One-Pot Reductive Amination of Carbonyl Compounds with Nitro Compounds via Ir-Catalyzed Transfer Hydrogenation

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Supporting Information

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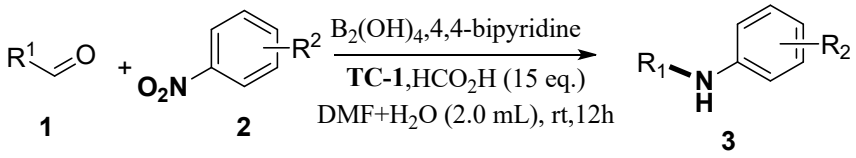
A. General Information

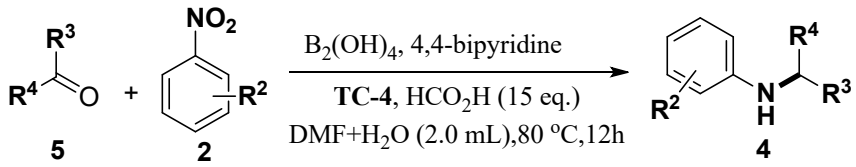
^{1}H and ^{13}C NMR spectra were recorded on a Bruker DRX-400spectrometer (400 MHz for ^{1}H; 100 MHz for ^{13}C), using $CDCl_3$ as solvent and TMS as an internal standard ($CDCl_3$ δ_H = 7.26 ppm, downfield from TMS, δ_C = 77.16 ppm). GC analyses were performed on a GC-7900 chromatograph with an FID and equipped with an AT.SE-30 capillary column (internal diameter: 0.32 mm, length: 30 mm). The materials used in the experiments were all purchased and without further purification. High-resolution mass spectra (HRMS) were recorded by a LCMS-IT-TOF mass spectrometer. Melting points were determined on a melting point instrument.

B. General Procedure for preparation of 3 [1]



To a 25 mL dried Schlenk tube were added nitrobenzene (1.0 mmol), $B_2(OH)_4$ (3.0 mmol), and 4,4-bipyridine (0.05 mmol) and stirred in the DMF (1.0 mL) at room temperature for 5 minutes, then the aldehydes (0.5 mmol, 1.0 equiv.), Ir catalyst (1 mol %), HCO_2H (15.0 equiv.) and water (1.0 mL) were added successively. The mixture was stirred at room temperature for 12 h. After the completion of reaction, the mixture was diluted with H_2O (15.0 mL), neutralized with $NaHCO_3$, and extracted with EtOAc (10 mL x 3). The organic extract then was washed with brine (10 mL x 3) and dried over anhydrous $MgSO_4$ and concentrated in vacuum, which was purified by flash column chromatography on silica gel to afford the desired product **3**.

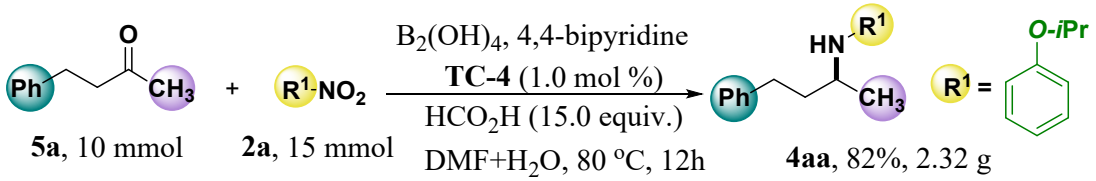
C. General Procedure for preparation of 4 [1]



To a 25.0 mL dried Schlenk tube were added nitrobenzene (0.75 mmol), $B_2(OH)_4$ (2.25 mmol), and 4,4-bipyridine (0.0375 mmol) and stirred in the DMF (1.0 mL) at room temperature for 5.0 minutes, then the ketones (0.5 mmol, 1.0 equiv.), Ir catalyst (1.0 mol %), HCO_2H (15.0 equiv.) and water (1.0 mL) were added into the Schlenk

tube successively. The mixture was stirred at 80 °C for 12 h. After the completion of reaction, the mixture was diluted with H_2O (15.0 mL), neutralized with $NaHCO_3$, and extracted with EtOAc (10 mL x 3). The organic extract then was washed with brine (10 mL x 3) and dried over anhydrous $MgSO_4$ and concentrated in vacuum, which was purified by flash column chromatography on silica gel to afford the desired product **4**.

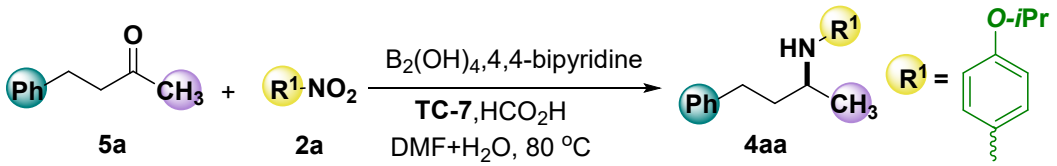
D. Large scale synthesis of 4aa. [1]



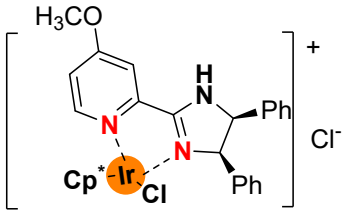
5a, 10 mmol **2a**, 15 mmol **4aa**, 82%, 2.32 g

To a 100.0 mL dried Schlenk tube were added the mixture of **2a** (15 mmol, 1.5 equiv.), $B_2(OH)_4$ (45.0 mmol), 4,4-bipyridine (0.5 mmol), and DMF (25.0 mL) and stirred for 5.0 min, after which the **5a** (10.0 mmol, 1.0 equiv.), Ir catalyst (0.1 mol %), HCO_2H (15.0 equiv.) and water (25.0 mL) were added. The mixture was stirred at 80 °C for 12 h. After the completion of reaction, the mixture was diluted with H_2O (50.0 mL), neutralized with $NaHCO_3$, and extracted with EtOAc (20.0 mL x 3). The organic extract then was washed with brine (20.0 mL x 3) and dried over anhydrous $MgSO_4$ and concentrated in vacuum, which was purified by flash column chromatography (hexane/ethyl acetate = 30/1) on silica gel to afford the product of **4aa**.

E. Asymmetric synthesis of 4aa. [1]



5a **2a** **4aa**

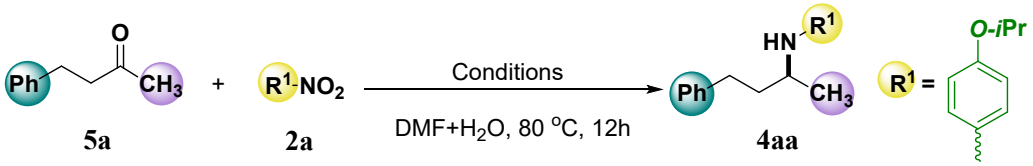


TC-7

To a 25.0 mL dried Schlenk tube were added the mixture of **2a** (0.75 mmol, 1.5

equiv.), $B_2(OH)_4$ (2.25 mmol), 4,4-bipyridine (0.025 mmol) and DMF (1.0 mL) and stirred for 5.0 min, after which the **5a** (0. 5 mmol, 1.0 equiv.), **TC-7** (1.0 mol %), HCO_2H (15.0 equiv.) and water (1.0 mL) were added. The mixture was stirred at 80 °C for 12 h. After the completion of reaction, the mixture was diluted with H_2O (15.0 mL), neutralized with $NaHCO_3$, and extracted with EtOAc (10.0 mL x 3). The organic extract then was washed with brine (10.0 mL x 3) and dried over anhydrous $MgSO_4$ and concentrated in vacuum. The residue was purified by chromatography on silica gel with (hexane/ethyl acetate = 30/1) as the eluent to afford the product of **4aa** in 83% yield. The enantiomeric excess was determined by HPLC using Daicel Chiralpak OD-H column, hexane/i-PrOH 85:15, flow rate 1.0 mL/min, UV detection at 220 nm, t_{minor} = 7.511 min, t_{major} = 7.881 min, 0% *ee*.

F. Control experiment



Entry	$B_2(OH)_4$	4,4-Bipyridine	**TC-4**	HCO_2H	yield[b]
1	-	+	+	+	30
2	+	-	+	+	n.d
3	-	-	+	+	n.d
4	-	+	-	+	n.d
5	-	-	+	+	n.d
6[a]	+	+	+	+	97
7	+	+	+	-	n.d

[a] Reaction conditions: **5a** (0.5 mmol), **2a** (0.75 mmol), solvent (2.0 mL), catalyst (1.0% mol), hydrogen donor (15.0 equiv.), $B_2(OH)_4$(2.25 mmol), 4,4-bipyridine (0.0375 mmol) at 80 °C under air for 12h. [b] Determined by GC-MS.

G. Analysis Data for the Products

N-benzyl-4-isopropoxyaniline(3aa)

114.52 mg, 90% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36-7.29 (m, 4H), 7.27-7.23 (m, 1H), 6.76 (d, J = 8.3

Hz, 2H), 6.55 (d, *J* = 8.3 Hz, 2H), 4.36-4.24 (m, 1H), 4.24 (s, 2H), 1.27 (d, *J* = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 142.5, 139.6, 128.5, 127.5, 127.1, 117.8, 113.9, 71.0, 49.1, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{16}H_{19}NO$, 242.1545; found, 242.1547.

4-isopropoxy-*N*-(2-methylbenzyl)aniline (3ba)

100.73 mg, 79% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 (d, *J* = 6.4 Hz, 1H), 7.18 (s, 3H), 6.78 (dd, *J* = 8.9, 2.3 Hz, 2H), 6.57 (dd, *J* = 8.7, 2.0 Hz, 2H), 4.39-4.32 (m, 1H), 4.20 (s, 2H), 2.35 (s, 3H), 1.28 (dd, *J* = 6.0, 2.3 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 142.8, 137.2, 136.3, 130.3, 128.2, 127.3, 126.0, 117.9, 113.7, 71.1, 47.1, 22.1, 18.9. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{21}NO$, 256.1701; found, 256.1690.

4-isopropoxy-*N*-(4-methylbenzyl)aniline (3ca)

87.98 mg, 69% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.25 (d, *J* = 8.0 Hz, 2H), 7.14 (d, *J* = 7.9 Hz, 2H), 6.78-6.76 (m, 2H), 6.58-6.56 (m, 2H), 4.38-4.32 (m, 1H), 4.22 (s, 2H), 2.34 (s, 3H), 1.28 (d, *J* = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 142.7, 136.8, 136.5, 129.2, 127.5, 117.9, 113.9, 71.1, 48.9, 22.2, 21.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{21}NO$, 256.1701; found, 256.1690.

4-isopropoxy-*N*-(2-methoxybenzyl)aniline (3da)

108.40 mg, 80% yield, brown solid, mp. 64.0-65.0 ℃. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.17 (d, *J* = 7.4 Hz, 1H), 7.10 (t, *J* = 7.8 Hz, 1H), 6.79-6.72 (m, 2H), 6.65-6.63 (m, 2H), 6.46 (dd, *J* = 8.7, 1.7 Hz, 2H), 4.24-4.18 (m, 1H), 4.14 (s, 2H), 3.68 (s, 3H), 1.15 (dd, *J* = 6.1, 1.8 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 157.2, 149.8, 142.7, 128.8, 128.0, 127.4, 120.3, 117.7, 114.1, 110.0, 70.8, 55.0, 44.2, 22.0. HRMS (ESI, m/z): $[M+Na]^+$ Calcd. for $C_{17}H_{21}NNaO_2$, 294.1470; found, 294.1469.

4-isopropoxy-*N*-(3-methoxybenzyl)aniline (3ea)

111.11 mg, 82% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.28-7.22 (m, 1H), 6.95 (d, *J* = 13.1 Hz, 2H), 6.83-6.74 (m, 3H), 6.61-6.55 (m, 2H), 4.38-4.32 (m, 1H), 4.25 (s, 2H), 3.79 (d, *J* = 1.7 Hz, 3H),

1.28 (dd, J = 6.1, 2.9 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 159.8, 150.1, 142.6, 141.4, 129.6, 119.8, 117.9, 114.0, 113.0, 112.6, 71.1, 55.2, 49.2, 22.2. HRMS (ESI, m/z): $[M+Na]^+$ Calcd.for $C_{17}H_{21}NNaO_2$, 294.1470; found, 294.1469.

4-isopropoxy-*N*-(4-propoxybenzyl)aniline (3fa)

106.92 mg, 72% yield, yellow oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.18 (d, J = 8.0 Hz, 2H), 6.78 (d, J = 8.1 Hz, 2H), 6.69 (d, J = 8.5 Hz, 2H), 6.50-6.48 (m, 2H), 4.29-4.23 (m, 1H), 4.09 (s, 2H), 3.81 (t, J = 6.5 Hz, 2H), 1.76-1.67 (m, 2H), 1.20 (d, J = 6.1 Hz, 6H), 0.94 (t, J = 7.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 158.3, 150.0, 142.7, 131.4, 128.8, 117.9, 114.5, 113.9, 71.1, 69.4, 48.6, 22.5, 22.1, 10.5. HRMS (ESI, m/z): $[M+Na]^+$ Calcd. for $C_{17}H_{25}NNaO_2$, 322.1783; found, 322.1790.

4-isopropoxy-*N*-(4-isopropylbenzyl)aniline (3ga)

113.2 mg, 80% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.29 (d, J = 8.2 Hz, 2H), 7.20 (d, J = 8.1 Hz, 2H), 6.79 - 6.75 (m, 2H), 6.60-6.56 (m, 2H), 4.42-4.32 (m, 1H), 4.22 (s, 2H), 2.95-2.85 (m, 1H), 1.28 (d, J = 6.1 Hz, 6H), 1.24 (d, J = 7.0 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 147.8, 142.8, 136.9, 127.7, 126.6, 117.9, 113.9, 71.1, 48.9, 33.8, 24.0, 22.2. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{25}NO$, 284.2014; found, 284.2030.

4-isopropoxy-*N*-(4-nitrobenzyl)aniline (3ha)

71.5 mg, 50% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.25. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.21-8.13 (m, 2H), 7.53 (d, J = 8.1 Hz, 2H), 6.78-6.72 (m, 2H), 6.55-6.49 (m, 2H), 4.41 (s, 2H), 4.38-4.32 (m, 1H), 1.27 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.5, 147.8, 147.0, 141.6, 127.7, 123.8, 117.8, 114.0, 71.0, 48.4, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{18}N_2O_3$, 287.1396; found, 287.1381.

***N*-(2-fluorobenzyl)-4-isopropoxyaniline (3ia)**

108.78 mg, 84% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.25. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.37-7.33 (m, 1H), 7.23-7.27 (m, 1H), 7.08-6.99 (m, 2H), 6.77-6.73 (m, 2H), 6.58 – 6.54 (m, 2H), 4.36-4.31 (m, 3H), 1.26 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.0, 159.6, 150.2, 142.1, 129.4 (d, J = 4.6 Hz),

128.6 (d, J = 8.1 Hz), 126.5 (d, J = 14.5 Hz), 124.1 (d, J = 3.5 Hz), 117.8, 115.3, 115.1, 114.1, 70.9, 42.6 (d, J = 4.1 Hz), 22.1; ^{19}F NMR (377 MHz, $CDCl_3$) δ -119.1 (s, 1F). HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{18}FNO$, 260.1451; found, 260.1455.

***N*-(2-aminobenzyl)-4-isopropoxyaniline (3ja)**

94.85 mg, 70% yield, brown solid, mp. 63.0-65.0 ℃. TLC (hexane/ethyl acetate = 5/1, v/v): R_f = 0.28. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.15-7.11 (m, 2H), 6.81 (dd, J = 8.7, 1.8 Hz, 2H), 6.75-6.59 (m, 4H), 4.41-4.35 (m, 1H), 4.16 (s, 2H), 1.30 (dd, J = 6.0, 2.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.6, 146.0, 142.6, 130.0, 128.8, 123.1, 118.2, 117.8, 116.3, 115.8, 114.8, 71.0, 48.1, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{20}N_2O$, 257.1654; found, 257.1652.

***N*-(2, 3-dimethylbenzyl)-4-isopropoxyaniline (3ka)**

111.64 mg, 83% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.29. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.18 (d, J = 7.1 Hz, 1H), 7.12-7.05 (m, 2H), 6.79 (d, J = 8.7 Hz, 2H), 6.58 (d, J = 8.7 Hz, 2H), 4.39-4.33 (m, 1H), 4.21 (s, 2H), 2.31 (s, 3H), 2.26 (s, 3H), 1.29 (d, J = 6.0 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 142.9, 137.1, 137.0, 135.1, 129.1, 126.6, 125.9, 125.5, 118.0, 115.1, 113.7, 71.2, 47.9, 22.2, 21.7, 20.4, 14.7. HRMS (ESI, m/z): $[M+Na]^+$ Calcd. for $C_{18}H_{23}NNaO$, 292.1672; found, 292.1682.

***N*-(2, 5-dimethylbenzyl)-4-isopropoxyaniline (3la)**

100.88 mg, 75% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.27. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.08 (s, 1H), 7.00 (d, J = 7.6 Hz, 1H), 6.93 (d, J = 7.8 Hz, 1H), 6.75-6.67 (m, 2H), 6.55-6.46 (m, 2H), 4.39-4.33 (m, 1H), 4.09 (s, 2H), 2.23 (d, J = 8.6 Hz, 6H), 1.21 (dd, J = 6.1, 1.8 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 143.0, 137.0, 135.6, 133.2, 130.3, 129.1, 128.0, 118.0, 113.8, 71.2, 47.3, 22.2, 21.0, 18.5. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{23}NO$, 270.1858; found, 270.1873.

***N*-(2,4-dimethylbenzyl)-4-isopropoxyaniline (3ma)**

83.39 mg, 62% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.27. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.11 (dd, J = 7.2, 2.8 Hz, 1H), 6.95-6.85 (m, 2H), 6.69 (dd, J = 8.8, 3.1 Hz, 2H), 6.48 (dd, J = 8.8, 3.1 Hz, 2H), 4.30-4.24 (m, 1H), 4.07 (d, J =

2.4 Hz, 2H), 2.23 (dd, *J* = 6.8, 2.7 Hz, 6H), 1.20 (dd, *J* = 6.0, 3.3 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 142.9, 137.0, 136.2, 134.2, 131.2, 128.4, 126.7, 118.0, 113.7, 71.2, 47.0, 22.2, 21.0, 18.8. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{23}NO$, 270.1858; found, 270.1839.

4-isopropoxy-*N*-(2,4,5-trimethylbenzyl)aniline (3na)

100.13 mg, 75% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.27. ^{1}H NMR (400 MHz, $CDCl_3$) δ 6.81 (s, 2H), 6.74 (d, *J* = 8.9 Hz, 2H), 6.53 (d, *J* = 8.9 Hz, 2H), 4.32-4.26 (m, 1H), 4.06 (s, 2H), 2.27 (s, 6H), 2.20 (s, 3H), 1.22 (d, *J* = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.9, 143.3, 137.4, 137.1, 132.4, 129.0, 118.1, 113.5, 71.3, 43.1, 22.2, 20.9, 19.4. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{25}NO$, 284.2014; found, 284.1995.

***N*-(4-fluoro-3-methylbenzyl)-4-isopropoxyaniline (3oa)**

101.01 mg, 74% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.18-7.11 (m, 2H), 6.97-6.92 (m, 1H), 6.77 (dd, *J* = 8.9, 2.1 Hz, 2H), 6.56 (dd, *J* = 8.9, 2.0 Hz, 2H), 4.38-4.32 (m, 1H), 4.17 (s, 2H), 2.25 (s, 3H), 1.28 (dd, *J* = 6.1, 2.0 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 160.4 (d, *J* = 243.6 Hz), 150.1, 142.5, 135.0 (d, *J* = 3.5 Hz), 130.6 (d, *J* = 5.1 Hz), 126.3 (d, *J* = 8.0 Hz), 124.8 (d, *J* = 17.4 Hz), 117.9, 114.9 (d, *J* = 22.4 Hz), 113.9, 71.0, 48.5, 22.1, 14.5 (d, *J* = 3.5 Hz); ^{19}F NMR (377 MHz, $CDCl_3$) δ -112.8 (s, 1F).HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{20}FNO$, 274.1607; found, 274.1590.

***N*-(2, 3-difluorobenzyl)-4-isopropoxyaniline (3pa)**

109.42 mg, 79% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.11 (t, *J* = 6.6 Hz, 1H), 7.06-6.95 (m, 2H), 6.75 (d, *J* = 8.6 Hz, 2H), 6.55 (d, *J* = 8.7 Hz, 2H), 4.34 (s, 3H), 1.27 (d, *J* = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 151.7 (d, *J* = 12.5 Hz), 150.5, 150.0 (d, *J* = 12.7 Hz), 149.3 (d, *J* = 12.4 Hz), 147.5 (d, *J* = 12.8 Hz), 141.9, 129.3 (d, *J* = 11.3 Hz), 124.2, 124.1 (q, *J* = 2.9 Hz), 117.9, 115.9 (d, *J* = 17.2 Hz), 114.2, 71.1, 42.4 (t, *J* = 3.6 Hz), 22.2; ^{19}F NMR (377 MHz, $CDCl_3$) δ -138.8 (d, *J* = 20.9 Hz, 1F), -144.3 (d, *J* = 20.8 Hz, 1F). HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{16}H_{17}F_2NO$, 278.1356; found, 278.1358.

***N*-(2, 4-difluorobenzyl)-4-isopropoxyaniline (3qa)**

99.72 mg, 72% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.25. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.38-7.30 (m, 1H), 6.85-6.74 (m, 4H), 6.61-6.54 (m, 2H), 4.39-4.33 (m, 1H), 4.30 (s, 2H), 1.28 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.6 (dd, J = 135.6, 11.9 Hz), 160.2 (dd, J = 136.1, 11.8 Hz), 150.4, 141.9, 130.3 (dd, J = 9.6, 6.2 Hz), 122.4 (dd, J = 14.7, 3.7 Hz), 117.8, 114.2, 111.1 (dd, J = 21.0, 3.6 Hz), 103.8 (t, J = 25.4 Hz), 71.0, 42.3 (d, J = 3.4 Hz), 22.1; ^{19}F NMR (377 MHz, $CDCl_3$) δ -111.9 (d, J = 7.5 Hz, 1F), -115.0 (d, J = 7.0 Hz, 1F). HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{16}H_{17}F_2NO$, 278.1356; found, 278.1358.

4-isopropoxy-*N*-(2-phenylpropyl)aniline (3ra)

82.05 mg, 61% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.20. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.31 (t, J = 7.5 Hz, 2H), 7.21 (d, J = 7.5 Hz, 3H), 6.76 - 6.74 (m, 2H), 6.51-6.49 (m, 2H), 4.37-4.31 (m, 1H), 3.28 (dd, J = 12.1, 6.1 Hz, 1H), 3.17 (dd, J = 12.0, 8.4 Hz, 1H), 3.18-2.99 (m, 1H), 1.31 (dd, J = 6.9, 1.9 Hz, 3H), 1.27 (d, J = 6.3 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.9, 144.5, 142.5, 128.6, 127.2, 126.5, 117.9, 114.1, 71.1, 51.8, 39.2, 22.1, 19.7. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{23}NO$, 270.1858; found, 270.1873.

***N*-(3, 5-di-tert-butylbenzyl)-4-isopropoxyaniline (3sa)**

135.91 mg, 77% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.30. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.28 (s, 1H), 7.17-7.12 (m, 2H), 6.72 (d, J = 8.8 Hz, 2H), 6.55 (d, J = 8.8 Hz, 2H), 4.31-4.25 (m, 1H), 4.15 (s, 2H), 1.24 (s, 18H), 1.21 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 151.0, 150.0, 143.0, 138.5, 125.9, 122.2, 121.3, 118.1, 115.1, 114.0, 71.2, 50.1, 34.8, 31.4, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{24}H_{35}NO$, 354.2797; found, 354.2801.

4-isopropoxy-*N*-(naphthalen-2-ylmethyl)aniline (3ta)

77.12 mg, 53% yield, yellow solid, mp. 56.0 ℃. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.23. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.83-7.79 (m, 4H), 7.50-7.44 (m, 3H), 6.77 (dd, J = 8.9, 2.1 Hz, 2H), 6.62 (dd, J = 8.9, 2.0 Hz, 2H), 4.43 (s, 2H), 4.38-4.32 (m, 1H), 1.28 (dd, J = 6.3, 2.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.2, 142.6, 137.2, 133.4, 132.7, 128.3, 127.7, 127.6, 126.1, 125.9, 125.8, 125.6, 117.9, 114.1,

71.1, 49.4, 22.2. HRMS (ESI, m/z): $[M+Na]^+$ Calcd. for $C_{20}H_{21}NNaO$, 314..1521; found, 314.1526.

(Z)-4-isopropoxy-*N*-(4-methyl-1-phenylpent-1-en-1-yl)aniline (3ua)

81.89 mg, 53% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.19. ^1H NMR (400 MHz, $CDCl_3$) δ 7.36-7.31 (m, 2H), 7.28-7.24 (m, 1H), 7.15 (d, J = 7.5 Hz, 2H), 6.76 (dd, J = 8.9, 2.5 Hz, 2H), 6.54 (dd, J = 8.9, 2.5 Hz, 2H), 5.70 (t, J = 6.8 Hz, 1H), 4.38-4.32 (m, 1H), 3.93 (s, 2H), 1.85 (t, J = 6.0 Hz, 2H), 1.62-1.53 (m, 1H), 1.28 (dd, J = 6.0, 2.4 Hz, 6H), 0.79 (dd, J = 6.6, 2.3 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.9, 142.5, 139.6, 138.2, 128.6, 128.4, 128.2, 126.8, 117.9, 114.4, 71.1, 52.2, 37.6, 28.8, 22.3, 22.2. HRMS (ESI, m/z): $[M+Na]^+$ Calcd. for $C_{21}H_{27}NNaO$, 332.1990; found, 332.1978.

4-isopropoxy-*N*-((4-(prop-1-en-2-yl)cyclohex-1-en-1-yl)methyl)aniline (3va)

78.38 mg, 55% yield, brown oil. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.18. ^1H NMR (400 MHz, $CDCl_3$) δ 6.77 (dd, J = 8.9, 2.1 Hz, 2H), 6.56 (dd, J = 8.8, 2.1 Hz, 2H), 5.69 (s, 1H), 4.71 (d, J = 4.2 Hz, 2H), 4.38-4.32 (m, 1H), 3.58 (s, 2H), 2.12 (t, J = 13.9 Hz, 4H), 1.99-1.83 (m, 3H), 1.74 (s, 3H), 1.29 (dd, J = 6.1, 2.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.9, 149.8, 143.0, 135.2, 127.7, 126.6, 122.3, 117.9, 113.9, 108.6, 71.1, 50.9, 41.1, 31.3, 30.5, 27.6, 27.2, 22.2, 20.8. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{27}NO$, 286.2171; found, 286.2168.

2-allyl-6-(((4-isopropoxyphenyl)amino)methyl)phenol (3wa)

69.80 mg, 47% yield, brown solid, mp. 55.0 ℃. TLC (hexane/ethyl acetate = 30/1, v/v): R_f = 0.30. ^1H NMR (400 MHz, $CDCl_3$) δ 7.08 (d, J = 7.5 Hz, 1H), 6.98 (d, J = 7.6 Hz, 1H), 6.79 (d, J = 8.6 Hz, 5H), 6.09-5.94 (m, 1H), 5.13-5.01 (m, 2H), 4.44-4.38 (m, 1H), 4.33 (s, 2H), 3.40 (d, J = 6.5 Hz, 2H), 1.29 (d, J = 6.0 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 154.9, 152.5, 140.5, 136.9, 129.4, 127.3, 126.6, 122.5, 119.4, 117.7, 117.2, 115.4, 70.6, 50.1, 33.9, 22.0. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{23}NO_2$, 298.1807; found, 298.1809.

(*E*)-*N*-(3-(furan-3-yl)allyl)-4-isopropoxyaniline (3xa)

25.7 mg, 20% yield, brown oil. TLC (hexane/ethyl acetate = 20/1, v/v): R_f = 0.36. ^1H NMR (400 MHz, $CDCl_3$) δ 7.33 (s, 1H), 6.78 (d, J = 8.8 Hz, 2H), 6.60 (d, J = 8.8 Hz,

2H), 6.43 (d, *J* = 15.9 Hz, 1H), 6.36-6.35 (m, 1H), 6.27 (dt, *J* = 15.9, 5.6 Hz, 1H), 6.19 (d, *J* = 3.1 Hz, 1H), 4.39-4.33 (m, 1H), 3.86 (d, *J* = 5.4 Hz, 2H), 1.29 (d, *J* = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 152.5, 150.2, 142.3, 141.8, 126.1, 119.6, 117.9, 114.2, 111.2, 107.5, 71.1, 46.7, 22.2. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{16}H_{19}NO_2$, 258.1494; found, 258.1469.

2-(benzylamino)benzoic acid (3ab)

48.81 mg, 43% yield, brown oil. TLC (hexane/ethyl acetate = 5/1, v/v): R_f = 0.21. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.92 (d, *J* = 8.0 Hz, 1H), 7.28 (d, *J* = 3.8 Hz, 4H), 7.19 (s, 2H), 6.56 (t, *J* = 8.4 Hz, 2H) 4.42(s, 2H) ; ^{13}C NMR (100 MHz, $CDCl_3$) δ 173.1, 151.6, 138.7, 135.6, 132.6, 128.7, 127.2, 126.9, 115.1, 111.8, 108.8, 46.8. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{14}H_{13}NO_2$, 228.1025; found, 228.1020.

4-isopropoxy-*N*-(4-phenylbutan-2-yl)aniline (4aa)

133.01 mg, 94% yield, brown oil. TLC (petroleum ether/ethyl acetate = 10/1, v/v): R_f = 0.26. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.26 (m, *J* = 8.9, 8.3 Hz, 2H), 7.18 (d, *J* = 7.4 Hz, 3H), 6.75 (d, *J* = 8.9 Hz, 2H), 6.48 (d, *J* = 9.0 Hz, 2H), 4.38-4.32 (m, 1H), 3.43-3.35 (m, 1H), 2.72 (t, *J* = 7.9 Hz, 2H), 1.91-1.82 (m, 1H), 1.77-1.68 (m, 1H), 1.28 (d, *J* = 6.0 Hz, 6H), 1.19 (d, *J* = 6.2 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.8, 142.1, 142.0, 128.5, 128.4, 125.9, 118.1, 114.6, 71.2, 48.9, 38.9, 32.5, 22.3, 20.9. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{25}NO$, 284.2014; found, 284.2030. The enantiomeric excess was determined by HPLC using Daicel Chiralpak OD-H column, hexane/i-PrOH 85:15, flow rate 1.0 mL/min, UV detection at 220 nm, tminor = 7.511 min, tmajor = 7.881 min, 0% *ee*.

***N*-cyclohexyl-4-isopropoxyaniline (4ba)**

103.69 mg, 89% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.28. ^{1}H NMR (400 MHz, $CDCl_3$) δ 6.77-6.74 (m, 2H), 6.55-6.53 (m, 2H), 4.38-4.32 (m, 1H), 3.15 (tt, *J* = 10.0, 3.6 Hz, 1H), 3.08 (s, 1H), 2.06-2.02 (m, 2H), 1.75 (dt, *J* = 13.2, 3.9 Hz, 2H), 1.66-1.61 (m, 1H), 1.38-1.17 (m, 10H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.8, 141.8, 118.1, 114.6, 71.2, 52.7, 33.7, 26.0, 25.1, 22.3. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{15}H_{23}NO$, 234.1858; found, 234.1876.

***N*-cyclobutyl-4-isopropoxyaniline (4ca)**

80.98 mg, 79% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.23.^{1}H NMR (400 MHz, $CDCl_3$) δ 6.76 (dd, J = 8.8, 1.6 Hz, 2H), 6.49 (dd, J = 8.8, 1.5 Hz, 2H), 4.38-4.32 (m, 1H), 3.87-3.81 (m, 1H), 2.39-2.38 (m, 2H), 1.80-1.77 (m, 4H), 1.28 (dd, J = 6.1, 1.5 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.1, 141.7, 118.0, 114.3, 71.1, 49.8, 31.4, 22.3, 15.3. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{13}H_{19}NO$, 206.1545; found, 206.1552.

***N*-(1-cyclopropylethyl)-4-isopropoxyaniline (4da)**

82.13 mg, 75% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.25.^{1}H NMR (400 MHz, $CDCl_3$) δ 6.55 (d, J = 6.8 Hz, 2H), 6.34 (d, J = 6.8 Hz, 2H), 4.17-4.11 (m, 1H), 2.67-2.61 (m, 1H), 1.07 (d, J = 6.1 Hz, 6H), 0.99 (d, J = 6.4 Hz, 3H), 0.72-0.65 (m, 1H), 0.26 (d, J = 8.4 Hz, 2H), 0.09 -0.00 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.9, 142.3, 117.9, 114.9, 71.1, 53.7, 22.3, 20.3, 18.0, 3.3, 2.6. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{14}H_{21}NO$, 220.1701; found, 220.1711.

***N*-(4-isopropoxyphenyl)-2, 3-dihydro-1*H*-inden-1-amine (4ea)**

92.12 mg, 69% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.43. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.35 (d, J = 7.2 Hz, 1H), 7.23-7.15 (m, 3H), 6.79 (d, J = 8.8 Hz, 2H), 6.63 (d, J = 8.8 Hz, 2H), 4.92 (t, J = 6.7 Hz, 1H), 4.39-4.33 (m, 1H), 3.02-2.95 (m, 1H), 2.89-2.81 (m, 1H), 2.58-2.49 (m, 1H), 1.87 (dt, J = 12.8, 7.1 Hz, 1H), 1.29 (d, J = 6.2 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.1, 144.9, 143.7, 142.3, 127.9, 126.7, 124.9, 124.4, 118.2, 114.5, 71.2, 59.5, 34.0, 30.3, 22.3. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{21}NO$, 268.1701; found, 268.1671.

***N*-(4-isopropoxyphenyl)-5-methoxy-2, 3-dihydro-1*H*-inden-1-amine (4fa)**

102.47 mg, 69% yield, brown oil. TLC (petroleum ether/ethyl acetate = 10/1, v/v): R_f = 0.19. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.25 (d, J = 8.3 Hz, 1H), 6.82-6.76 (m, 3H), 6.74 (dd, J = 8.3, 2.4 Hz, 1H), 6.64 (d, J = 8.9 Hz, 2H), 4.88 (t, J = 6.3 Hz, 1H), 4.39-4.32 (m, 1H), 3.79 (s, 3H), 3.02-2.94 (m, 1H), 2.88-2.80 (m, 1H), 2.57-2.49 (m, 1H), 1.95-1.86 (m, 1H), 1.30 (d, J = 6.0 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 159.8, 149.9, 145.3, 142.2, 136.8, 124.9, 118.0, 114.3, 112.6, 109.8, 71.1, 58.7, 55.4, 34.0, 30.4, 22.2. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{23}NO$, 298.1807; found, 298.1809.

***N*-(4-isopropoxyphenyl)-1, 2, 3, 4-tetrahydronaphthalen-1-amine (4ga)**

91.33 mg, 65% yield, brown oil. TLC (petroleum ether/ethyl acetate = 30/1, v/v): R_f = 0.21.^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42 (d, J = 6.5 Hz, 1H), 7.21-7.11 (m, 3H), 6.80 (d, J = 8.9 Hz, 2H), 6.62 (d, J = 9.0 Hz, 2H), 4.54 (t, J = 4.8 Hz, 1H), 4.40-4.34 (m, 1H), 2.87-2.71 (m, 2H), 1.96-1.74 (m, 4H), 1.30 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.8, 141.9, 138.4, 137.5, 129.3, 129.0, 127.0, 126.0, 118.1, 114.1, 71.2, 51.8, 29.3, 28.6, 22.2, 19.3. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{23}NO$, 282.1858; found, 282.1825.

4-isopropoxy-N-((1S)-2-methyl-5-(prop-1-en-2-yl)cyclohexyl)aniline (4ha)

101.18 mg, 71% yield, brown oil. TLC (petroleum ether/ethyl acetate = 5/1, v/v): R_f = 0.42. ^{1}H NMR (400 MHz, $CDCl_3$) δ 6.76 (dd, J = 9.0, 2.9 Hz, 2H), 6.56 (d, J = 9.1 Hz, 2H), 4.66 (d, J = 2.0 Hz, 2H), 4.37-4.31 (m, 1H), 3.55 (s, 1H), 2.11-1.57 (m, 11H), 1.28 (dd, J = 6.1, 2.7 Hz, 6H), 0.97 (dd, J = 6.8, 3.2 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 149.4, 142.6, 118.0, 114.1, 108.4, 71.1, 53.6, 38.4, 35.4, 35.2, 31.2, 29.1, 22.2, 21.0, 18.9. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{29}NO$, 288.2373; found, 288.2363.

***N*-(4-isopropoxyphenyl)chroman-4-amine (4ia)**

96.22 mg, 68% yield, brown oil. TLC (petroleum ether/ethyl acetate = 10/1, v/v): R_f = 0.32. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 (dd, J = 7.7, 1.7 Hz, 1H), 7.20-7.16 (m, 1H), 6.91-6.85 (m, 2H), 6.83-6.80 (m, 2H), 6.65-6.59 (m, 2H), 4.52 (t, J = 4.2 Hz, 1H), 4.41-4.35 (m, 1H), 4.25-4.18 (m, 2H), 2.12-2.08 (m, 2H), 1.30 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 154.9, 150.1, 140.9, 130.1, 129.0, 125.9, 123.4, 120.5, 118.1, 116.9, 115.1, 114.0, 71.1, 62.6, 47.4, 27.7, 22.2, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{21}NO_2$, 284.1651; found, 284.1616.

***N*-(1, 5-diphenylpentan-3-yl)-4-isopropoxyaniline (4ja)**

128.69 mg, 70% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.21. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.25 (t, J = 7.3 Hz, 4H), 7.19-7.15 (m, 2H), 7.11 (d, J = 8.1 Hz, 4H), 6.72 (d, J = 8.9 Hz, 2H), 6.38 (d, J = 8.9 Hz, 2H), 4.37-4.31 (m, 1H), 3.31-3.25 (m, 1H), 2.72-2.63 (m, 4H), 1.90-1.72 (m, 4H), 1.28 (dd, J = 6.1, 1.3 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.6, 142.1, 142.0, 128.4, 128.3, 125.7,

117.9, 114.3, 71.0, 52.4, 36.7, 32.2, 22.2. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{26}H_{31}NO$, 374.2484; found, 374.2462.

4-isopropoxy-*N*-(nonan-2-yl)aniline (4ka)

114.96 mg, 70% yield, brown oil. TLC (petroleum ether/ethyl acetate = 15/1, v/v): R_f = 0.44. ^1H NMR (400 MHz, $CDCl_3$) δ 6.76 (dd, J = 8.8, 1.9 Hz, 2H), 6.52 (dd, J = 8.8, 1.9 Hz, 2H), 4.38-4.32 (m, 1H), 3.38-3.32 (m, 1H), 1.61-1.50 (m, 2H), 1.28 (dd, J = 6.1, 1.8 Hz, 16H), 1.14 (dd, J = 6.4, 1.7 Hz, 3H), 0.88 (t, J = 6.1 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.6, 142.1, 118.0, 114.4, 71.1, 49.3, 37.2, 31.8, 29.6, 29.3, 26.1, 22.6, 22.2, 20.8, 14.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{31}NO$, 278.2484; found, 278.2484.

***N*-(1-(4-bromophenyl)ethyl)-4-isopropoxyaniline (4la)**

129.87 mg, 78% yield, brown oil. TLC (petroleum ether/ethyl acetate = 25/1, v/v): R_f = 0.25.^1H NMR (400 MHz, $CDCl_3$) δ 7.35-7.33 (m, 2H), 7.17-7.15 (m, 2H), 6.61-6.59 (m, 2H), 6.33-6.31 (m, 2H), 4.29-4.19 (m, 2H), 1.37 (d, J = 6.7 Hz, 3H), 1.17 (dd, J = 6.1, 1.6 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0, 144.7, 141.4, 131.7, 127.7, 120.4, 117.7, 114.4, 71.0, 53.8, 25.1, 22.2. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{17}H_{20}BrNO$, 334.0807; found, 334.0794.

4-(1-((4-isopropoxyphenyl)amino)ethyl)benzonitrile (4ma)

88.20 mg, 63% yield, brown oil. TLC (petroleum ether/ethyl acetate = 5/1, v/v): R_f = 0.20.^1H NMR (400 MHz, $CDCl_3$) δ 7.60 (dd, J = 8.3, 1.5 Hz, 2H), 7.48 (dd, J = 8.3, 1.5 Hz, 2H), 6.68 (dd, J = 8.9, 1.5 Hz, 2H), 6.37 (dd, J = 8.9, 1.5 Hz, 2H), 4.42 (q, J = 6.8 Hz, 1H), 4.34-4.28 (m, 1H), 1.48 (dd, J = 6.8, 1.4 Hz, 3H), 1.25 (dd, J = 6.2, 1.4 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 151.3, 150.1, 140.9, 132.5, 126.6, 119.0, 117.6, 114.3, 110.5, 70.9, 54.0, 24.9, 22.1, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{20}N_2O$, 281.1654; found, 228.1020.

***N*-(1-(3, 5-dimethylphenyl)ethyl)-4-isopropoxyaniline (4na)**

111.79 mg, 79% yield, brown oil. TLC (petroleum ether/ethyl acetate = 15/1, v/v): R_f = 0.33. ^1H NMR (400 MHz, $CDCl_3$) δ 6.98 (s, 2H), 6.86 (s, 1H), 6.69 (d, J = 8.9 Hz, 2H), 6.46 (d, J = 8.9 Hz, 2H), 4.34-4.28 (m, 2H), 2.29 (s, 6H), 1.46 (d, J = 6.7 Hz, 3H), 1.25 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.7, 145.6, 142.0,

138.0, 128.5, 123.6, 117.7, 114.3, 71.0, 54.3, 25.1, 22.2, 22.2, 21.4. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{25}NO$, 284.2014; found, 284.2030.

4-(3-((4-isopropoxyphenyl)amino)butyl)-*N*, *N*-dimethylaniline (4oa)

92.38 mg, 62% yield, brown oil. TLC (petroleum ether/ethyl acetate = 10/1, v/v): R_f = 0.32. ^1H NMR (400 MHz, $CDCl_3$) δ 7.05 (d, J = 6.8 Hz, 2H), 6.74 (d, J = 7.0 Hz, 2H), 6.68 (d, J = 6.8 Hz, 2H), 6.48 (d, J = 7.0 Hz, 2H), 4.36-4.31 (m, 1H), 3.40-3.34 (m, 1H), 2.89 (s, 6H), 2.65-2.58 (m, 2H), 1.86-1.77 (m, 1H), 1.72-1.62 (m, 1H), 1.27 (d, J = 4.1 Hz, 6H), 1.16 (d, J = 4.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.6, 148.9, 142.0, 130.1, 128.9, 117.9, 114.5, 112.9, 71.0, 48.7, 40.8, 39.0, 31.3, 22.1, 20.8. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{26}N_2NaO$, 321.1943; found, 321.1958.

