

Electronic Supplementary Information

Divergent Synthesis of Two Types of Indolizines from Pyridine-2- acetonitrile, (Hetero)arylglyoxal, and TMSCN

Seonghyeon Nam,[‡] Sunhee Lee,[‡] Woojin Kim,[‡] and Ikyon Kim*

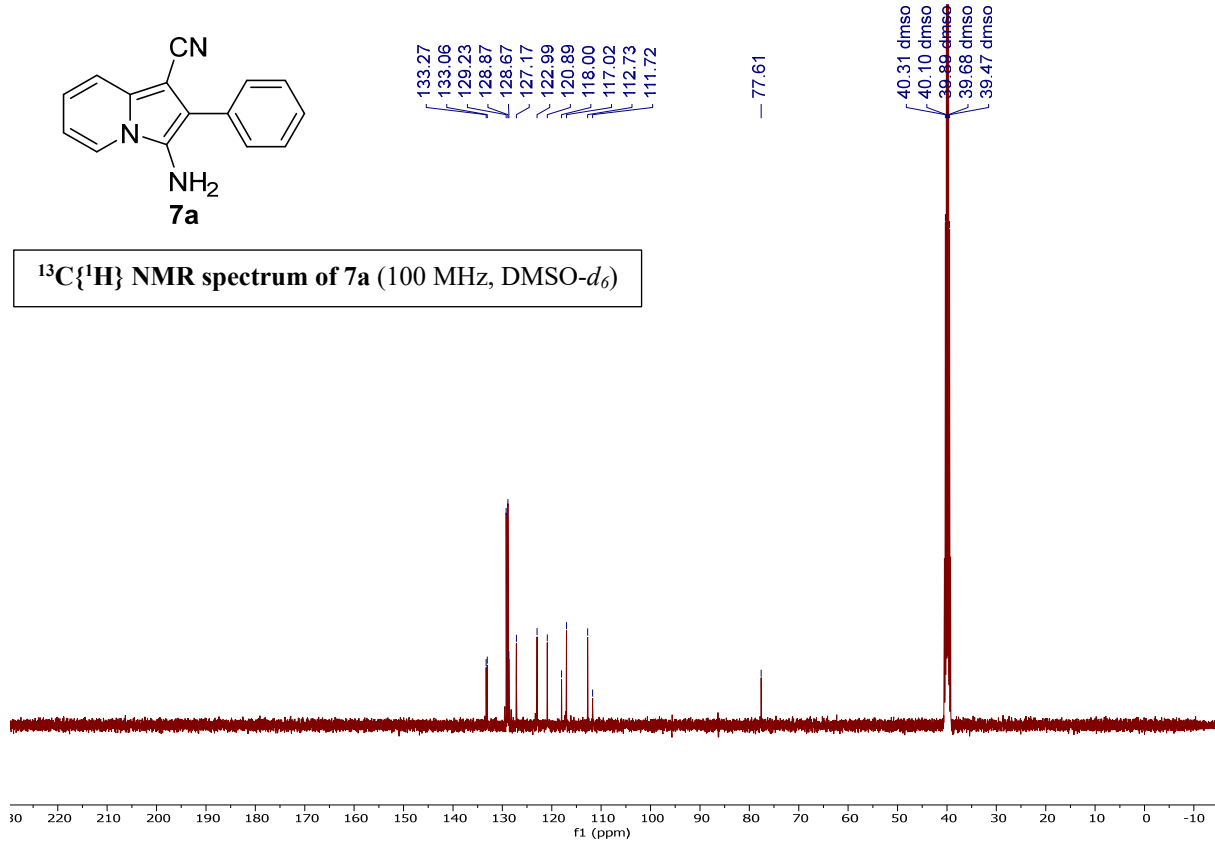
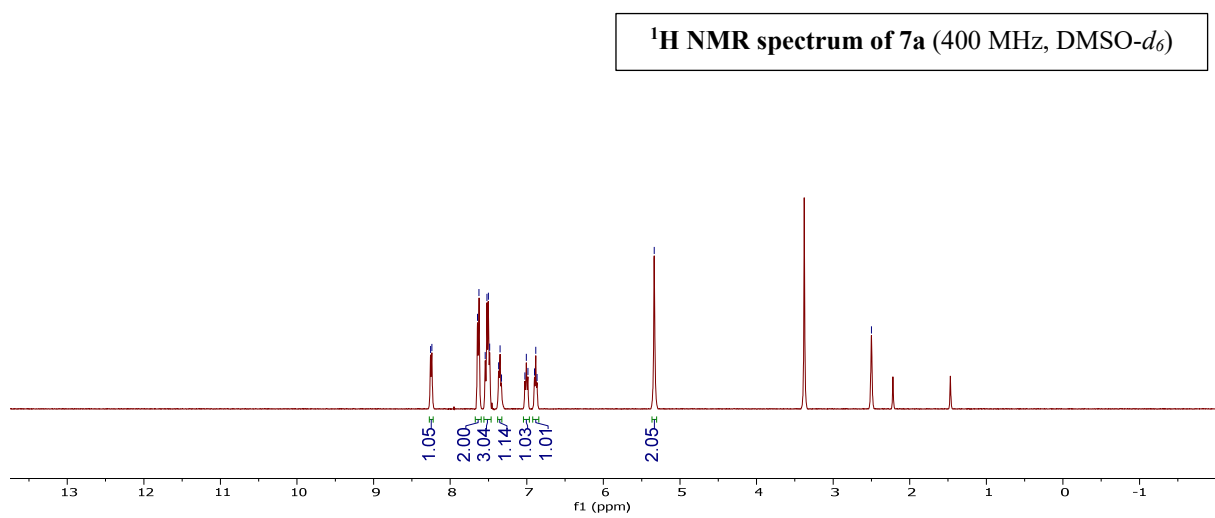
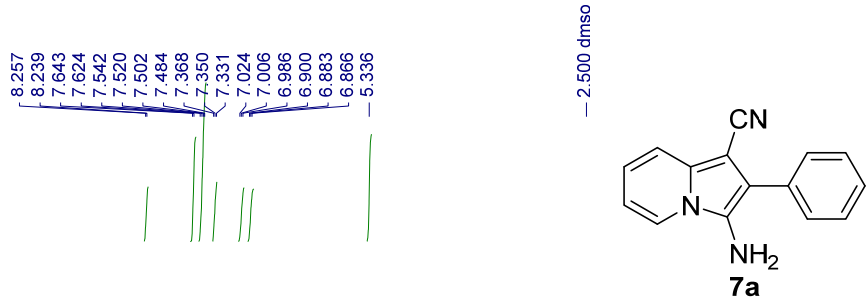
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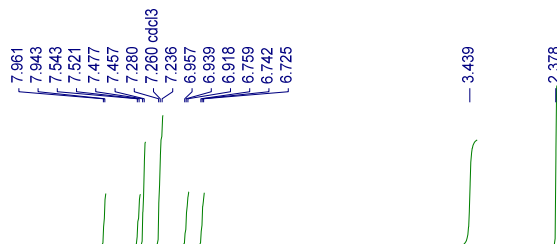
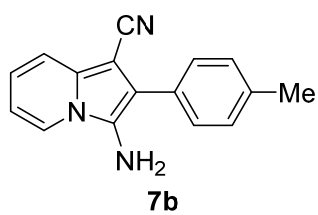
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[‡] These authors contributed equally.

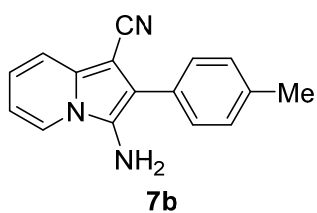
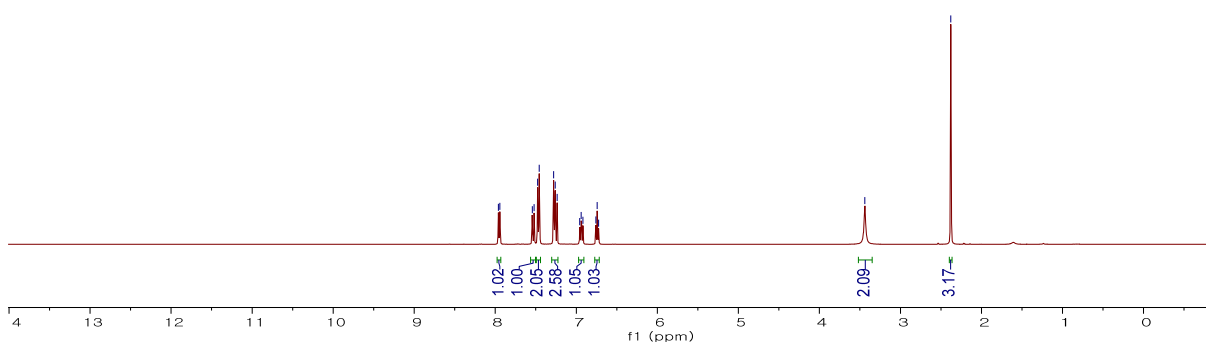
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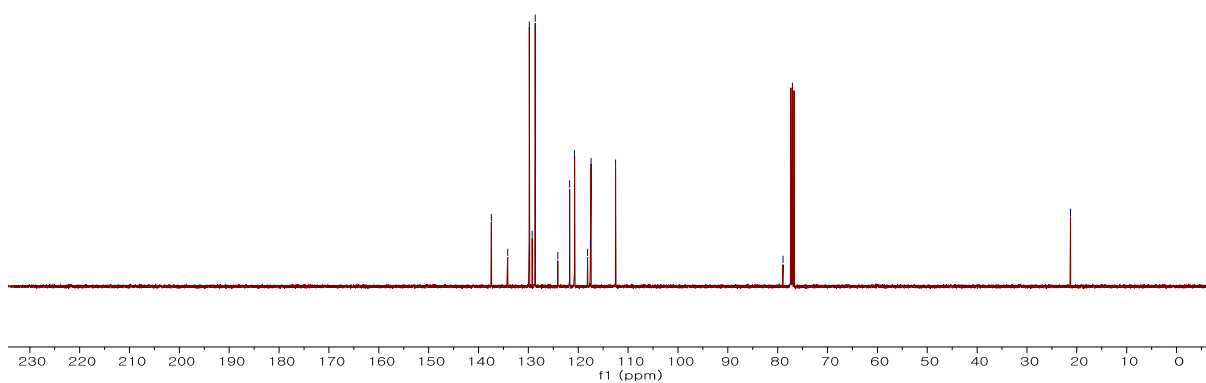


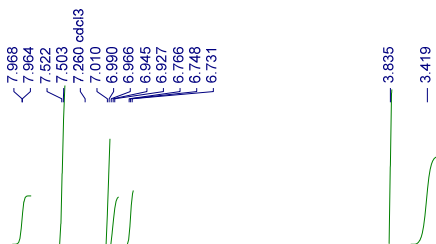
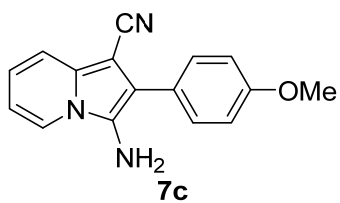


¹H NMR spectrum of 7b (400 MHz, CDCl₃)

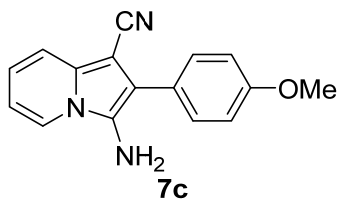
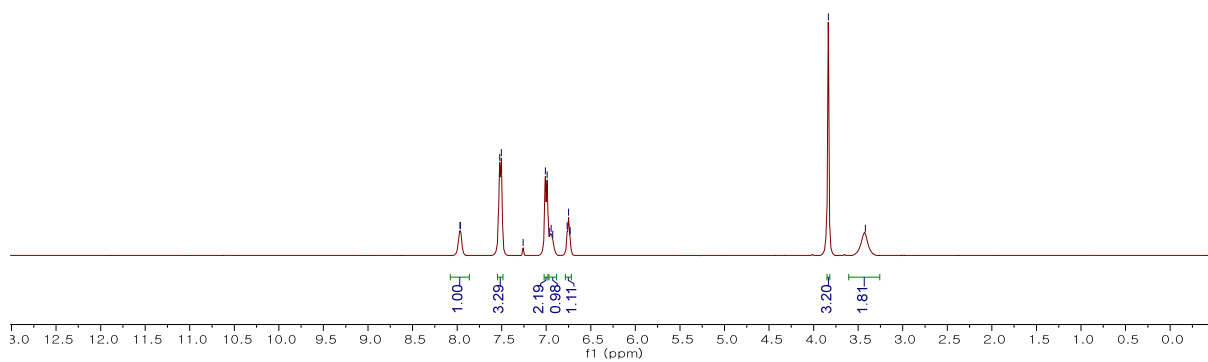


¹³C{¹H} NMR spectrum of 7b (100 MHz, CDCl₃)

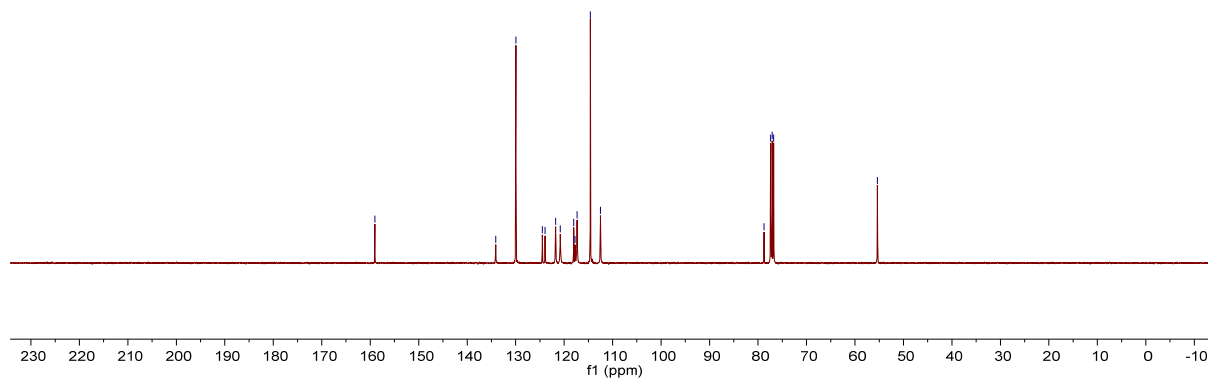


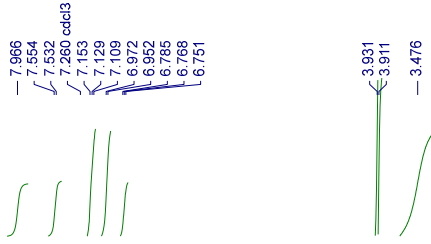
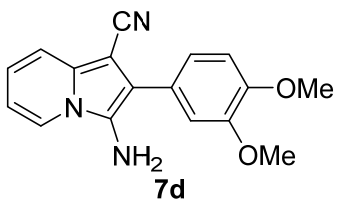


¹H NMR spectrum of 7c (400 MHz, CDCl₃)

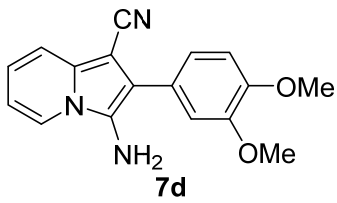
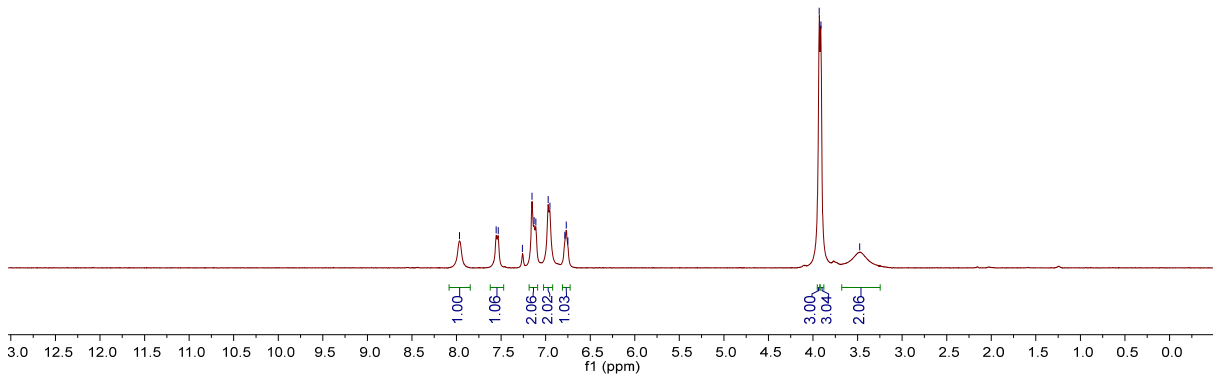


¹³C{¹H} NMR spectrum of 7c (100 MHz, CDCl₃)

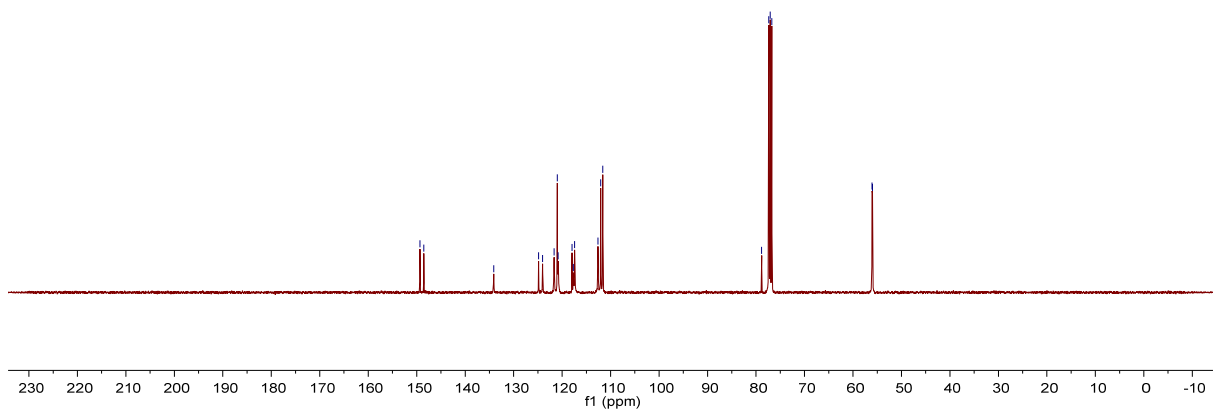


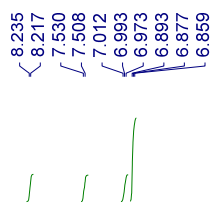
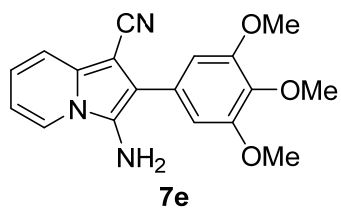


^1H NMR spectrum of 7d (400 MHz, CDCl_3)

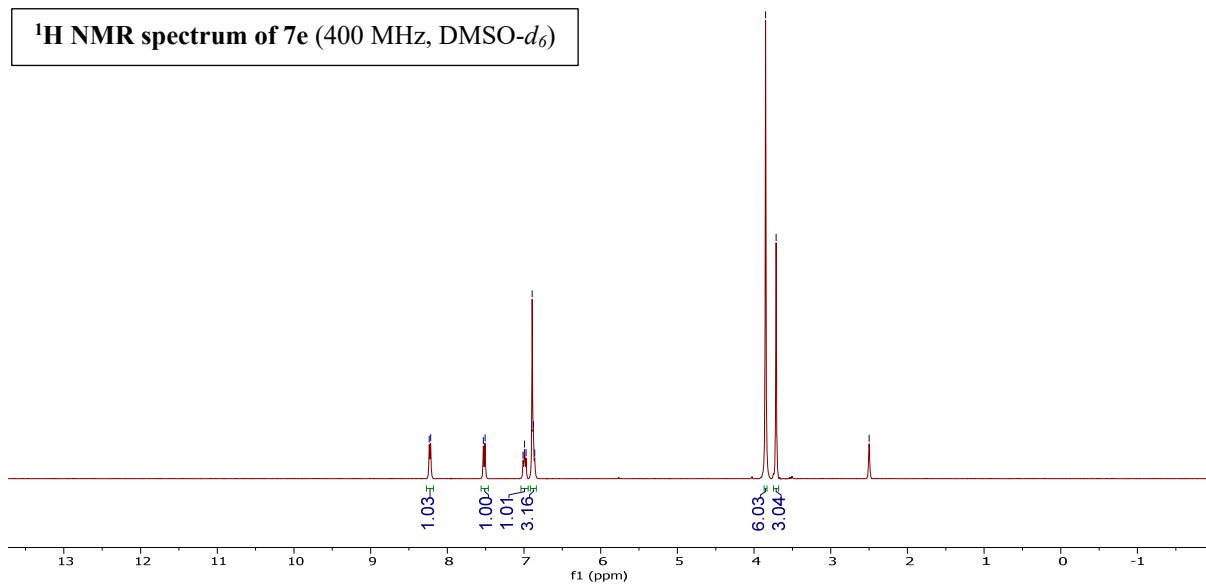


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of 7d (100 MHz, CDCl_3)

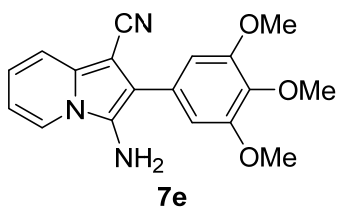




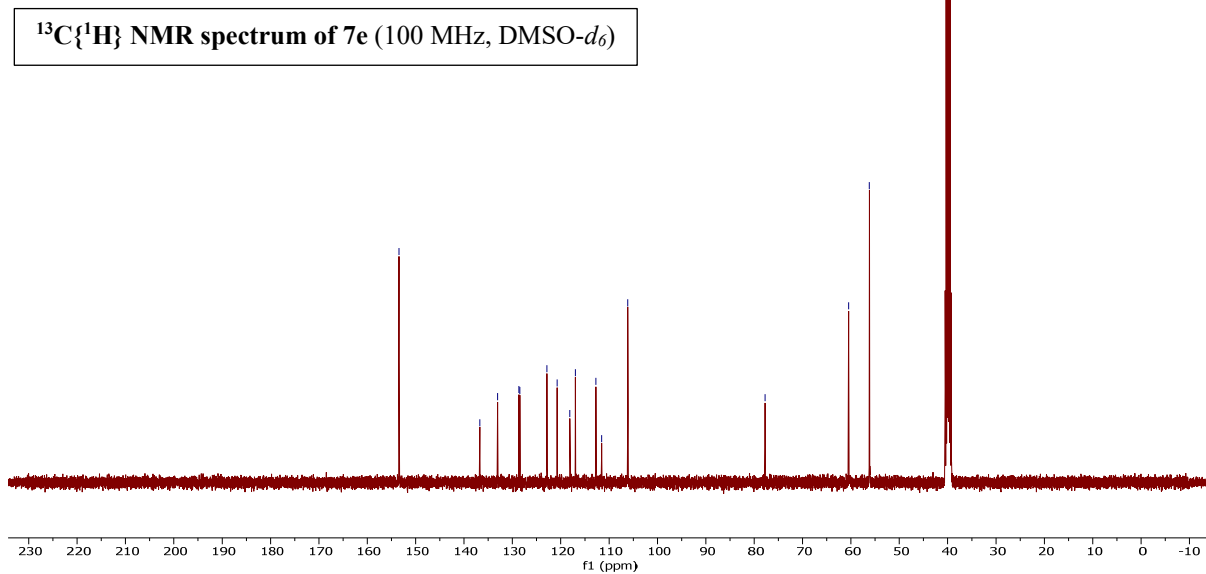
¹H NMR spectrum of **7e** (400 MHz, DMSO-*d*₆)

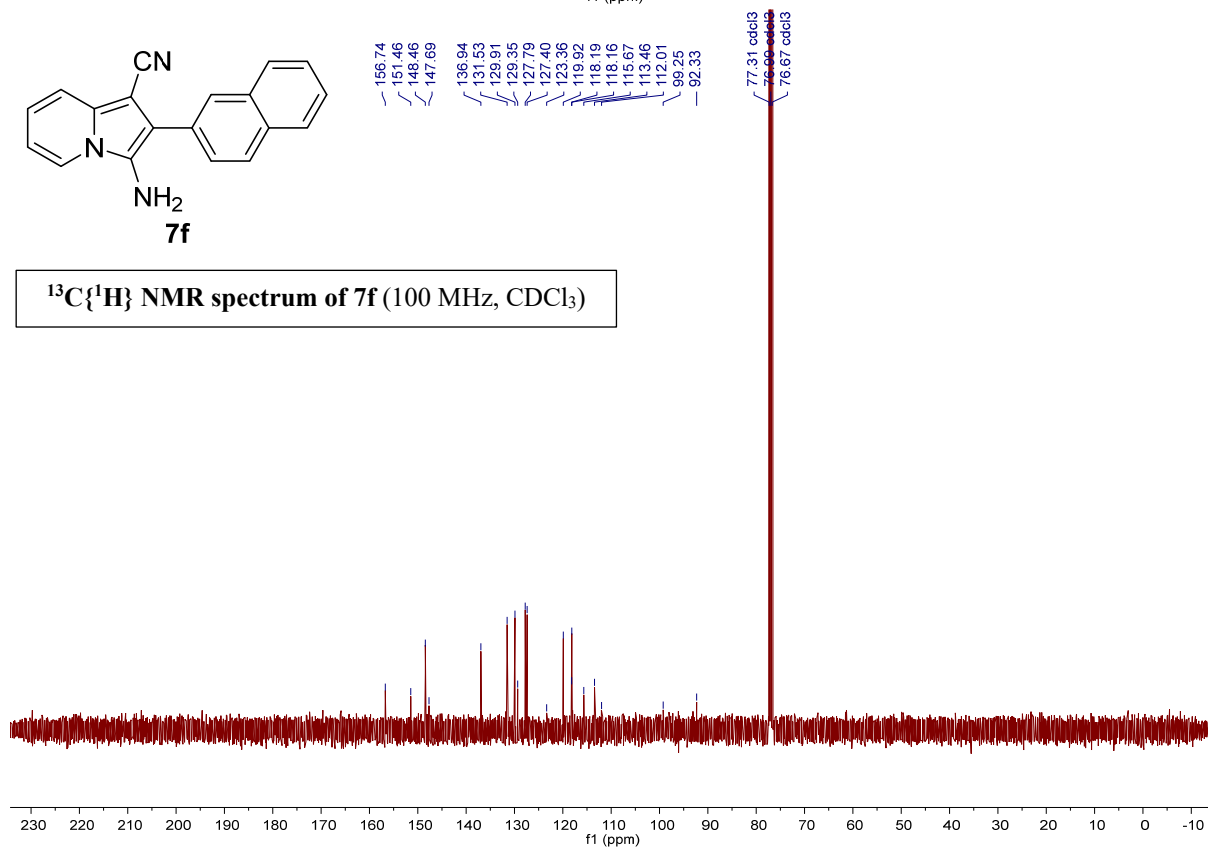
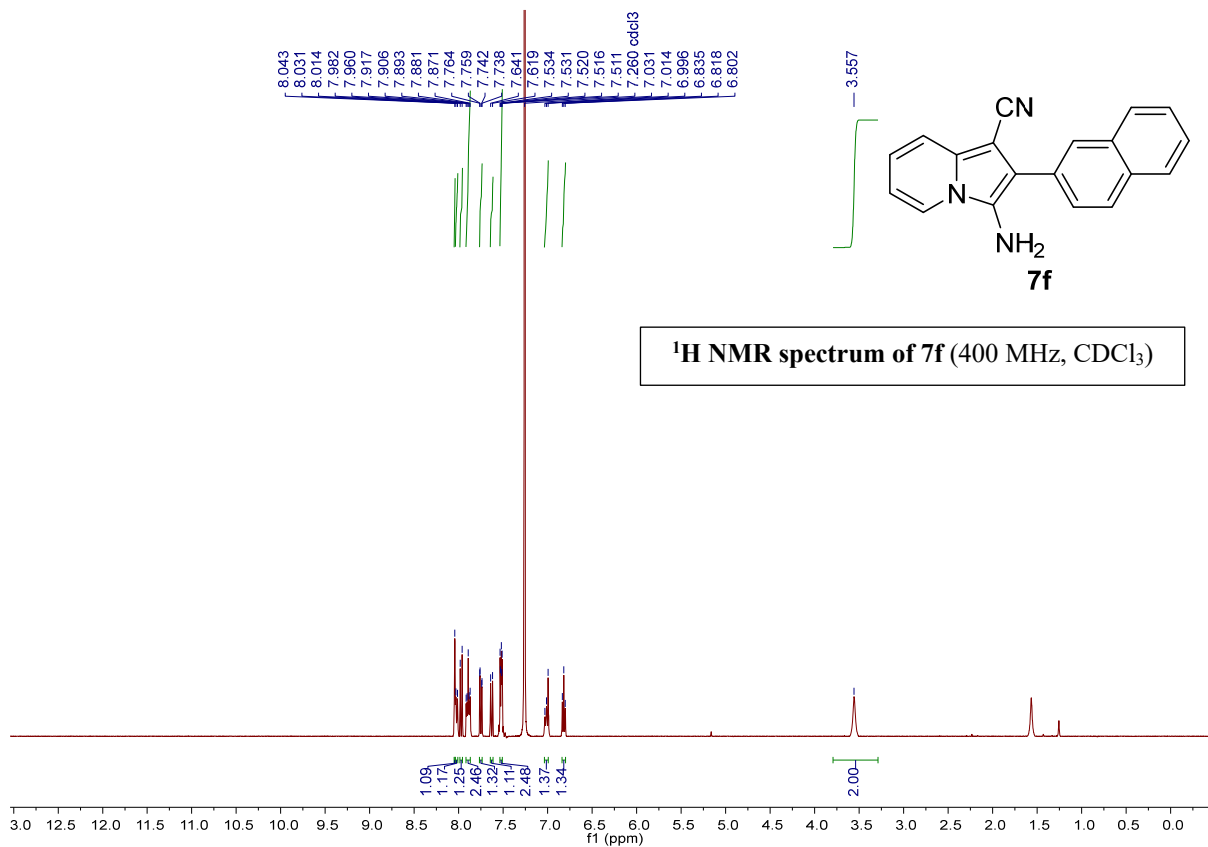


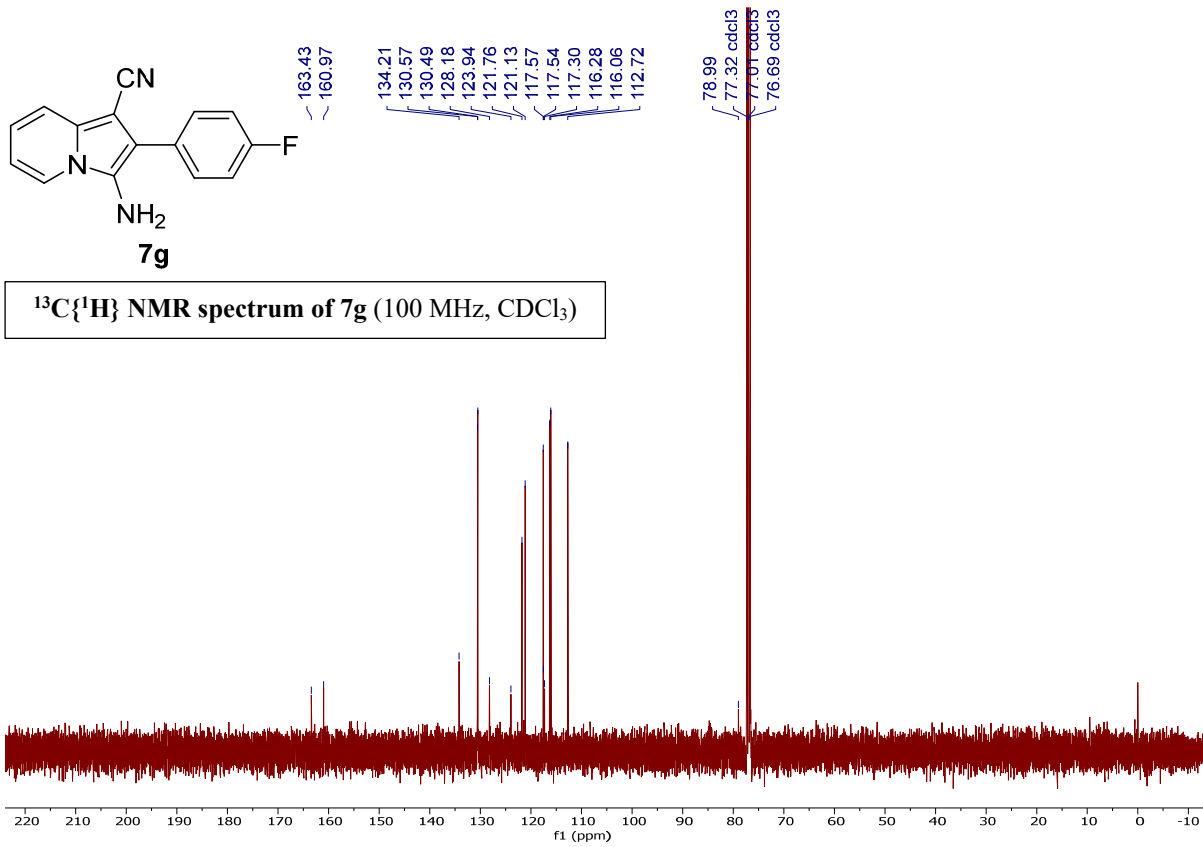
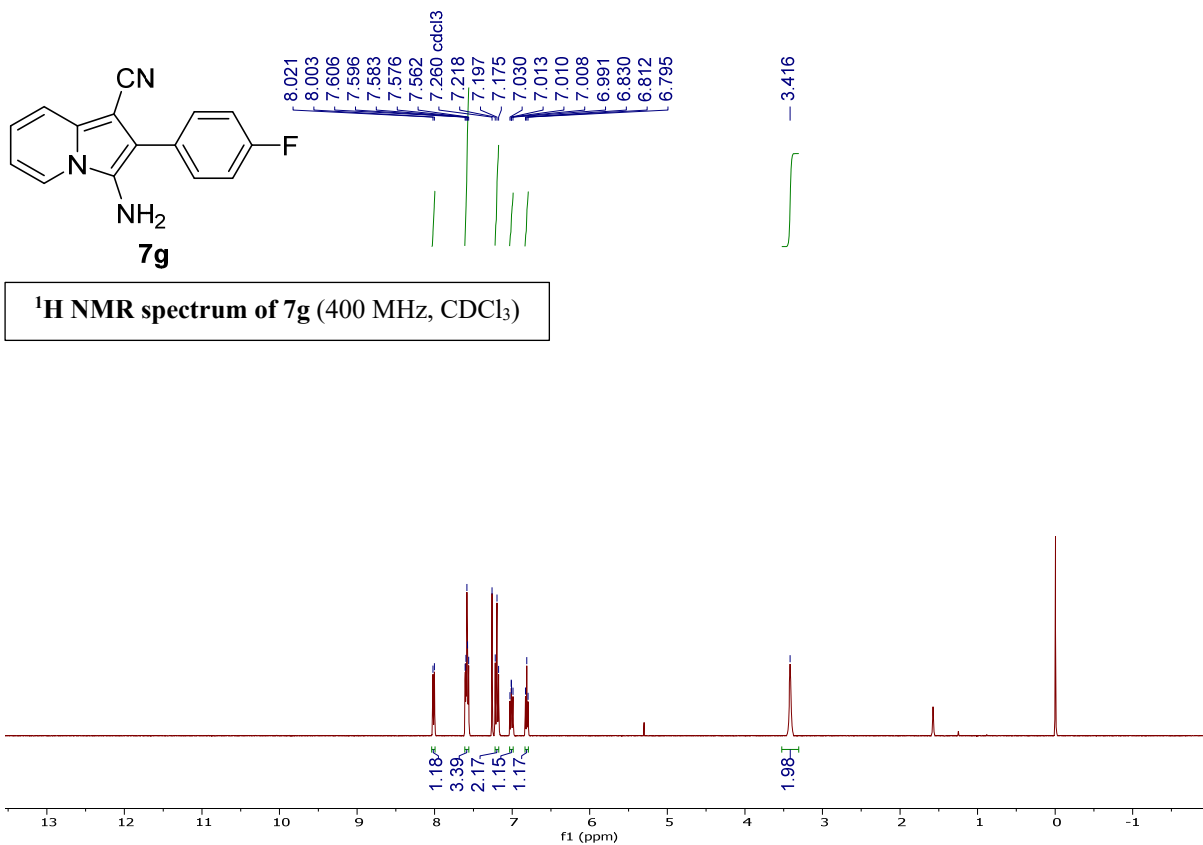
7e

