Supporting Information

Ruthenium-Catalyzed Synthesis of Indole Derivatives From N-Aryl-2-aminopyridines and *alpha*-Carbonyl Sulfoxonium Ylides

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List of the Contents General methods

General methods

Commercially available reagents were used without additional purification, unless otherwise stated. Nuclear magnetic resonance spectra (^{1}H and ^{13}C NMR) were recorded on a Bruker Unity 300 MHz spectrometer for $CDCl_3$ solutions and chemical shifts are reported as parts per million (ppm) relative to, respectively, residual $CHCl_3$ δH (7.24 ppm) and $CDCl_3$ δC (77.23 ppm) as internal standards. Resonance patterns are reported with the notations s (singlet), d (doublet), t (triplet), q (quartet), and m (multiplet). In addition, the notation br is used to indicate a broad signal. Coupling constants (J) are reported in hertz (Hz).

General procedure for the synthesis of pyrimidyl arylamines: [1-3]

To an oven-dried flask charged with aniline (977.8 mg, 10.5 mmol, 150 mol %), 2-chloropyrimidine (801.7 mg, 7.0 mmol, 100 mol %) and acetic acid (7 mL) in 1,4-dioxane (19 mL) was added. The reaction mixture was stirred at 110 °C for 24 h and monitored by TLC. Upon completion, the mixture was extracted with CH_2Cl_2 (3 × 20 mL) and washed with brine. The organic layer was dried over Mg_2SO_4 and concentrated in vacuo. The residue was purified by flash column chromatography (n-hexanes/EtOAc) to give N-phenylpyrimidin-2-amine **1a** (990.6 mg) in 82% yield.

General procedure for the synthesis of pyridinyl arylamines:[1-3]

To an oven-dried flask charged with aniline (1.4 g, 15 mmol, 100 mol %), 2-bromopyridine (2.4 g, 15 mmol, 100 mol %) wad added. The reaction mixture was stirred at 160 °C for 7 h and monitored by TLC. Upon completion, saturated $NaHCO_3$ was added and the mixture was extracted with EtOAc (3 × 15 mL). The combined organic phase was washed with brine and dried over Mg_2SO_4. The solid was filtered off and the filtrate was evaporated in vacuum. The crude product was purified by flash column chromatography (n-hexanes/EtOAc) to give N-phenylpyridin-2- amine **1a** (2.44 g) in 95% yield.

General procedure for the synthesis of sulfoxonium ylides[4]

In a 250 mL flame-dried round bottom flask attached to a reflux condenser, under argon atmosphere, 6.0 g of potassium tert-butanolate (54.4 mmol, 4.0 equiv) and 60.0 mL of anhydrous THF was added. Then, 8.9 g of trimethylsulfoxonium iodide (40.8 mmol, 3.0 equiv) was added in one portion. The suspension was heated at reflux and maintained for 2 hours. After this time, the mixture was cooled to 0 °C, followed by slow addition of a 1.0 M solution of the benzoyl chlorides (13.6 mmol, 1.0 equiv) in anhydrous THF. The reaction mixture was allowed to warm to room temperature and stirred for additional 3 hours. Next, the solvent was removed on a rotary evaporator, 15.0 mL of water was added and the product extracted with EtOAc (3 ×50 mL). The organic phase was washed with saturated NaCl solution (2 ×10 mL) and dried over with Na_2SO_4. The crude product was purified by recrystallization with EtOAc.

References:

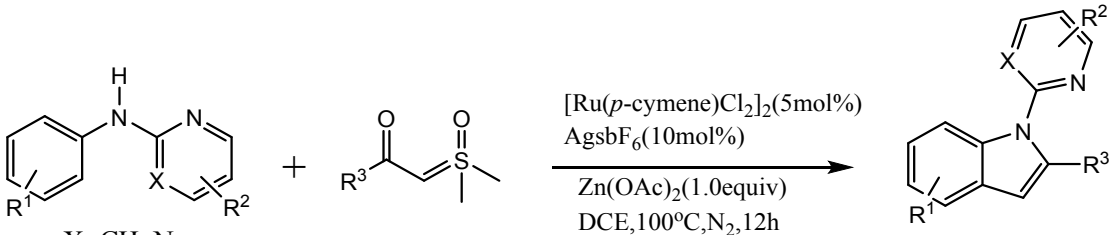
[1] X. Huang, S. Xu, Q. Tan, M. Gao, M. Lia and B. Xu, *Chem. Commun.*, 2014, **50**, 1465.

[2] L. Ackermann and A. V. Lygin, *Org. Lett.*, 2012, **14**, 764.

[3] G. Qian, B. Liu, Q. Tan, S. Zhang and B. Xu, *Eur. J. Org. Chem.*, 2014, 4837.

[4] Barday, M.; Janot, C.; Halcovitch, N. R.; Muir, J.; Aïssa, C. *Angew. Chem., Int. Ed*. 2017, **56**, 13117.

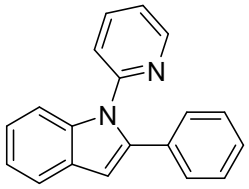
Typical procedure for the for the Ru-Catalyzed Cyclization between Pyridin-2-amine and sulfoxonium ylides



A pressure tube was charged with [Ru(p-cymene)Cl_2]$_2$(8mg, 5mol%), $AgSbF_6$(7mg, 10mol%), $Zn(OAc)_2$(38mg, 1equiv) additive, pyridin-2-amine (**1**, 0.2 mmol), and dimethyloxosulfonium benzoylmethylide (**2**, 0.3mmol), DCE (2 mL) was then added and the mixture was stirred at 100 °C for 12h. Then the solvent was evaporated and the crude product was purified by column chromatography to afford the desired compound **3**.

Characterization Data for the all Products

2-phenyl-1-(pyridin-2-yl)-1H-indole(3aa)

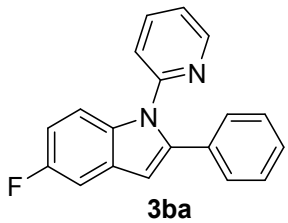


3aa

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3aa** as a white solid. M.p. 132-134 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.63 (dd, *J* = 4.9, 1.8 Hz, 1H), 7.67 (m, 2H), 7.60 (m, 1H), 7.29 – 7.18 (m, 8H), 6.88 (d, *J* = 8.0 Hz, 1H), 6.80 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 152.06, 149.16, 139.94, 138.48, 137.72, 132.67, 128.72, 128.29, 127.40, 122.99, 121.99, 121.45, 120.54, 111.49, 105.59. **HRMS [ESI, (M+H)$^+$]:** $C_{19}H_{14}N_2H^+$, Calcd: 271.1230, Found: 271.1231.

5-fluoro-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ba)

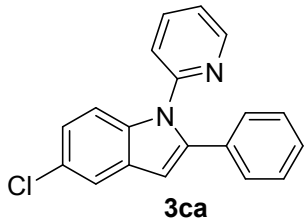


3ba

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ba** as a coloress liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.65 (m, 1H), 7.67 – 7.58 (m, 2H), 7.31 – 7.27 (m, 5H), 7.26 – 7.20 (m, 1H), 7.13 (dd, *J* = 10.4, 5.7 Hz, 1H), 6.97 (m, 1H), 6.84 (m, 1H), 6.76 (d, *J* = 0.7 Hz, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =160.18, 157.05, 151.74, 149.05, 141.32, 137.69, 134.86, 132.21, 128.62, 128.25, 127.59, 121.71 (d, *J* = 12.6 Hz), 112.37 (d, *J* = 9.4 Hz), 111.11, 110.77, 105.25 (dd, *J* = 14.0, 9.6 Hz). **HRMS [ESI, (M+H)$^+$]:** $C_{19}H_{13}FN_2H^+$, Calcd: 289.1136, Found: 289.1137.

5-chloro-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ca)



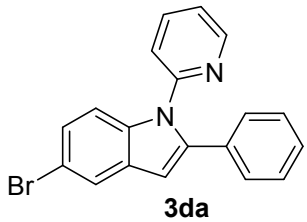
3ca

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ca** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.63 (m, 1H), 7.63 – 7.56 (m, 3H), 7.27 – 7.19 (m, 6H), 7.15 (dd, *J* = 8.7, 2.2 Hz, 1H), 6.83 (m, 1H), 6.72 (d, *J* = 0.7 Hz, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.93, 149.48, 141.47, 138.13, 137.07, 132.42, 129.98, 129.02, 128.65, 128.05, 127.07, 123.38, 122.17, 120.14, 112.98, 105.13.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}ClN_2H^+$, Calcd: 305.0840, Found: 305.0842.

5-bromo-2-phenyl-1-(pyridin-2-yl)-1H-indole(3da)



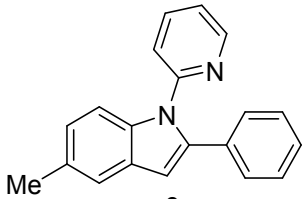
3da

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3da** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.64 (m, 1H), 7.81 – 7.77 (m, 1H), 7.64 – 7.55 (m, 2H), 7.32 – 7.21 (m, 7H), 6.85 (m, 1H), 6.73 (d, *J* = 0.5 Hz, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.88, 149.49, 141.34, 138.16, 137.38, 132.36, 130.62, 129.04, 128.67, 128.08, 125.96, 123.24, 122.20, 114.70, 113.42, 105.00.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}BrN_2H^+$, Calcd: 349.0335, Found: 349.0336.

5-methyl-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ea)



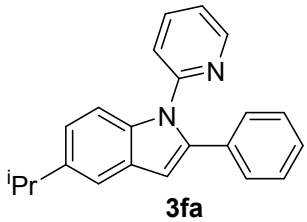
3ea

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ea** as a colorless liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.68 – 8.62 (m, 1H), 7.62 (m, 2H), 7.47 (s, 1H), 7.31 – 7.19 (m, 6H), 7.07 (d, *J* = 8.4 Hz, 1H), 6.89 (d, *J* = 8.0 Hz, 1H), 6.76 (s, 1H), 2.49 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =152.19 (s), 149.07 (s), 139.91, 137.62, 136.91, 132.79, 130.59, 128.91, 128.62, 128.23, 127.26, 124.52, 121.79, 121.35, 120.21, 111.18, 105.33, 21.38.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}N_2H^+$, Calcd: 285.1386, Found: 285.1387.

5-isopropyl-2-phenyl-1-(pyridin-2-yl)-1H-indole(3fa)



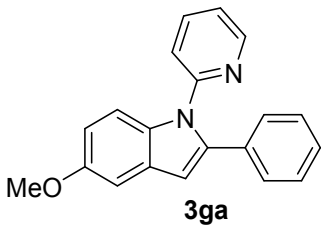
3fa

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3fa** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.62 (dd, *J* = 4.9, 1.4 Hz, 1H), 7.65 – 7.54 (m, 2H), 7.52 (d, *J* = 1.3 Hz, 1H), 7.29 – 7.11 (m, 7H), 6.87 (d, *J* = 8.1 Hz, 1H), 6.76 (s, 1H), 3.03 (m, 1H), 1.33 (d, *J* = 6.9 Hz, 6H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 152.11, 149.02, 142.02, 139.90, 137.51, 137.00, 132.78, 128.63, 128.16, 127.19, 122.16, 121.68, 121.26, 117.34, 111.23, 105.47, 34.05, 24.47.

HRMS [ESI, (M+H)$^+$]: $C_{22}H_{20}N_2H^+$, Calcd: 313.1699, Found: 313.1697.

5-methoxy-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ga)



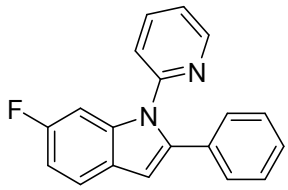
3ga

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ga** as a white solid. M.p. 91-92 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.61 (m, 1H), 7.65 – 7.53 (m, 2H), 7.29 – 7.22 (m, 5H), 7.18 (m, 1H), 7.12 (d, *J* = 2.4 Hz, 1H), 6.90 – 6.79 (m, 2H), 6.73 (d, *J* = 0.7 Hz, 1H), 3.87 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 155.44, 152.40, 149.36, 140.64, 137.95, 133.94, 132.98, 129.46, 128.93, 128.58, 127.67, 122.04, 121.67, 113.13, 112.76, 105.79, 102.48, 56.05.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}N_2OH^+$, Calcd: 301.1336, Found: 301.1337.

6-fluoro-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ha)



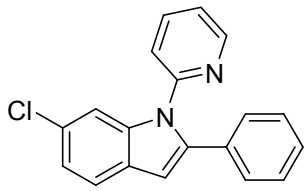
3ha

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ha** as a colorless liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.65 (m, 1H), 7.67 – 7.60 (m, 1H), 7.48 – 7.43 (m, 1H), 7.29 – 7.22 (m, 6H), 7.18 – 7.10 (m, 1H), 6.92 – 6.85 (m, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 157.98, 154.71, 152.03, 149.53, 141.02 (d, *J* = 10.6 Hz), 140.27, 138.17, 132.41, 129.05, 128.65, 128.00, 123.65 (d, *J* = 7.6 Hz), 122.30 (d, *J* = 1.8 Hz), 118.22, 117.92, 107.89 (d, *J* = 3.7 Hz), 106.38 (d, *J* = 18.7 Hz), 101.26.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}FN_2H^+$, Calcd: 289.1136, Found: 289.1139.

6-chloro-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ia)



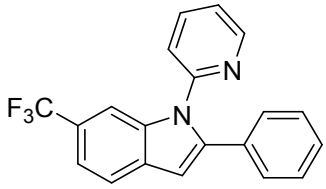
3ia

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ia** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.65 (dd, *J* = 4.9, 1.1 Hz, 1H), 7.70 (d, *J* = 1.3 Hz, 1H), 7.61 (m, 2H), 7.29 – 7.21 (m, 6H), 7.16 (dd, *J* = 8.4, 1.9 Hz, 1H), 6.84 (d, *J* = 8.0 Hz, 1H), 6.76 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.51, 149.24, 140.58, 138.68, 137.86, 132.14, 128.64, 128.33, 127.64, 127.15, 122.17, 121.67, 121.28, 111.66, 105.30.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}ClN_2H^+$, Calcd: 305.0840, Found: 305.0843.

2-phenyl-1-(pyridin-2-yl)-6-(trifluoromethyl)-1H-indole(3ja)



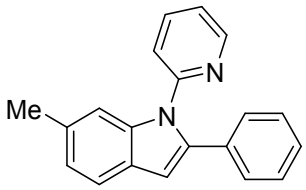
3ja

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ja** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.67 (d, *J* = 4.8 Hz, 1H), 7.96 (s, 1H), 7.73 (d, *J* = 8.3 Hz, 1H), 7.63 (m, 1H), 7.43 (d, *J* = 8.3 Hz, 1H), 7.28 (s, 6H), 6.88 – 6.80 (m, 2H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.24, 149.34, 142.48, 137.98, 137.24, 131.82, 130.93, 128.78, 128.38, 127.98, 122.04 (d, *J* = 14.6 Hz), 120.77, 117.90 (d, *J* = 3.4 Hz), 109.20 (d, *J* = 4.5 Hz), 105.14.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{13}F_3N_2H^+$, Calcd: 339.1104, Found: 339.1106.

6-methyl-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ka)



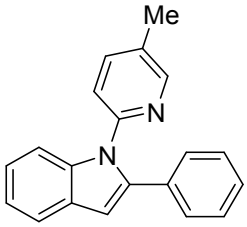
3ka

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ka** as a white solid. M.p. 147-149 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.66 (m, 1H), 7.65 – 7.47 (m, 3H), 7.29 – 7.20 (m, 6H), 7.07 – 7.00 (m, 1H), 6.90 – 6.84 (m, 1H), 6.76 (d, *J* = 0.8 Hz, 1H), 2.46 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =152.46, 149.39, 139.61, 139.18, 137.96, 133.16, 128.86, 128.51, 127.46, 126.77, 123.28, 122.32, 121.73, 120.43, 111.63, 105.79, 22.19.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}N_2H^+$, Calcd: 285.1386, Found: 285.1388.

1-(5-methylpyridin-2-yl)-2-phenyl-1H-indole(3la)



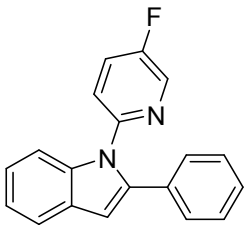
3la

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3la** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.44 (d, *J* = 2.2 Hz, 1H), 7.63 (m, 2H), 7.41 (dd, *J* = 8.1, 2.2 Hz, 1H), 7.30 – 7.16 (m, 7H), 6.79 (t, *J* = 4.0 Hz, 2H), 2.35 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =149.66, 149.29, 139.95, 138.45, 132.68, 131.29, 128.60, 128.20, 127.26, 122.77, 121.42, 121.07, 120.43, 111.35, 105.04, 17.93.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}N_2H^+$, Calcd: 285.1386, Found: 285.1385.

1-(5-fluoropyridin-2-yl)-2-phenyl-1H-indole(3ma)



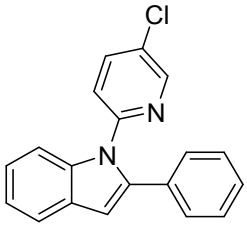
3ma

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ma** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.48 (d, *J* = 3.0 Hz, 1H), 7.67 (m, 1H), 7.62 – 7.57 (m, 1H), 7.38 – 7.20 (m, 8H), 6.87 (m, 1H), 6.80 (t, *J* = 1.0 Hz, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 159.68, 156.29, 148.36, 140.25, 138.79, 137.42, 137.08, 132.69, 129.22 – 128.55 (m), 127.84, 125.15 (d, *J* = 20.0 Hz), 123.59 – 122.99 (m), 121.72, 120.91, 111.50, 105.80.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}FN_2H^+$, Calcd: 289.1136, Found: 289.1138.

1-(5-chloropyridin-2-yl)-2-phenyl-1H-indole(3na)



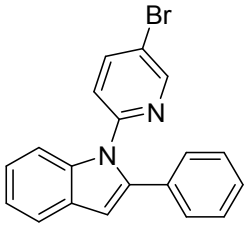
3na

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3na** as a colorless liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.57 (dd, *J* = 2.6, 0.6 Hz, 1H), 7.71 – 7.63 (m, 2H), 7.54 (dd, *J* = 8.6, 2.6 Hz, 1H), 7.30 – 7.20 (m, 7H), 6.81 – 6.75 (m, 2H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 150.57, 148.12, 140.05, 138.58, 137.73, 132.66, 129.72, 129.53, 128.62, 127.92, 123.53, 122.73, 121.92, 120.95, 111.77, 106.45.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}ClN_2H^+$, Calcd: 305.0840, Found: 305.0843.

1-(5-bromopyridin-2-yl)-2-phenyl-1H-indole(3oa)



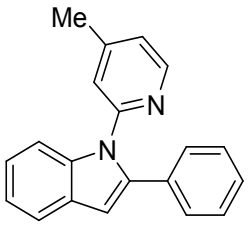
3oa

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3oa** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.68 – 8.64 (m, 1H), 7.72 – 7.62 (m, 3H), 7.32 – 7.19 (m, 8H), 6.79 (d, *J* = 0.8 Hz, 1H), 6.73 – 6.68 (m, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.00, 150.36, 140.53, 140.00, 138.53, 132.66, 128.93, 127.94, 123.57, 123.22, 121.96, 120.96, 118.05, 111.83, 106.58.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}BrN_2H^+$, Calcd: 349.0335, Found: 349.0334.

1-(4-methylpyridin-2-yl)-2-phenyl-1H-indole(3pa)



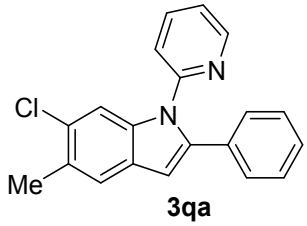
3pa

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3pa** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.45 (d, *J* = 5.1 Hz, 1H), 7.67 – 7.59 (m, 2H), 7.22 (m, 7H), 7.03 (d, *J* = 5.1 Hz, 1H), 6.83 – 6.72 (m, 2H), 2.21 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 152.03, 149.28, 148.80, 140.07, 138.59, 132.74, 128.73, 128.22, 127.32, 123.11, 122.53, 121.17, 120.52, 111.42, 105.25, 20.91.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}N_2H^+$, Calcd: 285.1386, Found: 285.1389.

6-chloro-5-methyl-2-phenyl-1-(pyridin-2-yl)-1H-indole(3qa)



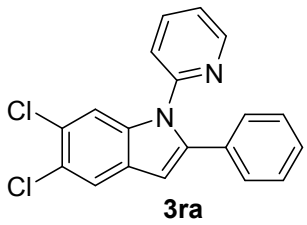
3qa

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3qa** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.63 (d, *J* = 3.8 Hz, 1H), 7.74 (s, 1H), 7.58 (m, 1H), 7.47 (s, 1H), 7.29 – 7.18 (m, 6H), 6.81 (d, *J* = 8.1 Hz, 1H), 6.69 (s, 1H), 2.46 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.72, 149.19, 140.42, 137.79, 137.40, 132.31, 129.58, 128.66, 128.33, 127.58, 121.62, 111.96, 105.06, 20.33.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{15}ClN_2H^+$, Calcd: 319.0997, Found: 319.0999.

5,6-dichloro-2-phenyl-1-(pyridin-2-yl)-1H-indole(3ra)



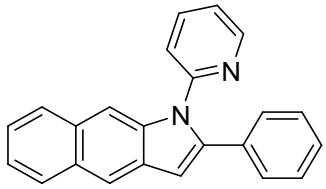
3ra

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ra** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.67 – 8.62 (m, 1H), 7.83 (s, 1H), 7.71 (s, 1H), 7.61 (m, 1H), 7.31 – 7.21 (m, 6H), 6.80 (d, *J* = 8.1 Hz, 1H), 6.69 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.27, 149.30, 141.77, 137.98, 137.10, 131.75, 128.72, 128.59, 127.87, 126.61, 125.14, 122.10, 121.76, 121.30, 113.37, 104.61.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{12}Cl_2N_2H^+$, Calcd: 339.0451, Found: 339.0450.

2-phenyl-1-(pyridin-2-yl)-1H-benzo[f]indole(3sa)



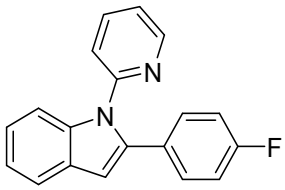
3sa

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3sa** as a yellow solid. M.p. 167-169 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.68 (d, *J* = 3.5 Hz, 1H), 8.15 (d, *J* = 17.5 Hz, 2H), 7.90 (m,2H), 7.61 (m, 1H), 7.39 – 7.16 (m, 8H), 6.96 – 6.82 (m, 2H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 152.38, 149.20, 143.56, 138.93, 137.75, 132.41, 130.96, 130.01, 129.75, 128.67, 128.38, 127.87, 123.89, 123.17, 121.75, 121.33, 117.97, 107.22, 105.45.

HRMS [ESI, (M+H)$^+$]: $C_{23}H_{16}N_2H^+$, Calcd: 321.1386, Found: 321.1387.

2-(4-fluorophenyl)-1-(pyridin-2-yl)-1H-indole(3ab)



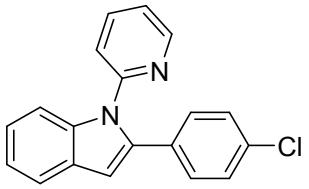
3ab

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ab** as a white solid. M.p. 143-145 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.62 (dd, *J* = 4.9, 1.9 Hz, 1H), 7.69 – 7.60 (m, 3H), 7.27 – 7.18 (m, 5H), 7.00 – 6.87 (m, 3H), 6.76 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =163.67, 160.39, 151.71, 149.14, 138.76, 138.25, 137.70, 130.21, 128.56, 122.92, 121.68, 121.26, 120.40, 115.37, 115.08, 111.26, 105.32.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}FN_2H^+$, Calcd: 289.1136, Found: 289.1134.

2-(4-chlorophenyl)-1-(pyridin-2-yl)-1H-indole(3ac)



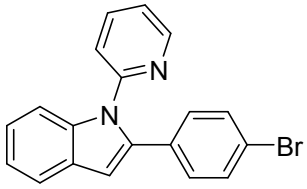
3ac

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ac** as a white solid. M.p. 111-1113 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.63 – 8.57 (m, 1H), 7.63 (m, 3H), 7.25 – 7.15 (m, 7H), 6.91 (d, *J* = 8.0 Hz, 1H), 6.79 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.78, 149.34, 138.64, 137.96, 133.39, 131.19, 129.82, 128.56, 123.27, 121.86, 121.49, 120.68, 111.43, 105.89.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}ClN_2H^+$, Calcd: 305.0840, Found: 305.0841.

2-(4-bromophenyl)-1-(pyridin-2-yl)-1H-indole(3ad)



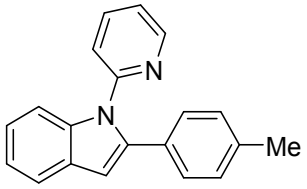
3ad

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ad** as a white solid. M.p. 123-126 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.65 – 8.58 (m, 1H), 7.70 – 7.60 (m, 3H), 7.42 – 7.34 (m, 2H), 7.27 – 7.18 (m, 3H), 7.15 – 7.08 (m, 2H), 6.96 – 6.89 (m, 1H), 6.80 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.83, 149.42, 138.72, 138.05, 131.63, 130.16, 128.62, 123.37, 121.78, 120.75, 111.50, 105.99.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}BrN_2H^+$, Calcd: 349.0335, Found: 349.0334.