4-isopropoxy-*N*-(1-phenylbutyl)aniline (4pa)

106.13 mg, 75% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.44. ^1H NMR (400 MHz, $CDCl_3$) δ 7.34-7.27 (m, 4H), 7.22-7.18 (m, 1H), 6.66 (d, J = 8.9 Hz, 2H), 6.43 (d, J = 9.0 Hz, 2H), 4.32-4.20 (m, 2H), 1.80-1.65 (m, 2H), 1.45-1.31 (m, 2H), 1.23 (d, J = 6.1 Hz, 6H), 0.91 (t, J = 7.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.7, 144.5, 141.9, 128.4, 126.7, 126.4, 117.7, 114.2, 70.9, 58.7, 41.1, 22.1, 22.1, 19.5, 13.9. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{25}NO$, 284.2014; found, 284.1995.

4-isopropoxy-*N*-(nonan-2-yl)aniline (4qa)

41.18 mg, 27% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.18. ^1H NMR (400 MHz, $CDCl_3$) δ 7.81-7.78 (m, 4H), 7.51-7.40 (m, 3H), 6.66 (d, J = 8.6 Hz, 2H), 6.52 (d, J = 8.5 Hz, 2H), 4.55 (q, J = 6.7 Hz, 1H), 4.29-4.24 (m, 1H), 1.55 (d, J = 6.7 Hz, 3H), 1.22 (d, J = 6.1 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 149.8, 143.1, 141.7, 133.5, 132.7, 128.4, 127.8, 127.6, 125.9, 125.4, 124.4, 124.2, 117.7, 114.4, 70.9, 54.4, 25.2, 22.1. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{19}H_{25}NO$, 306.1858; found, 306.1844.

***N*-(4-phenylbutan-2-yl)-2,3-dihydrobenzofuran-5-amine (4ac)**

96.12 mg, 72% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.28. ^1H NMR (400 MHz, $CDCl_3$) δ 7.29-7.25 (m, 2H), 7.21-7.16 (m, 3H), 6.61 (d, J = 8.4 Hz, 1H), 6.44 (d, J = 2.4 Hz, 1H), 6.32 (dd, J = 8.4, 2.5 Hz, 1H), 4.47 (t, J = 8.5

Hz, 2H), 3.39-3.33 (m, 1H), 3.10 (t, *J* = 8.5 Hz, 2H), 2.71 (t, *J* = 8.3 Hz, 2H), 1.90-1.81 (m, 1H), 1.76-1.67 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) *δ* 152.4, 142.2, 141.9, 128.5, 128.4, 127.8, 125.9, 113.4, 111.2, 109.5, 70.9, 49.3, 38.9, 32.6, 30.5, 20.9. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{21}NO$, 268.1701; found, 268.1704.

4-ethyl-*N*-(4-phenylbutan-2-yl)aniline (4ad)

90.6 mg, 73% yield, red oil. TLC (petroleum ether/ethyl acetate = 50/1, v/v): R_f = 0.34. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.28-7.24 (m, 2H), 7.18-7.15 (m, 3H), 6.99 - 6.96 (m, 2H), 6.48-6.45 (m, 2H), 3.47 - 3.49 (m, 1H), 3.05 (s, 1H), 2.69 (t, *J* = 7.9 Hz, 2H), 2.52 (q, *J* = 7.6 Hz, 2H), 1.88-1.79 (m, 1H), 1.76 - 1.67 (m, 1H), 1.20-1.16 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) *δ* 145.4, 142.0, 132.6, 128.5, 128.3, 128.3, 125.7, 113.2, 48.0, 38.8, 32.4, 27.8, 20.8, 15.9. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{18}H_{23}N$, 254.1909; found, 254.1889.

4-chloro-*N*-(4-phenylbutan-2-yl)aniline (4ae) [1]

124.5 mg, 92% yield, yellow oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.24. ^{1}H NMR (400 MHz, $CDCl_3$) *δ* 7.26 (t, *J* = 7.4 Hz, 2H), 7.19-7.13 (m, 3H), 7.07-7.04 (m, 2H), 6.39-6.37 (m, 2H), 3.42 - 3.34 (m, 1H), 2.67 (t, *J* = 8.0 Hz, 3H), 1.86 - 1.67 (m, 2H), 1.16 (d, *J* = 6.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) *δ* 145.9, 141.6, 128.9, 128.3, 125.8, 121.1, 114.0, 47.8, 38.4, 32.2, 20.5.

methyl 4-((4-phenylbutan-2-yl)amino)benzoate (4af)[1]

117.45mg, 83% yield, yellow oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.22. ^{1}H NMR (400 MHz, $CDCl_3$) *δ* 7.83 (d, *J* = 8.8 Hz, 2H), 7.27 (t, *J* = 7.3 Hz, 2H), 7.19 (d, *J* = 8.6 Hz, 1H), 7.15 (d, *J* = 8.3 Hz, 2H), 6.44 (d, *J* = 8.8 Hz, 2H), 4.02 (d, *J* = 8.9 Hz, 1H), 3.83 (s, 3H), 3.55 - 3.49 (m, 1H), 2.69 (t, *J* = 7.8 Hz, 2H), 1.91 - 1.73 (m, 2H), 1.21 (d, *J* = 6.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 167.3, 151.2, 141.4, 131.5, 128.4, 128.3, 125.9, 117.6, 111.5, 51.4, 47.3, 38.4, 32.2, 20.5.

3-((4-phenylbutan-2-yl)amino)phenol (4ag)

108.5 mg, 90% yield, brown oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.17. ^{1}H NMR (400 MHz, $CDCl_3$) *δ* 7.31-7.16 (m, 5H), 7.01-6.94 (m, 1H), 6.15-6.10 (m, 2H), 5.94 (t, *J* = 4.4 Hz, 1H), 3.45-3.47 (m, 1H), 2.69 (t, *J* = 7.8 Hz, 2H), 1.91-1.80 (m, 1H), 1.77-1.68 (m, 1H), 1.18 (dd, *J* = 6.4, 2.8 Hz, 3H); ^{13}C NMR (100 MHz,

$CDCl_3$) δ 156.7, 149.0, 141.9, 130.2, 128.5, 128.4, 125.8, 106.3, 104.0, 100.0, 47.9, 38.6, 32.4, 20.7. HRMS (ESI, m/z): $[M+H]^+$ Calcd. for $C_{16}H_{19}NO$, 242.1545; found, 242.1547.

7-((4-phenylbutan-2-yl)amino)-1, 2, 3, 4-tetrahydronaphthalen-1-ol (4ah)

89.5 mg, 80% yield, red oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.22. ^1H NMR (400 MHz, $CDCl_3$) δ 7.28-7.24 (m, 2H), 7.18-7.15 (m, 3H), 6.86 (d, J = 8.3 Hz, 1H), 6.59 - 6.57 (m, 1H), 6.40 (dd, J = 8.3, 2.8 Hz, 1H), 4.61 (t, J = 5.1 Hz, 1H), 3.49-3.41 (m, 1H), 2.67 (dt, J = 14.1, 6.8 Hz, 3H), 2.60-2.53 (m, 1H), 1.94-1.79 (m, 4H), 1.74-1.64 (m, 2H), 1.17 (dd, J = 6.3, 1.9 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 145.7 (d, J = 1.4 Hz), 141.9 (d, J = 1.6 Hz), 139.5, 129.6, 128.3, 128.2, 125.7, 125.3, 113.2, 112.5, 68.3 (d, J = 2.3 Hz), 47.9 (d, J = 2.5 Hz), 38.7 (d, J = 9.6 Hz), 32.3 (dd, J = 5.2, 2.7 Hz), 28.2, 20.7 (d, J = 4.2 Hz), 19.2 (d, J = 2.0 Hz). HRMS (ESI, m/z): $[M+Na]^+$ Calcd. for $C_{20}H_{25}NONa$, 318.1834, found, 318.1823.

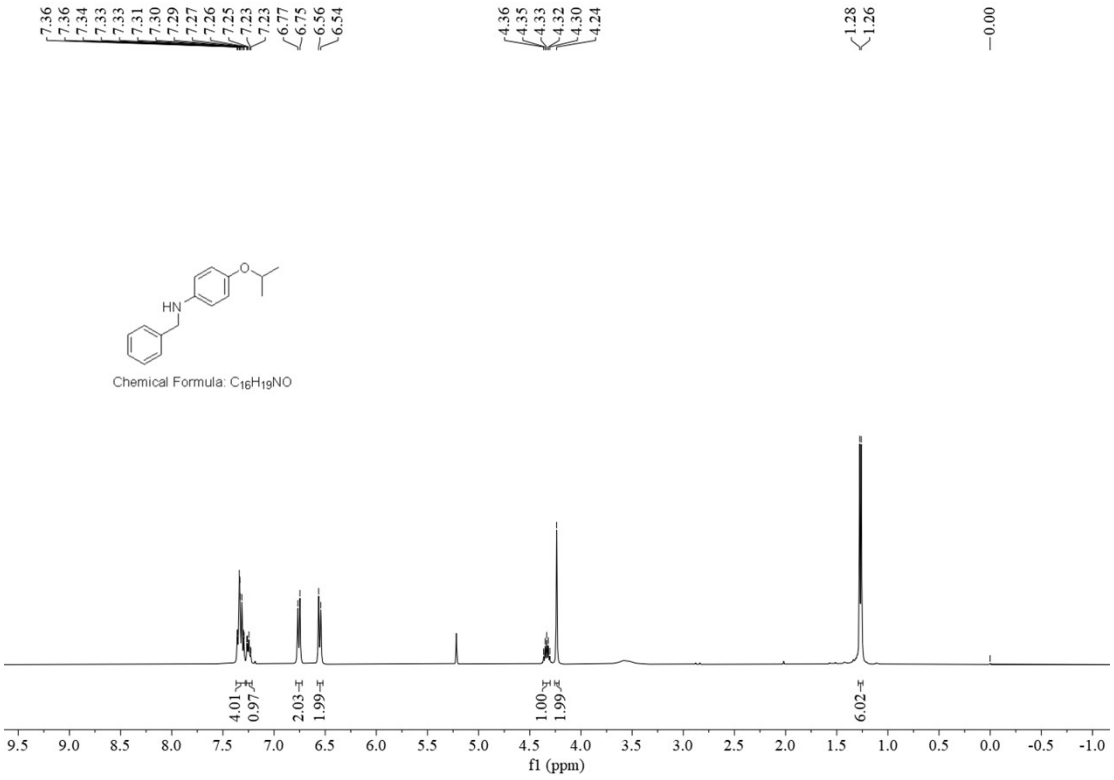
4-methyl-*N*-(4-phenylbutan-2-yl)aniline (4ai)[1]

112.4 mg, 94% yield, red oil. TLC (petroleum ether/ethyl acetate = 20/1, v/v): R_f = 0.27. ^1H NMR (400 MHz, $CDCl_3$) δ 7.27-7.23 (m, 2H), 7.15 (d, J = 6.0 Hz, 3H), 6.94 (d, J = 6.3 Hz, 2H), 6.44 (d, J = 6.1 Hz, 2H), 3.41 (qt, J = 6.4, 3.3 Hz, 1H), 3.09 (s, 1H), 2.68 (t, J = 6.8 Hz, 2H), 2.21 (s, 3H), 1.87-1.78 (m, 1H), 1.75-1.65 (m, 1H), 1.16 (dd, J = 6.3, 2.4 Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 145.1, 141.9, 129.6, 128.3, 128.2, 125.9, 125.7, 113.3, 48.0, 38.7, 32.4, 20.7, 20.3.

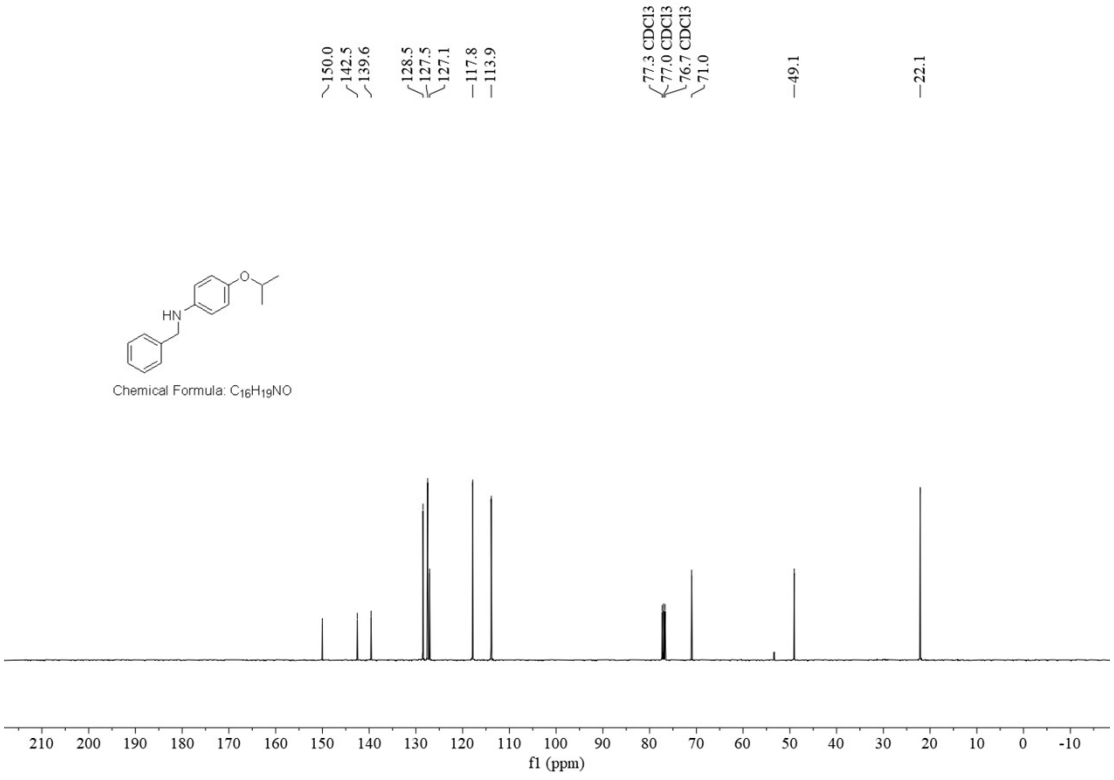
H. References

[1] (a) Jang, M.; Lim, T.; Park, B. Y.; Han, M. S. *J. Org. Chem.* **2022**, *87*, 910.; (b) Ouyang, L.; Xia, Y.; Liao, J.; Luo, R. *Eur. J. Org. Chem.* **2020**, *2020*, 6387.; (c) Popov, K. K.; Campbell, J. L.; Kysilka, O.; Hosek, J.; Davies, C. D.; Pour, M.; Kocovsky, P. *J. Org. Chem.* **2021**, *87*, 920.; (d) Cosgrove, S. C.; Thompson, M. P.; Ahmed, S. T.; Parmeggiani, F.; Turner, N. J. *Angew. Chem. Int. Ed.* **2020**, *59*, 18156.

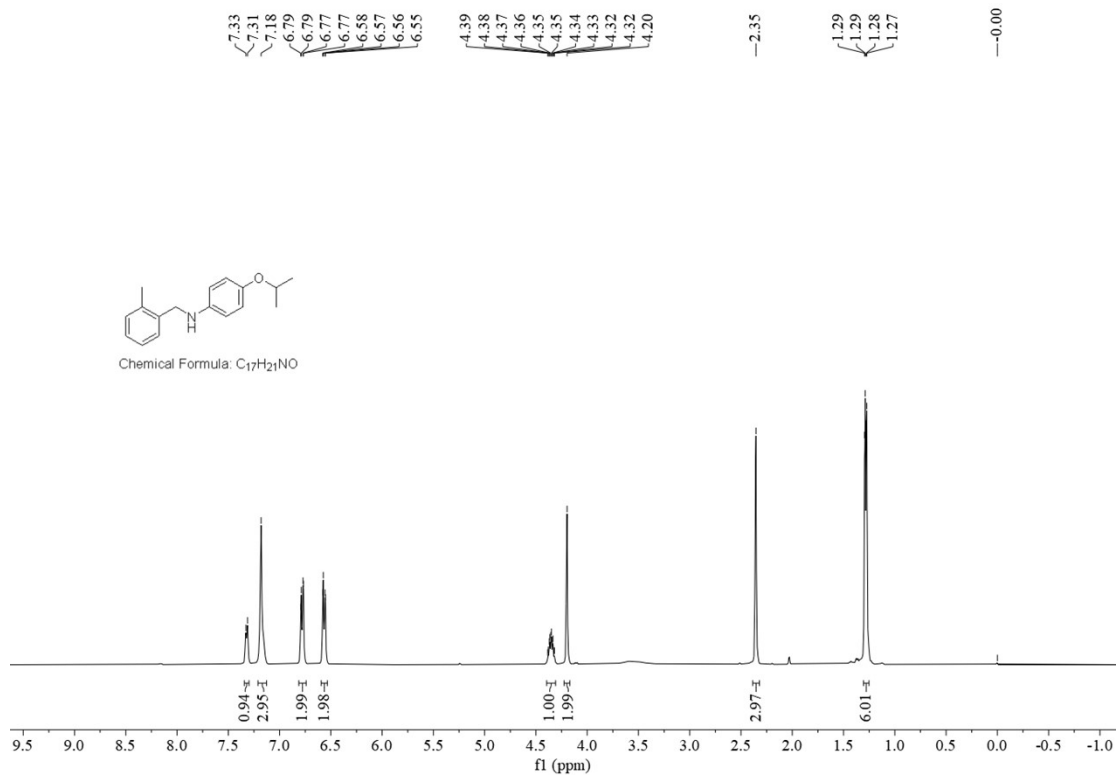
I. NMR Spectra of New Compounds



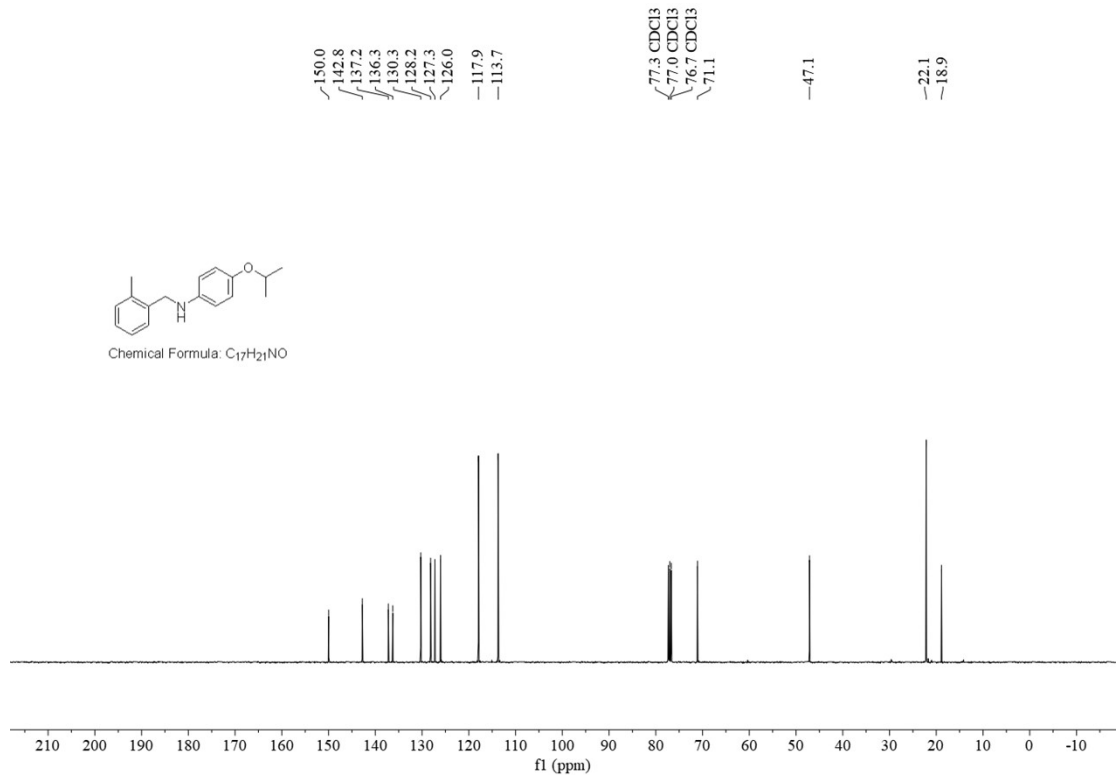
^{1}H NMR Spectrum of **3aa** in $CDCl_3$ at 400 MHz



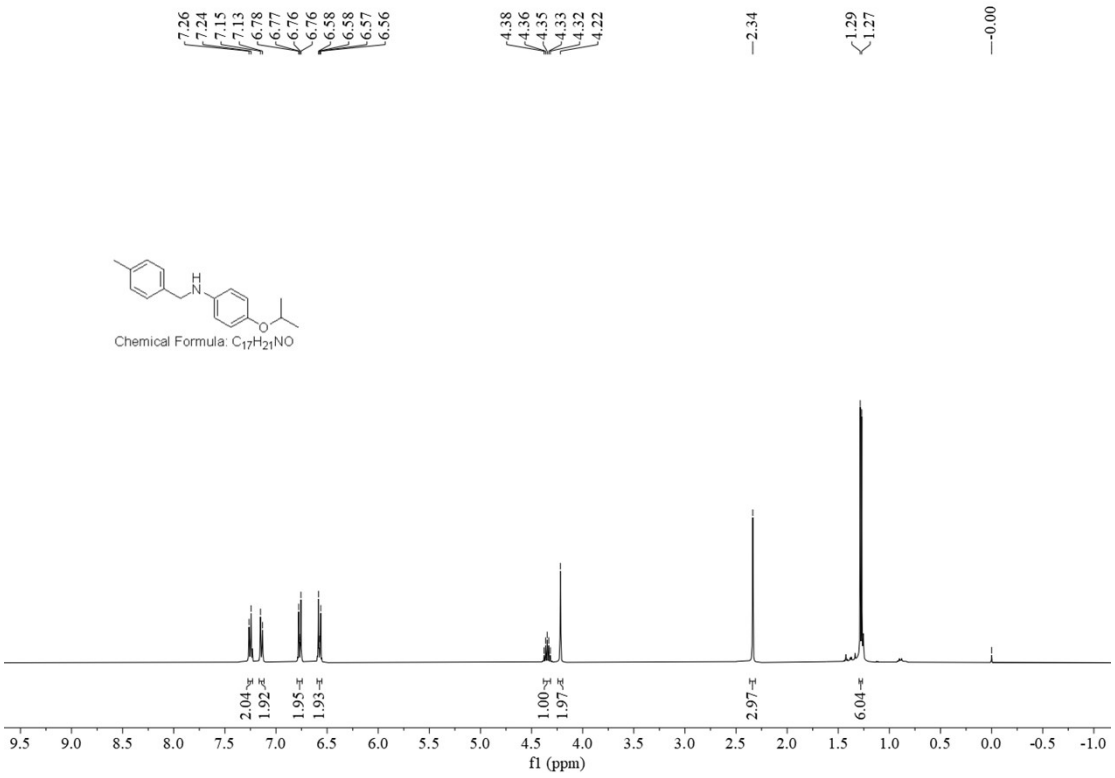
^{13}C{^{1}H} NMR Spectrum of **3aa** in $CDCl_3$ at 100 MHz



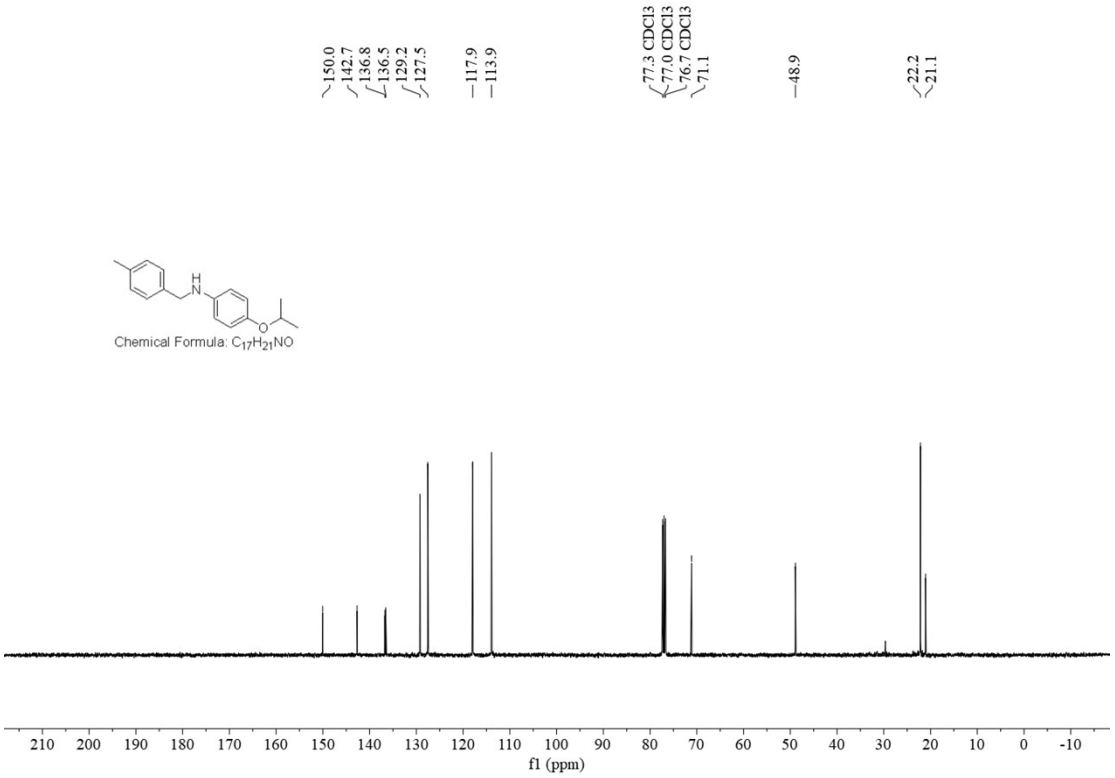
^{1}H NMR Spectrum of **3ba** in $CDCl_3$ at 400 MHz



^{13}C{^{1}H} NMR Spectrum of **3ba** in $CDCl_3$ at 100 MHz



^{1}H NMR Spectrum of **3ca** in $CDCl_3$ at 400 MHz



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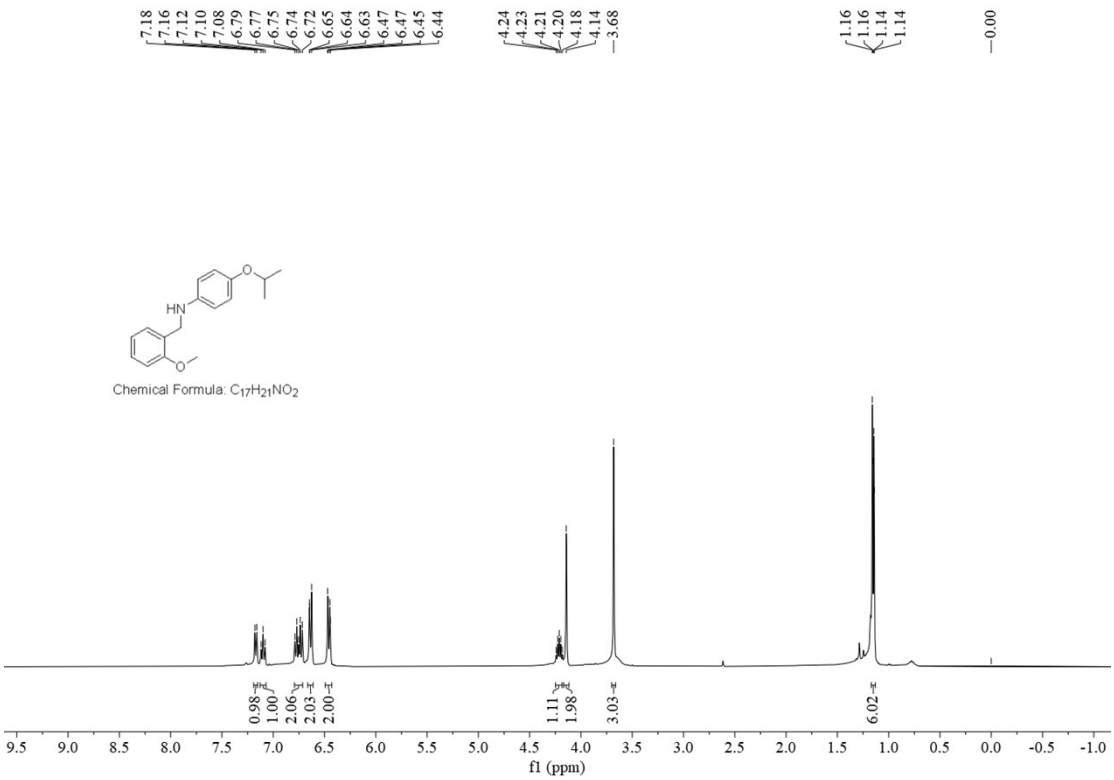
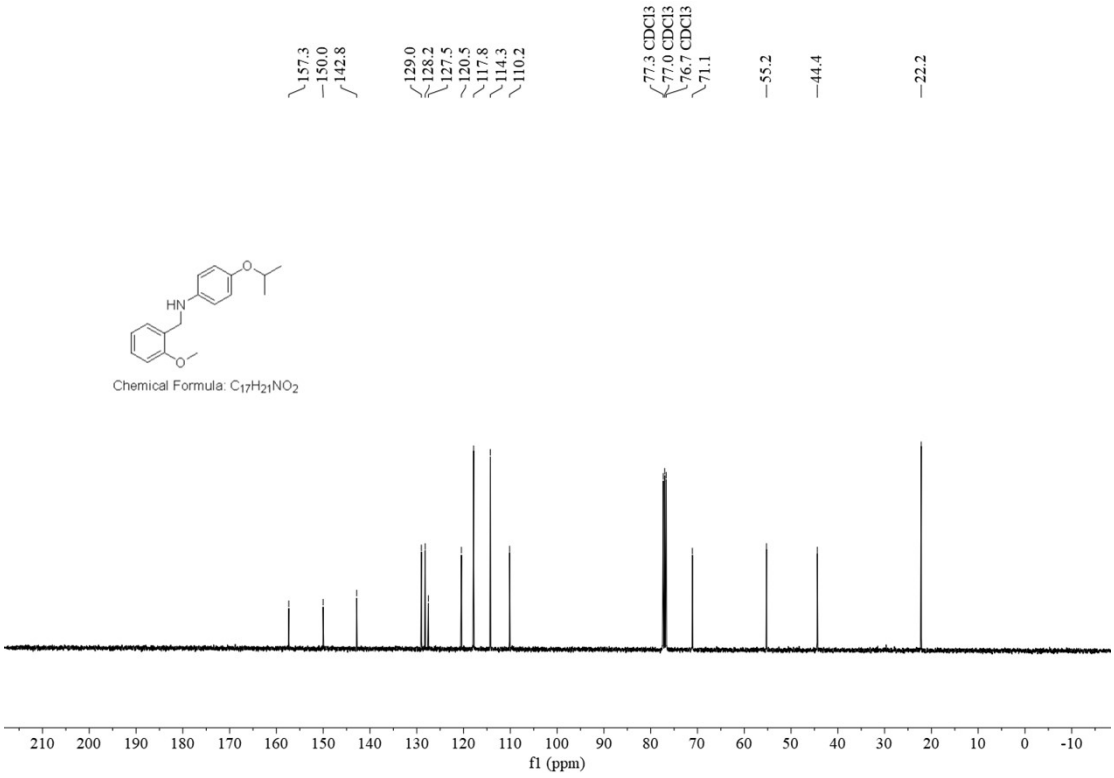
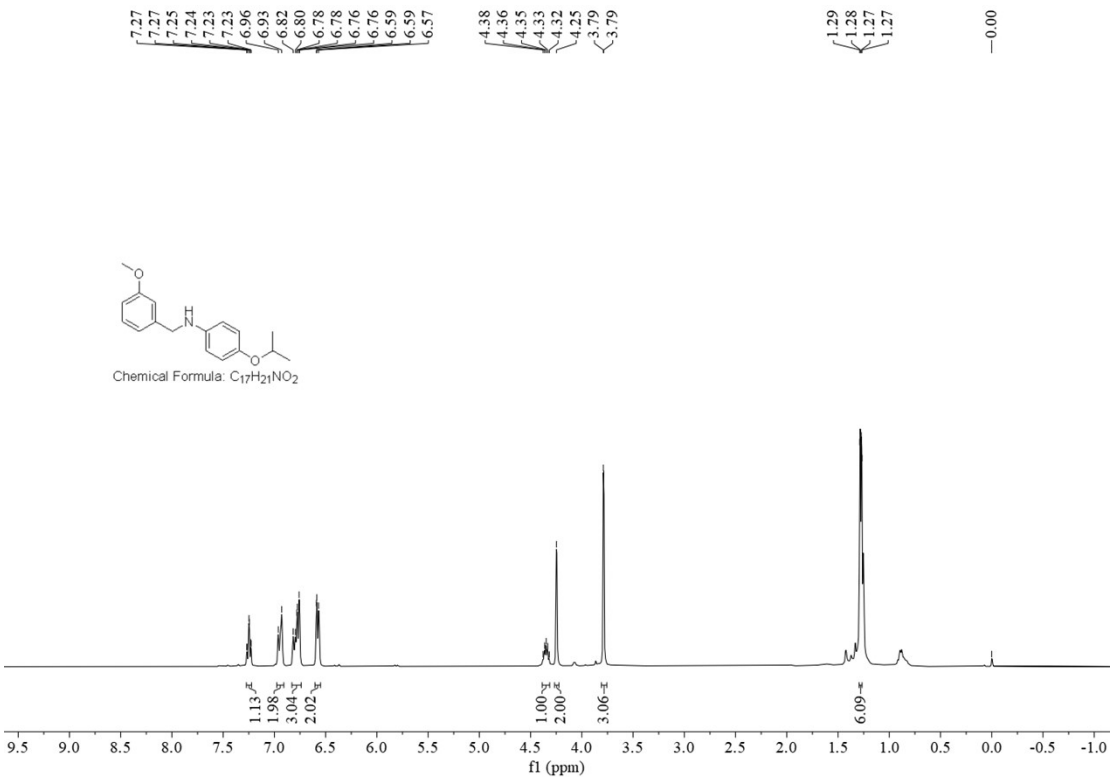


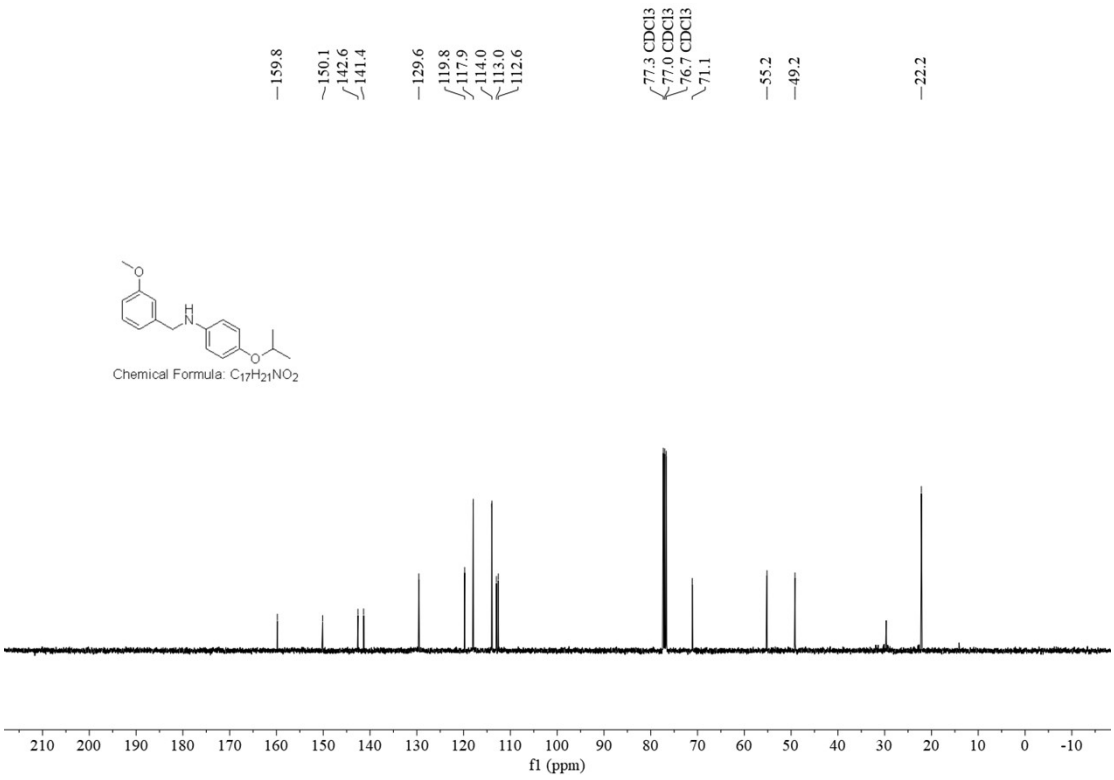
^{1}H NMR Spectrum of **3da** in $CDCl_3$ at 400 MHz



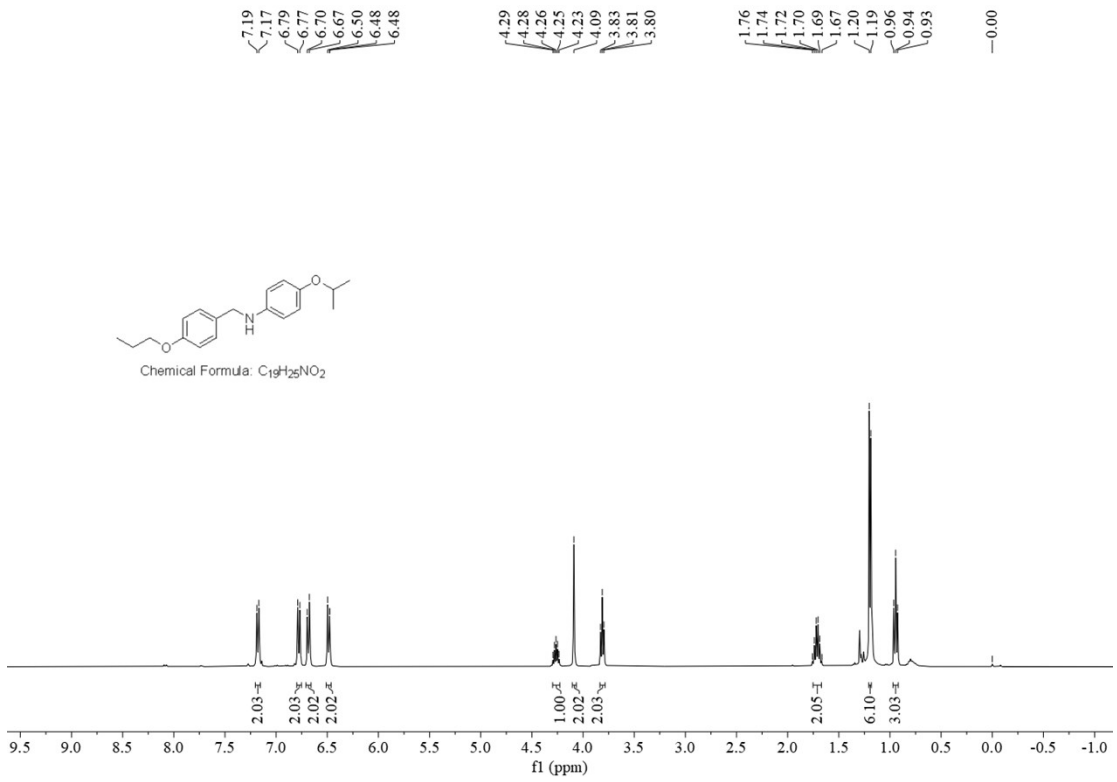
$^{13}C\{^{1}H\}$ NMR Spectrum of **3da** in $CDCl_3$ at 100 MHz



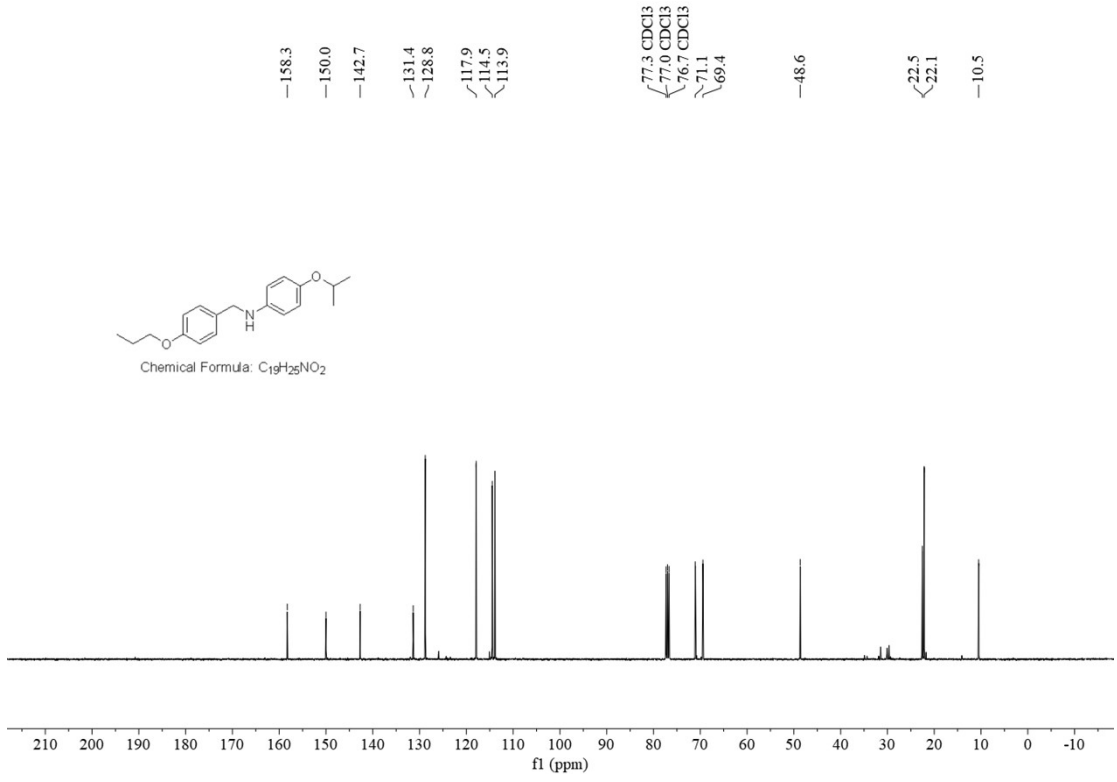
^{1}H NMR Spectrum of **3ea** in $CDCl_3$ at 400 MHz



