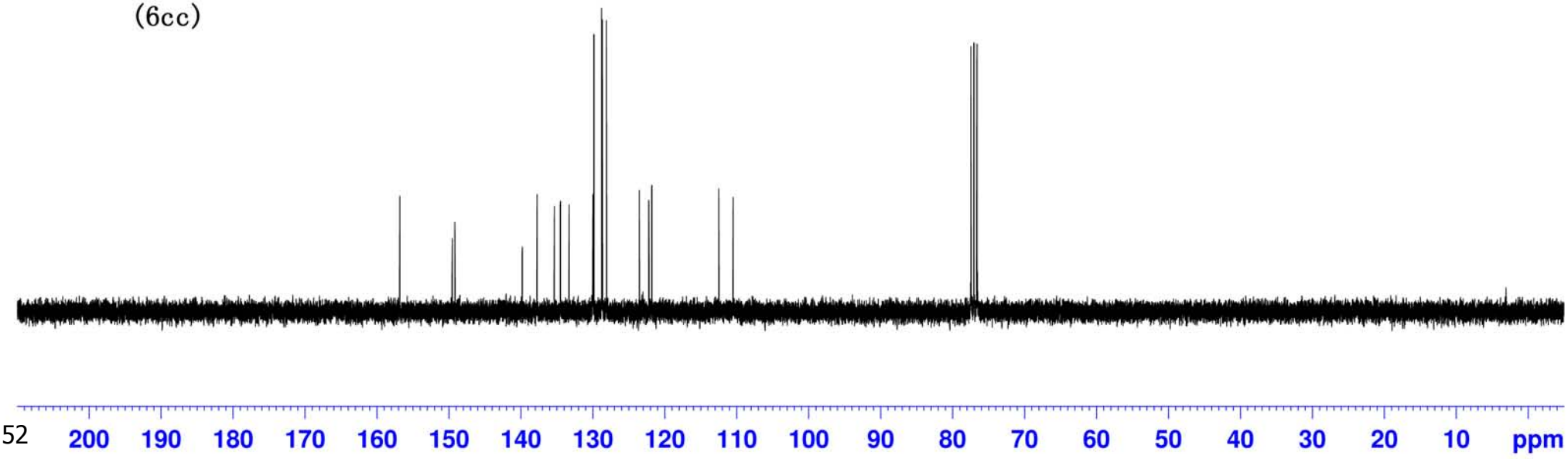

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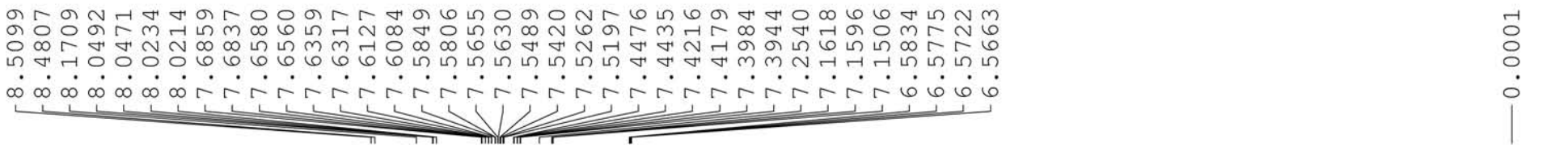

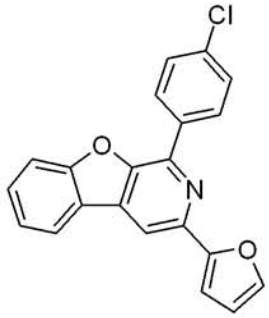

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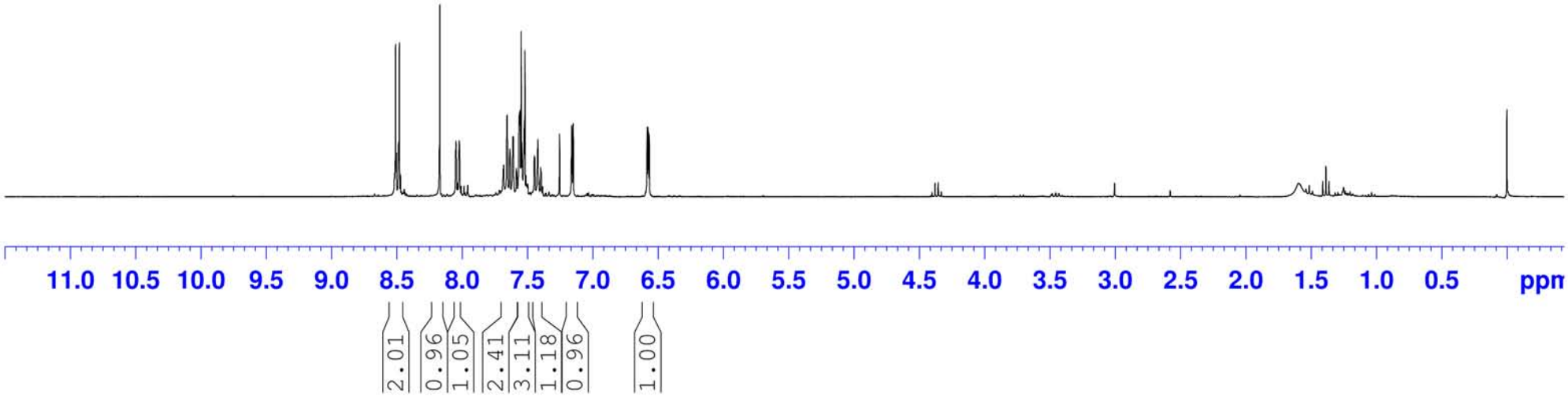