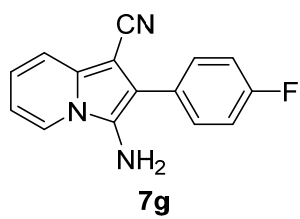


¹³C{¹H} NMR spectrum of **7e** (100 MHz, DMSO-*d*₆)

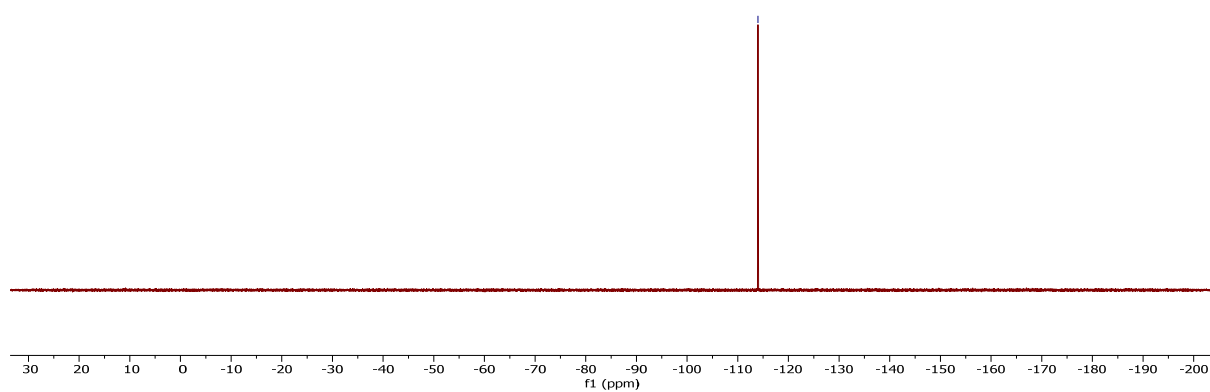


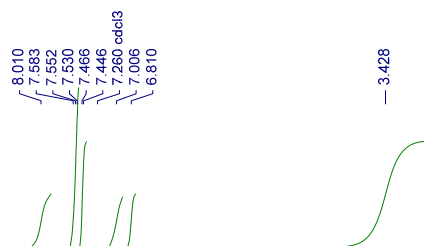
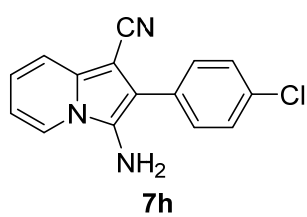




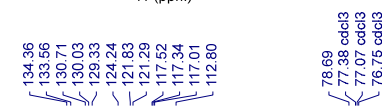
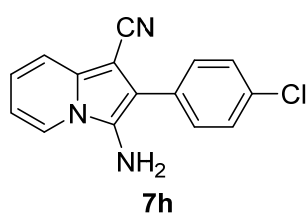
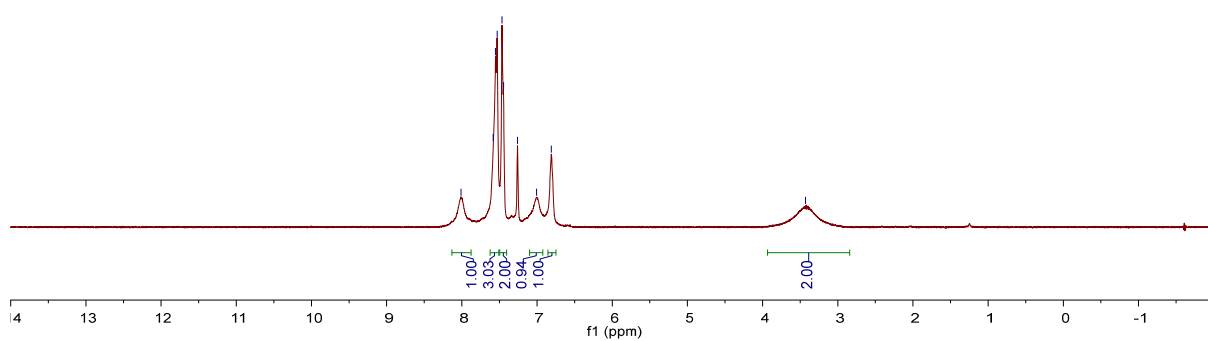


¹⁹F NMR spectrum of 7g (376 MHz, CDCl₃)

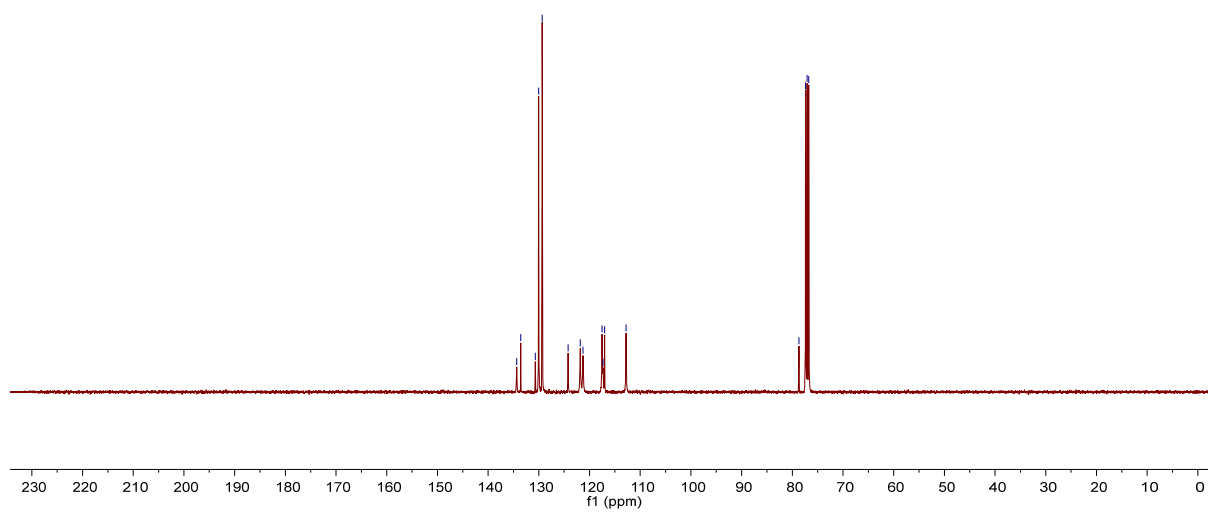


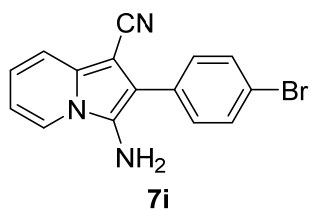


¹H NMR spectrum of 7h (400 MHz, CDCl₃)

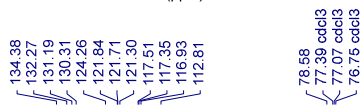
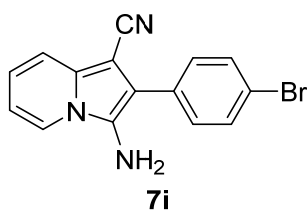
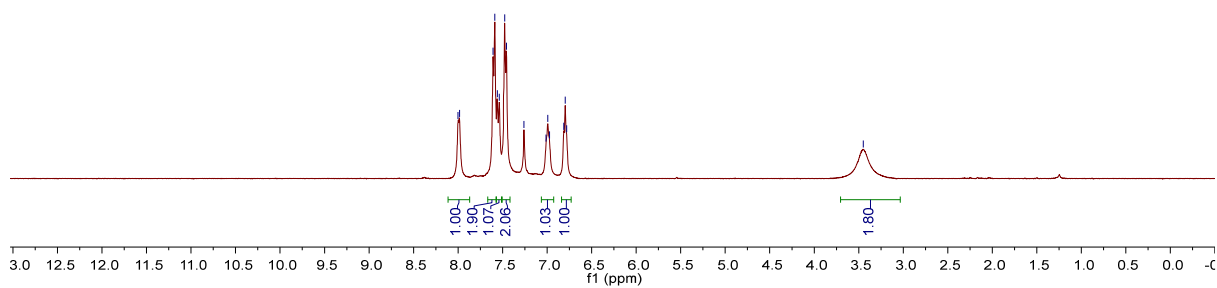


¹³C{¹H} NMR spectrum of 7h (100 MHz, CDCl₃)

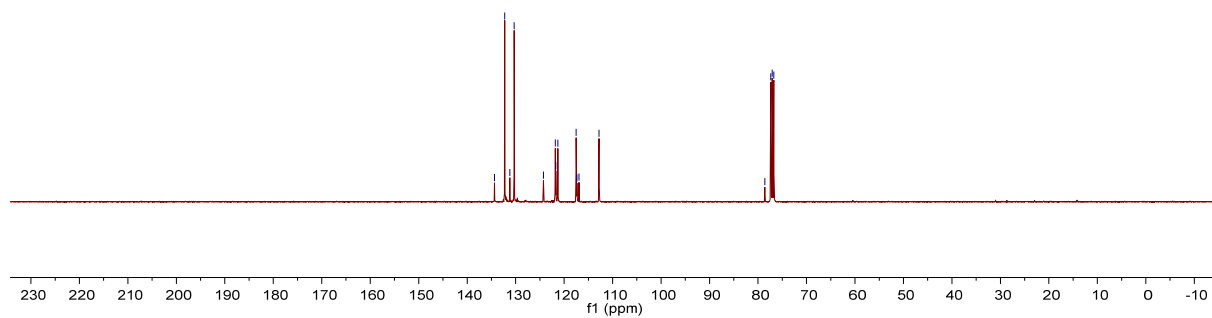


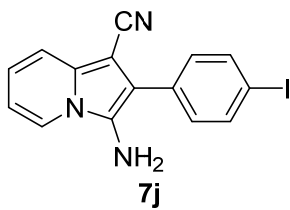


^1H NMR spectrum of 7i (400 MHz, CDCl_3)

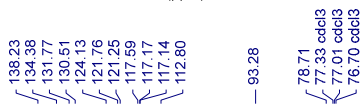
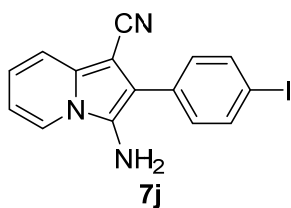
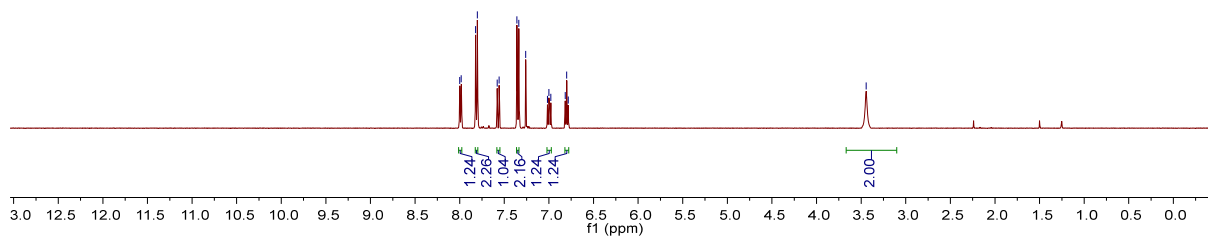


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of 7i (100 MHz, CDCl_3)

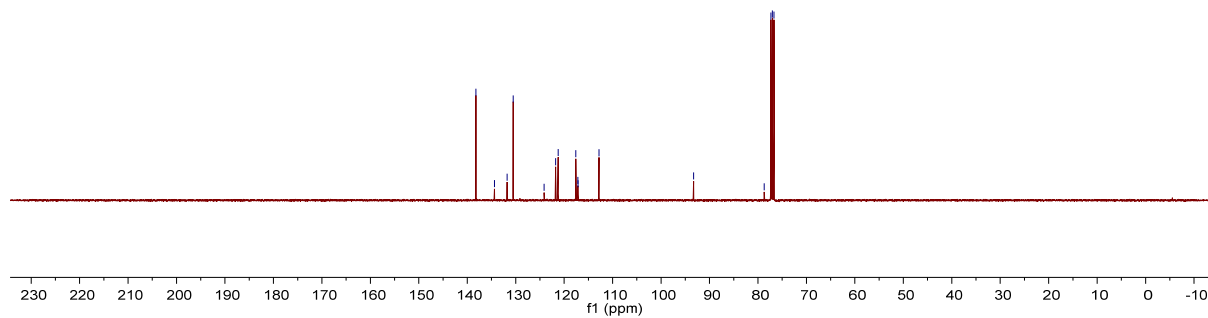


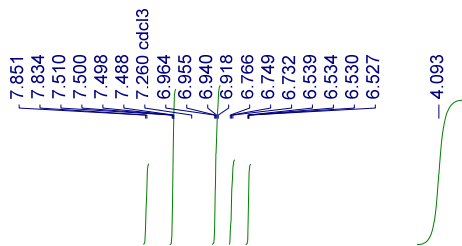
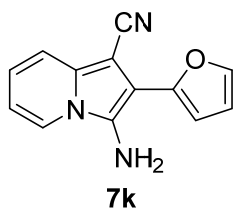


¹H NMR spectrum of 7j (400 MHz, CDCl₃)

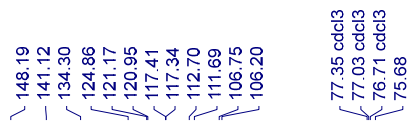
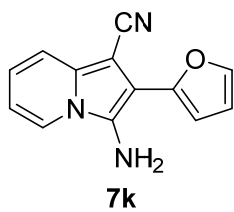
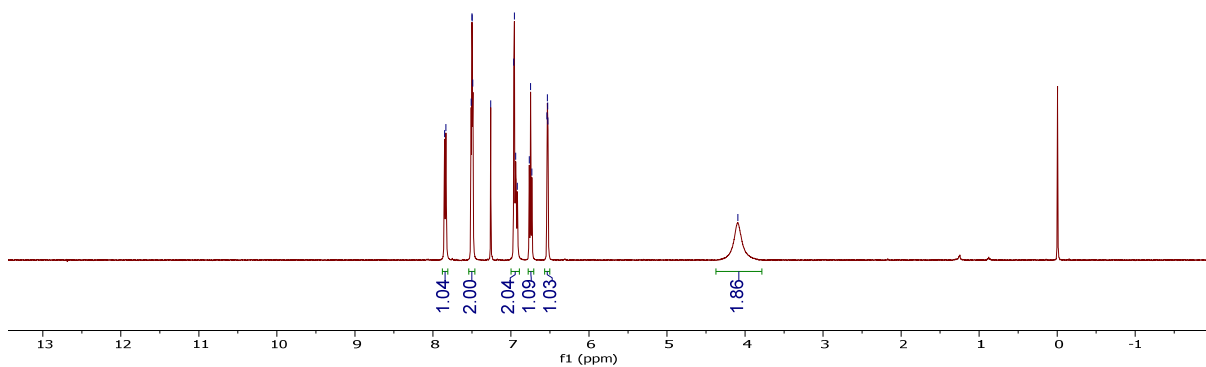


¹³C{¹H} NMR spectrum of 7j (100 MHz, CDCl₃)

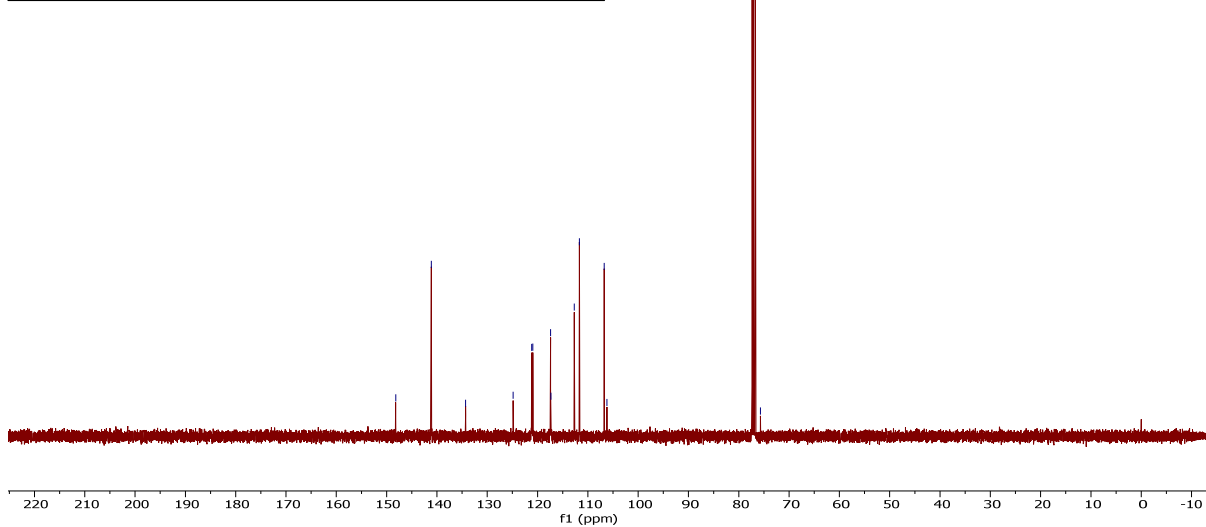


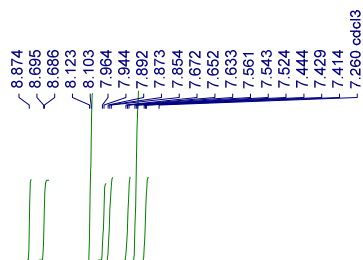
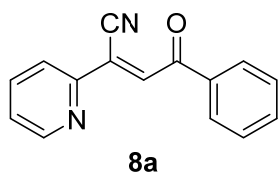


¹H NMR spectrum of 7k (400 MHz, CDCl₃)

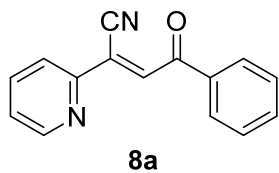
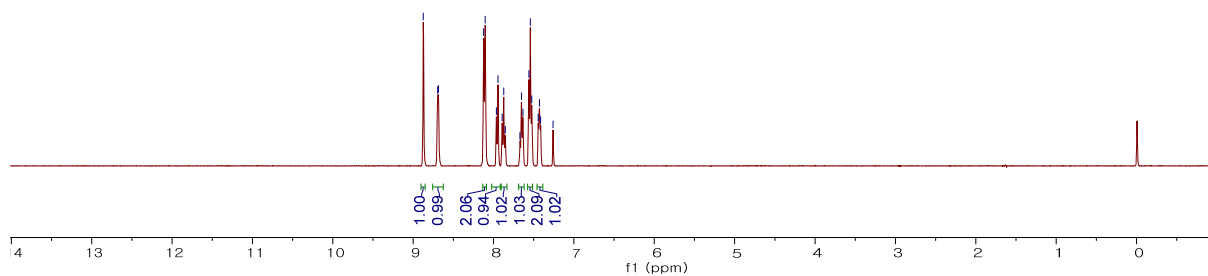


¹³C{¹H} NMR spectrum of 7k (100 MHz, CDCl₃)





¹H NMR spectrum of 8a (400 MHz, CDCl₃)

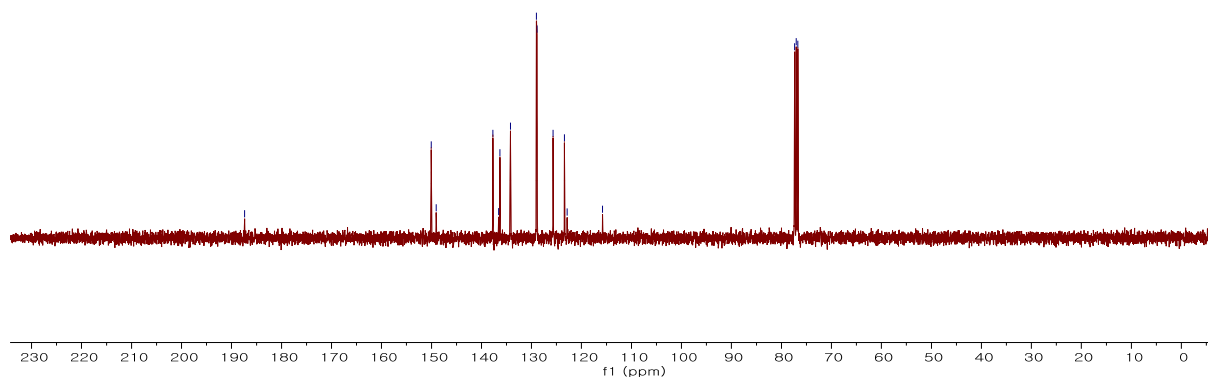


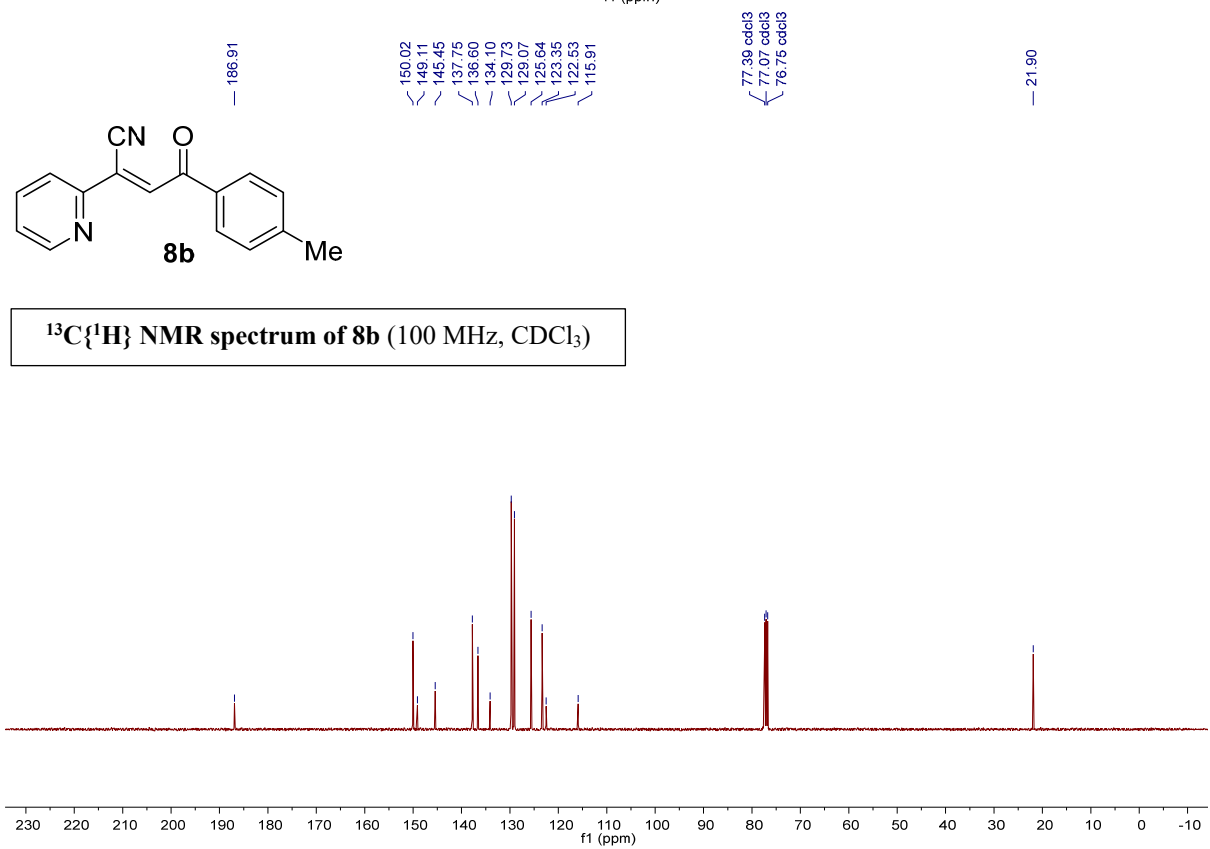
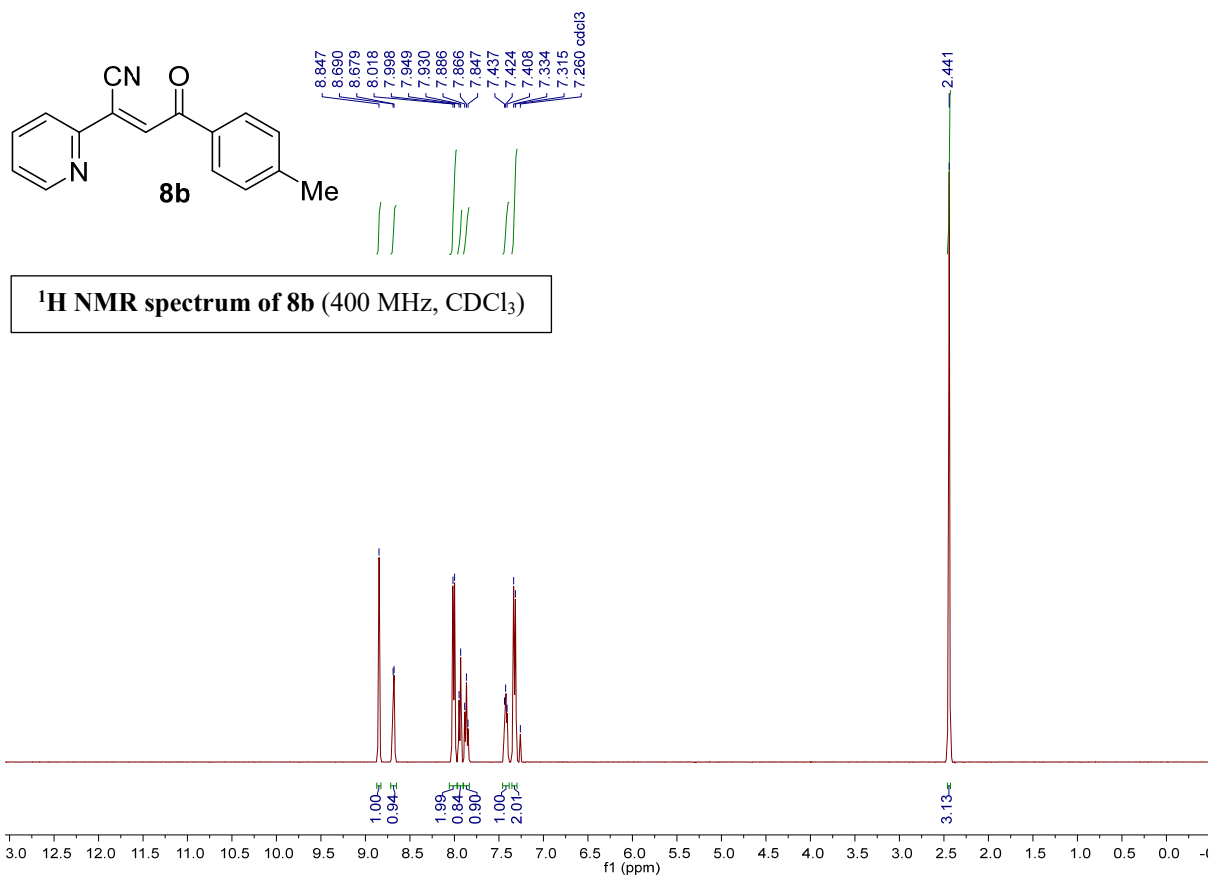
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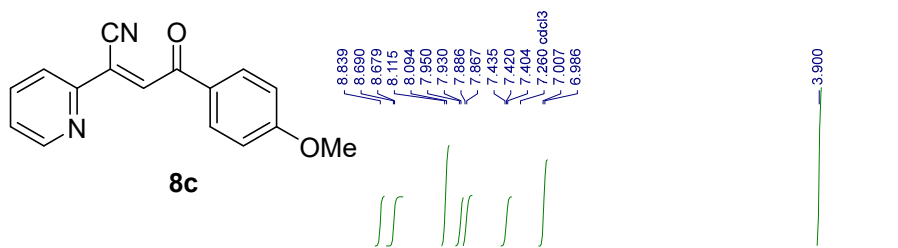
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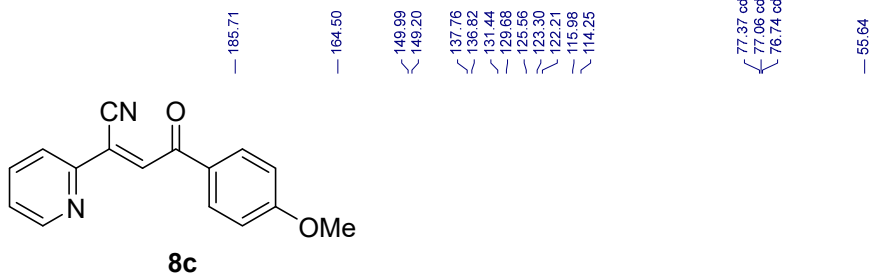
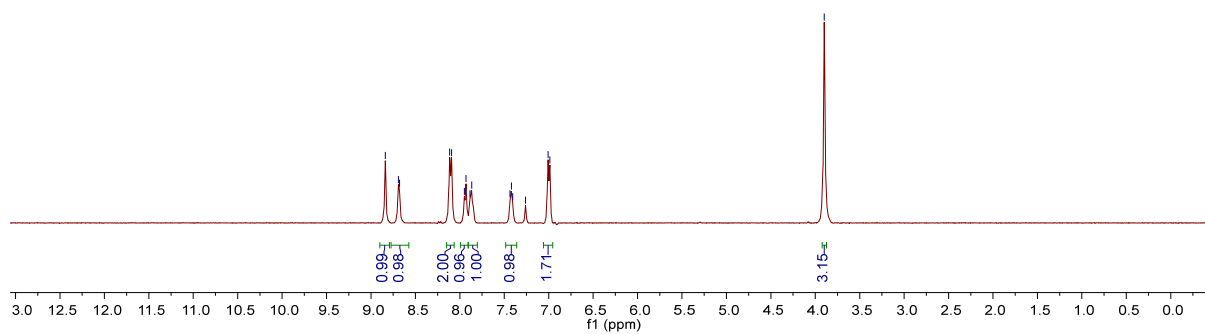
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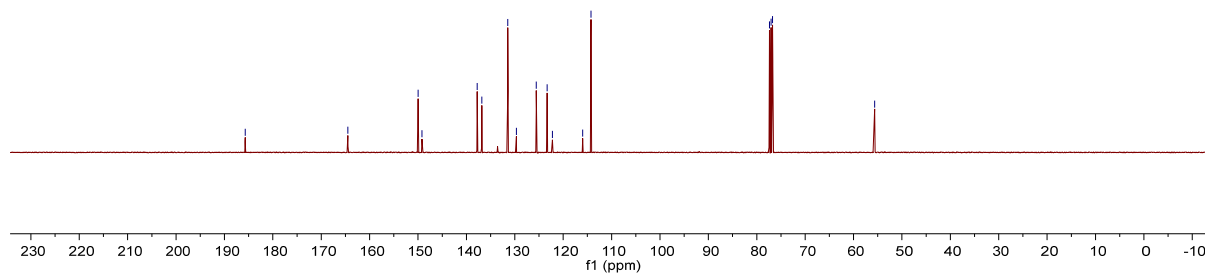


