Supporting Information

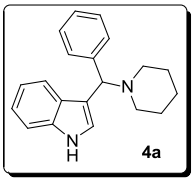
Micelle promoted multicomponent synthesis of 3-amino alkylated indoles *via* Mannich-type reaction in water

General Considerations.

1. Reagent grade solvents were used for extraction and flash chromatography. All the reagents and chemicals were purchased from Sigma–Aldrich Chemical Co, Lancaster and were used directly without further purification.The progress of reactions was checked by analytical thin-layer chromatography (TLC, Merck silica gel 60 F-254 plates). The plates were visualized first with UV illumination followed by iodine. Flash column chromatography was performed using silica gel (230-400 mesh). The solvent compositions reported for all chromatographic separations are on a volume/volume (v/v) basis. ^{1}H-NMR spectra were recorded at either 200 or 300 MHz and are reported in parts per million (ppm) on the δ scale relative to tetramethylsilane as an internal standard.^{13}C-NMR spectra were recorded at either 50 or 75 MHz and are reported in parts per million (ppm) on the δ scale relative to $CDCl_3$ (δ 77.00). Mass spectra were obtained using JEOL SX-102 (ESI) instrument. Melting points were determined on a Mel Temp II melting point apparatus and are uncorrected.

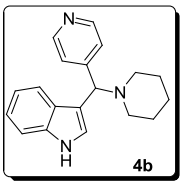
2. **General procedure for the synthesis of compound (4).** In a typical experiment, the aldehyde (1 mmol), secondary amine (1.2 mmol) and SDS (20 mol %) were taken in water (2 mL) in a round-bottom flask and was stirred at 80 ^{o}C temperature for 5 min. A white turbid mixture was obtained and then indole (1 mmol) was added. The reaction mixture was stirred till the completion of the reaction (monitored by TLC). After completion the reaction, mixture was extracted with ethyl acetate, dried over sodium sulphate and evoprated under vacuum to give crude product, which was purified by silica gel (230-400 mesh) coloum chromatography with hexane/ethyl acetate (2:3) as eluent to afford the correponding product.

3-(Phenyl(piperidin-1-yl)methyl)-1H-indole (4a).



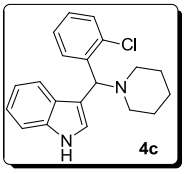
White solid; mp: 112 ^{0}C; ^{1}H NMR (300 MHz, $CDCl_3$) δ 1.0-1.14 (m, 6H), 1.72-1.82 (m, 2H), 2.04-2.15 (m, 2H), 4.67 (s, 1H), 6.40 (s, 1H), 6.61-6.77 (m, 7H), 6.82-6.91 (m, 1H), 7.44-7.53 (m, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 142.97, 136.49, 136.18, 128.10, 128.04, 126.45, 122.85, 121.71, 120.25, 119.19, 117.44, 111.01, 68.58, 52.83, 26.24, 24.66; **ESIMS**: m/z 291 (M+H); **IR** (KBr): 3400, 3066, 2821, 1493, 1395, 1219, 1164, 753 cm^{-1}; Analysis calculated for $C_{20}H_{22}N_2$: C, 82.72; H, 7.64; N, 9.65; found: C, 82.60; H, 7.54; N, 9.59%; HRMS (ES): calculated: 290.1783; found: 290.1791.

3-(Piperidin-1-yl(pyridin-4-yl)methyl)-1H-indole (4b).



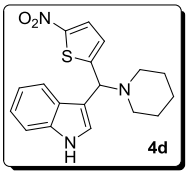
White solid; mp: 135-137 ^{0}C; ^{1}H NMR (300 MHz, $CDCl_3$) δ 1.54-1.61 (m, 6H), 2.37-2.46 (m, 4H), 4.68 (s, 1H), 7.03-7.31(m, 4H), 7.46 (d, 2H, *J* = 5.7 Hz), 7.73 (d, 1H, *J* = 7.7Hz), 8.48 (d, 2H, *J* = 5.9 Hz), 8.94 (br, s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 152.69, 149.38, 136.43, 126.65, 123.57, 123.40, 123.22, 121.93, 120.09, 119.40, 115.26, 111.23, 67.51, 52.62, 26.26, 24.53; **ESIMS**: m/z 292 (M+H); **IR** (KBr): 3420, 3069, 2829, 1489, 1393, 1217, 1158, 748 cm^{-1}; Analysis calculated for $C_{19}H_{21}N_3$: C, 78.32; H, 7.26; N, 14.42; found: C, 78.25; H, 7.19; N, 14.33%; HRMS (ES): calculated: 291.1735; found: 291.1722.

3-((2-Chlorophenyl)(piperidin-1-yl)methyl)-1H-indole (4c).



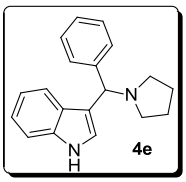
White semi solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.82-1.86 (m, 6H), 2.86-2.90 (m, 4H), 5.70 (s, 1H), 7.23-7.35 (m, 1H), 7.40-7.49 (m, 3H), 7.62-7.77 (m, 4H), 8.28 (d, 1H, *J* = 7.3 Hz), 8.38 (br, s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 137.32, 136.79, 134.06, 132.45, 130.47, 130.02, 127.88, 127.35, 127.00, 122.13, 121.15, 120.14, 115.23, 113.49, 71.29, 51.09, 24.68, 23.42; **ESIMS**: m/z 325 (M+H); **IR** (KBr): 3424, 3063, 2820, 1491, 1389, 1227, 1165, 752 cm^{-1}; Analysis calculated for $C_{20}H_{21}ClN_2$: C, 73.95; H, 6.52; N, 8.62; found: C, 73.82; H, 6.43; N, 8.55%; HRMS (ES): calculated: 324.1393; found: 324.1385.

3-((5-Nitrothiophen-2-yl)(piperidin-1-yl)methyl)-1H-indole (4d).



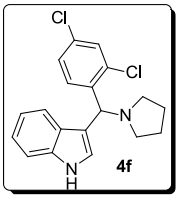
Yellow solid; mp: 130-133 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.51 (s, 6H), 2.48 (s, 4H), 5.38 (s, 1H), 6.97-7.05 (m, 1H), 7.11-7.21 (m, 2H), 7.40-7.49 (m, 2H), 8.86 (d, 1H, *J* = 5.2 Hz), 7.90 (br, s, 1H), 7.99 (d, 1H, *J* = 7.65 Hz); **^{13}C, 50 MHz ($CDCl_3$):** 167.77, 153.97, 137.32, 130.74, 127.00, 125.21, 122.13, 121.15, 120.14, 119.80, 113.49, 112.08, 69.48, 51.70, 24.68, 23.42; **ESIMS**: m/z 342 (M+H); **IR** (KBr): 3429, 3063, 2820, 1515, 1387, 1213, 1163, 759 cm^{-1}; Analysis calculated for $C_{18}H_{19}N_3O_2S$: C, 63.32; H, 5.61; N, 12.31; found: C, 63.25; H, 5.66; N, 12.28%; HRMS (ES): calculated 341.1198; found: 341.1187.

3-(Phenyl(pyrrolidin-1-yl)methyl)-1H-indole (4e).



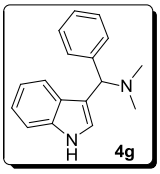
White solid; mp: 145-147 ^{0}C;^{1}H NMR (300 MHz, $CDCl_3$) δ1.75 (s, 4H), 2.51 (d, 4H, *J* = 6.5 Hz), 4.59 (s, 1H), 7.04-7.15(m, 4H), 7.21-7.26 (m, 3H), 7.54 (d, 2H, *J* = 7.2 Hz), 7.82 (d, 1H, *J* = 7.5 Hz), 8.10 (br, s, 1H); **^{13}C, 50MHz ($CDCl_3$)**: 144.41, 136.08, 128.16, 127.69, 126.53, 122.0, 121.79, 119.73, 119.39, 119.30, 111.01, 67.97, 53.68, 23.51. ESIMS: m/z 277 (M+H). IR (KBr): 3417, 3063, 2824, 1494, 1392, 1213, 1164, 754 cm^{-1}; Analysis calculated for $C_{19}H_{20}N_2$: C, 82.57; H, 7.29; N, 10.14%; found: C, 82.50; H, 7.21; N, 10.05%; HRMS (ES): calculated 276.1626; found: 276.1632.

3-((2,4-Dichlorophenyl)(pyrrolidin-1-yl)methyl)-1H-indole (4f).



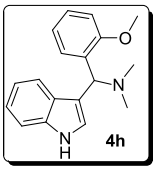
White solid; mp: 141-143 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.38-1.45 (m, 4H), 2.36 (s, 4H), 4.92 (s, 1H), 6.60 (s, 1H), 6.65-6.70 (m, 2H), 6.81 (s, 2H), 6.86-6.91 (m, 1H), 7.09 (s, 1H), 7.18-7.22 (m, 1H), 9.61 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 137.32, 136.06, 135.10, 133.92, 130.29, 128.40, 127.88, 127.00, 122.12, 121.14, 120.14, 115.23, 113.48, 71.30, 54.14, 24.76; **ESIMS**: m/z 345 (M+H); IR (KBr): 3435, 3056, 2825, 1491, 1397, 1207, 1172, 751 cm^{-1}; Analysis calculated for $C_{19}H_{18}Cl_2N_2$: C, 66.09; H, 5.25; N, 8.11; found: C, 66.18; H, 5.19; N, 8.03%; HRMS (ES): calculated 344.0847; found: 344.0838.

1-(1H-indol-3-yl)-*N,N*-dimethyl-1-phenylmethanamine (4g).



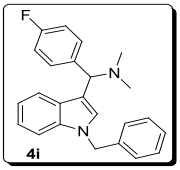
White solid; mp: 109 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.70 (s, 6H), 4.98 (s, 1H), 6.59-6.74 (m, 2H), 6.83-6.85 (m, 3H), 6.94-7.03 (m, 4H), 7.20 (s, 1H), 7.42 (d, 1H, *J* = 6.8 Hz); **^{13}C, 50 MHz ($CDCl_3$):** 137.32, 136.43, 129.61, 129.24, 128.77, 128.12, 127.00, 122.13, 121.15, 120.14, 115.35, 113.49, 74.28, 41.64; **ESIMS**: m/z 251 (M+H); **IR** (KBr): 3400, 3066, 2821, 1484, 1395, 1227, 1164, 759 cm^{-1}; Analysis calculated for $C_{17}H_{18}N_2$: C, 81.56; H, 7.25; N, 11.19%; found: C, 81.62; H, 7.18; N, 11.24%; HRMS (ES): calculated: 250.1470; found: 250.1481.

1-(1H-indol-3-yl)-1-(2-methoxyphenyl)-*N,N*-dimethylmethanamine (4h).



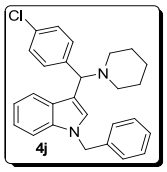
Colourless liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.93 (s, 6H), 3.46 (s, 3H), 5.00 (s, 1H), 6.63-6.70 (m, 2H), 6.84 (s, 1H), 6.90-6.92 (m, 2H), 6.99-7.14 (m, 3H), 7.27-7.32 (m, 1H), 8.59 (br, s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 158.18, 137.32, 133.53, 129.45, 128.35, 127.00, 126.35, 122.44, 122.13, 121.15, 120.14, 115.98, 113.49, 112.25, 74.13, 56.79, 41.64; **ESIMS**: m/z 281 (M+H); **IR** (KBr): 3451, 3060, 2825, 1481, 1393, 1223, 1156, 758 cm^{-1}; Analysis calculated for $C_{18}H_{20}N_2O$: C, 77.11; H, 7.19; N, 9.99; found: C, 77.02; H, 7.08; N, 9.86 %; HRMS (ES): calculated 280.1576; found: 280.1570.

1-(1-Benzyl-1H-indol-3-yl)-1-(4-fluorophenyl)-*N,N*-dimethylmethanamine (4i).



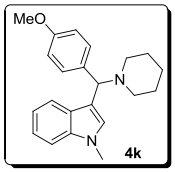
Brown liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.02 (s, 6H), 4.83 (s, 1H), 5.15 (s, 2H), 6.75 (d, 1H, *J* = 7.7 Hz), 6.88-7.03 (m, 5H), 7.07-7.19 (m, 2H), 7.19-7.32 (m, 4H), 7.40 (s, 1H), 7.51 (d, 1H, *J* = 6.7 Hz); **^{13}C, 50 MHz ($CDCl_3$):** 162.44, 139.77, 139.44, 137.47, 132.91, 131.44, 131.30, 128.68, 128.48, 127.74, 123.83, 123.52, 121.86, 115.62, 114.34, 114.00, 73.68, 52.89, 41.64; **ESIMS**: m/z 359 (M+H); **IR** (KBr): 3064, 2820, 1487, 1383, 1211, 1162, 753 cm^{-1}; Analysis calculated for $C_{24}H_{23}FN_2$: C, 80.42; H, 6.47; N, 7.82; found: C, 80.35; H, 6.39; N, 7.78%; HRMS (ES): calculated 358.1845; found: 358.1852.

1-Benzyl-3-((4-chlorophenyl)(piperidin-1-yl)methyl)-1H-indole (4j).