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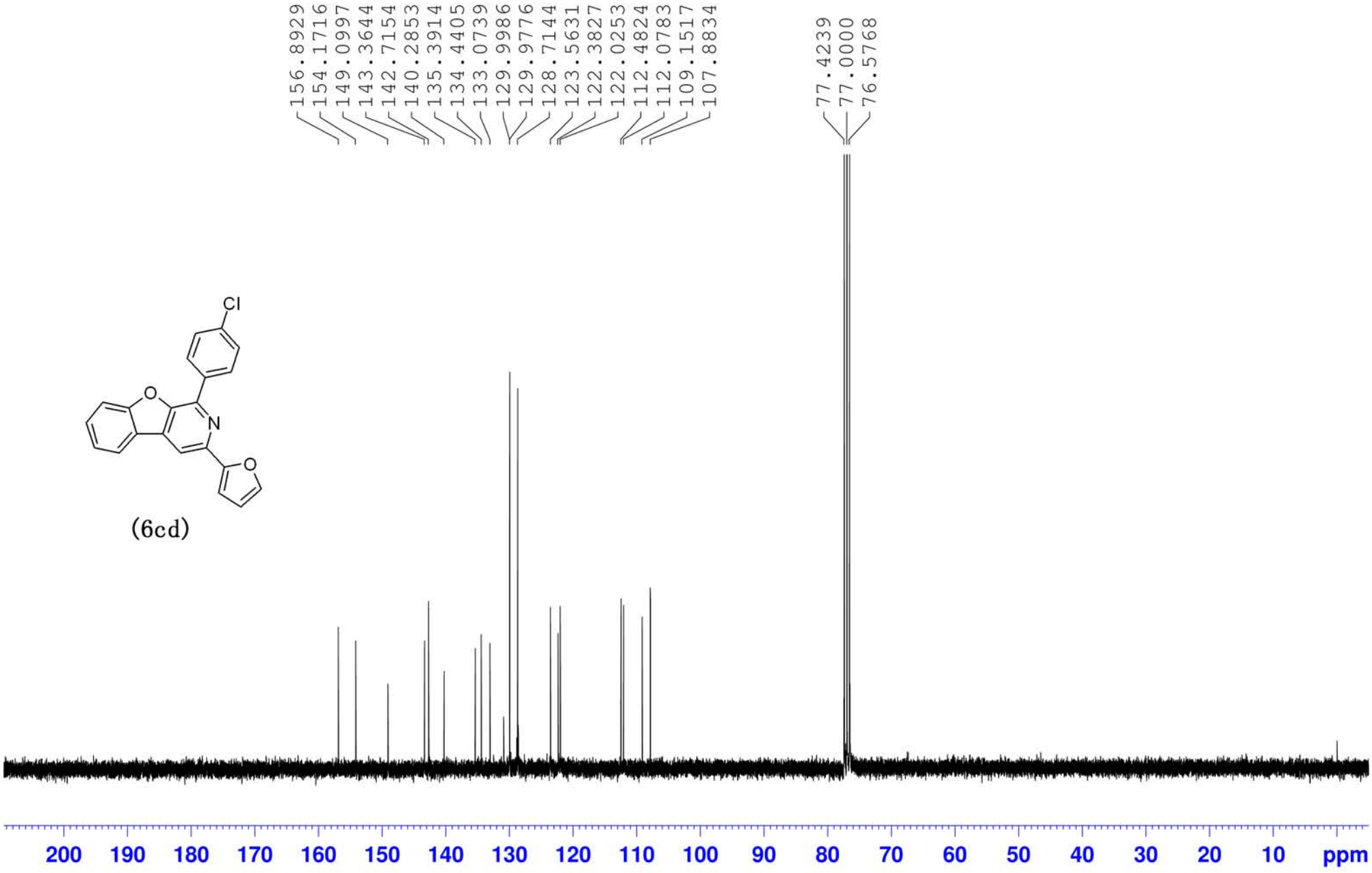

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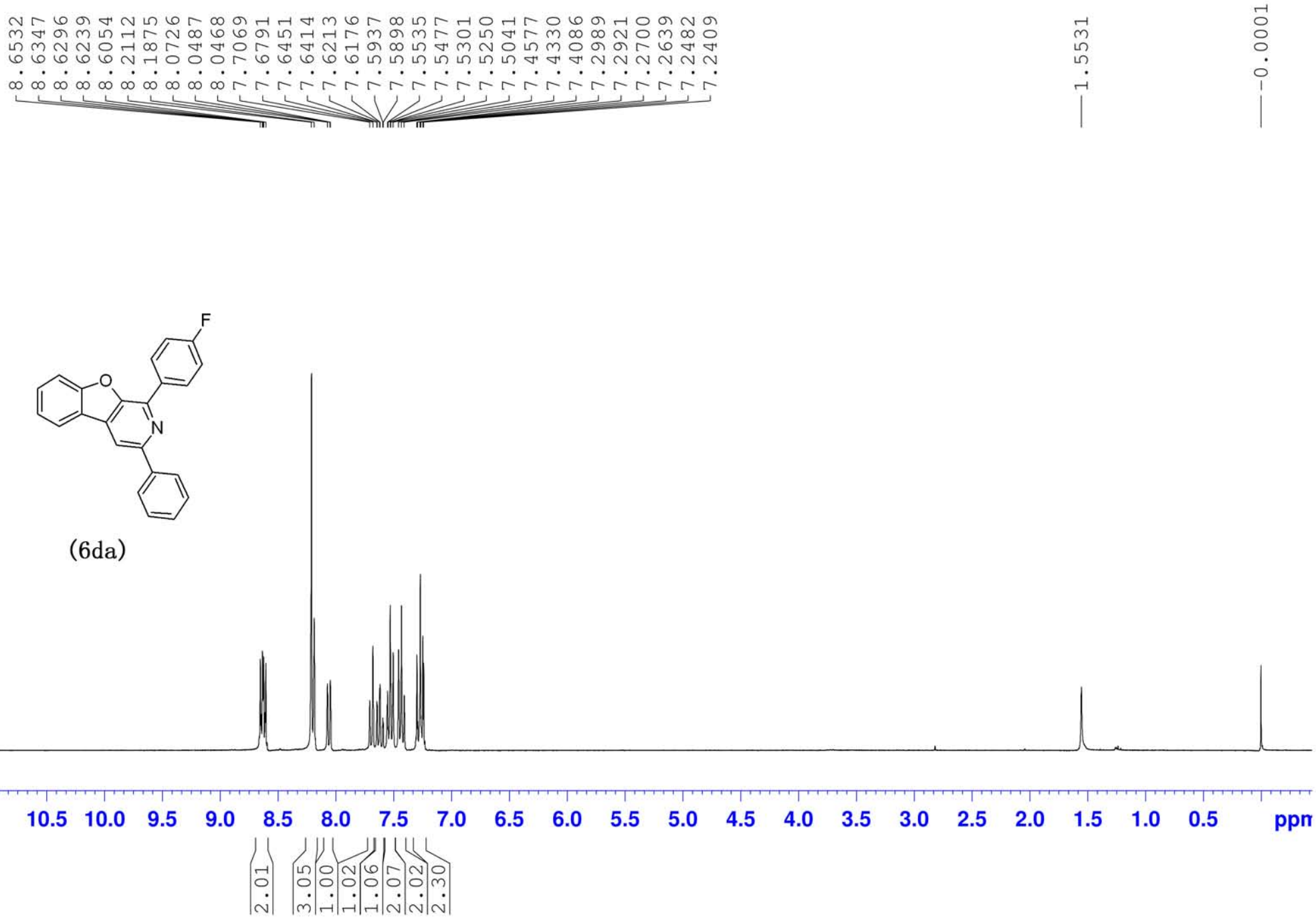

