Electronic Supplementary Material (ESI) for Organic Chemistry Frontiers.

Supporting Information

Iron-Catalyzed Quinoline Synthesis *via* Acceptorless Dehydrogenative Coupling

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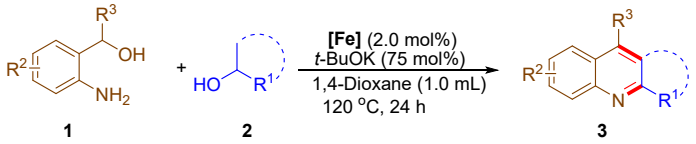
General

All solvents were dried and degassed, which were kept in the glove box. And all catalytic reactions were carried out in oven dried schlenk sealed pressure tube under Ar atmosphere. Chemicals were obtained from commercial sources and were used without further purification. The PNP-Iron catalysts were prepared according to the previous report.[1] The GC yields were determined by GC-FID, Agilent 8860 Network with FID detector, using *n*-hexadecane as an internal standard. Chemicals shifts (δ) are reported in ppm downfield of tetramethylsilane. The residual solvent signals were used as references for ^{1}H and ^{13}C NMR spectra ($CDCl_3$: δH = 7.26 ppm, δC = 77.1 ppm). ^{19}F NMR spectra are not calibrated by an internal reference. Data for ^{1}H NMR spectra were reported as follows: chemical shift (ppm), peak shape (s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, dd = doublet of doublets, vt = virtual triplet), coupling constant (Hz), and integration. Data for ^{13}C NMR were reported in terms of chemical shift (ppm).

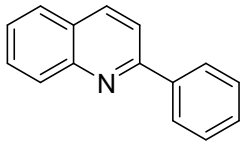
General Procedure for the Synthesis of Quinolines



In glovebox, an oven-dried Schlenk pressure tube (25 mL) containing a stirring bar was sequentially charged with **[Fe]** (2.0 mol%), KO*t*-Bu (75 mol%) and 1,4-dioxane (0.5 mL), stirring for 10 minutes. Afterwards, 2-aminobenzyl alcohol (0.5 mmol), secondary alcohols (1.5 mmol), and another 0.5 mL 1,4-dioxane were added. The reaction tube was capped and brought out of the glovebox. It was then placed into an oil-bath and heated at 120 °C for 24 h. After cooling to room temperature, the reaction mixture was transferred to round flask by DCM, the solvent was removed under *vacuum*. The residue was purified by column chromatography using petroleum ether /ethyl acetate as an eluent to afford pure products.

Characterization data for products

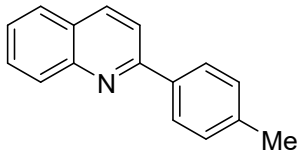
2-Phenylquinoline (3aa)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3aa** (88%, 90 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.19–8.14 (m, 4H), 7.87 (d, J = 8.6 Hz, 1H), 7.83 (dd, J = 8.1, 1.4 Hz, 1H), 7.77–7.69 (m, 1H), 7.57–7.44 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.4, 148.3, 139.7, 136.8, 129.8, 129.7, 129.4, 128.9, 127.6, 127.5, 127.2, 126.3, 119.1.

The spectral data are in accordance with those reported in the literature.[2]

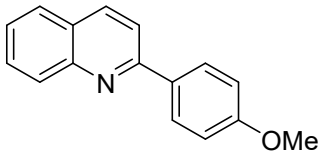
2-(4-Methylphenyl)quinoline (3ab)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(*p*-tolyl)ethan-1-ol (207 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ab** (80%, 94 mg) as yellow solid. ^{1}H NMR (400 MHz, CDCl3) δ = 8.20 (d, J = 8.6 Hz, 1H), 8.16 (d, J = 8.5 Hz, 1H), 8.07 (d, J = 8.2 Hz, 2H), 7.86 (d, J = 8.6 Hz, 1H), 7.82 (dd, J = 8.2 Hz, 1.3 Hz, 1H), 7.74–7.69 (m, 1H), 7.53–7.49 (m, 1H), 7.33 (d, J = 7.9 Hz, 2H), 2.44 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.3, 148.3, 139.4, 136.9, 136.7, 129.7, 129.6 (2C), 127.5 (2C), 127.1, 126.1, 118.9, 21.4.

The spectral data are in accordance with those reported in the literature.[2]

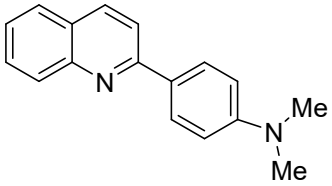
2-(4-Methoxyphenyl)quinoline (3ac)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-methoxyphenyl)ethan-1-ol (212 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ac** (81%, 95 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.19 (d, J = 8.6 Hz, 1H), 8.17–8.11 (m, 3H), 7.84 (d, J = 8.6 Hz, 1H), 7.80 (d, J = 8.4 Hz, 1H), 7.73–7.69 (m, 1H), 7.53–7.47 (m, 1H), 7.08–7.02 (m, 2H), 3.89 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 160.8, 156.9, 148.3, 136.7, 132.3, 129.6, 129.5, 128.9, 127.5, 126.9, 125.9, 118.6, 114.2, 55.4.

The spectral data are in accordance with those reported in the literature.[2]

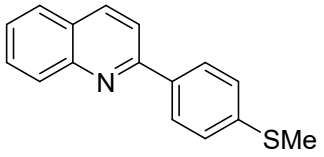
***N*,*N*-Dimethyl-4-(quinolin-2-yl)aniline (3ad)**



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-(dimethylamino)phenyl)ethan-1-ol (248 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 10:1), yielded **3ad** (83%, 103 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.14–8.10 (m, 4H), 7.83 (d, J = 8.7 Hz, 1H), 7.76 (d, J = 8.3 Hz, 1H), 7.71–7.64 (m, 1H), 7.47–7.43 (m, 1H), 6.87–6.80 (m, 2H), 3.05 (s, 6H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.4, 151.4, 148.4, 136.3, 129.4, 129.3, 128.5, 127.4, 127.4, 126.7, 125.4, 118.3, 112.3, 40.4.

The spectral data are in accordance with those reported in the literature.[2]

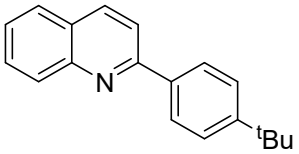
2-(4-(Methylthio)phenyl)quinoline (3ae)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-(methylthio)phenyl)ethan-1-ol (252 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ae** (88%, 111 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.22–8.08 (m, 4H), 7.86–7.78 (m, 2H), 7.74–7.71 (m, 1H), 7.55–7.49 (m, 1H), 7.39 (d, J = 8.5 Hz, 2H), 2.54 (s, 3H).^{13}C NMR (100 MHz, $CDCl_3$) δ = 156.6, 148.3, 140.4, 136.8, 136.3, 129.7, 129.6, 127.8, 127.5, 127.1, 126.4, 126.2, 118.6, 15.6.

The spectral data are in accordance with those reported in the literature.[3]

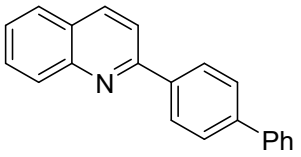
2-(4-(*tert*-Butyl) phenyl)quinoline (3af)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), 2-aminobenzyl alcohol (62 mg, 0.5 mmol) and 1-(4-(tert-butyl)phenyl)ethan-1-ol (267 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3af** (86%, 112 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.19 (d, J = 8.5 Hz, 2H), 8.12 (d, J = 8.3 Hz, 2H), 7.87 (d, J = 8.5 Hz, 1H), 7.83–7.79 (m, 1H), 7.75–7.68 (m, 1H), 7.58–7.56 (m, 2H), 7.54–7.50 (m, 1H), 1.40 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.4, 152.6, 148.3, 137.0, 136.7, 129.7, 129.6, 127.5, 127.3, 127.1, 126.1, 125.9, 119.0, 34.8, 31.4.

The spectral data are in accordance with those reported in the literature.[4]

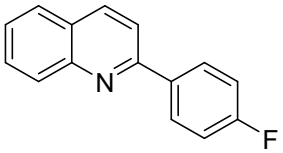
2-([1,1'-Biphenyl]-4-yl)quinoline (3ag)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-([1,1'-biphenyl]-4-yl)ethan-1-ol (297 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ag** (81%, 114 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.27–8.24 (m, 3H), 8.20 (d, J = 8.4 Hz, 1H), 7.94 (d, J = 8.6 Hz, 1H), 7.85 (d, J = 8.7 Hz, 1H), 7.79–7.73 (m, 3H), 7.71–7.67 (m, 2H), 7.56–7.53 (m, 1H), 7.52–7.49 (m, 2H), 7.40–7.38 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 156.9, 148.3, 142.1, 140.6, 138.5, 136.9, 129.8, 129.7, 128.9, 128.0, 127.63, 127.59, 127.5, 127.2, 126.4, 119.0.

The spectral data are in accordance with those reported in the literature.[2]

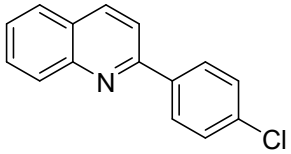
2-(4-Fluorophenyl)quinoline (3ah)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-fluorophenyl)ethan-1-ol (190 µL, 1.5 mmol) under 135 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ah** (60%, 67 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.22 (d, J = 8.6 Hz, 1H), 8.18–8.13 (m, 3H), 7.83 (d, J = 8.5 Hz, 2H), 7.75–7.72 (m, 1H), 7.55–7.52 (m, 1H), 7.24–7.18 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 165.1(d, J = 249 Hz), 156.3, 148.2, 137.0, 135.8 (d, J = 3.0 Hz), 129.8, 129.6, 129.4 (d, J = 8.4 Hz), 127.5, 127.1, 126.4, 118.7, 115.8 (d, J = 21.7Hz). ^{19}F NMR (376 MHz, $CDCl_3$) δ = -112.50.

The spectral data are in accordance with those reported in the literature.[2]

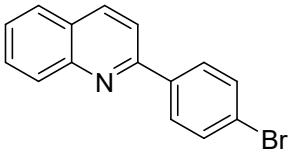
2-(4-Chlorophenyl)quinoline (3ai)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-chlorophenyl)ethan-1-ol (201 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ai** (68%, 81 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.24 (d, J = 8.5 Hz, 1H), 8.15 (d, J = 8.4 Hz, 1H), 8.14–8.09 (m, 2H), 7.87–7.81 (m, 2H), 7.75–7.72 (m, 1H), 7.56–7.53 (m, 1H), 7.51–7.48 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 156.0, 148.2, 138.0, 137.0, 135.6, 129.9, 129.7, 129.0, 128.8, 127.5, 127.2, 126.5, 118.6.

The spectral data are in accordance with those reported in the literature.[2]

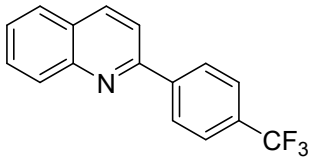
2-(4-Bromophenyl)quinoline (3aj)



The procedure was followed using [Fe] (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-bromophenyl)ethan-1-ol (207 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3aj** (61%, 87 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.24 (d, J = 8.9 Hz, 1H), 8.15 (d, J = 8.5 Hz, 1H), 8.10–8.02 (m, 2H), 7.87–7.82 (m, 2H), 7.76–7.71 (m, 1H), 7.67–7.61 (m, 2H), 7.56–7.52 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 156.1, 148.3, 138.5, 137.0, 132.0, 129.9, 129.7, 129.1, 127.5, 127.3, 126.5, 124.0, 118.5.

The spectral data are in accordance with those reported in the literature.[2]

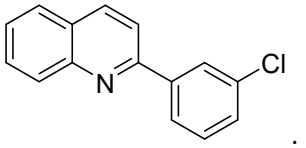
2-(4-(Trifluoromethyl) phenyl)quinoline (3ak)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(4-(trifluoromethyl)phenyl)ethan-1-ol (231 μL, 1.5 mmol) under 135 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ak** (59%, 81 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.29–8.26 (m, 3H), 8.19 (d, J = 8.4 Hz, 1H), 7.89 (d, J = 8.6 Hz, 1H), 7.86 (d, J = 8.2 Hz, 1H), 7.79–7.75 (m, 3H), 7.59–7.56 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 155.7, 148.3, 142.9, 137.2, 131.1 (q, J = 32.5 Hz), 130.0, 129.9, 127.9, 127.6, 127.4, 126.9, 125.8 (q, J = 3.8 Hz), 124.2 (q, J = 272.1 Hz), 118.8. ^{19}F NMR (565 MHz, $CDCl_3$) δ = -62.56.

The spectral data are in accordance with those reported in the literature.[2]

2-(3-Chlorophenyl)quinoline (3al)



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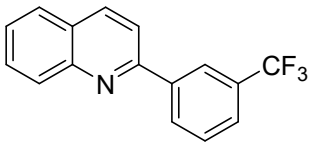
The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(3-chlorophenyl)ethan-1-ol (201 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3al** (81%, 97 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.25–8.15 (m, 3H), 8.05–8.00 (m, 1H), 7.84–7.82 (m, 2H), 7.77–7.71 (m, 1H), 7.57–7.53 (m, 1H), 7.46–7.42 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 155.8, 148.2, 141.4, 137.1, 135.0, 130.1, 130.0, 129.7, 129.3, 127.8, 127.5, 127.4, 126.7, 125.6, 118.8.

The spectral data are in accordance with those reported in the literature.[5]

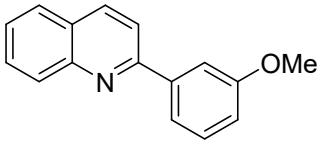
2-(3-(Trifluoromethyl)phenyl)quinoline (3am)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(3-(trifluoromethyl)phenyl)ethan-1-ol (231 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3am** (74%, 101 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.46 (s, 1H), 8.36 (d, J = 7.7 Hz, 1H), 8.27 (d, J = 7.8 Hz, 1H), 8.19 (d, J = 8.4 Hz, 1H), 7.90 (d, J = 8.6 Hz, 1H), 7.86 (d, J = 8.1 Hz, 1H), 7.79–7.70 (m, 2H), 7.68–7.62 (m, 1H), 7.59–7.55 (m, 1H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 155.6, 148.2, 140.4, 137.2, 131.4, 130.7, 130.0, 129.8, 129.3, 127.5, 127.4, 126.8, 125.9 (q, J = 3.7 Hz), 124.4 (q, J = 3.8 Hz), 124.2 (q, J =272.6 Hz), 118.6. ^{19}F NMR (376 MHz, $CDCl_3$) δ = -62.54.

The spectral data are in accordance with those reported in the literature.[6]

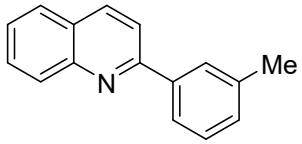
2-(3-Methoxyphenyl)quinoline (3an)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(3-methoxyphenyl)ethan-1-ol (212 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3an** (84%, 99 mg) as yellow oil. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.20 (d, J = 8.5 Hz, 1H), 8.18 (d, J = 8.5 Hz, 1H), 7.85 (d, J = 8.5 Hz, 1H), 7.82 (d, J = 6.7 Hz, 1H), 7.78–7.77 (m, 1H), 7.75–7.67 (m, 2H), 7.54–7.49 (m, 1H), 7.42 (t, J = 7.9 Hz, 1H), 7.02 (dd, J = 8.2, 2.6 Hz, 1H), 3.93 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 160.1, 157.2, 148.2, 141.1, 136.9, 129.9, 129.73, 129.71, 127.5, 127.3, 126.4, 120.1, 119.2, 115.4, 112.7, 55.5.

The spectral data are in accordance with those reported in the literature.[2]

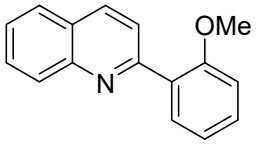
2-(*m*-Tolyl)quinoline(3ao)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(*m*-tolyl)ethan-1-ol (207 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ao** (82%, 90 mg) as yellow solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.22 (d, J = 8.6 Hz, 1H), 8.19 (d, J = 8.4 Hz, 1H), 8.02 (s, 1H), 7.93 (d, J = 6.8 Hz, 1H), 7.87 (d, J = 8.6 Hz, 1H), 7.83 (d, J = 6.8 Hz, 1H), 7.75–7.72 (m, 1H), 7.54–7.52 (m, 1H), 7.42 (t, J = 7.6 Hz, 1H), 7.29 (d, J = 7.5 Hz, 1H), 2.49 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.6, 148.3, 139.7, 138.6, 136.8, 130.2, 129.7 (2C), 128.8, 128.3, 127.5, 127.2, 126.3, 124.7, 119.2, 21.7.

The spectral data are in accordance with those reported in the literature.[2]

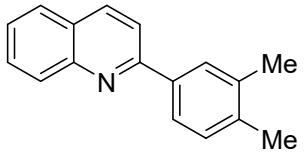
2-(2-Methoxyphenyl)quinoline (3ap)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(2-methoxyphenyl)ethan-1-ol (211 µL, 1.5 mmol) under 135 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3ap** (55%, 65 mg) as yellow oil. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.17 (d, J = 8.8 Hz, 1H), 8.15 (d, J = 8.6 Hz, 1H), 7.88 (d, J = 8.5 Hz, 1H), 7.86–7.82 (m, 2H), 7.73–7.68 (m, 1H), 7.55–7.51 (m, 1H), 7.44–7.40 (m, 1H), 7.13 (t, J = 7.0 Hz, 1H), 7.04 (d, J = 8.3 Hz, 1H), 3.87 (s, 3H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 157.21, 157.16, 148.3, 135.1, 131.5, 130.4, 129.74, 129.65, 129.2, 127.4, 127.1, 126.2, 123.5, 121.3, 111.5, 55.7.

The spectral data are in accordance with those reported in the literature.[2]

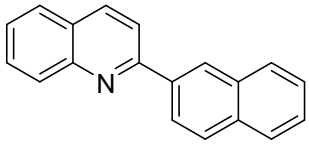
2-(3,4-Dimethylphenyl) quinoline (3aq)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(3,4-dimethylphenyl)ethan-1-ol (225 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3aq** (80%, 93 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.21–8.17 (m, 2H), 7.99 (d, J = 1.9 Hz, 1H), 7.88–7.86 (m, 2H), 7.82 (d, J = 6.7 Hz, 1H), 7.74–7.70 m, 1H), 7.53–7.49 (m, 1H), 7.29 (d, J = 7.8 Hz, 1H), 2.40 (s, 3H), 2.35 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.6, 148.3, 138.2, 137.2, 137.2, 136.7, 130.2, 129.6, 129.6, 128.7, 127.5, 127.1, 126.1, 125.0, 119.0, 77.4, 77.1, 76.8, 20.1, 19.8.

The spectral data are in accordance with those reported in the literature.[7]

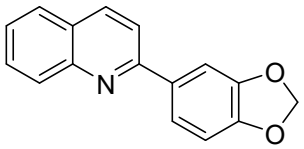
2-(Naphthalen-2-yl)quinoline (3ar)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(naphthalen-2-yl)ethan-1-ol (258 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ar** 88% (112 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.63 (s, 1H), 8.38 (d, J = 8.4 Hz, 1H), 8.27 (d, J = 8.6 Hz, 1H), 8.23 (d, J = 8.5 Hz, 1H), 8.05 (d, J = 8.6 Hz, 1H), 8.01 (d, J = 8.1 Hz, 2H), 7.95–7.88 (m, 1H), 7.86 (d, J = 8.2 Hz, 1H), 7.77–7.74 (m, 1H), 7.57–7.53 (m, 3H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 157.2, 148.4, 136.94, 136.87, 133.9, 133.5, 129.8, 129.7, 128.9, 128.6, 127.7, 127.5, 127.3, 127.2, 126.7, 126.4, 126.4, 125.1, 119.2.

The spectral data are in accordance with those reported in the literature.[4]

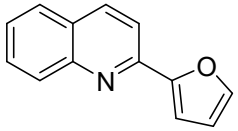
2-(Benzo[*d*][1,3] dioxol-5-yl)quinoline (3as)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(benzo[*d*][1,3]dioxol-5-yl)ethan-1-ol (249 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3as** (80%, 100 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.17 (d, J = 8.6 Hz, 1H), 8.13 (d, J = 8.5 Hz, 1H), 7.82–7.78 (m, 2H), 7.76–7.68 (m, 2H), 7.66 (dd, J = 8.1, 1.8 Hz, 1H), 7.52–7.48 (m, 1H), 6.95 (d, J = 8.2 Hz, 1H), 6.04 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 156.7, 148.8, 148.4, 148.2, 136.7, 134.1, 129.7, 129.5, 127.5, 127.0, 126.1, 121.8, 118.7, 108.5, 107.9, 101.4.

The spectral data are in accordance with those reported in the literature.[8]

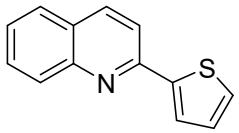
2-(Furan-2-yl)quinoline (3at)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(furan-2-yl)ethan-1-ol (156 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3at** (78%, 76 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.16 (d, J = 7.8 Hz, 1H), 8.13 (d, J = 8.4 Hz, 1H), 7.83–7.75 (m, 2H), 7.73–7.68 (m, 1H), 7.63 (dd, J = 1.8, 0.8 Hz, 1H), 7.52–7.47 (m, 1H), 7.22 (dd, J = 3.5, 0.8 Hz, 1H), 6.59 (dd, J = 3.4, 1.8 Hz, 1H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 153.7, 149.0, 148.1, 144.1, 136.7, 129.9, 129.4, 127.6, 127.2, 126.2, 117.5, 112.2, 110.2.

The spectral data are in accordance with those reported in the literature.[9]

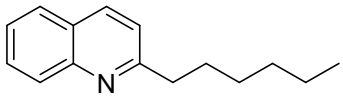
2-(Thiophen-2-yl)quinoline (3au)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-(thiophen-2-yl)ethan-1-ol (165 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3au** (76%, 80 mg) as yellow solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.14 (d, J = 8.6 Hz, 1H), 8.10 (d, J = 8.4 Hz, 1H), 7.80 (d, J = 8.6 Hz, 1H), 7.79–7.75 (m, 1H), 7.75–7.72 (m, 1H), 7.71–7.67 (m, 1H), 7.51–7.45 (m, 2H), 7.19 (dd, J = 5.0, 3.7 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 152.3, 148.1, 145.3, 136.7, 129.9, 129.2, 128.7, 128.1, 127.5, 127.2, 126.2, 125.9, 117.7.

The spectral data are in accordance with those reported in the literature.[2]

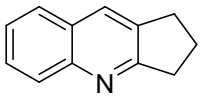
2-Hexylquinoline (3av)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and octan-2-ol (239 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3av** (59%, 63 mg) as yellow oil. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.09–8.00 (m, 2H), 7.74 (dd, J = 8.1, 1.5 Hz, 1H), 7.66 (ddd, J = 8.5, 6.9, 1.5 Hz, 1H), 7.49–7.41 (m, 1H), 7.27 (d, J = 8.4 Hz, 1H), 3.02–2.85 (m, 2H), 1.87–1.72 (m, 2H), 1.45–1.36 (m, 2H), 1.36–1.25 (m, 4H), 0.92–0.83 (m, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 163.1, 147.9, 136.2, 129.3, 128.8, 127.5, 126.7, 125.6, 121.4, 39.4, 31.8, 30.1, 29.3, 22.6, 14.1.

The spectral data are in accordance with those reported in the literature.[10]

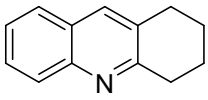
2,3-Dihydro-1H-cyclopenta[*b*]quinoline (3aw)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and cyclopentanol (136 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3aw** (68%, 58 mg) as yellow oil. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.01 (d, J = 8.4 Hz, 1H), 7.88 (s, 1H), 7.72 (dd, J = 8.1, 1.4 Hz, 1H), 7.61 (ddd, J = 8.4, 6.8, 1.5 Hz, 1H), 7.45 (ddd, J = 8.1, 6.8, 1.2 Hz, 1H), 3.16 (t, J = 7.6 Hz, 2H), 3.08 (t, J = 7.4 Hz, 2H), 2.20 (tt, J = 7.6, 7.6 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 167.9, 147.5, 135.6, 130.4, 128.6, 128.4, 127.5, 127.4, 125.5, 34.7, 30.6, 23.7.

The spectral data are in accordance with those reported in the literature.[11]

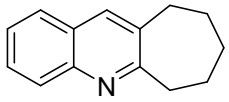
1,2,3,4-Tetrahydroacridine (3ax)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and cyclohexanol (158 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ax** (61%, 56 mg) as yellow oil. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 7.99 (d, J = 8.5 Hz, 1H), 7.83 (s, 1H), 7.72 (dd, J = 8.2, 1.4 Hz, 1H), 7.64–7.61 (m, 1H), 7.45–7.40 (m, 1H), 3.15 (t, J = 6.6 Hz, 2H), 3.00 (t, J = 6.4 Hz, 2H), 2.08–1.94 (m, 2H), 1.92 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 159.3, 146.6, 135.0, 131.0, 128.5, 128.3, 127.2, 126.9, 125.5, 33.6, 29.3, 23.3, 22.9.

The spectral data are in accordance with those reported in the literature.[3]

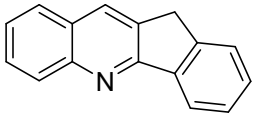
7,8,9,10-Tetrahydro-6*H*-cyclohepta[*b*]quinoline (3ay)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and cycloheptanol (181 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ay** (84%, 83 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.00 (d, J = 8.5 Hz, 1H), 7.79 (s, 1H), 7.70 (d, J = 8.2 Hz, 1H), 7.64–7.58 (m, 1H), 7.46–7.42 (m, 1H), 3.24–3.14 (m, 2H), 2.98–2.90 (m, 2H), 1.92–1.87 (m, 2H), 1.82–1.78 (m, 2H), 1.78–1.68 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 164.7, 146.3, 136.5, 134.6, 128.46, 128.45, 127.4, 126.8, 125.7, 40.1, 35.5, 32.3, 28.9, 27.0.

The spectral data are in accordance with those reported in the literature.[12]

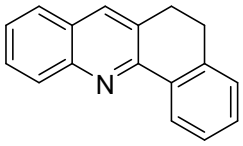
11*H*-Indeno[1,2-*b*]quinoline (3az)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 2,3-dihydro-1*H*-inden-1-ol (201 mg, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3az** (86%, 93 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.31 (dd, J = 6.4, 2.3 Hz, 1H), 8.23–8.14 (m, 2H), 7.81 (dd, J = 8.1, 1.4 Hz, 1H), 7.70 (ddd, J = 8.5, 6.8, 1.6 Hz, 1H), 7.60 (dd, J = 6.2, 2.2 Hz, 1H), 7.56–7.45 (m, 3H), 4.03 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 161.7, 148.0, 145.1, 140.3, 134.6, 131.2, 130.0, 129.1, 128.9, 127.8, 127.6, 127.4, 125.7, 125.5, 122.1, 34.0.

