Supporting Information

General synthesis of *N*-Alkylation of Amines with Secondary Alcohols *via* Hydrogen Auto-transfer

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Contents

1. General Information S2

2. Experimental section S3

3. Mechanistic investigation S4

4. Rate order determination S11

5. Characterization data S20

6. Copy of ^{1}H and ^{13}C NMR Spectra S37

1. General Information

All catalytic experiments were carried out using standard Schlenk techniques. All solvents were reagent grade or better. Deuterated solvents were used as received. *m*-Xylene was refluxed over sodium/benzophenoneketyl and distilled under argon atmosphere and stored over sodium. Most of the chemicals used in the catalytic reactions were purified according to standard procedure. Thin layer chromatography (TLC) was performed using silica gel precoated glass plates, which were visualized with visualized with UV light at 254 nm or under iodine. Column chromatography was performed with SiO_2 (Silicycle Silica flash F60 (230-400 mesh). ^{1}H NMR (200, 400 or 500 MHz), ^{13}C NMR (50, 100 or 126 MHz) spectra were recorded on the NMR spectrometer. Deuterated chloroform was used as the solvent, and chemical shift values (δ) are reported in parts per million relatives to the residual signals of this solvent [δ 7.27 for ^{1}H (chloroform-d), δ 77.0 for ^{13}C (chloroform-d). Abbreviations used in the NMR follow-up experiments: br, broad; s, singlet; d, doublet; t, triplet; q, quartet; m, multiplet. GC analysis was carried out using a HP-5 column (30 m, 0.25 mm, 0.25μ). Mass spectra were obtained on a GCMS-QP 5000 instruments with ionization voltages of 70 eV. High resolution mass spectra (HRMS) were obtained on a High-resolution mass spectra (HRMS) were obtained by fast atom bombardment (FAB) using a double focusing magnetic sector mass spectrometer and electron impact (EI) ionization technique (magnetic sector-electric sector double focusing mass analyzer).

2. Experimental Section

General procedure for the Ni catalyzed *N*-alkylation of amines with secondary alcohols

In an oven dried screw cap reaction tube (15 mL), alcohol (0.75 mmol) amine (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added in a gentle stream of argon. Then the reaction mixture was stirred with a magnetic stirring bar at 140 ^{o}C in an oil bath for 12 h. After completion of the reaction the crude mixture was filtered through celite filter and washed with ethyl acetate (3×5 mL), followed by the solvent was removed under vacuum and finally the residue was purified by silica gel column chromatography (230-400 mesh size) using petroleum-ether and ethyl acetate as an eluent to give the secondary amines.

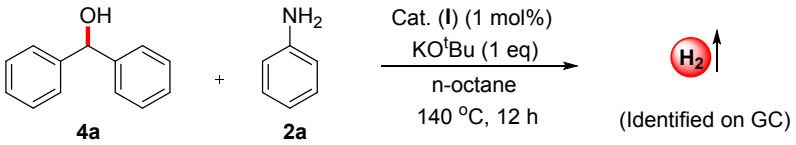
General procedure for the Ni catalyzed *N*-alkylation of aniline 2a with diphenyl methanol 4a

In an oven dried screw cap reaction tube (15 mL), diphenyl methanol **4a** (1.5 mmol) aniline **2a** (1.0 mmol), KO^{t}Bu (1.0 mmol), [Ni]-catalyst (1 mol%) and n-octane (2 mL) were added in a gentle stream of argon. Then the reaction mixture was stirred with a magnetic stirring bar at 140 ^{o}C in an oil bath for 12 h. After completion of the reaction the crude mixture was filtered through celite filter and washed with ethyl acetate (3×5 mL), followed by the solvent was removed under vacuum and finally the residue was purified by silica gel column chromatography (230-400 mesh size) using petroleum-ether and ethyl acetate as an eluent to give the Pale yellow liquid of *N*-benzhydrylaniline **3f** in 240 mg, 93% isolated yield.

3. Mechanistic investigation

3.1 H_2 detection

In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a** (0.75 mmol) aniline **2a** (0.5 mmol), KOtBu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added in a gentle stream of argon. Then the reaction mixture was stirred with a magnetic stirring bar at 140 °C for 12 h. After completion of the reaction the crude mixture was cooled to room temperature followed by the sample was submitted to GC for detection of H_2 gas (Figure S1).



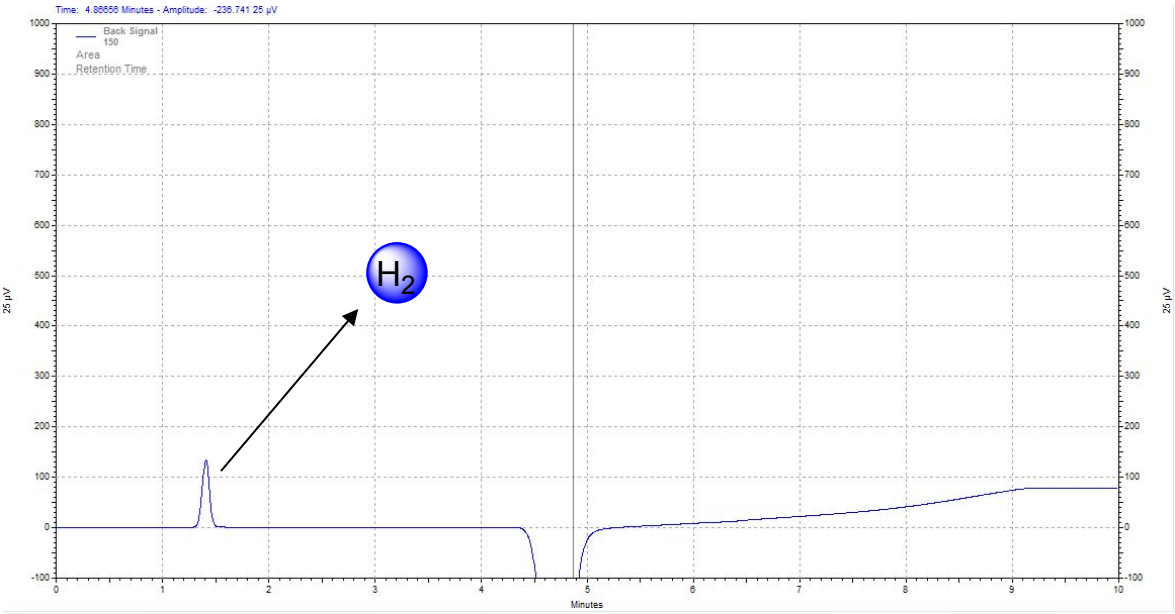
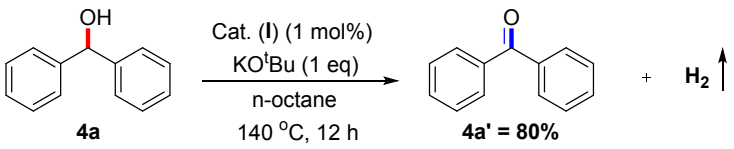


Figure S1. Gas chromatography analysis for the detection of hydrogen

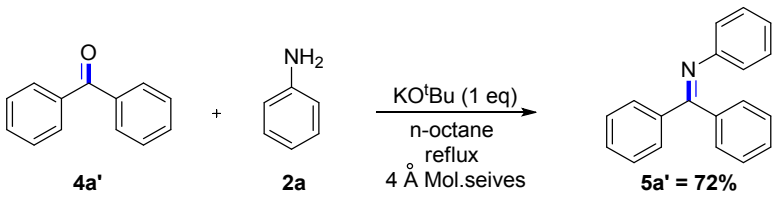
3.2 Determination of dehydrogenative product

In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a** (0.5 mmol) KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added in a gentle stream of argon. Then the reaction mixture was stirred with a magnetic stirring bar at 140 ^{o}C for 12 h. After completion of the reaction the crude mixture was filtered through celite filter and washed with ethyl acetate (3×5 mL), followed by the solvent was removed under vacuum and finally the residue was purified by silica gel column chromatography (230–400 mesh size) using petroleum-ether and ethyl acetate as an eluent to give the benzophenone product **4a**' in 80% yield.



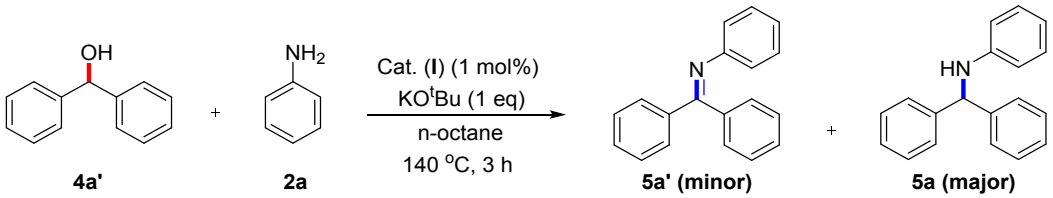
3.3 Synthesis of ketimine

In an oven dried screw cap reaction tube (15 mL), benzophenone **4a'** (1.0 mmol), aniline **2a** (1.0 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%), n-octane (1 mL) and 4 A^o molecular sieves were added in a gentle stream of argon. Then the reaction mixture was refluxed for 12 h. After completion of the reaction the crude mixture was filtered through celite filter and washed with ethyl acetate (3×5 mL), followed by the solvent was removed under vacuum and finally the residue was purified by silica gel column chromatography (230–400 mesh size) using petroleum-ether and ethyl acetate as an eluent to give the *N*-(diphenylmethylene)aniline **5a**' in 72% yield.



3.4 Detection of intermediate ketimine

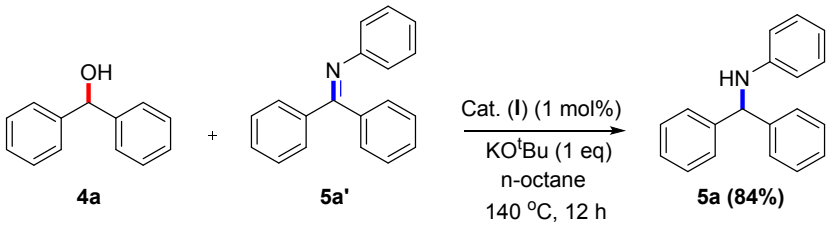
In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a** (0.75 mmol), aniline **2a** (1.0 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added in a gentle stream of argon. Then the reaction mixture was stirred at 140 ^{o}C. Subsequently, the reaction was stopped after 3h followed by the sample was cooled to room temperature and filtered through celite filter and submitted to GC and GC-MS analysis. The benzophenone imine intermediate **5a'**(minor), and *N*-alkylated product **5a** (major) were identified from the resulted mixture.



3.5 Hydrogenation of intermediate ketimine with secondary alcohols

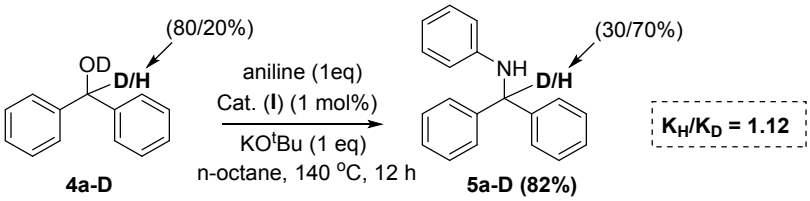
In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a** (0.75 mmol) N-(diphenylmethylene)aniline **5a**' (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added in a gentle stream of argon. Then the reaction mixture was stirred with a magnetic stirring bar at 140 ^{o}C for 12 h. After completion of the reaction the crude mixture was filtered through celite filter and washed with ethyl acetate (3×5 mL), followed by

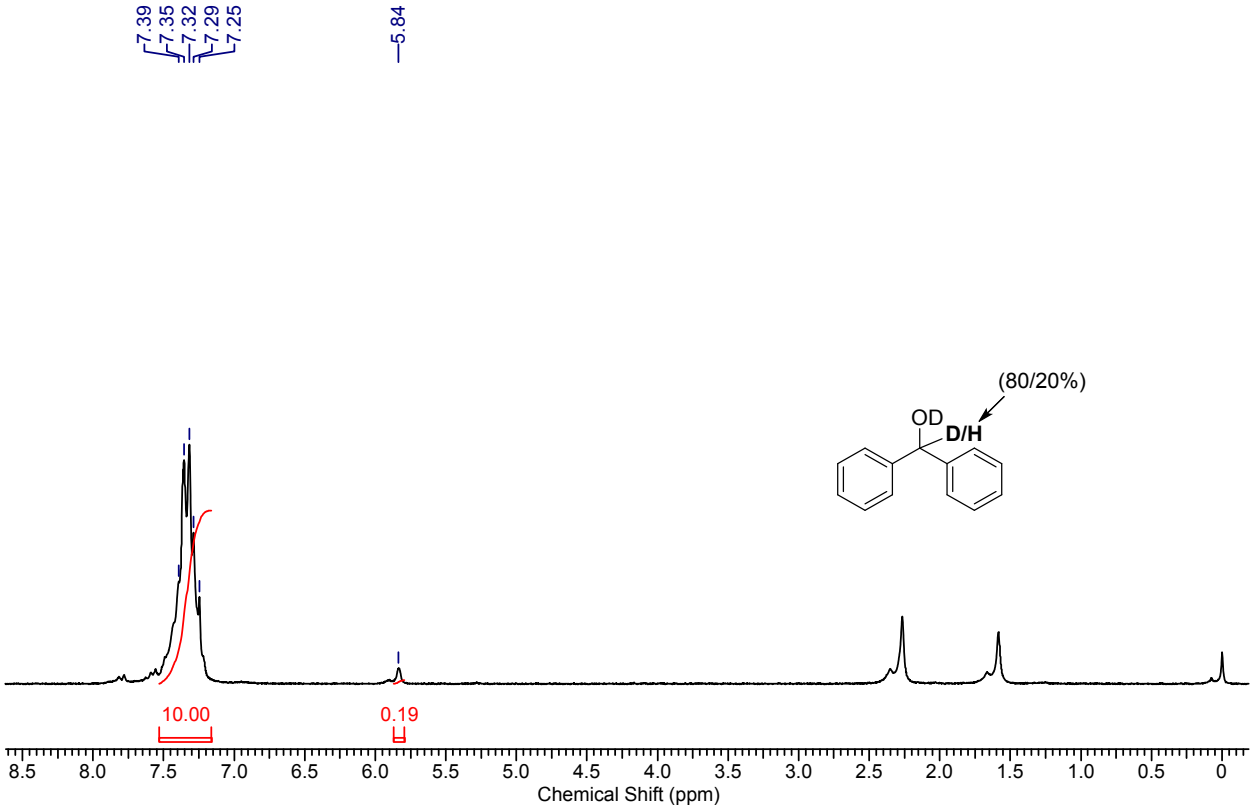
the solvent was removed under vacuum and finally the residue was purified by silica gel column chromatography (230-400 mesh size) using petroleum-ether and ethyl acetate as an eluent to give the hydrogenated product **5a** in 84% yield.



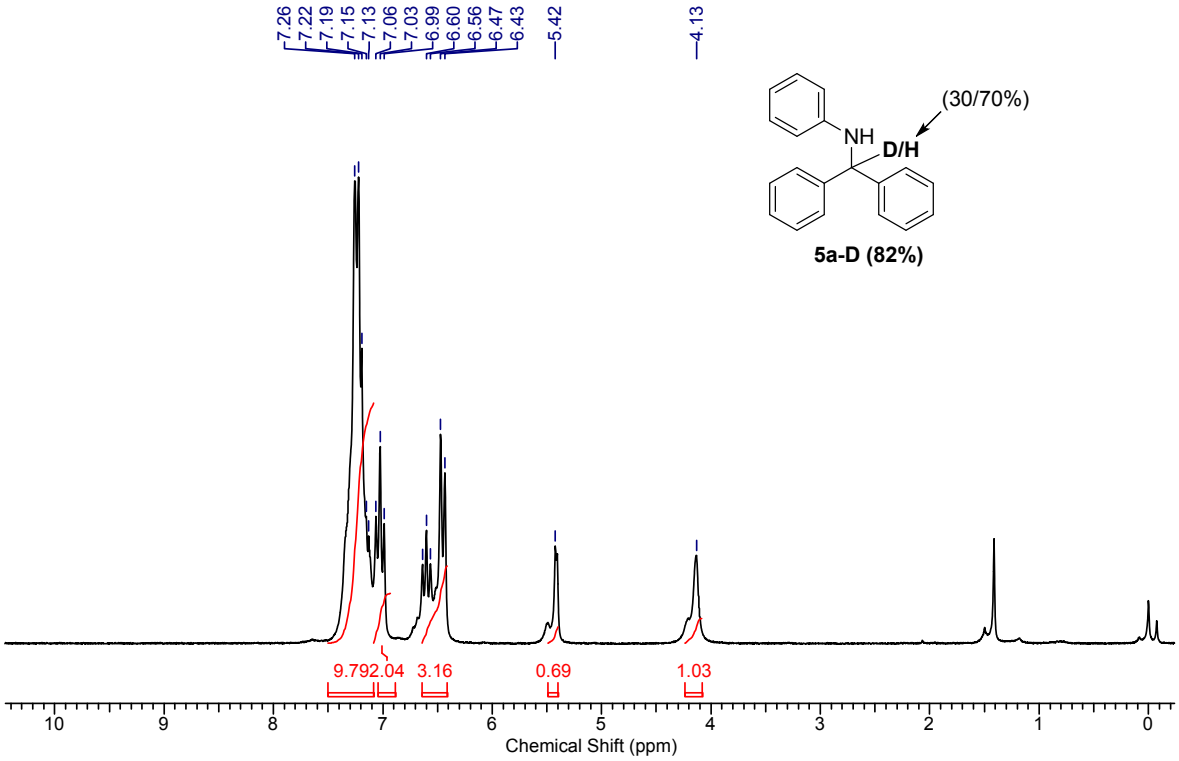
3.6 Deuterium labeling experiment

To an oven-dried 15 mL screw-capped vial, **4a-D** (0.75 mmol), aniline (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added under a gentle stream of argon. Then the reaction mixture was stirred for 12 h at 140 °C. After completion of the reaction the crude mixture was cooled to room temperature followed by filtered through a celite pad with several washings (3 x 3 mL ethyl acetate) and concentrated *in vacuo*. The residue was purified by column chromatography on silica gel (eluent: pet ether) to afford the product **5a-D** in 82% yield.





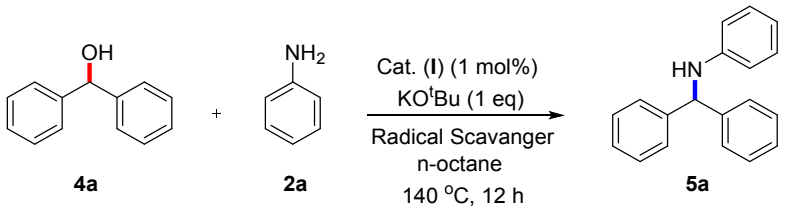
^{1}H NMR of **4a-D**



^{1}H NMR of **5a-D**

3.7. Reaction with radical scavangers

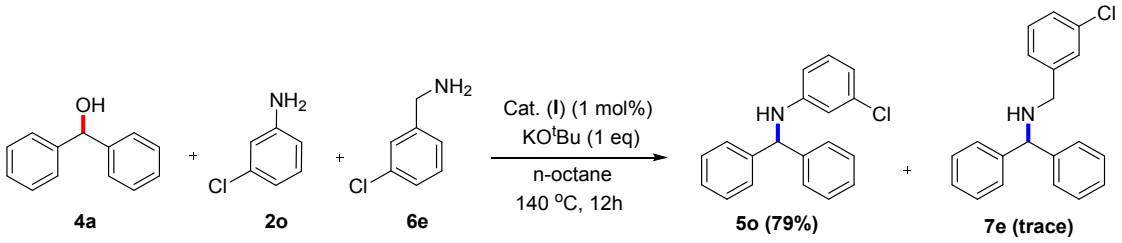
To an oven-dried 15 mL screw-capped reaction tube, diphenylmethanol **4a** (0.75 mmol), aniline (0.5 mmol), radical scavenger (1.0 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added under a gentle stream of argon. Then the reaction mixture was stirred for 12 h at 140 °C. After completion of the reaction the crude mixture was cooled to room temperature followed by filtered through a celite pad with several washings (3 x 3 mL ethyl acetate) and concentrated *in vacuo*. The residue was purified by column chromatography on silica gel (eluent: pet ether) to afford the desired product.



Radical scavanger	Yield of 3a
TEMPO	90 %
1,1 diphenyl ethylene	85 %

3.8 Competitive experiment

To an oven-dried 15 mL screw-capped reaction tube, diphenylmethanol **4a** (0.75 mmol), 3-chloroaniline **2o** (0.5 mmol), 3-chlorobenzylamine **6e** (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) and n-octane (1 mL) were added under a gentle stream of argon. Then the reaction mixture was stirred for 12 h at 140 °C. After completion of the reaction the crude mixture was cooled to room temperature followed by filtered through a celite pad with several washings (3 x 3 mL ethyl acetate) and concentrated *in vacuo*. The residue was purified by column chromatography on silica gel (eluent: pet ether) to afford the product **5o** in 79% yield.



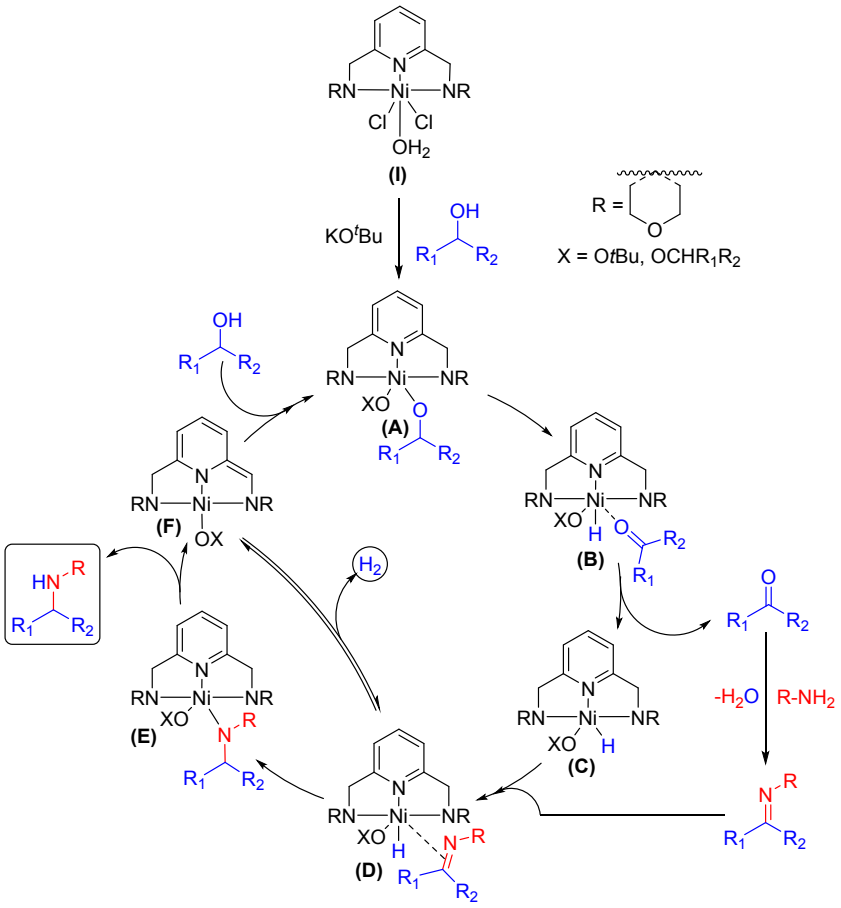
3.9 Homogenous test

To an oven-dried 15 mL screw-capped reaction tube, diphenylmethanol **4a** (0.75 mmol), aniline **2a** (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%), n-octane (1 mL) and one drop of mercury were added under a gentle stream of argon. Then the reaction mixture was stirred for 12 h at 140 °C. After completion of the reaction the crude mixture was cooled to room temperature followed by filtered through a celite pad with several washings (3 x 3 mL ethyl acetate) and concentrated *in vacuo*. The residue was purified by column chromatography on silica gel (eluent: pet ether) to afford the desired product in 93% yield.

From the above results and based on our previous studies, a possible mechanistic cycle is proposed using catalyst **I** for the *N*-alkylation reaction (Scheme 4). In the presence of alkoxide, the precatalyst **I** undergo displacement reaction to give the complex (**A**). Then, the β-hydride elimination of **(A)** resulted the Ni(II) hydride species **(B)**, and subsequently forms **(C)** with the elimination of ketone which further undergoes condensation reaction with amines to form imines. Subsequently, the hydrogenation of imine intermediate with nickel(II) hydride species **(D)** and the protonation of amine intermediate in complex **(E)** gave the corresponding *N*-alkylated secondary amine product and the formation of complex **(F)**. Additionally, the liberation of molecular hydrogen from the complex **(D)** leads to the formation of complex **(F)**is also possible. Finally, the complex (**F)** reacts with alcohol to regenerate the catalyst (**A**). Indeed, XPS (X-ray photoelectron) studies clearly show that, there is no change in the oxidation

state throughout the mechanistic cycle. Thus, the mechanism proceeds *via* dehydrogenation, condensation and hydrogenation pathways. The isolation of proposed intermediates is under progress in our laboratory and will be communicated in due course.

Scheme S1. A plausible catalytic cycle.



4. Rate order determination

Next, the reaction kinetic profile for the nickel-catalyzed *N*-alkylation of aniline **2a**with diphenylmethanol **4a** was conducted (Figure.1). The time dependent product formation clearly showed that the starting material aniline **2a** was completely consumed within 7h and the *N*-

alkylated product formation **5a** increases gradually with increasing the reaction time. Notably, a trace amount of the corresponding benzophenone imine intermediate was detected.

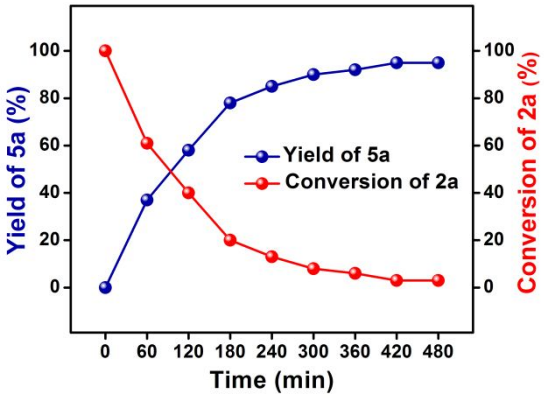


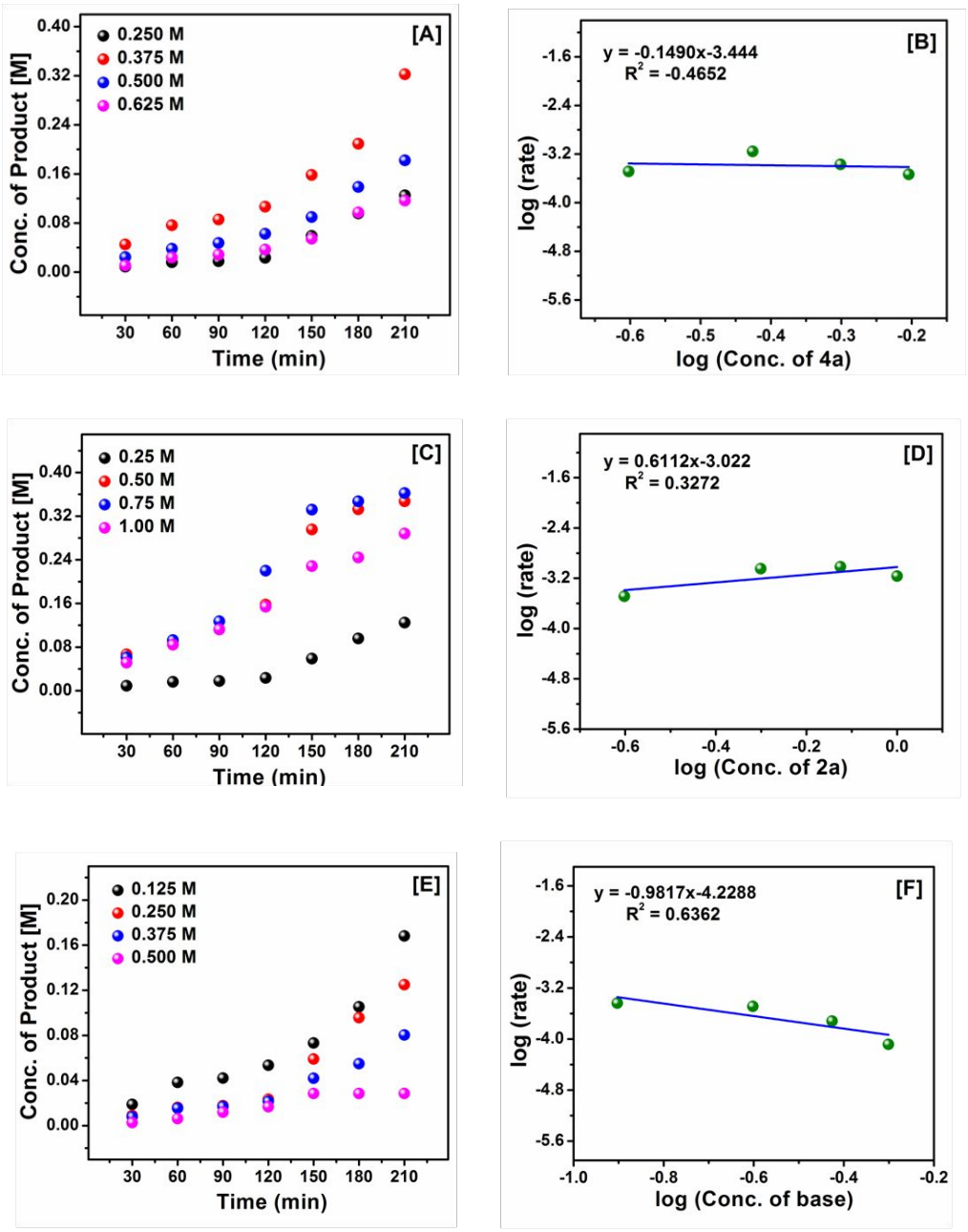
Figure. S2 Kinetic plot for the nickel catalyzed *N*-alkylation of amine (**2a**) with secondary alcohol (**4a**).

To determine the order of each component in the *N*-alkylation of amines with secondary alcohols, kinetic studies were carried out using the initial rate approximation (Figure. 2). From the graph (A) upon increasing the concentration of **4a**, the rate of the reaction is independent and a negative slope of 0.1 was obtained from the plot of log (rate) *vs*. log (conc. of **1a**) and found the reaction is zeroth order behavior in the concentration of **4a**. A graph of increase in the concentration of **2a** enhances the rate of the reaction with a slope of 0.6 was obtained from the plot of log (rate) *vs*. log (conc. of **2a**), shows a fractional order reaction. Similarly, upon increasing the concentration of base, the rate of the reaction is independent and a negative slope of 0.9 was obtained from the plot of log (rate) *vs*. log (conc. of base) and establishes the reaction is zeroth order behavior in the concentration of base. Next, the dependence of reaction rate on different loadings of the nickel catalyst, and a slop of 0.3 was obtained from the plot of log (rate) *vs.* log (conc. of Ni) suggesting a fractional-order reaction for the different concentration of nickel catalyst. Thus, the rate of the reaction depends on the concentration of **2a** and

concentration of nickel catalyst and independent of the concentration of alcohol and base. From the above kinetic results, the rate equation for the *N*-alkylation of amines with secondary alcohols is given below,

$$\text{Rate} = k\,[\text{conc. of } \mathbf{2a}]^{0.61} * [\text{conc. of } \mathbf{Ni}]^{0.33}$$

Overall reaction order = 0.94



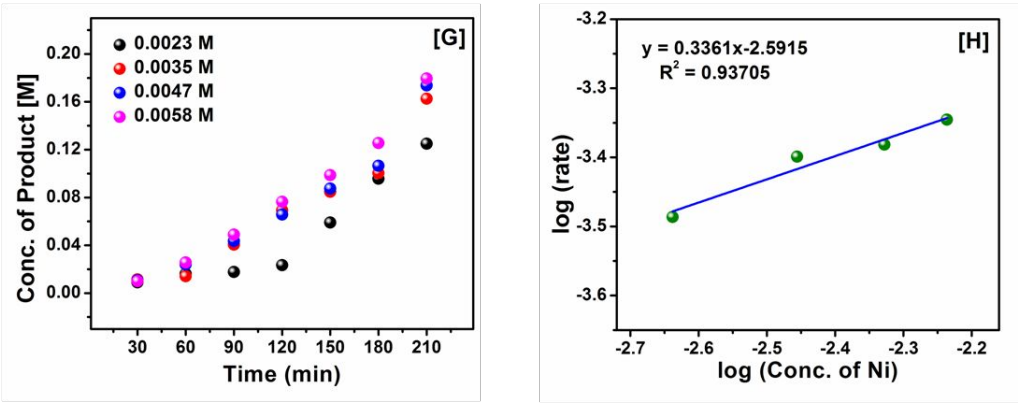


Figure. S3. Kinetics study. The graph of (A) Product concentration vs. time with increasing concentration of **4a**. (B) log (rate) vs. log (conc. of **4a**). (C) Product concentration vs. time with increasing concentration of **2a**. (D) log (rate) vs. log (conc. of **2a**). (E) Product concentration vs. time with increasing concentration of base. (F) log (rate) vs. log(conc. of base). (G) Product concentration vs. time with increasing concentration of cat. Ni. (H) log (rate) vs. log (conc. of cat. Ni).

The rate order of the *N*-alkylation of amines with secondary alcohols was determined by the initial rate method with various reaction components. The data of the concentration of the product vs time (min) plot was fitted linear with Origin Pro 8. The slope of the linear fitting represents the reaction rate. The order of the reaction was then determined by plotting the log(rate) vs log(conc) for a particular component.

4.1 Rate order determination for 1a.

To determine the order of the *N*-alkylation reaction on diphenylmethanol **4a**, the initial rates at different initial concentrations of **4a** were recorded. The final data was obtained by averaging the results of three independent runs for each experiment.

In an oven dried screw cap reaction tube (15 mL), aniline **2a** (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) specific amount of **4a** (as shown in Table S1; Figures S2A & S2B), *m*-xylene (0.5 mmol) as internal standard and n-octane (1 mL) were added in a gentle stream of argon. Then the mixture was stirred with a magnetic stirring bar at 140 ^{o}C. At regular intervals, the reaction vessel was removed and cooled to ambient temperature and an aliquot of sample was withdrawn to the GC vial. Finally, the sample was diluted with EtOAc and subjected to GC analysis. The concentration of the product **5a** obtained in each sample was determined with respect to the internal standard *m*-xylene.

Table S1. Rate of nickel-catalyzed *N*-alkylation reaction at different initial concentration of 4a.

Experiment	Amount of **4a** (gm)	Initial concentration of **4a** [M]	Initial Rate [Mmin^{-1}] x 10^{-3}
1	0.092	0.250	0.326
2	0.138	0.375	0.696
3	0.184	0.500	0.426
4	0.230	0.625	0.291

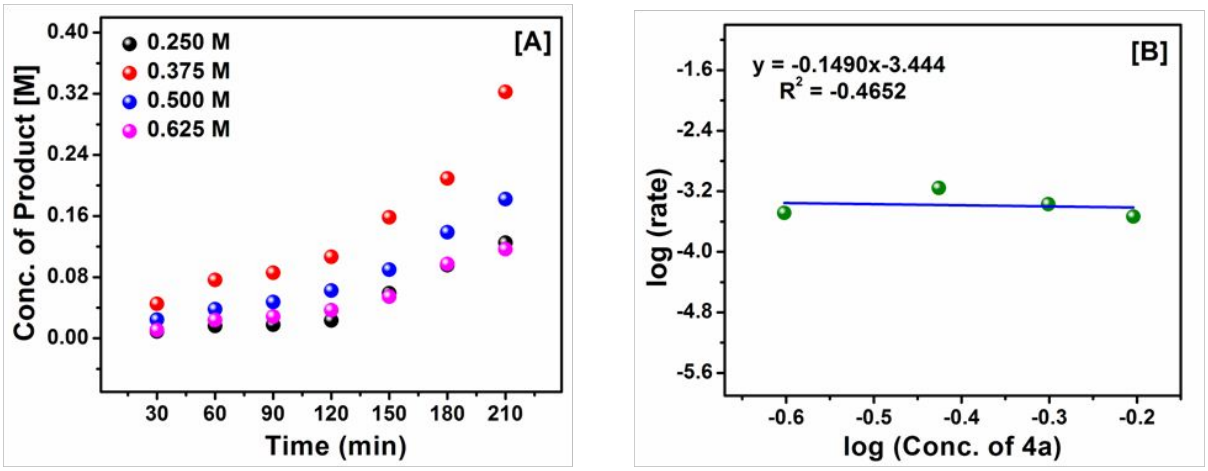


Figure S4. (**A**) Time-dependent formation of **5a**at different initial concentration of **4a**. (**B**) Plot of log(rate) *vs* log(conc. of **4a**).

4.2 Rate order determination for2a

To determine the order of the *N*-alkylation reaction on aniline **2a**, the initial rates at different initial concentrations of **2a** were recorded. The final data was obtained by averaging the results of three independent runs for each experiment.

In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a** (0.5 mmol), KO^{t}Bu (0.5 mmol), [Ni]-catalyst (1 mol%) specific amount of **2a** (as shown in Table S2; Figures S2C& S2D), *m*-xylene (0.5 mmol) as internal standard and n-octane (1 mL) were added in a gentle stream of argon. Then the mixture was stirred with a magnetic stirring bar at 140 ^{o}C. At regular intervals, the reaction vessel was removed and cooled to ambient temperature and an aliquot of sample was withdrawn to the GC vial. Finally, the sample was diluted with EtOAc and subjected to GC analysis. The concentration of the product **5a** obtained in each sample was determined with respect to the internal standard *m*-xylene.

Table S2. Rate of nickel-catalyzed *N*-alkylation reaction at different initial concentration of 2a.

Experiment	Amount of **2a** (gm)	Initial concentration of **2a** [M]	Initial Rate [Mmin^{-1}] x 10^{-3}
1	0.0465	0.25	0.3263
2	0.0930	0.50	0.8978
3	0.1395	0.75	0.9627
4	0.1860	1.00	0.6820

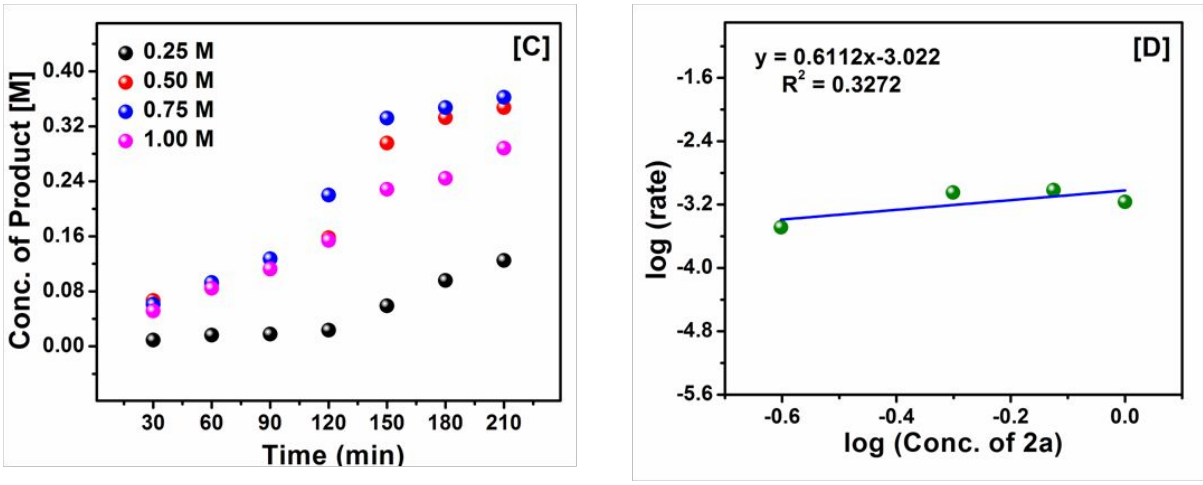


Figure S5. (**C**) Time-dependent formation of **5a**at different initial concentration of **2a.** (**D**) Plot of log(rate) *vs* log(conc. of **2a**).

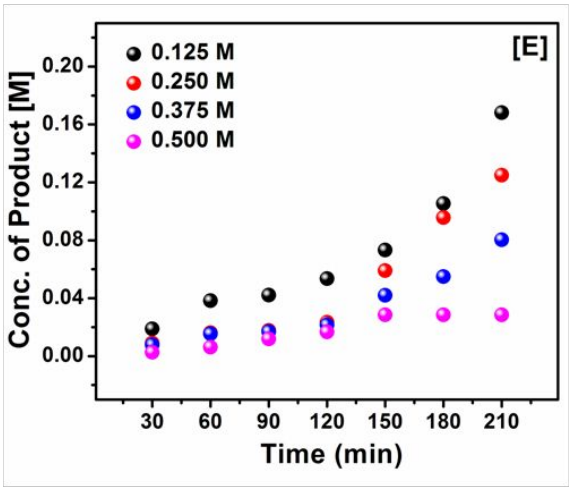
4.3 Rate order determination forbase

To determine the order of the N-alkylation reaction on base (KO^{t}Bu), the initial rates at different initial concentrations of base was recorded. The final data was obtained by averaging the results of three independent runs for each experiment.

In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a**, aniline **2a** (0.5 mmol), [Ni]-catalyst (1 mol%) specific amount of base (as shown in Table S3; Figures S2E& S4F), *m*-xylene (0.5 mmol) as internal standard and n-octane (1 mL) were added in a gentle stream of argon. Then the mixture was stirred with a magnetic stirring bar at 140 ^{o}C. At regular intervals, the reaction vessel was removed and cooled to ambient temperature and an aliquot of sample was withdrawn to the GC vial. Finally, the sample was diluted with EtOAc and subjected to GC analysis. The concentration of the product **5a** obtained in each sample was determined with respect to the internal standard *m*-xylene.

Table S3. Rate of nickel-catalyzed *N*-alkylation reaction at different initial concentration of base.

Experiment	Amount of base (gm)	Initial concentration of base [M]	Initial Rate [$Mmin^{-1}$] x 10^{-3}
1	0.028	0.125	0.3651
2	0.056	0.250	0.3263
3	0.084	0.375	0.1916
4	0.112	0.500	0.0826



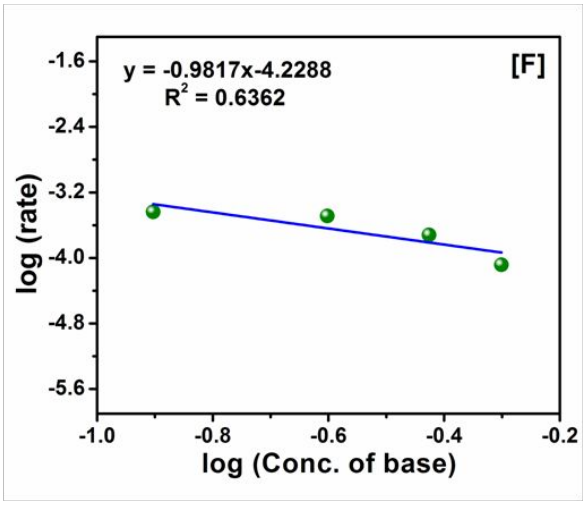


Figure S6. (**E**) Time-dependent formation of **5a**at different initial concentration of base. (**F**) Plot of log(rate) *vs* log(conc. of base).