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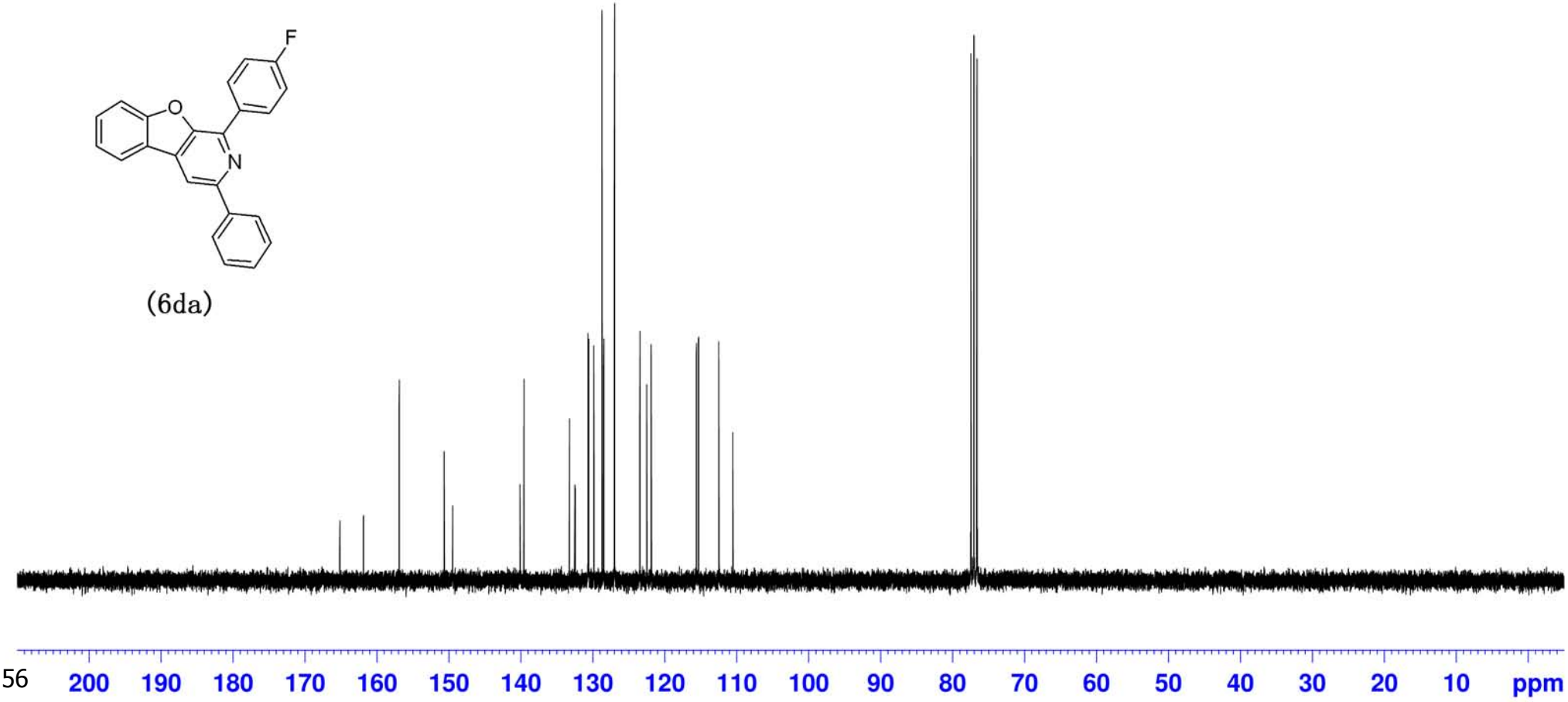

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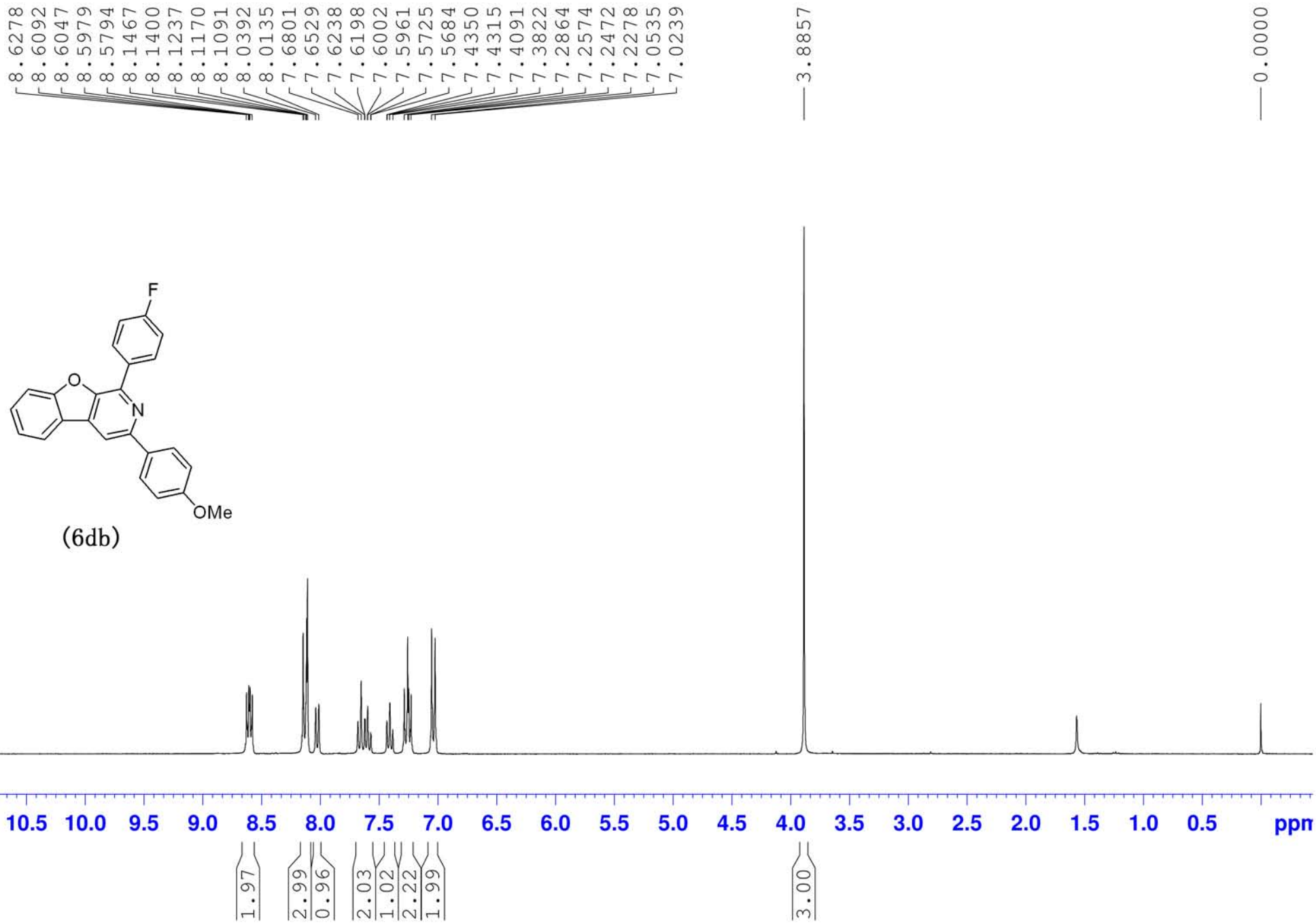