1-(pyridin-2-yl)-2-(p-tolyl)-1H-indole(3ae)



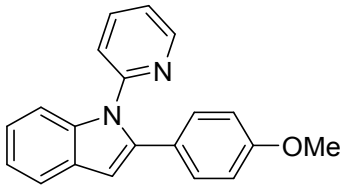
3ae

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ae** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.62 (m, 1H), 7.69 – 7.54 (m, 3H), 7.23 – 7.13 (m, 5H), 7.06 (d, J = 8.1 Hz, 2H), 6.90 – 6.84 (m, 1H), 6.78 – 6.74 (m, 1H), 2.31 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =152.43, 149.40, 140.35, 138.71, 138.00, 137.57, 130.04, 129.33, 128.97, 125.42, 123.10, 122.33, 121.83, 121.56, 120.71, 111.76, 105.43, 21.48.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}N_2H^+$, Calcd: 285.1386, Found: 285.1388.

2-(4-methoxyphenyl)-1-(pyridin-2-yl)-1H-indole(3af)



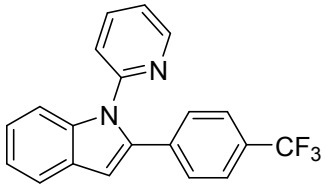
3af

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3af** as a white solid. M.p. 125-127 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.65 – 8.60 (m, 1H), 7.68 – 7.56 (m, 3H), 7.23 – 7.15 (m, 5H), 6.90 – 6.84 (m, 1H), 6.84 – 6.76 (m, 2H), 6.75 – 6.71 (m, 1H), 3.77 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 159.32, 152.43, 149.39, 140.11, 138.57, 137.99, 130.25, 129.06, 125.45, 122.94, 122.32, 121.80, 121.53, 120.57, 114.08, 111.69, 104.93, 55.48.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{16}ON_2H^+$, Calcd: 301.1336, Found: 301.1338.

1-(pyridin-2-yl)-2-(4-(trifluoromethyl)phenyl)-1H-indole(3ag)



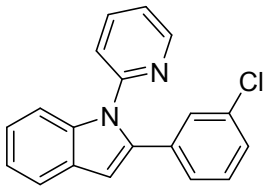
3ag

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ag** as a white solid. M.p. 138-140 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.66 – 8.59 (m, 1H), 7.73 – 7.62 (m, 3H), 7.51 (d, *J* = 8.2 Hz, 2H), 7.36 (d, *J* = 8.1 Hz, 2H), 7.29 – 7.17 (m, 3H), 6.97 (d, *J* = 8.0 Hz, 1H), 6.88 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.67, 149.49, 138.86, 138.24 (d, *J* = 16.7 Hz), 136.26, 128.58 (d, *J* = 12.9 Hz), 125.29 (d, *J* = 3.7 Hz), 123.70, 122.15, 121.38, 120.96, 111.47, 106.92.

HRMS [ESI, (M+H)$^+$]: $C_{20}H_{13}F_3N_2H^+$, Calcd: 339.1104, Found: 339.1105.

2-(3-chlorophenyl)-1-(pyridin-2-yl)-1H-indole(3ah)



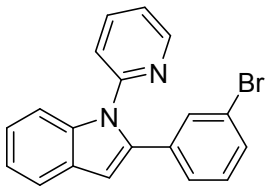
3ah

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ah** as a white solid. M.p. 133-136 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.62 (dd, *J* = 4.8, 1.7 Hz, 1H), 7.66 (m, 3H), 7.33 (d, *J* = 1.6 Hz, 1H), 7.29 – 7.12 (m, 5H), 7.08 – 7.02 (m, 1H), 6.95 (d, *J* = 8.0 Hz, 1H), 6.83 (s, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.89, 149.56, 138.70, 138.15, 134.69, 134.40, 129.65, 128.69, 127.59, 126.97, 123.61, 122.07, 121.70, 120.98, 111.64, 106.48.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}ClN_2H^+$, Calcd: 305.0840, Found: 305.0842.

2-(3-bromophenyl)-1-(pyridin-2-yl)-1H-indole(3ai)



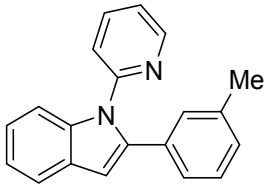
3ai

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3ai** as a gray solid. M.p. 129-132 °C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.62 (m, 1H), 7.70 – 7.62 (m, 3H), 7.49 (m, 1H), 7.35 (m, 1H), 7.26 – 7.16 (m, 3H), 7.10 – 7.05 (m, 2H), 6.95 (d, *J* = 8.0 Hz, 1H), 6.82 (d, *J* = 0.5 Hz, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.94, 149.63, 138.90, 138.53, 138.23, 135.02, 131.65, 130.56, 129.97, 128.75, 127.48, 123.70, 122.63, 122.16, 121.78, 121.07, 111.71, 106.59.

HRMS [ESI, (M+H)$^+$]: $C_{19}H_{13}BrN_2H^+$, Calcd: 349.0335, Found: 349.0333.

1-(pyridin-2-yl)-2-(m-tolyl)-1H-indole(3aj)



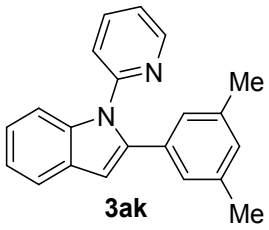
3aj

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3aa** as a white solid. M.p. 103-105 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.63 (m, 1H), 7.71 – 7.57 (m, 3H), 7.24 – 7.14 (m, 4H), 7.12 (d, *J* = 7.5 Hz, 1H), 7.05 (d, *J* = 7.3 Hz, 1H), 6.99 (d, *J* = 7.5 Hz, 1H), 6.89 (dd, *J* = 8.1, 0.8 Hz, 1H), 6.79 (d, *J* = 0.6 Hz, 1H), 2.28 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =152.14, 149.11, 140.14, 138.48, 137.98, 137.68, 132.56, 129.41, 128.73, 128.15, 125.88, 122.91, 122.03, 121.41, 120.51, 111.50, 105.46, 21.40.

HRMS [ESI, (M+H)$^{+}$]: $C_{20}H_{16}N_2H^{+}$, Calcd: 285.1386, Found: 285.1387.

2-(3,5-dimethylphenyl)-1-(pyridin-2-yl)-1H-indole(3ak)



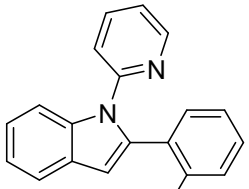
3ak

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3aa** as a yellowish liquid.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.65 – 8.60 (m, 1H), 7.70 – 7.56 (m, 3H), 7.25 – 7.15 (m, 3H), 6.89 (dd, *J* = 7.0, 0.7 Hz, 4H), 6.79 – 6.76 (m, 1H), 2.21 (d, *J* = 0.5 Hz, 6H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 152.25, 149.08, 140.32, 138.48, 137.71, 132.49, 129.18, 128.78, 126.63, 122.85, 122.09, 121.39, 120.50, 111.53, 105.37, 21.29.

HRMS [ESI, (M+H)$^{+}$]: $C_{21}H_{18}N_2H^{+}$, Calcd: 299.1543, Found: 299.1545.

1-(pyridin-2-yl)-2-(o-tolyl)-1H-indole(3al)



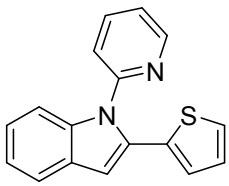
3al

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3aa** as a white solid. M.p. 151-154 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ =8.57 (m, 1H), 7.88 – 7.82 (m, 1H), 7.69 – 7.64 (m, 1H), 7.48 (m, 1H), 7.33 – 7.27 (m, 1H), 7.26 – 7.20 (m, 3H), 7.19 – 7.09 (m, 3H), 6.69 (m, 2H), 2.06 (s, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 152.16, 149.11, 139.23, 137.93, 137.00, 132.99, 131.33, 130.42, 128.89, 128.52, 125.84, 123.10, 121.39, 120.69, 112.23, 106.43, 20.42.

HRMS [ESI, (M+H)$^{+}$]: $C_{20}H_{16}N_2H^{+}$, Calcd: 285.1386, Found: 285.1387.

1-(pyridin-2-yl)-2-(thiophen-2-yl)-1H-indole(3am)



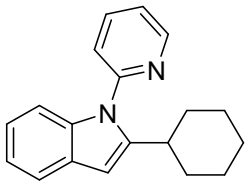
3am

Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3aa** as a yellow solid. M.p. 154-157 ^{o}C.

^{1}H NMR (300 MHz, $CDCl_3$) δ= 8.69 (m, 1H), 7.74 (m, 1H), 7.66 (m, 1H), 7.52 – 7.47 (m, 1H), 7.32 (m, 1H), 7.27 – 7.17 (m, 3H), 7.14 (m, 1H), 6.94 (dd, *J* = 5.1, 3.6 Hz, 1H), 6.88 (d, *J* = 0.7 Hz, 1H), 6.77 (dd, *J* = 3.6, 1.1 Hz, 1H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ= 151.80, 149.65, 138.85, 138.28, 134.56, 133.49, 128.61, 127.56, 126.82, 126.02, 123.44, 122.70, 121.62, 120.79, 111.40, 105.81.

HRMS [ESI, (M+H)$^{+}$]: $C_{17}H_{12}N_2SH^{+}$, Calcd: 277.0794, Found: 277.0795.

2-cyclohexyl-1-(pyridin-2-yl)-1H-indole(3an)



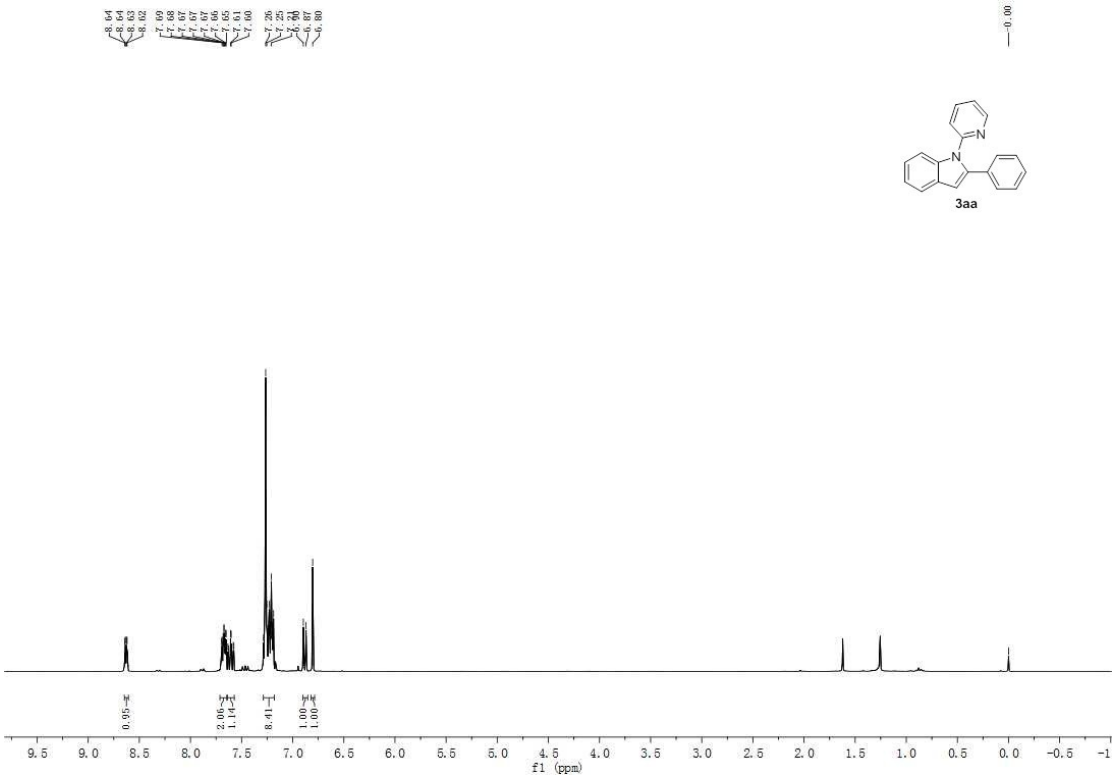
3an

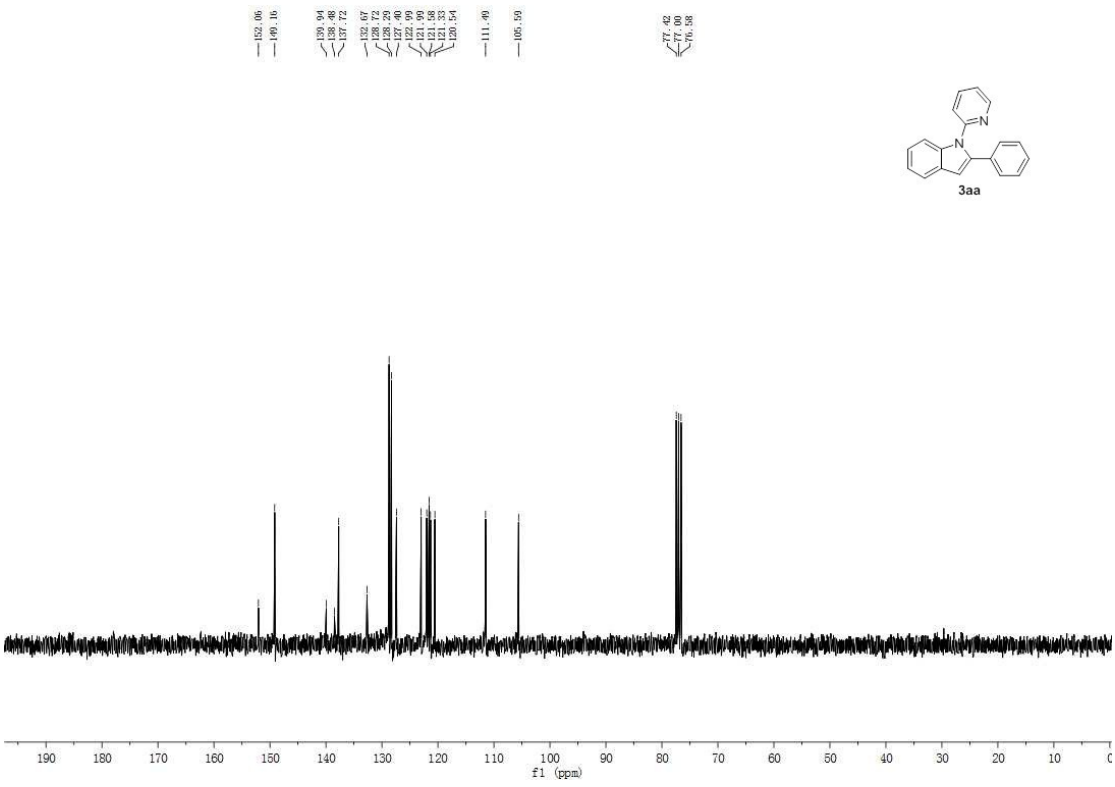
Flash column chromatography on a silica gel (ethyl acetate: petroleum ether, 10: 1) give **3aa** as a colorless liquid.

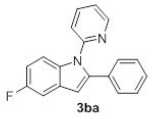
^{1}H NMR (300 MHz, $CDCl_3$) δ =8.66 (m, 1H), 7.87 (m, 1H), 7.61 – 7.54 (m, 1H), 7.42 (d, *J* = 8.0 Hz, 1H), 7.35 – 7.22 (m, 2H), 7.14 – 7.06 (m, 2H), 6.44 (s, 1H), 2.99 (m, 1H), 1.90 (d, *J* = 12.9 Hz, 2H), 1.70 (m, 3H), 1.46 – 1.33 (m, 2H), 1.28 – 1.18 (m, 3H). **^{13}C NMR** (75 MHz, $CDCl_3$) δ =151.99, 149.90, 147.45, 138.53, 137.54, 128.82, 122.39, 121.72, 120.72, 120.22, 110.18, 100.08, 35.86, 33.44, 26.72, 26.44.

HRMS [ESI, (M+H)$^{+}$]: $C_{19}H_{20}N_2H^{+}$, Calcd: 277.1699, Found: 277.1698.

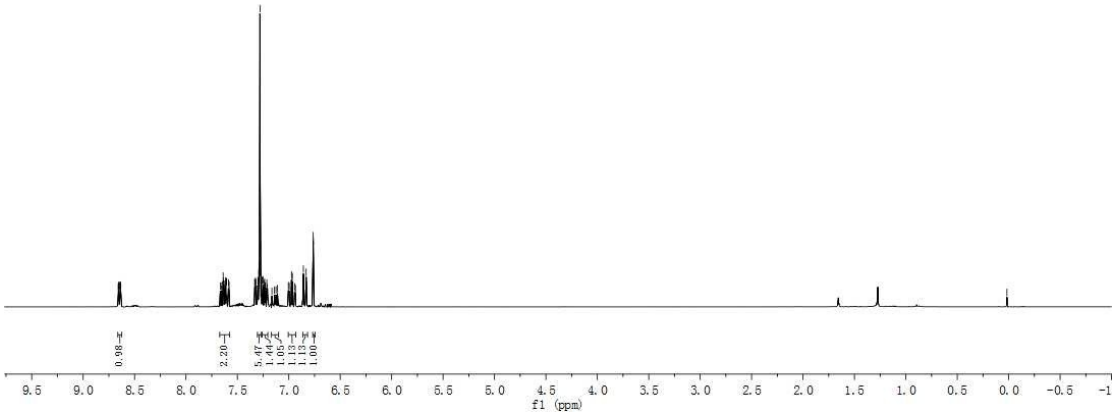
^{1}H NMR, ^{13}C NMR Spectra

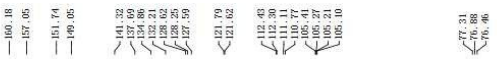


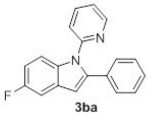



N
N
F

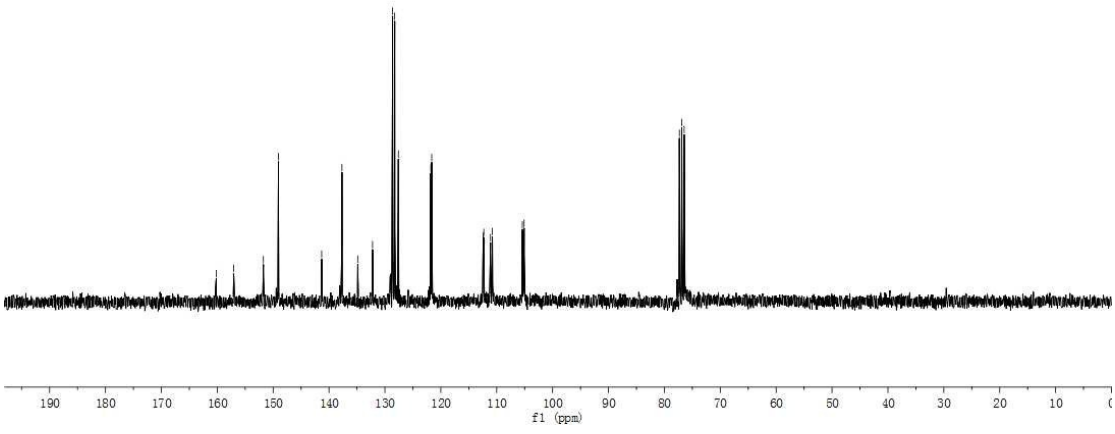
3ba


0.98
2.20
5.47
1.64
1.55
1.13
1.13
1.00
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1
f1 (ppm)




N
N
F

3ba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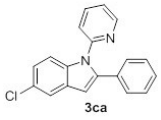
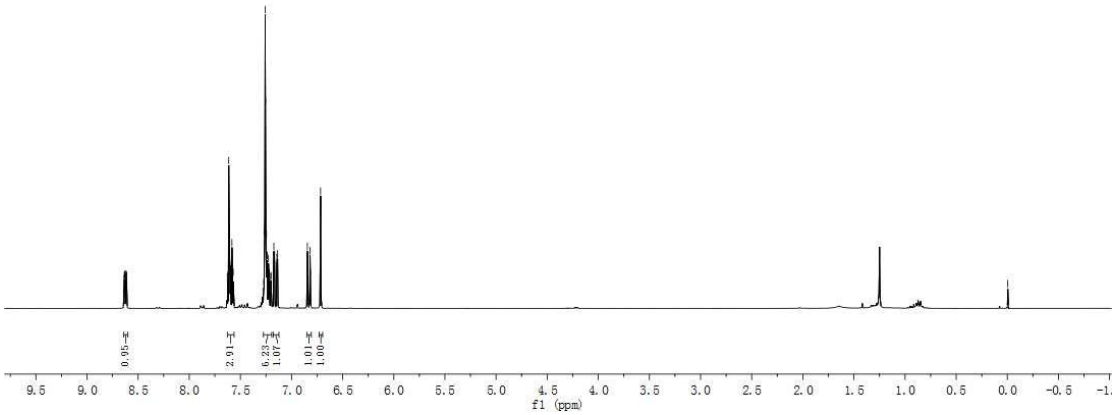
f1 (ppm)


N
N
Cl

3ca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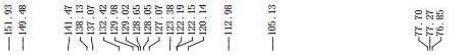
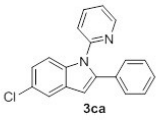
2.91
6.23
1.07
1.01
1.00
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)

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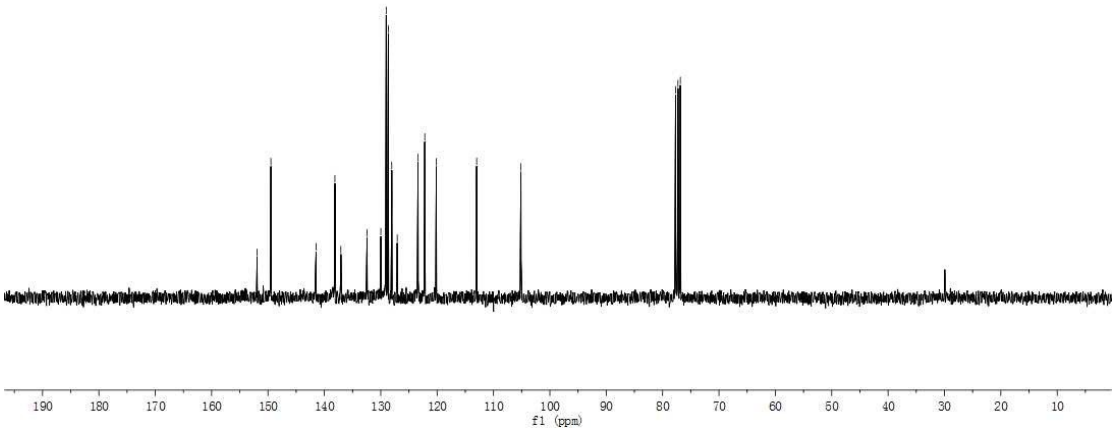
N
Cl