The spectral data are in accordance with those reported in the literature.[13]

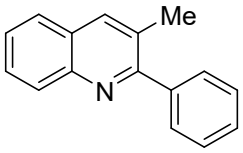
5,6-Dihydrobenzo[*c*]acridine (3aaa)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1,2,3,4-tetrahydronaphthalen-1-ol (204 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/Ethyl acetate: 15:1), yielded **3aaa** (94%, 109 mg) as yellow solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.58 (d, J = 9.1 Hz, 1H), 8.14 (d, J = 8.4 Hz, 1H), 7.93 (s, 1H), 7.75 (d, J = 8.1 Hz, 1H), 7.67–7.64 (m, 1H), 7.49–7.46 (m, 1H), 7.46–7.40 (m, 1H), 7.39–7.36 (m, 1H), 7.28 (dd, J = 7.4, 1.3 Hz, 1H), 3.14 (dd, J = 9.6, 6.7 Hz, 2H), 3.02 (dd, J = 8.5, 5.6 Hz, 2H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 153.4, 147.7, 139.4, 134.7, 133.7, 130.6, 129.7, 129.4, 128.7, 128.0, 127.9, 127.4, 126.9, 126.1 (2C), 28.9, 28.4.

The spectral data are in accordance with those reported in the literature.[14]

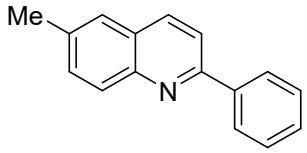
3-Methyl-2-phenylquinoline (3aab)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), **1a** (62 mg, 0.5 mmol) and 1-phenylpropan-1-ol (206 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3aab** 66% yield (72 mg) as yellow oil. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.14 (d, J = 8.4 Hz, 1H), 8.02 (s, 1H), 7.78 (d, J = 6.8 Hz, 1H), 7.68–7.65 (m, 1H), 7.60 (d, J = 6.8 Hz, 2H), 7.53–7.48 (m, 3H), 7.46–7.43 (m, 1H), 2.47 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 160.6, 146.6, 140.9, 136.8, 129.3, 129.2, 128.9, 128.8, 128.3, 128.2, 127.6, 126.7, 126.4, 20.7.

The spectral data are in accordance with those reported in the literature.[12]

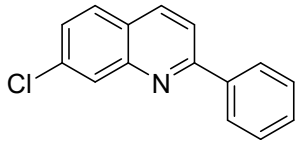
6-Methyl-2-phenylquinoline (3ba)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-amino-5-methylphenyl)methanol (69 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ba** (80%, 88 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.16–8.15 (m, 2H), 8.13 (d, J = 8.5 Hz, 1H), 8.08 (d, J = 8.5 Hz, 1H), 7.84 (d, J = 8.5 Hz, 1H), 7.61–7.50 (m, 4H), 7.47–7.45 (m, 1H), 2.58 (s, 3H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 156.6, 146.9, 139.8, 136.18, 136.16, 132.0, 129.4, 129.2, 128.8, 127.5, 127.2, 126.4, 119.0, 21.7.

The spectral data are in accordance with those reported in the literature.[14]

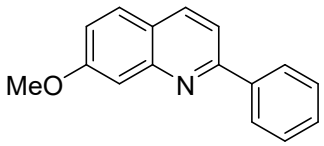
7-Chloro-2-phenylquinoline (3ca)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-amino-4-chlorophenyl)methanol (79 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ca** (63%, 76 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.21–8.14 (m, 4H), 7.89 (d, J = 8.5 Hz, 1H), 7.77 (d, J = 8.6 Hz, 1H), 7.57–7.52 (m, 3H), 7.51–7.44 (m, 2H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 158.3, 148.6, 139.2, 136.6, 135.5, 129.7, 128.9, 128.70, 128.68, 127.6, 127.3, 125.5, 119.2.

The spectral data are in accordance with those reported in the literature.[14]

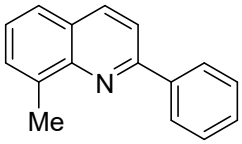
7-Methoxy-2-phenylquinoline (3da)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-amino-4-methoxyphenyl)methanol (77 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3da** (79%, 93 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.13 (d, J = 8.0 Hz, 3H), 7.73 (d, J = 8.4 Hz, 1H), 7.71 (d, J = 8.9 Hz, 1H), 7.55–7.49 (m, 3H), 7.48–7.45 (m, 1H), 7.19 (dd, J = 8.9, 2.5 Hz, 1H), 3.98 (s, 3H).^{13}C NMR (150 MHz, $CDCl_3$) δ = 160.9, 157.7, 150.0, 139.9, 136.4, 129.2, 128.8, 128.5, 127.6, 122.4, 119.6, 117.0, 107.6, 55.6.

The spectral data are in accordance with those reported in the literature.[4]

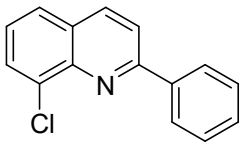
8-Methyl-2-phenylquinoline (3ea)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-amino-3-methylphenyl)methanol (69 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ea** (92%, 101 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.30 (dd, J = 8.2, 1.4 Hz, 2H), 8.18 (d, J = 8.5 Hz, 1H), 7.91 (d, J = 8.5 Hz, 1H), 7.68 (d, J = 8.1 Hz, 1H), 7.60 (d, J = 7.0 Hz, 1H), 7.56 (dd, J = 8.4, 6.9 Hz, 2H), 7.51–7.48 (m, 1H), 7.46–7.42 (m, 1H), 2.96 (s, 3H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 155.6, 147.2, 139.9, 137.7, 137.0, 129.7, 129.3, 128.8, 127.5, 127.1, 126.1, 125.5, 118.3, 18.0.

The spectral data are in accordance with those reported in the literature. [15]

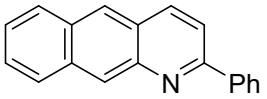
8-Chloro-2-phenylquinoline (3fa)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-amino-3-chlorophenyl)methanol (69 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3fa** (60%, 72 mg) as colorless oil. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.35–8.29 (m, 2H), 8.22 (d, J = 8.5 Hz, 1H), 7.97 (d, J = 8.6 Hz, 1H), 7.86 (dd, J = 7.4, 1.4 Hz, 1H), 7.74 (dd, J = 8.1, 1.3 Hz, 1H), 7.60–7.55 (m, 2H), 7.54–7.49 (m, 1H), 7.44 (t, J = 7.8 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.4, 144.4, 139.1, 137.2, 134.0, 129.80, 129.78, 128.9, 128.5, 127.7, 126.6, 126.1, 119.4.

The spectral data are in accordance with those reported in the literature.[16]

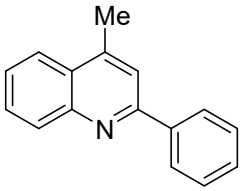
2-Phenylbenzo[*g*]quinoline (3ga)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (3-aminonaphthalen-2-yl)methanol (87 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 μL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ga** (65%, 83 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.76 (s, 1H), 8.37 (d, J = 8.9 Hz, 2H), 8.28–8.18 (m, 2H), 8.09 (d, J = 9.4 Hz, 1H), 8.02 (d, J = 6.6 Hz, 1H), 7.87 (d, J = 8.9 Hz, 1H), 7.59–7.46 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.9, 144.7, 139.6, 137.1, 134.2, 131.8, 129.6, 128.9, 128.6, 128.1, 127.7, 127.6, 126.3, 126.2, 125.9, 125.6, 118.8.

The spectral data are in accordance with those reported in the literature.[13]

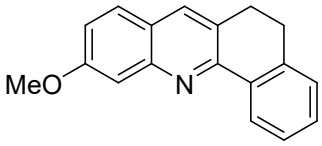
4-Methyl-2-phenylquinoline (3ha)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), 1-(2-aminophenyl)ethan-1-ol (69 mg, 0.5 mmol) and 1-phenylethan-1-ol (180 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3ha** (61%, 67 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.20–8.13 (m, 3H), 8.01 (d, J = 7.1 Hz, 1H), 7.76–7.70 (m, 2H), 7.58–7.50 (m, 3H), 7.48–7.45 (m, 1H), 2.78 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 157.1, 148.1, 144.9, 139.8, 130.3, 129.4, 129.2, 128.8, 127.6, 127.3, 126.1, 123.7, 119.8, 19.1.

The spectral data are in accordance with those reported in the literature.[14]

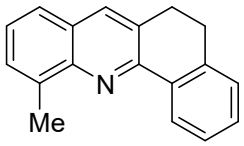
10-Methoxy-5,6-dihydrobenzo[*c*]acridine (3daa)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KOt-Bu (75 mol%, 42 mg), (2-amino-4-methoxyphenyl)methanol (77 mg, 0.5 mmol) and 1,2,3,4-tetrahydronaphthalen-1-ol (204 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3daa** (83%, 108 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.53 (d, J = 7.7 Hz, 1H), 7.81 (s, 1H), 7.60 (d, J = 8.9 Hz, 1H), 7.46 (d, J = 2.5 Hz, 1H), 7.43–7.39 (m, 1H), 7.37–7.33 (m, 1H), 7.26–7.24 (m, 1H), 7.12 (dd, J = 8.9, 2.5 Hz, 1H), 3.96 (s, 3H), 3.09–3.02 (m, 2H), 3.01–2.94 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 160.2, 153.5, 149.2, 139.4, 134.8, 133.6, 129.6, 128.3, 128.0, 127.9, 127.3, 125.9, 123.1, 119.2, 107.4, 55.5, 28.6.

The spectral data are in accordance with those reported in the literature.[17]

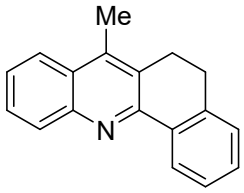
10-Methyl-5,6-dihydrobenzo[*c*]acridine (3eaa)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-amino-3-methylphenyl)methanol (69 mg, 0.5 mmol) and 1,2,3,4-tetrahydronaphthalen-1-ol (204 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3eaa** (92%, 113 mg) as white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.56 (d, J = 7.7 Hz, 1H), 7.77 (s, 1H), 7.48 (d, J = 8.2 Hz, 1H), 7.40 (d, J = 7.0 Hz, 1H), 7.34 (t, J = 7.5 Hz, 1H), 7.29–7.24 (m, 2H), 7.20–7.13 (m, 1H), 3.06–2.94 (m, 2H), 2.91 (dd, J = 8.4, 5.4 Hz, 2H), 2.81 (s, 3H). ^{13}C NMR (150 MHz, $CDCl_3$) δ = 152.0, 146.5, 139.3, 137.4, 135.2, 133.9, 130.1, 129.5, 128.8, 128.0, 127.8, 127.3, 126.1, 125.9, 124.9, 28.7, 28.5, 18.0.

The spectral data are in accordance with those reported in the literature.[17]

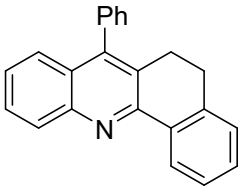
7-Methyl-5,6-dihydrobenzo[*c*]acridine (3haa)



The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), 1-(2-aminophenyl)ethan-1-ol (69 mg, 0.5 mmol) and 1,2,3,4-tetrahydronaphthalen-1-ol (204 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3haa** (73%, 90 mg) as white solid. ^{1}H NMR (600 MHz, $CDCl_3$) δ = 8.61 (d, J = 7.7 Hz, 1H), 8.18 (d, J = 8.4 Hz, 1H), 8.01 (d, J = 8.4 Hz, 1H), 7.70–7.67 (m, 1H), 7.59–7.34 (m, 3H), 7.30 (d, J = 7.5 Hz, 1H), 3.15 (t, J = 6.9 Hz, 2H), 3.02 (t, J = 6.9 Hz, 2H), 2.68 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 152.7, 146.8, 139.8, 139.1, 135.2, 130.2, 129.5, 128.4, 128.3, 127.7, 127.6, 127.3, 126.4, 125.8, 123.7, 28.2, 25.4, 14.0.

The spectral data are in accordance with those reported in the literature.[18]

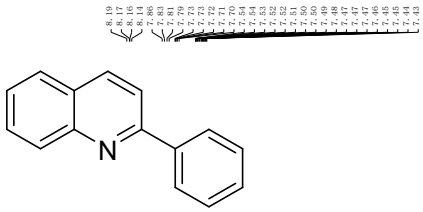
7-Phenyl-5,6-dihydrobenzo[*c*]acridine (3iaa)



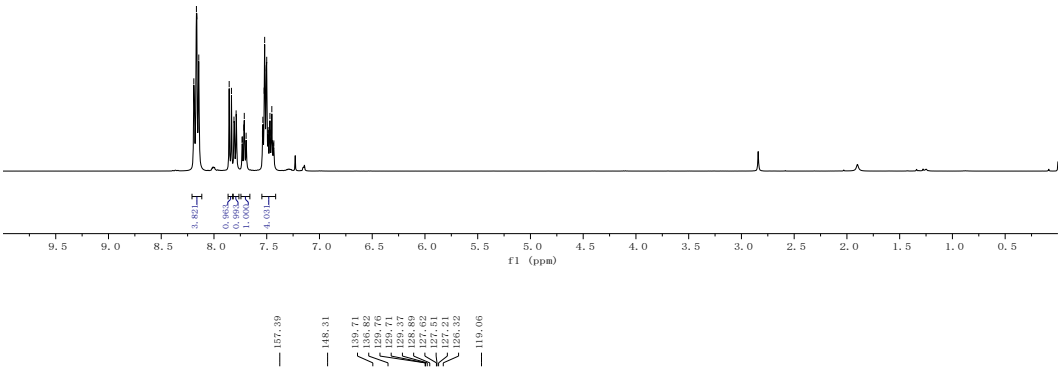
The procedure was followed using **[Fe]** (2.0 mol%, 6.3 mg), KO*t*-Bu (75 mol%, 42 mg), (2-aminophenyl)(phenyl)methanol (100 mg, 0.5 mmol) and 1,2,3,4-tetrahydronaphthalen-1-ol (204 µL, 1.5 mmol) under 120 °C for 24 h. Purification by column chromatography of silica gel (Petroleum ether/ Ethyl acetate: 15:1), yielded **3iaa** (52%, 80 mg) as yellow solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.62 (d, J = 7.7 Hz, 1H), 8.17 (d, J = 8.4 Hz, 1H), 7.63–7.59 (m, 1H), 7.53–7.44 (m, 3H), 7.42–7.38 m, 2H), 7.36–7.31 (m, 2H), 7.30–7.26 (m, 2H), 7.21 (d, J = 7.2 Hz, 1H), 2.87–2.78 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$) δ = 153.2, 147.3, 145.4, 139.3, 137.0, 135.2, 129.68, 129.65, 129.6, 128.6, 128.5, 128.13, 127.94, 127.9, 127.7, 127.3, 126.4, 126.1, 126.0, 28.3, 26.6.

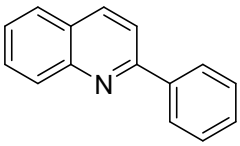
The spectral data are in accordance with those reported in the literature.[19]

Copies of ^{1}H and ^{13}C Spectra

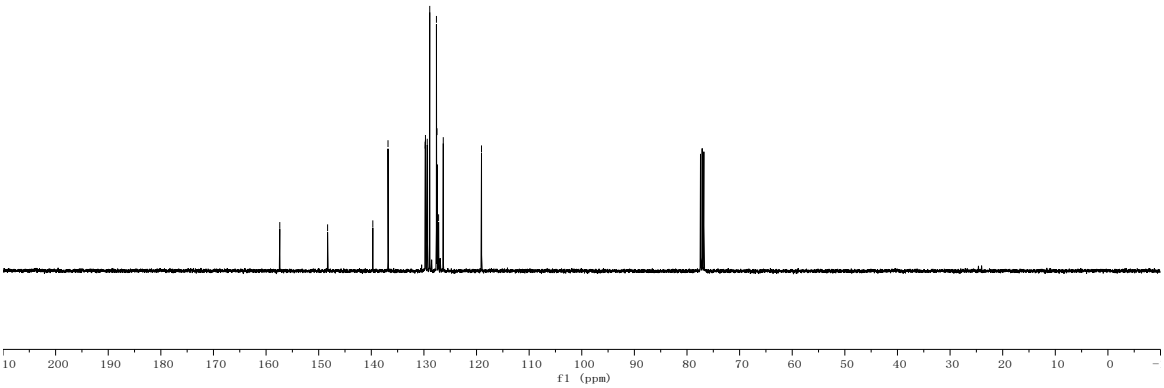


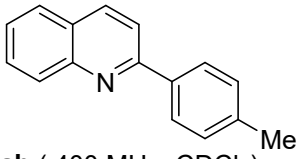
3aa (400 MHz, $CDCl_3$)



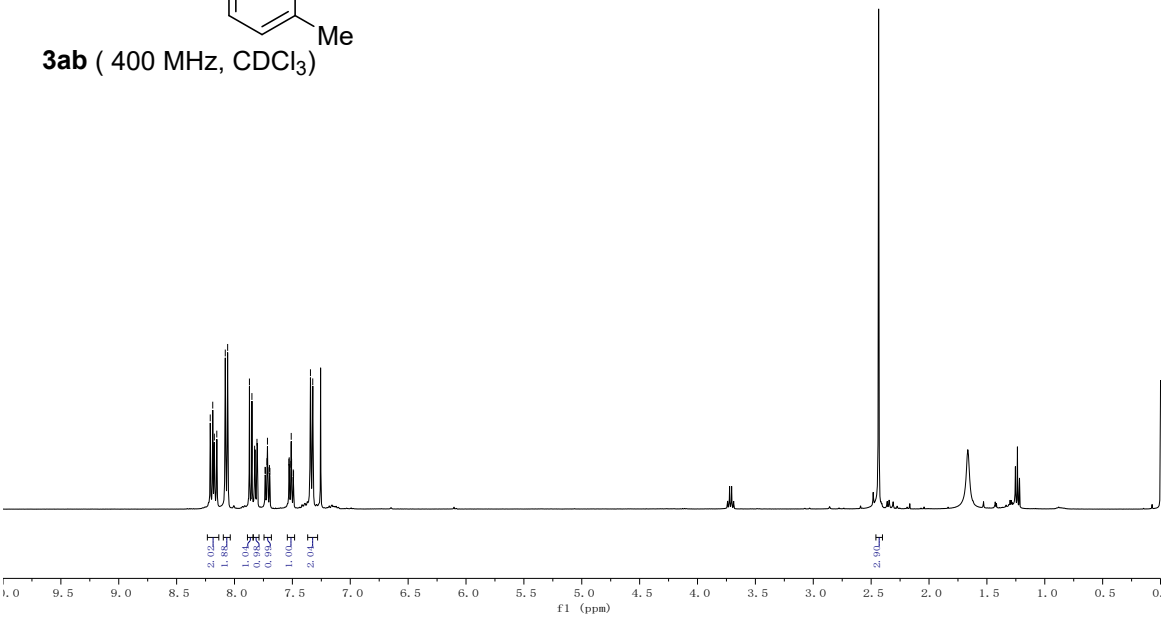


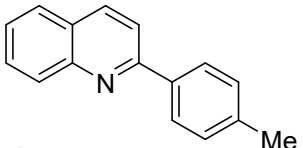
3aa (100 MHz, $CDCl_3$)



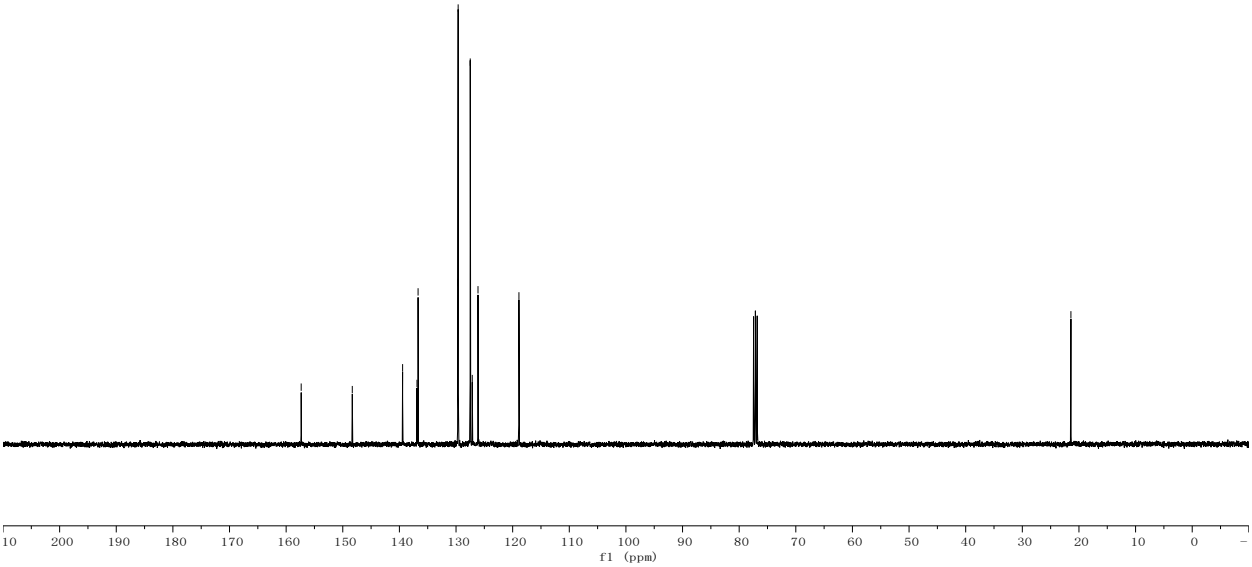


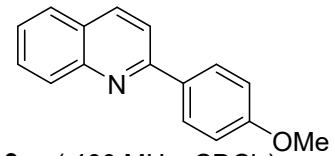
3ab (400 MHz, $CDCl_3$)



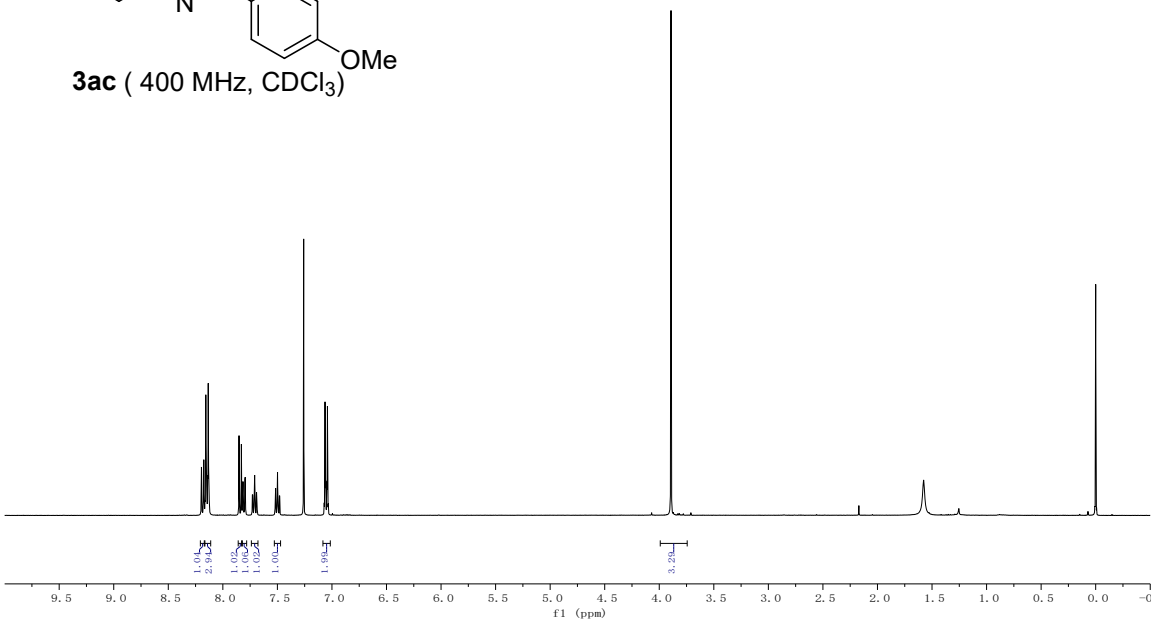


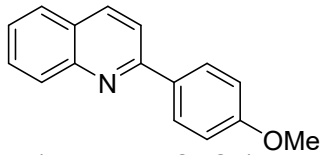
3ab (100 MHz, $CDCl_3$)