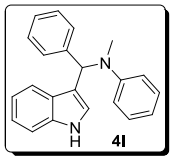
White solid; mp: 155-157 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 0.86-1.14 (m, 6H), 1.67-1.81 (m, 2H), 1.98-2.11 (m, 2H), 4.46 (s, 2H), 4.58 (s, 1H), 6.49-6.76 (m, 11 H), 6.79-6.92 (m, 1H), 7.07 (s, 1H), 7.26-7.37 (m, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 139.88, 139.77, 137.46, 135.62, 133.20, 131.43, 131.28, 129.35, 129.19, 128.67, 128.59, 128.47, 128.35, 127.73, 123.82, 123.51, 121.86, 113.99, 112.71, 71.94, 52.88, 24.68, 23.42; **ESIMS**: m/z 415 (M+H); **IR** (KBr): 3048, 2883, 2951, 2790, 1395, 1217, 1166, 754 cm^{-1}; Analysis calculated for $C_{27}H_{27}ClN_2$: C, 78.15; H, 6.56; N, 6.75%; found: C, 78.05; H, 6.42; N, 6.66%; HRMS (ES): calculated 414.1863; found: 414.1871.

3-((4-Methoxyphenyl)(piperidin-1-yl)methyl)-1-methyl-1H-indole (4k).



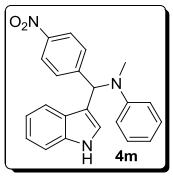
White solid; mp: 124 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 0.84-1.07 (m, 6H), 1.65-1.79 (m, 2H), 1.98-2.11 (m, 2H), 3.06 (s, 3H), 3.13 (s, 3H), 4.58 (s, 1H), 6.16-6.25 (2H), 6.57-6.75 (m, 6H), 7.37-7.58 (m, 1H).; **^{13}C, 50 MHz ($CDCl_3$):** 159.99, 139.88, 139.69, 130.17, 130.07, 124.77, 122.15, 113.86, 112.84, 112.51, 111.74, 71.94, 56.03, 51.09, 35.89, 24.68, 23.42; **ESIMS**: m/z 335(M+H). **IR** (KBr): 3058, 2821, 1492, 1397, 1213, 1161, 759 cm^{-1}; Analysis calculated for $C_{22}H_{26}N_2O$: C, 79.00; H, 7.84; N, 8.38; found: C, 78.89; H, 7.76; N, 8.31%; HRMS (ES): calculated 334.2045; found: 334.2059.

***N*-((1H-indol-3-yl)(phenyl)methyl)-*N*-methylaniline (4l).**



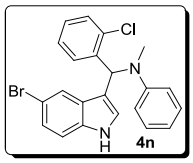
Brown solid; mp: 145-147 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.37 (s, 3H), 5.53 (s, 1H), 6.44 (d, 2H, *J* = 8.1 Hz), 6.75-6.82 (m, 1H), 6.47-7.01 (m, 5H), 7.07-7.18 (m, 4H), 7.28-7.33 (m, 3H), 8.94 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 137.32, 137.28, 129.97, 128.78, 128.53, 128.06, 127.00, 122.88, 122.13, 121.15, 120.14, 119.64, 116.40, 116.34, 113.49, 65.72, 37.62; **ESIMS**: m/z 313 (M+H). **IR** (KBr): 3412, 3358, 2920, 2859, 1609, 1457, 745 cm^{-1}; Analysis calculated for $C_{22}H_{20}N_2$: C, 84.58; H, 6.45; N, 8.97; found: C, 84.49; H, 6.37; N, 8.88%; HRMS (ES): calculated 312.1626; found: 312.1632.

***N*-((1H-indol-3-yl)(4-nitrophenyl)methyl)-*N*-methylaniline (4m).**



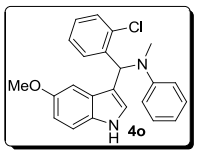
Brown solid; mp: 67-70 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.49 (s, 3H), 5.80 (s, 1H), 6.55 (d, 2H, *J* = 7.7 Hz), 6.86-6.93 (m, 1H), 7.05-7.17 (m, 5H), 7.24-7.27 (m, 1H), 7.39-7.44 (m, 1H), 7.54 (d, 2H, *J* = 8.6 Hz), 8.13 (d, 2H, *J* = 8.8 Hz), 9.05 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 147.43, 146.17, 137.32, 128.55, 128.06, 127.00, 123.75, 122.88, 122.13, 121.15, 120.14, 119.64, 116.40, 116.34, 113.49, 65.72, 37.62; **ESIMS**: m/z 358 (M+H). **IR** (KBr): 3409, 3352, 2929, 2862, 1617, 1460, 759 cm^{-1}; Analysis calculated for $C_{22}H_{19}N_3O_2$: C, 73.93; H, 5.36; N, 11.76; found: C, 73.82; H, 5.24; N, 11.69 %; HRMS (ES): calculated 357.1477; found: 357.1484.

***N*-((5-bromo-1H-indol-3-yl)(2-chlorophenyl)methyl)-*N*-methylaniline (4n).**



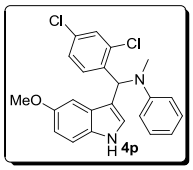
Brown solid; mp: 137-141 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.43 (s, 3H), 5.95 (s, 1H), 6.52 (d, 2H, *J* = 7.8 Hz), 6.80-6.97 (m, 2H), 7.01-7.15 (m, 4H), 7.18-7.40 (m, 4H), 7.64 (s, 1H), 9.85 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 137.67, 136.83, 134.34, 133.07, 130.34, 129.93, 128.06, 127.35, 127.10, 124.28, 123.14, 122.26, 119.64, 116.52, 116.40, 115.69, 115.13, 63.57, 37.62; **ESIMS**: m/z 425 (M+H). **IR** (KBr): 3417, 3347, 2925, 2865, 1614, 1445, 751 cm^{-1}; Analysis calculated for $C_{22}H_{18}BrClN_2$: C, 62.06; H, 4.26; N, 6.58; found: C, 61.91; H, 4.16; N, 6.51 %; HRMS (ES): calculated 424.0342; found: 424.0353.

***N*-((2-chlorophenyl)(5-methoxy-1H-indol-3-yl)methyl)-*N*-methylaniline (4o).**



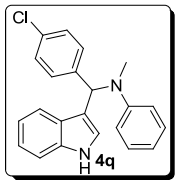
Brown solid; mp: 133-135 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.20 (s, 3H), 3.58 (s, 3H), 5.64 (s, 1H), 6.28 (d, 2H, *J* = 7.6 Hz), 6.52-6.70 (m, 3H), 6.74-6.90 (m, 4H), 6.96-7.07 (m, 3H), 7.12-7.16 (m, 1H), 8.32 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 153.95, 149.90, 136.83, 134.34, 133.07, 132.49, 130.34, 129.93, 128.06, 127.10, 125.97, 122.26, 119.64, 116.40, 115.69, 113.36, 113.29, 103.83, 63.57, 56.04, 37.62.; **ESIMS**: m/z 377 (M+H). **IR** (KBr): 3419, 3368, 2924, 2862, 1613, 1461, 749 cm^{-1}; Analysis calculated for $C_{23}H_{21}ClN_2O$: C, 73.30; H, 5.62; N, 7.43; found: C, 73.21; H, 5.55; N, 7.35 %; HRMS (ES): calculated 376.1342; found: 376.1351.

***N*-((2,4-dichlorophenyl)(5-methoxy-1H-indol-3-yl)methyl)-*N*-methylaniline (4p).**



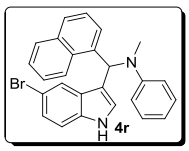
Brown liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.43 (s, 3H), 3.82 (s, 3H), 5.87 (s, 1H), 6.52 (d, 2H, *J* = 7.8 Hz), 6.78-6.93 (m, 3H), 7.03-7.13 (m, 4H), 7.20-7.24 (m, 2H), 7.55 (s, 1H), 8.55 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 153.95, 149.90, 135.89, 135.46, 135.03, 134.30, 132.49, 130.24, 128.18, 128.06, 125.97, 122.26, 119.64, 116.40, 115.69, 113.36, 113.29, 103.83, 63.57, 56.04, 37.62; **ESIMS**: m/z 411 (M+H). **IR** (KBr): 3405, 3348, 2911, 2851, 1616, 1452, 752 cm^{-1}; Analysis calculated for $C_{23}H_{20}Cl_2N_2O$: C, 67.16; H, 4.90; N, 6.81; found: C, 67.07; H, 4.81; N, 6.73 %; HRMS (ES): calculated 410.0953; found: 410.0963.

***N*-((4-chlorophenyl)(1H-indol-3-yl)methyl)-*N*-methylaniline (4q).**



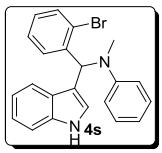
Brown solid; mp: 135-137 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.52 (s, 3H), 6.07 (s, 1H), 6.44 (d, 2H, *J* = 7.0 Hz), 6.86-6.98 (m, 1H), 7.01-7.18 (m, 4H), 7.26-7.43 (m, 7H), 7.83 (d, 1H, *J* = 7.5 Hz); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 137.32, 136.48, 133.44, 131.14, 129.04, 128.06, 127.00, 122.88, 122.13, 121.15, 120.14, 119.64, 116.40, 116.34, 113.49, 65.72, 37.62; ESIMS: m/z 347 (M+H). IR (KBr): 3416, 3363, 2927, 2867, 1601, 1463, 757 cm^{-1}; Analysis calculated for $C_{22}H_{19}ClN_2$: C, 76.18; H, 5.52; N, 8.08; found: C, 76.07; H, 5.43; N, 8.01 %; HRMS (ES): calculated 346.1237; found: 346.1245.

***N*-((5-bromo-1H-indol-3-yl)(naphthalen-1-yl)methyl)-*N*-methylaniline (4r).**



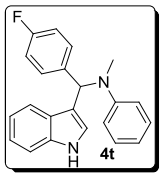
Brown solid; mp: 82-85 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.48 (s, 3H), 6.19 (s, 1H), 6.49 (d, 2H, *J* = 7.8 Hz), 6.96-7.09 (m, 4 H), 7.22-7.42 (m, 4H), 7.45-7.60 (m, 2 H), 7.68-7.79 (m, 2 H), 8.12 (d, 1H, *J* = 8.20 Hz), 9.64 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 137.67, 134.40, 132.56, 131.92, 130.44, 128.84, 128.06, 127.86, 127.35, 127.26, 126.75, 126.70, 126.59, 124.28, 123.59, 123.14, 119.64, 116.52, 116.40, 115.64, 115.13, 63.28, 37.62; **ESIMS**: m/z 441 (M+H). **IR** (KBr): 3418, 3353, 2914, 2869, 1617, 1459, 755 cm^{-1}; Analysis calculated for $C_{26}H_{21}BrN_2$: C, 70.75; H, 4.80; N, 6.35; found: C, 70.69; H, 4.71; N, 6.21 %; HRMS (ES): calculated 440.0888; found: 440.0897.

***N*-((2-bromophenyl)(1H-indol-3-yl)methyl)-*N*-methylaniline (4s).**



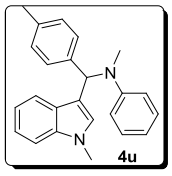
Brown solid; mp: 131-133 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.49 (s, 3H), 5.56 (s, 1H), 6.55 (d, 2H, *J* = 7.6 Hz), 6.83-6.93 (m, 3H), 7.05-7.17 (m, 5H), 7.24-7.31 (m, 3H), 7.39-7.44 (m, 1H), 9.05 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 137.32, 135.24, 133.45, 133.31, 129.49, 128.06, 128.04, 127.00, 124.27, 123.13, 122.13, 121.15, 120.14, 119.64, 116.40, 116.34, 113.49, 65.66, 37.62; **ESIMS**: m/z 391 (M+H). **IR** (KBr): 3417, 3349, 2912, 2857, 1618, 1451, 743 cm^{-1}; Analysis calculated for $C_{22}H_{19}BrN_2$: C, 67.53; H, 4.89; N, 7.16; found: C, 67.41; H, 4.78; N, 7.06 %; HRMS (ES): calculated 390.0732; found: 390.0741.

***N*-((4-fluorophenyl)(1H-indol-3-yl)methyl)-*N*-methylaniline (4t).**



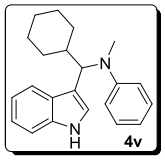
Brown liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.39 (s, 3H), 5.46 (s, 1H), 6.45 (d, 2H, *J* = 7.8 Hz), 6.73-6.8 (m, 3H), 6.95-7.07 (m, 5H), 7.14-7.21 (m, 3H), 7.29-7.34 (m, 1H), 8.95 (s, 1H).; **^{13}C, 50 MHz ($CDCl_3$):** 162.78, 149.90, 137.32, 133.93, 131.41, 128.06, 127.00, 122.88, 122.13, 121.15, 120.14, 119.64, 116.40, 116.34, 114.71, 113.49, 65.72, 37.62.; **ESIMS**: m/z 331 (M+H). **IR** (KBr): 3404, 3353, 2914, 2851, 1619, 1447, 754 cm^{-1}; Analysis calculated for $C_{22}H_{19}FN_2$: C, 79.97; H, 5.80; N, 8.48; found: C, 79.89; H, 5.73; N, 8.35%; HRMS (ES): calculated 330.1532; found: 330.1545.