3ca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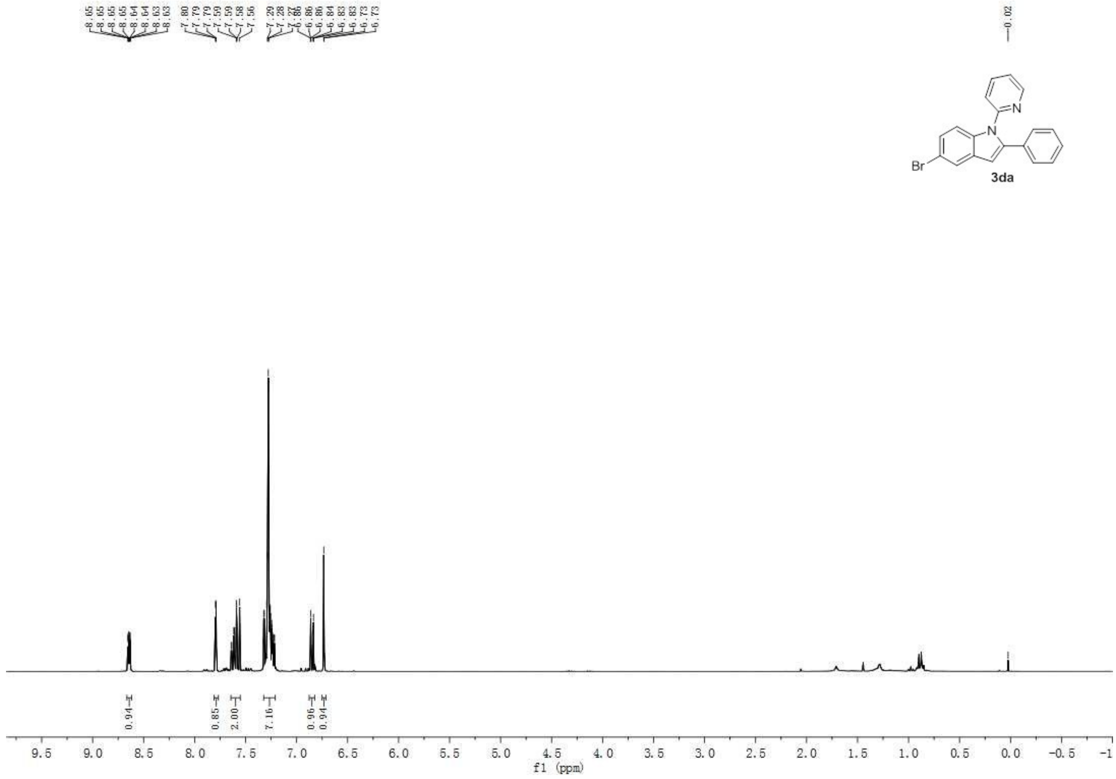
f1 (ppm)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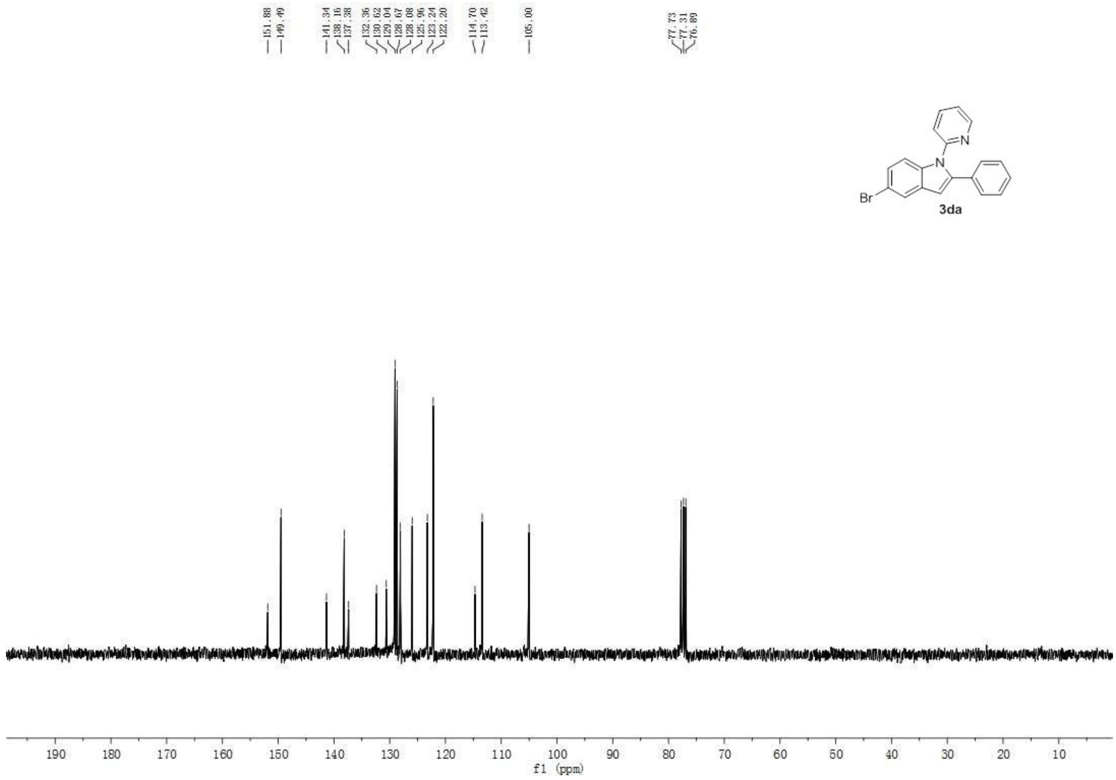
8.65
8.64
8.64
8.63
8.63
7.80
7.79
7.59
7.59
7.58
7.56
7.29
7.28
6.86
6.86
6.84
6.83
6.83
6.73
6.73
0.02
N
Br
3da
0.94
0.85
2.00
7.16
0.96
0.94
f1 (ppm)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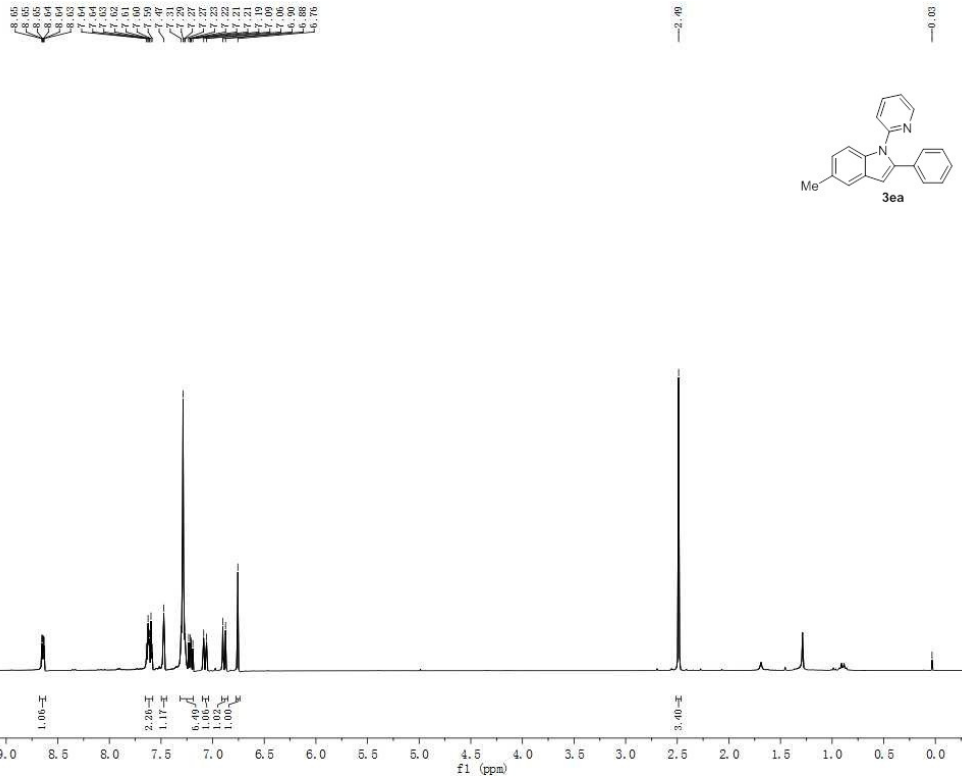
149.49
141.34
138.16
137.38
132.36
130.62
129.04
128.67
128.08
125.96
123.24
122.20
114.70
113.42
105.00
77.73
77.31
76.89
N
Br
3da
f1 (ppm)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8.64
8.64
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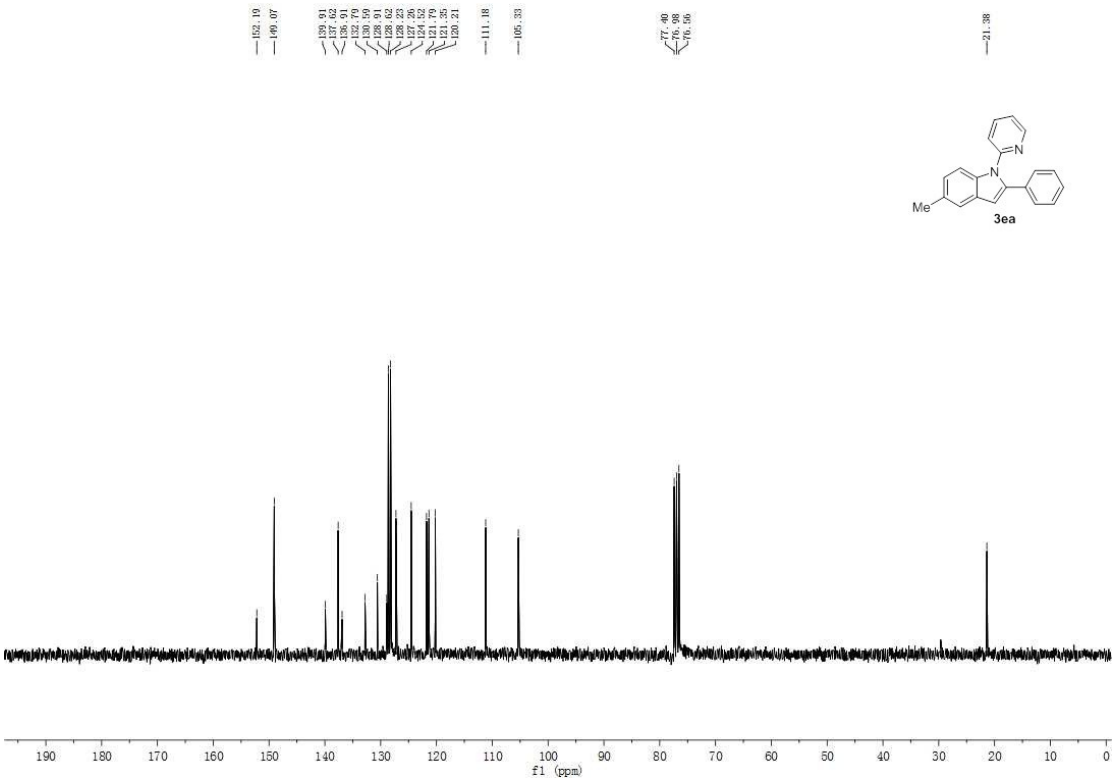
7.63
7.62
7.61
7.60
7.59
7.47
7.31
7.29
7.27
7.23
7.22
7.21
7.19
7.09
7.06
6.89
6.88
6.76
2.49
0.03
N
N
Me
3ea
1.06
2.26
1.17
6.49
1.02
1.00
3.40
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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139.91
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136.91
132.79
130.99
128.91
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128.23
127.26
124.52
121.79
121.35
120.21
111.18
105.33
77.40
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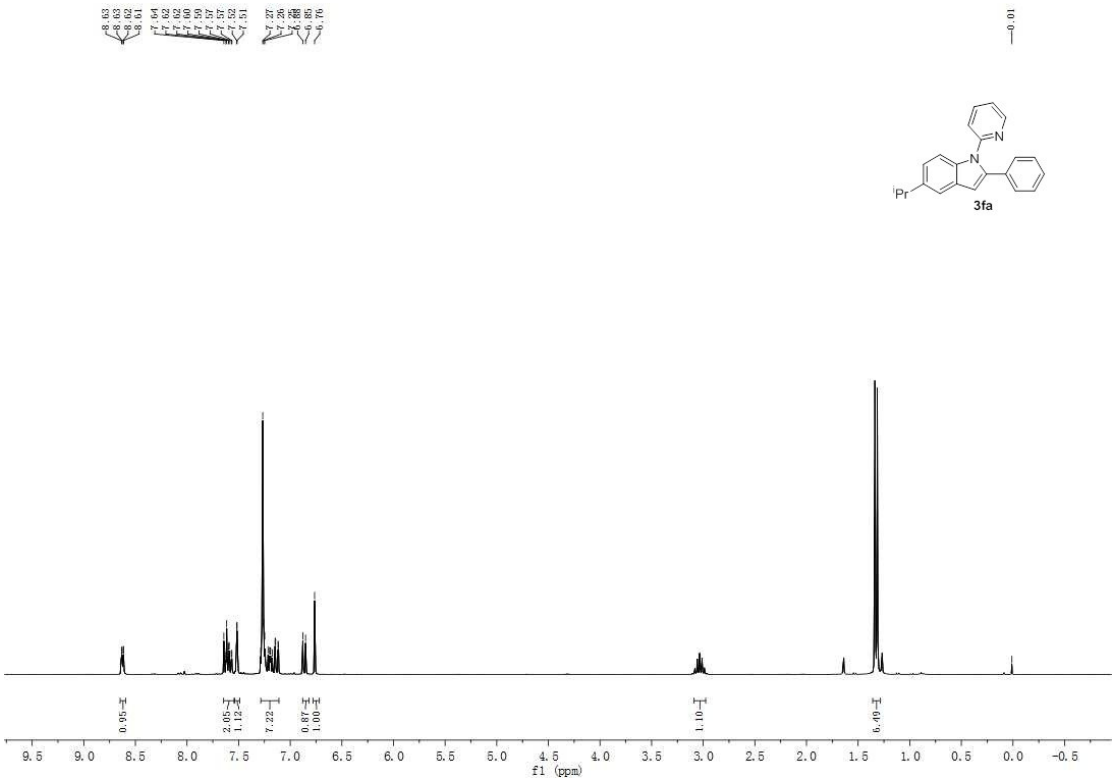
76.56
21.38
N
N
Me
3ea
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)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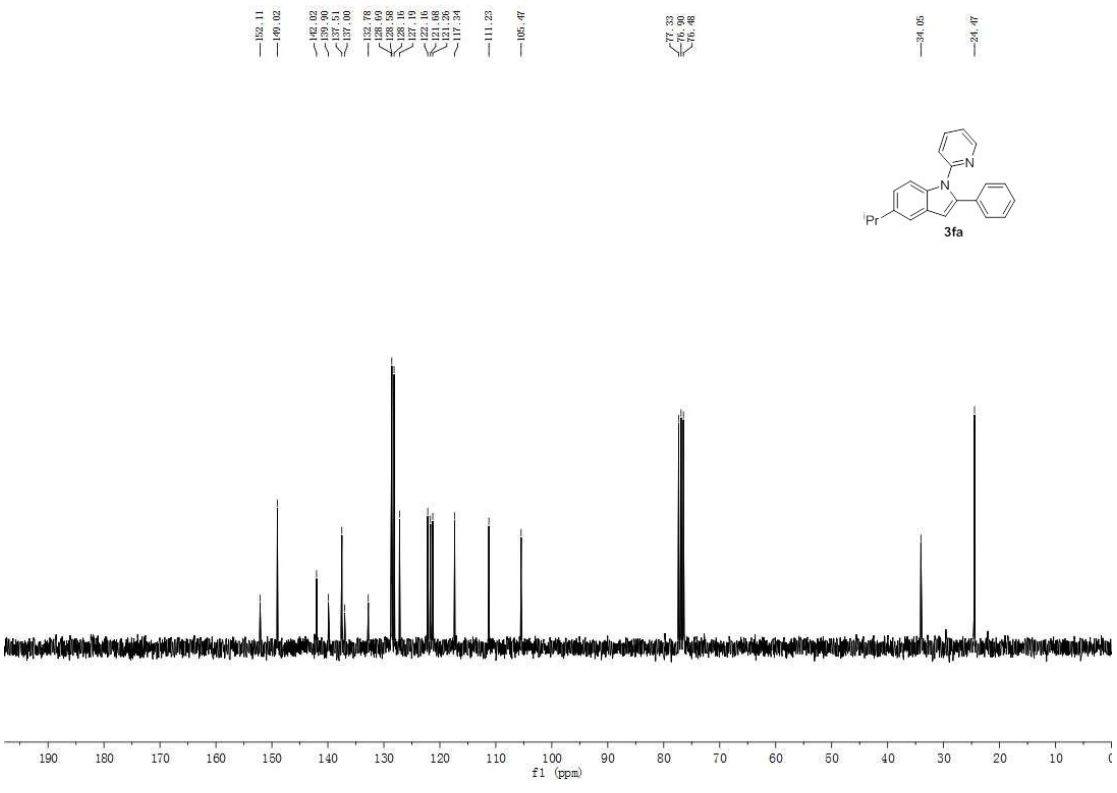
8.61
7.64
7.62
7.60
7.59
7.57
7.57
7.52
7.51
7.27
7.26
7.08
6.86
6.76
0.01
3fa
0.95
2.05
1.12
7.22
0.87
1.00
1.10
6.49
f1 (ppm)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142.02
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132.78
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122.16
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111.23
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77.33
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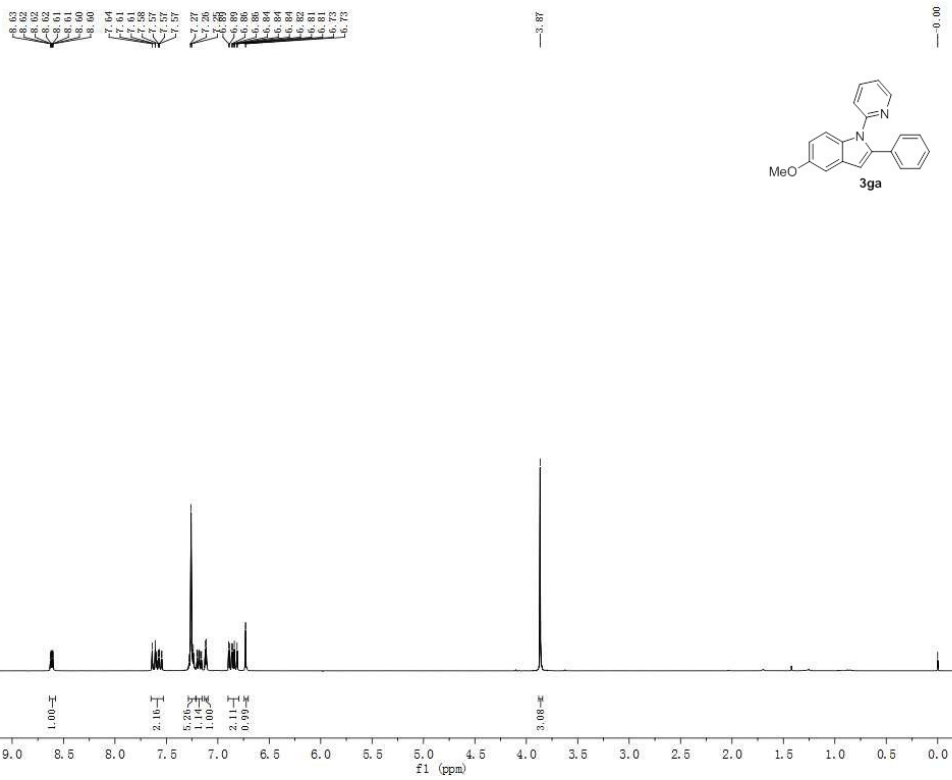
76.48
34.05
24.47
3fa
f1 (ppm)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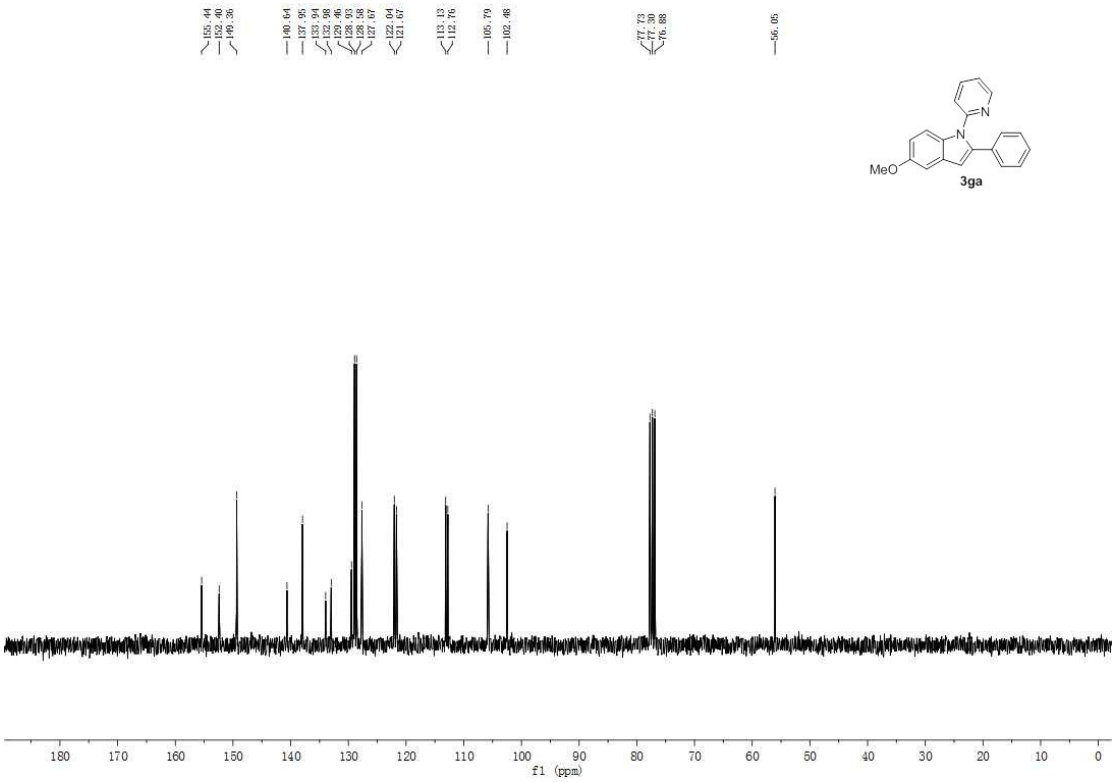
8.62
8.62
8.61
8.61
8.60
8.60
7.64
7.61
7.61
7.58
7.57
7.57
7.57
7.57
7.27
7.26
7.25
6.89
6.89
6.86
6.86
6.84
6.84
6.84
6.82
6.81
6.81
6.73
6.73
3.87
0.00
MeO
3ga
1.00
2.16
5.26
1.14
1.00
2.11
0.99
3.08
f1 (ppm)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132.98
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128.58
127.07
122.04
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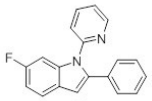
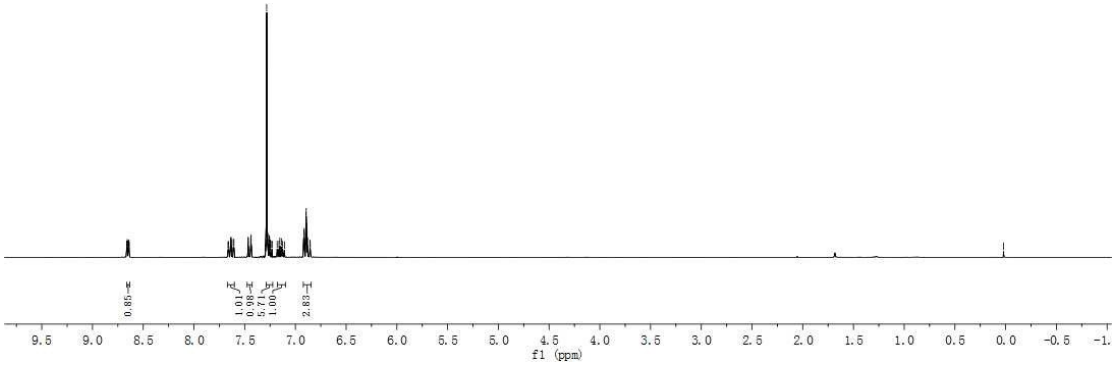
76.88
56.05
MeO
3ga
f1 (ppm)


F
N
N
3ha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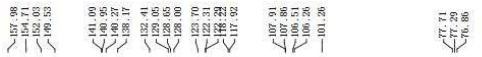
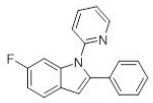
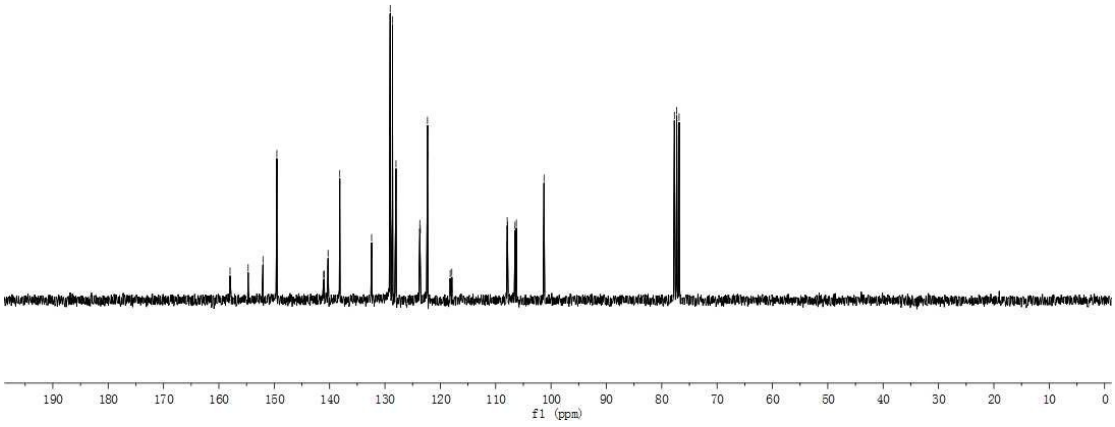
1.01
0.98
5.71
1.00
2.83
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.
f1 (ppm)




