Metal-Free Domino One-pot Decarboxylative-Cyclization of Cinnamic Acid Esters: Synthesis of Functionalized Indanes

Alavala Gopi Krishna Reddy, and Gedu Satyanarayana*

Department of Chemistry, Indian Institute of Technology, Hyderabad

Kandi – 502 285, Sangareddy, Telangana, INDIA

Phone: (040) 2301 6033; Fax: (040) 2301 6003 /32

E-mail: gvsatya@iith.ac.in

The following esters **1a–k** which have been used as starting materials are reported in literature.[1]

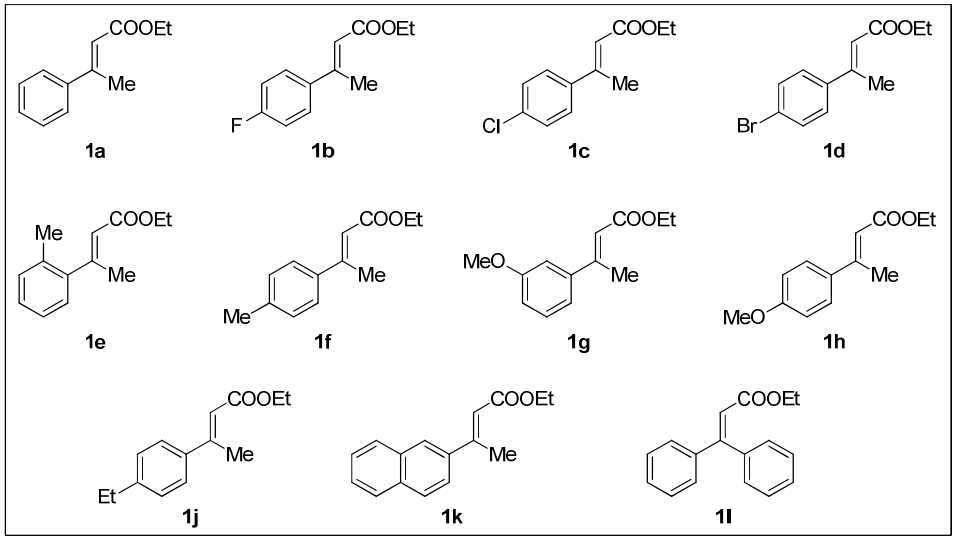


Figure S1: Esters known from the literature

Compounds **2a–l** are known from the literature.[2]

[1] (a) Niharika, P.; Ramulu, B. V.; Satyanarayana, G. *Org. Biomol. Chem.* **2014**, *12,* 4347. (b) Ramulu, B. V.; Niharika, P.; Satyanarayana, G. *Synthesis* **2015**, *47*, 1255.

[2] (a) Ramulu, B. V.; Satyanarayana, G. *RSC Adv*. **2015**, *5*, 70972. (b) Reeves, J. T.; Fandrick, D. R.; Tan, Z.; Song, J. J.; Yee, N. K.; Senanayake, C. H. *Tetrahedron Lett*. **2009**, *50*, 3077. (c) Satomura, M.; Iwakura, K. *Jpn*. *Kokai Tokkyo Koho* 1989, JP 01265036 A 19891023. (d) vom Stein, T.; Perez, M.; Dobrovetsky, R.; Winkelhaus, D.; Caputo, C. B.; Stephan, D. W. *Angew*. *Chem*. *Int*. *Ed*. **2015**, *54*, 10178.

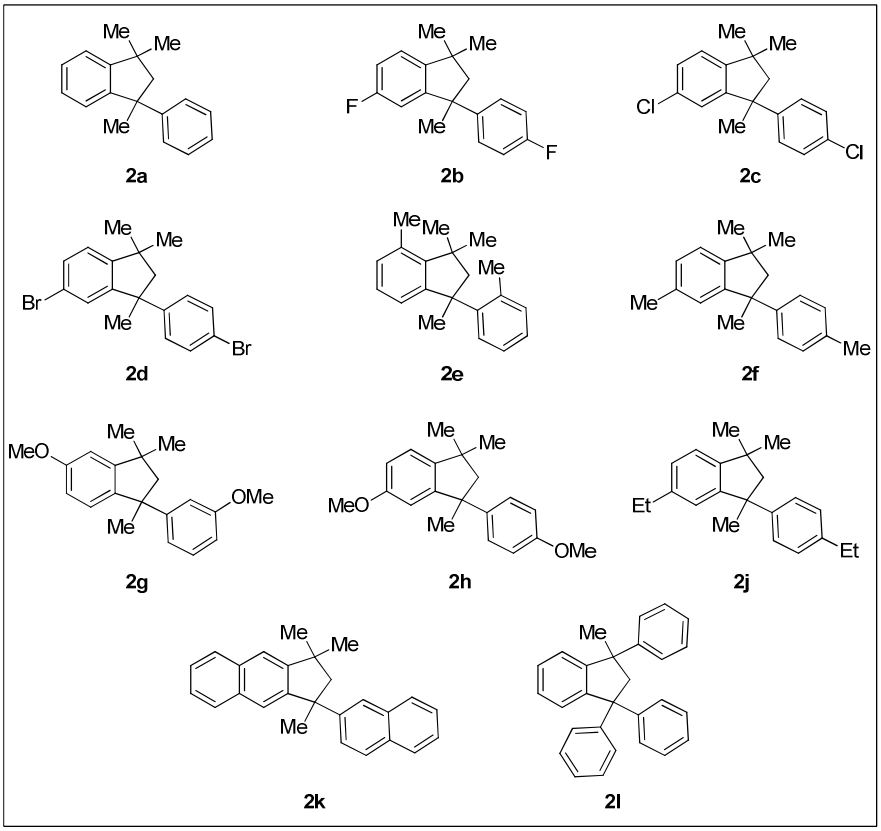


Figure S2: Indanes known from the literature

Compounds **3a**,[3] **8**,[4] **10a**[5] and **10l**[6] are known from the literature.

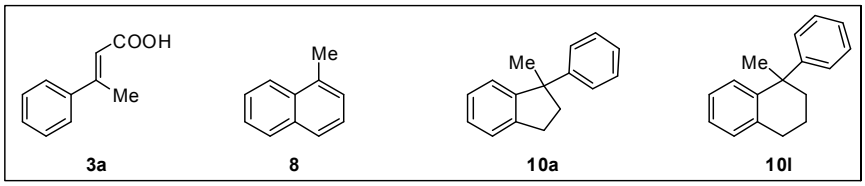
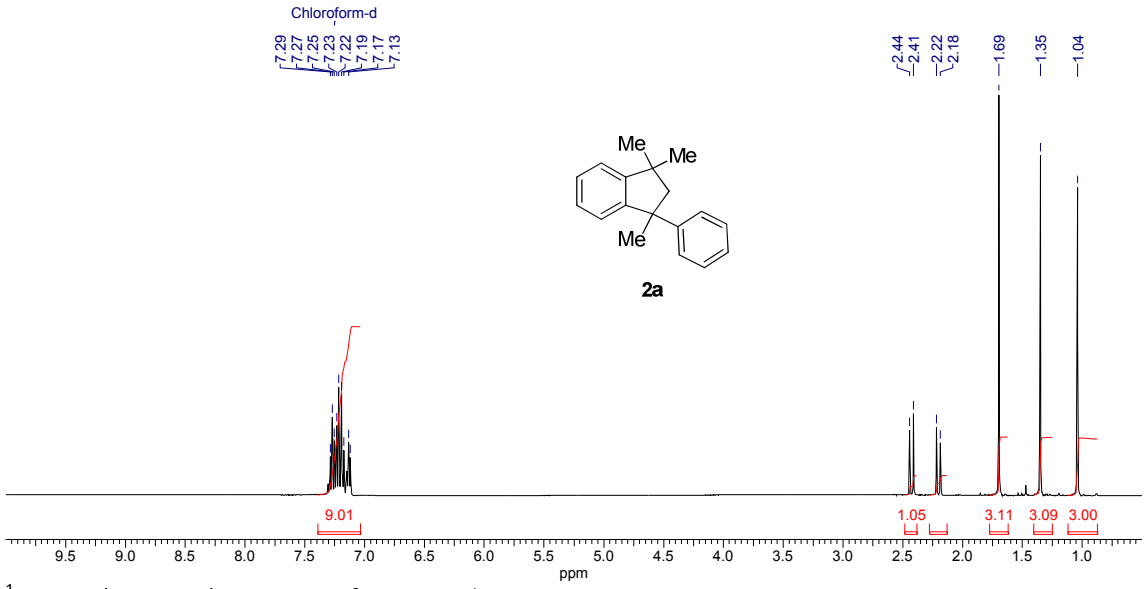
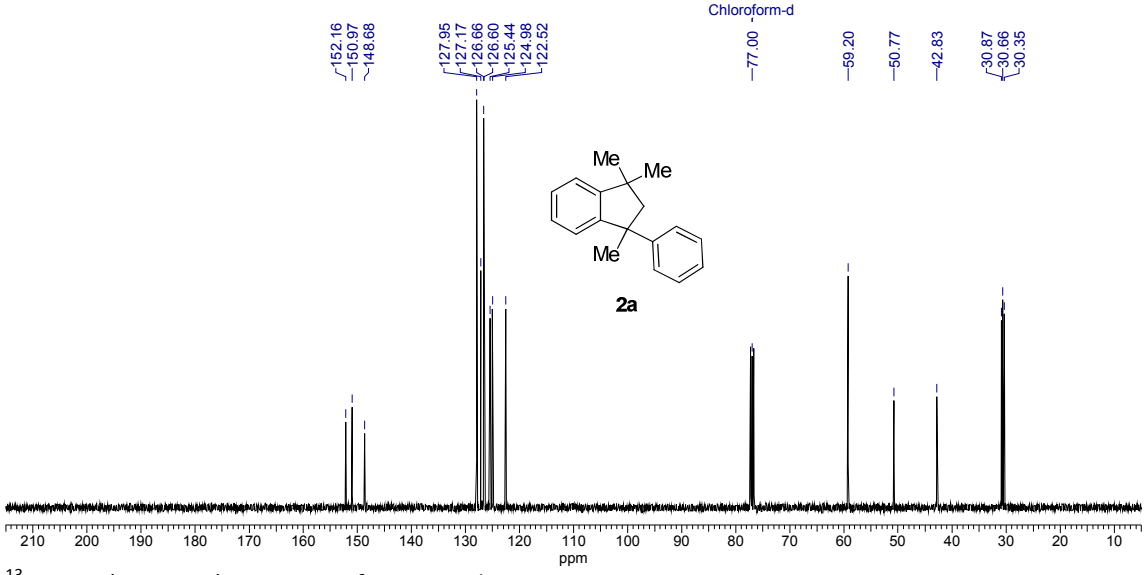


Figure S3: Compounds known from the literature

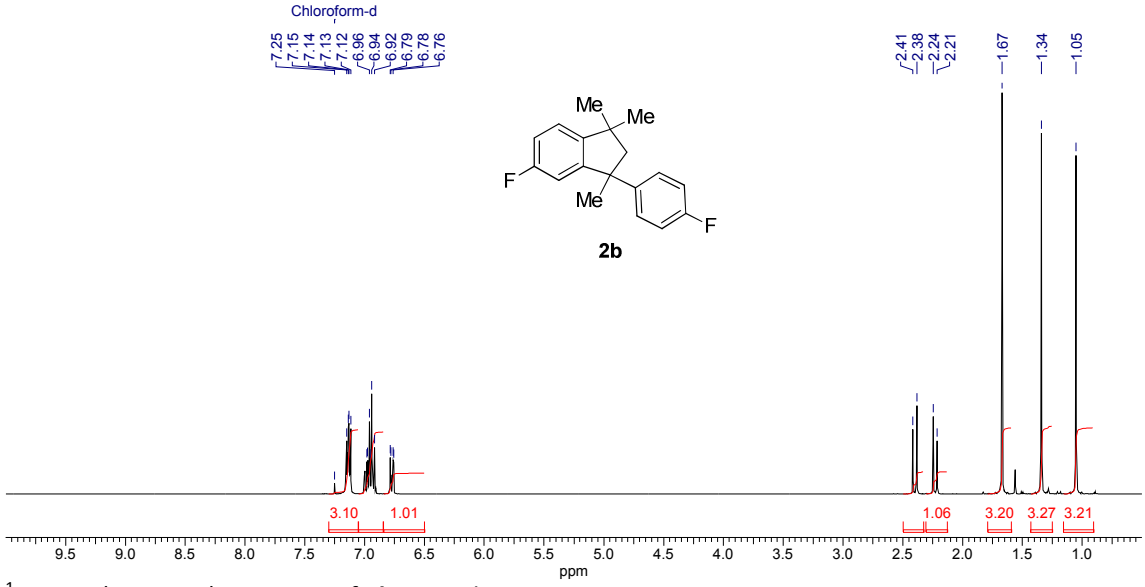
[3] Zhao, W.; Carreira, E. M. *Org. Lett*. **2011**, *13*, 5084.
[4] Joseph, J. T.; Sajith, A. M.; Ningegowda, R. C.; Nagaraj, A.; Rangappa, K. S.; Shashikanth, S. *Tetrahedron Lett*. **2015**, *56*, 5106.
[5] Kamata, R.; Shiraishi, F.; Nishikawa, J.-i.; Yonemoto, J.; Shiraishi, H. *Toxicology in Vitro* **2008**, *22*, 1050.
[6] Oae, S.; Kita, T.; Kawamura, S. *Tetrahedron*, **1963**, *19*, 1783.