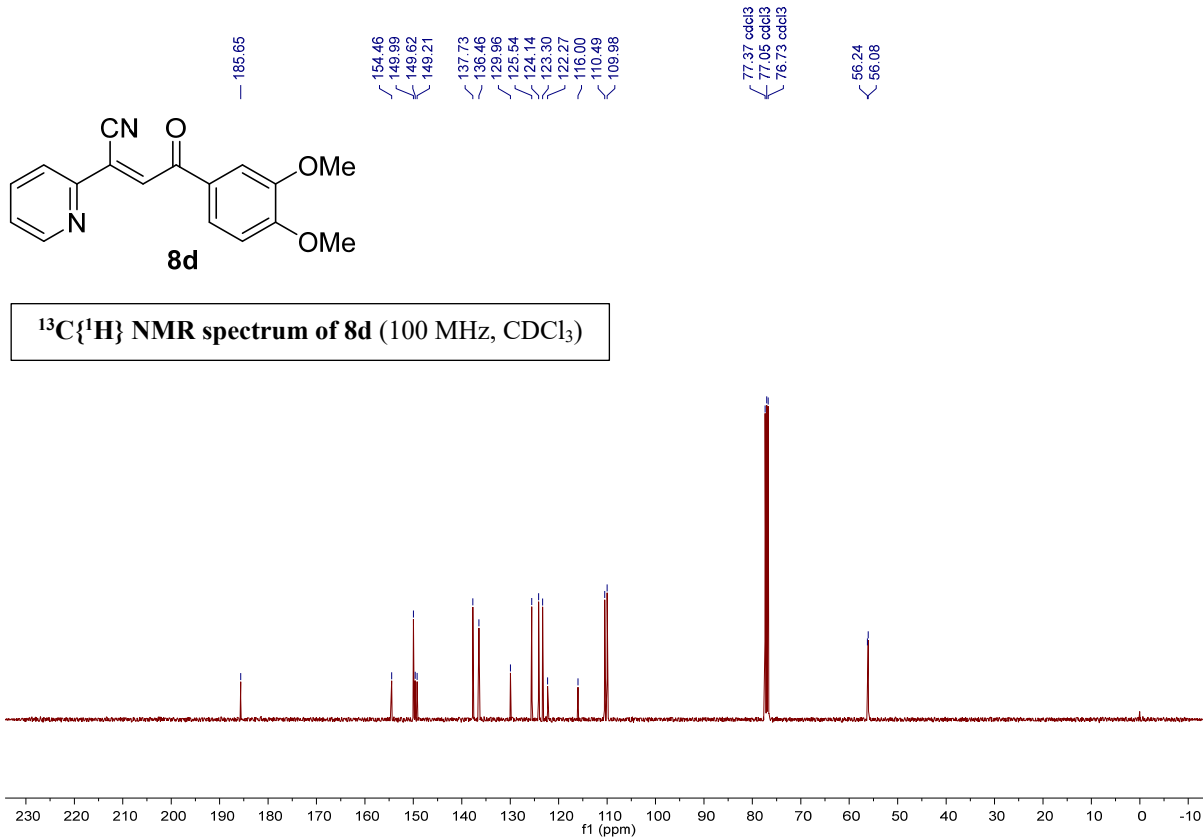
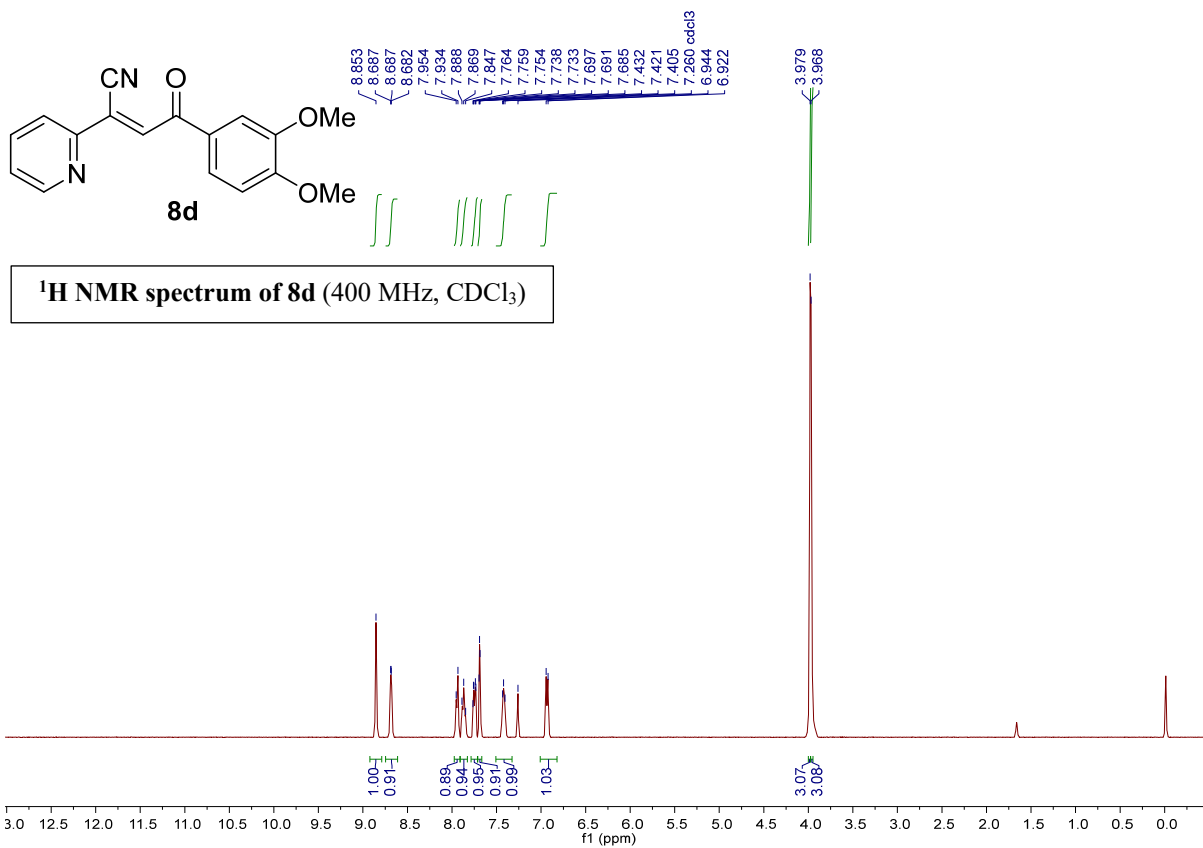


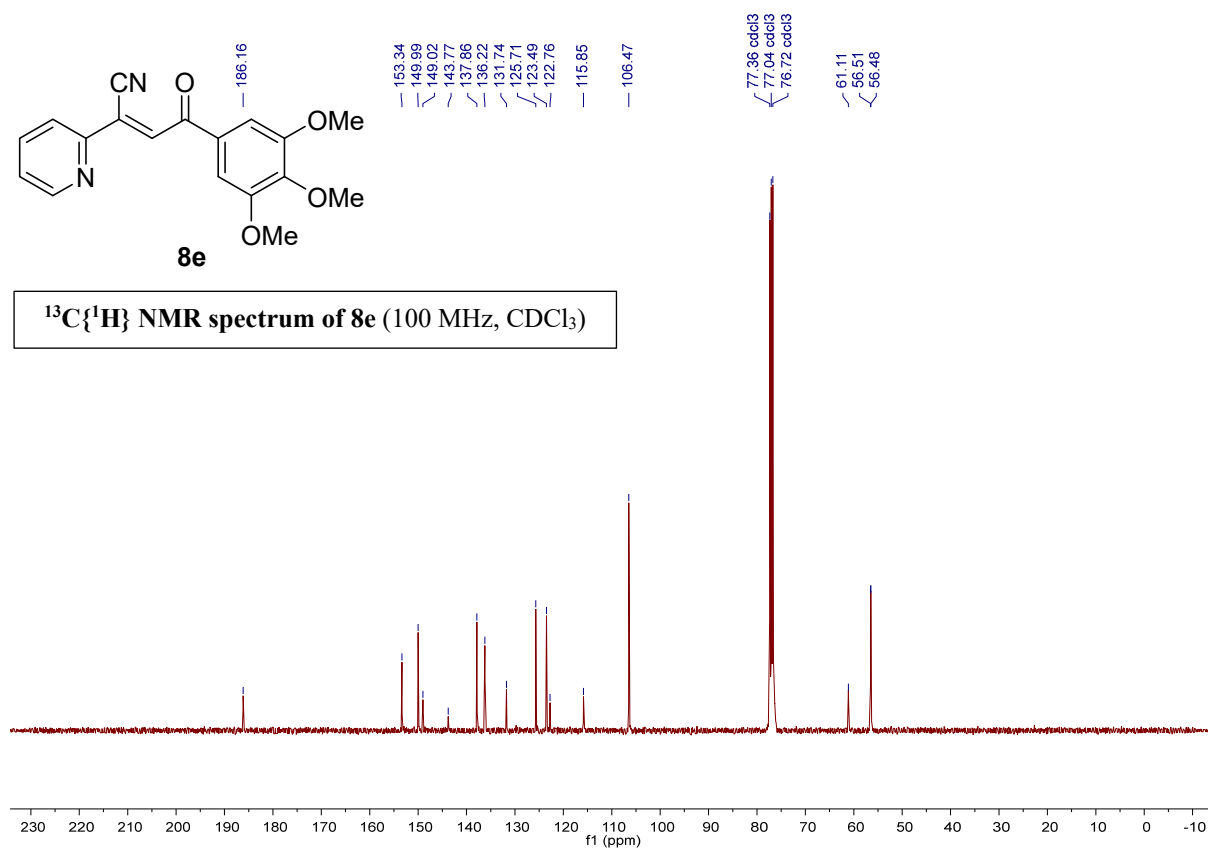
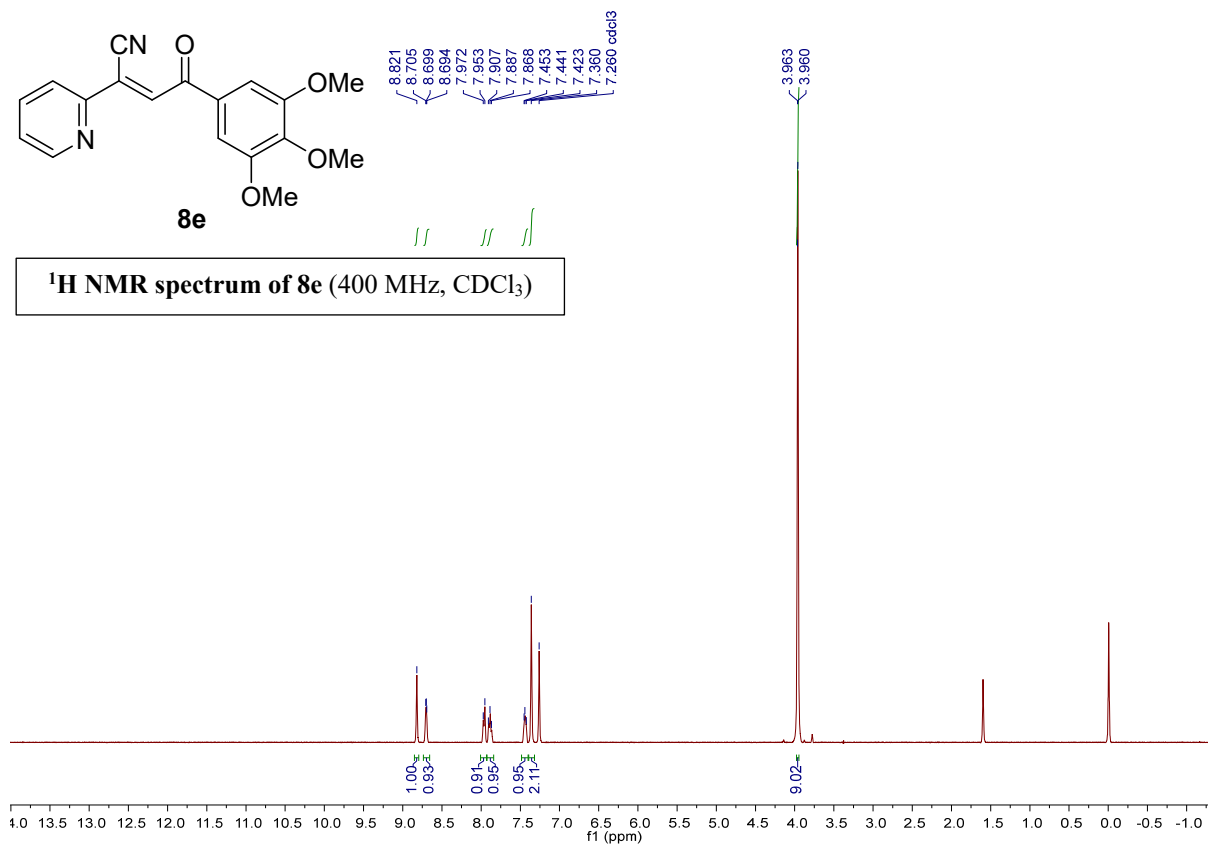
¹H NMR spectrum of 8c (400 MHz, CDCl₃)

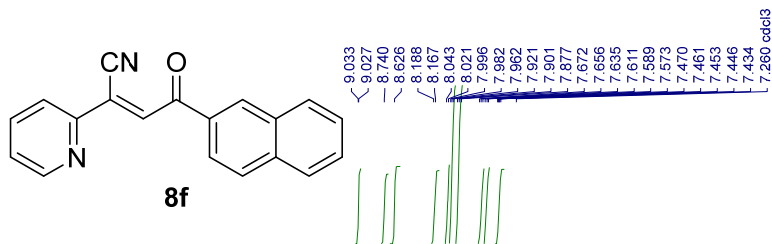


¹³C{¹H} NMR spectrum of 8c (100 MHz, CDCl₃)

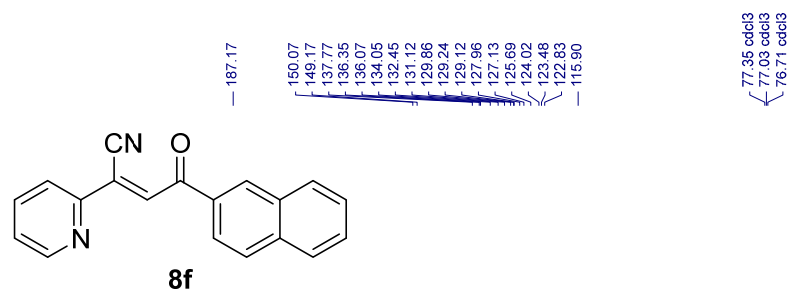
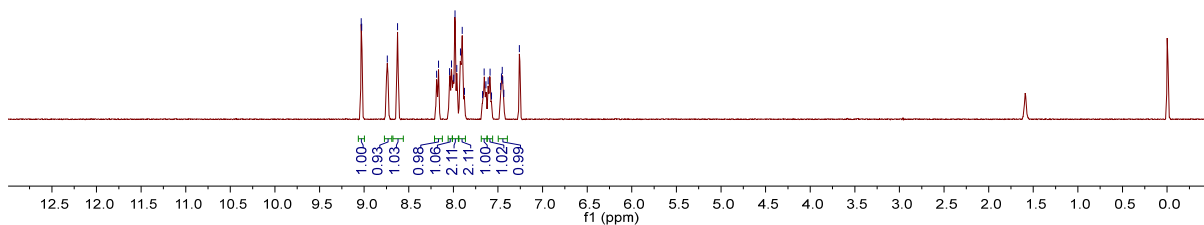




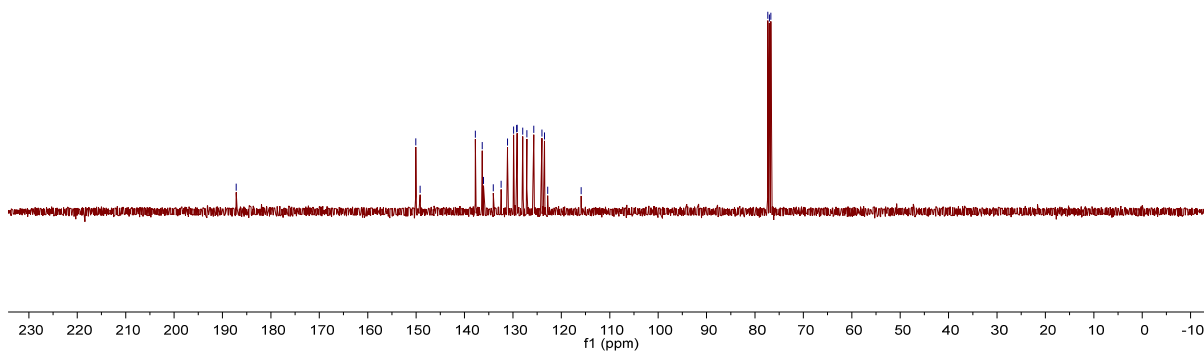


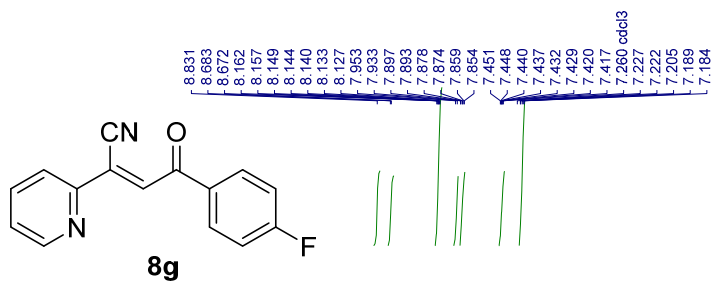


^1H NMR spectrum of **8f (400 MHz, CDCl_3)**

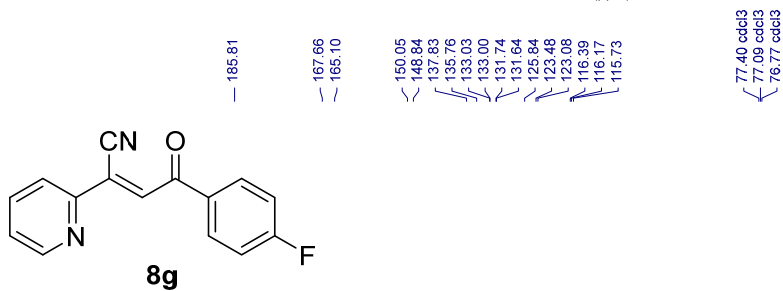
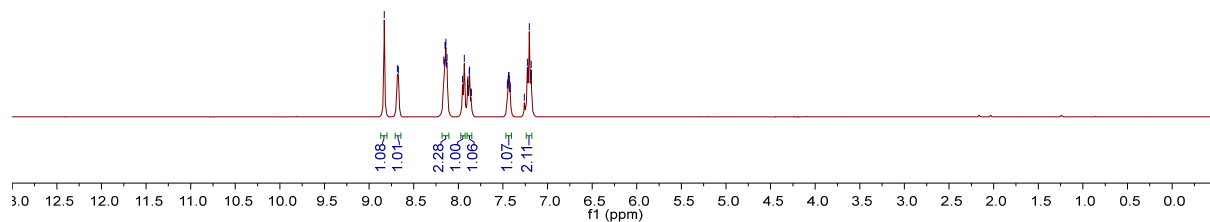


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **8f (100 MHz, CDCl_3)**

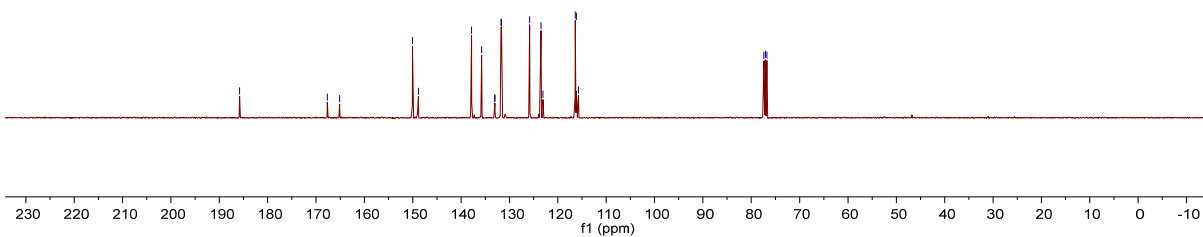


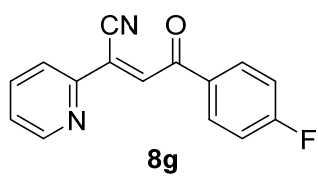


¹H NMR spectrum of 8g (400 MHz, CDCl₃)



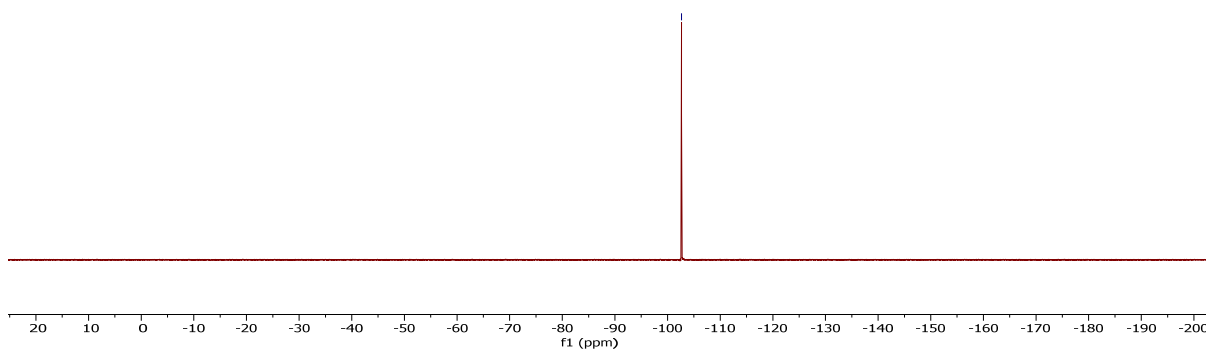
¹³C{¹H} NMR spectrum of 8g (100 MHz, CDCl₃)

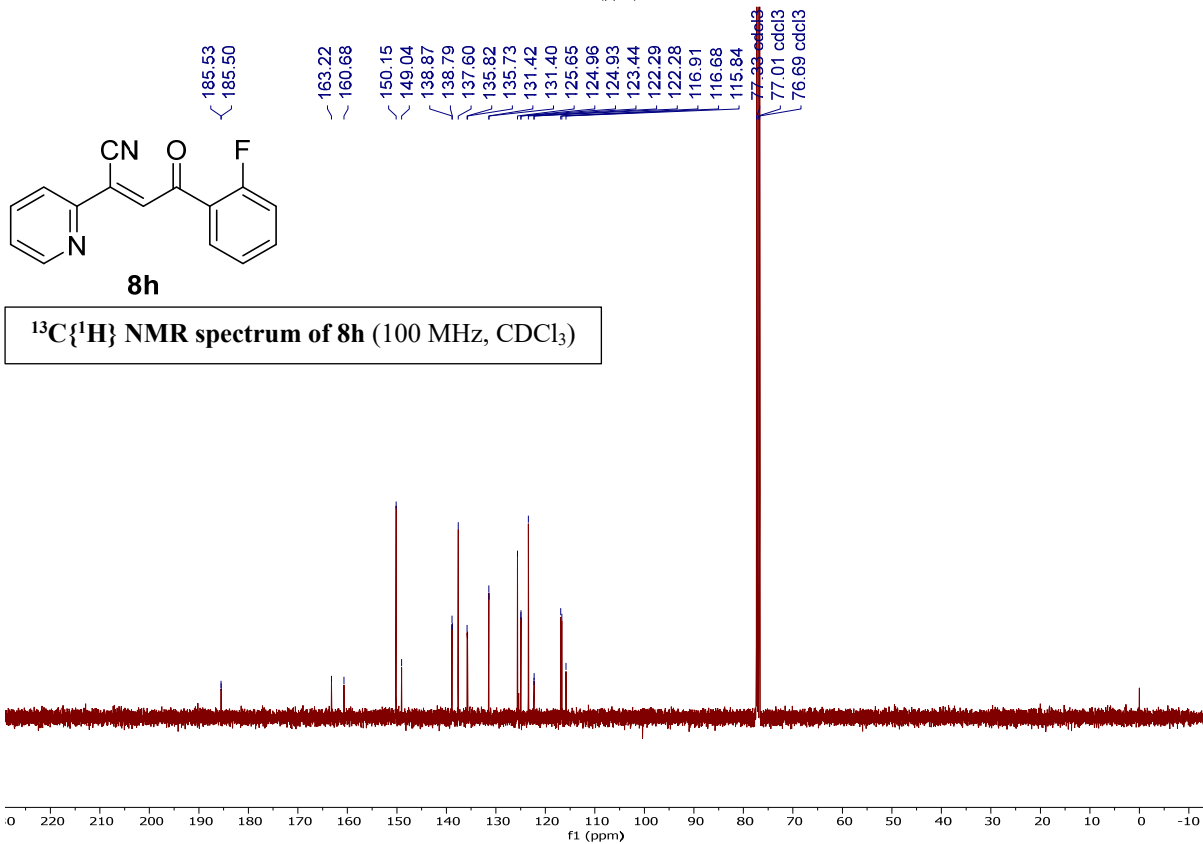
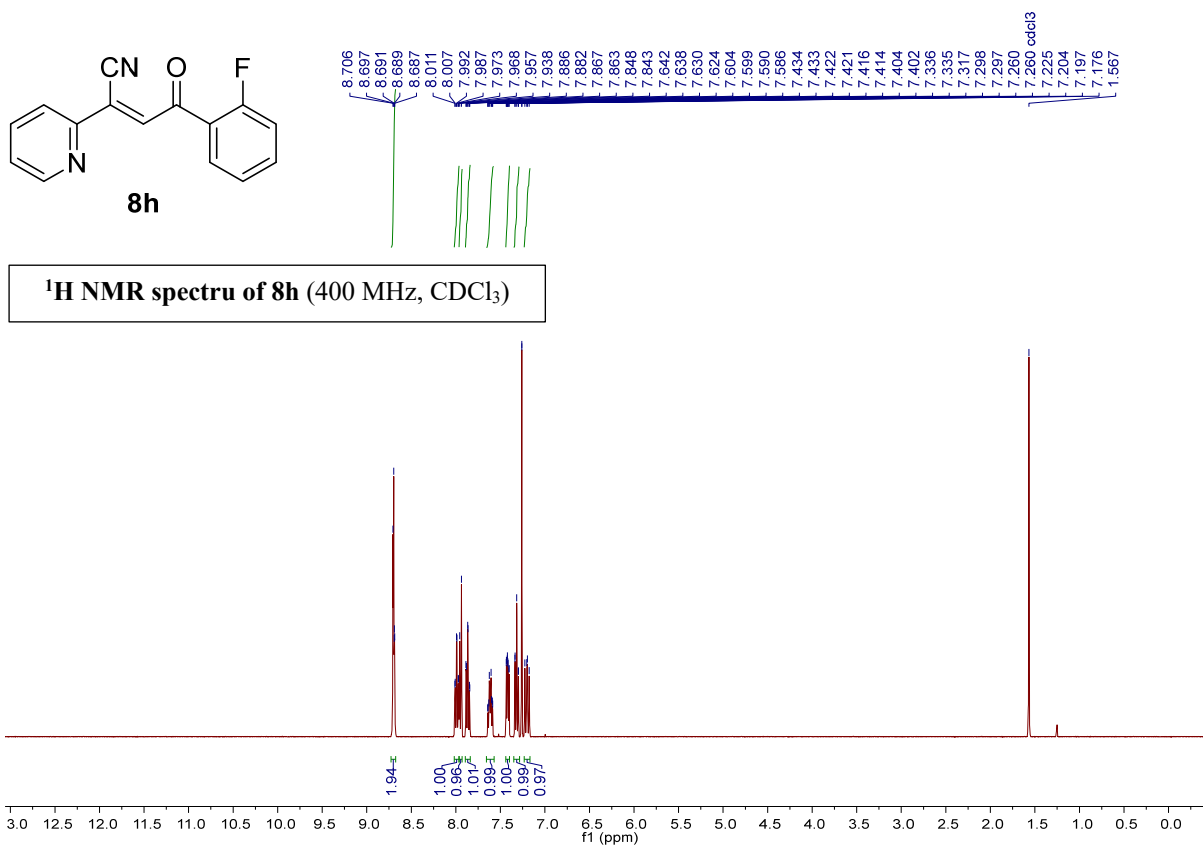
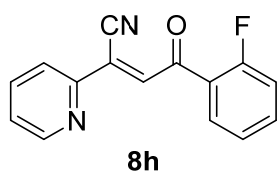


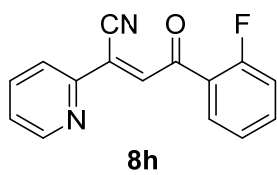


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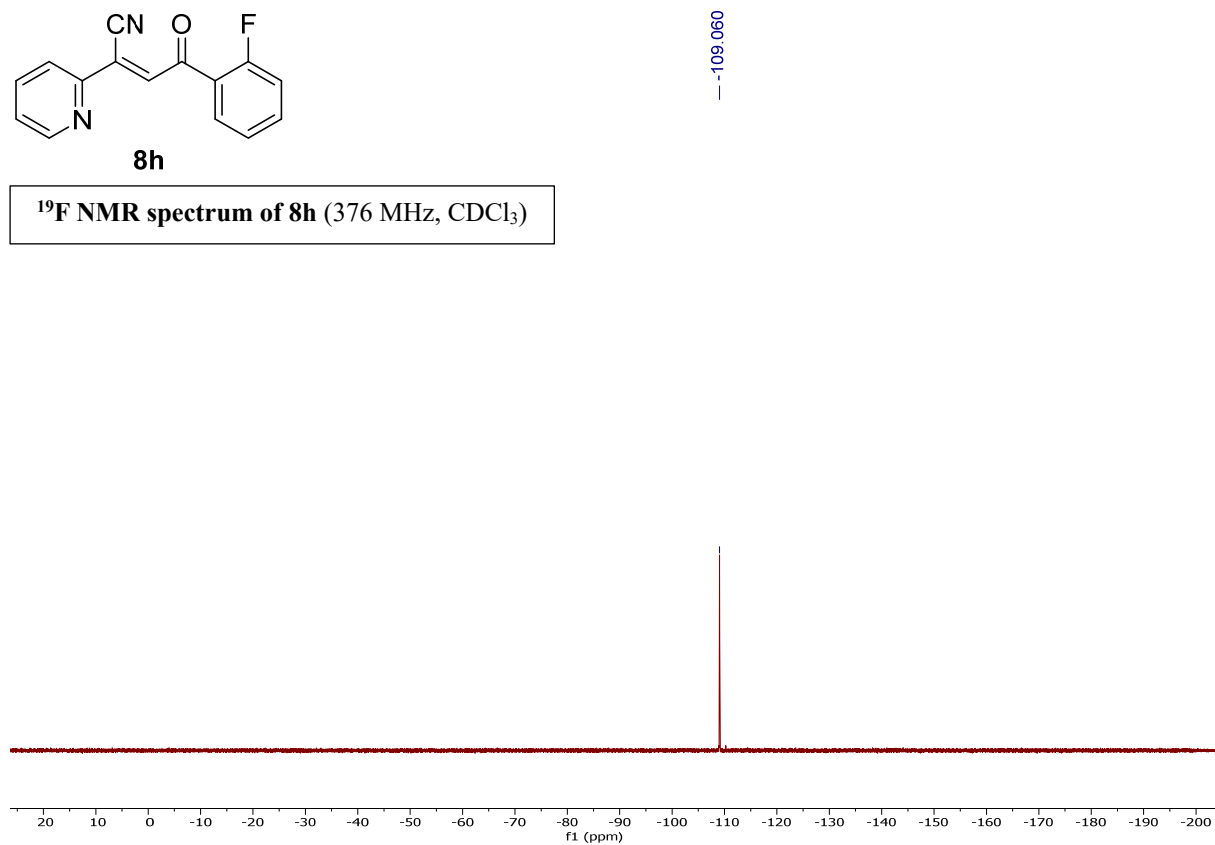
¹⁹F NMR spectrum of 8g (376 MHz, CDCl₃)