***N*-methyl-*N*-((1-methyl-1H-indol-3-yl)(p-tolyl)methyl)aniline (4u).**



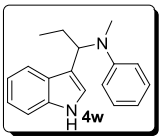
Brown liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 2.29 (s, 3H), 2.42 (s, 3H), 3.84 (s, 3H), 5.63 (s, 1H), 6.54 (d, 2H *J* = 7.7 Hz), 6.86-6.94 (m, 1H), 6.99-7.11 (m, 6H), 7.15-7.24 (m, 4H), 7.43 (d, 1H, *J* = 6.9 Hz); **^{13}C, 50 MHz ($CDCl_3$):** 149.90, 139.88, 137.16, 137.07, 135.44, 130.97, 130.06, 129.49, 128.06, 124.77, 122.87, 122.16, 119.64, 116.40, 112.52, 108.08, 65.21, 37.62, 35.89, 21.13; **ESIMS**: m/z 341 (M+H). **IR** (KBr): 3048, 2881, 2948, 2782, 1399, 1219, 751 cm^{-1}; Analysis calculated for $C_{24}H_{24}N_2$: C, 84.67; H, 7.11; N, 8.23; found: C, 84.72; H, 7.21; N, 8.05%; HRMS (ES): calculated 340.1939; found: 340.1942.

***N*-(cyclohexyl(1H-indol-3-yl)methyl)-*N*-methylaniline (4v).**



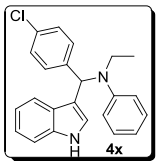
Brown solid; mp: 110-113 ^{0}C; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.29-1.35 (m, 6H), 1.42-1.44 (m, 4H), 2.57 (s, 4H), 4.35 (d, 1H, *J* = 11.0 Hz), 6.55 (d, 2H, *J* = 7.7 Hz), 6.84-6.92 (m, 1H), 7.01-7.09 (m, 4H), 7.27-7.35 (m, 2H), 7.63-7.67 (m, 1H), 8.81 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.43, 136.88, 128.22, 126.47, 121.58, 121.01, 120.86, 119.97, 119.30, 119.29, 116.23, 113.42, 60.49, 39.06, 38.80, 29.78, 25.92, 25.57; **ESIMS**: m/z 319 (M+H). **IR** (KBr): 3435, 3058, 2929, 2839, 1609, 1563, 1461, 747 cm^{-1}; Analysis calculated for $C_{22}H_{26}N_2$: C, 82.97; H, 8.23; N, 8.80; found: C, 82.88; H, 8.35; N, 8.75 %; HRMS (ES): calculated 318.2096; found: 318.2104.

***N*-(1-(1H-indol-3-yl)propyl)-*N*-methylaniline (4w).**



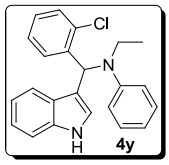
Brown liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.09 (t, 3H, *J* = 7.2 Hz), 2.00 (m, 2H), 2.77 (s, 3H), 4.70 (t, 1H, *J* = 7.0 Hz), 6.77 (d, 2H, *J* = 7.6 Hz), 6.93-7.00 (m, 1H), 7.13-7.27 (m, 5H), 7.39-7.44 (m, 1H), 7.73-7.78 (m, 1H), 8.54 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 149.01, 136.53, 128.46, 126.01, 122.54, 121.16, 120.91, 119.84, 119.24, 118.97, 116.10, 113.37, 55.74, 37.79, 25.45, 12.09; **ESIMS**: m/z 265 (M+H). **IR** (KBr): 3442, 3051, 2934, 2843, 1601, 1569, 1454, 756 cm^{-1}; Analysis calculated for $C_{18}H_{20}N_2$: C, 81.78; H, 7.63; N, 10.60; found: C, 81.70; H, 7.67; N, 10.61%; HRMS (ES): calculated 264.1626; found: 264.1635.

***N*-((4-chlorophenyl)(1H-indol-3-yl)methyl)-*N*-ethylaniline (4x).**



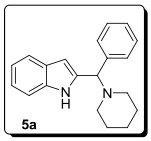
Brown liquid; ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.09 (t, 3H, *J* = 6.7 Hz), 3.06 (q, 2H, *J* = 6.9 Hz), 5.61 (s, 1H), 6.42 (d, 2H, *J* = 7.8 Hz), 6.78-6.86 (m, 1H), 6.92-7.04 (m, 4H), 7.08-7.26 (m, 6H), 7.36-7.41 (m, 1H), 9.51 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 148.68, 137.32, 136.48, 133.37, 131.26, 128.98, 128.04, 127.00, 122.64, 122.13, 121.15, 120.14, 119.72, 118.75, 115.68, 113.49, 63.33, 45.18, 14.42; **ESIMS**: m/z 361 (M+H). **IR** (KBr): 3438, 3058, 2857, 1885, 1619, 1521, 1461, 741 cm^{-1}; Analysis calculated for $C_{23}H_{21}ClN_2$: C, 76.55; H, 5.87; N, 7.76; found: C, 76.48; H, 5.79; N, 7.69 %; HRMS (ES): calculated 360.1393; found: 360.1397.

***N*-((2-chlorophenyl)(1H-indol-3-yl)methyl)-*N*-ethylaniline (4y).**



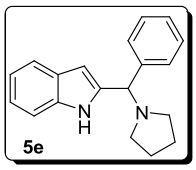
Brown liquid: ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.09 (t, 3H, *J* = 6.9 Hz), 3.14 (q, 2H, *J* = 6.8 Hz), 5.72 (s, 1H), 6.34 (d, 2H, *J* = 7.5 Hz), 6.74-6.84 (m, 2H), 6.88-7.09 (m, 6H), 7.12-7.24 (m, 3H), 7.41-7.46 (m, 1H), 9.57 (s, 1H); **^{13}C, 50 MHz ($CDCl_3$):** 148.68, 137.32, 136.89, 134.33, 132.99, 130.34, 129.82, 128.04, 128.04, 127.01, 127.00, 122.86, 122.13, 121.15, 120.14, 119.72, 118.75, 115.66, 113.49, 61.20, 45.18, 14.42; **ESIMS**: m/z 361 (M+H). **IR** (KBr): 3422, 3058, 2921, 1706, 1597, 1443, 1261, 754 cm^{-1}; Analysis calculated for $C_{23}H_{21}ClN_2$: C, 76.55; H, 5.87; N, 7.76; found: C, 76.43; H, 5.73; N, 7.61%; HRMS (ES): calculated 360.1393; found: 360.1399.

2-(Phenyl(piperidin-1-yl)methyl)-1H-indole (5a).



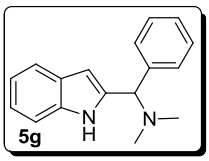
Colourless liquid: ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.54-1.59 (m, 6H), 2.44-2.49 (m, 4H), 6.01 (s, 1H), 6.54 (d, 1H, *J*=3.2 Hz), 7.05-7.18 (m, 2H), 7.20-7.29 (m, 4H), 7.30-7.37 (m, 2H), 7.38-7.60 (m, 1H), 7.61-7.65 (m, 1H); **^{13}C NMR (50 MHz, $CDCl_3$):** 138.87, 137.02, 128.45, 127.97, 127.64, 126.57, 121.38, 120.81, 119.50, 110.09, 101.68, 78.92, 51.19, 26.11, 24.44. ; **ESIMS**: m/z 391 (M+H). **IR** (KBr): 3439, 3048, 2928, 1701, 1597, 1437, 1254, 751 cm^{-1}.

2-(Phenyl(pyrrolidin-1-yl)methyl)-1H-indole (5e).



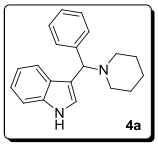
Colourless liquid: ^{1}H NMR (200 MHz, $CDCl_3$) δ 1.32-1.38 (m, 4H), 2.37-2.41 (m, 4H), 5.93 (s, 1H), 6.47 (d, 1H, *J*=3.1 Hz), 7.00-7.11 (m, 3H), 7.14-7.28 (m, 6H), 7.39 (d, 1H, *J*=7.8 Hz), 7.58 (d, 1H, *J*=6.9 Hz); **^{13}C NMR (50 MHz, $CDCl_3$):** 138.19, 136.60, 135.34, 129.76, 128.60, 128.37, 128.05, 122.02, 121.48, 120.74, 111.96, 100.13, 75.50, 54.12, 24.76; **ESIMS**: m/z 277 (M+H). **IR** (KBr): 3442, 3041, 2928, 1714, 1587, 1435, 1248, 747 cm^{-1}.

1-(1H-indol-2-yl)-*N*,*N*-dimethyl-1-phenylmethanamine (5g).

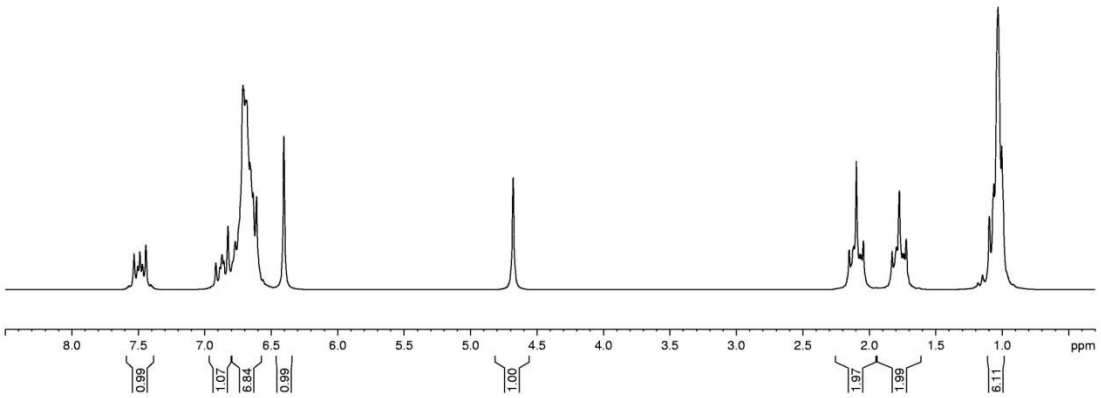


Colourless liquid: ^{1}H NMR (300 MHz, $CDCl_3$) δ 2.18 (s, 6H), 5.74 (s, 1H), 6.98 (d, 1H, J=3.0 Hz), 6.98-7.03 (m, 1H), 7.07-7.11 (m, 1H), 7.12-7.21 (m, 4H), 7.23-7.34 (m, 2H) 7.41 (d, 1H, J=8.1 Hz), 7.51 (d, 1H, J=7.5 Hz); **^{13}C NMR (75 MHz, $CDCl_3$):** 139.03, 136.79, 128.53, 128.46, 128.17, 127.52, 126.04, 121.49, 120.87, 119.58, 109.91, 102.14, 79.42, 42.40. ; ESIMS: m/z 251 (M+H); IR (KBr): 3442, 3055, 2814, 1489, 1391, 1232, 1169, 751 cm^{-1}.