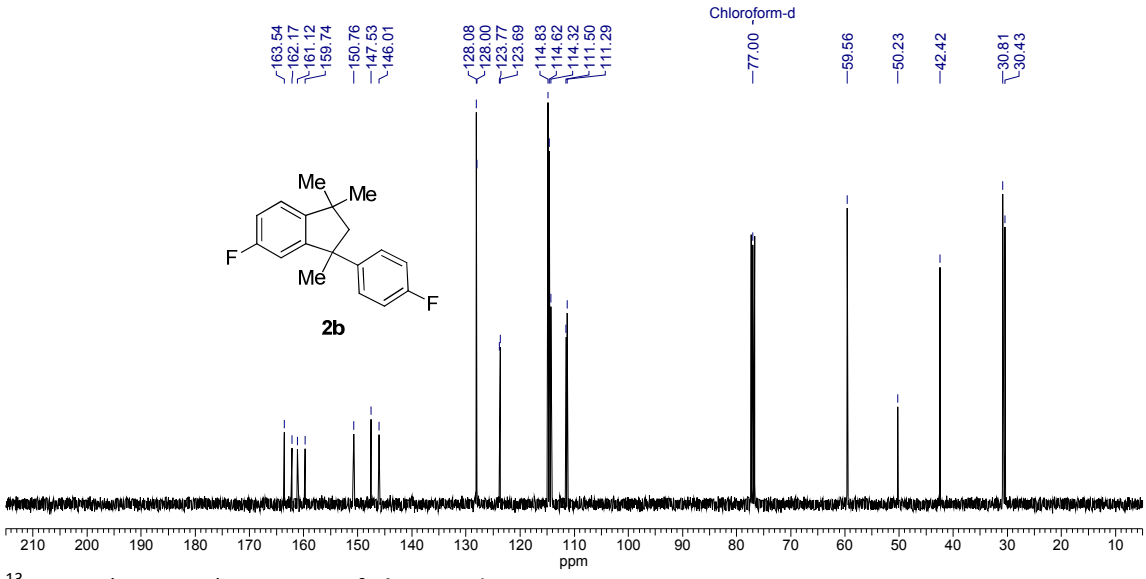
^{1}H NMR (400 MHz) spectrum of **2a** in $CDCl_3$



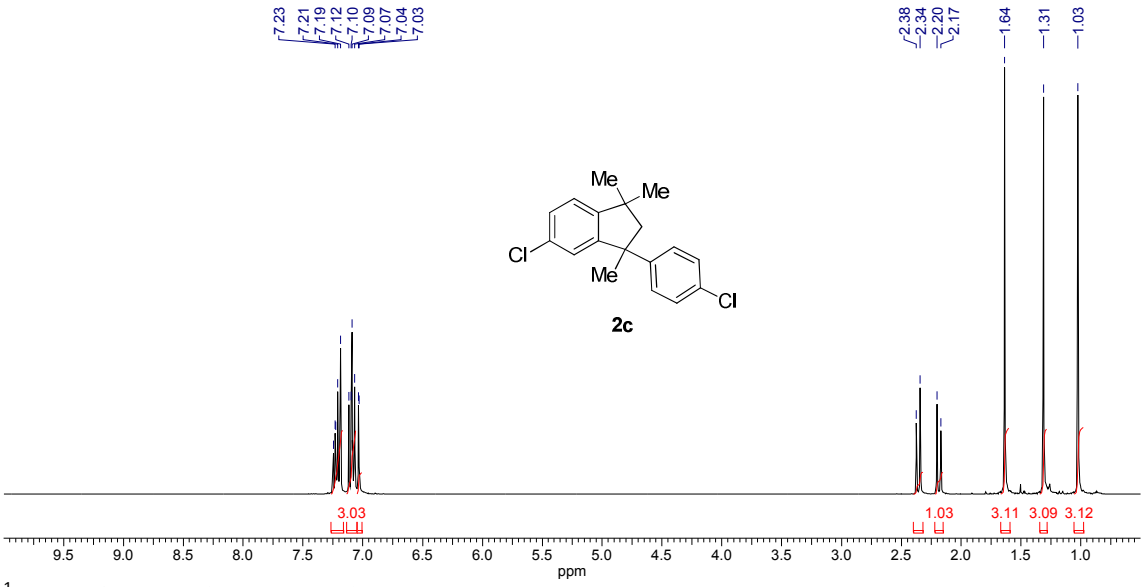
^{13}C NMR (100 MHz) spectrum of **2a** in CDCl



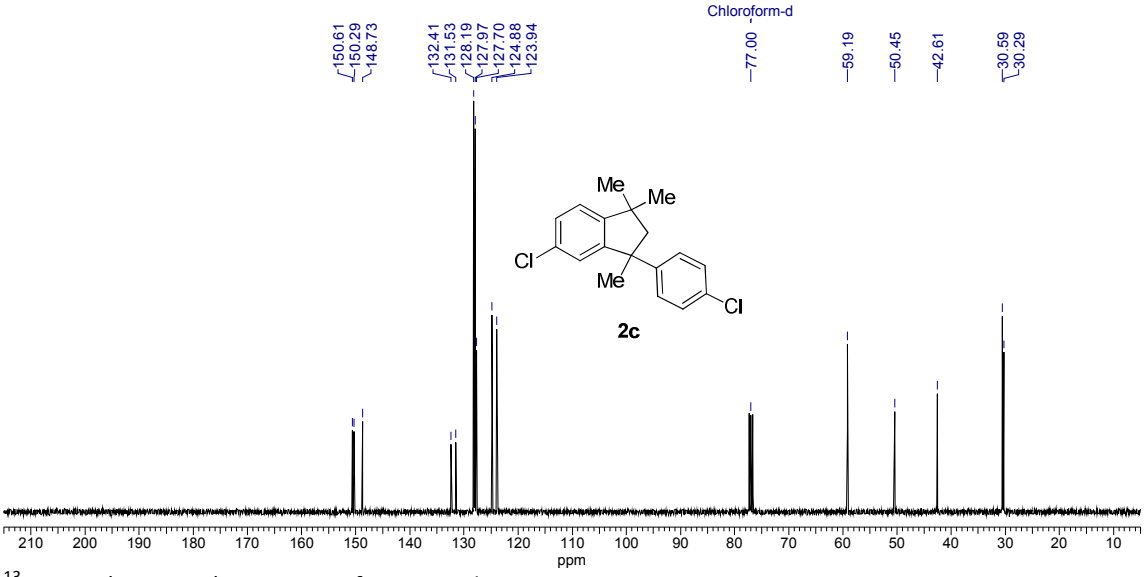
^{1}H NMR (400 MHz) spectrum of **2b** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **2b** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **2c** in $CDCl_3$



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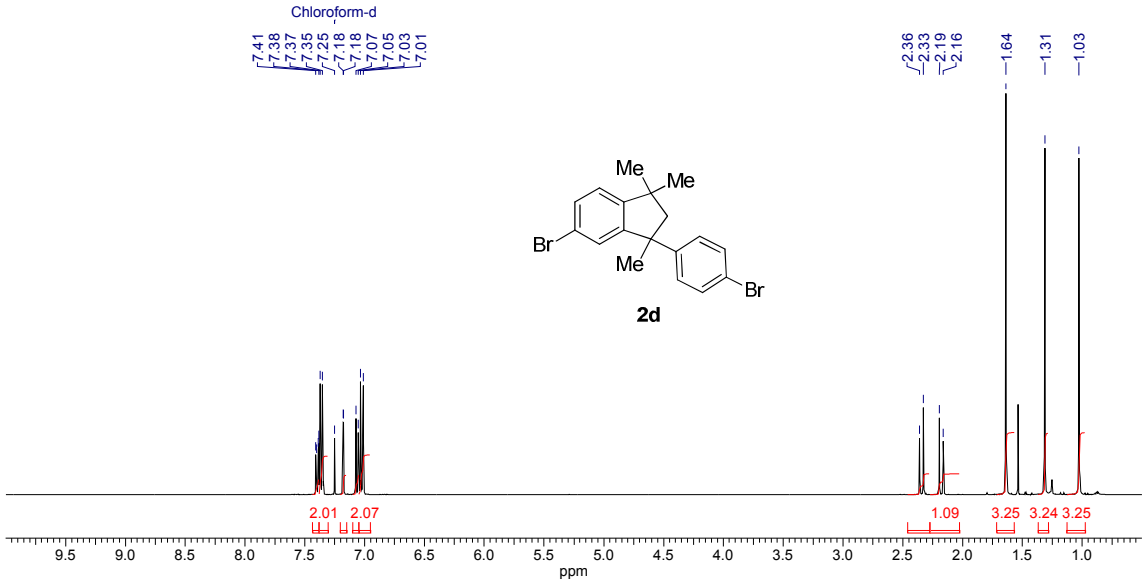
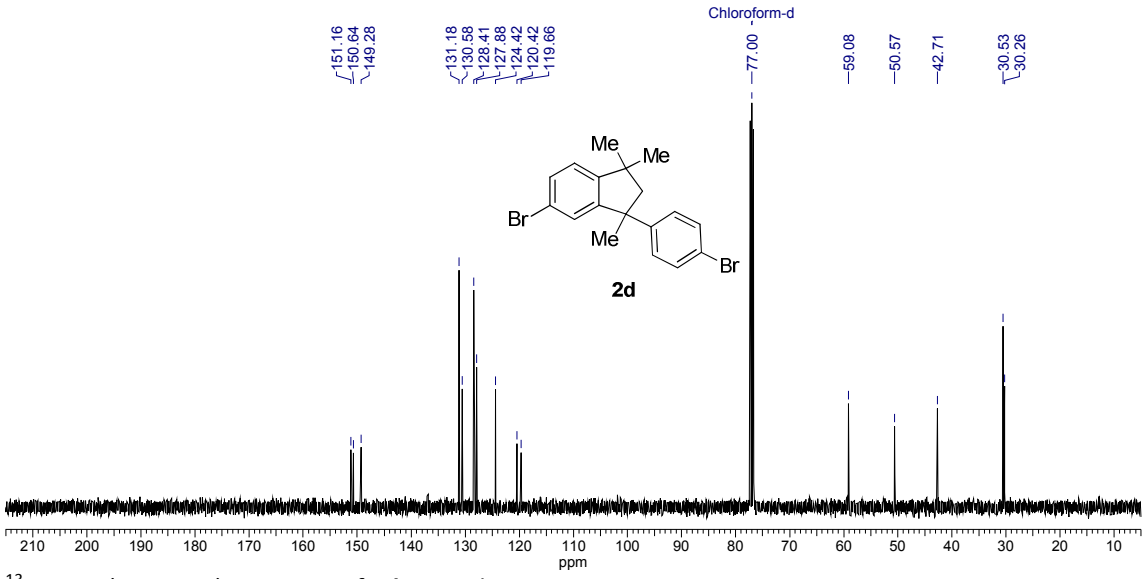
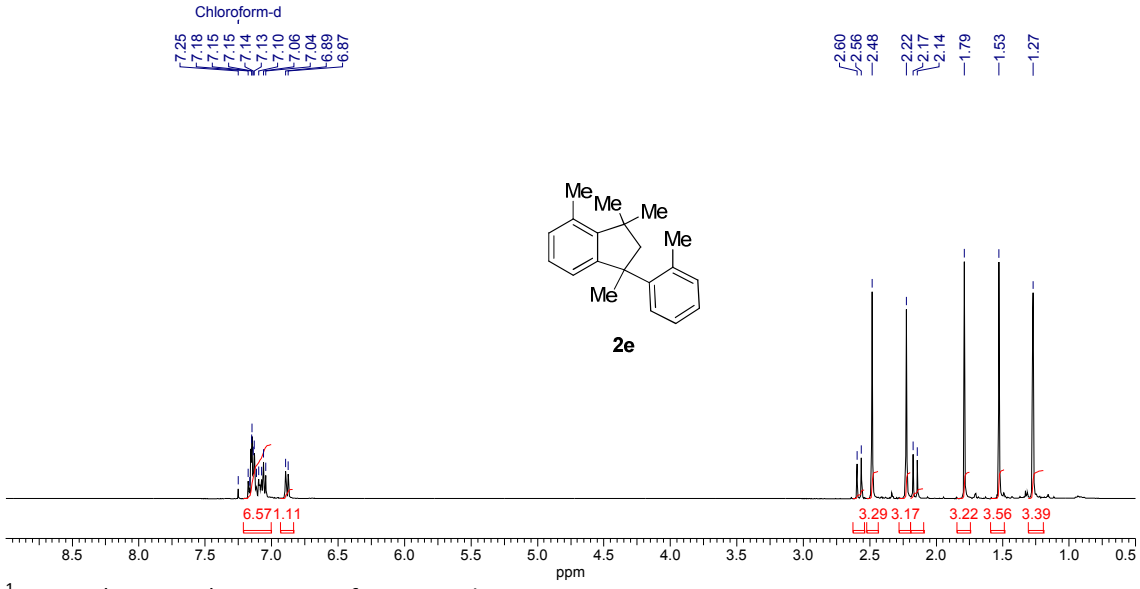