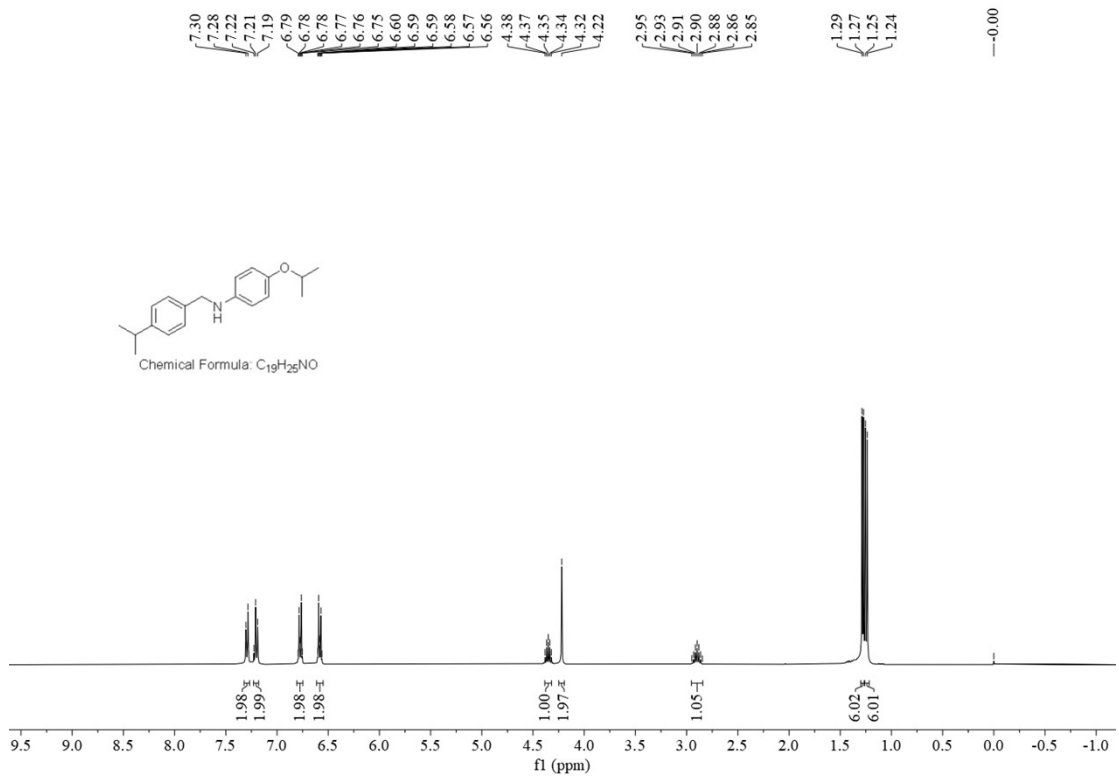
^{13}C{^{1}H} NMR Spectrum of **3ea** in $CDCl_3$ at 100 MHz



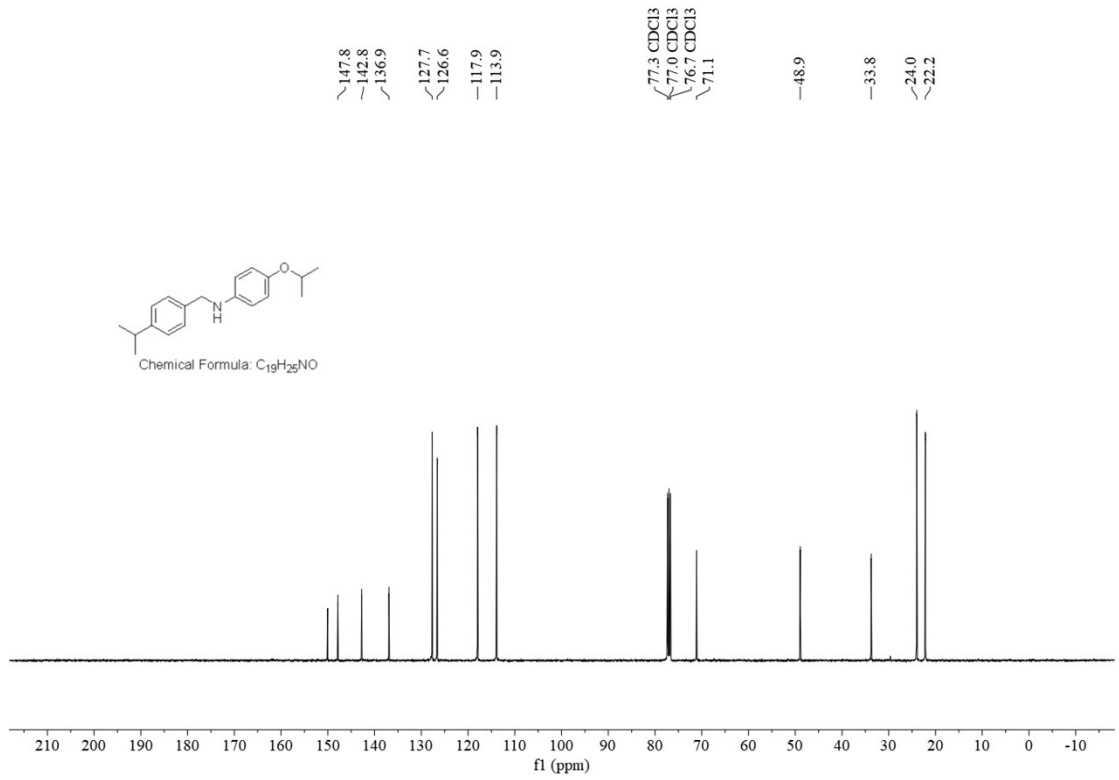
^{1}H NMR Spectrum of **3fa** in $CDCl_3$ at 400 MHz



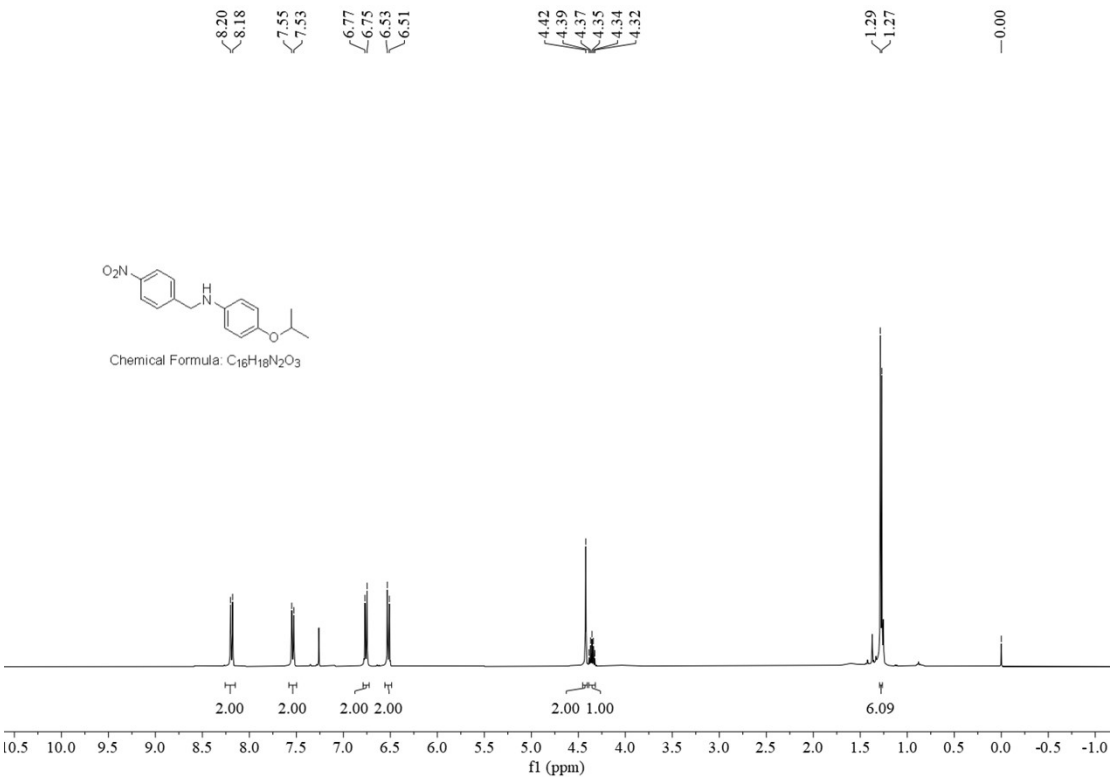
^{13}C{^{1}H} NMR Spectrum of **3fa** in $CDCl_3$ at 100 MHz



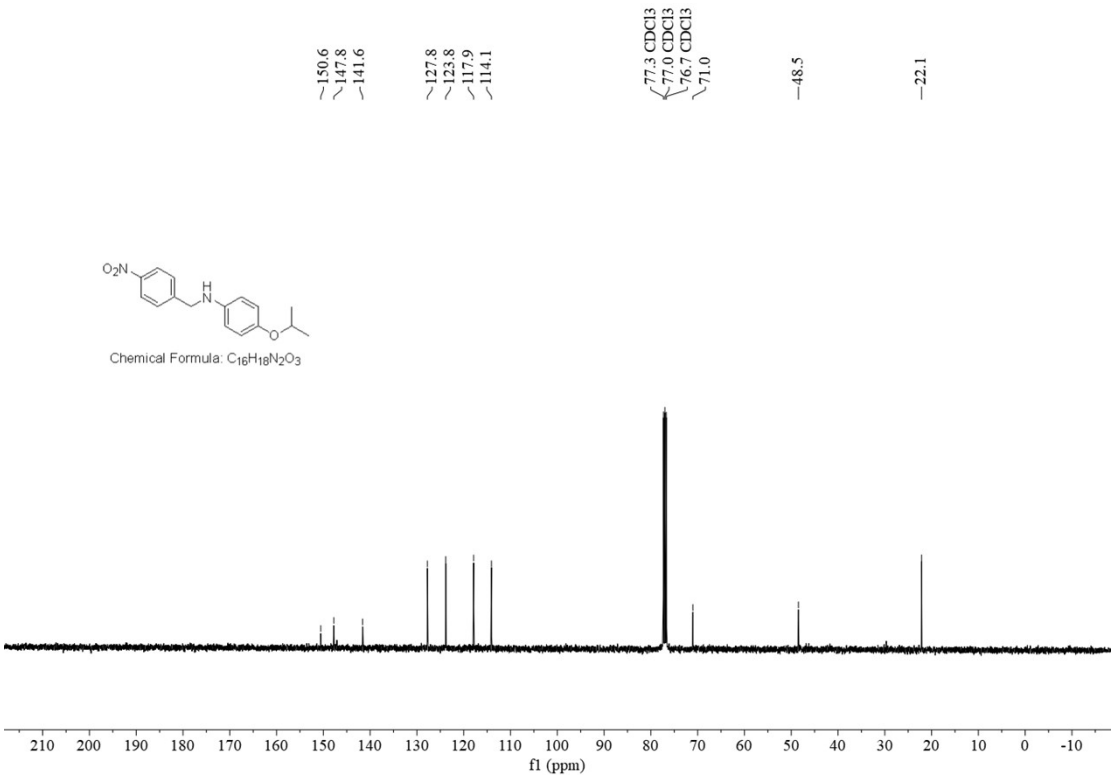
^{1}H NMR Spectrum of **3ga** in $CDCl_3$ at 400 MHz



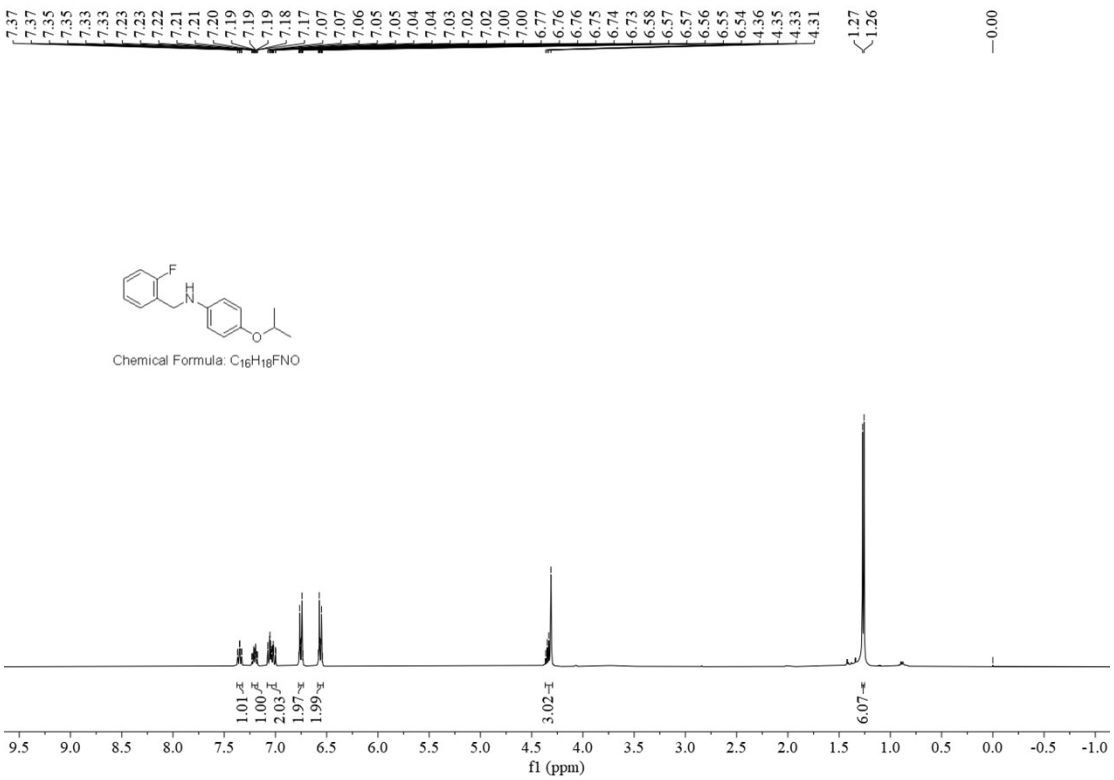
^{13}C{^{1}H} NMR Spectrum of **3ga** in $CDCl_3$ at 100 MHz



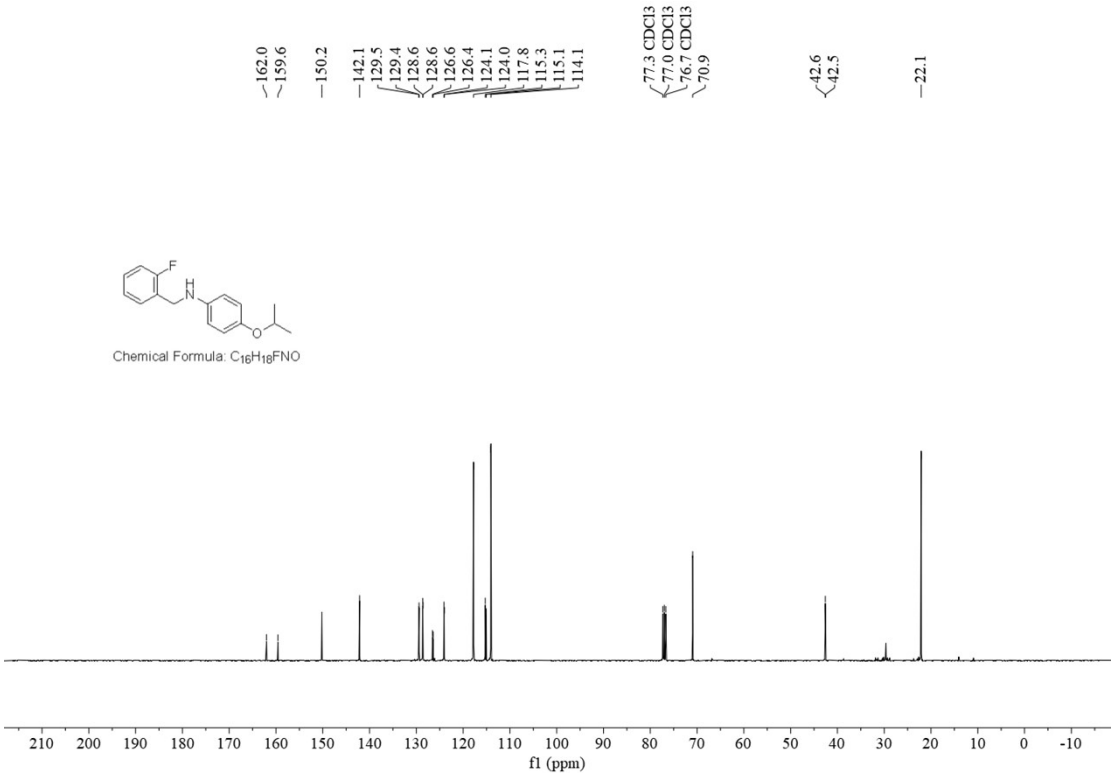
^{1}H NMR Spectrum of **3ha** in $CDCl_3$ at 400 MHz



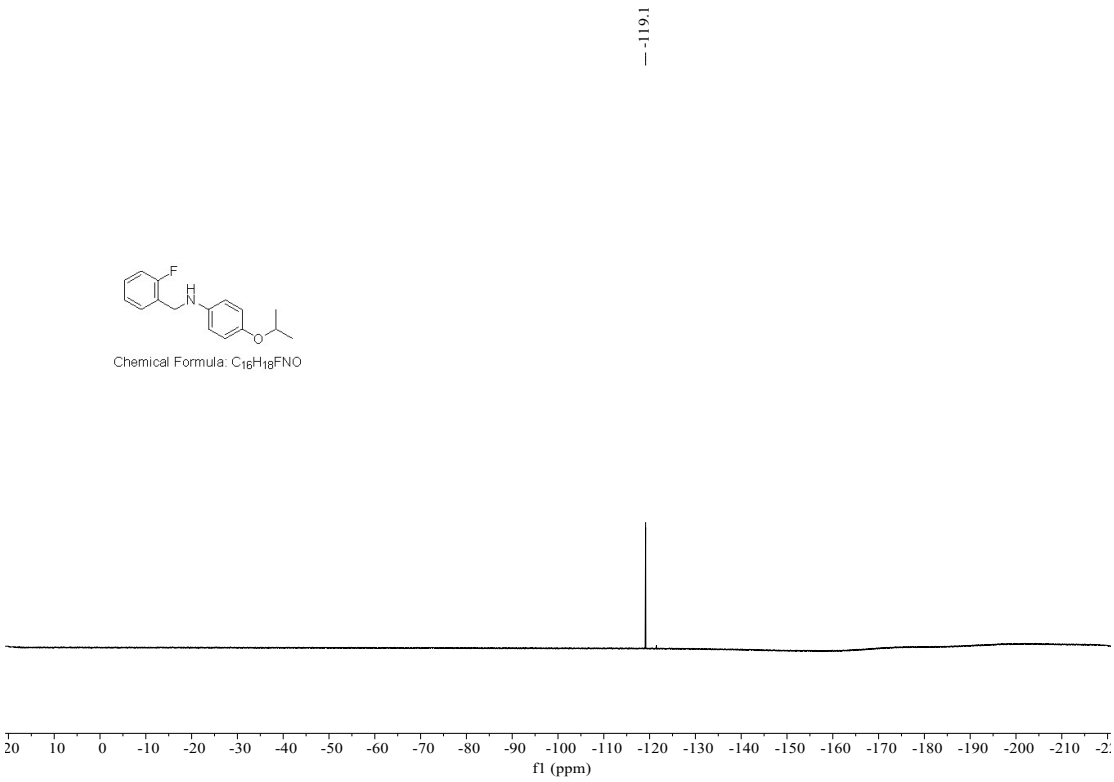
^{13}C{^{1}H} NMR Spectrum of **3ha** in $CDCl_3$ at 100 MHz



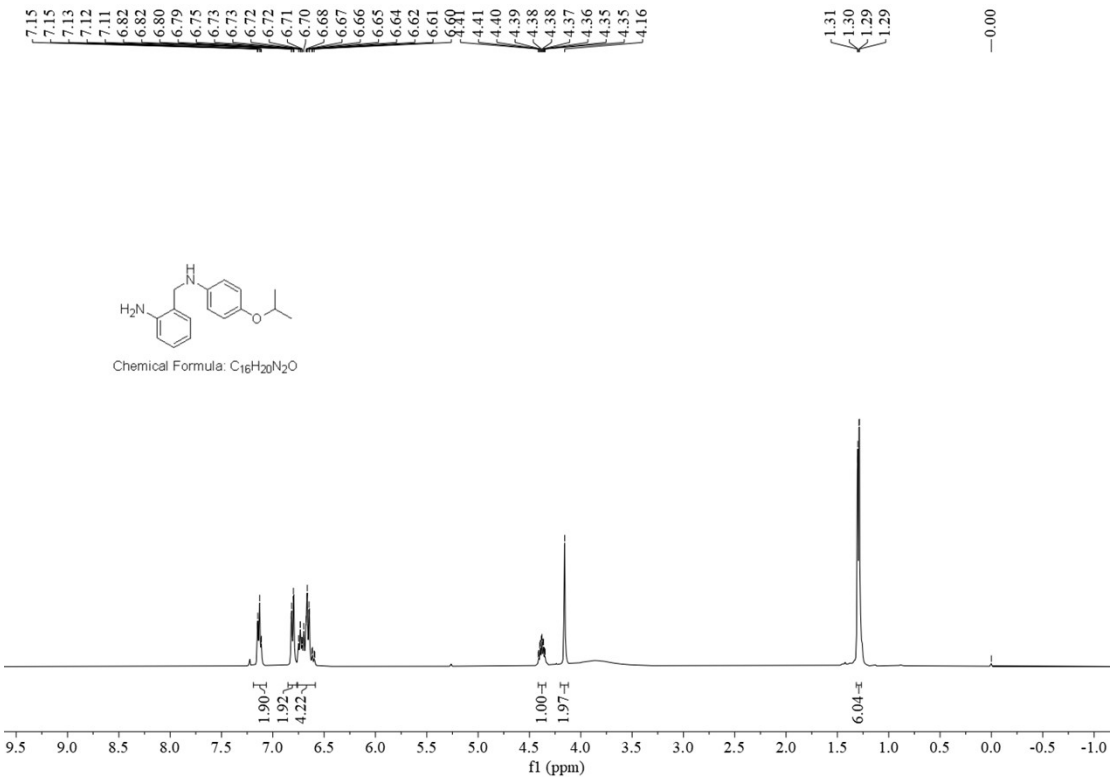
^{1}H NMR Spectrum of **3ia** in $CDCl_3$ at 400 MHz



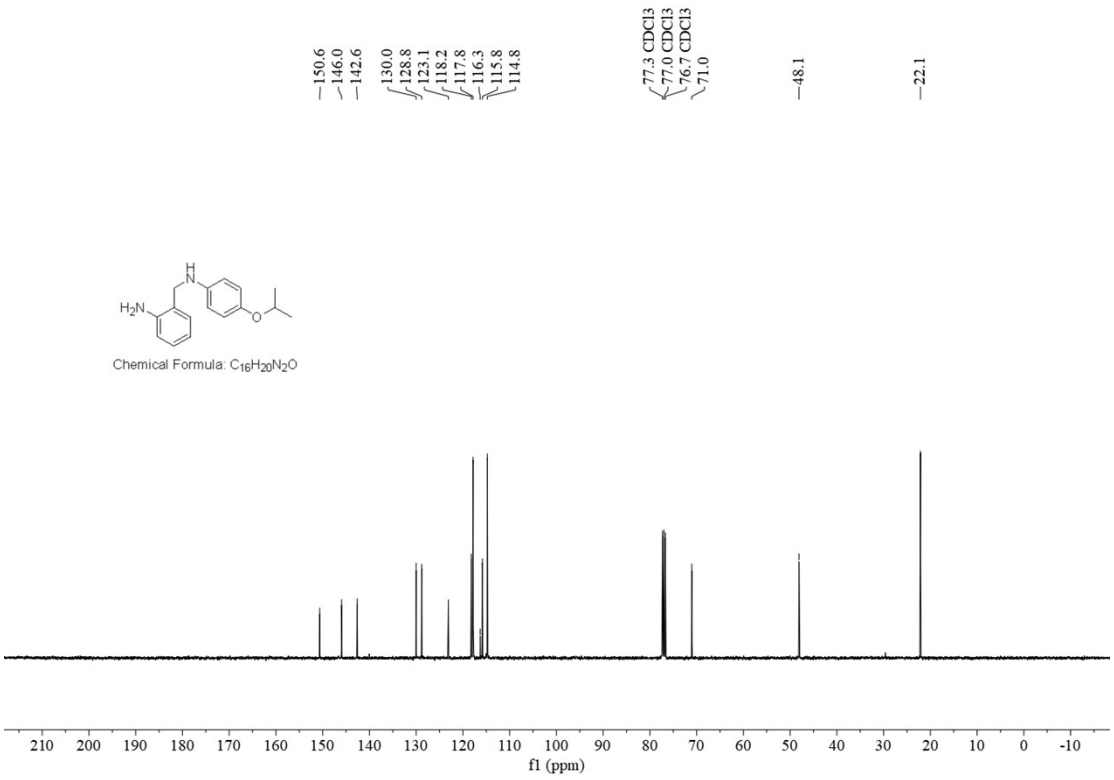
^{13}C{^{1}H} NMR Spectrum of **3ia** in $CDCl_3$ at 100 MHz



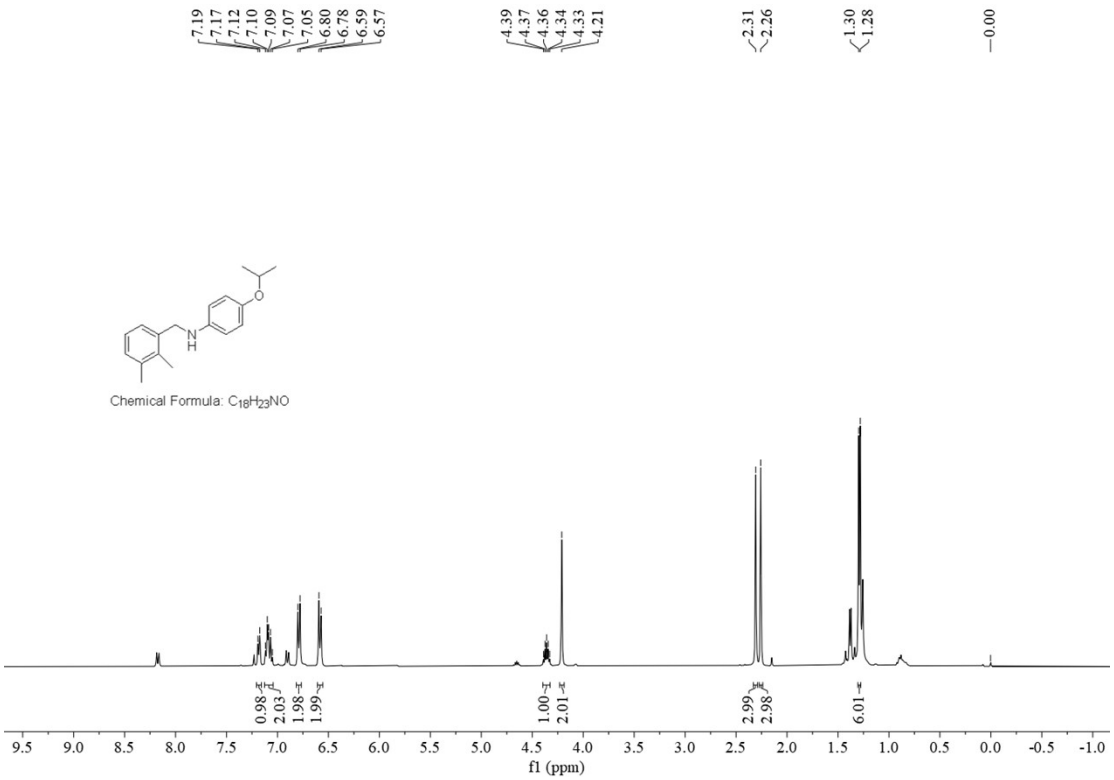
^{19}F NMR Spectrum of **3ia** in $CDCl_3$ at 377 MHz



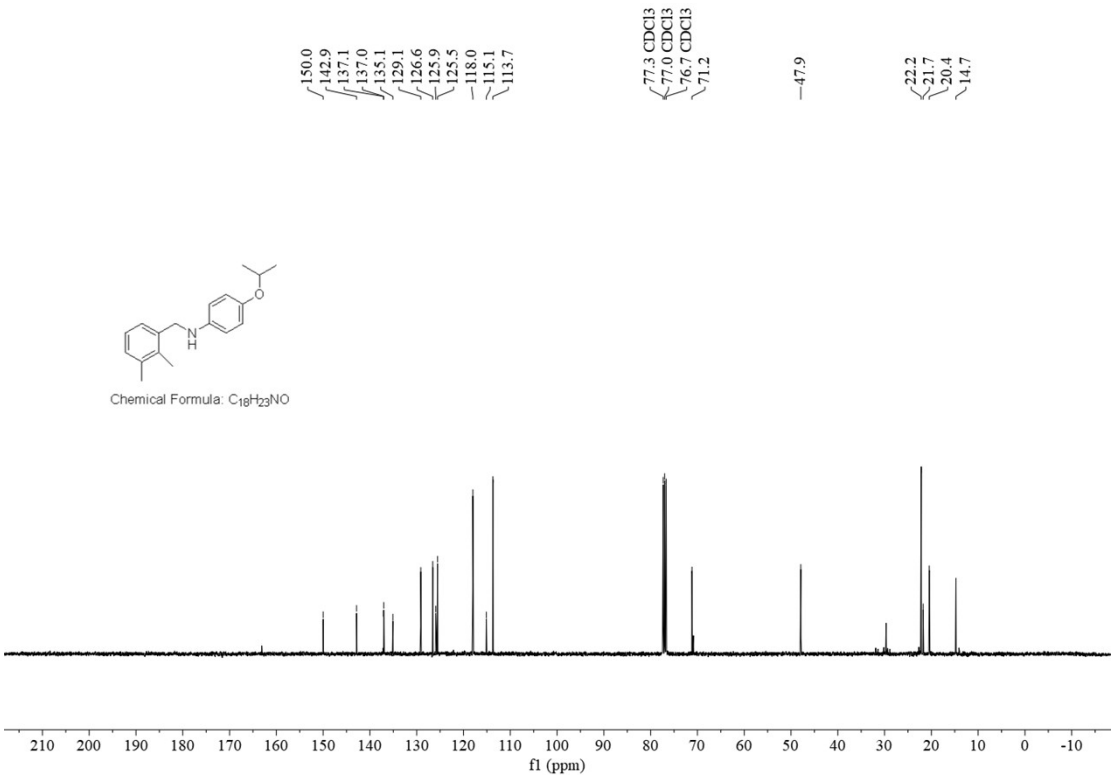
^{1}H NMR Spectrum of **3ja** in $CDCl_3$ at 400 MHz



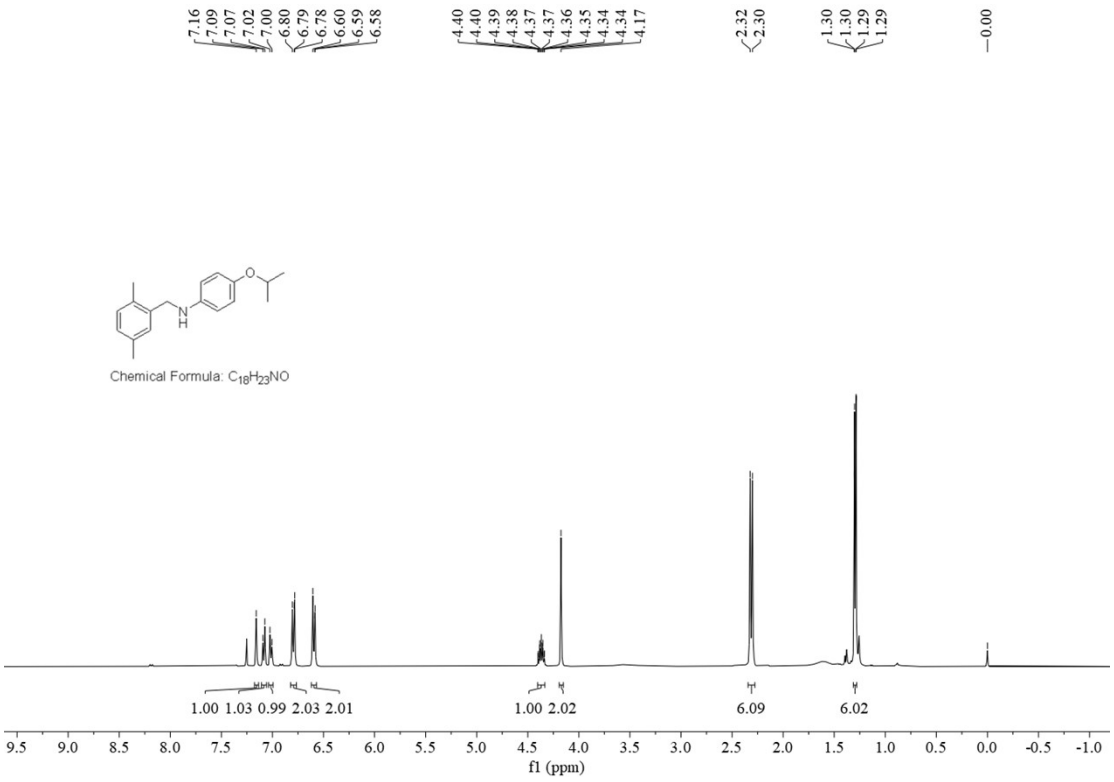
$^{13}C\{^{1}H\}$ NMR Spectrum of **3ja** in $CDCl_3$ at 100 MHz



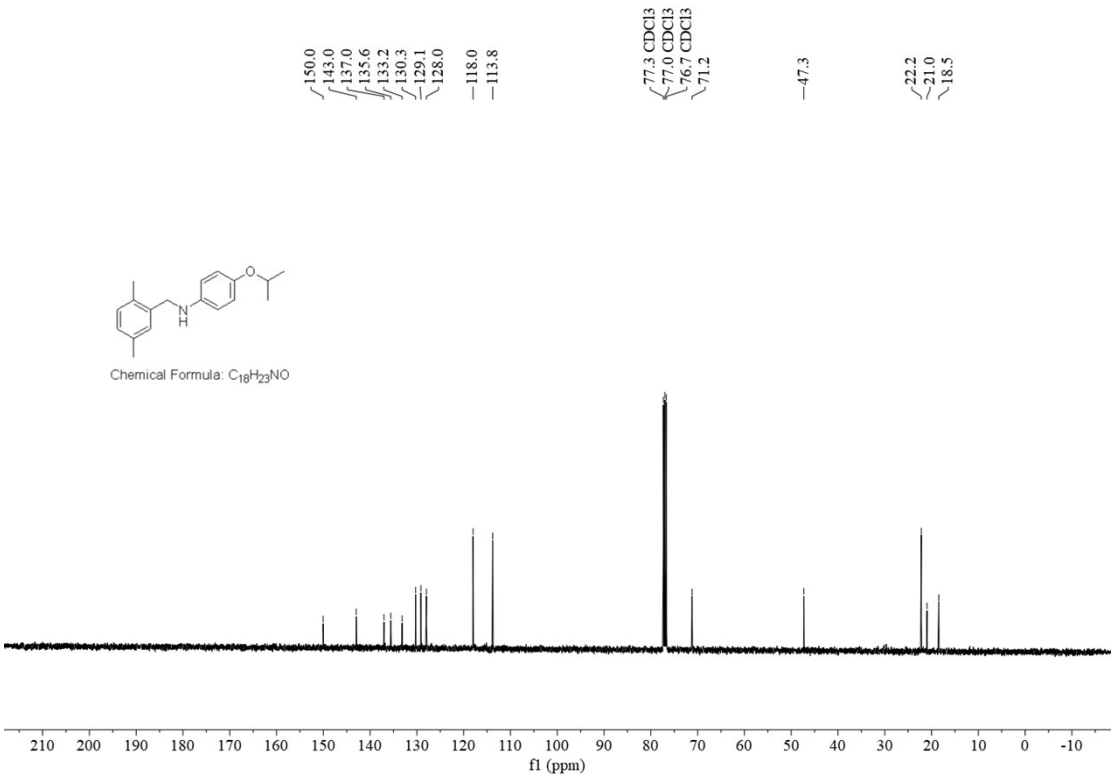
^{1}H NMR Spectrum of **3ka** in $CDCl_3$ at 400 MHz



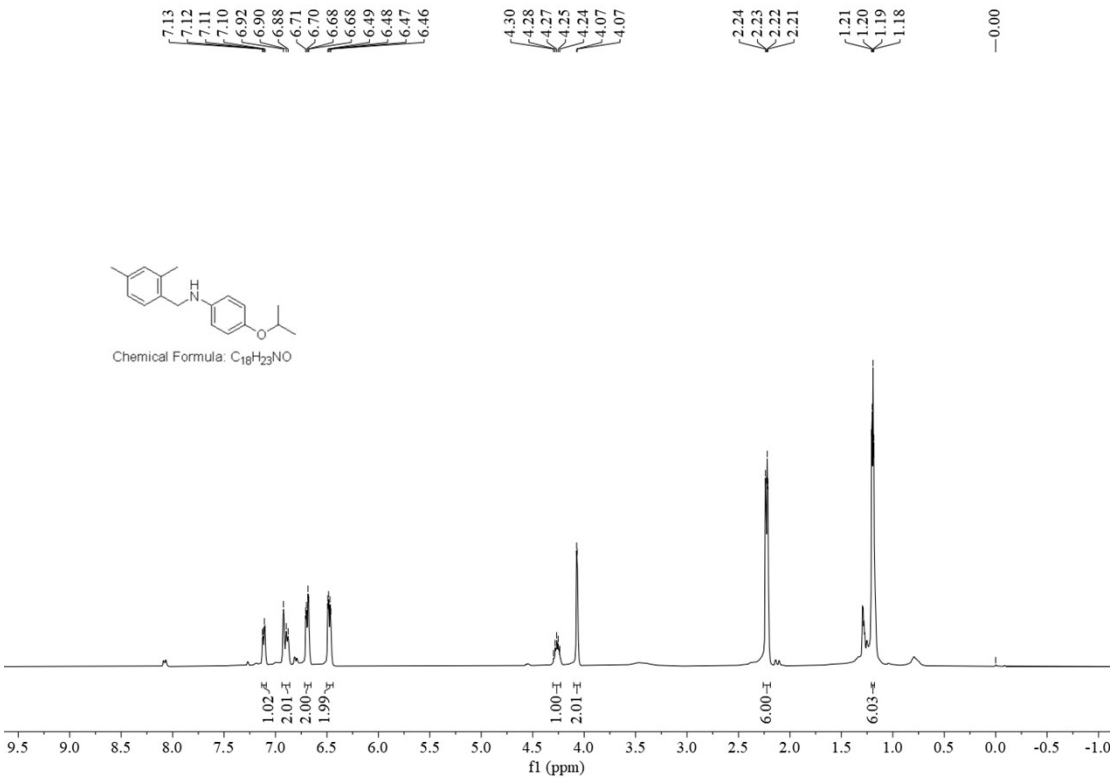
$^{13}C\{^{1}H\}$ NMR Spectrum of **3ka** in $CDCl_3$ at 100 MHz



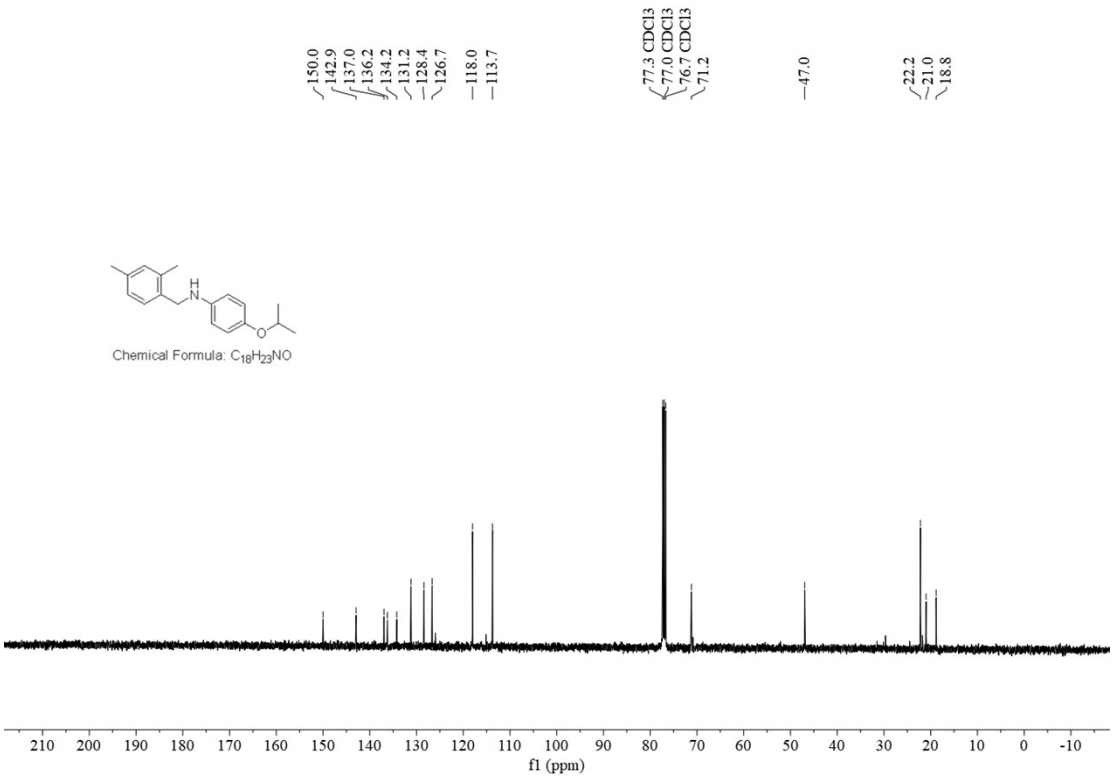
^{1}H NMR Spectrum of **3la** in $CDCl_3$ at 400 MHz