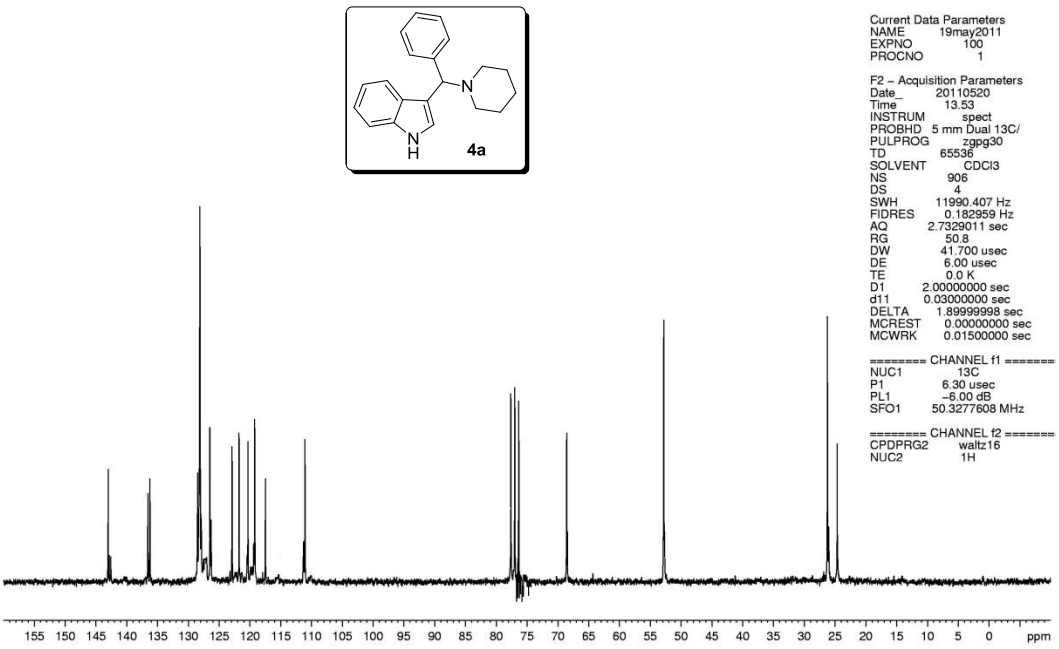
mkg–4a

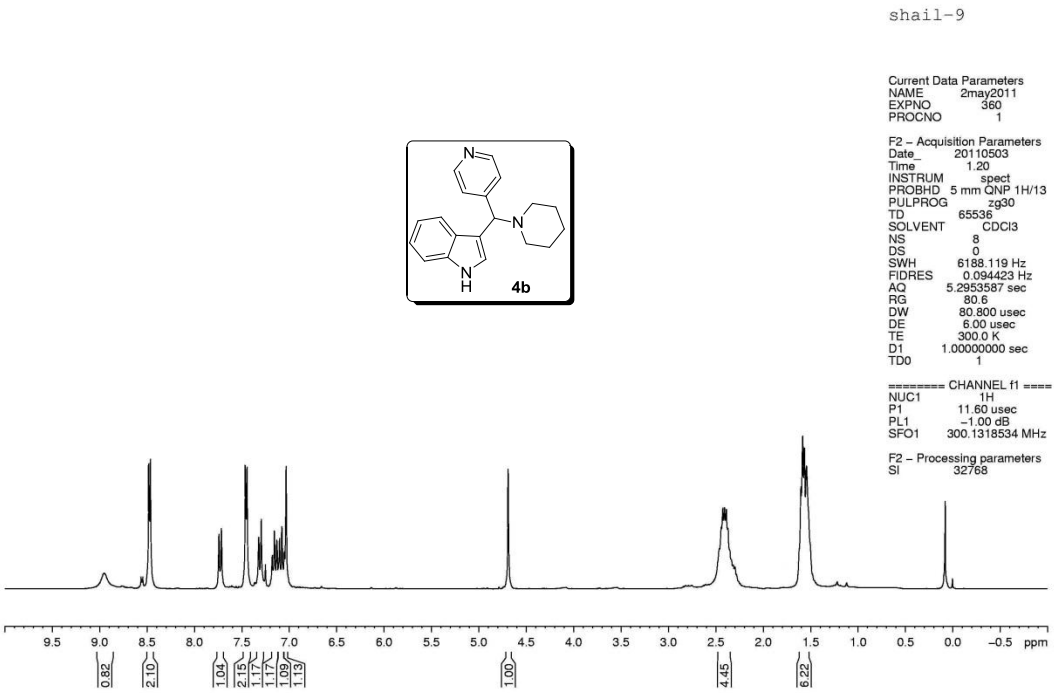


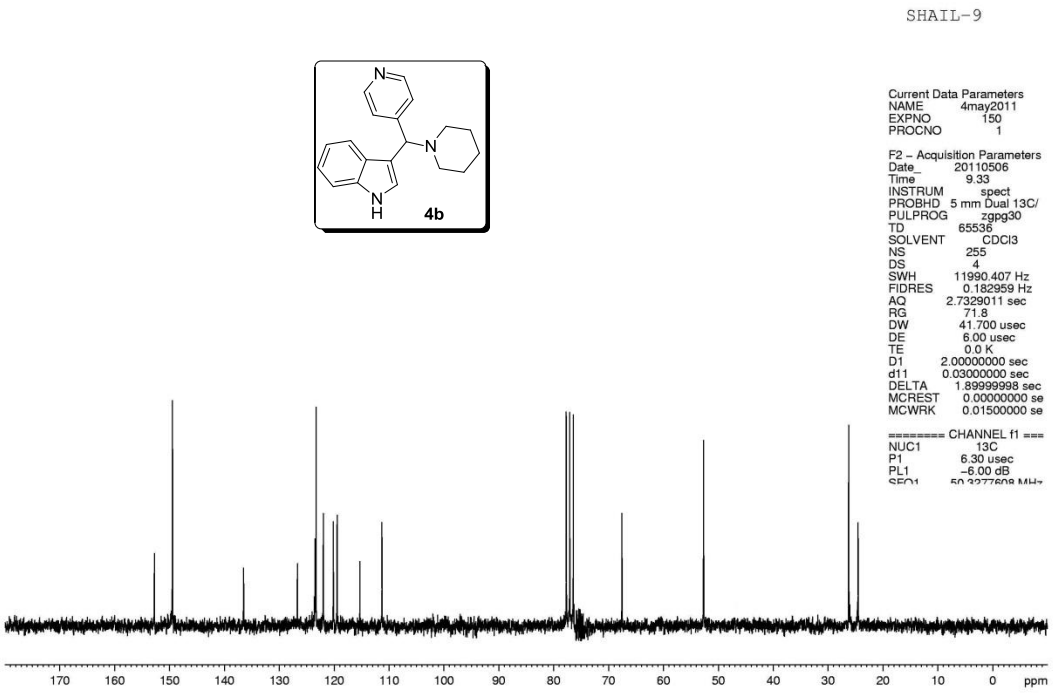
4a

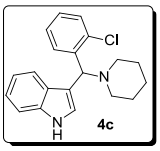


SHAIL-11

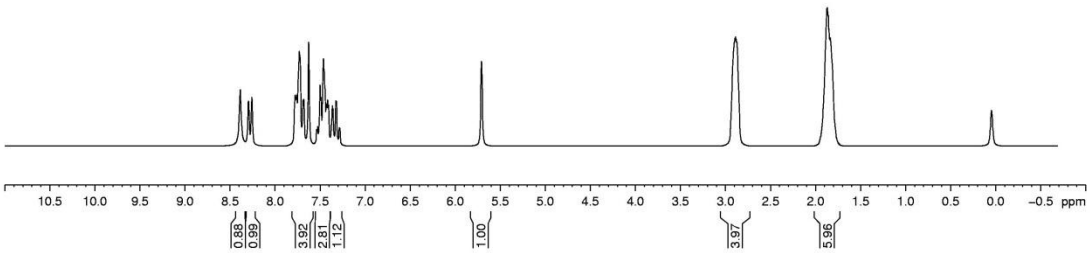




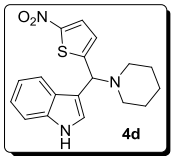




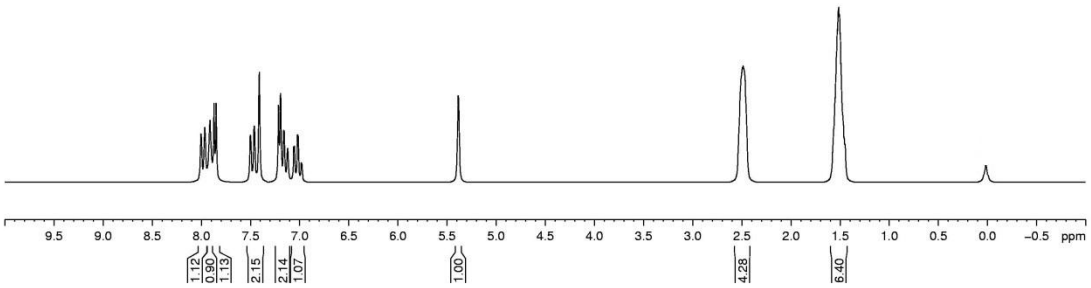
4c