5.4 Rate order determination for cat. Ni

To determine the order of the *N*-alkylation reaction on cat. Ni, the initial rates at different initial concentrations of cat. Ni was recorded. The final data was obtained by averaging the results of three independent runs for each experiment.

In an oven dried screw cap reaction tube (15 mL), diphenylmethanol **4a**, aniline **2a** (0.5 mmol), KO^{t}Bu (0.5 mmol), specific amount of [Ni]-catalyst (as shown in Table S4; Figures S2G& S2H), *m*-xylene (0.5 mmol) as internal standard and n-octane (1 mL) were added in a

gentle stream of argon. Then the mixture was stirred with a magnetic stirring bar at 140 °C. At regular intervals, the reaction vessel was removed and cooled to ambient temperature and an aliquot of sample was withdrawn to the GC vial. Finally, the sample was diluted with EtOAc and subjected to GC analysis. The concentration of the product **5a** obtained in each sample was determined with respect to the internal standard *m*-xylene.

Table S4. Rate of nickel-catalyzed *N*-alkylation reaction at different initial concentration of Cat. Ni.

Experiment	Amount of cat. Ni (gm)	Initial concentration of cat. Ni [M]	Initial Rate [$Mmin^{-1}$] x 10^{-3}
1	0.002	0.0023	0.3263
2	0.003	0.0035	0.3990
3	0.004	0.0047	0.4154
4	0.005	0.0058	0.4513

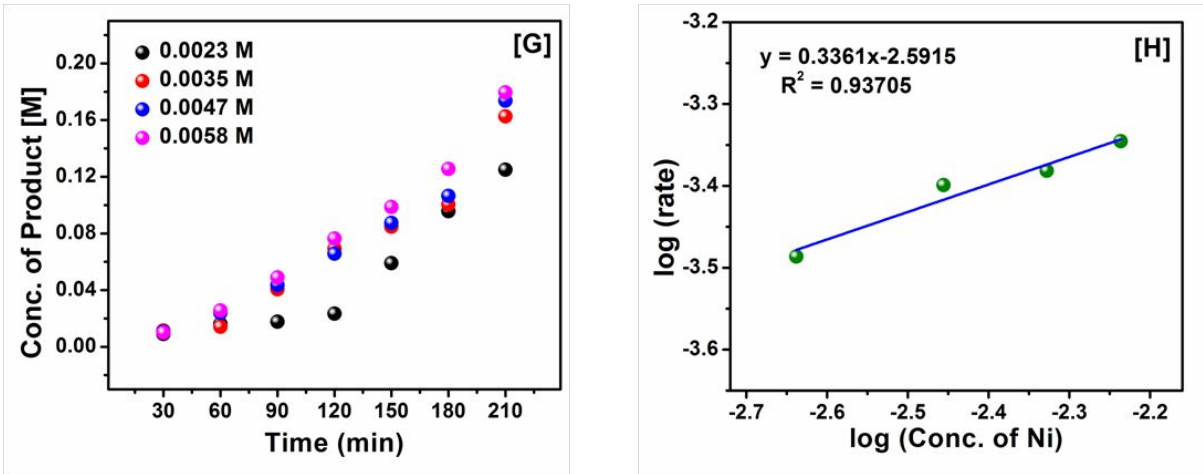
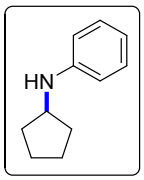


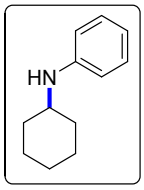
Figure S7. (**G**) Time-dependent formation of **5a**at different initial concentration of cat.Ni. (**H**) Plot of log(rate) *vs* log(conc. of cat. Ni).

5. Characterization Data



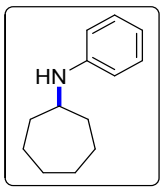
***N*-cyclopentylaniline (3a)**

56 mg, 69% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.19 - 7.11 (m, 2H), 6.67 - 6.57 (m, 3H), 3.78 (m, 1H), 1.72 - 1.57 (m, 8H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ ppm 148.01, 129.14, 116.85, 113.12, 54.62, 33.57, 24.04 ppm. HRMS (EI): *m/z* Calcd for $C_{11}H_{16}N[M+H]^{+}$: 162.1277; Found: 162.1276.



***N*-cyclohexylaniline (3b)**

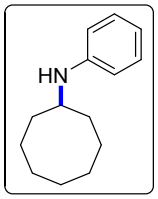
55 mg, 63% isolated yield, Pale yellow liquid, ^{1}H NMR (400 MHz, CHLOROFORM-d) δ 7.19 - 7.14 (m, 2H), 6.69 - 6.60 (m, 3H), 3.29 - 3.24 (m, 1H), 2.08 - 2.05 (m, 2H), 1.79 – 1.75 (m, 3H), 1.40 – 1.15 (m, 5H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-d) δ 147.21, 129.24, 116.91, 113.21, 51.75, 33.41, 25.89, 25.00 ppm. HRMS (EI): *m/z* Calcd for $C_{12}H_{18}N[M+H]^{+}$: 176.1434; Found: 176.1432.



***N*-phenylcycloheptanamine (3c)**

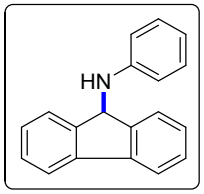
55 mg, 58% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.24 – 7.11 (m, 2H), 6.65 - 6.52 (m, 3H), 4.93 (br. s., 1H), 3.49 (br. s., 1H), 1.56 (br, 12H) ppm. ^{13}C

NMR (101 MHz, CHLOROFORM-d) δ 147.14, 129.22, 116.80, 113.30, 52.56, 32.57, 27.05, 25.89, 24.02 ppm. HRMS (EI): *m/z* Calcd for $C_{13}H_{20}N[M+H]^+$: 190.1590; Found: 190.1588.



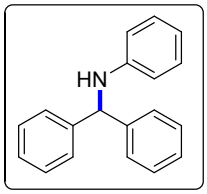
***N*-phenylcyclooctanamine (3d)**

43 mg, 42% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.27 - 7.14 (m, 2H), 6.68 - 6.54 (m, 3H), 4.92 (br. s., 1H), 3.47 (br, 1H), 2.04 (s, 2H), 1.59 (br, 12H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ 147.28, 129.23, 116.75, 113.21, 53.64, 34.80, 28.33, 24.38 ppm. HRMS (EI): *m/z* Calcd for $C_{14}H_{20}N[M-H]^+$: 202.1590; Found: 202.1579.



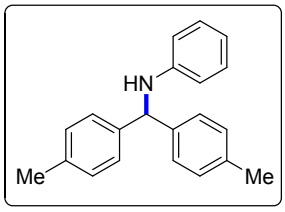
***N*-phenyl-9H-fluoren-9-amine (3e)**

94 mg, 73% isolated yield, Yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.63 (d, *J*=7.50 Hz, 2H) 7.49 (d, *J*=7.39 Hz, 2H) 7.26 - 7.34 (m, 2H) 7.13 - 7.20 (m, 4H) 6.91 (d, *J*=7.28 Hz, 1H) 6.72 (d, *J*=7.72 Hz, 2H) 5.59 (br. s., 1 H) 3.96 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ 147.64, 145.66, 140.19, 129.40, 128.42, 127.52, 124.80, 119.95, 117.92, 113.70, 59.09 ppm. Known compound: Aziz, J.; Frison, G.; Montserrat Gómez, M.; Brion, J-D.; Hamze, A.; Alami, M. *ACS Catal.* **2014**, *4*, 4498−4503.



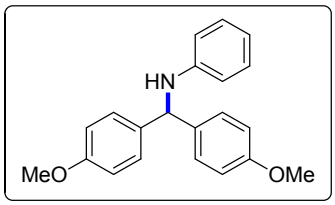
***N*-benzhydrylaniline (3f)**

120 mg, 93% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.36 - 7.21(m, 10 H) 7.13 - 7.05 (m, 2 H) 6.67 (m, 1H) 6.51 (d, *J*=7.71 Hz, 2 H) 5.48 (s, 1H) 4.20 (s, 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 147.29, 142.87, 129.06, 128.69, 127.41, 127.30, 117.60, 113.43, 62.97 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{16}N[M-H]^{+}$: 258.1277; Found: 258.1275.



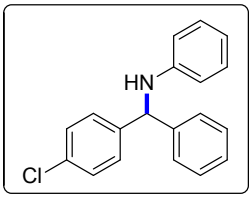
***N*-(di-p-tolylmethyl)aniline (3g)**

72 mg, 50% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.18 - 7.14 (m, 4H) 7.06 - 6.99 (m, 6H) 6.63 - 6.60 (m, 1H) 6.48 - 6.44 (m, 2H) 5.35 (s, 1H) 4.11 (br. s., 1H) 2.24 (s, 6H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 145.08, 143.08, 129.56, 128.66, 127.39, 127.24, 126.74, 113.52, 63.24, 20.34, ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{20}N[M-H]^{+}$: 286.1590; Found: 286.1585.



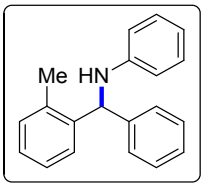
***N*-(bis(4-methoxyphenyl)methyl)aniline (3h)**

101 mg, 63% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.24 (d, *J*=8.59 Hz, 4H) 7.10 - 7.06 (m, 2H) 6.86 - 6.82 (m, 4H) 6.73 - 6.67 (m, 1H) 6.52 (d, *J*=7.58 Hz, 2H) 5.40 (s, 1H) 4.16 (br. s., 1H) 3.76 (s, 6H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 158.70, 147.39, 135.35, 129.04, 128.44, 128.08, 117.44, 113.99, 113.70, 113.41, 61.66, 55.20 ppm. HRMS (EI): *m/z* Calcd for $C_{22}H_{20}O_2N[M-H]^{+}$: 318.1489; Found: 318.1486.



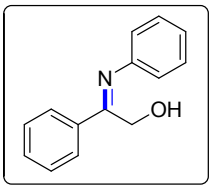
(S)-*N*-((4-chlorophenyl)(phenyl)methyl)aniline (3i)

76 mg, 52% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.74 - 7.31 (m, 8H), 7.29 - 7.10 (m, 3H), 6.75 - 6.67 (m, 1H), 6.55 - 6.51 (m, 2H), 5.48 (br. s., 1H), 4.22 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ 147.34, 142.93, 129.09, 128.71, 128.17, 127.43, 127.33, 123.11, 120.91, 117.64, 113.47, 63.03 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{15}NCl[M-H]^{+}$: 292.0888; Found: 292.0878.



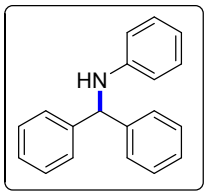
(S)-*N*-(phenyl(o-tolyl)methyl)aniline (3j)

51 mg, 37% isolated yield, Pale yellow liquid, ^{1}H NMR (400 MHz, CHLOROFORM-d) δ 7.35 - 7.28 (m, 6H), 7.22 - 7.12 (m, 5H), 6.71 (t, *J* = 7.3 Hz, 1H), 6.53 (d, *J* = 7.9 Hz, 2H), 5.68 (s, 1H), 4.17 (br. s., 1H), 2.35 (s, 3H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-d) δ 147.34, 141.95, 140.38, 135.89, 130.68, 129.13, 128.65, 128.65, 127.97, 127.34, 127.25, 126.27, 117.46, 113.06, 59.43, 19.40 ppm. HRMS (EI): *m/z* Calcd for $C_{22}H_{18}N[M-H]^{+}$: 272.1434; Found: 272.1431.



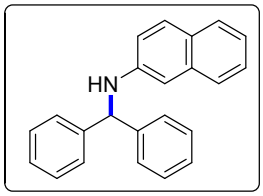
(*Z*)-2-phenyl-2-(phenylimino)ethanol (3k)

45 mg, 43% isolated yield, Pale yellow liquid, ^{1}H NMR (400 MHz, CHLOROFORM-d) δ 7.42 - 7.36 (m, 4H), 7.31 - 7.28 (m, 1H), 7.21 (t, *J* = 7.9 Hz, 2H), 6.75 - 6.67 (m, 3H), 4.36 (s, 2H), 4.08 (br. s., 1H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-d) δ 148.11, 139.39, 129.24, 128.61, 127.49, 127.21, 117.55, 112.82, 48.30 ppm. HRMS (EI): *m/z* Calcd for $C_{14}H_{12}ON[M+H]^{+}$: 210.0913; Found: 210.0912.



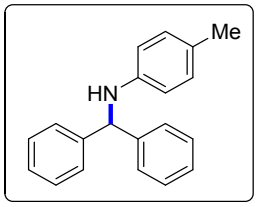
***N*-benzhydrylaniline (5a)**

120 mg, 93% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.36 - 7.21(m, 10 H) 7.13 - 7.05 (m, 2 H) 6.67 (m, 1H) 6.51 (d, *J*=7.71 Hz, 2 H) 5.48 (s, 1H) 4.20 (s, 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 147.29, 142.87, 129.06, 128.69, 127.41, 127.30, 117.60, 113.43, 62.97 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{16}N[M-H]^{+}$: 258.1277; Found: 258.1275.



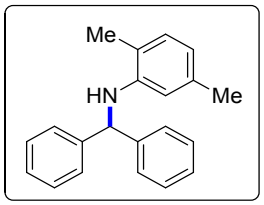
***N*-benzhydrylnaphthalen-2-amine (5b)**

128 mg, 83% isolated yield, Pale yellow liquid, ^{1}H NMR (400 MHz, CHLOROFORM-*d*) δ 7.80 - 7.66(m, 2H), 7.62-7.41 (m, 12H),7.27 - 7.17 (m, 1H), 6.96 (dd, *J*=8.70, 2.29 Hz, 1H), 6.75 (s, 1H), 5.72 (s, 1H), 4.47 (br. s., 1H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-*d*) δ 144.78, 142.62, 134.87, 128.73, 127.51, 127.44, 127.38, 126.18, 126.06, 122.09, 117.96, 105.87, 62.97 ppm. HRMS (EI): *m/z* Calcd for $C_{23}H_{19}N$ $[M]^{+}$: 309.1512; Found: 309.1519.



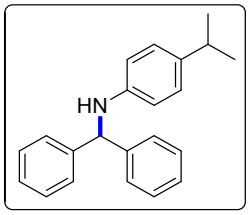
***N*-benzhydryl-4-methylaniline (5c)**

108 mg, 79% isolated yield, Colorless liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.36 - 7.21(m, 10H), 6.91 (d, *J*=8.08 Hz, 2H), 6.44 (d, *J*=8.34 Hz, 2H), 5.45 (s, 1H), 4.09 (br. s., 1H), 2.19 (s, 3H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 145.08, 143.08, 129.56, 128.66, 127.39, 127.24, 126.74, 113.52, 63.24, 20.34, ppm. HRMS (EI): *m/z* Calcd for $C_{20}H_{19}N$ $[M]^{+}$: 273.1512; Found: 273.1522.



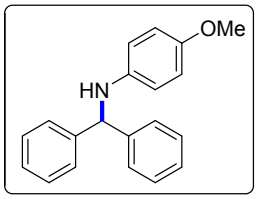
***N*-benzhydryl-2,5-dimethylaniline (5d)**

71 mg, 49% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.29 - 7.18 (m, 10H) 6.87 (d, *J*=7.33 Hz, 1H) 6.38 (d, *J*=7.45 Hz, 1H) 6.16 (s, 1H) 5.47 (s, 1H) 3.93 (br. s., 1H) 2.05 (s, 6H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 145.13, 143.15, 136.53, 129.77, 128.69, 127.38, 127.24, 118.97, 117.91, 112.01, 62.70, 21.48, 17.21 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{20}N$ $[M-H]^{+}$: 286.1590; Found: 286.1588.



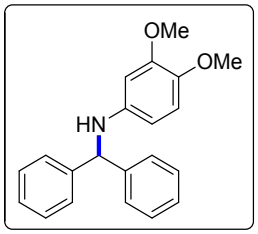
***N*-benzhydryl-4-isopropylaniline (5e)**

96 mg, 64% isolated yield, Yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.33 - 7.19 (m, 10H), 6.97 (d, *J* = 8.34 Hz, 2H) 6.47 (d, *J*=8.34 Hz, 2H) 5.44 (s., 1H) 4.10 (s., 1H) 2.79- 2.73 (m, 1H) 1.16 (d, *J* = 6.95 Hz, 6H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 145.44, 143.14, 138.03, 128.66, 127.40, 127.24, 126.93, 113.42, 63.37, 33.08, 24.18 ppm. HRMS (EI): *m/z* Calcd for $C_{22}H_{24}N$ $[M]^{+}$: 302.1903; Found: 302.1916.



***N*-benzhydryl-4-methoxyaniline (5f)**

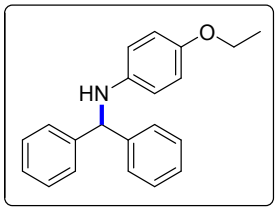
110 mg, 76% isolated yield, Colorless liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.38 - 7.23(m, 10 H) 6.70 (d, *J*=8.97 Hz, 2H) 6.49 (d, *J*=8.97 Hz, 2H) 5.41 (s, 1H) 3.99 (br. s., 1H) 3.69 (s, 3H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 152.14, 143.20, 141.67, 128.69, 127.38, 127.26, 114.72, 114.61, 63.82, 55.71 ppm. HRMS (EI): *m/z* Calcd for $C_{20}H_{19}ON$ $[M]^{+}$: 289.1461; Found: 289.1470.



***N*-benzhydryl-3,4-dimethoxyaniline (5g)**

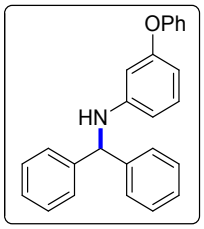
81 mg, 51% isolated yield, Red solid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.33 - 7.15 (m, 10H) 6.59 - 6.55 (m, 1H) 6.13 (dd, *J*=5.05, 2.65 Hz, 1H) 5.93 (dd, *J*=8.46, 3.41 Hz, 1H) 5.34 (d, *J*=3.16 Hz, 1H) 4.03 (br, 1H) 3.67 (s, 3H) 3.62 (s, 3H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-*d*) δ 149.69, 146.37, 143.04, 141.56, 139.16, 128.69, 128.66, 127.35, 127.32,

127.24, 112.89, 112.21, 104.38, 104.27, 101.25, 99.47, 63.86, 63.54, 56.68, 56.54, 55.51 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{21}O_2N$ $[M-H]^+$: 319.1567; Found: 319.1565.



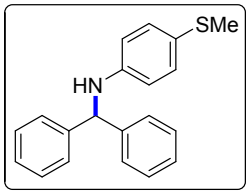
***N*-benzhydryl-4-ethoxyaniline (5h)**

89 mg, 59% isolated yield, Brown liquid, ^{1}H NMR (500 MHz, CHLOROFORM-*d*) δ 7.43 - 7.30 (m, 10H), 6.76 (d, *J*=8.77 Hz, 2H), 6.54 (d, *J*=8.77 Hz, 2H) 5.47 (s, 1H), 4.16 (br, 1H), 3.97(q, *J*=6.87 Hz, 2H) 1.40 (t, *J*=7.06 Hz, 3H) ppm. ^{13}C NMR (126 MHz, CHLOROFORM-*d*) δ 151.36, 143.20, 141.62, 128.67, 127.37, 127.23, 115.51, 114.55, 63.95, 63.77, 14.97 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{21}ON$ $[M]^+$: 303.1618; Found: 303.1627.



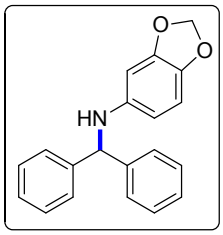
***N*-benzhydryl-3-phenoxyaniline (5i)**

118 mg, 67% isolated yield, Colorless liquid, ^{1}H NMR (500 MHz, CHLOROFORM-*d*) δ 7.43 - 7.35 (m, 11H) 7.13 (q, *J*=7.88 Hz, 2H) 7.06 (d, *J*=7.63 Hz, 2H) 6.44 (dd, *J*=8.01, 1.91 Hz, 1H) 6.39 (dd, *J*=8.01, 1.91 Hz, 1H) 6.31 (t, *J*=2.29 Hz, 1H) 5.58 (s, 1H) 4.38 (br. s., 1H) ppm. ^{13}C NMR (126 MHz, CHLOROFORM-*d*) δ 158.27, 156.84, 148.71, 142.51, 130.02, 129.52, 128.70, 127.35, 122.99, 119.04, 108.43, 107.71, 103.78, 62.81 ppm. HRMS (EI): *m/z* Calcd for $C_{25}H_{21}ON$ $[M]^+$: 351.1618; Found: 351.1630.



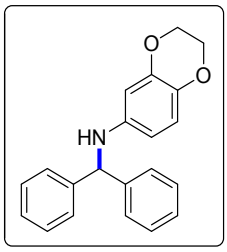
***N*-benzhydryl-4-(methylthio)aniline (5j)**

110 mg, 72% isolated yield, Brown liquid, ^{1}H NMR (500 MHz, CHLOROFORM-*d*) δ 7.43 - 7.33 (m, 10H), 7.22 (d, *J*=8.77 Hz, 2H) 6.56 (d, *J*=8.77 Hz, 2H) 5.56 (s, 1H) 4.34 (br. s., 1H) 2.44 (s, 3H) ppm. ^{13}C NMR (126 MHz, CHLOROFORM-*d*) δ 145.99, 142.56, 132.33, 131.01, 129.98, 128.70, 128.20, 127.34, 124.64, 114.05, 62.94, 18.80 ppm. HRMS (EI): *m/z* Calcd for $C_{20}H_{19}NS$ $[M]^{+}$: 305.1233; Found: 305.1239.



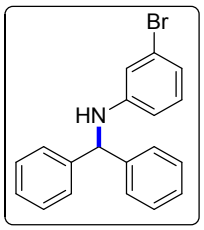
***N*-benzhydrylbenzo[d][1,3]dioxol-5-amine (5k)**

64 mg, 42% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.29 - 7.16 (m, 10H) 6.50 (d, *J*=8.34 Hz, 1H) 6.10 (d, *J*=2.27 Hz, 1H), 5.92-5.84 (m, 1H), 5.73 (s, 2H) 5.32 (s, 1H) 3.99 (br, 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 148.11, 142.91, 128.73, 127.35, 108.49, 105.17, 100.52, 96.47, 63.85 ppm. HRMS (EI): *m/z* Calcd for $C_{20}H_{17}O_2N$ $[M]^{+}$: 303.1254; Found: 303.1264.



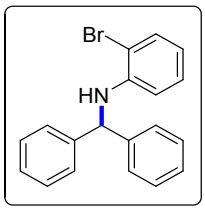
***N*-benzhydryl-2,3-dihydrobenzo[b][1,4]dioxin-6-amine (5l)**

78 mg, 49% isolated yield, Colorless liquid, ^{1}H NMR (500 MHz, CHLOROFORM-*d*) δ 7.42 - 7.37 (m, 7H) 7.35 - 7.28 (m, 3H) 6.68 (d, *J*=8.77 Hz, 1H) 6.14 - 6.12 (m, 2H) 5.88 (s, 1H) 5.44 (s, 1H) 4.17 - 4.20 (m, 4H) ppm. ^{13}C NMR (126 MHz, CHLOROFORM-*d*) δ 156.71, 155.96, 155.35, 148.62, 141.58, 141.36, 140.44, 140.25, 140.16, 139.40, 130.36, 120.11, 115.08, 90.15, 89.89, 89.64, 89.12 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{19}O_2N$ $[M]^+$: 317.1410; Found: 317.1421.



***N*-benzhydryl-3-bromoaniline (5m)**

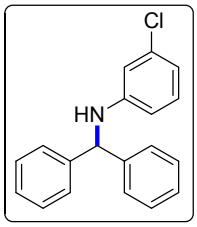
153 mg, 91% isolated yield, Brown liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.26 - 7.19 (m, 10H) 7.03 – 6.99 (m, 2H) 6.61 (s, 1H) 6.46 (d, *J*=7.71 Hz, 1H) 5.41 (s, 1H) 4.14 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 147.31, 142.89, 142.23, 130.38, 129.09, 128.71, 127.53, 127.41, 127.33, 120.45, 117.62, 116.21, 113.44, 111.90, 63.01 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{16}N[M\text{-}Br]^+$: 258.1277; Found: 258.1275.



***N*-benzhydryl-2-bromoaniline (5n)**

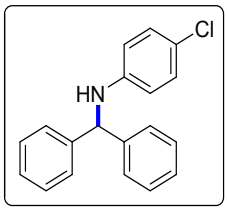
111 mg, 66% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.28 - 7.14 (m, 10H) 7.05 - 7.01 (m, 2H) 6.66 - 6.51 (m, 1H) 6.43 (d, *J*=7.71 Hz, 2H) 5.40 (s, 1H) 4.12 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 147.27, 142.86, 129.05,

128.68, 127.39, 127.29, 117.58, 113.41, 62.95 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{16}N[M-Br]^+$: 258.1277; Found: 258.1272.



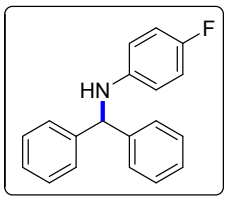
***N*-benzhydryl-3-chloroaniline (5o)**

138 mg, 94% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.22 - 7.16 (m, 10H) 6.90 - 6.86 (m, 1H) 6.57 - 6.53 (m, 1H) 6.42 (s, 1H) 6.32 - 6.31 (m, 1H) 5.38 (s, 1H) 4.21 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 148.32, 142.25, 134.76, 130.05, 128.78, 127.50, 127.34, 117.53, 113.26, 111.55, 62.72 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{15}NCl[M-H]^+$: 292.0888; Found: 292.0884.



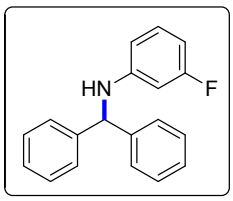
***N*-benzhydryl-4-chloroaniline (5p)**

139 mg, 95% isolated yield, Brown liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.49 - 7.41 (m, 10H) 7.19 (d, *J*=8.84 Hz, 2H) 6.58 (d, *J*=8.84 Hz, 2H) 5.61 (s, 1H) 4.38 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 145.68, 142.81, 142.32, 129.02, 128.82, 128.71, 128.34, 127.41, 127.30, 122.12, 117.56, 114.48, 113.40, 62.91 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{16}NCl[M-H]^+$: 292.0888; Found: 292.0885.



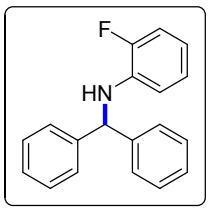
***N*-benzhydryl-4-fluoroaniline (5q)**

115 mg, 83% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.27 - 7.15 (m, 10H) 6.71 - 6.66 (m, 2H) 6.38 - 6.34 (m, 2H) 5.32 (s, 1H) 4.03 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 158.18, 153.51, 143.67, 142.75, 128.75, 127.35, 115.72, 115.28, 114.30, 114.15, 63.56 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{15}NF[M-H]^{+}$: 276.1183; Found: 276.1180.



***N*-benzhydryl-3-fluoroaniline (5r)**

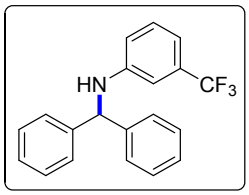
67 mg, 48% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.26 - 7.17 (m, 10H) 6.94 (d, *J*=6.82 Hz, 1H) 5.28 - 6.10 (m, 3H) 5.39 (d, *J*=3.92 Hz, 1H) 4.25 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 166.29, 161.46, 149.11, 148.89, 142.33, 130.21, 130.01, 129.09, 128.80, 127.51, 127.36, 109.28, 104.32, 103.89, 100.52, 100.01, 62.91 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{15}NF[M-H]^{+}$: 276.1183; Found: 276.1179.



***N*-benzhydryl-2-fluoroaniline (5s)**

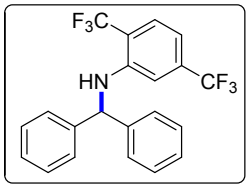
98 mg, 71% isolated yield, Colorless liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.28 - 7.15 (m, 10H) 6.90 - 6.76 (m, 2H) 6.54 - 6.39 (m, 2H) 5.43 (s, 1H) 4.42 (br. s., 1H) ppm. ^{13}C

NMR (50 MHz, CHLOROFORM-*d*) δ 153.87, 149.13, 142.44, 135.88, 135.65, 128.79, 127.49, 127.35, 124.46, 117.04, 116.90, 114.44, 114.07, 113.36, 113.30, 62.65 ppm. HRMS (EI): *m/z* Calcd for $C_{19}H_{15}NF[M-H]^+$: 276.1183; Found: 276.1181.



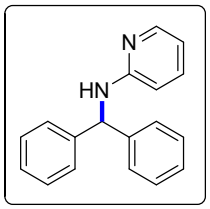
***N*-benzhydryl-3-(trifluoromethyl)aniline (5t)**

129 mg, 79% isolated yield, Colorless liquid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.25 - 7.09 (m, 11H) 6.83 (d, *J*=7.71 Hz, 1H) 6.69 (s, 1H) 6.55 (d, *J*=8.08 Hz, 1H) 5.43 (s, 1H) 4.34 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 147.32, 142.12, 129.58, 128.85, 127.60, 127.34, 115.97, 114.08, 113.99, 110.15, 110.07, 62.84 ppm. HRMS (EI): *m/z* Calcd for $C_{20}H_{15}NF_3[M-H]^+$: 326.1151; Found: 326.1159.



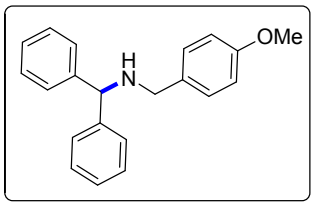
***N*-benzhydryl-2,5-bis(trifluoromethyl)aniline (5u)**

113 mg, 57% isolated yield, Pale yellow liquid,^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 7.41 - 7.36 (m, 10H) 7.19 (s, 2H) 6.94 (s, 1H) 5.59 (s, 1H) 4.74 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 147.66, 141.22, 131.64, 129.55, 129.30, 129.01, 128.82, 128.35, 127.91, 127.27, 121.43, 112.62, 62.69 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{14}NF_6[M-H]^+$: 394.1025; Found: 394.1039.



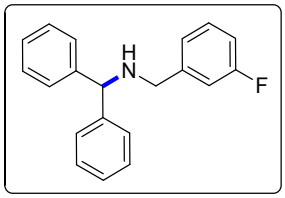
***N*-benzhydrylpyridin-2-amine (5w)**

120 mg, 92% isolated yield, White solid, ^{1}H NMR (200 MHz, CHLOROFORM-*d*) δ 8.02 - 8.00 (m, 1H) 7.35 - 7.26 (m, 11H) 6.55 - 6.54 (m, 1H) 6.26 (d, *J*=8.34 Hz, 1H) 5.81 (d, *J*=5.68 Hz, 1H) 5.28 (s, 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 157.87, 148.21, 142.41, 137.48, 128.65, 127.37, 127.33, 113.39, 106.76, 60.74 ppm. HRMS (EI): *m/z* Calcd for $C_{18}H_{17}N_2[M+H]^+$: 261.1386; Found: 261.1383.



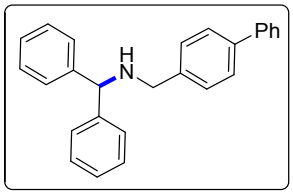
***N*-(4-methoxybenzyl)-1,1-diphenylmethanamine (7a)**

68 mg, 45% isolated yield, Colorless liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.49 - 7.27 (m, 12H), 6.91 (d, *J* = 8.2 Hz, 2H), 5.89 (s, 1H), 4.90 (s, 1H), 3.85 (s, 3H), 3.73 (s, 2H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ 158.56, 13.97, 143.78, 132.54, 129.31, 128.47, 127.55, 127.34, 126.98, 126.51, 113.74, 66.27, 55.25, 51.19 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{20}ON[M-H]^+$: 302.1539; Found: 302.1535.



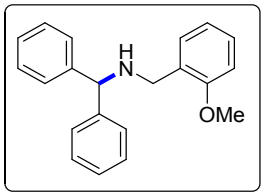
***N*-(3-fluorobenzyl)-1,1-diphenylmethanamine (7b)**

67 mg, 46% isolated yield, Pale yellow liquid, ^{1}H NMR (400 MHz, CHLOROFORM-d) δ 7.46 (d, *J* = 7.3 Hz, 4H), 7.38 - 7.32 (m, 10H), 4.90 (s, 1H), 3.79 (s, 2H), 1.74 (br. s., 1H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-d) δ 143.94, 140.44, 128.48, 128.36, 128.14, 127.88, 127.35, 127.08, 127.02, 66.43, 51.86 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{20}ON[M-H]^{+}$: 302.1539; Found: 302.1535.



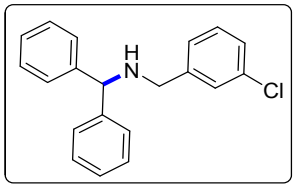
***N*-([1,1'-biphenyl]-4-ylmethyl)-1,1-diphenylmethanamine (7c)**

86 mg, 49% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.61 - 7.54 (m, 4H), 7.47 - 7.24 (m, 5H), 4.89 (s, 1H), 3.79 (s, 2H), 1.78 (br. s., 1H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-d) δ 143.92, 141.98, 139.87, 139.52, 128.73, 128.56, 128.51, 127.35, 127.11, 127.04, 66.45, 51.51 ppm. HRMS (EI): *m/z* Calcd for $C_{26}H_{22}N[M-H]^{+}$: 348.1747; Found: 348.1743.



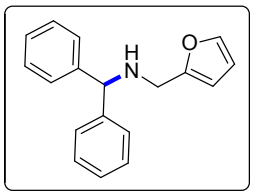
***N*-(2-methoxybenzyl)-1,1-diphenylmethanamine (7d)**

61 mg, 40% isolated yield, Colorless liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.36 (s, 2H), 7.26 - 7.12 (m, 10H), 6.87 - 6.79 (m, 2H), 4.82 (s, 1H), 4.74 (s, 1H), 3.72 (s, 3H), 3.68 (s, 2H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ = 144.19, 141.88, 130.03, 128.79, 128.41, 127.43, 127.30, 126.89, 120.29, 119.25, 116.42, 110.23, 66.19, 55.18, 50.66, 47.42 ppm. HRMS (EI): *m/z* Calcd for $C_{21}H_{22}ON[M+H]^{+}$: 304.1696; Found: 304.1692.



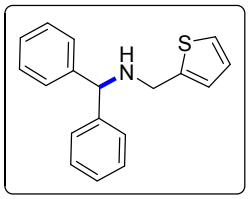
***N*-(3-chlorobenzyl)-1,1-diphenylmethanamine (7e)**

94 mg, 61% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.36 (d, *J* = 7.8 Hz, 4H), 7.28 - 7.15 (m, 10H), 4.77 (s, 1H), 3.66 (s, 2H) ppm. ^{13}C NMR (101 MHz, CHLOROFORM-d) δ 134.25, 129.67, 128.72, 128.62, 128.49, 127.73, 127.42, 127.34, 126.53, 66.24, 50.96 ppm. HRMS (EI): *m/z* Calcd for $C_{20}H_{17}NCl[M-H]^{+}$: 306.1044; Found: 306.1046.



***N*-(furan-2-ylmethyl)-1,1-diphenylmethanamine(7f)**

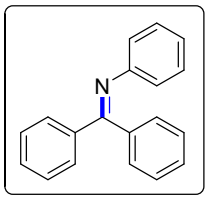
43 mg, 32% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.35 - 7.16 (m, 11H), 6.24 (s, 1H), 6.06 (d, *J* = 2.8 Hz, 1H), 4.75 (s, 1H), 3.66 (s, 2H), 1.71 (br. s., 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ 153.21, 142.94, 141.15, 127.86, 126.73, 126.44, 109.43, 106.41, 76.37, 65.26, 43.52 ppm. HRMS (EI): *m/z* Calcd for $C_{18}H_{18}ON[M+H]^{+}$: 264.1383; Found: 264.1379.



1,1-diphenyl-*N*-(thiophen-2-ylmethyl)methanamine (7g)

53 mg, 38% isolated yield, Pale yellow liquid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.37 - 7.32 (m, 4H), 7.22 - 7.12 (m, 7H), 6.87 - 6.81 (m, 2H), 4.83 (s, 1H), 3.86 (s, 2H), 1.76 (s, 1H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-d) δ 144.16, 143.60, 128.50, 127.38, 127.08,

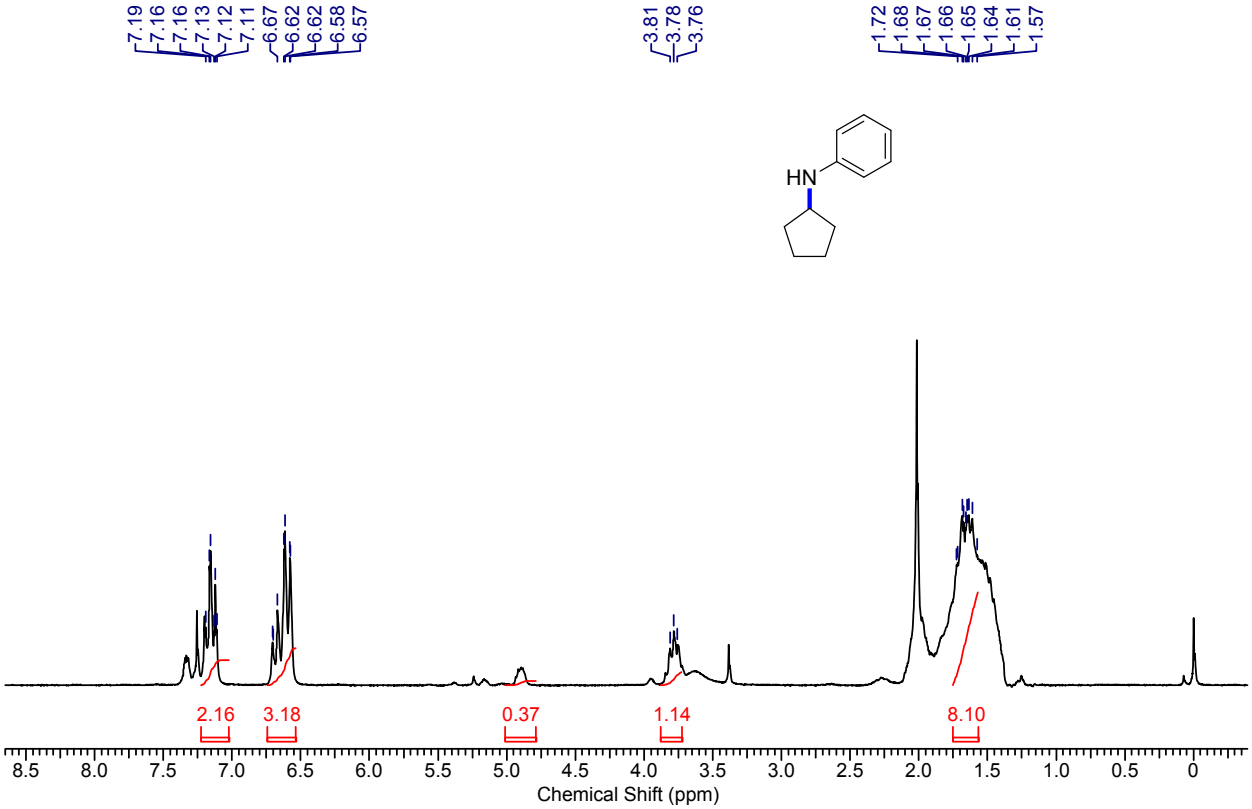
126.59, 124.84, 124.31, 65.84, 46.22 ppm. HRMS (EI): *m/z* Calcd for $C_{18}H_{18}NS[M+H]^+$: 280.1154; Found: 280.1148.



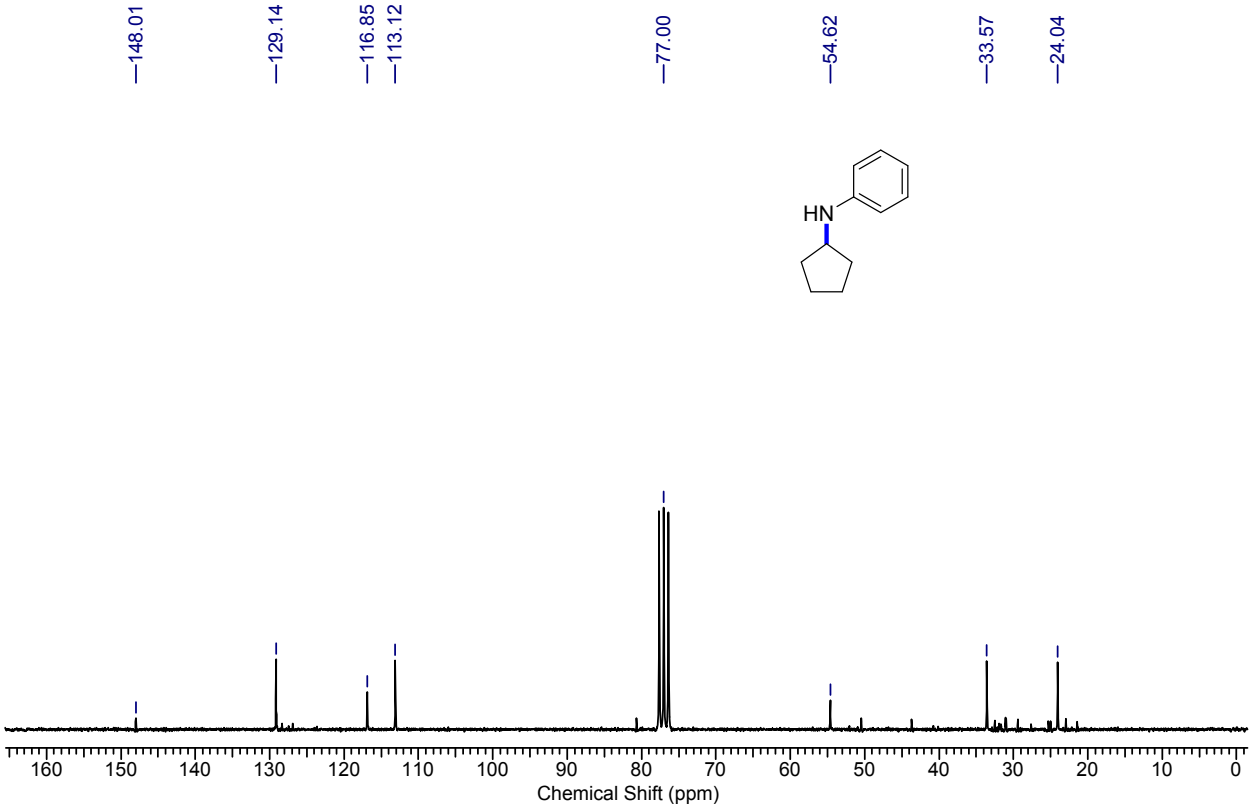
***N*-(diphenylmethylene)aniline (5a')**

103 mg, 86% isolated yield, Yellow solid, ^{1}H NMR (200 MHz, CHLOROFORM-d) δ 7.82 - 7.79 (m, 4H), 7.59 - 7.43 (m, 5H), 7.26 - 7.10 (m, 4H),6.93 – 6.70(m, 2H) ppm. ^{13}C NMR (50 MHz, CHLOROFORM-*d*) δ 168.26, 151.29, 132.42, 130.07, 129.53, 129.33, 128.47, 127.90, 123.15, 120.95 ppm.