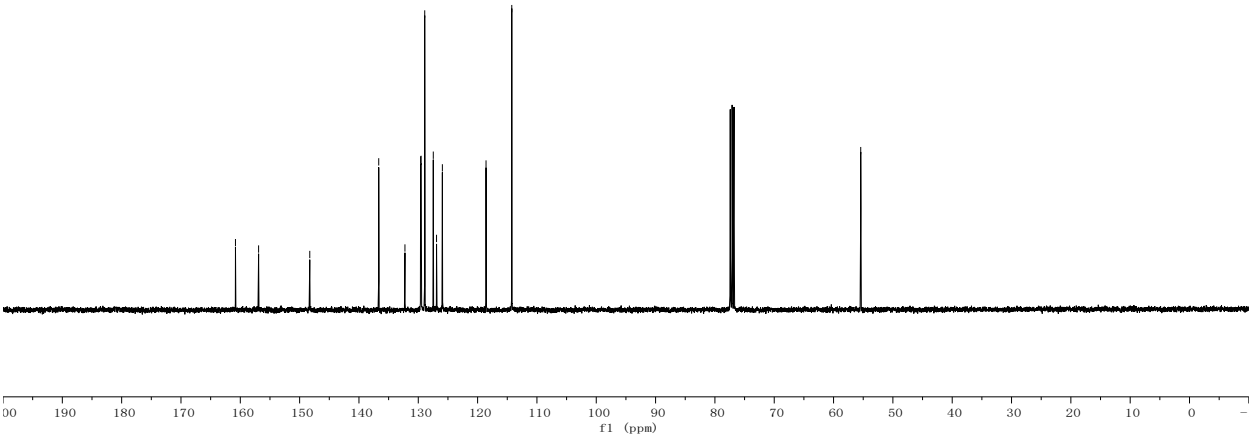


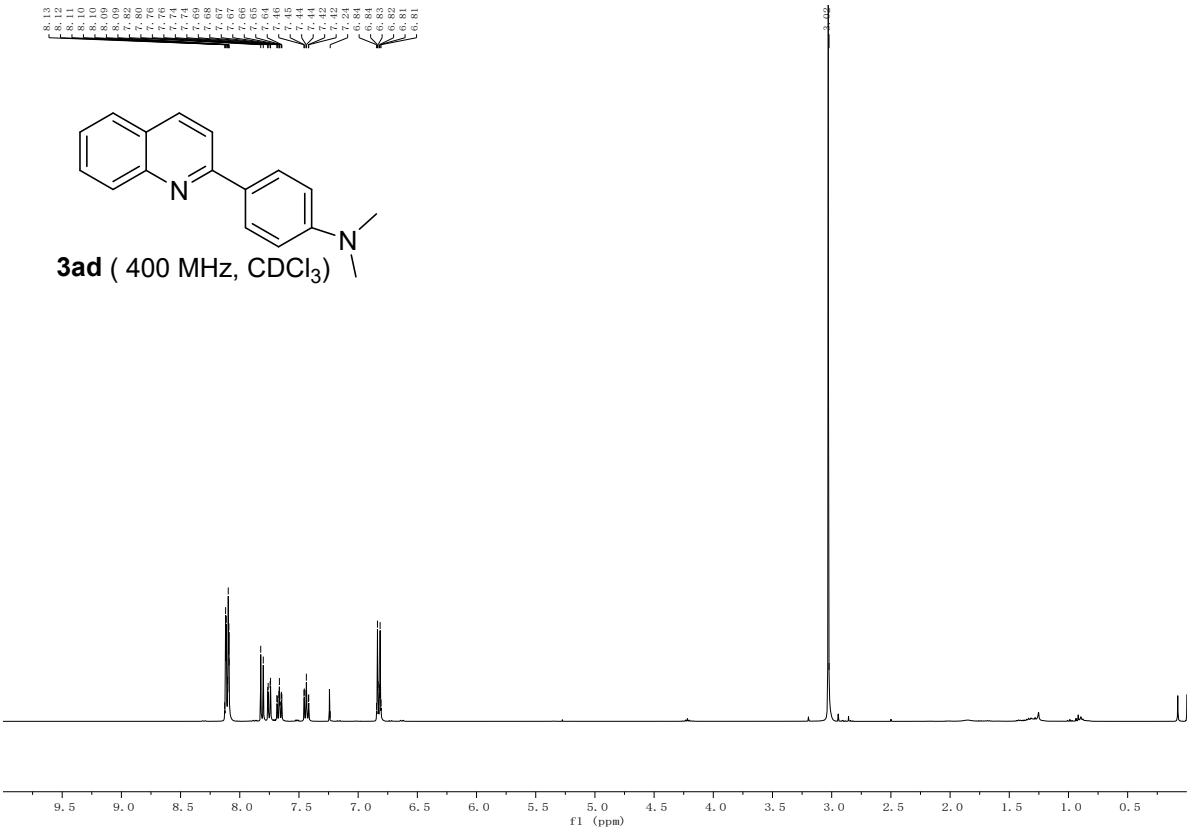
3ac (400 MHz, $CDCl_3$)

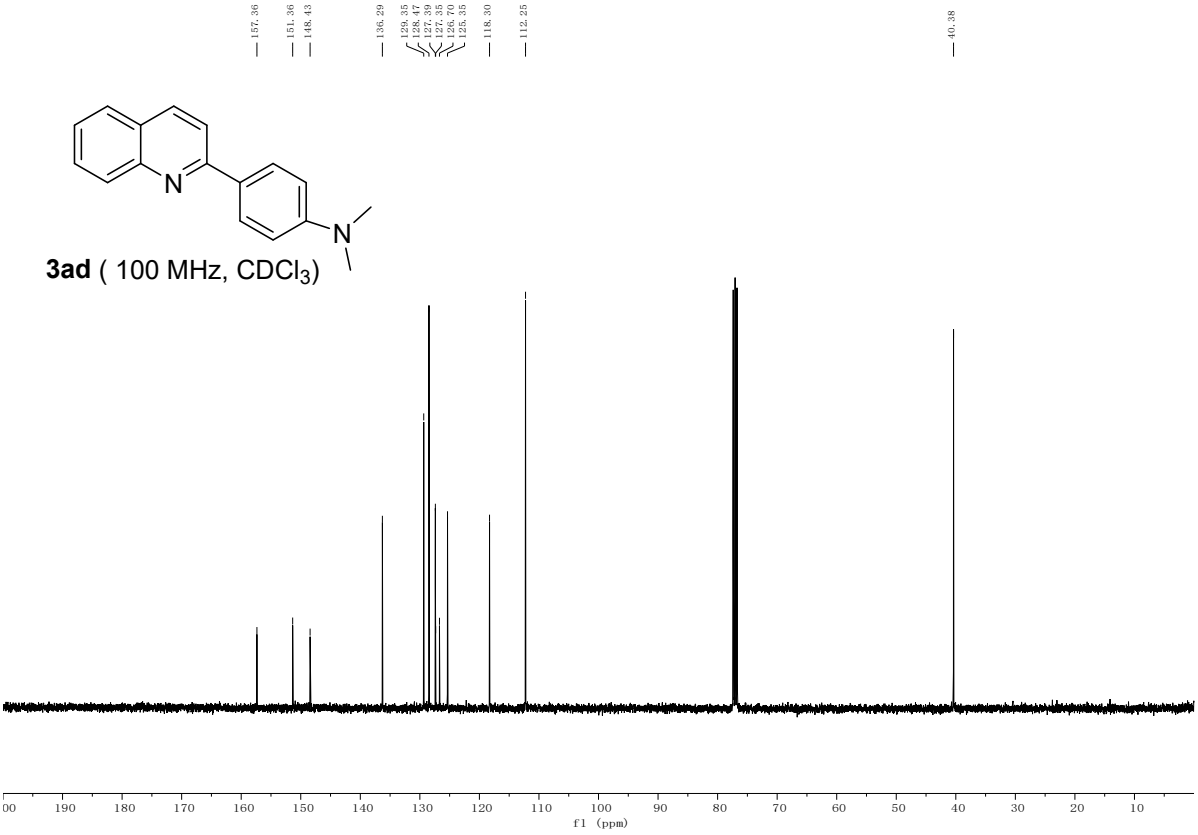


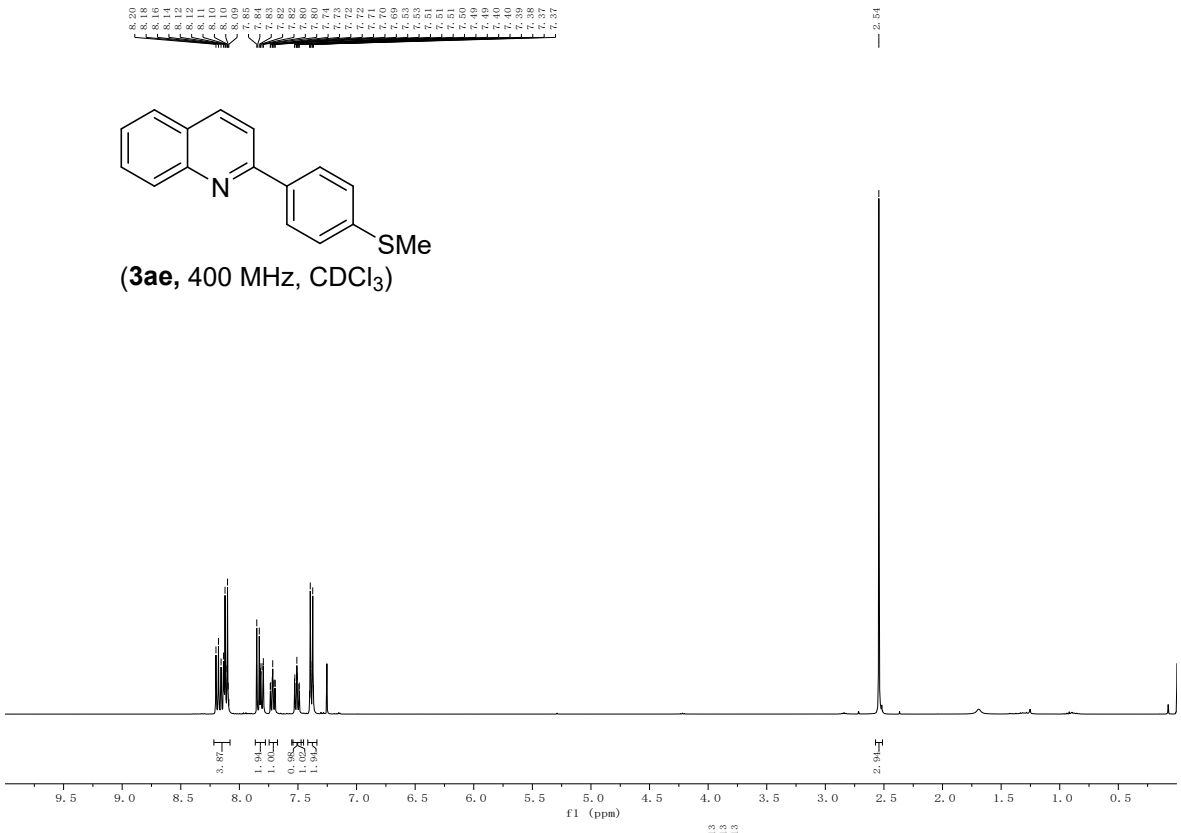


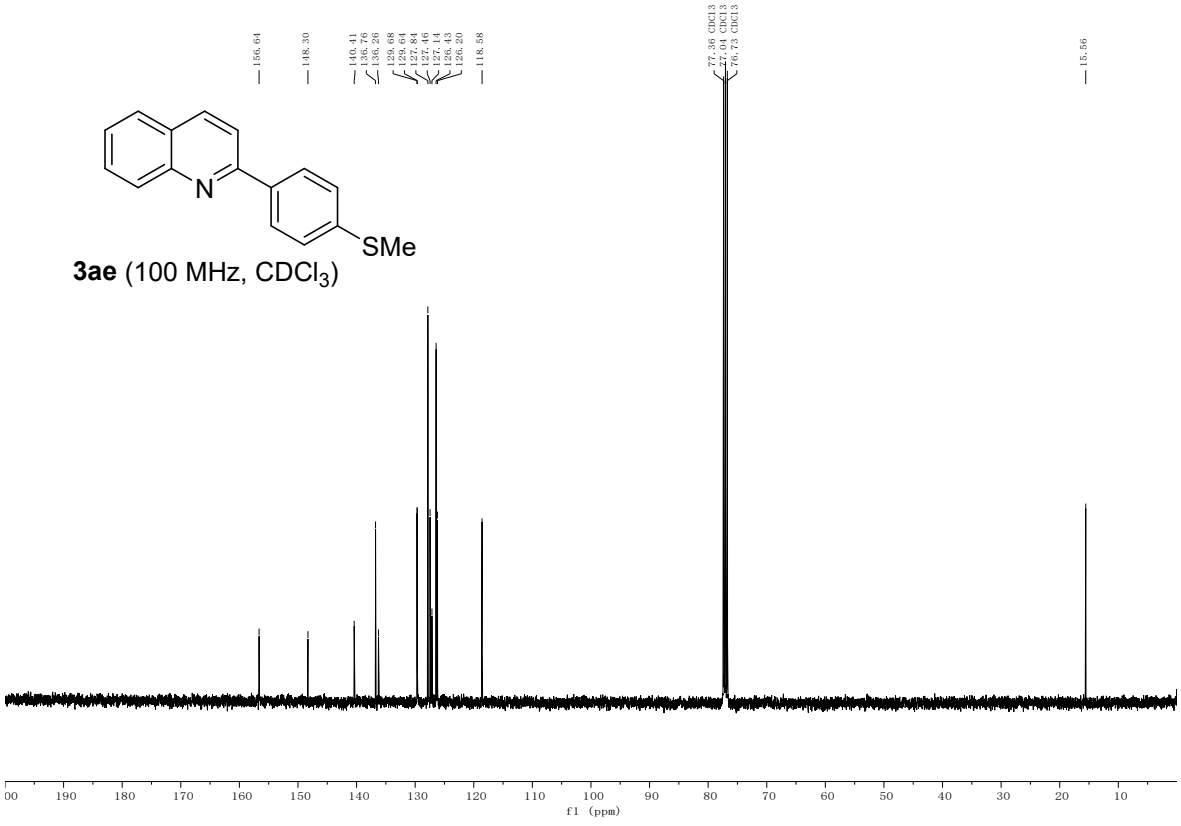
3ac (100 MHz, $CDCl_3$)

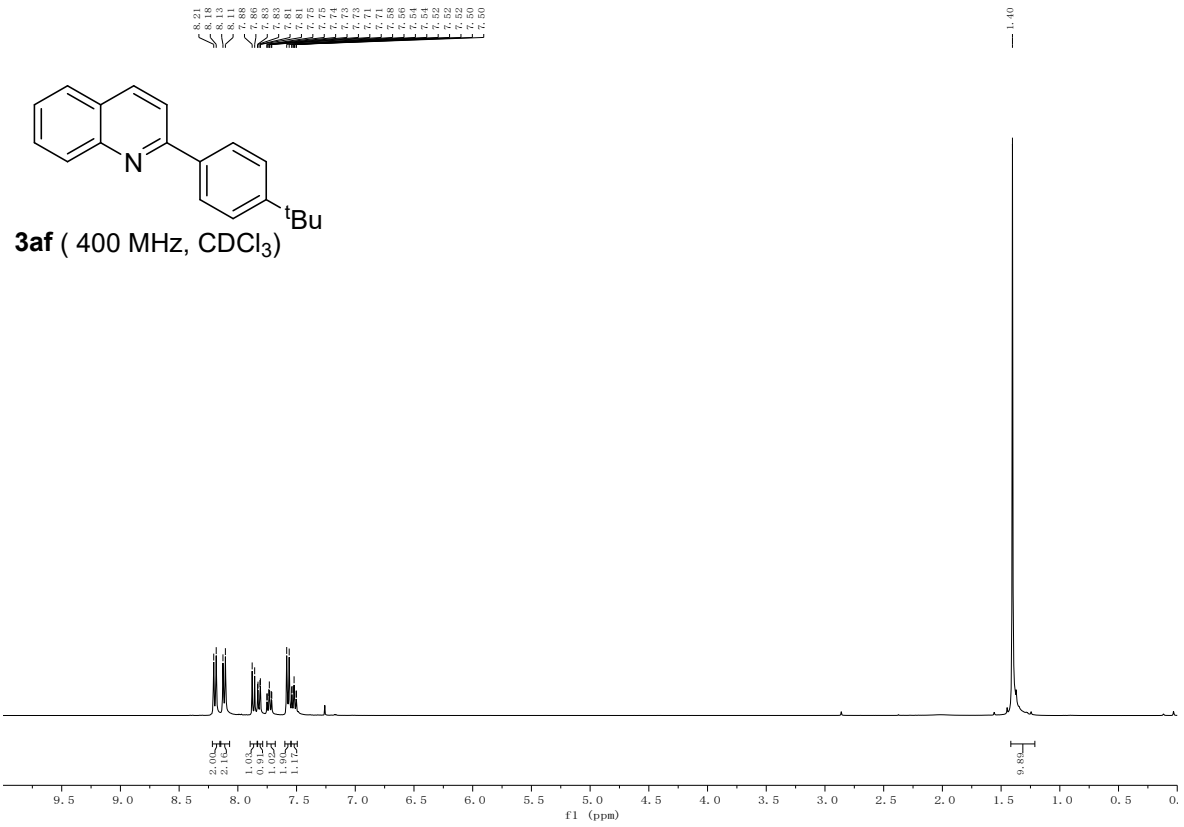



8.13
8.12
8.11
8.10
8.10
8.09
8.09
7.82
7.80
7.76
7.76
7.74
7.74
7.69
7.68
7.67
7.67
7.66
7.65
7.64
7.46
7.45
7.44
7.44
7.42
7.42
7.24
6.84
6.84
6.83
6.82
6.81
6.81
3.02
N
N
3ad (400 MHz, CDCl3)
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
f1 (ppm)

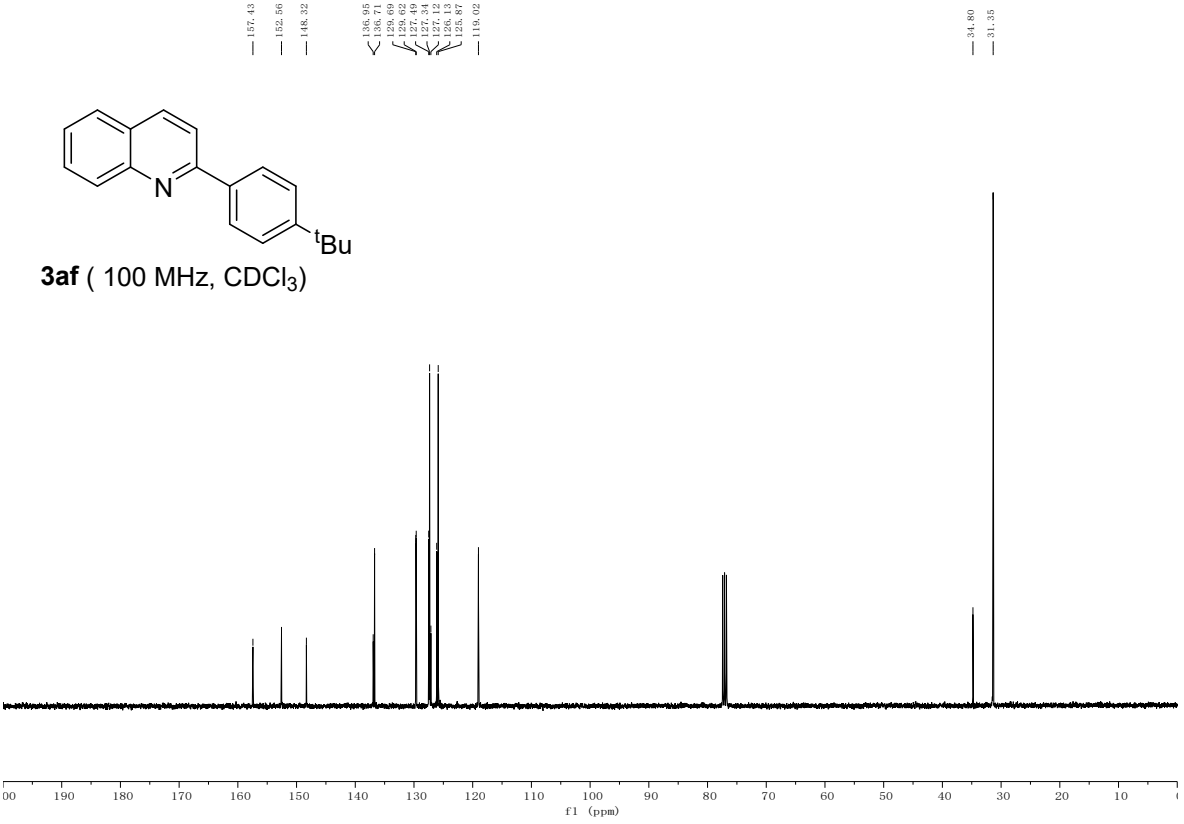

157.36
151.36
148.43
136.29
129.35
128.47
127.39
127.35
126.70
125.35
118.30
112.25
40.38
N
N
3ad (100 MHz, CDCl3)
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
f1 (ppm)


SMe
(3ae, 400 MHz, CDCl3)
f1 (ppm)

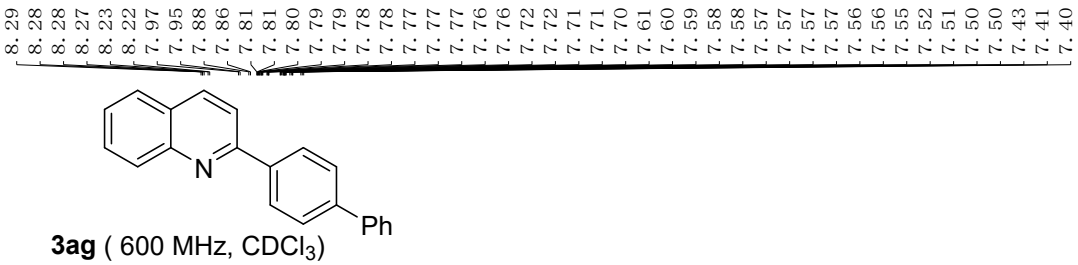

SMe
3ae (100 MHz, CDCl3)
f1 (ppm)



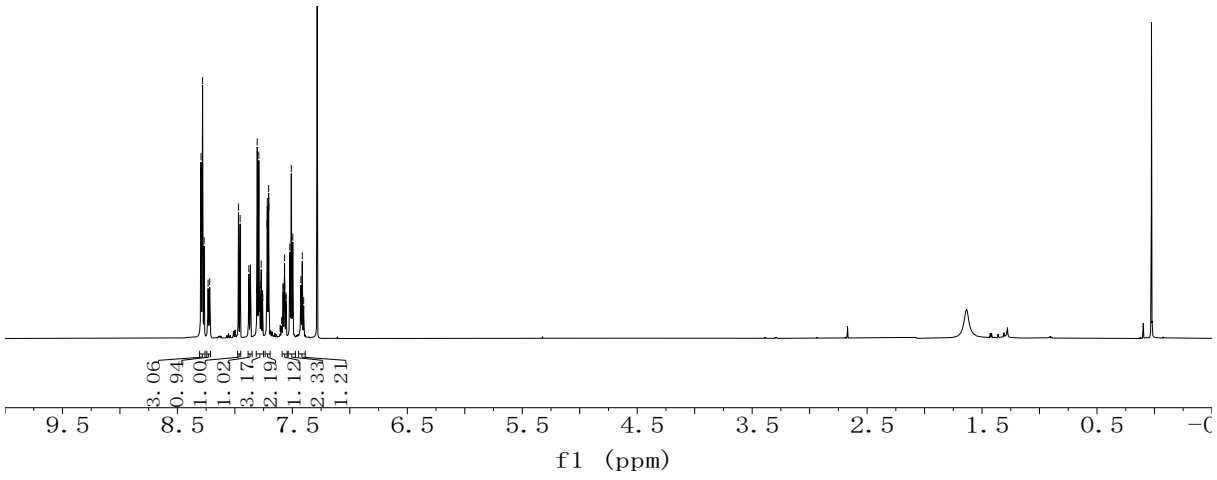
3af (400 MHz, $CDCl_3$)

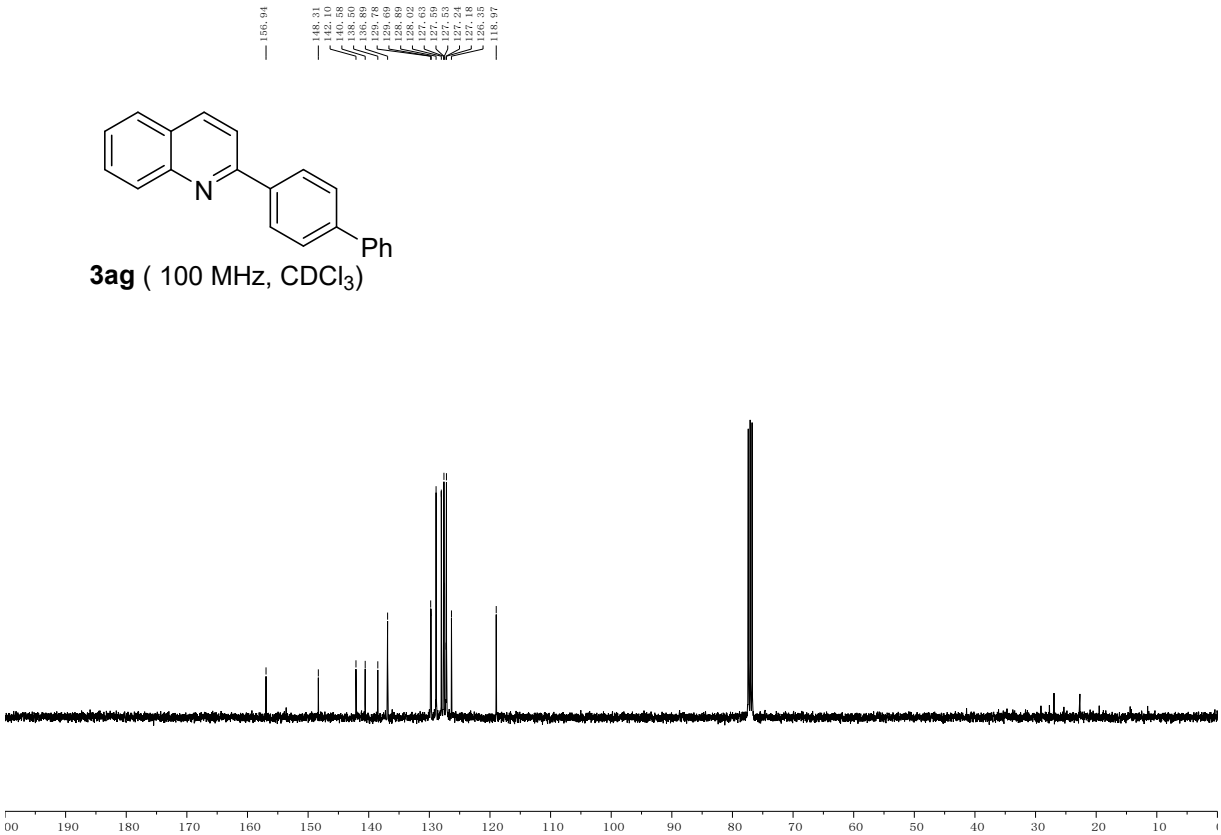


3af (100 MHz, $CDCl_3$)

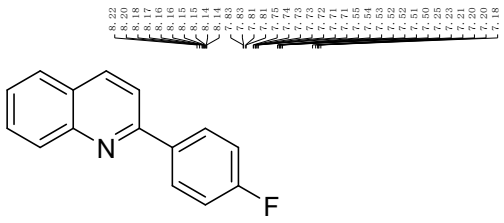


3ag (600 MHz, $CDCl_3$)

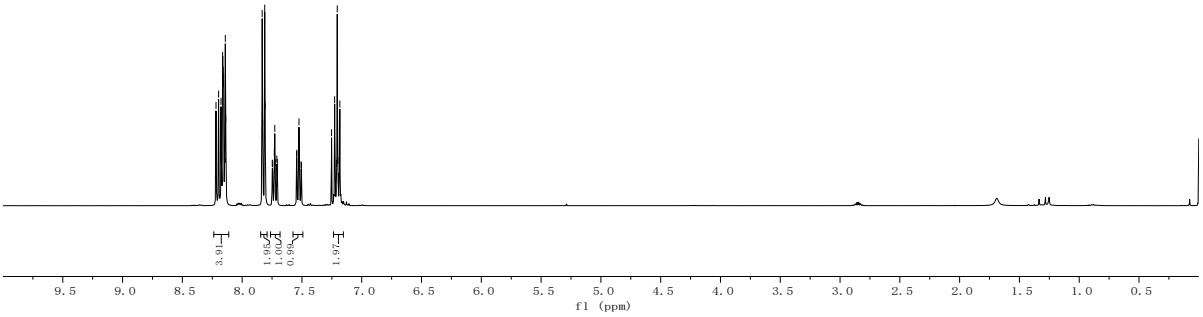


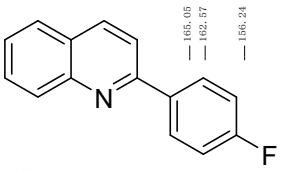


3ag (100 MHz, $CDCl_3$)

