

Supporting information for

***N*-Heterocyclization of Naphthylamines with 1,2- and 1,3-Diols Catalyzed  
by Iridium Chloride/BINAP System**

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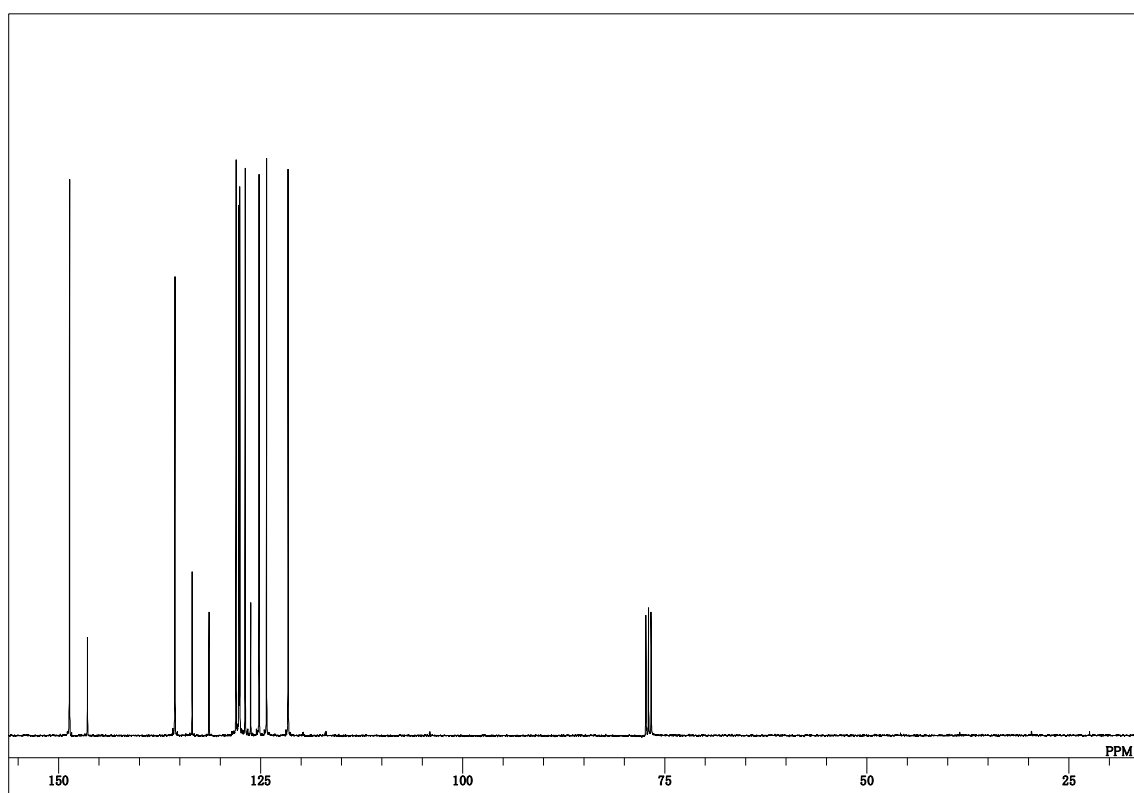
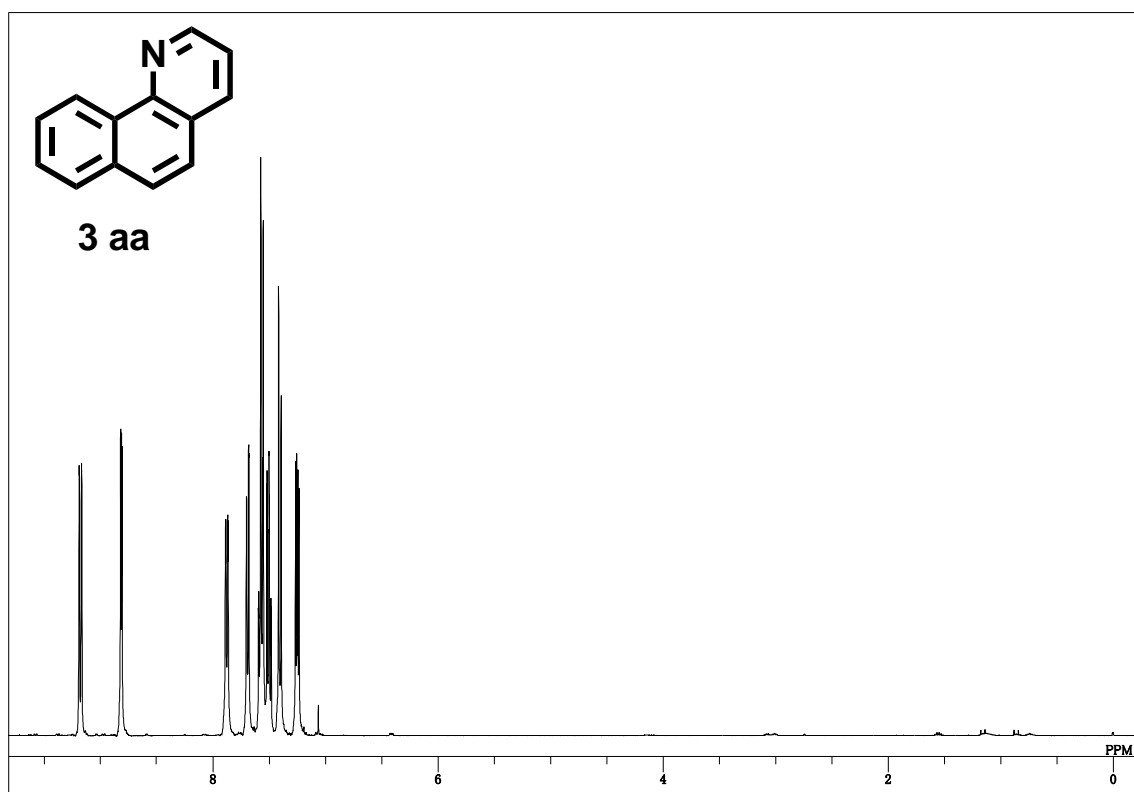
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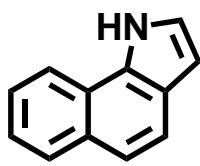
### General Experimental Methods

GLC analysis was performed with a flame ionization detector using a 0.22 mm × 25 m capillary column (BP-5).  $^1\text{H}$  and  $^{13}\text{C}$  NMR were measured at 400 and 100 MHz, respectively, in  $\text{CDCl}_3$  with  $\text{Me}_4\text{Si}$  as the internal standard. The products were characterized by  $^1\text{H}$  NMR,  $^{13}\text{C}$  NMR, NOESY, DEPT, HMQC, and GC-MS. The yields of products were estimated from the peak areas based on the internal standard technique using GLC.