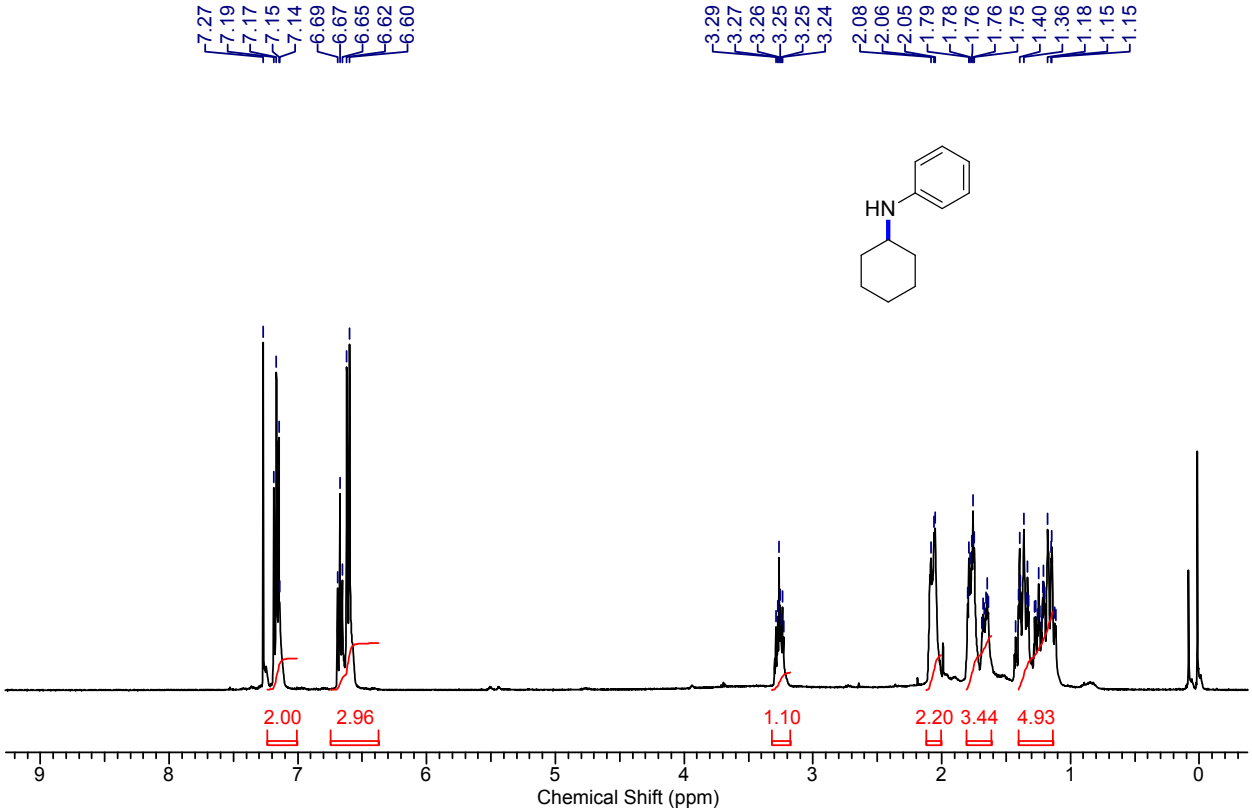
6. Copy of ^{1}H And ^{13}C NMR Spectra



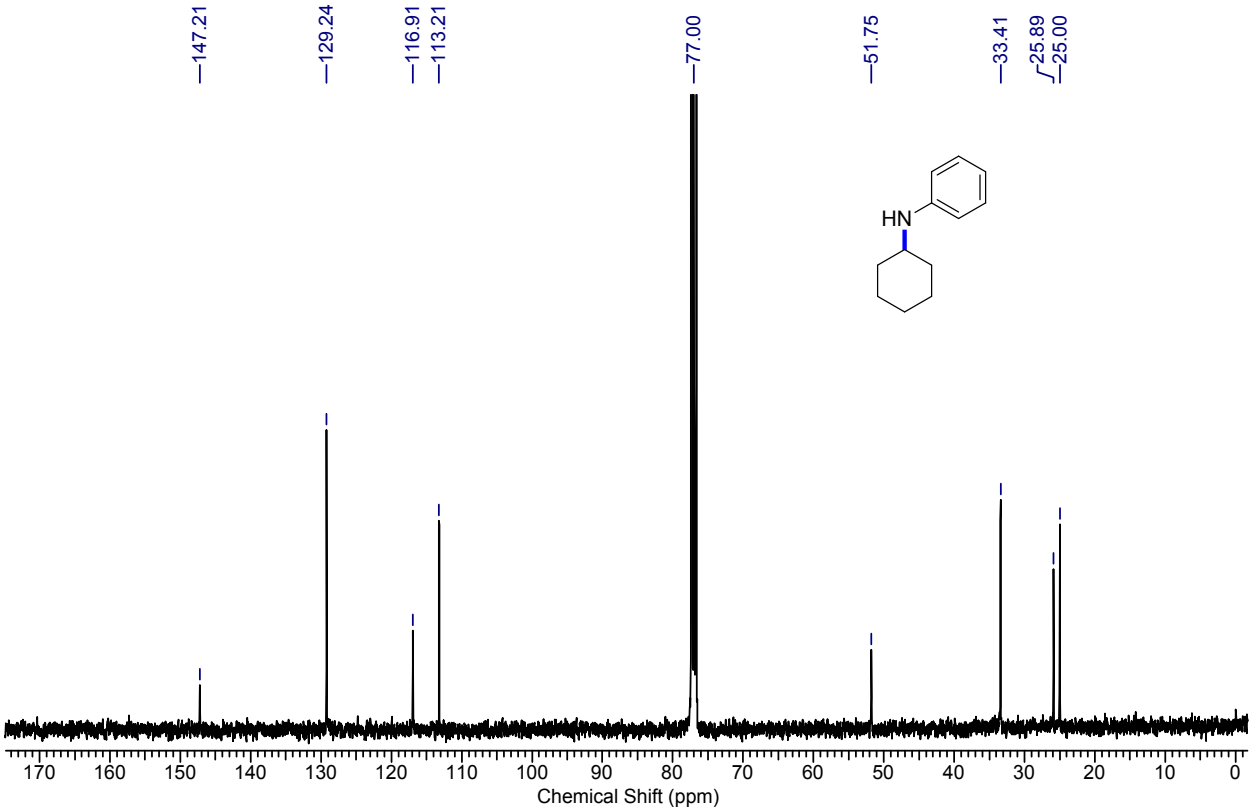
^{1}H NMR of **3a**



^{13}C NMR of **3a**



^{1}H NMR of **3b**



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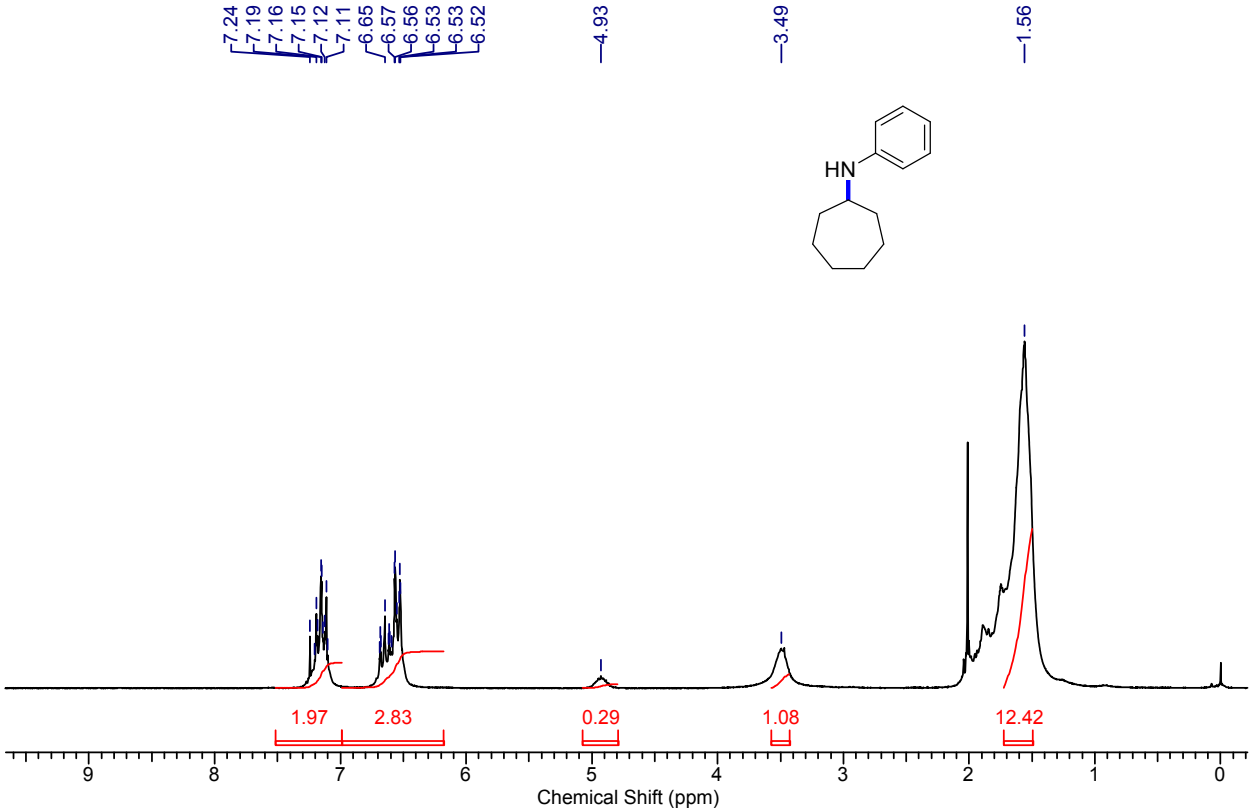

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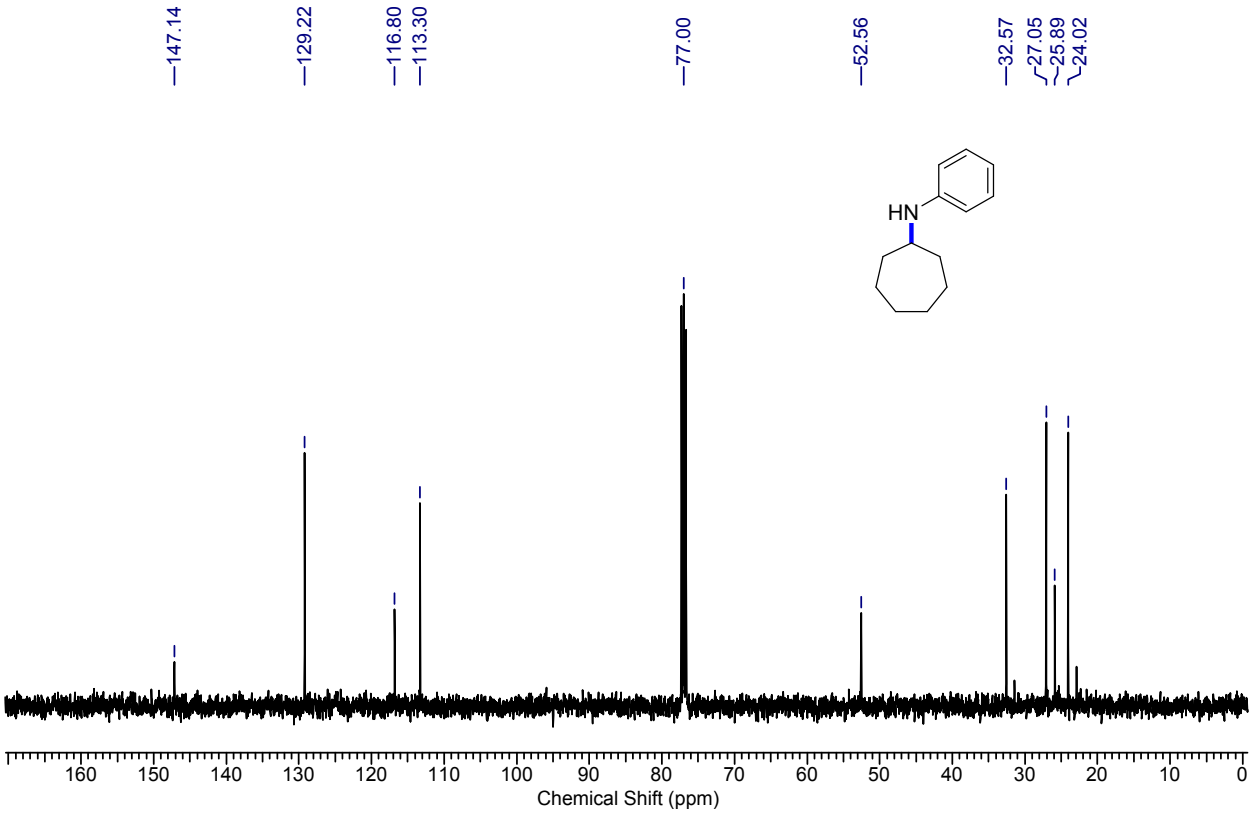

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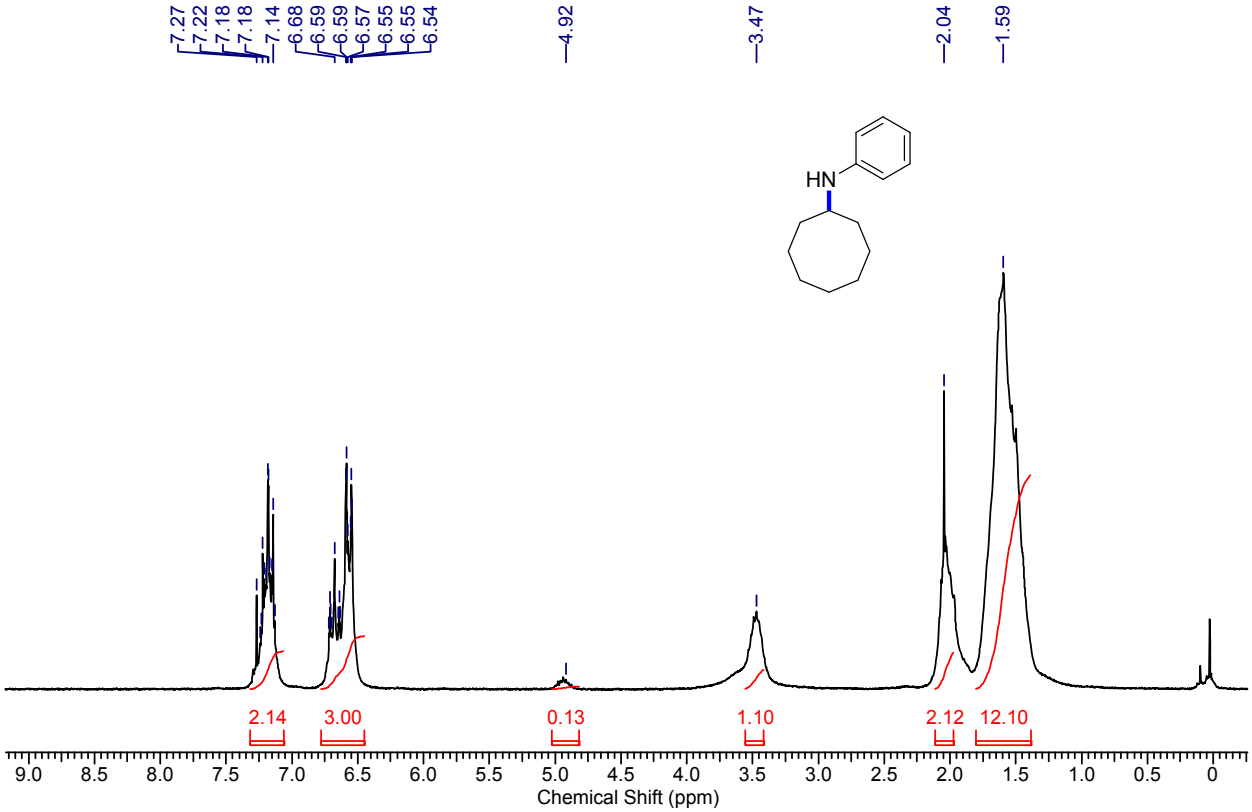
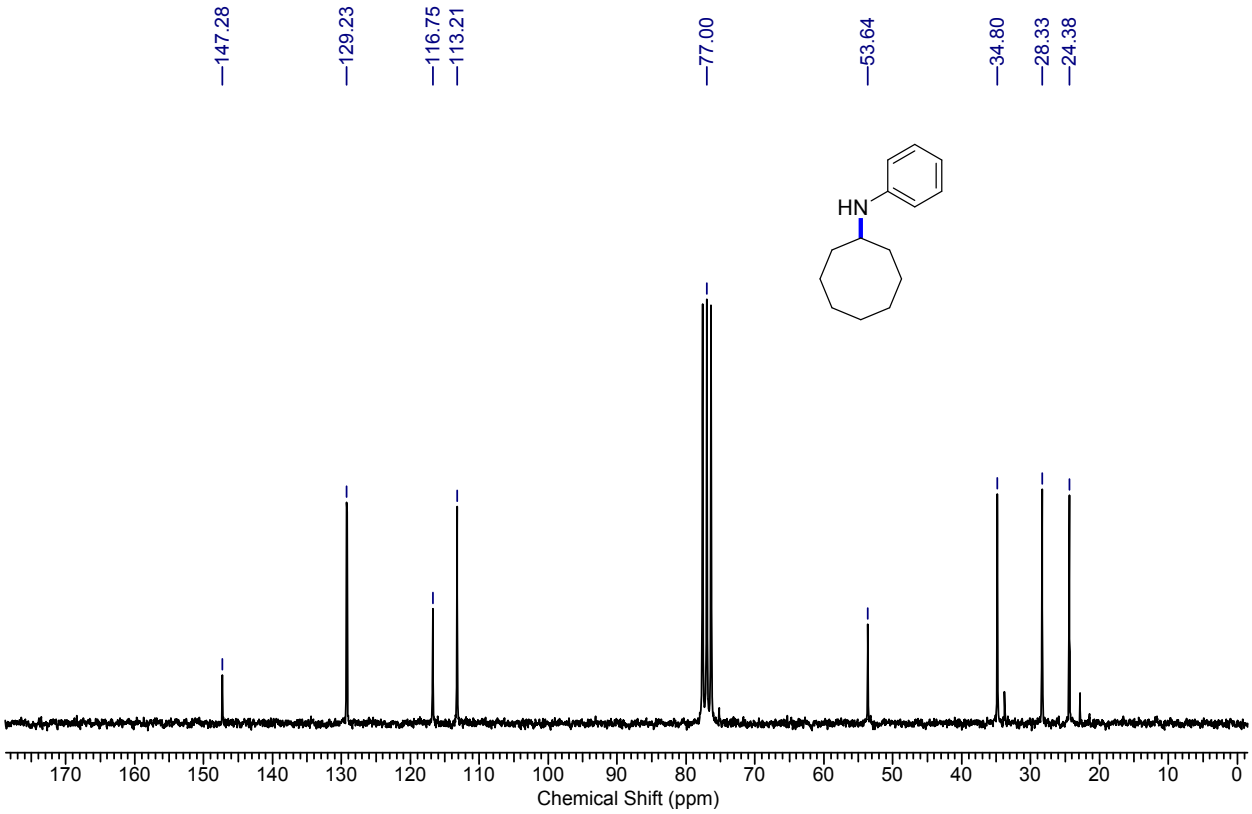
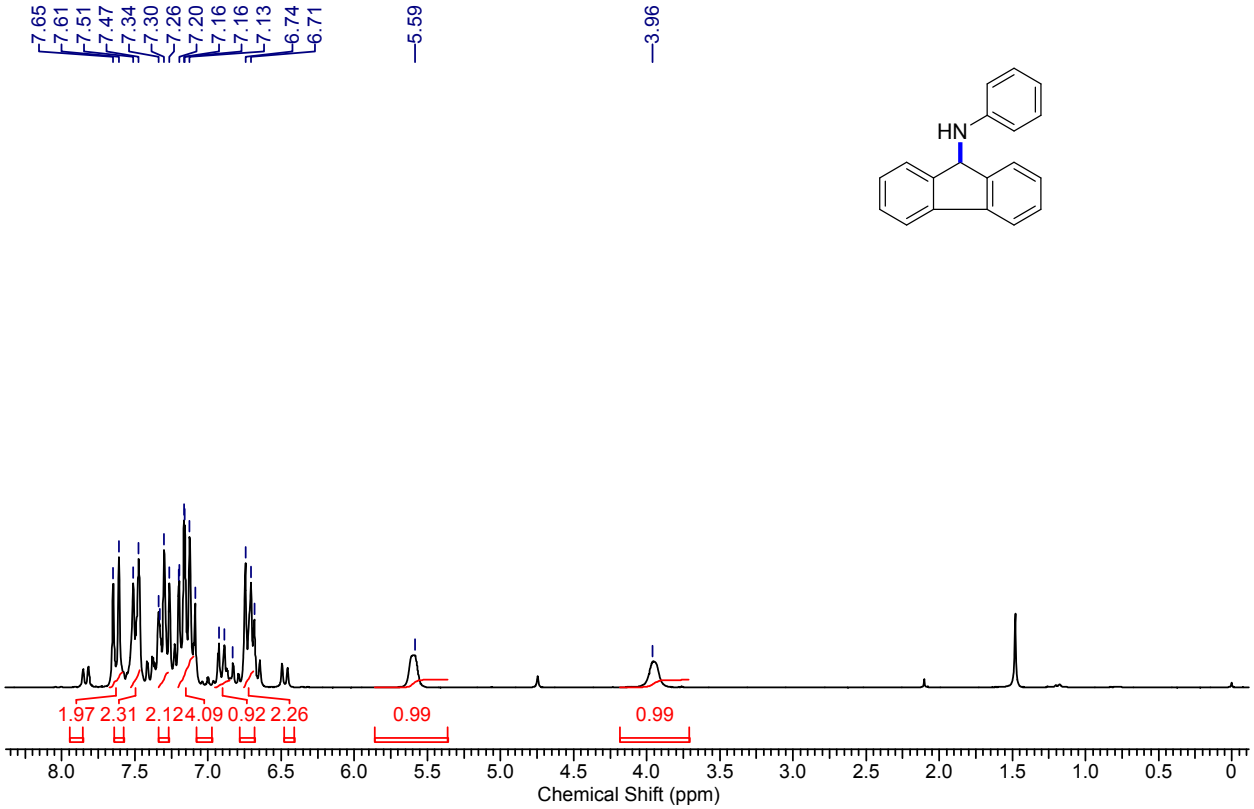


^{1}H NMR of **3d**



^{13}C NMR of **3d**



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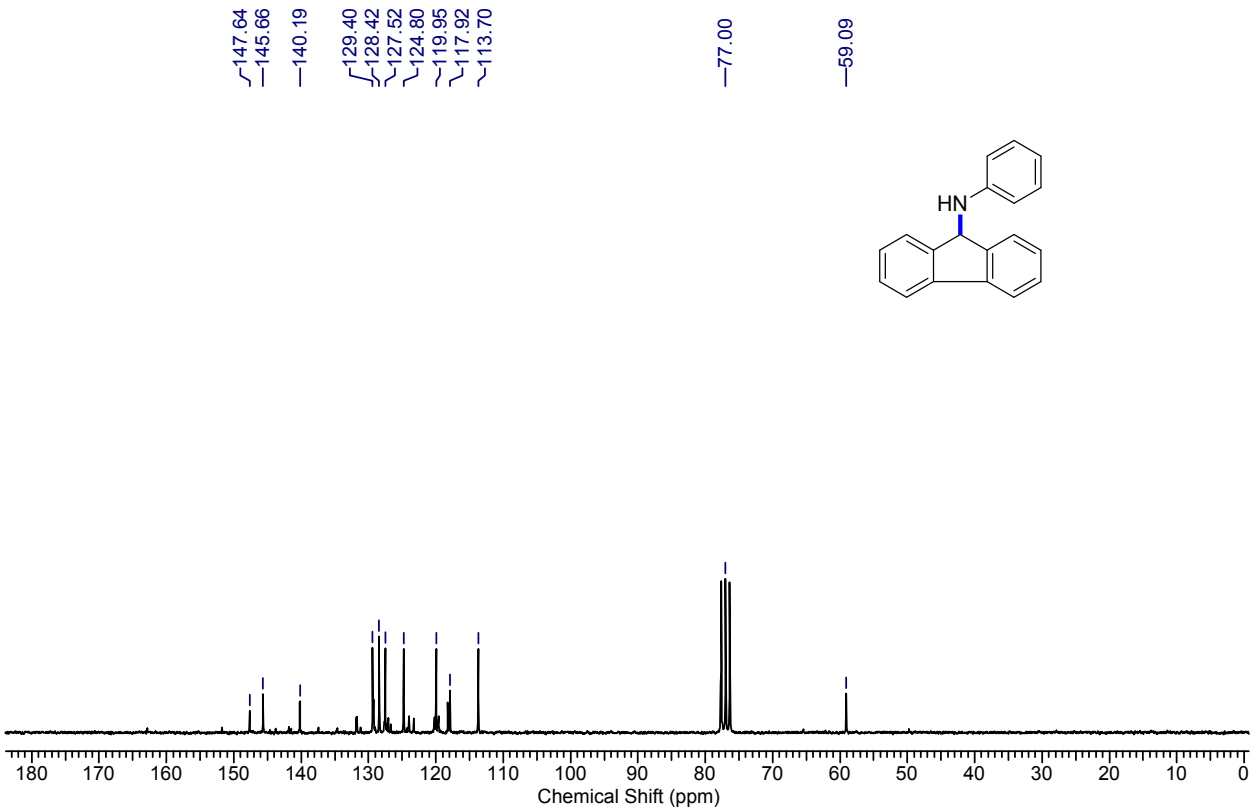
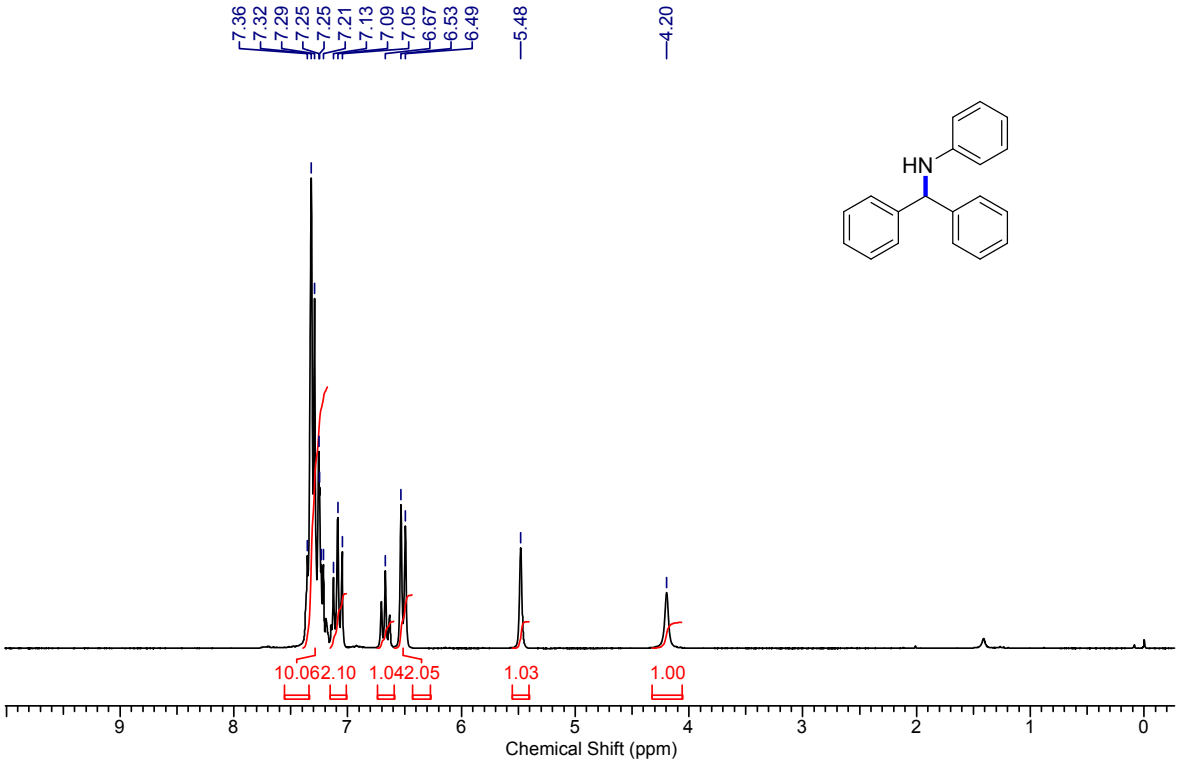
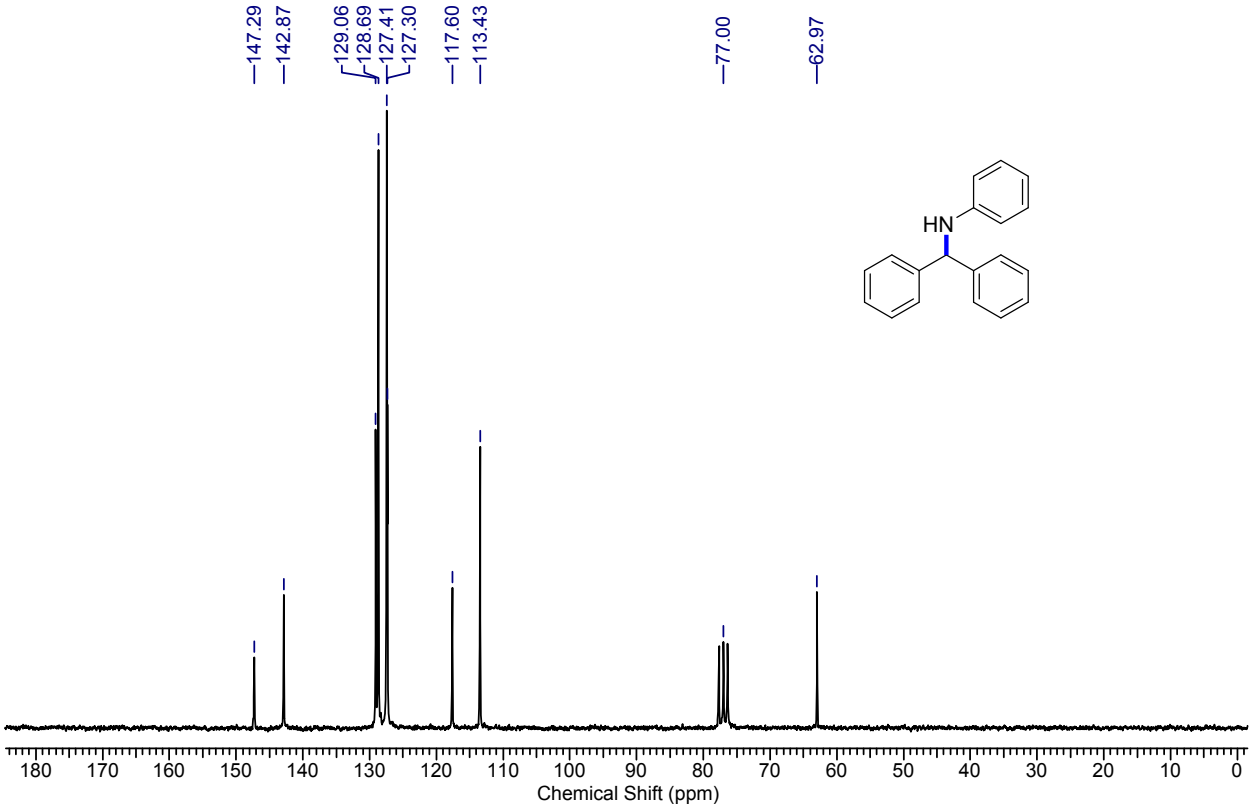


^{13}C NMR of **3e**



^{1}H NMR of **3f**



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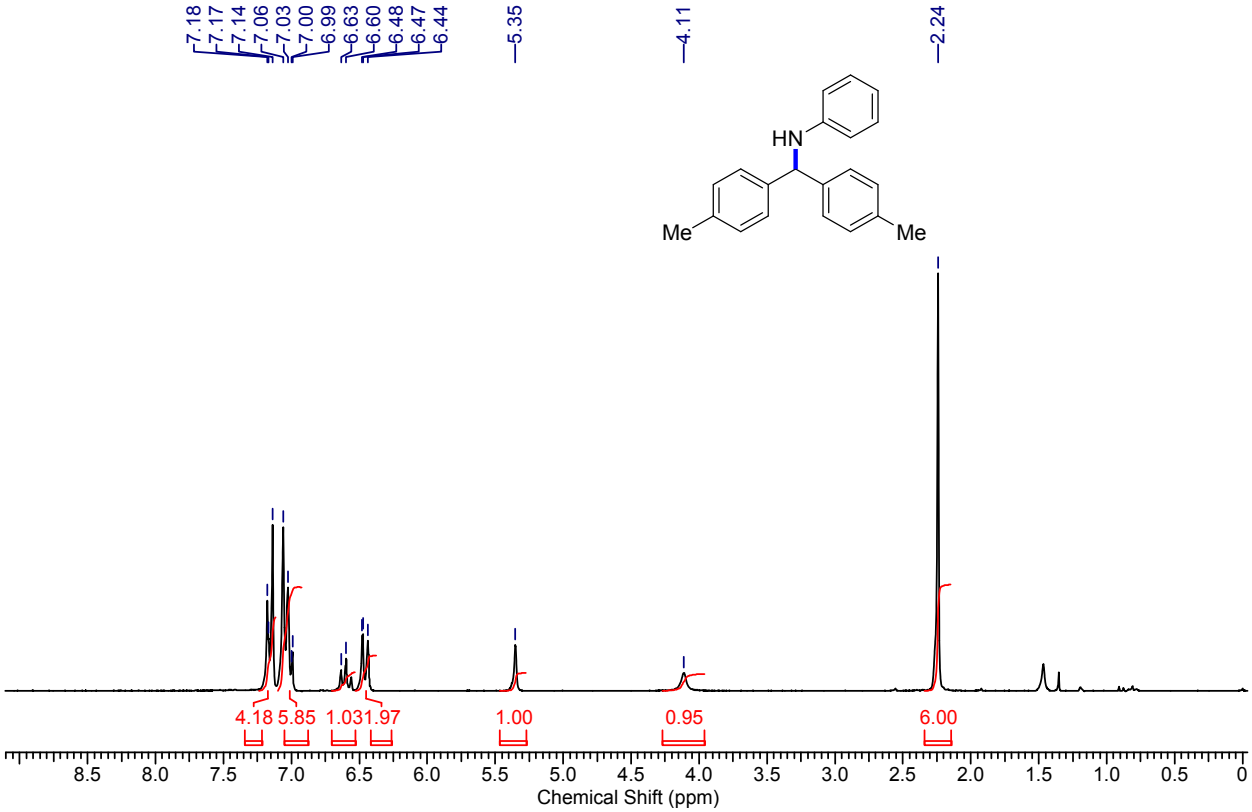
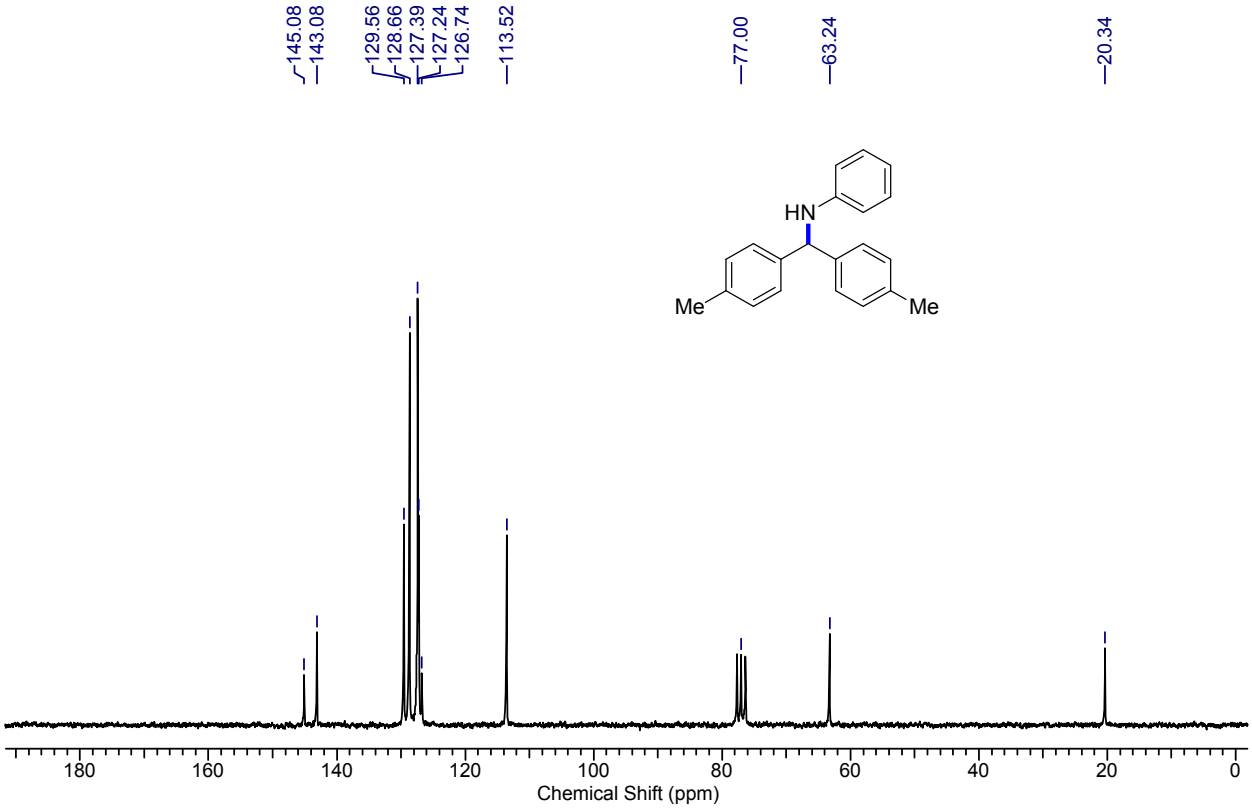
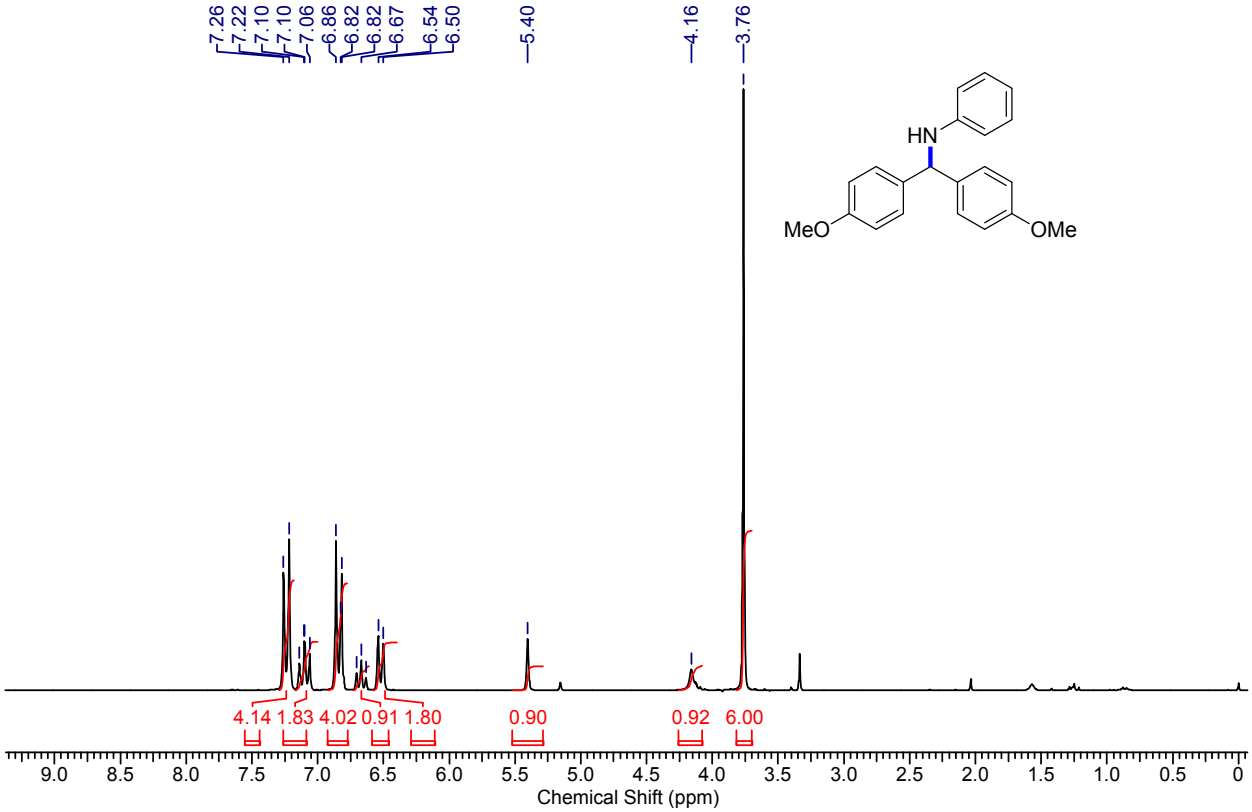