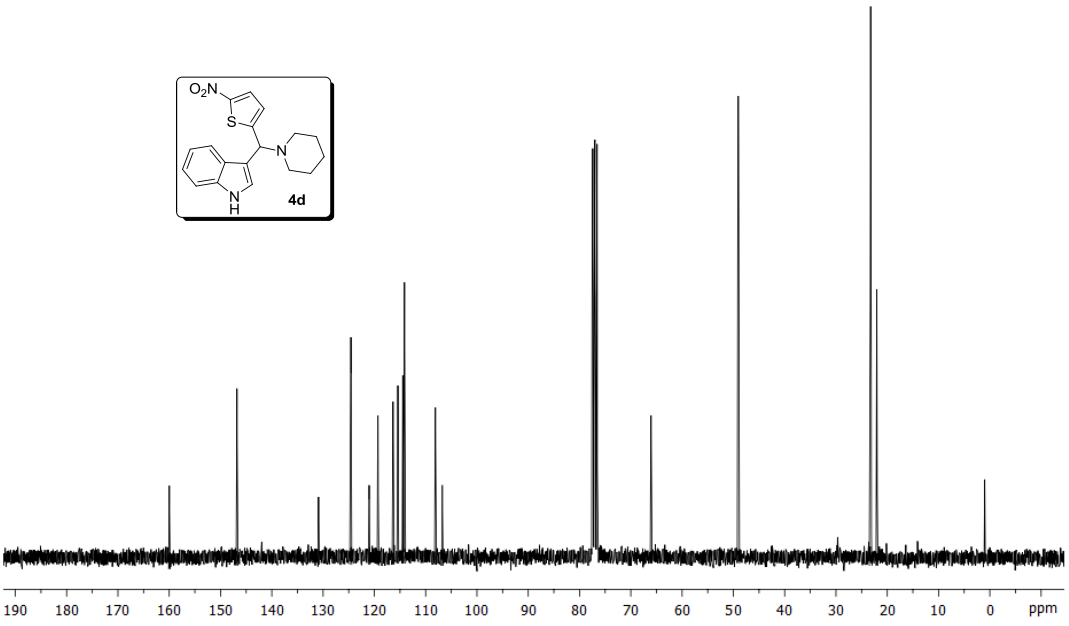


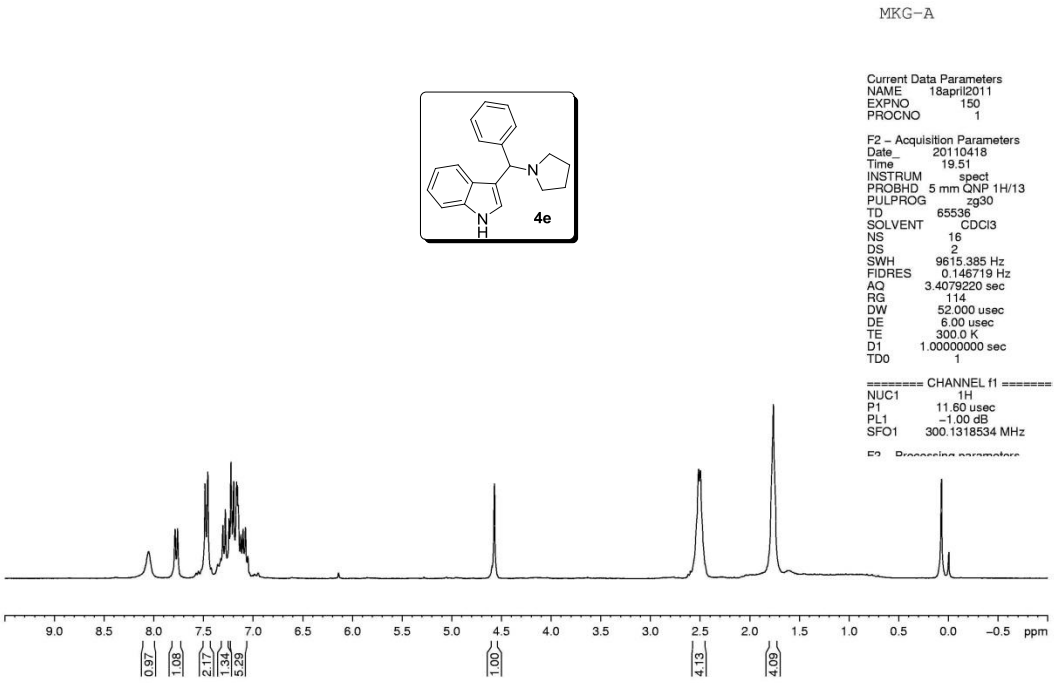
mkg-12d

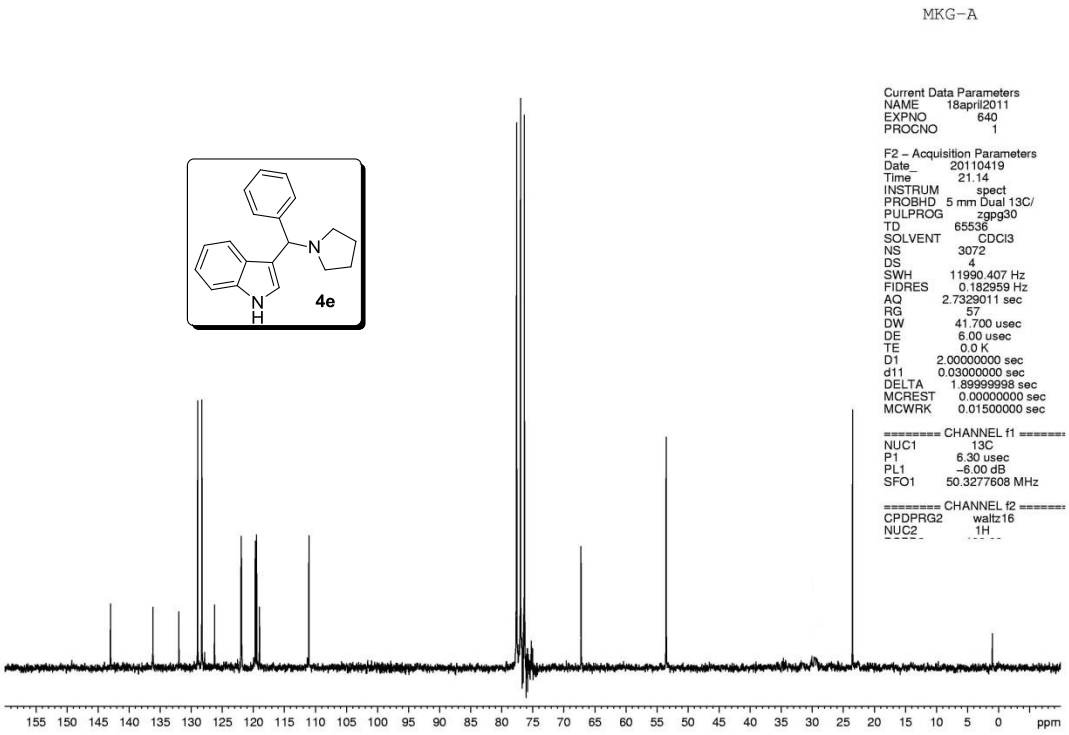


4d

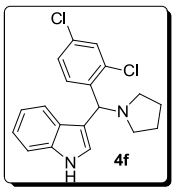




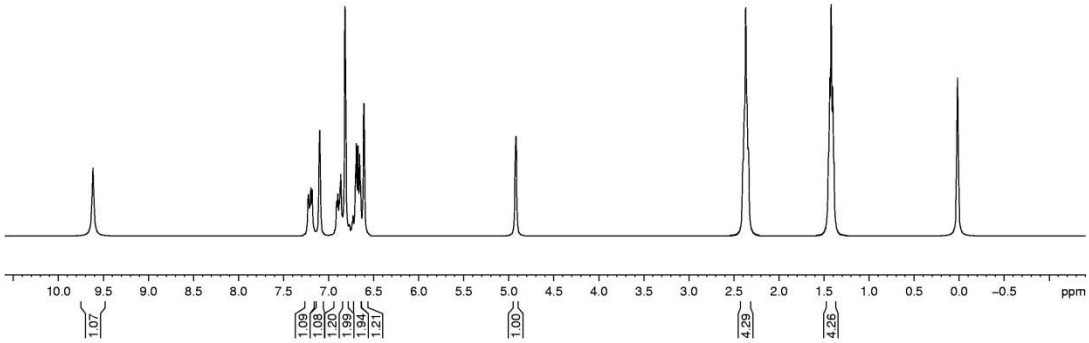


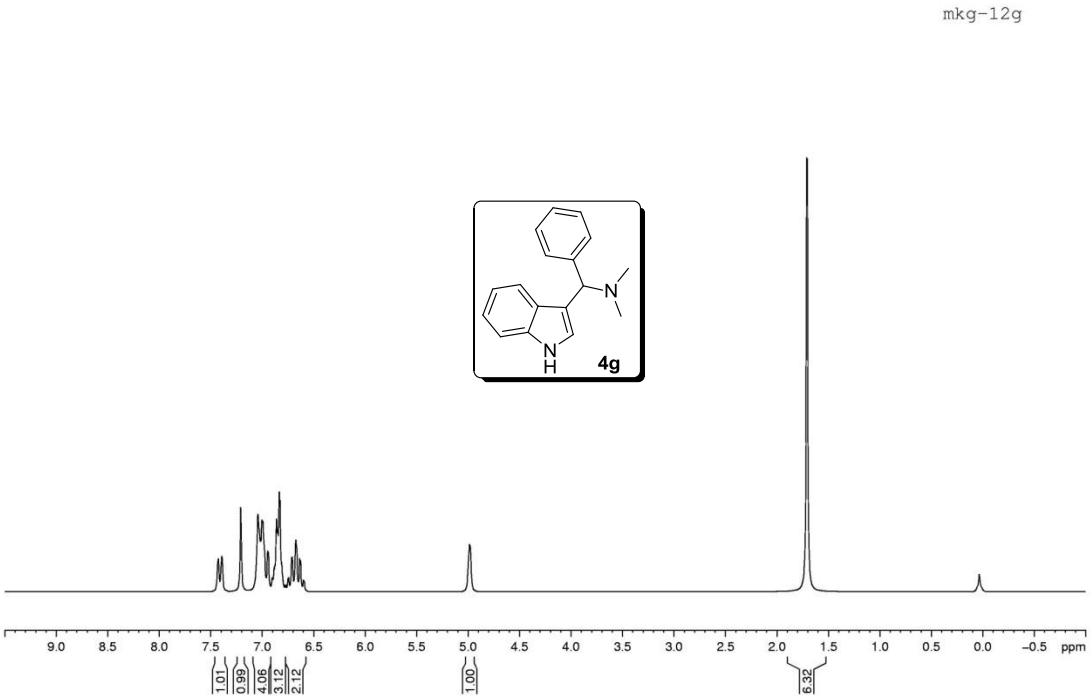


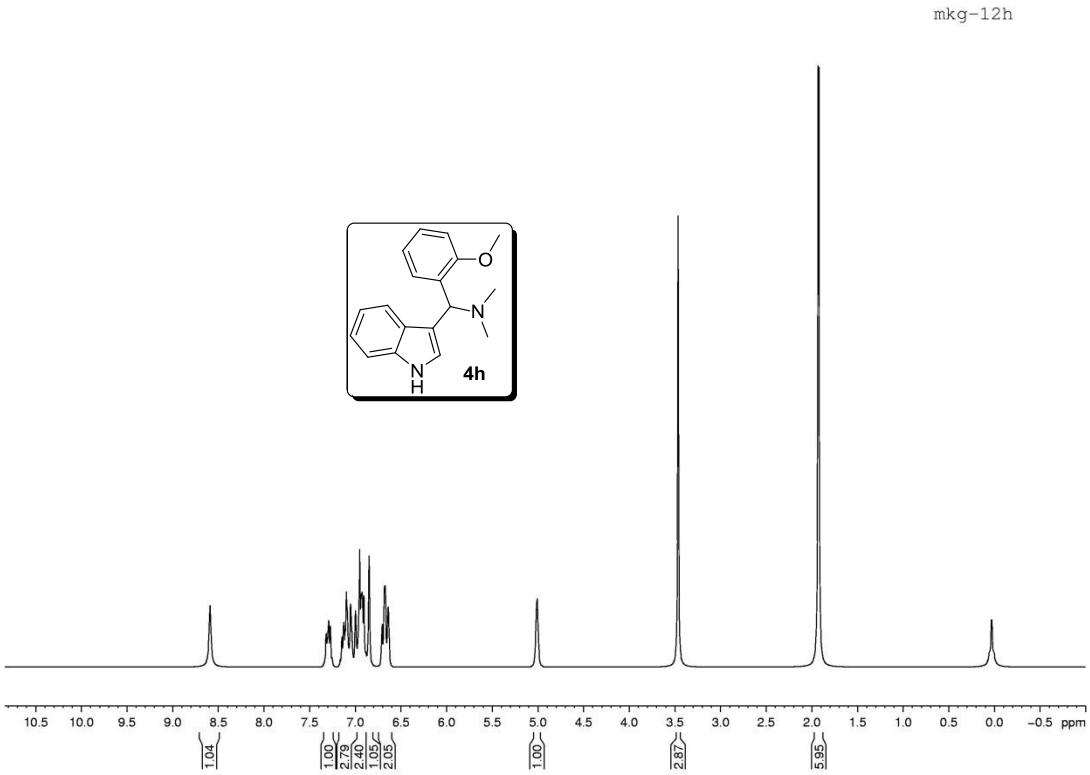
mkg-12f



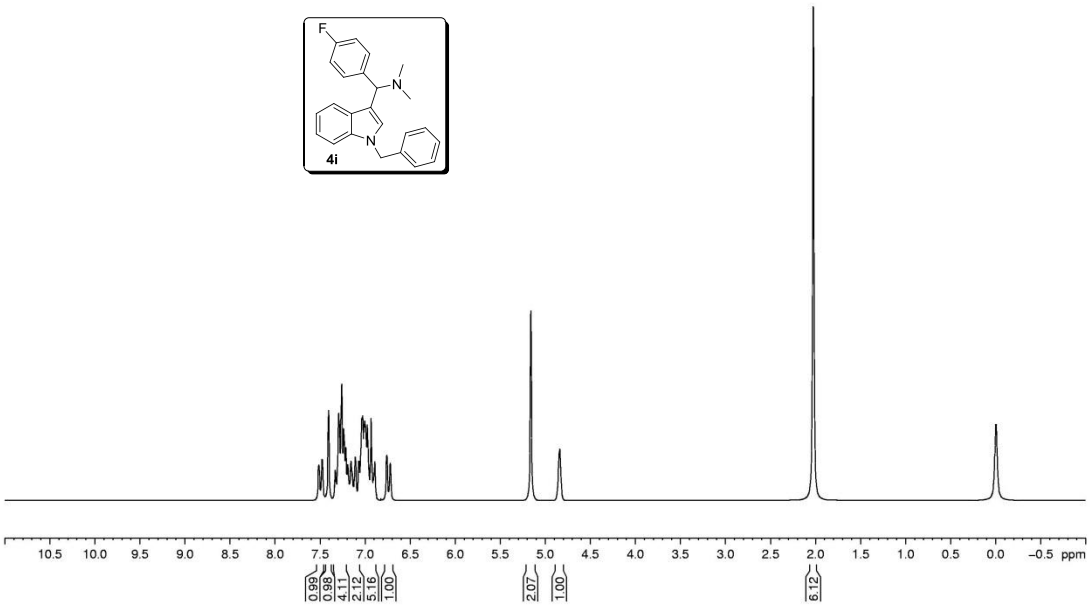