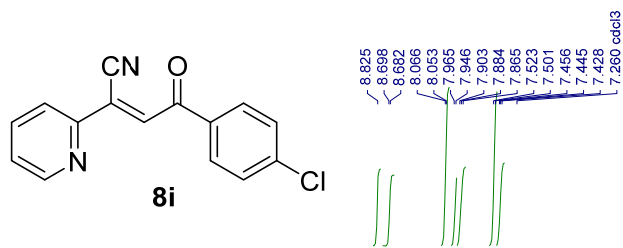




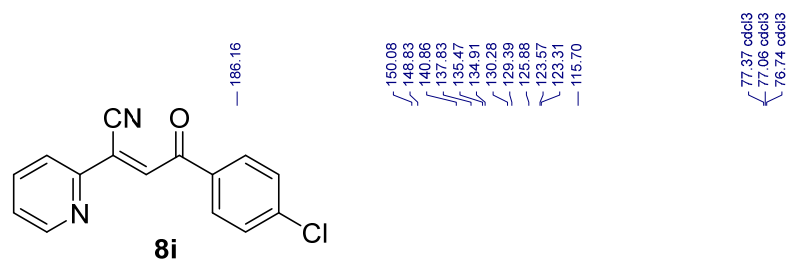
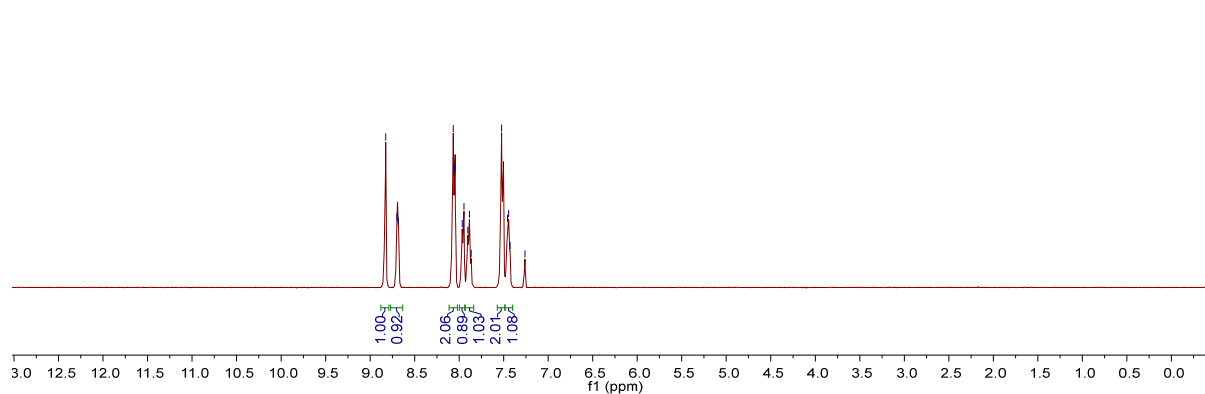


¹⁹F NMR spectrum of 8h (376 MHz, CDCl₃)

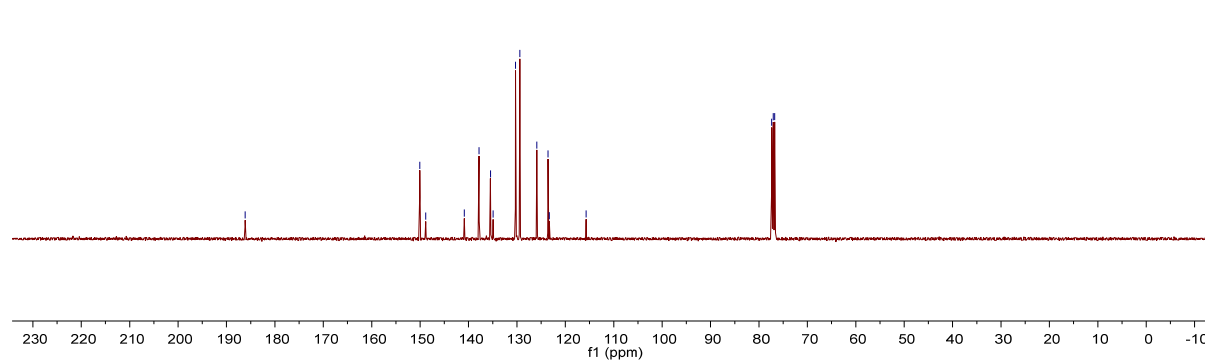


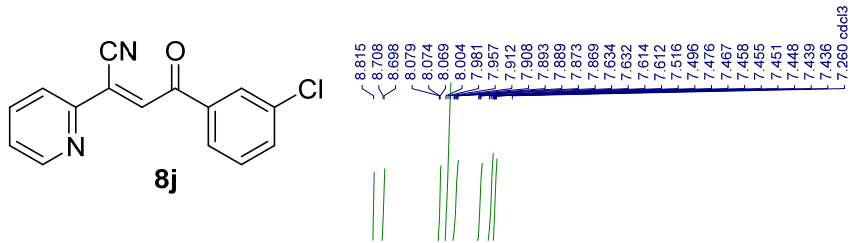


¹H NMR spectrum of 8i (400 MHz, CDCl₃)

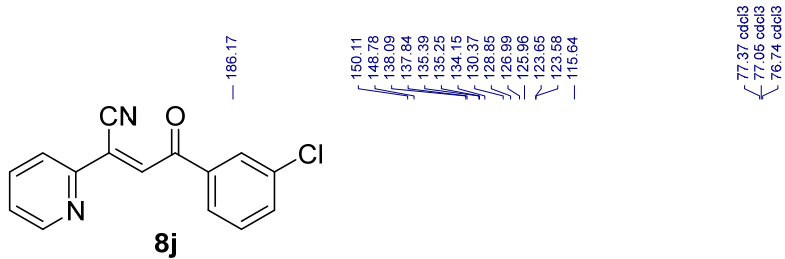
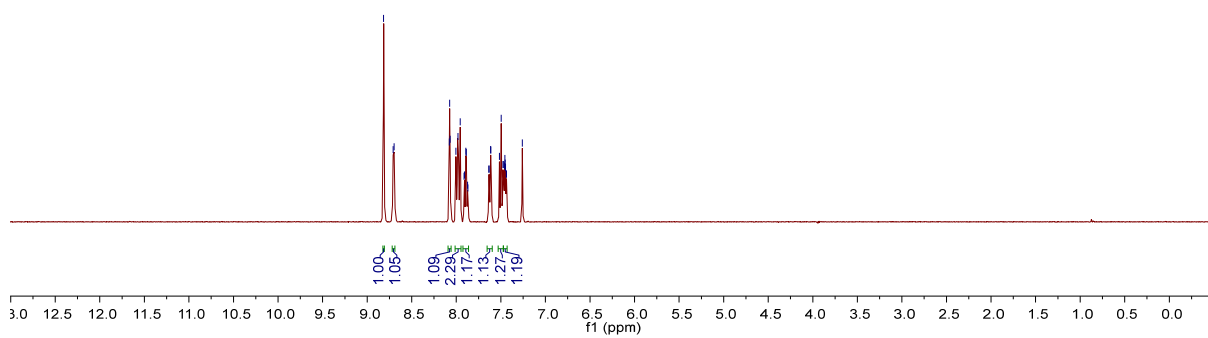


¹³C{¹H} NMR spectrum of 8i (100 MHz, CDCl₃)

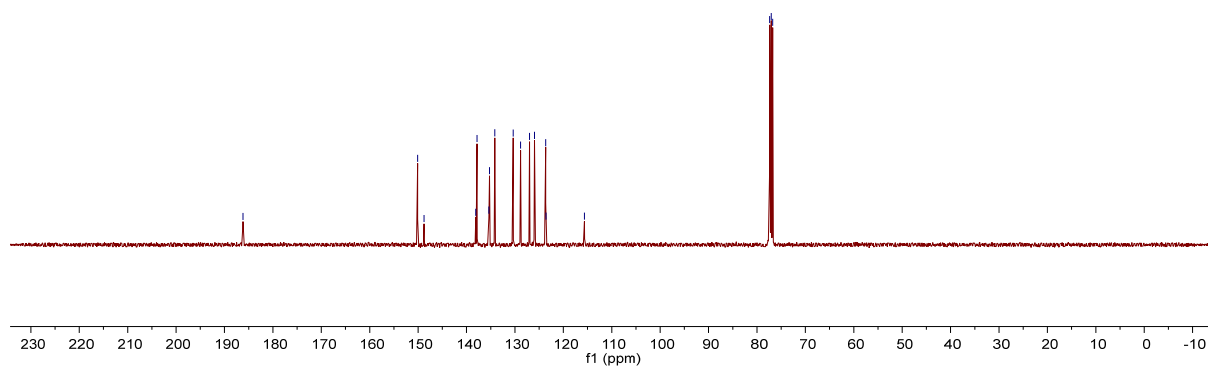


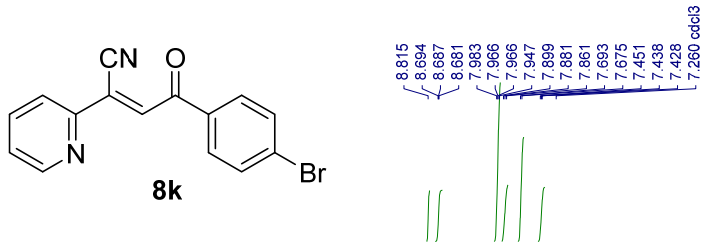


¹H NMR spectrum of 8j (400 MHz, CDCl₃)

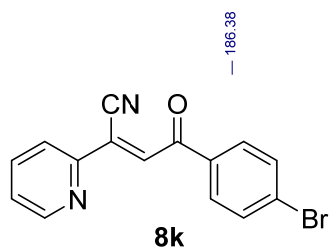
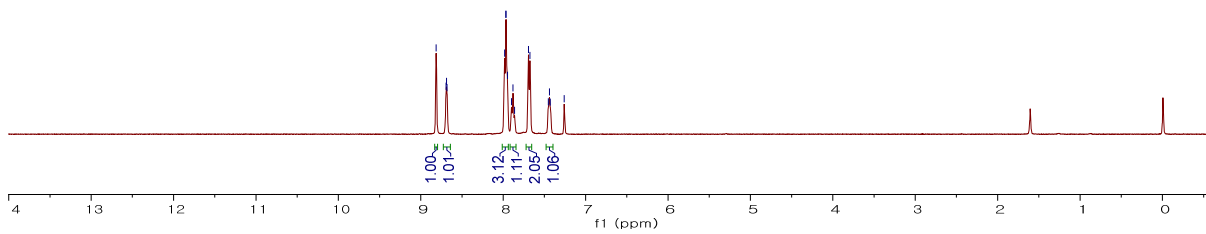


¹³C{¹H} NMR spectrum of 8j (100 MHz, CDCl₃)

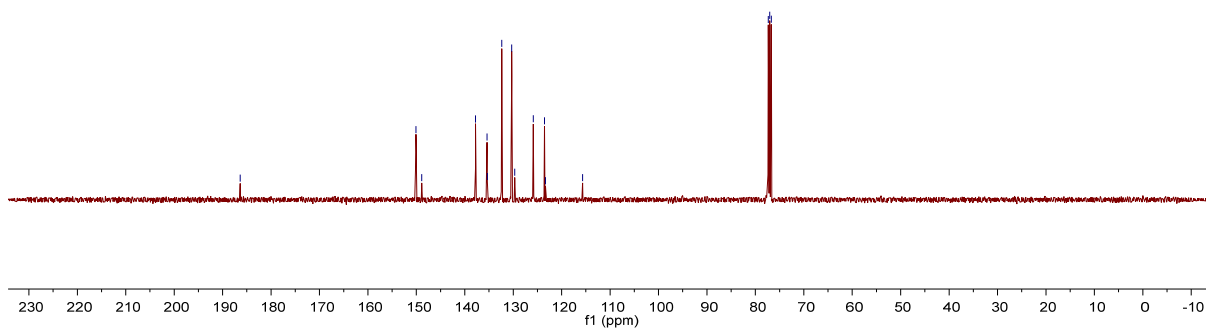


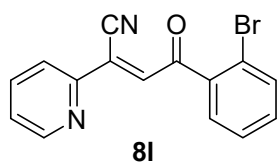


^1H NMR spectrum of 8k (400 MHz, CDCl_3)

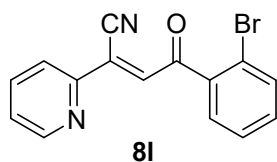
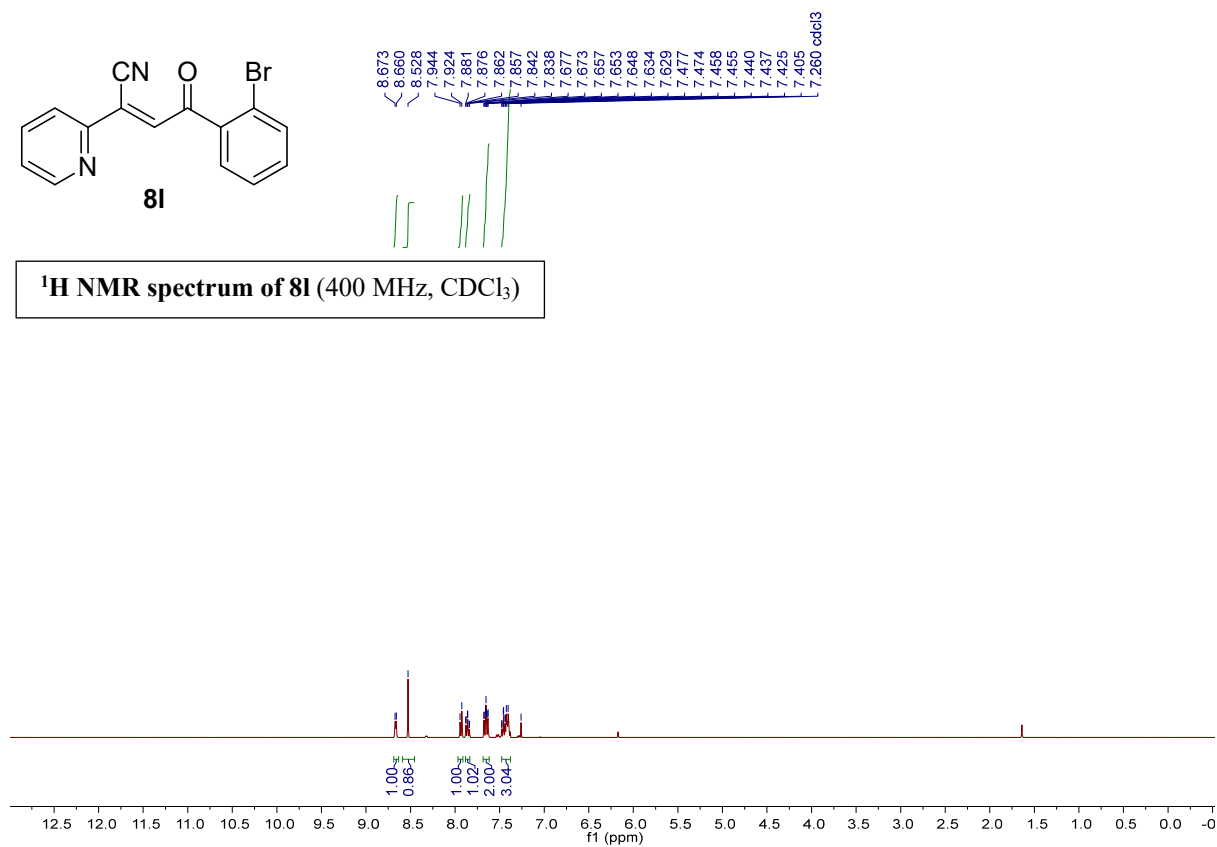


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of 8k (100 MHz, CDCl_3)

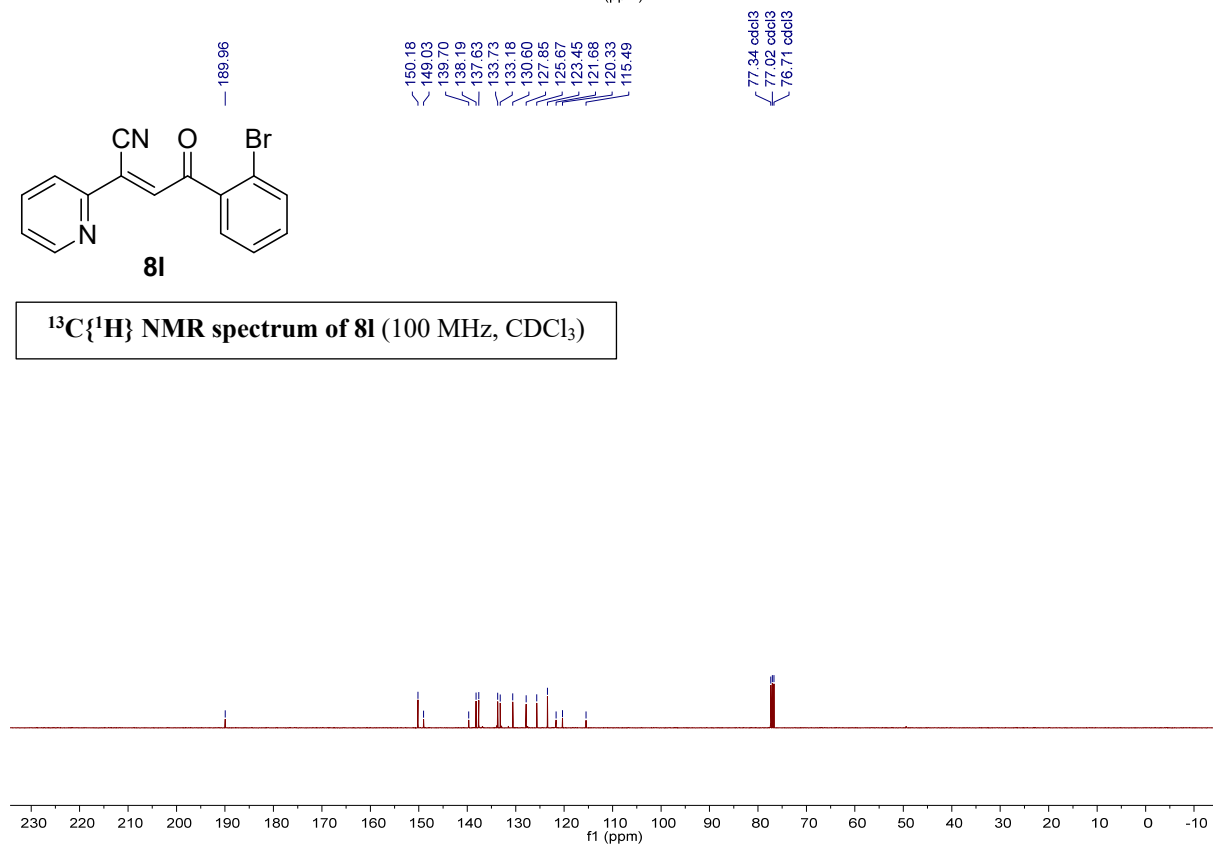


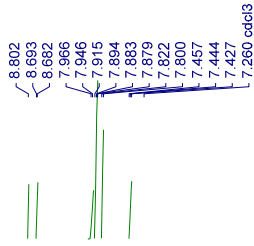
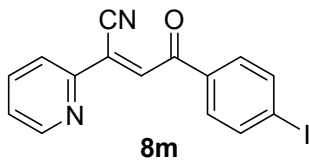


¹H NMR spectrum of 8I (400 MHz, CDCl₃)

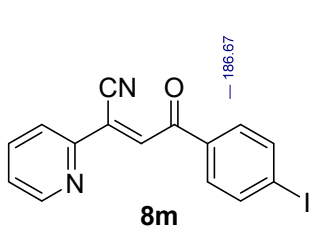
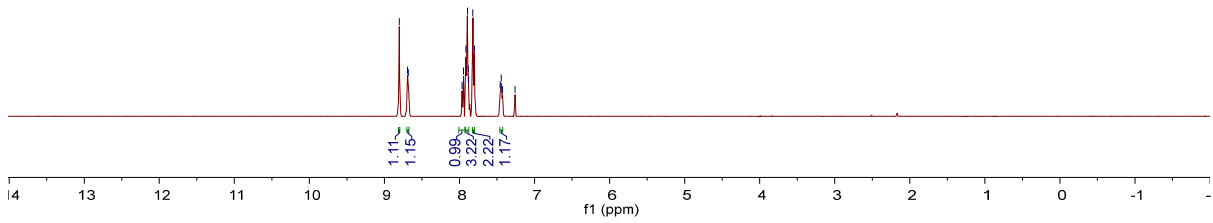


¹³C{¹H} NMR spectrum of 8I (100 MHz, CDCl₃)

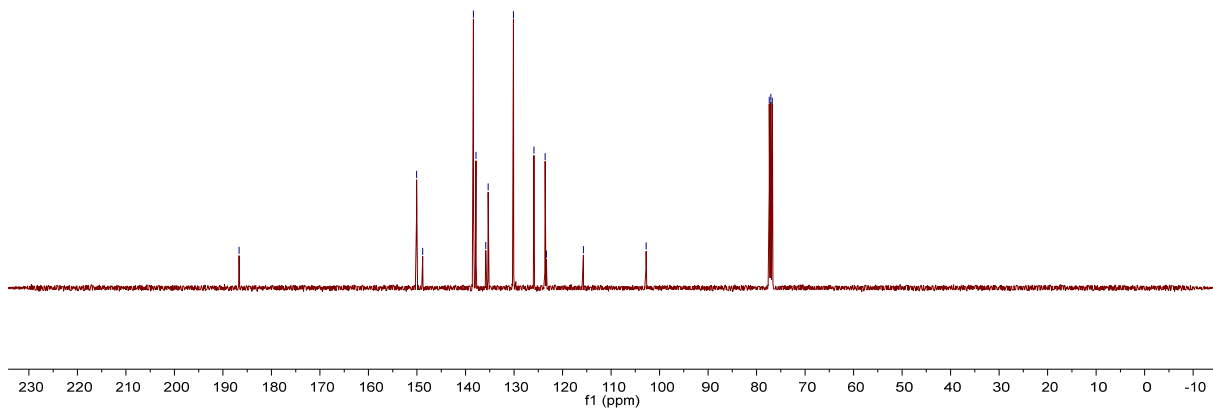


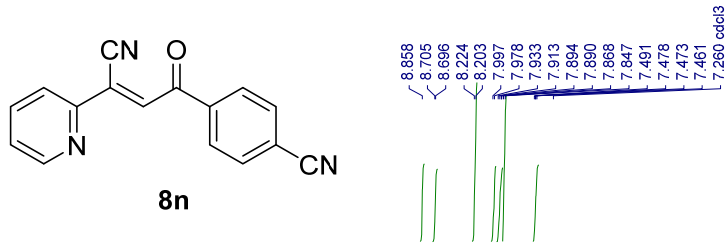


¹H NMR spectrum of 8m (400 MHz, CDCl₃)

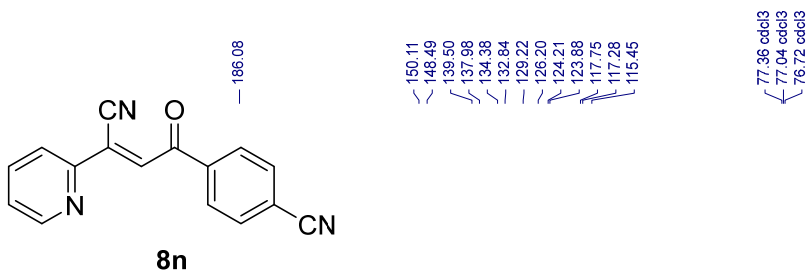
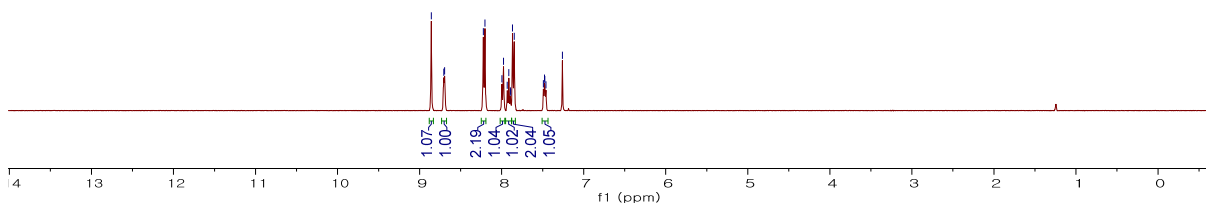


¹³C{¹H} NMR spectrum of 8m (100 MHz, CDCl₃)

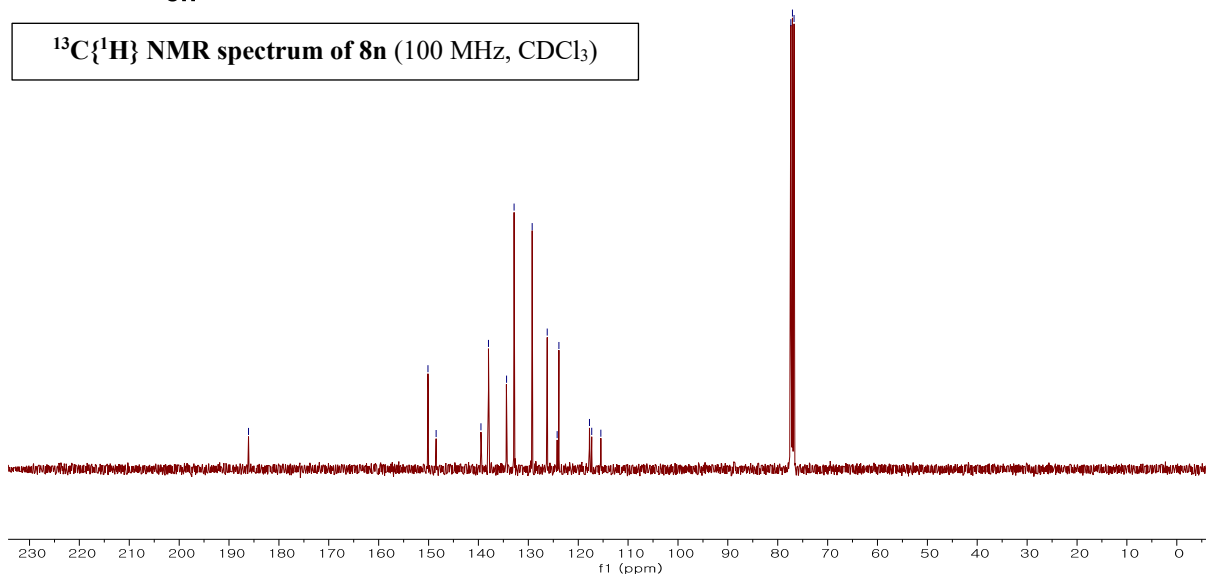


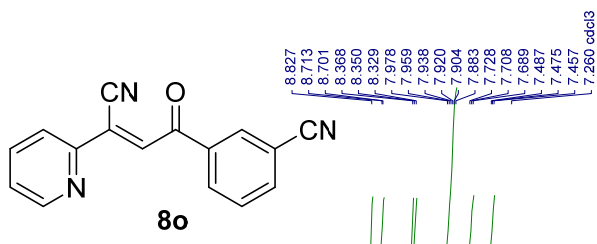


^1H NMR spectrum of **8n** (400 MHz, CDCl_3)

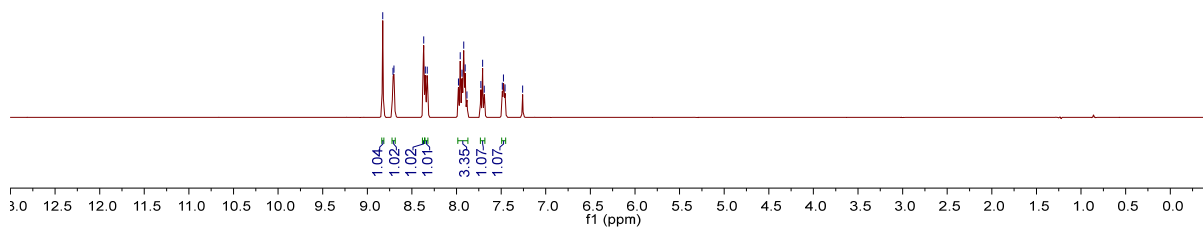


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **8n** (100 MHz, CDCl_3)

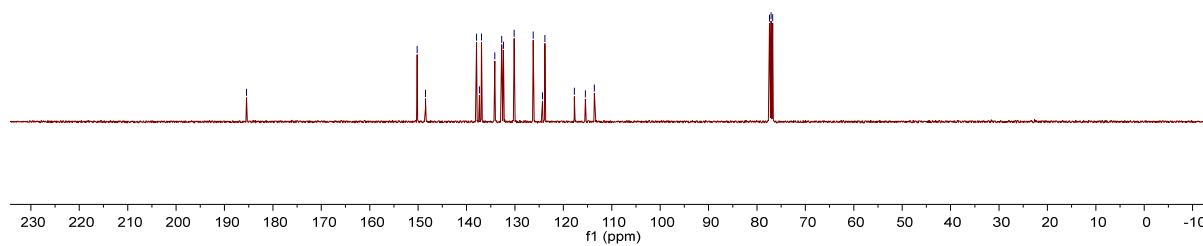


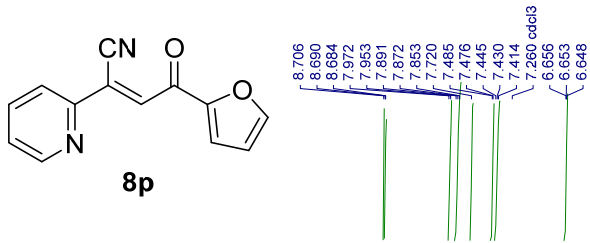


¹H NMR spectrum of **8o** (400 MHz, CDCl₃)

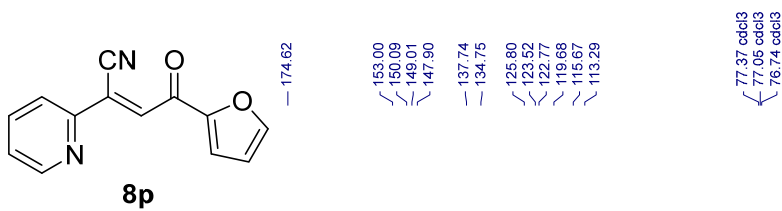
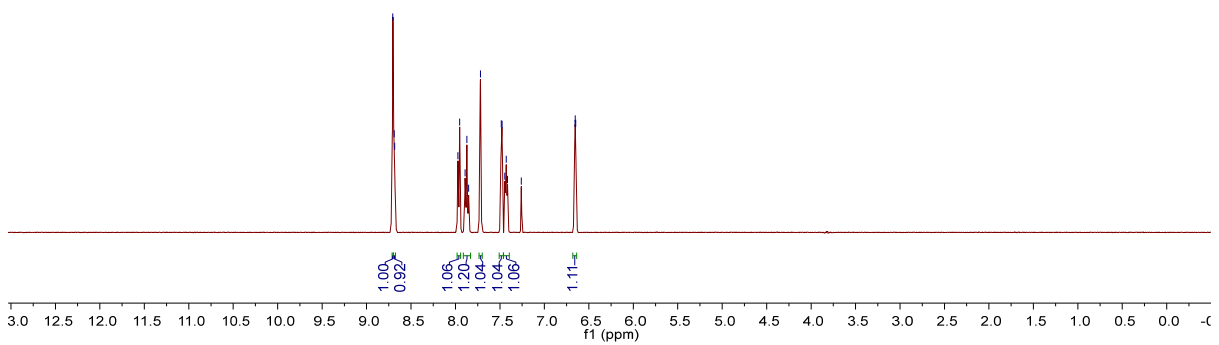


¹³C{¹H} NMR spectrum of **8o** (100 MHz, CDCl₃)

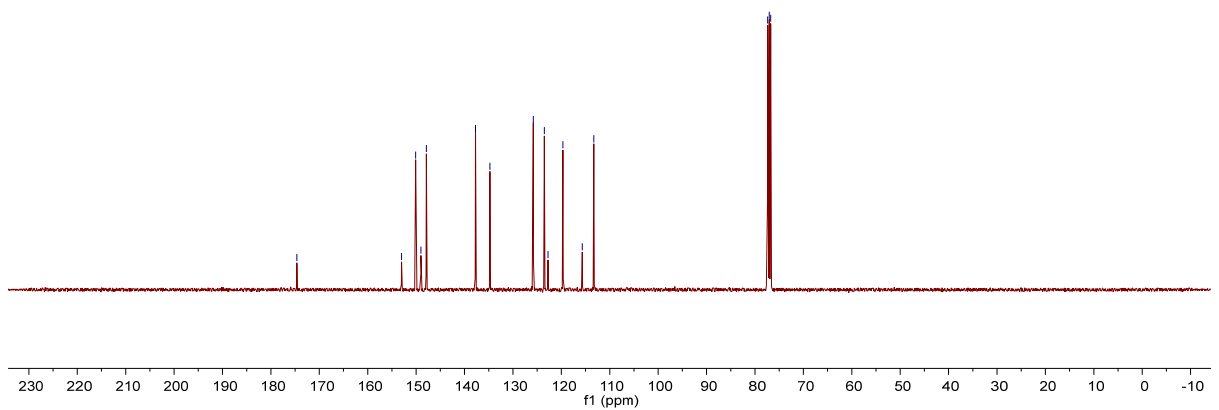


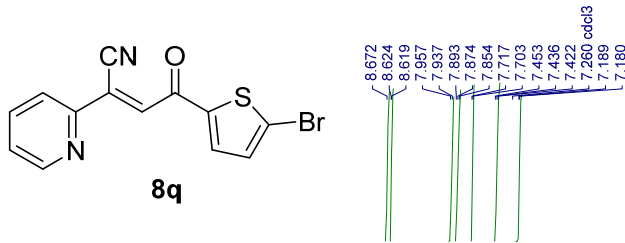


¹H NMR spectrum of 8p (400 MHz, CDCl₃)