^{1}H NMR of **3g**



^{13}C NMR of **3g**



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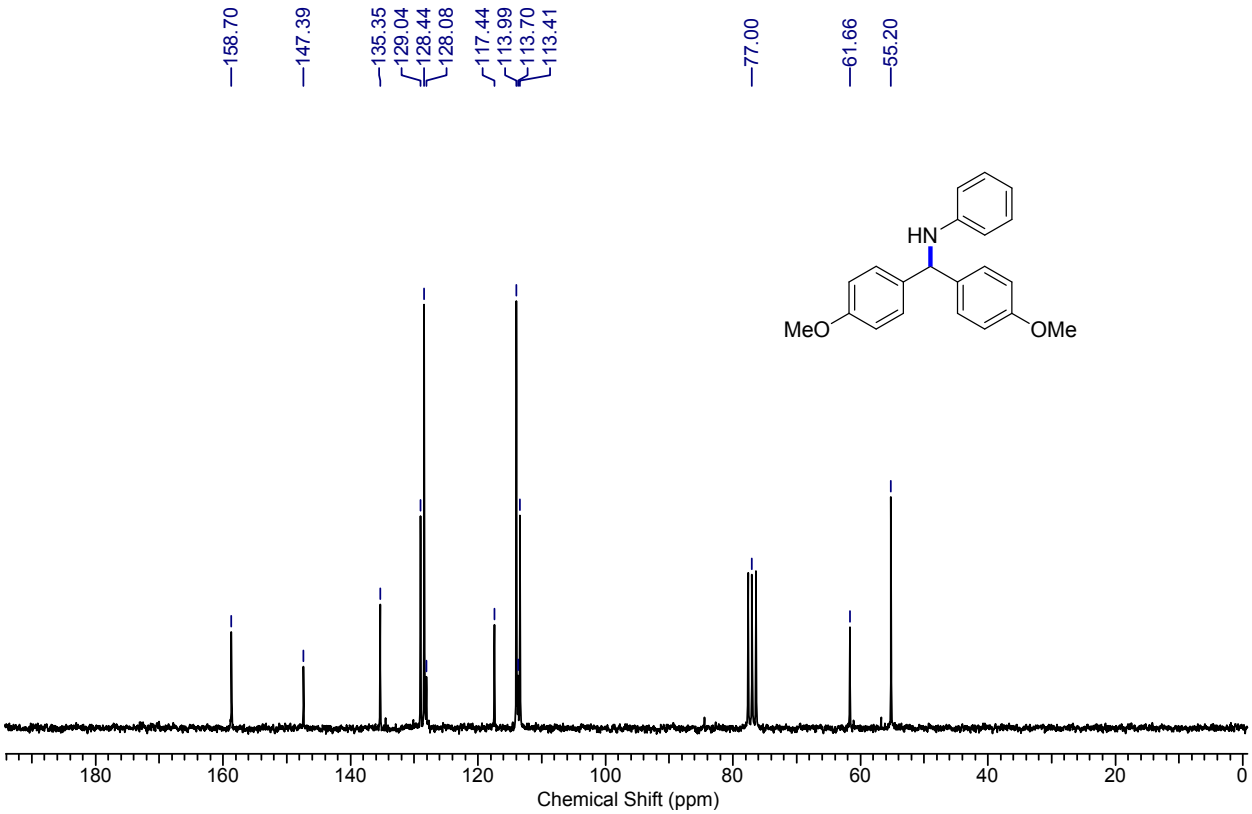

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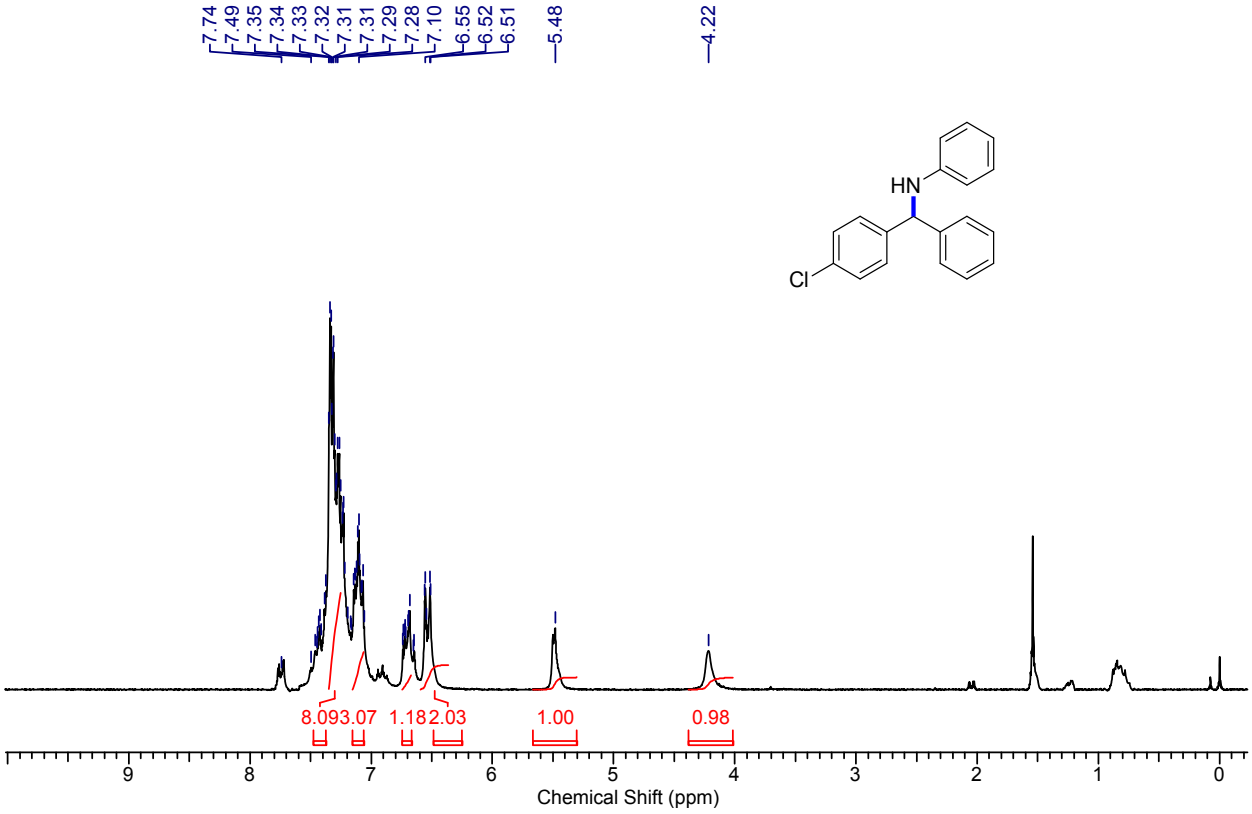
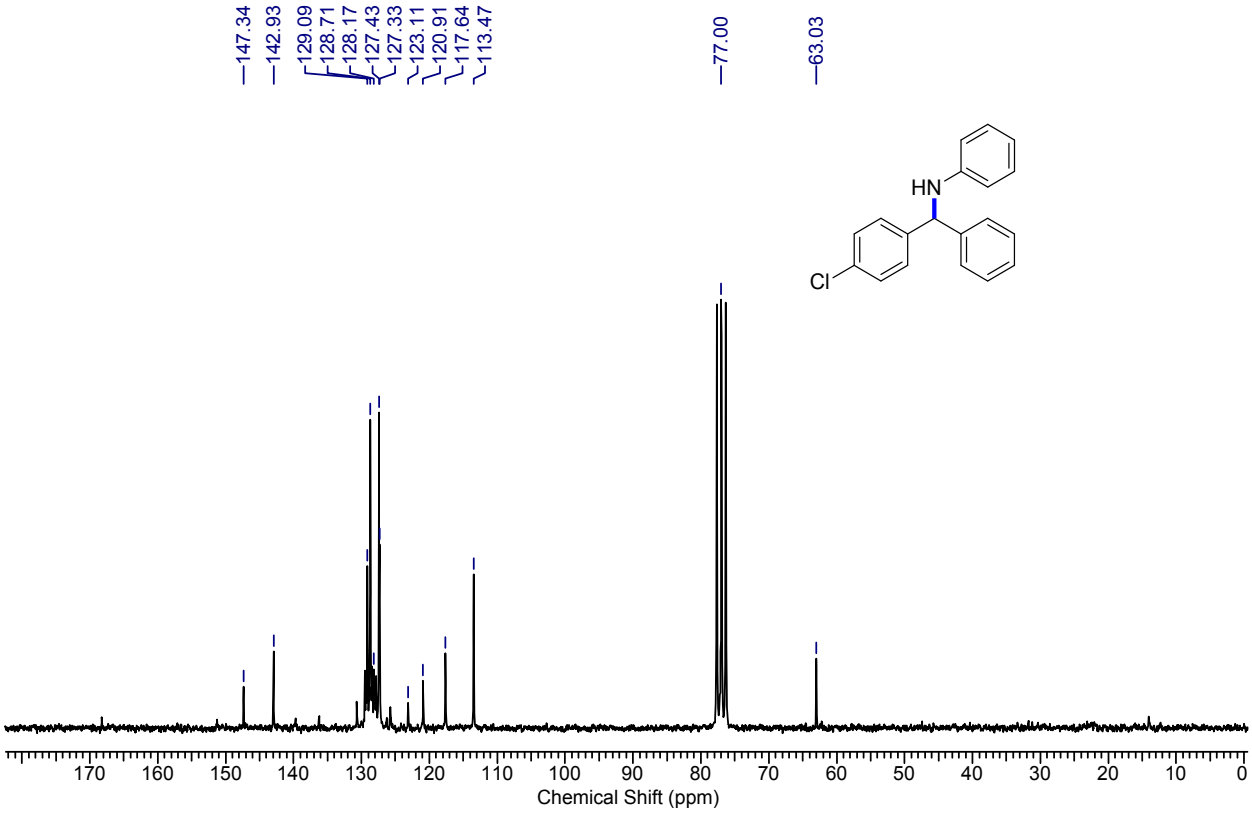


^{1}H NMR of **3i**



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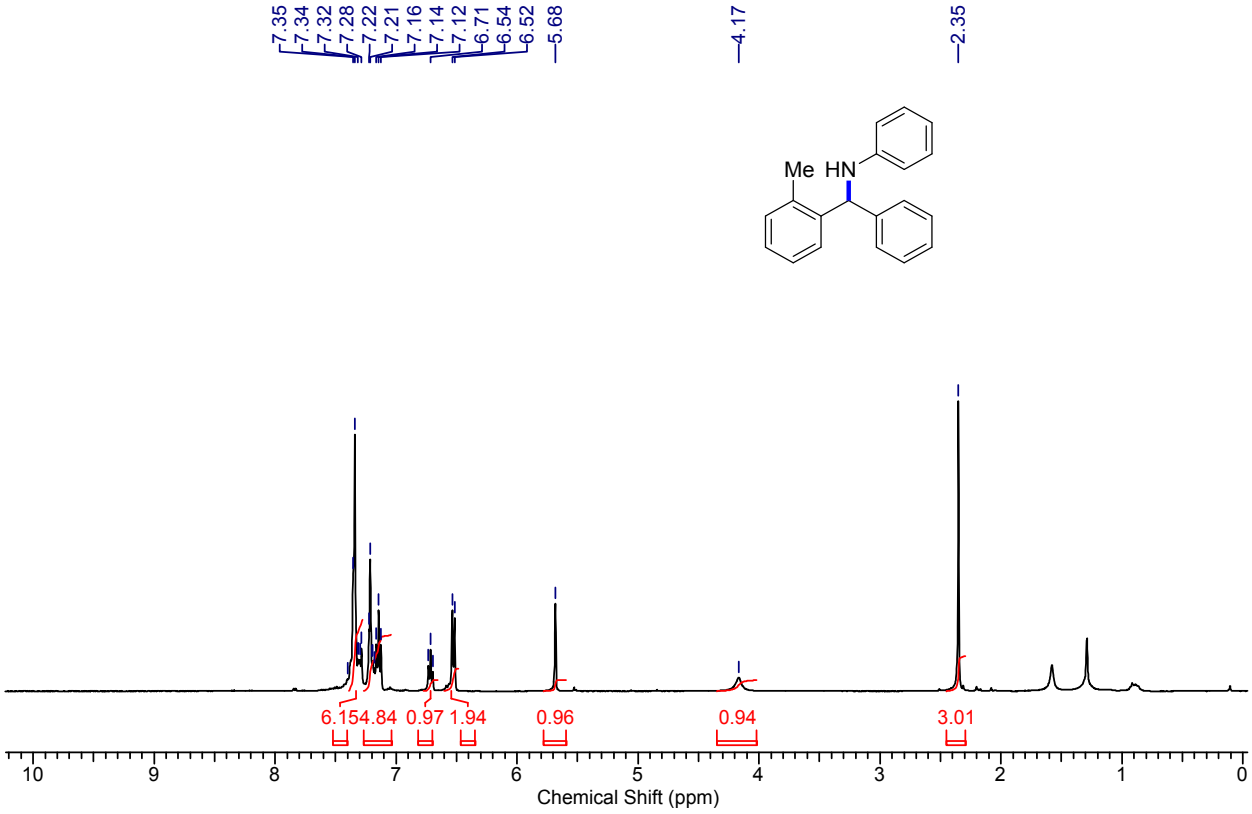
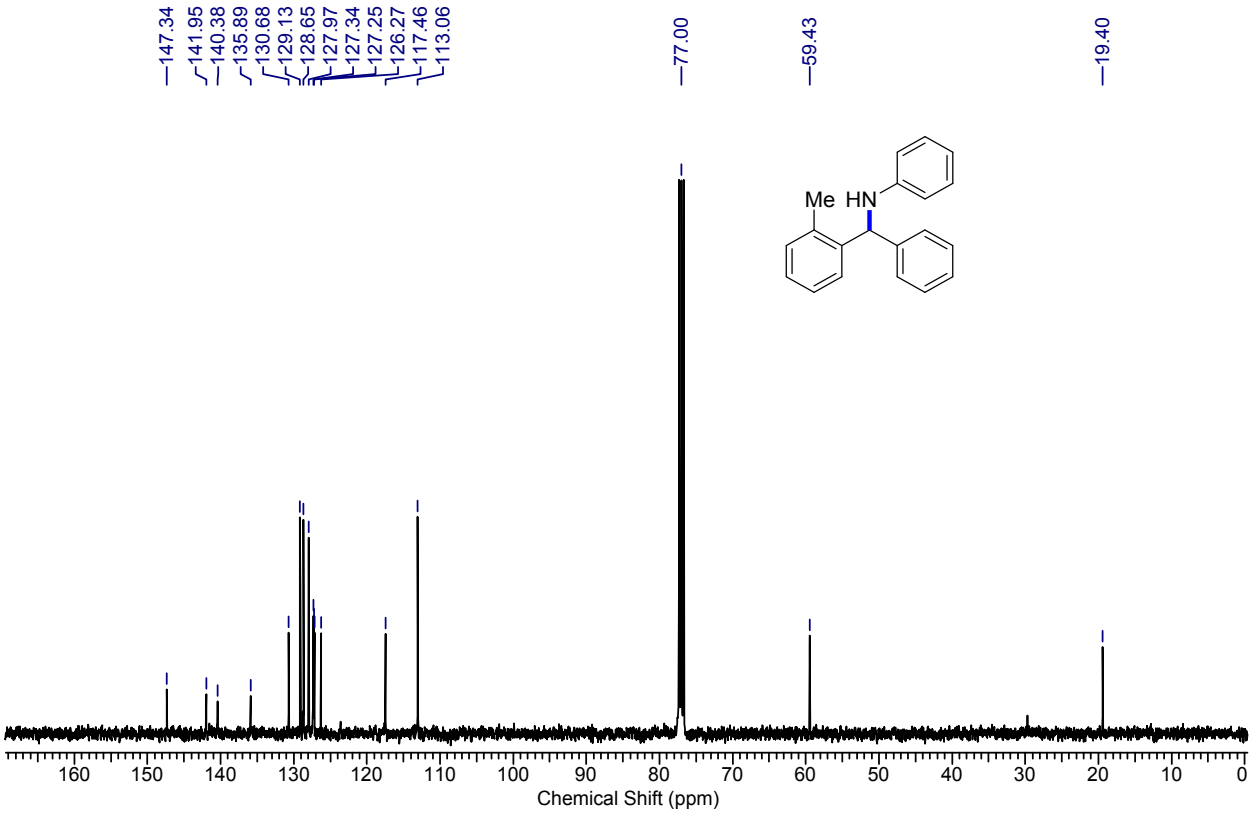


^{1}H NMR of **3j**



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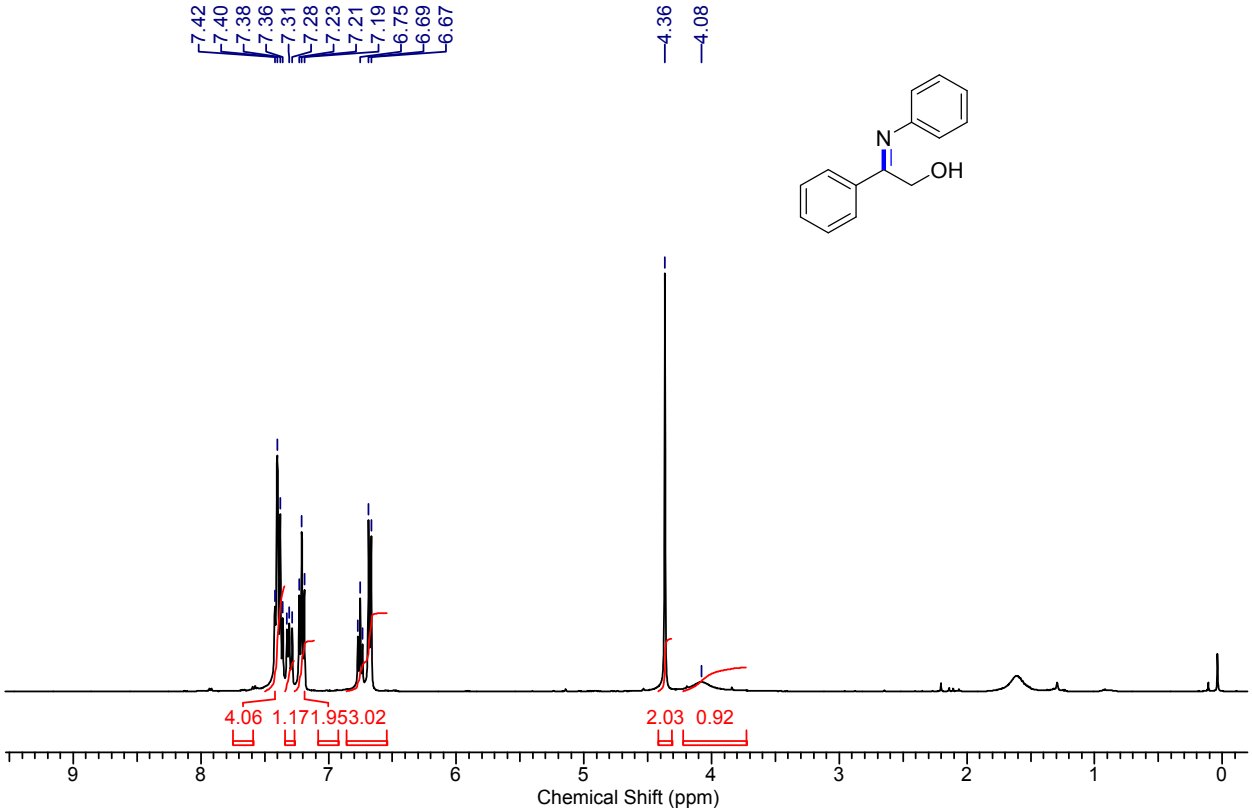
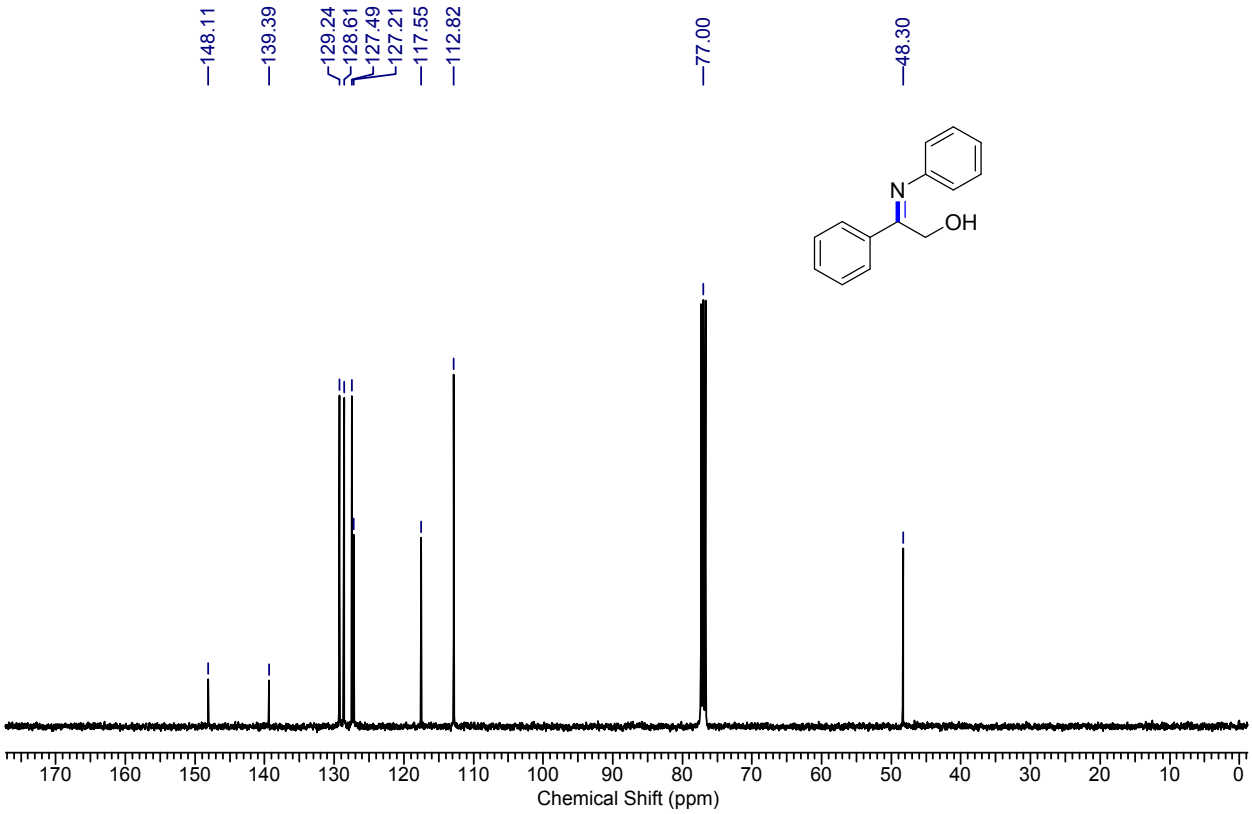


^{1}H NMR of **3k**



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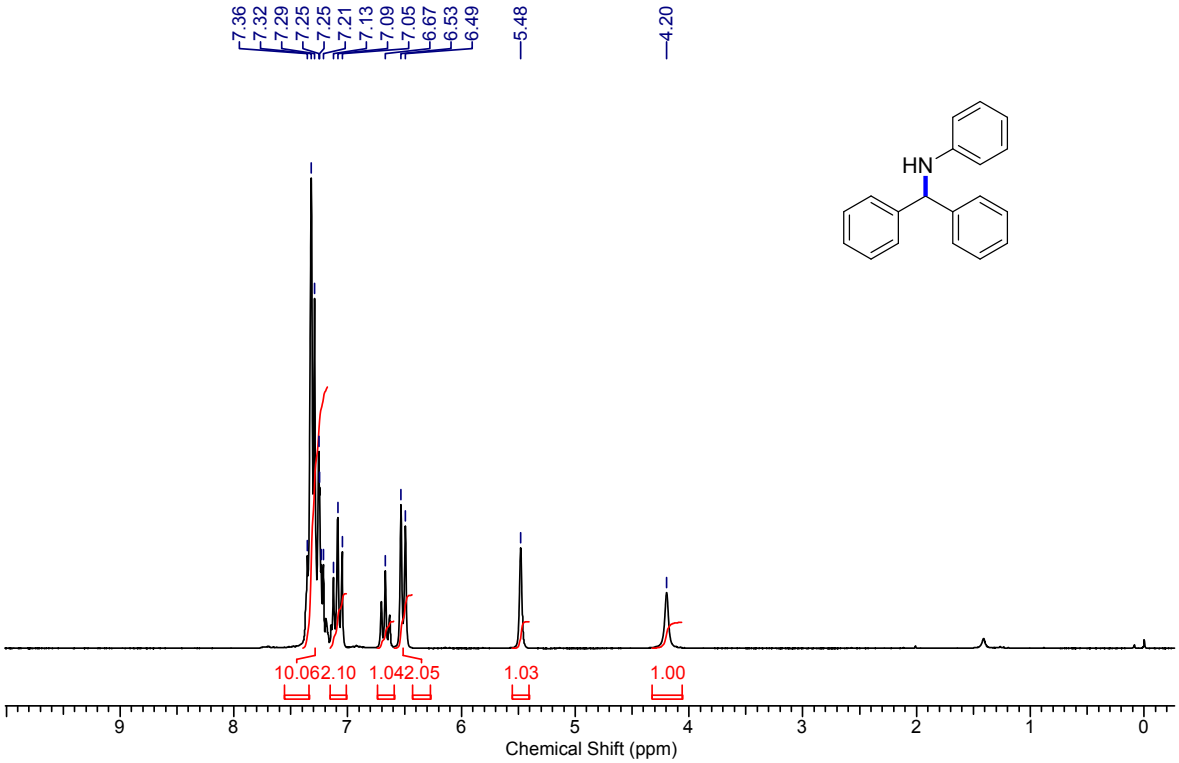
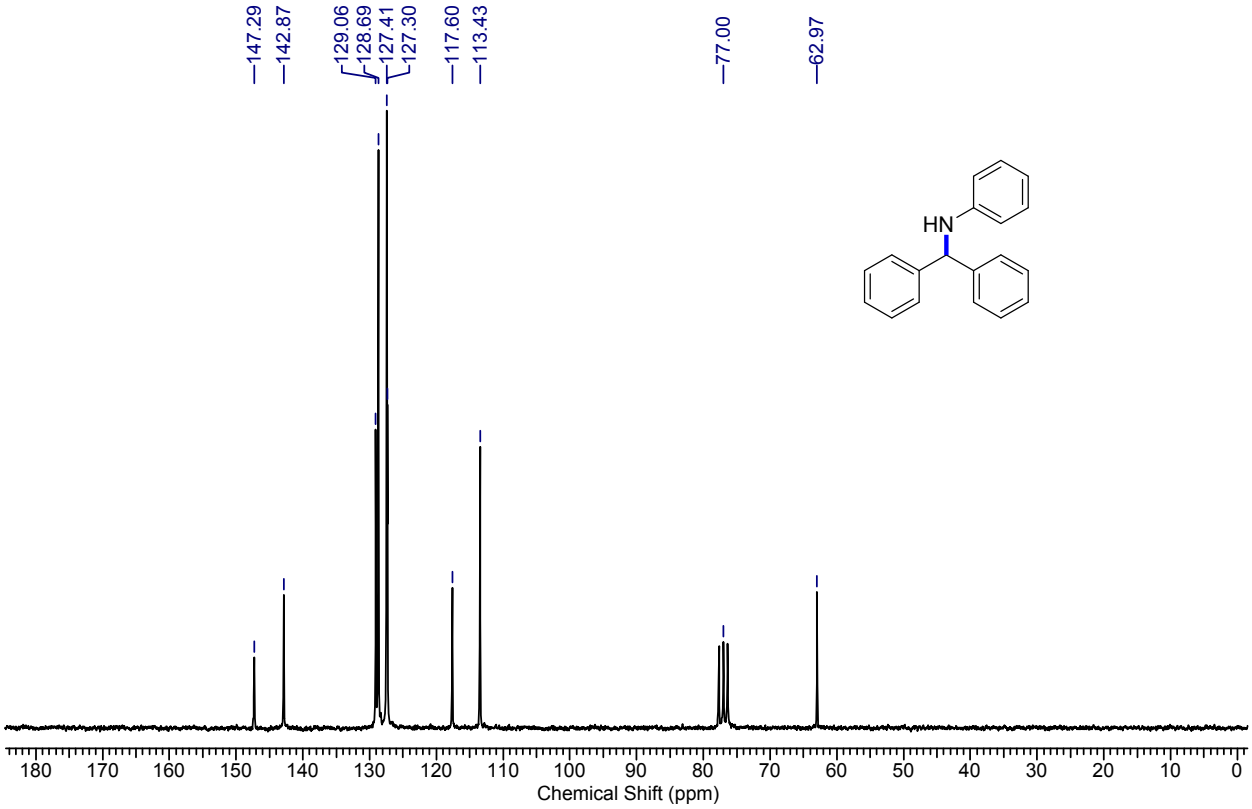
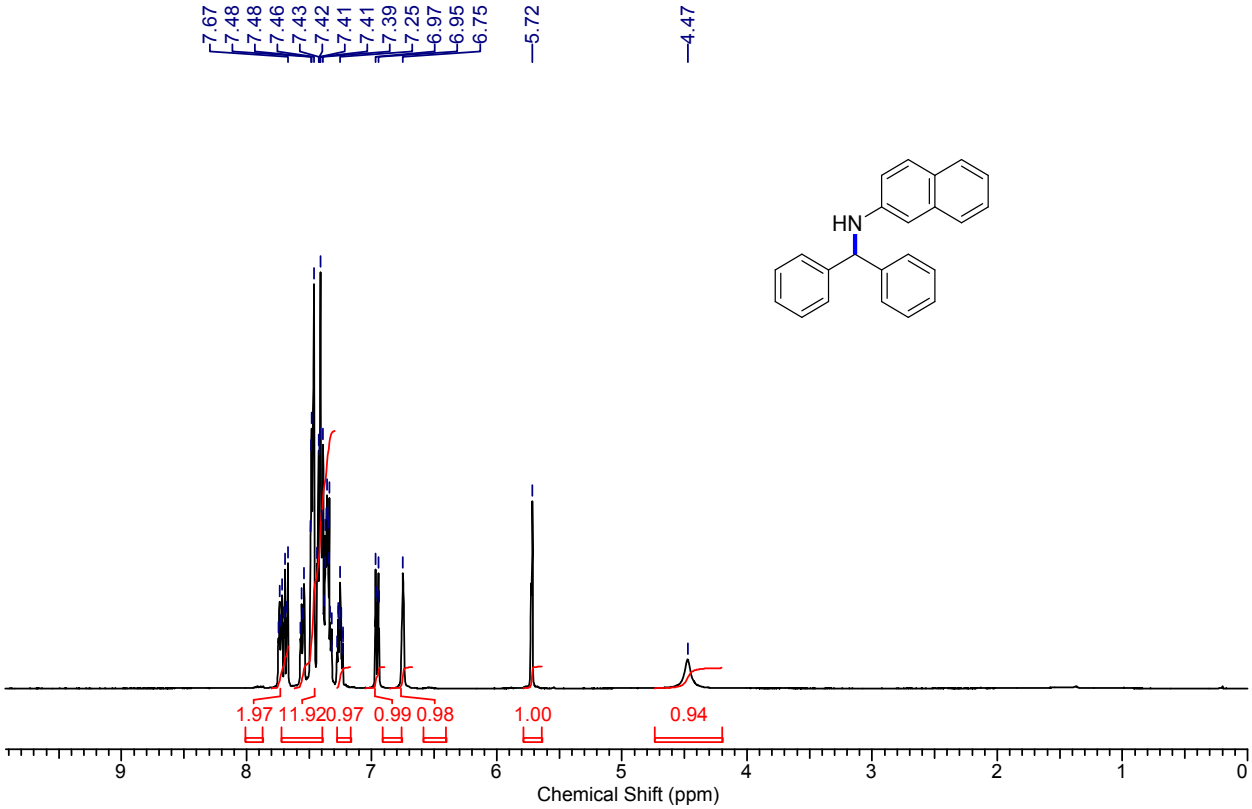


^{1}H NMR of **5a**



^{13}C NMR of **5a**



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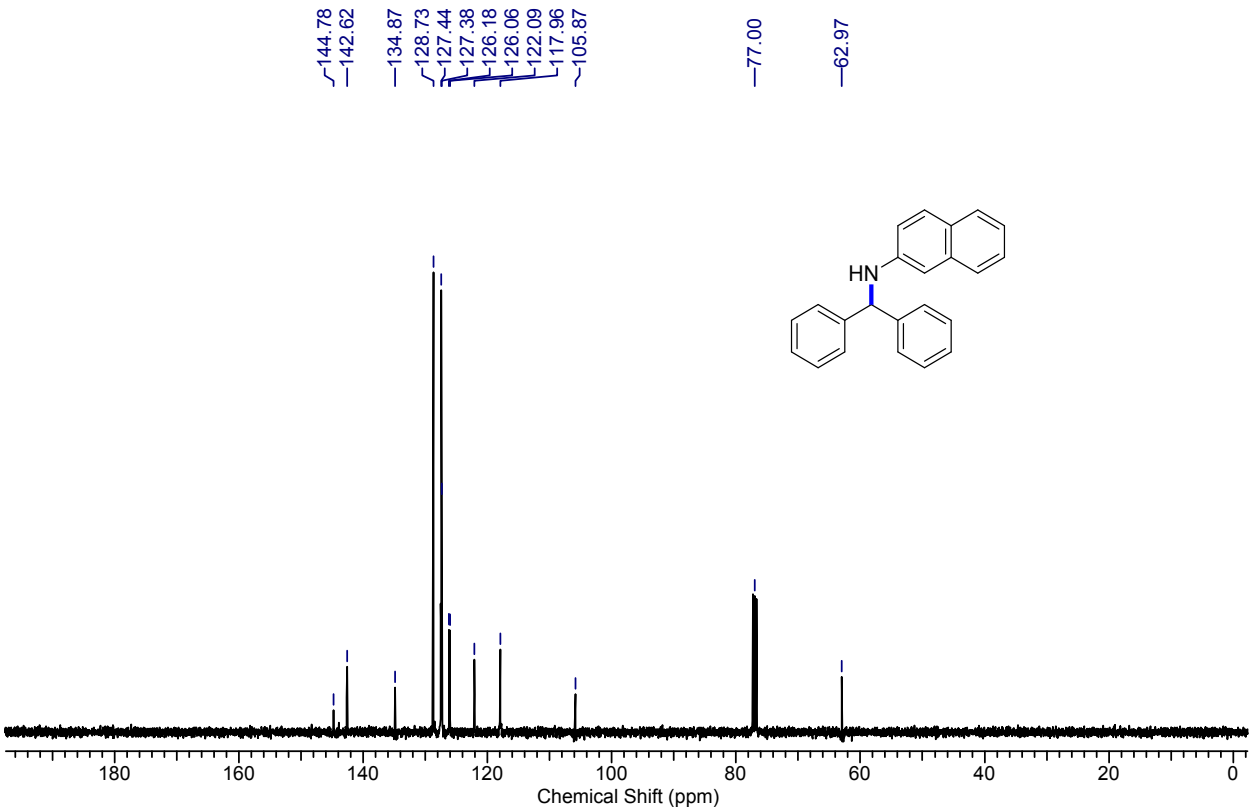

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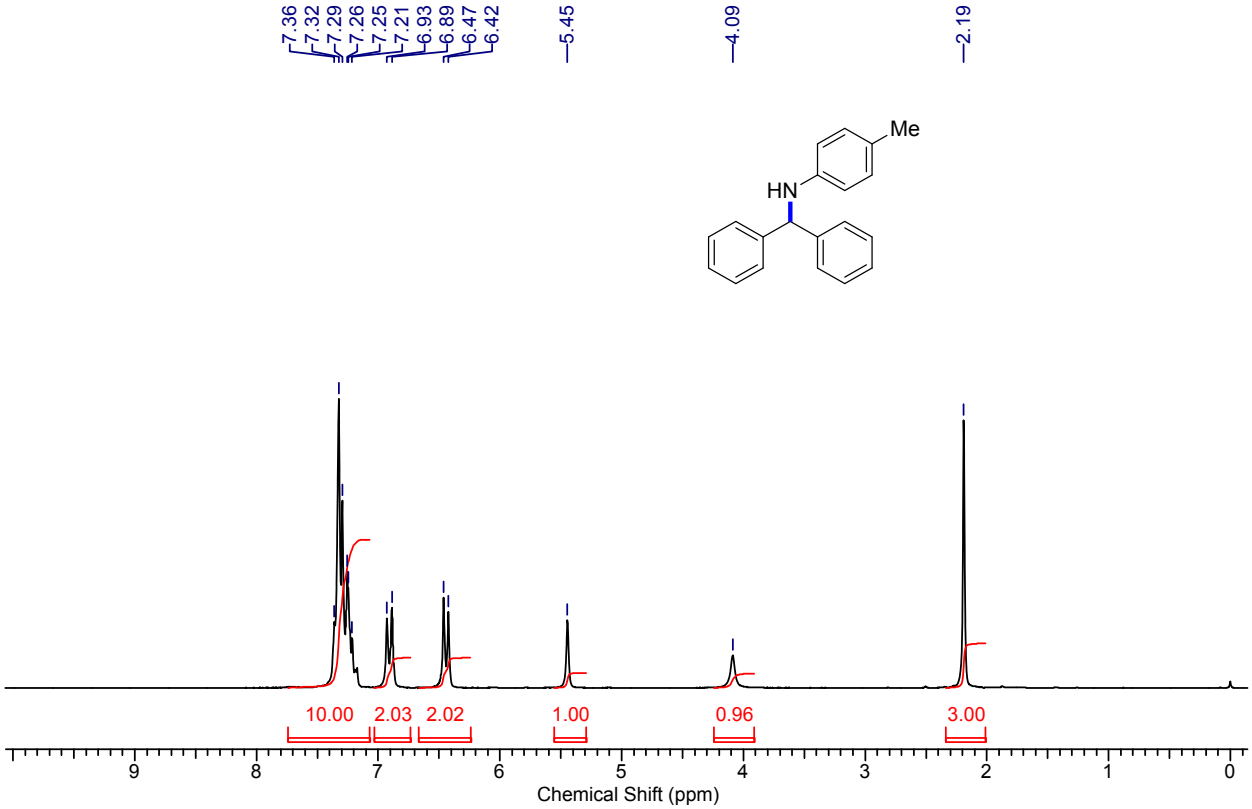
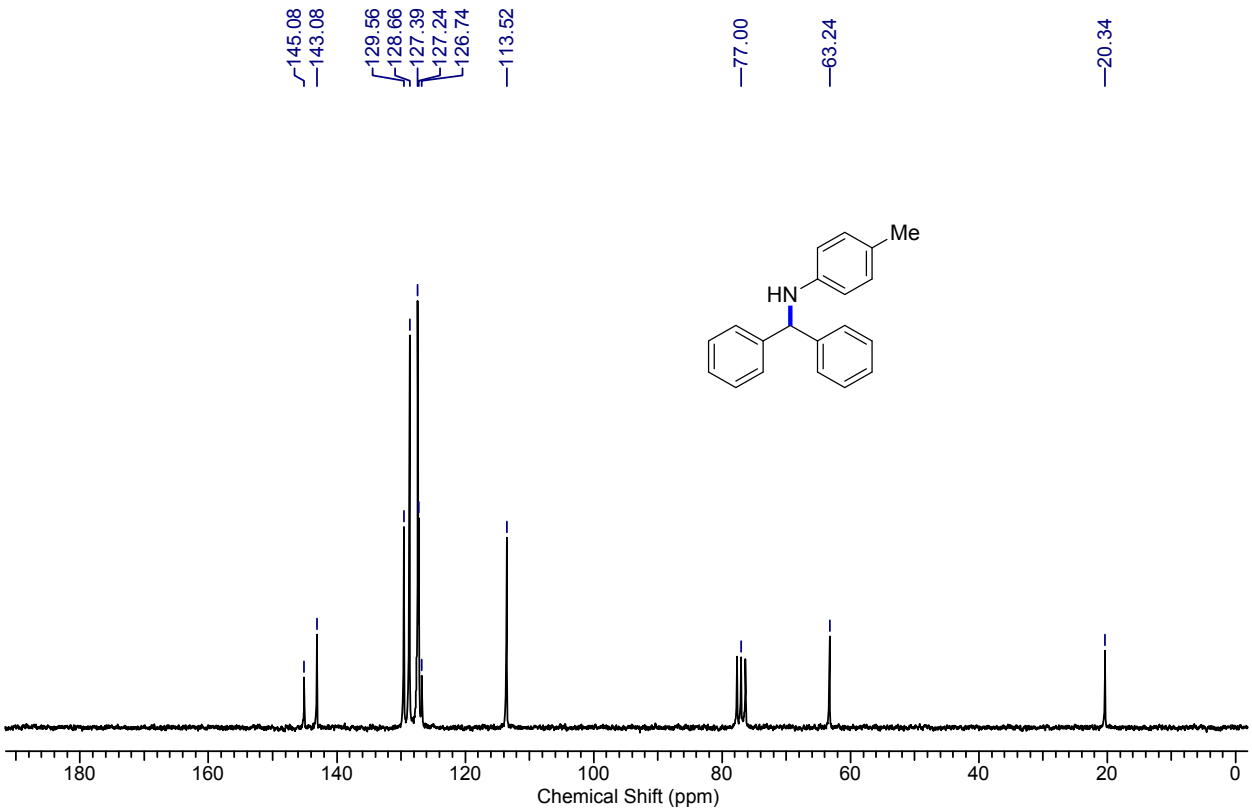
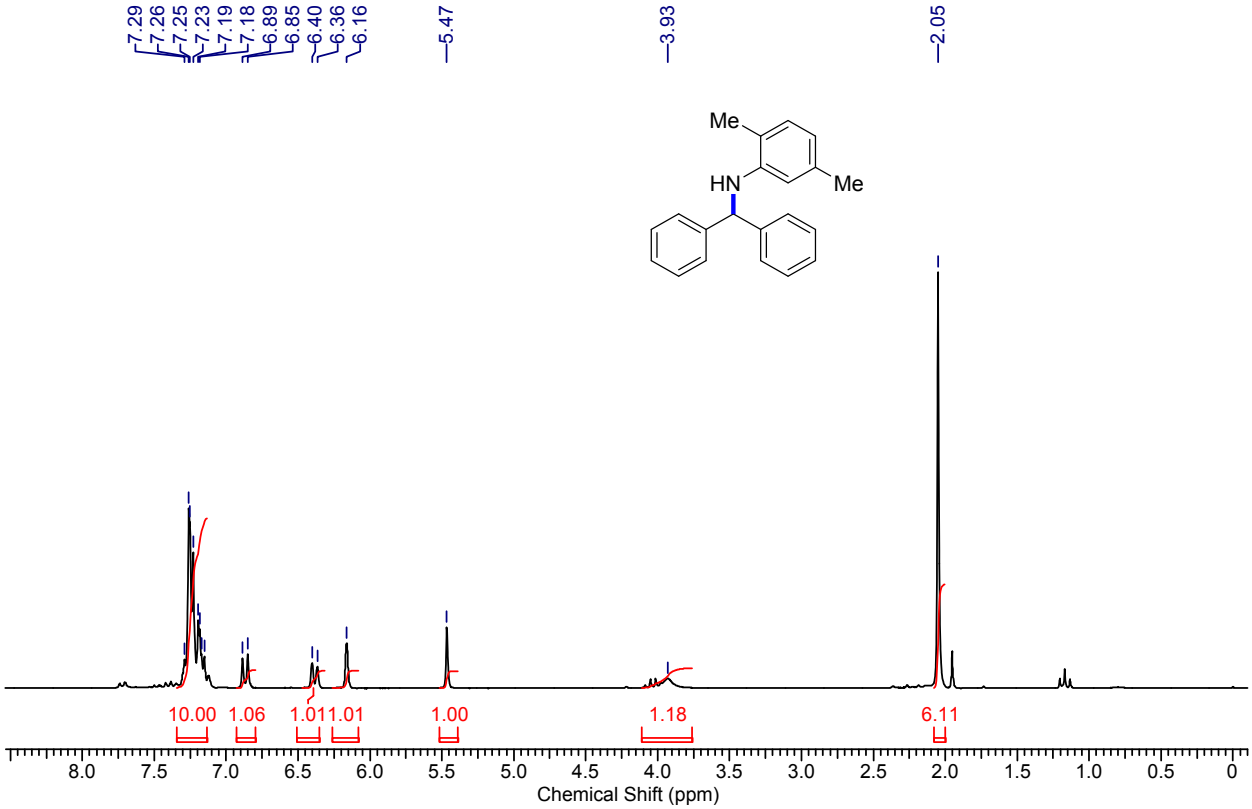