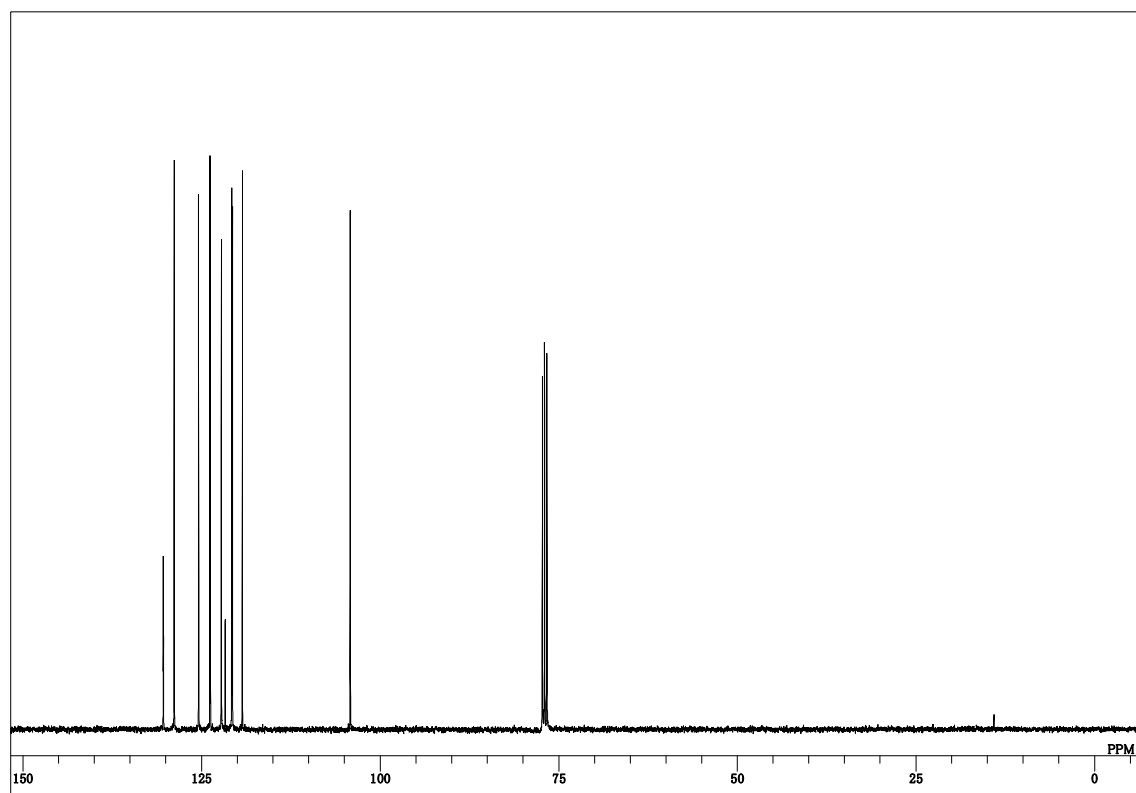
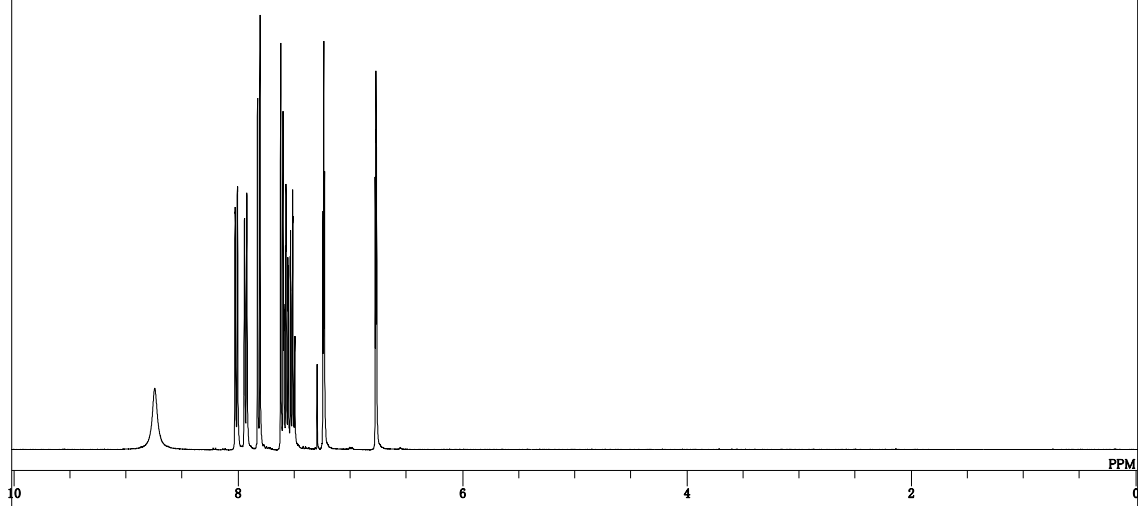
**Reaction of 3-(1-Naphtylamino)-propanol (D) and 1a in the Presence of Ir catalyst (Eq. 2):** To a mixture of  $\text{IrCl}_3\cdot\text{H}_2\text{O}$  (18 mg, 0.05 mmol), BINAP (47 mg, 0.075 mmol), and  $\text{Na}_2\text{CO}_3$  (9 mg, 0.08 mmol) was added to the mixture of 3-(1-naphtylamino)-1-propanol (201 mg, 1 mmol) and **1a** (143 mg, 1 mmol) in mesitylene (1.5 mL) under  $\text{O}_2$  (1 atm). The reaction mixture was stirred at refluxing temperature of mesitylene (169 °C) for 15 h. GC analysis of the reaction mixture showed that **3aa** and **1a** was formed in 72% and 19% yields, respectively.

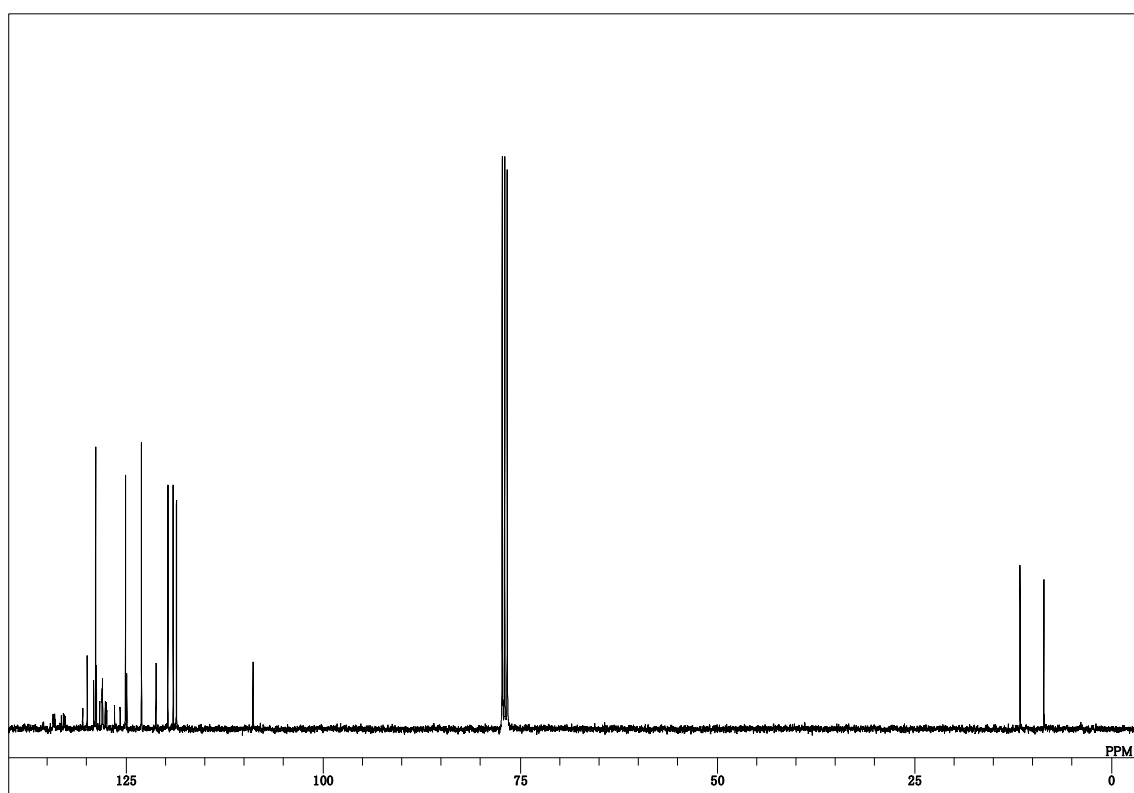
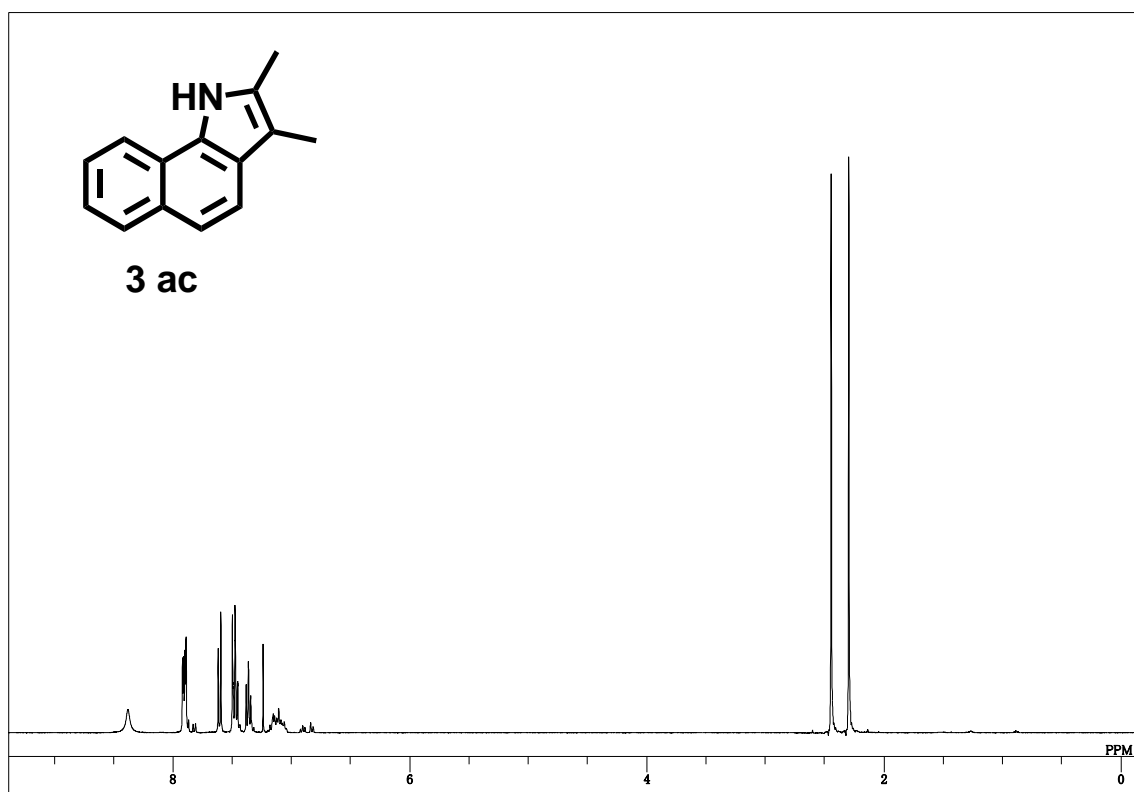
**Reaction of *N,N'*-di(naphthalene-1-yl)propane-1,3-diamine (E) in the Presence of Ir catalyst (Eq. 4):** To a mixture of  $\text{IrCl}_3\cdot\text{H}_2\text{O}$  (35 mg, 0.10 mmol), BINAP (93 mg, 0.15 mmol), and  $\text{Na}_2\text{CO}_3$  (17 mg, 0.16 mmol) was added to *N,N'*-di(naphthalene-1-yl)propane-1,3-diamine (**E**) (326 mg, 1 mmol) in mesitylene (1.5 mL) under  $\text{O}_2$  (1 atm). The reaction mixture was stirred at refluxing temperature of mesitylene (169 °C) for 15 h. GC analysis of the reaction mixture showed that **3aa** and **1a** was formed in 76% and 83% yield, respectively.