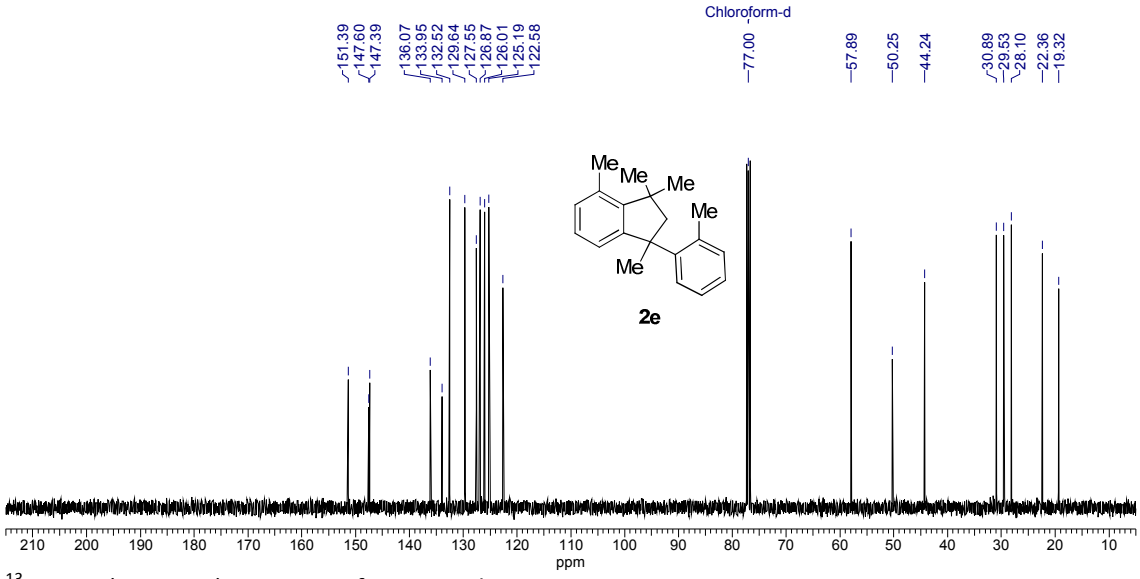
^{1}H NMR (400 MHz) spectrum of **2d** in $CDCl_3$



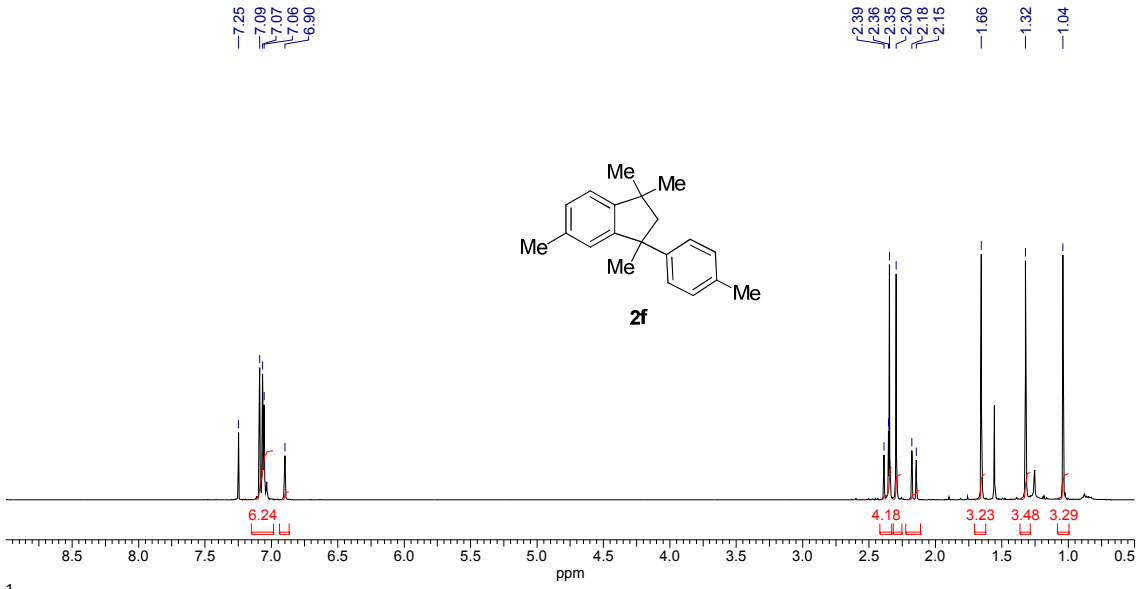
^{13}C NMR (100 MHz) spectrum of **2d** in $CDCl_3$



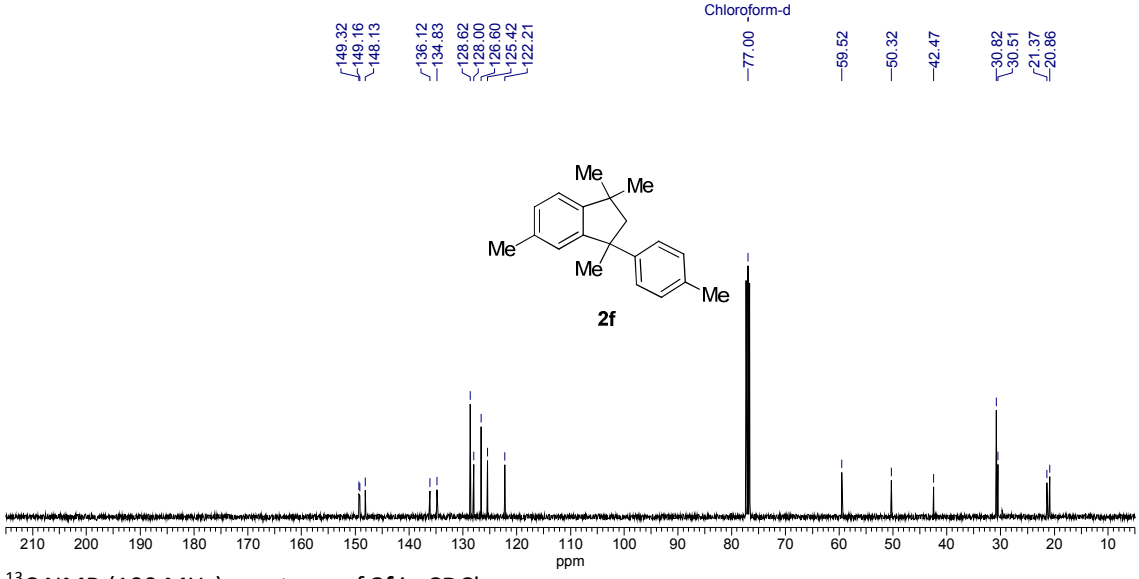
^{1}H NMR (400 MHz) spectrum of **2e** in $CDCl_3$



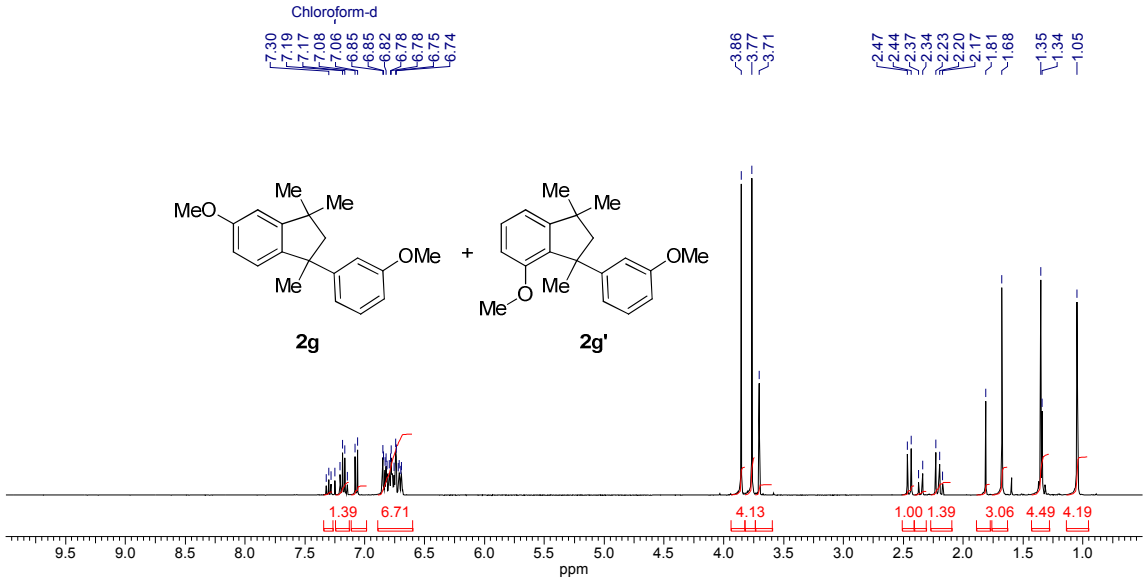
^{13}C NMR (100 MHz) spectrum of **2e** in $CDCl_3$



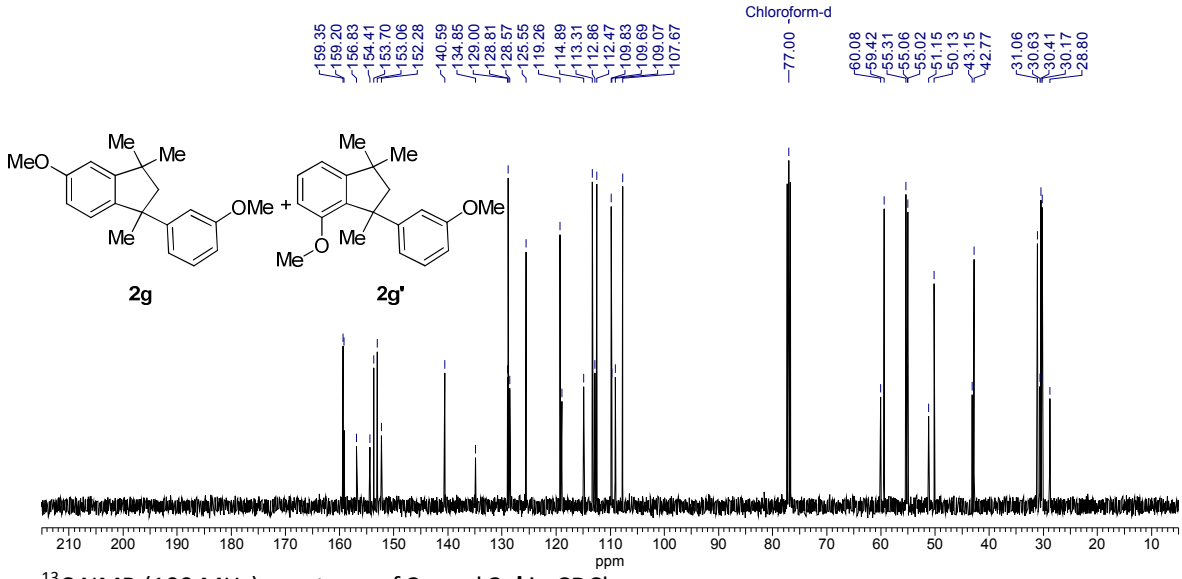
^{1}H NMR (400 MHz) spectrum of **2f** in $CDCl_3$



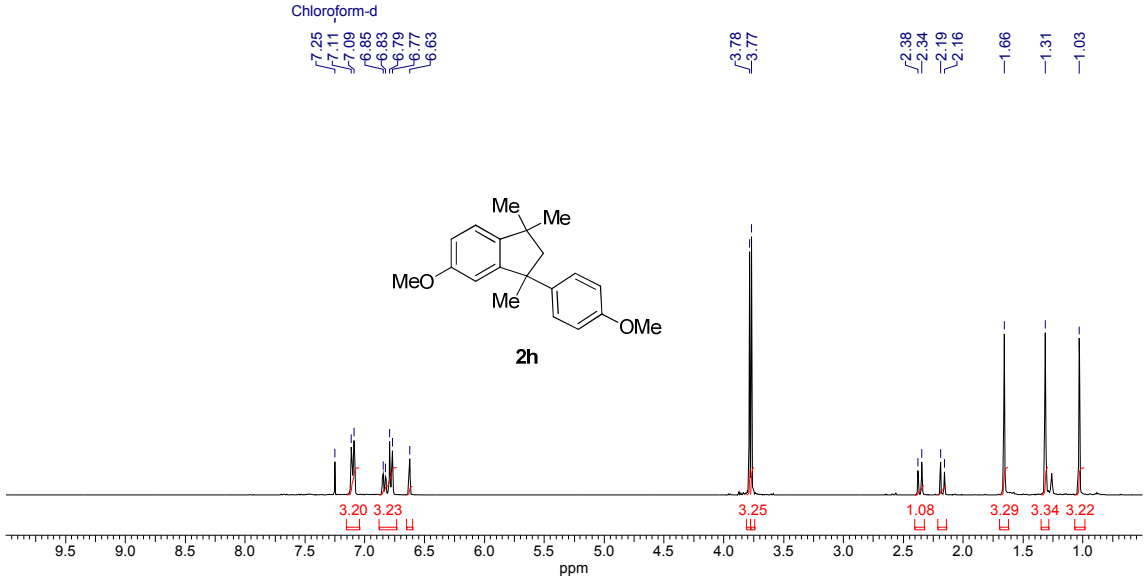
^{13}C NMR (100 MHz) spectrum of **2f** in $CDCl_3$