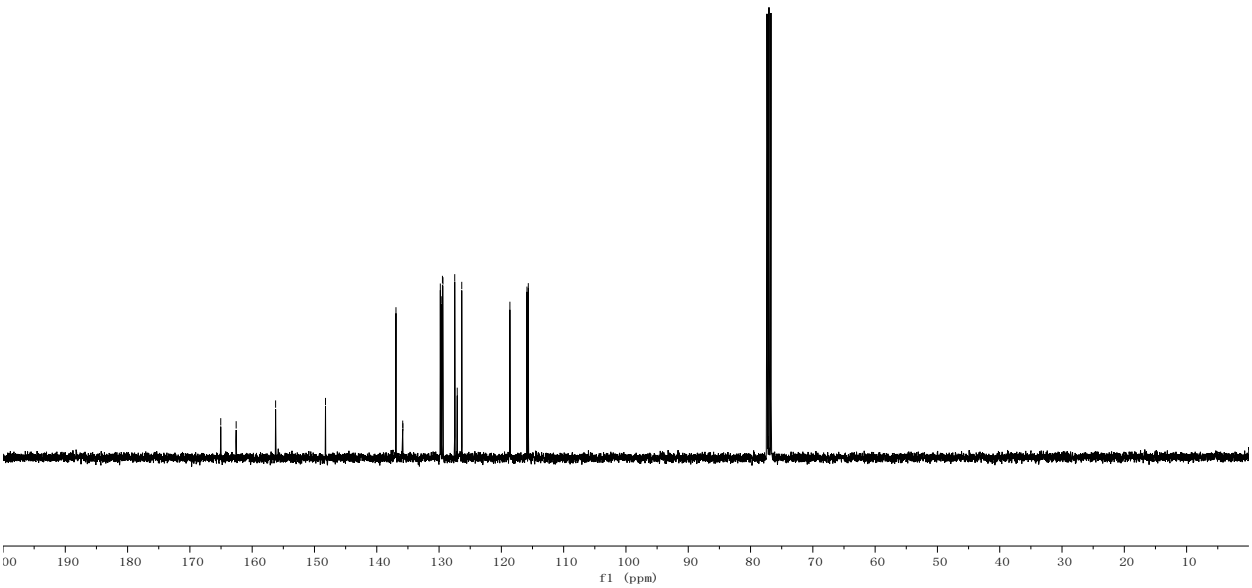


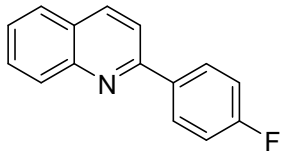
3ah (400 MHz, $CDCl_3$)



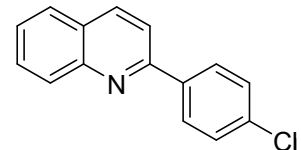


3ah (100 MHz, $CDCl_3$)

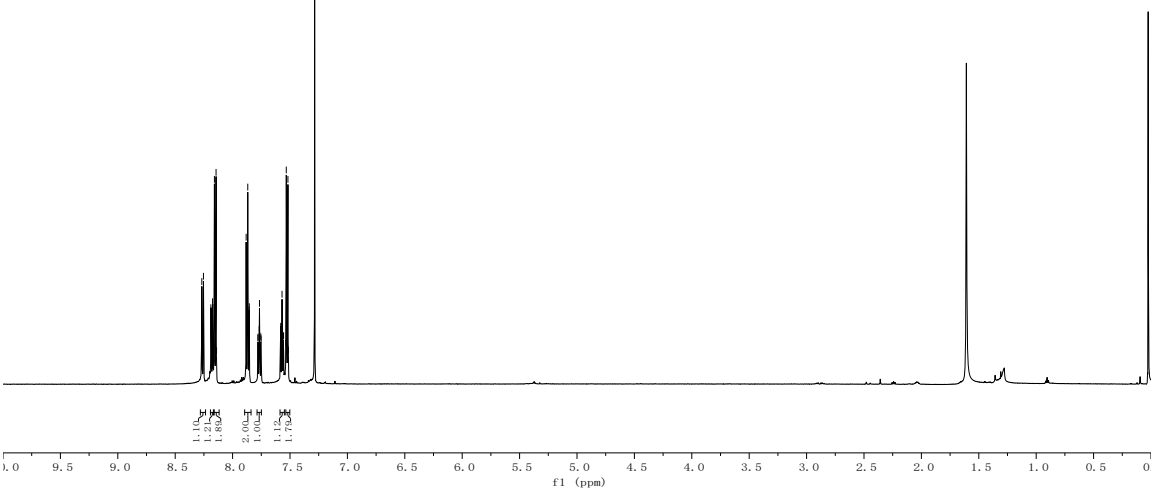


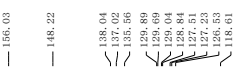


3ah (376 MHz, $CDCl_3$)

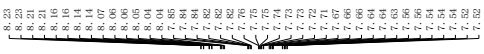


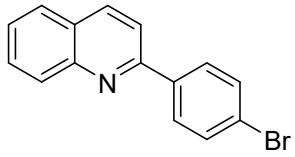
3ai (600 MHz, $CDCl_3$)



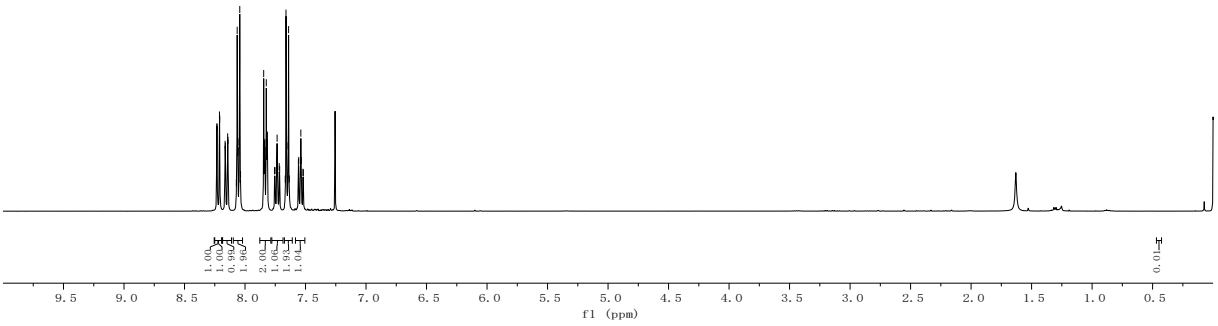


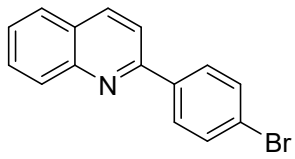
3ai (100 MHz, $CDCl_3$)



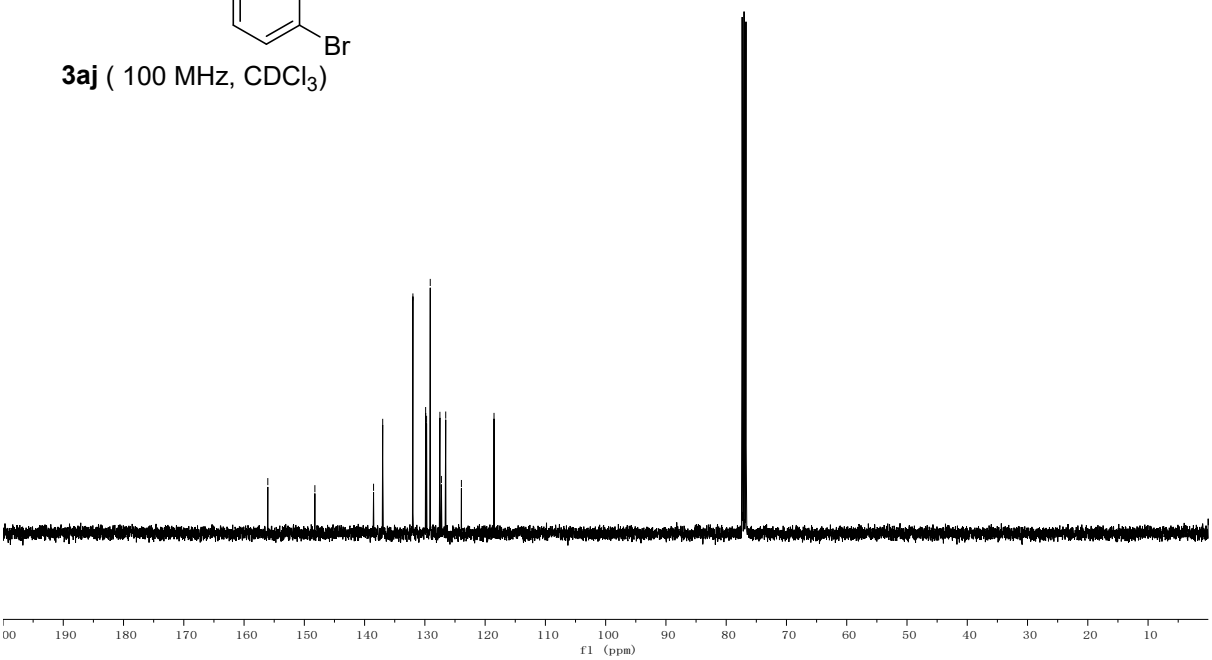


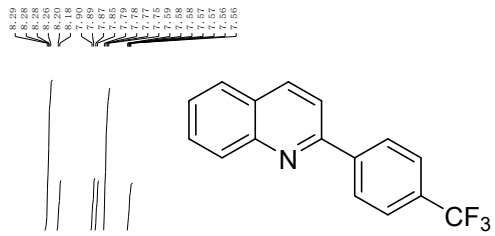
3aj (400 MHz, $CDCl_3$)



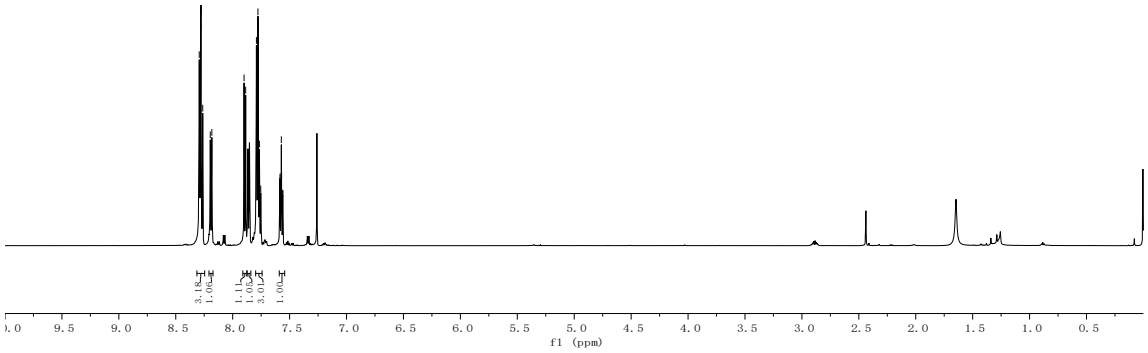


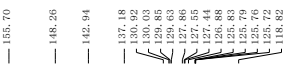
3aj (100 MHz, $CDCl_3$)

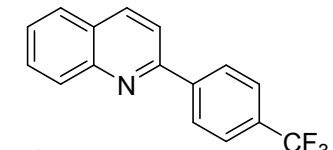




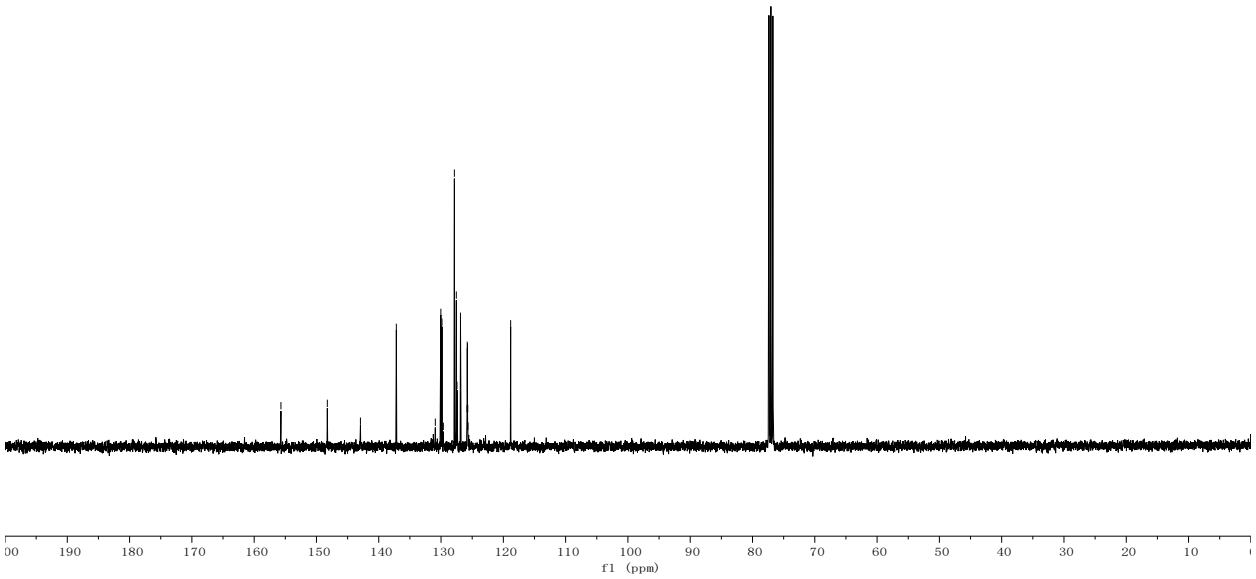
3ak (600 MHz, $CDCl_3$)

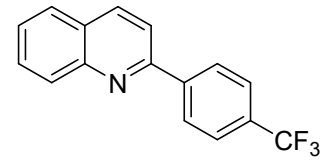




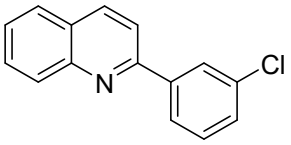


3ak (100 MHz, $CDCl_3$)

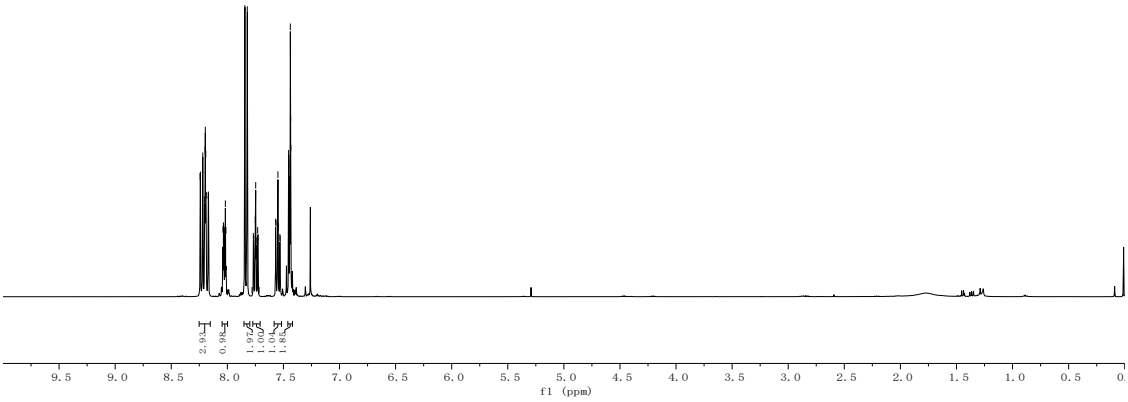


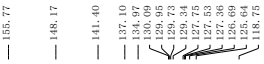


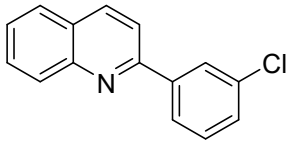
3ak (565 MHz, $CDCl_3$)



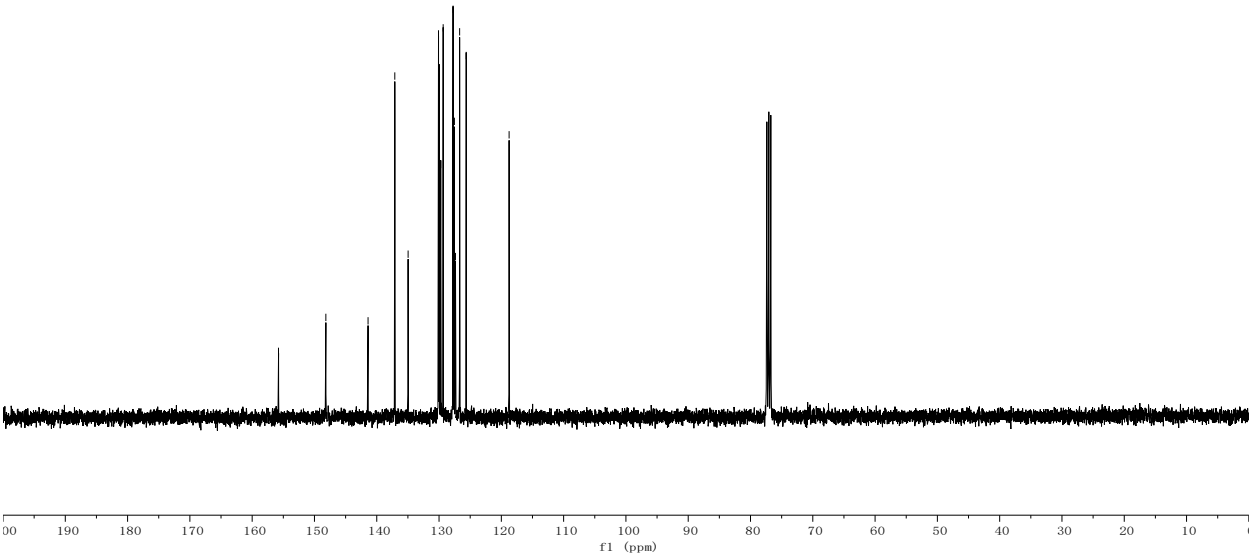
3al (400 MHz, $CDCl_3$)

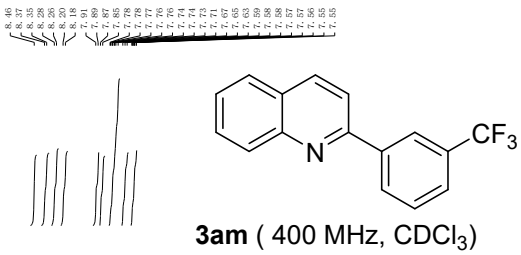




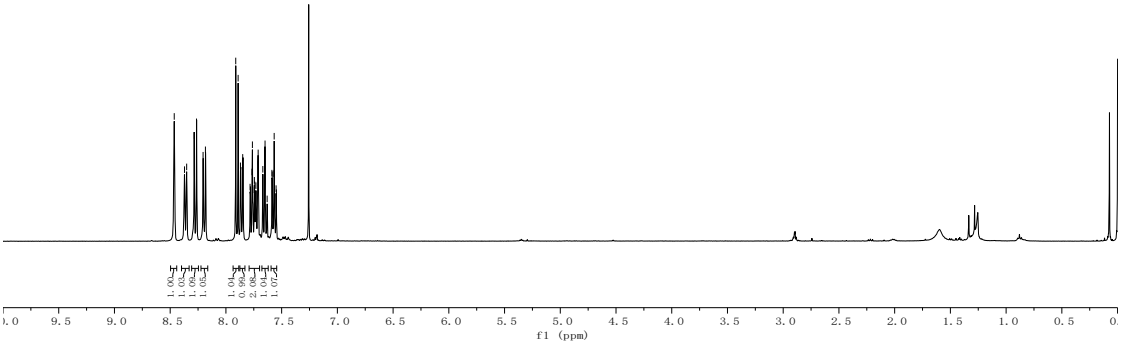


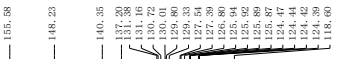
3al (100 MHz, $CDCl_3$)

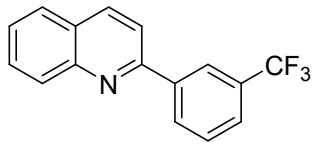




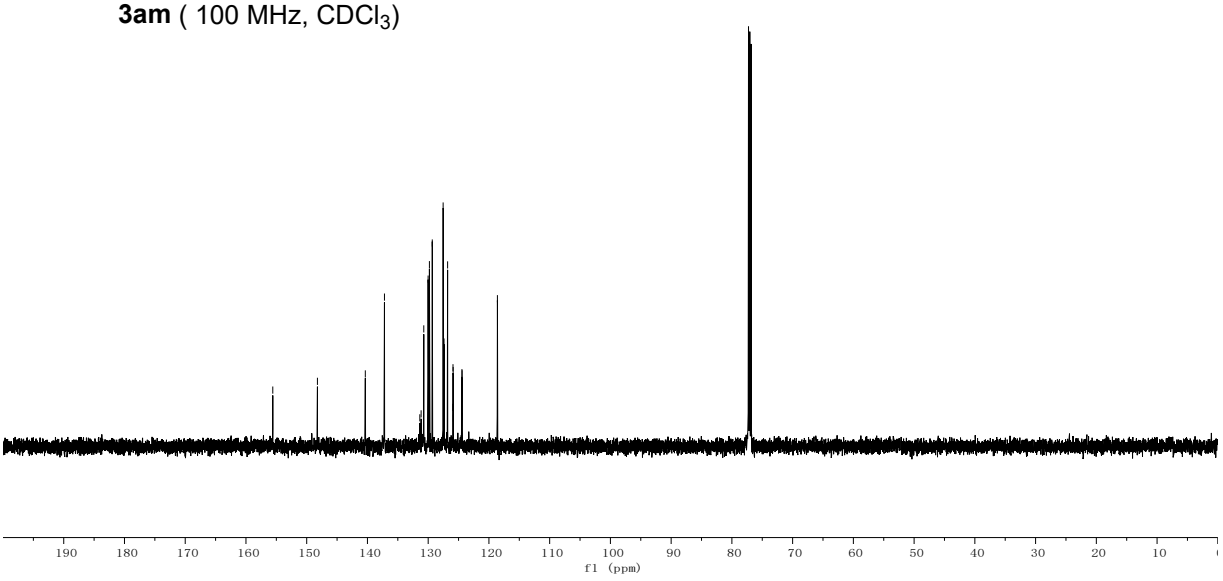
3am (400 MHz, $CDCl_3$)

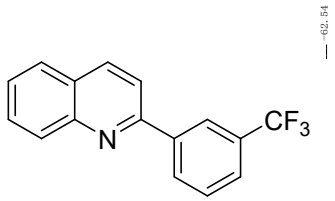




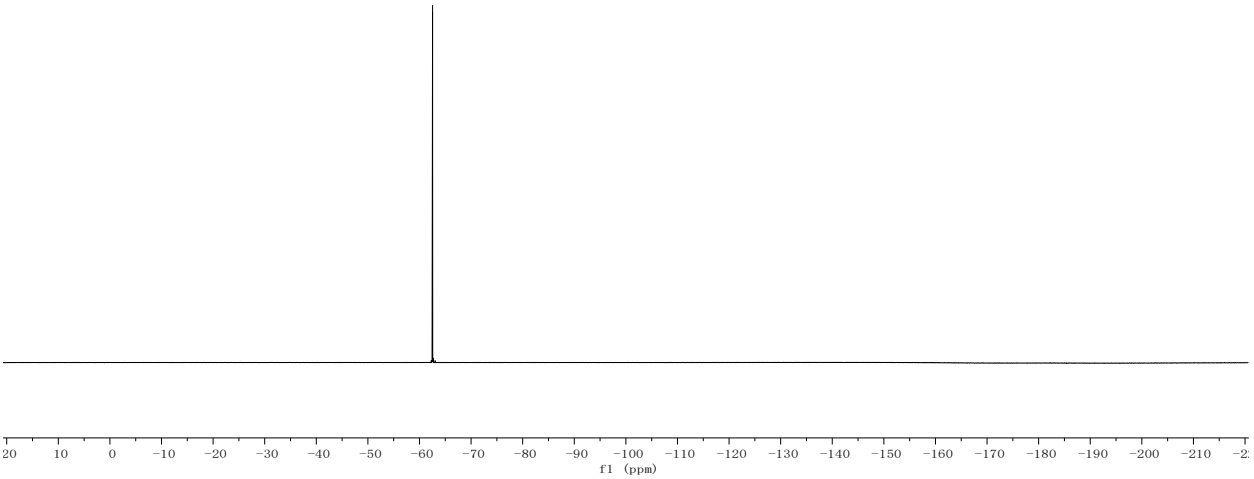


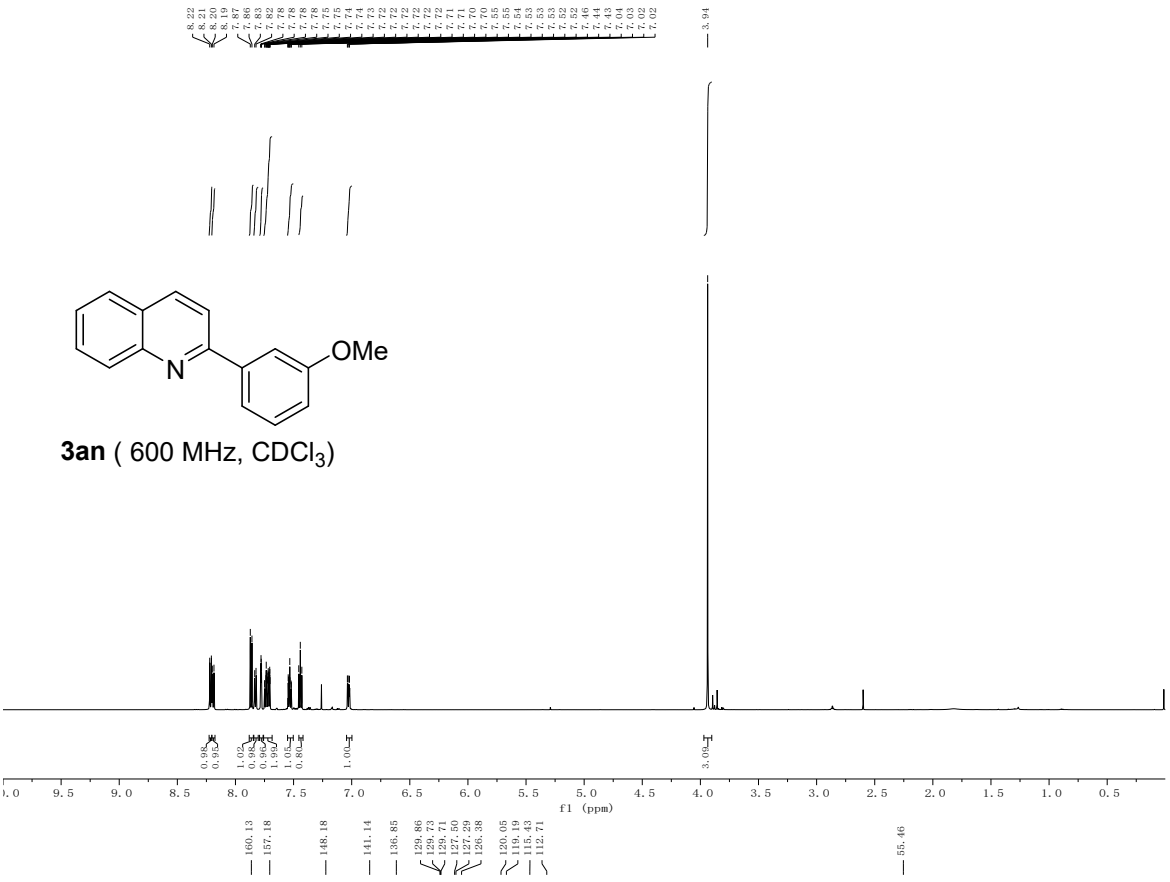
3am (100 MHz, $CDCl_3$)