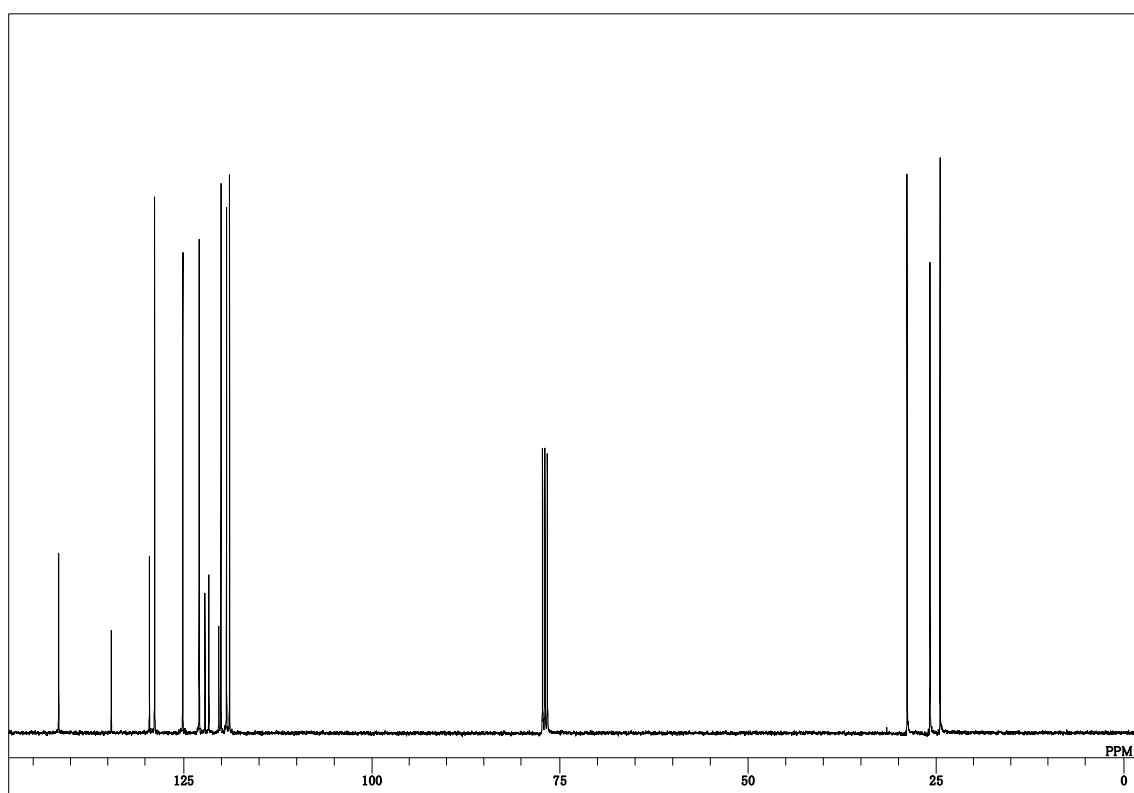
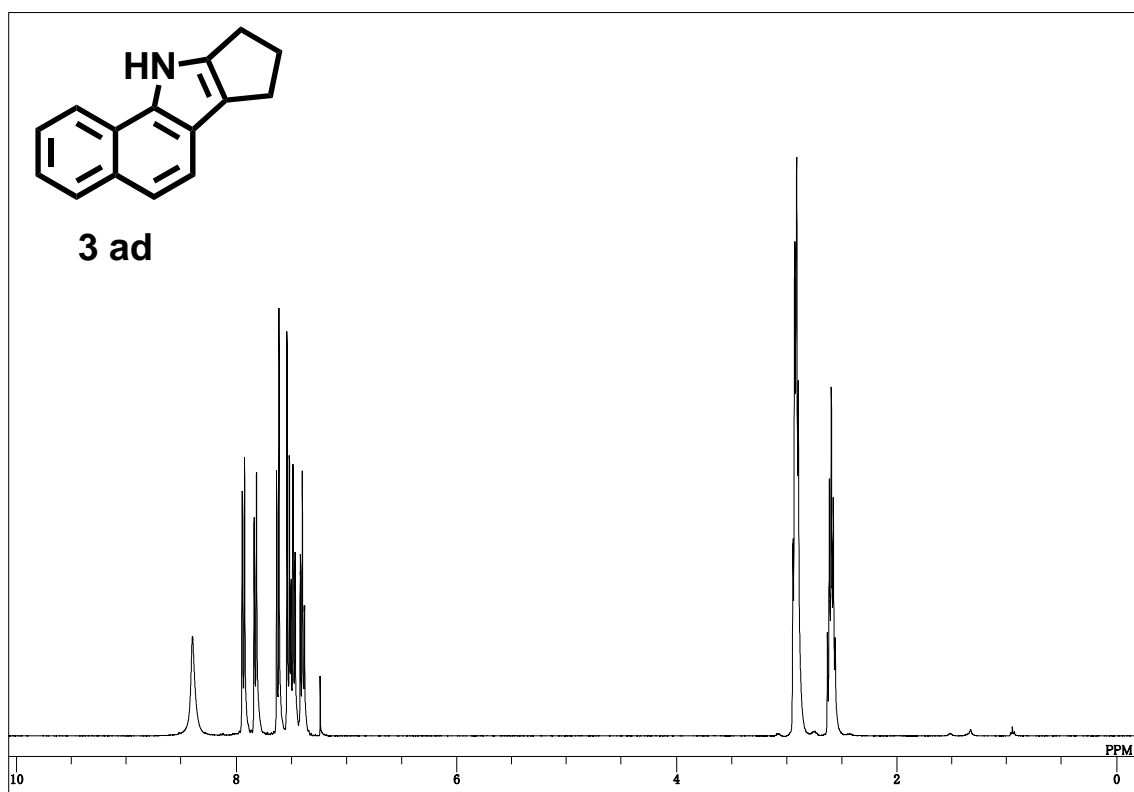