F
N
N
3ha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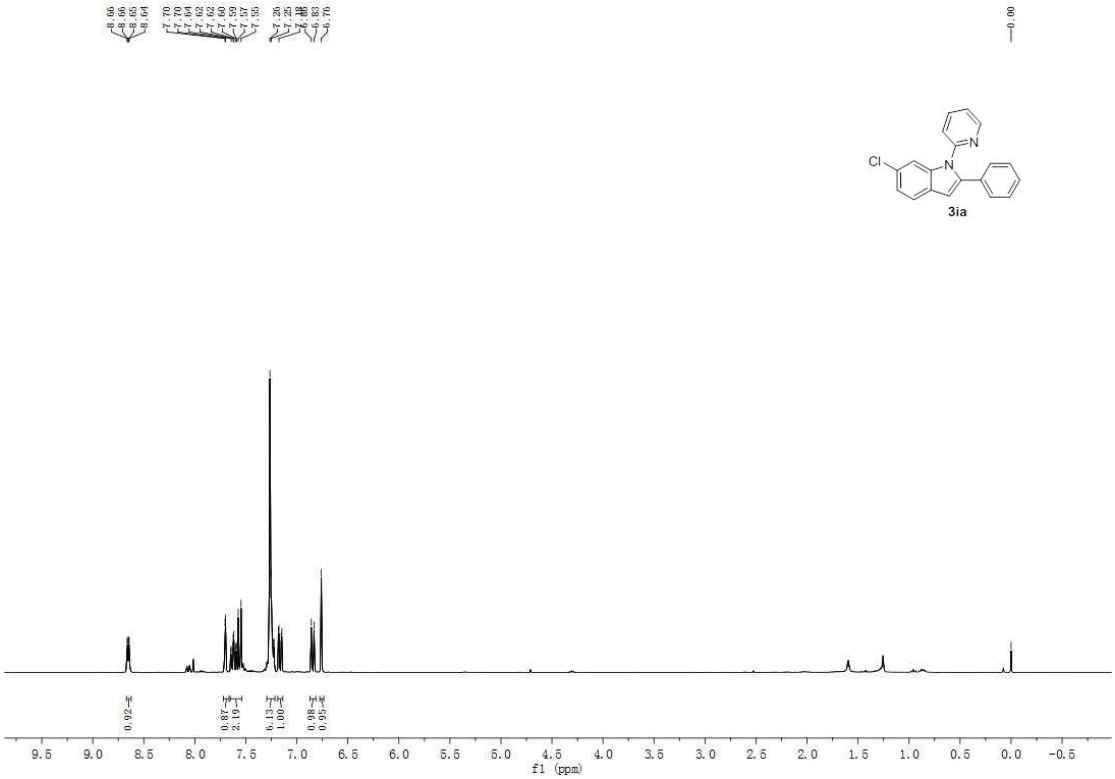
f1 (ppm)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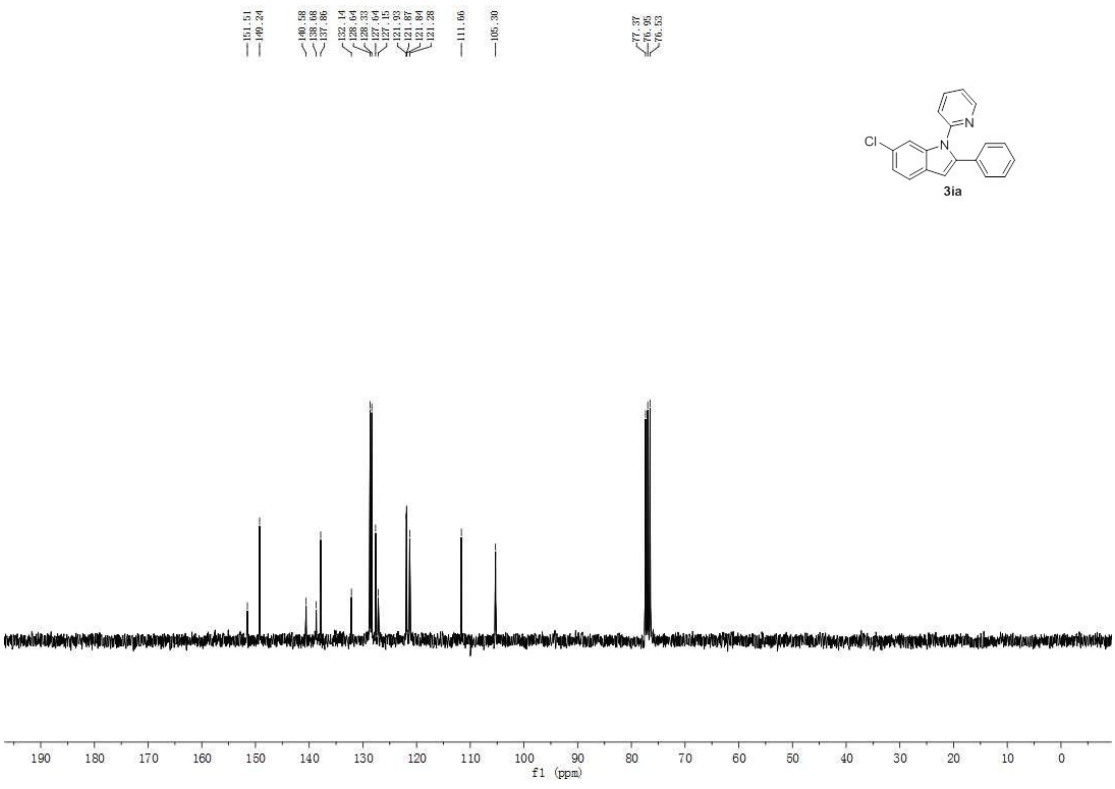
7.60
7.60
7.59
7.57
7.55
7.26
7.25
7.25
7.24
6.83
6.76
0.00
Cl
N
N
3ia
0.92
0.87
2.19
6.13
1.00
0.98
0.94
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
f1 (ppm)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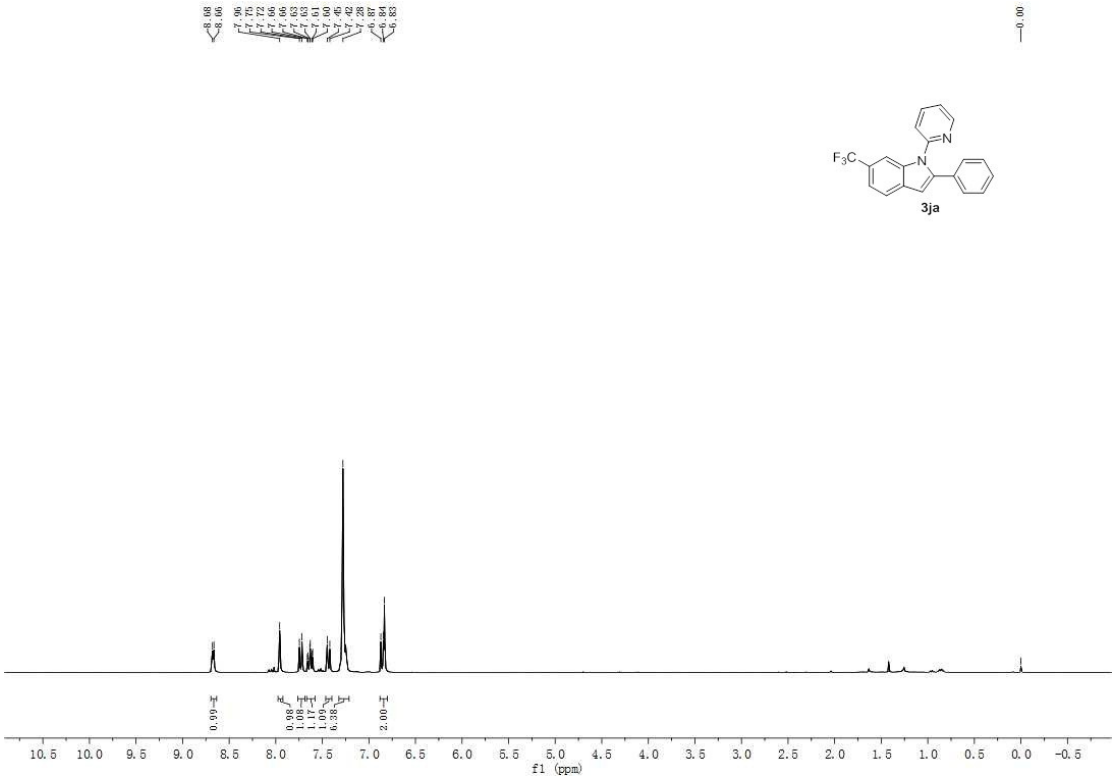
132.14
128.64
128.51
127.64
127.15
121.93
121.87
121.84
121.28
111.66
105.30
77.37
76.95
76.53
Cl
N
N
3ia
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)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7.65
7.63
7.61
7.60
7.45
7.42
7.28
6.84
6.83
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N
3ja
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0.98
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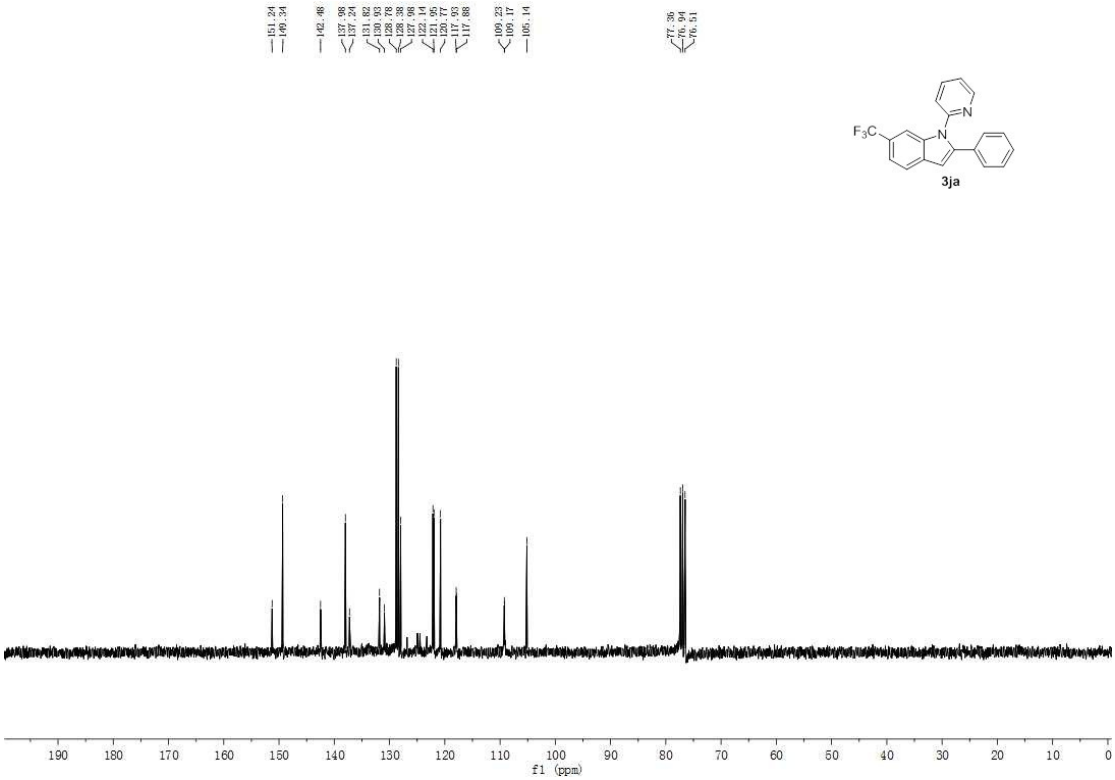
1.17
1.00
6.38
2.00
f1 (ppm)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127.98
122.14
121.95
120.77
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117.88
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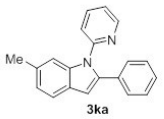
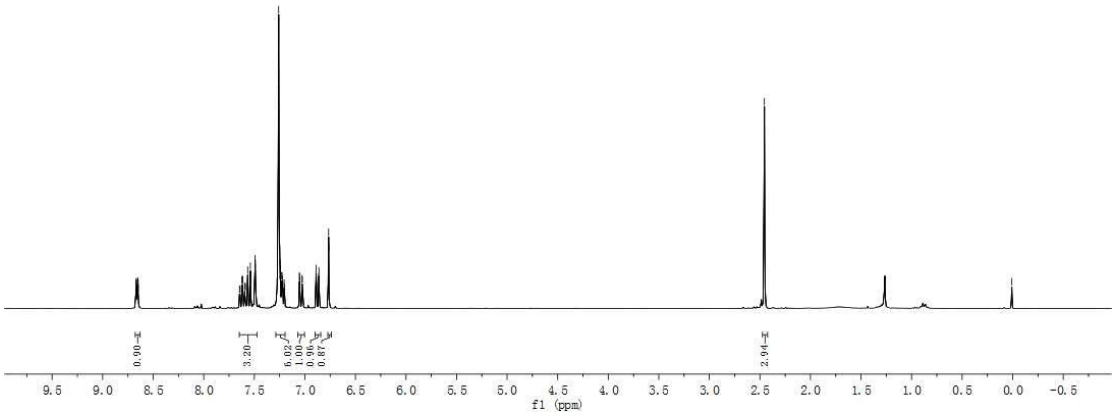
109.17
105.14
77.36
76.94
76.51
F3C
N
N
3ja
f1 (ppm)


Me
N
N

3ka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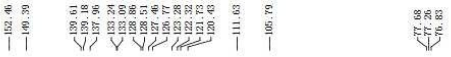
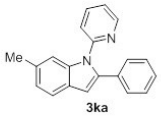
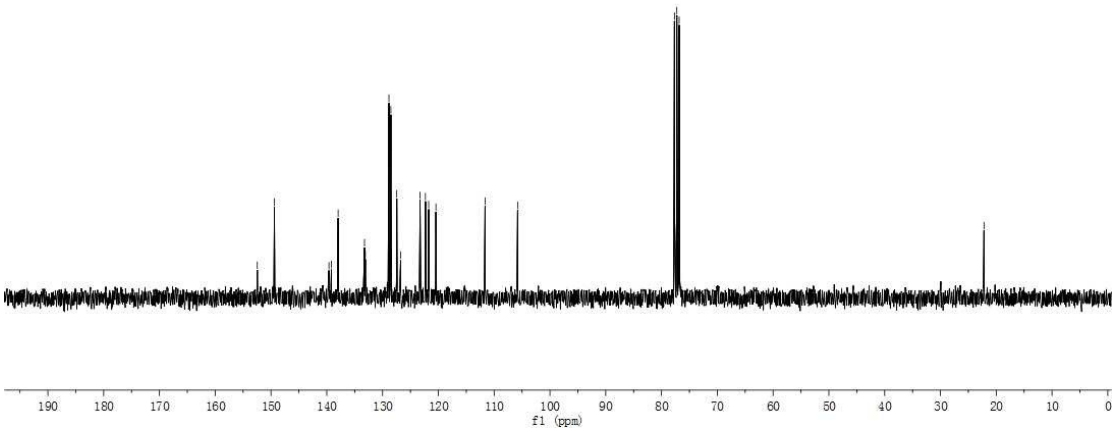
3.20
6.02
1.00
0.87
2.94
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)




Me
N
N

3ka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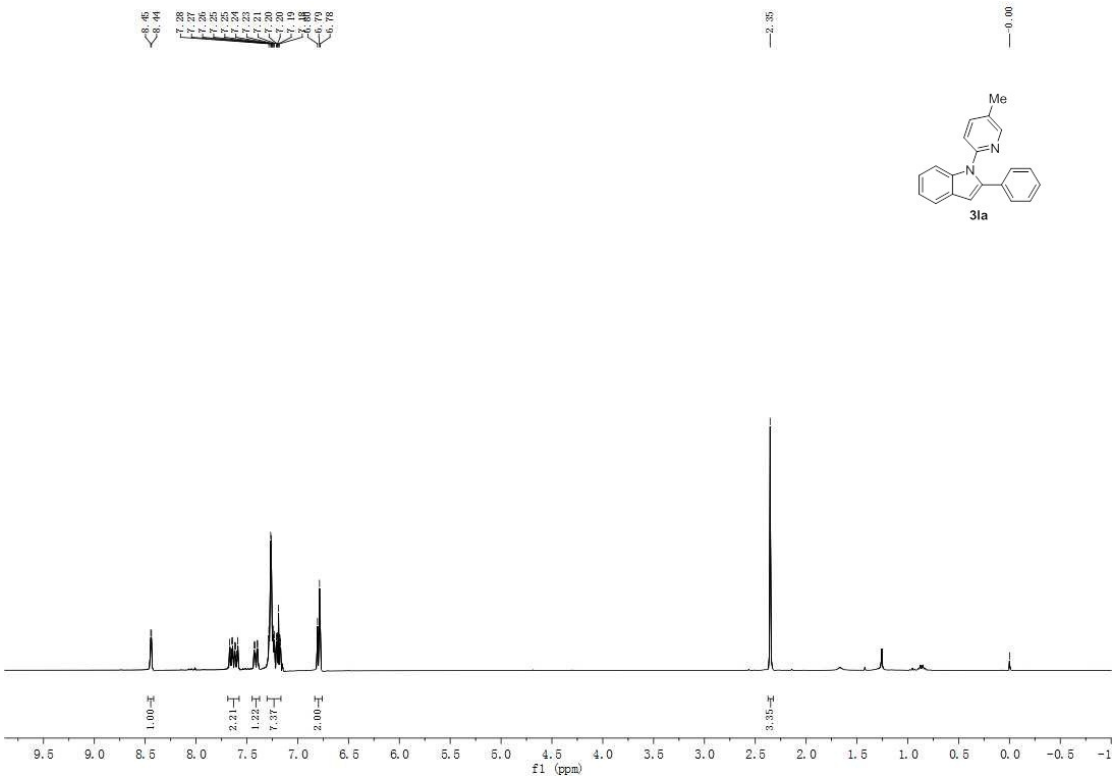
f1 (ppm)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7.24
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7.21
7.20
7.20
7.19
6.79
6.78
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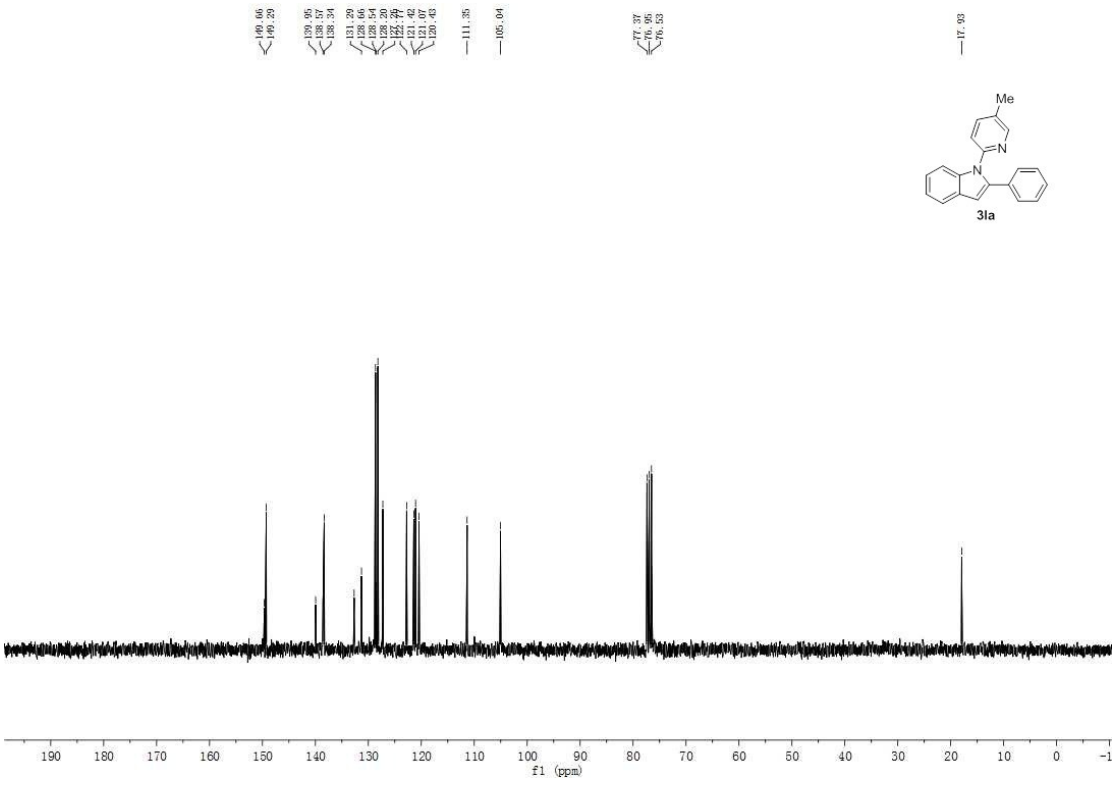
0.00
Me
N
N
3la
1.00
2.21
1.22
7.37
2.00
3.35
f1 (ppm)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122.47
121.42
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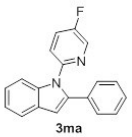
111.35
105.04
77.37
76.95
76.53
17.93
Me
N
N
3la
f1 (ppm)



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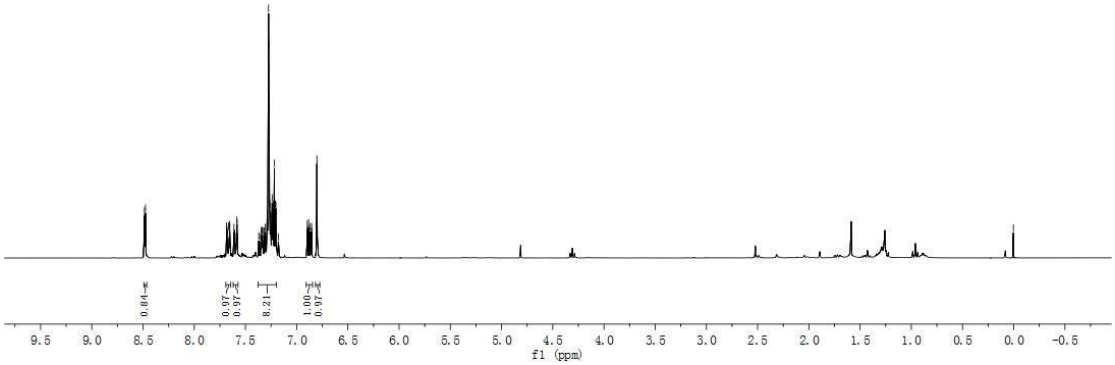

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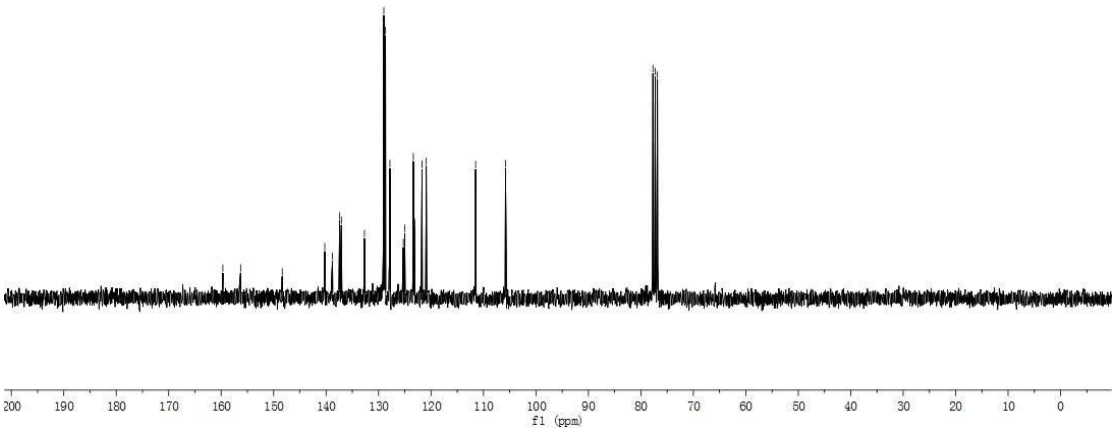