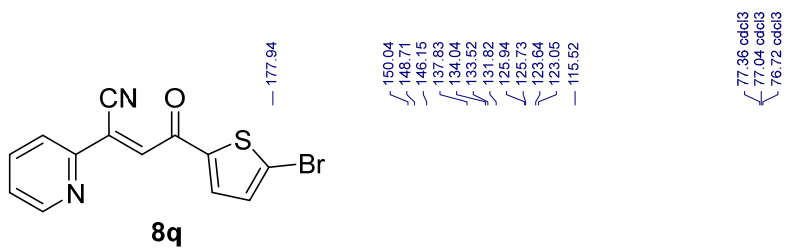
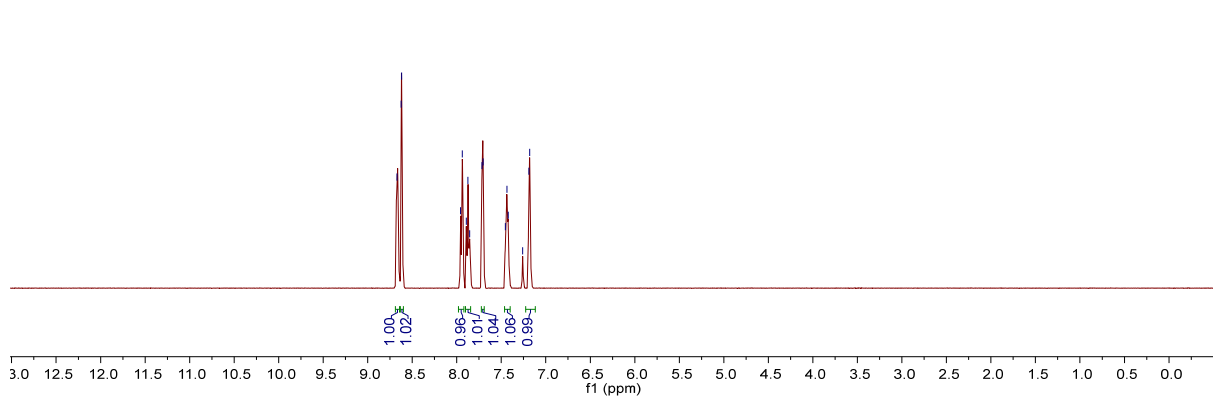


¹³C{¹H} NMR spectrum of 8p (100 MHz, CDCl₃)

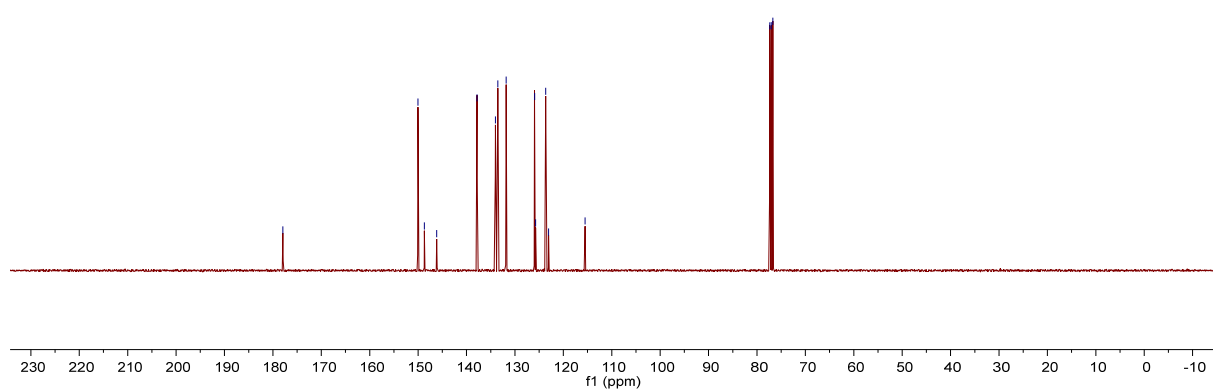


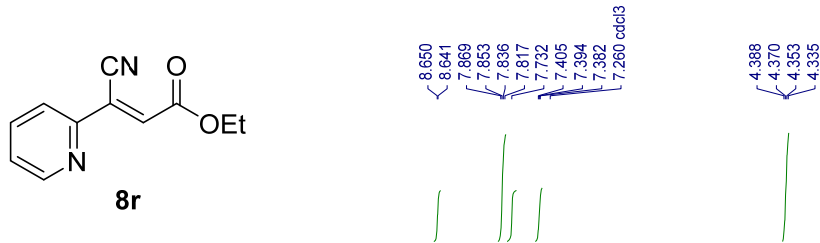


^1H NMR spectrum of **8q (400 MHz, CDCl_3)**

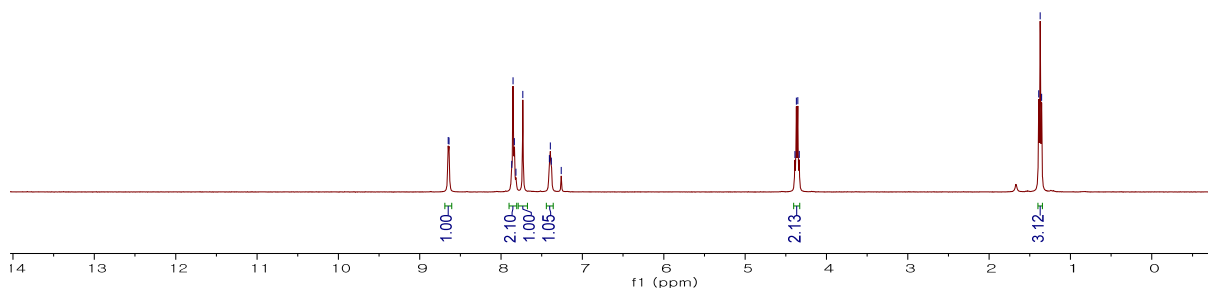


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **8q (100 MHz, CDCl_3)**

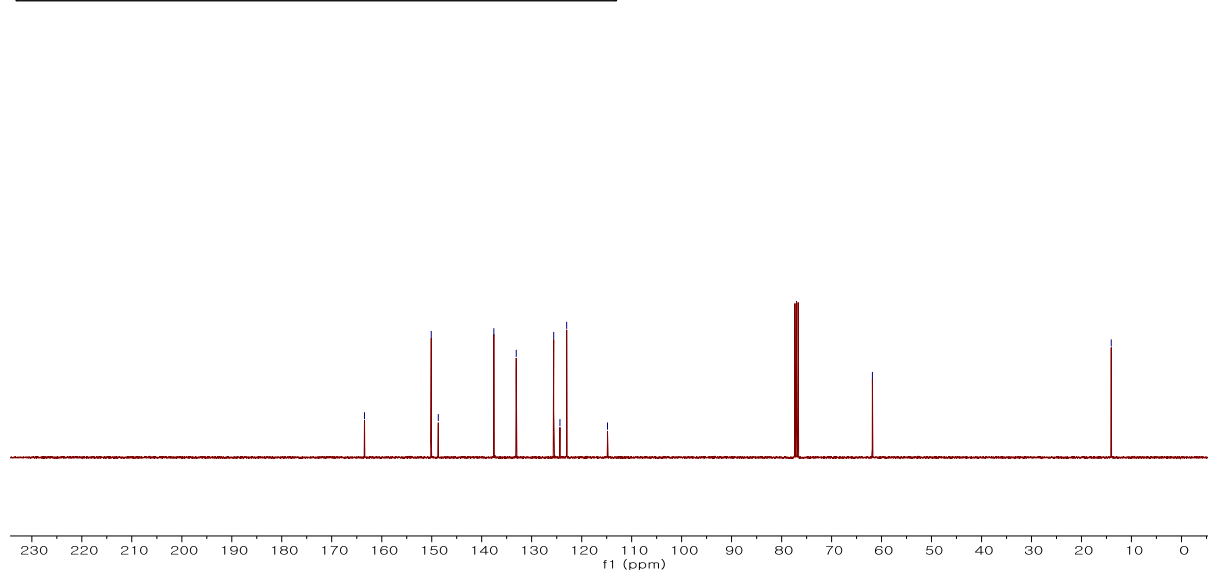


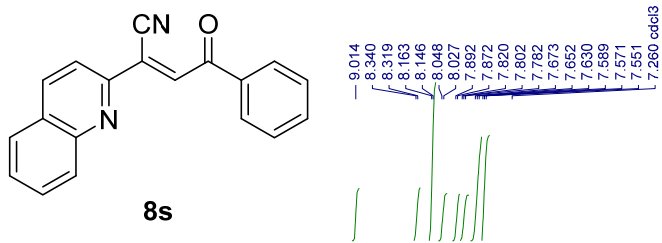


¹H NMR spectrum of **8r** (400 MHz, CDCl₃)

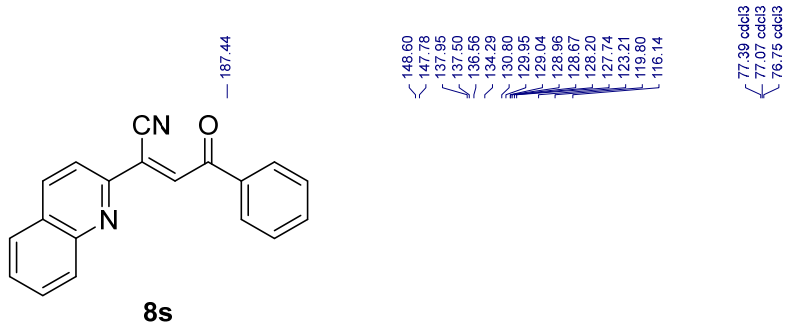
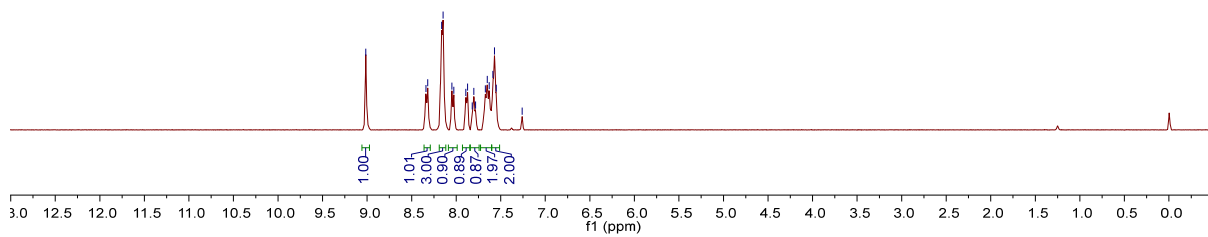


¹³C{¹H} NMR spectrum of **8r** (100 MHz, CDCl₃)

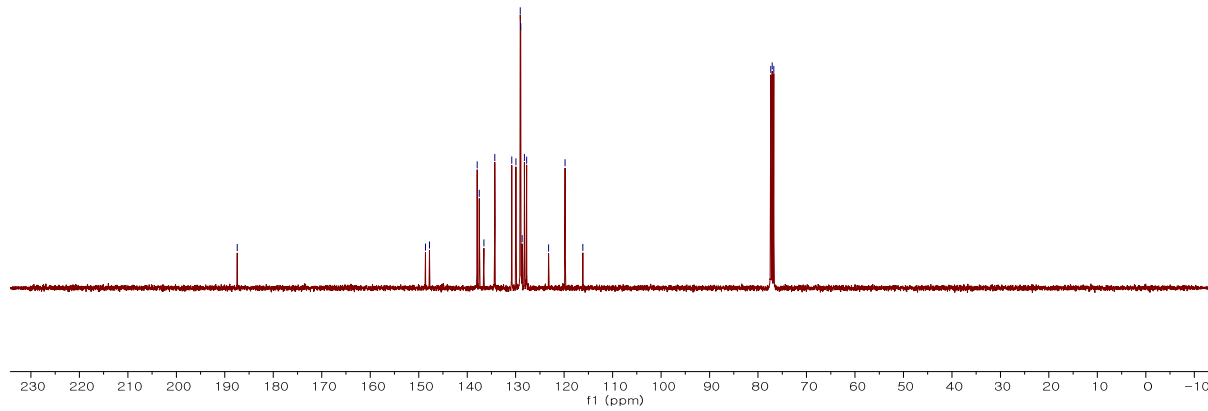


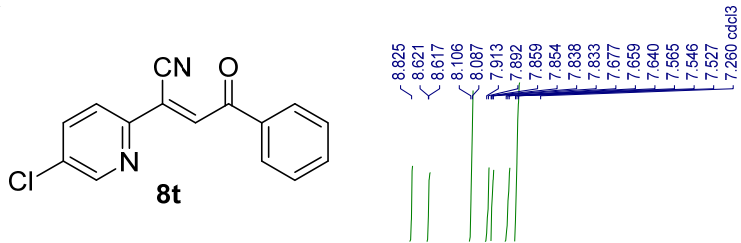


^1H NMR spectrum of **8s** (400 MHz, CDCl_3)

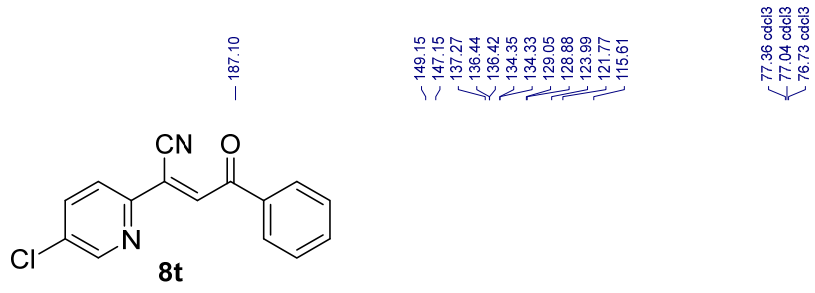
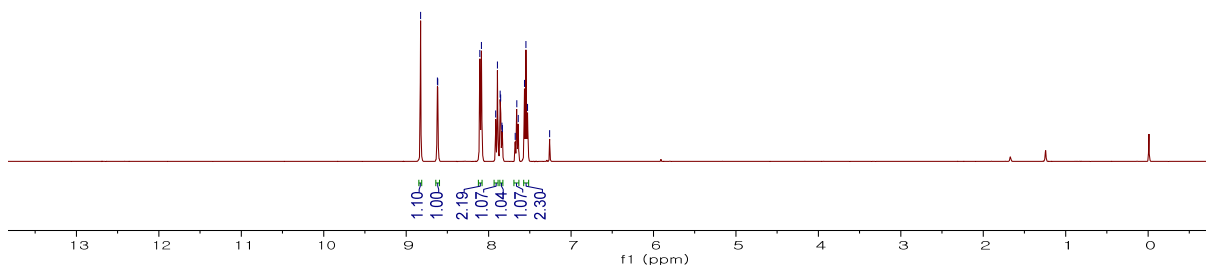


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **8s** (100 MHz, CDCl_3)

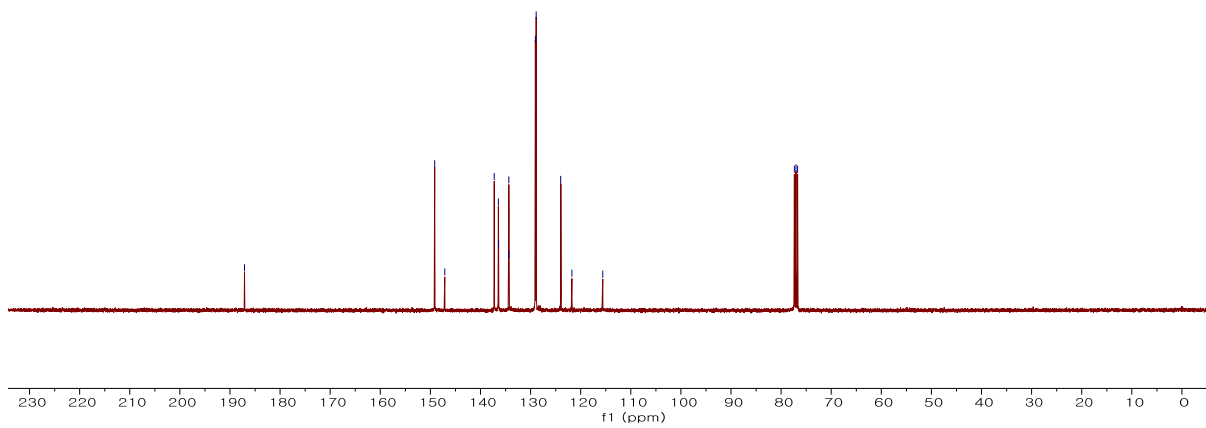


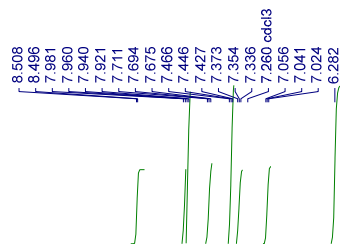
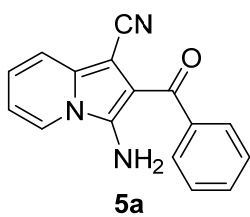


¹H NMR spectrum of **8t** (400 MHz, CDCl₃)

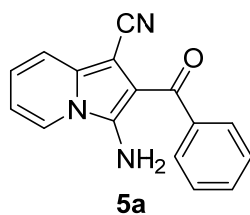
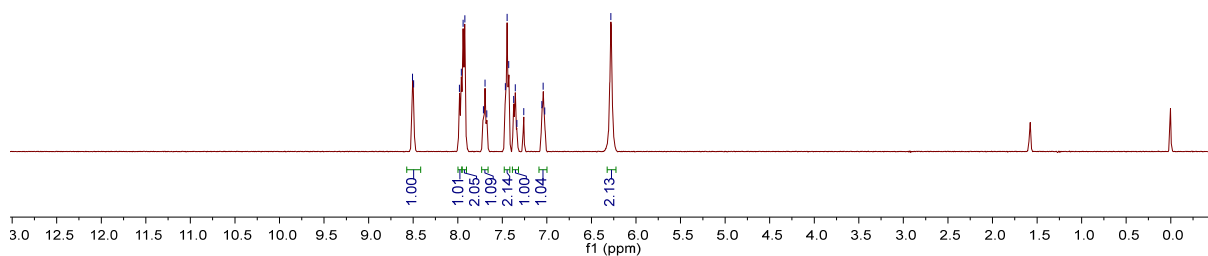


¹³C{¹H} NMR spectrum of **8t** (100 MHz, CDCl₃)

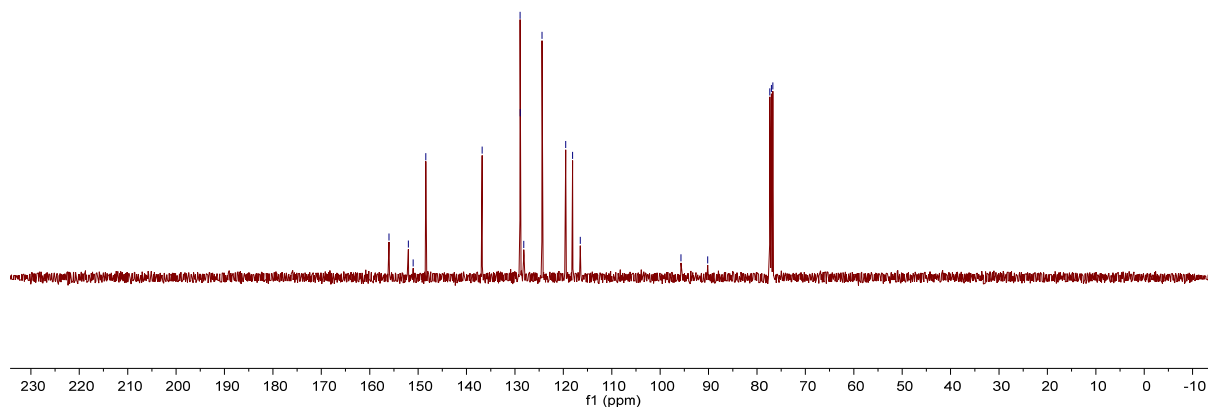


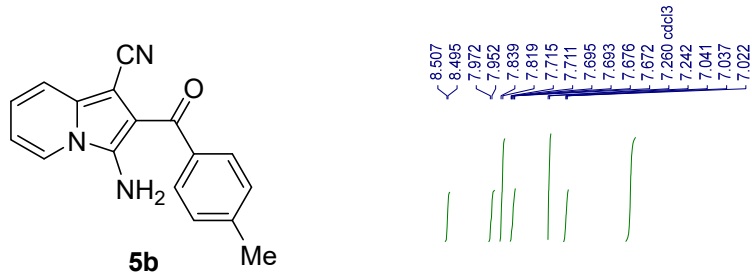


^1H NMR spectrum of 5a (400 MHz, CDCl_3)

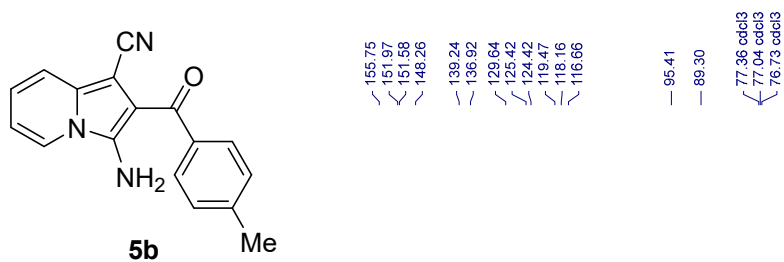
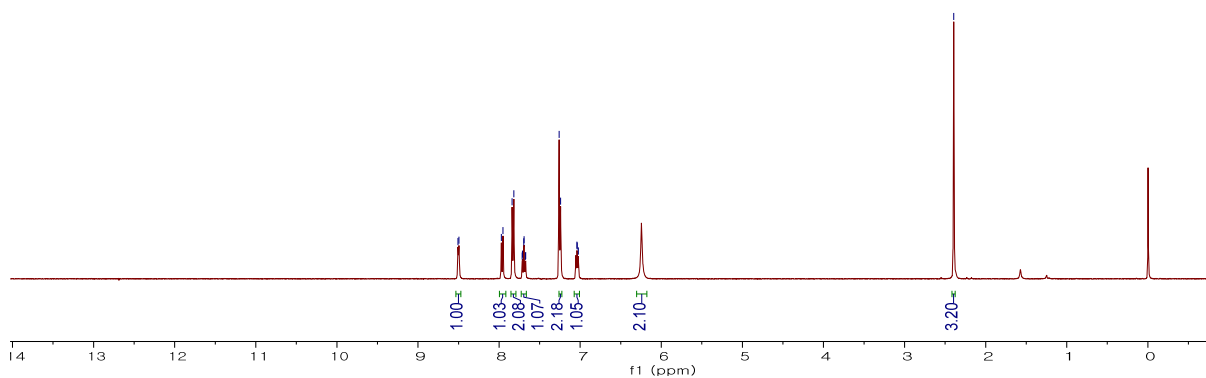


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of 5a (100 MHz, CDCl_3)

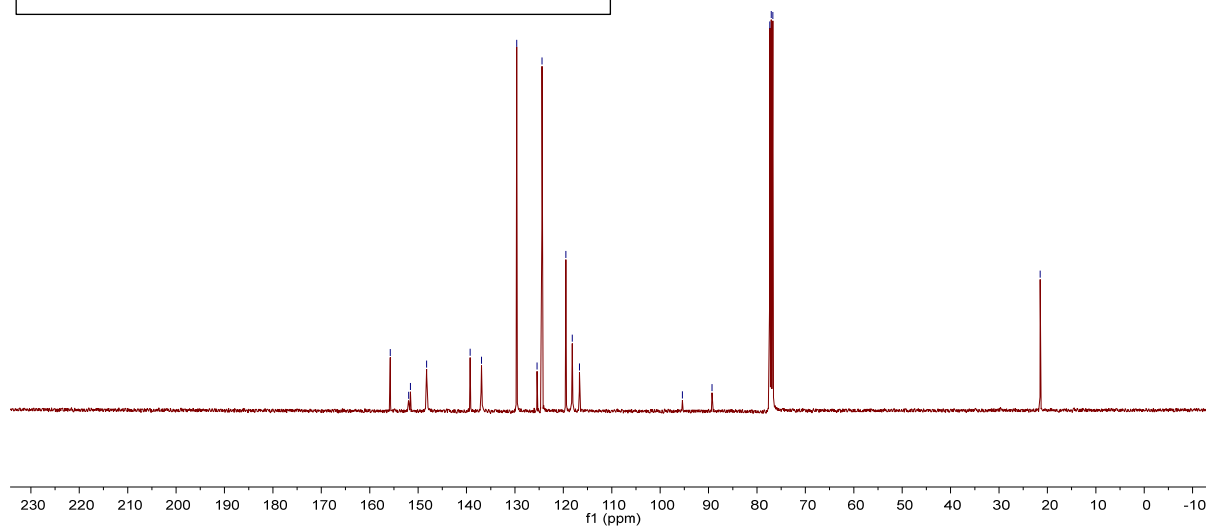


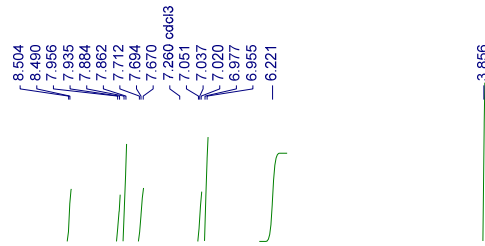
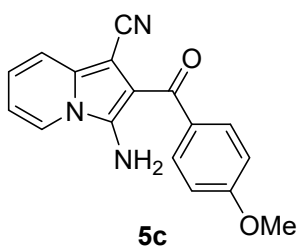


^1H NMR spectrum of **5b** (400 MHz, CDCl_3)

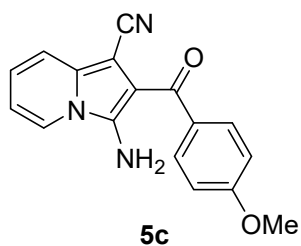
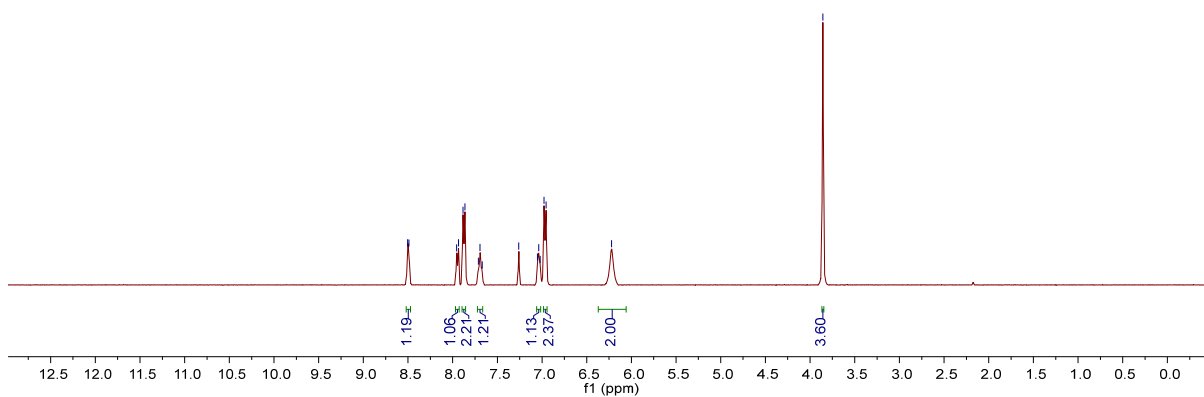


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5b** (100 MHz, CDCl_3)

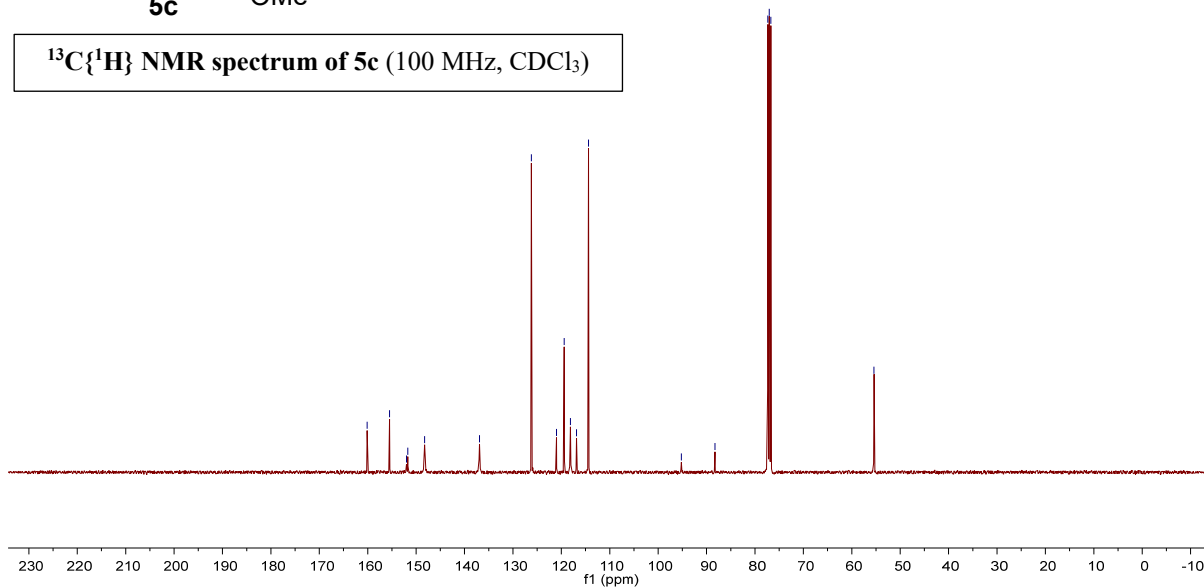


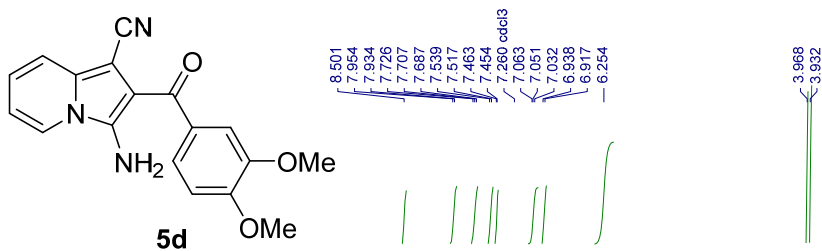


¹H NMR spectrum of 5c (400 MHz, CDCl₃)

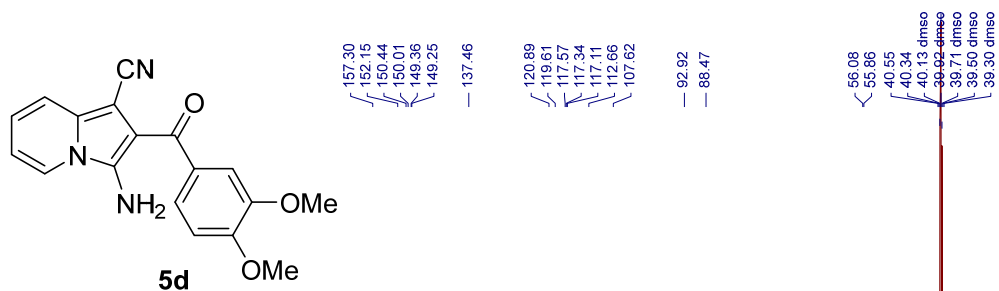
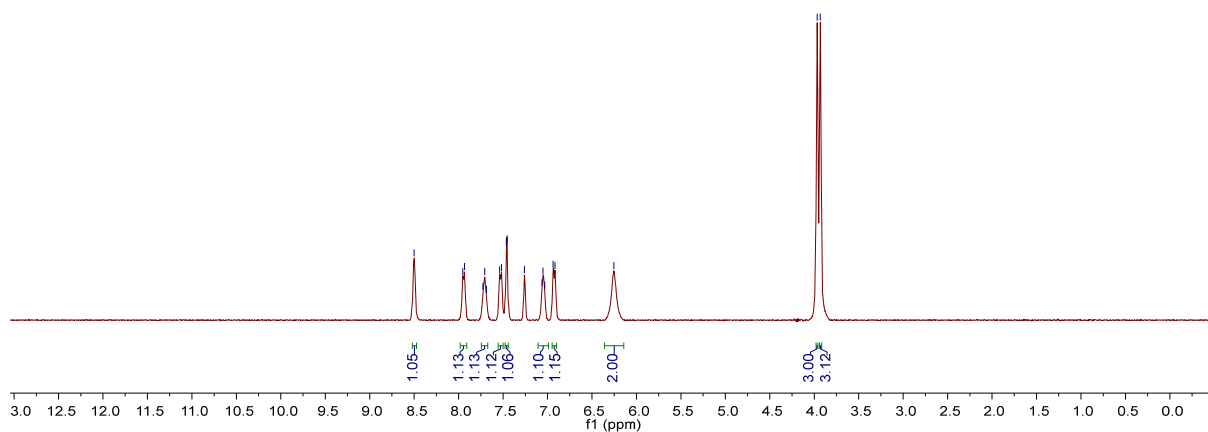


¹³C{¹H} NMR spectrum of 5c (100 MHz, CDCl₃)