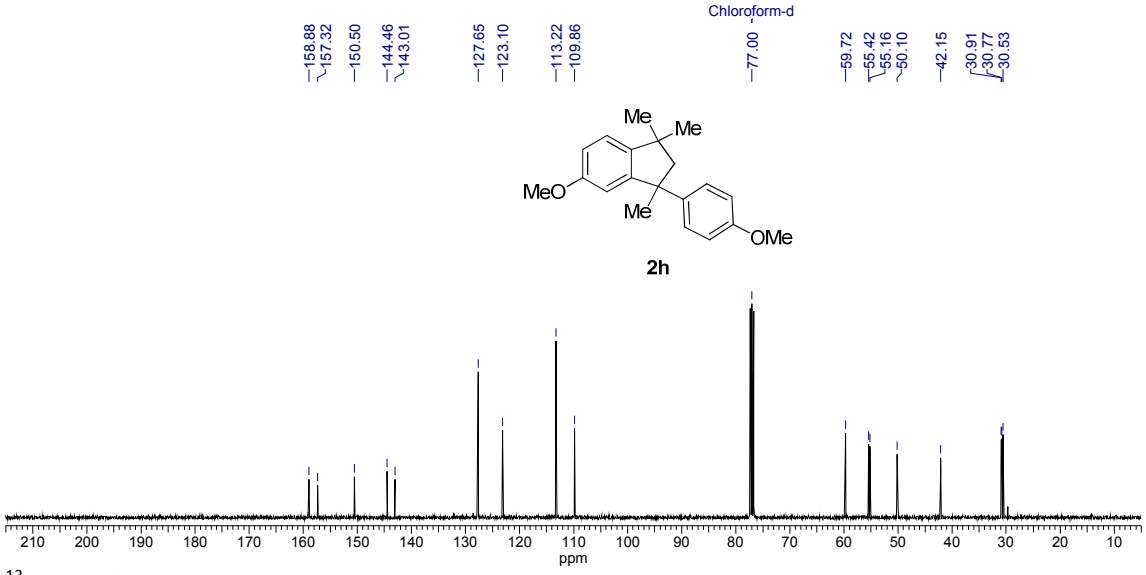
^{1}H NMR (400 MHz) spectrum of **2g** and **2g'** in $CDCl_3$



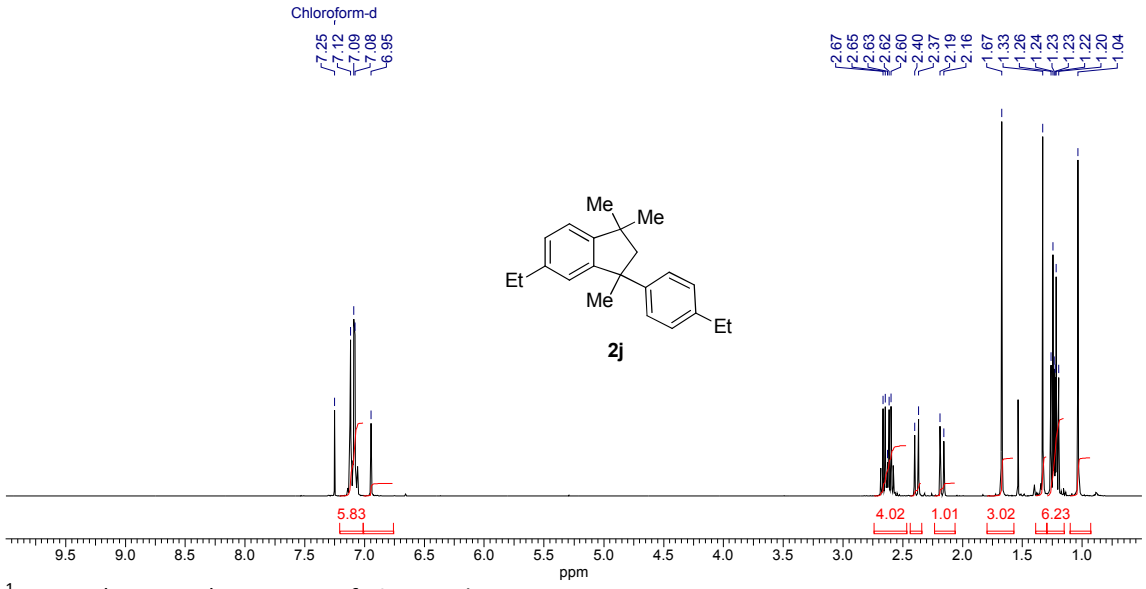
^{13}C NMR (100 MHz) spectrum of **2g** and **2g'** in $CDCl_3$



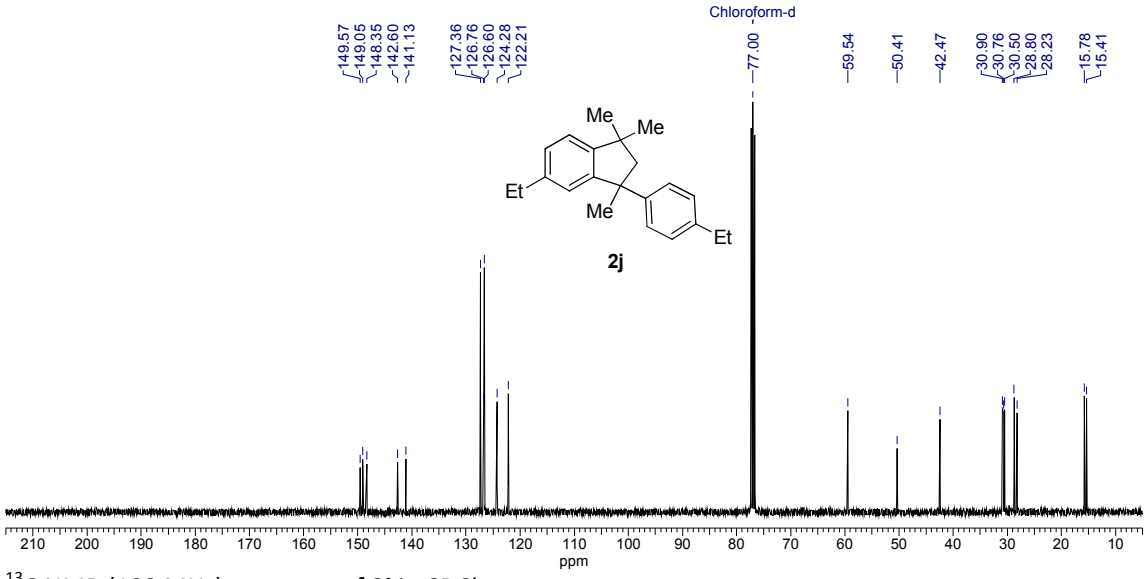
^{1}H NMR (400 MHz) spectrum of **2h** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **2h** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **2j** in $CDCl_3$



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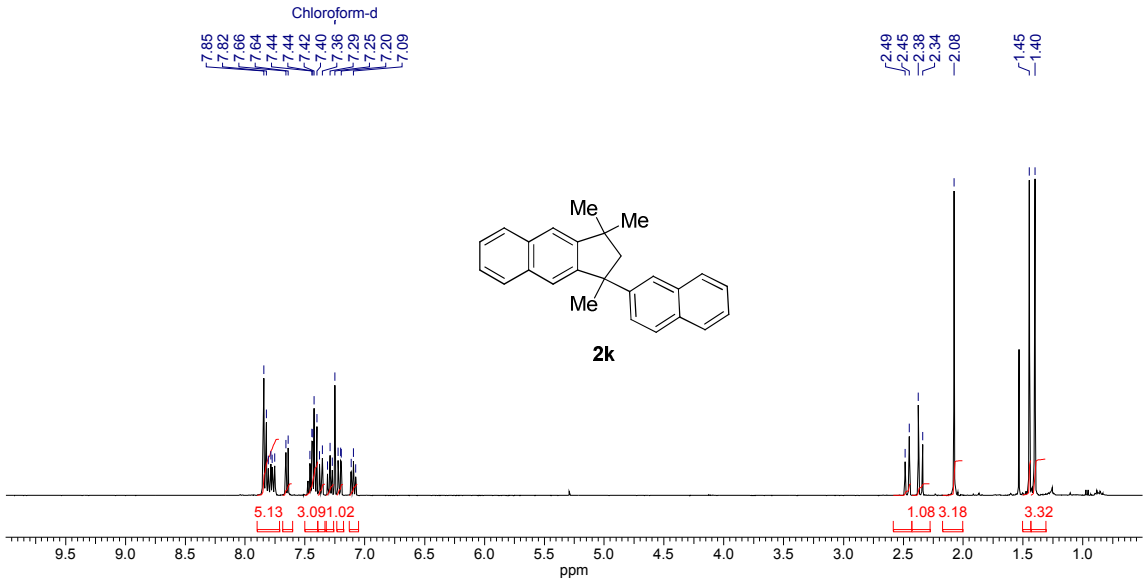
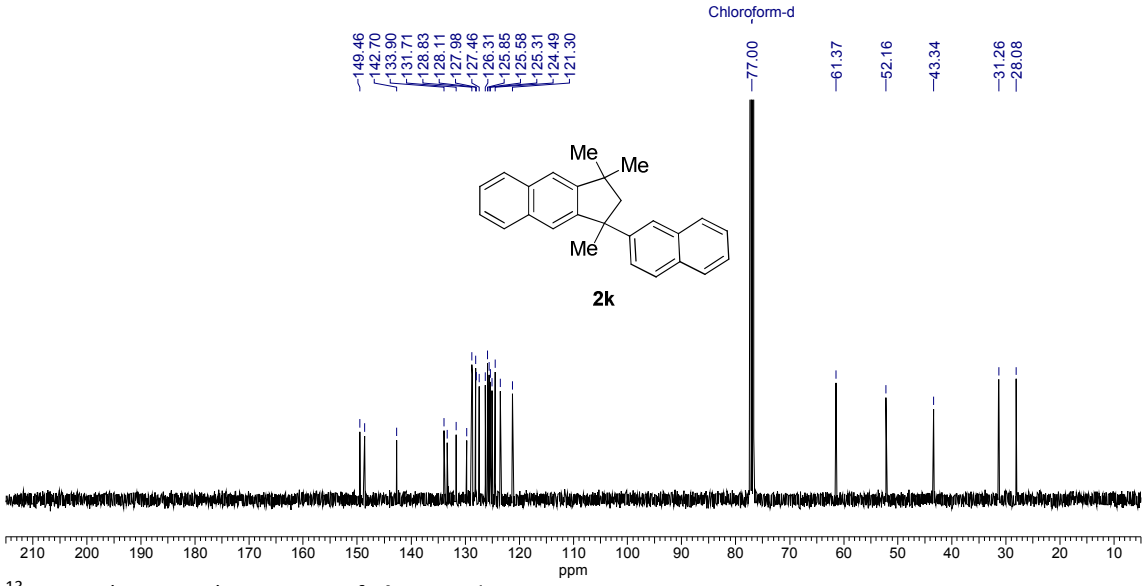


^{1}H NMR (400 MHz) spectrum of **2k** in $CDCl_3$



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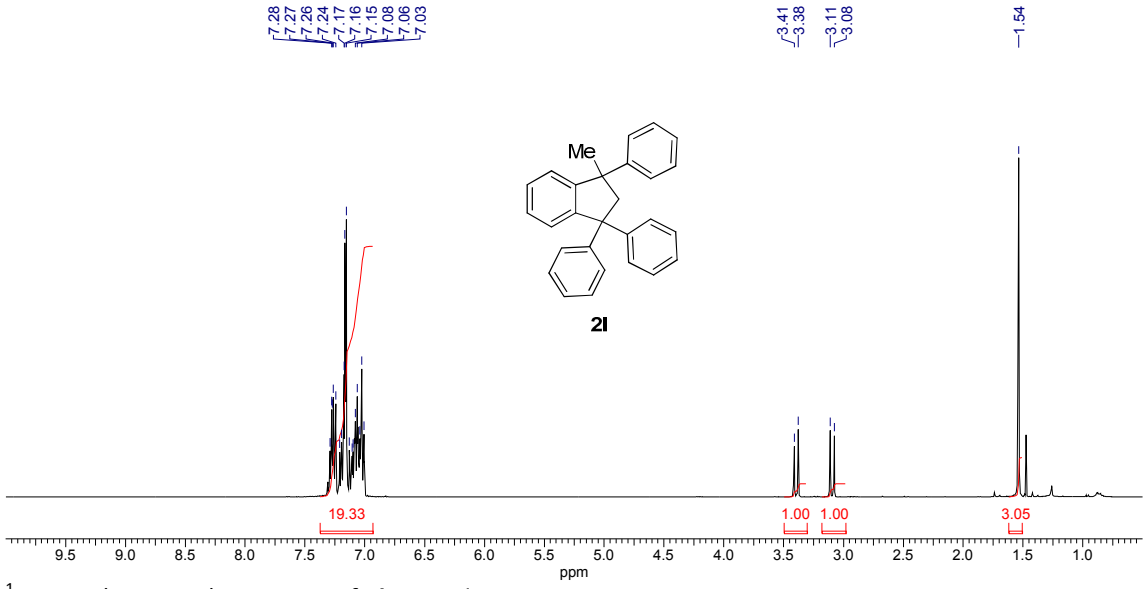
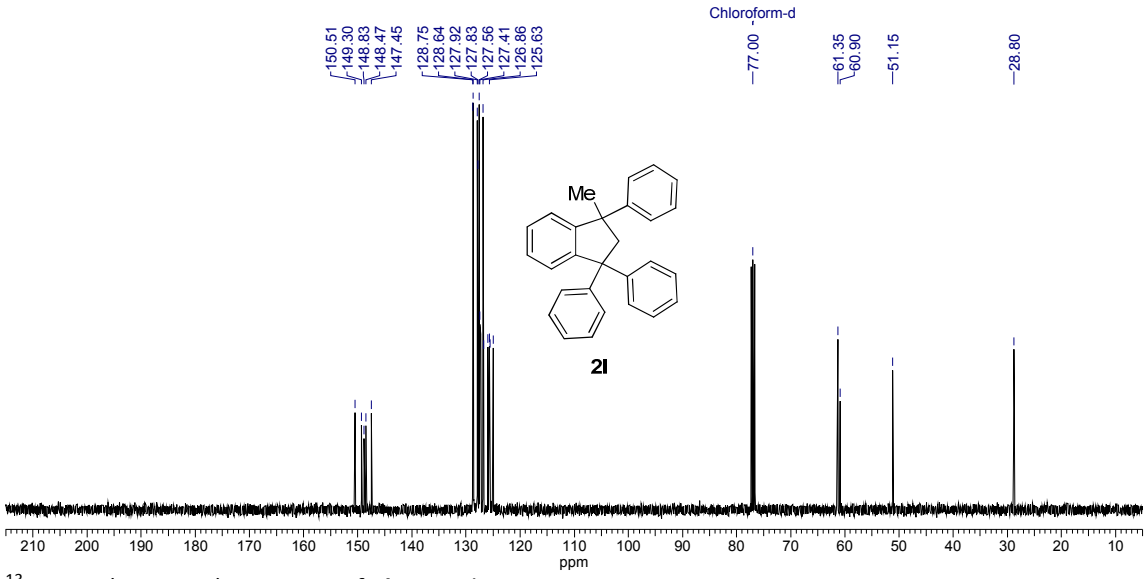