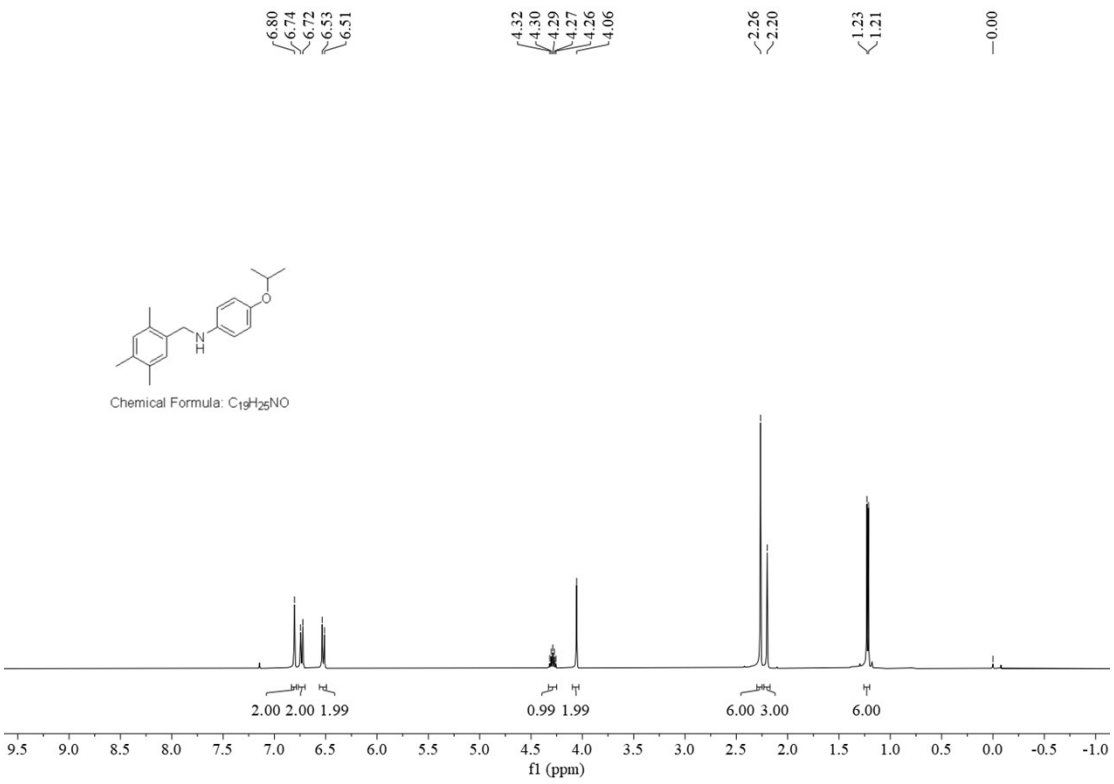
$^{13}C\{^{1}H\}$ NMR Spectrum of **3la** in $CDCl_3$ at 100 MHz



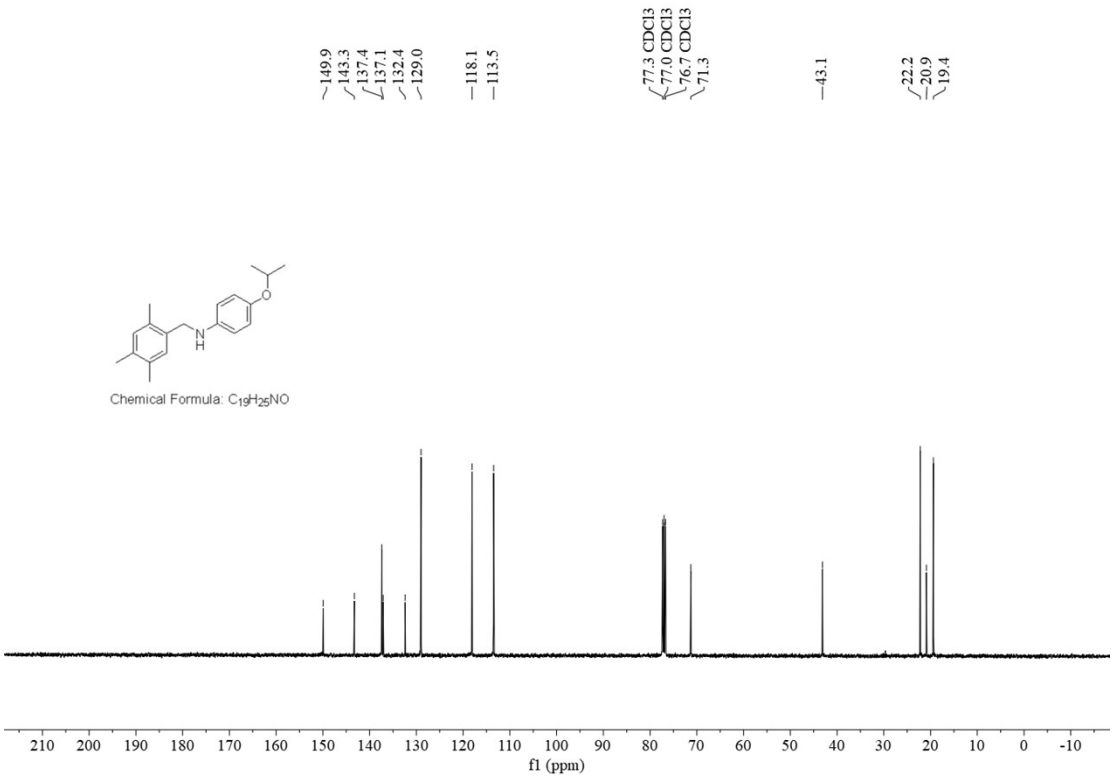
^{1}H NMR Spectrum of **3ma** in $CDCl_3$ at 400 MHz



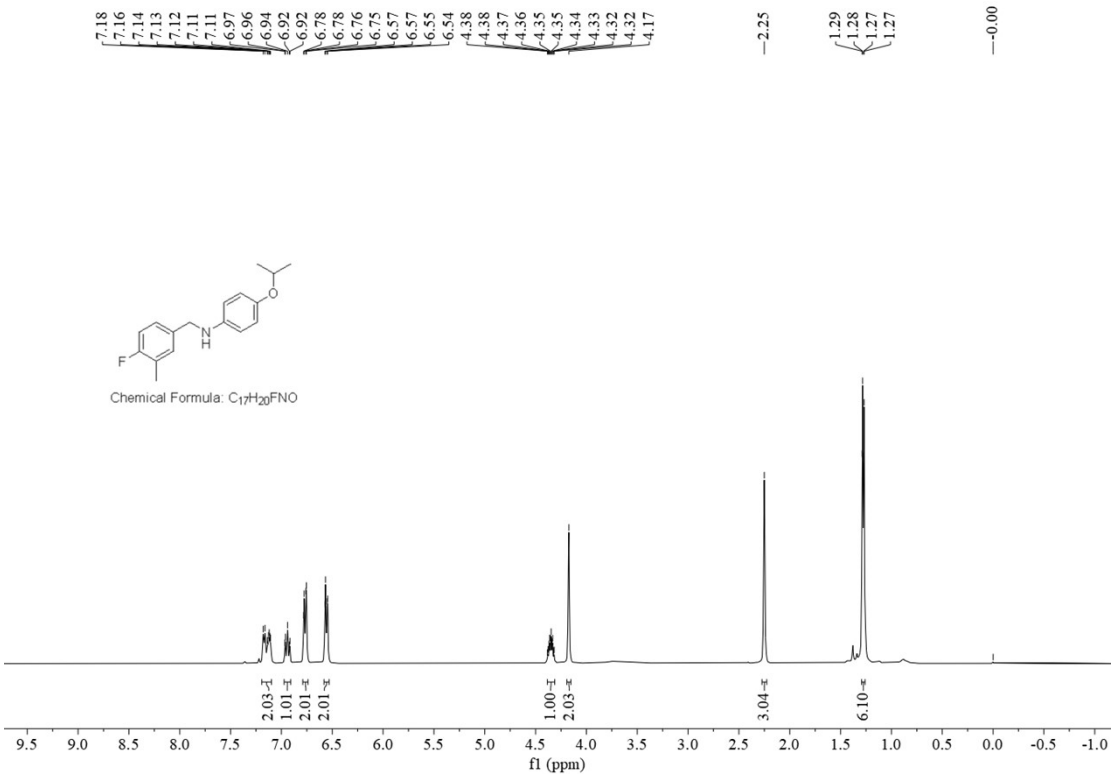
$^{13}C\{^{1}H\}$NMR Spectrum of **3ma** in $CDCl_3$ at 100 MHz



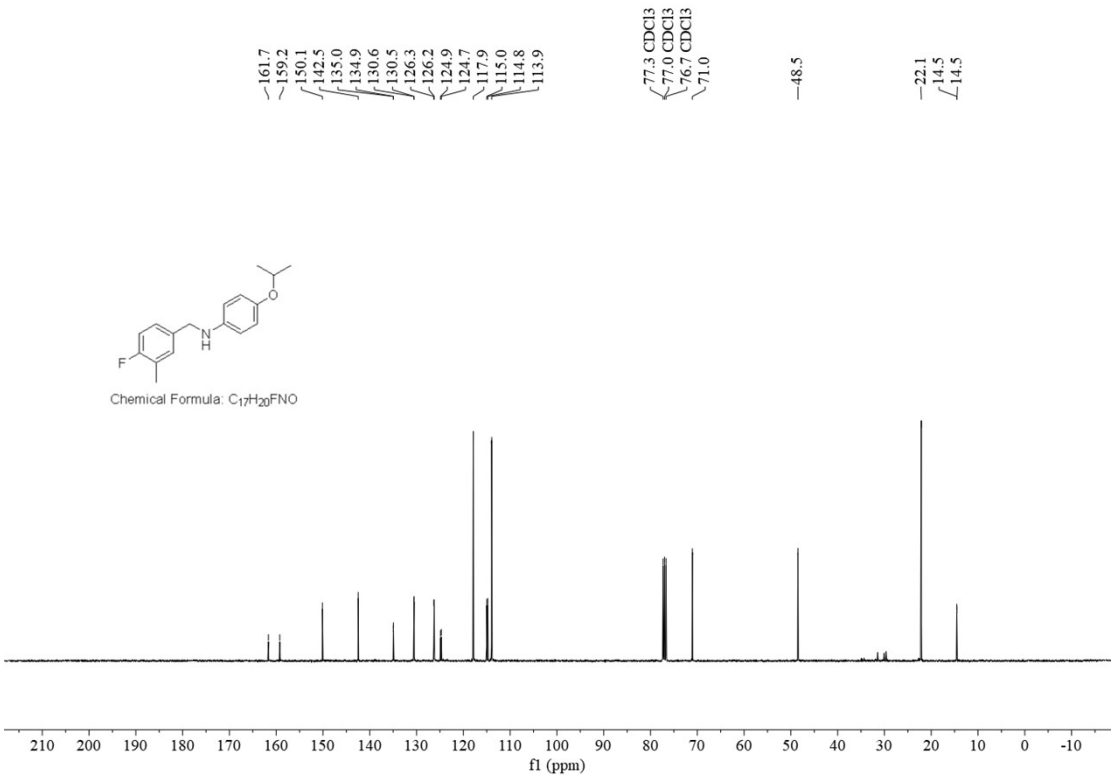
^{1}H NMR Spectrum of **3na** in $CDCl_3$ at 400 MHz



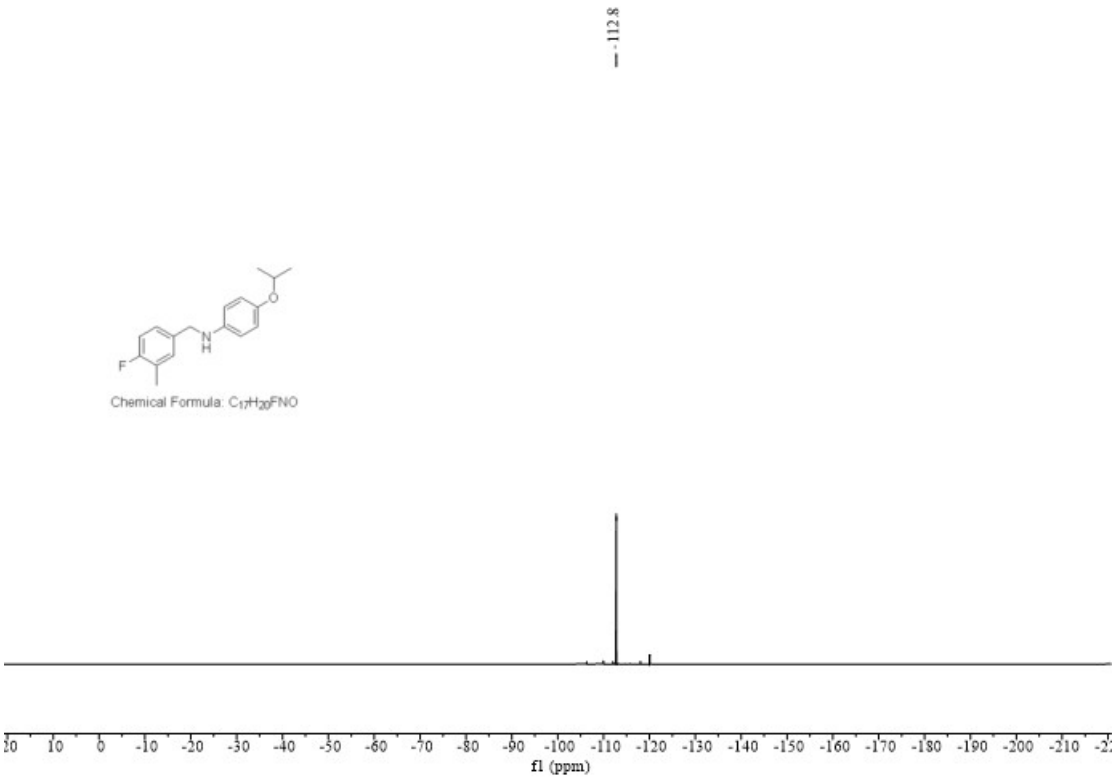
$^{13}C\{^{1}H\}$ NMR Spectrum of **3na** in $CDCl_3$ at 100 MHz



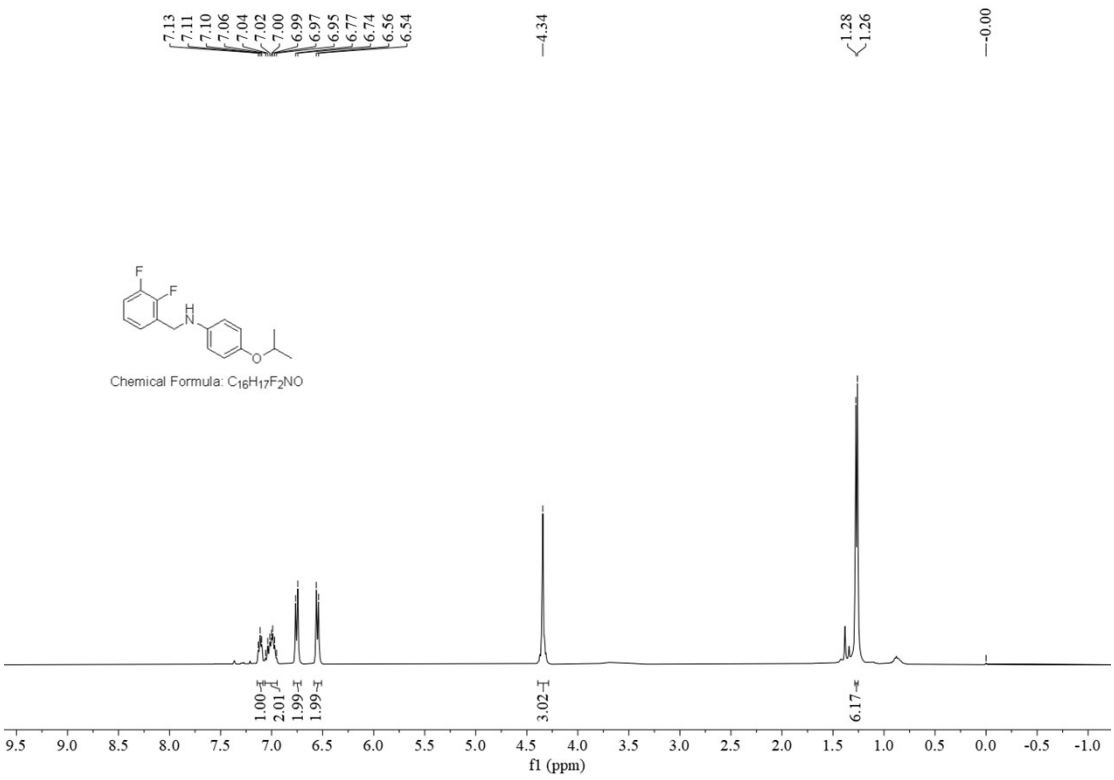
^{1}H NMR Spectrum of **3oa** in $CDCl_3$ at 400 MHz



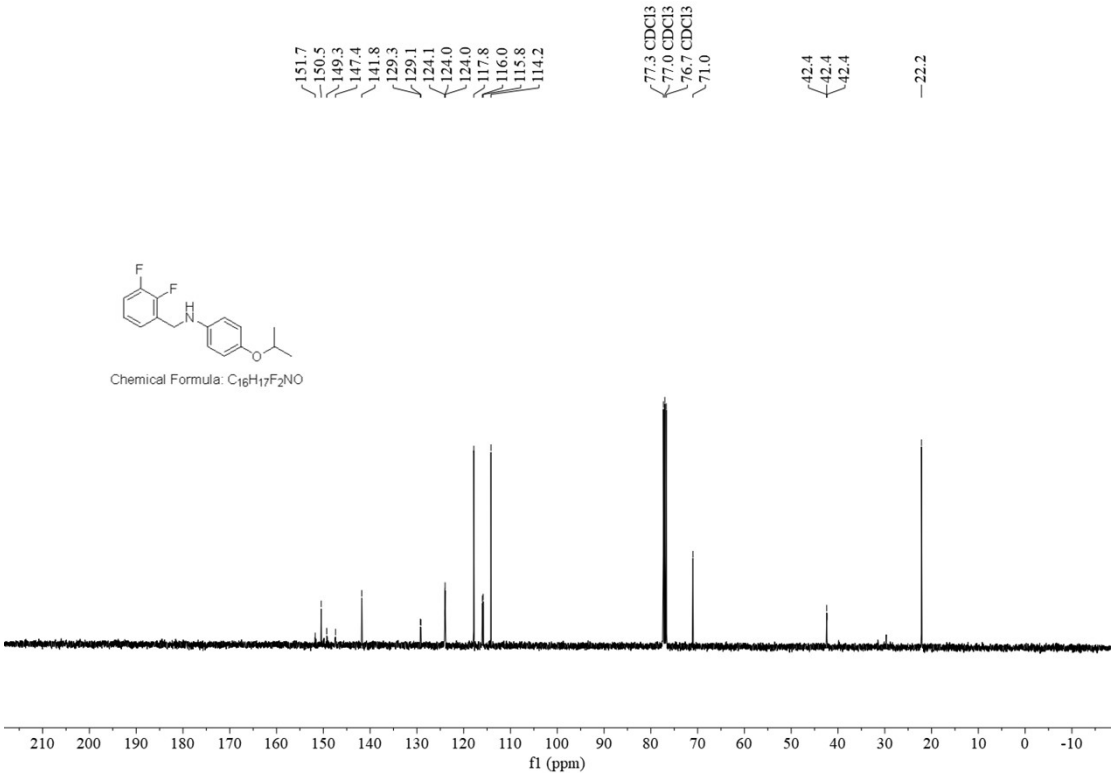
$^{13}C\{^{1}H\}$ NMR Spectrum of **3oa** in $CDCl_3$ at 100 MHz



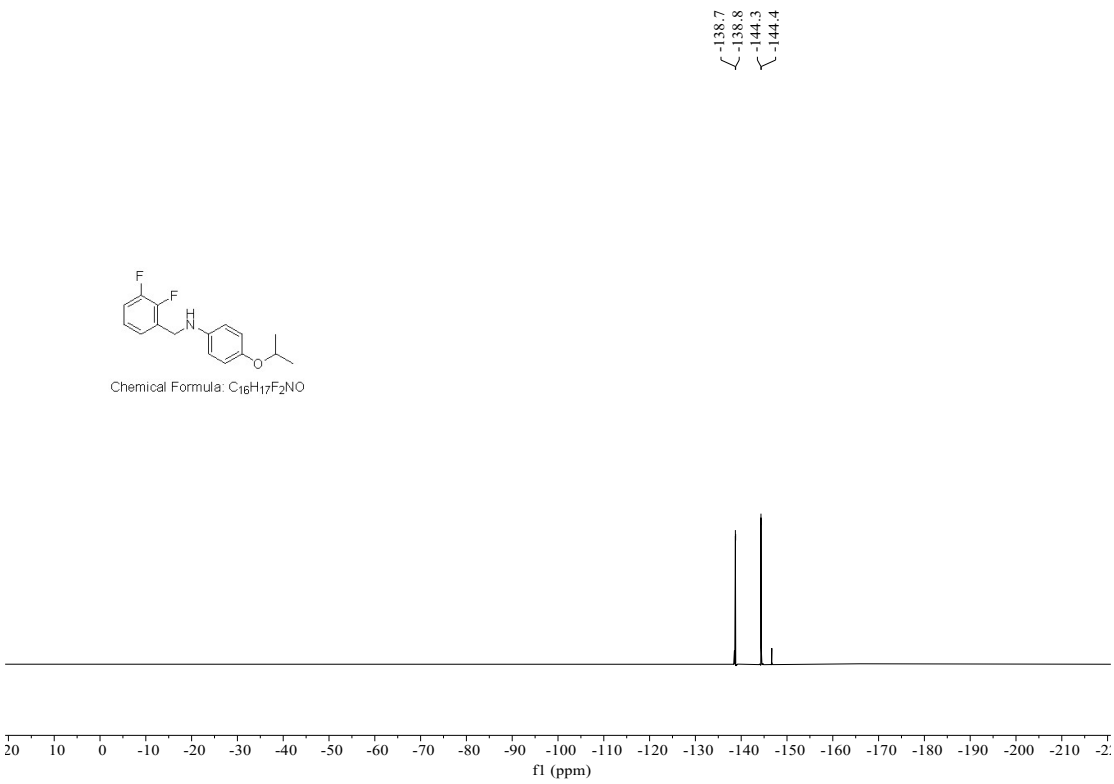
^{19}F NMR Spectrum of **3oa** in $CDCl_3$ at 377 MHz



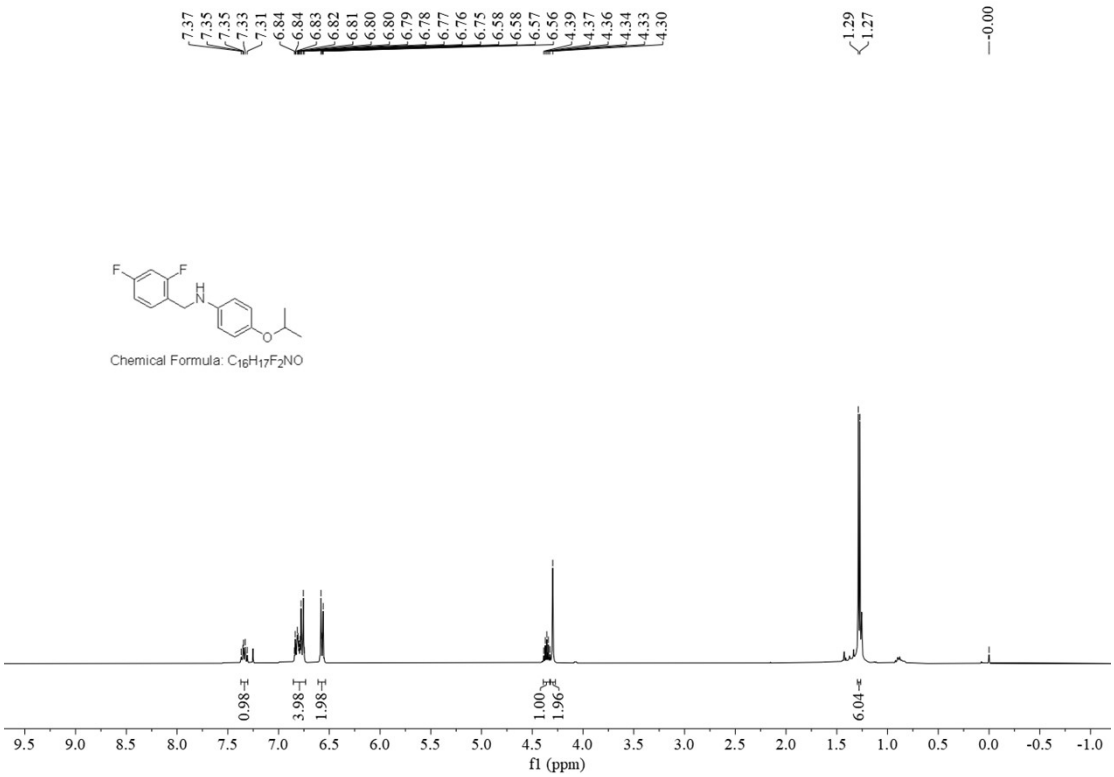
^{1}H NMR Spectrum of **3pa** in $CDCl_3$ at 400 MHz



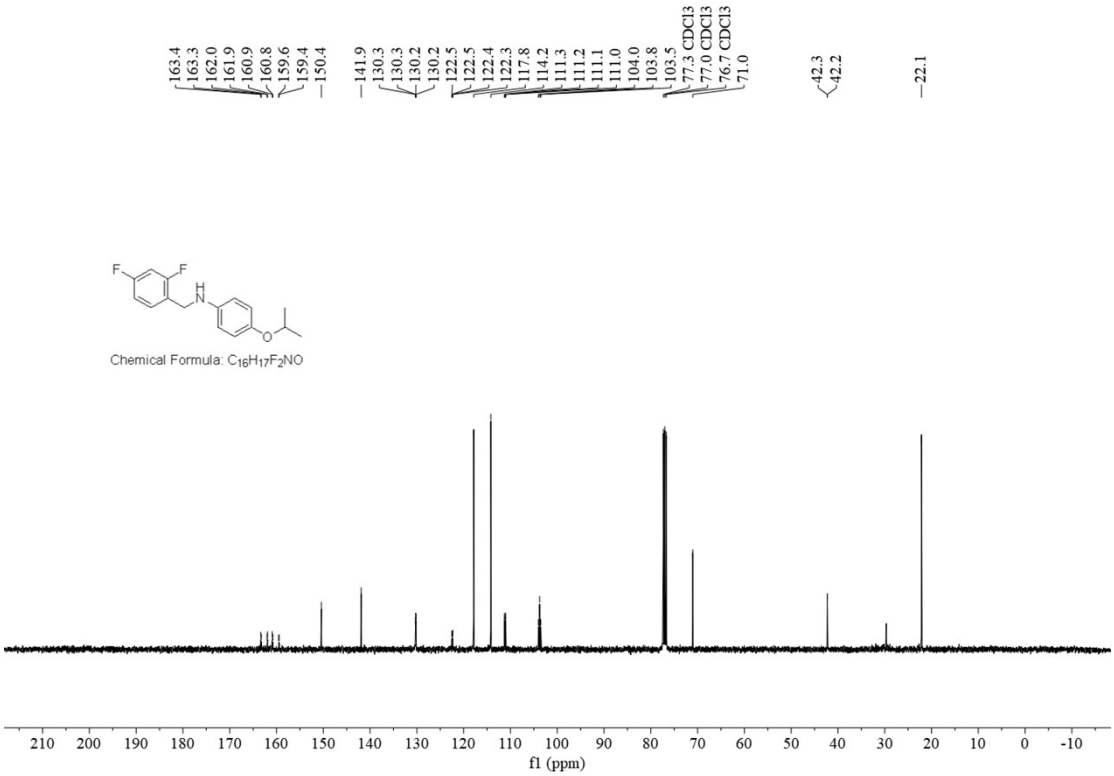
^{13}C{^{1}H} NMR Spectrum of **3pa** in $CDCl_3$ at 100 MHz



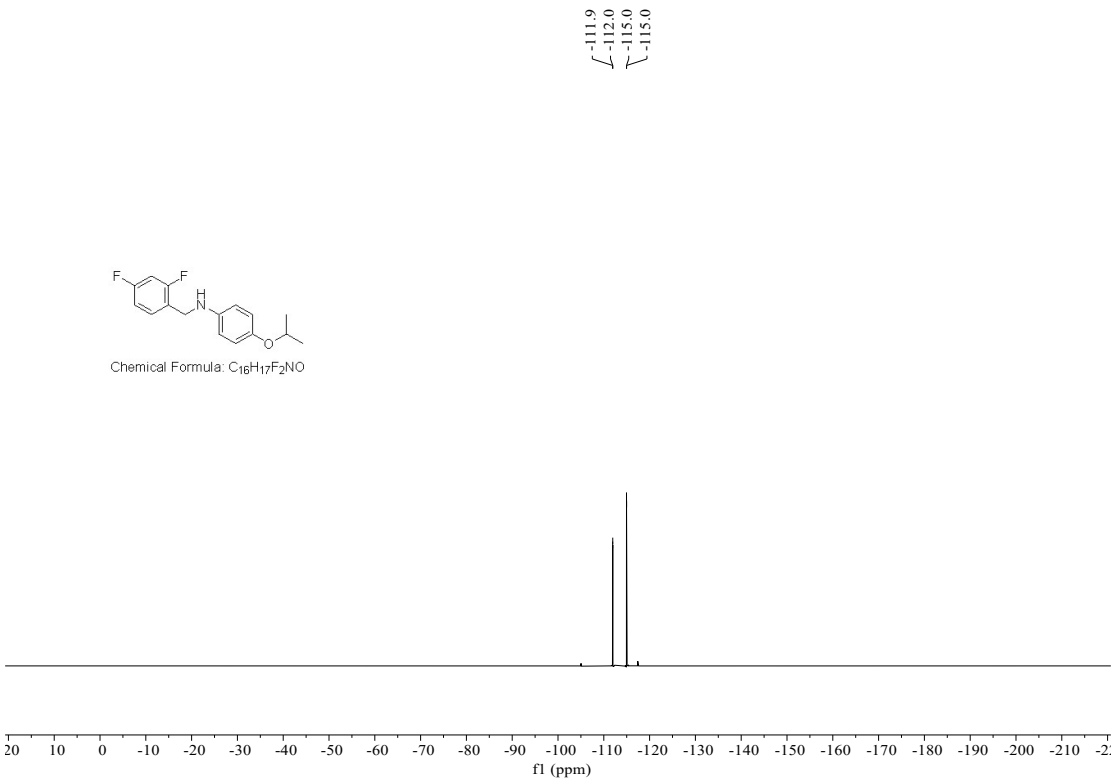
^{19}F NMR Spectrum of **3pa** in $CDCl_3$ at 377 MHz



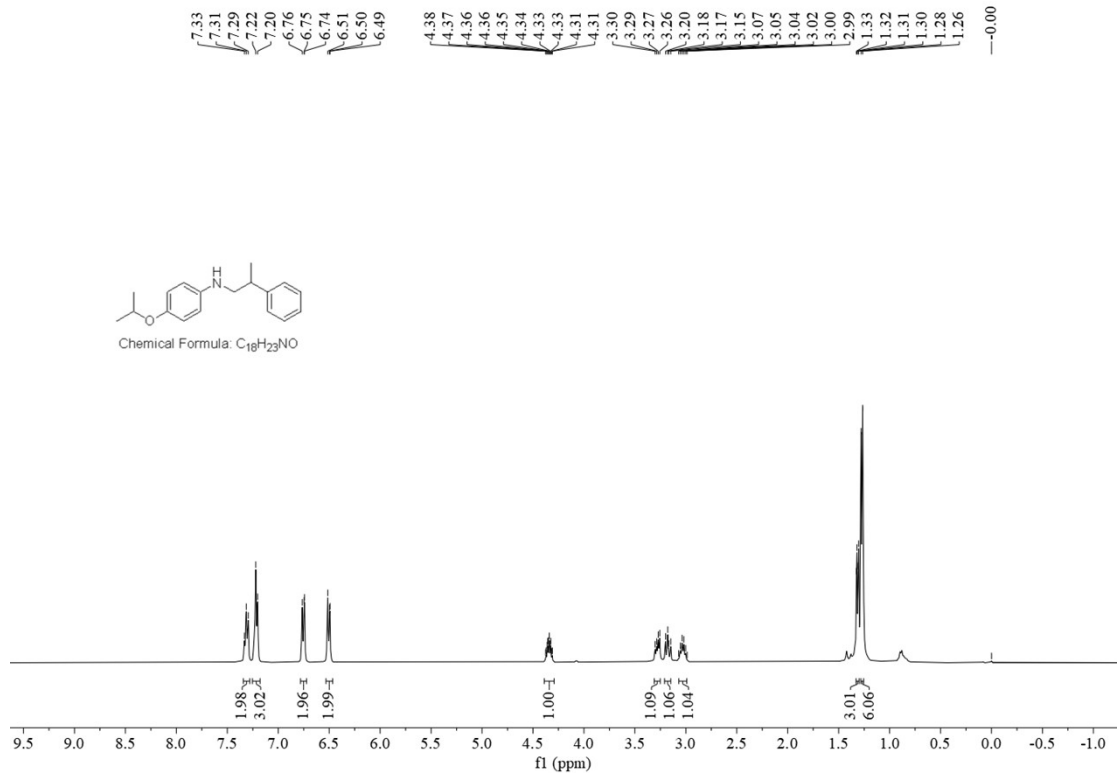
^{1}H NMR Spectrum of **3qa** in $CDCl_3$ at 400 MHz



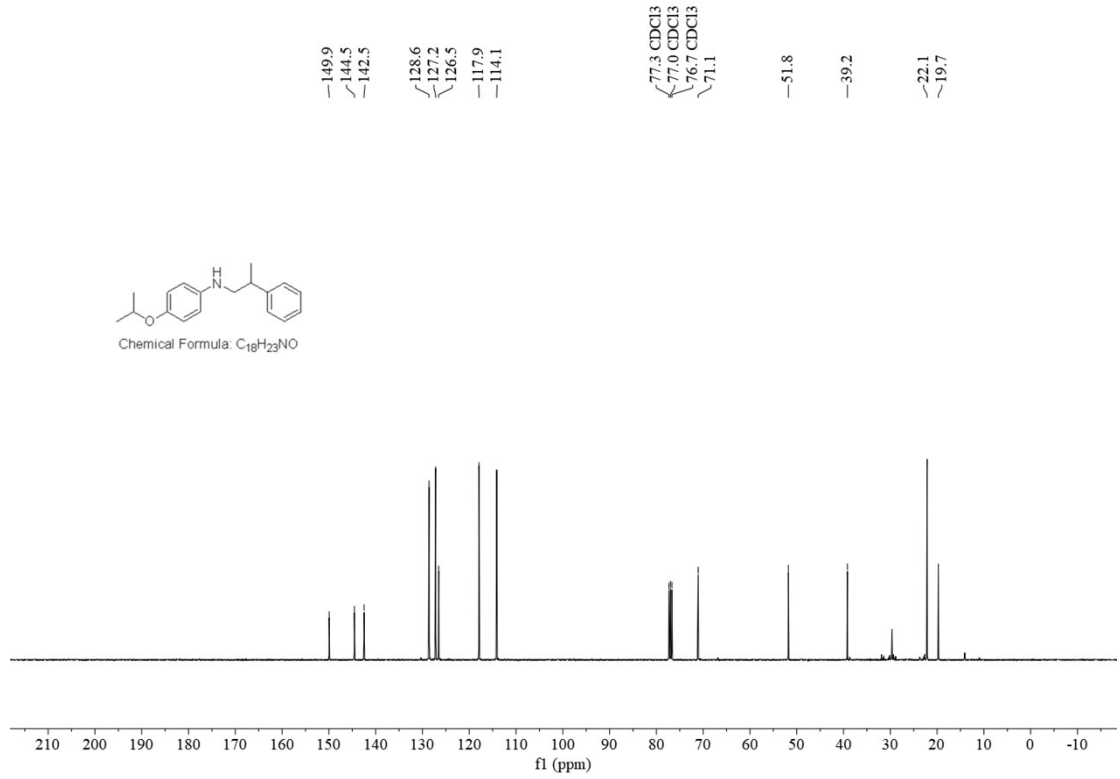
$^{13}C\{^{1}H\}$ NMR Spectrum of **3qa** in $CDCl_3$ at 100 MHz



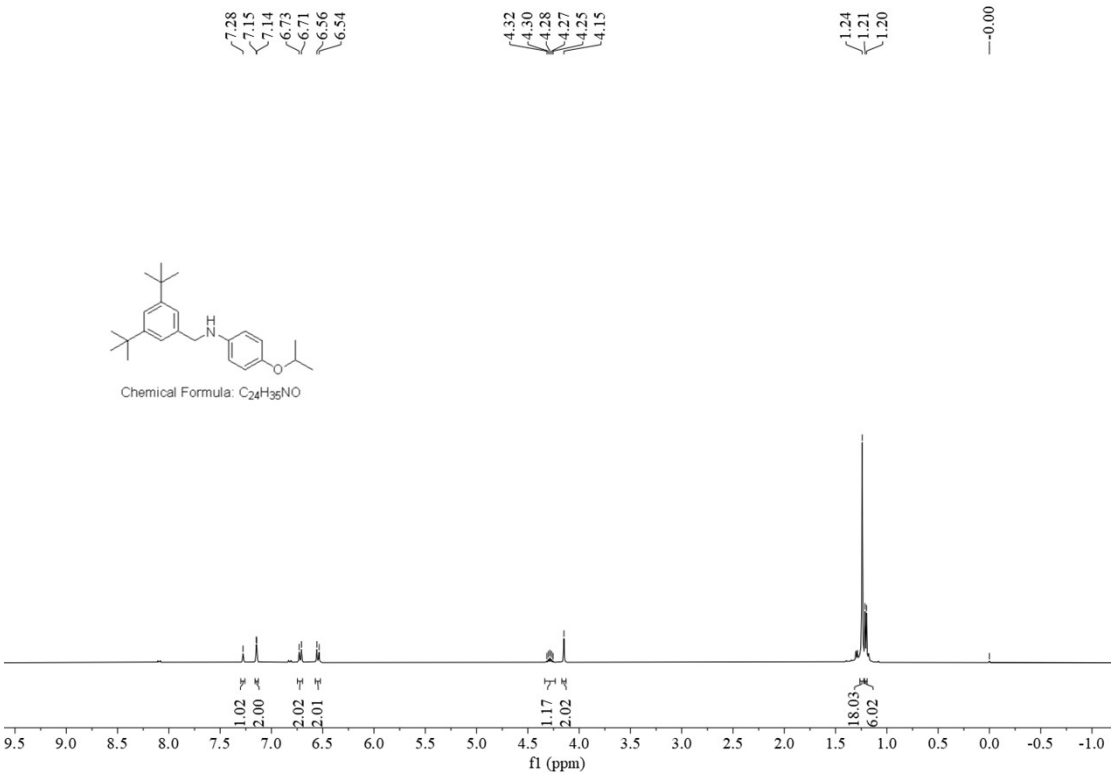
^{19}F NMR Spectrum of **3qa** in $CDCl_3$ at 377 MHz



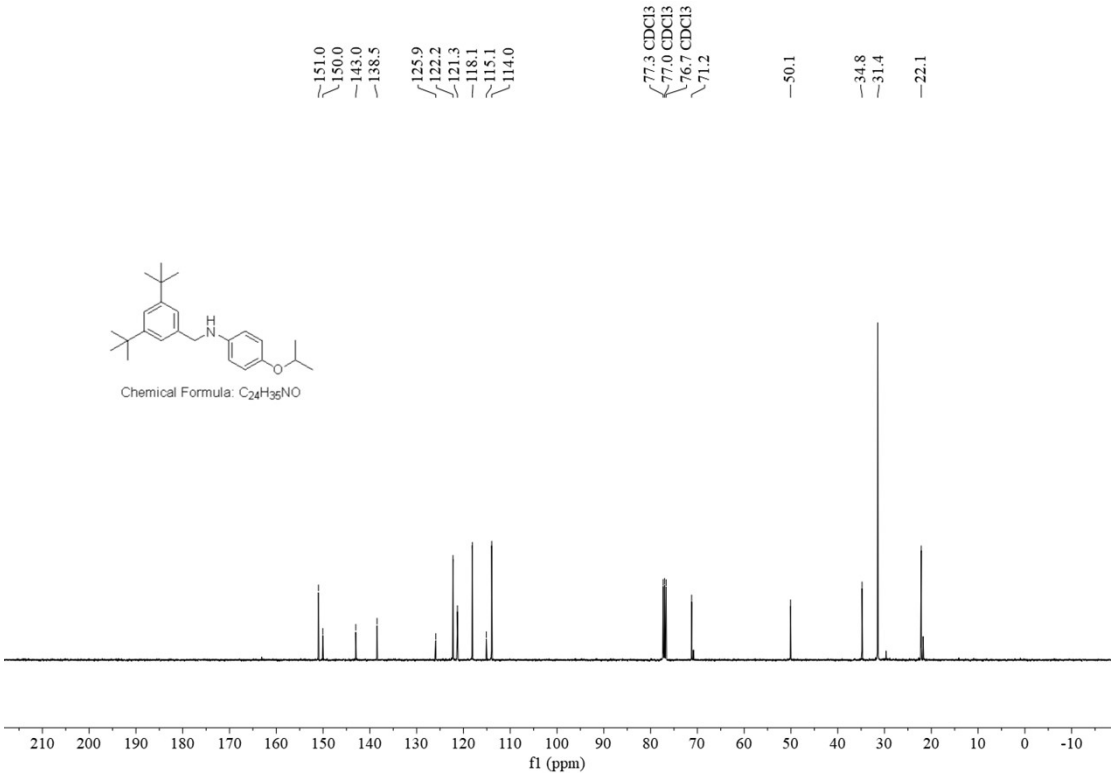
^{1}H NMR Spectrum of **3ra** in $CDCl_3$ at 400 MHz



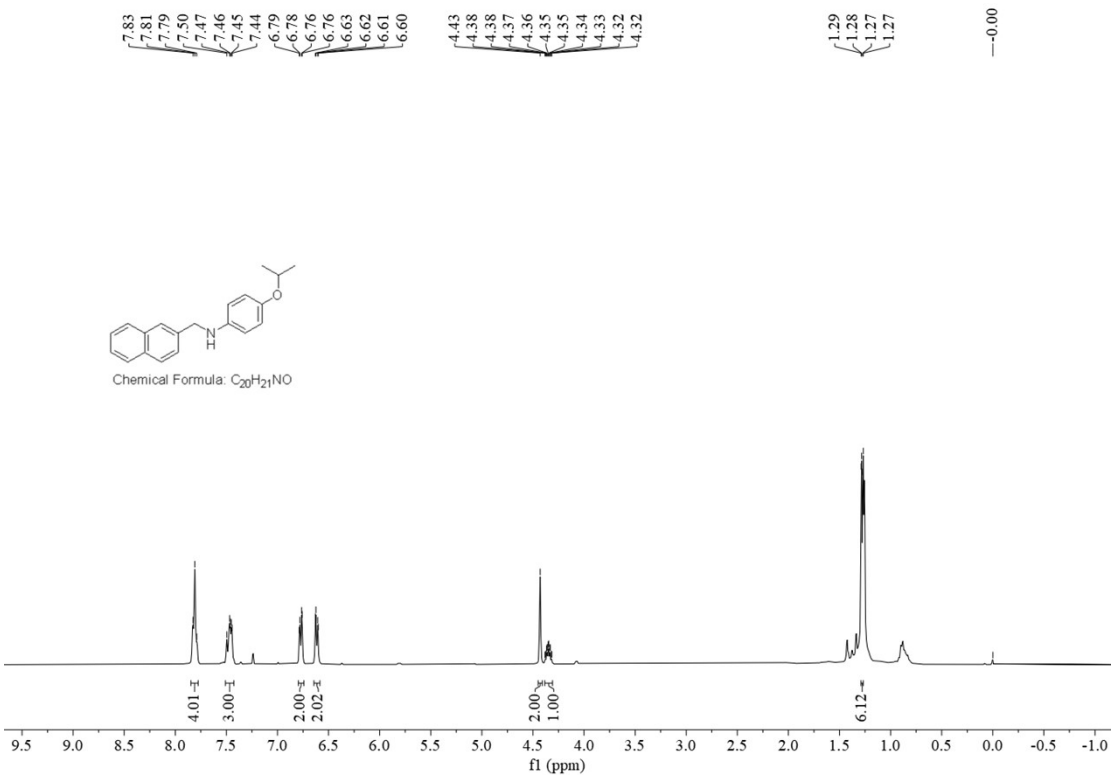
^{13}C{^{1}H} NMR Spectrum of **3ra** in $CDCl_3$ at 100 MHz