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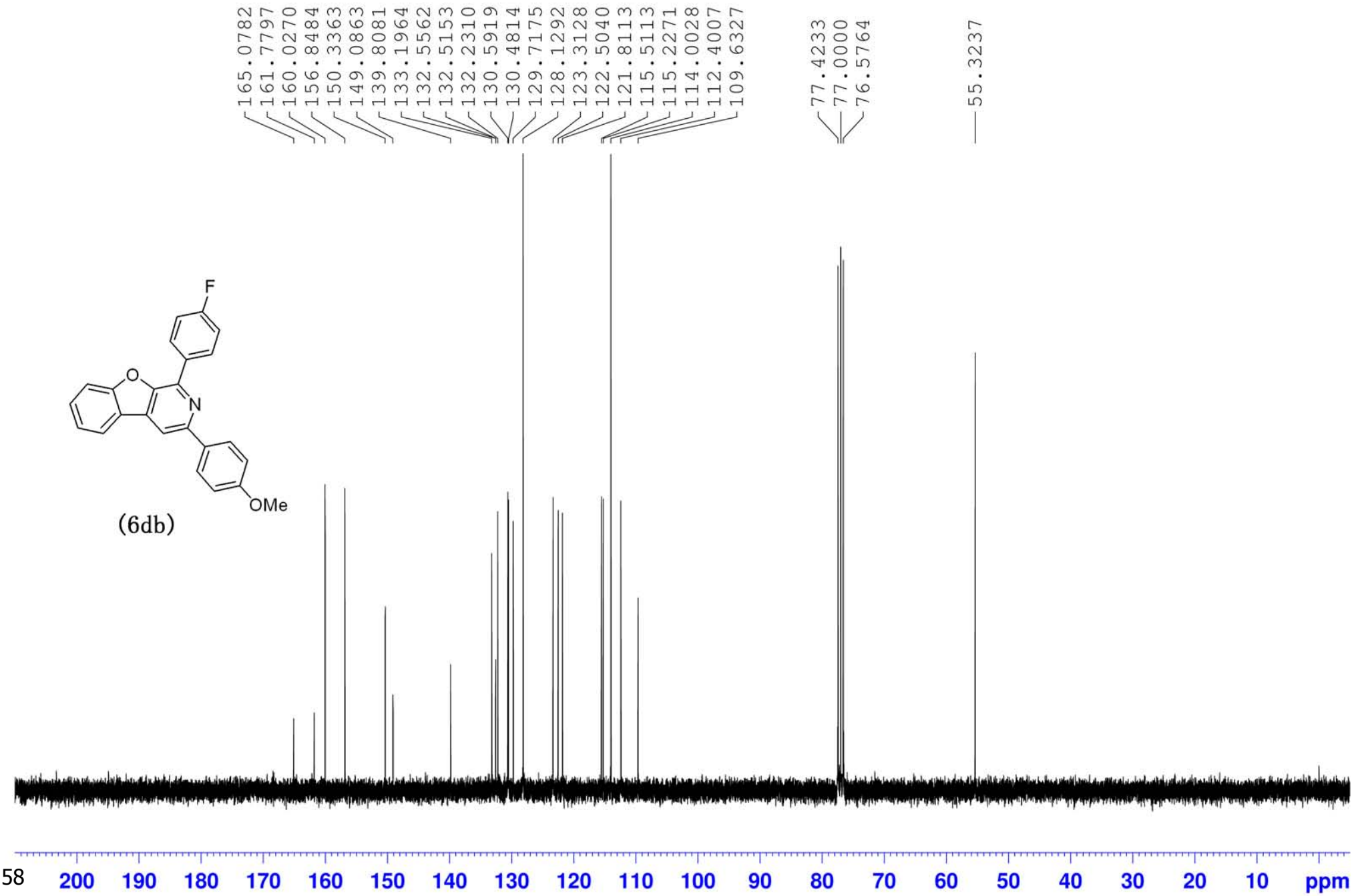

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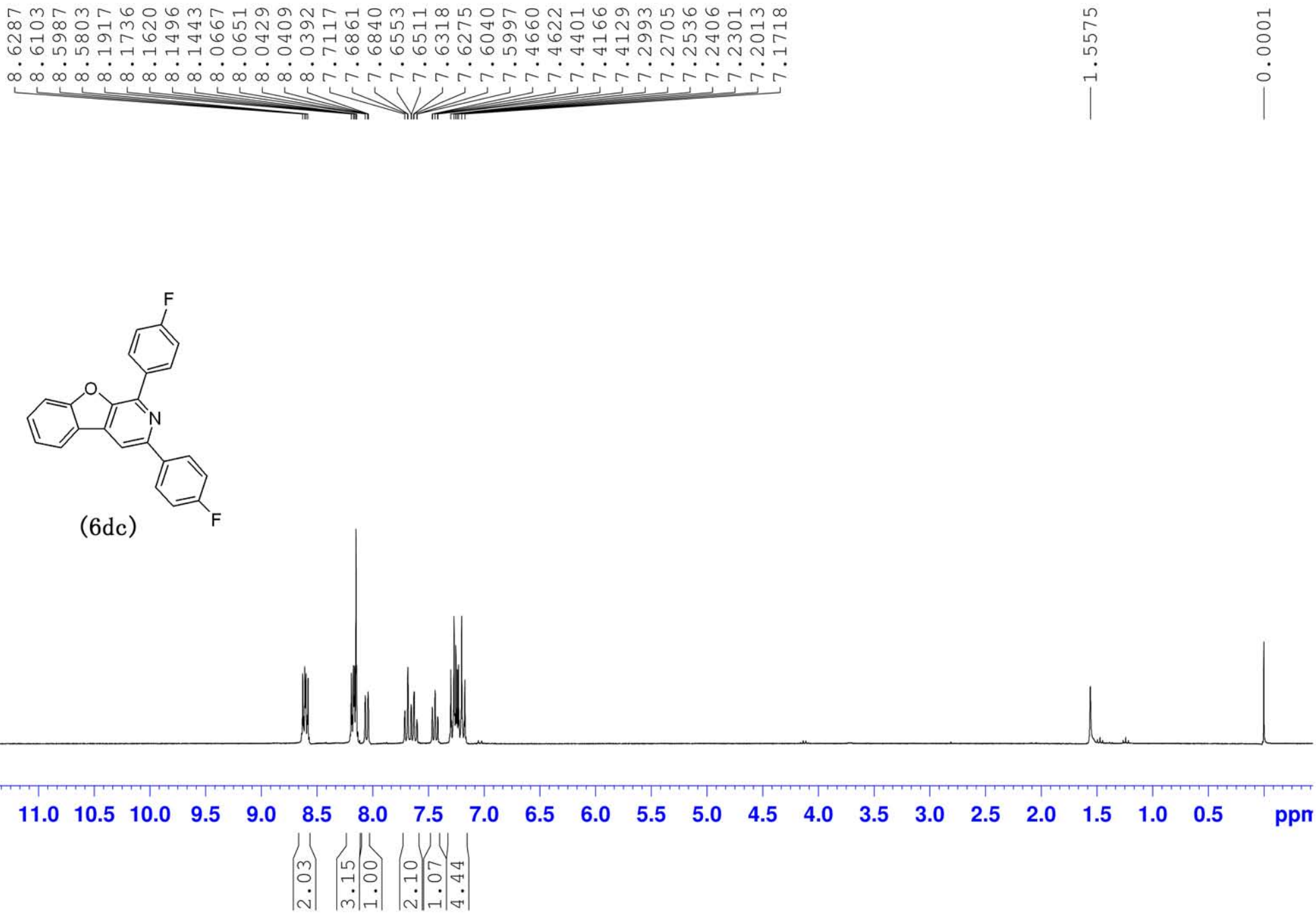