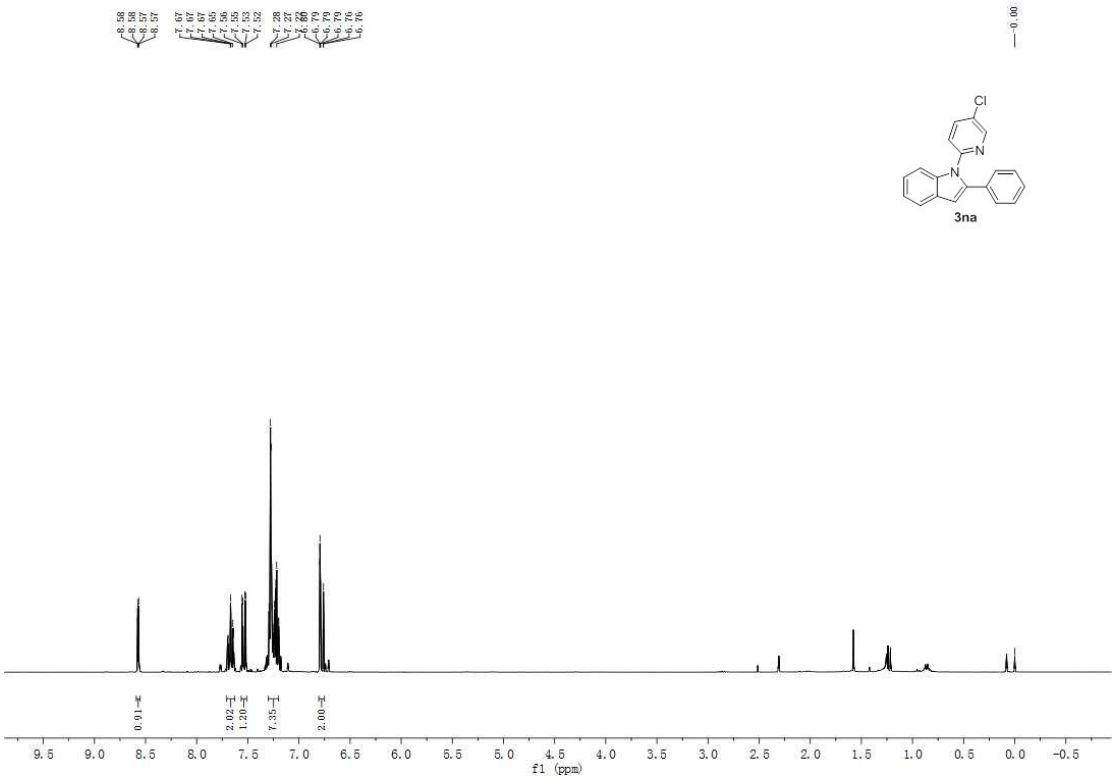
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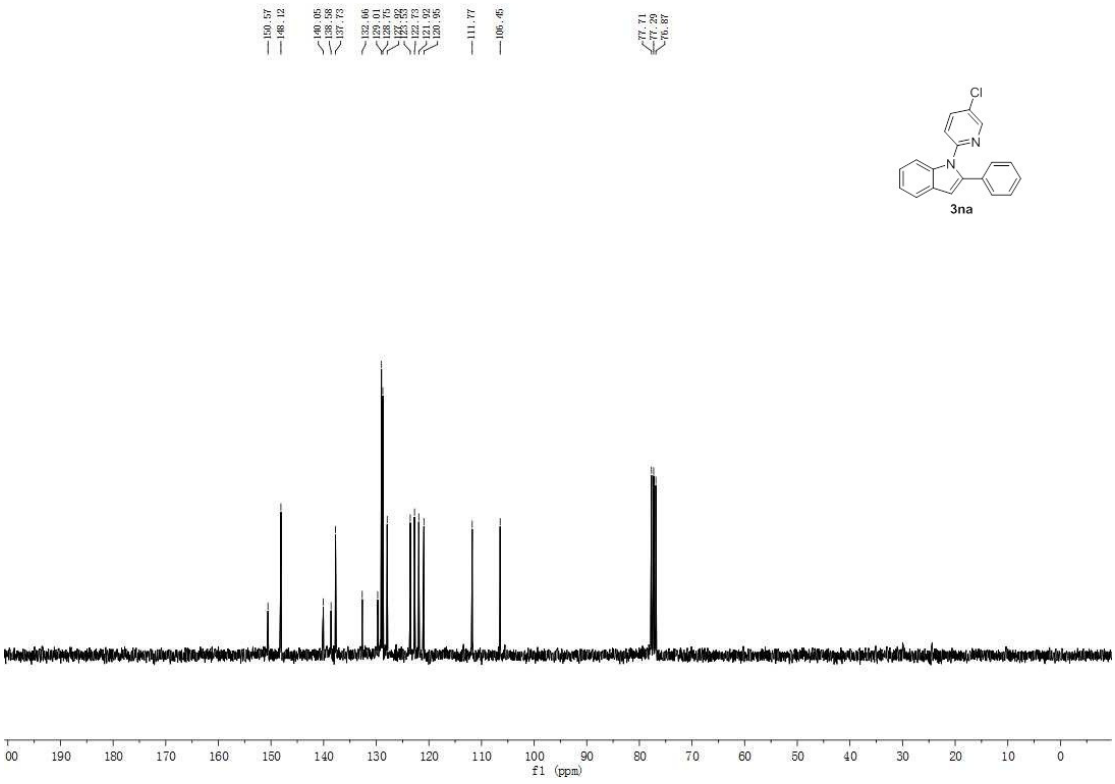
7.52
7.28
7.27
6.79
6.79
6.79
6.76
6.76
0.00
Cl
N
N
3na
0.91
2.02
1.20
7.35
2.00
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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128.75
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120.95
111.77
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76.87
Cl
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N
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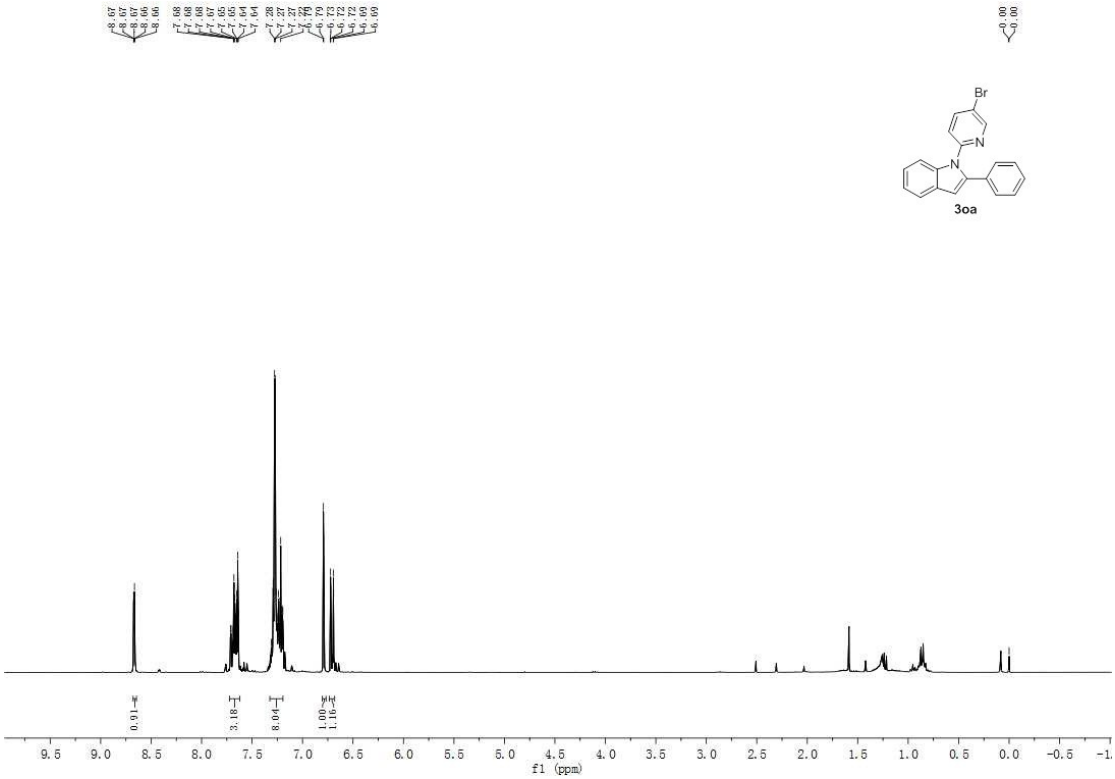
f1 (ppm)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7.27
7.27
7.27
6.79
6.73
6.72
6.72
6.69
6.69
0.00
0.00
Br
N
N
3oa
0.91
3.18
8.04
1.00
1.16
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
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2.5
2.0
1.5
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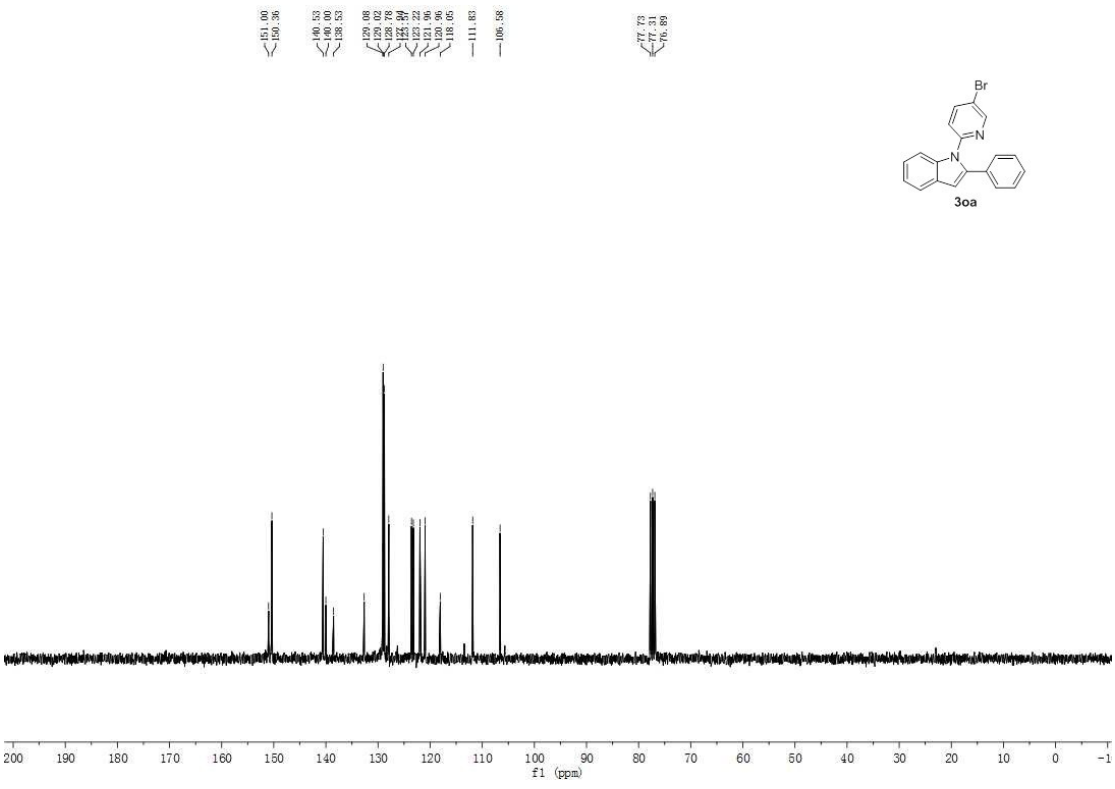
0.5
0.0
-0.5
f1 (ppm)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120.96
118.05
111.83
106.58
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77.31
76.89
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N
N
3oa
200
190
180
170
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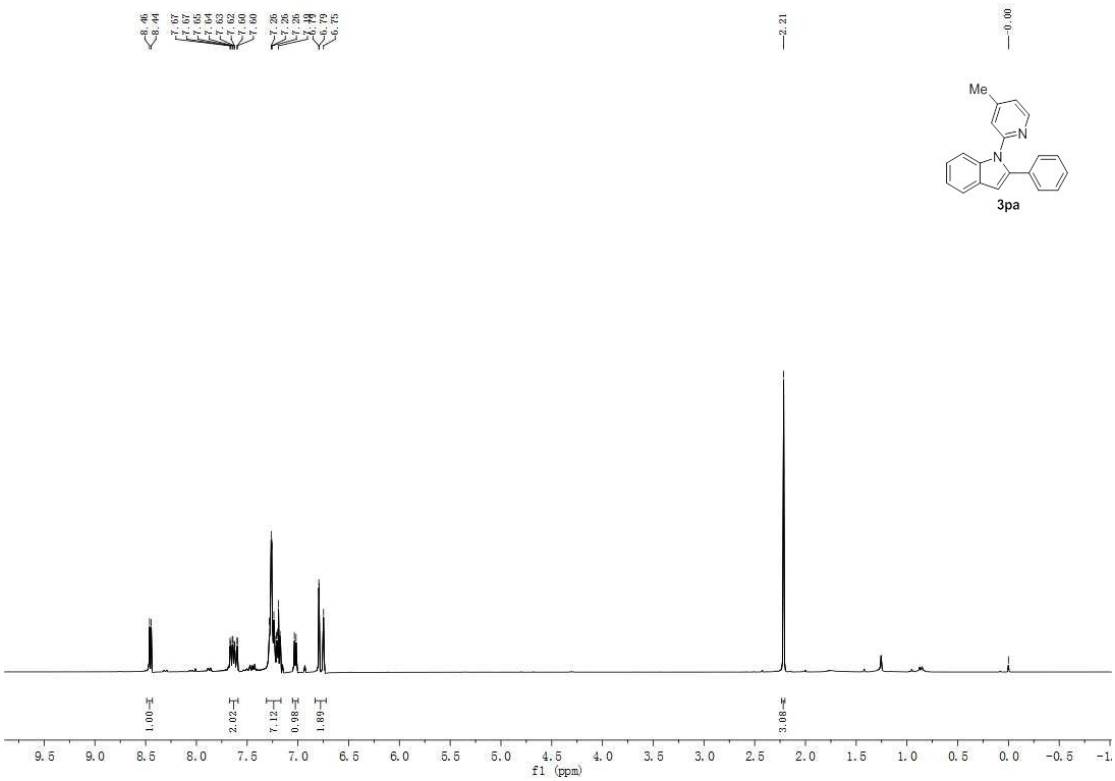
-1
f1 (ppm)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7.26
7.25
7.19
7.19
6.79
6.75
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N
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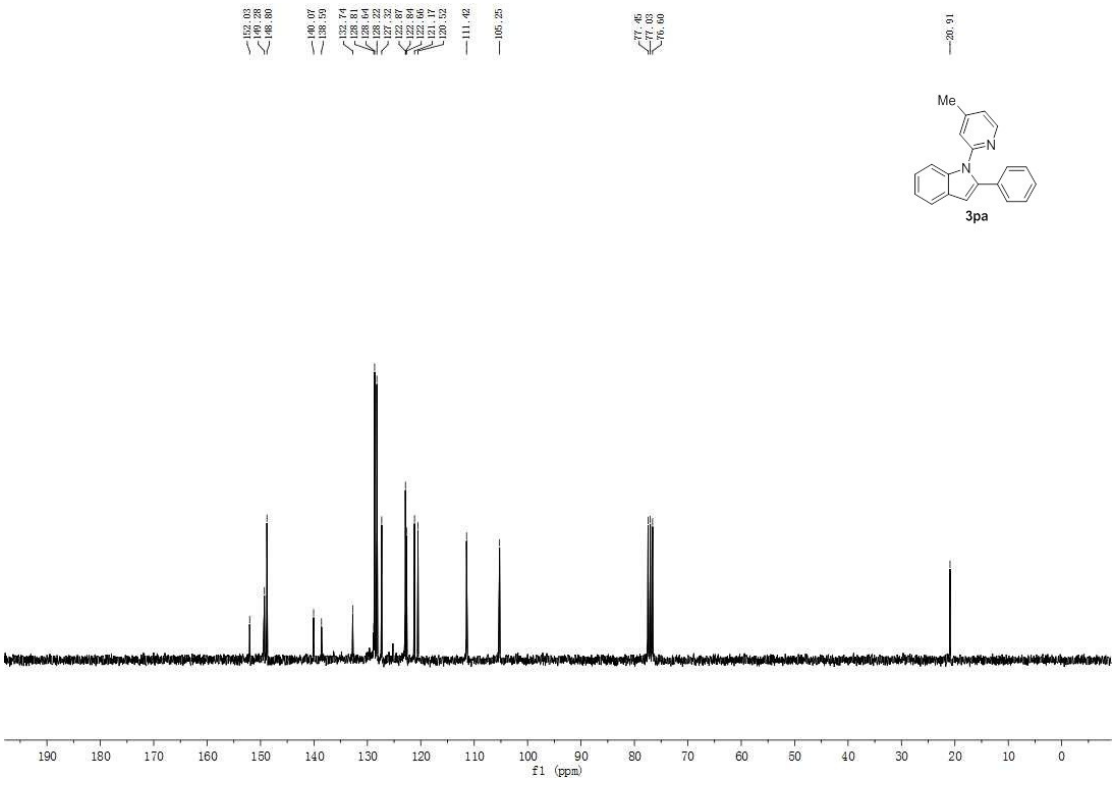
3.08
f1 (ppm)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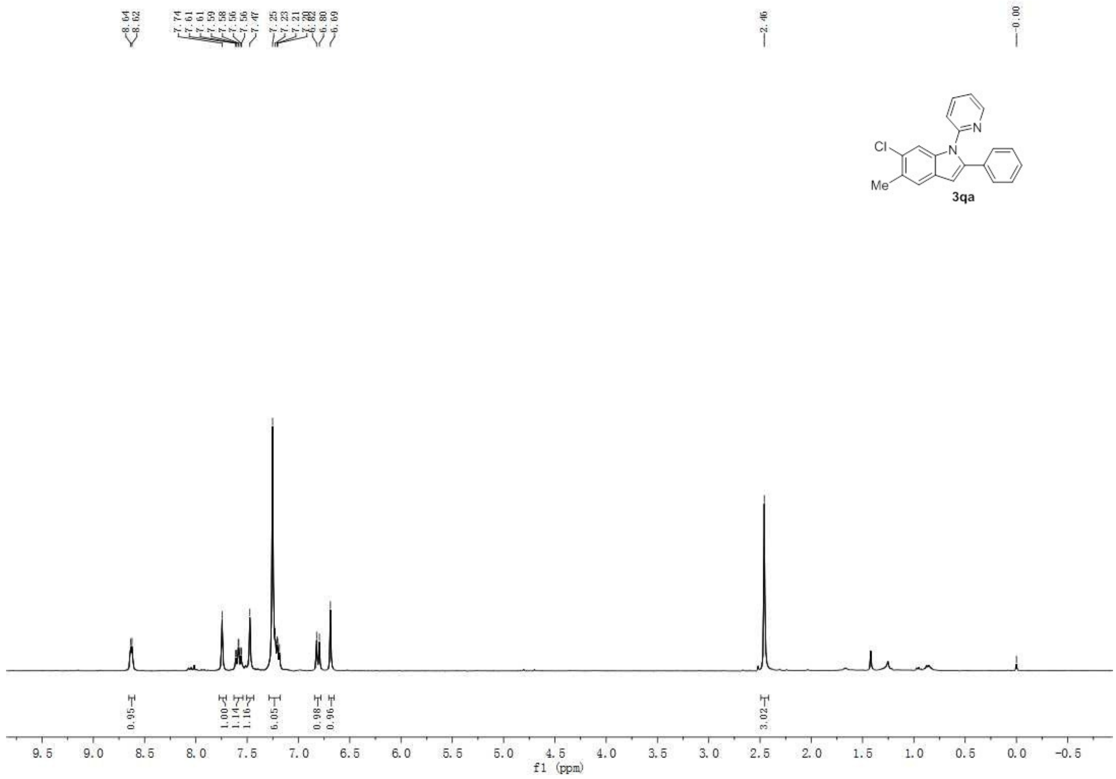
3pa
f1 (ppm)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7.25
7.23
7.21
7.20
6.82
6.80
6.69
2.46
0.00
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1.14
1.16
6.05
0.98
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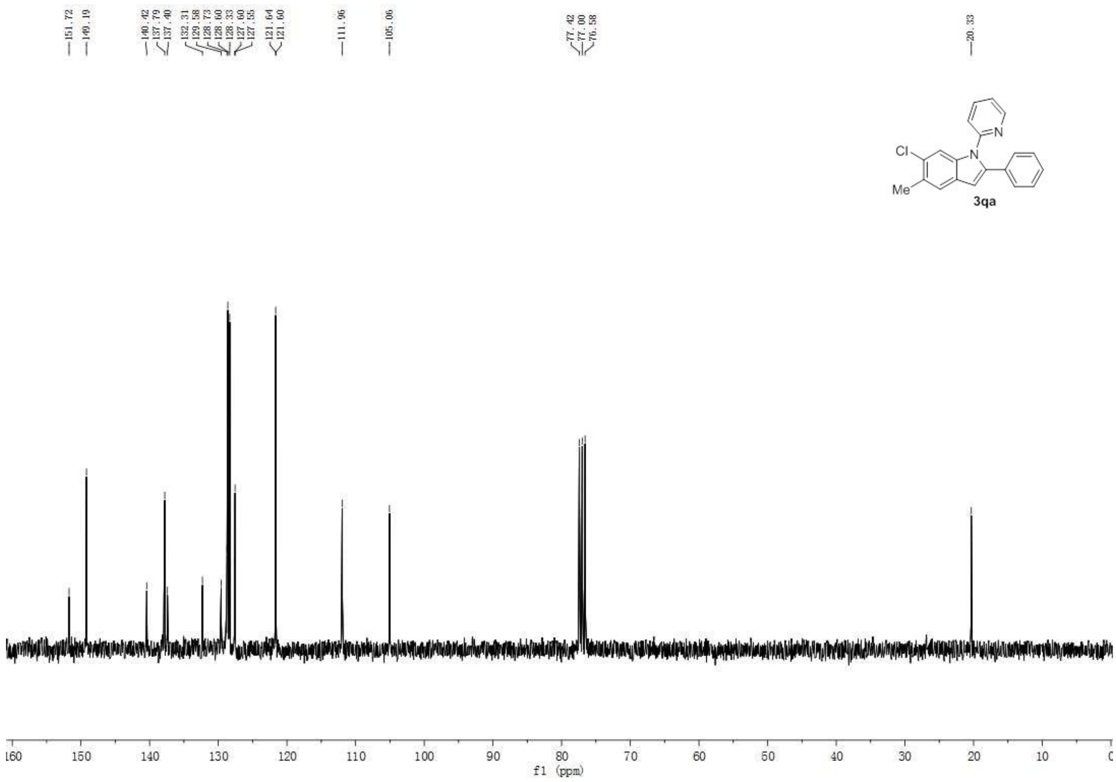
3.02
f1 (ppm)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20.33
Cl
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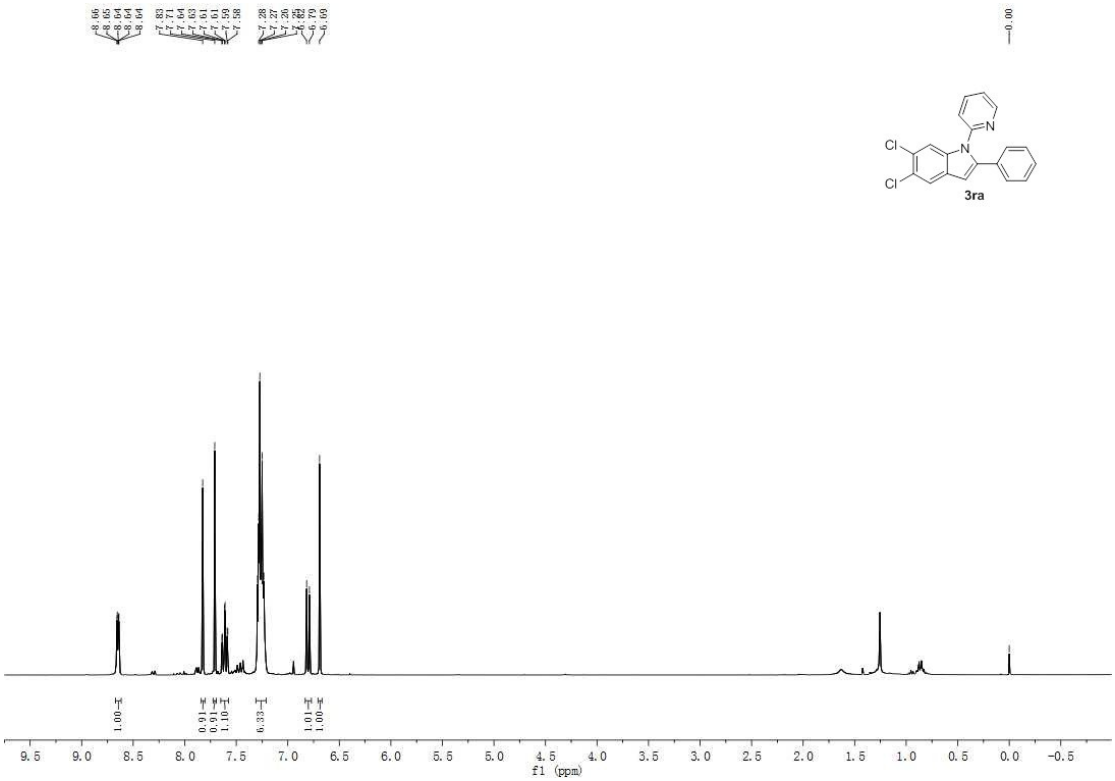
N
Me
3qa
f1 (ppm)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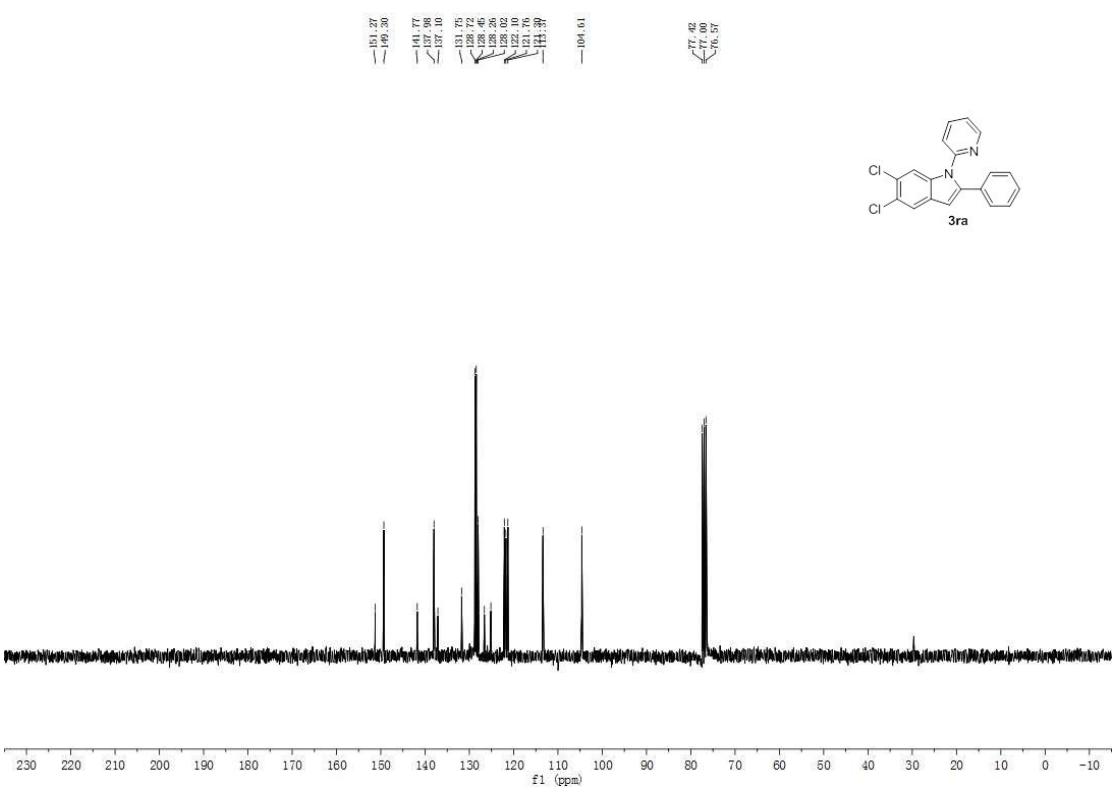