4f

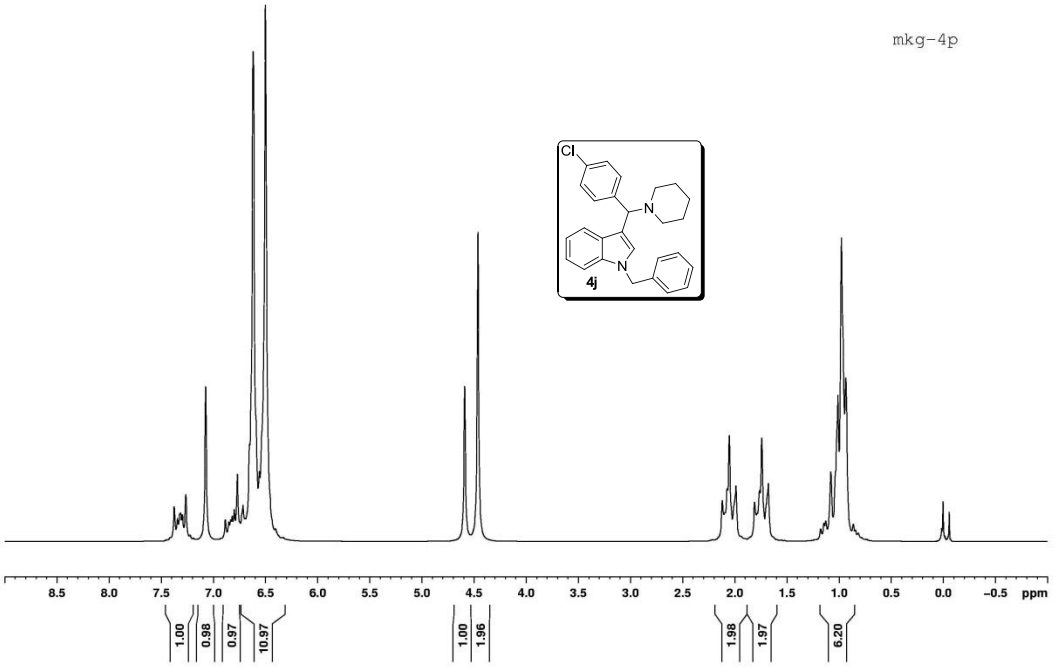




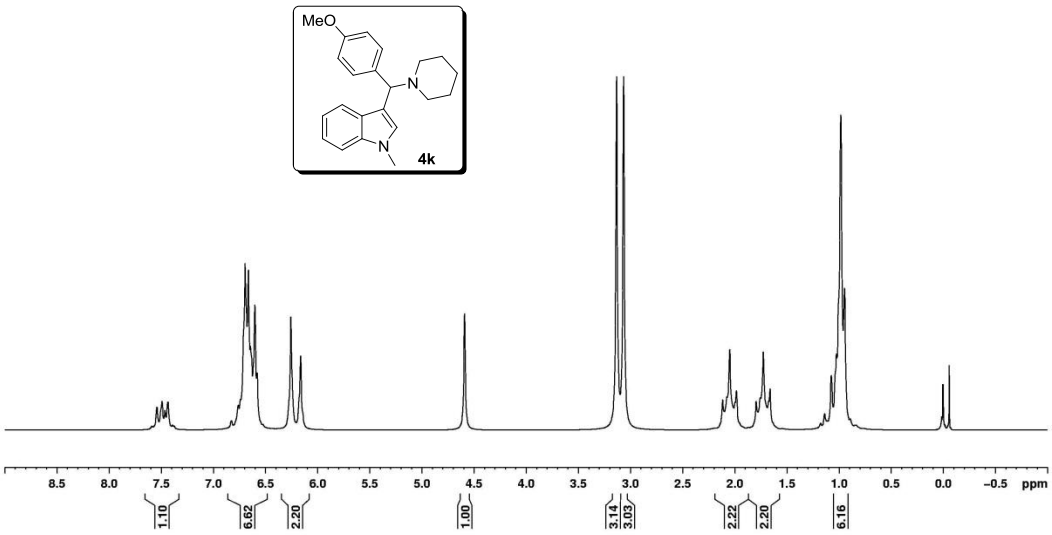


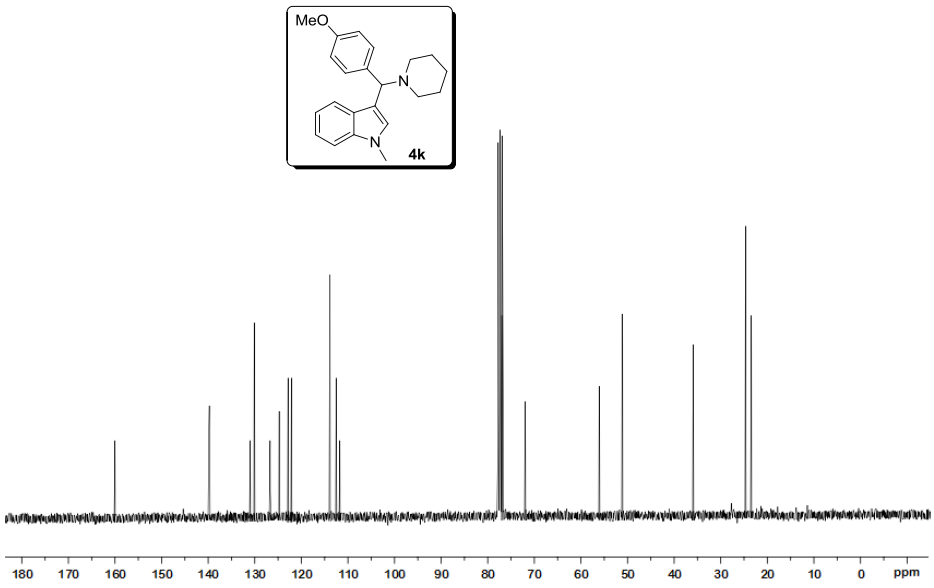
mkg-12i



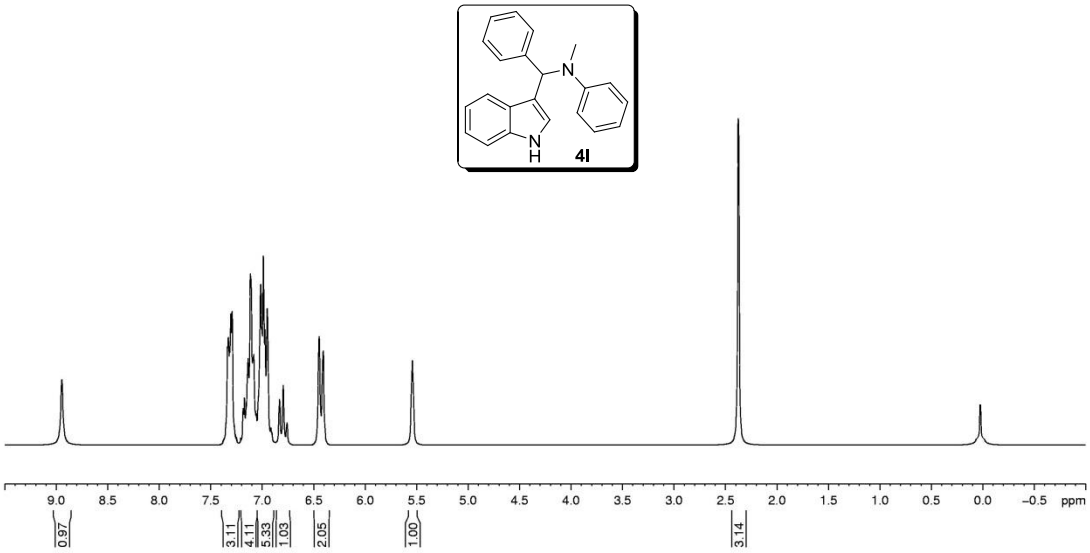


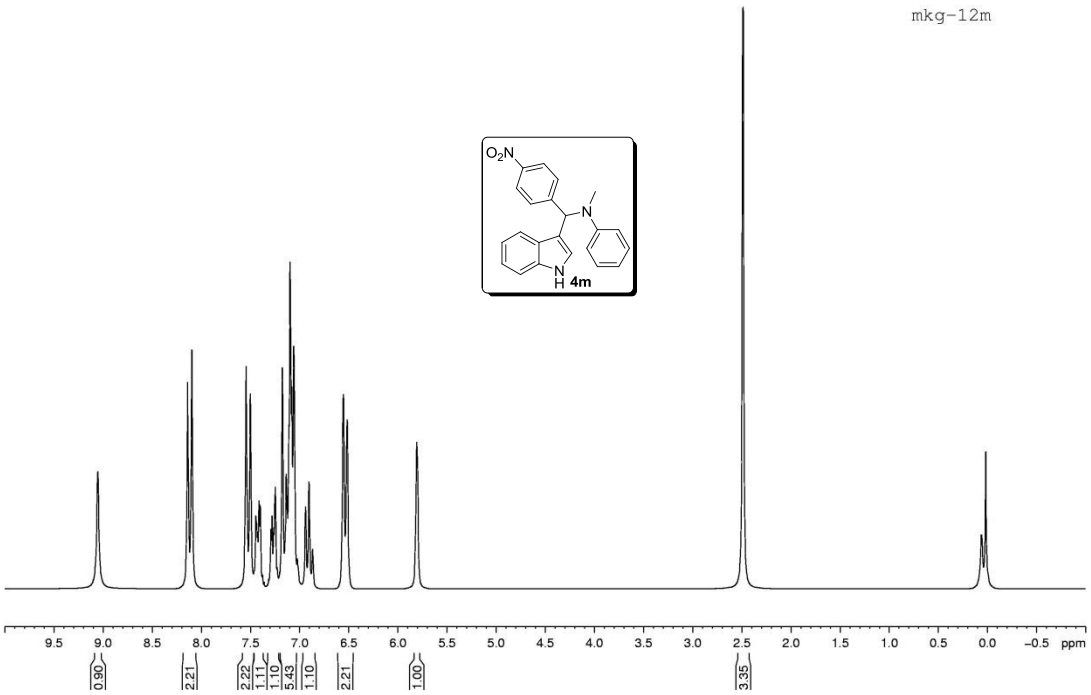
mkg-4o

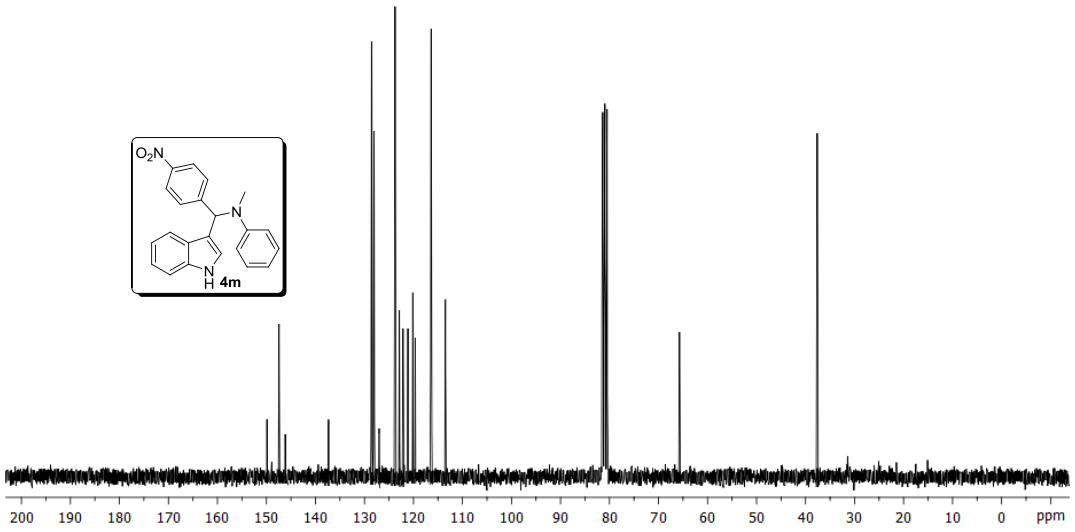


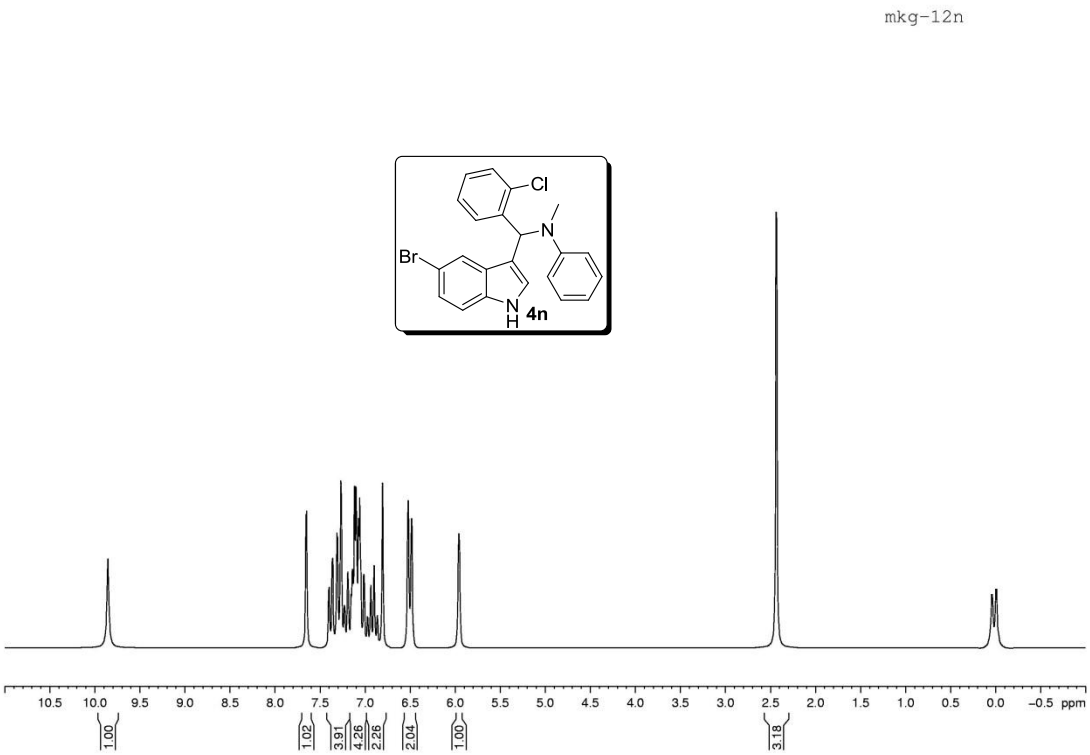