^{1}H NMR of **5c**



^{13}C NMR of 5**c**



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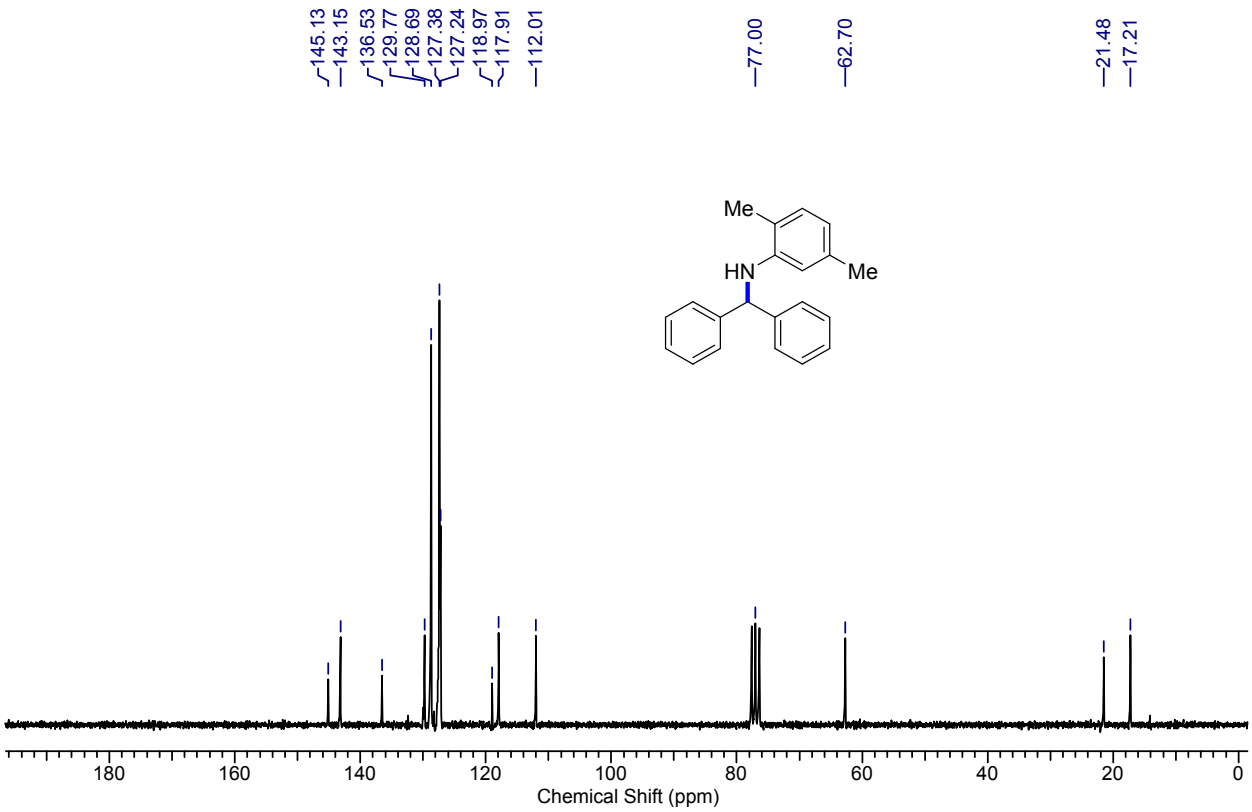

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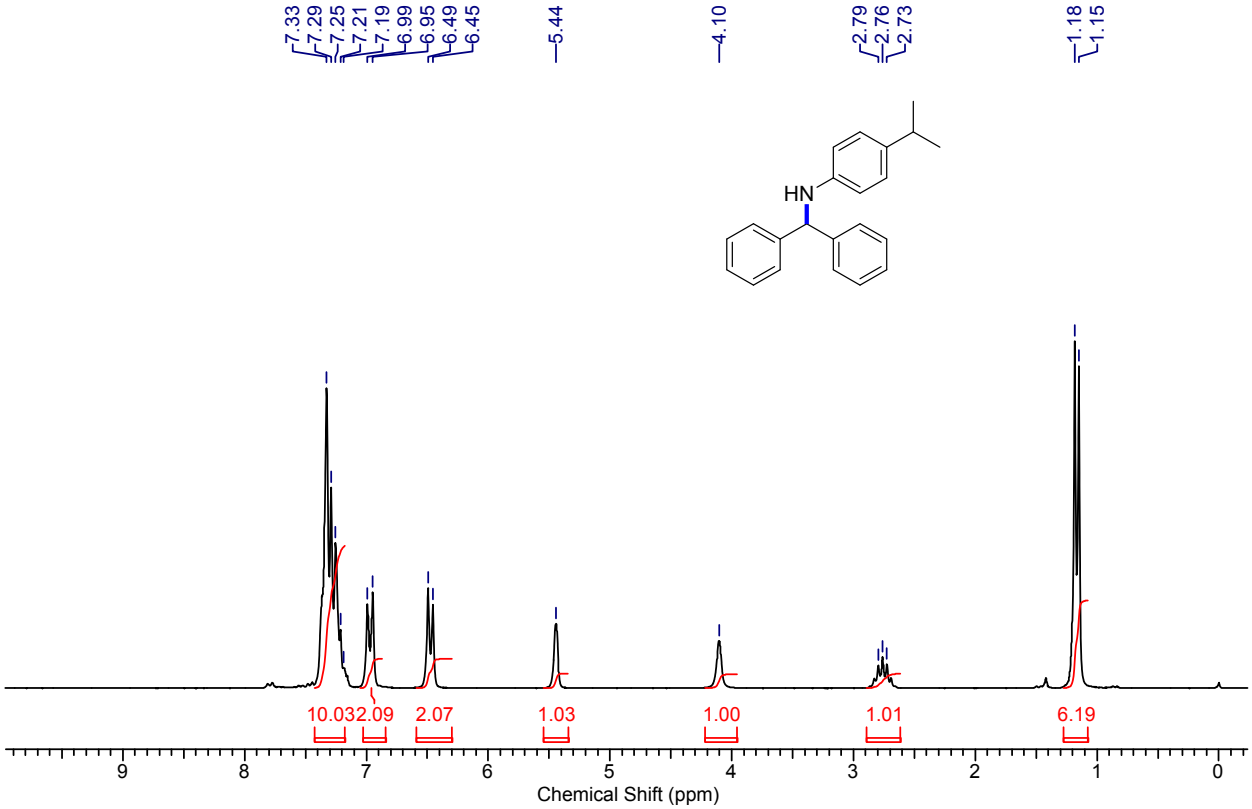

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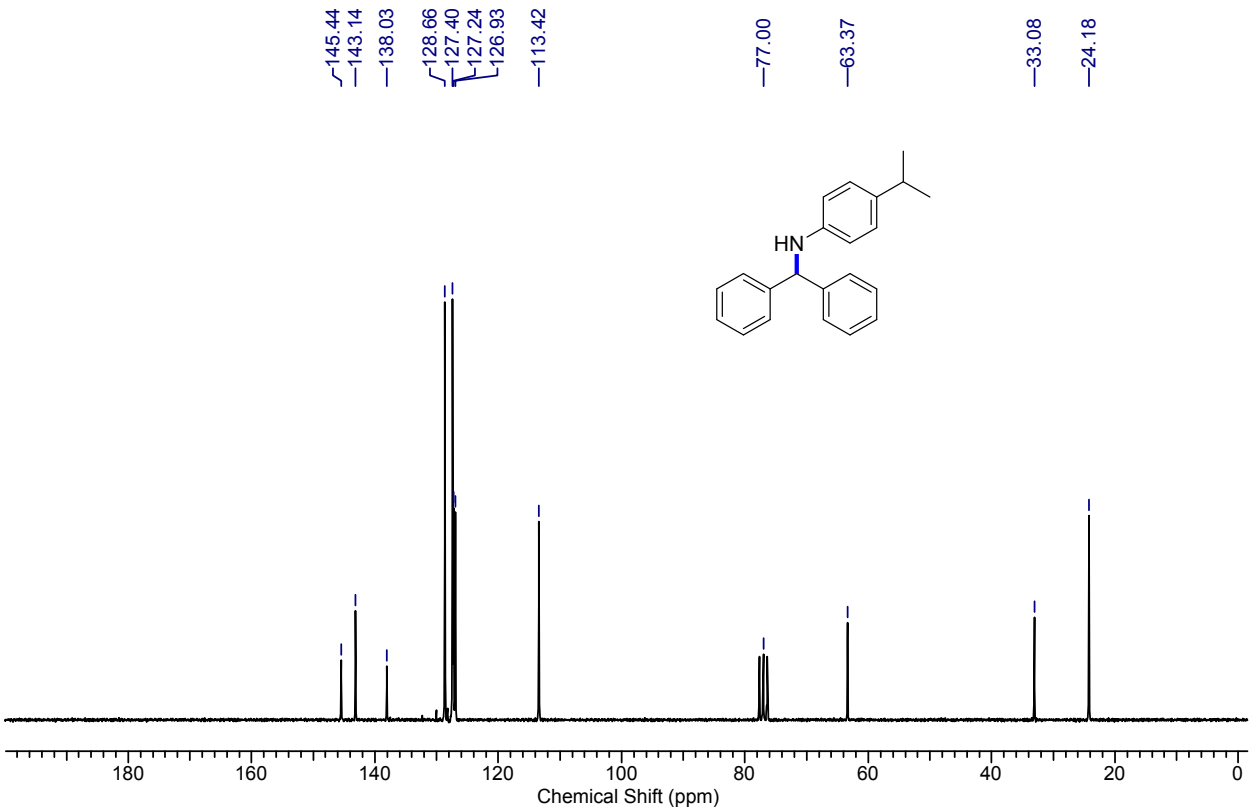
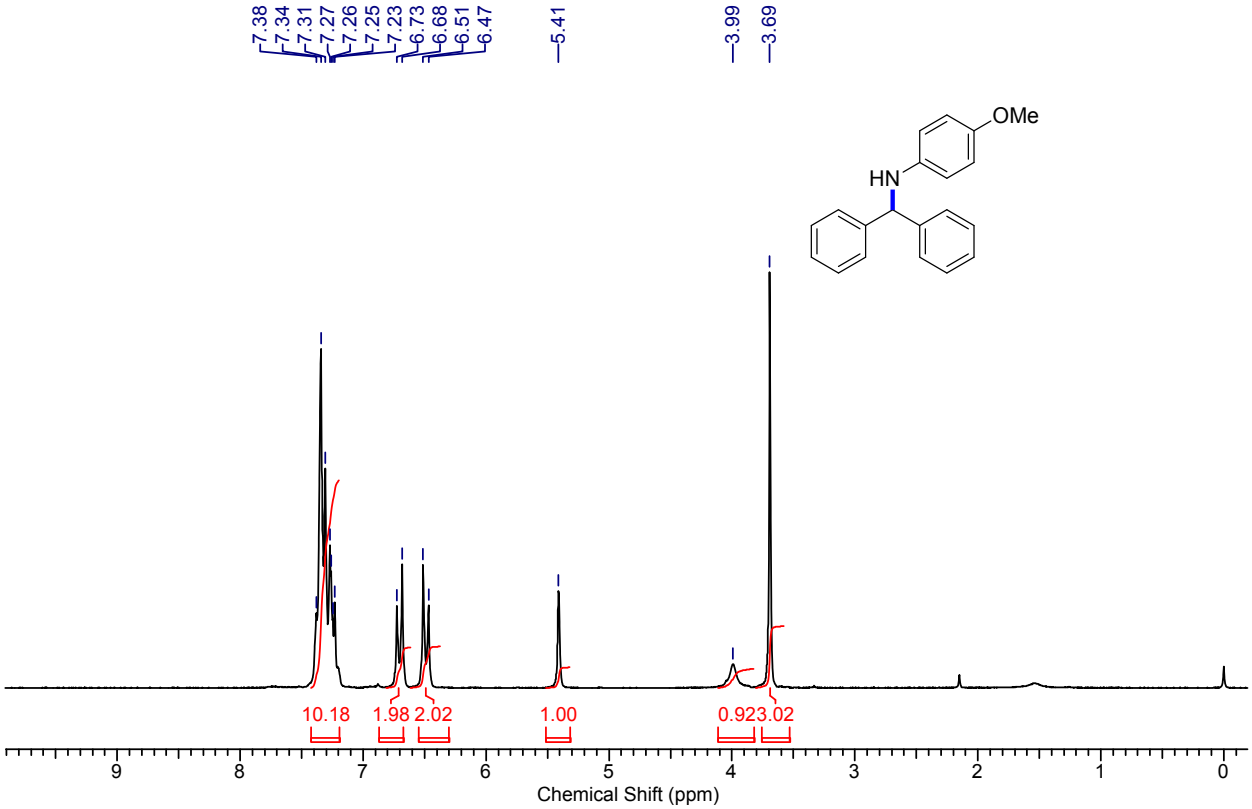
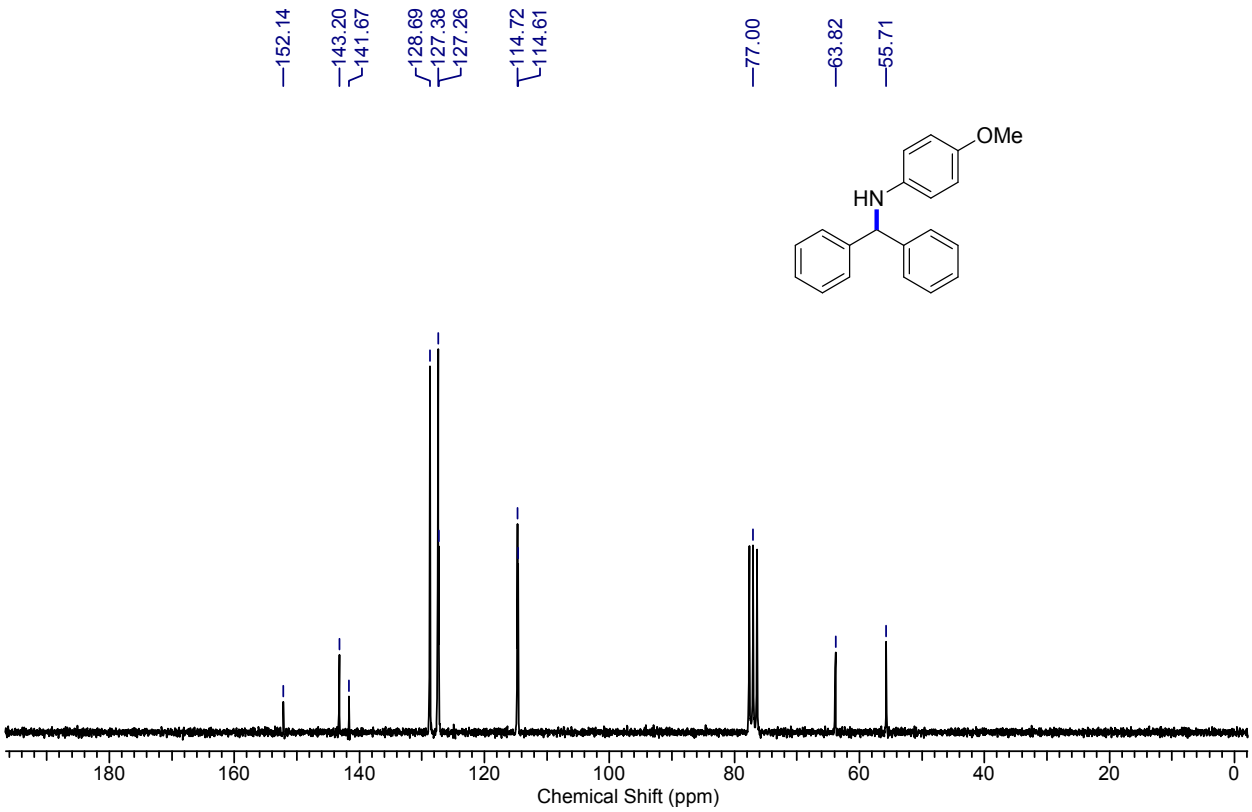


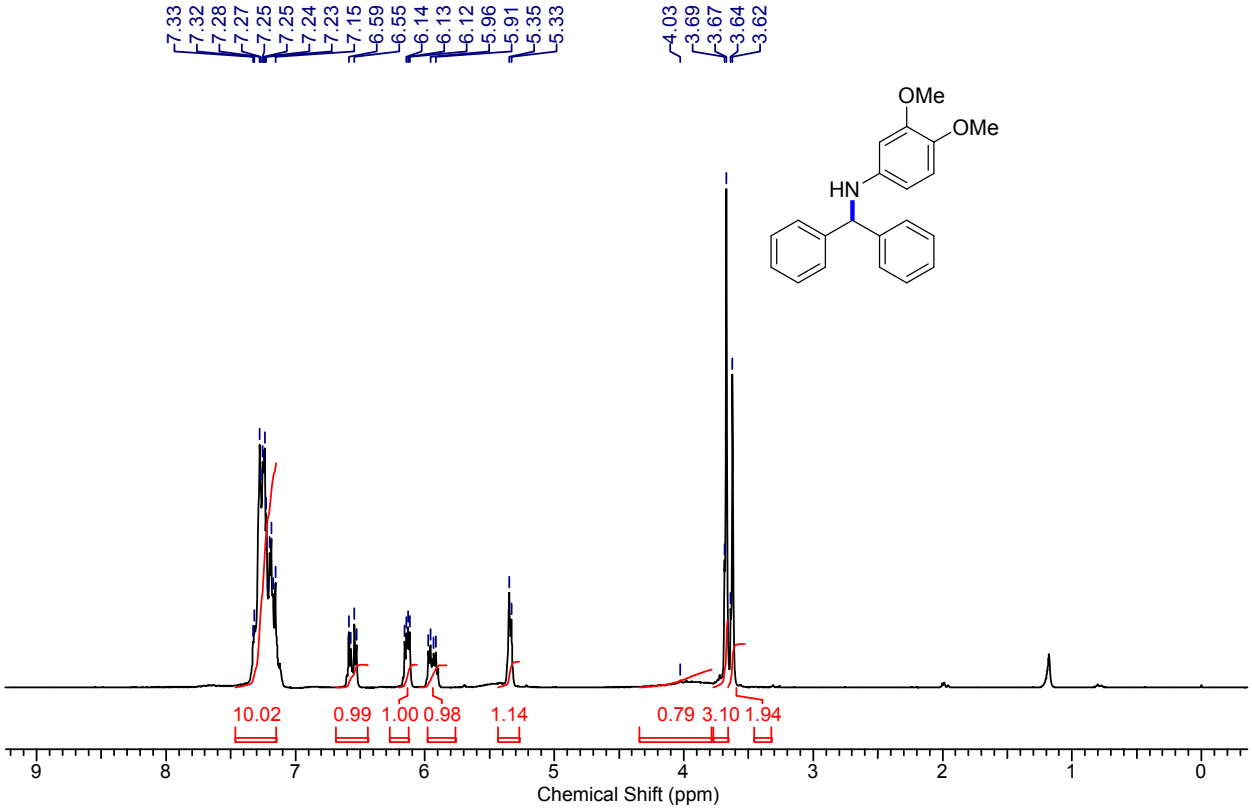
^{13}C NMR of **5e**



^{1}H NMR of **5f**



^{13}C NMR of **5f**



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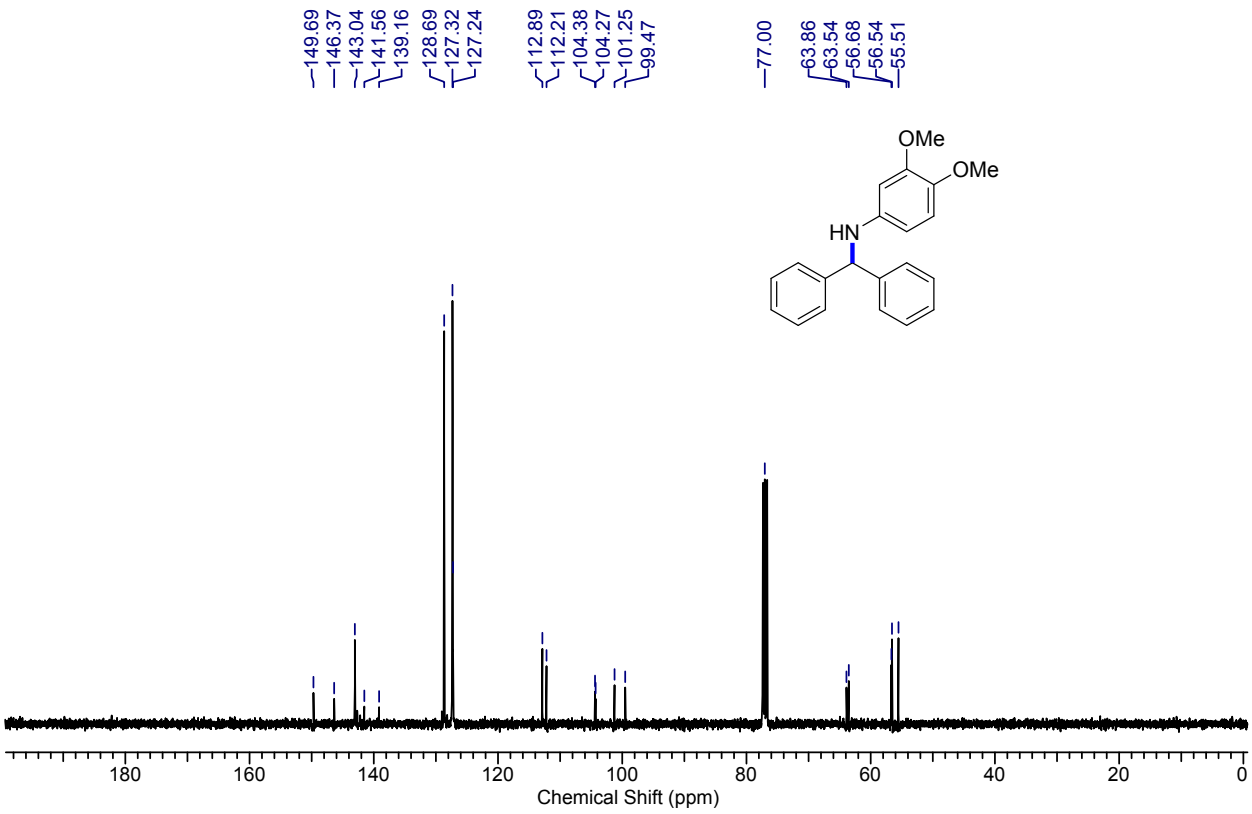

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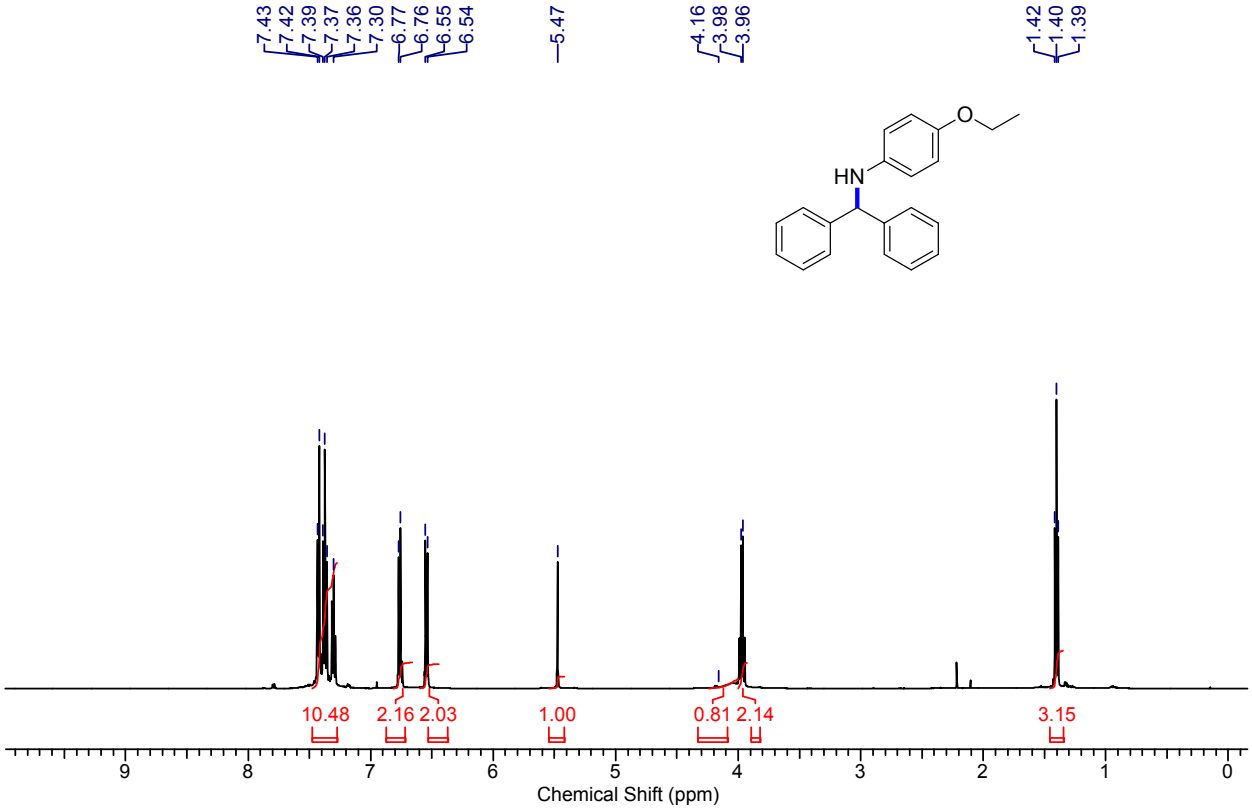

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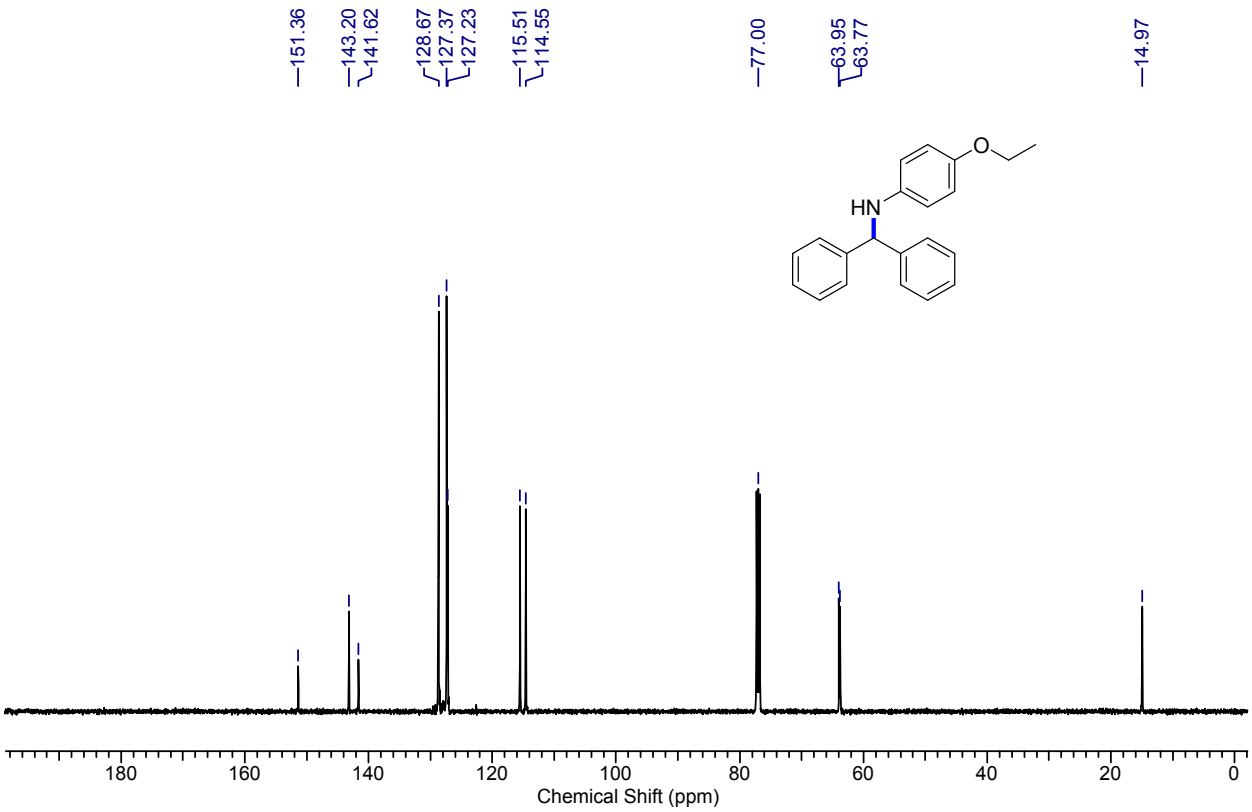

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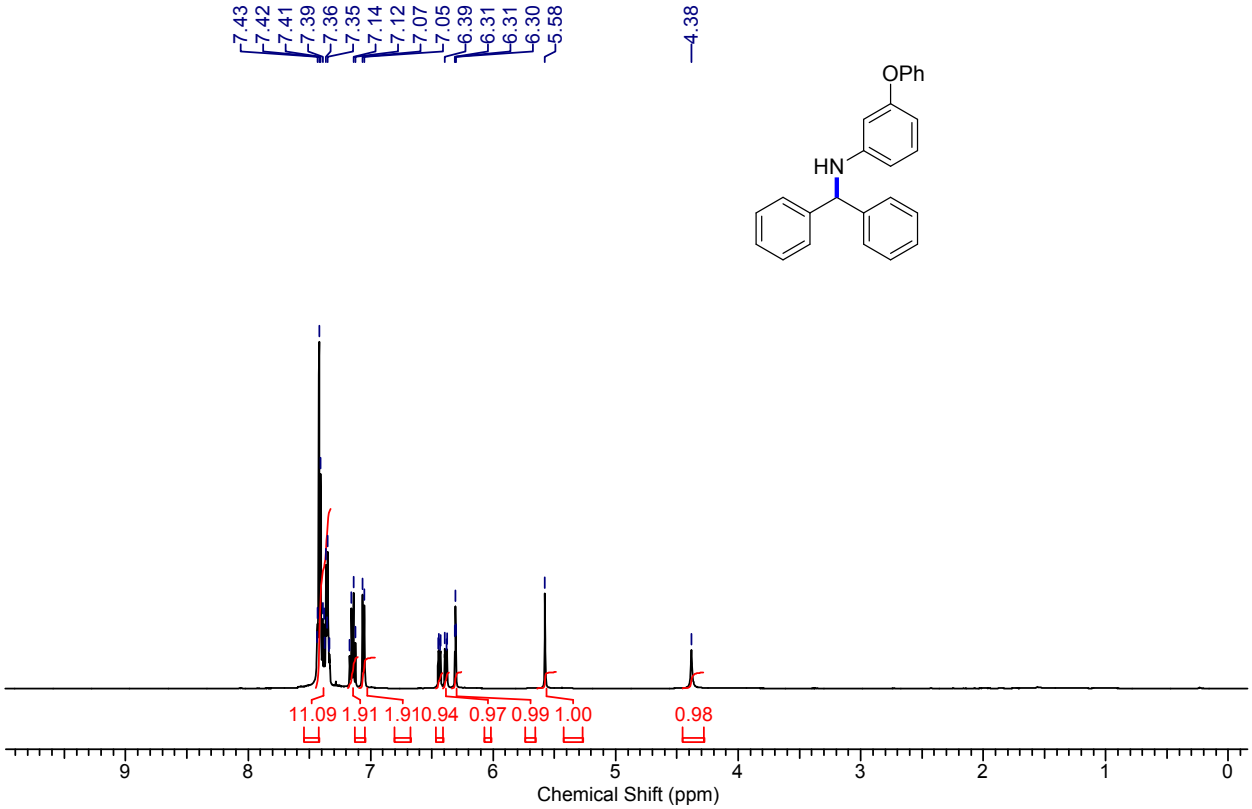
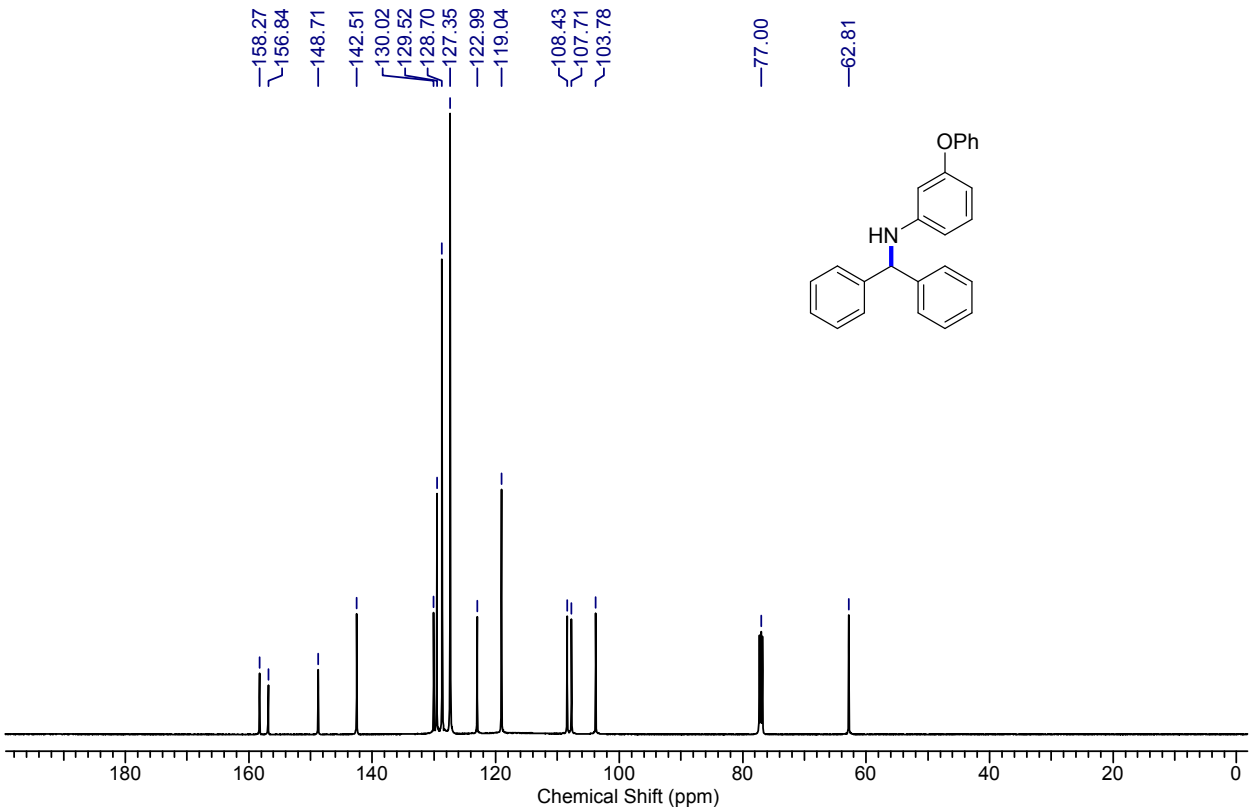


^{1}H NMR of **5i**



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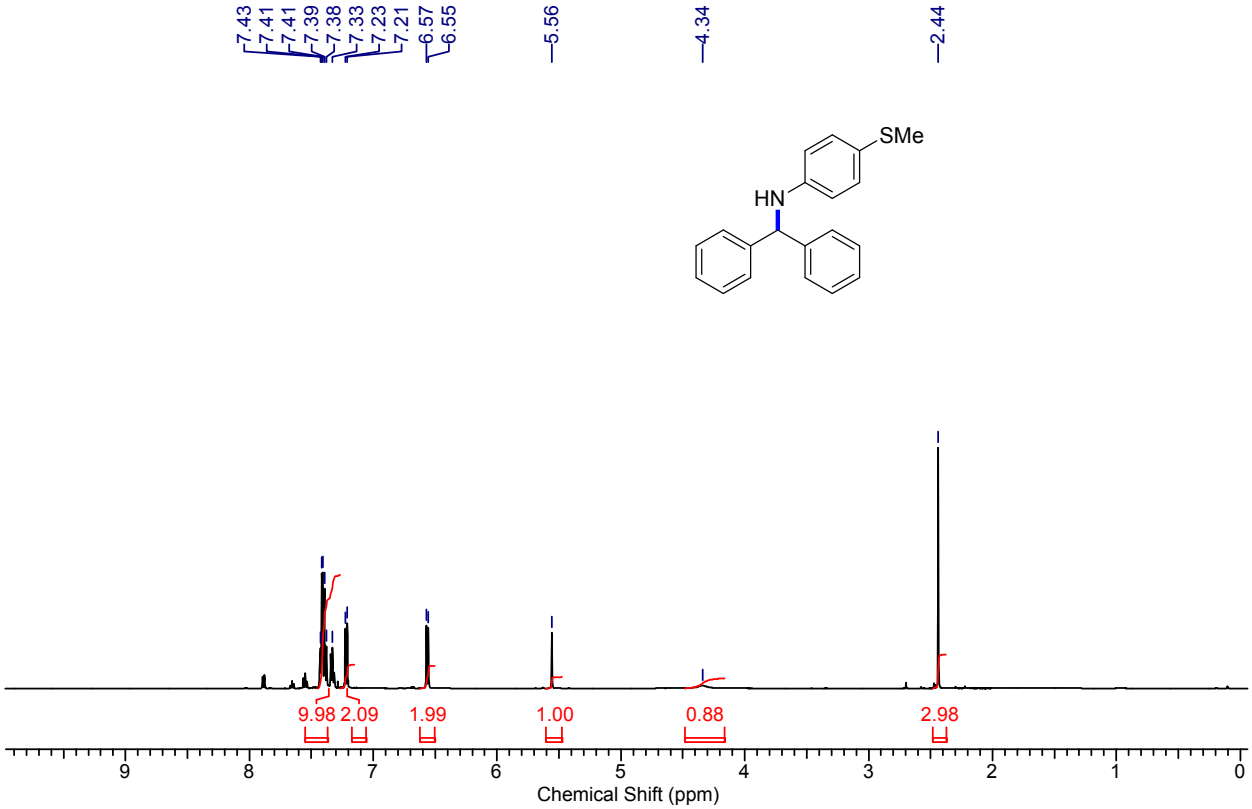

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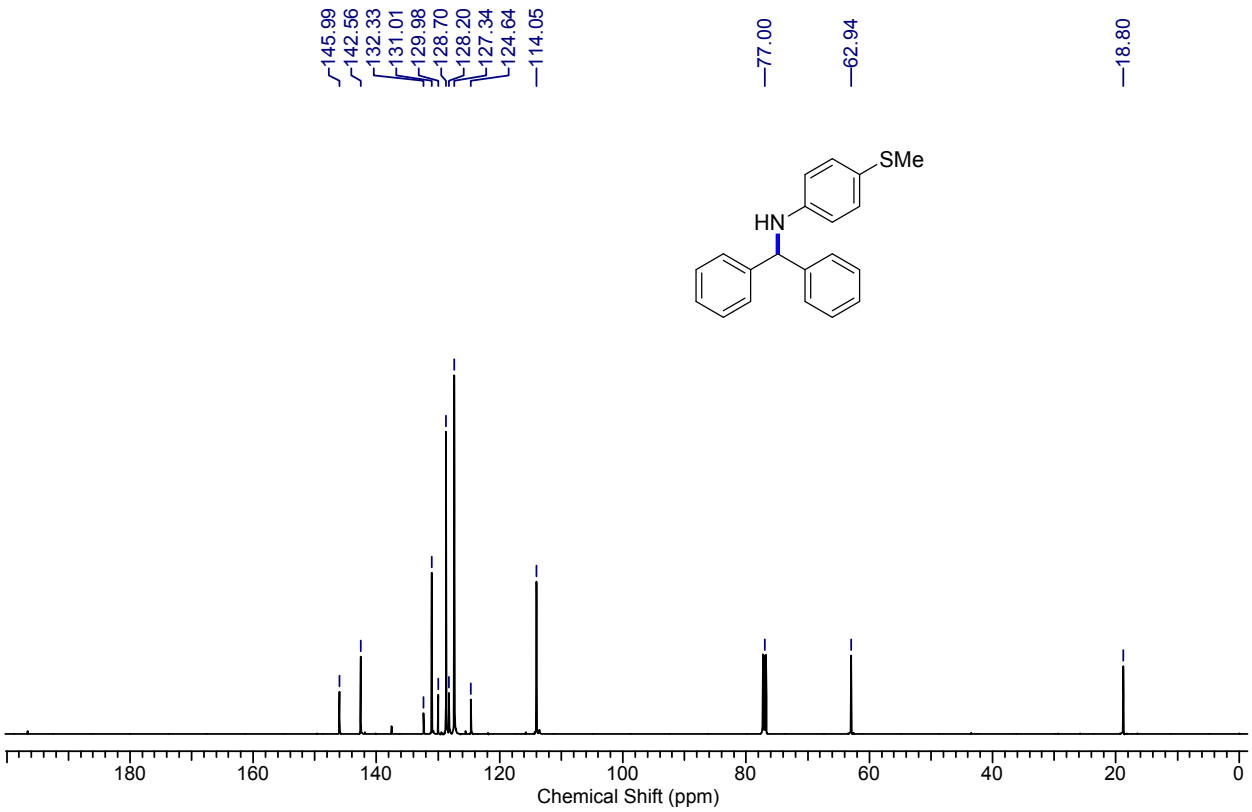