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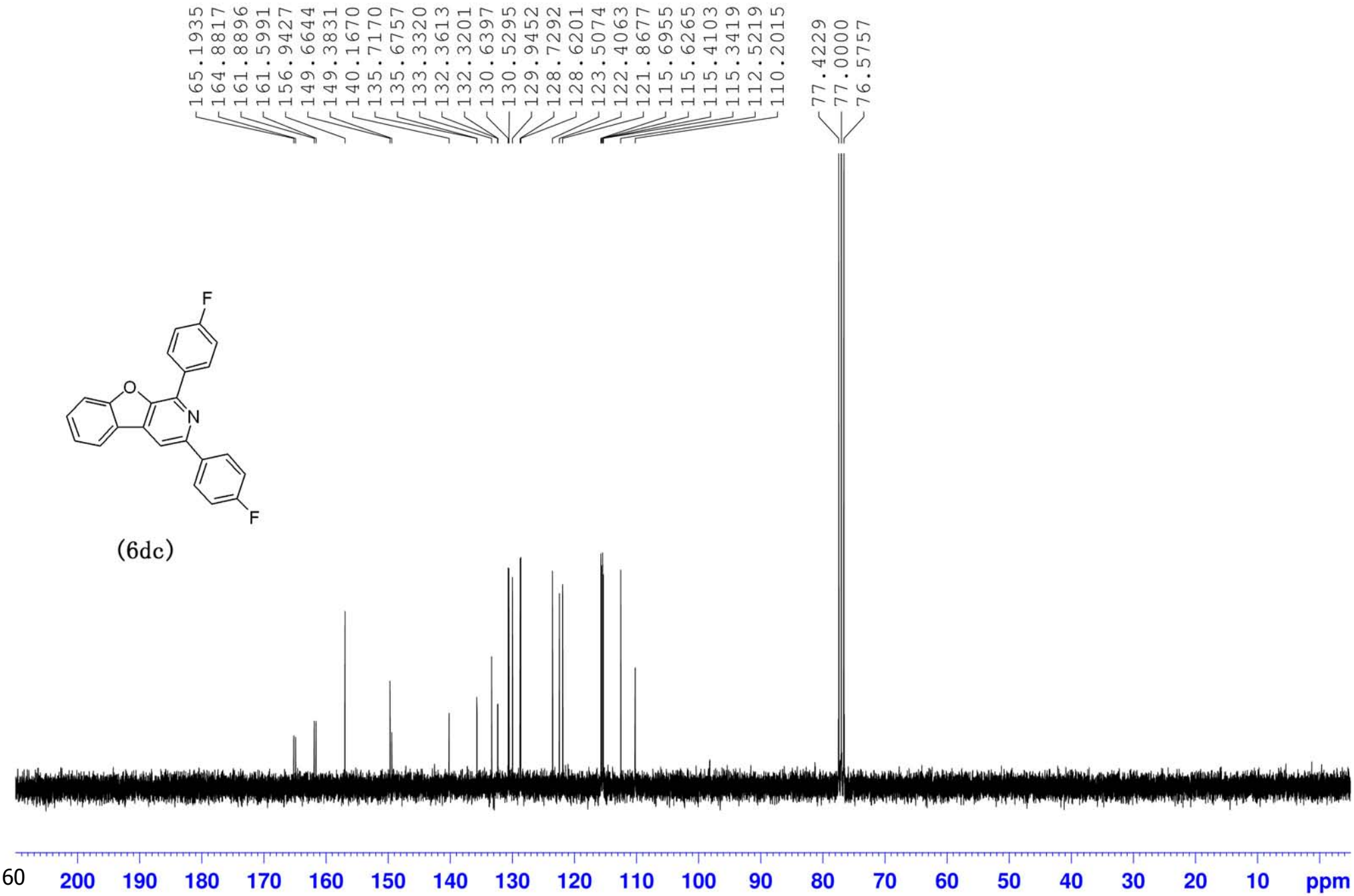

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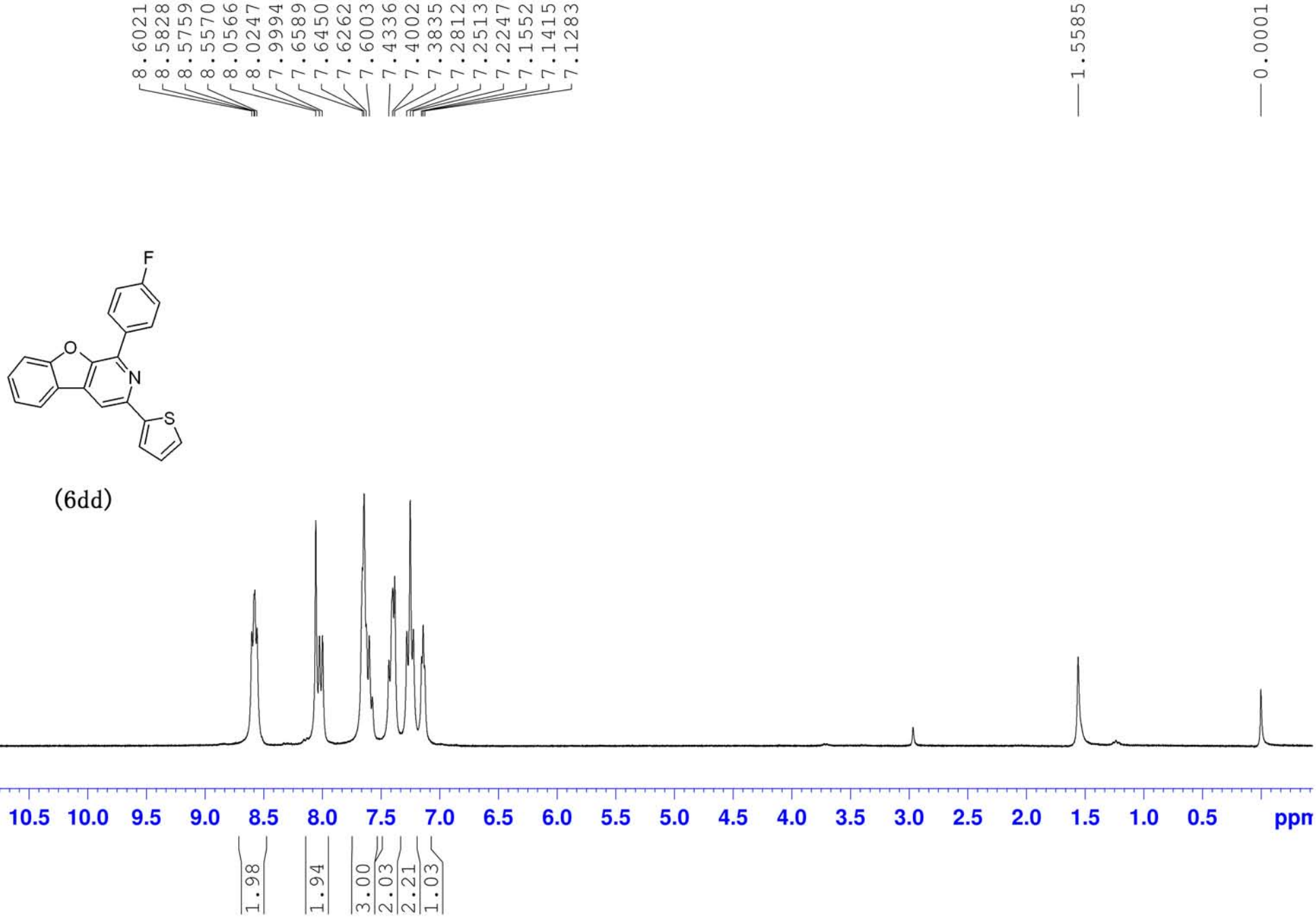