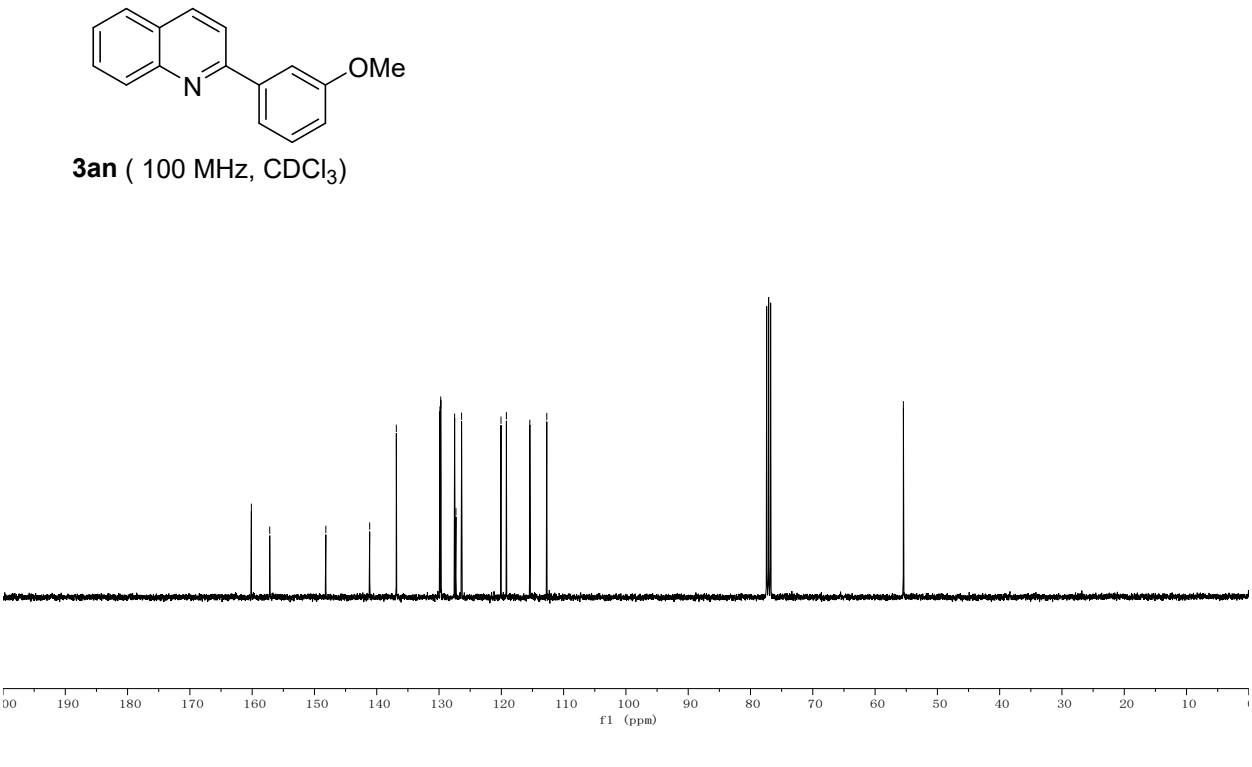


3am (565MHz, $CDCl_3$)

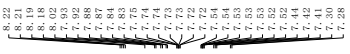


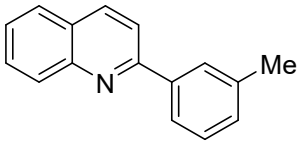


3an (600 MHz, $CDCl_3$)

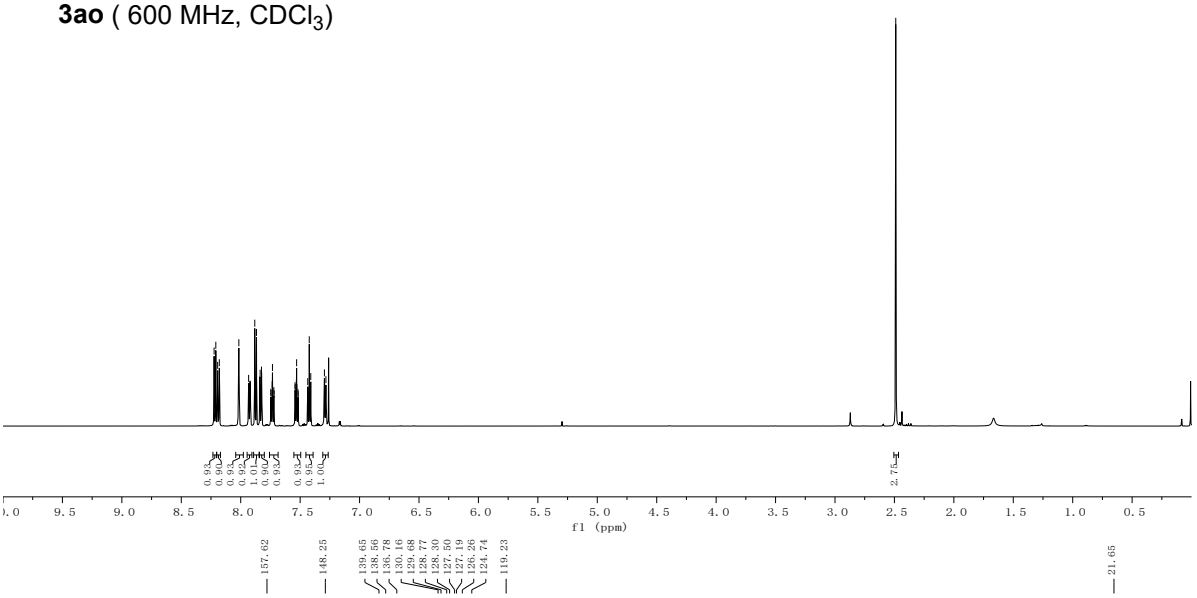


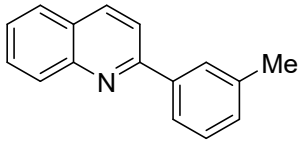
3an (100 MHz, $CDCl_3$)



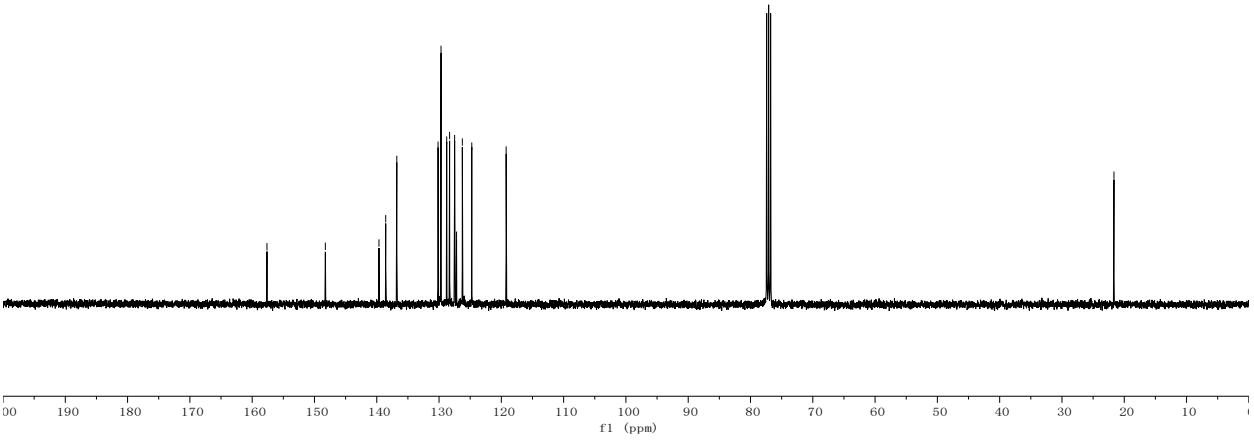


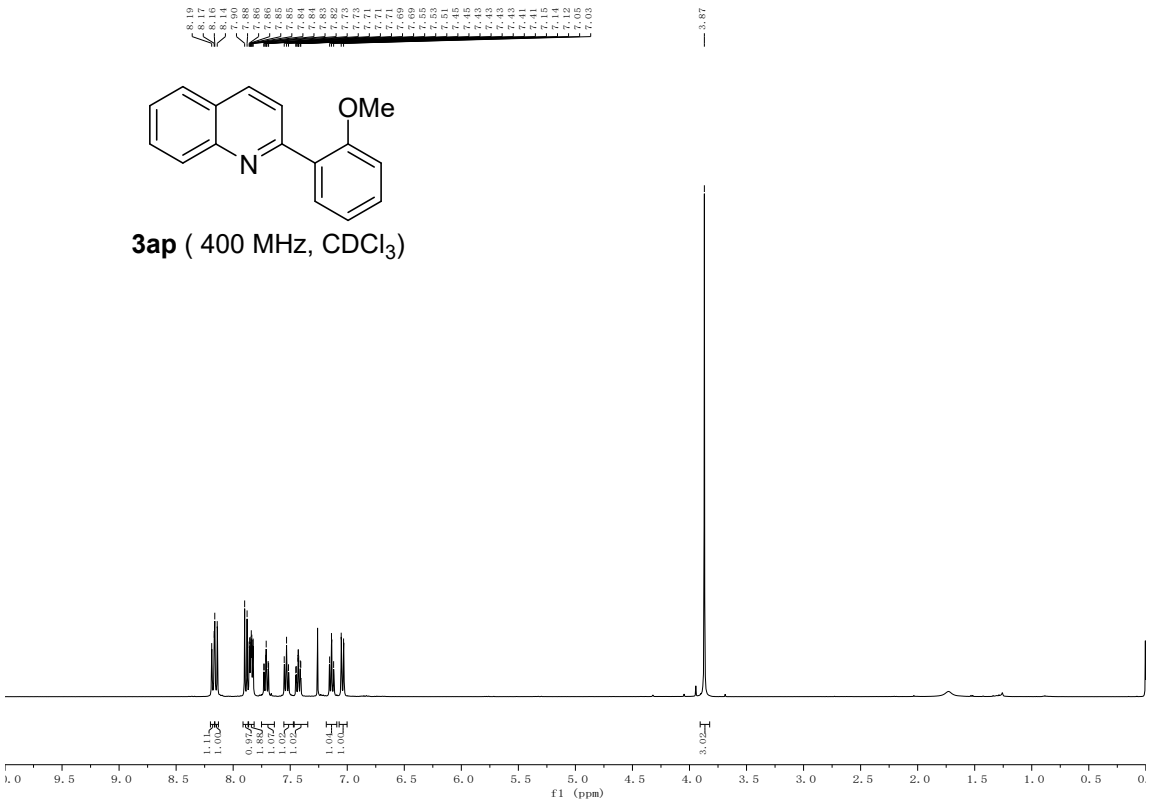
3ao (600 MHz, $CDCl_3$)



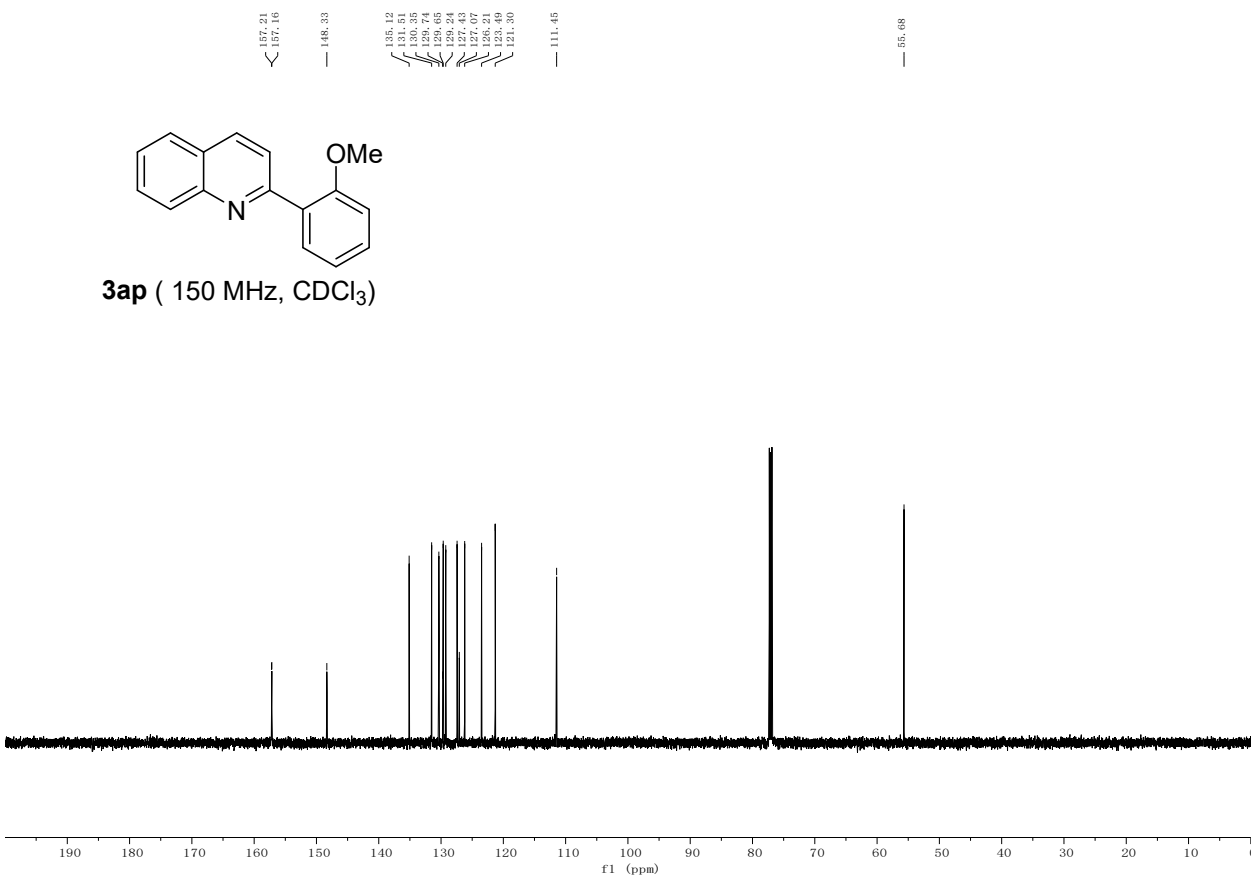


3ao (100 MHz, $CDCl_3$)

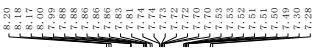


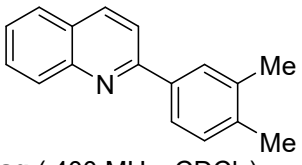


3ap (400 MHz, $CDCl_3$)

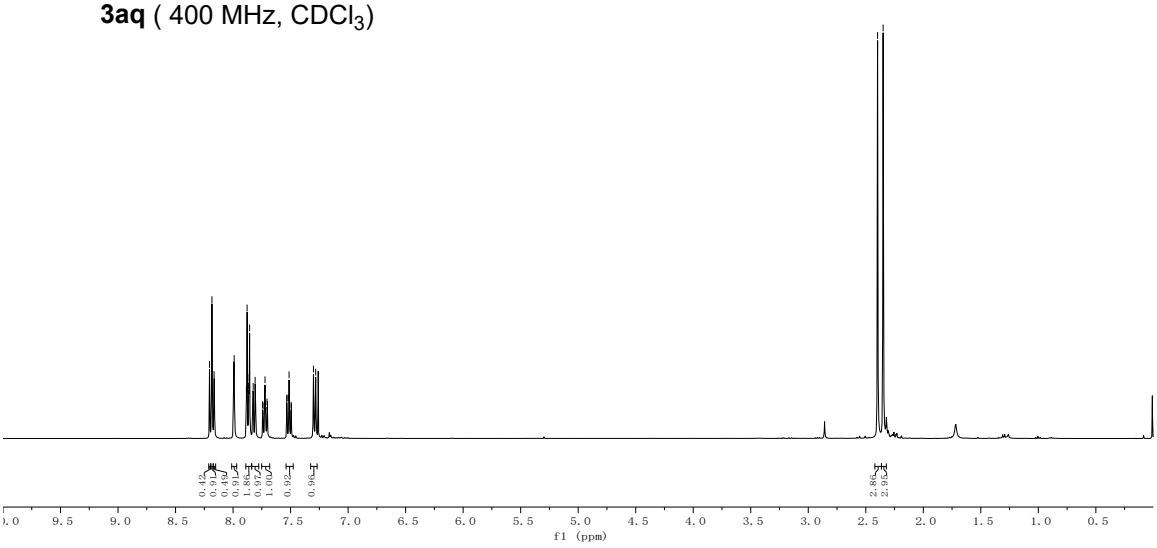


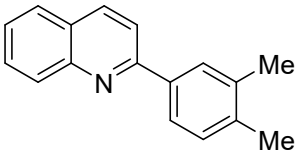
3ap (150 MHz, $CDCl_3$)



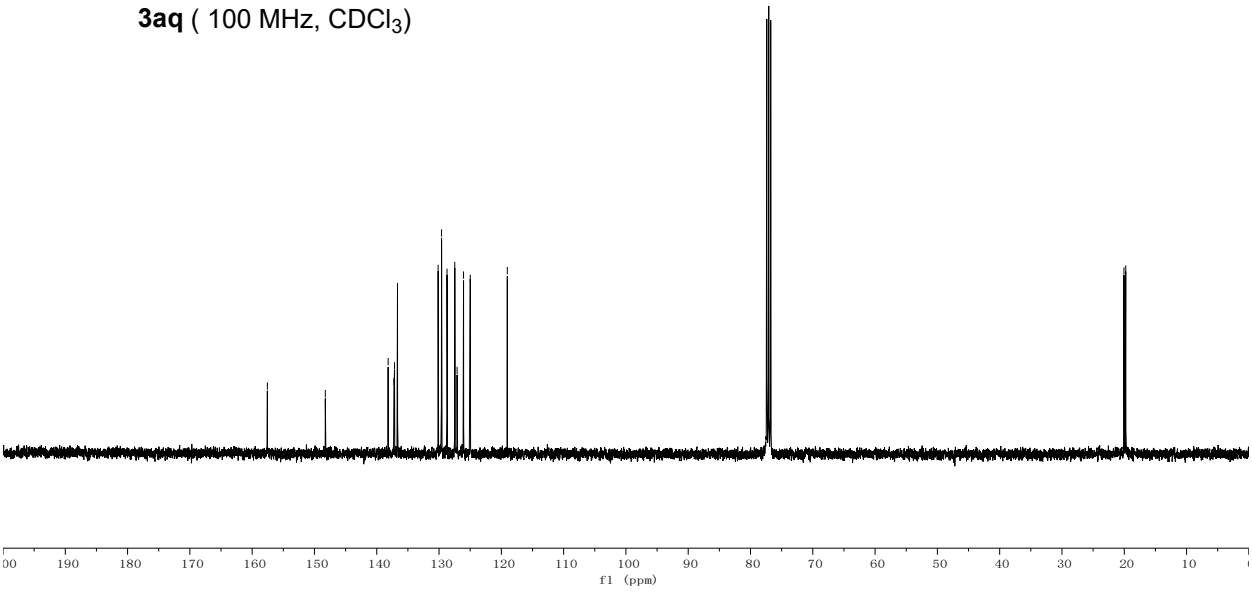


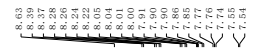
3aq (400 MHz, $CDCl_3$)

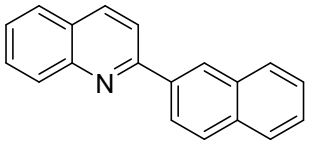




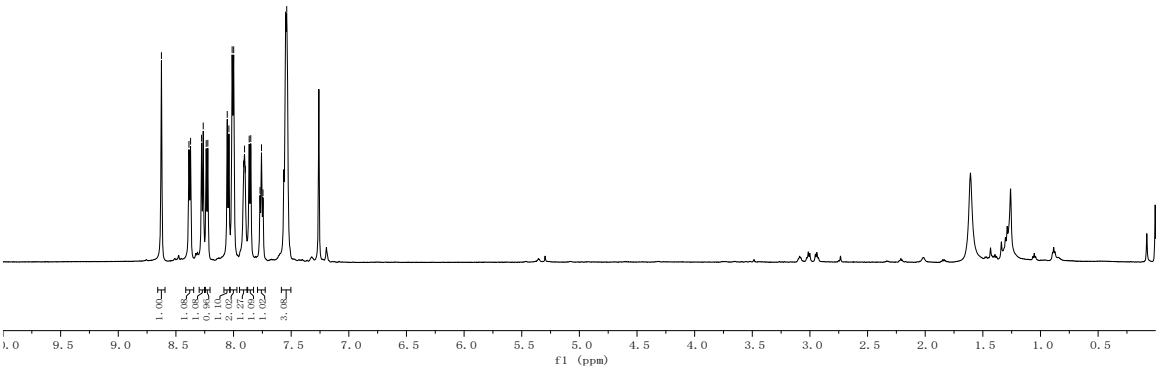
3aq (100 MHz, $CDCl_3$)

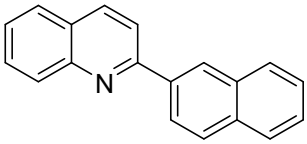




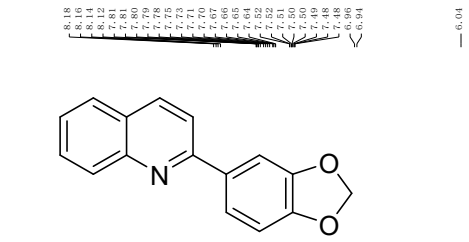


3ar (600 MHz, $CDCl_3$)

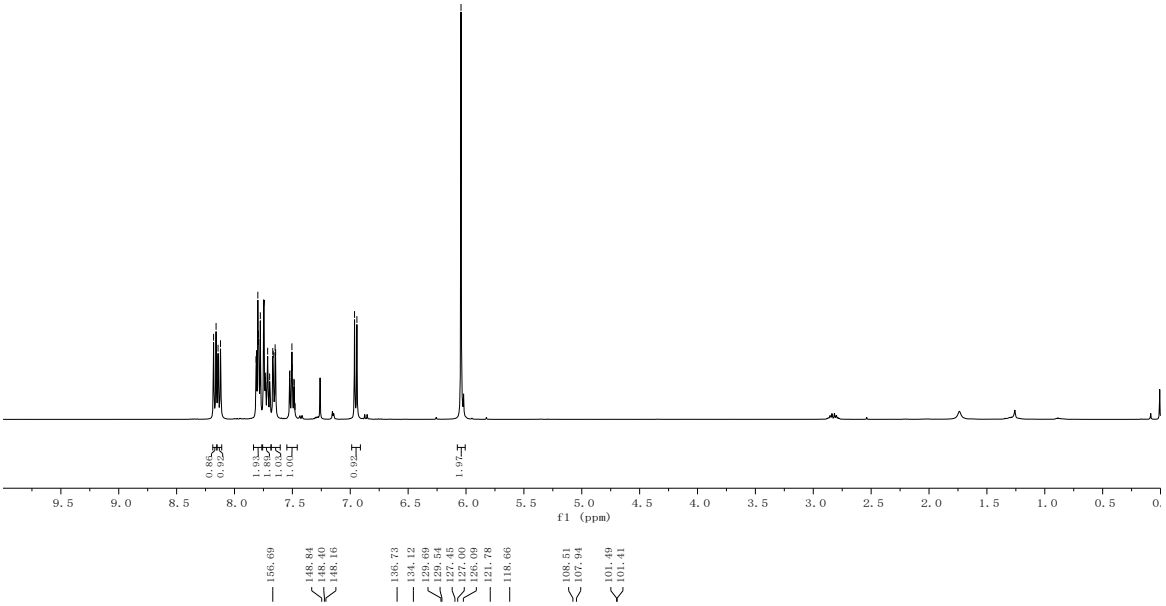


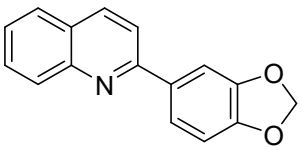


3ar (150 MHz, $CDCl_3$)

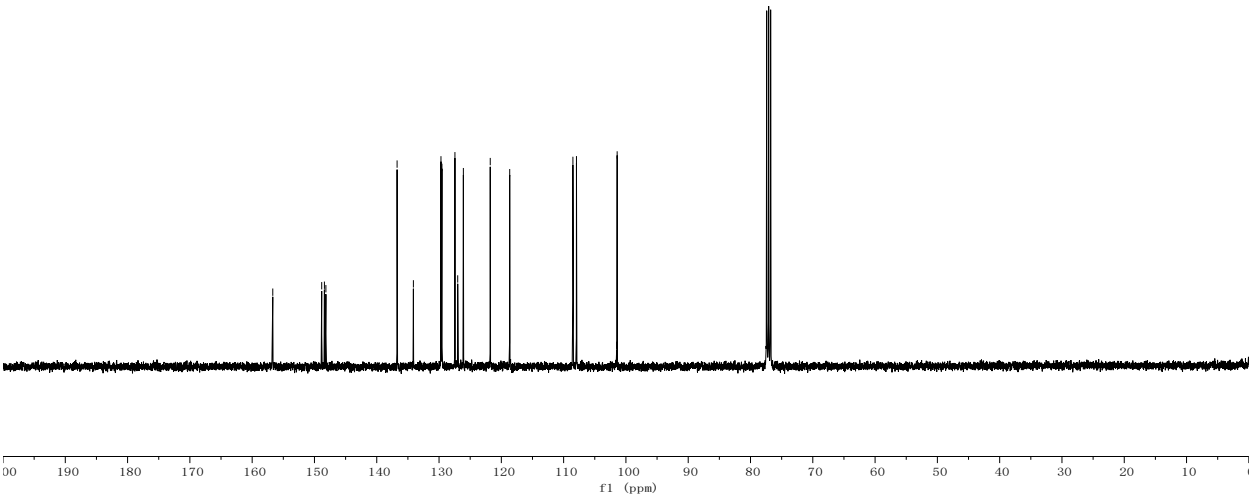


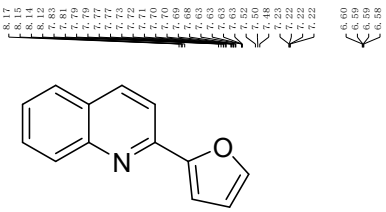
3as (400 MHz, $CDCl_3$)