7.59
7.58
7.28
7.27
7.26
7.22
6.79
6.69
0.00
Cl
Cl
N
N
3ra
1.00
0.91
0.91
1.10
6.33
1.01
1.00
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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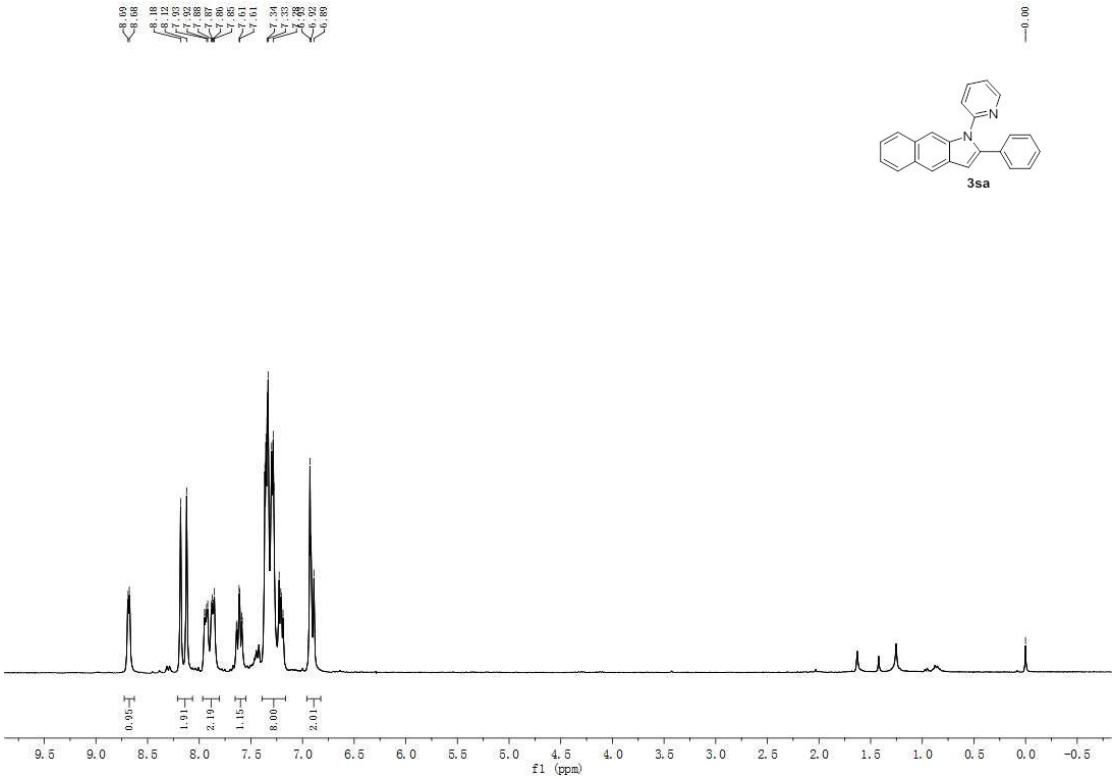
122.10
121.76
104.61
77.42
77.00
76.57
Cl
Cl
N
N
3ra
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)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7.87
7.86
7.85
7.61
7.61
7.34
7.33
7.28
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1.91
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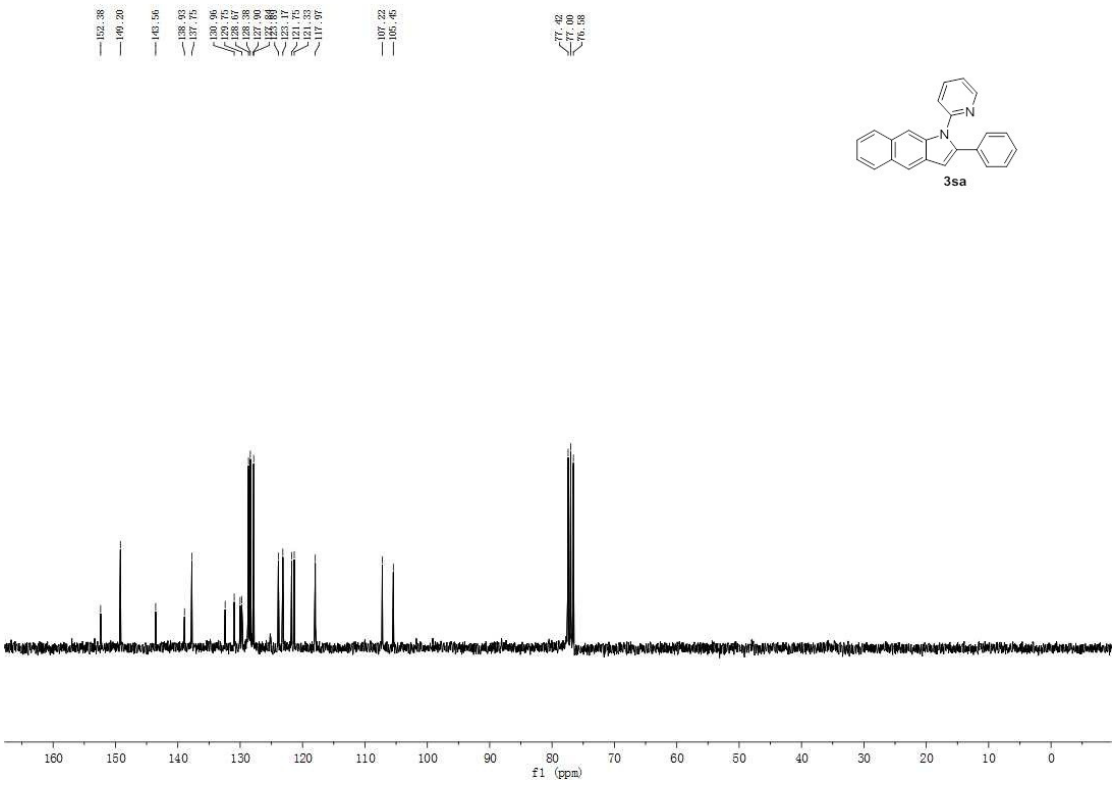
1.15
8.00
2.01
f1 (ppm)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121.33
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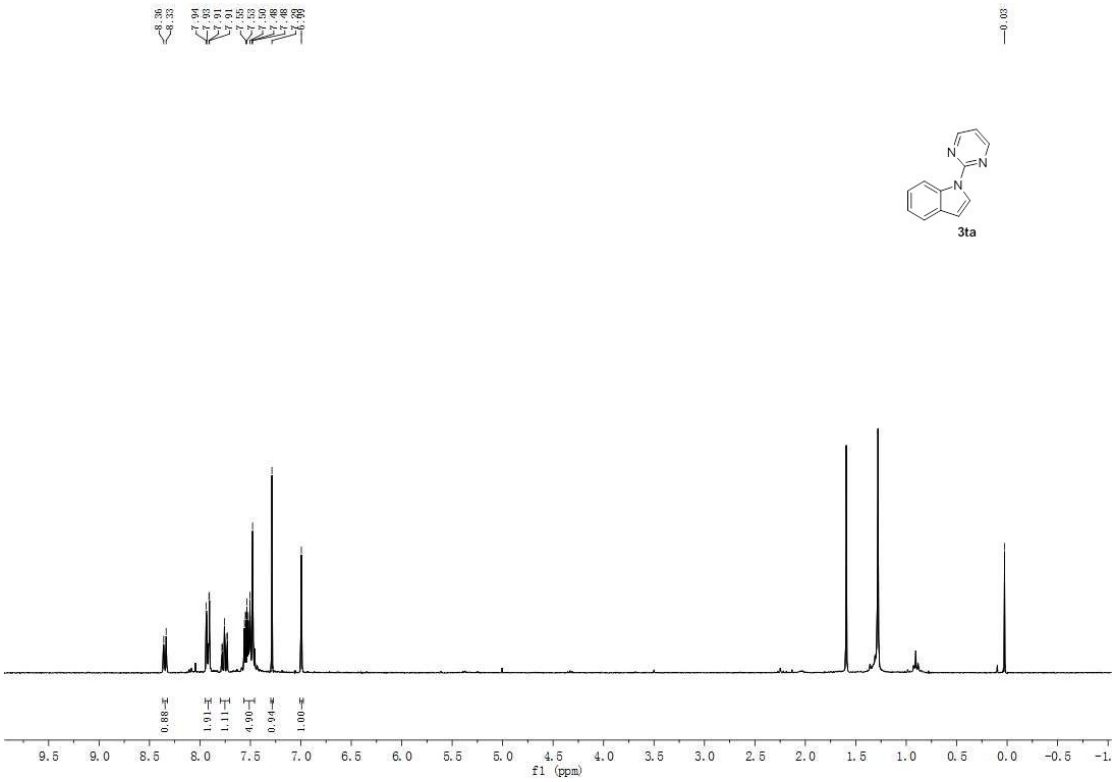
107.22
105.45
77.42
77.00
76.58
3sa
f1 (ppm)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4.90
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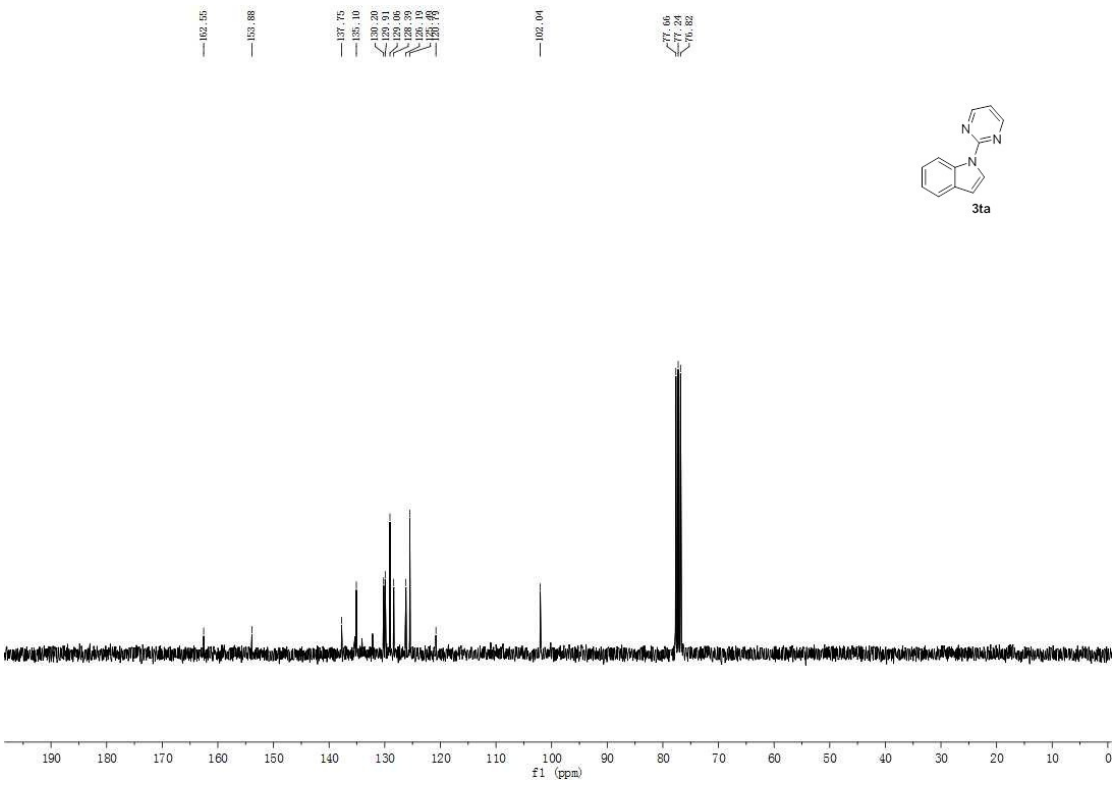
1.00
f1 (ppm)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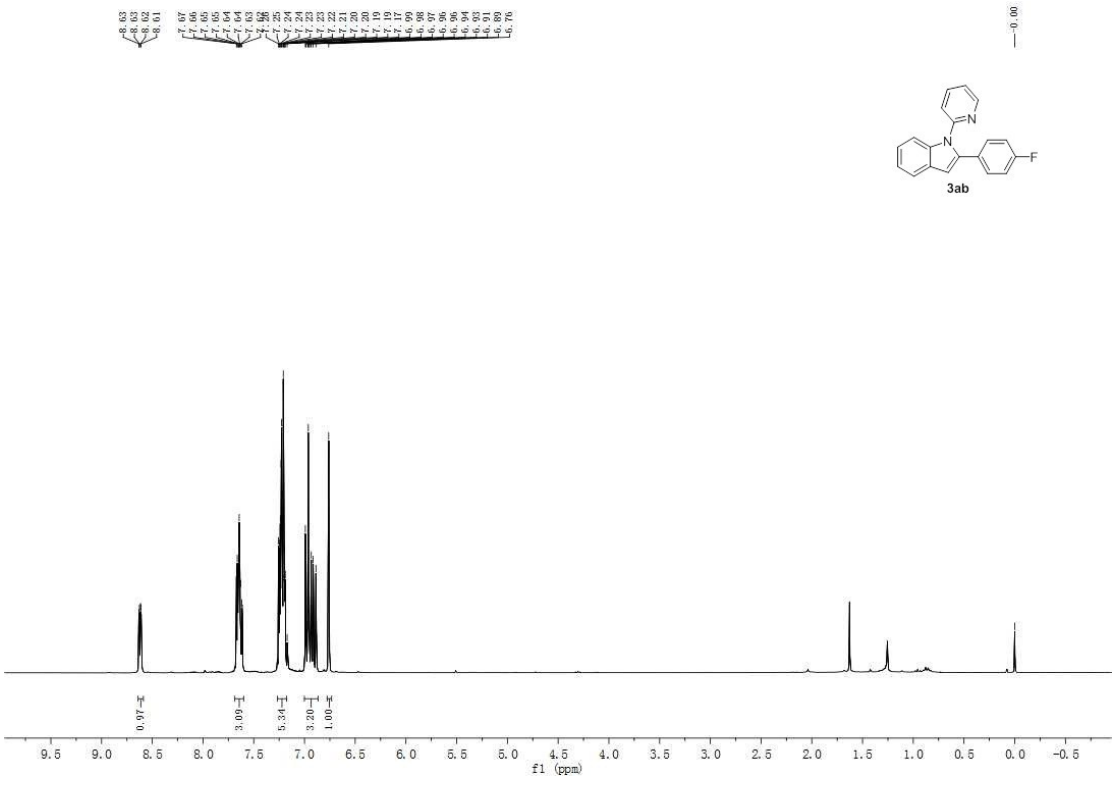
3ta
f1 (ppm)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7.19
7.17
6.99
6.98
6.97
6.96
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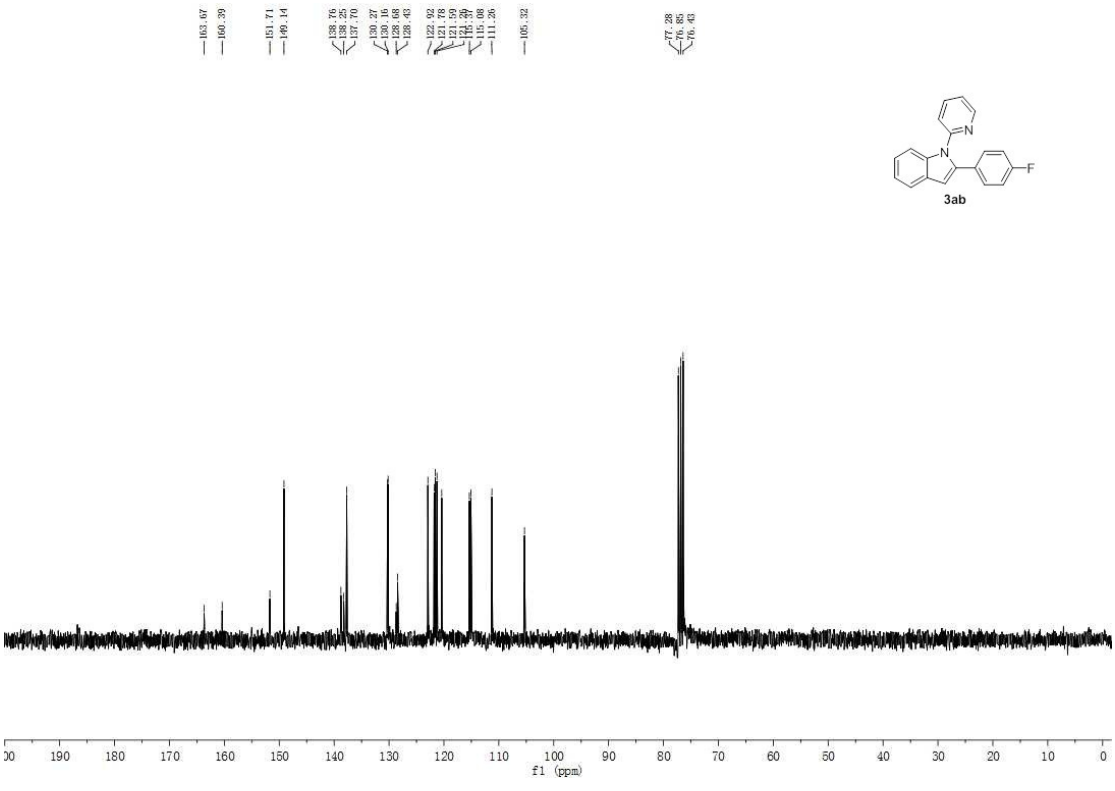
1.00
f1 (ppm)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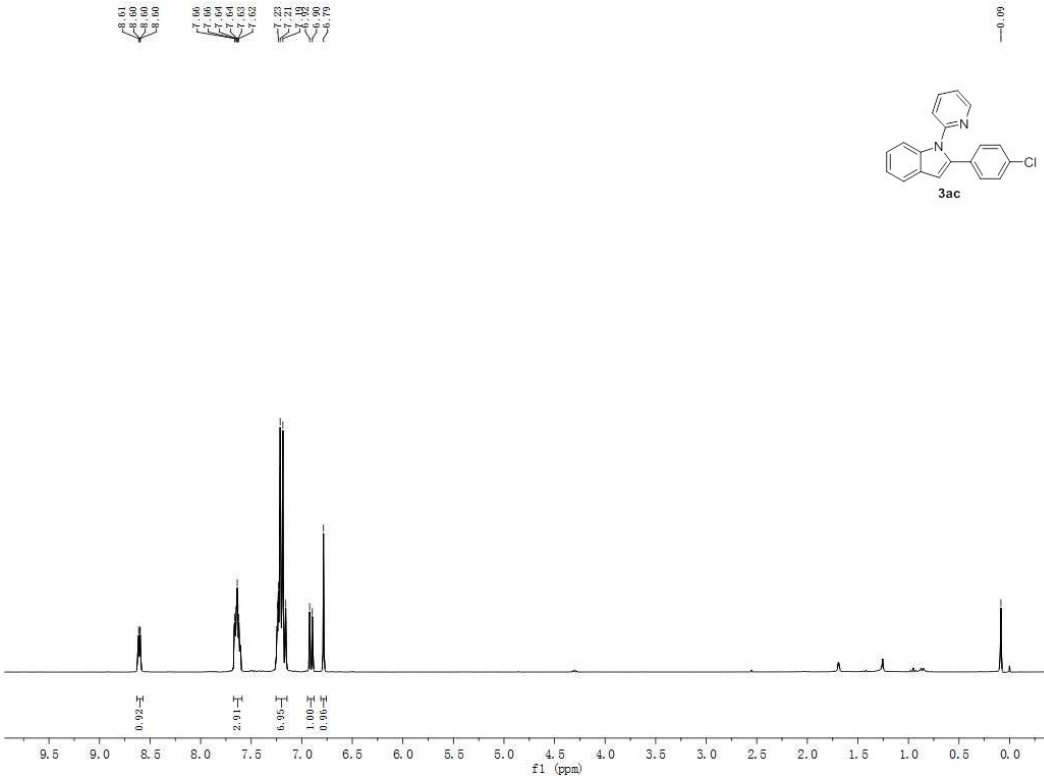
3ab
f1 (ppm)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7.02
6.90
6.79
0.00
N
N
Cl
3ac
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6.95
1.09
0.96
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
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1.5
1.0
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0.0
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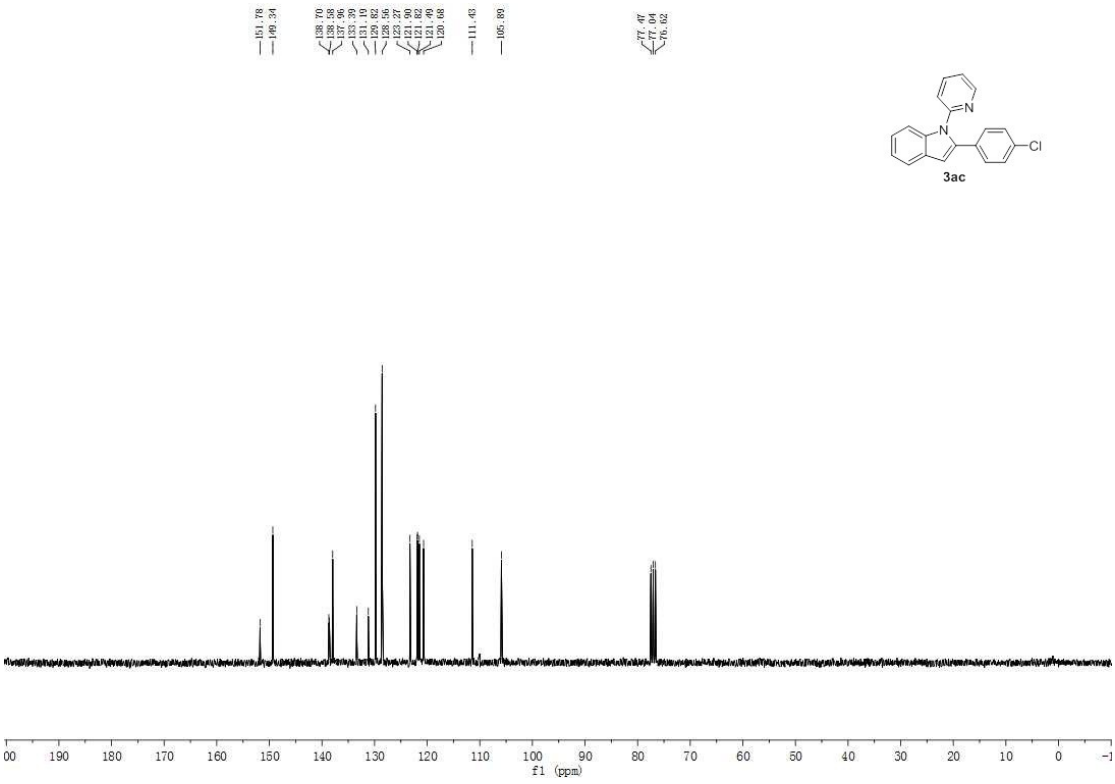
-1
f1 (ppm)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120.68
111.43
105.89
77.47
77.04
76.62
N
N
Cl
3ac
00
190
180
170
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100
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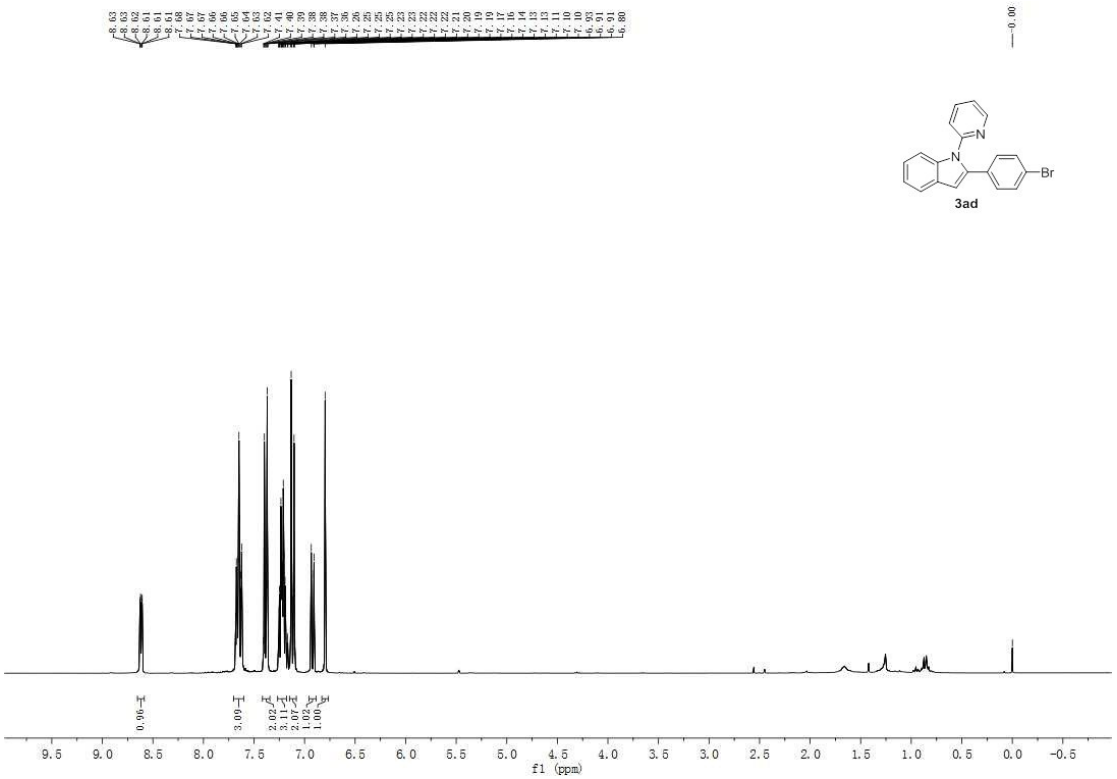
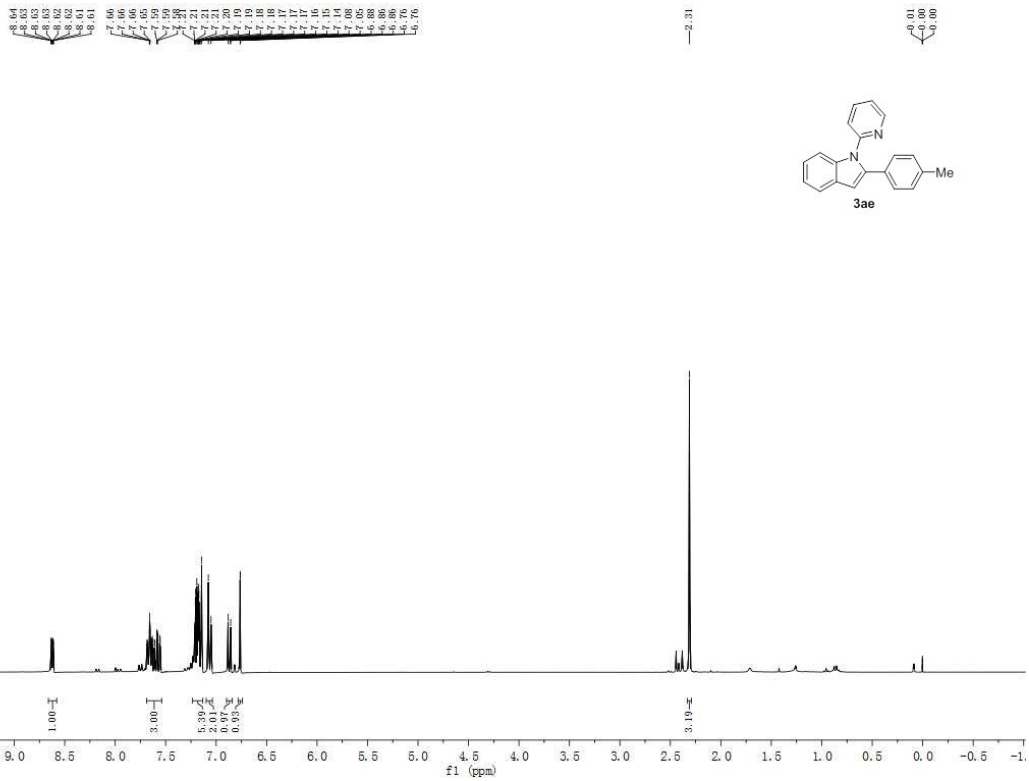
0
-1
f1 (ppm)