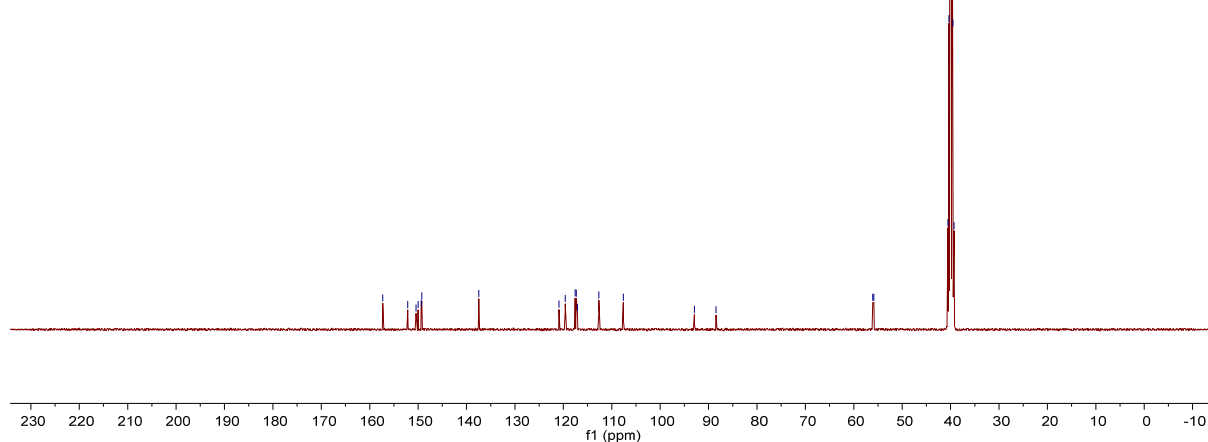


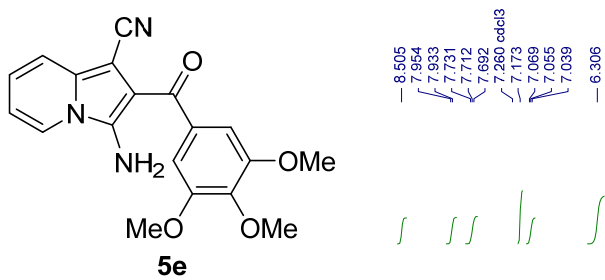


^1H NMR spectrum of **5d** (400 MHz, CDCl_3)

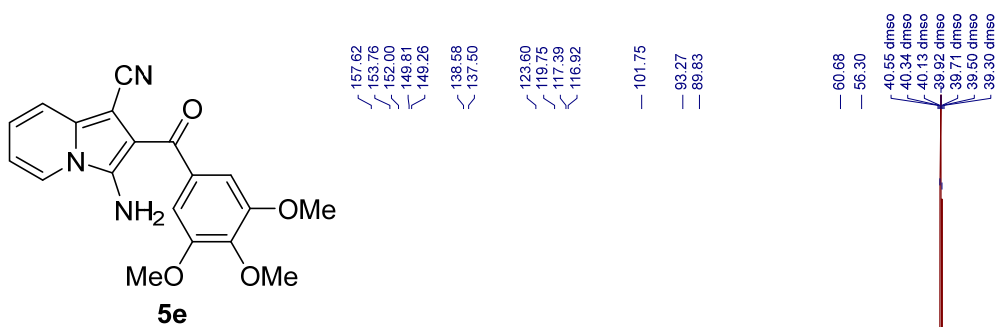
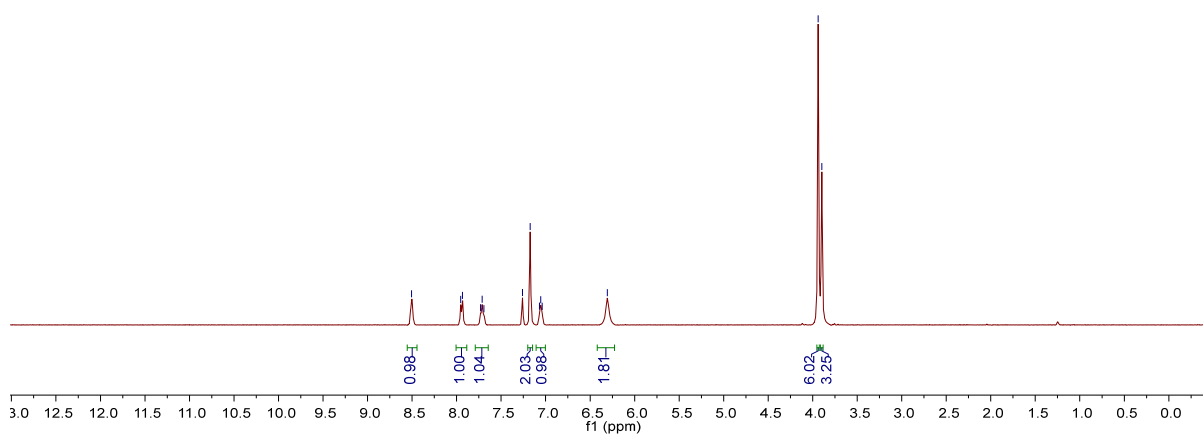


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5d** (100 MHz, DMSO-d_6)

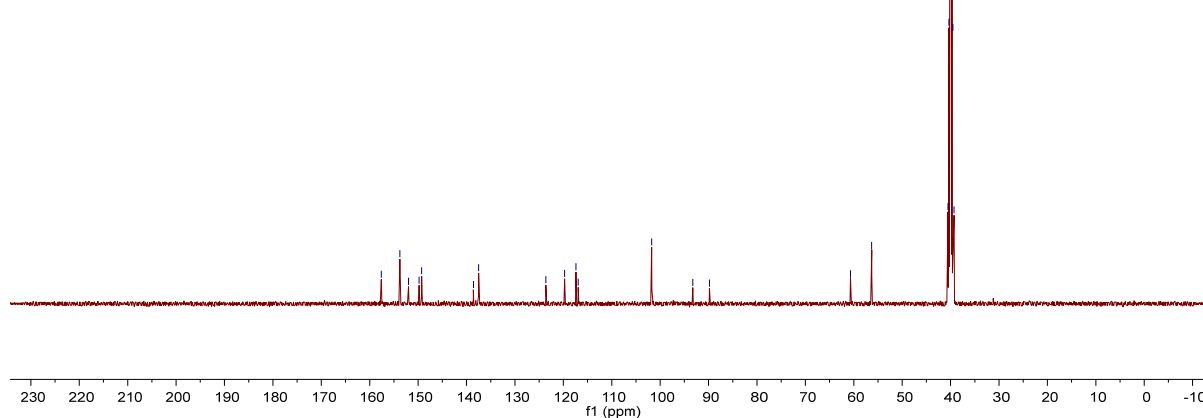


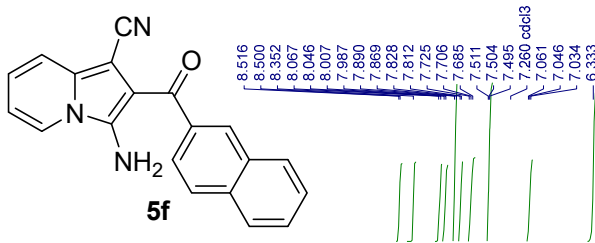


¹H NMR spectrum of **5e** (400 MHz, CDCl₃)

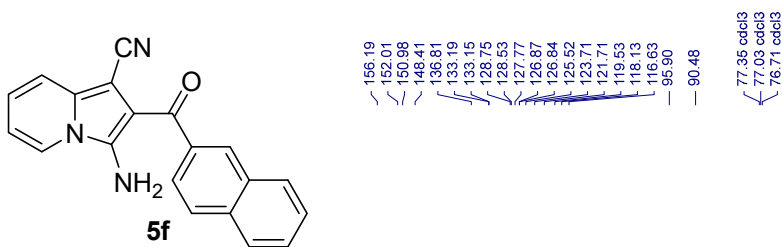
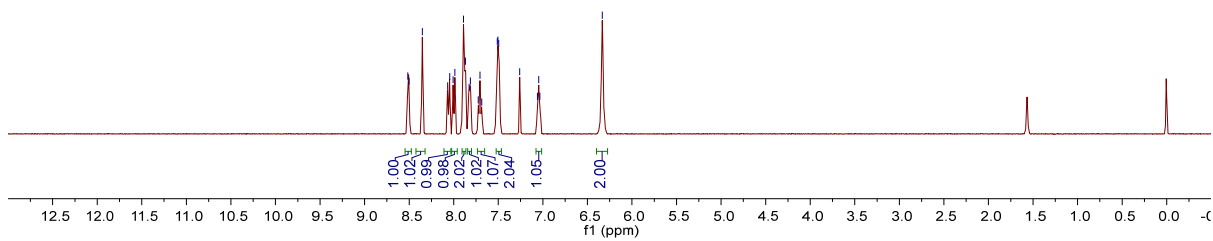


¹³C{¹H} NMR spectrum of **5e** (100 MHz, DMSO-d₆)

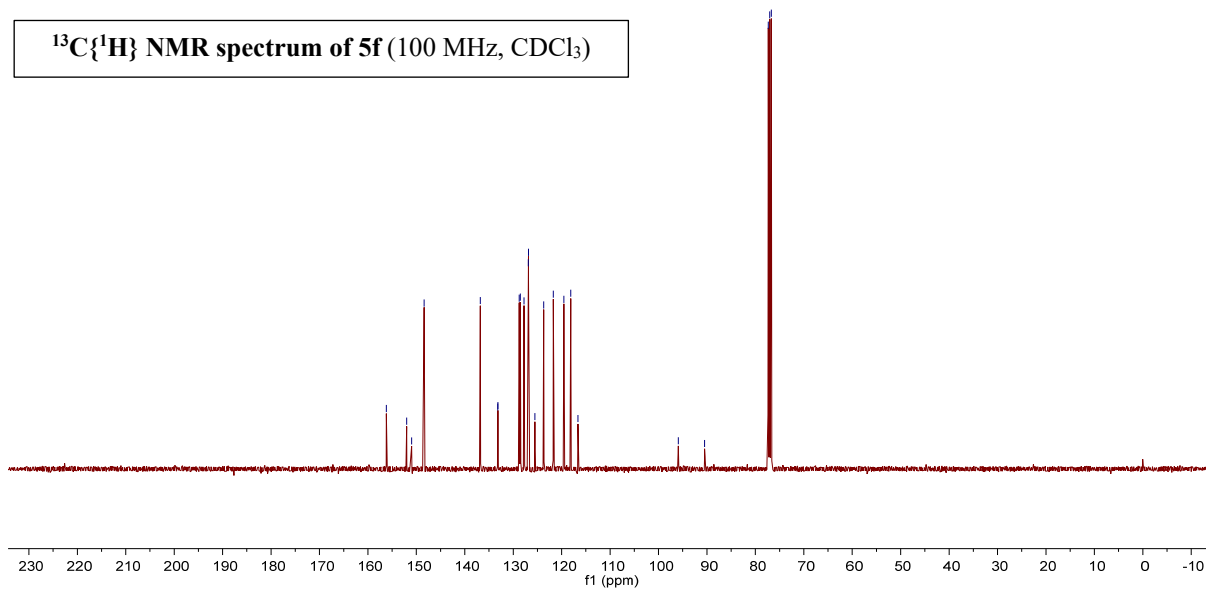


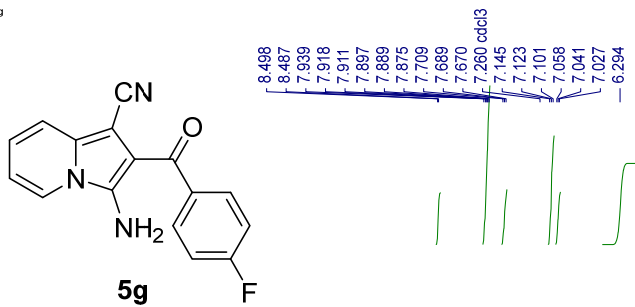


^1H NMR spectrum of **5f** (400 MHz, CDCl_3)

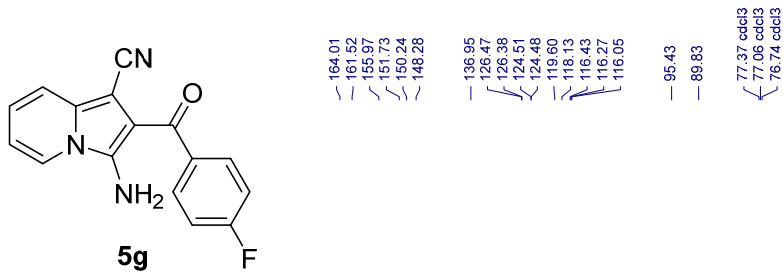
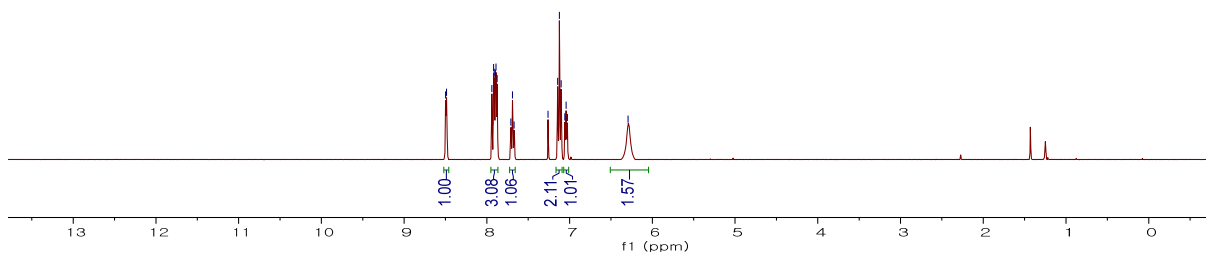


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5f** (100 MHz, CDCl_3)

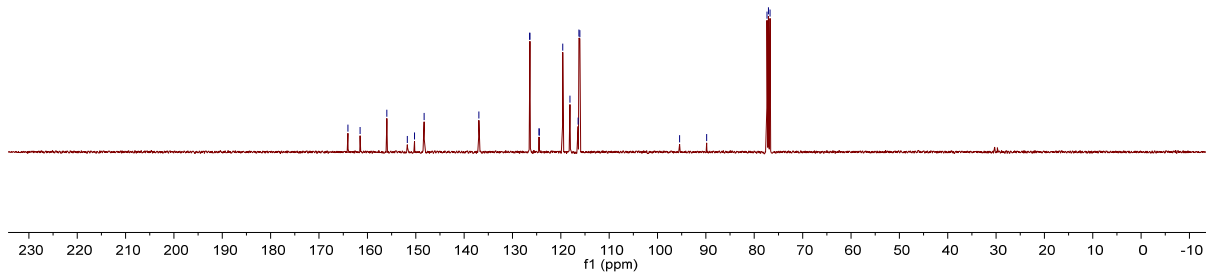


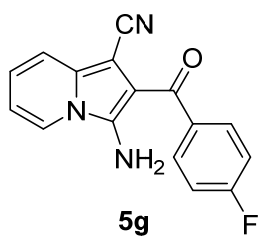


¹H NMR spectrum of 5g (400 MHz, CDCl₃)

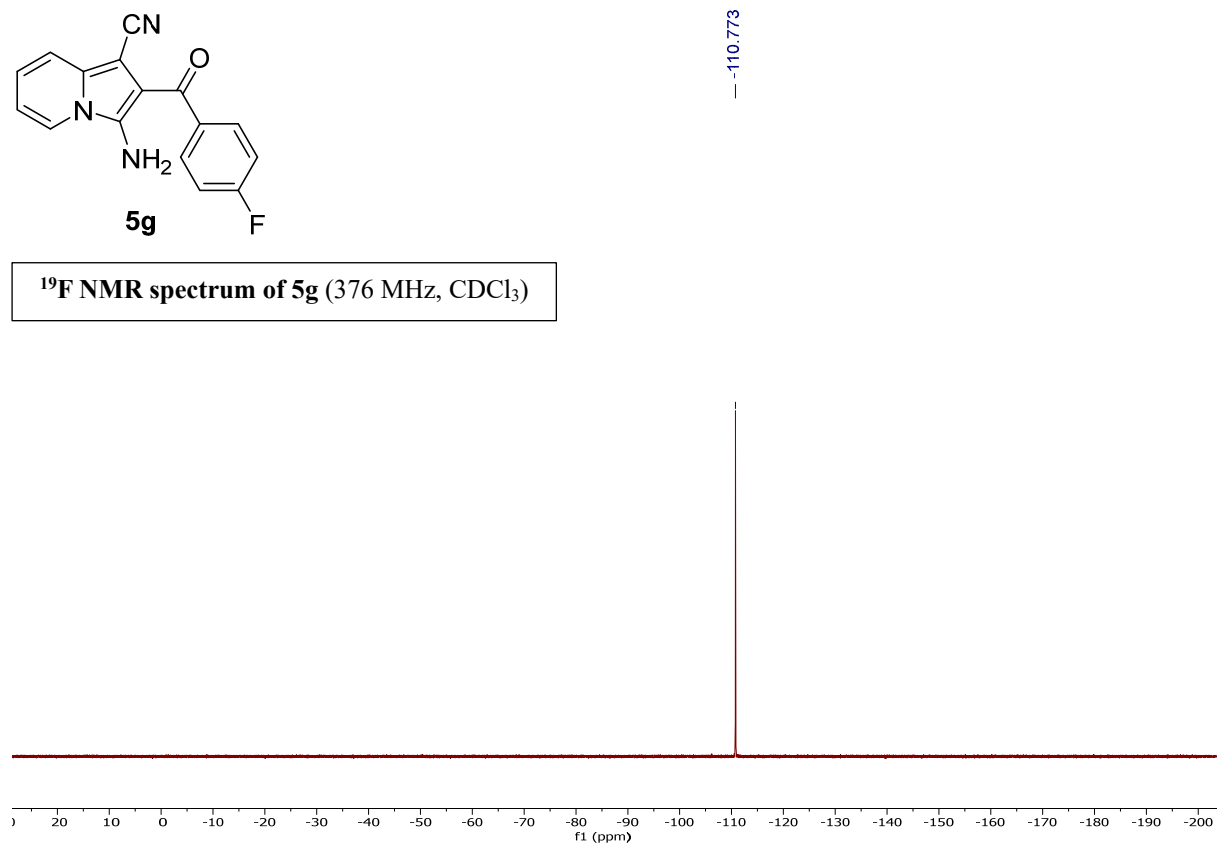


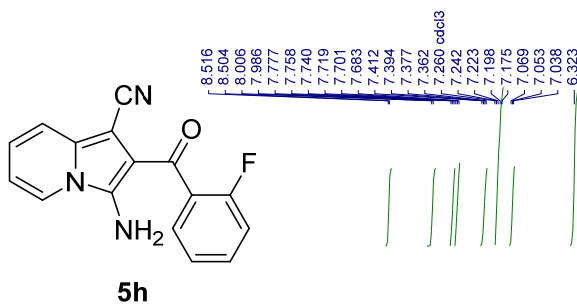
¹³C{¹H} NMR spectrum of 5g (100 MHz, CDCl₃)



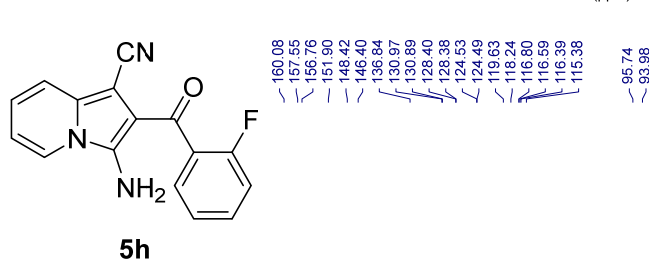
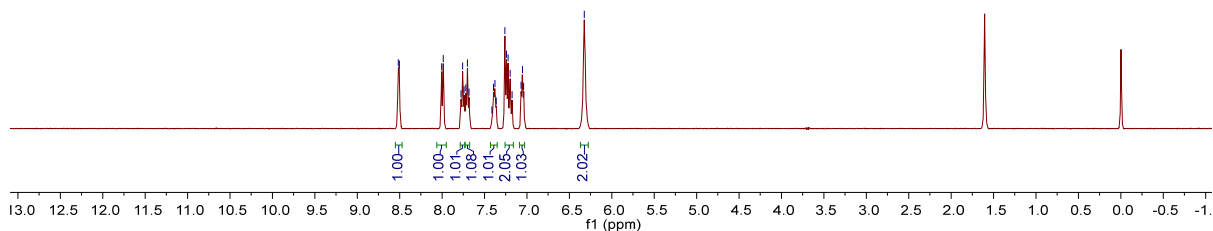


¹⁹F NMR spectrum of 5g (376 MHz, CDCl₃)

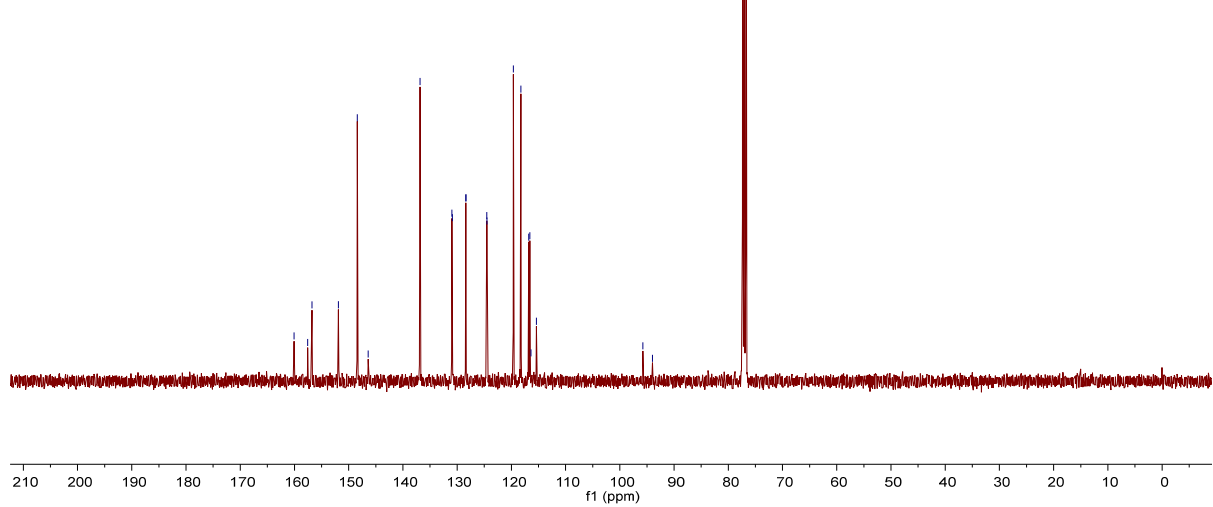


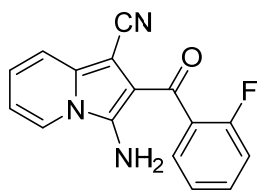


^1H NMR spectrum of **5h** (400 MHz, CDCl_3)



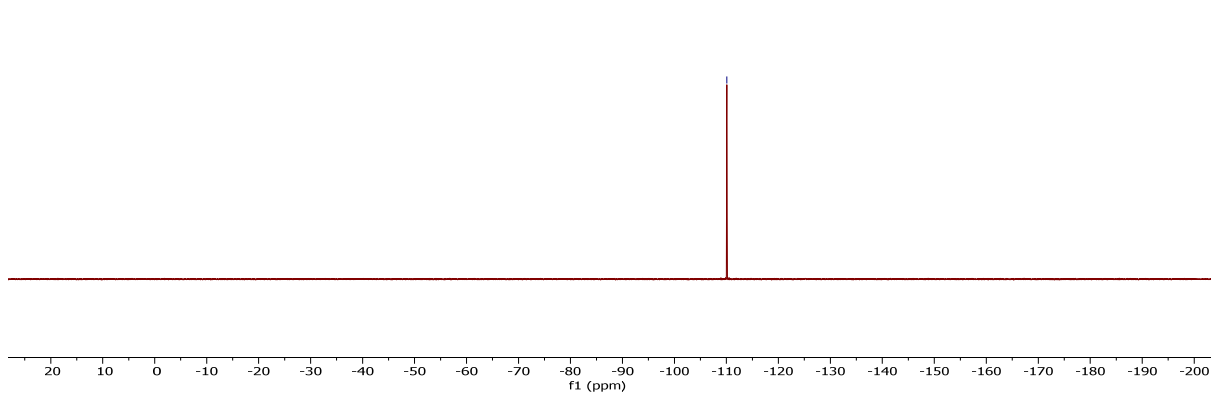
$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5h** (100 MHz, CDCl_3)

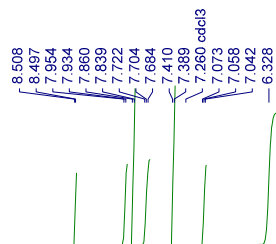
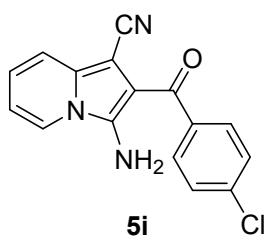




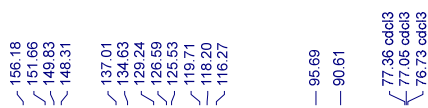
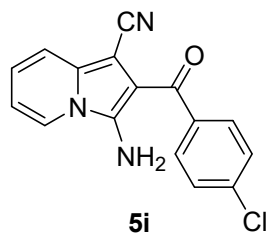
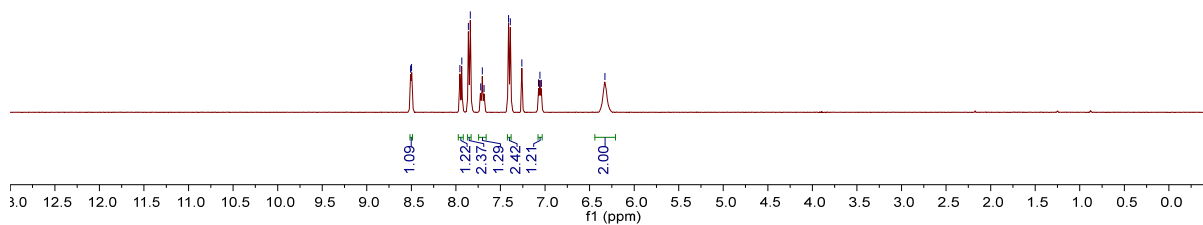
5h

¹⁹F NMR spectrum of 5h (376 MHz, CDCl₃)

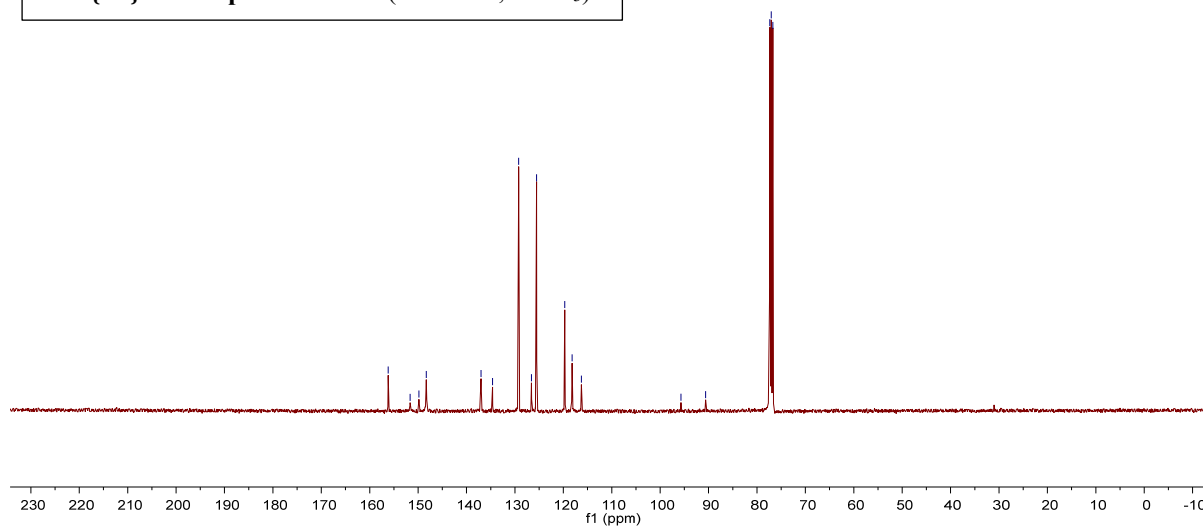


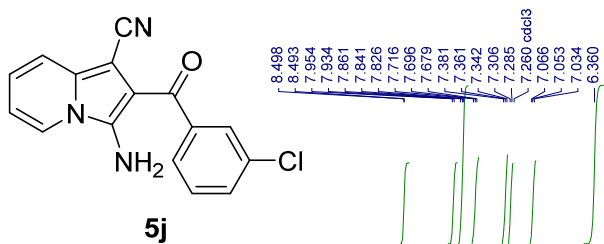


¹H NMR spectrum of **5i** (400 MHz, CDCl₃)

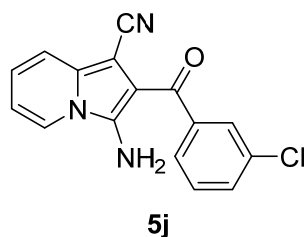
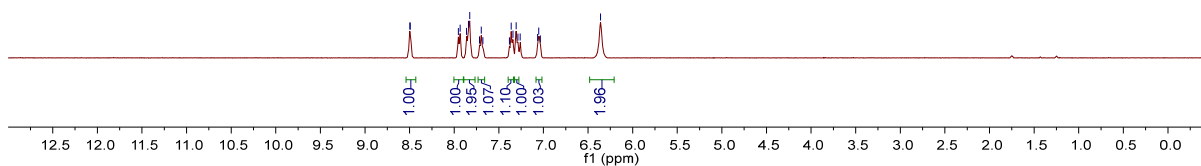


¹³C{¹H} NMR spectrum of **5i** (100 MHz, CDCl₃)



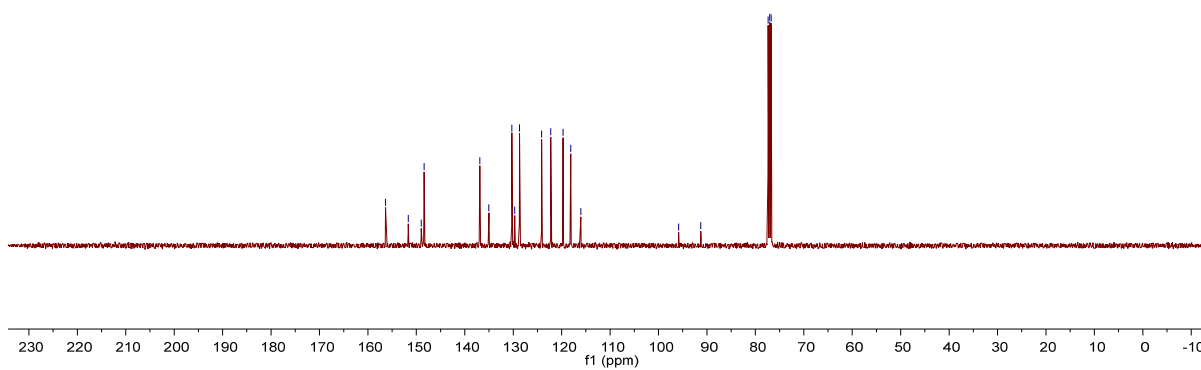


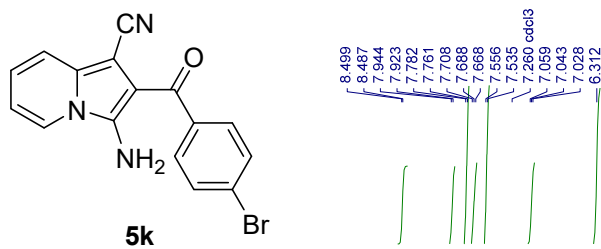
^1H NMR spectrum of **5j** (400 MHz, CDCl_3)



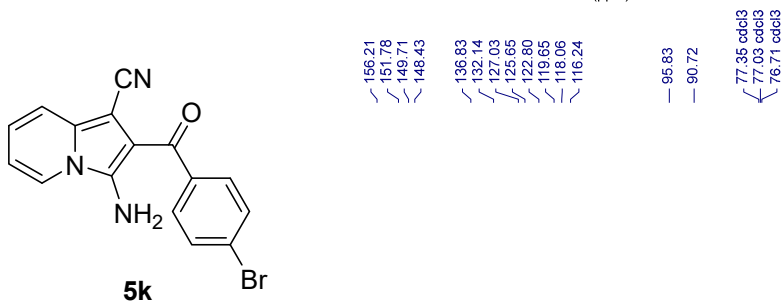
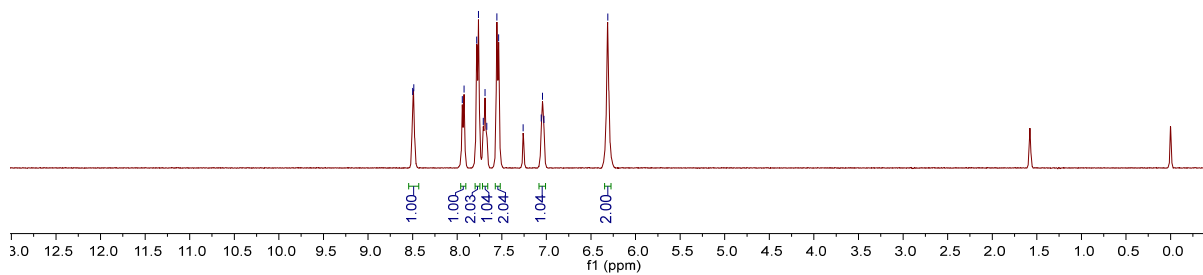
5j

$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5j** (100 MHz, CDCl_3)