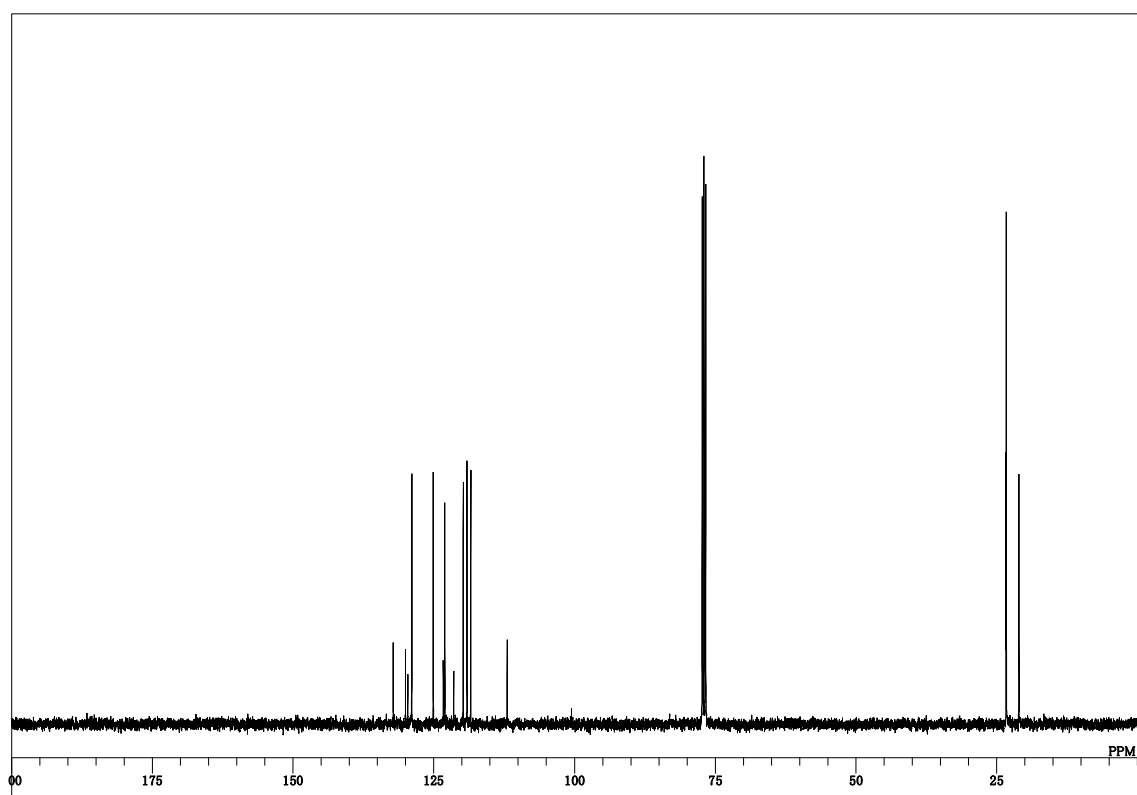
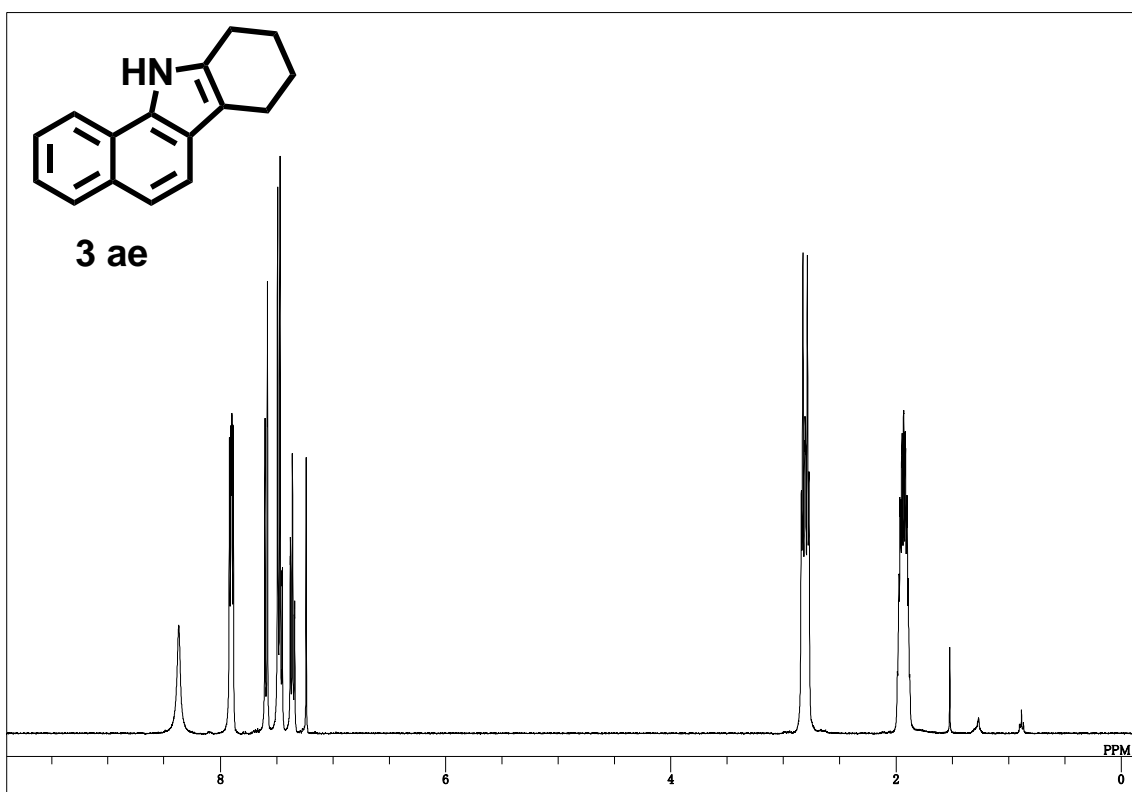