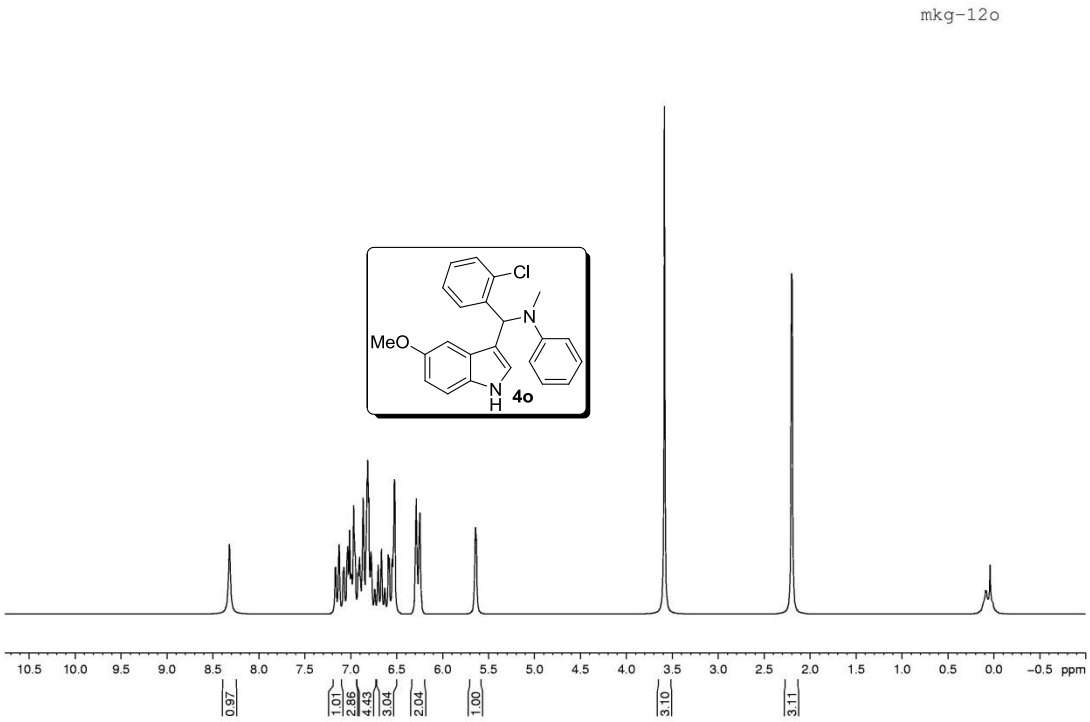
mkg-121

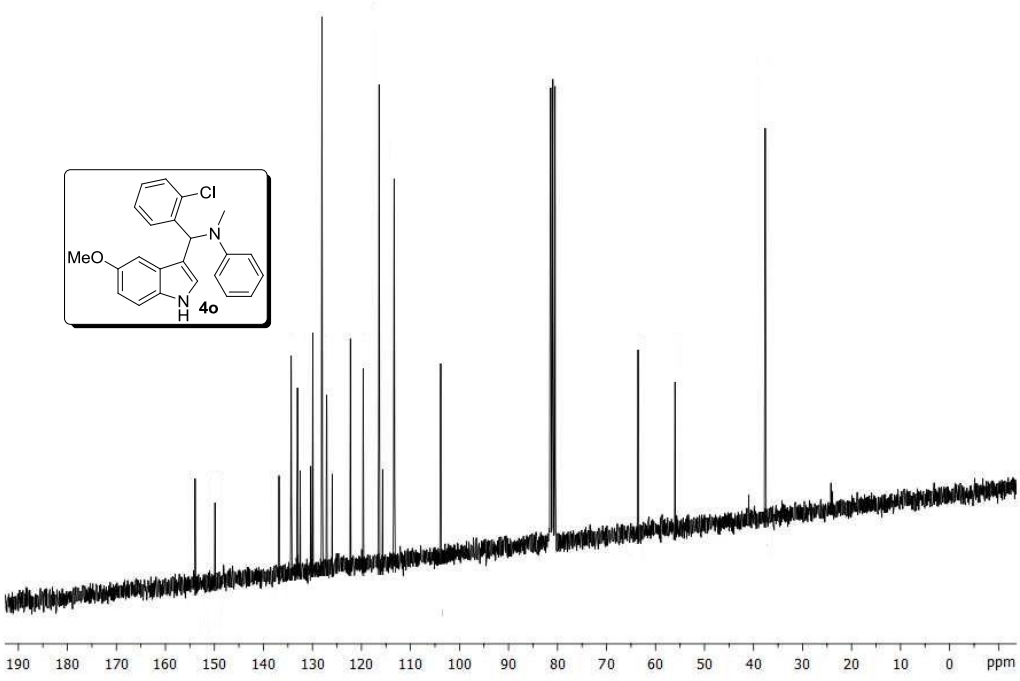


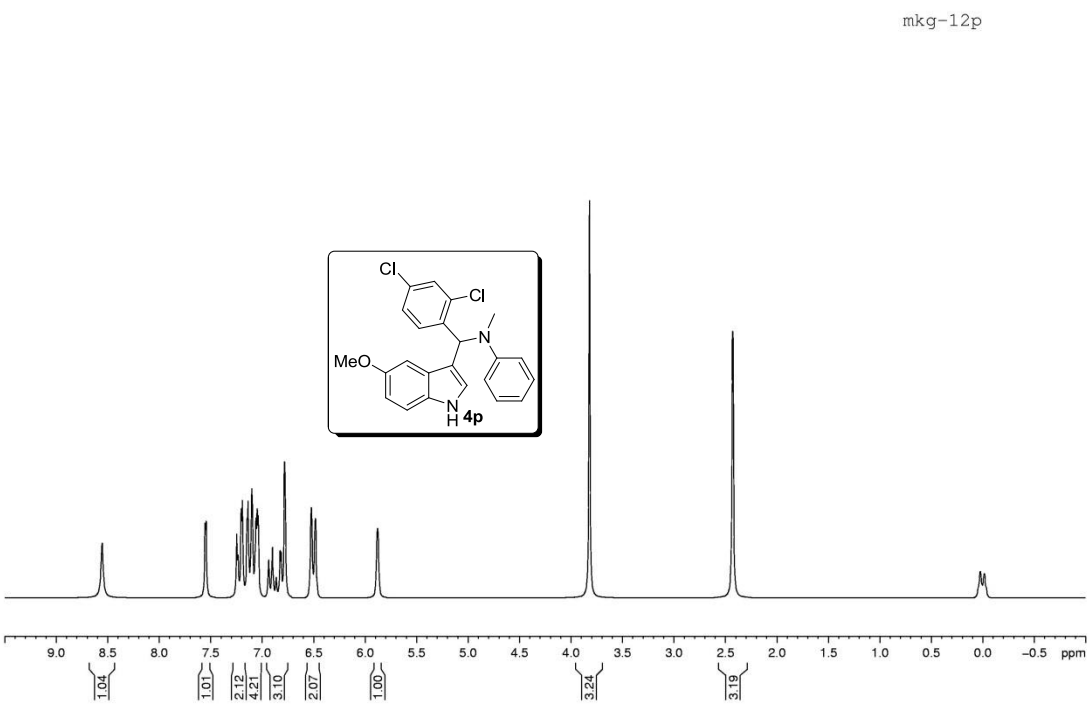


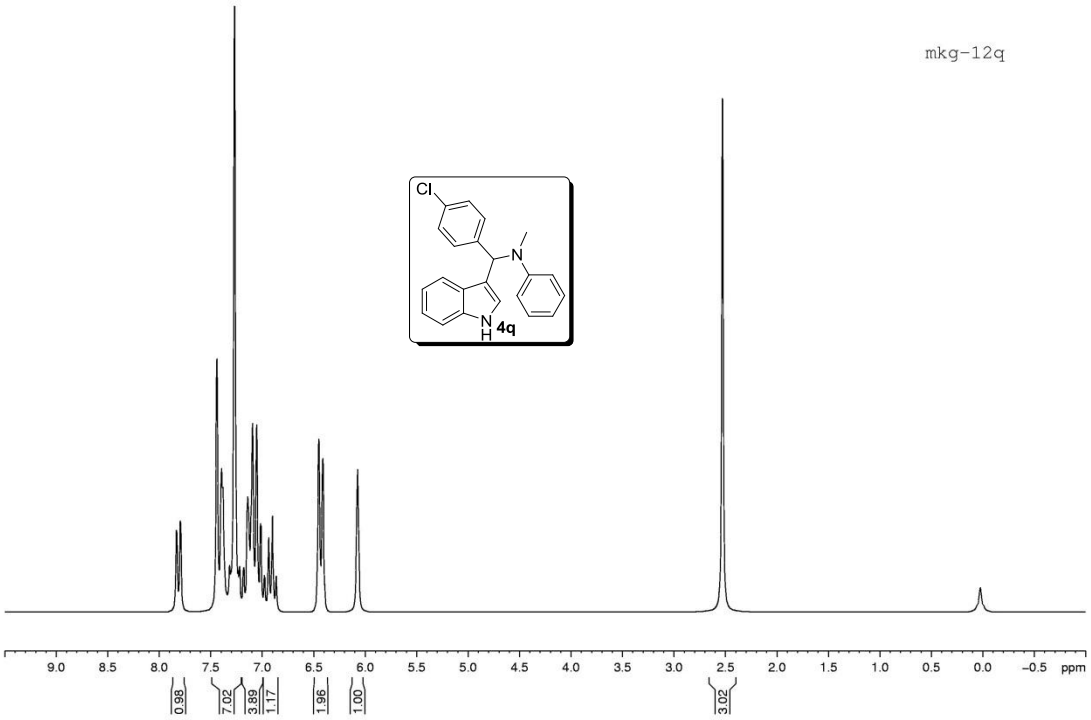


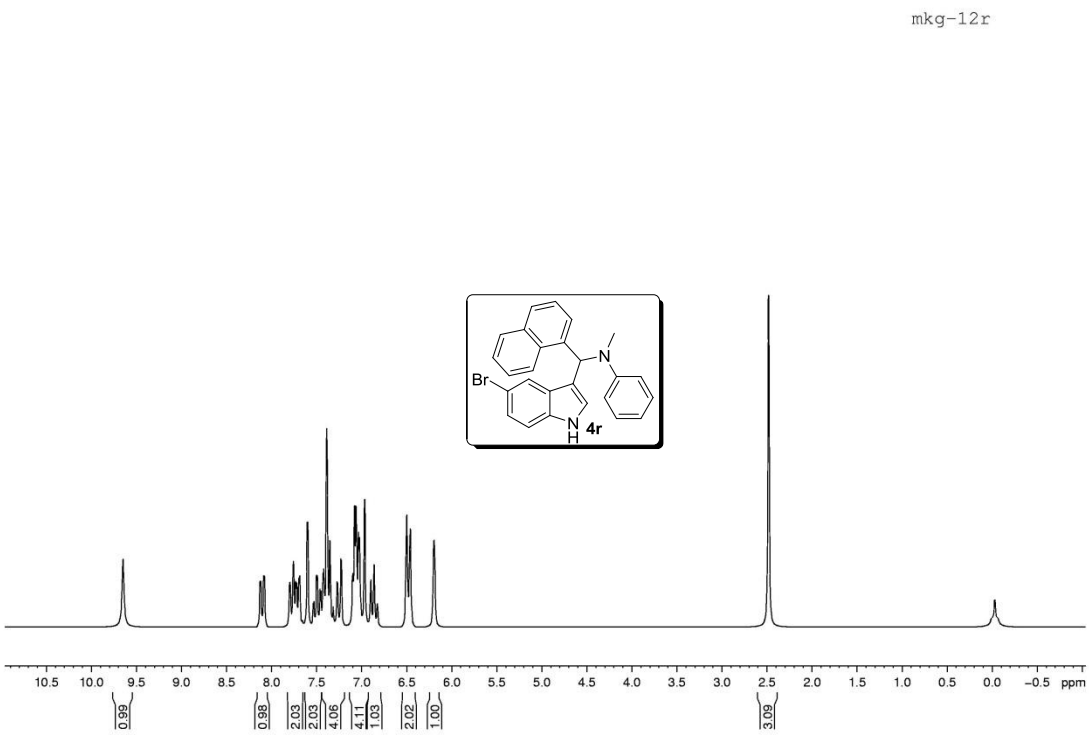


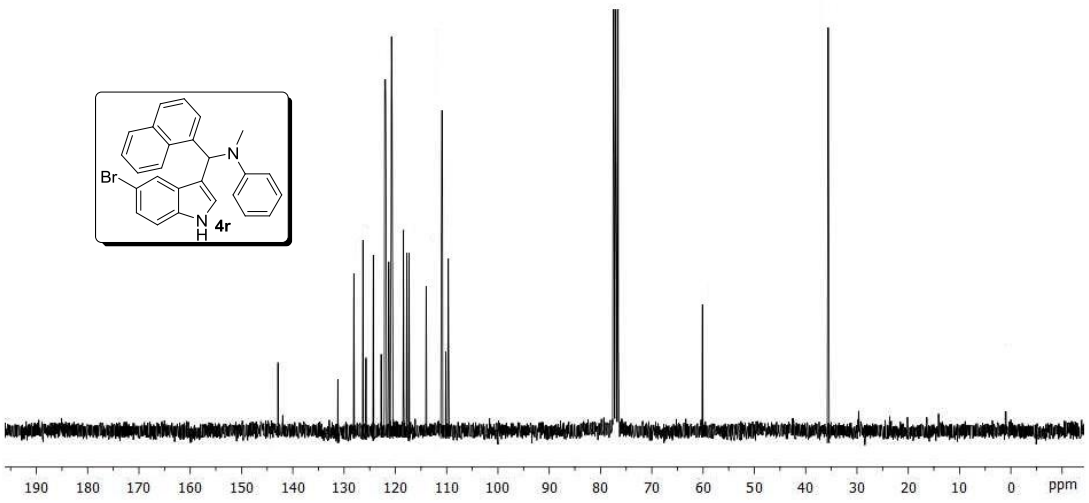




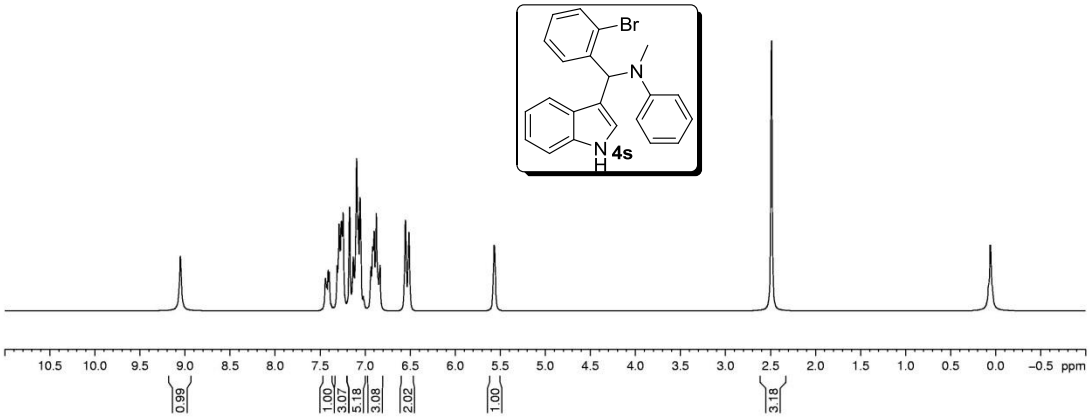




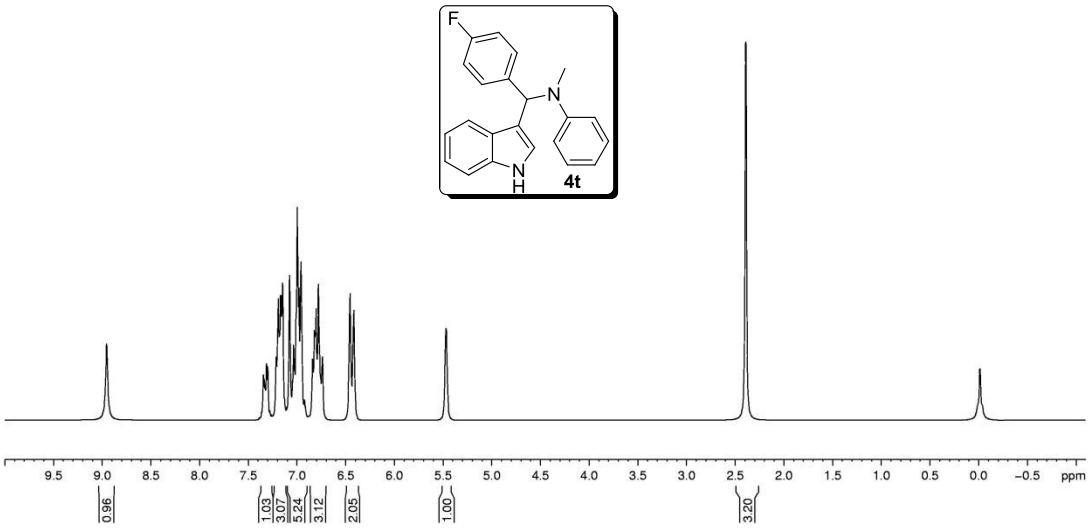