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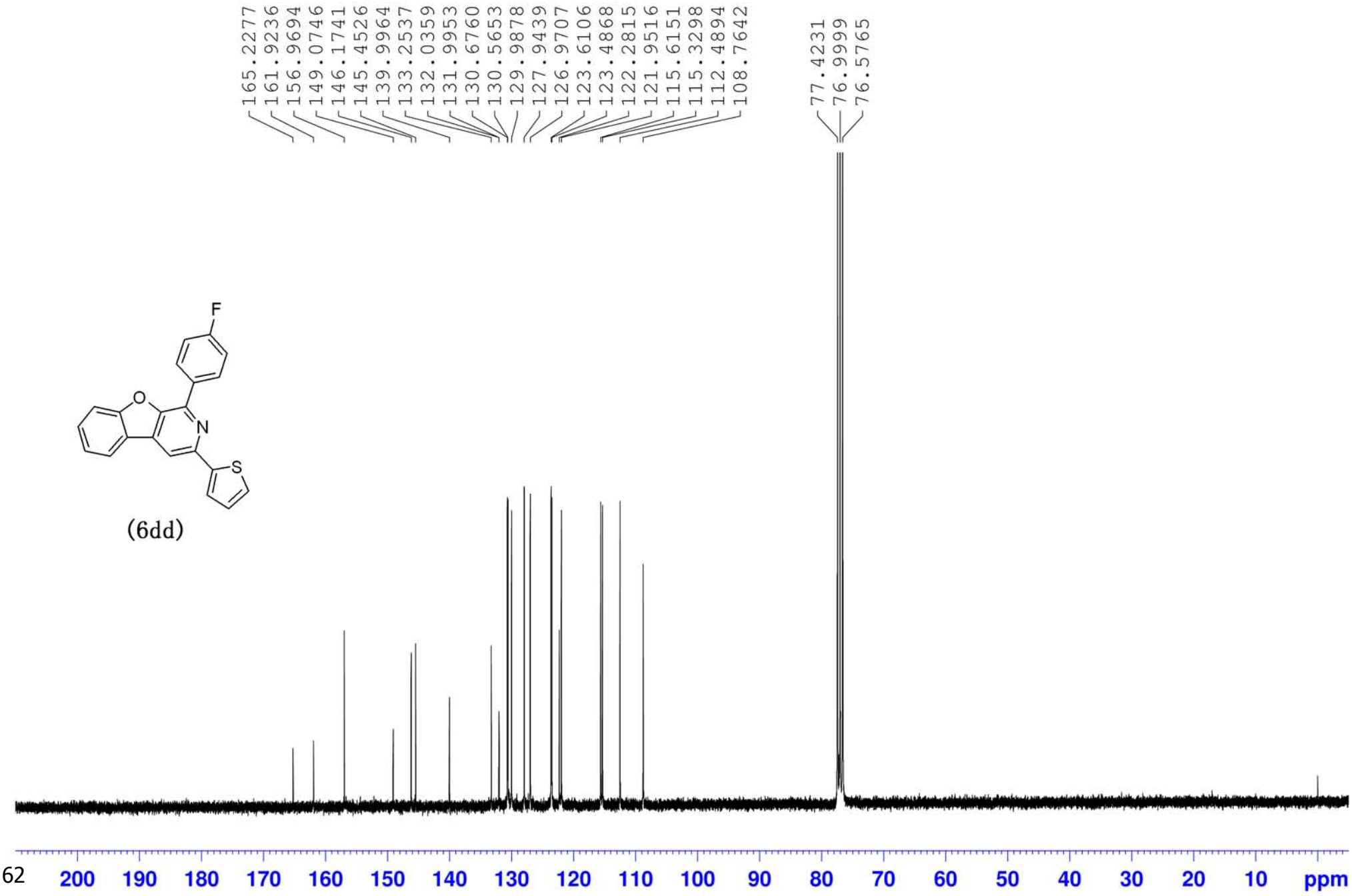

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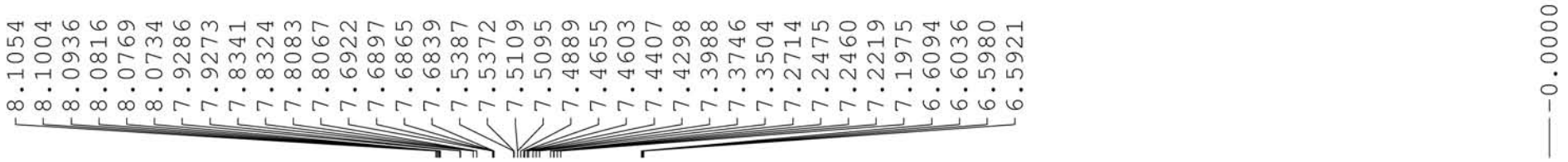

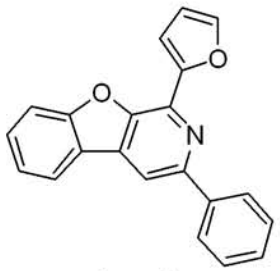

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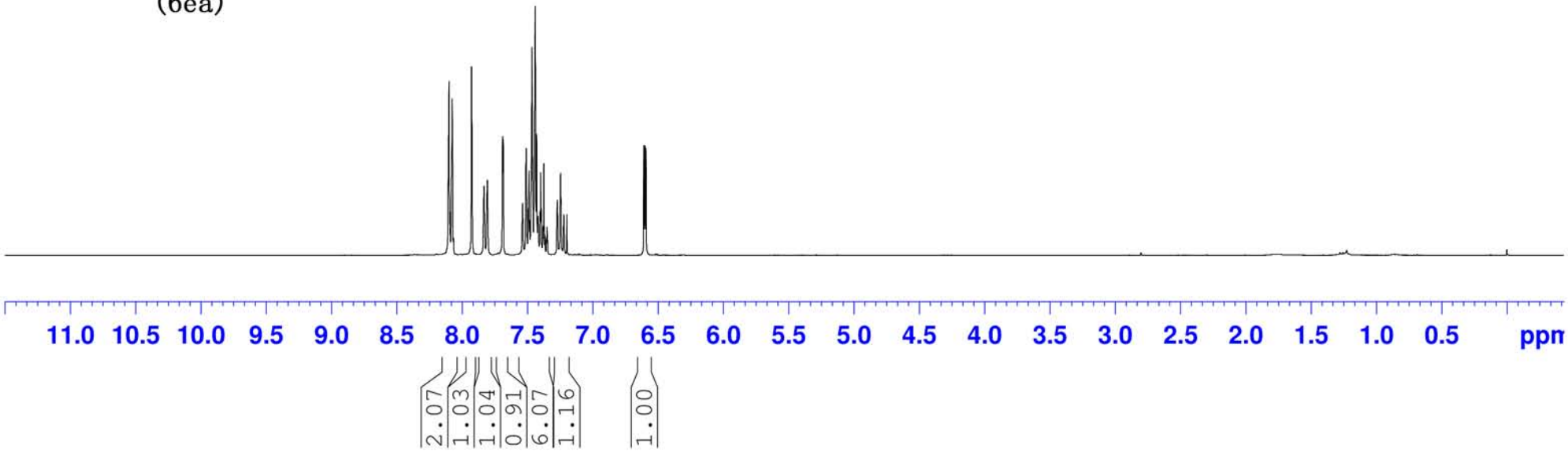