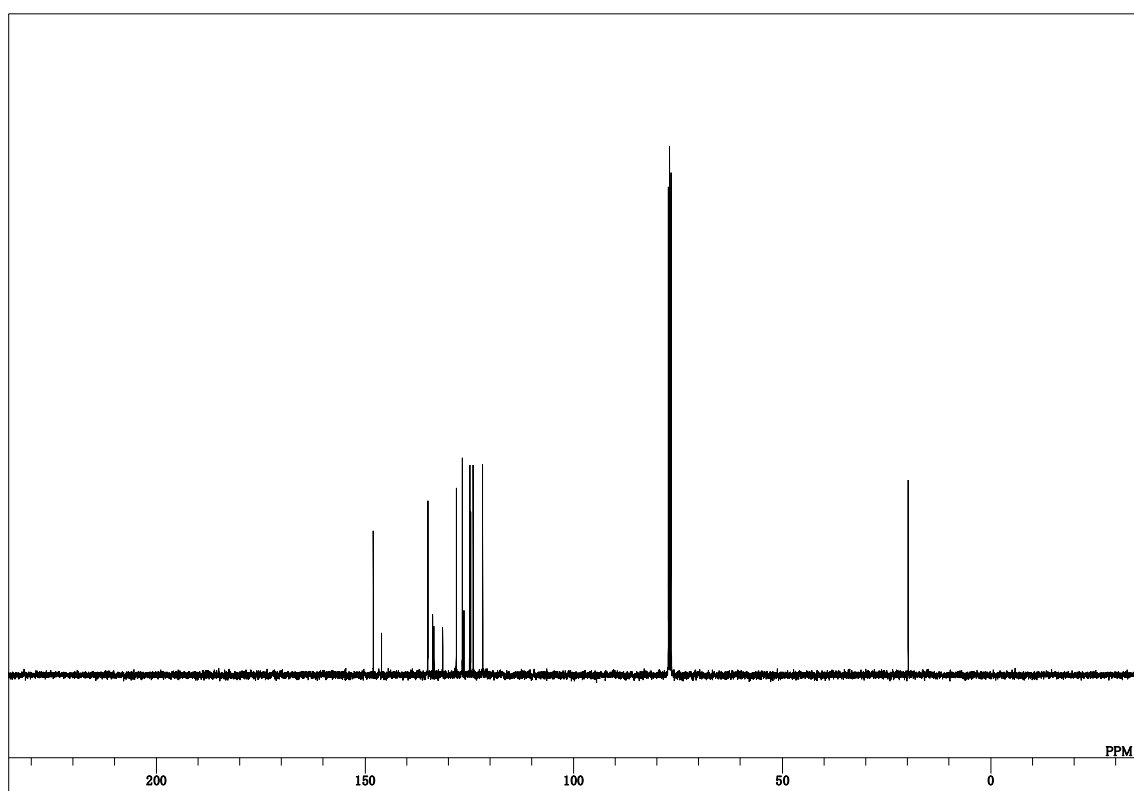
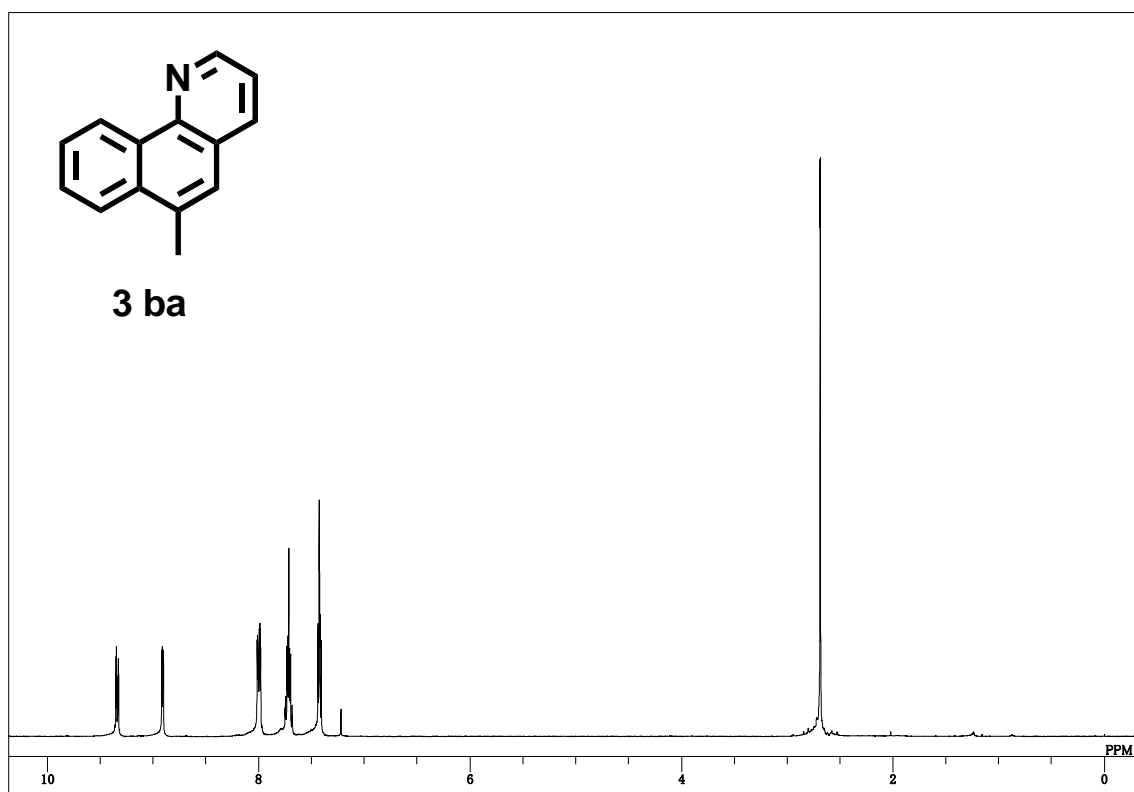
3 ab



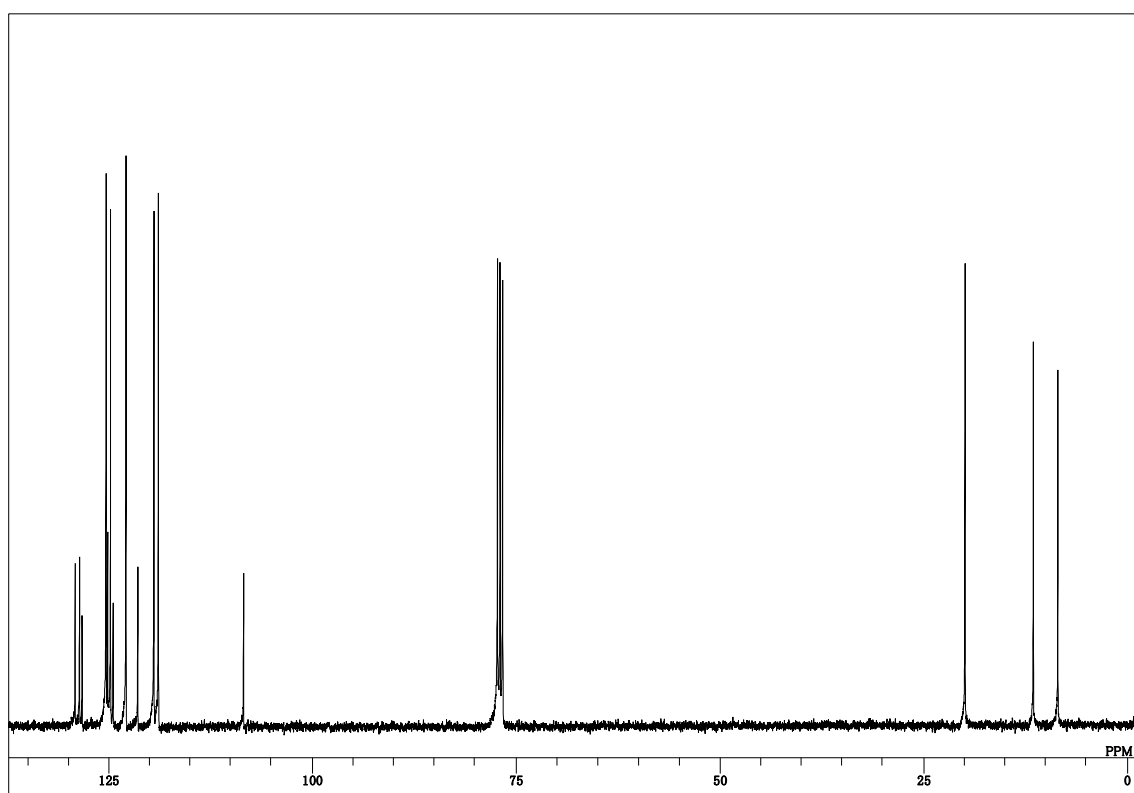
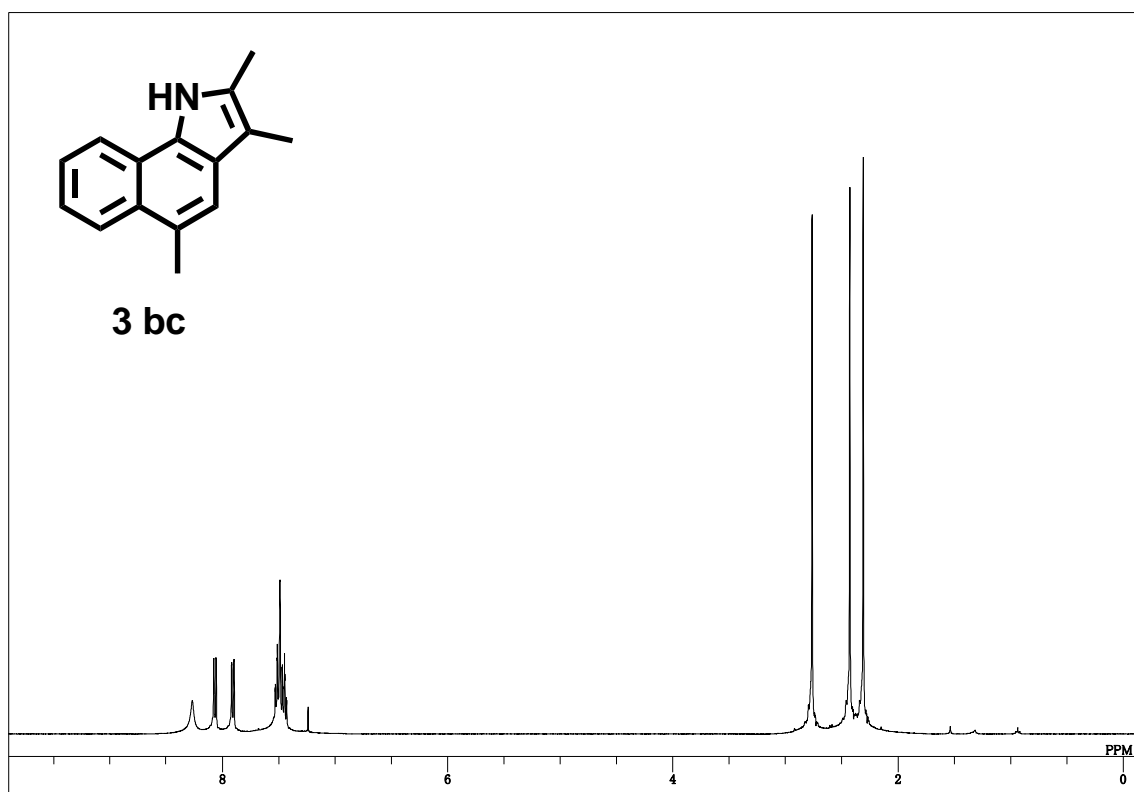