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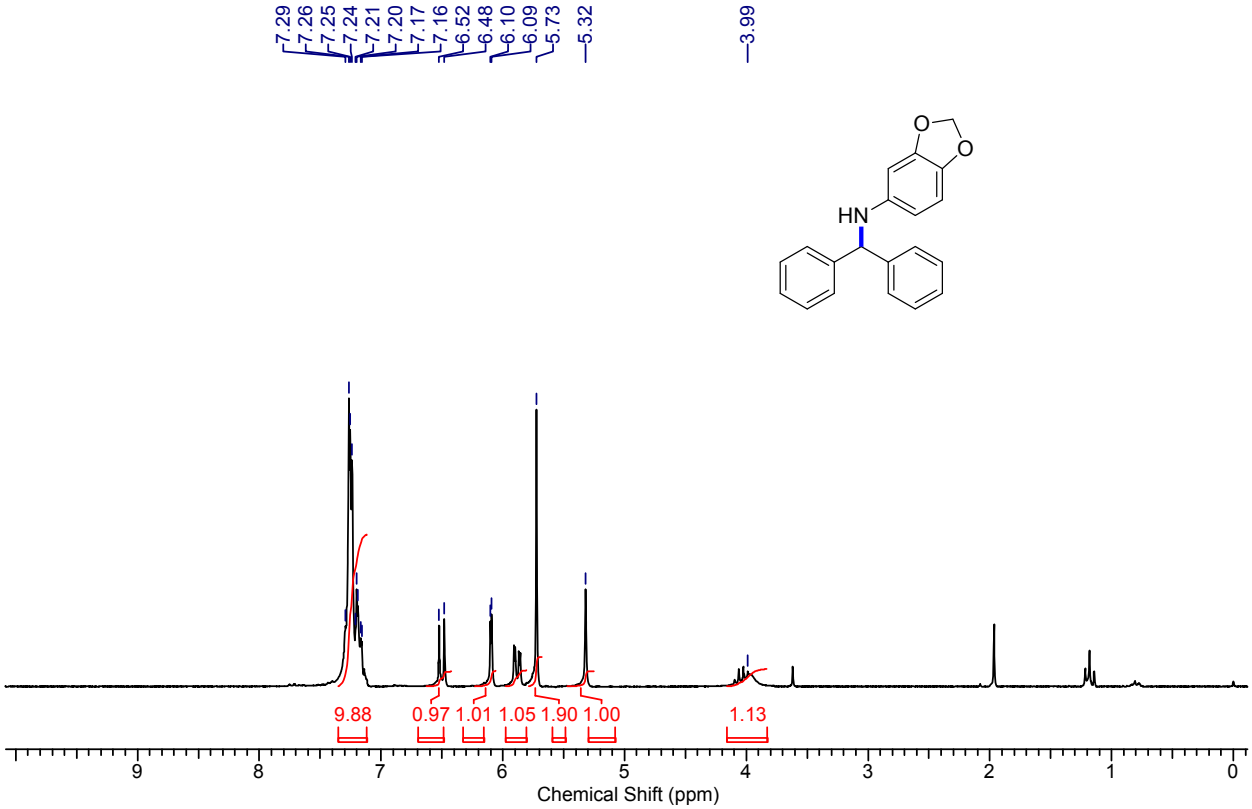

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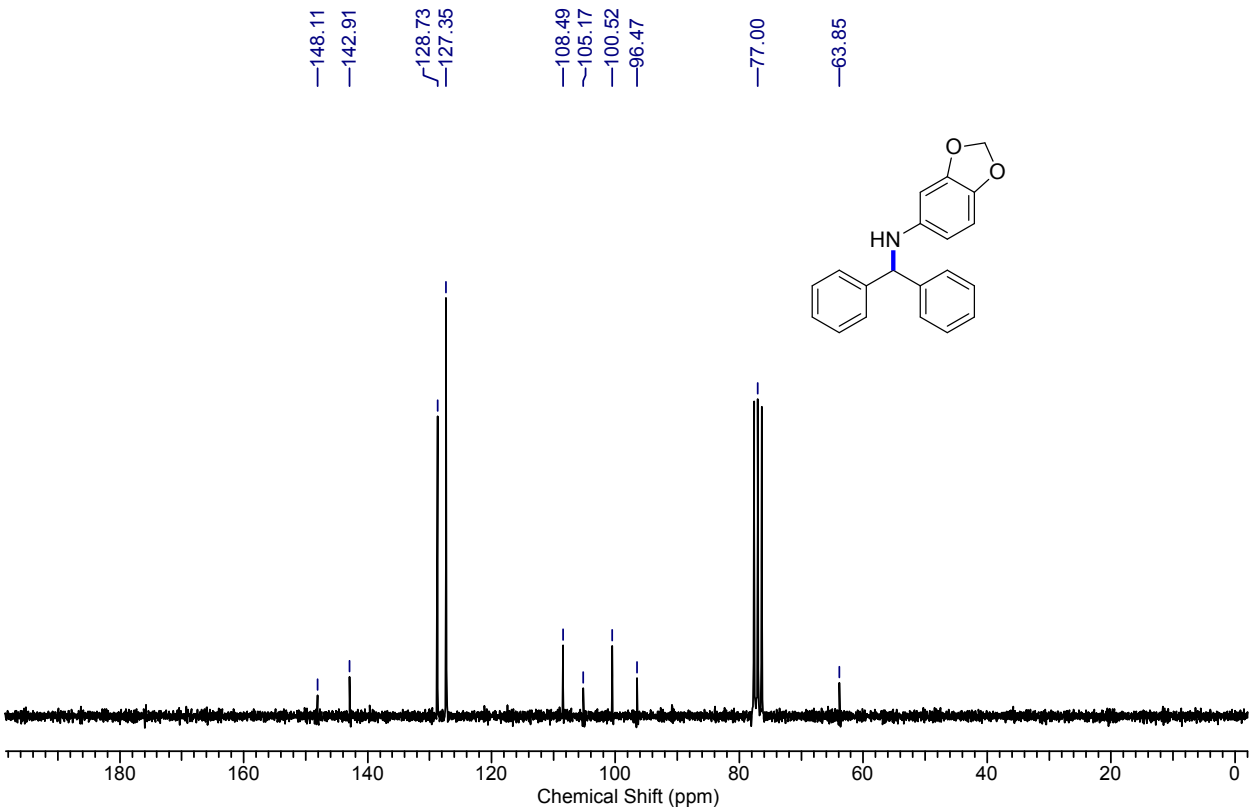

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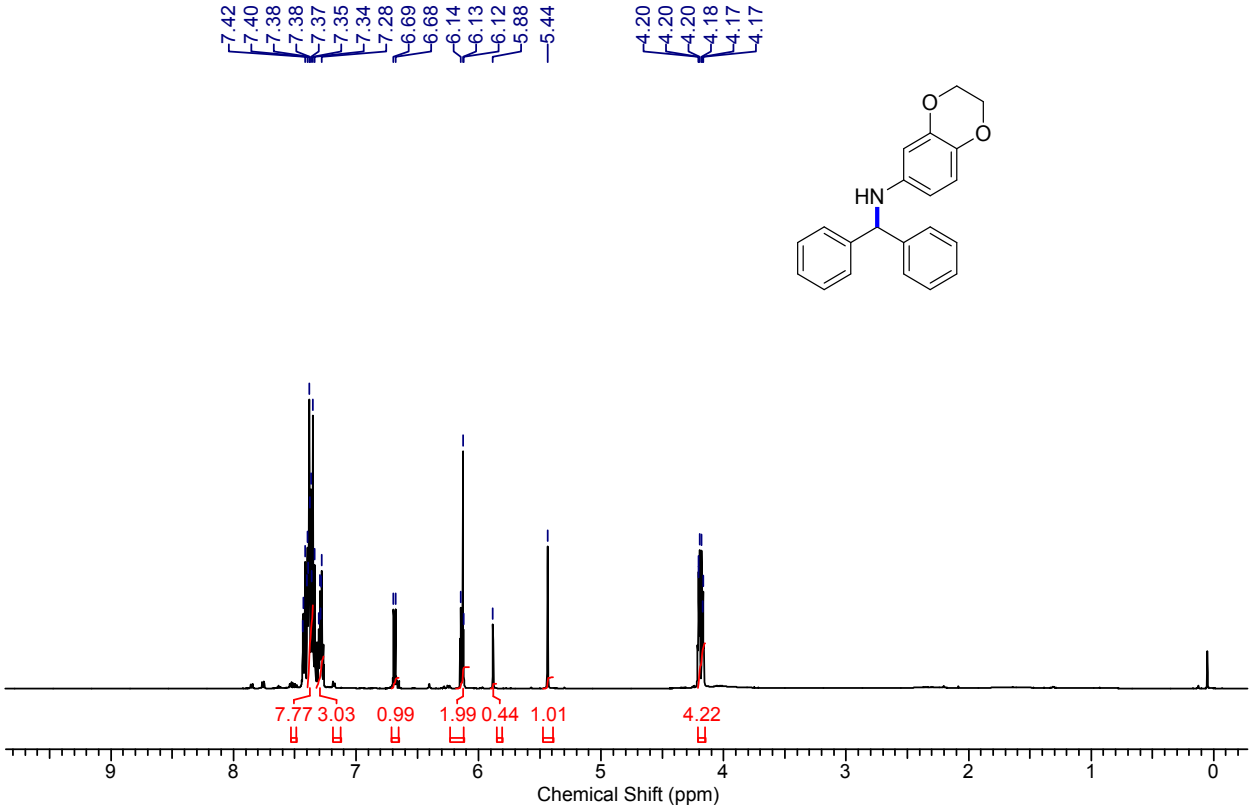

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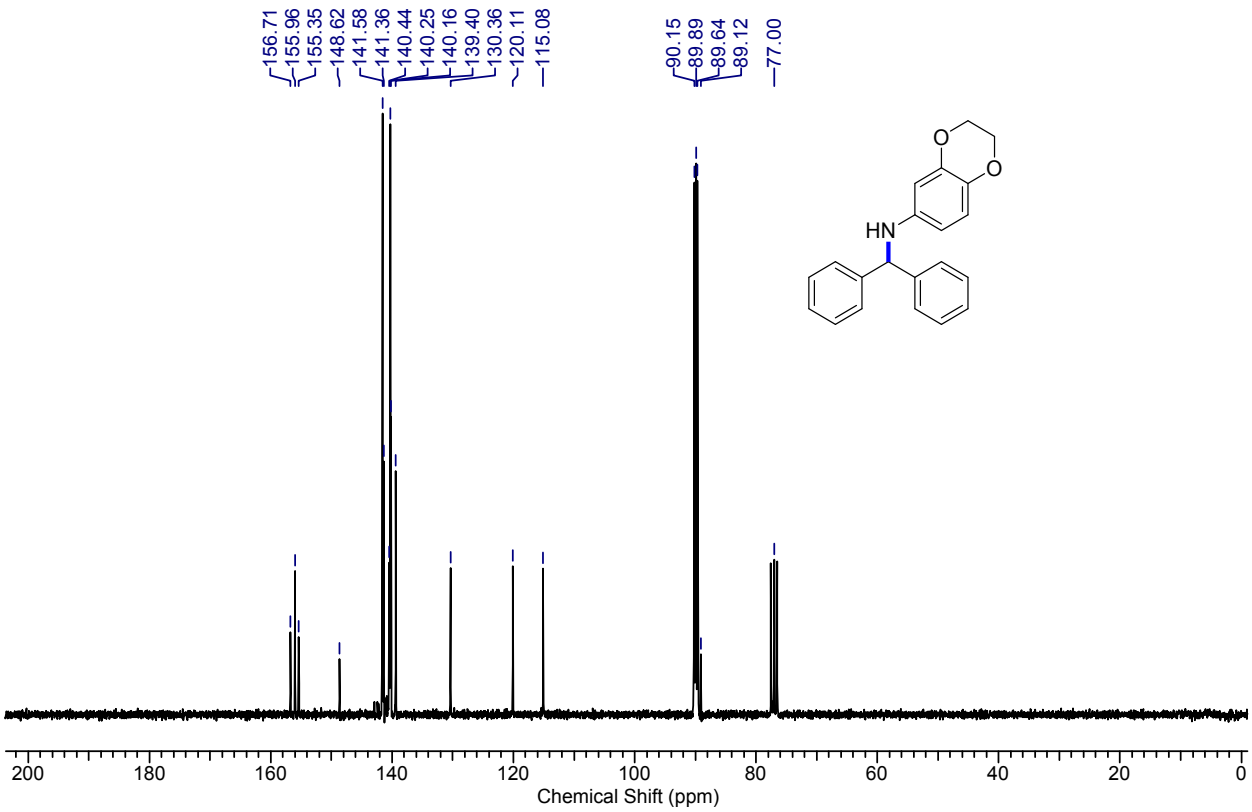

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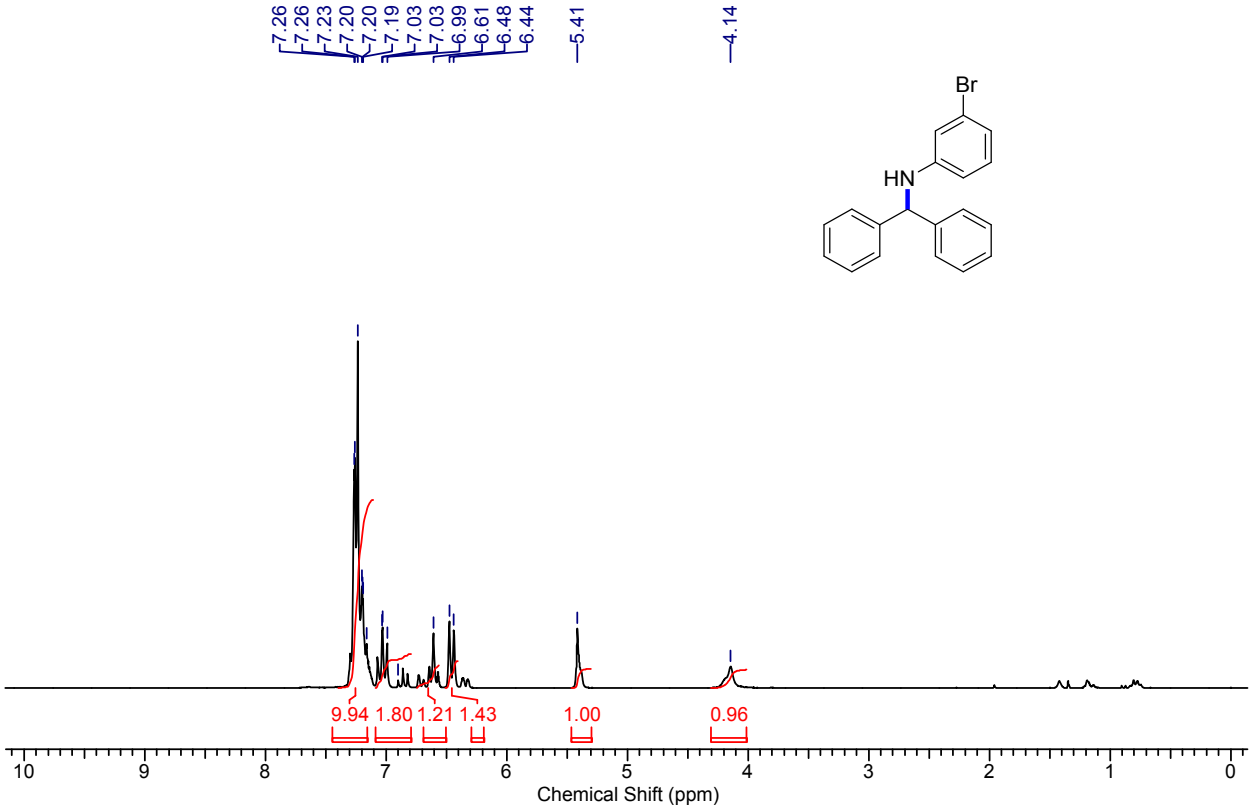

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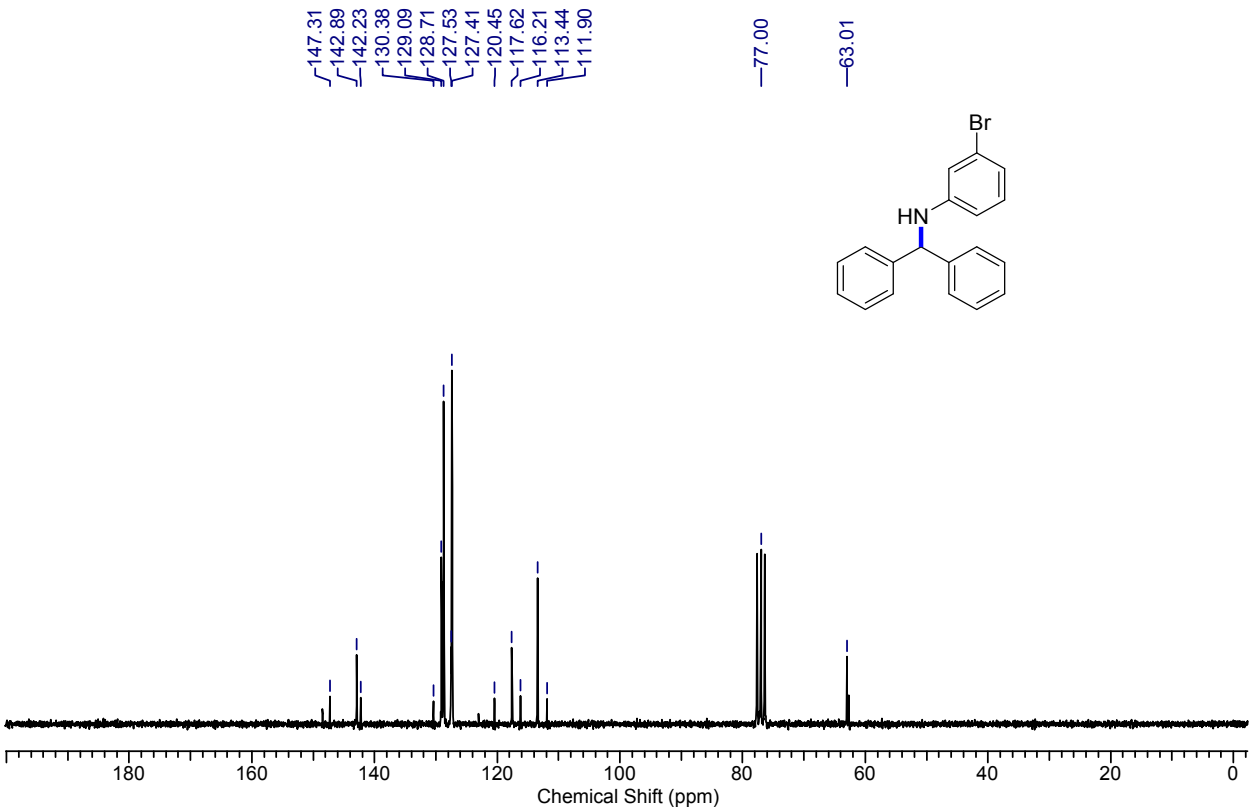

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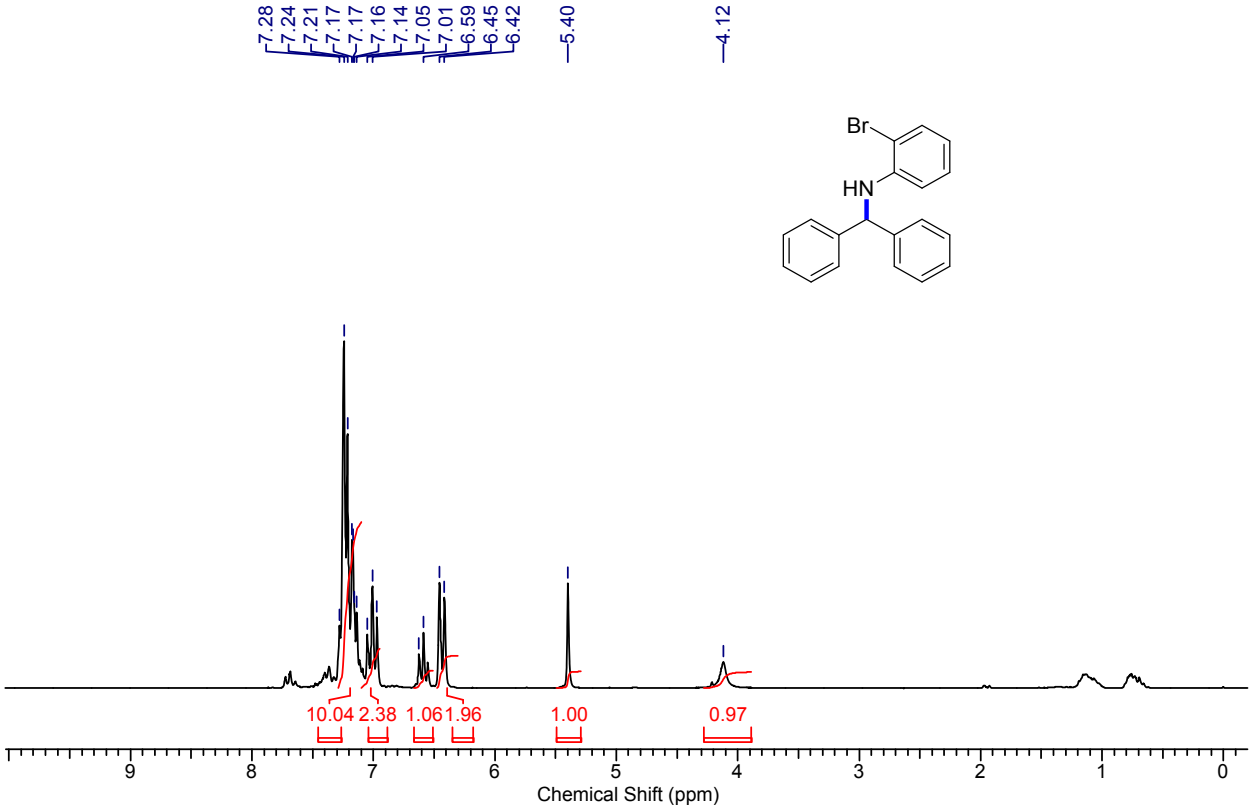

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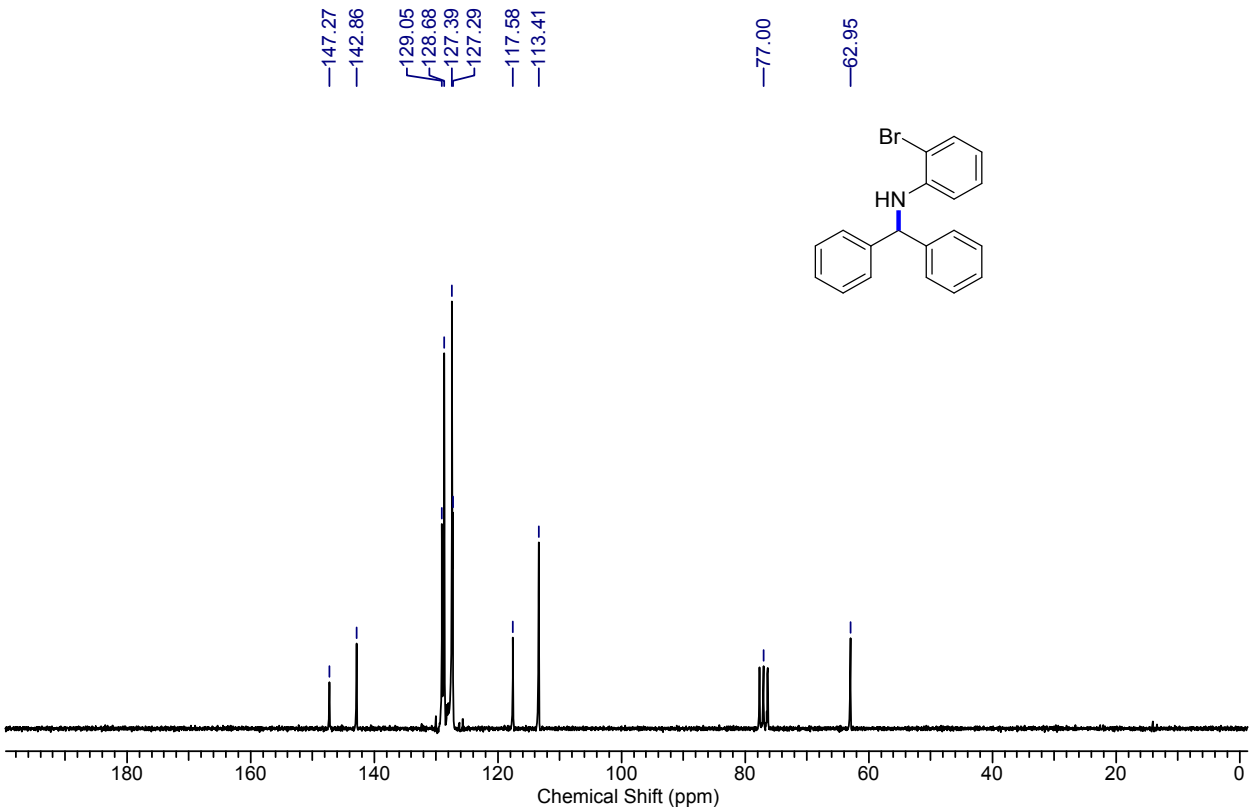

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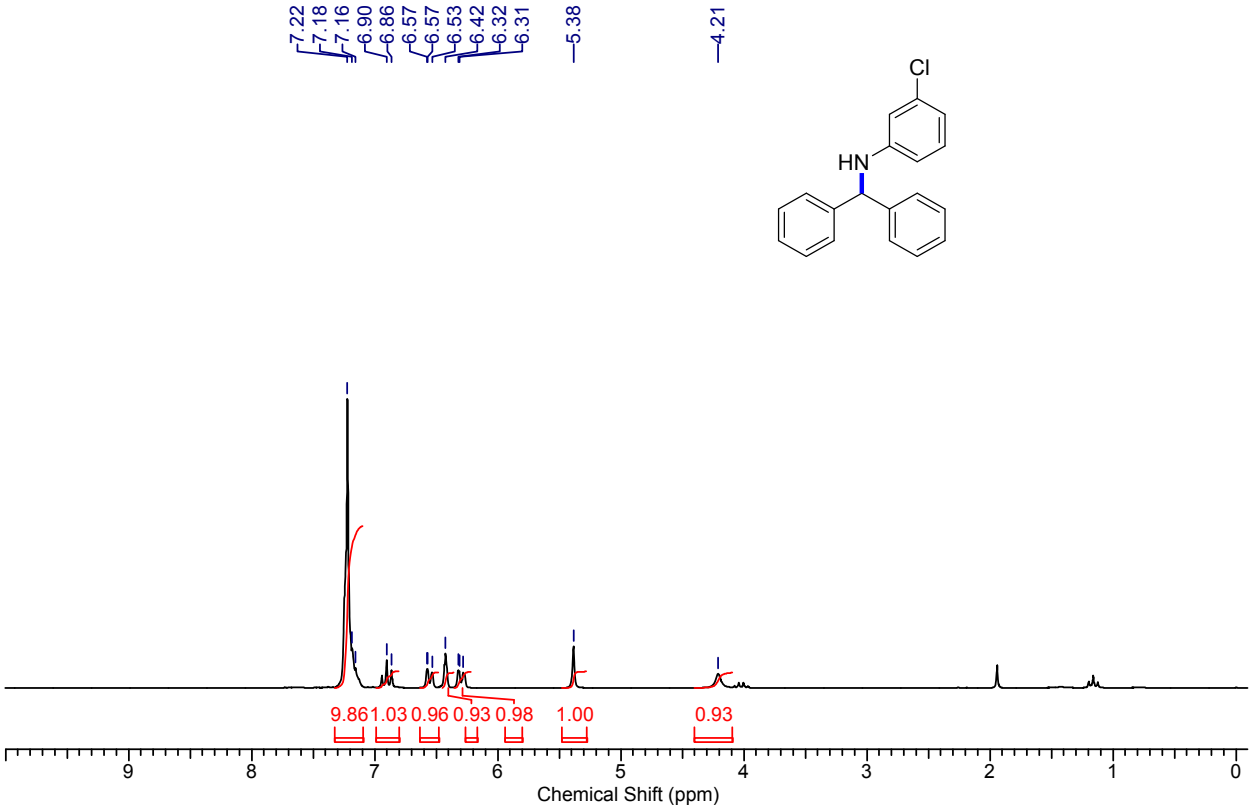

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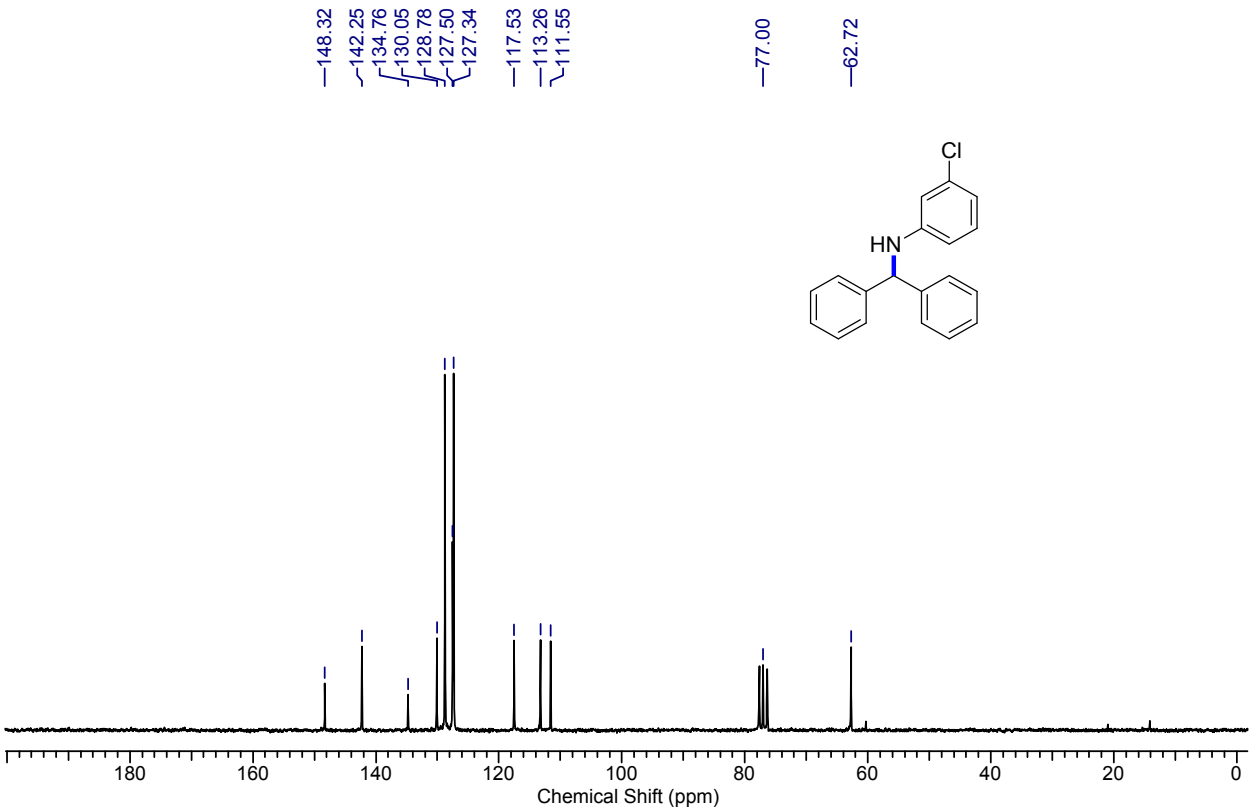
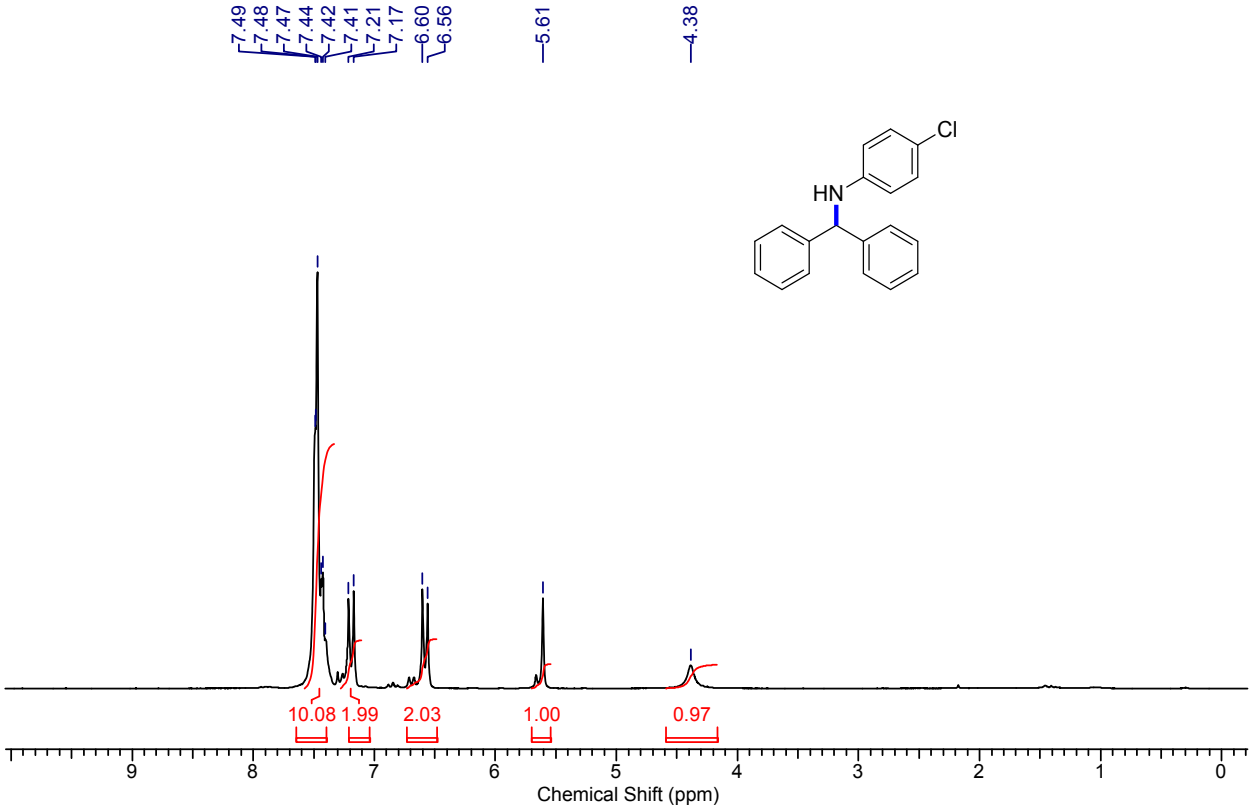
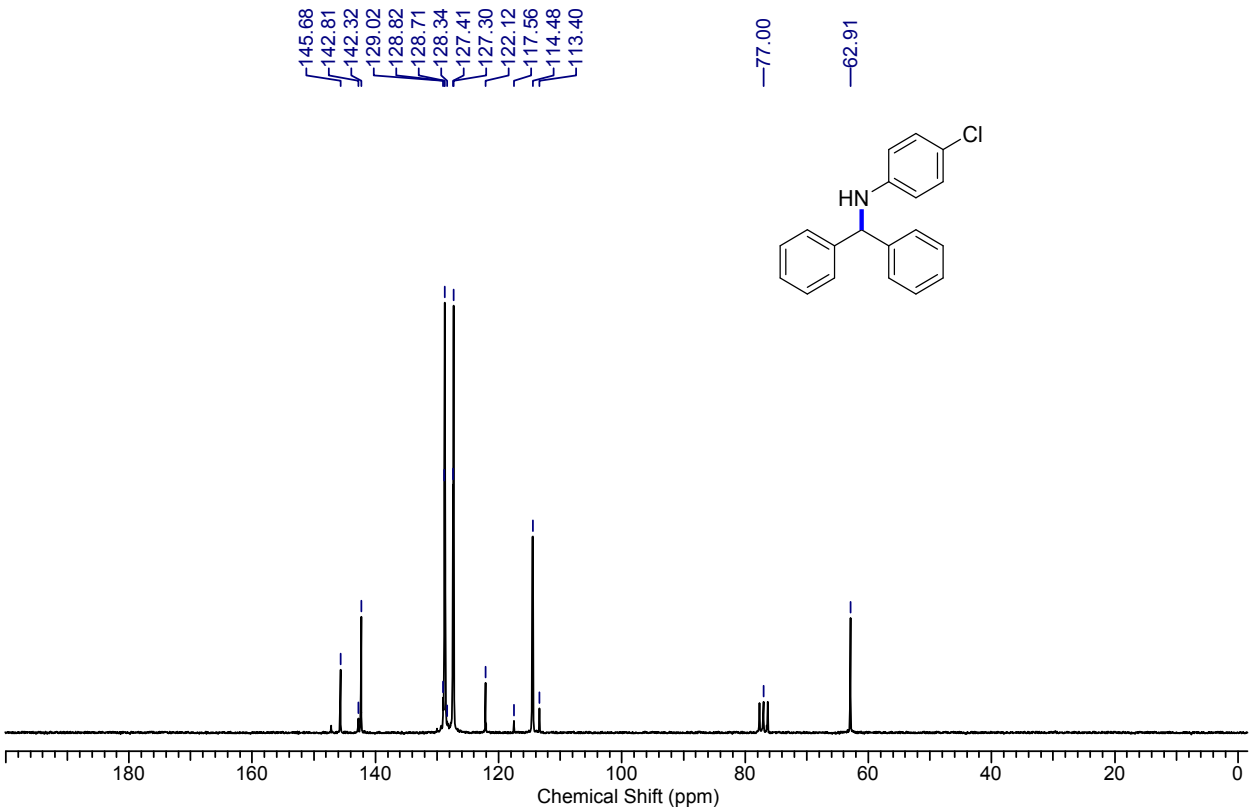