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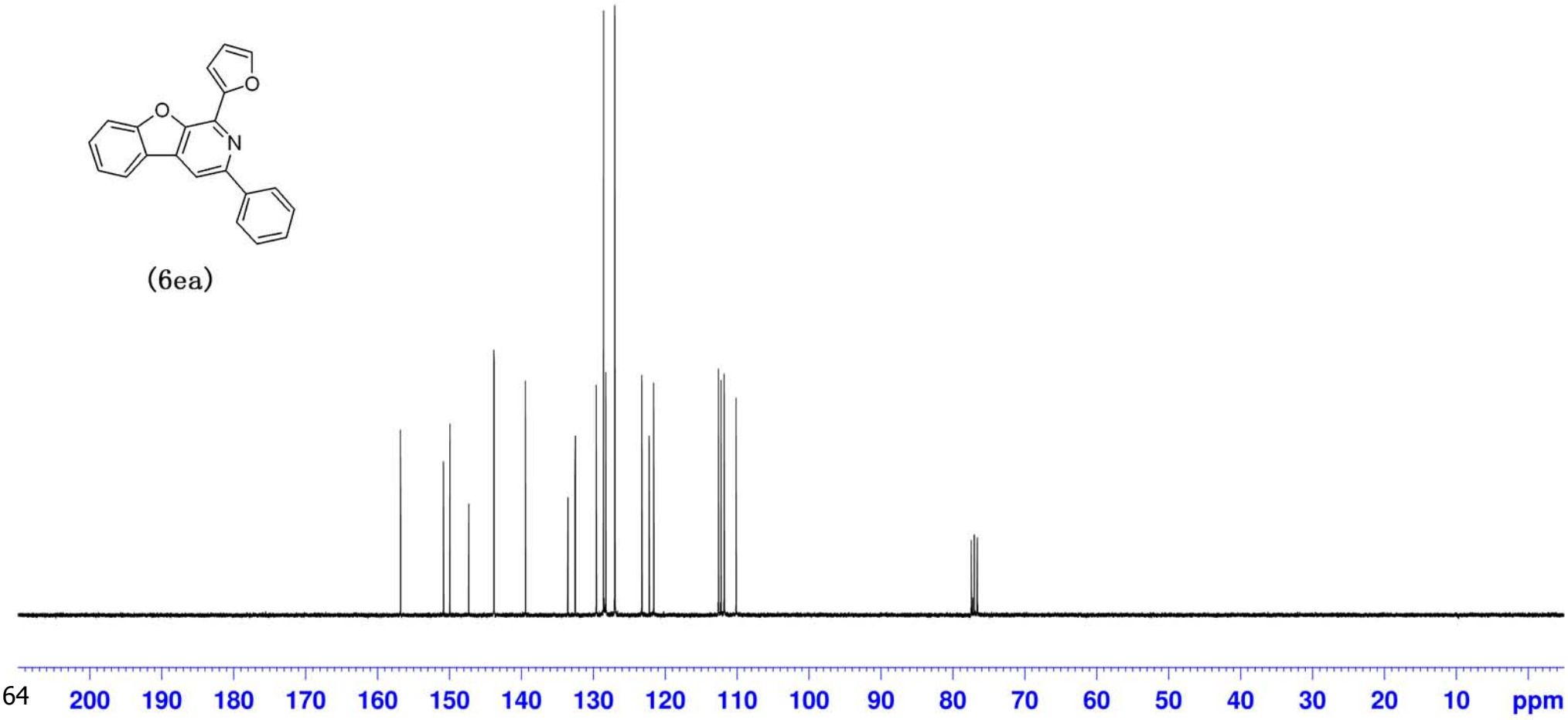

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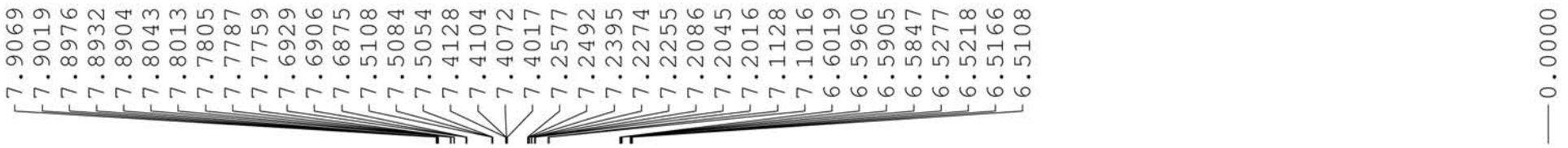

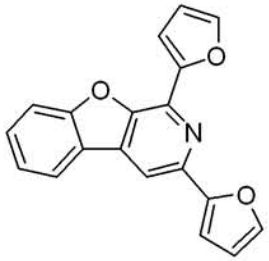

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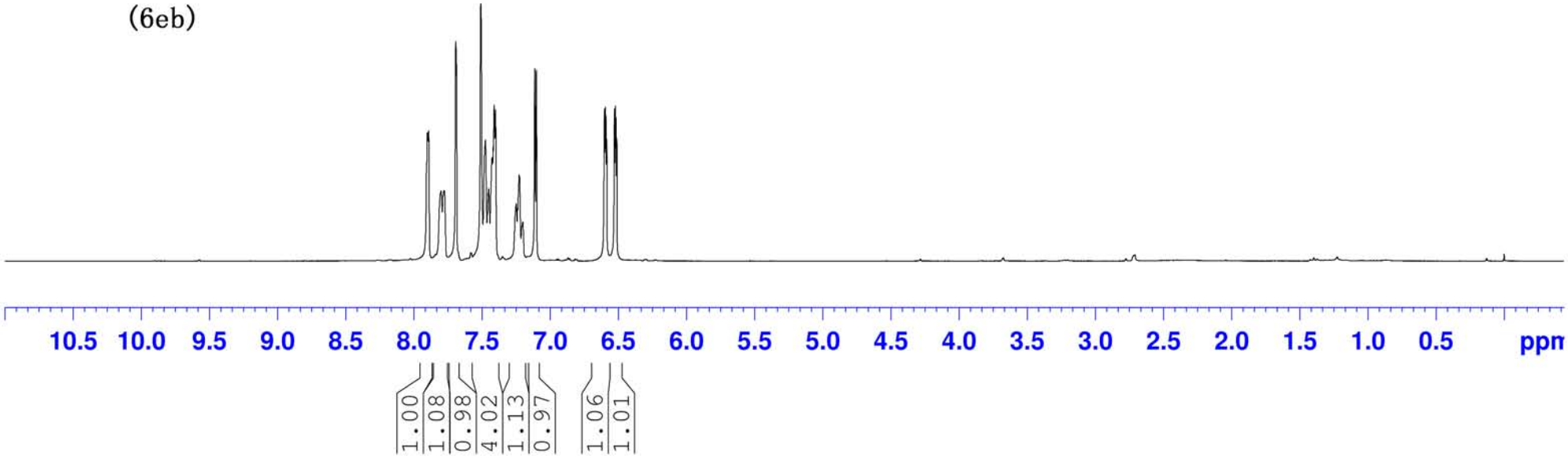