3ad
f1 (ppm)
3ad
f1 (ppm)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7.19
7.18
7.17
7.17
7.17
7.16
7.15
7.14
7.08
7.05
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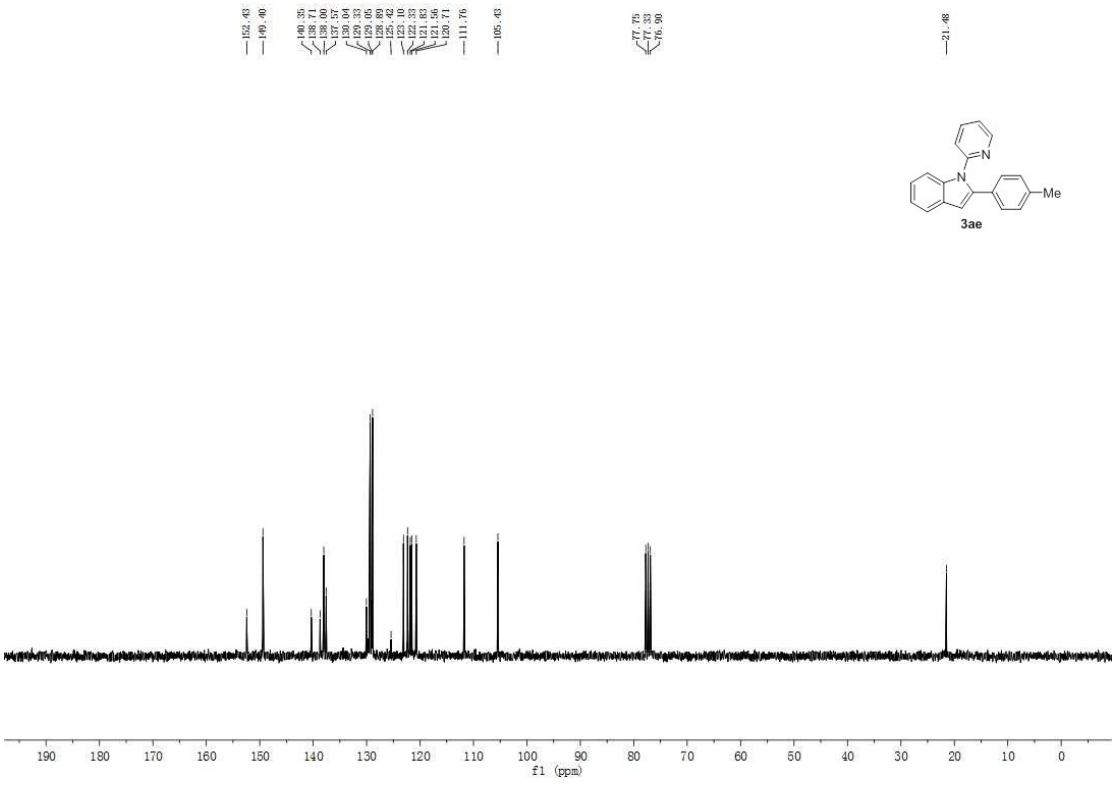
6.86
6.86
6.76
6.76
2.31
0.01
0.00
0.00
N
N
Me
3ae
1.00
3.00
5.39
2.01
0.97
0.93
3.19
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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120.71
111.76
105.43
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76.90
21.48
N
N
Me
3ae
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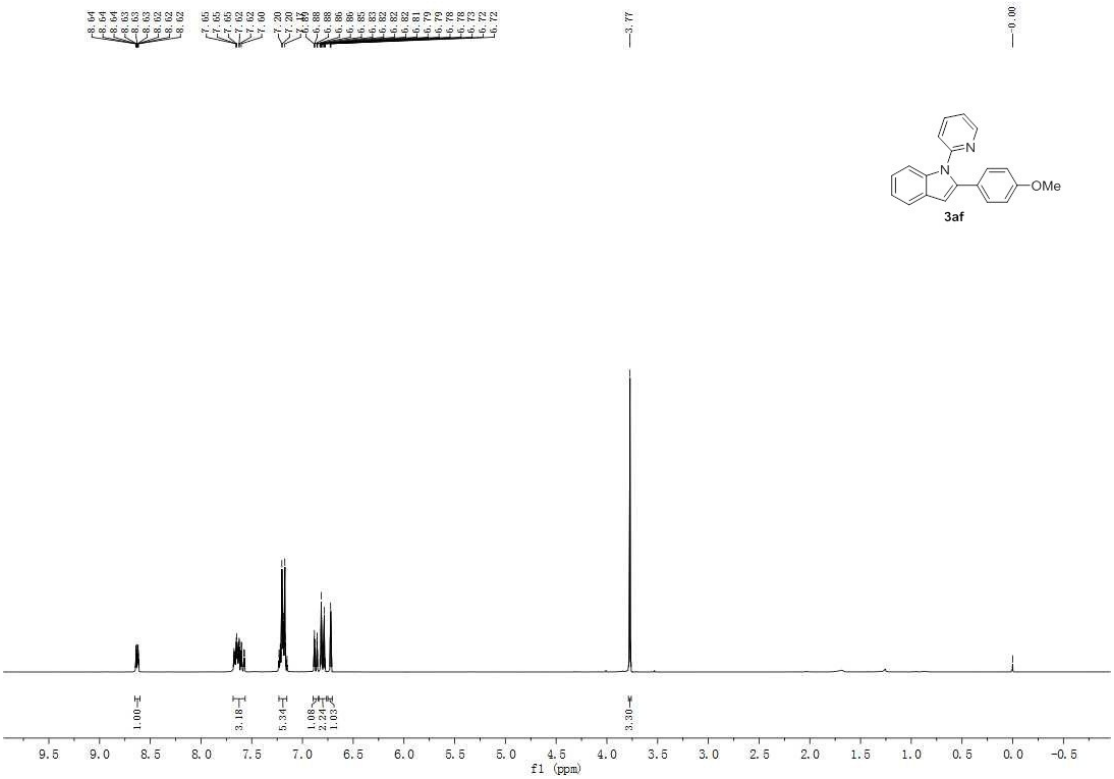
f1 (ppm)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7.60
7.20
7.20
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6.86
6.86
6.85
6.83
6.82
6.82
6.81
6.79
6.79
6.78
6.78
6.73
6.72
6.72
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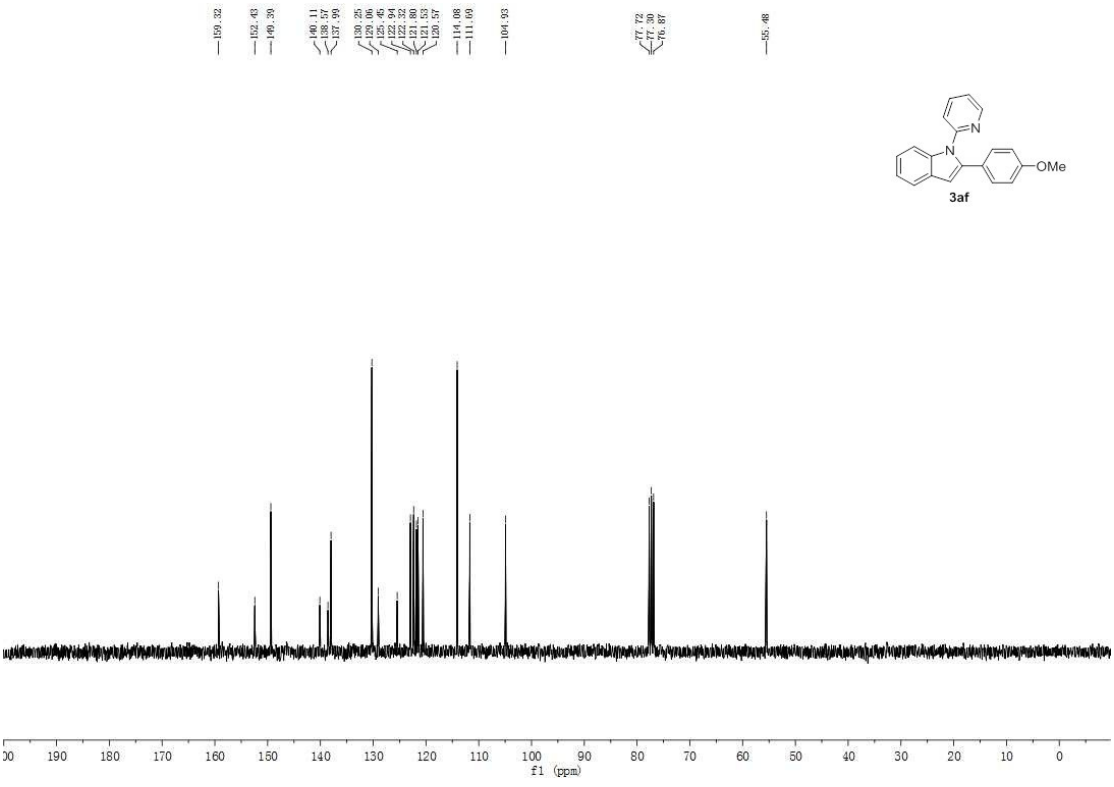
5.34
1.06
2.04
1.03
3.30
f1 (ppm)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76.87
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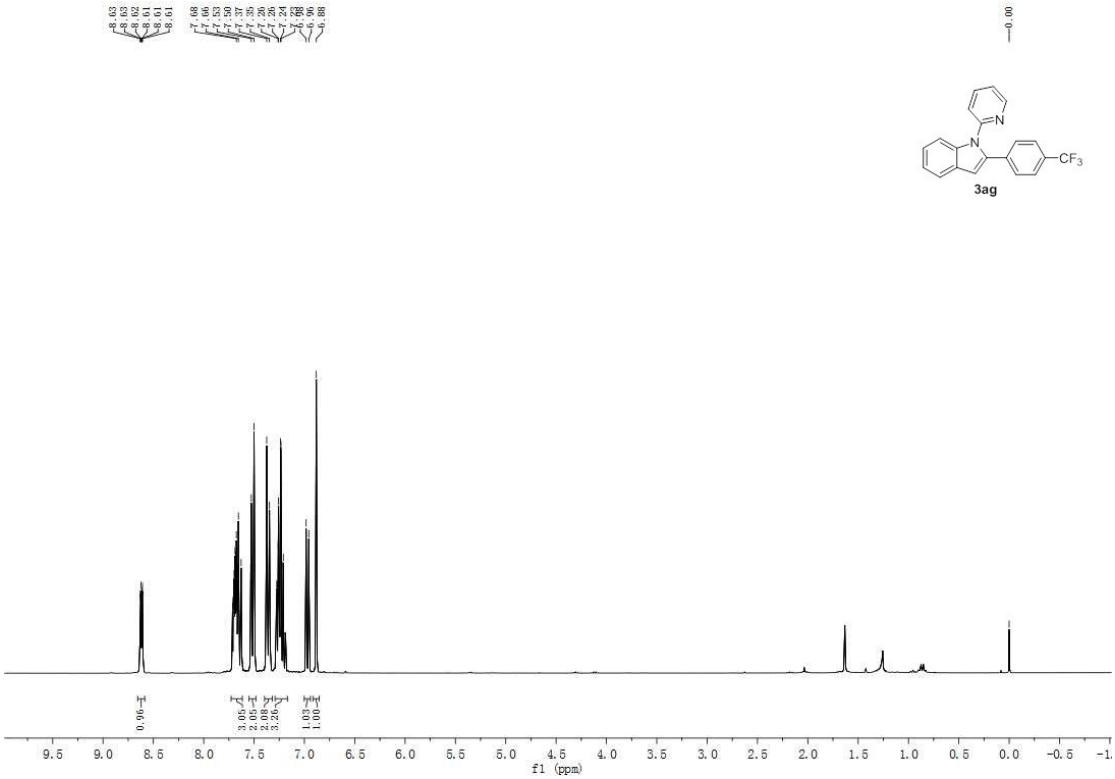
OMe
3af
f1 (ppm)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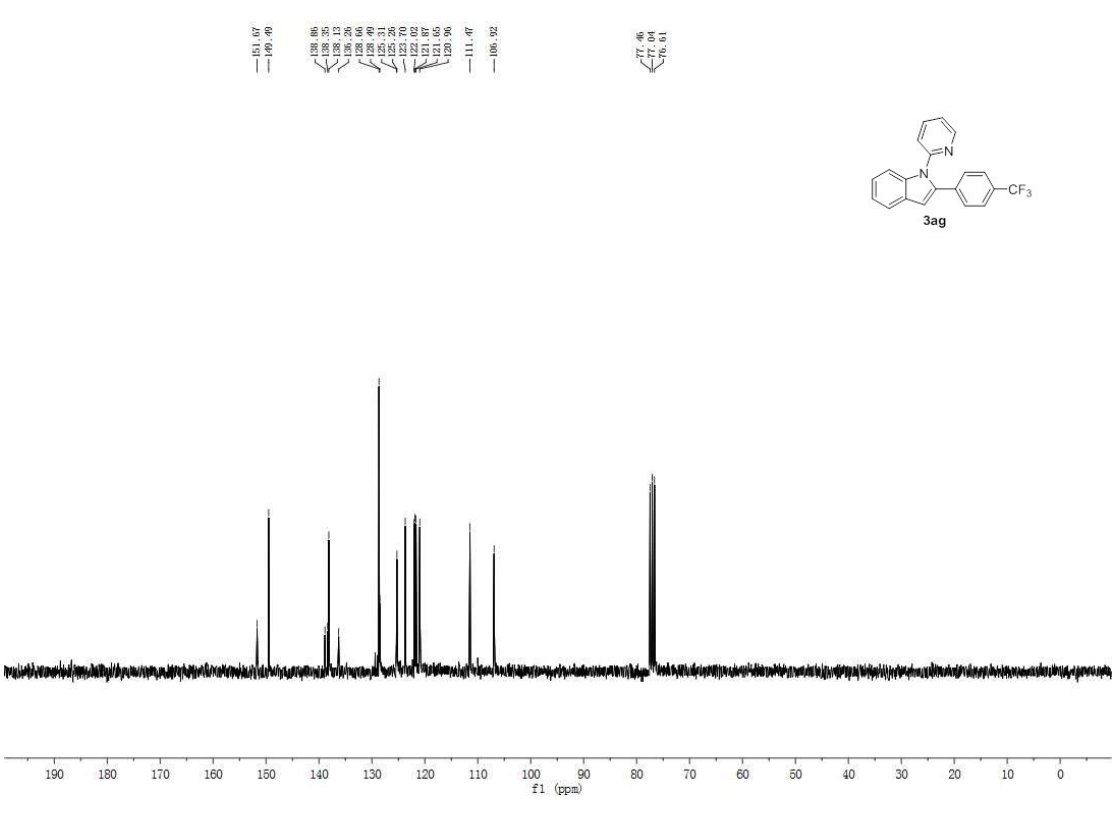
1.00
f1 (ppm)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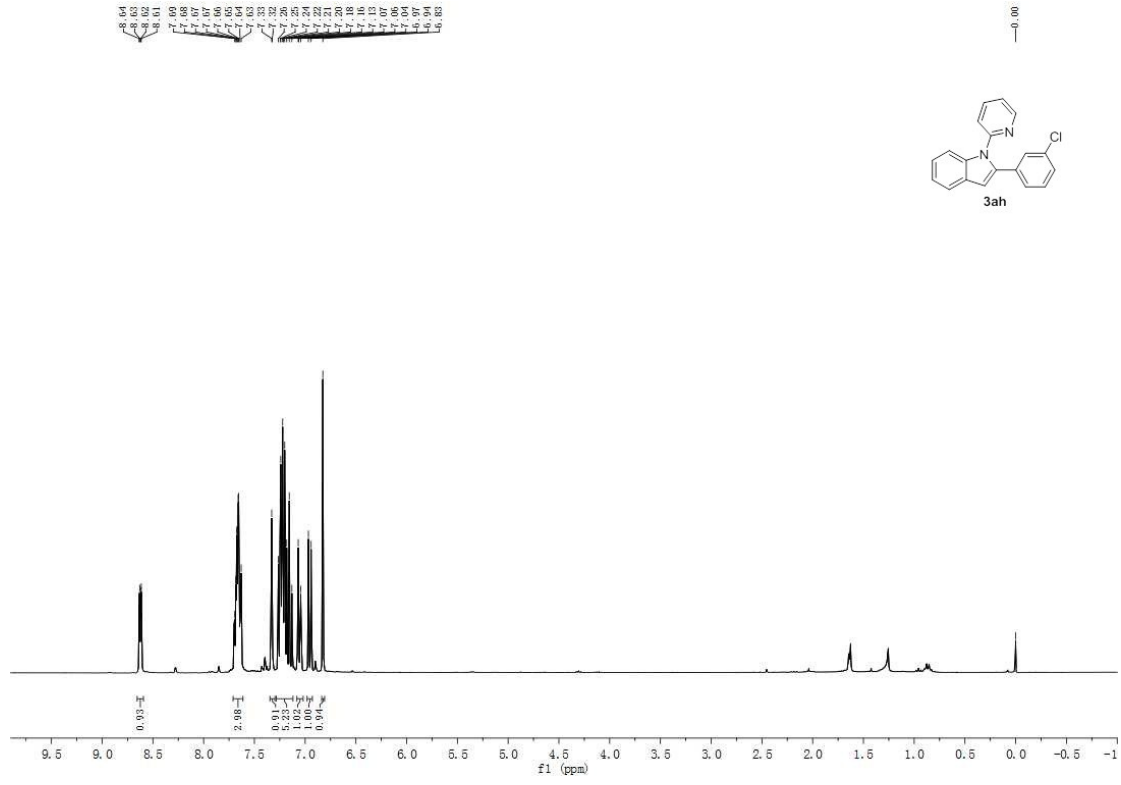
f1 (ppm)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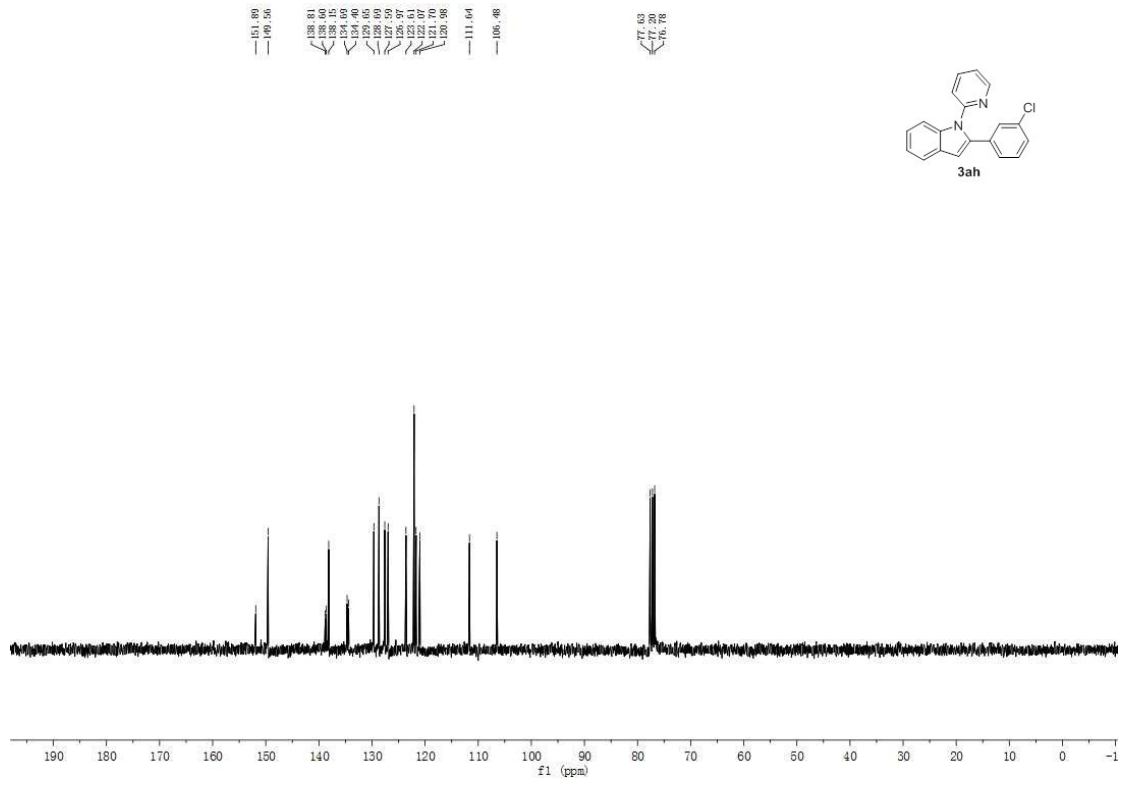
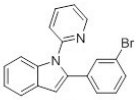
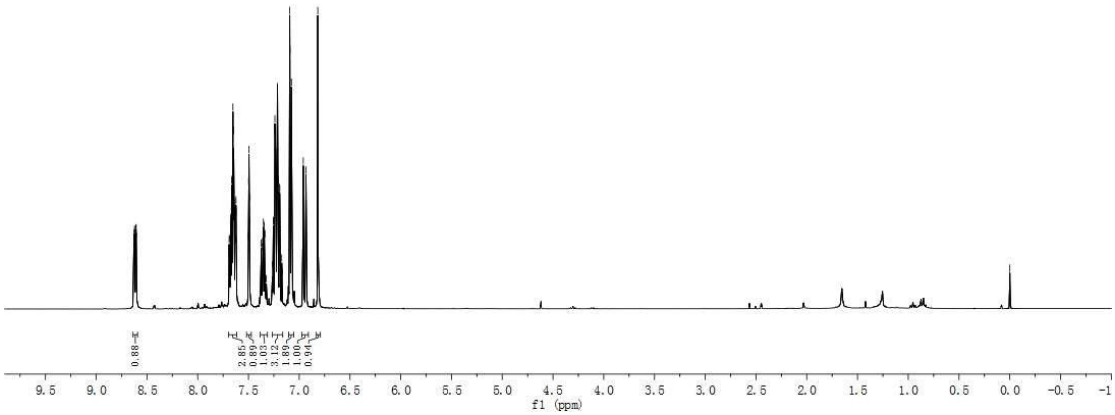
f1 (ppm)