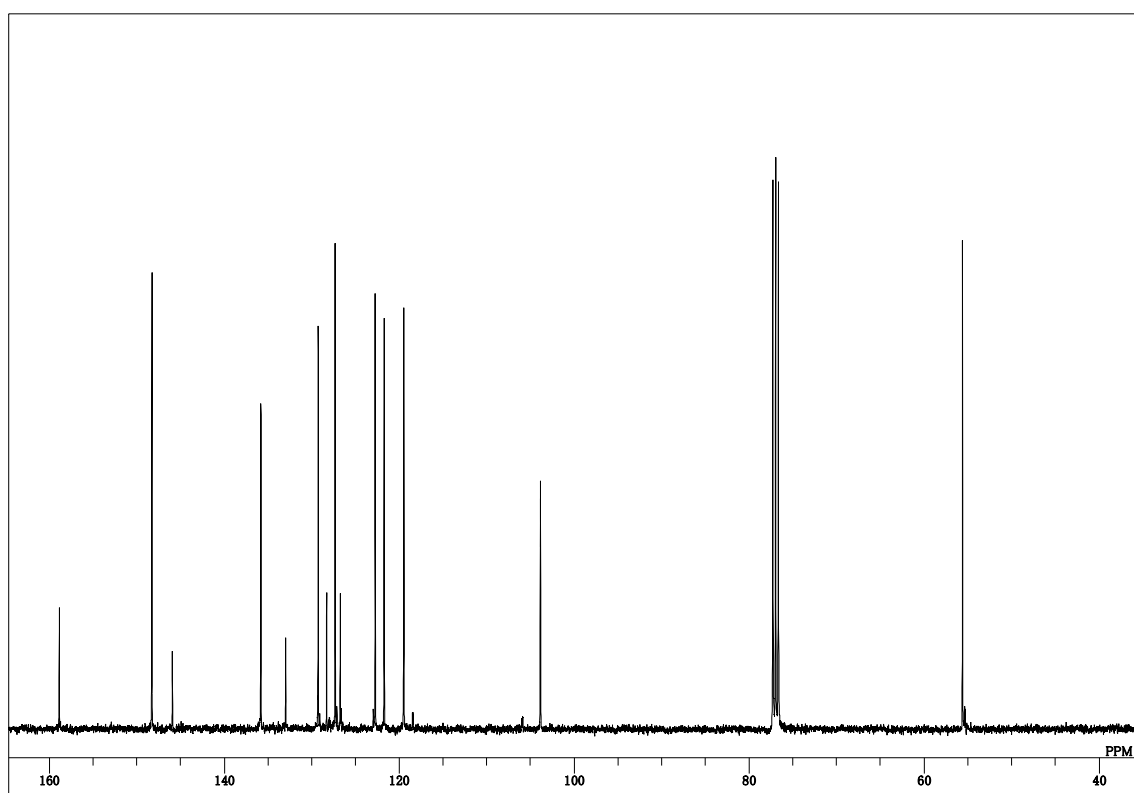
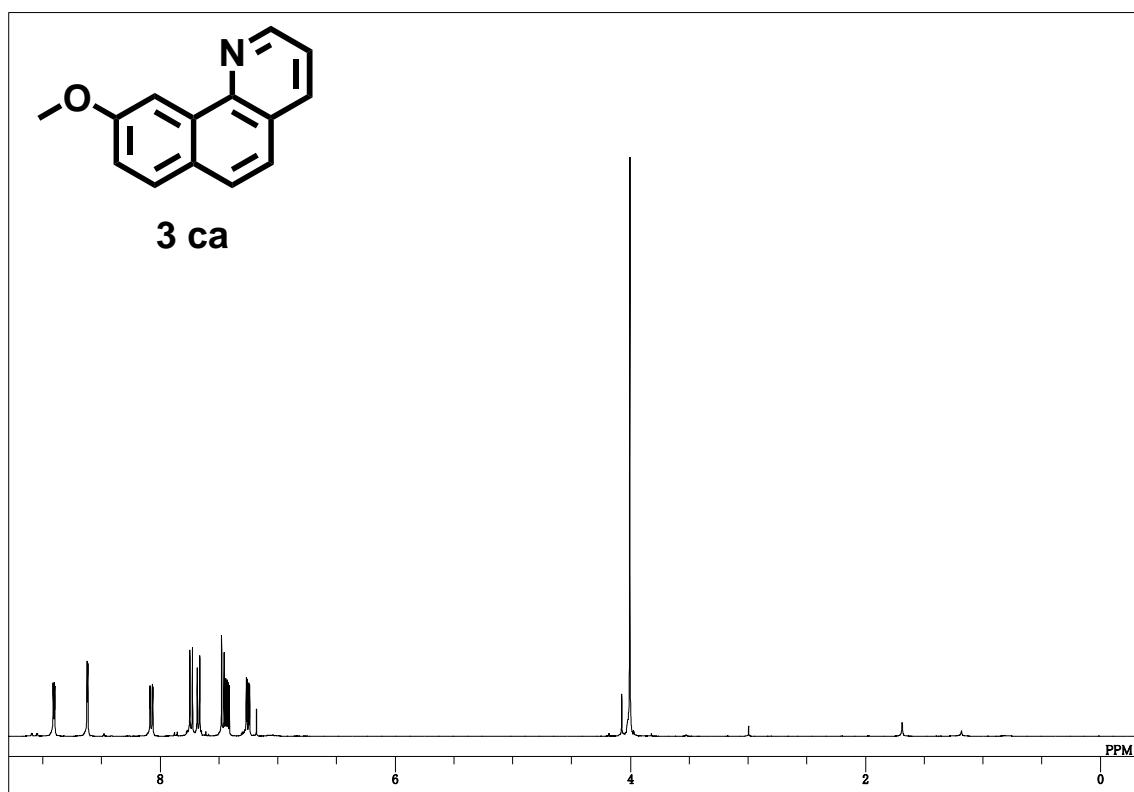