^{1}H NMR (400 MHz) spectrum of **2l** in $CDCl_3$



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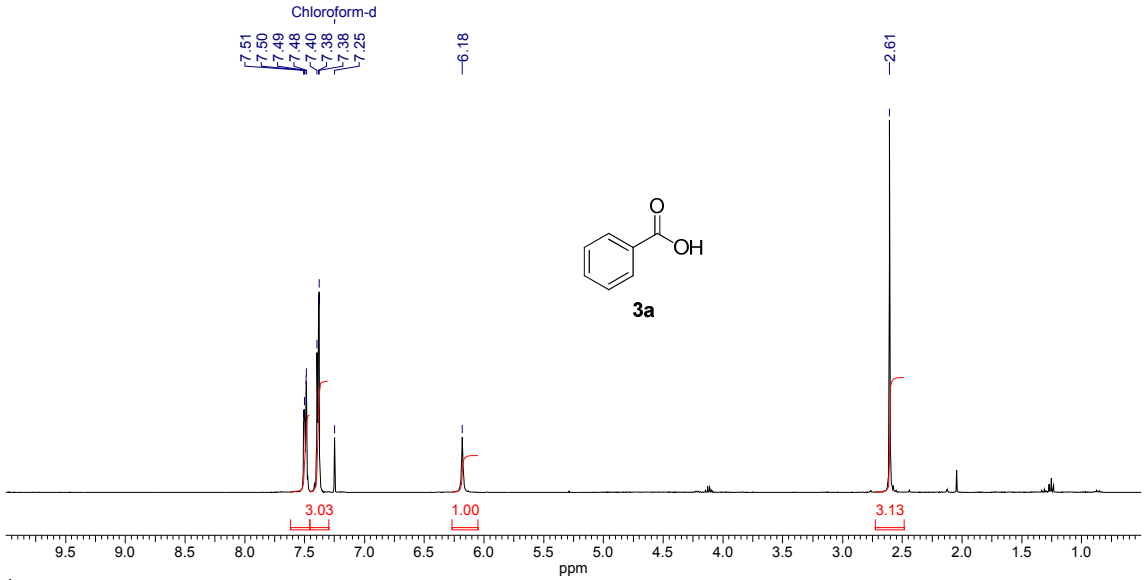
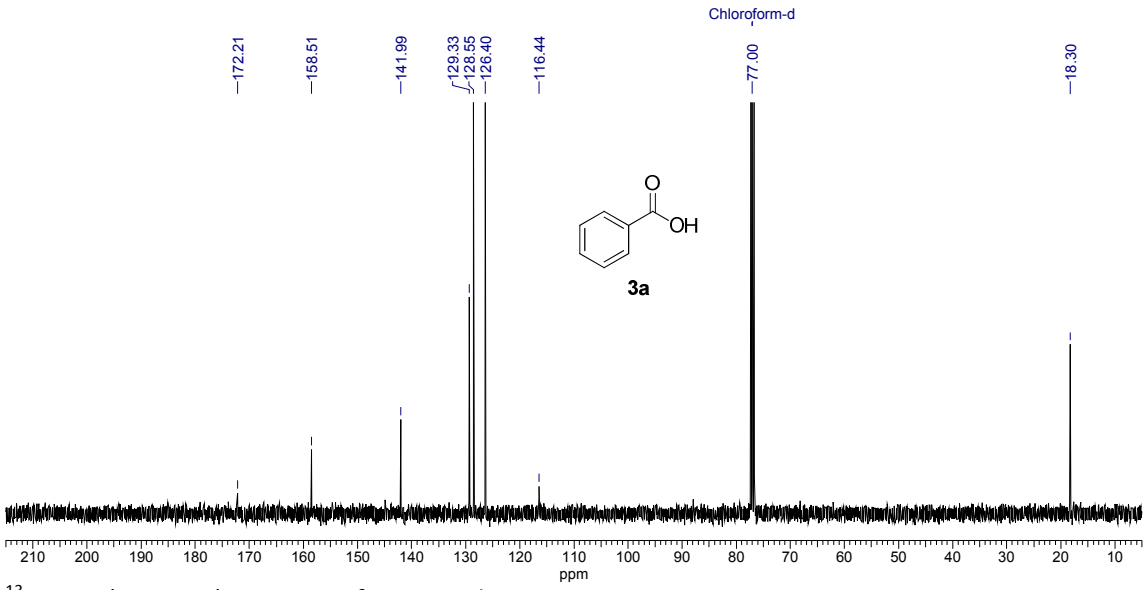


^{1}H NMR (400 MHz) spectrum of **3a** in $CDCl_3$



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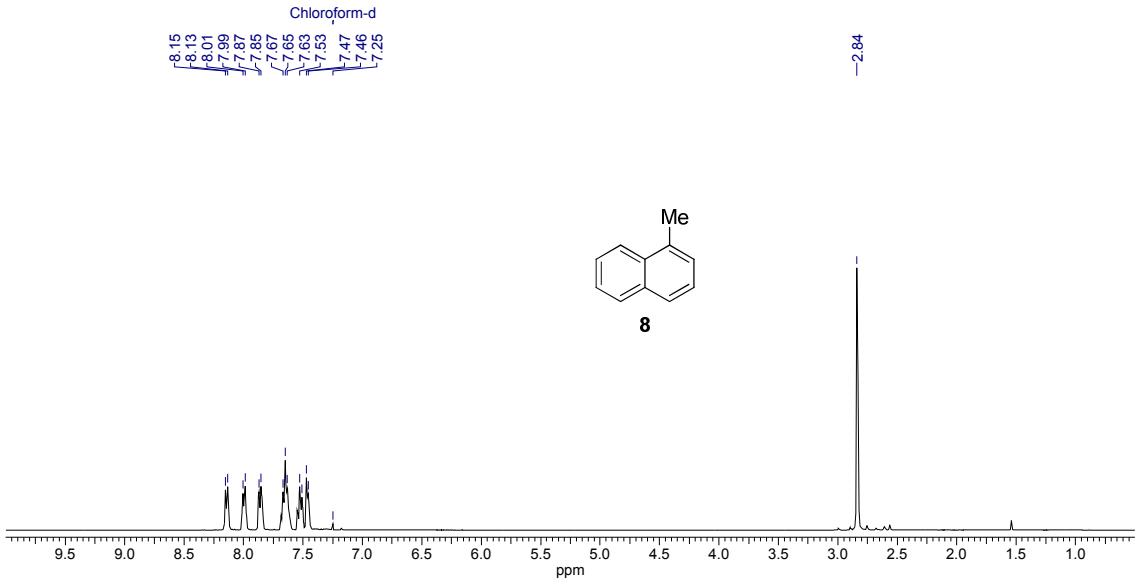
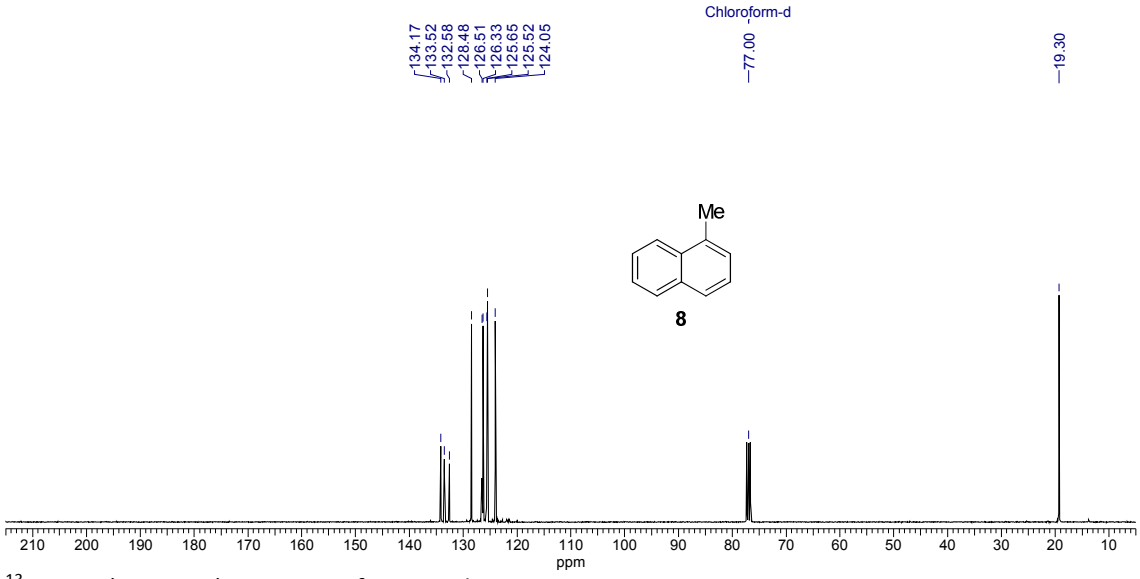
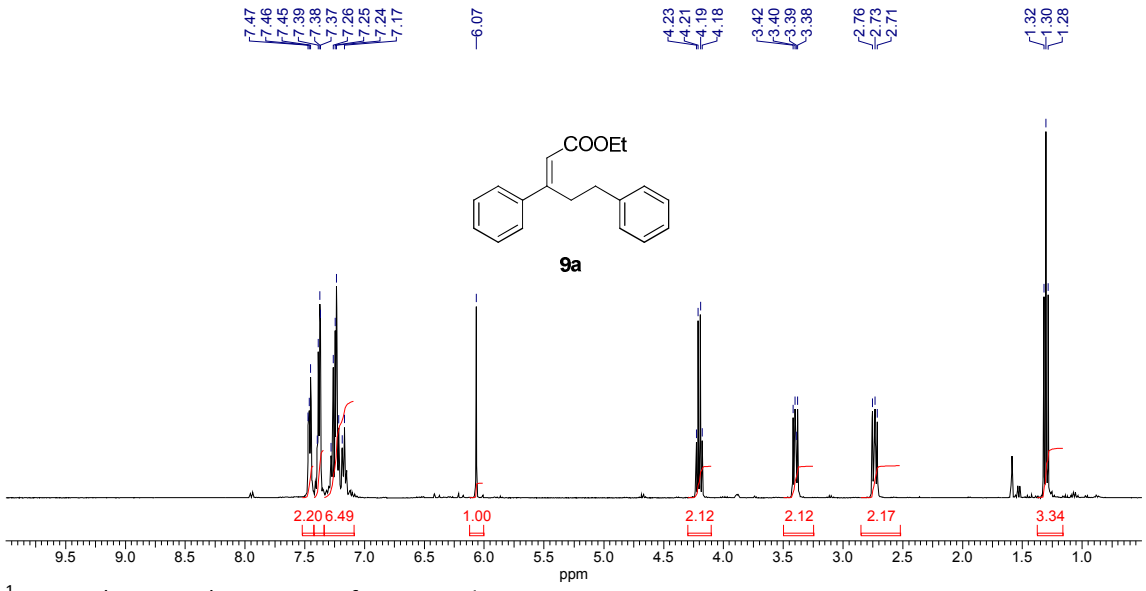


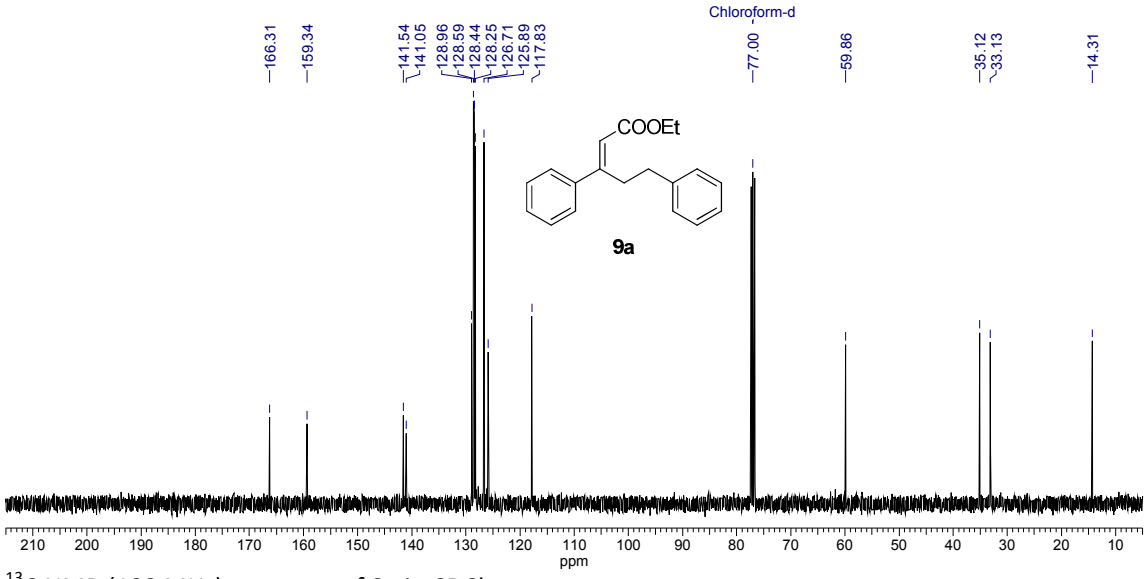
^{1}H NMR (400 MHz) spectrum of **8** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **8** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **9a** in $CDCl_3$