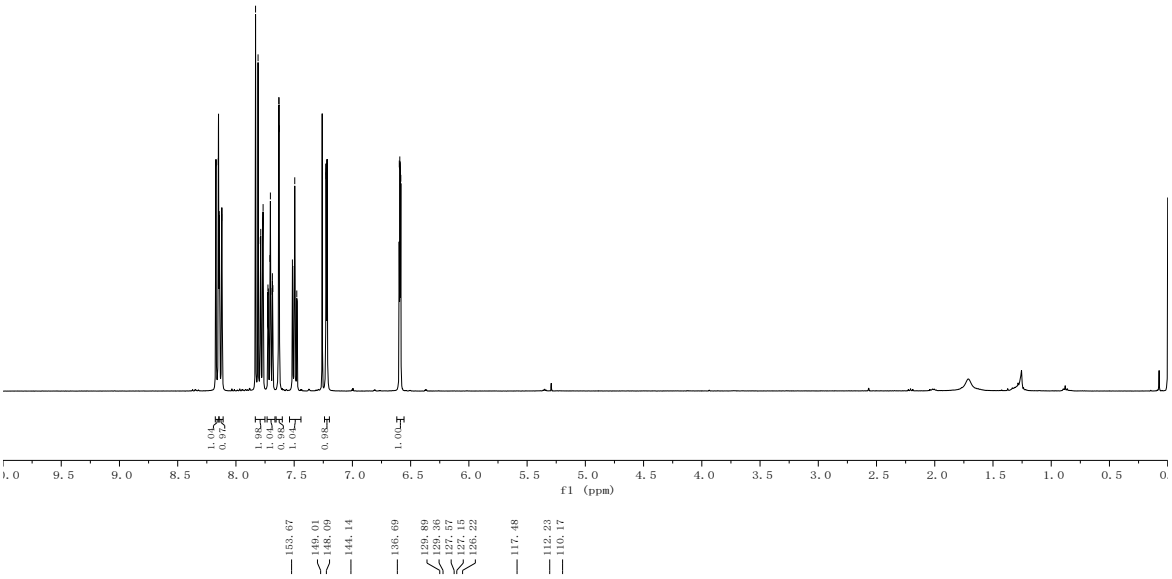


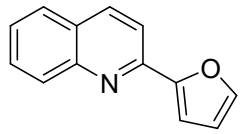
3as (100 MHz, $CDCl_3$)



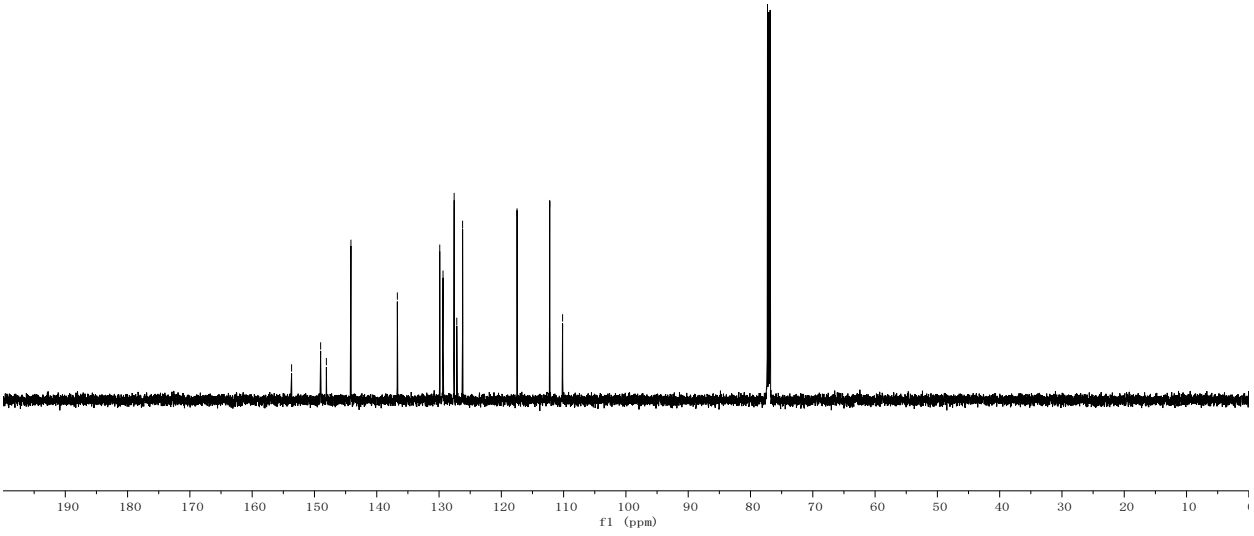


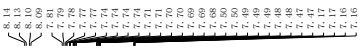
3at (400 MHz, $CDCl_3$)

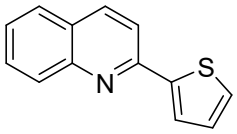




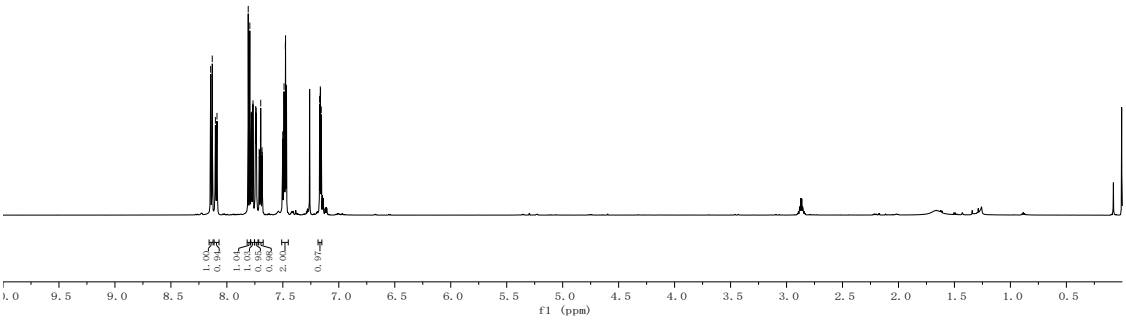
3at (150 MHz, $CDCl_3$)

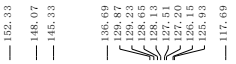


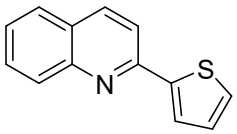




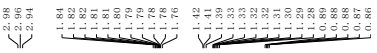
3au (600 MHz, $CDCl_3$)

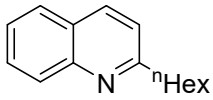




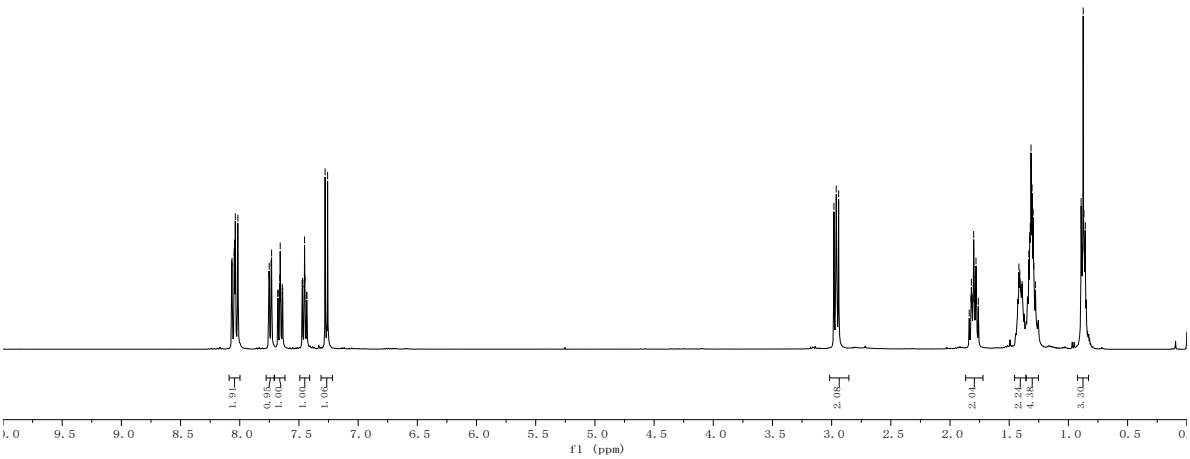


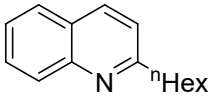
3au (150 MHz, $CDCl_3$)



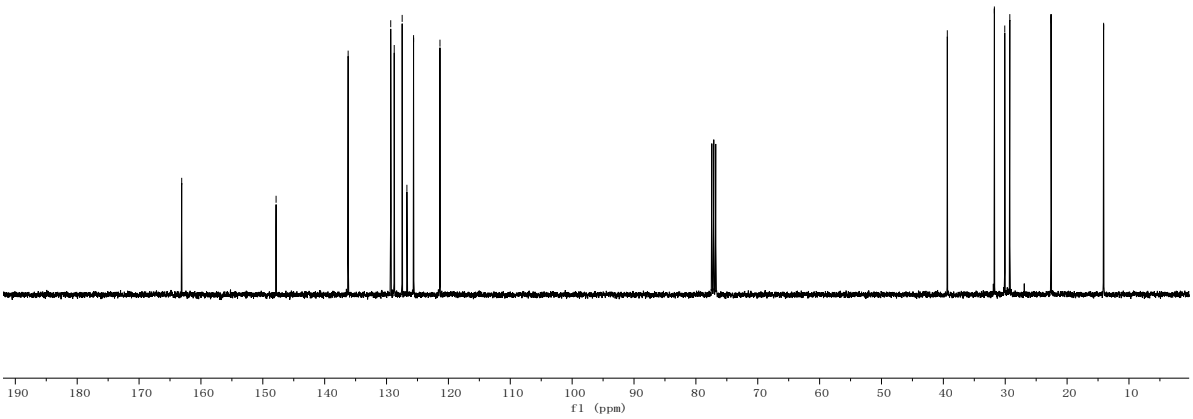


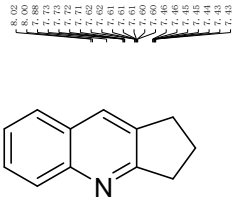
3av (400 MHz, $CDCl_3$)



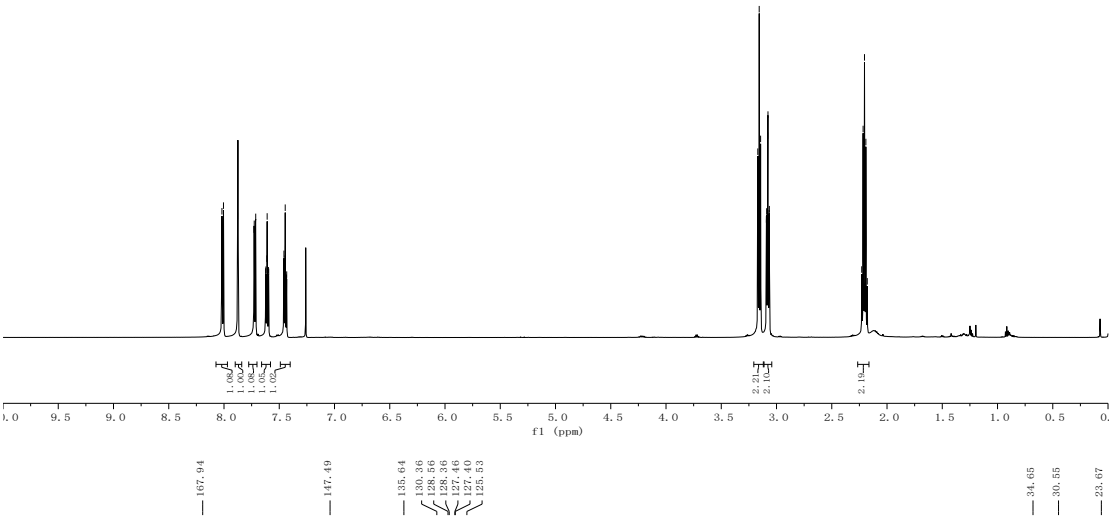


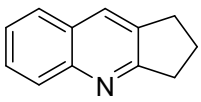
3av (100 MHz, $CDCl_3$)



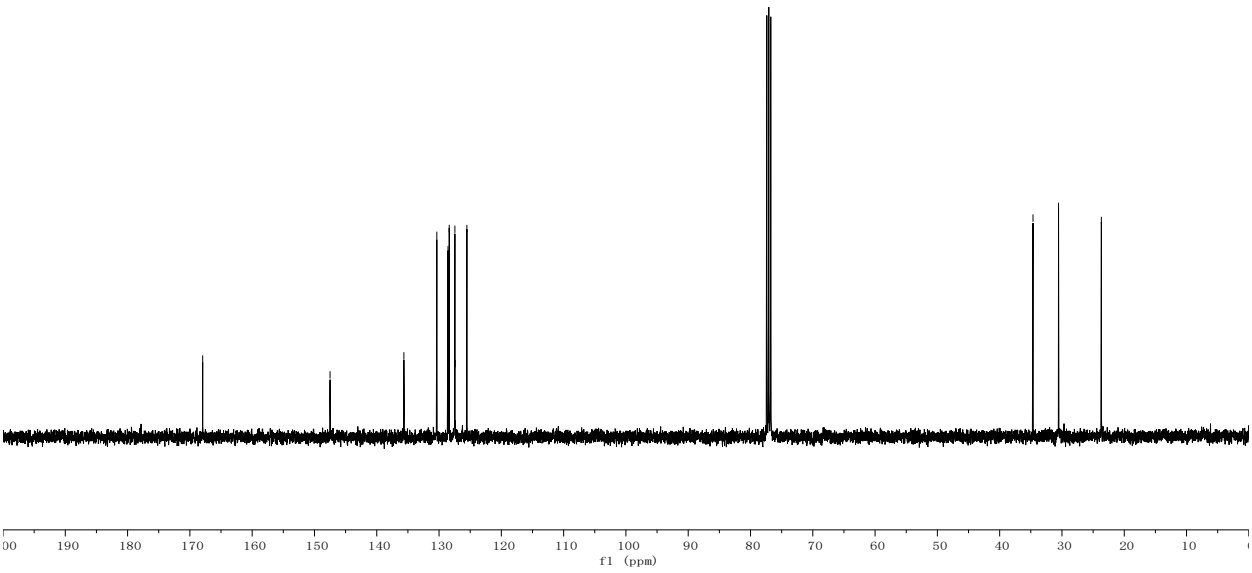


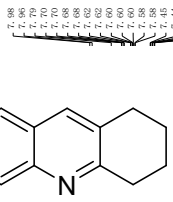
3aw (600 MHz, $CDCl_3$)



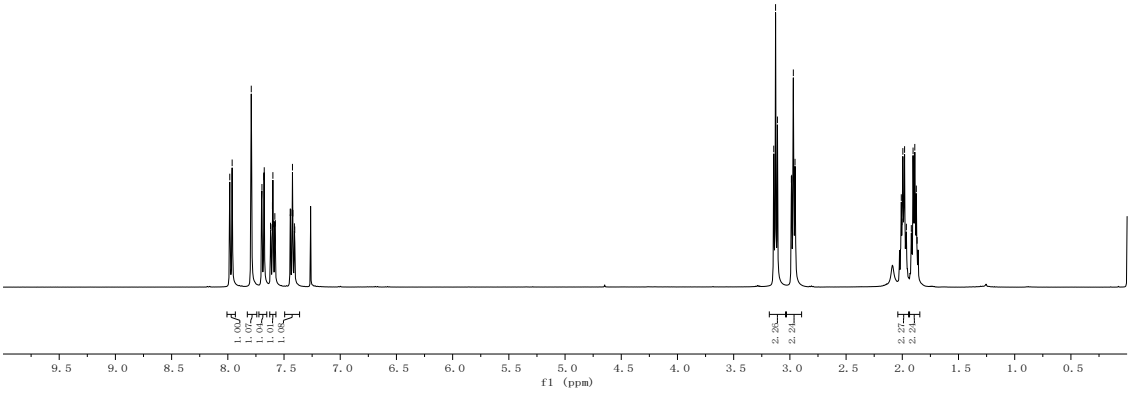


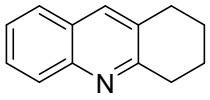
3aw (100 MHz, $CDCl_3$)



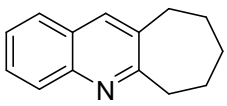


3ax (600 MHz, $CDCl_3$)

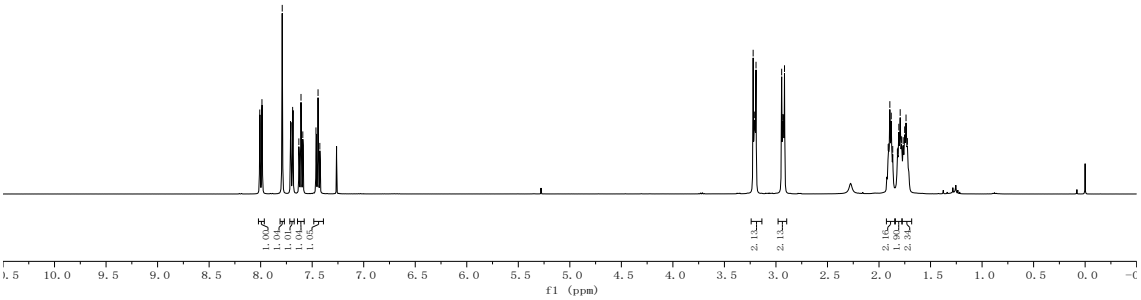


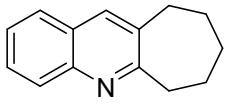


3ax (100 MHz, $CDCl_3$)

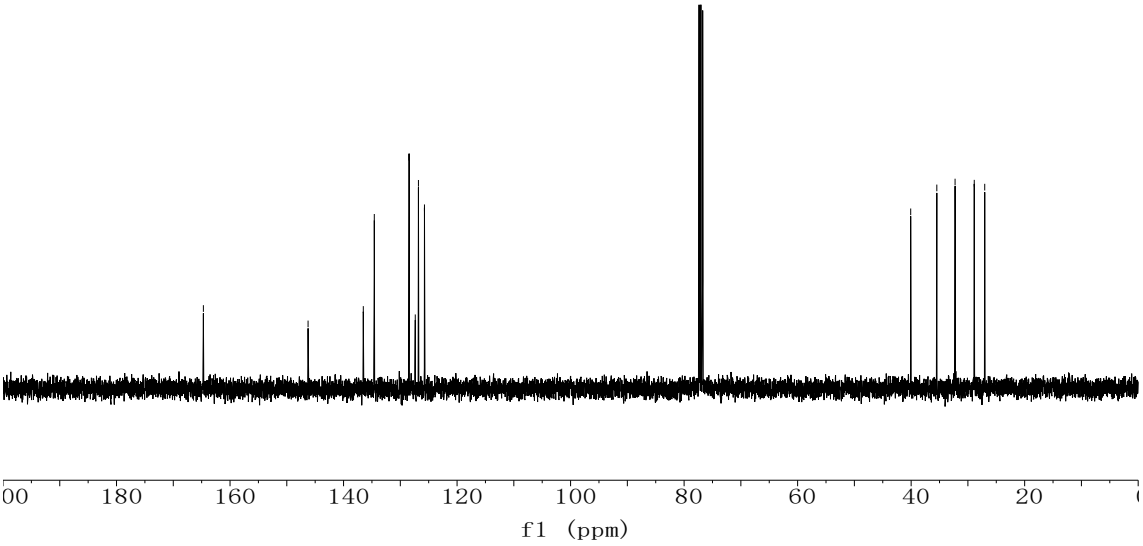


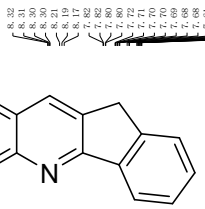
3ay (400 MHz, $CDCl_3$)



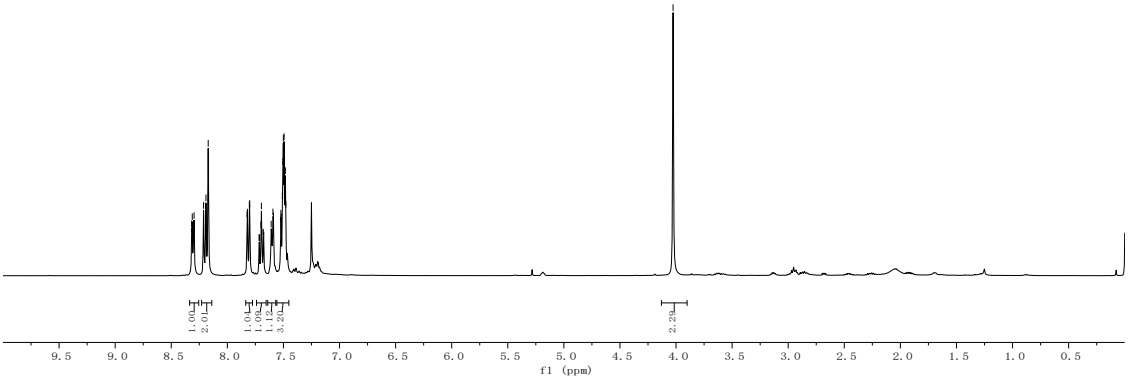


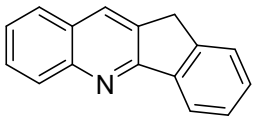
3ay (100 MHz, $CDCl_3$)



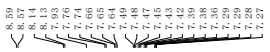


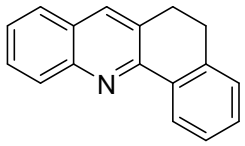
3az (400 MHz, $CDCl_3$)



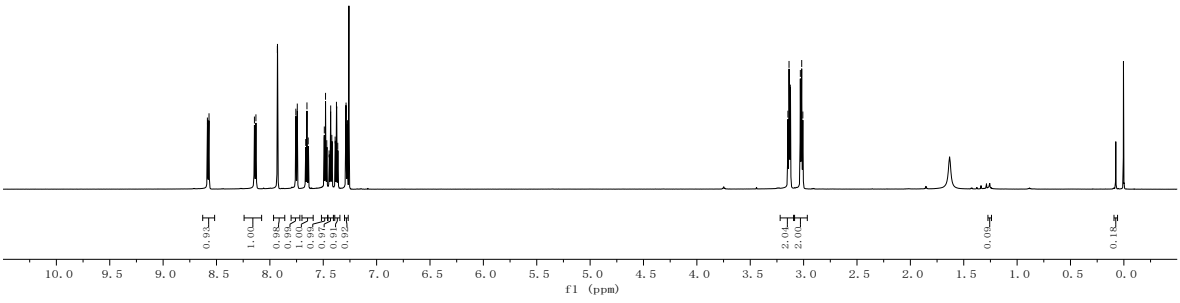


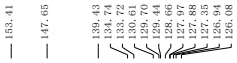
3az (100 MHz, $CDCl_3$)

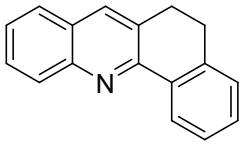




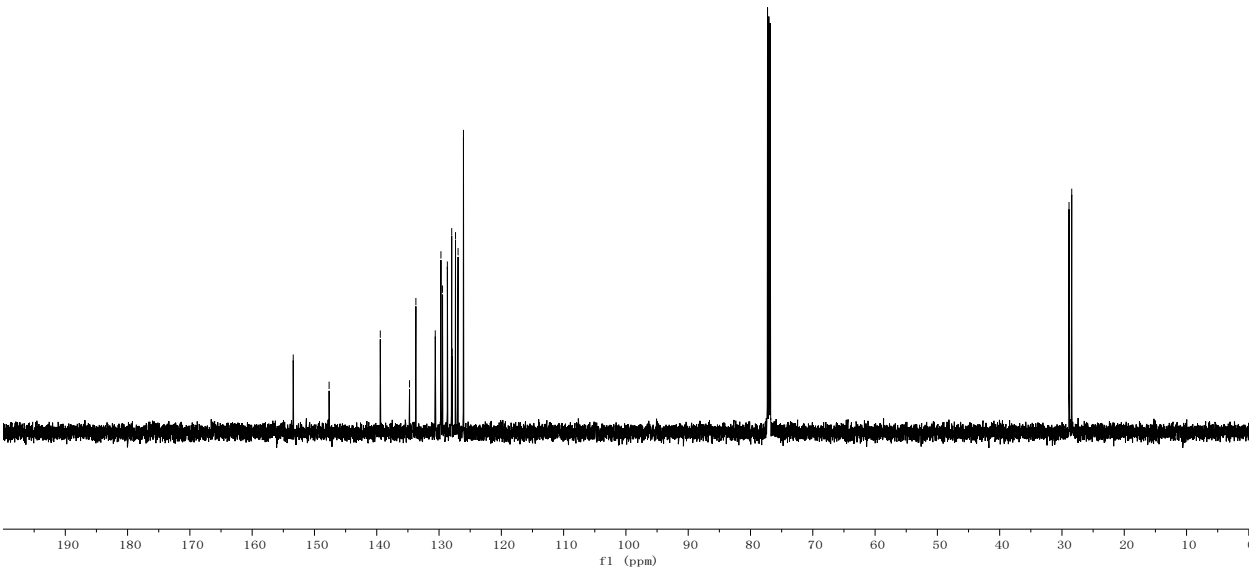
3aaa (600 MHz, $CDCl_3$)