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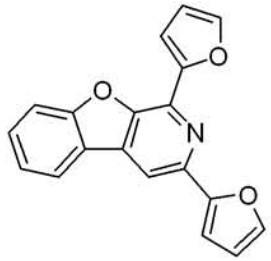

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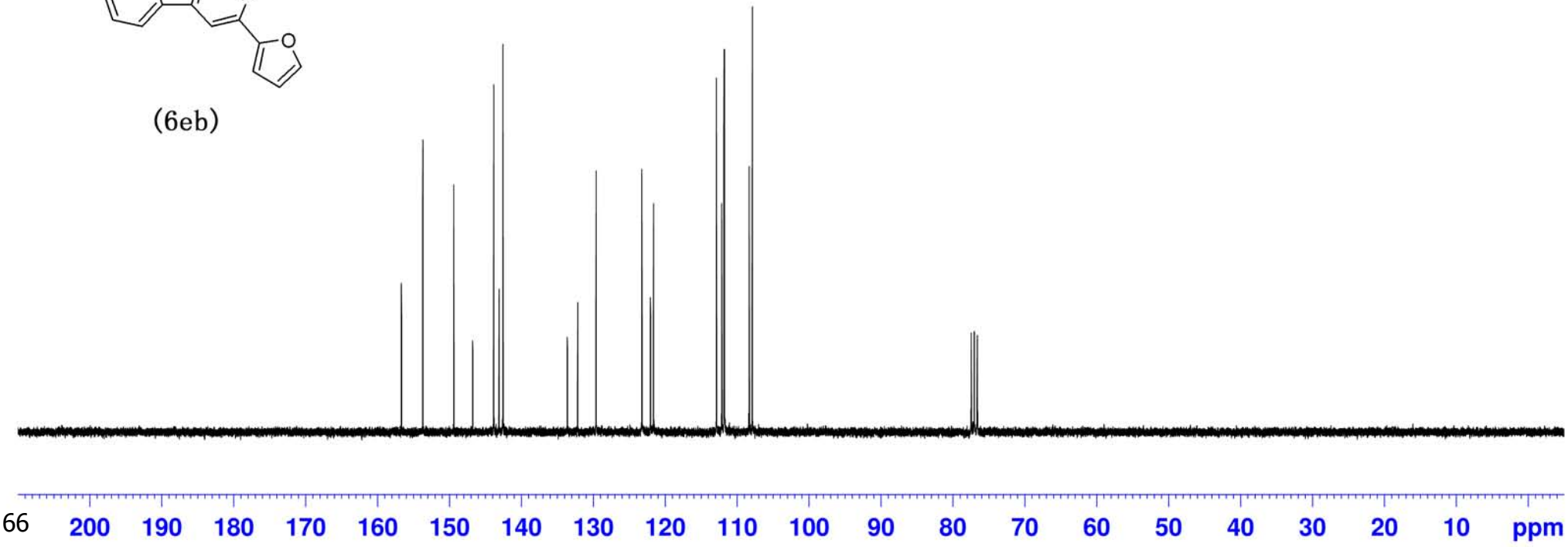

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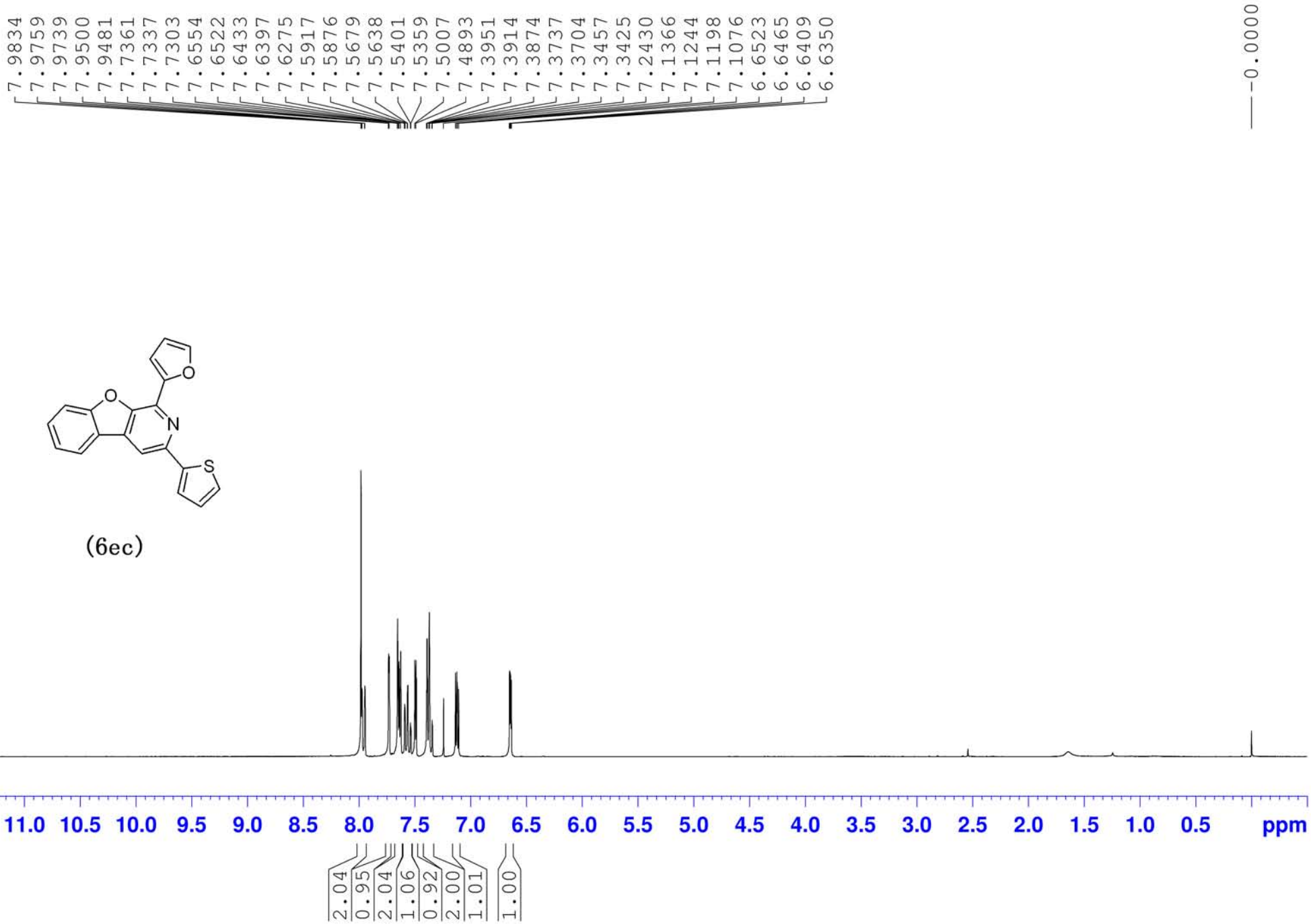

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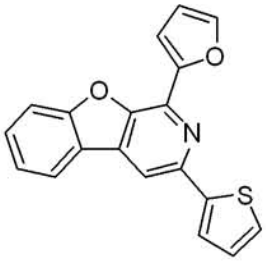

(6ec)