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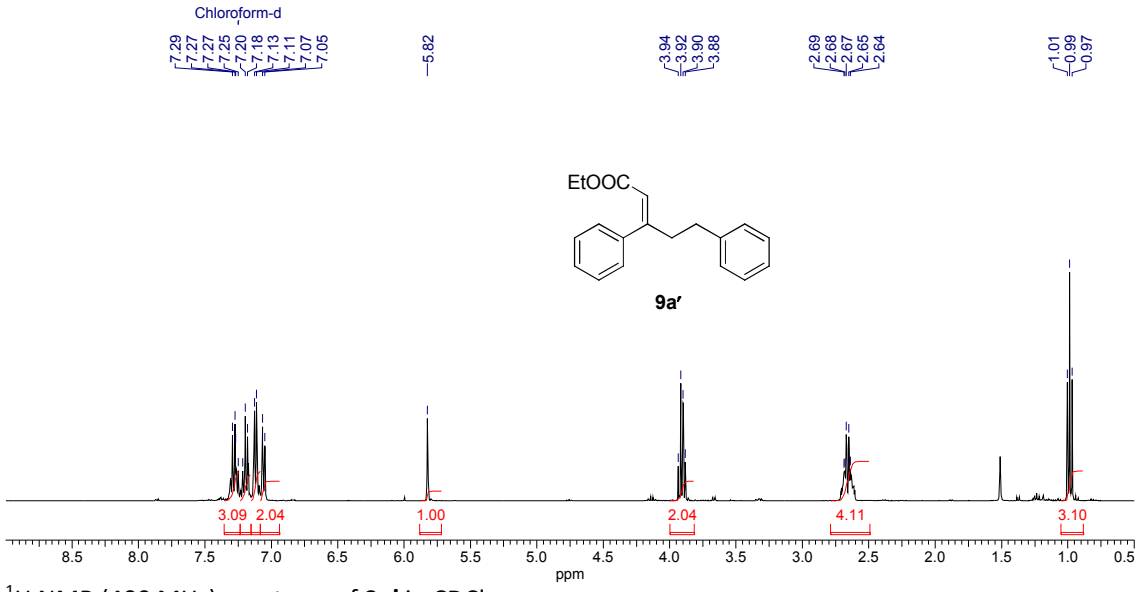

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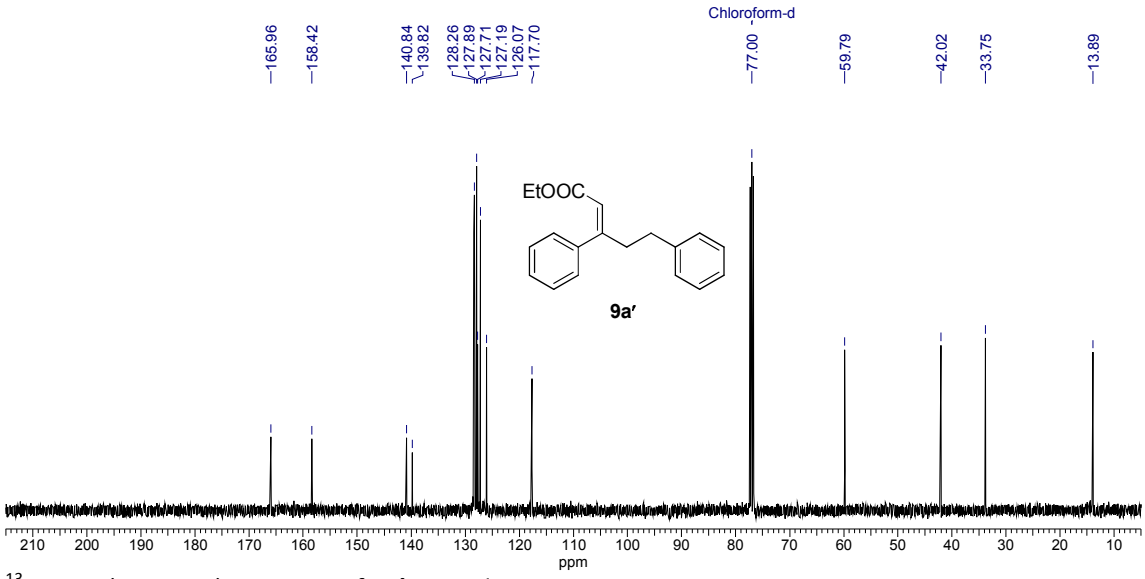
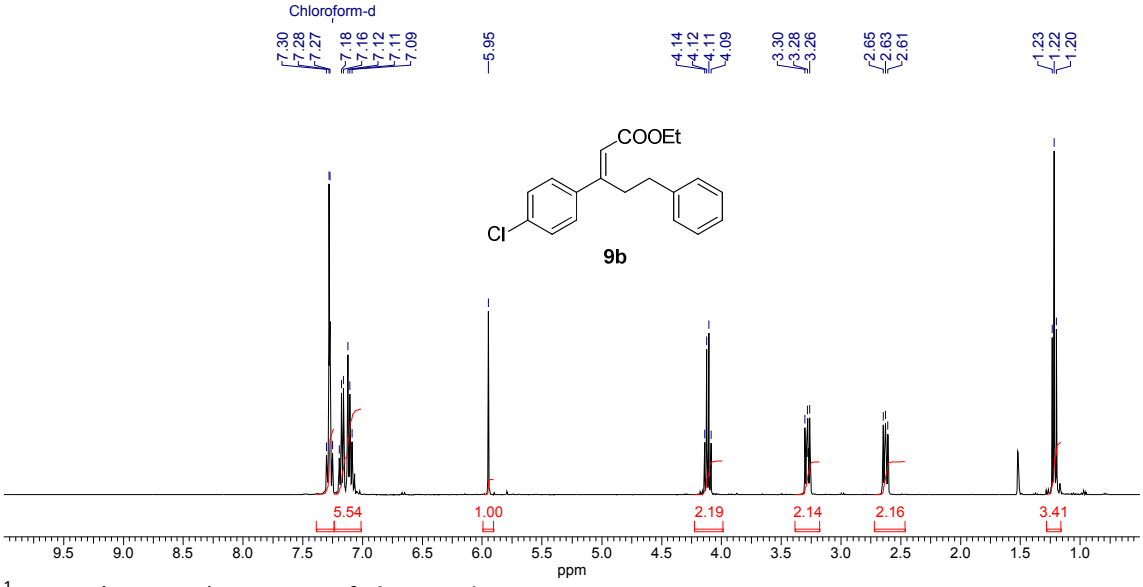


^{13}C NMR (100 MHz) spectrum of **9a′** in $CDCl_3$



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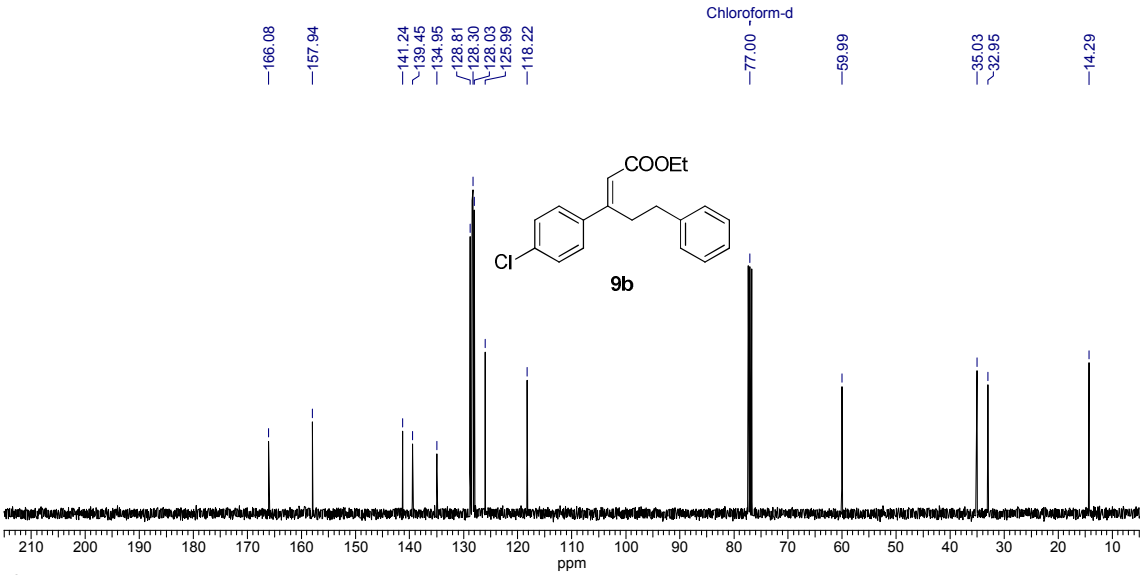
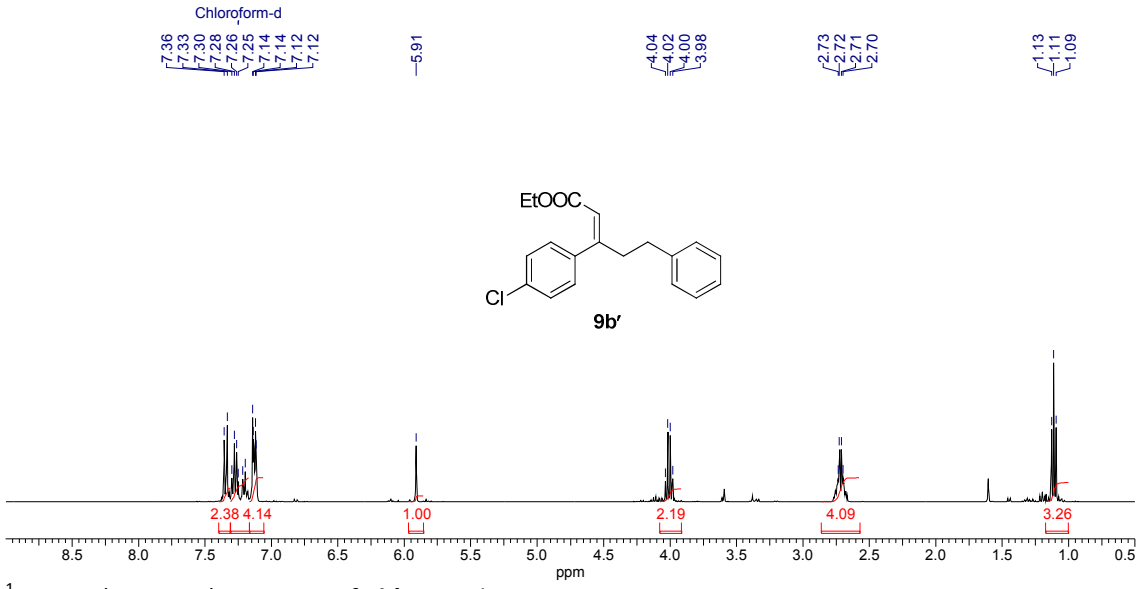
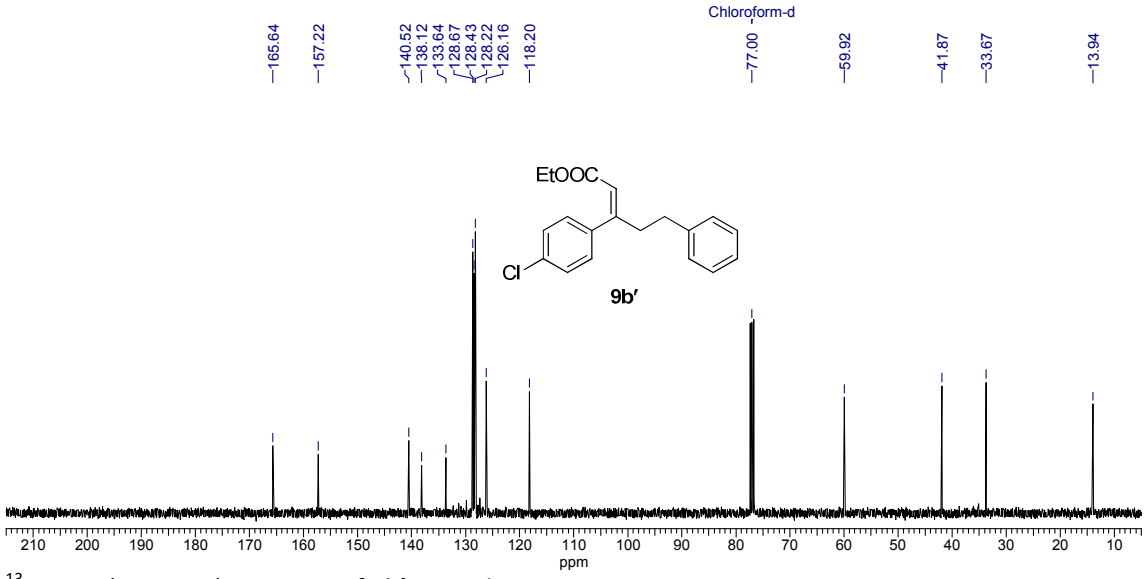


^{13}C NMR (100 MHz) spectrum of **9b** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **9b′** in $CDCl_3$