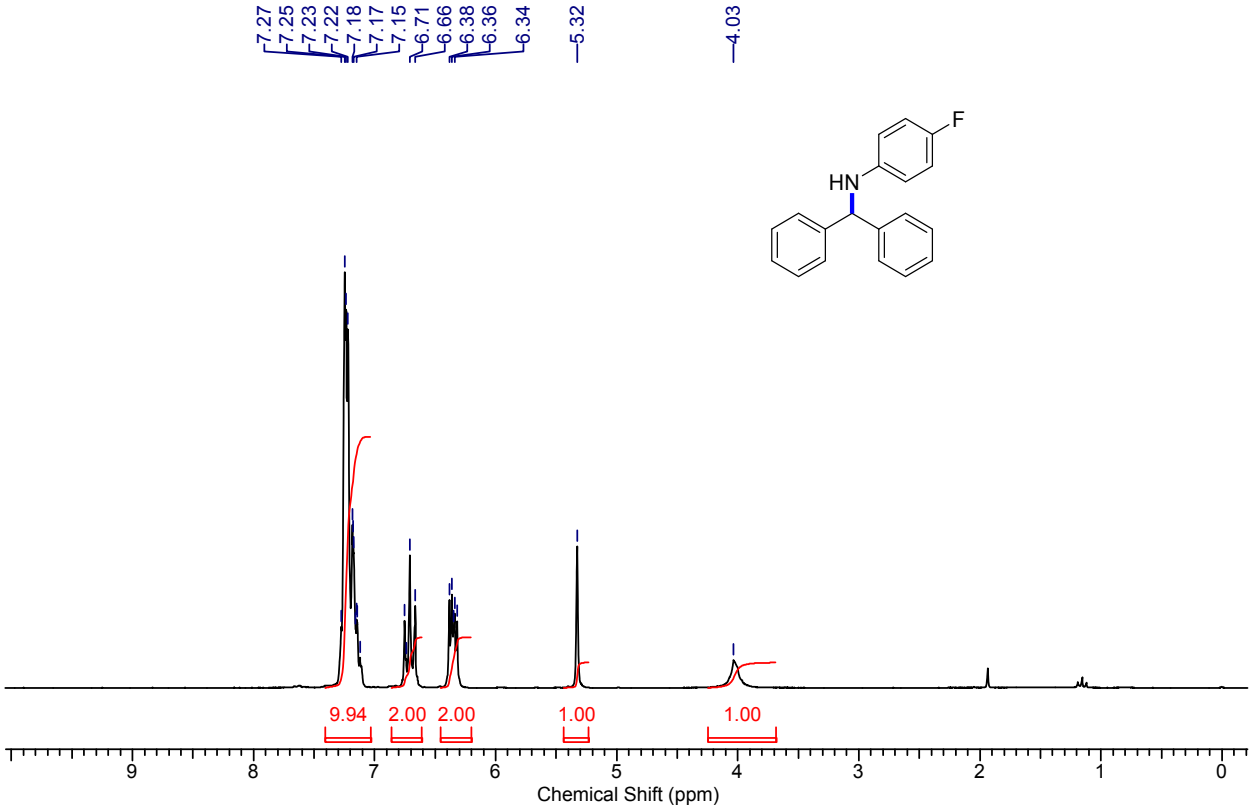
^{13}C NMR of **5o**



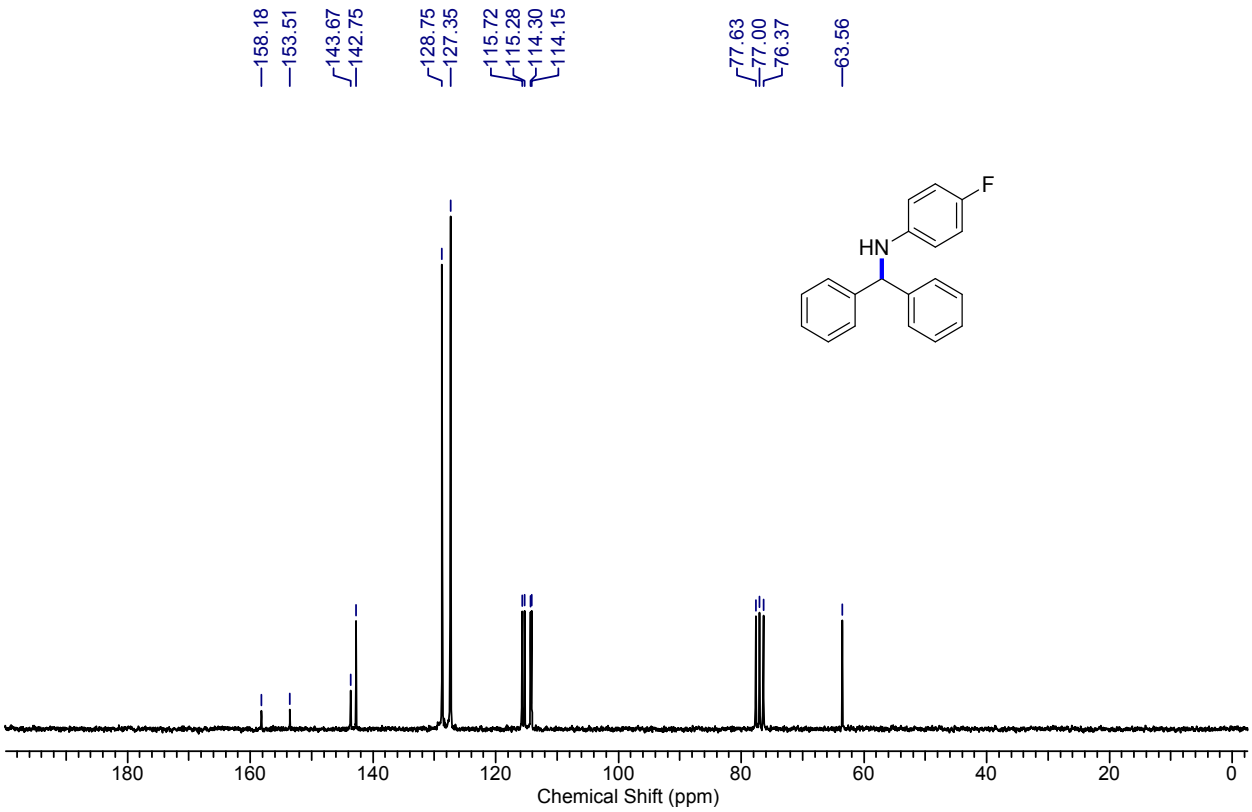
^{1}H NMR of **5p**



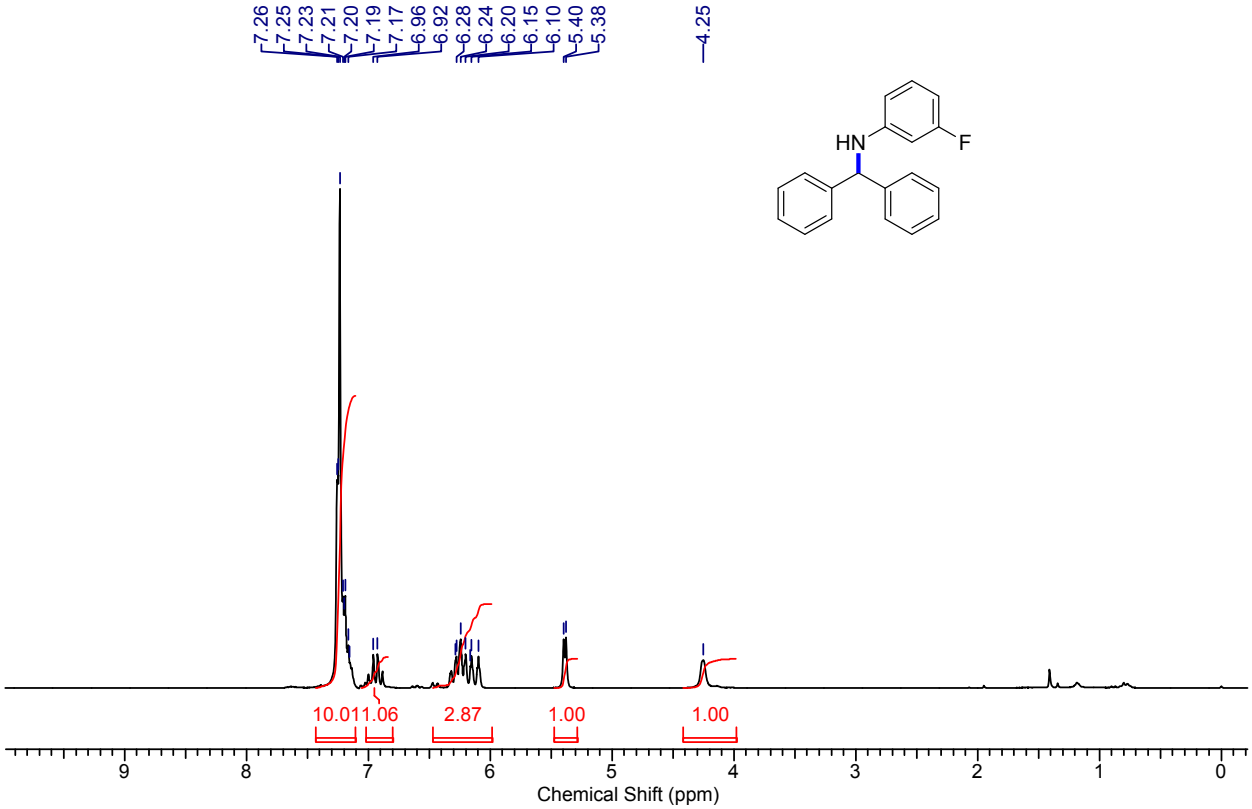
^{13}C NMR of **5p**



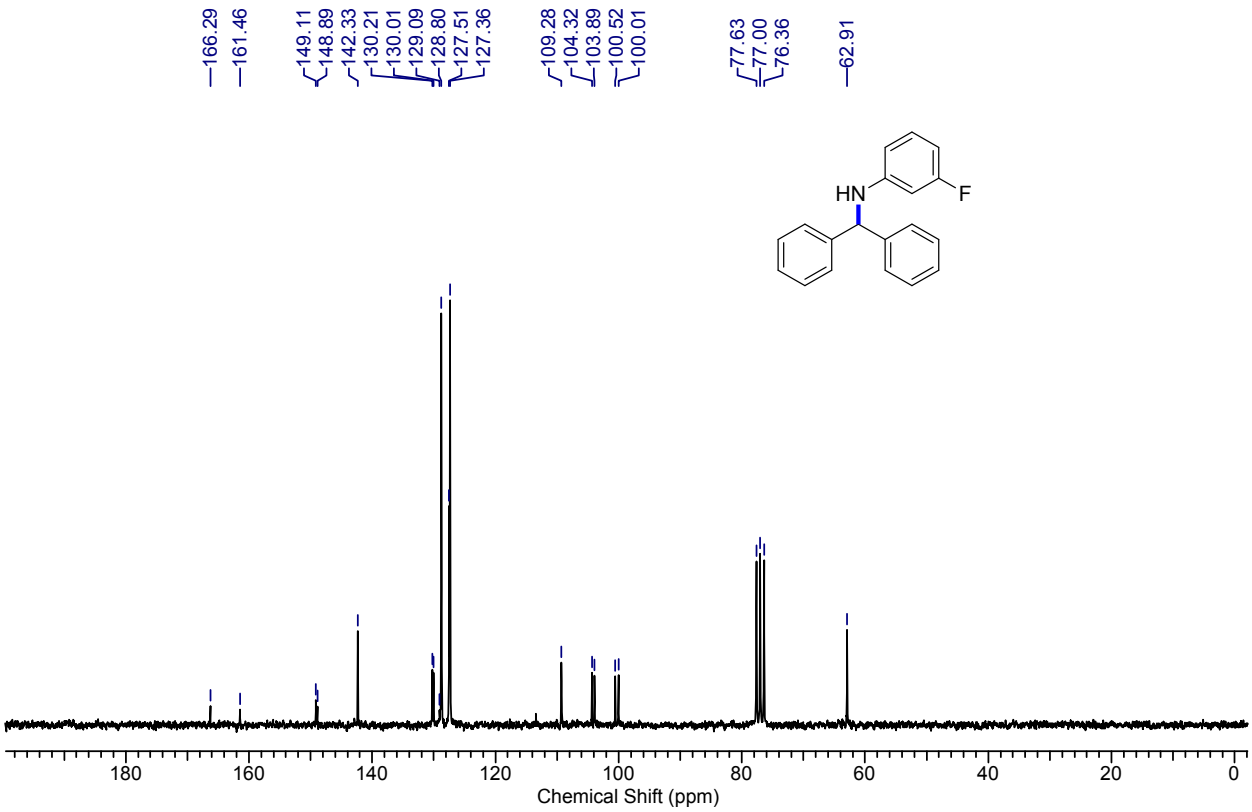
^{1}H NMR of **5q**



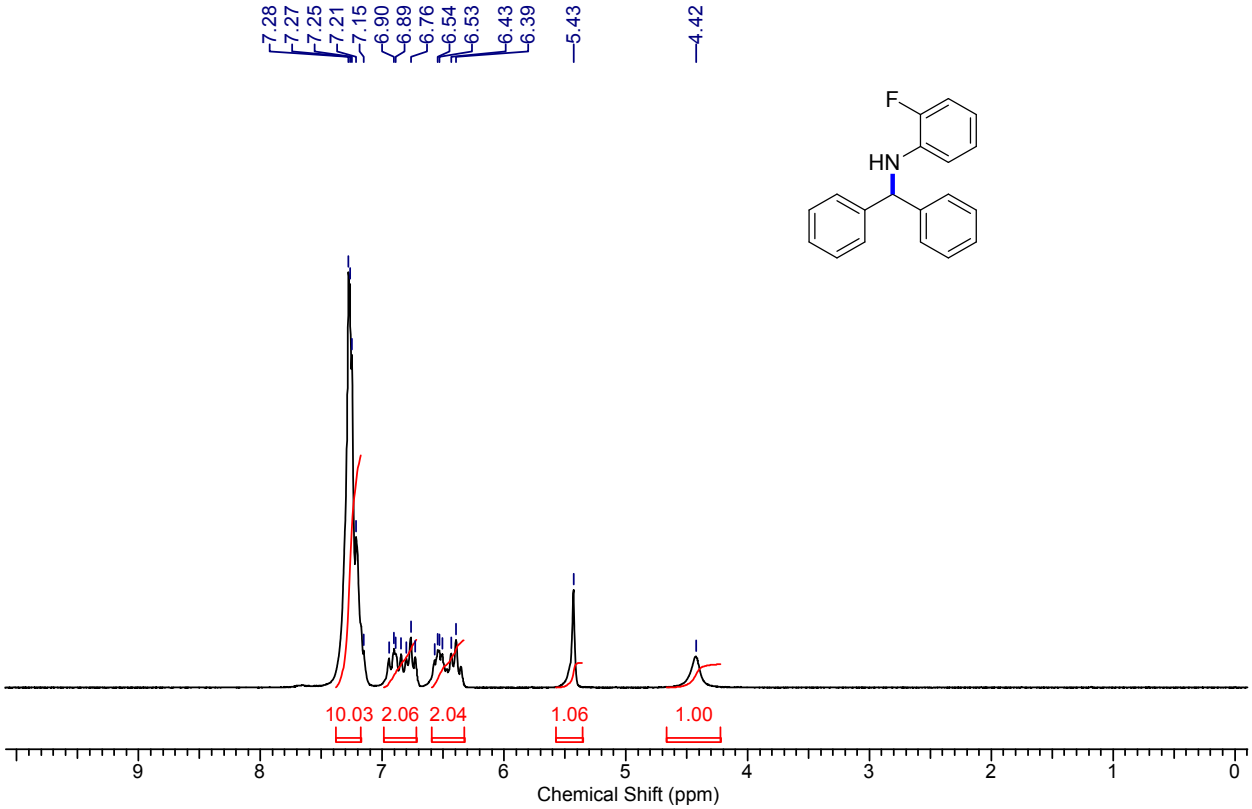
^{13}C NMR of **5q**



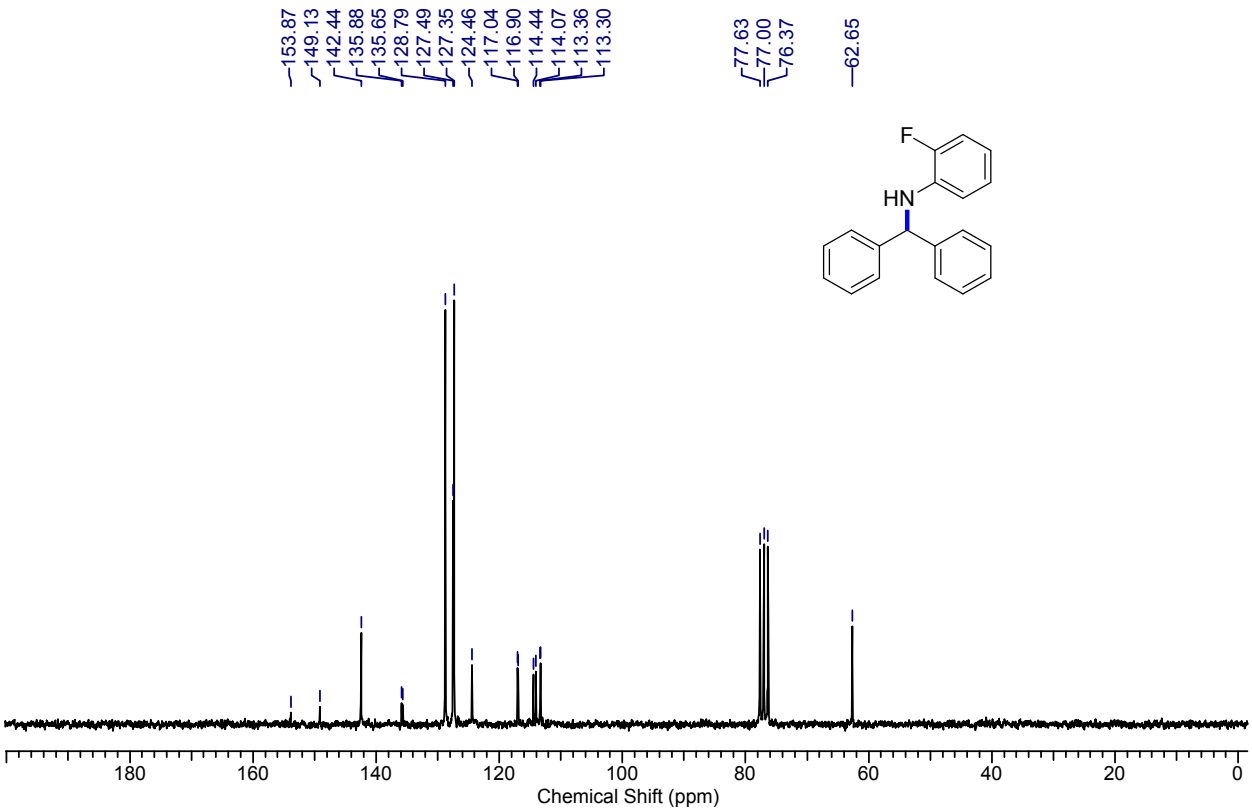
^{1}H NMR of **5r**



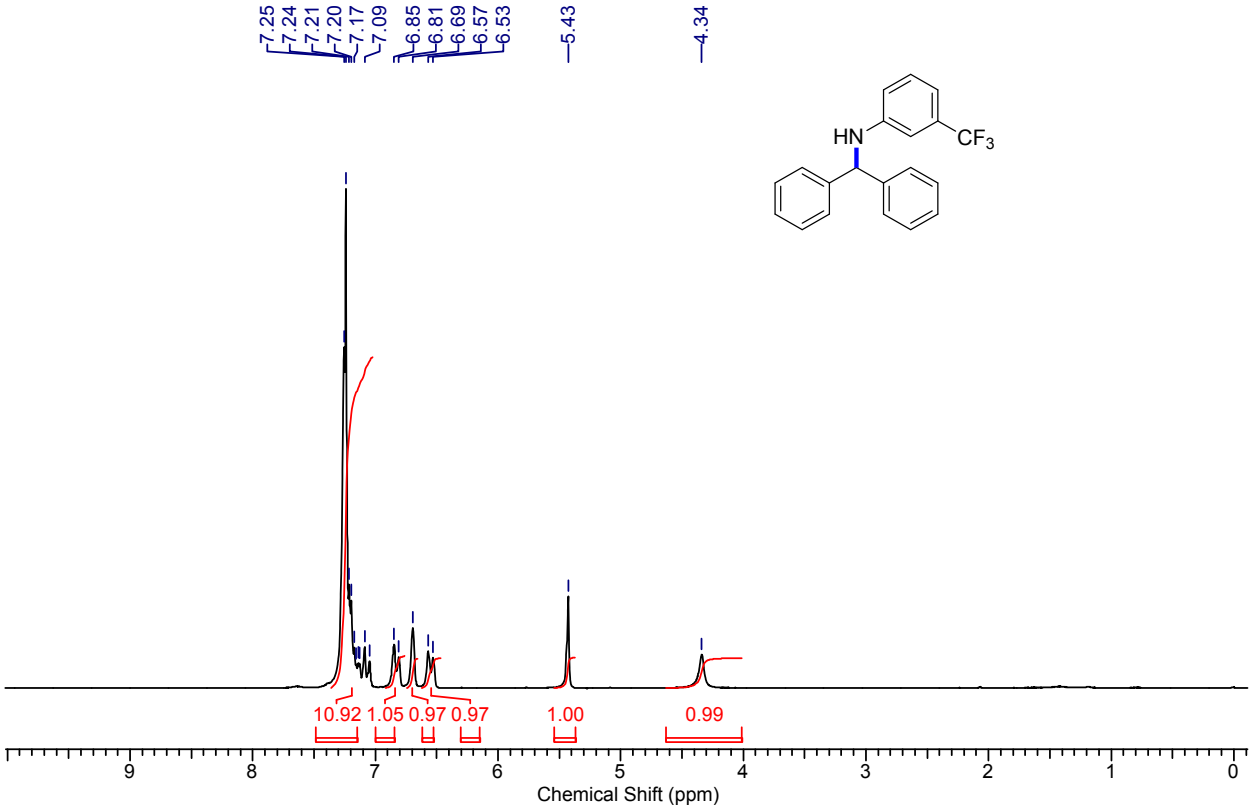
^{13}C NMR of **5r**



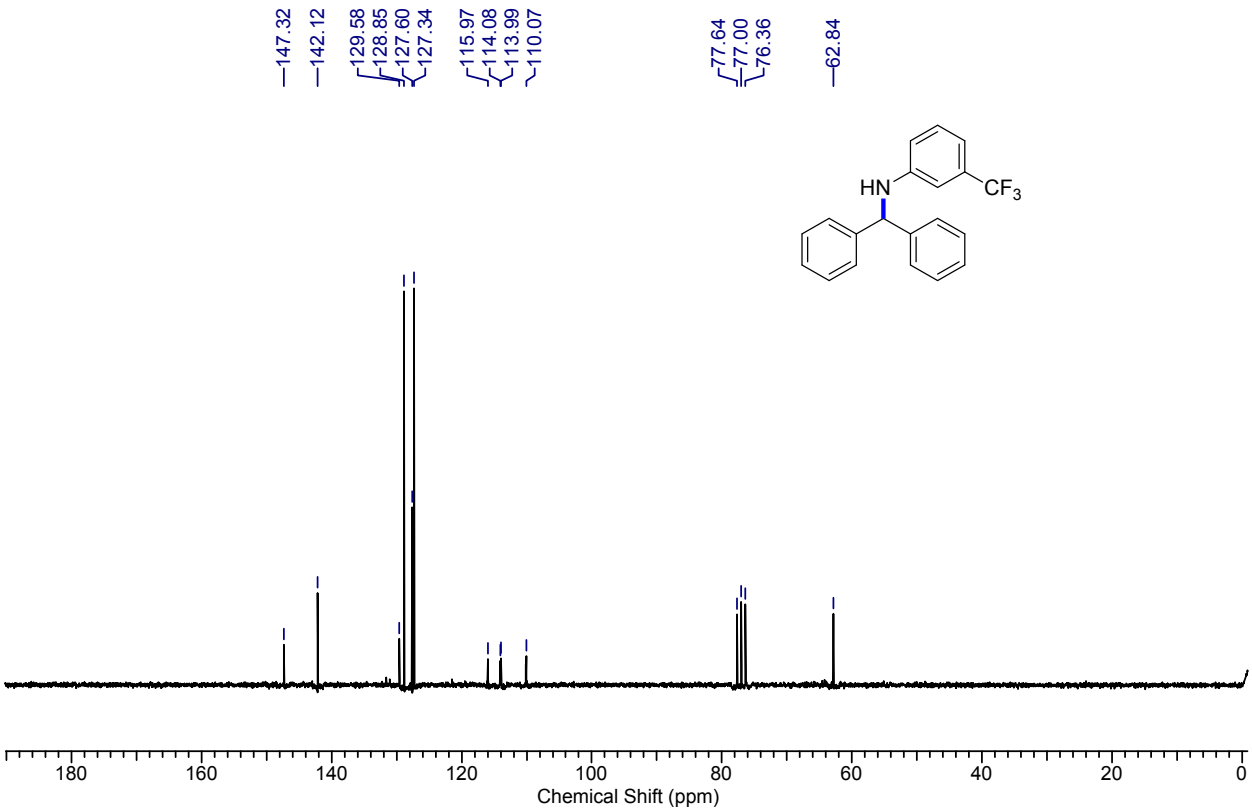
^{1}H NMR of **5s**



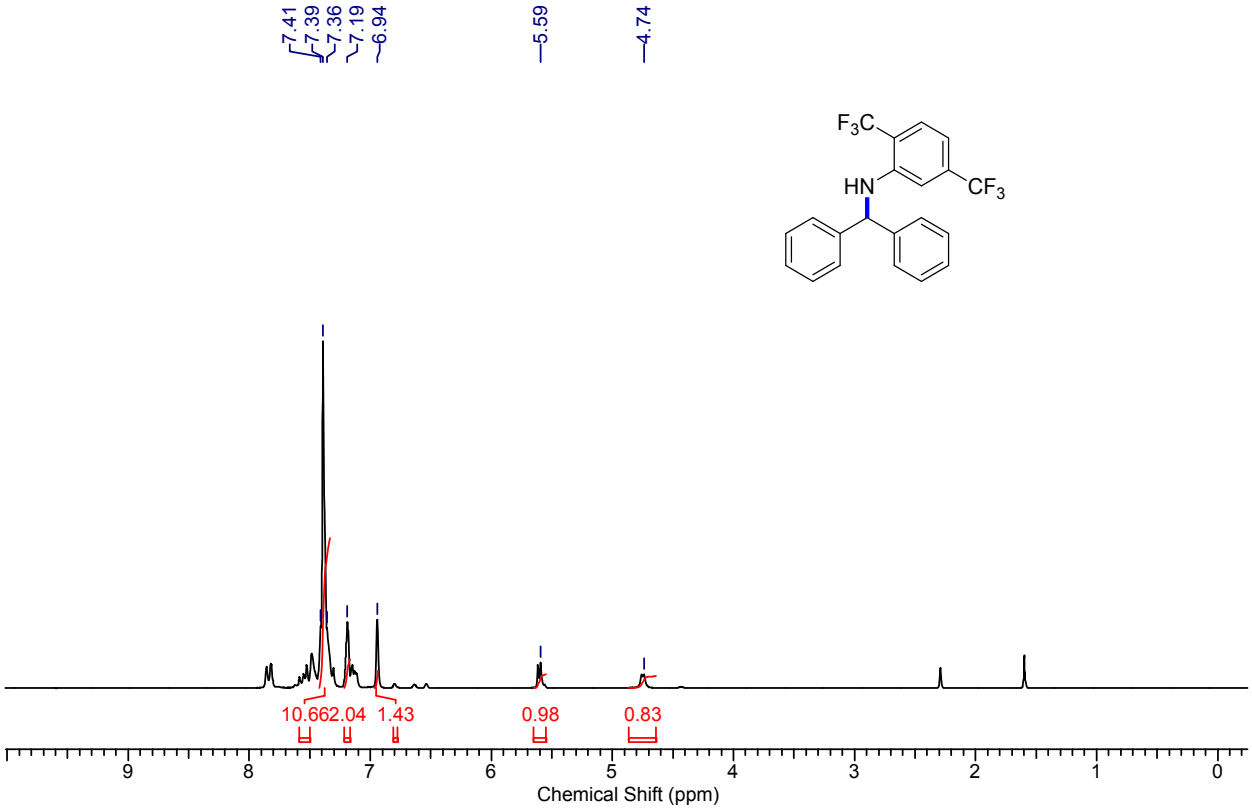
^{13}C NMR of **5s**



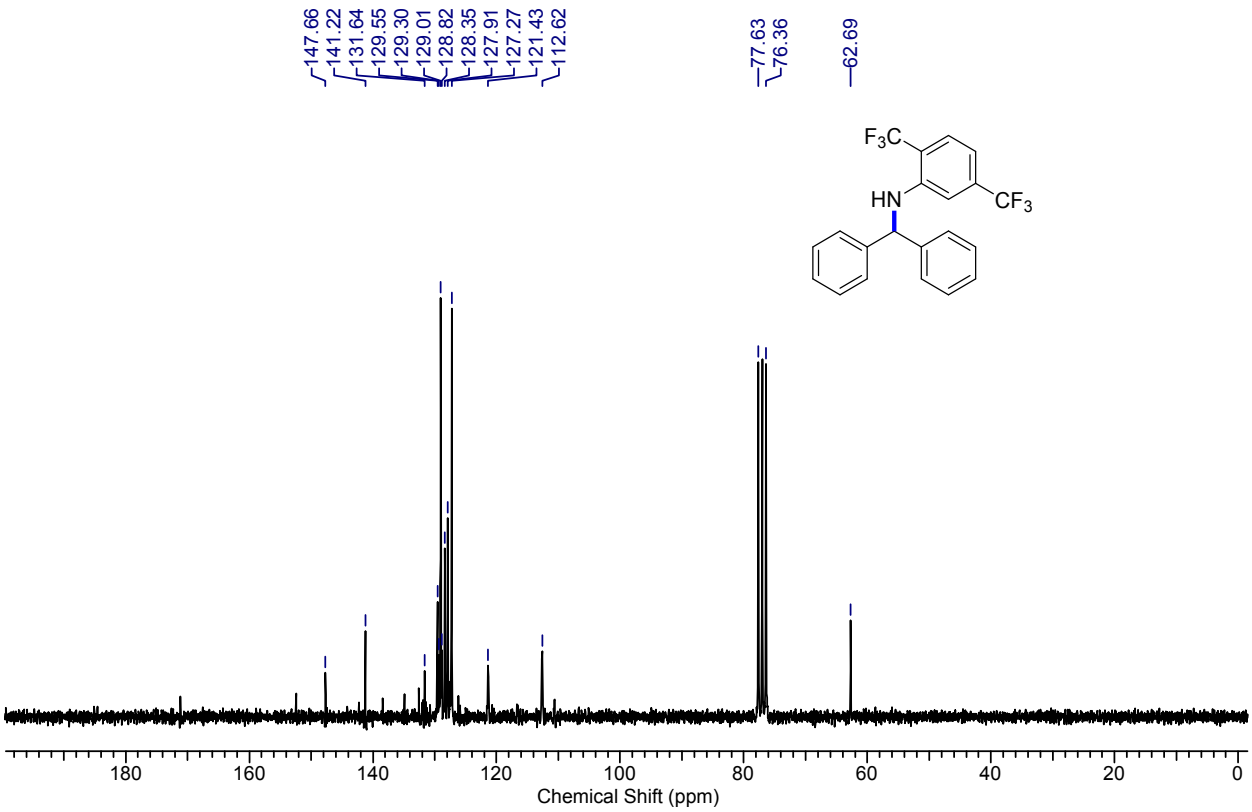
^{1}H NMR of **5t**



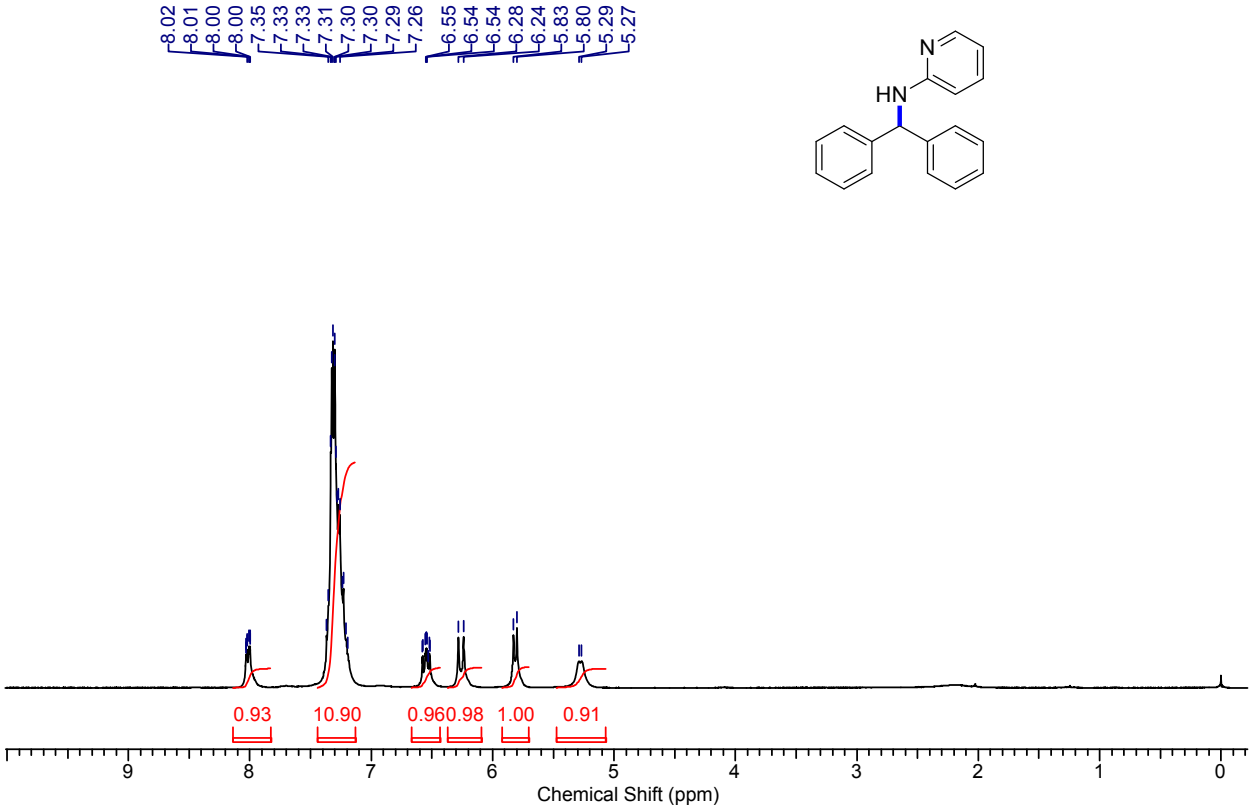
^{13}C NMR of **5t**



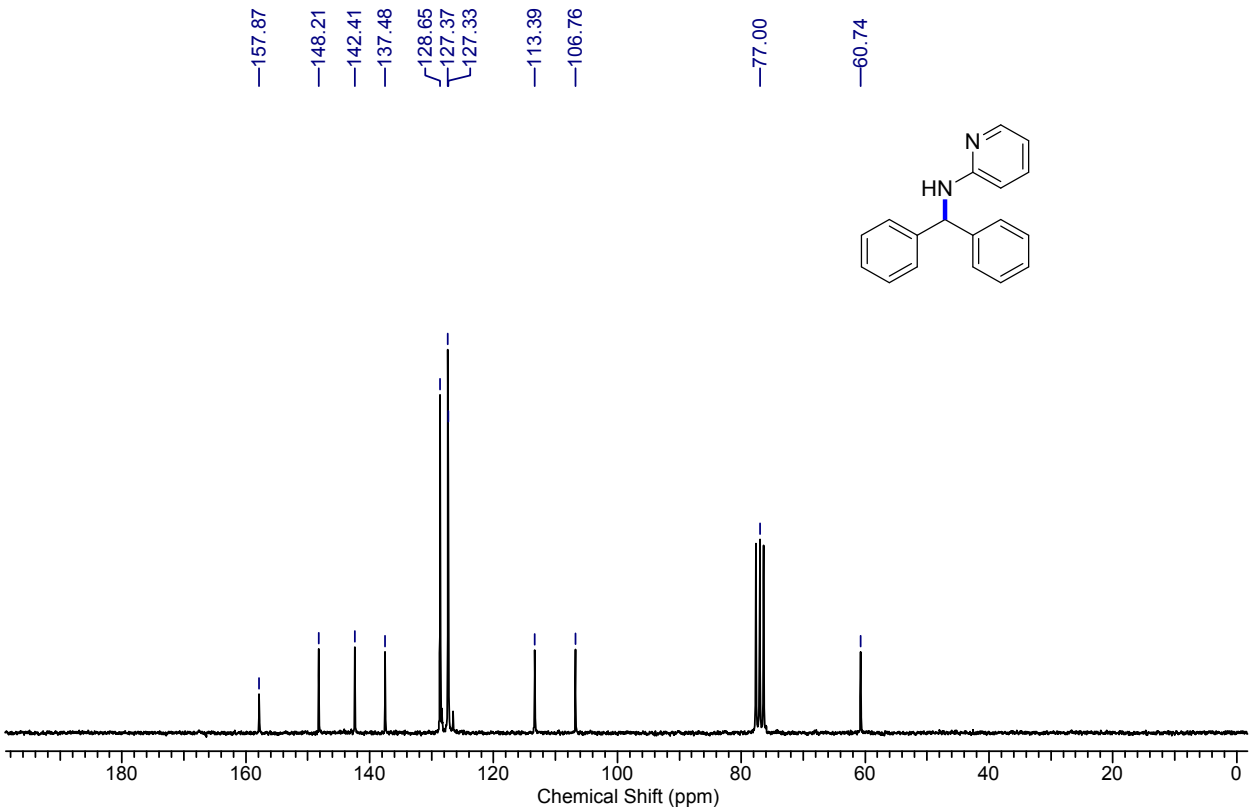
^{1}H NMR of **5u**



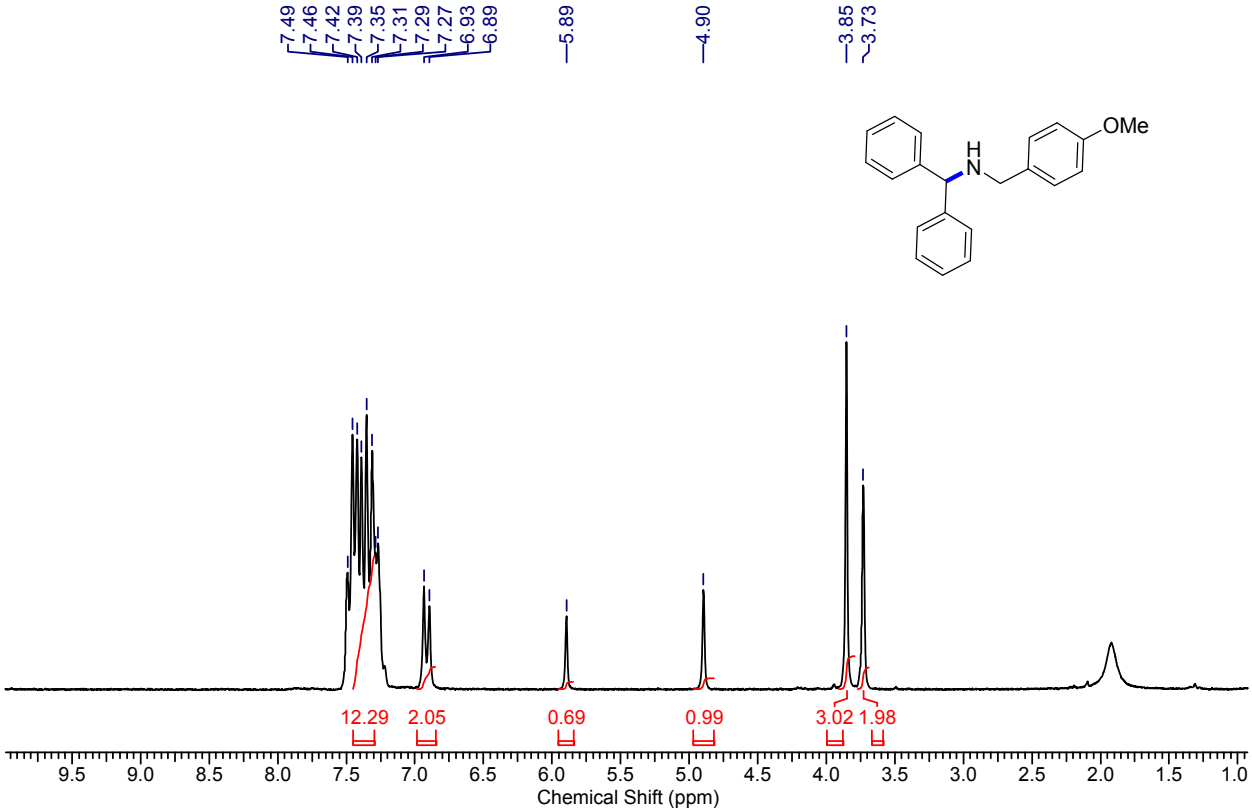
^{13}C NMR of **5u**



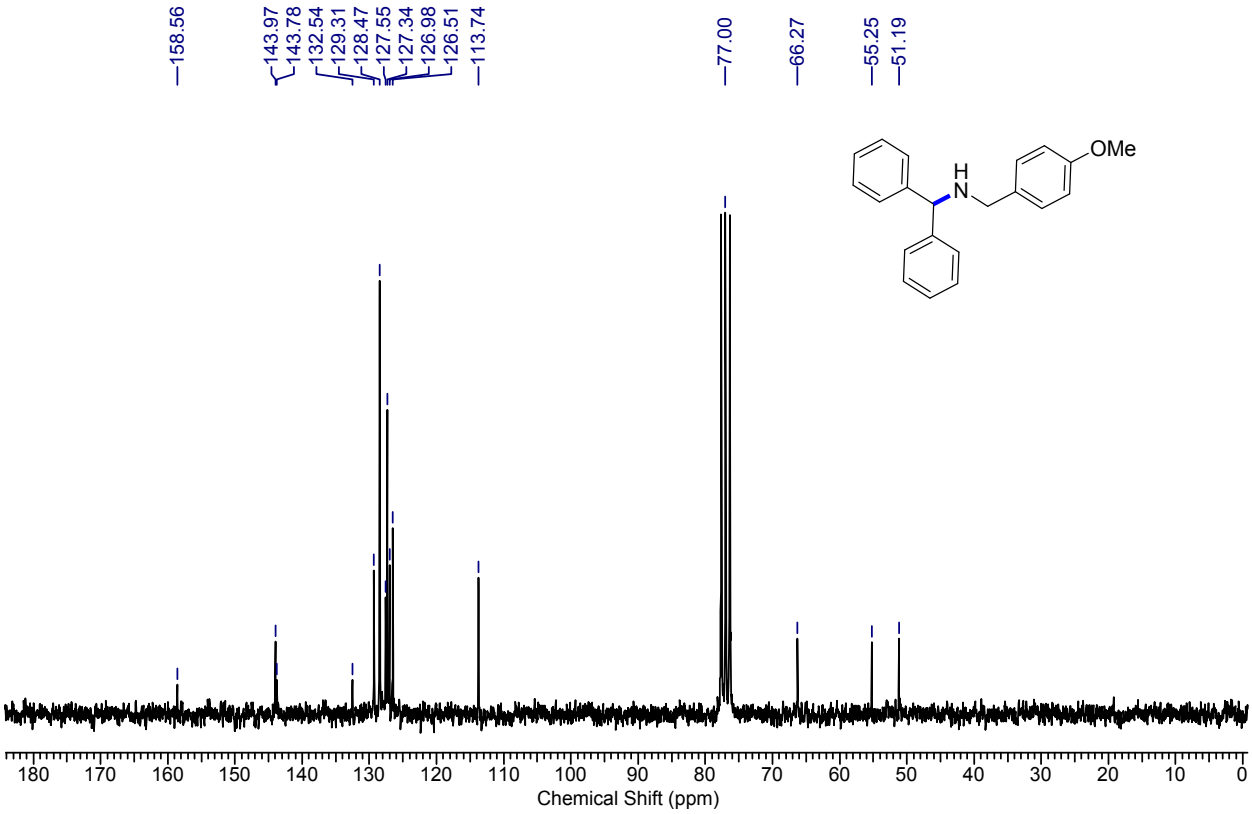
^{1}H NMR of **5w**



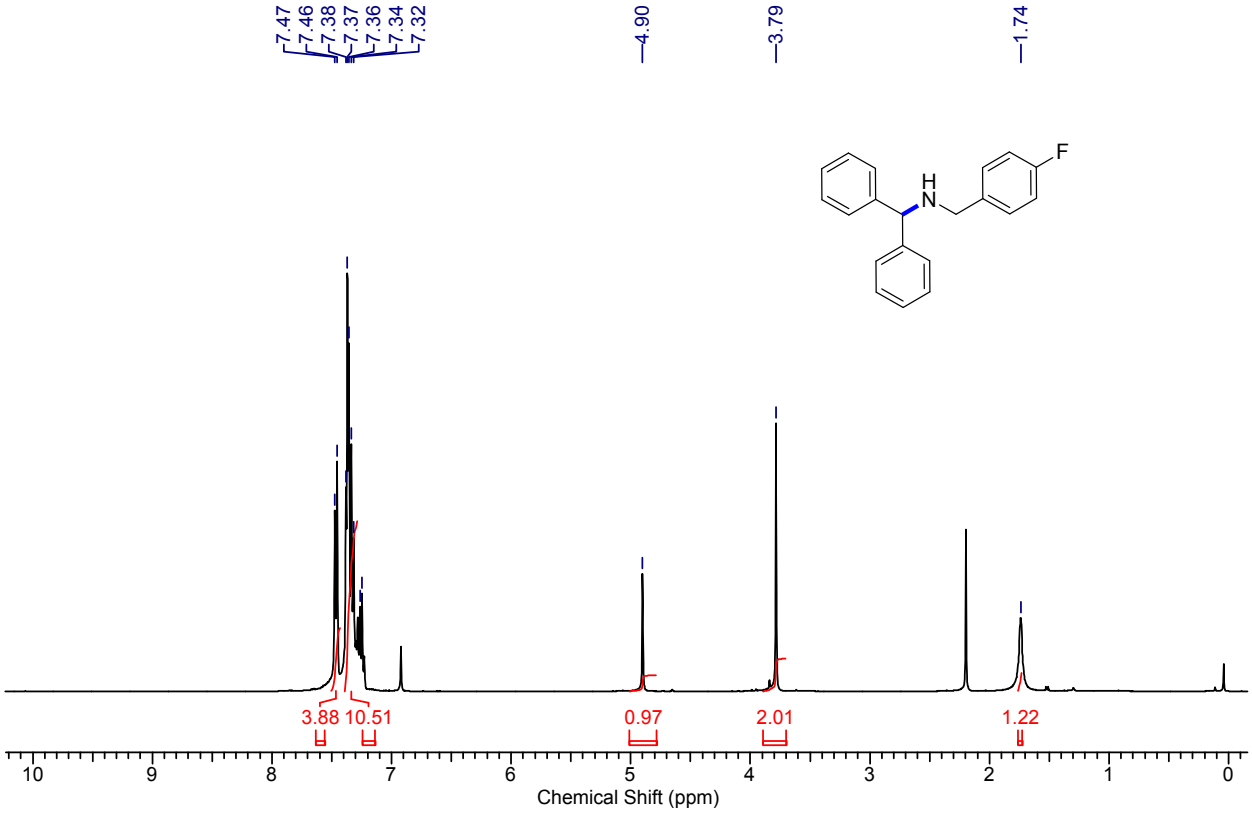
^{13}C NMR of **5w**