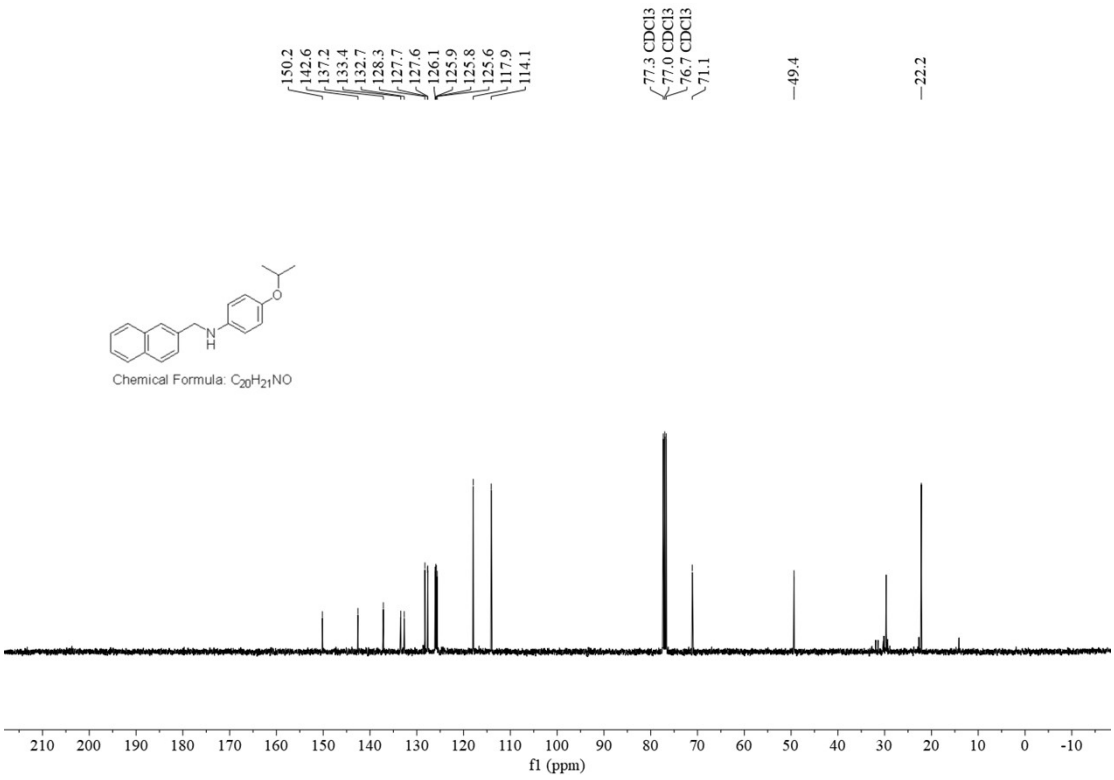
^{1}H NMR Spectrum of **3sa** in $CDCl_3$ at 400 MHz



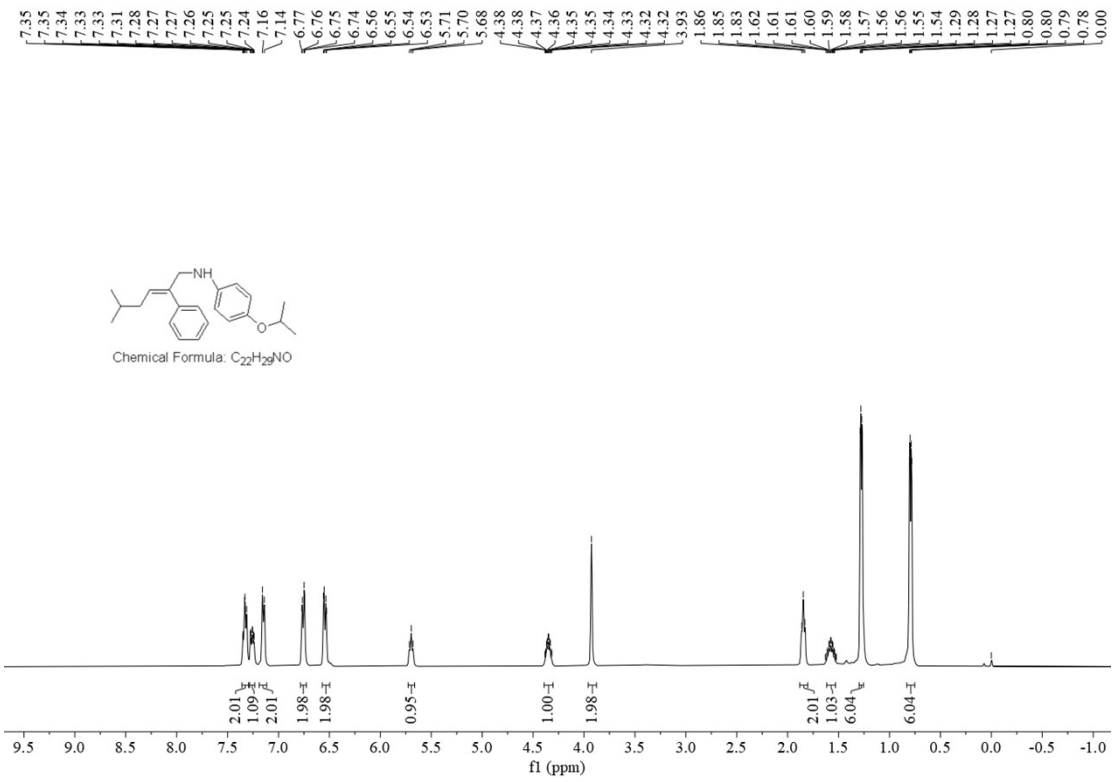
^{13}C{^{1}H} NMR Spectrum of **3sa** in $CDCl_3$ at 100 MHz



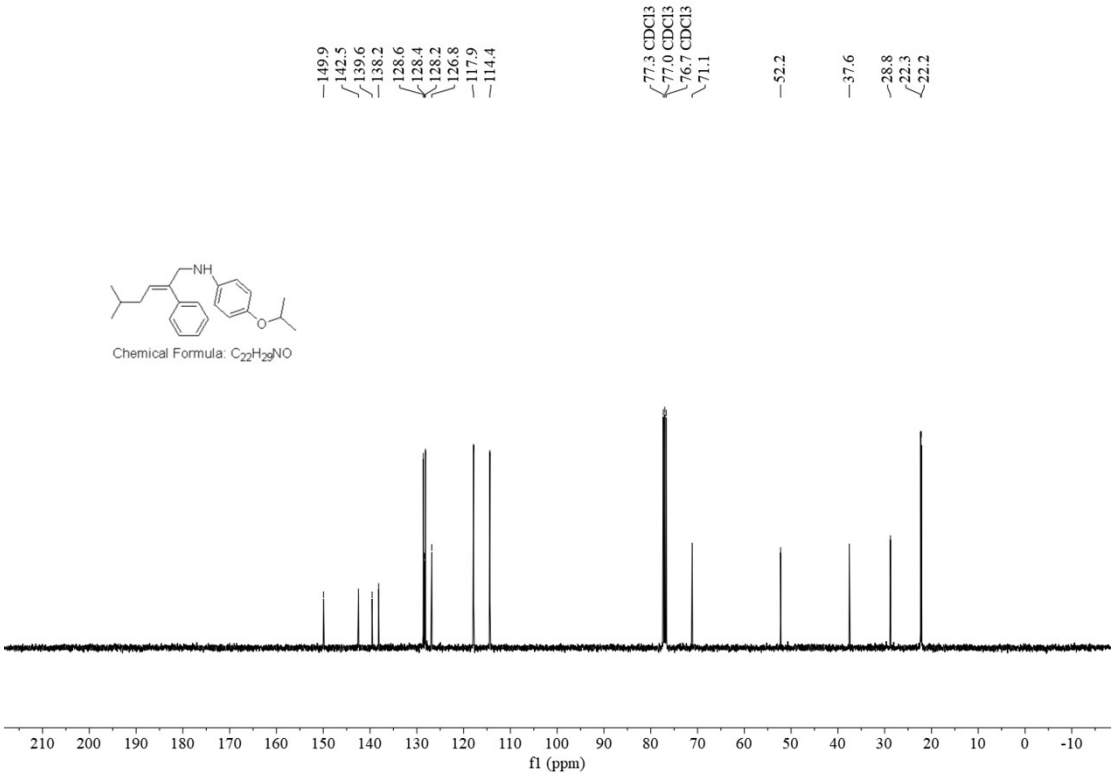
^{1}H NMR Spectrum of **3ta** in $CDCl_3$ at 400 MHz



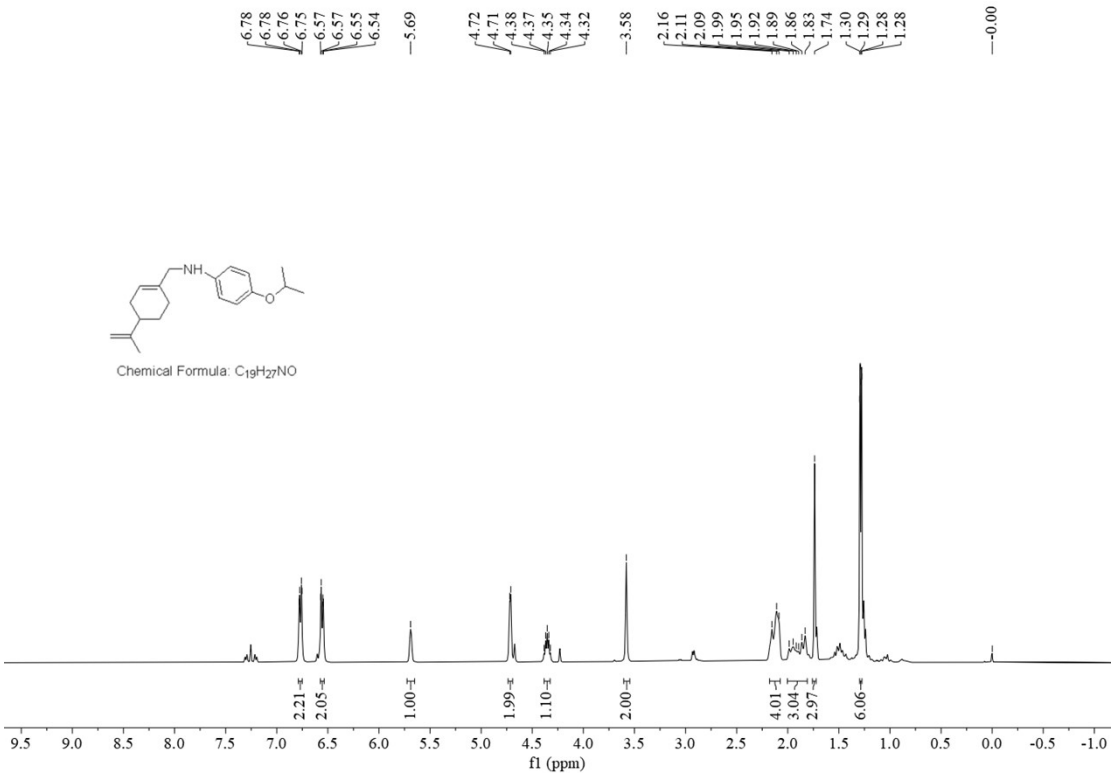
^{13}C{^{1}H} NMR Spectrum of **3ta** in $CDCl_3$ at 100 MHz



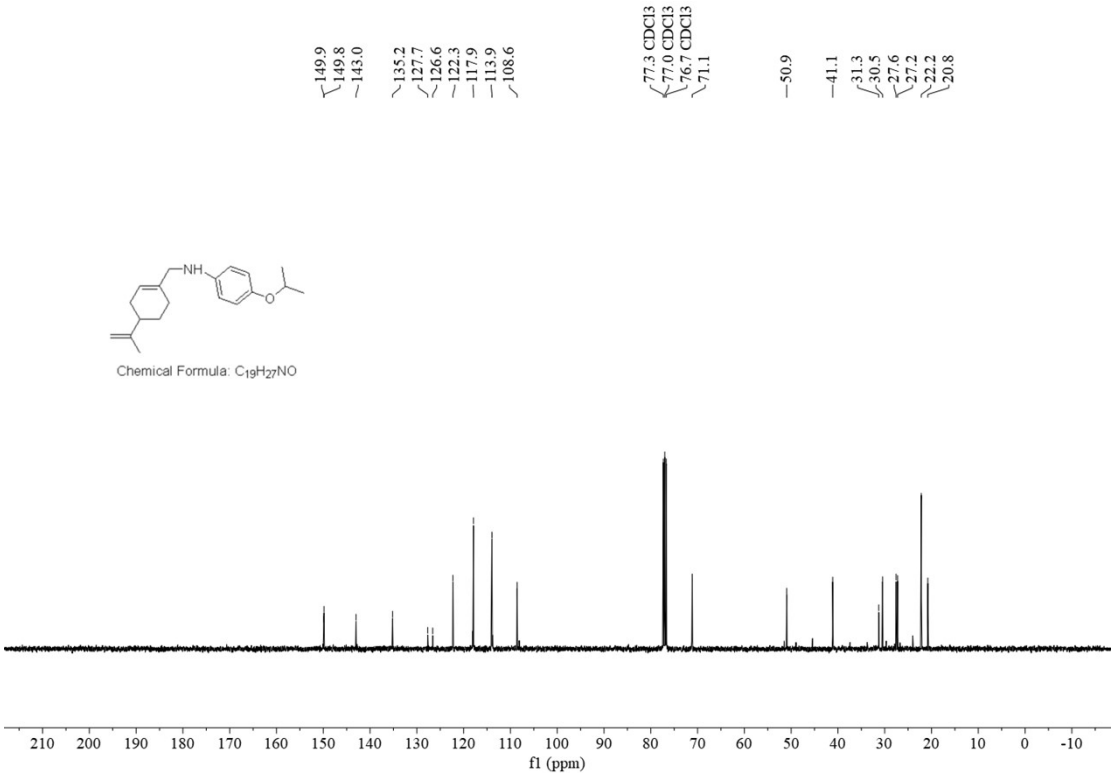
^{1}H NMR Spectrum of **3ua** in $CDCl_3$ at 400 MHz



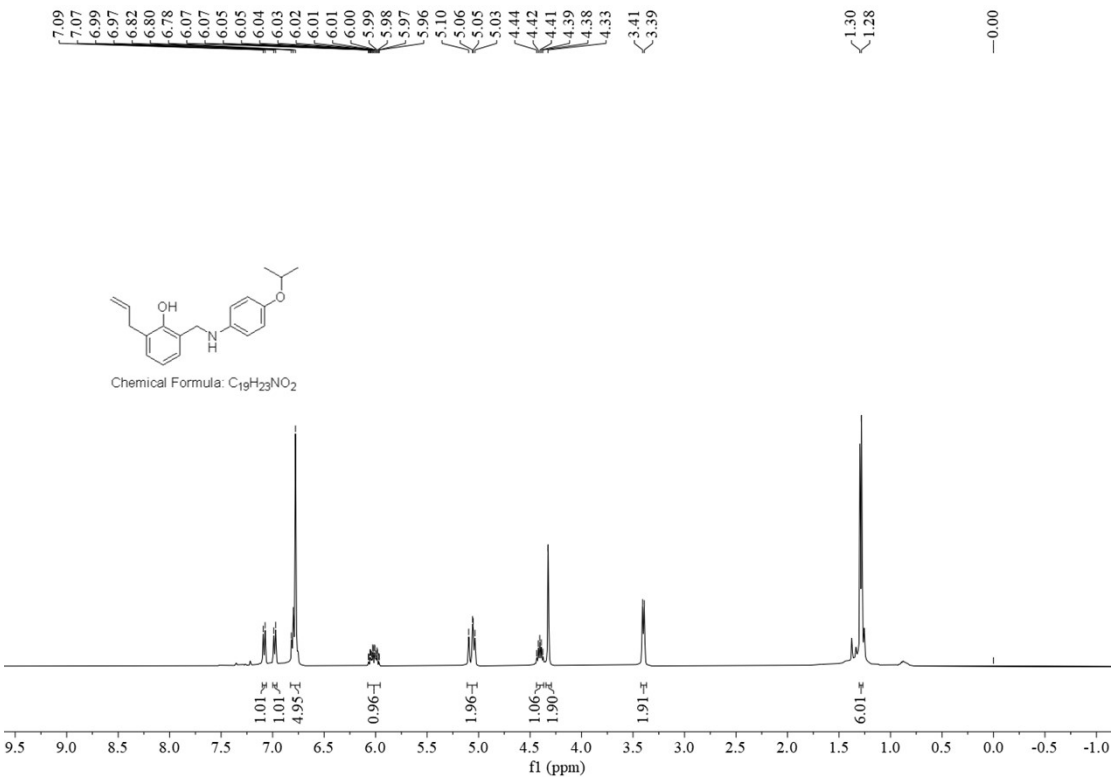
^{13}C{^{1}H} NMR Spectrum of **3ua** in $CDCl_3$ at 100 MHz



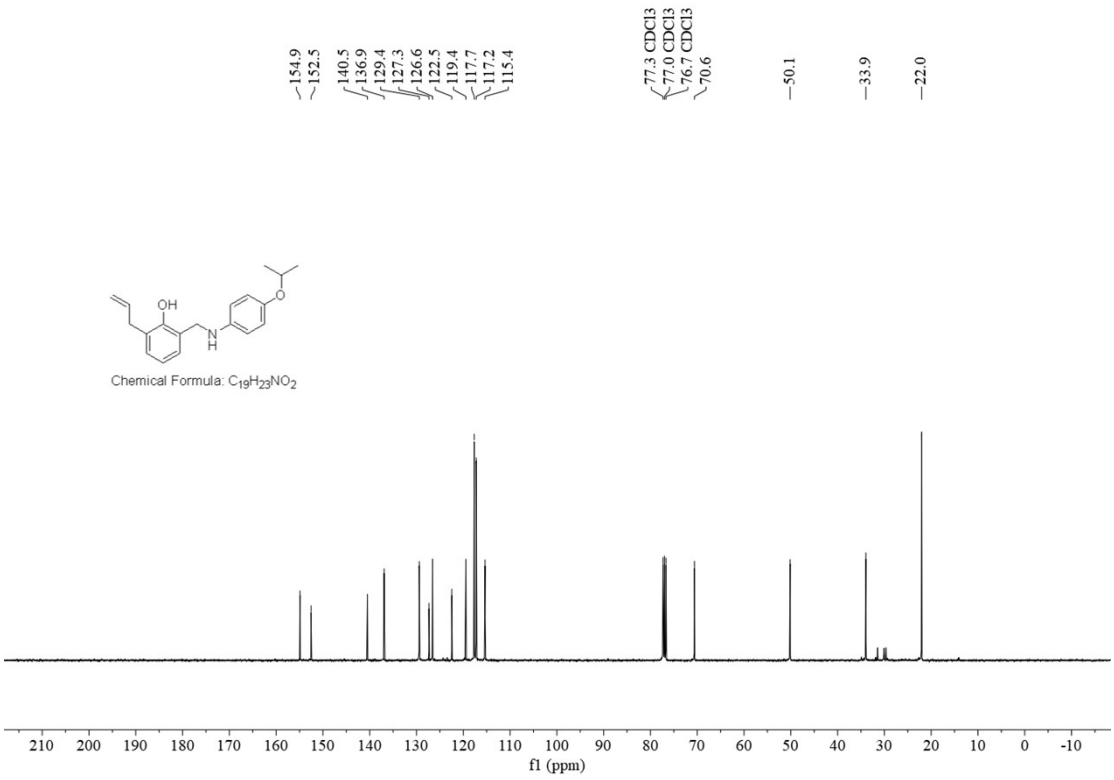
^{1}H NMR Spectrum of **3va** in $CDCl_3$ at 400 MHz



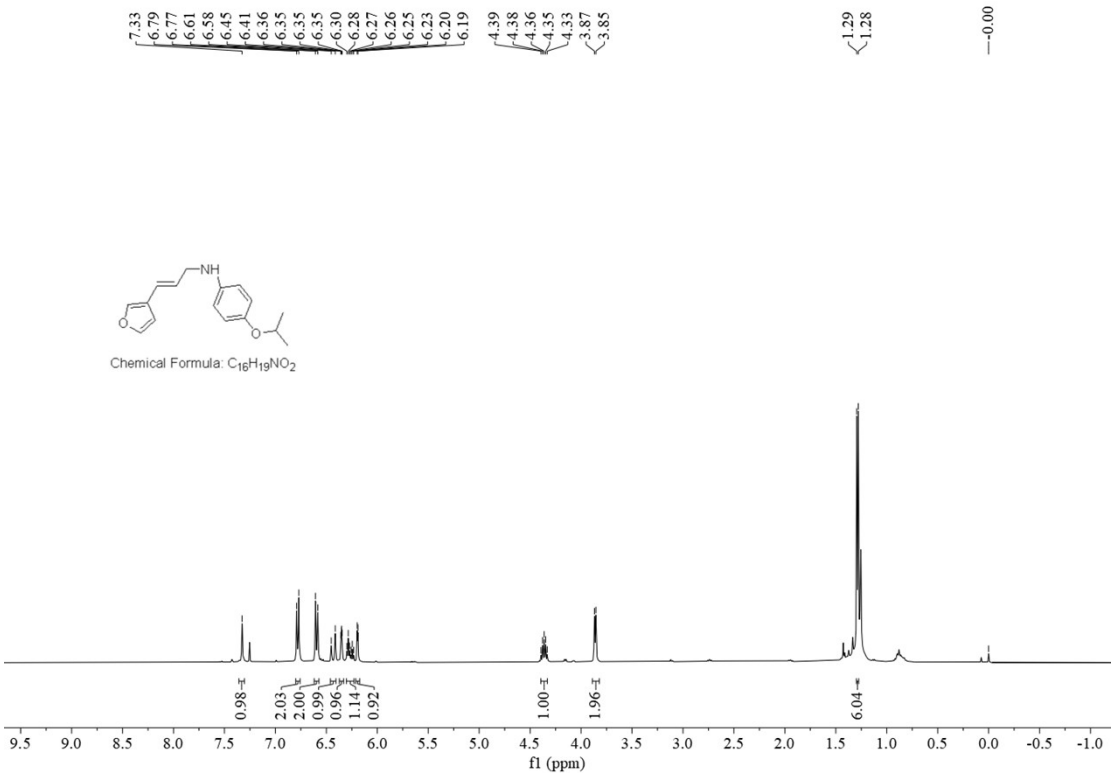
^{13}C{^{1}H} NMR Spectrum of **3va** in $CDCl_3$ at 100 MHz



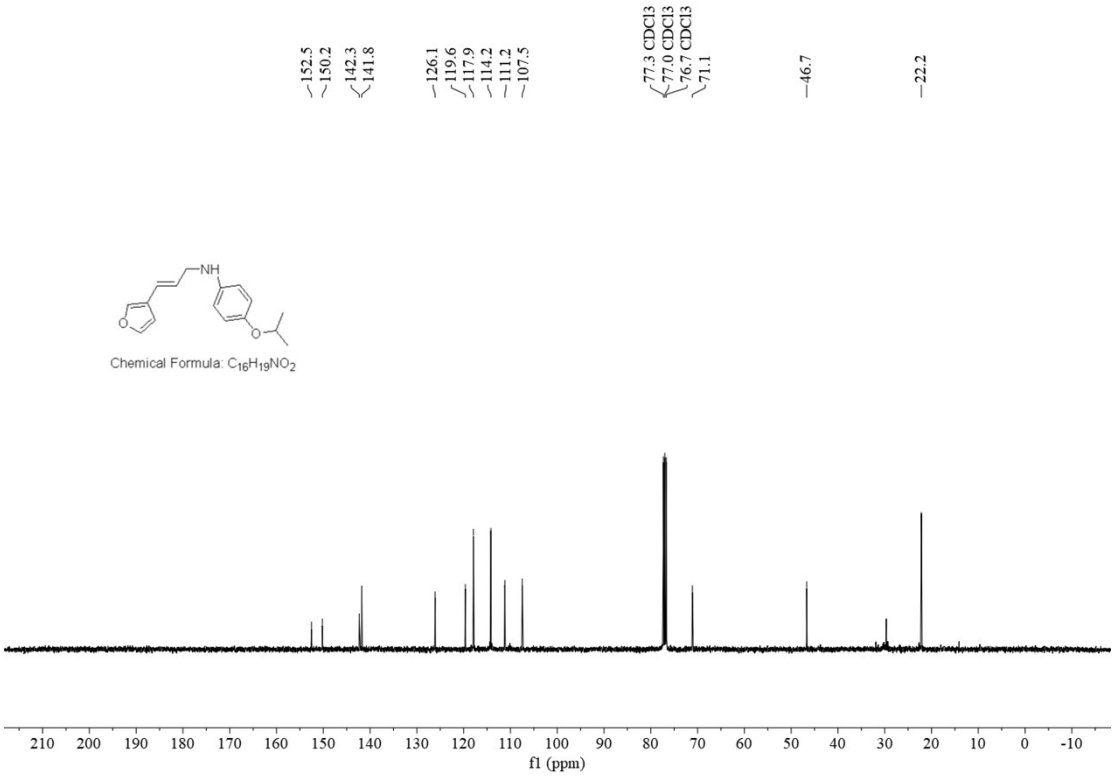
^{1}H NMR Spectrum of **3wa** in $CDCl_3$ at 400 MHz



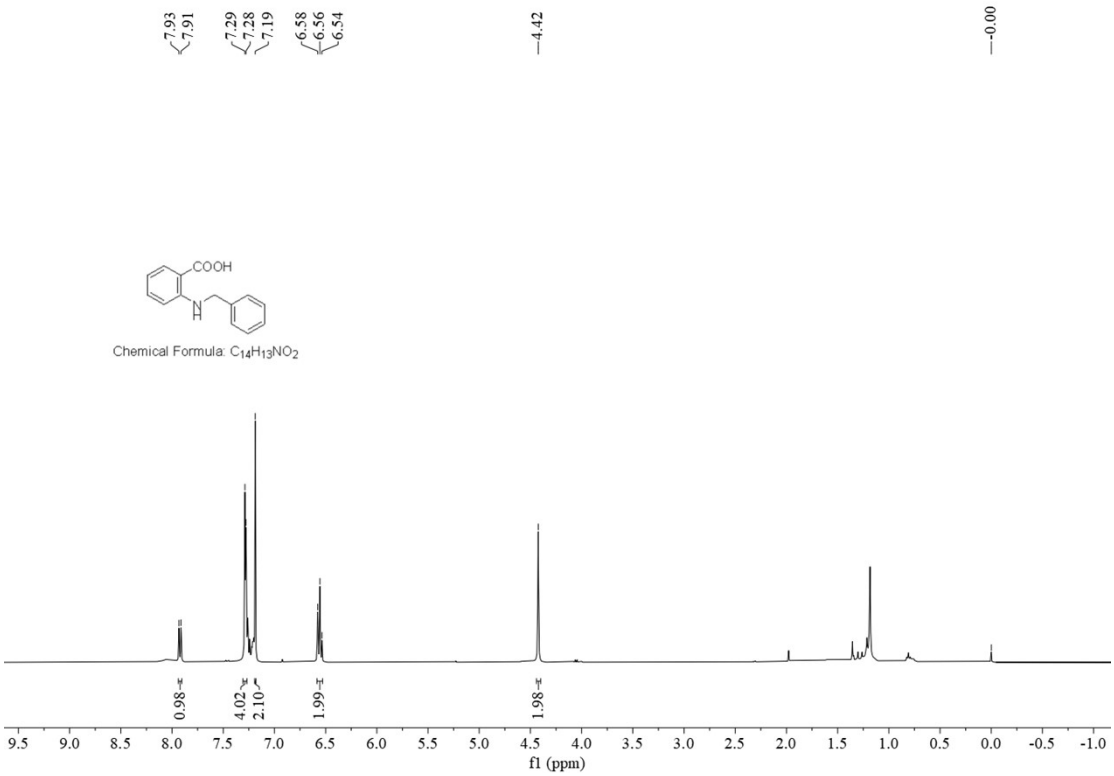
^{13}C{^{1}H} NMR Spectrum of **3wa** in $CDCl_3$ at 100 MHz



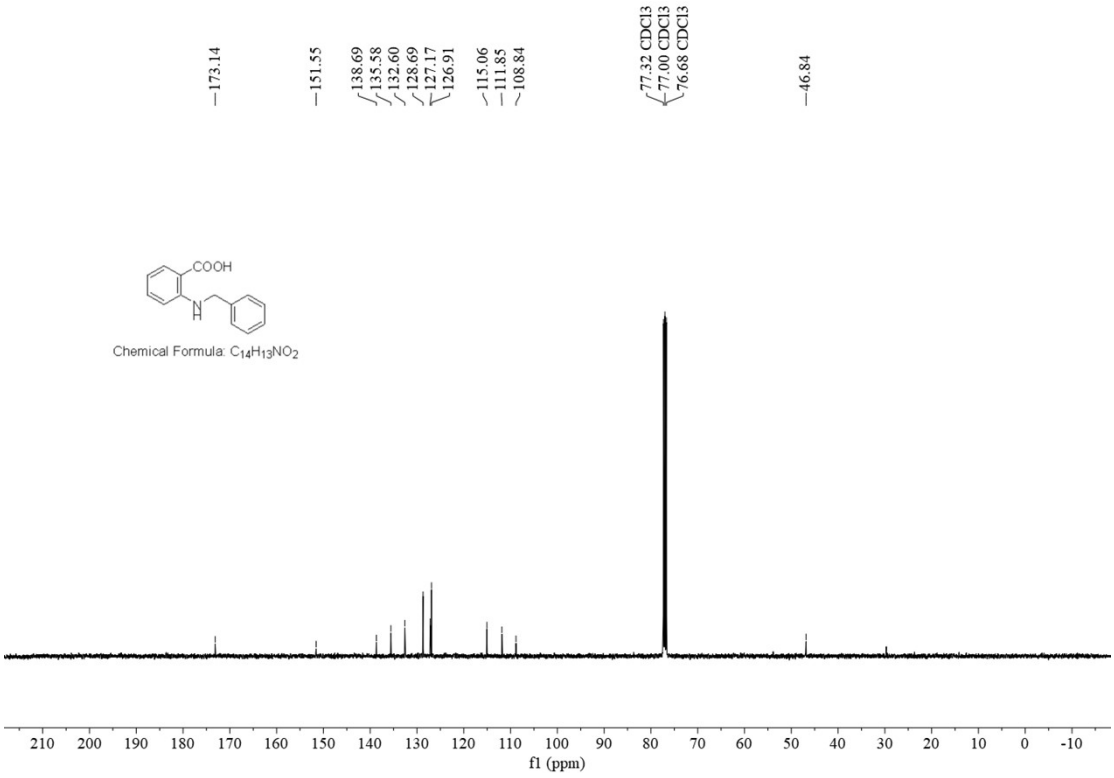
^{1}H NMR Spectrum of **3xa** in $CDCl_3$ at 400 MHz



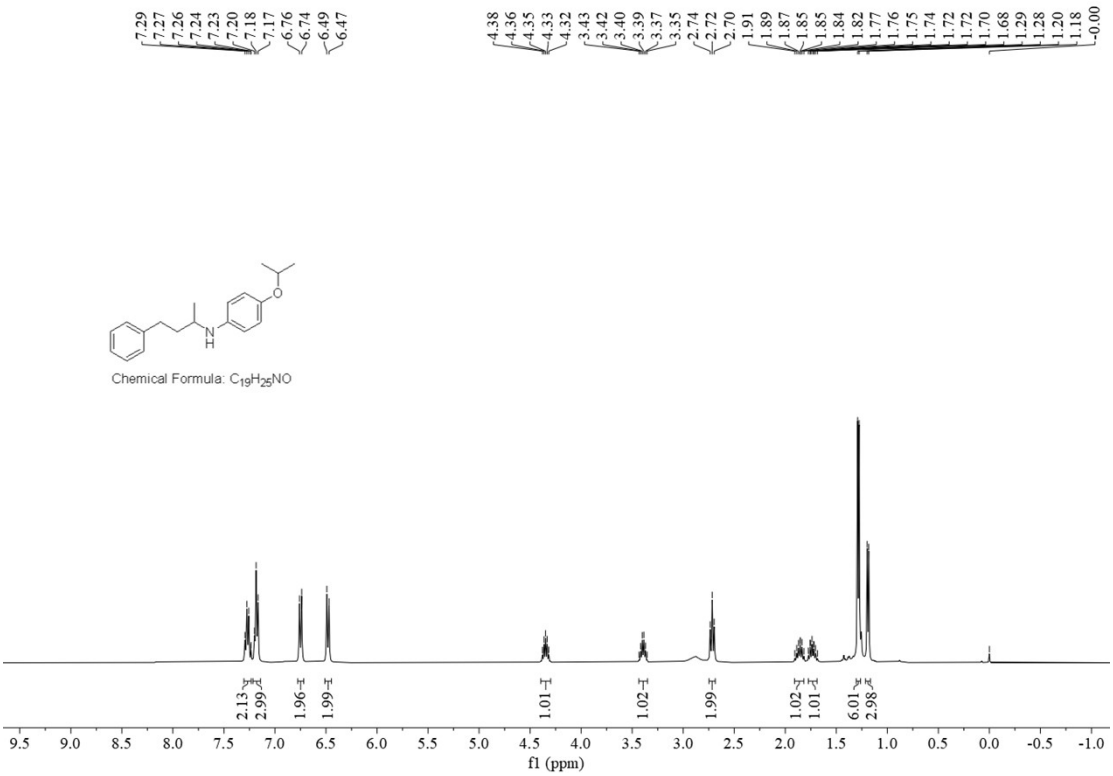
^{13}C{^{1}H} NMR Spectrum of **3xa** in $CDCl_3$ at 100 MHz



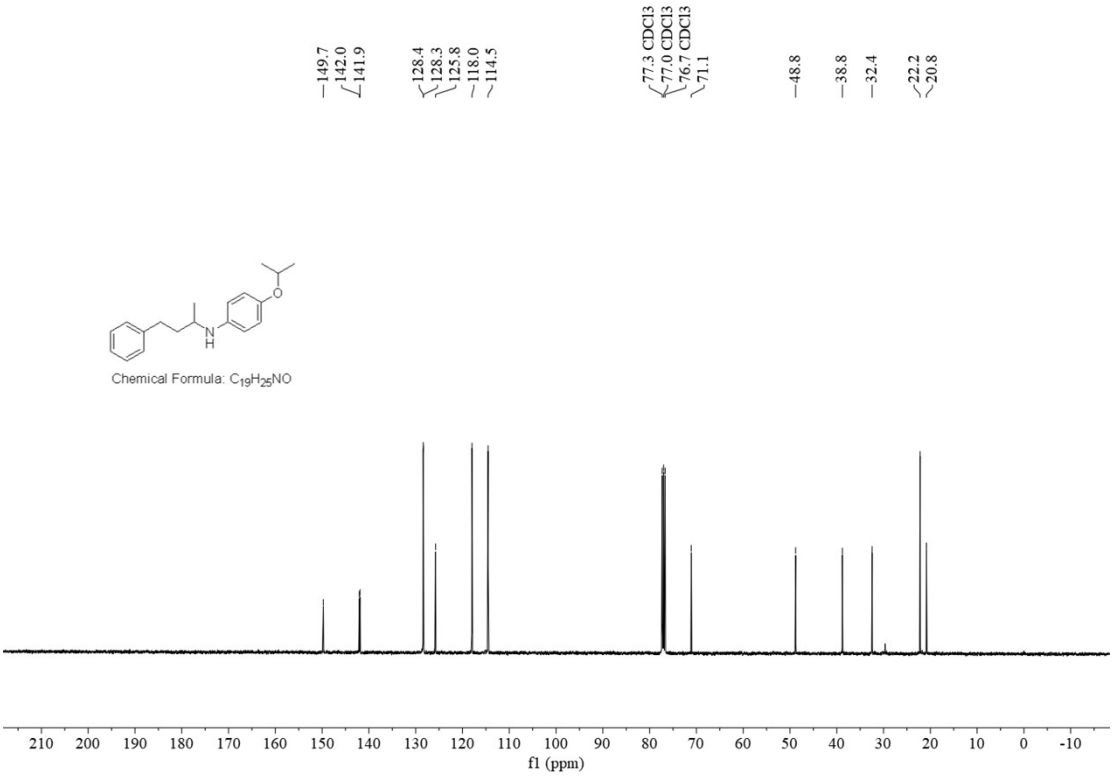
^{1}H NMR Spectrum of **3ab** in $CDCl_3$ at 400 MHz



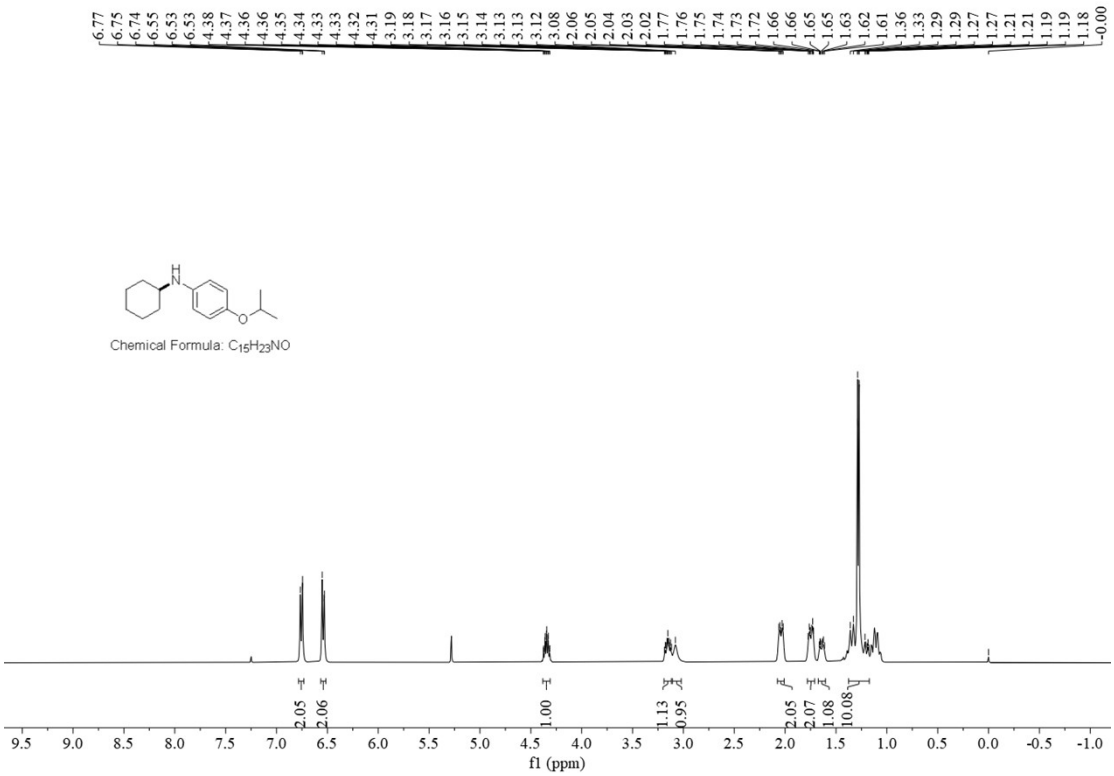
^{13}C{^{1}H} NMR Spectrum of **3ab** in $CDCl_3$ at 100 MHz



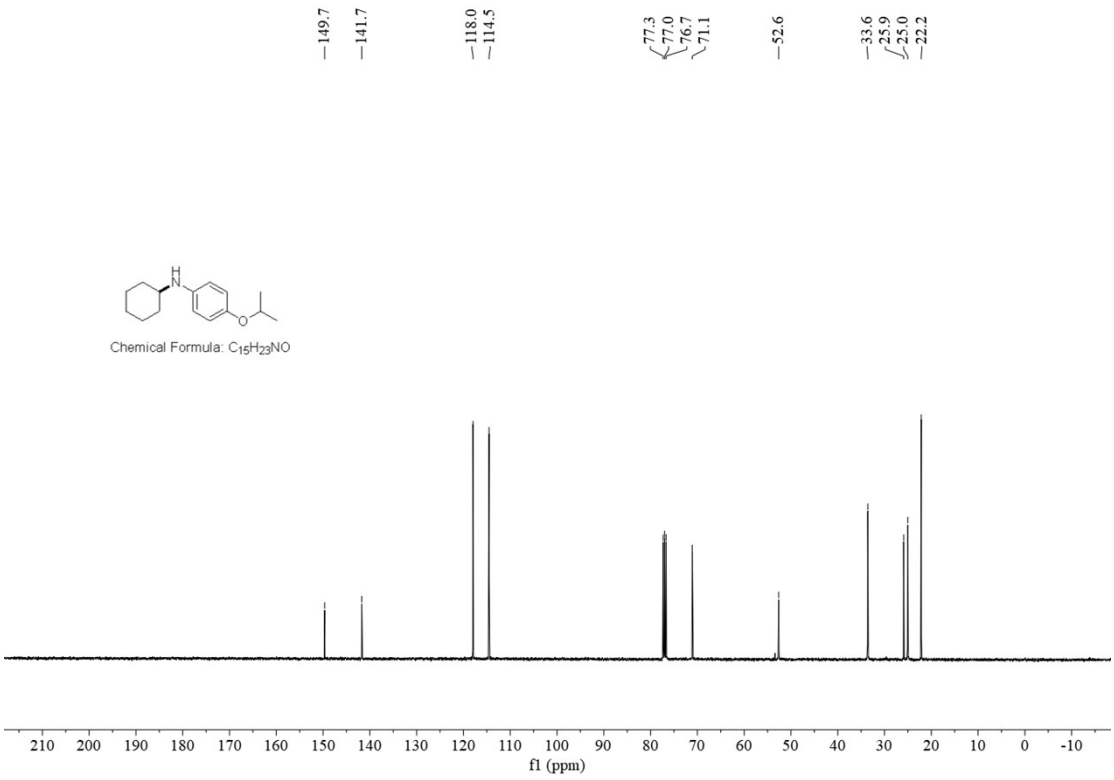
^{1}H NMR Spectrum of **4aa** in $CDCl_3$ at 400 MHz