3ah
f1 (ppm)


N
N
Br

3ai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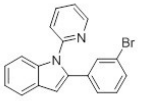
1.03
3.12
1.89
1.00
0.94
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1
f1 (ppm)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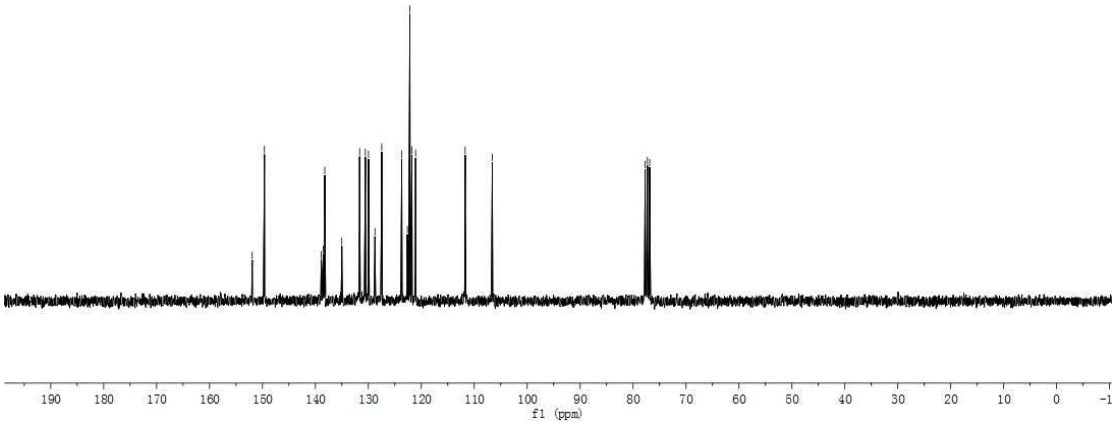
Br

3ai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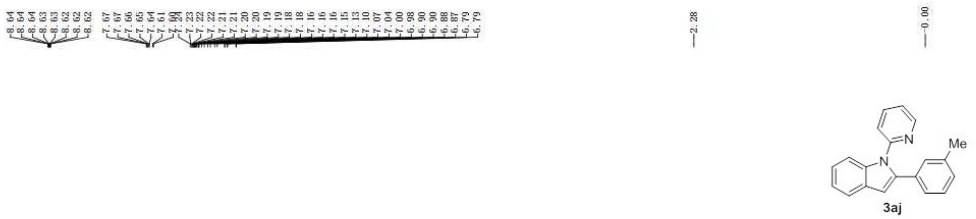
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7.04
7.00
6.98
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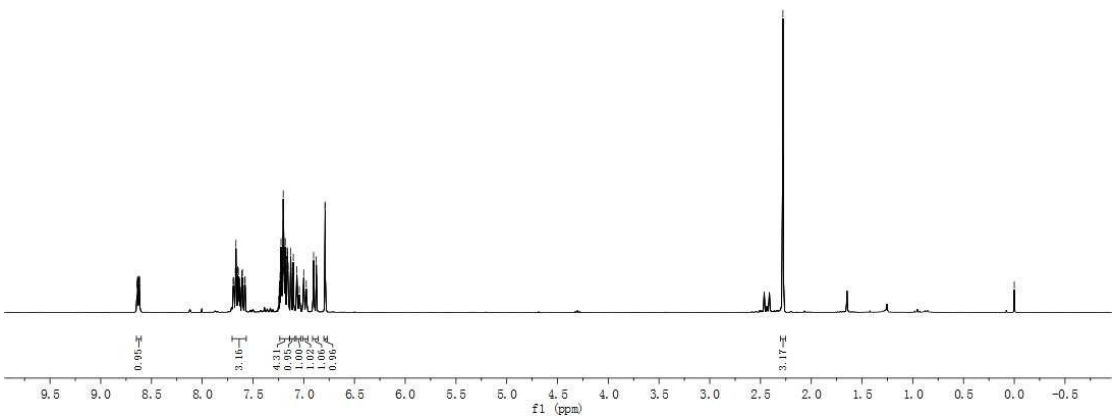
6.90
6.88
6.87
6.79
6.79
2.28
0.00

N
N
Me

3aj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9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
f1 (ppm)


152.14
149.11
140.14
138.46
137.98
137.68
129.41
128.73
128.21
128.10
125.88
122.91
122.03
121.54
121.29
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111.50
105.46
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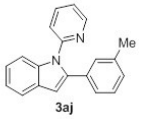
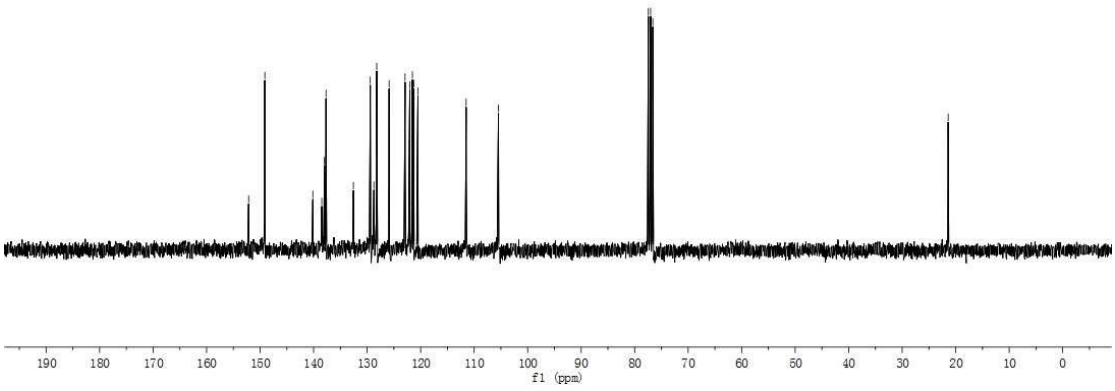
77.02
76.60
21.40


N
N
Me

3aj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180
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110
100
90
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50
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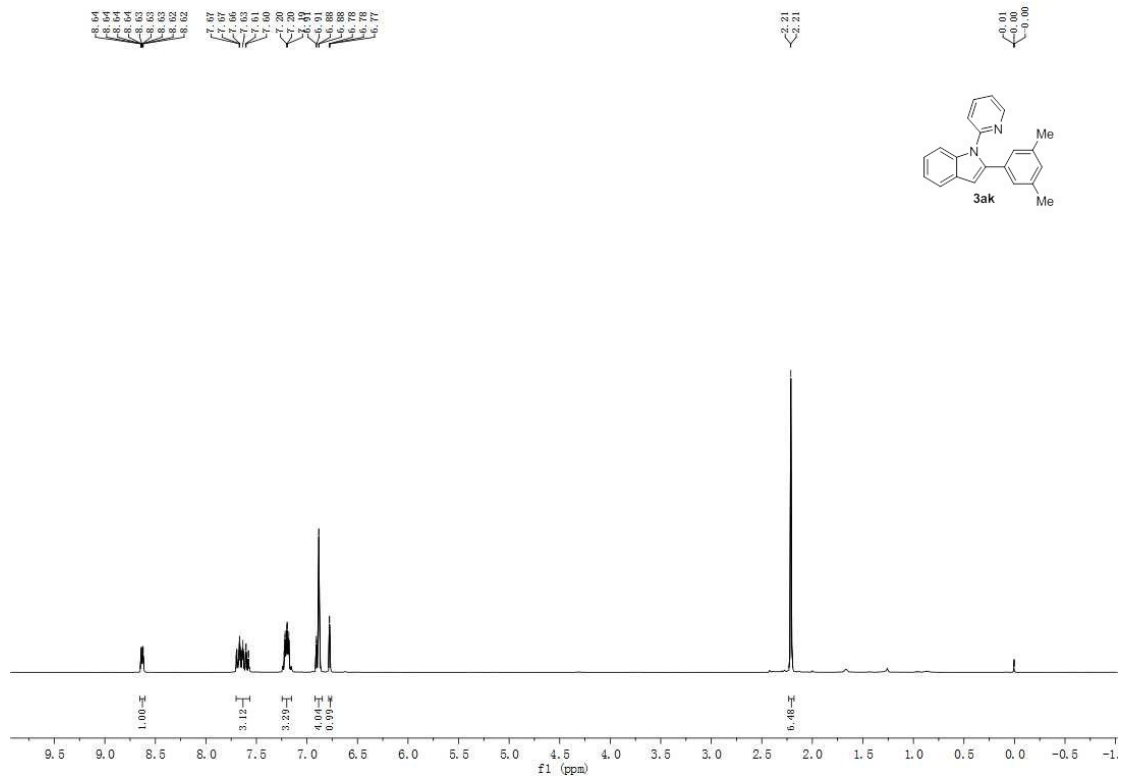
30
20
10
0
f1 (ppm)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7.67
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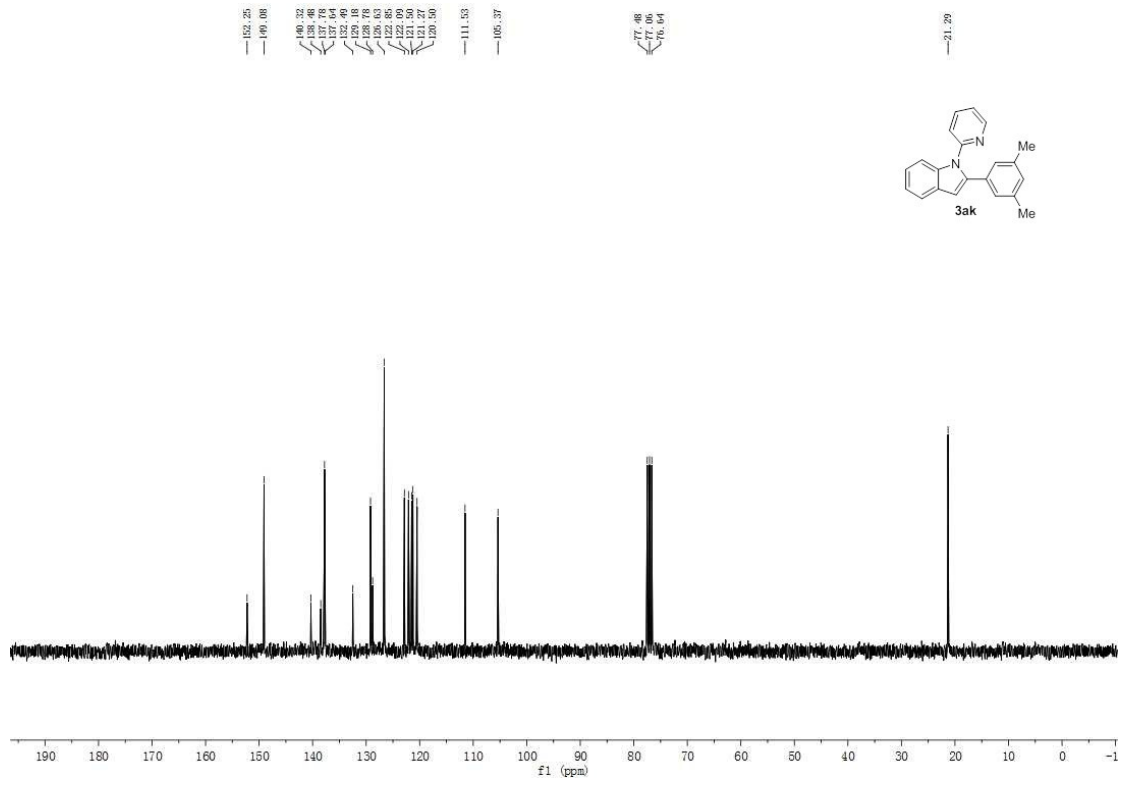
7.66
7.61
7.60
7.20
7.20
6.91
6.91
6.88
6.78
6.77
2.21
2.21
0.01
0.00
-0.00
Me
Me
3ak
1.00
3.12
3.23
4.04
0.99
6.48
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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138.48
137.78
137.64
137.40
129.18
128.78
126.63
122.85
122.09
121.50
121.27
120.50
111.53
105.37
77.48
77.06
76.64
21.29
Me
Me
3ak
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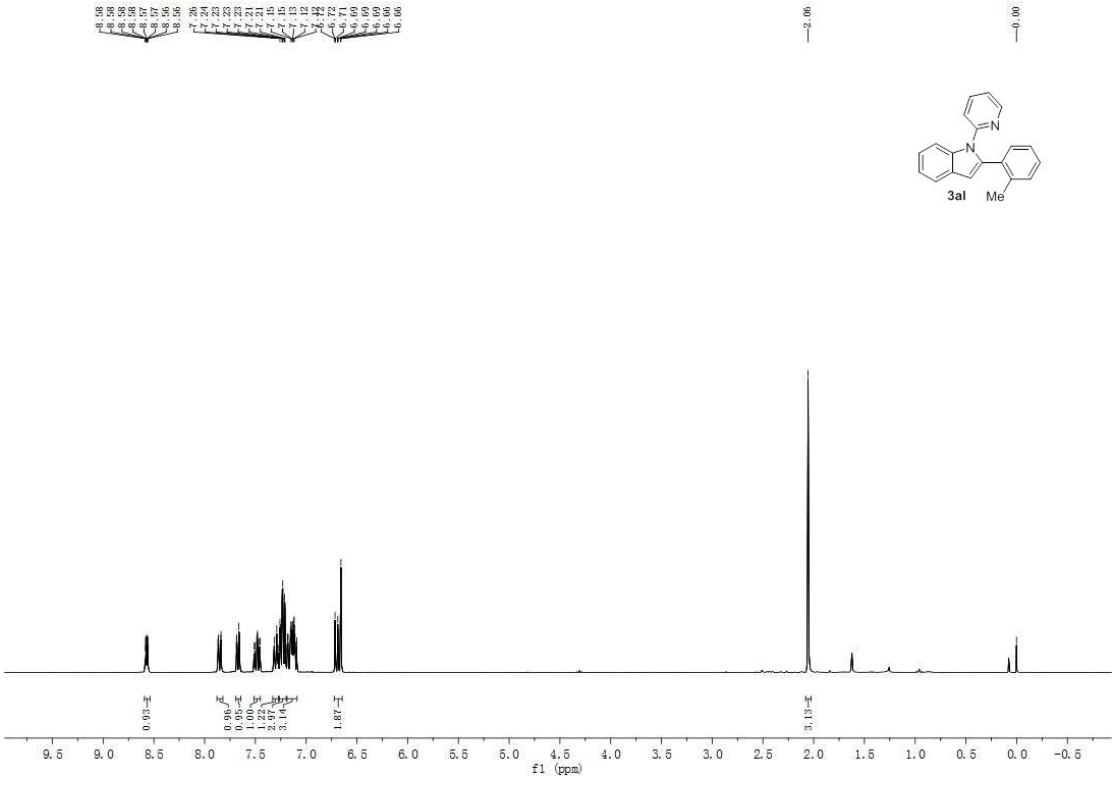
f1 (ppm)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7.23
7.22
7.21
7.21
7.15
7.15
7.13
7.12
6.72
6.71
6.69
6.69
6.69
6.66
6.66
2.06
0.00
3al
Me
0.93
0.96
0.95
1.00
1.22
2.97
3.14
1.87
3.13
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
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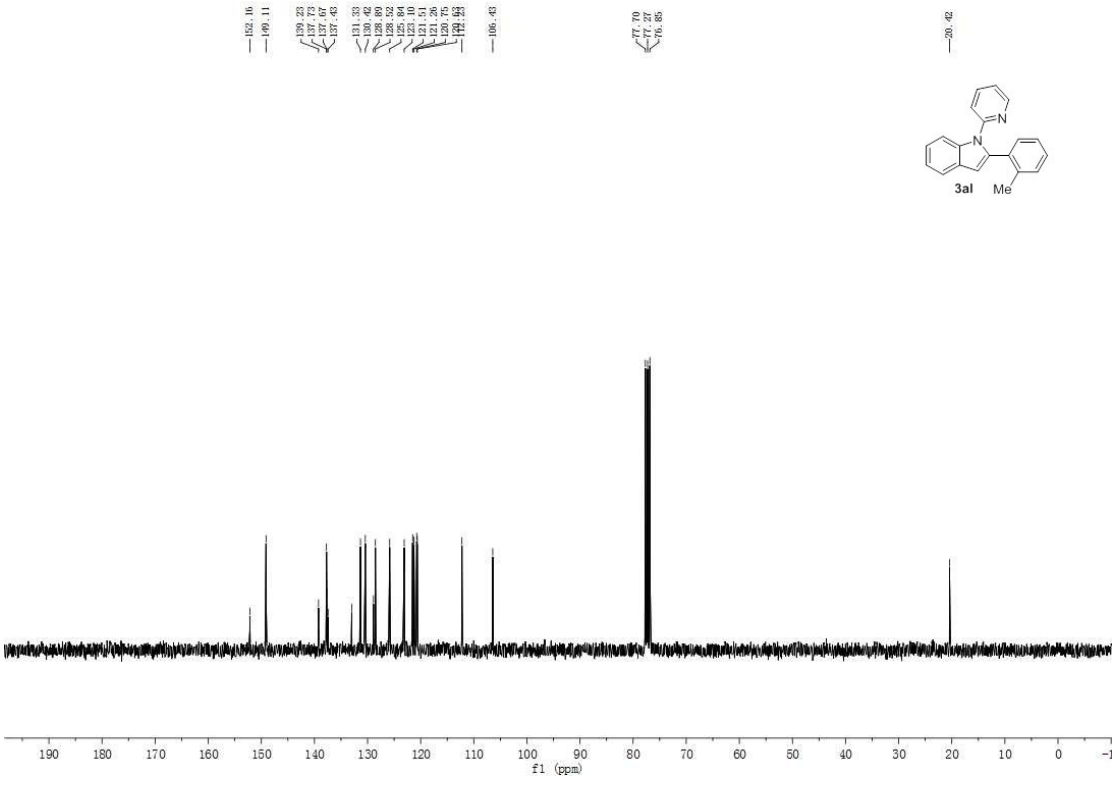
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
f1 (ppm)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149.11
139.23
137.73
137.67
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130.42
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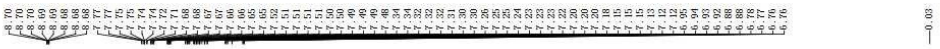
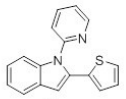
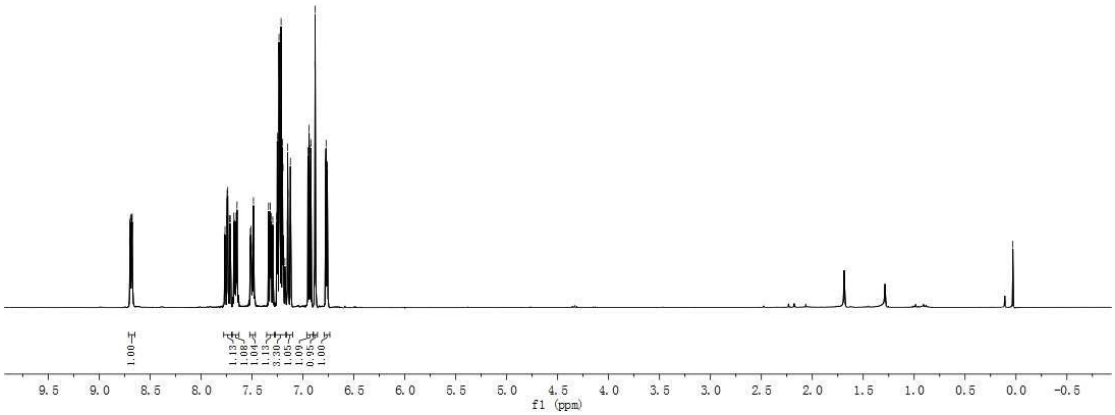
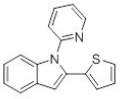
128.52
125.84
123.10
121.51
121.36
120.75
106.43
77.70
77.27
76.85
20.42
3al
Me
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)





3am





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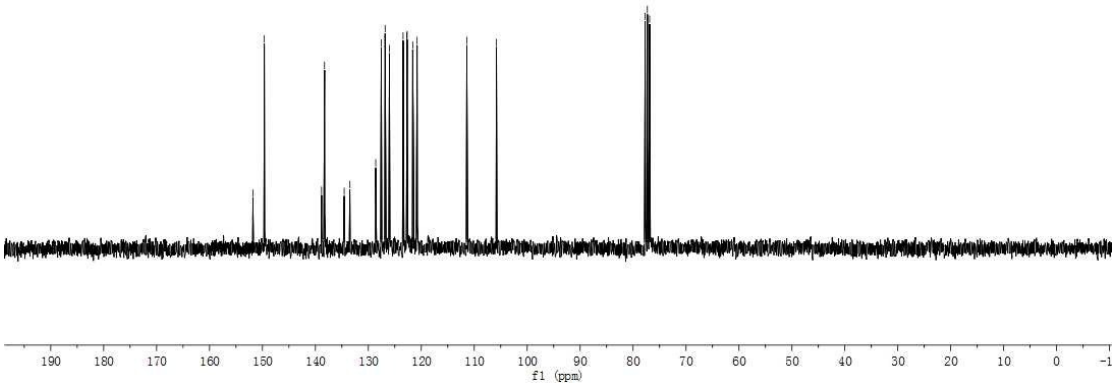

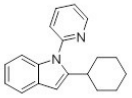

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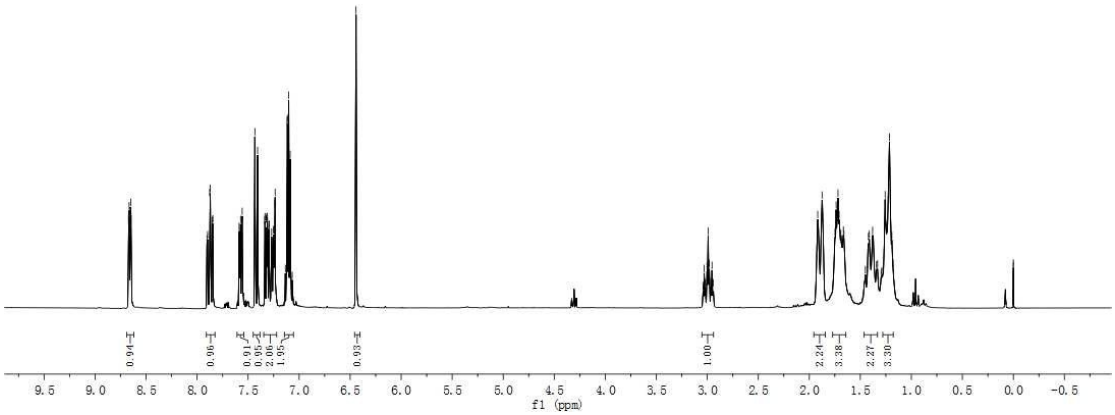

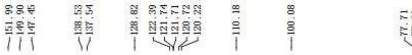

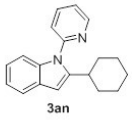

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