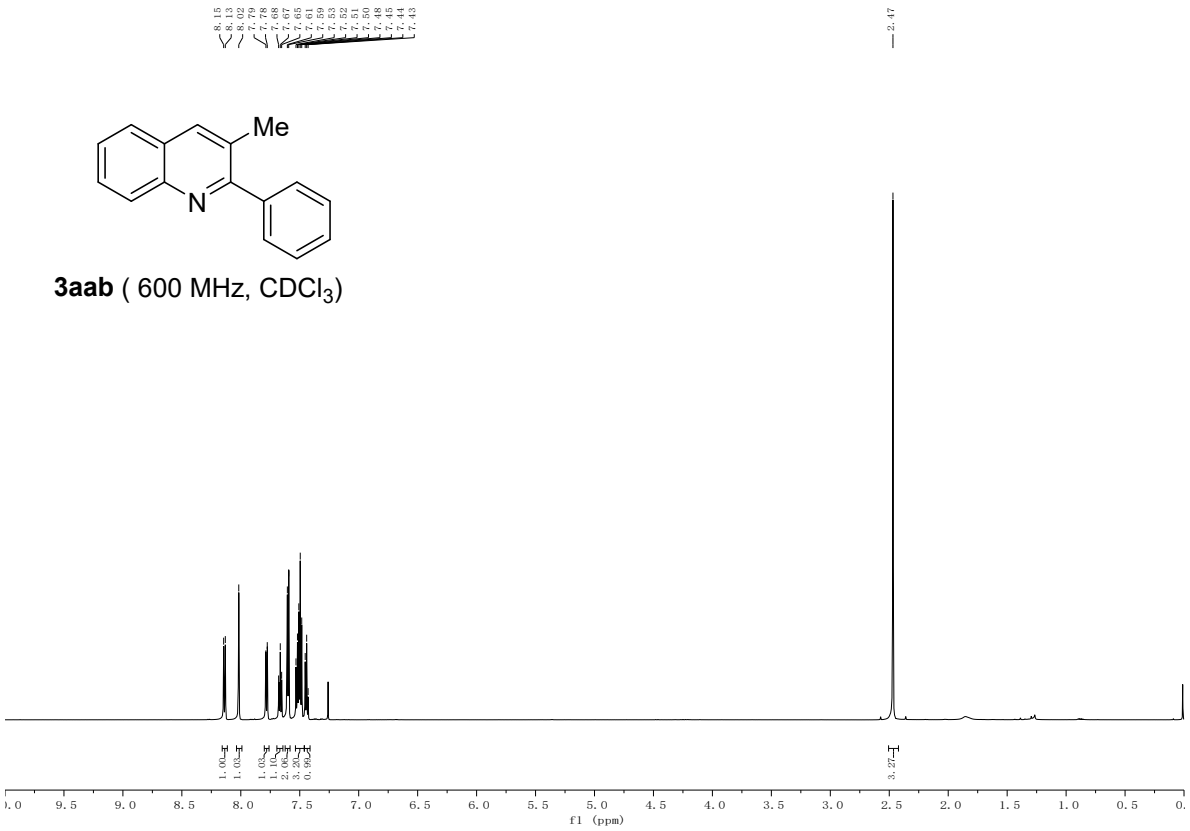




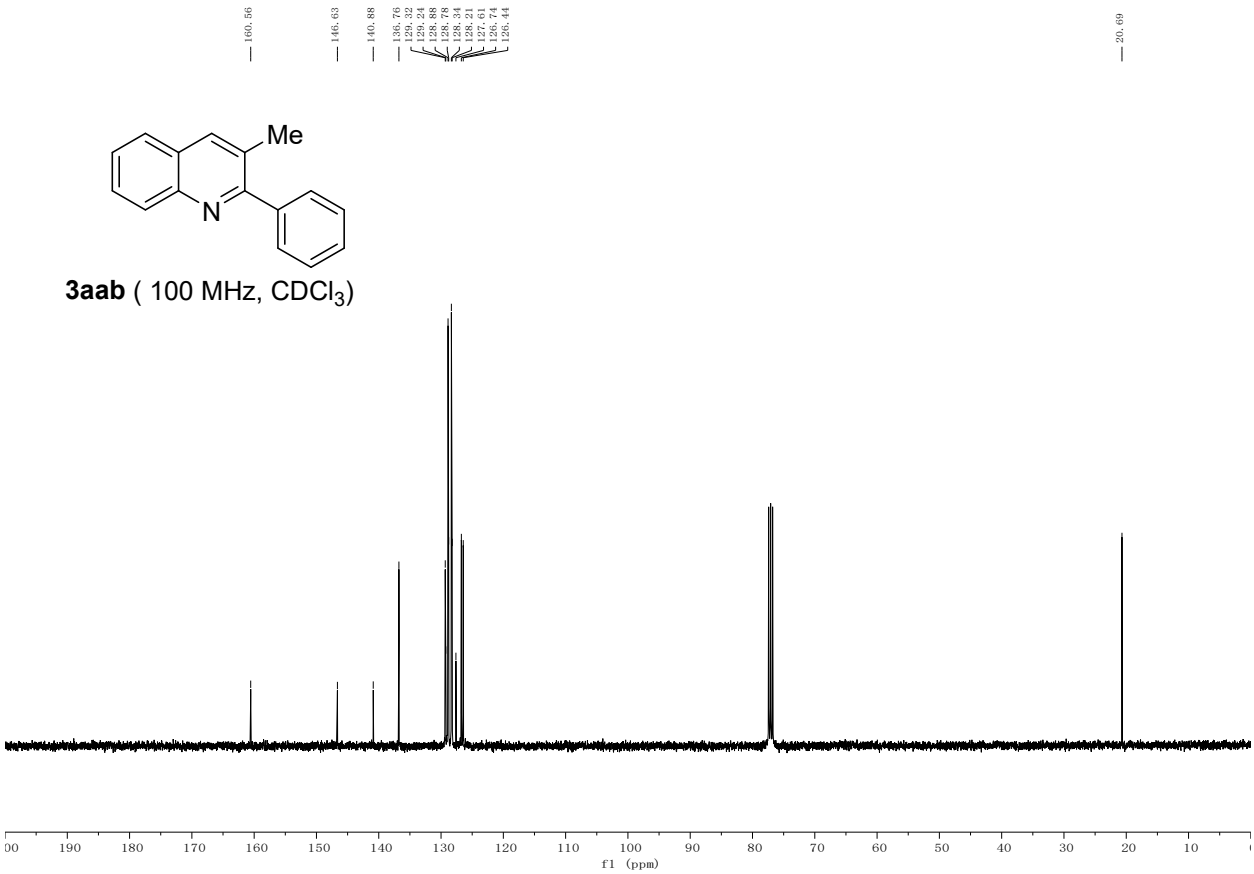


3aaa (150 MHz, $CDCl_3$)

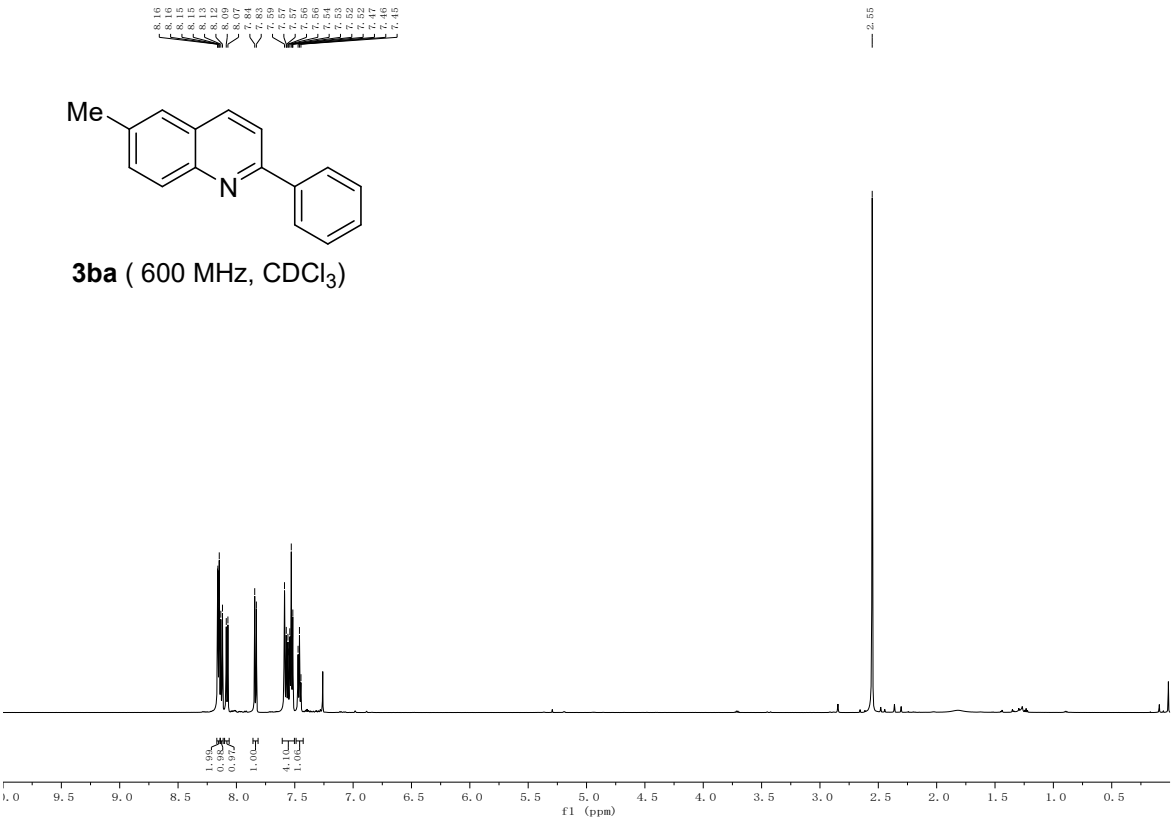




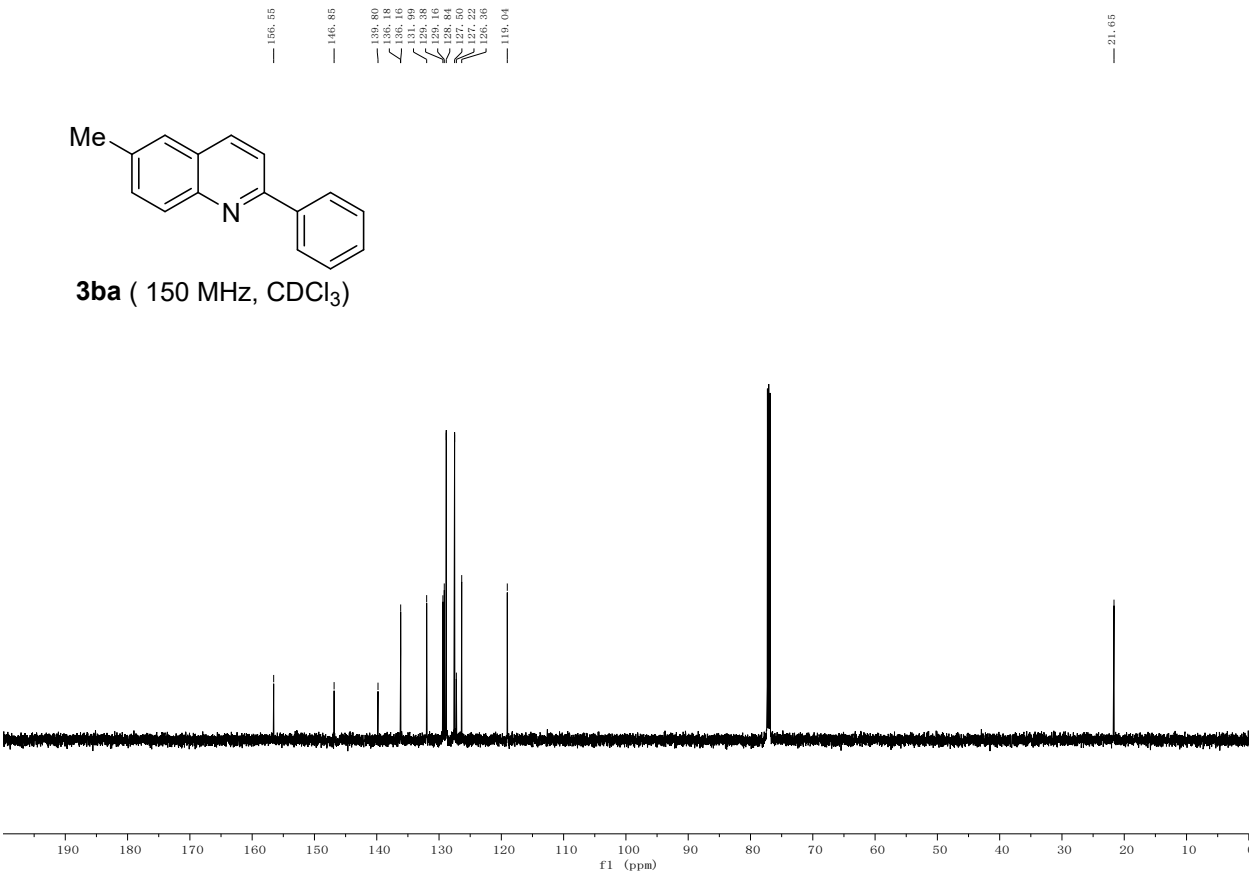
3aab (600 MHz, $CDCl_3$)



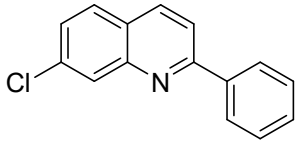
3aab (100 MHz, $CDCl_3$)



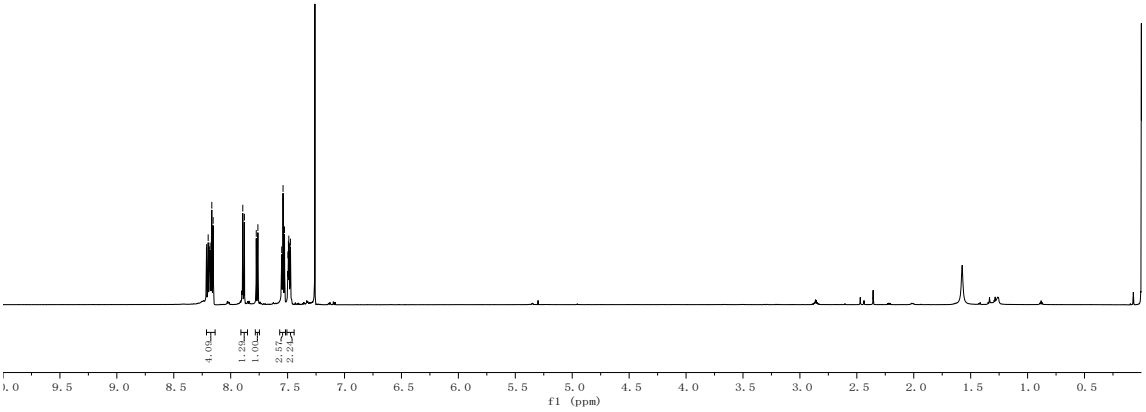
3ba (600 MHz, $CDCl_3$)

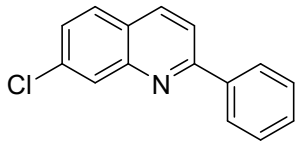


3ba (150 MHz, $CDCl_3$)

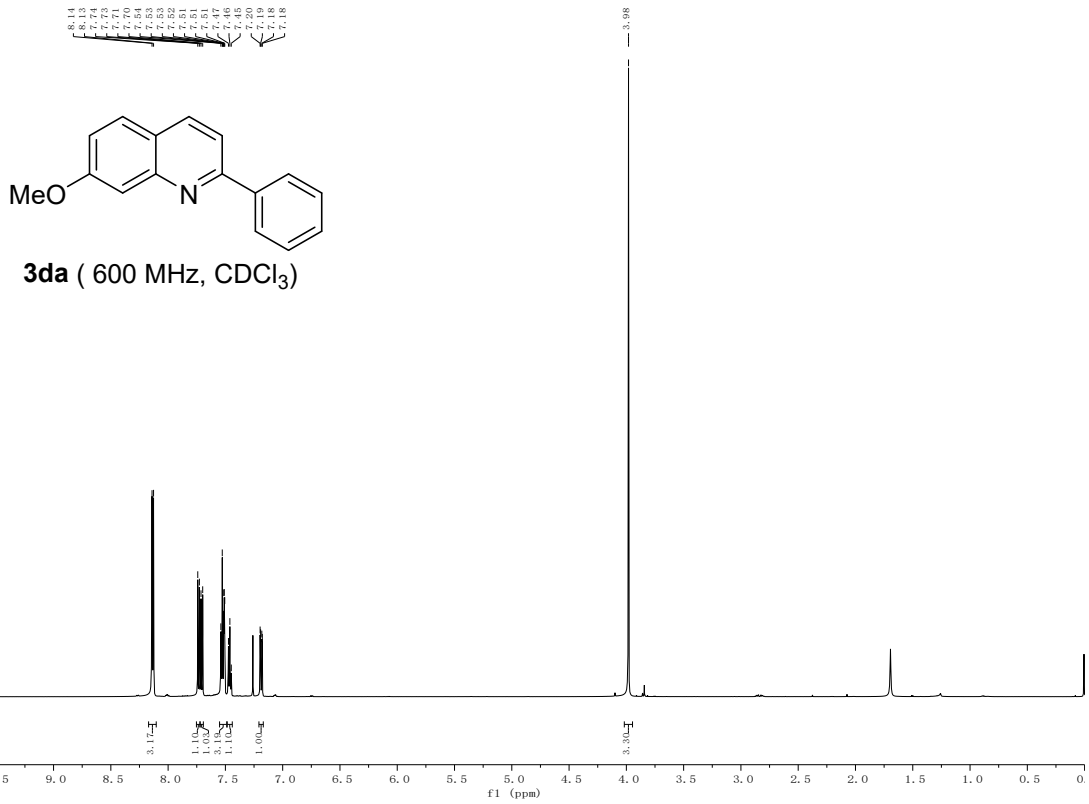


3ca (600 MHz, $CDCl_3$)

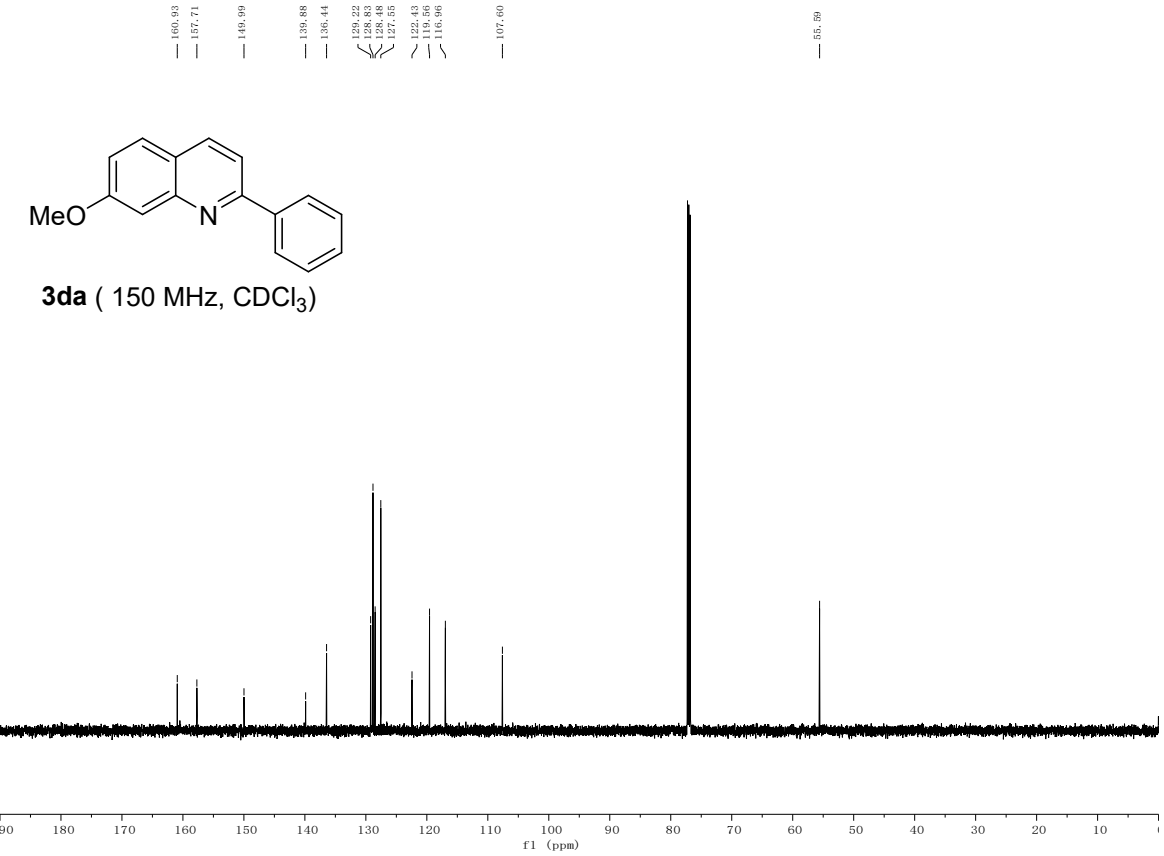




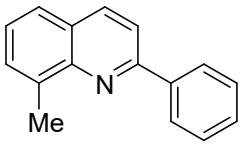
3ca (150 MHz, $CDCl_3$)



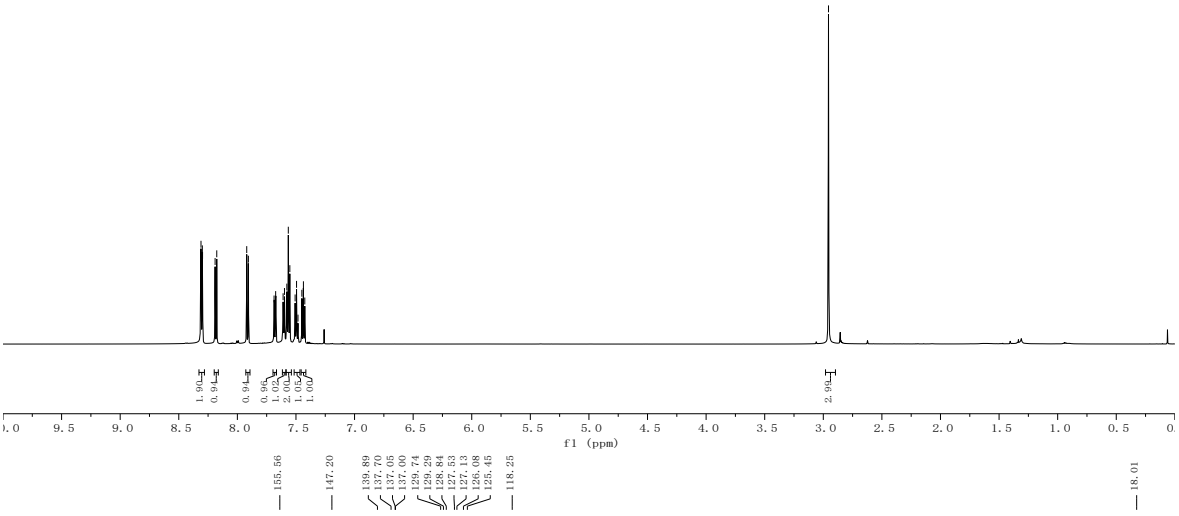
3da (600 MHz, $CDCl_3$)

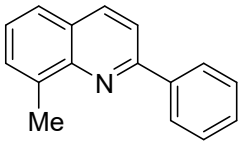


3da (150 MHz, $CDCl_3$)

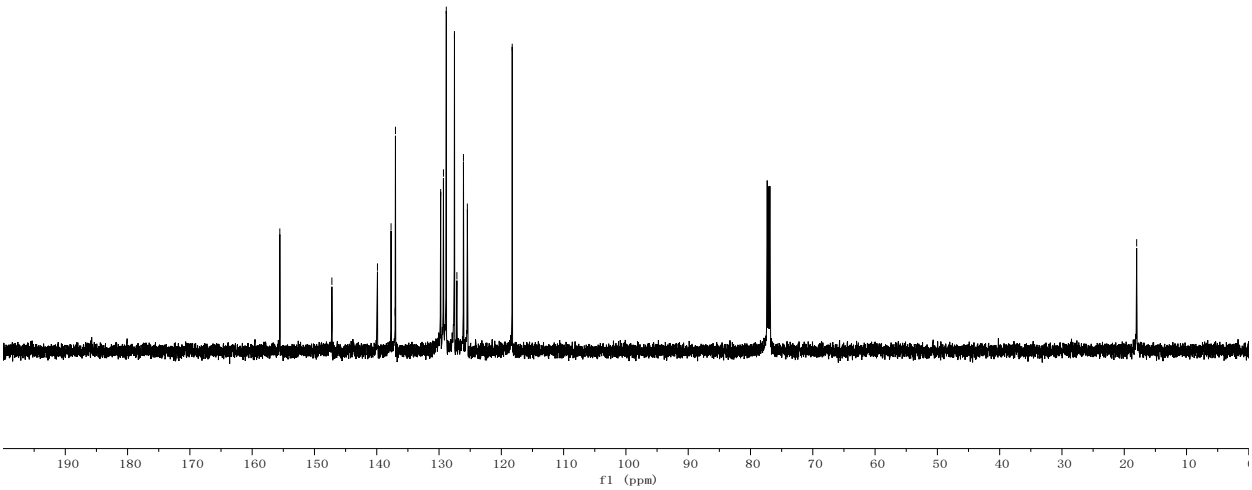


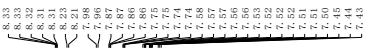
3ea (600 MHz, $CDCl_3$)

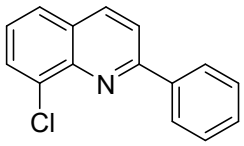




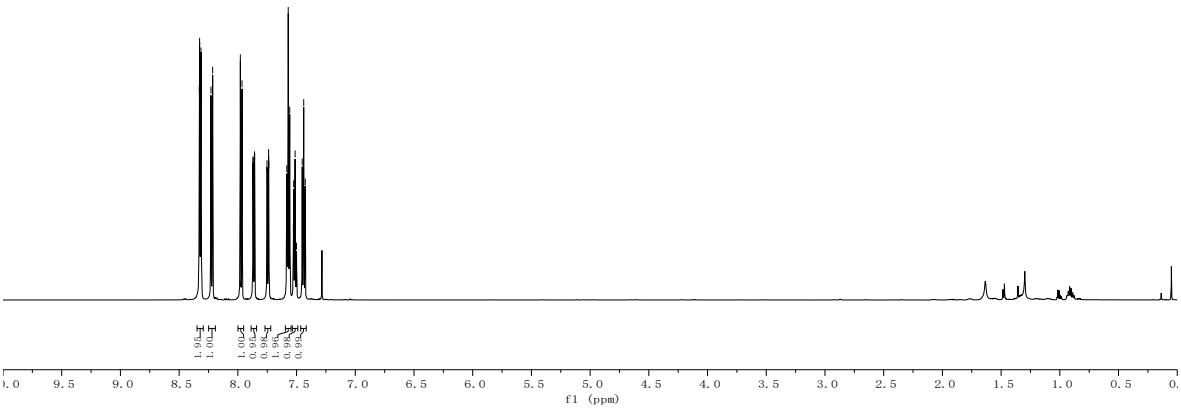
3ea (150 MHz, $CDCl_3$)