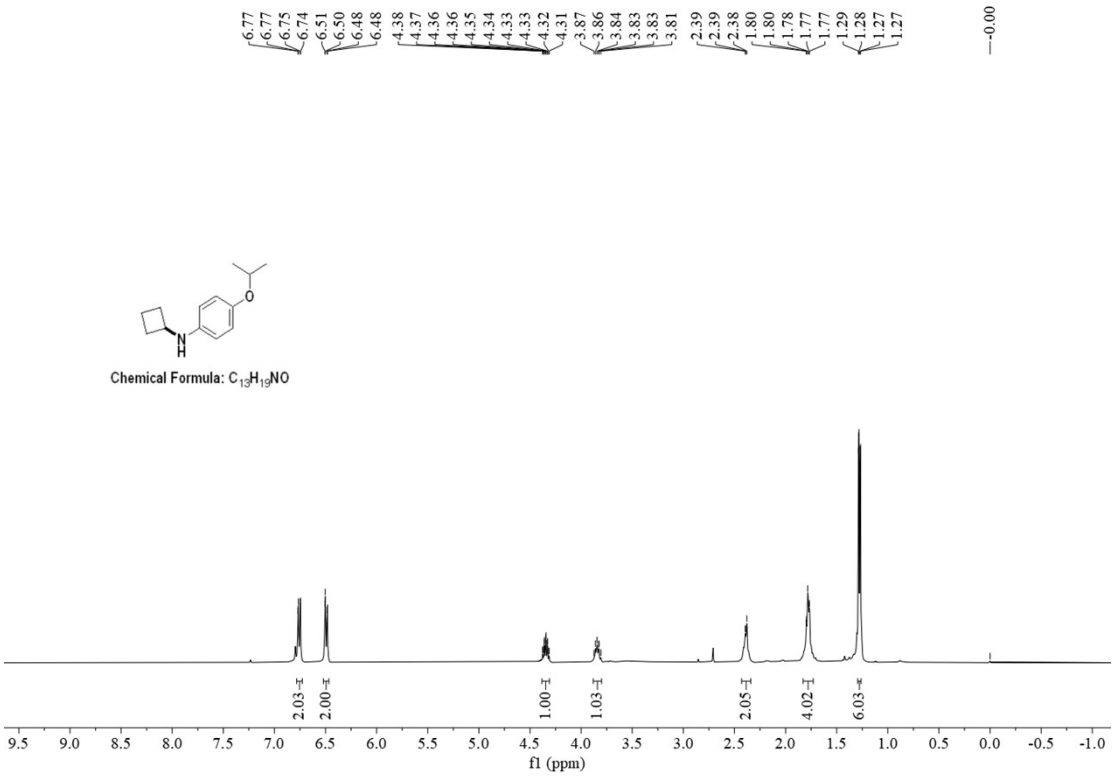
^{13}C{^{1}H} NMR Spectrum of **4aa** in $CDCl_3$ at 100 MHz



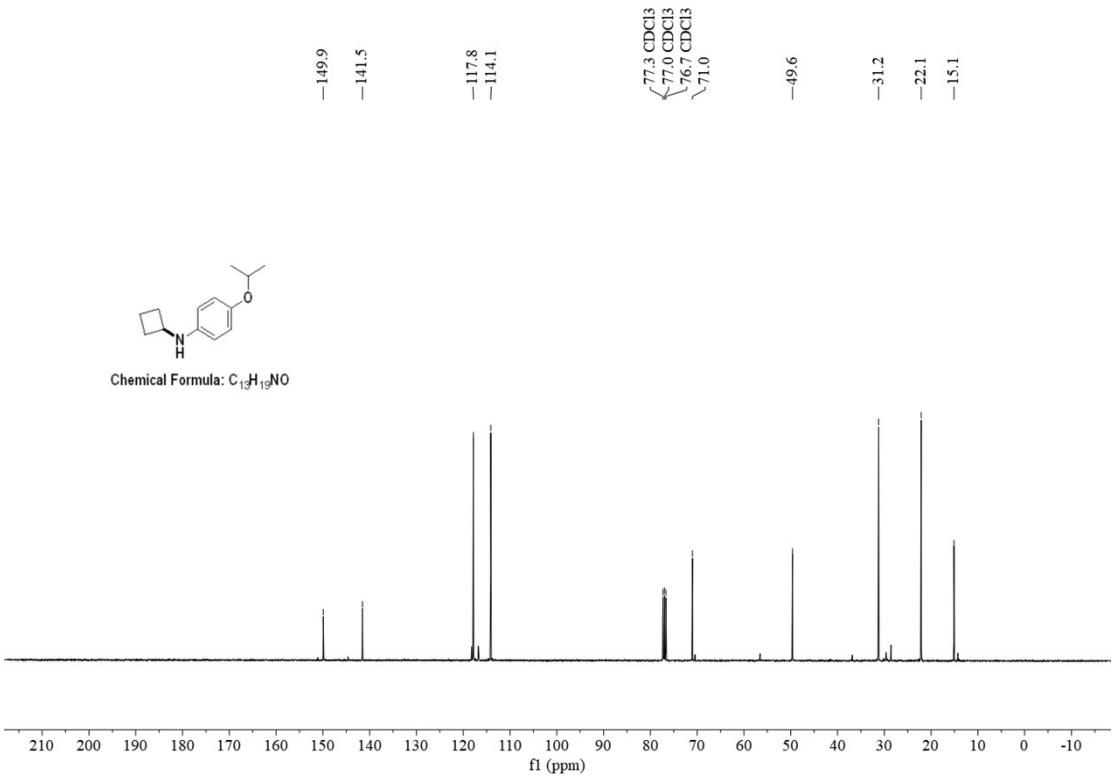
^{1}H NMR Spectrum of **4ba** in $CDCl_3$ at 400 MHz



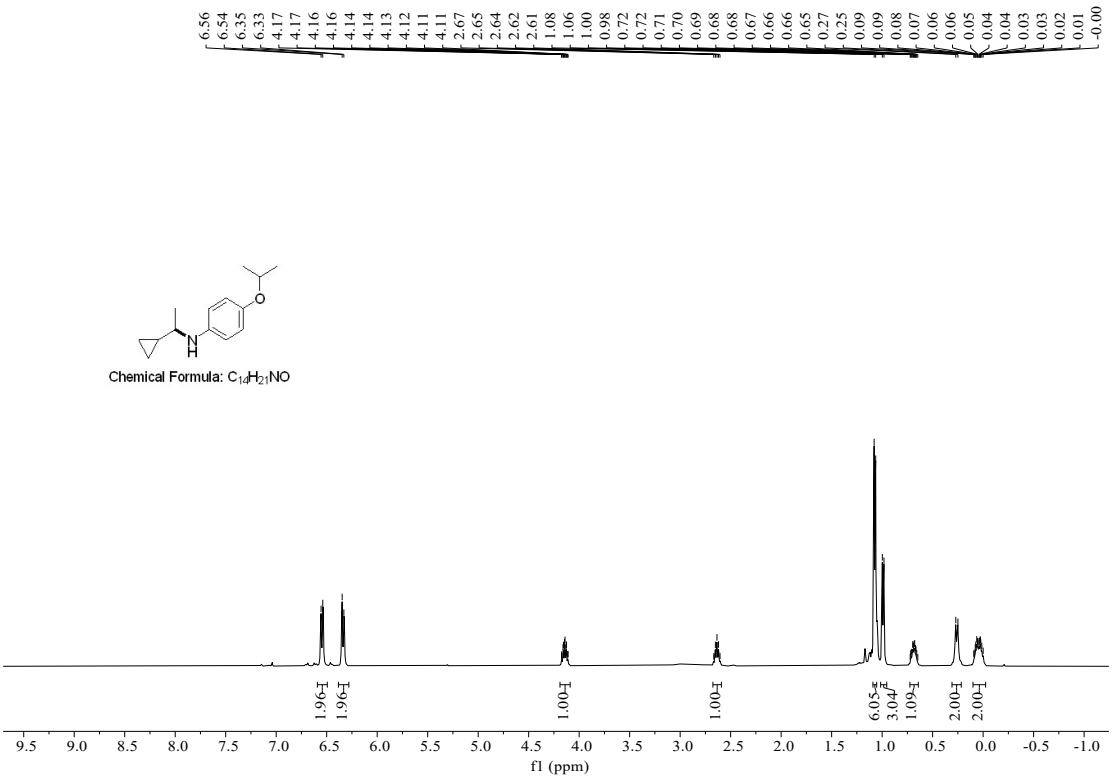
^{13}C{^{1}H} NMR Spectrum of **4ba** in $CDCl_3$ at 100 MHz



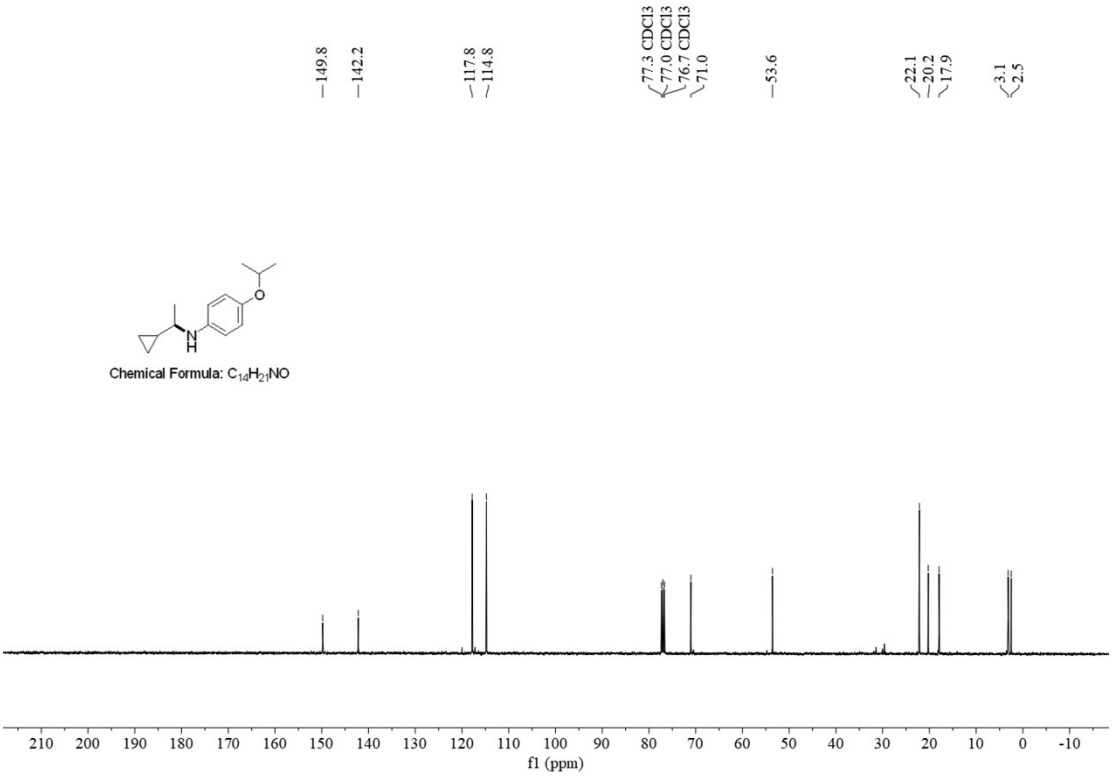
^{1}H NMR Spectrum of **4ca** in $CDCl_3$ at 400 MHz



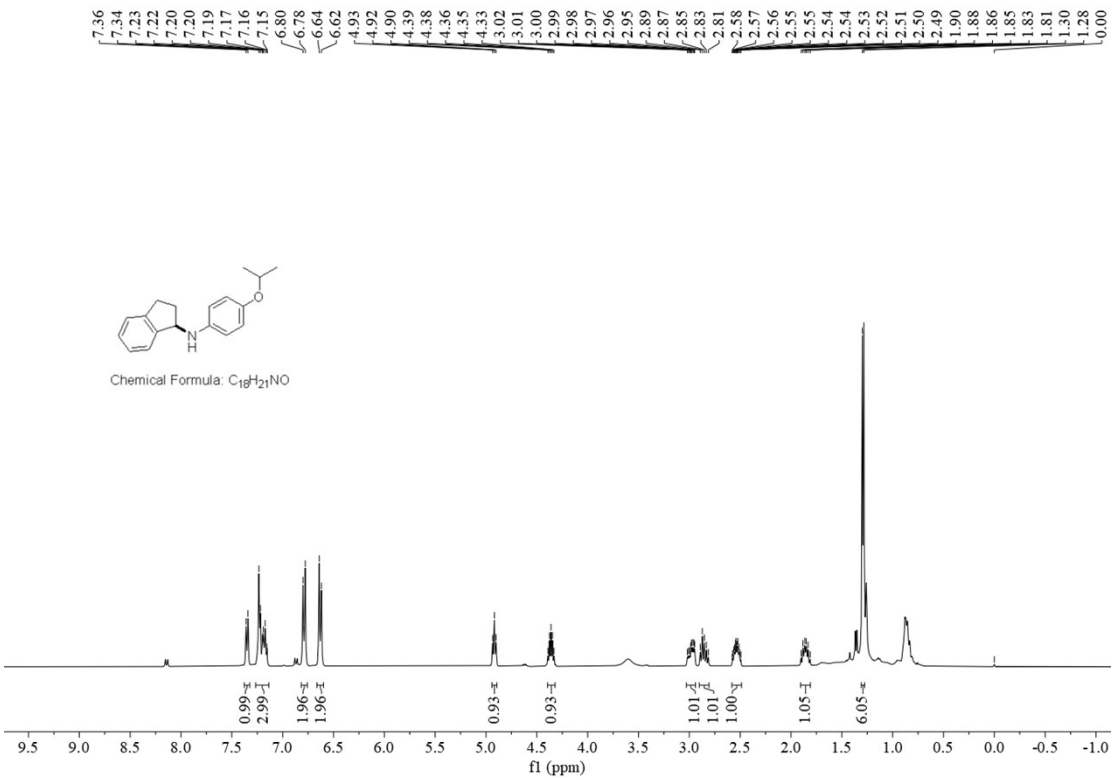
^{13}C{^{1}H} NMR Spectrum of **4ca** in $CDCl_3$ at 100 MHz



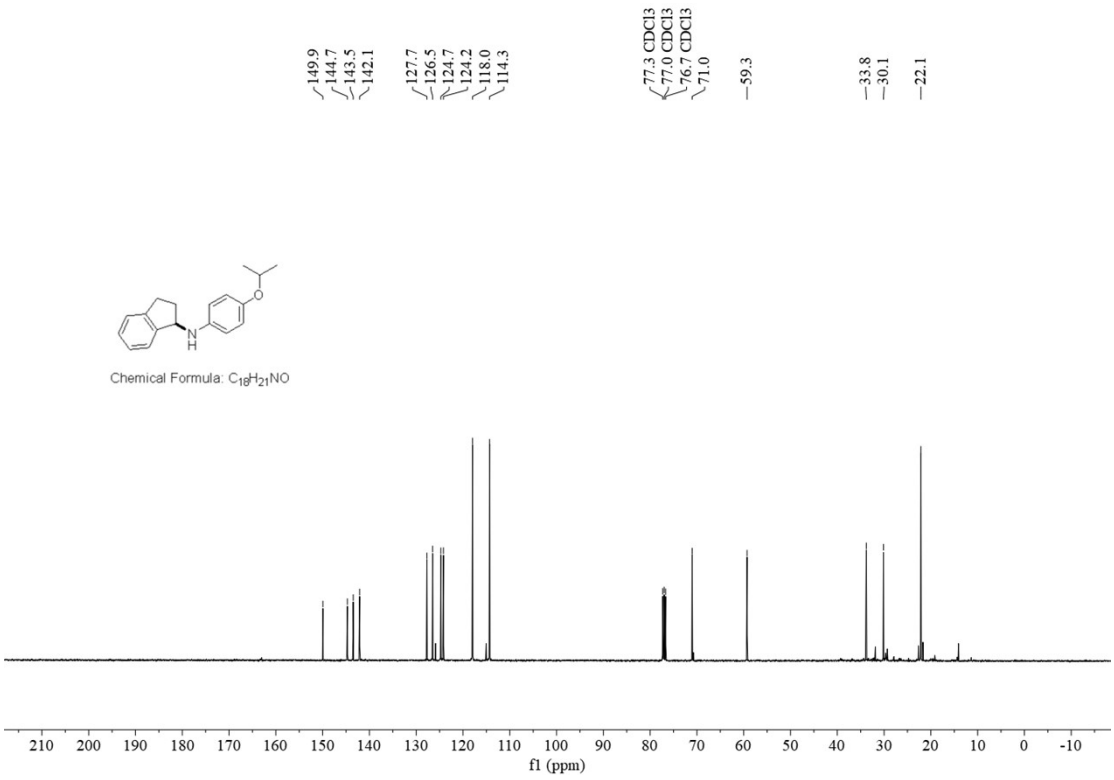
^{1}H NMR Spectrum of **4da** in $CDCl_3$ at 400 MHz



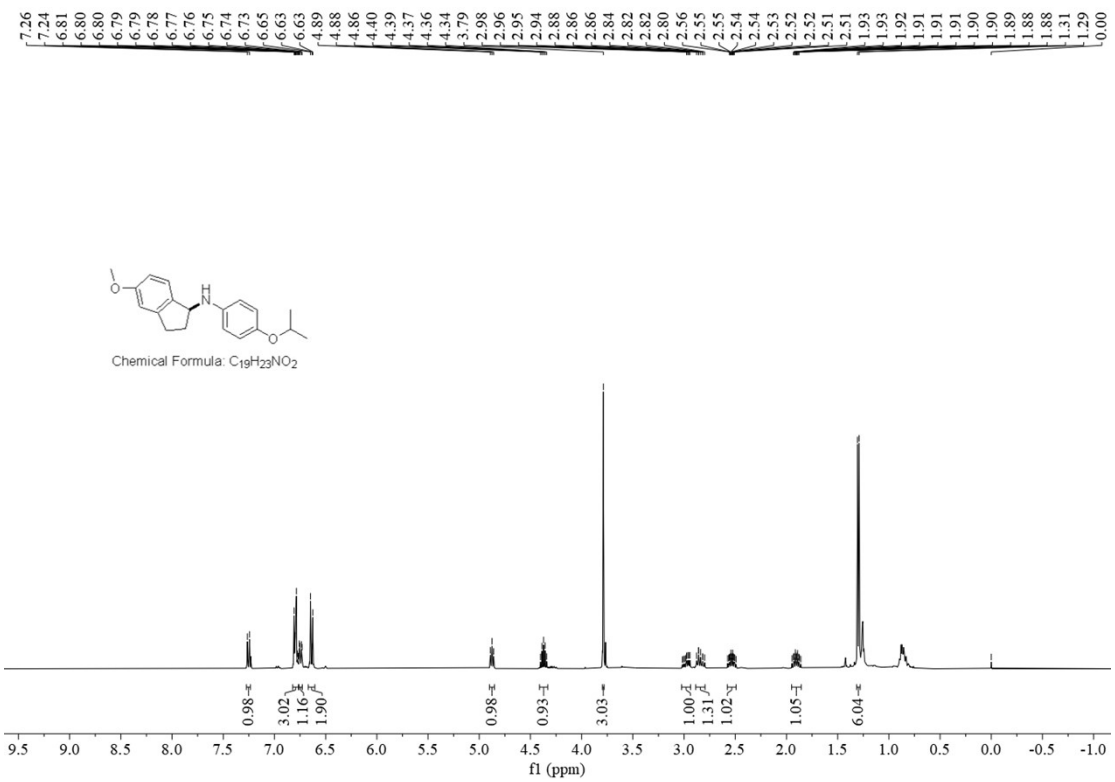
^{13}C{^{1}H} NMR Spectrum of **4da** in $CDCl_3$ at 100 MHz



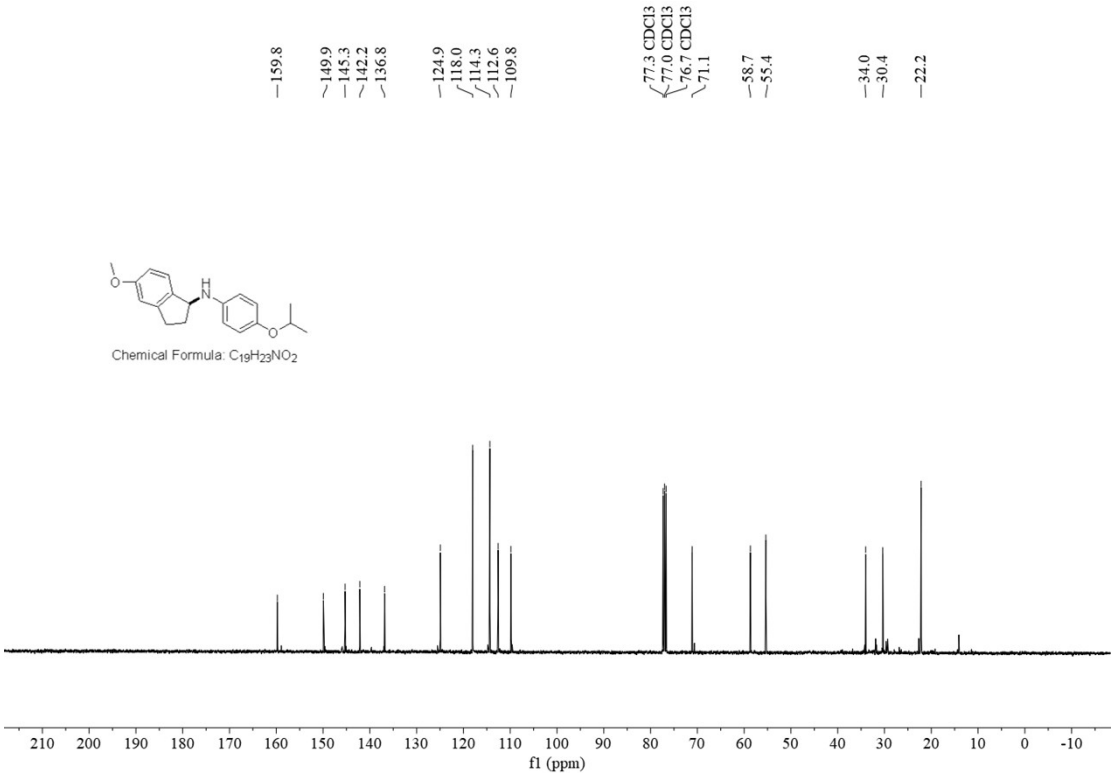
^{1}H NMR Spectrum of **4ea** in $CDCl_3$ at 400 MHz



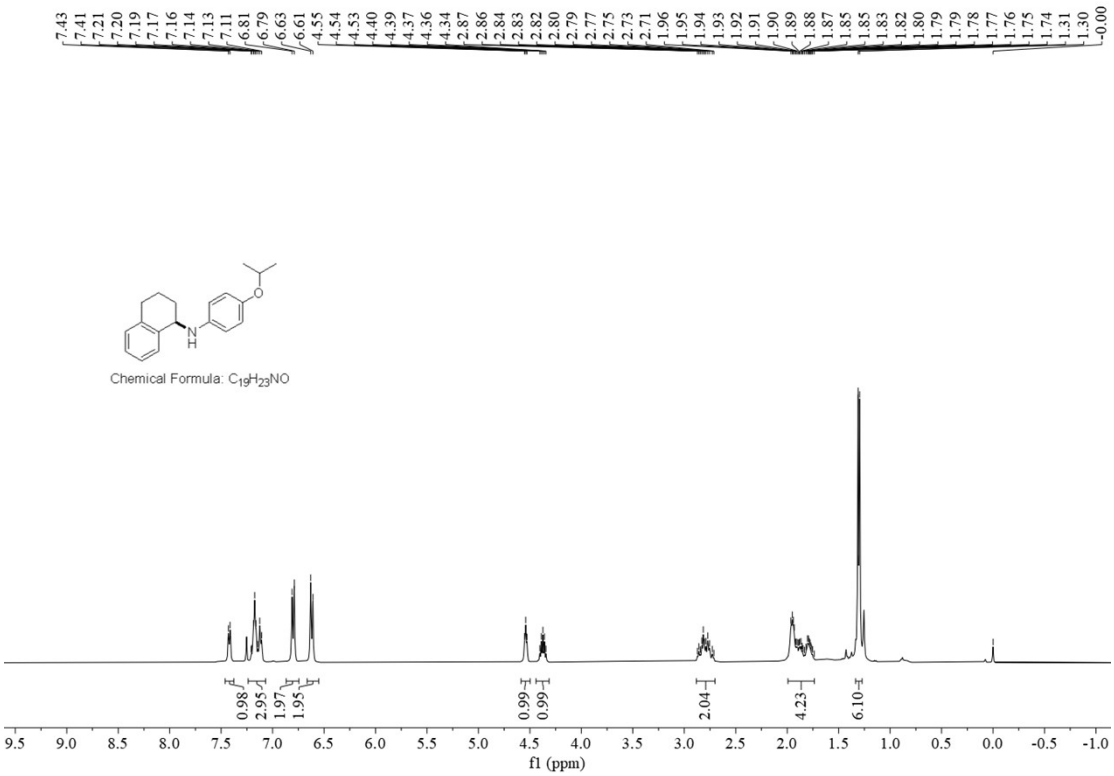
^{13}C{^{1}H} NMR Spectrum of **4ea** in $CDCl_3$ at 100 MHz



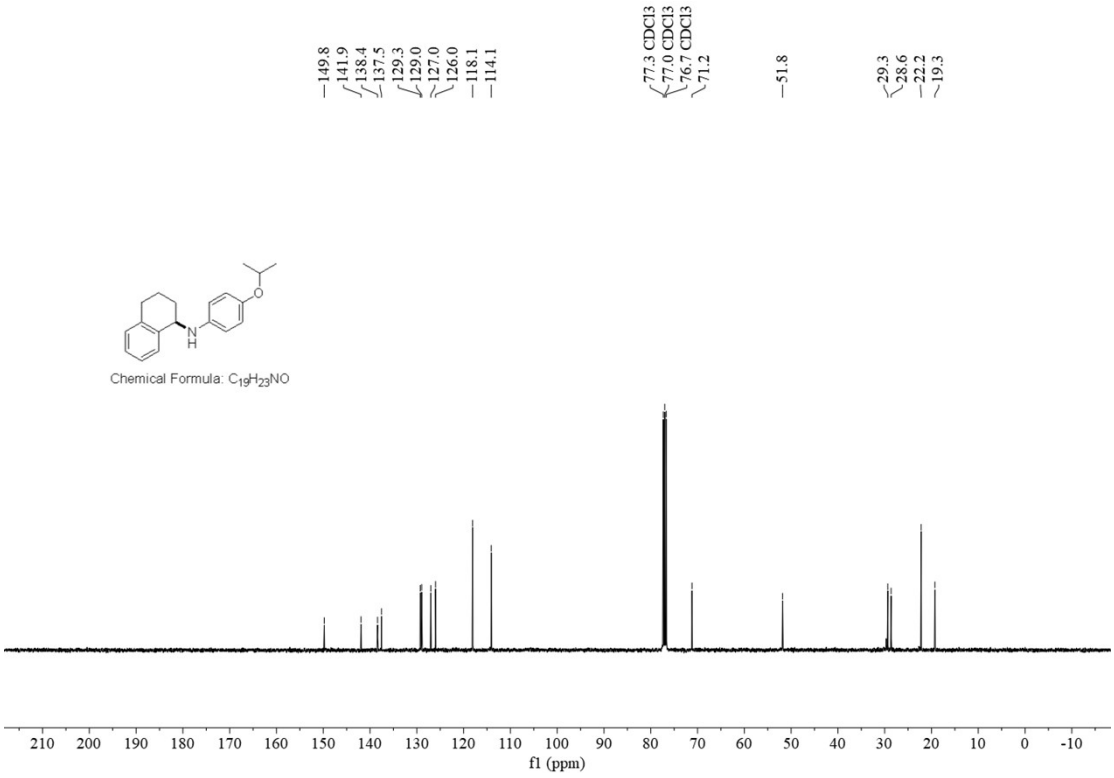
^{1}H NMR Spectrum of **4fa** in $CDCl_3$ at 400 MHz



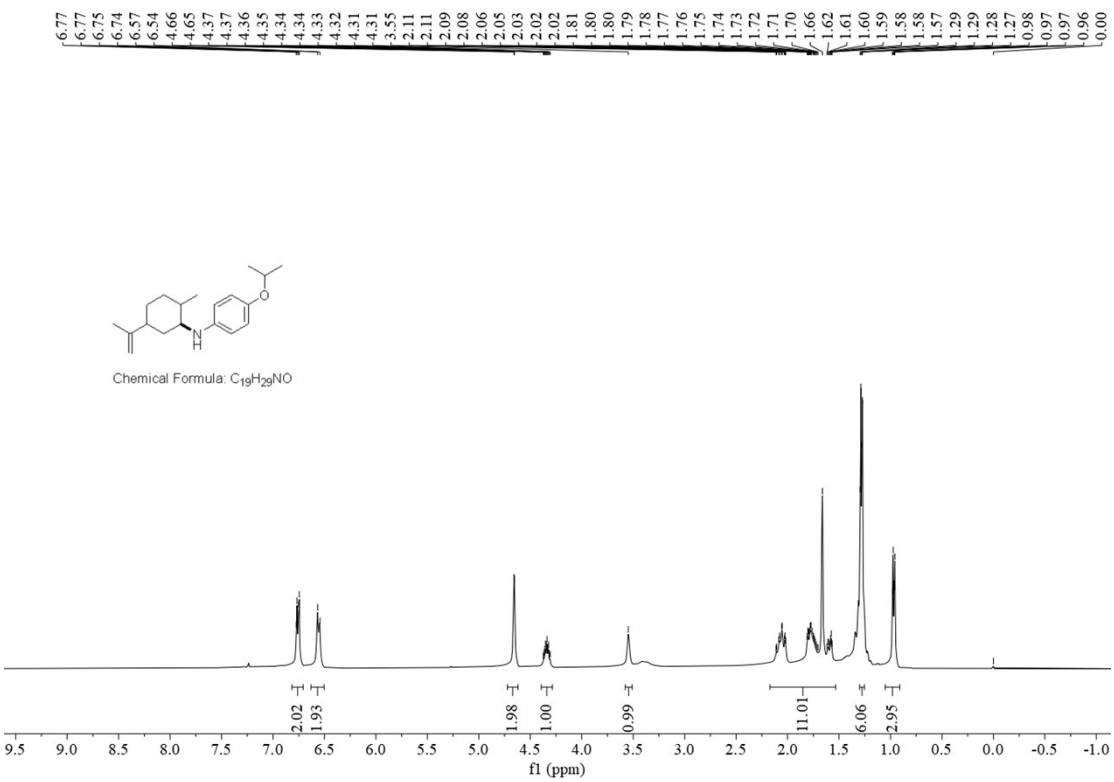
$^{13}C\{^{1}H\}$ NMR Spectrum of **4fa** in $CDCl_3$ at 100 MHz



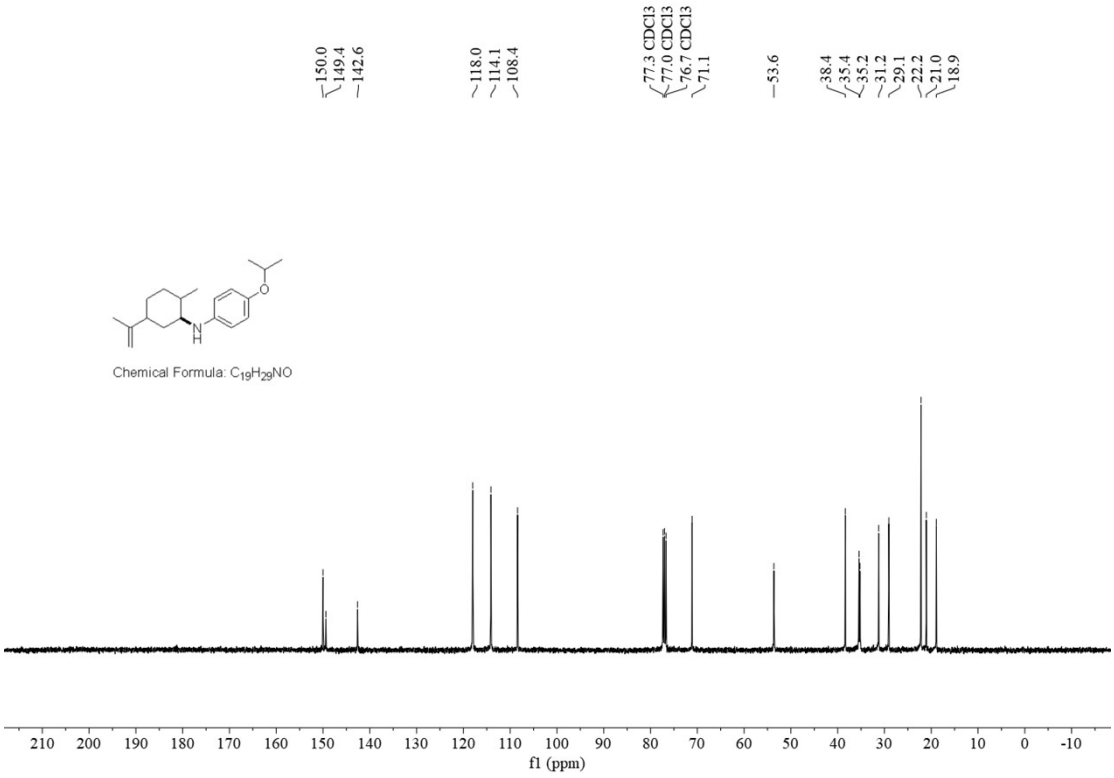
^{1}H NMR Spectrum of **4ga** in $CDCl_3$ at 400 MHz



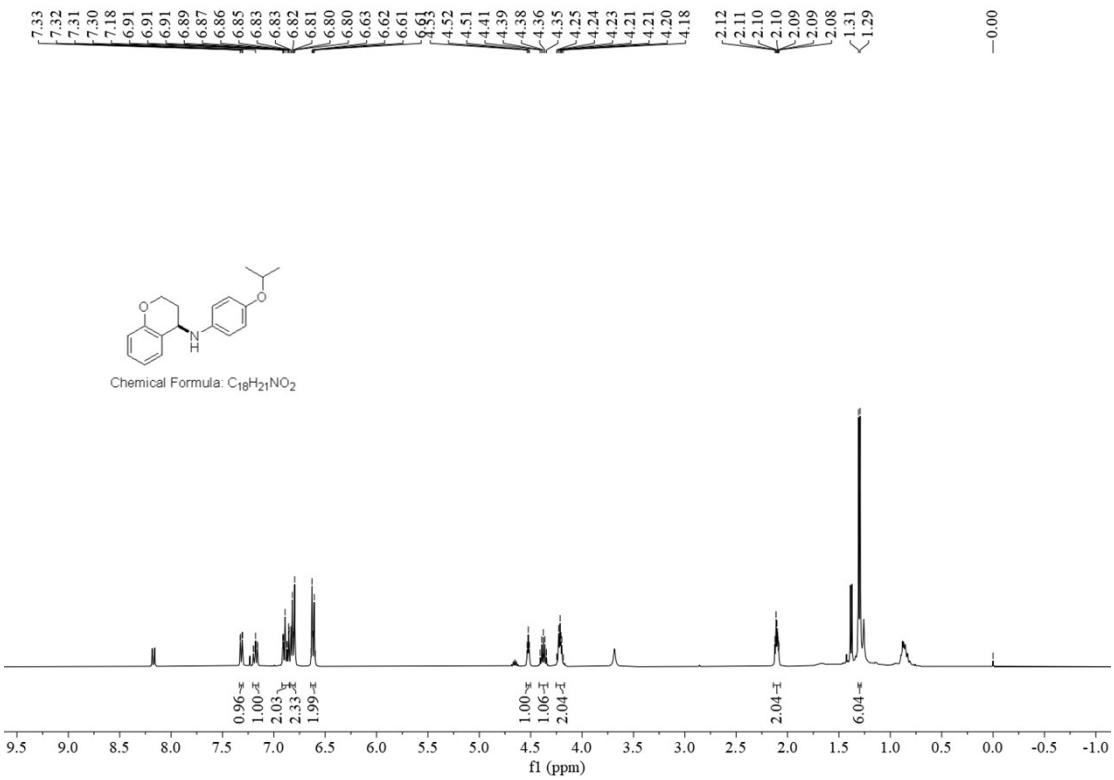
^{13}C{^{1}H} NMR Spectrum of **4ga** in $CDCl_3$ at 100 MHz



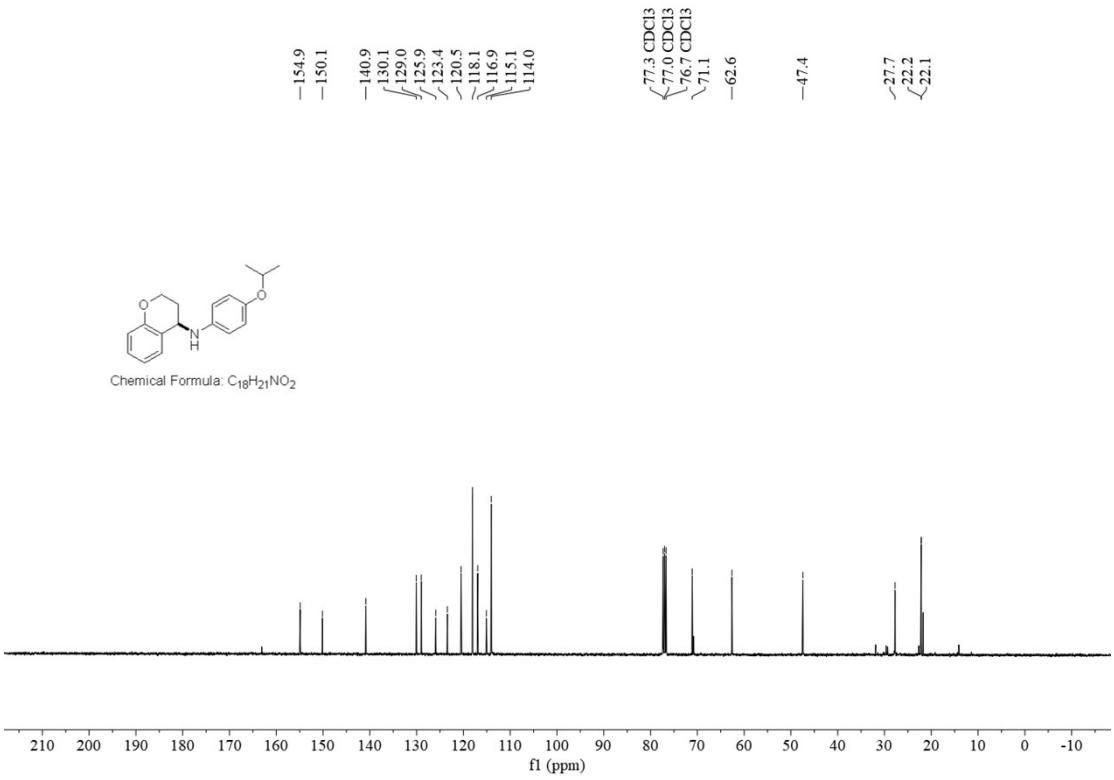
^{1}H NMR Spectrum of **4ha** in $CDCl_3$ at 400 MHz



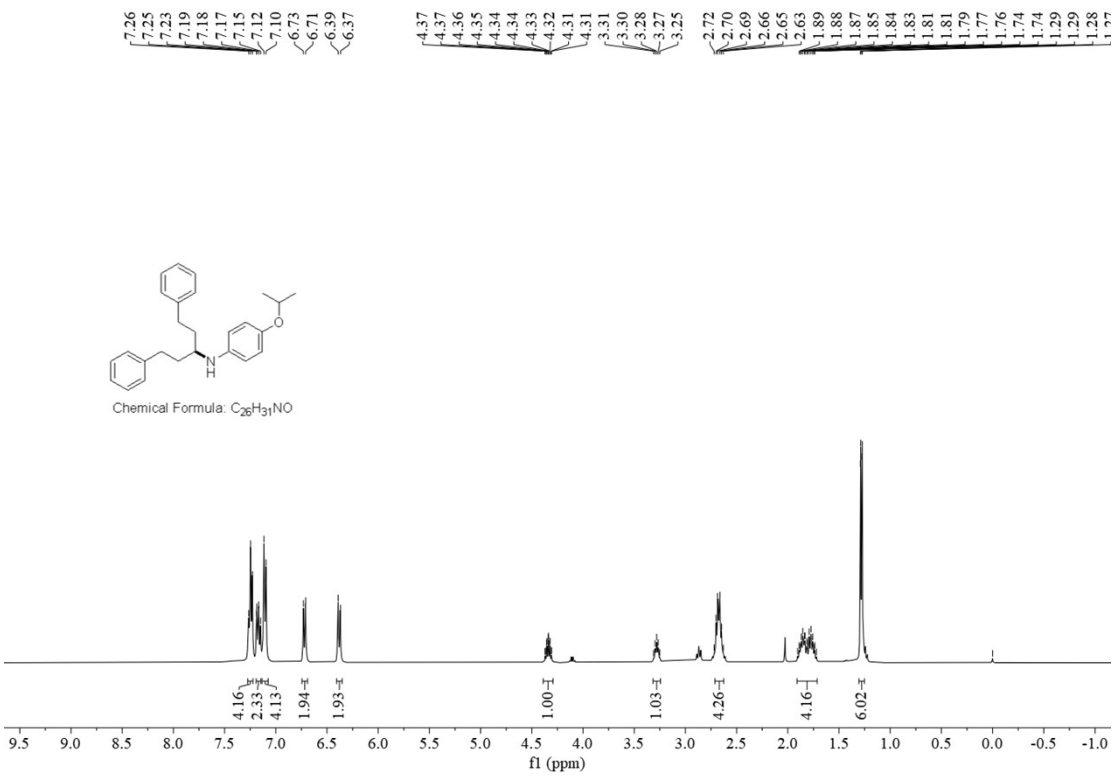
$^{13}C\{^{1}H\}$ NMR Spectrum of **4ha** in $CDCl_3$ at 100 MHz