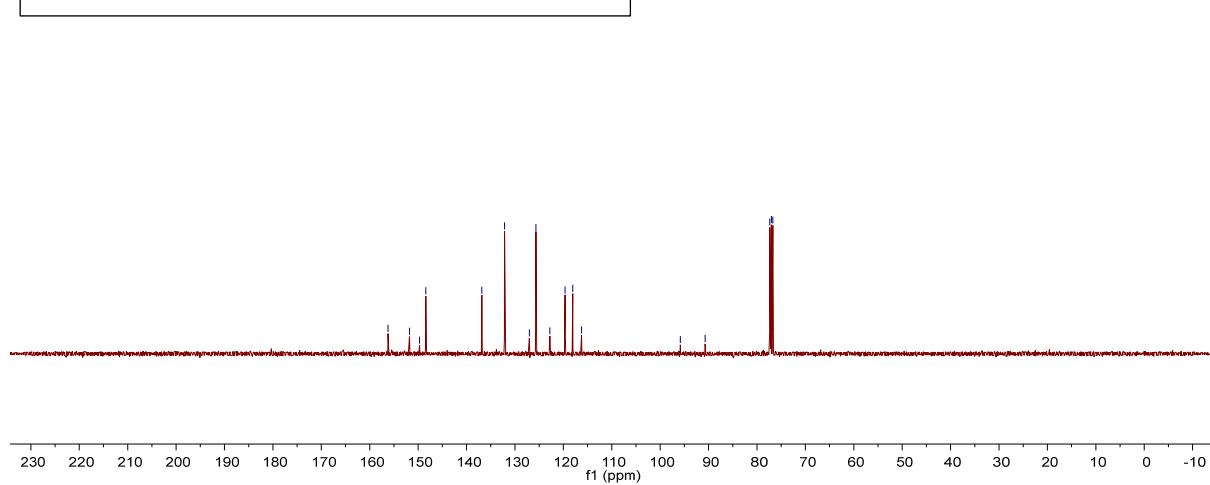


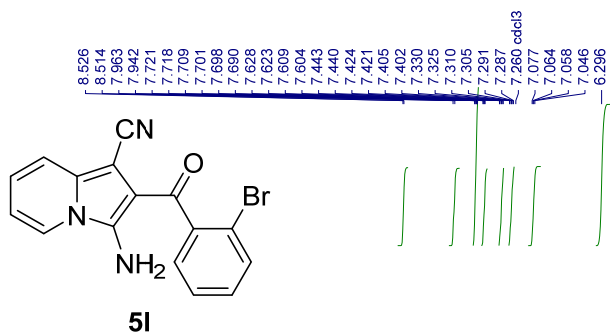


¹H NMR spectrum of 5k (400 MHz, CDCl₃)

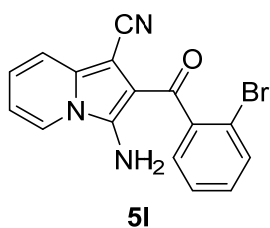
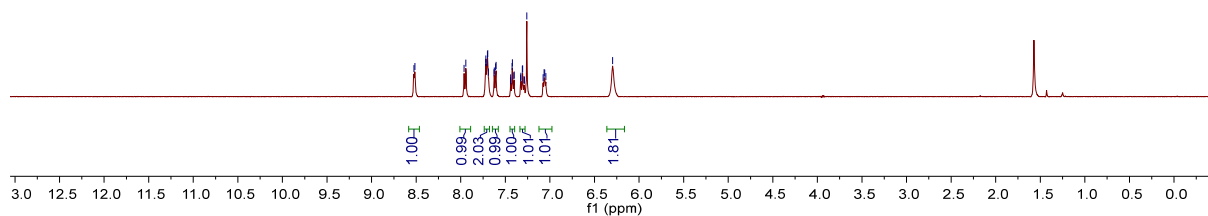


¹³C{¹H} NMR spectrum of 5k (100 MHz, CDCl₃)

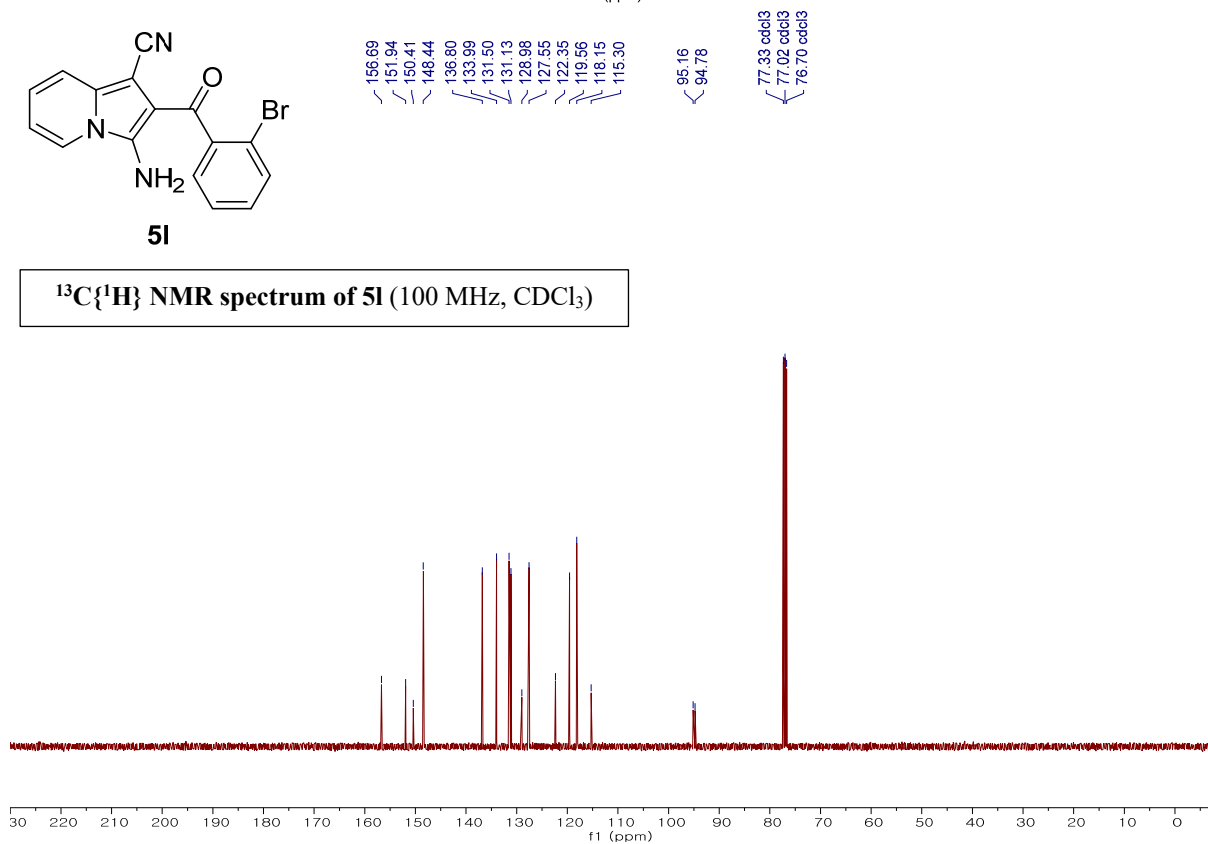


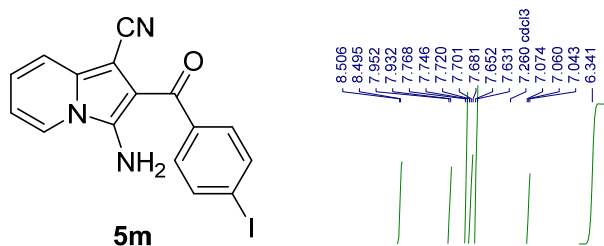


¹H NMR spectrum of 5I (400 MHz, CDCl₃)

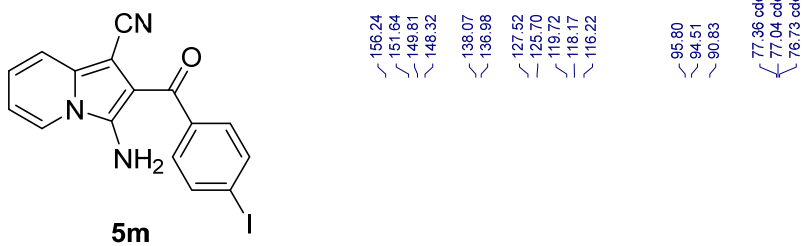
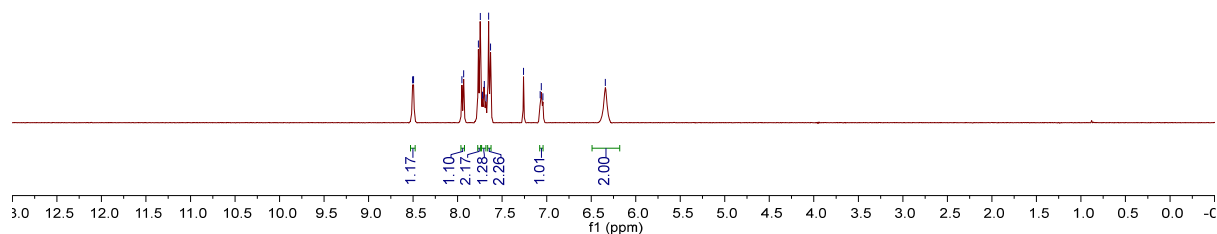


¹³C{¹H} NMR spectrum of 5I (100 MHz, CDCl₃)

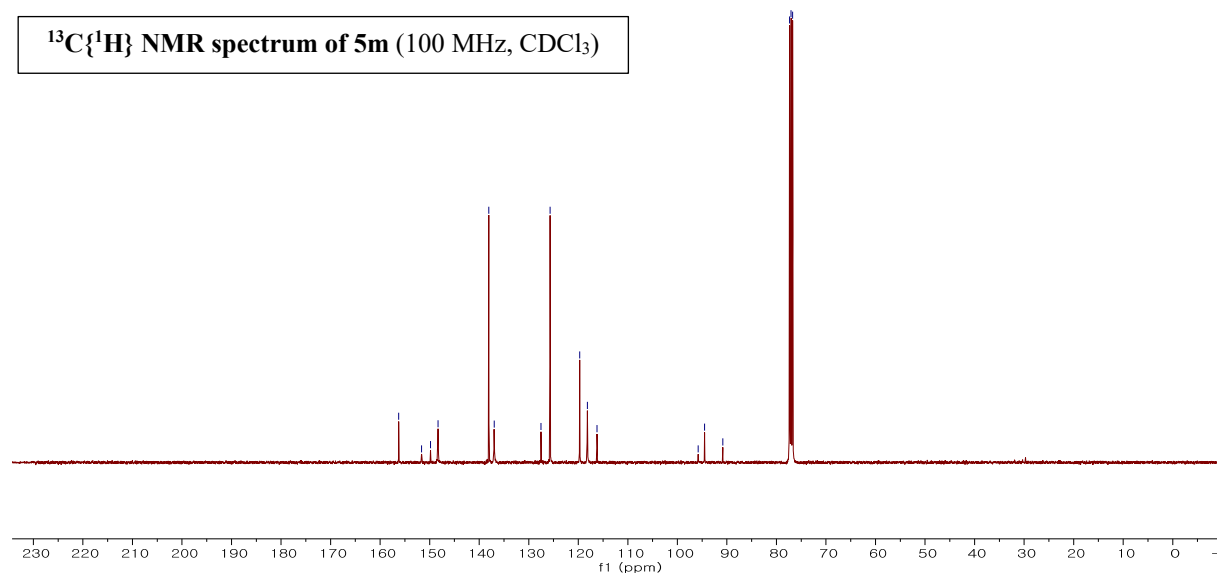


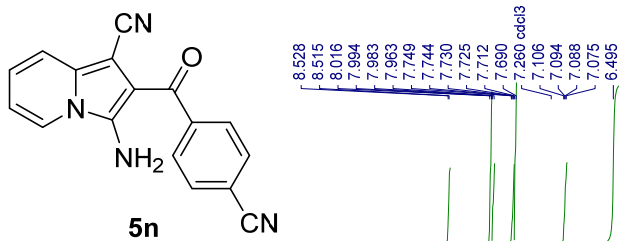


^1H NMR spectrum of 5m (400 MHz, CDCl_3)

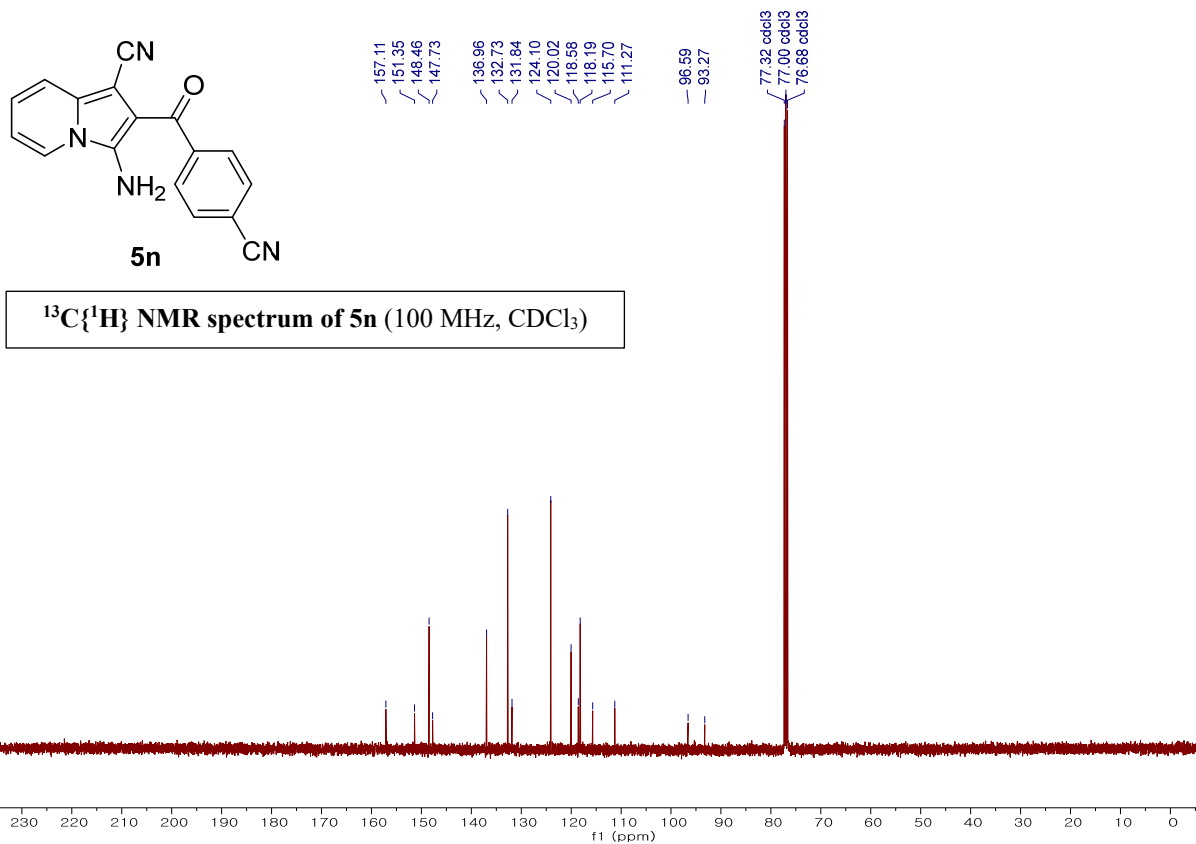
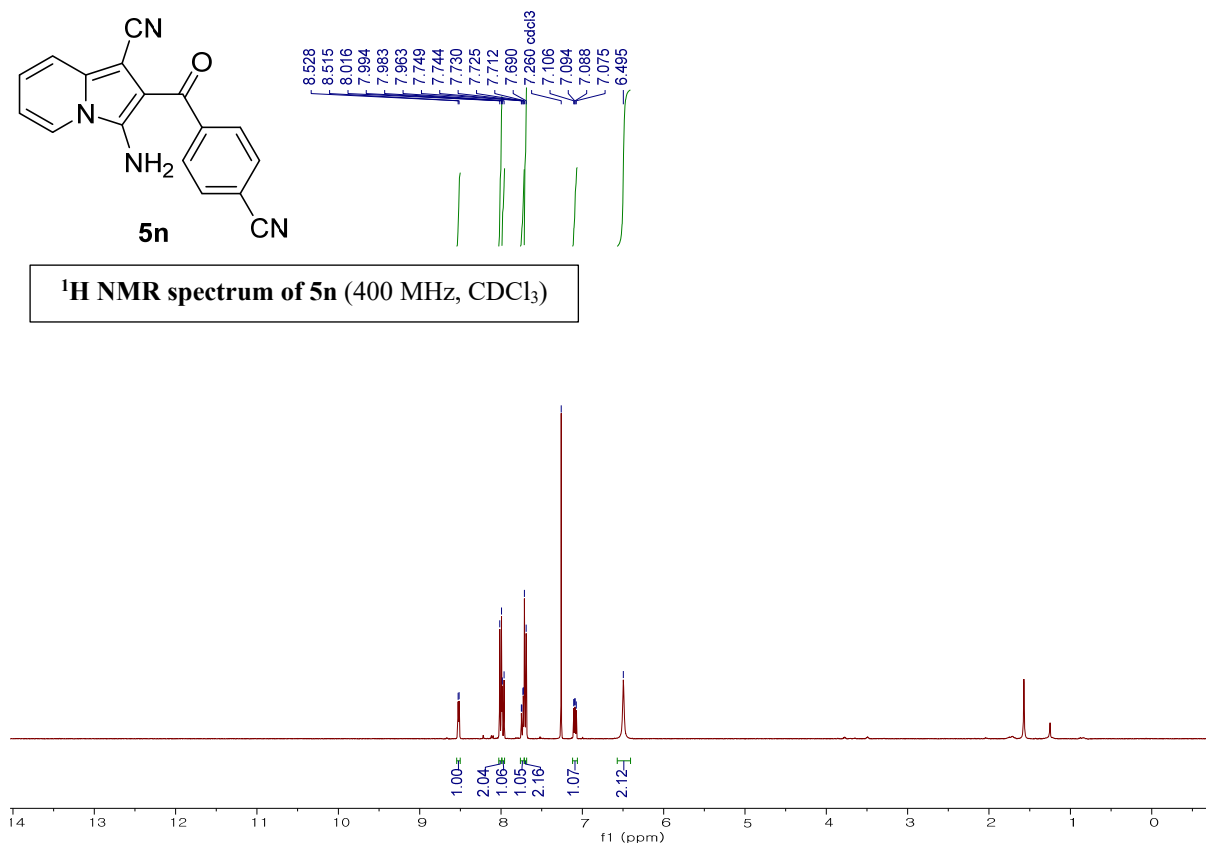


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of 5m (100 MHz, CDCl_3)

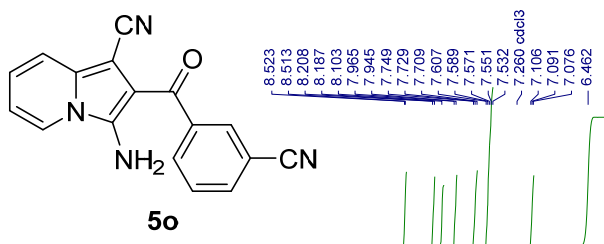




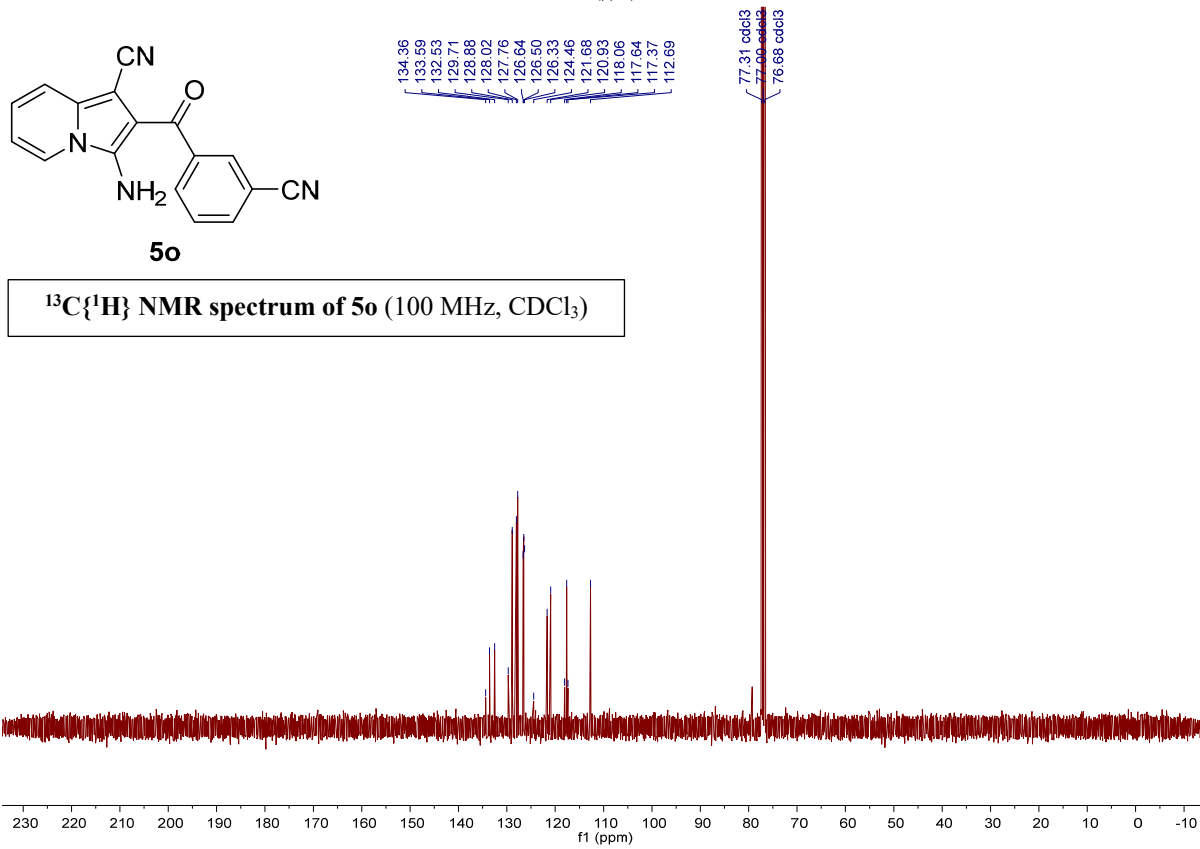
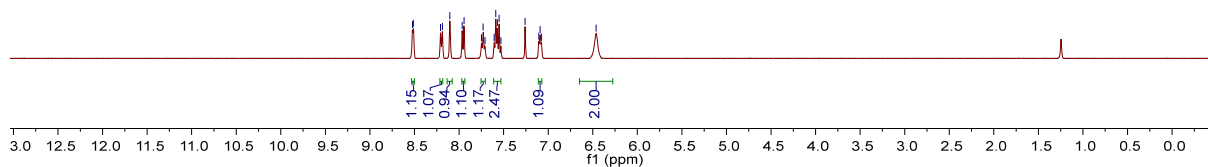
¹H NMR spectrum of 5n (400 MHz, CDCl₃)



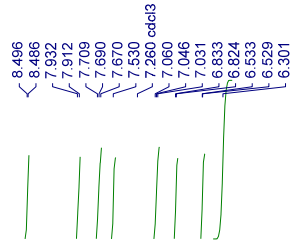
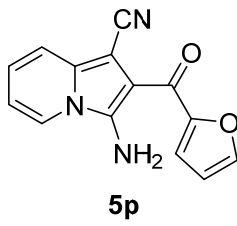
¹³C{¹H} NMR spectrum of 5n (100 MHz, CDCl₃)



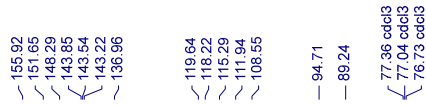
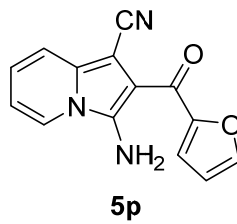
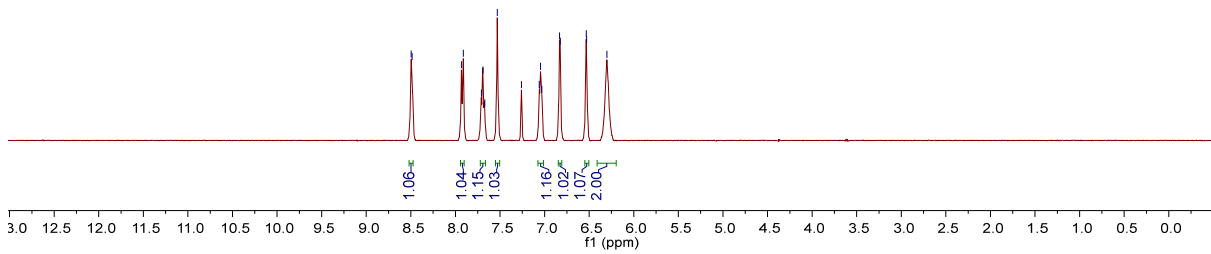
^1H NMR spectrum of **5o** (400 MHz, CDCl_3)



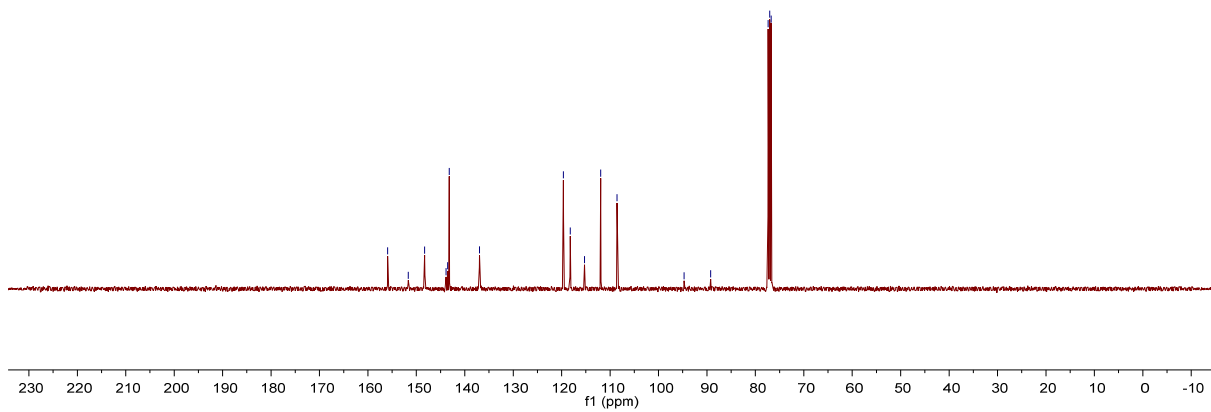
$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5o** (100 MHz, CDCl_3)

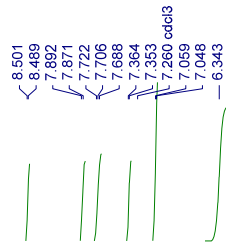
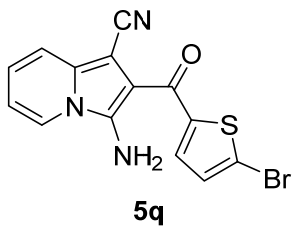


^1H NMR spectrum of 5p (400 MHz, CDCl_3)

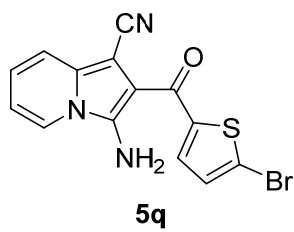
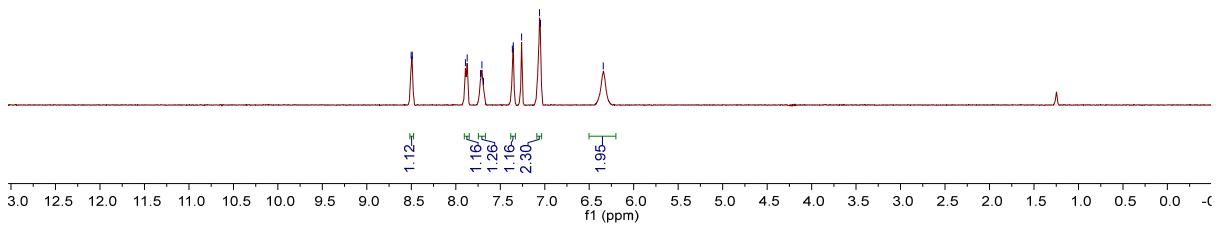


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of 5p (100 MHz, CDCl_3)

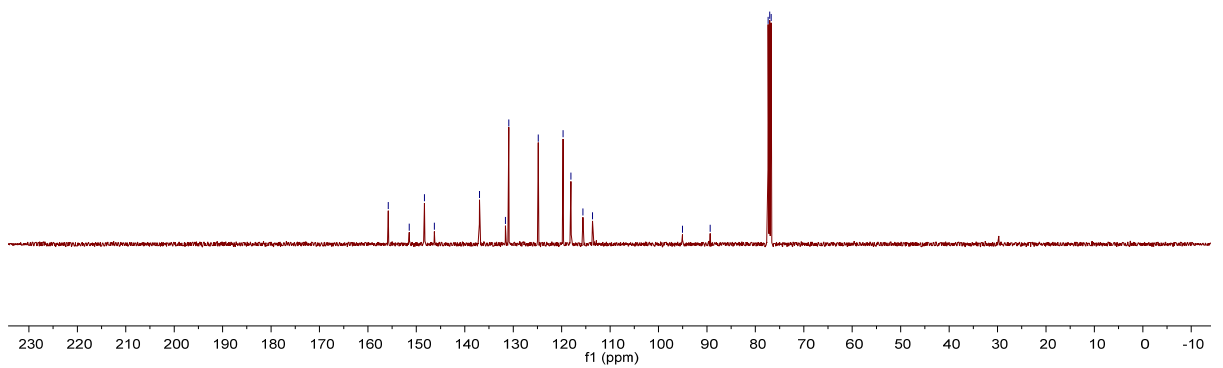


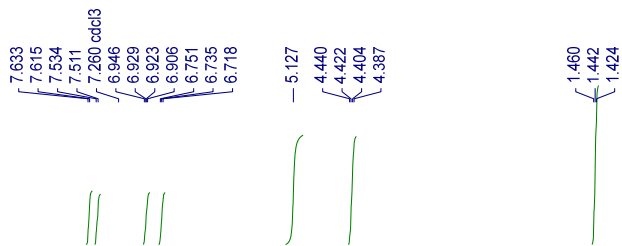
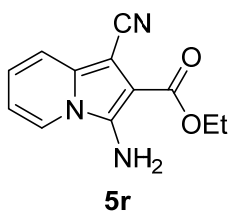


¹H NMR spectrum of **5q** (400 MHz, CDCl₃)

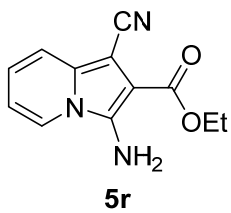
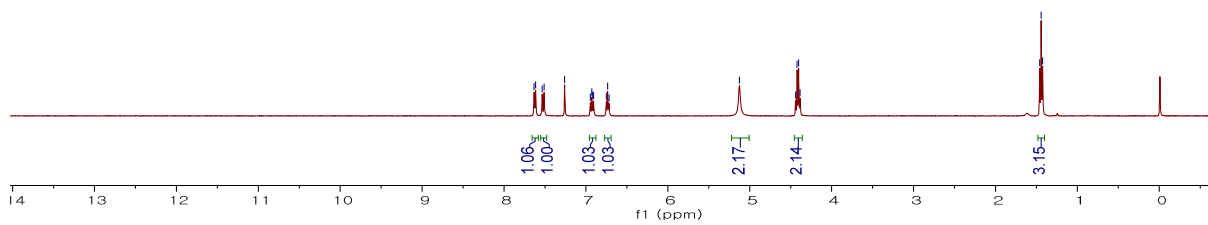


¹³C{¹H} NMR spectrum of **5q** (100 MHz, CDCl₃)

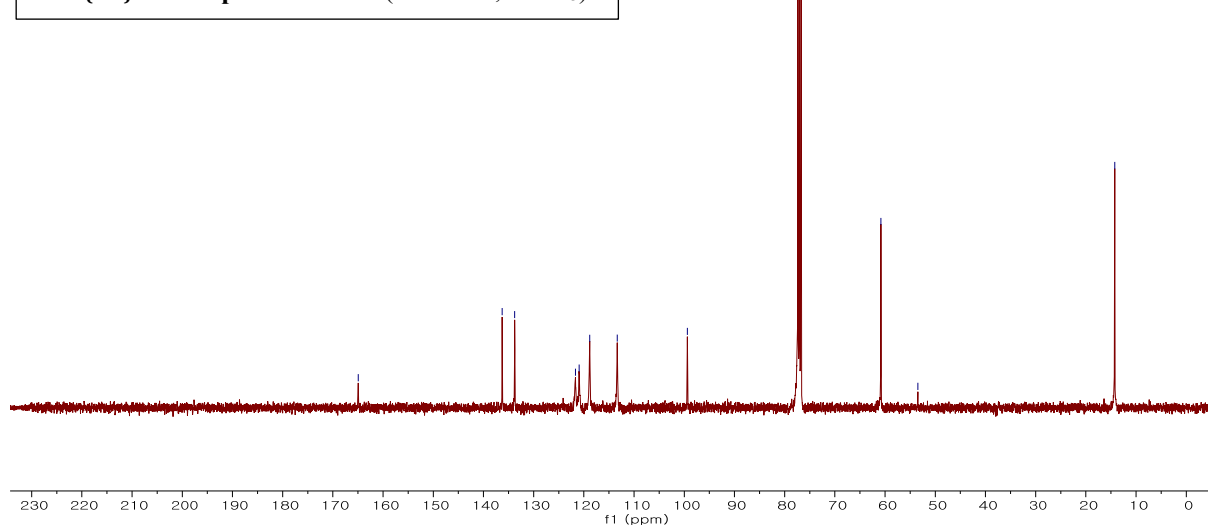


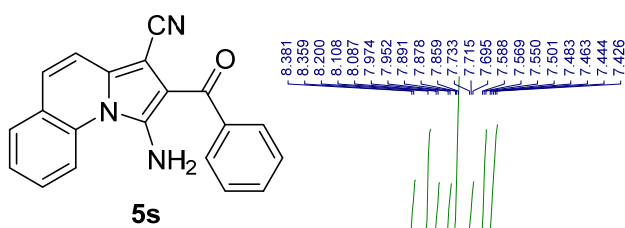


¹H NMR spectrum of 5r (400 MHz, CDCl₃)