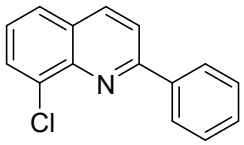




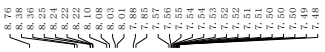


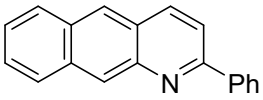
3fa (600 MHz, $CDCl_3$)



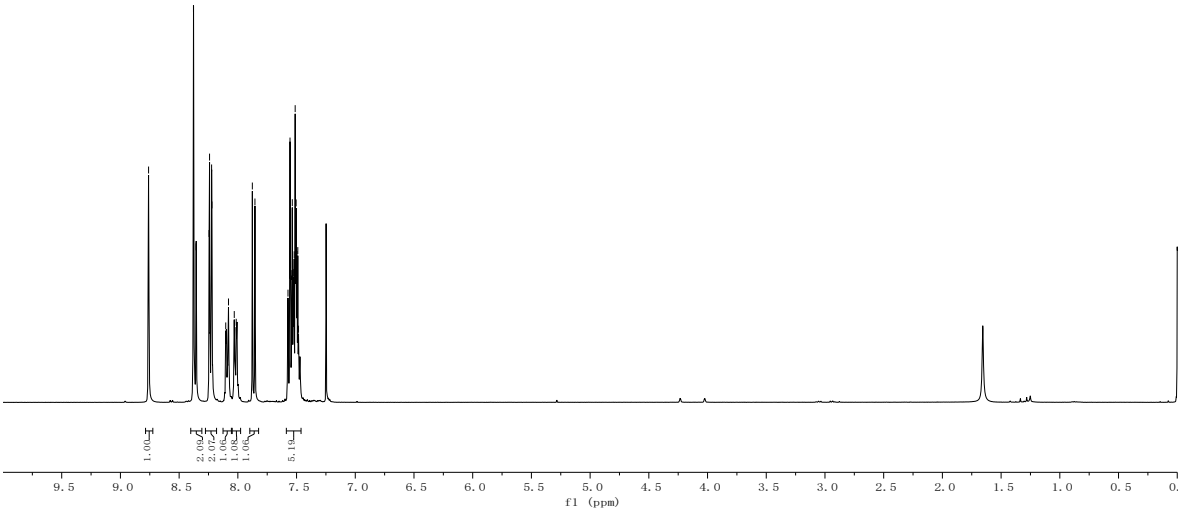


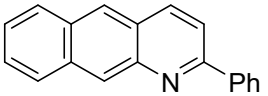
3fa (100 MHz, $CDCl_3$)



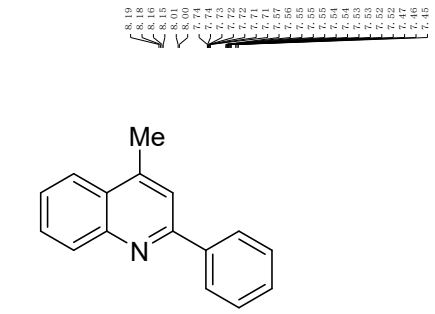


3ga (400 MHz, $CDCl_3$)

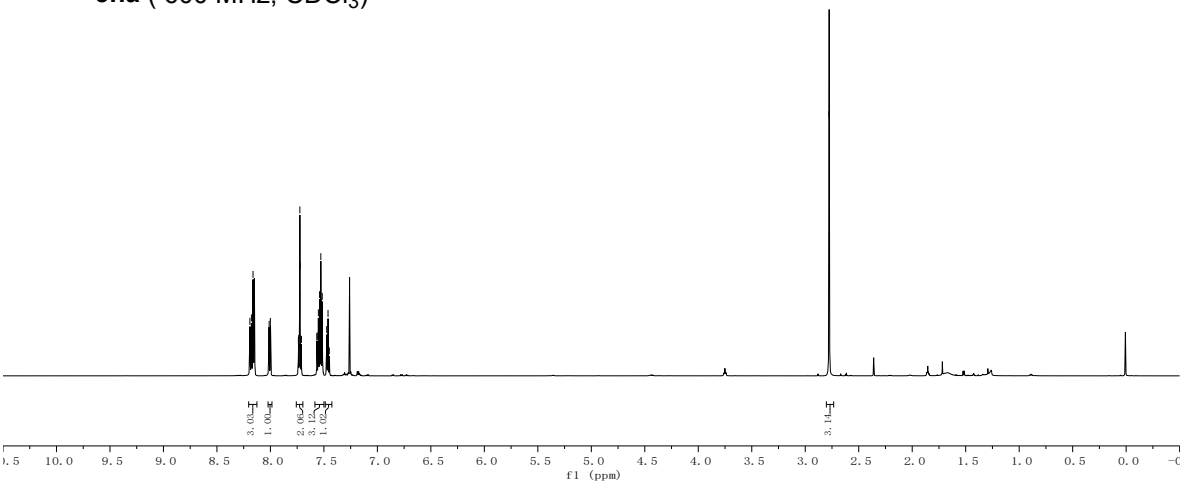


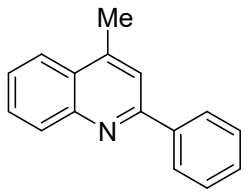


3ga (100 MHz, $CDCl_3$)

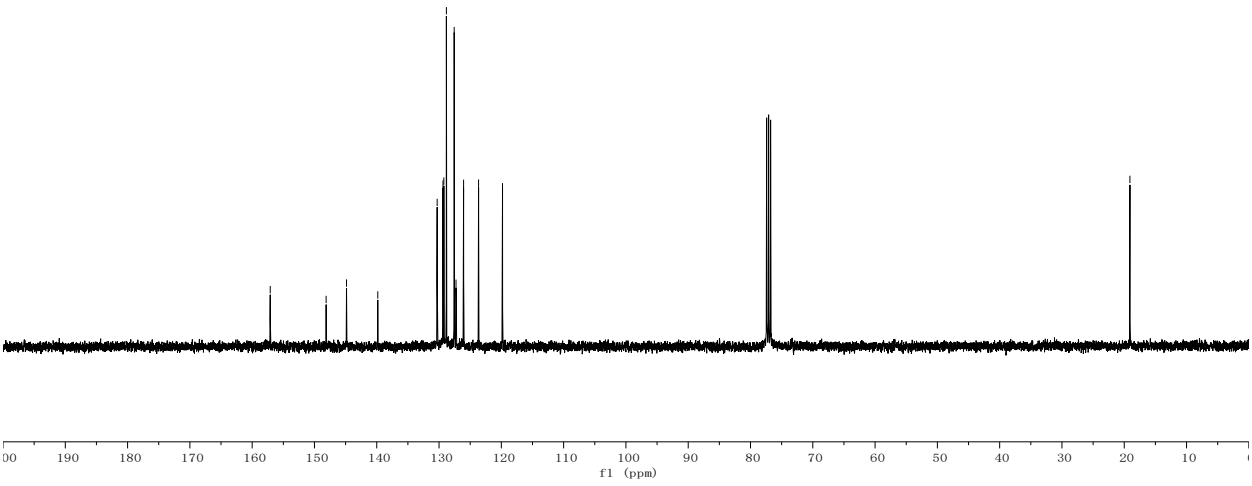


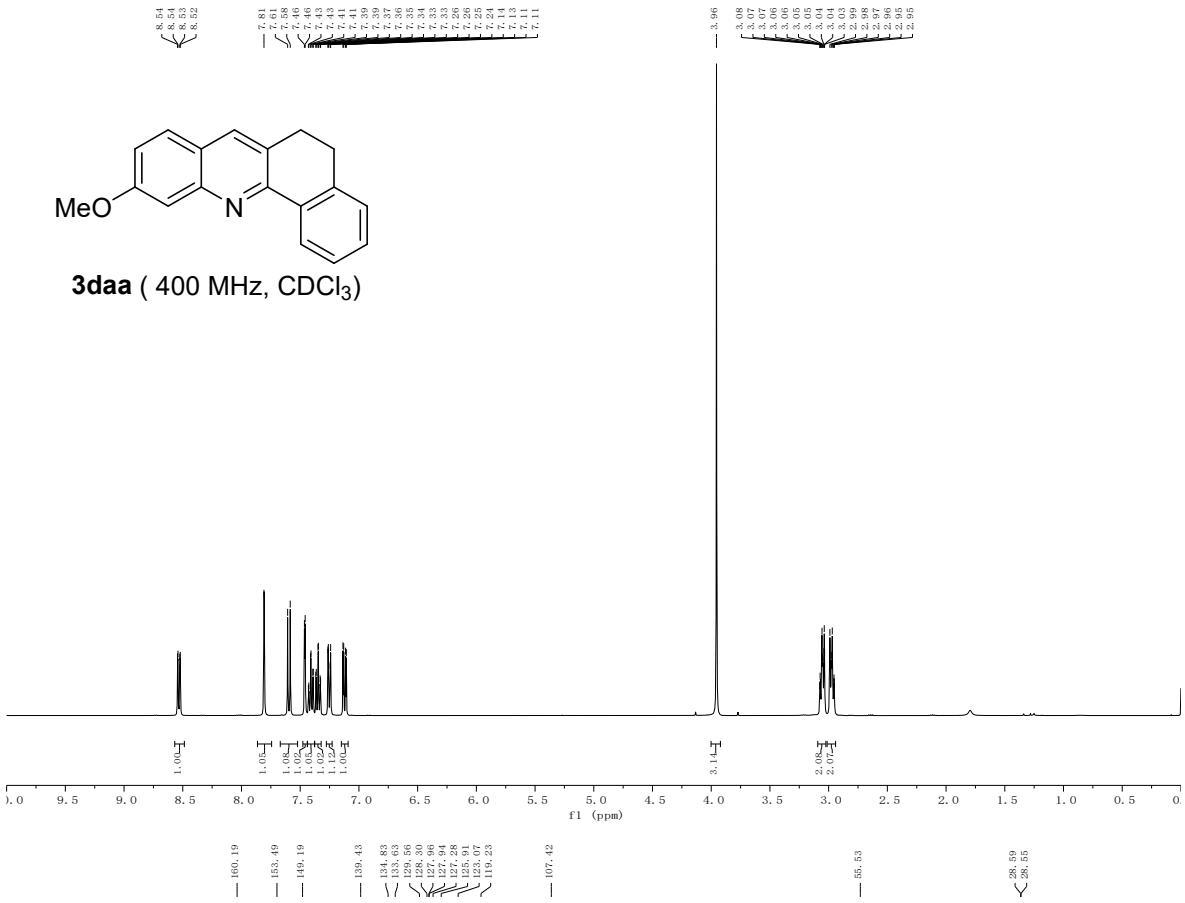
3ha (600 MHz, $CDCl_3$)



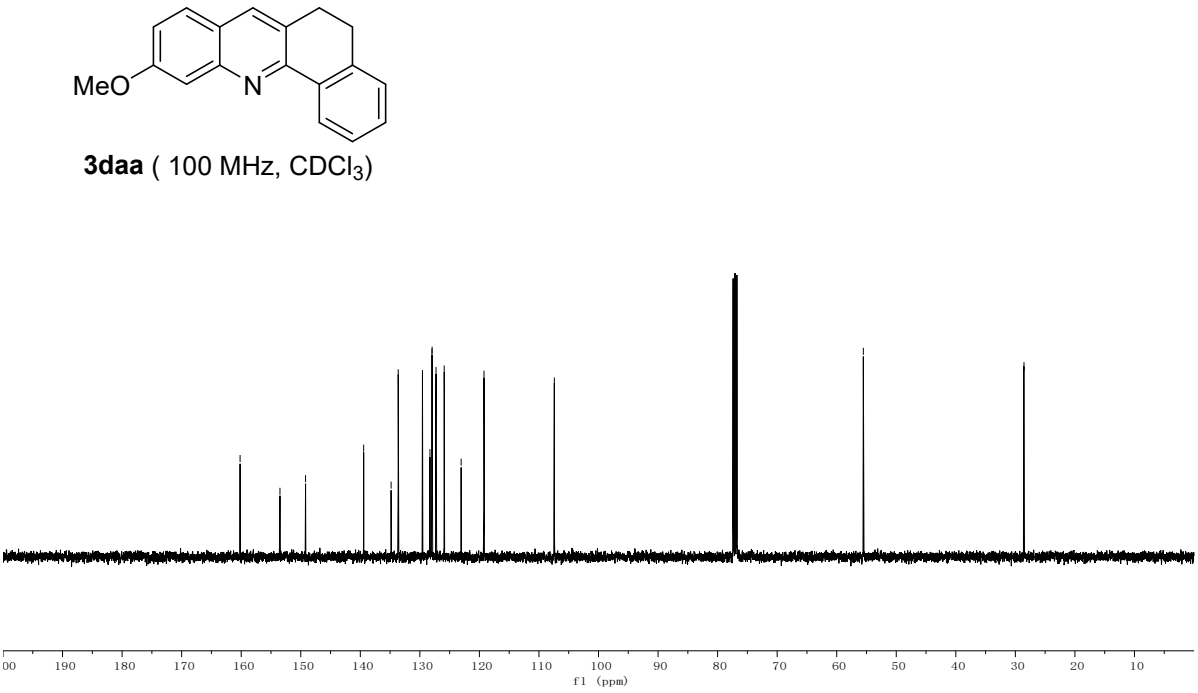


3ha (100 MHz, $CDCl_3$)

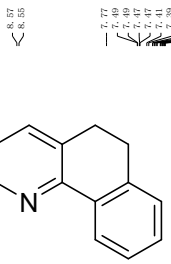




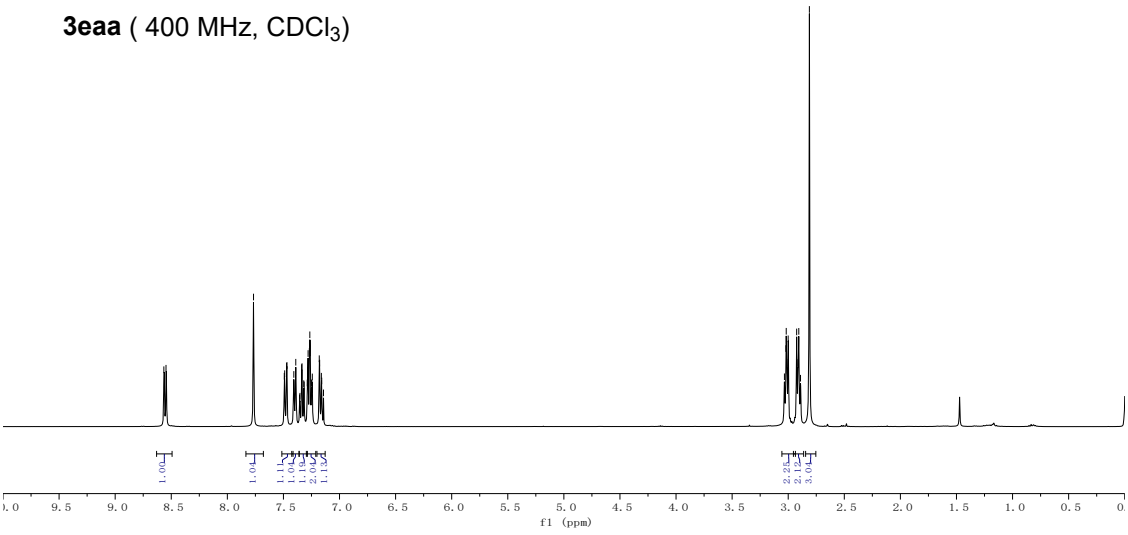
3daa (400 MHz, $CDCl_3$)

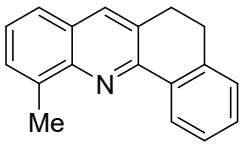


3daa (100 MHz, $CDCl_3$)

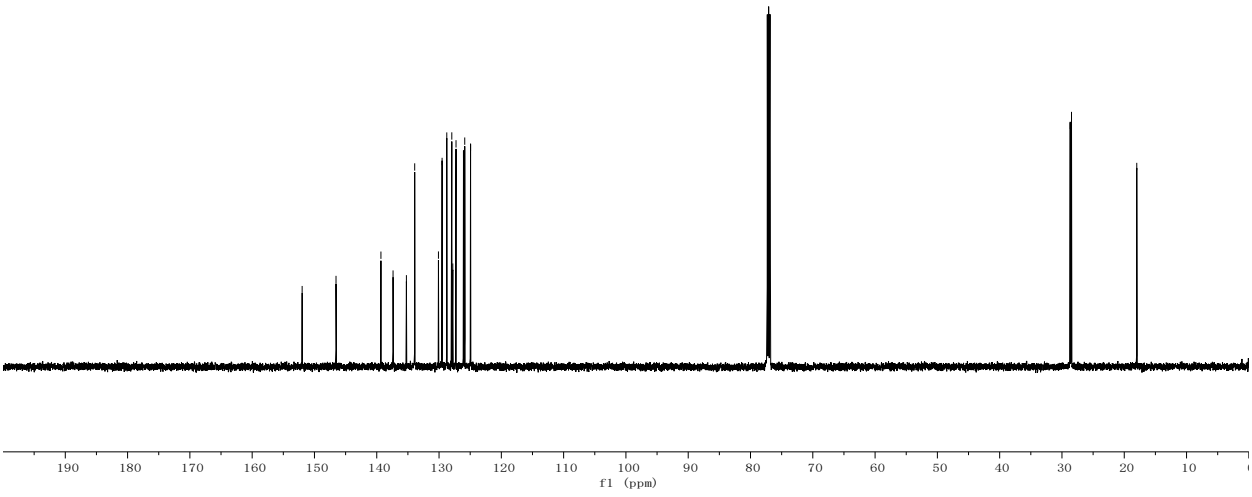


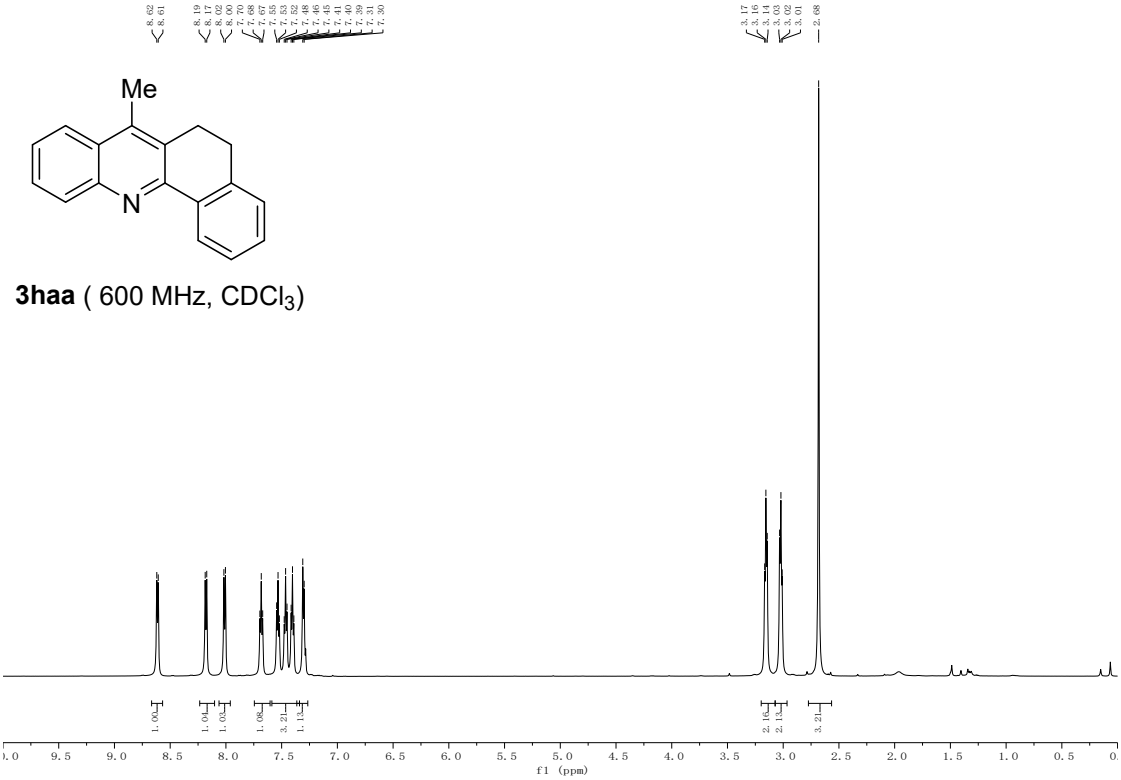
3eaa (400 MHz, $CDCl_3$)



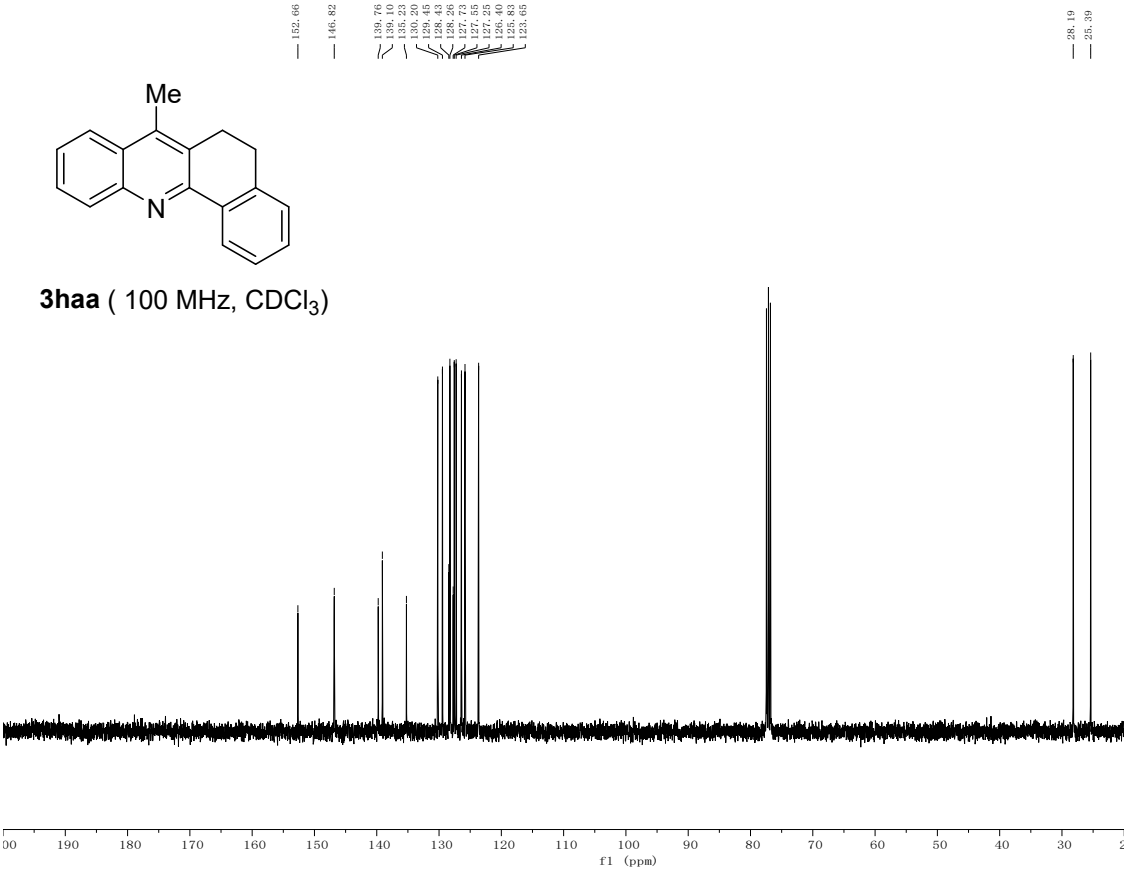


3eaa (150 MHz, $CDCl_3$)





3haa (600 MHz, $CDCl_3$)



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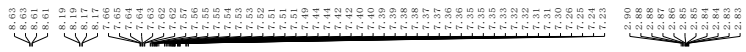
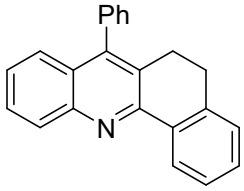
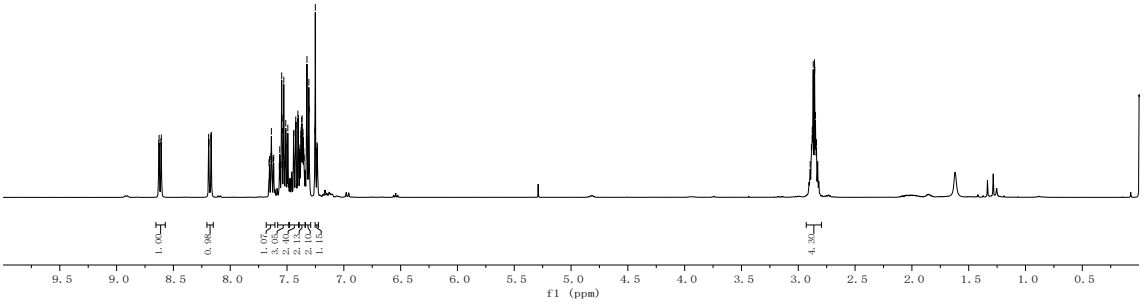
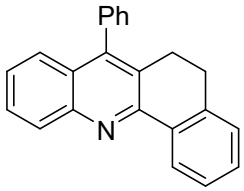




3iaa (400 MHz, $CDCl_3$)





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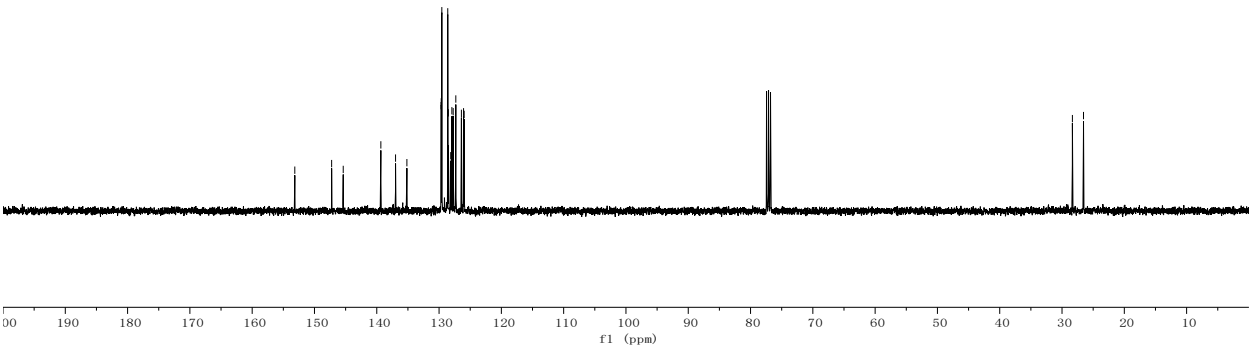

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