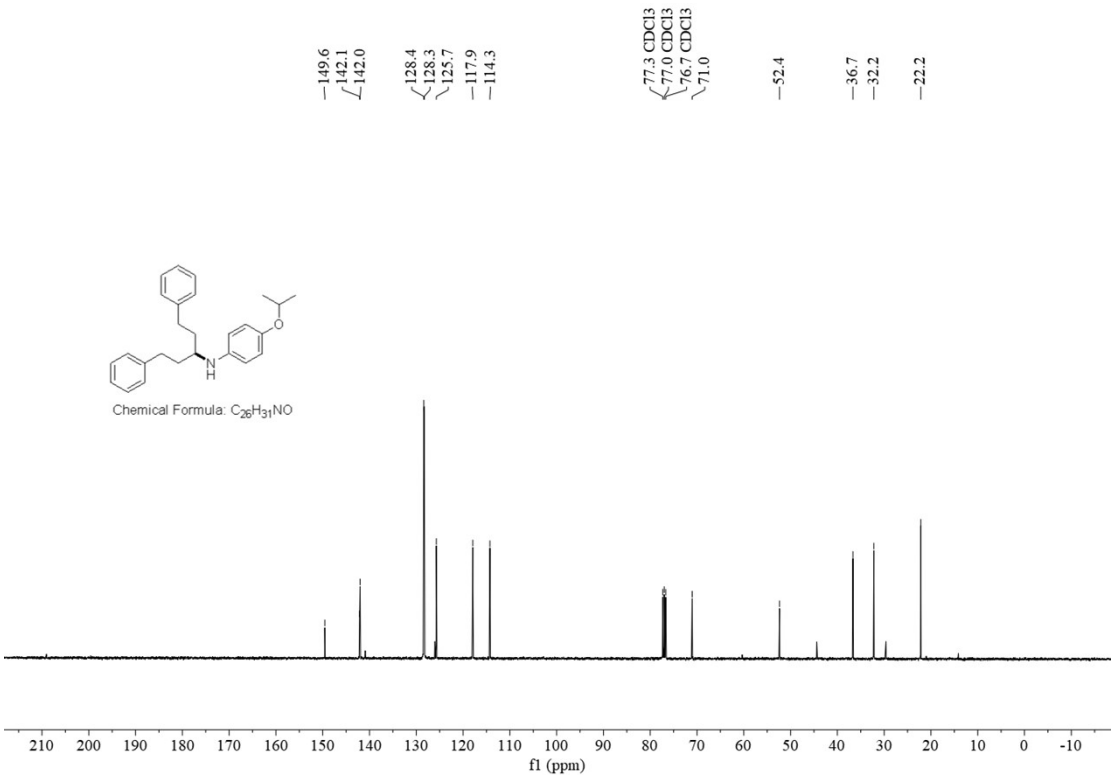
^{1}H NMR Spectrum of **4ia** in $CDCl_3$ at 400 MHz



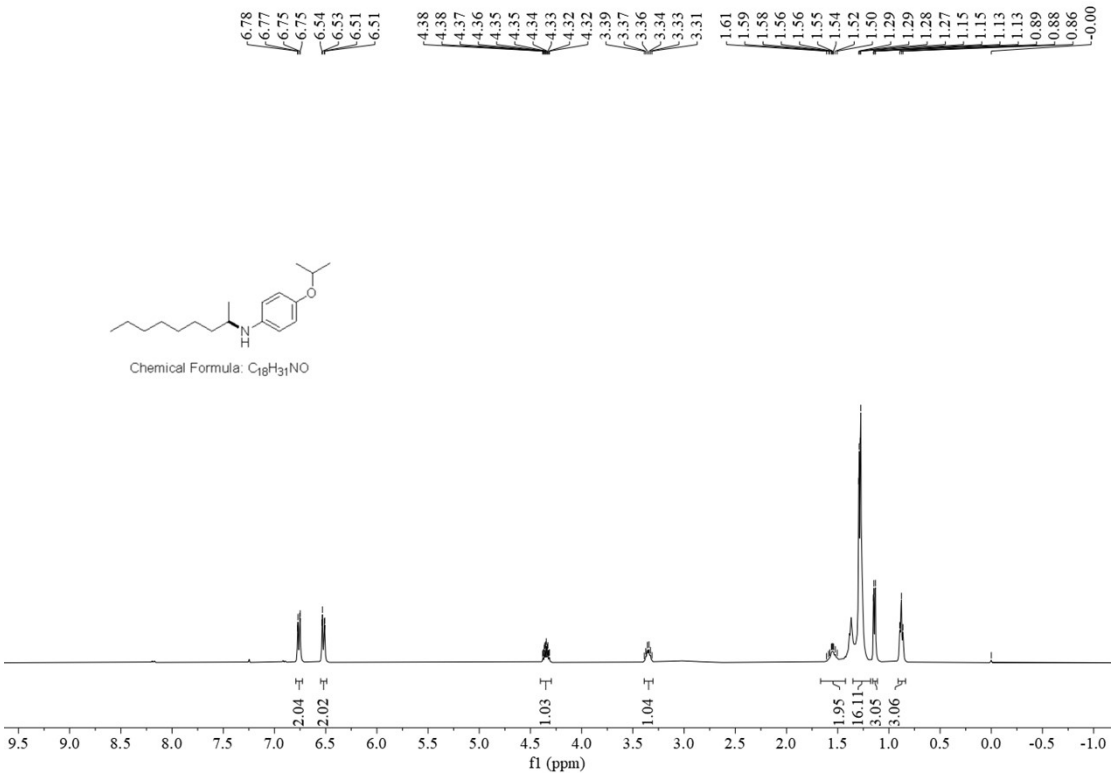
^{13}C{^{1}H} NMR Spectrum of **4ia** in $CDCl_3$ at 100 MHz



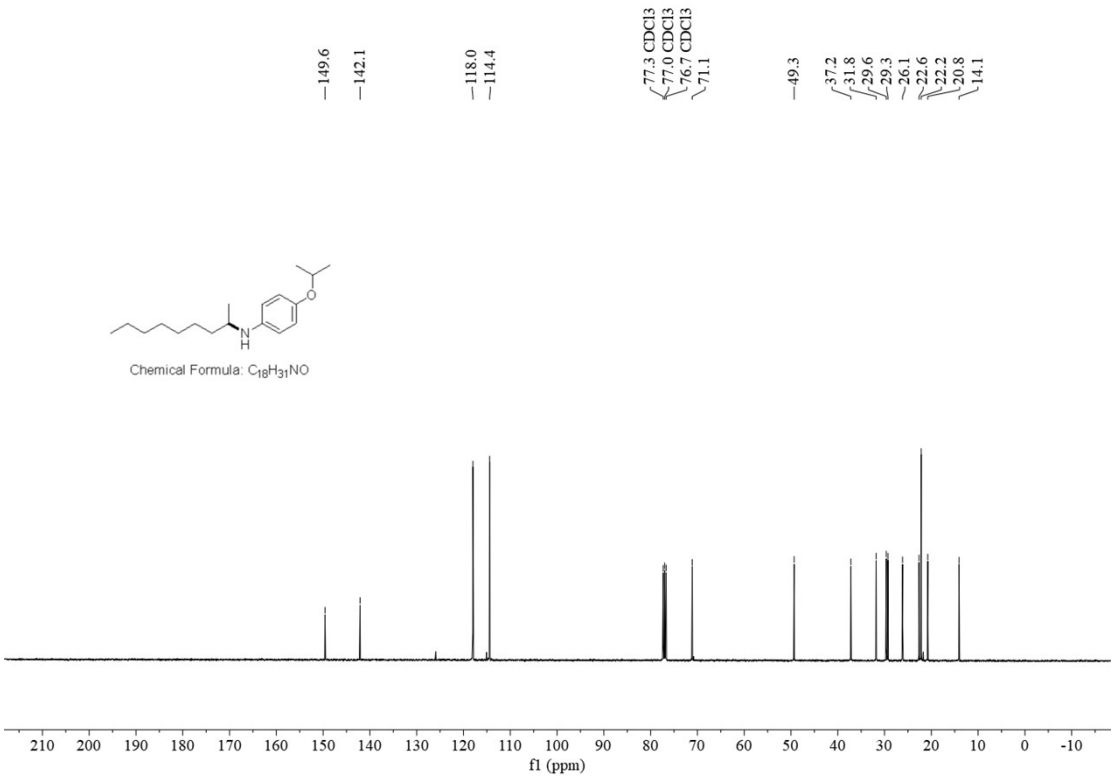
^{1}H NMR Spectrum of **4ja** in $CDCl_3$ at 400 MHz



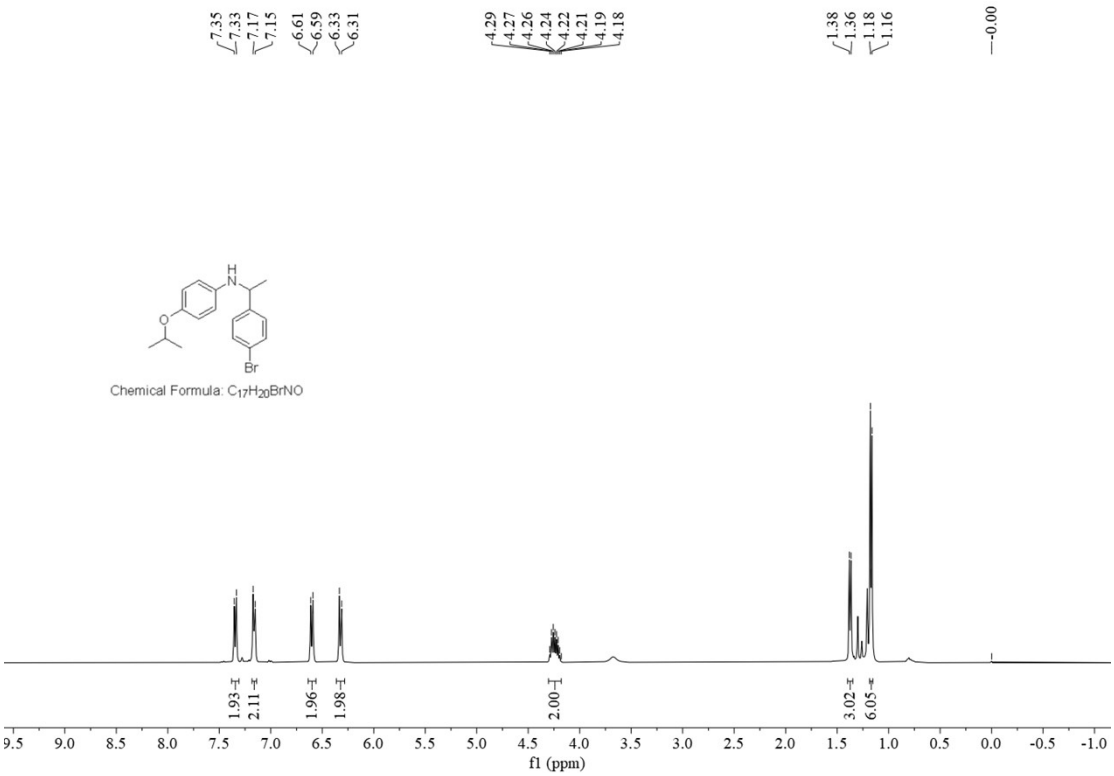
^{13}C{^{1}H}NMR Spectrum of **4ja** in $CDCl_3$ at 100 MHz



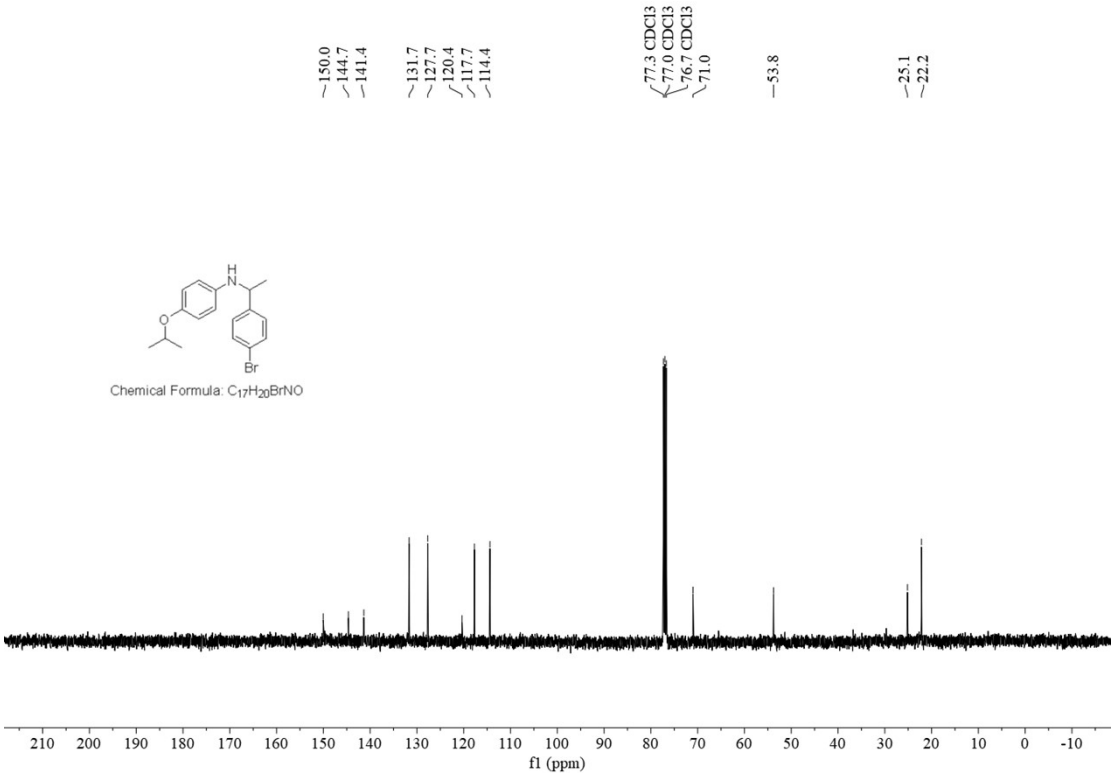
^{1}H NMR Spectrum of **4ka** in $CDCl_3$ at 400 MHz



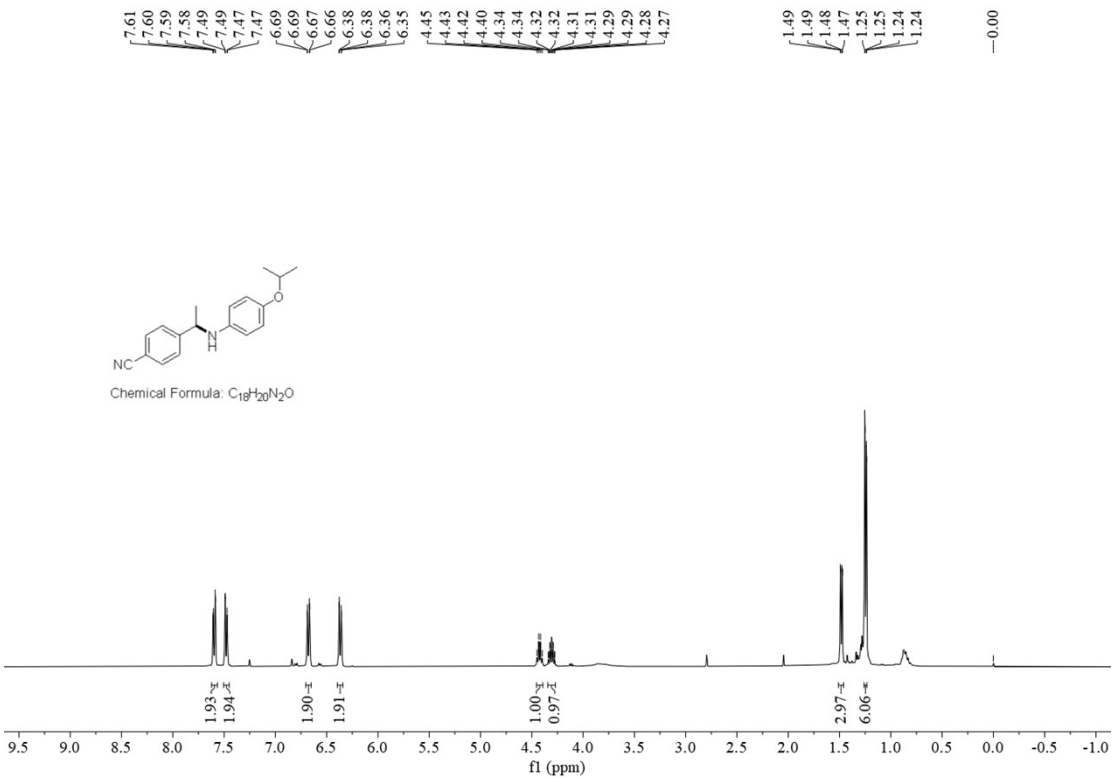
^{13}C{^{1}H} NMR Spectrum of **4ka** in $CDCl_3$ at 100 MHz



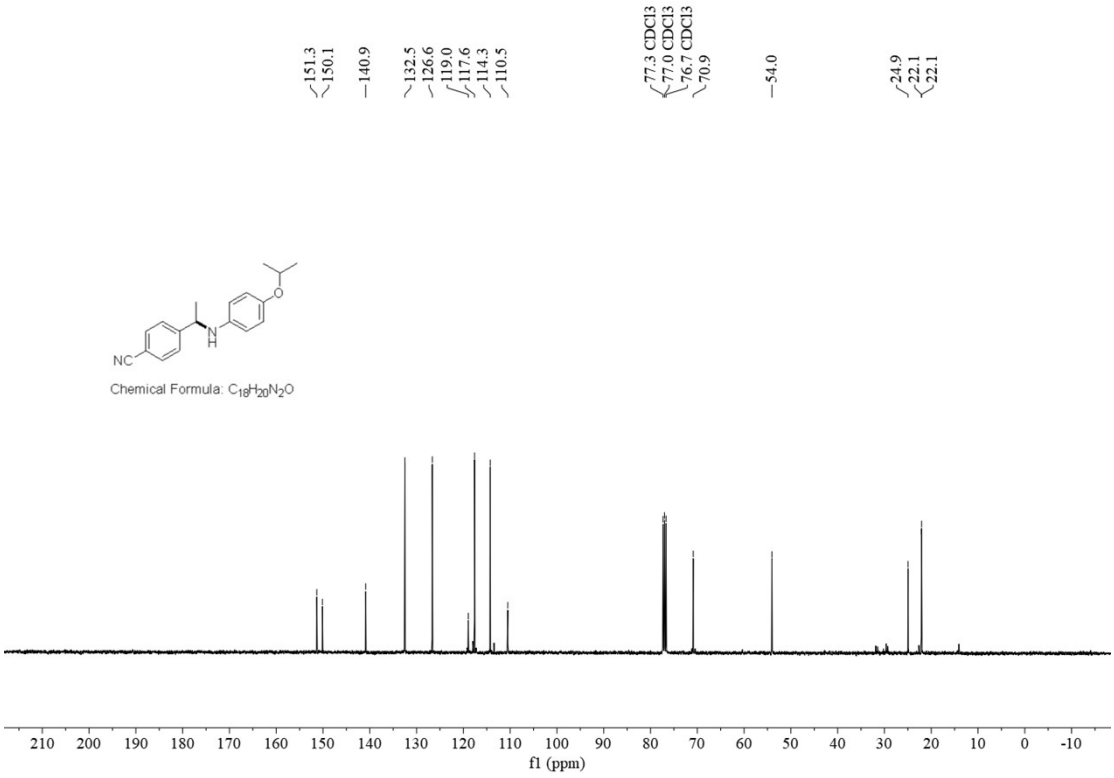
^{1}H NMR Spectrum of **4la** in $CDCl_3$ at 400 MHz



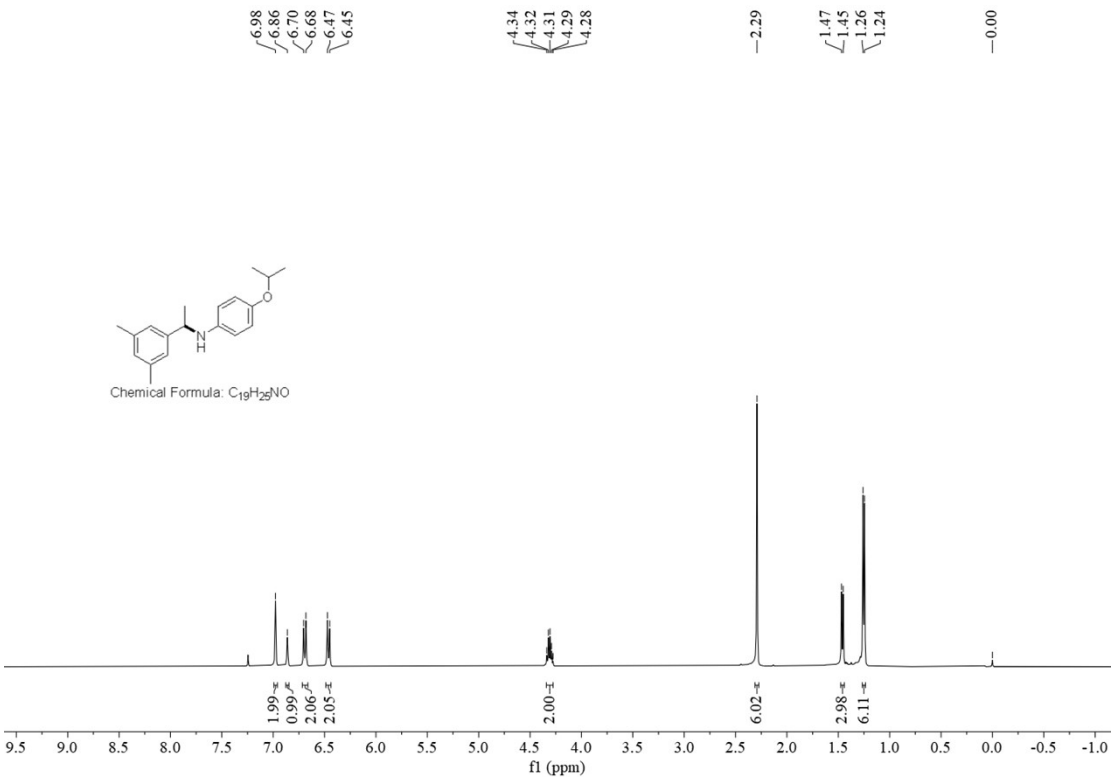
^{13}C{^{1}H} NMR Spectrum of **4la** in $CDCl_3$ at 100 MHz



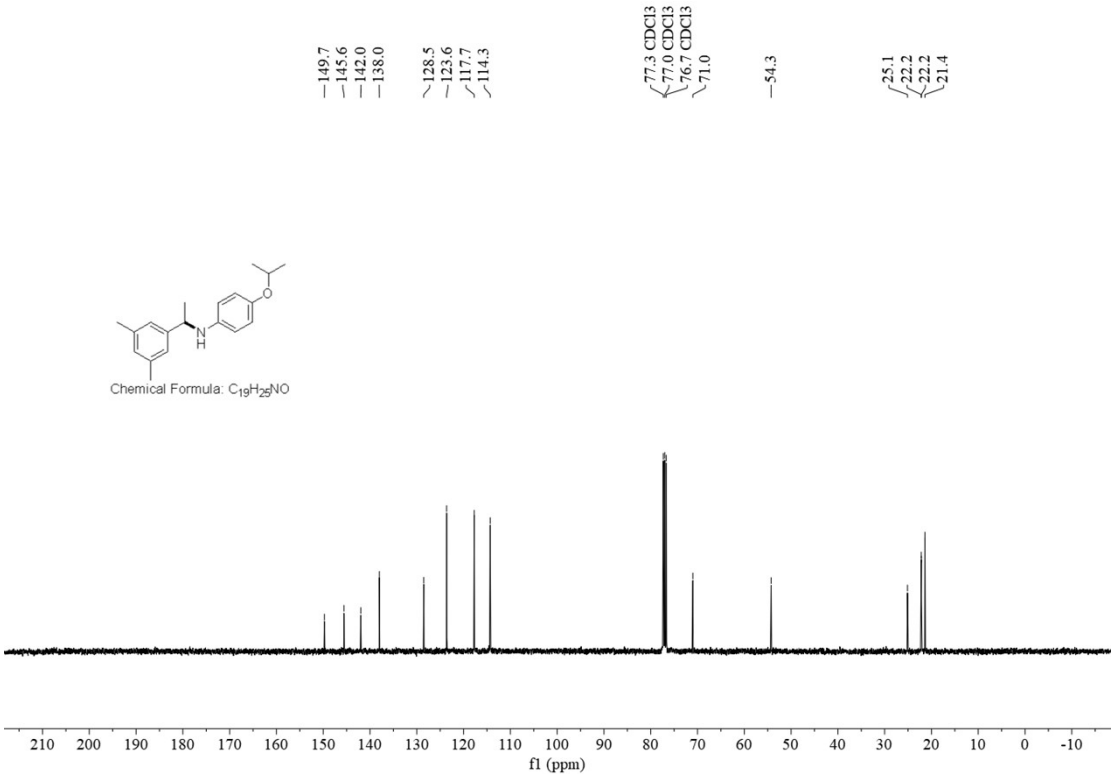
^{1}H NMR Spectrum of **4ma** in $CDCl_3$ at 400 MHz



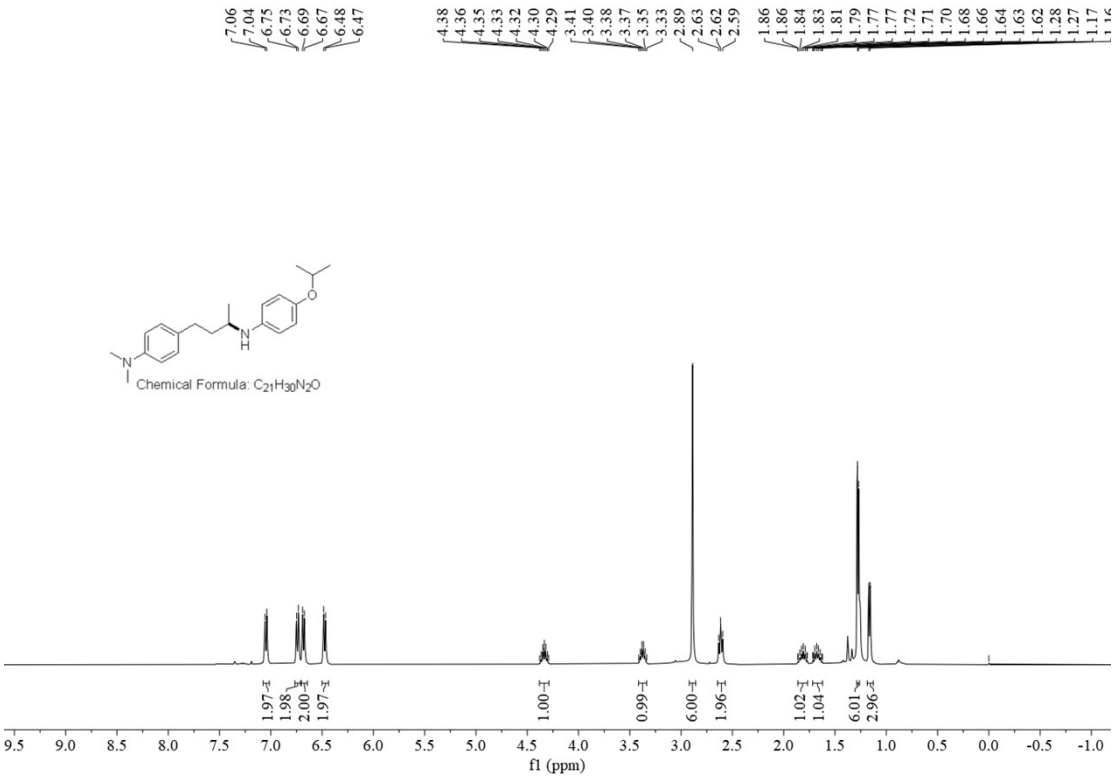
^{13}C{^{1}H} NMR Spectrum of **4ma** in $CDCl_3$ at 100 MHz



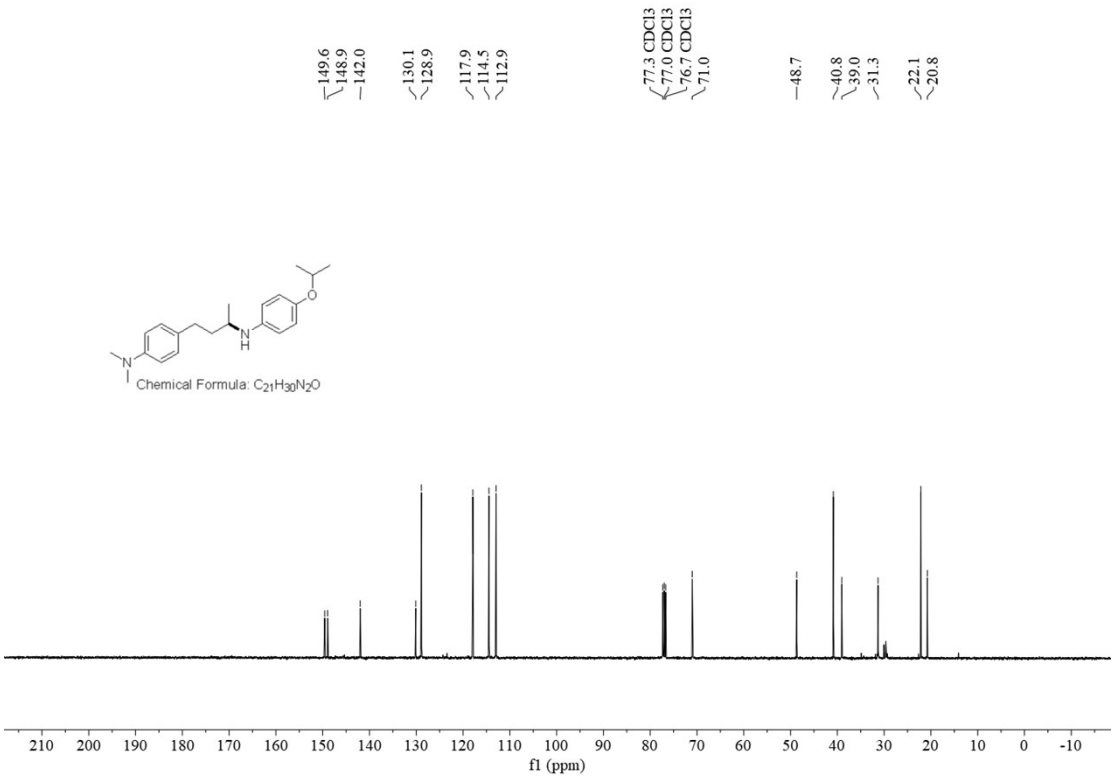
^{1}H NMR Spectrum of **4na** in $CDCl_3$ at 400 MHz



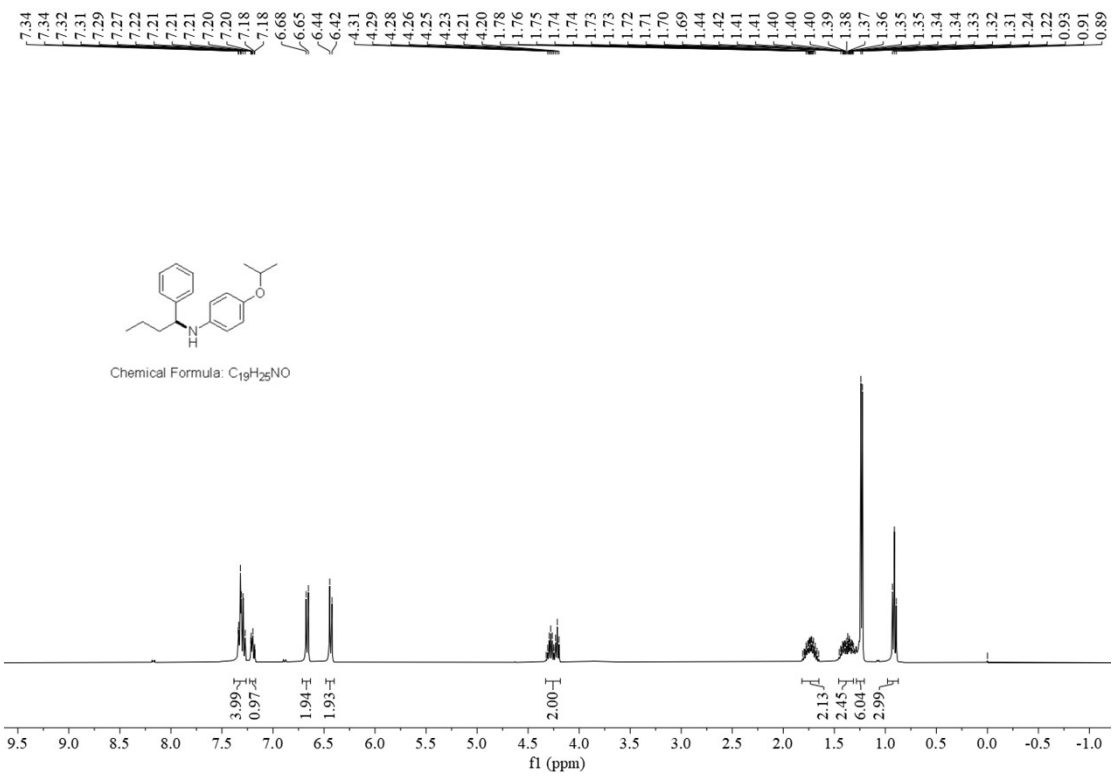
$^{13}C\{^{1}H\}$ NMR Spectrum of **4na** in $CDCl_3$ at 100 MHz



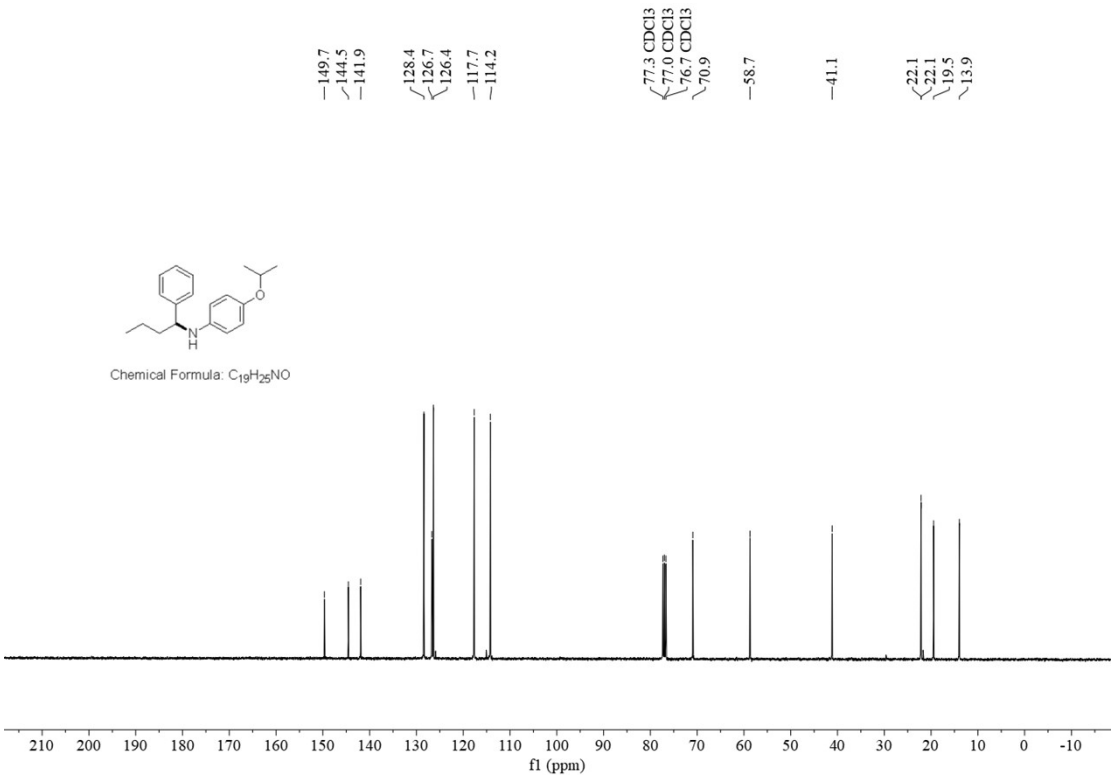
^{1}H NMR Spectrum of **4oa** in $CDCl_3$ at 400 MHz



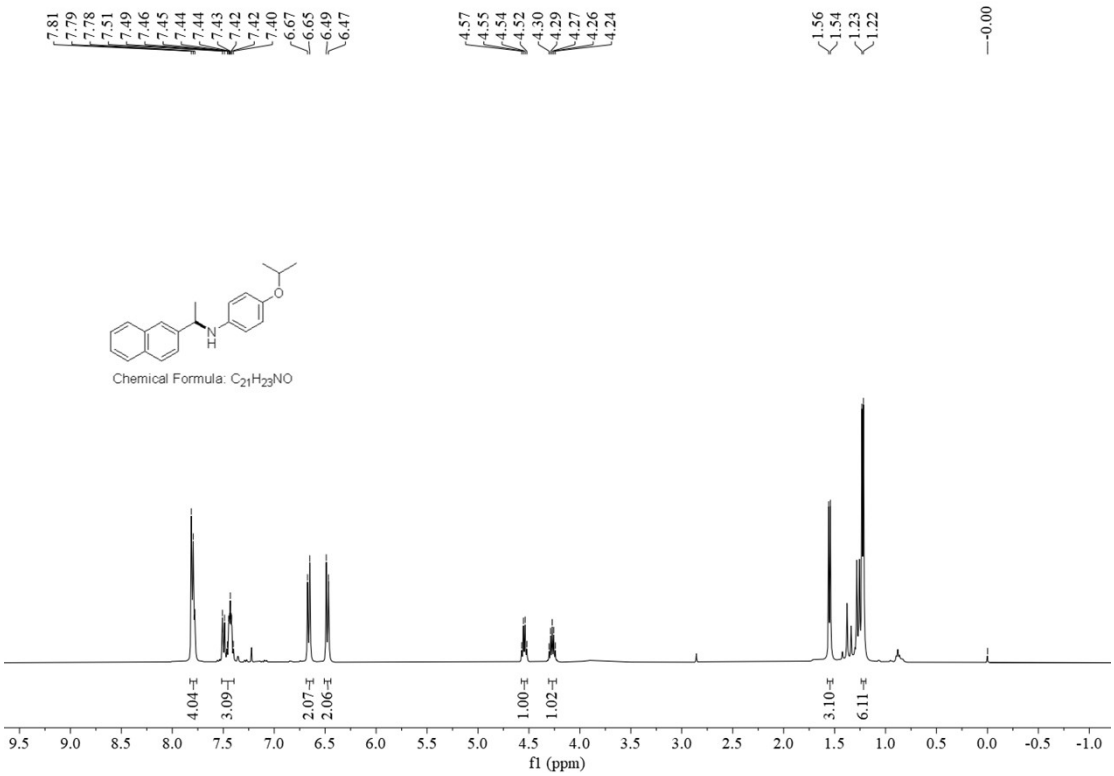
^{13}C{^{1}H} NMR Spectrum of **4oa** in $CDCl_3$ at 100 MHz



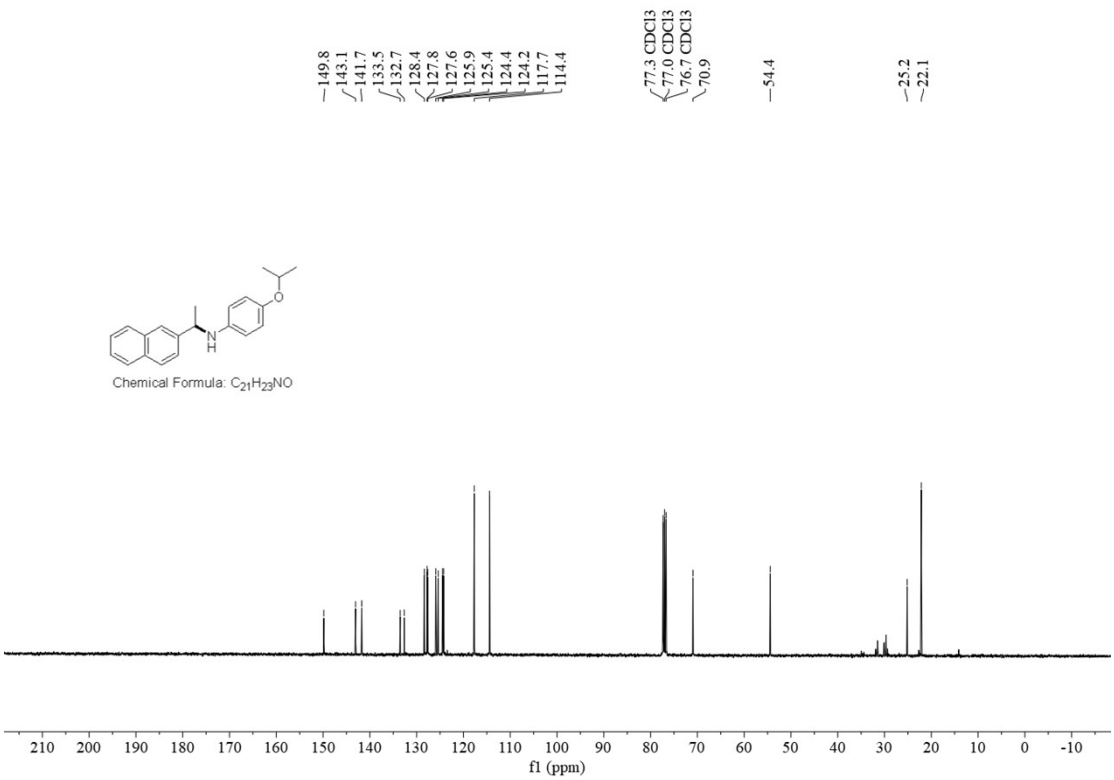
^{1}H NMR Spectrum of **4pa** in $CDCl_3$ at 400 MHz



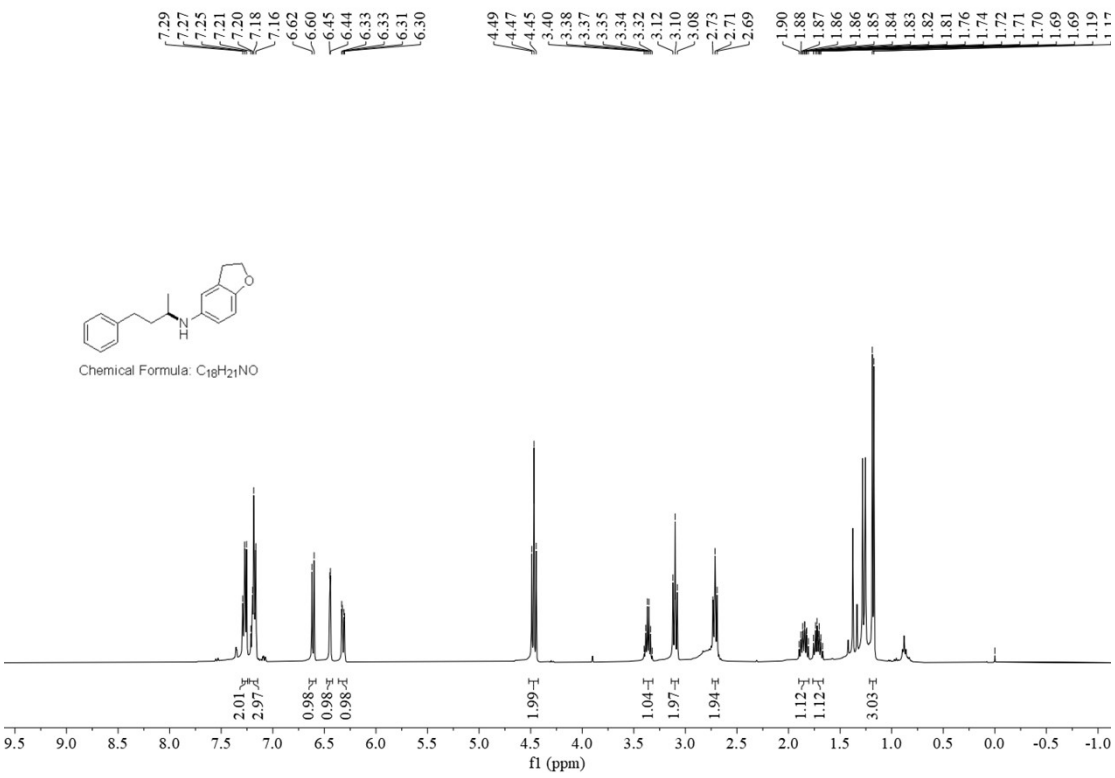
$^{13}C\{^{1}H\}$ NMR Spectrum of **4pa** in $CDCl_3$ at 100 MHz