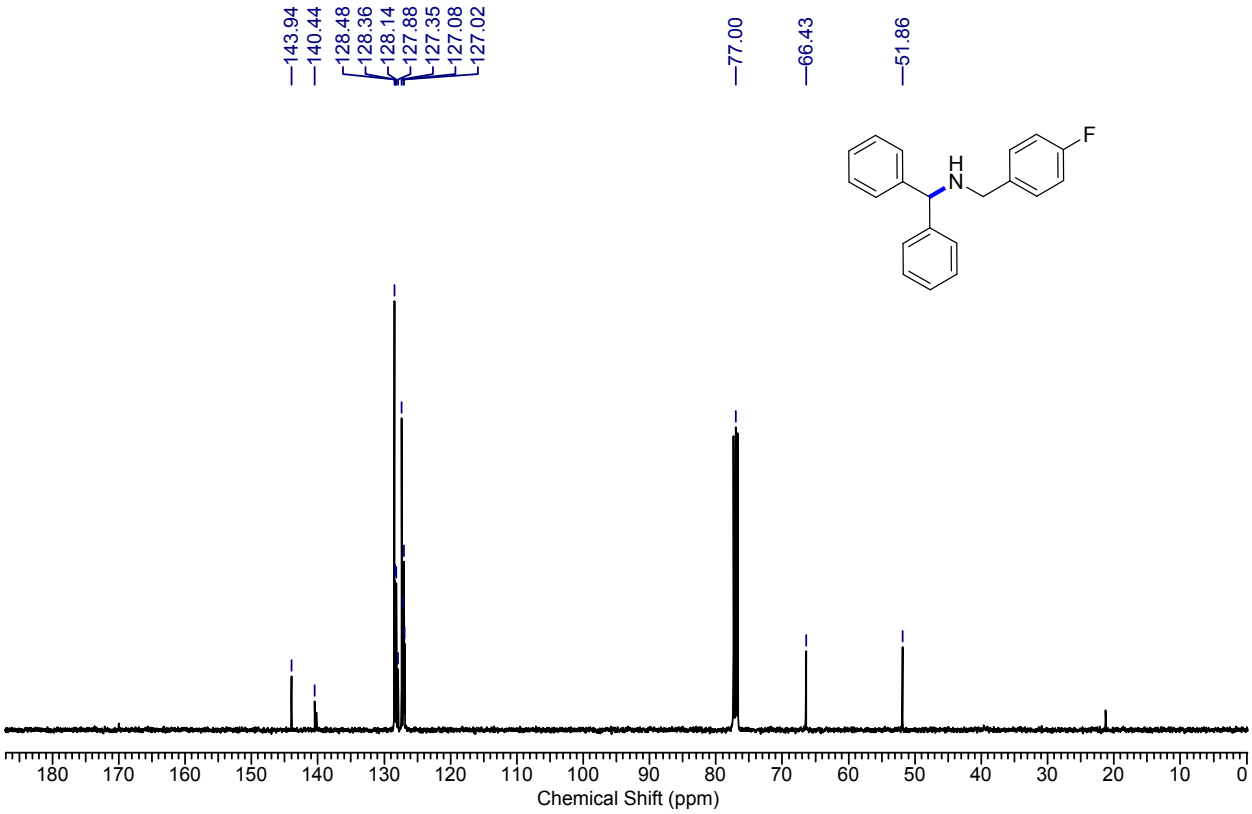
^{1}H NMR of **7a**



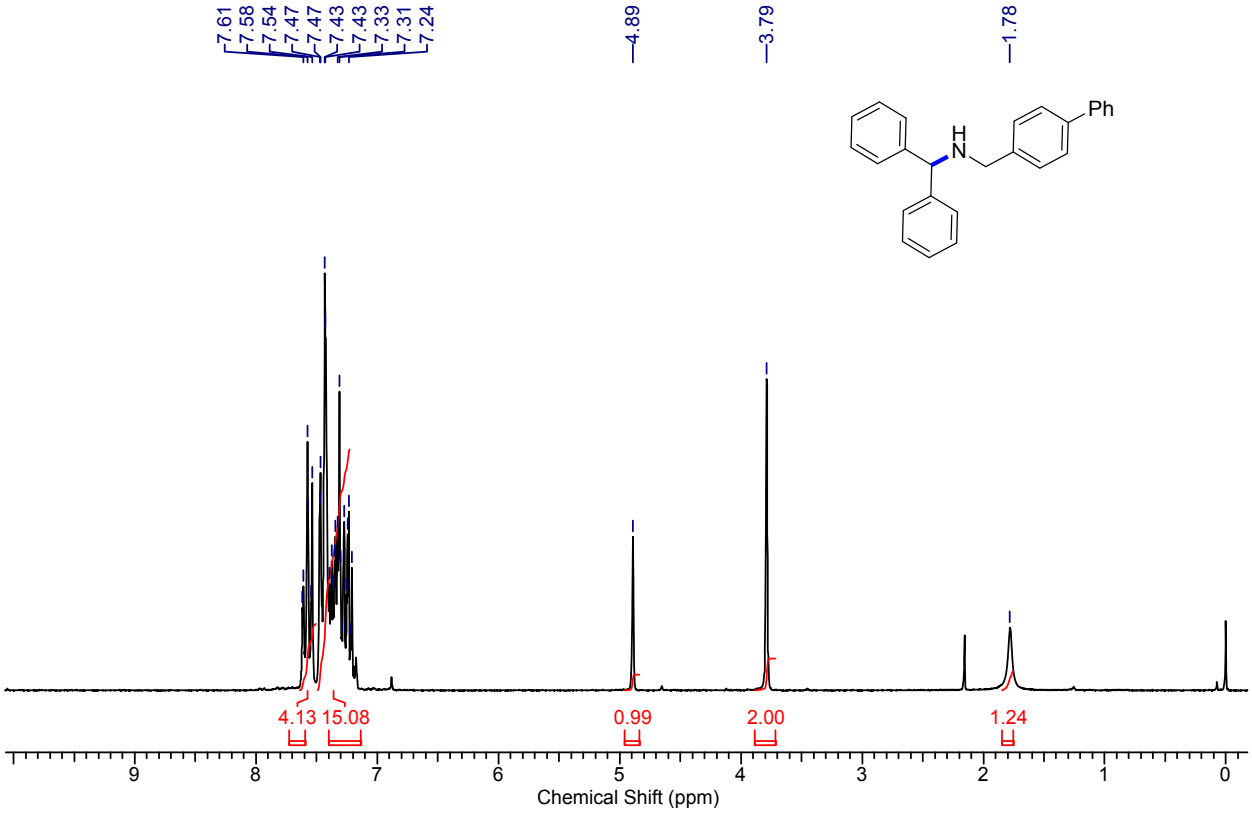
^{13}C NMR of **7a**



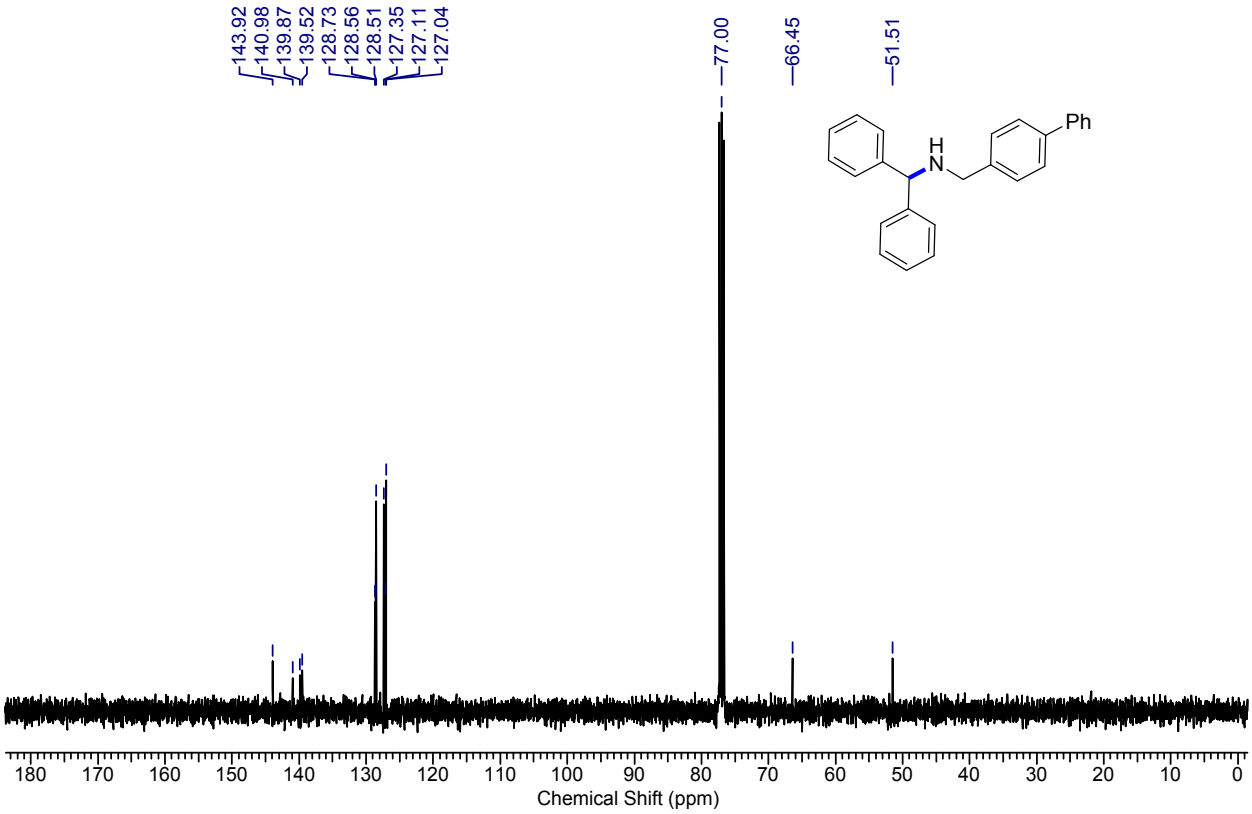
^{1}H NMR of **7b**



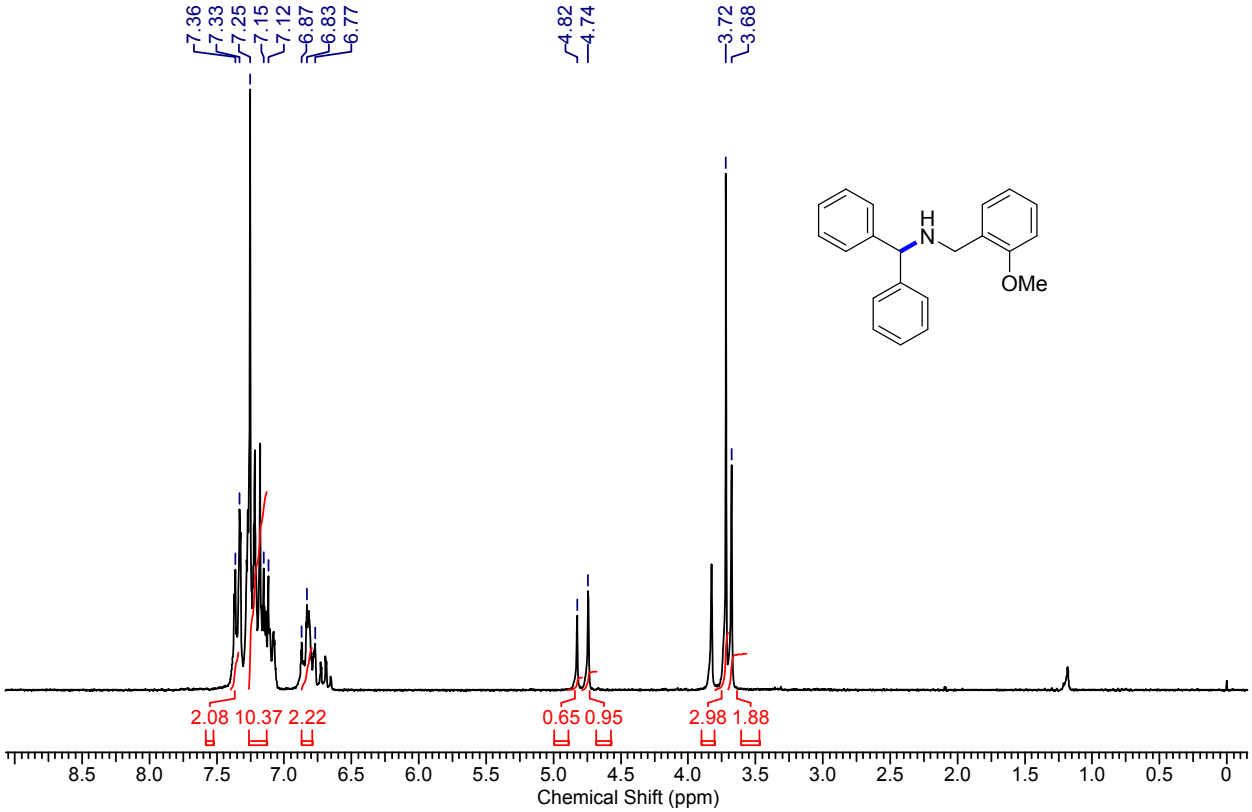
^{13}C NMR of **7b**



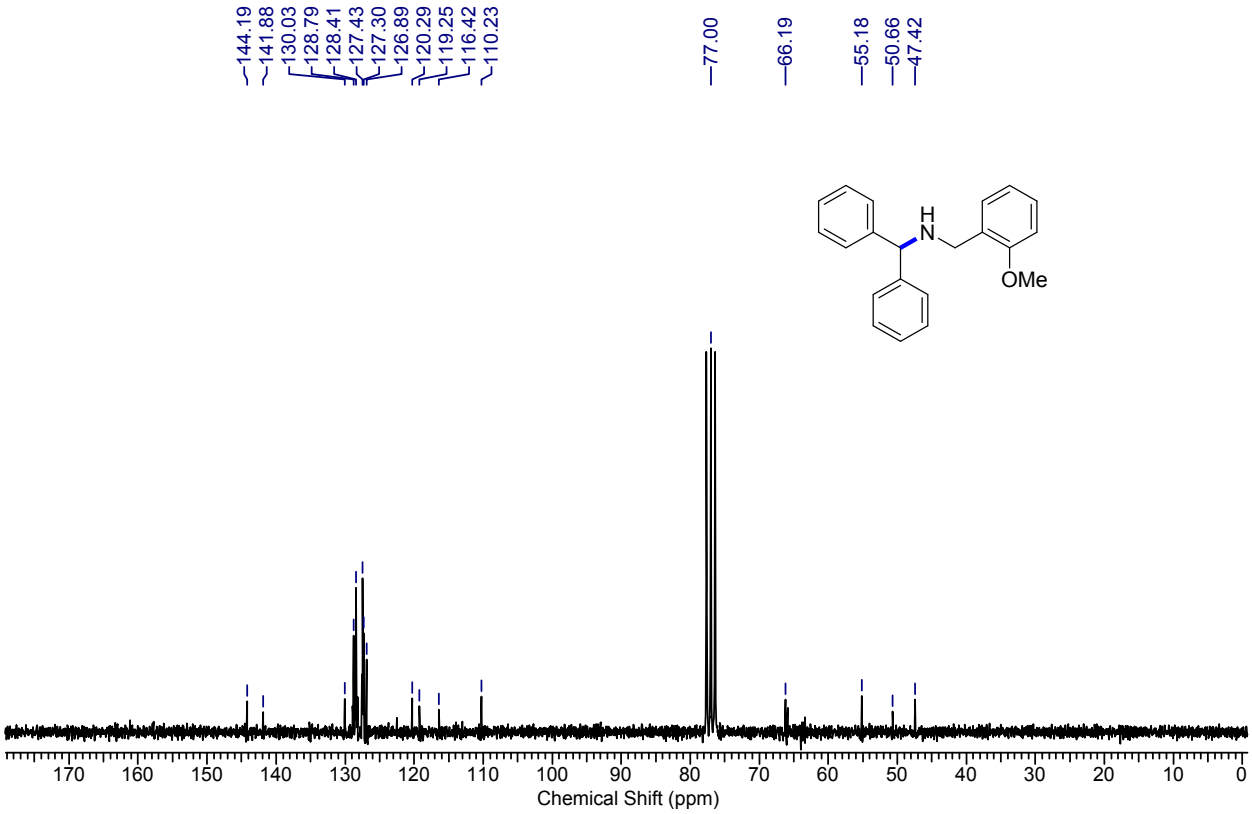
^{1}H NMR of **7c**



^{13}C NMR of **7c**



^{1}H NMR of **7d**



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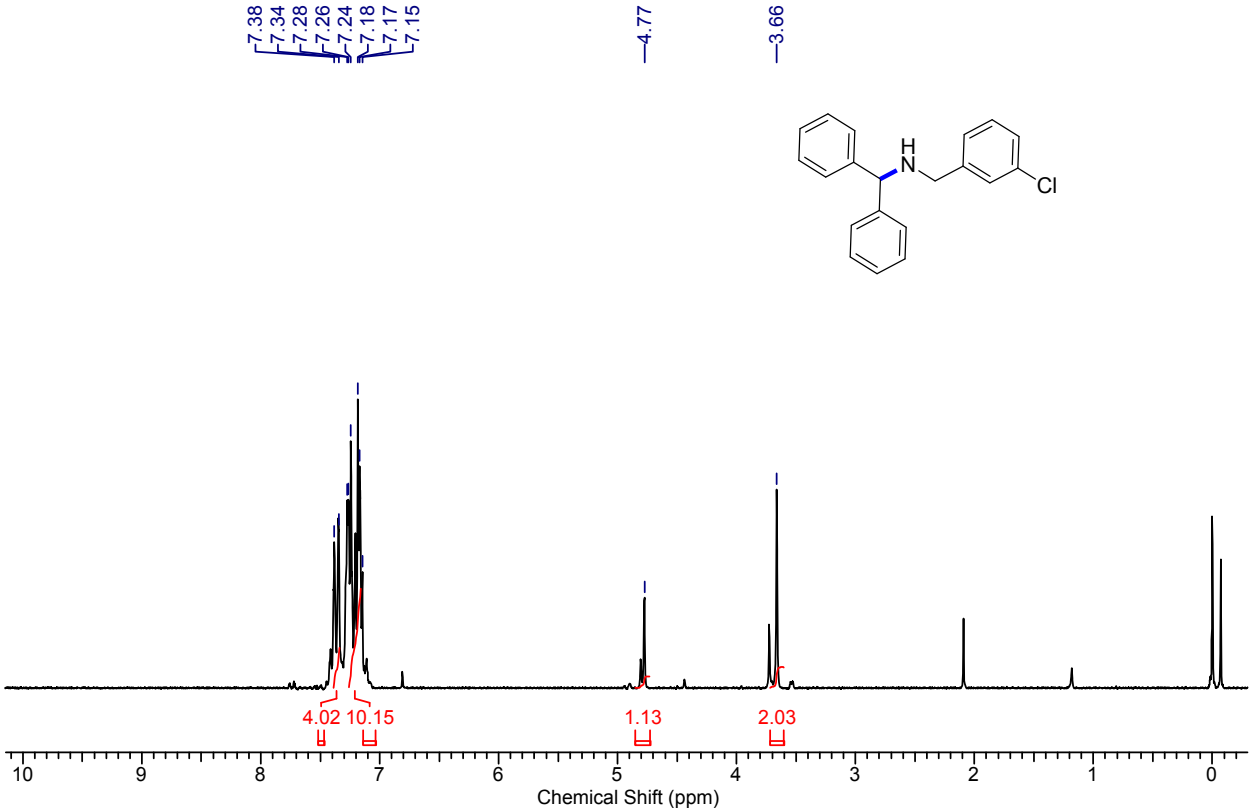

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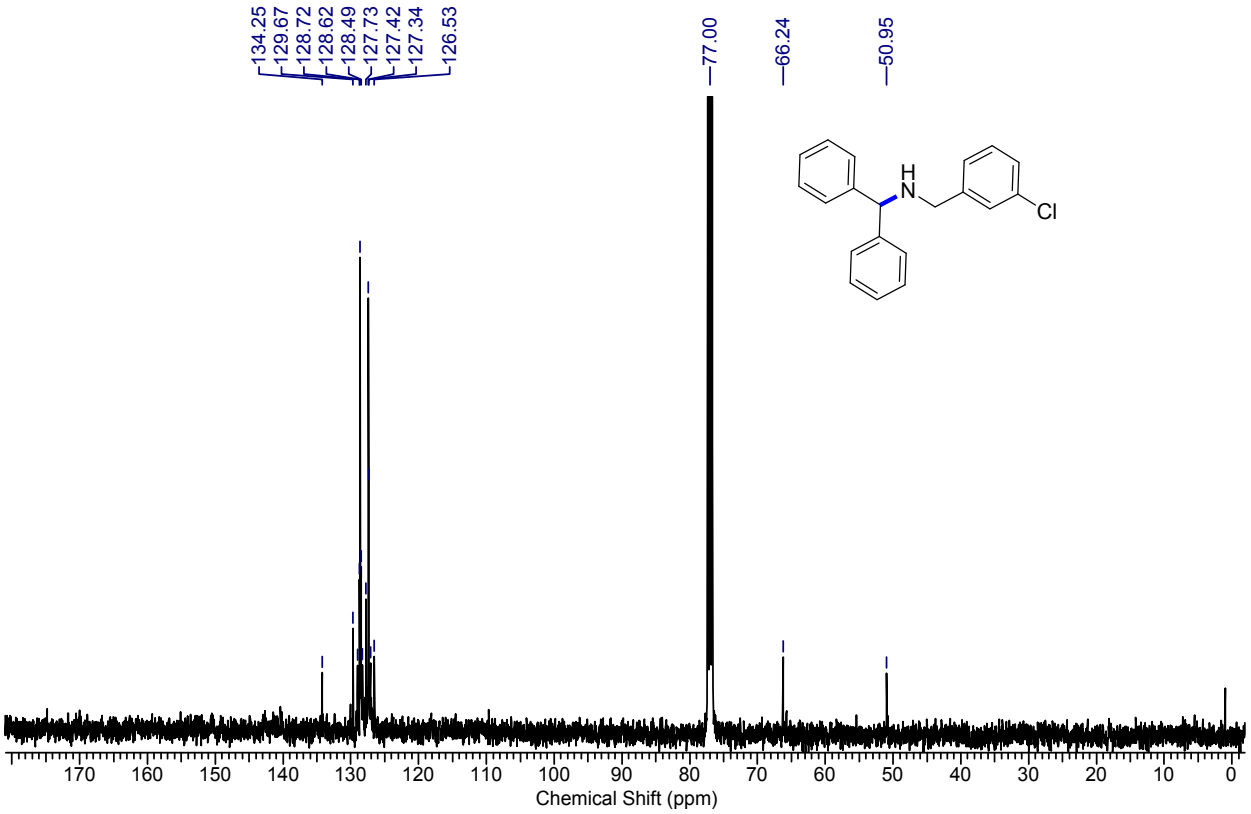

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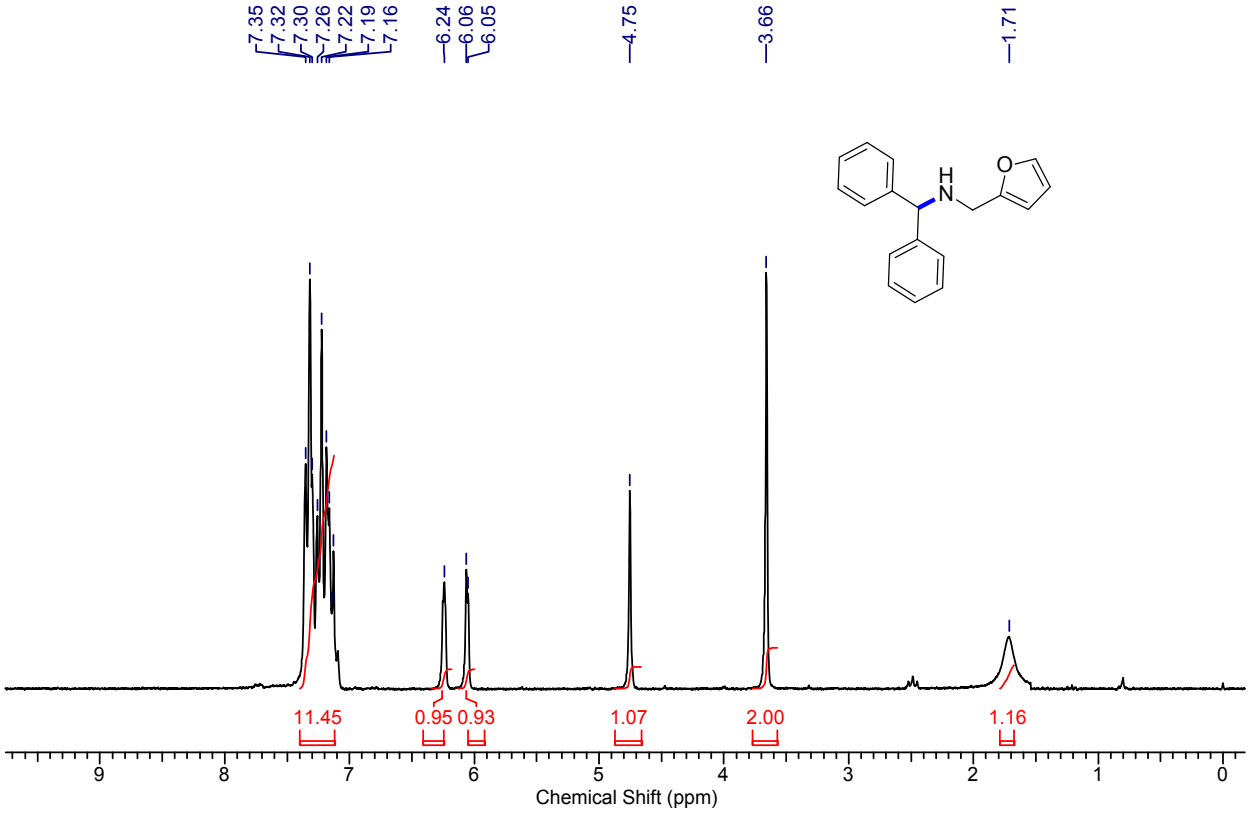
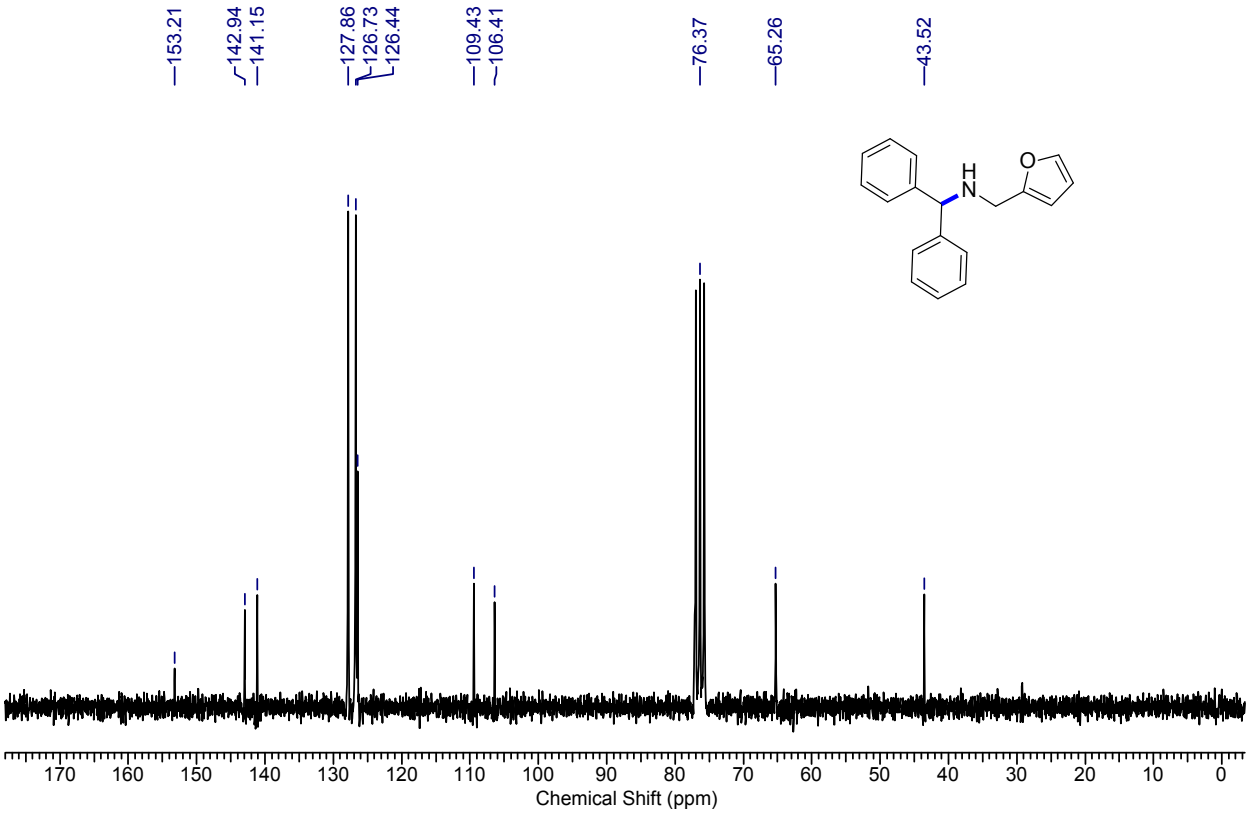
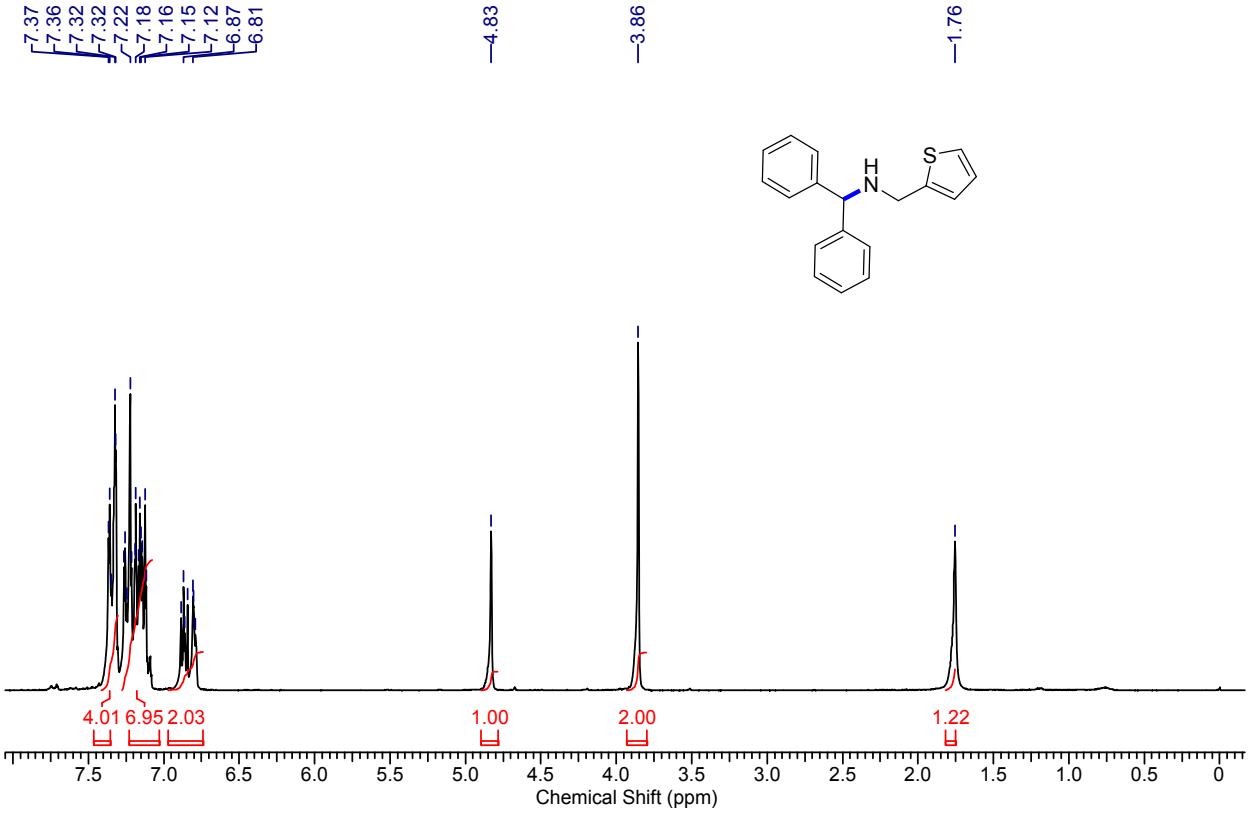


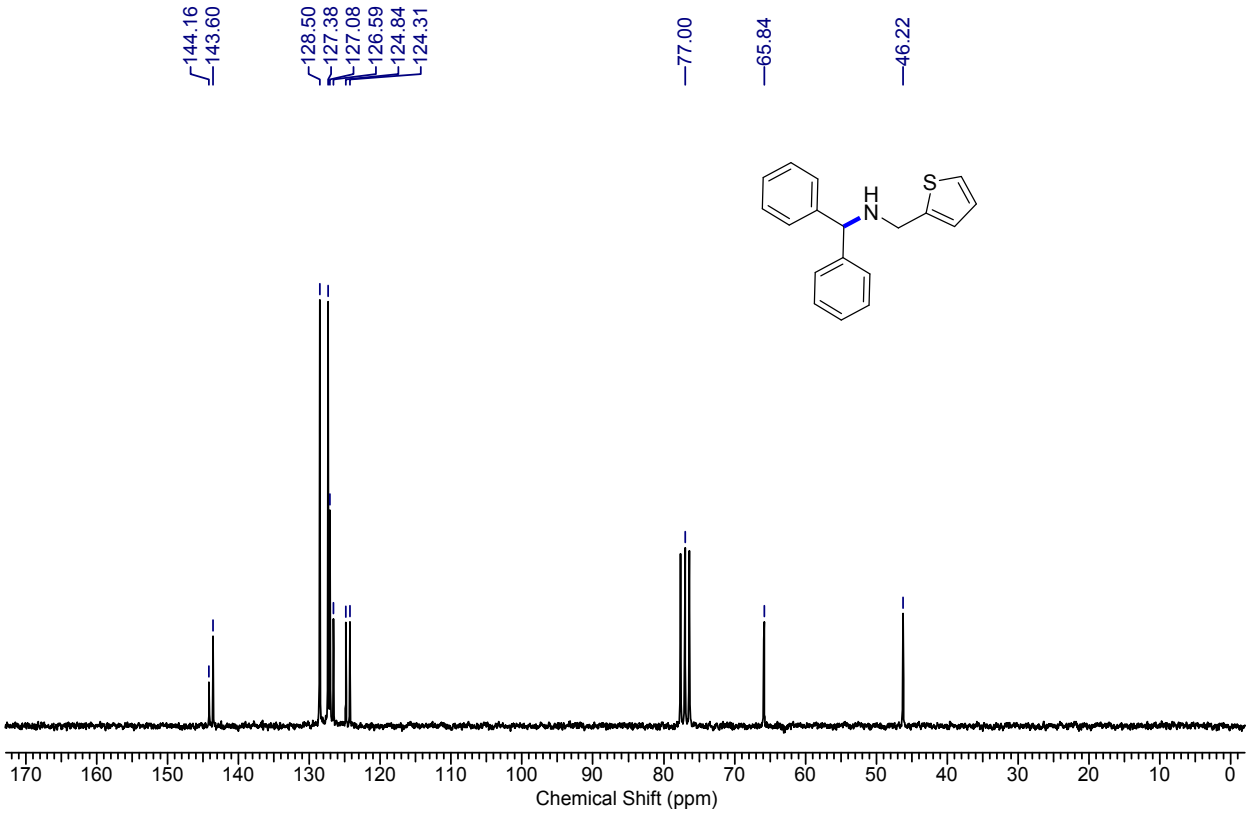
^{1}H NMR of **7f**



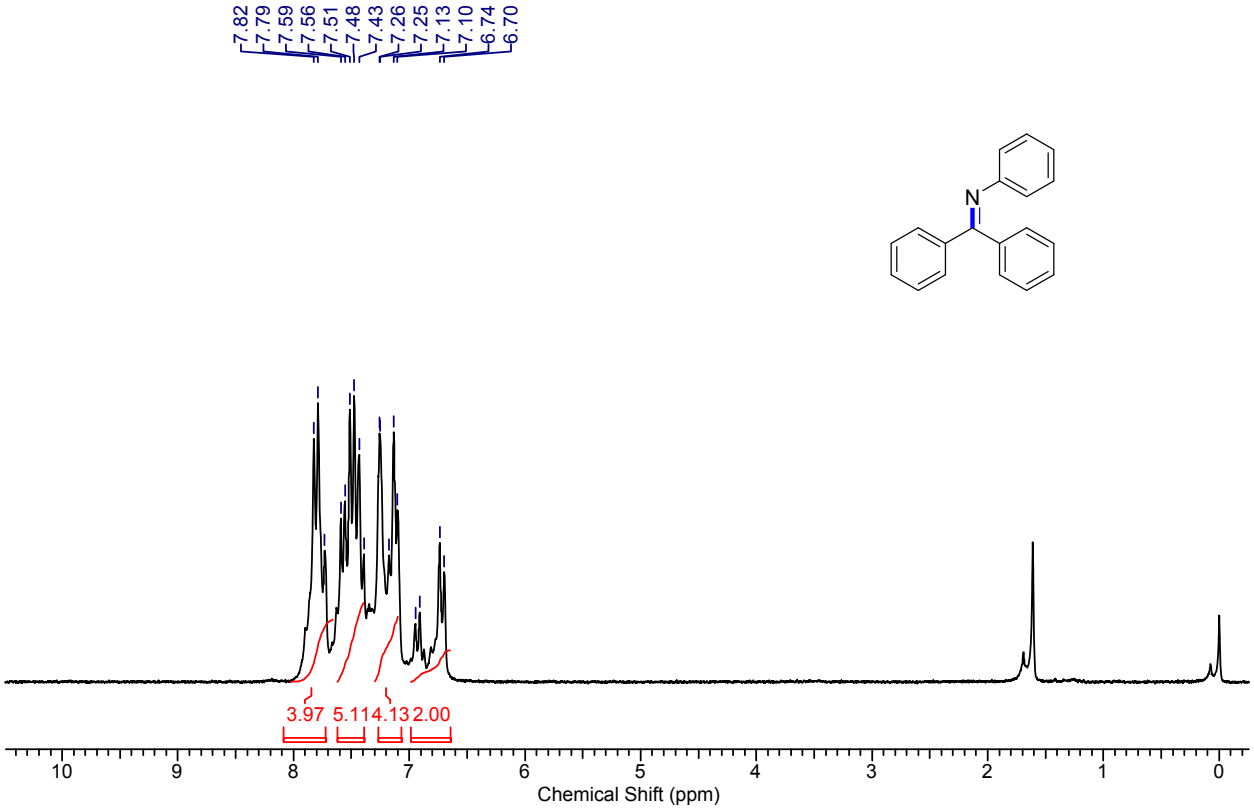
^{13}C NMR of **7f**



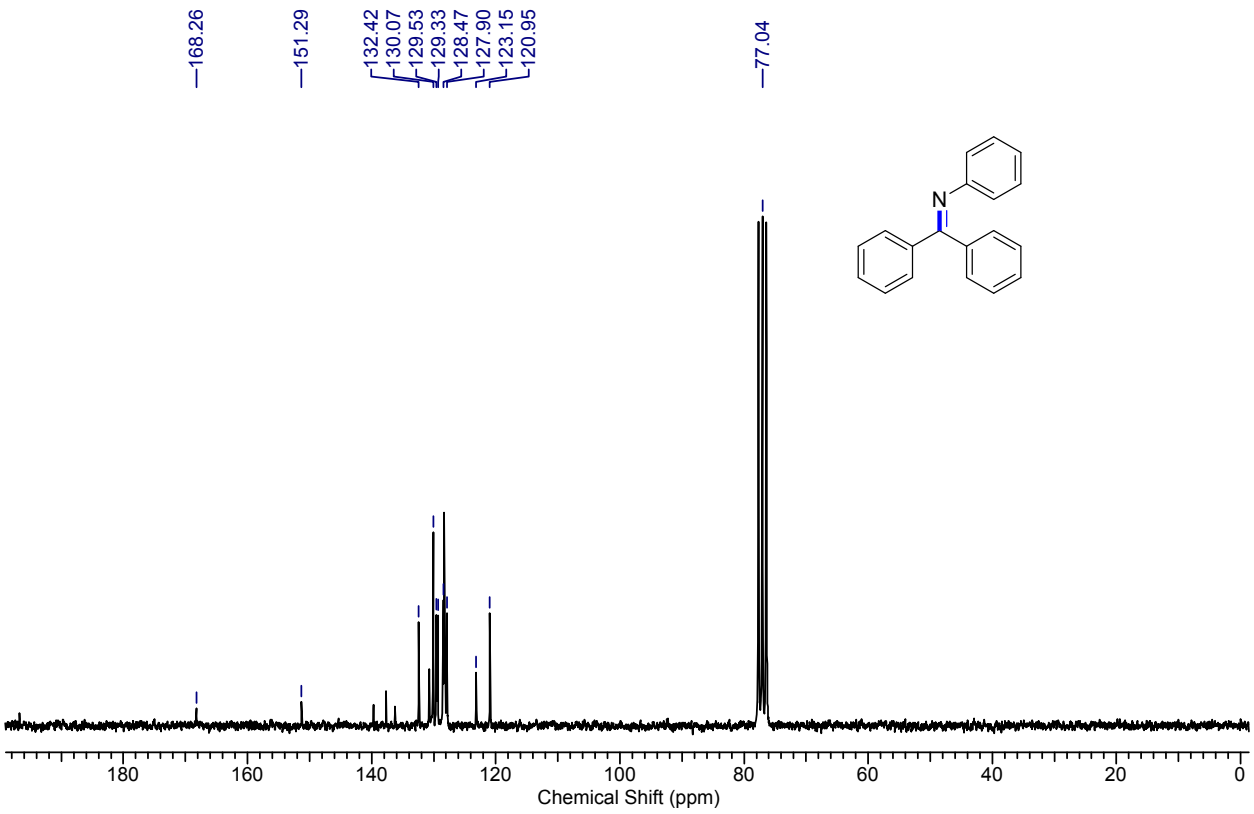
^{1}H NMR of **7g**



^{13}C NMR of **7g**



^{1}H NMR of **5a'**



^{13}C NMR of**5a'**