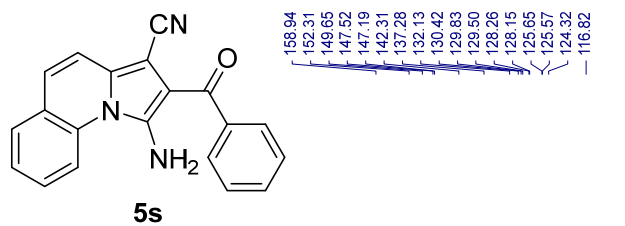
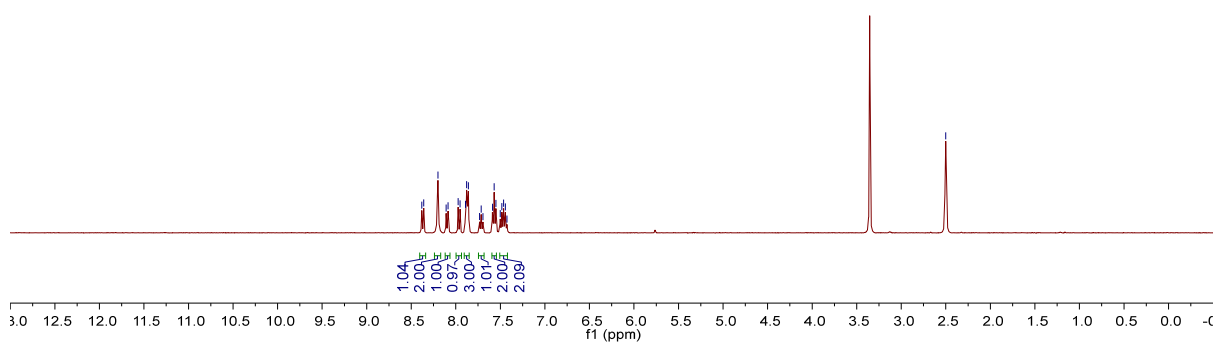


¹³C{¹H} NMR spectrum of 5r (100 MHz, CDCl₃)

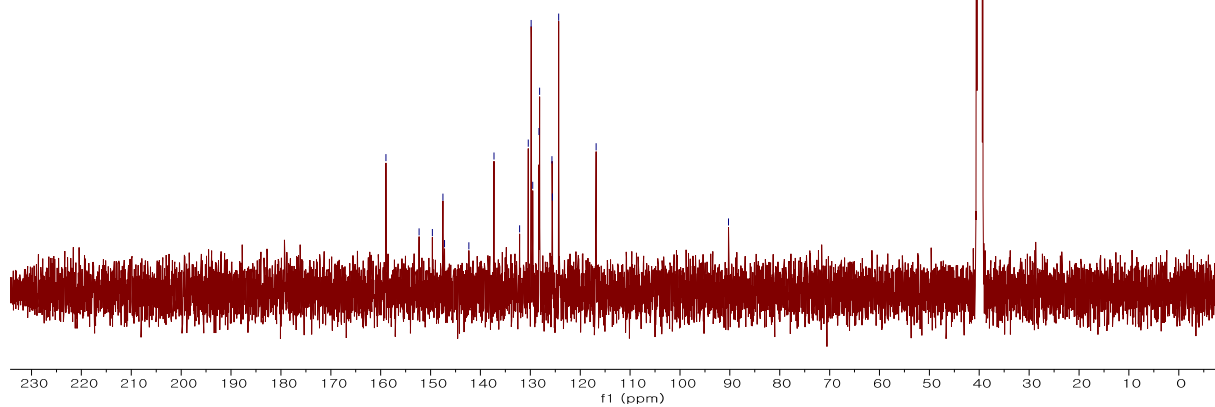


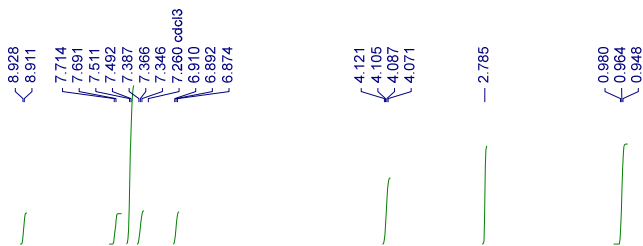
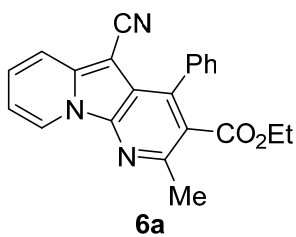


^1H NMR spectrum of **5s** (400 MHz, DMSO- d_6)

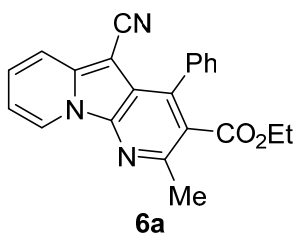
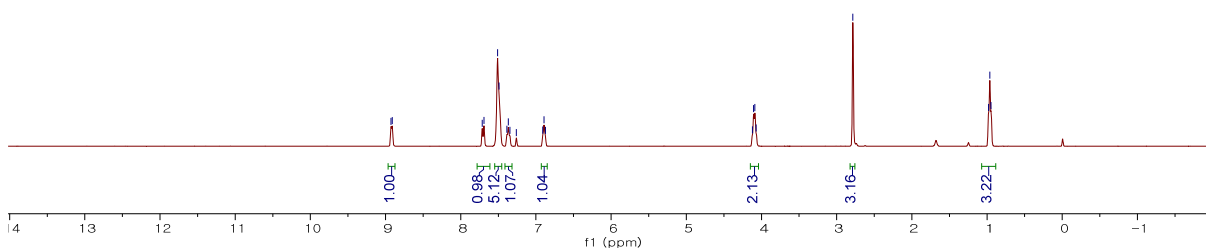


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **5s** (100 MHz, DMSO- d_6)

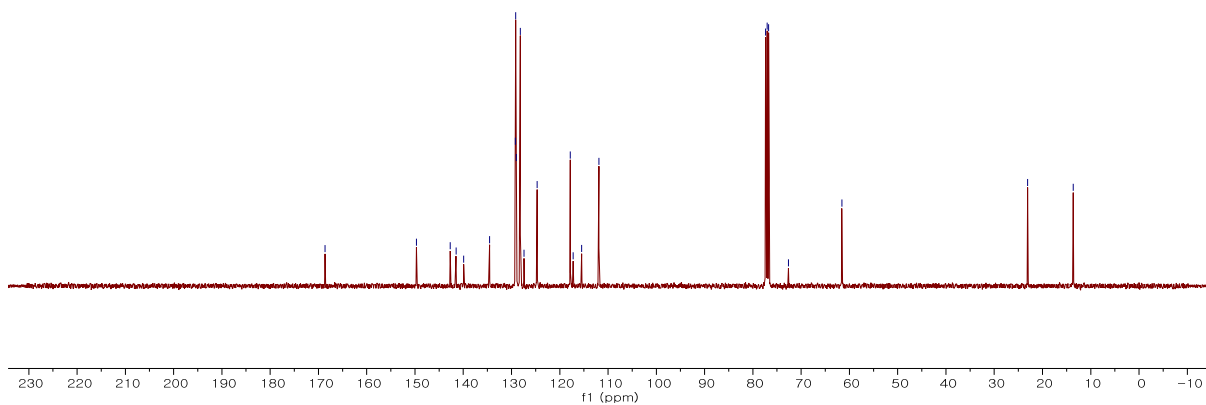


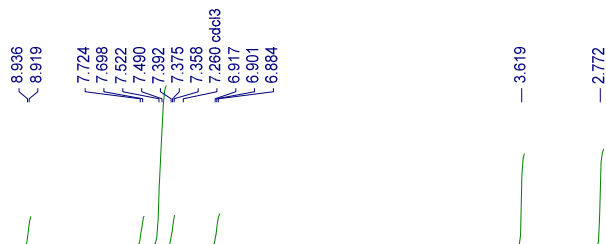
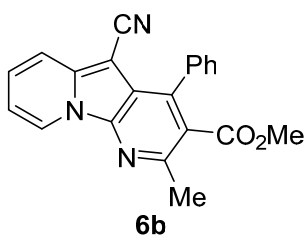


¹H NMR spectrum of 6a (400 MHz, CDCl₃)

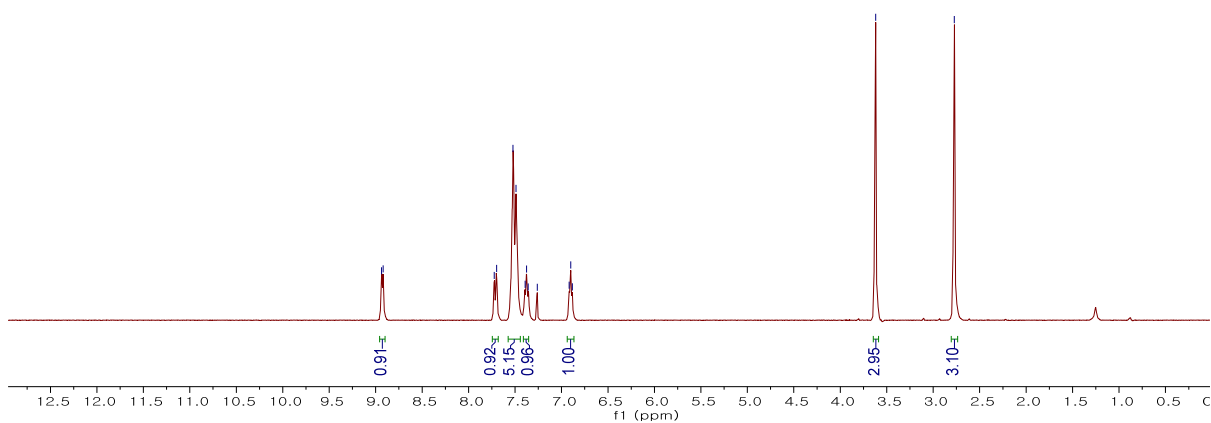


¹³C{¹H} NMR spectrum of 6a (100 MHz, CDCl₃)

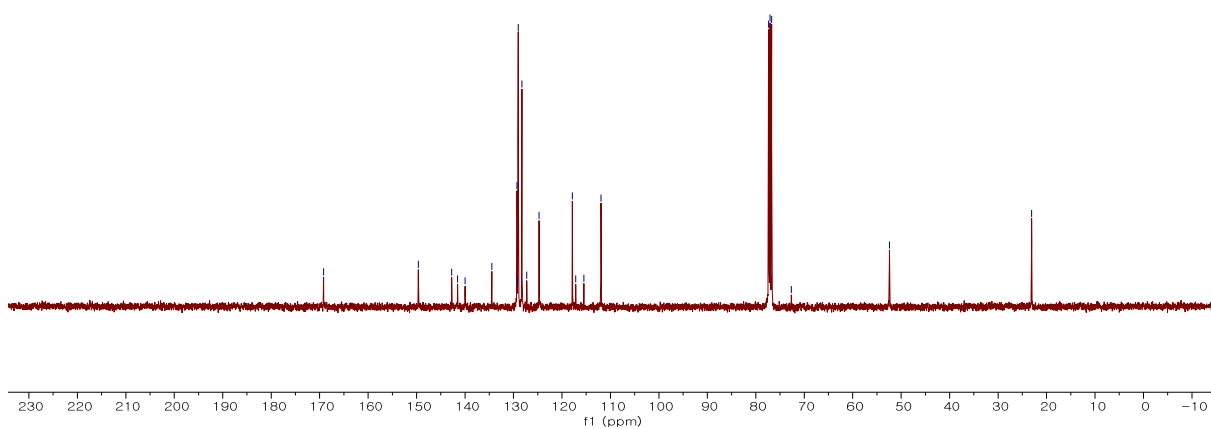


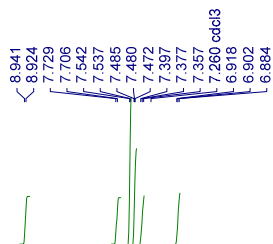
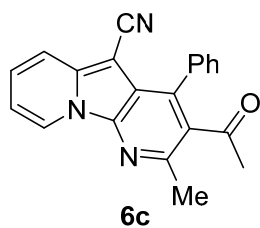


¹H NMR spectrum of 6b (400 MHz, CDCl₃)

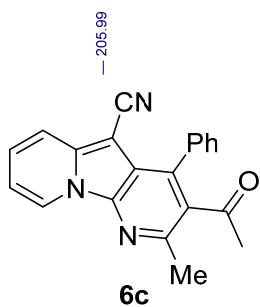
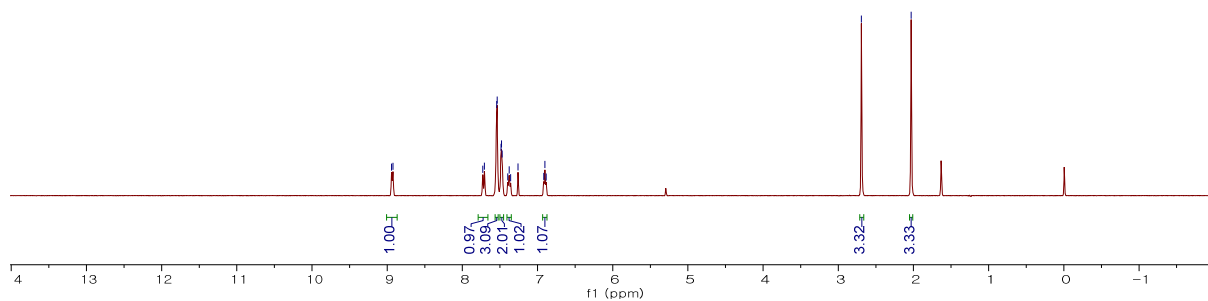


¹³C{¹H} NMR spectrum of 6b (100 MHz, CDCl₃)

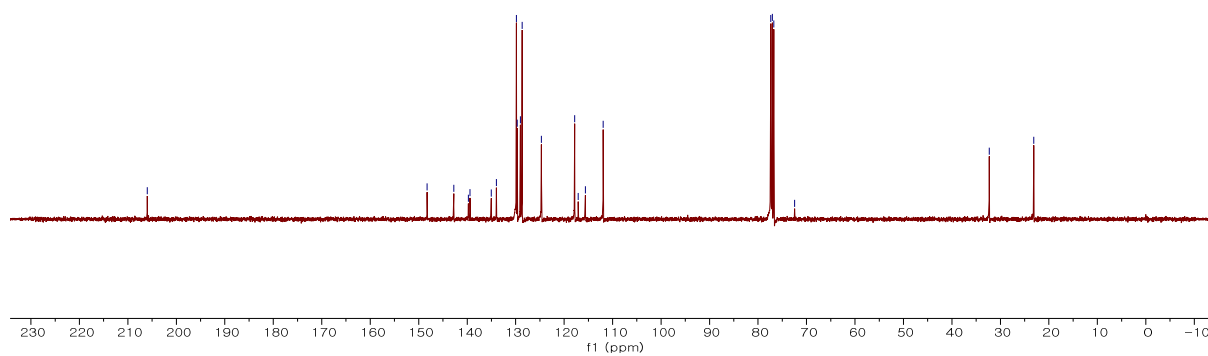


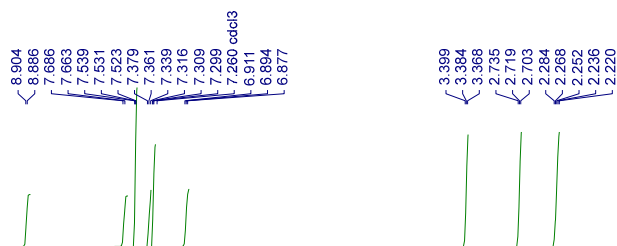
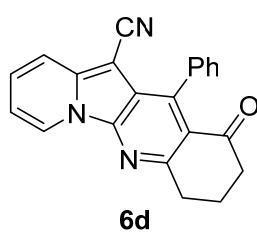


¹H NMR spectrum of 6c (400 MHz, CDCl₃)

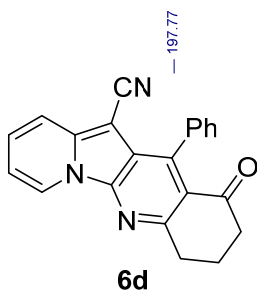
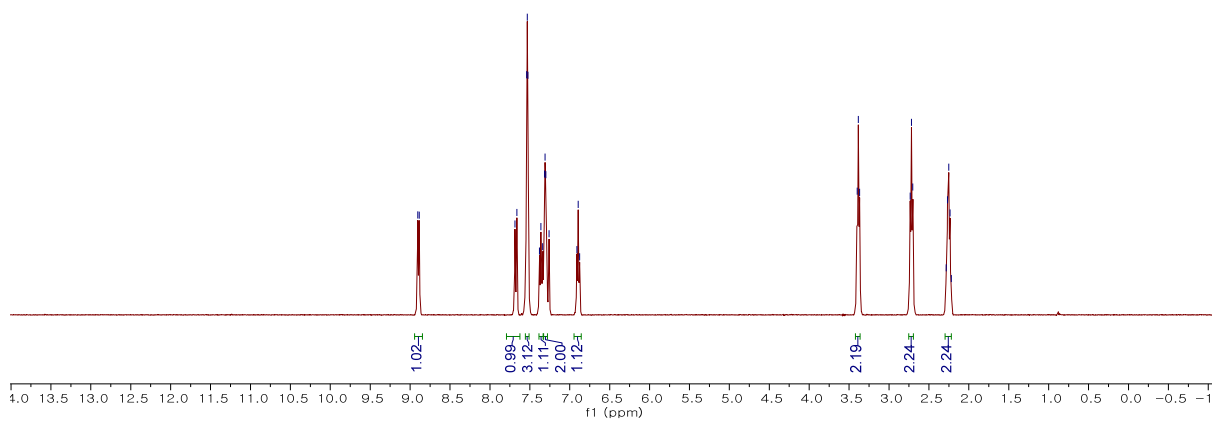


¹³C{¹H} NMR spectrum of 6c (100 MHz, CDCl₃)

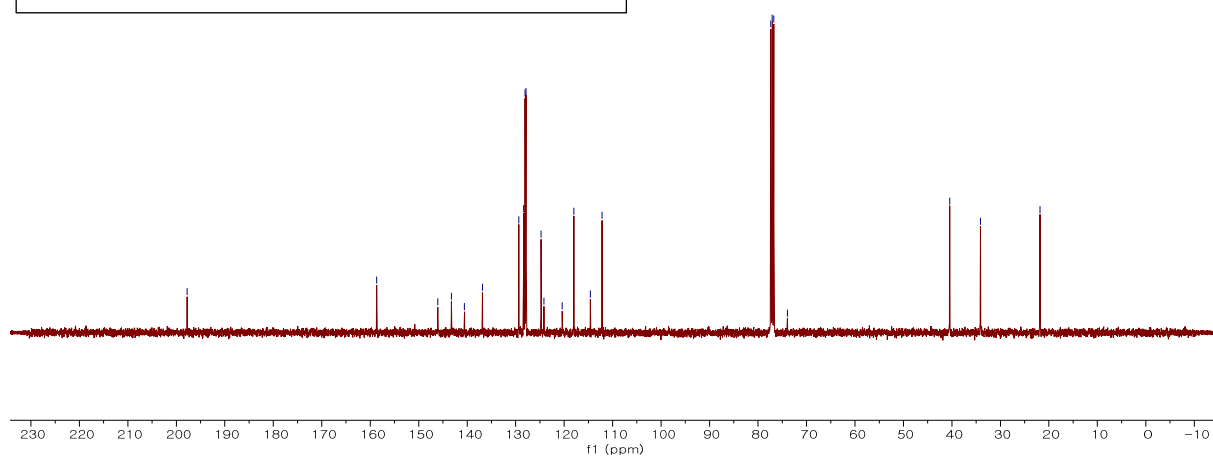


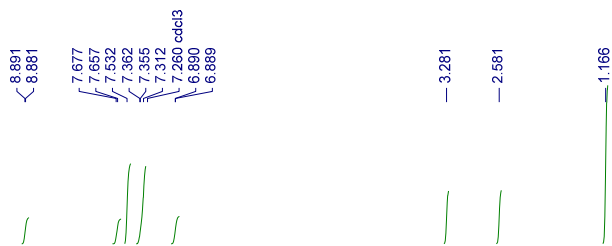
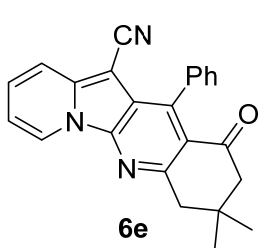


¹H NMR spectrum of 6d (400 MHz, CDCl₃)

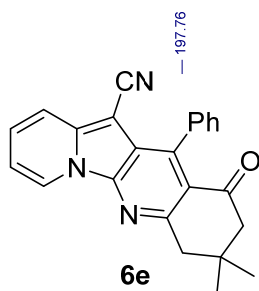
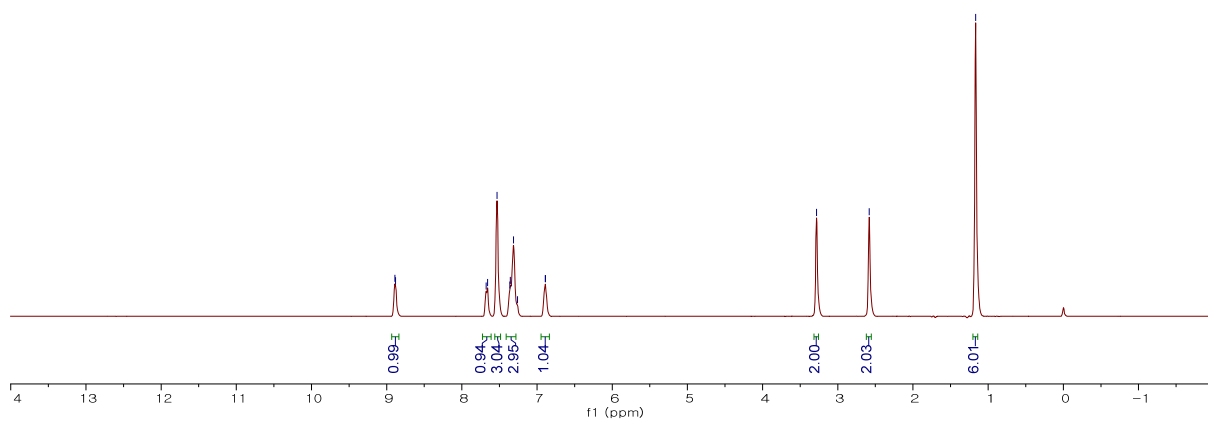


¹³C{¹H} NMR spectrum of 6d (100 MHz, CDCl₃)

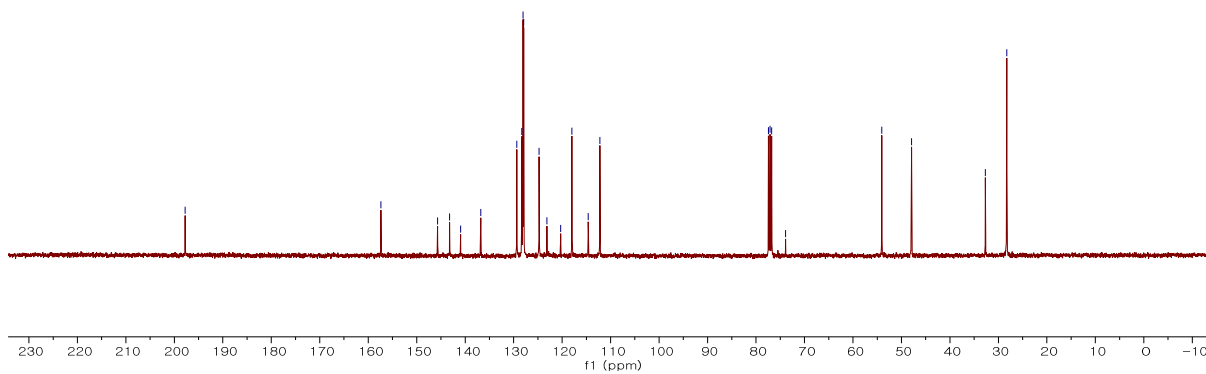


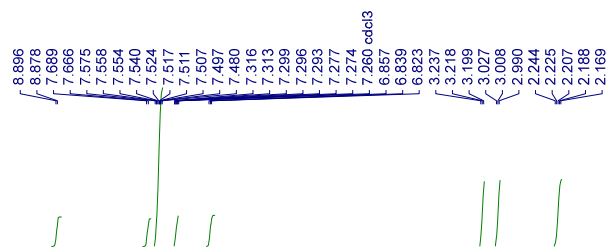
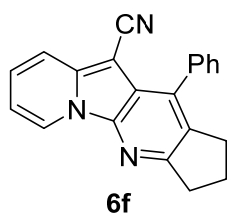


¹H NMR spectrum of 6e (400 MHz, CDCl₃)

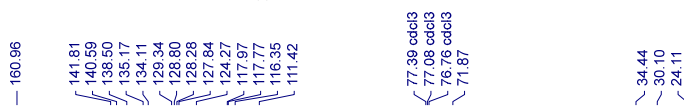
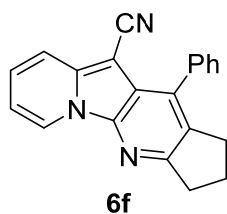
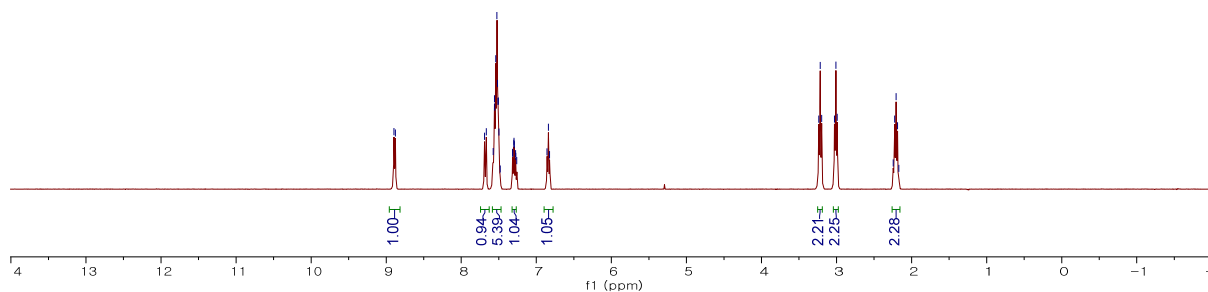


¹³C{¹H} NMR spectrum of 6e (100 MHz, CDCl₃)

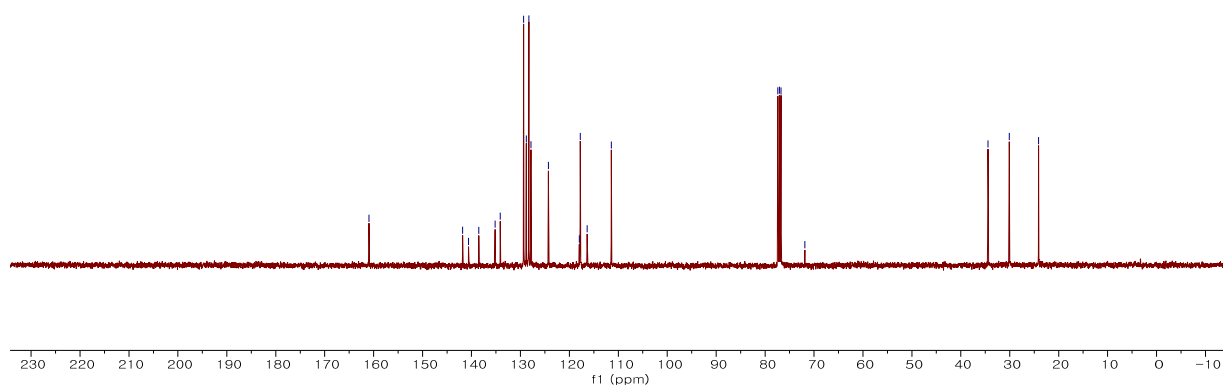


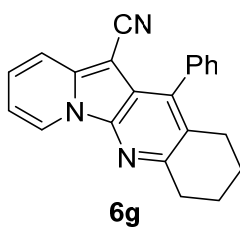


^1H NMR spectrum of **6f** (400 MHz, CDCl_3)

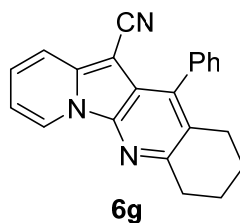
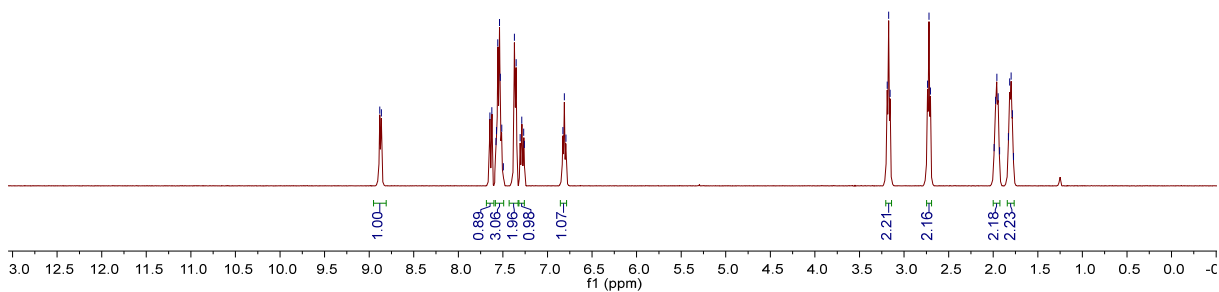


$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **6f** (100 MHz, CDCl_3)

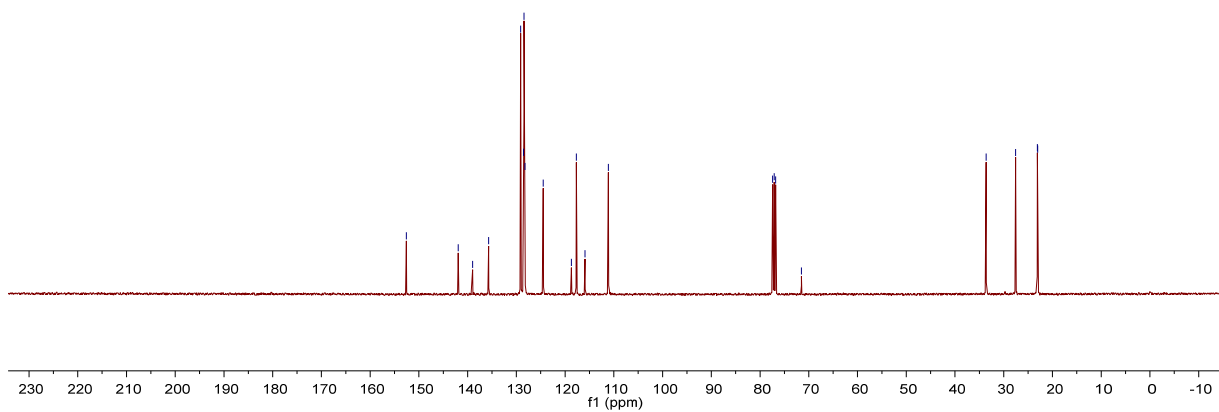


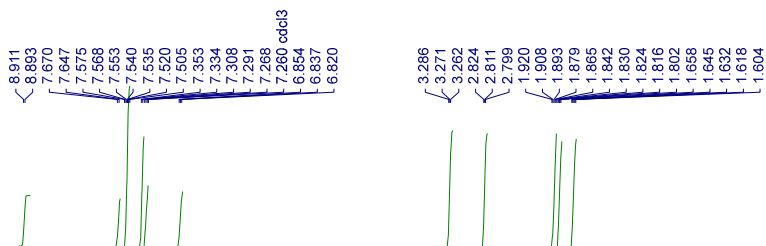
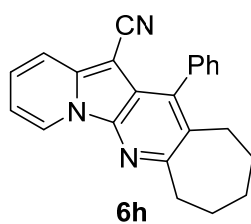


¹H NMR spectrum of 6g (400 MHz, CDCl₃)

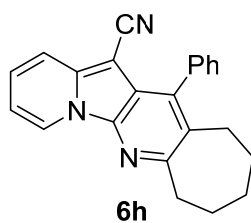
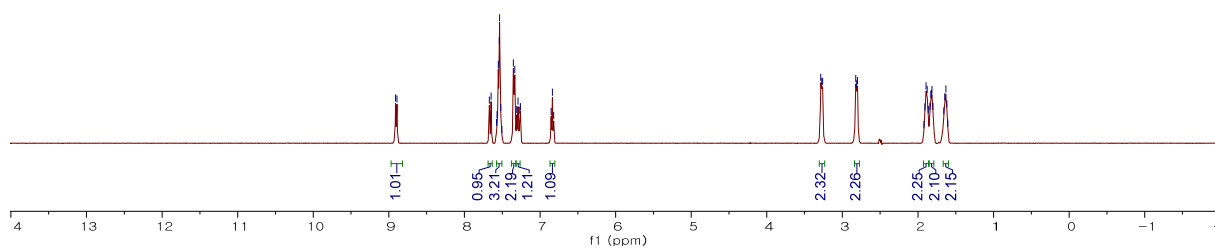


¹³C{¹H} NMR spectrum of 6g (100 MHz, CDCl₃)





^1H NMR spectrum of **6h** (400 MHz, CDCl_3)



$^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of **6h** (100 MHz, CDCl_3)