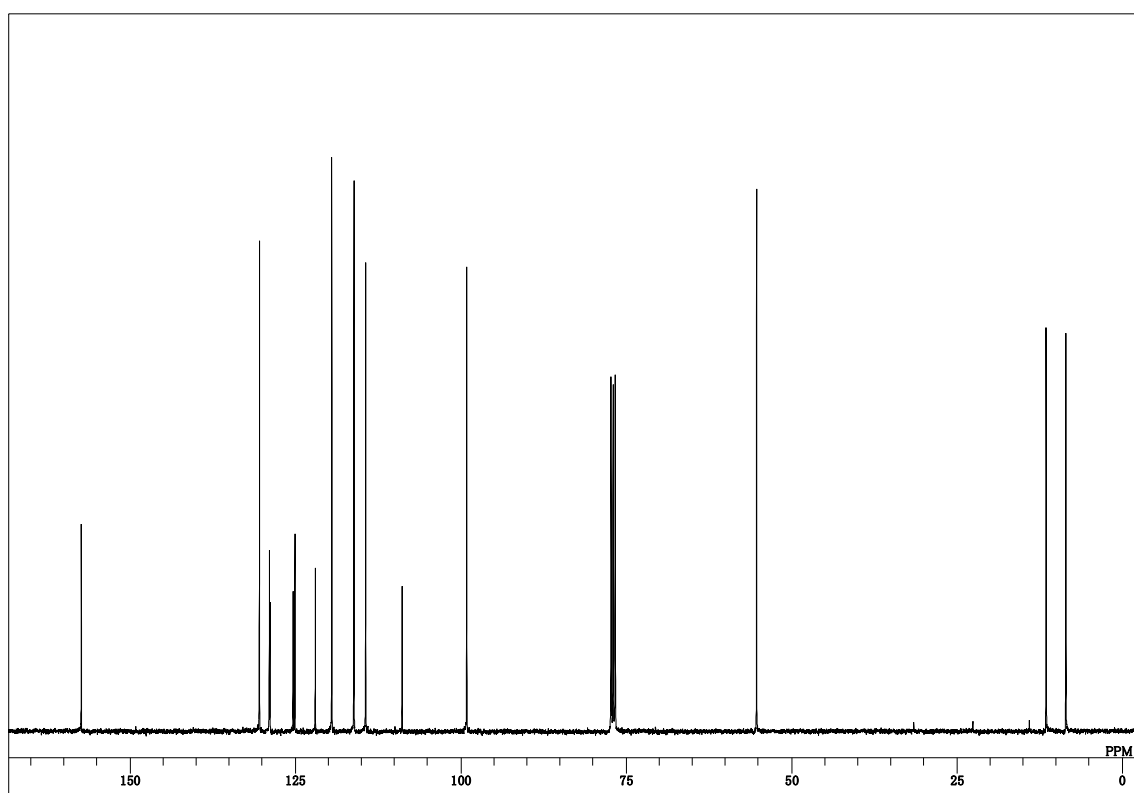
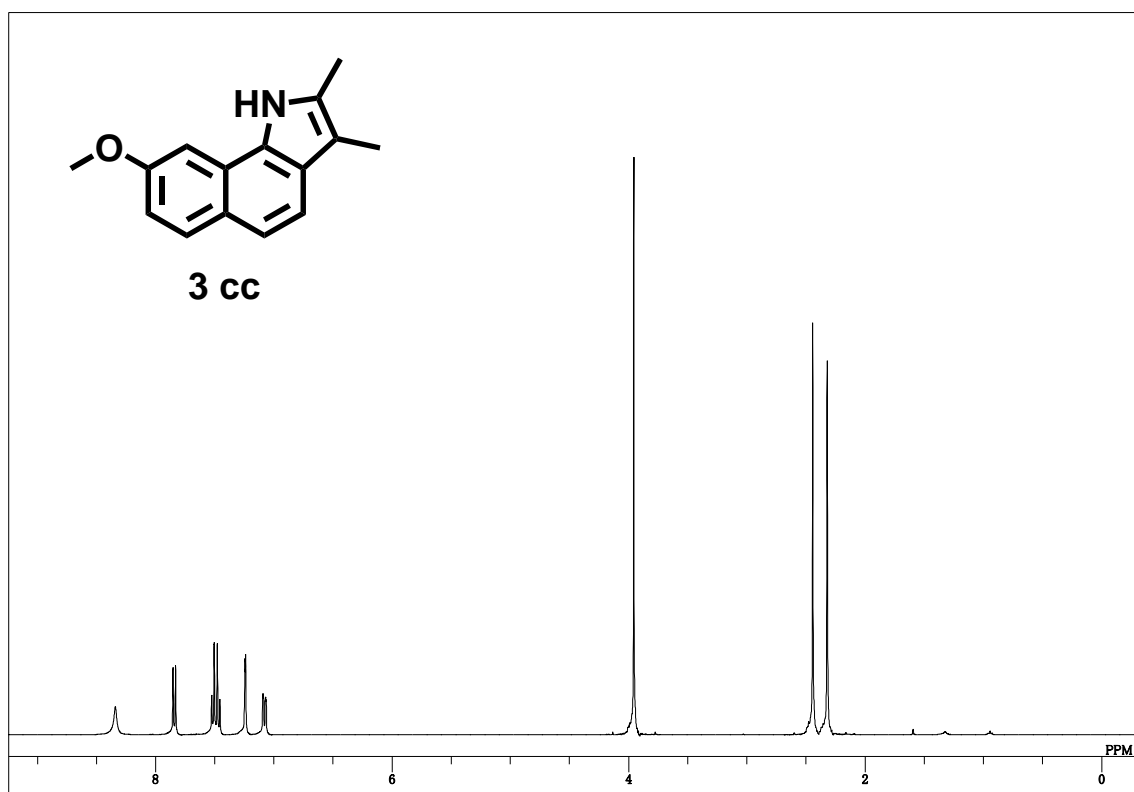


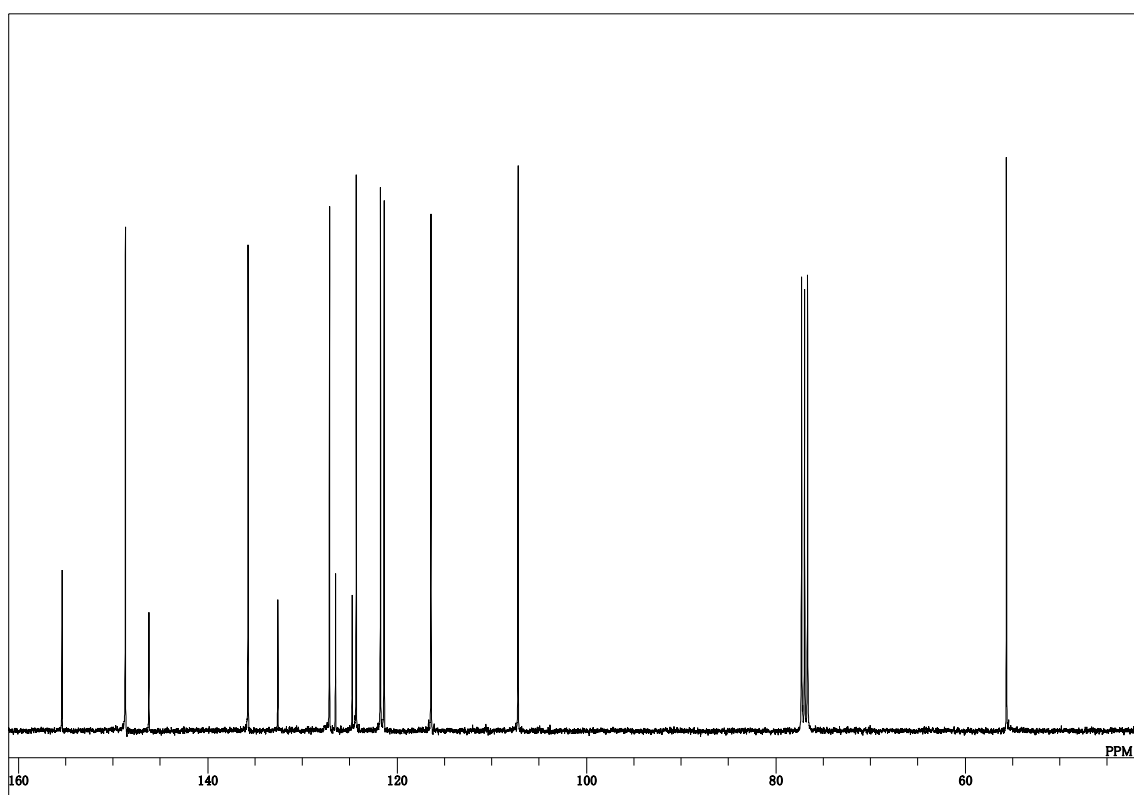
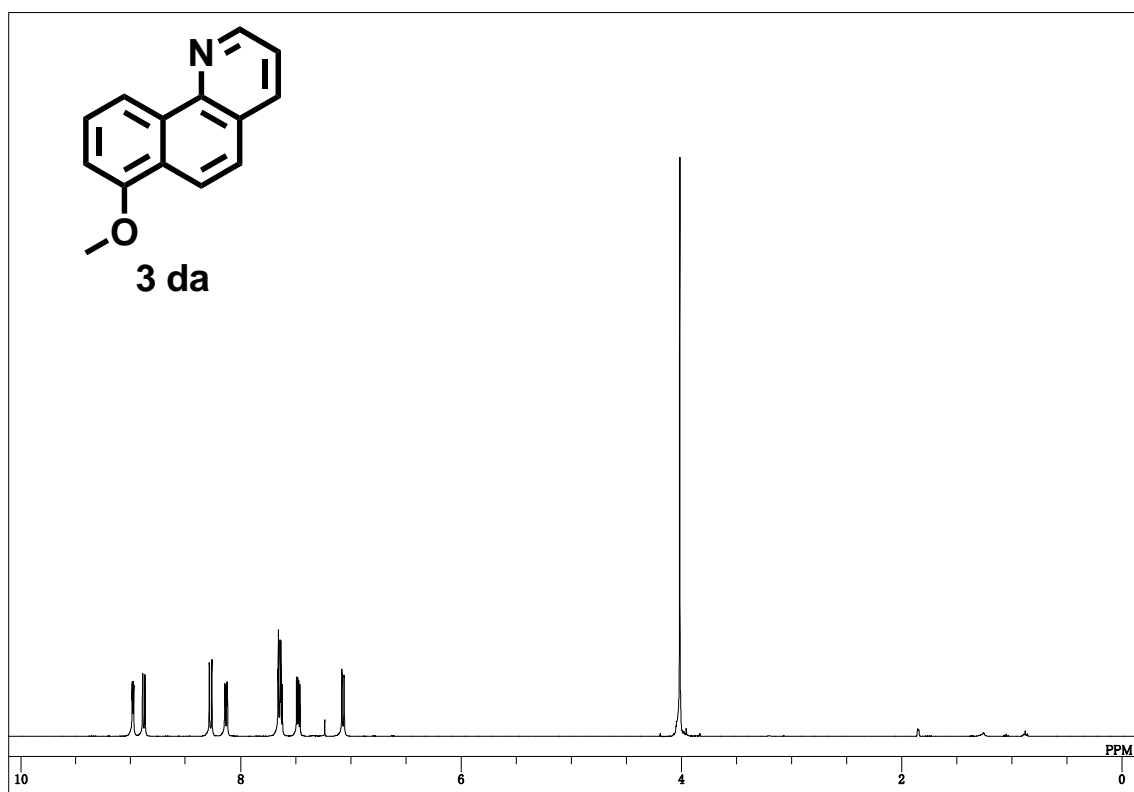