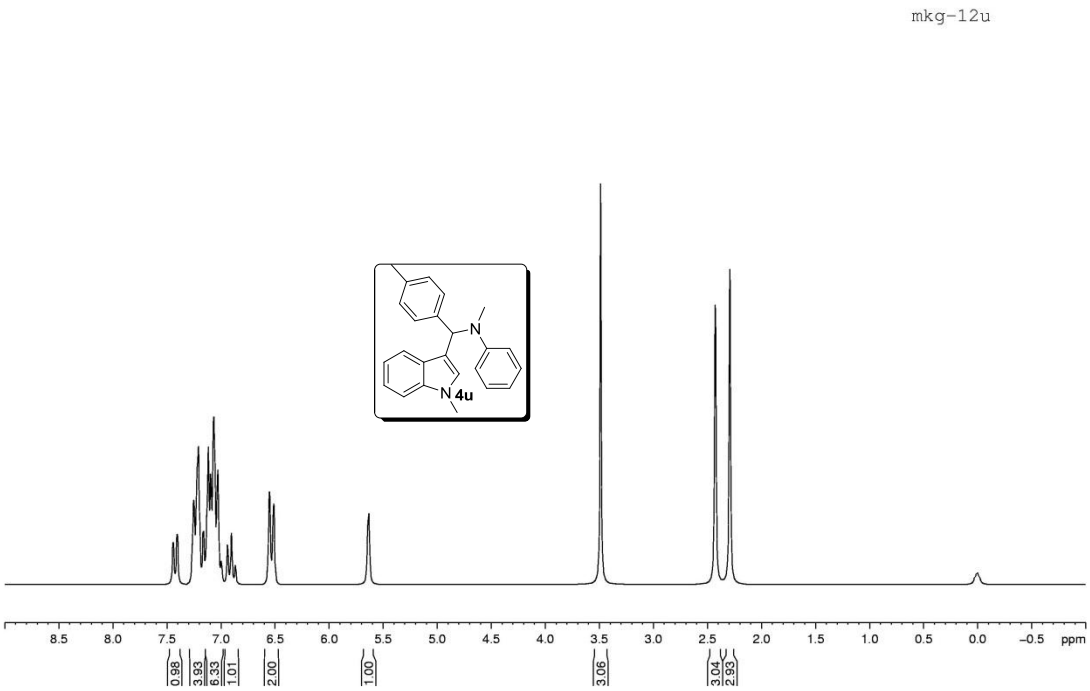


mkg-12s

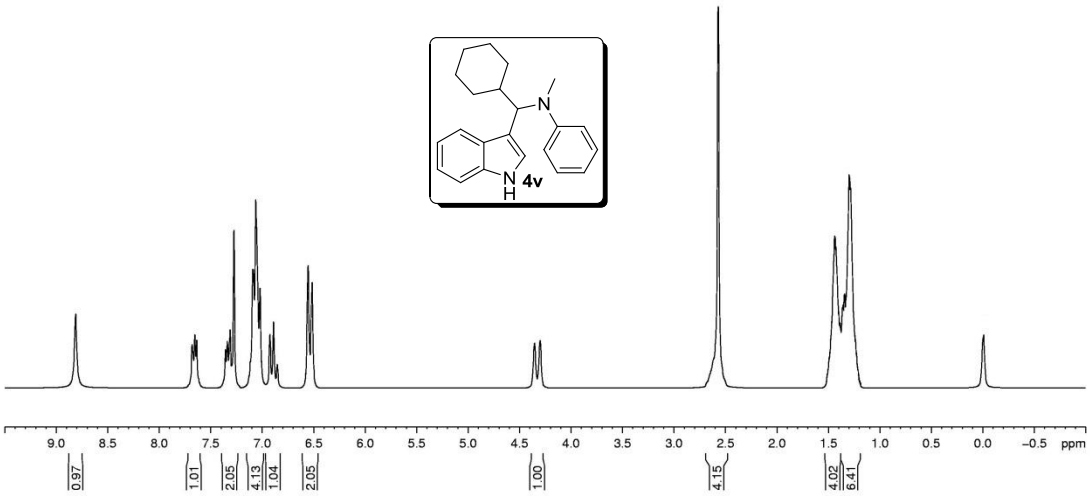


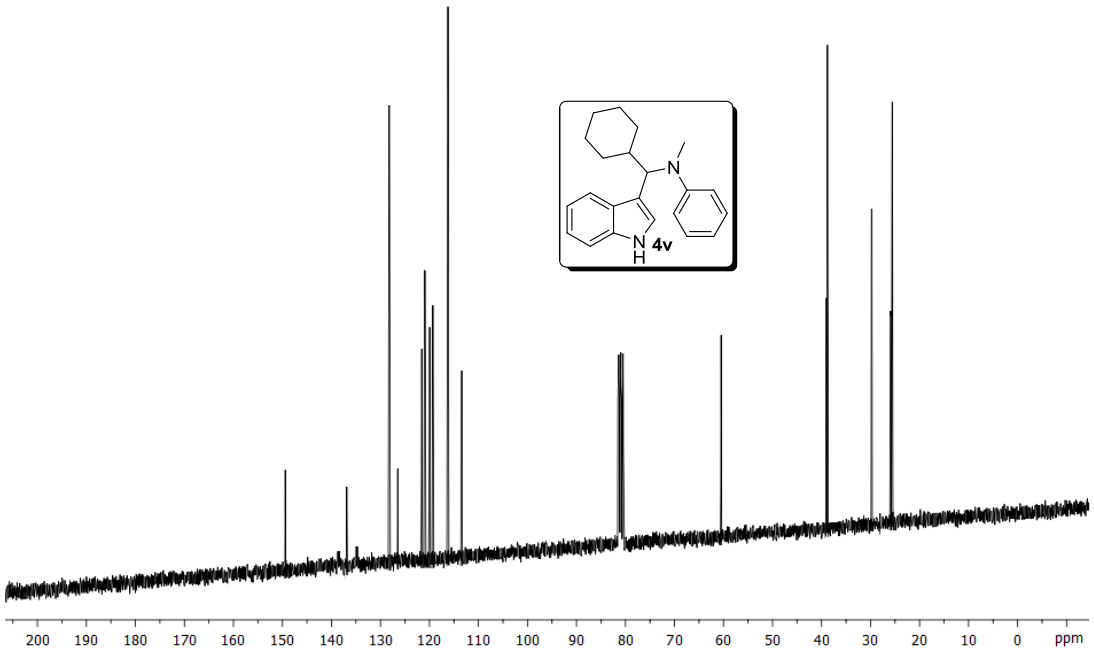
mkg-12t



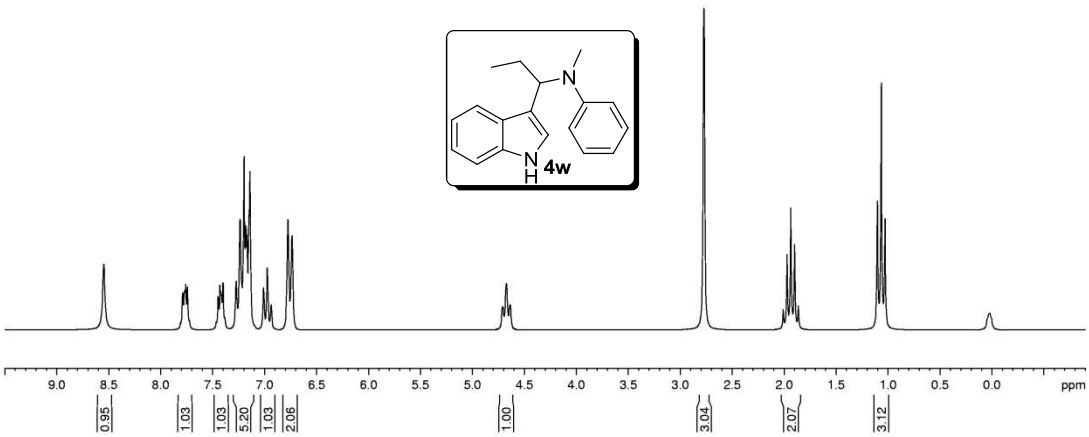


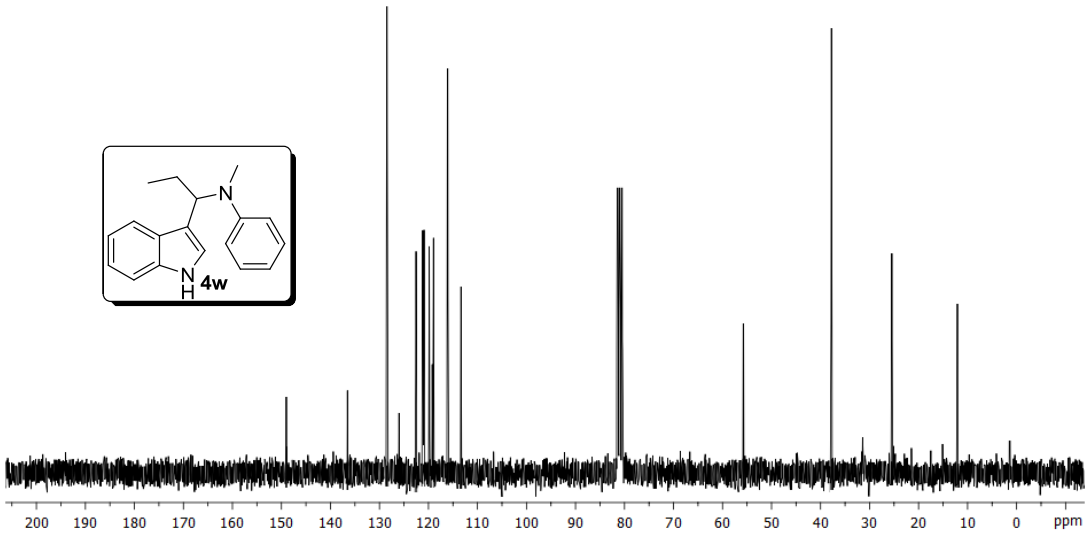
mkg-12v



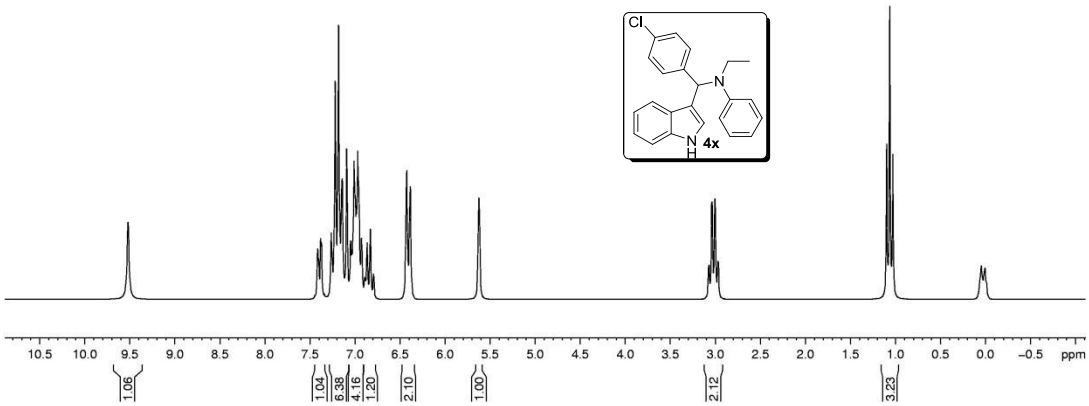


mkg-12w





mkg-12x



mkg-12y