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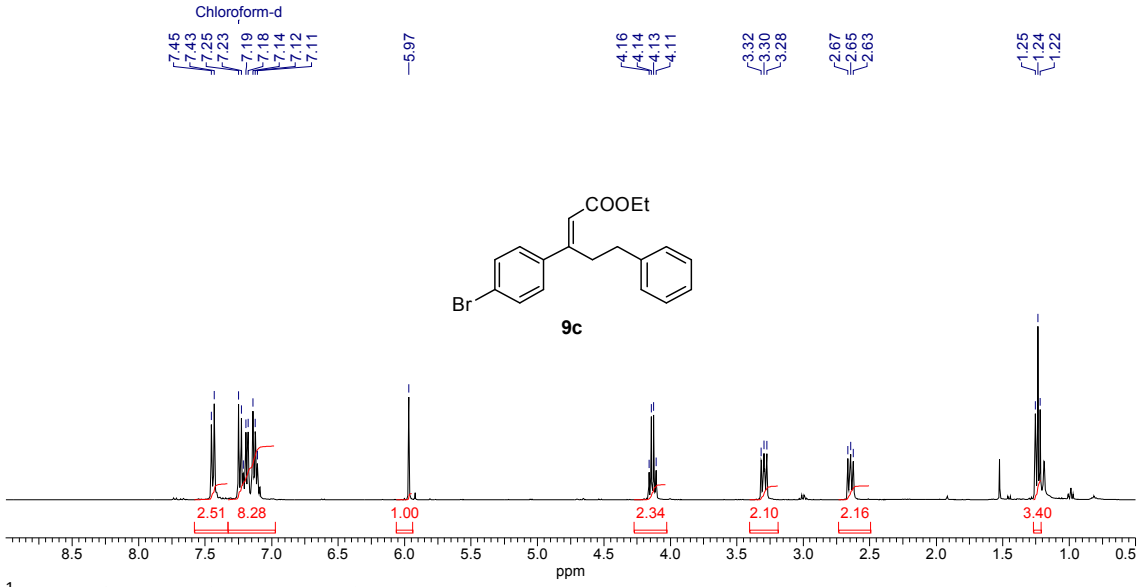

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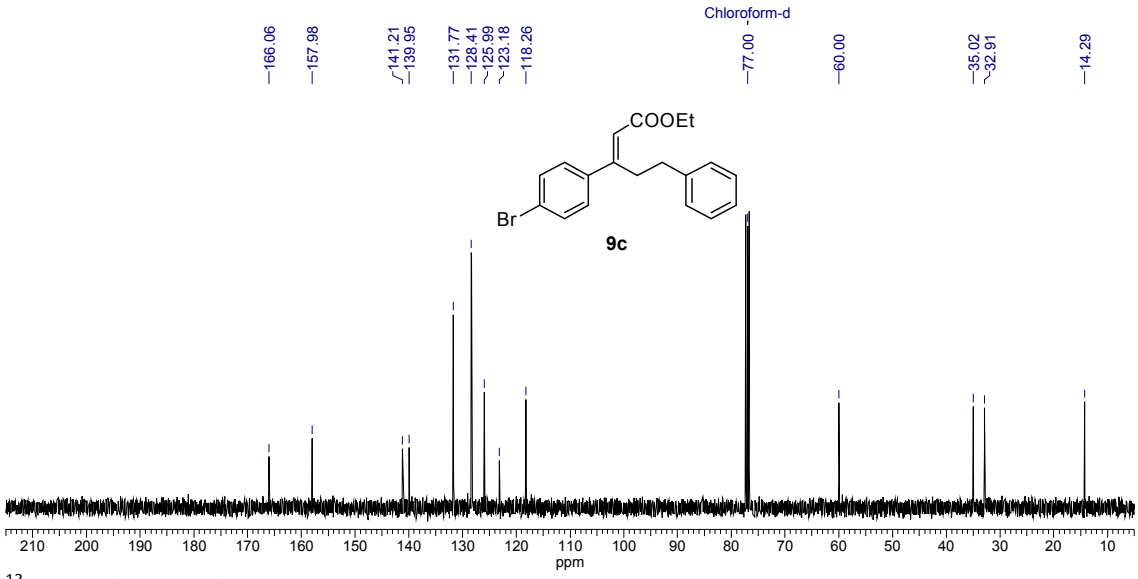

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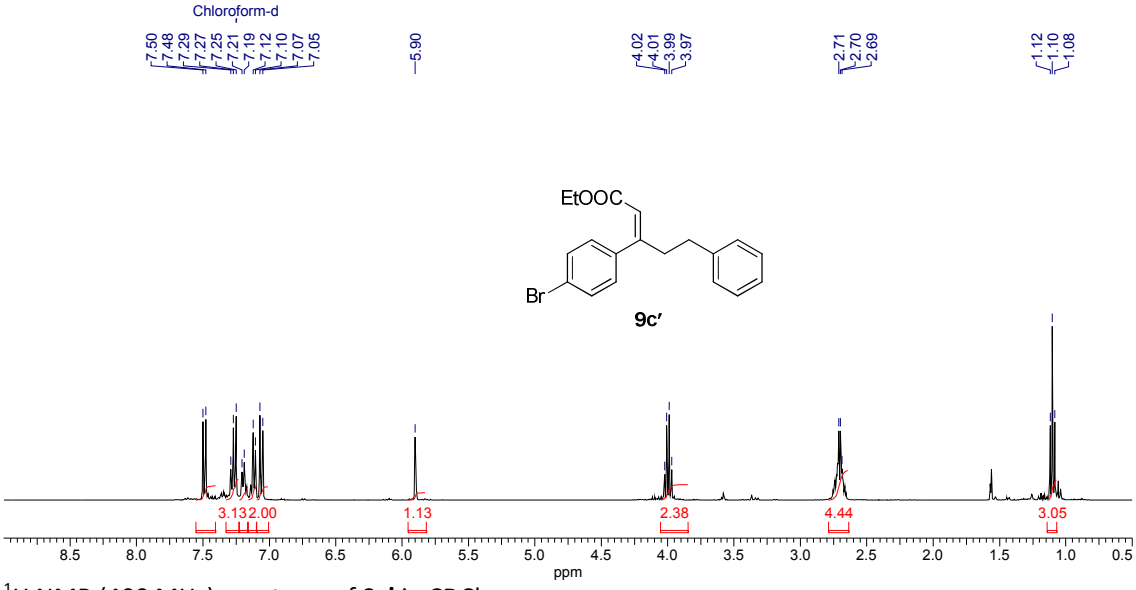

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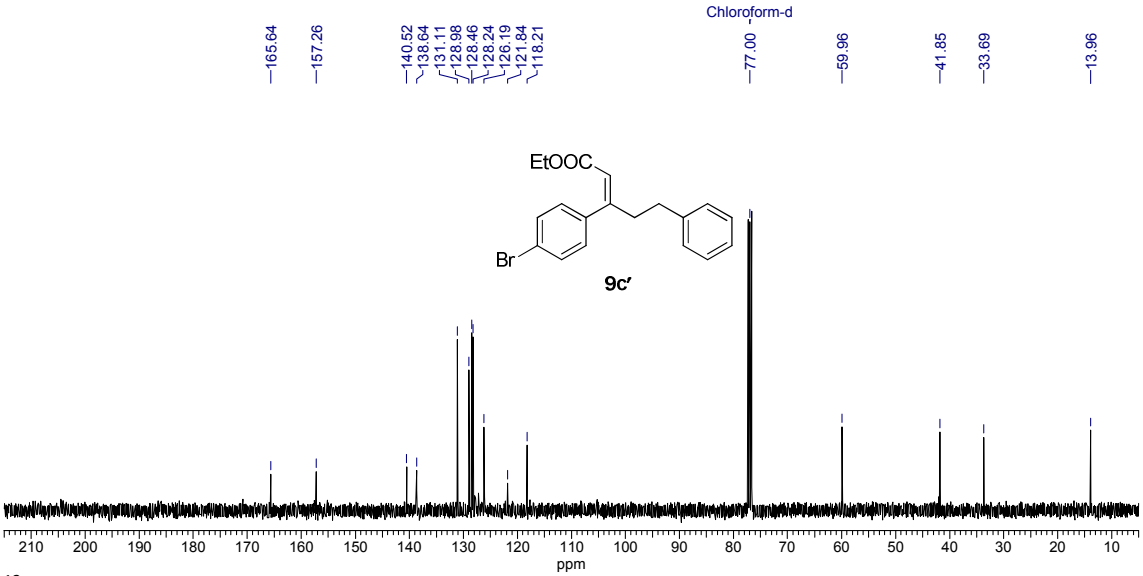

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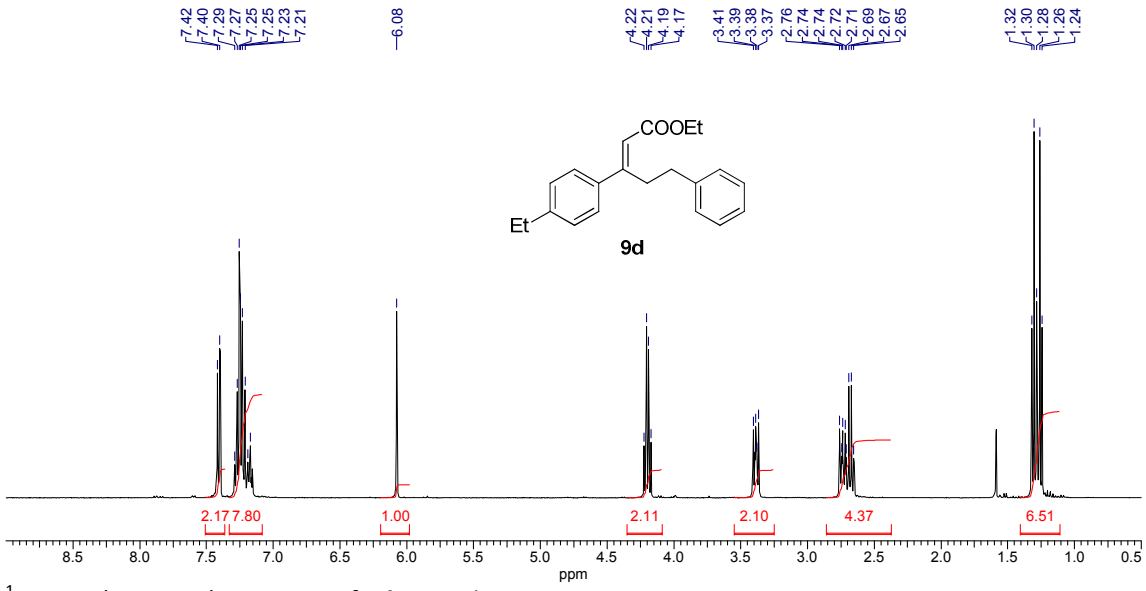

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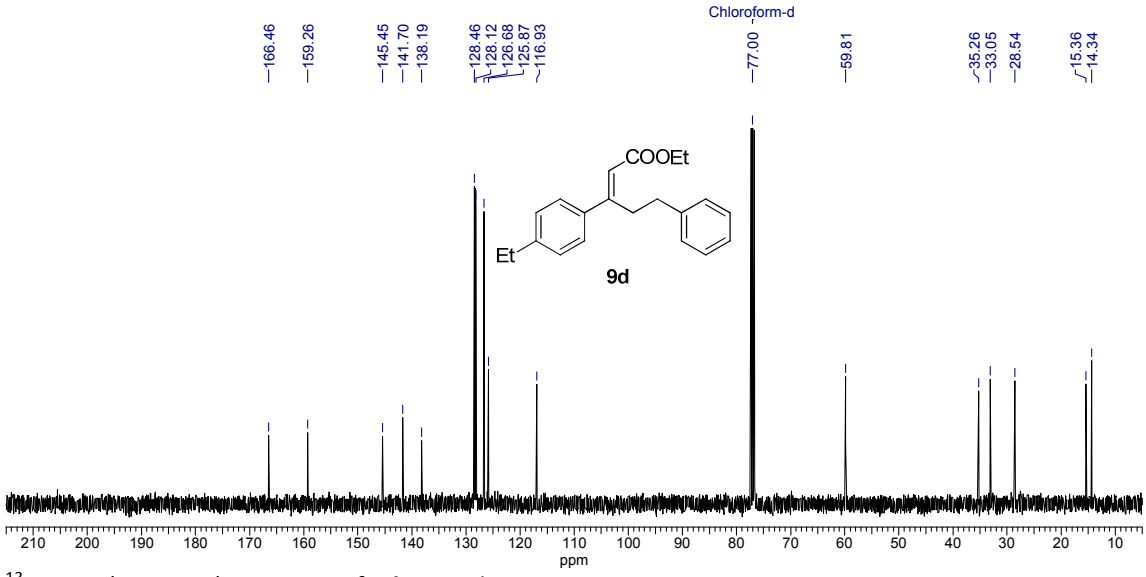

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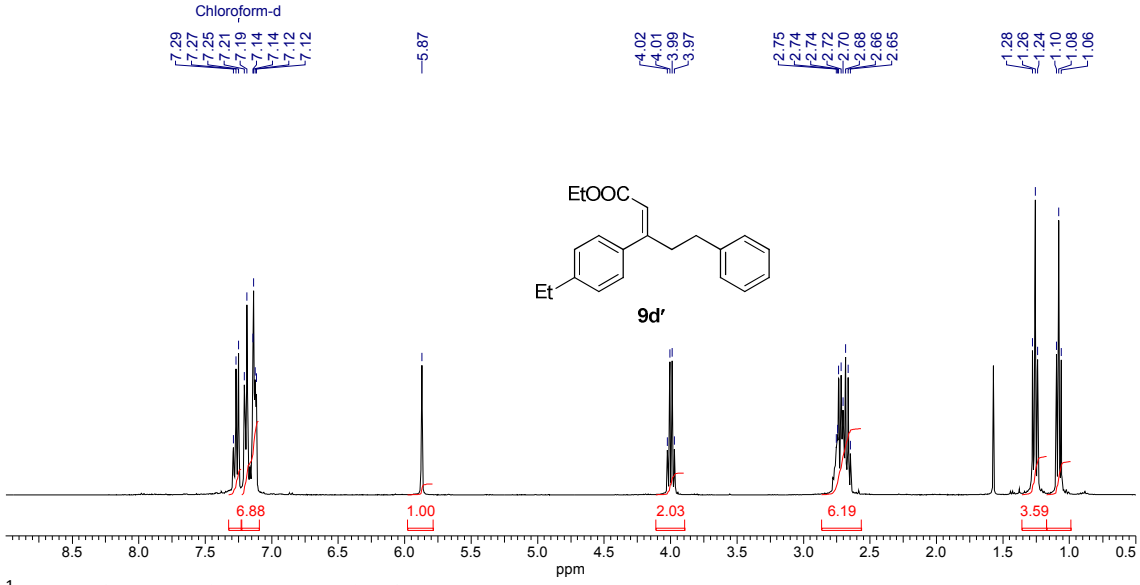