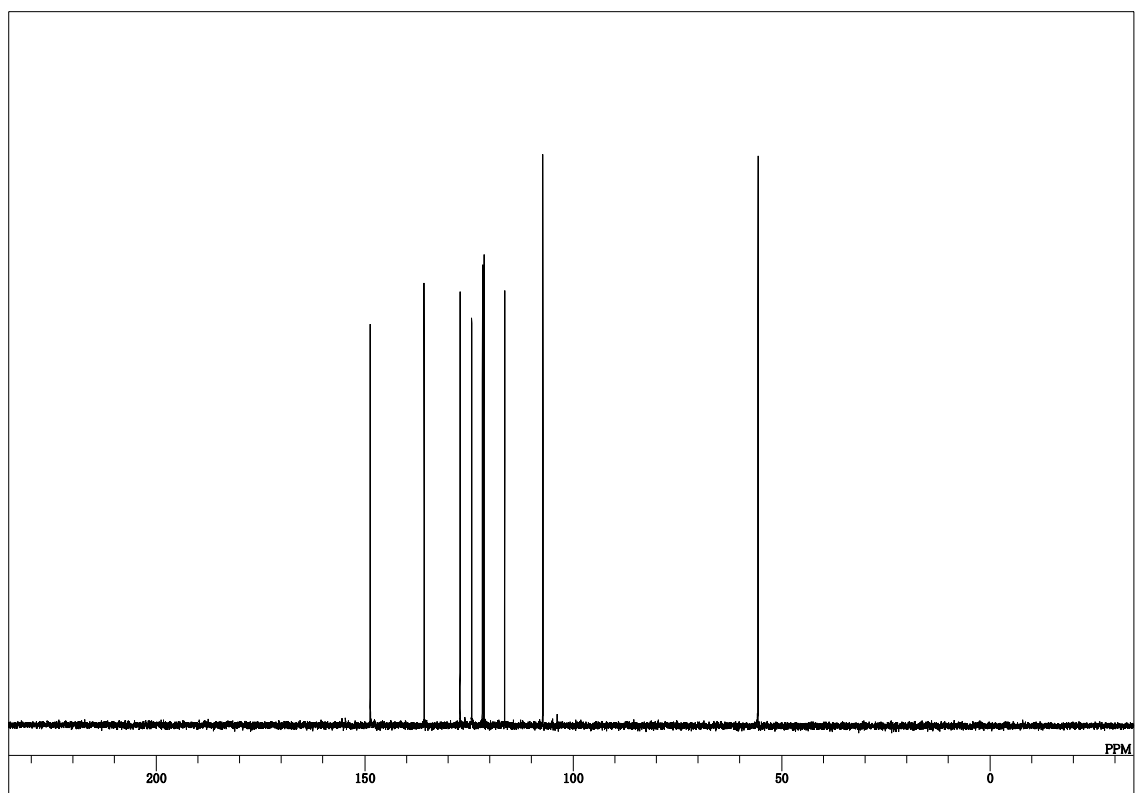




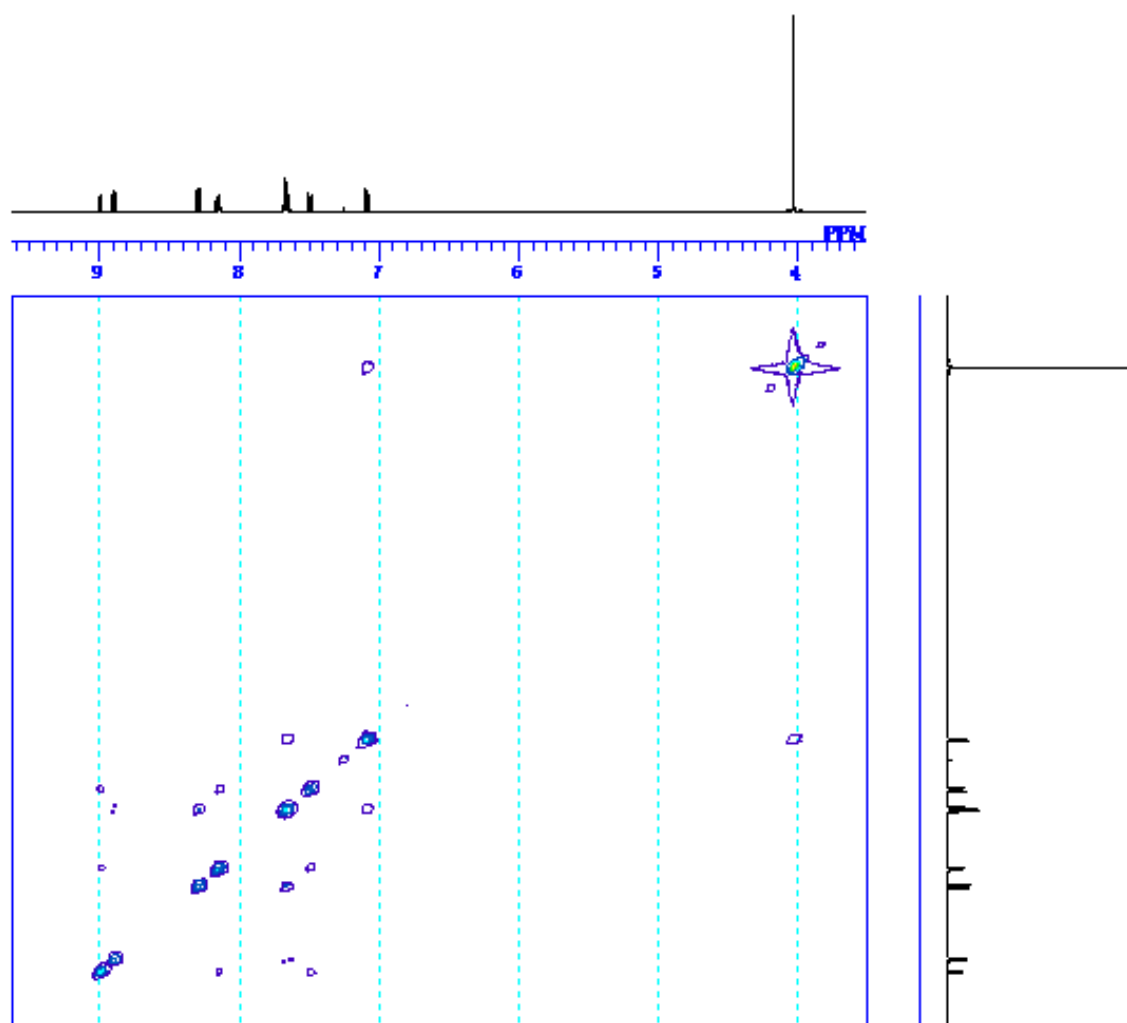




DEPT



NOESY



HMQC