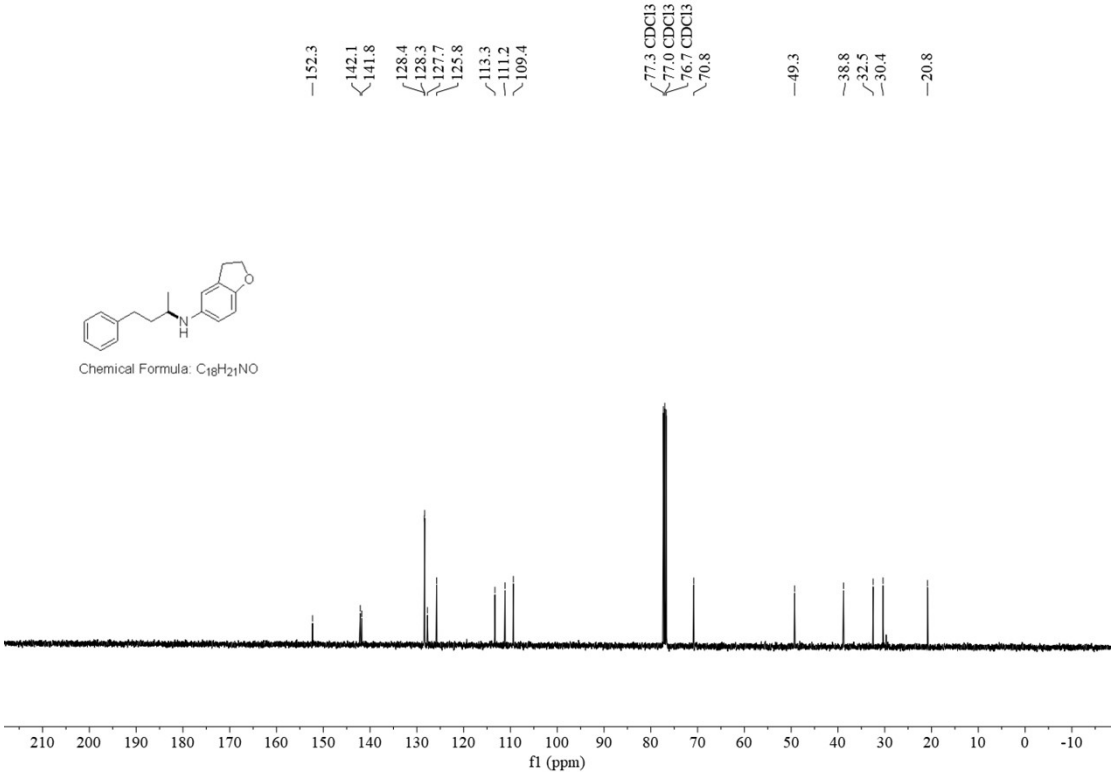
^{1}H NMR Spectrum of **4qa** in $CDCl_3$ at 400 MHz



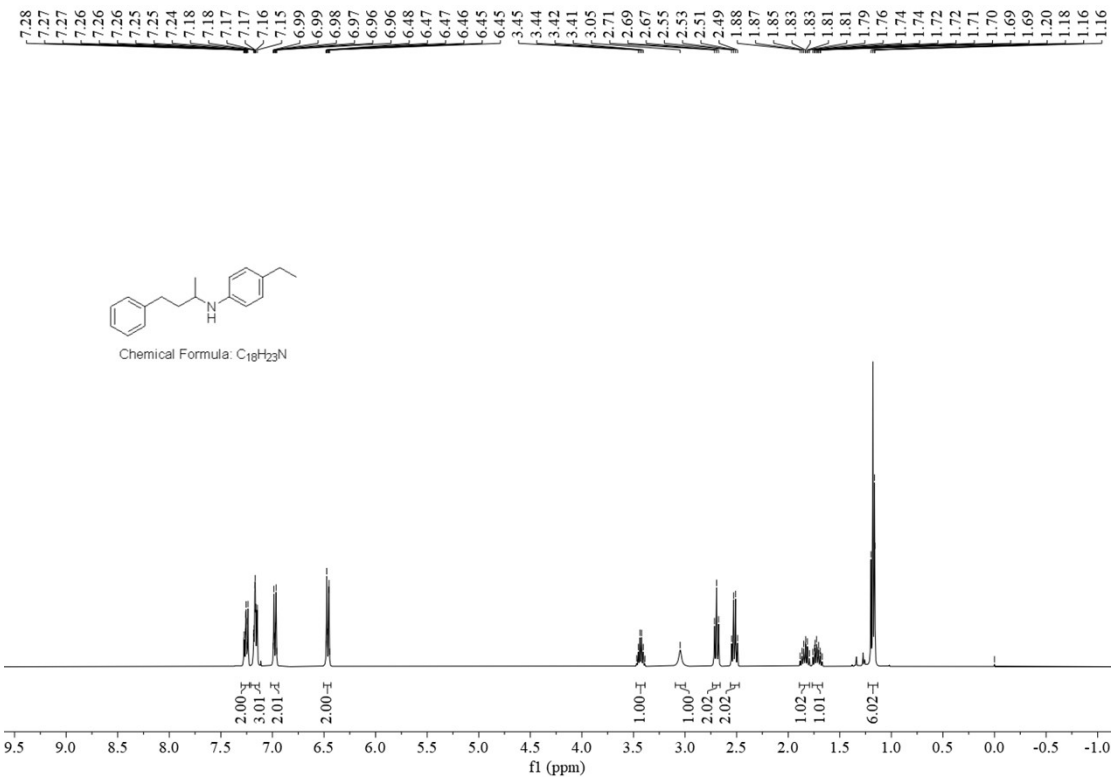
^{13}C{^{1}H} NMR Spectrum of **4qa** in $CDCl_3$ at 100 MHz



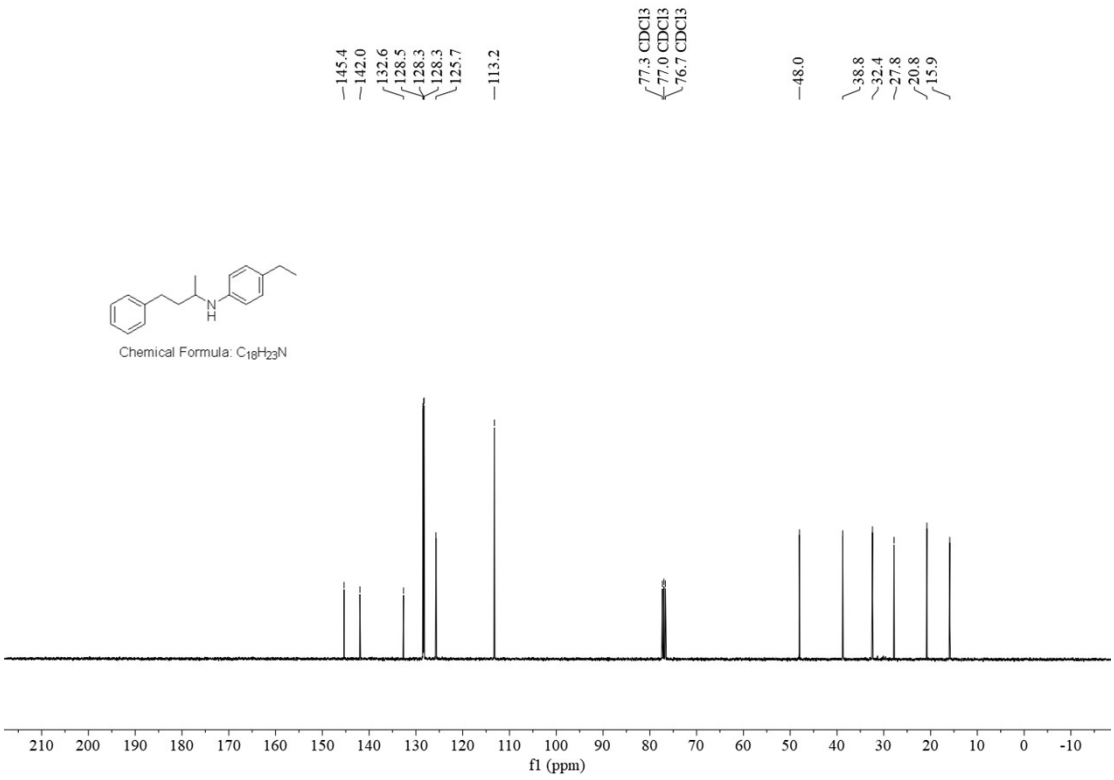
^{1}H NMR Spectrum of **4ac** in $CDCl_3$ at 400 MHz



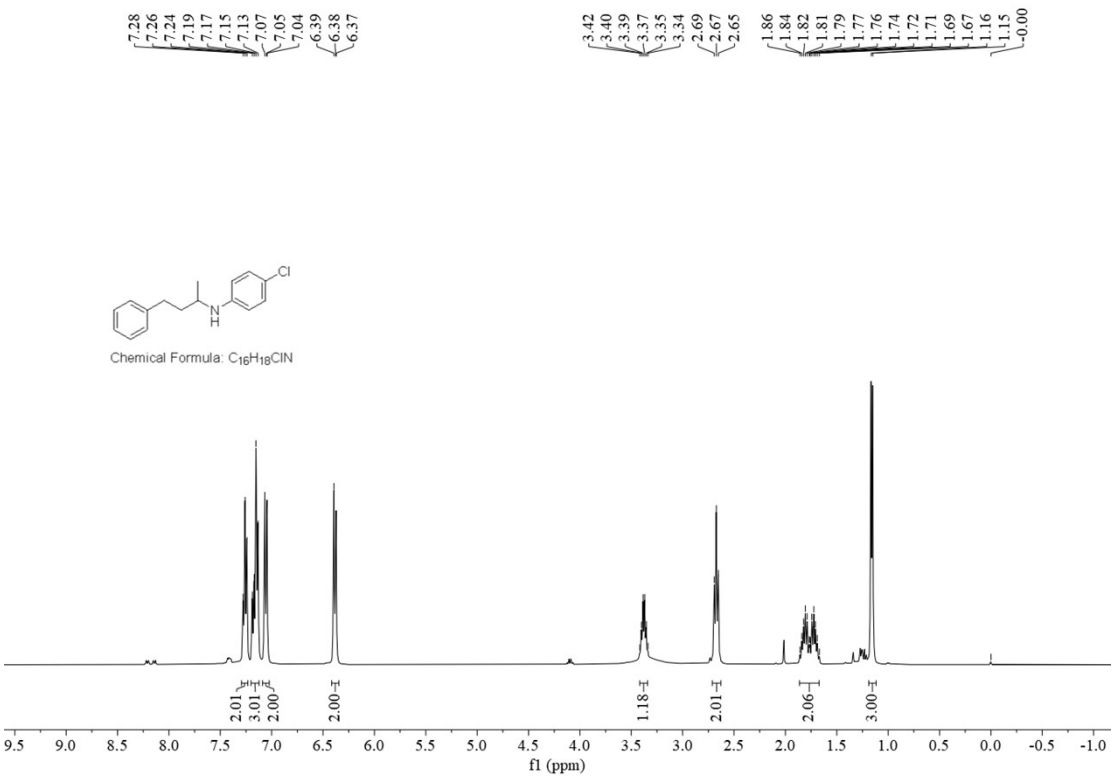
^{13}C{^{1}H} NMR Spectrum of **4ac** in $CDCl_3$ at 100 MHz



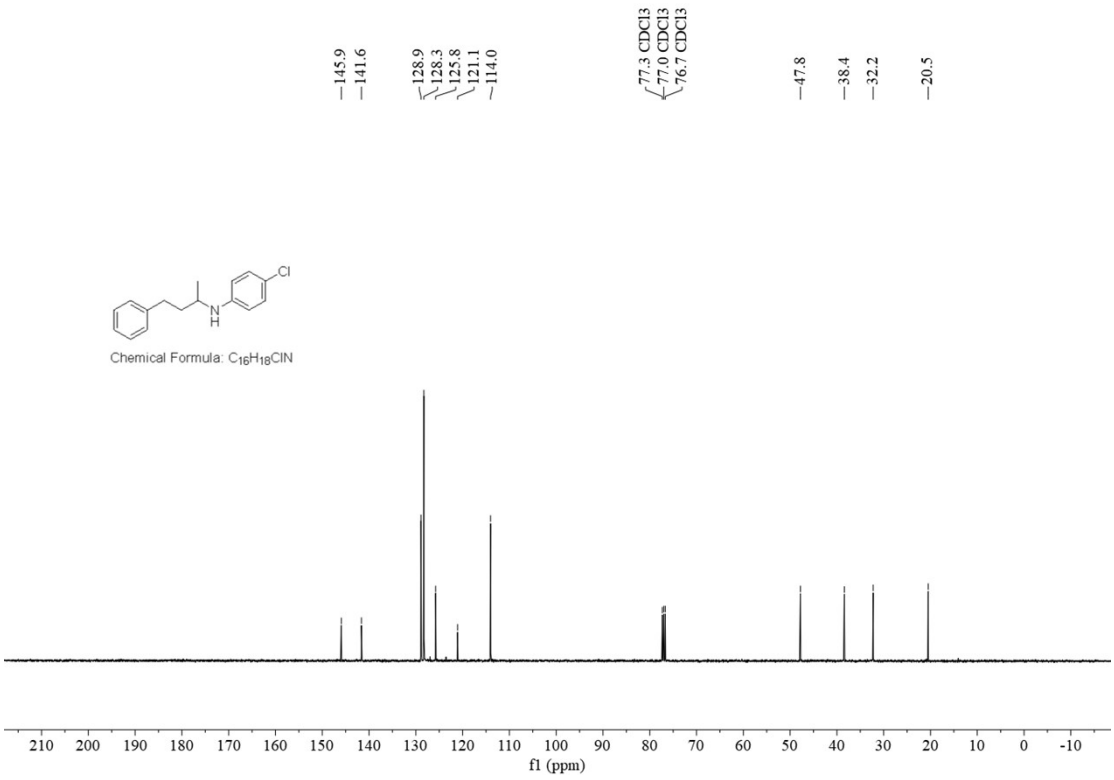
^{1}H NMR Spectrum of **4ad** in $CDCl_3$ at 400 MHz



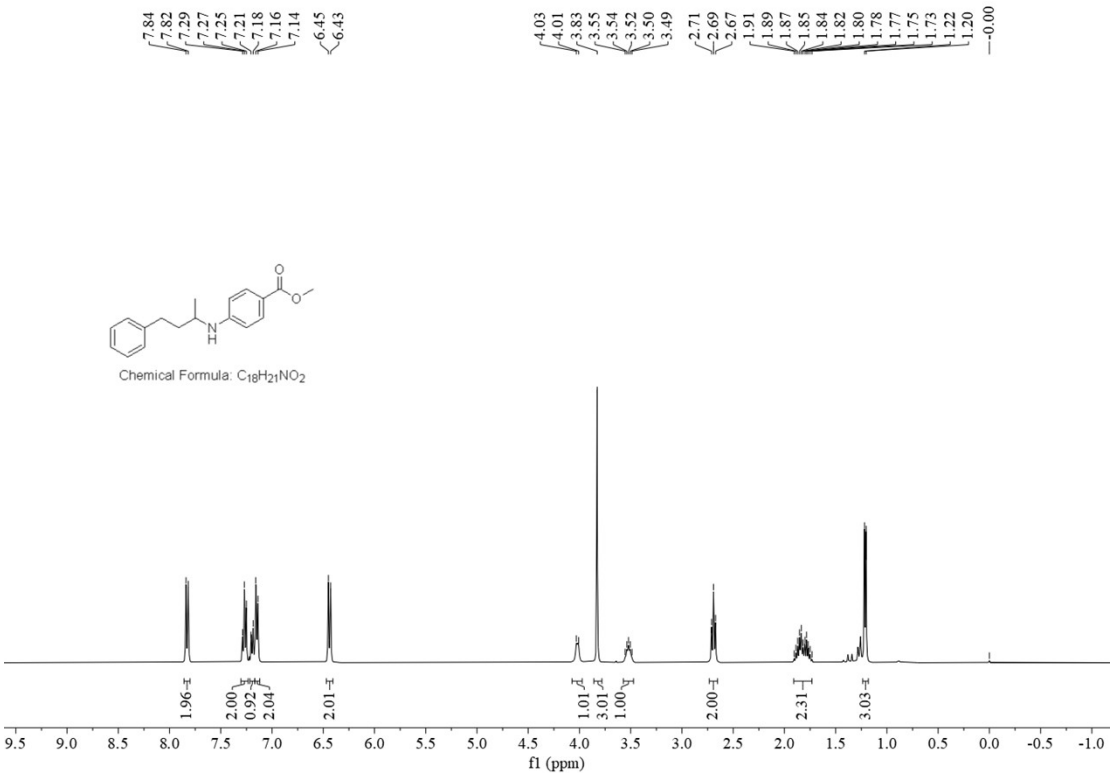
^{13}C{^{1}H} NMR Spectrum of **4ad** in $CDCl_3$ at 100 MHz



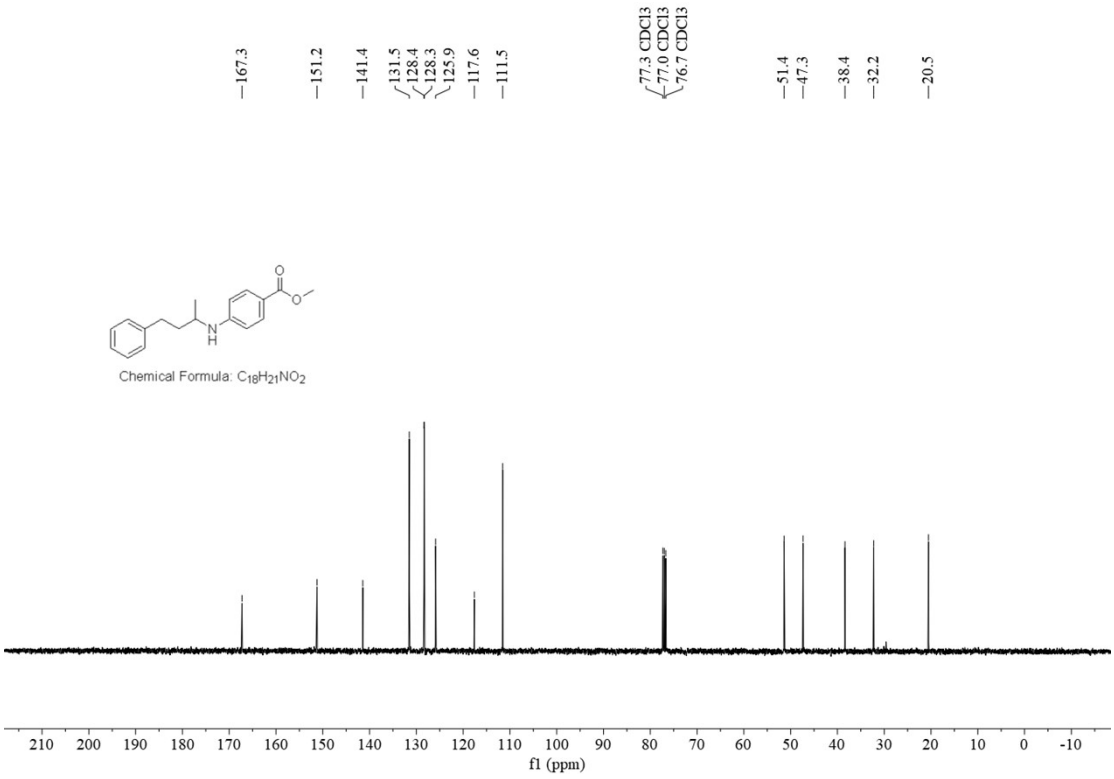
^{1}H NMR Spectrum of **4ae** in $CDCl_3$ at 400 MHz



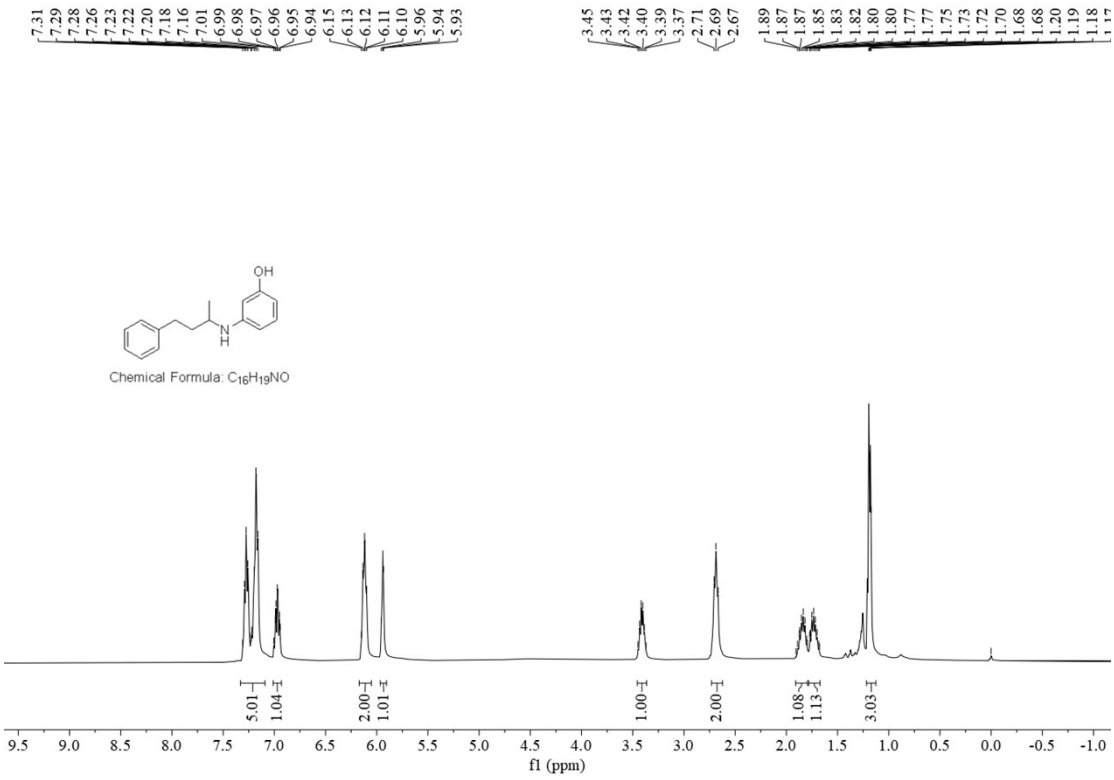
^{13}C{^{1}H} NMR Spectrum of **4ae** in $CDCl_3$ at 100 MHz



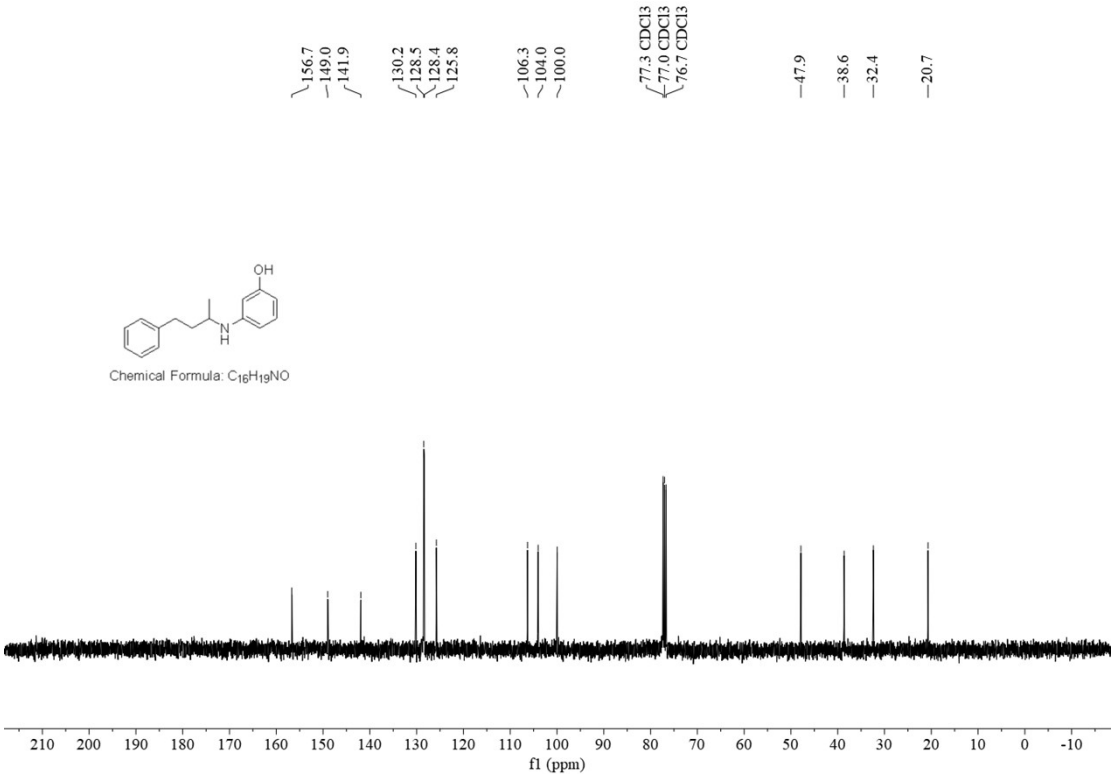
^{1}H NMR Spectrum of **4af** in $CDCl_3$ at 400 MHz



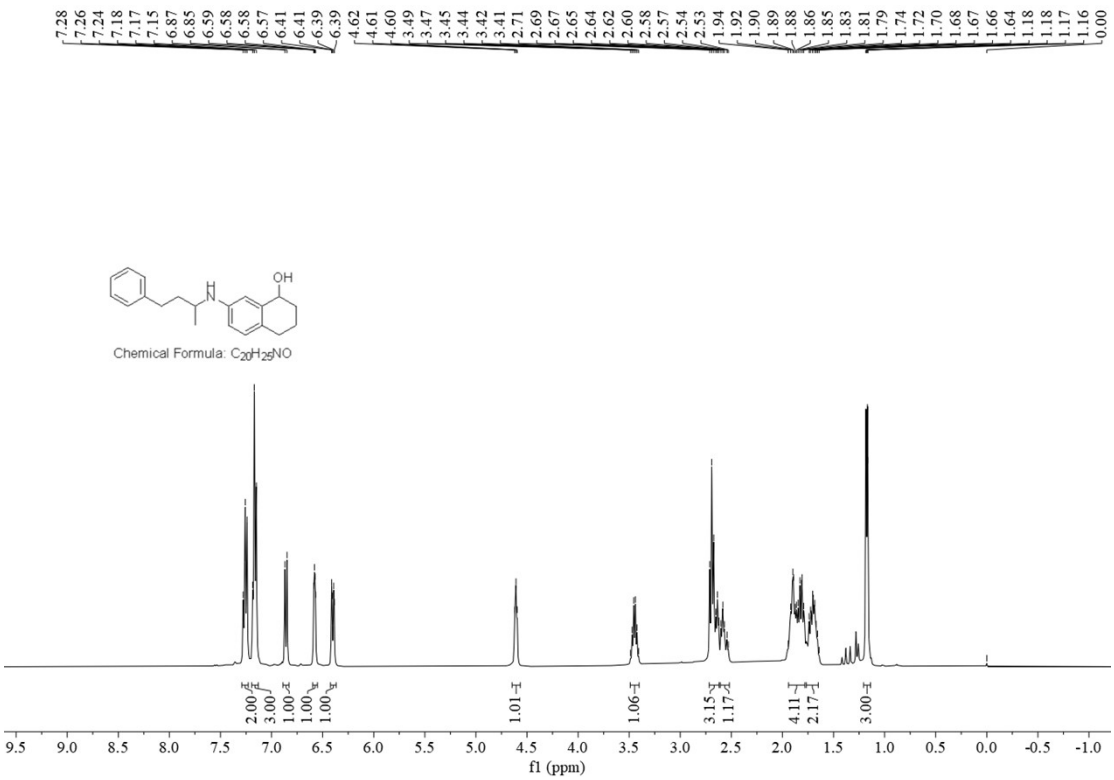
^{13}C{^{1}H} NMR Spectrum of **4af** in $CDCl_3$ at 100 MHz



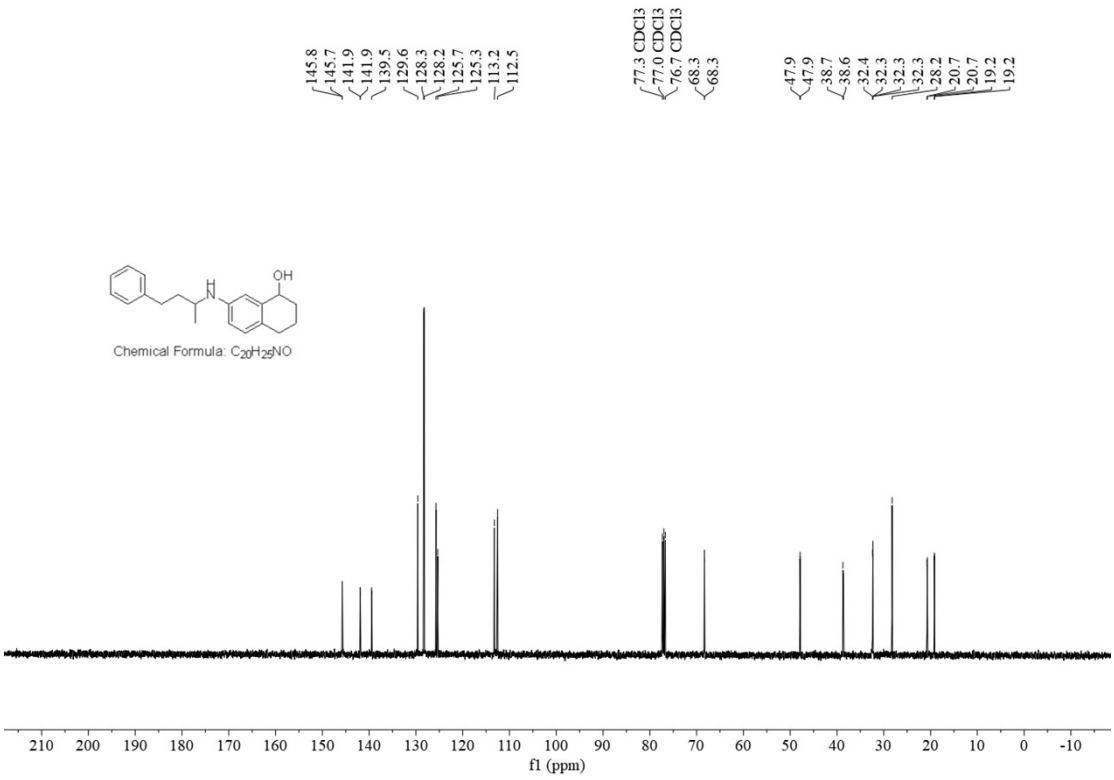
^{1}H NMR Spectrum of **4ag** in $CDCl_3$ at 400 MHz



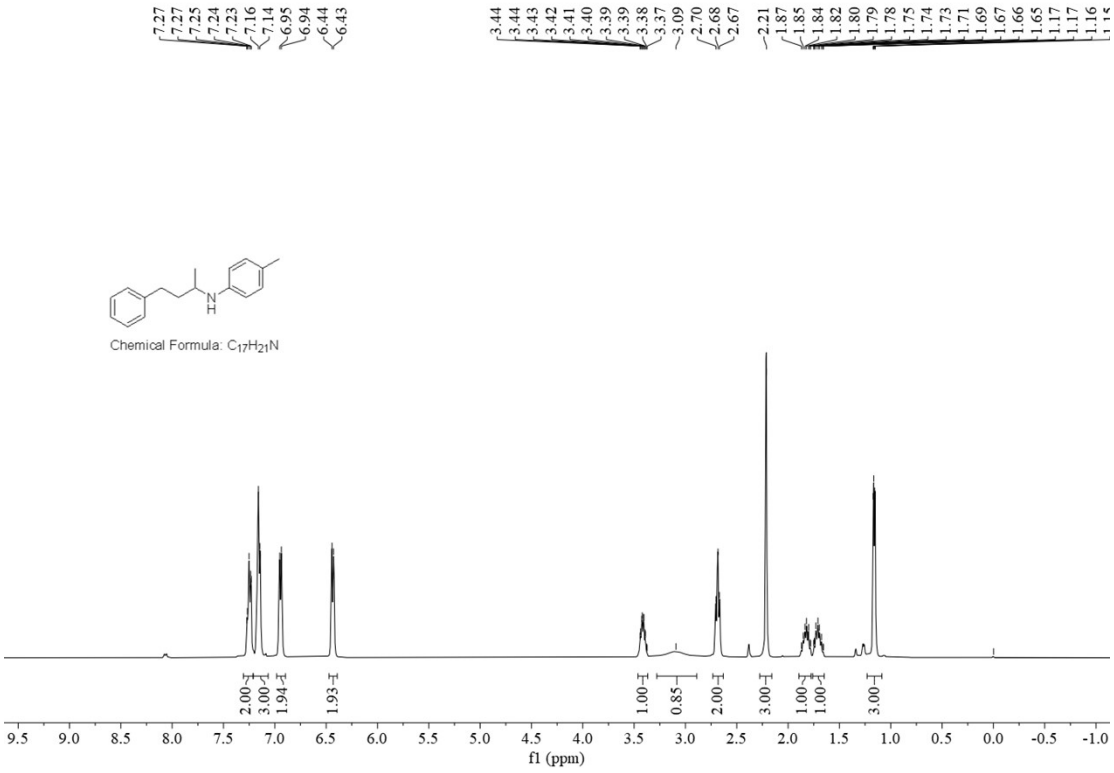
$^{13}C\{^{1}H\}$ NMR Spectrum of **4ag** in $CDCl_3$ at 100 MHz



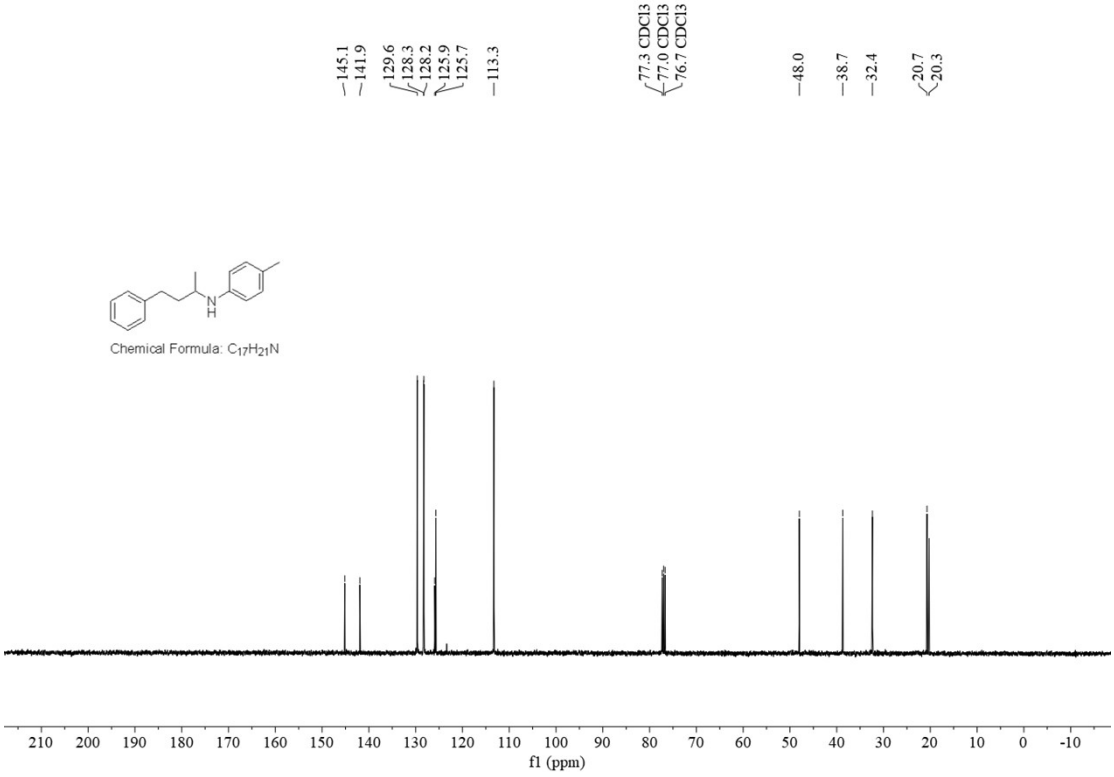
^{1}H NMR Spectrum of **4ah** in $CDCl_3$ at 400 MHz



$^{13}C\{^{1}H\}$ NMR Spectrum of **4ah** in $CDCl_3$ at 100 MHz



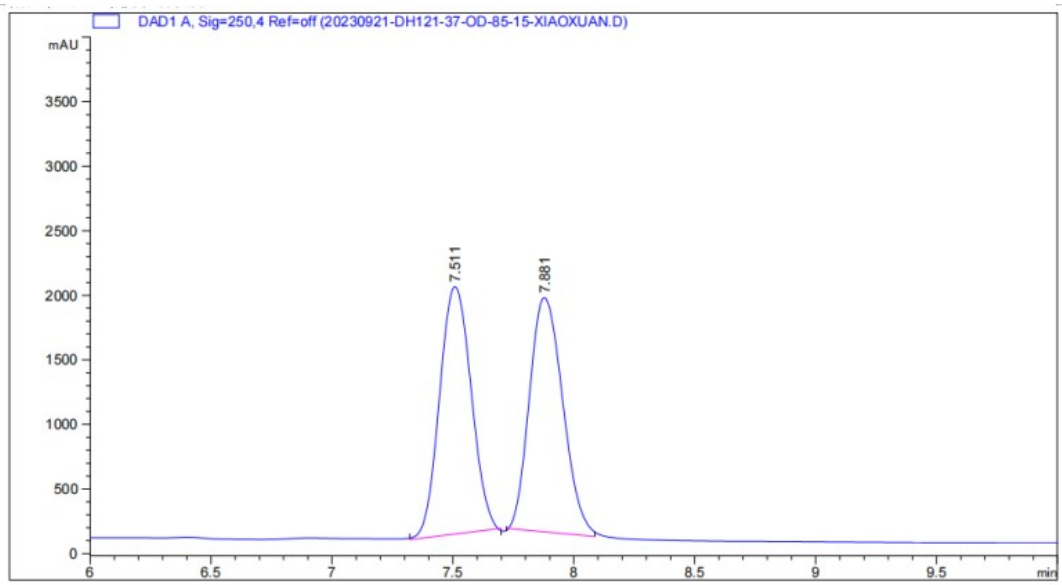
^{1}H NMR Spectrum of **4ai** in $CDCl_3$ at 400 MHz



^{13}C{^{1}H} NMR Spectrum of **4ai** in $CDCl_3$ at 100 MHz

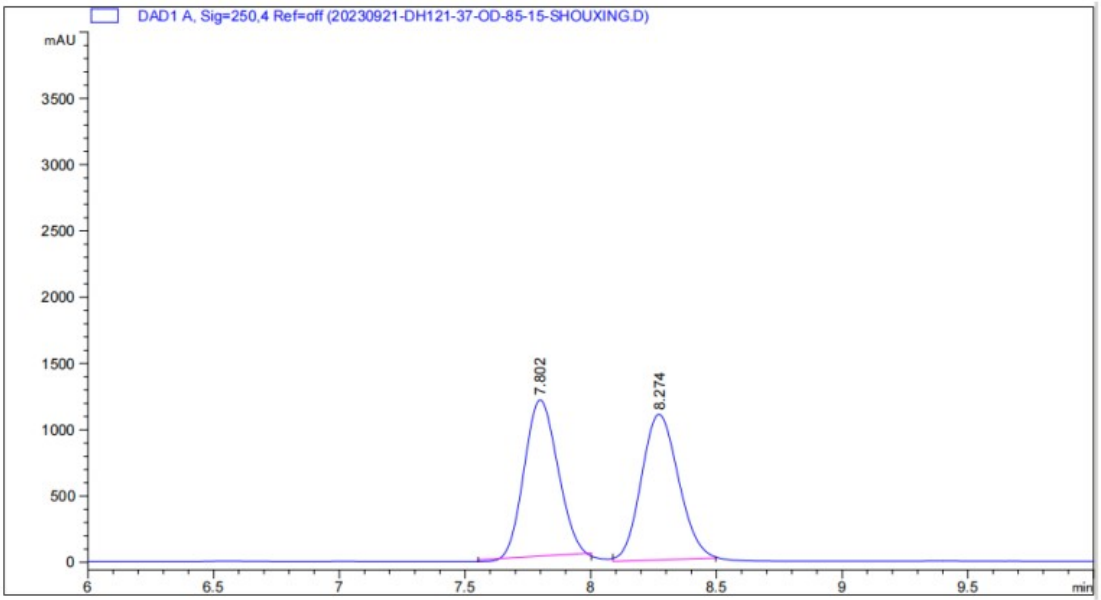
J. HPLC spectra

Racemic product of 4-isopropoxy-*N*-(4-phenylbutan-2-yl)aniline (4aa)



Peak #	RetTime [min]	Type	Width [min]	Area [mAu*s]	Height [mAu]	Area %
1	7.511	MM R	0.1509	1.73659e4	1918.45862	49.9851
2	7.881	MM R	0.1595	1.73762e4	1816.04834	50.0149

Chiral product of 4-isopropoxy-*N*-(4-phenylbutan-2-yl)aniline (4aa)



Peak #	RetTime [min]	Type	Width [min]	Area [mAu*s]	Height [mAu]	Area %
1	7.802	MM R	0.1538	1.08774e4	1178.90771	49.0168
2	8.274	MM R	0.1715	1.13137e4	1099.60254	50.9832