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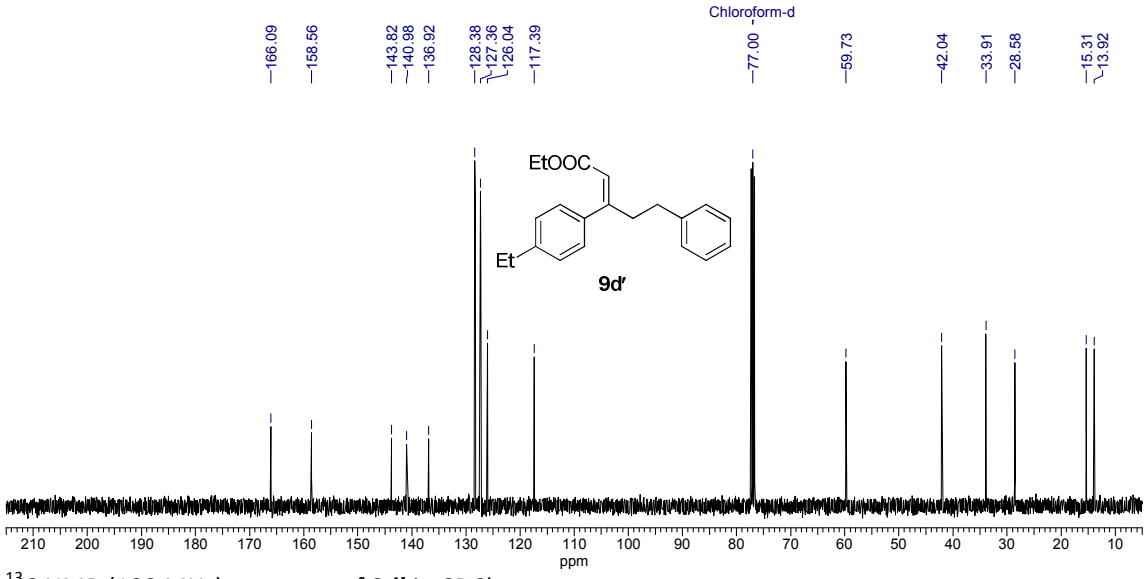

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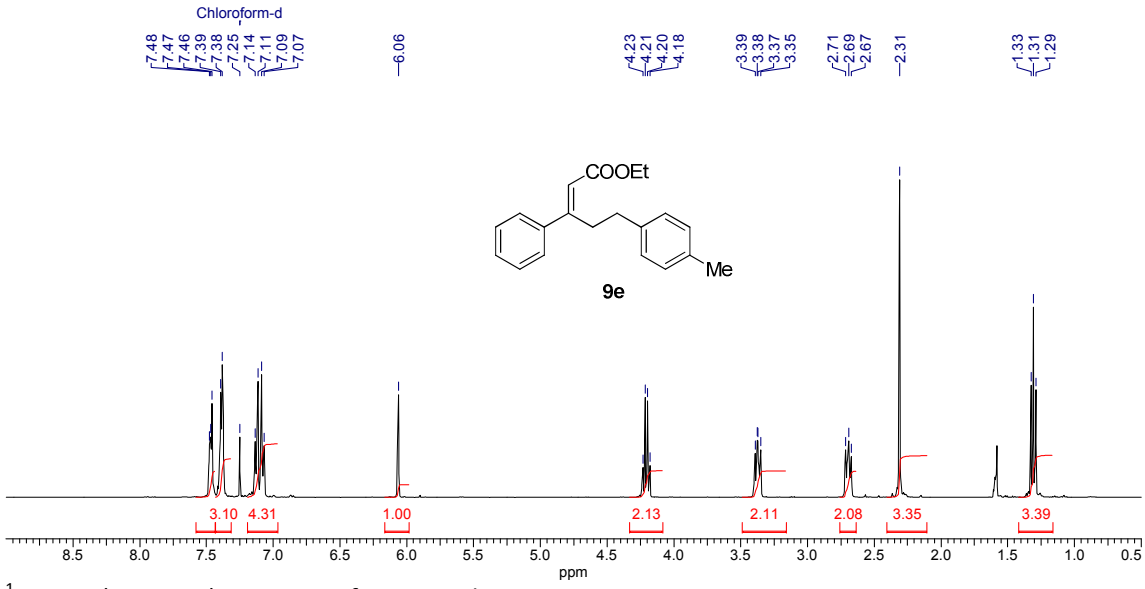

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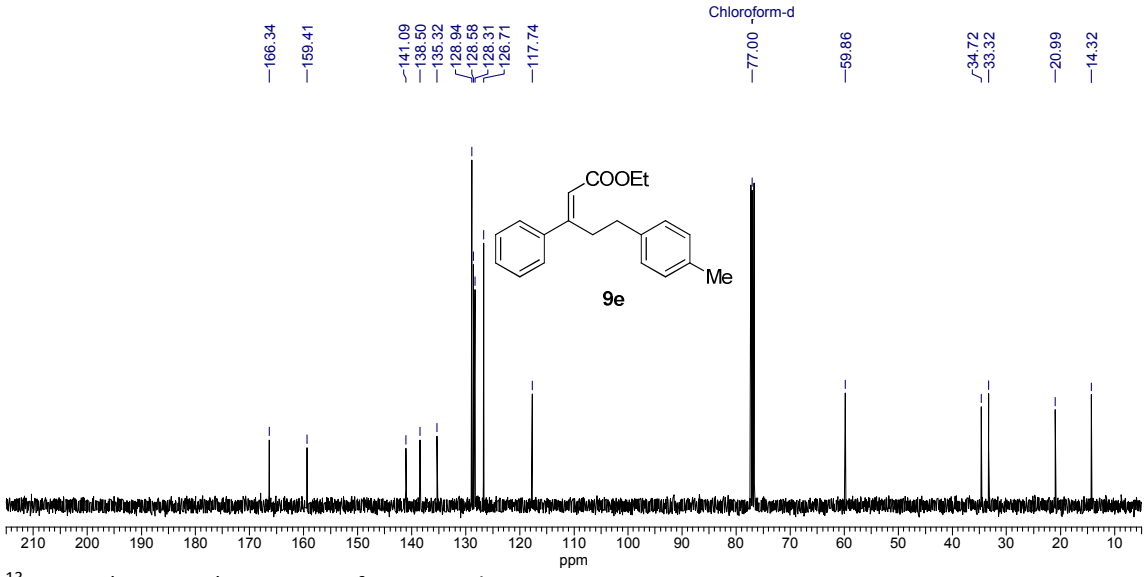
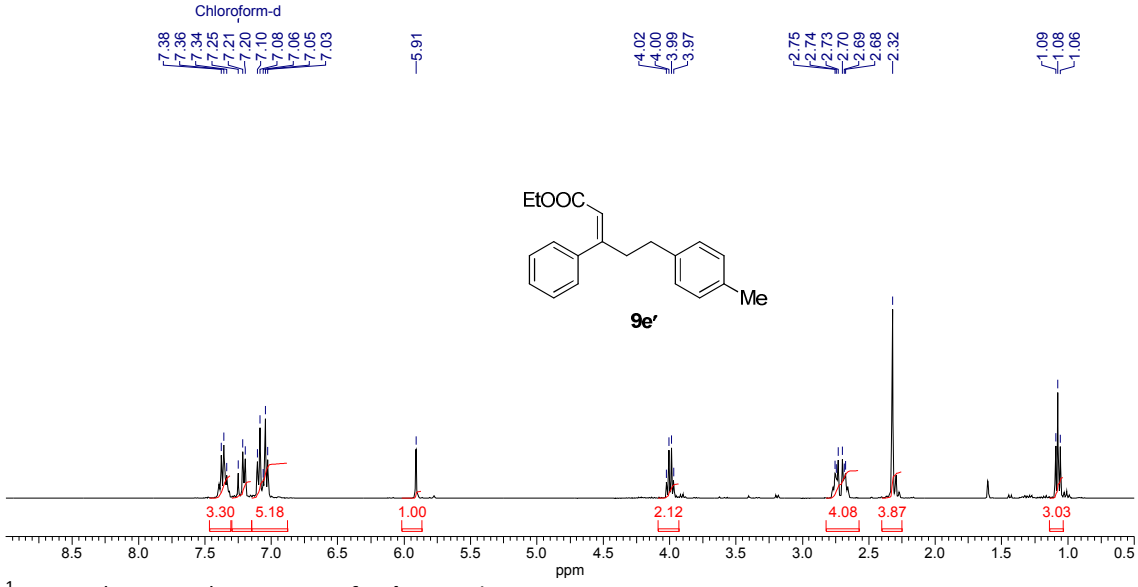


^{13}C NMR (100 MHz) spectrum of **9e** in $CDCl_3$



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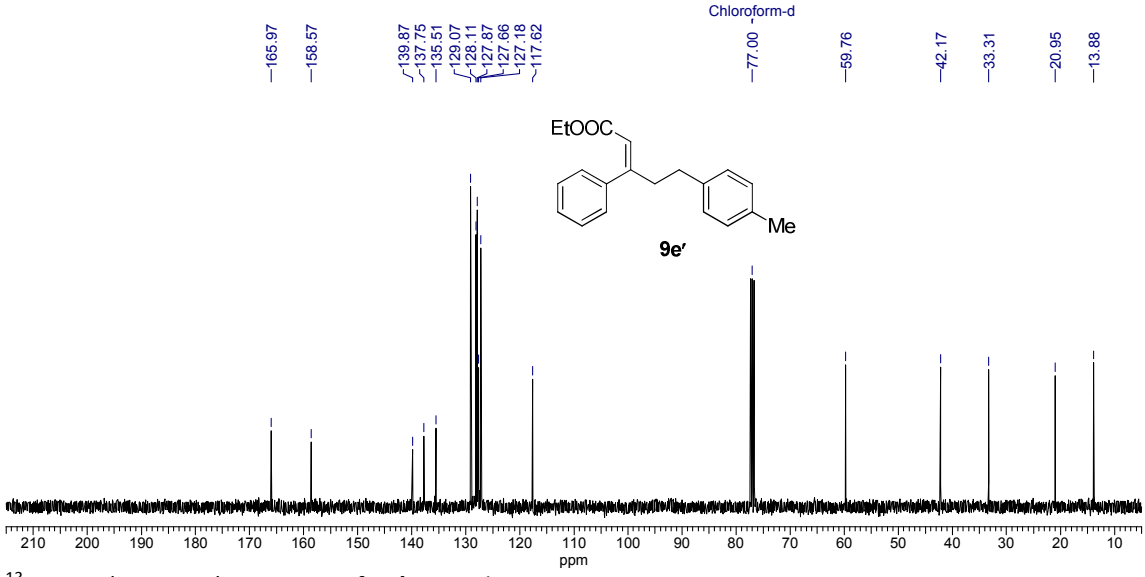
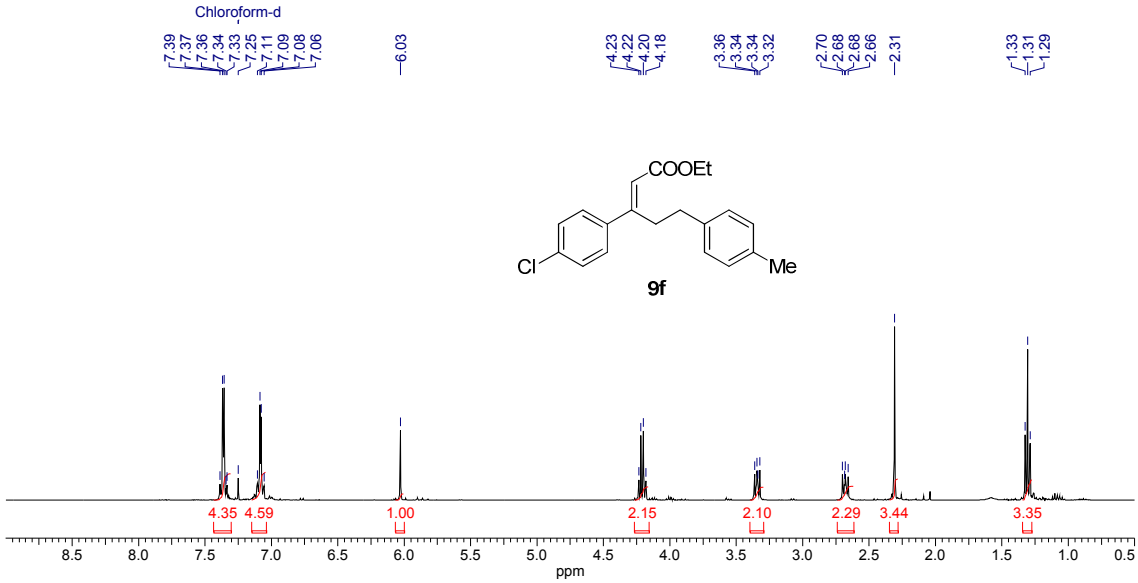
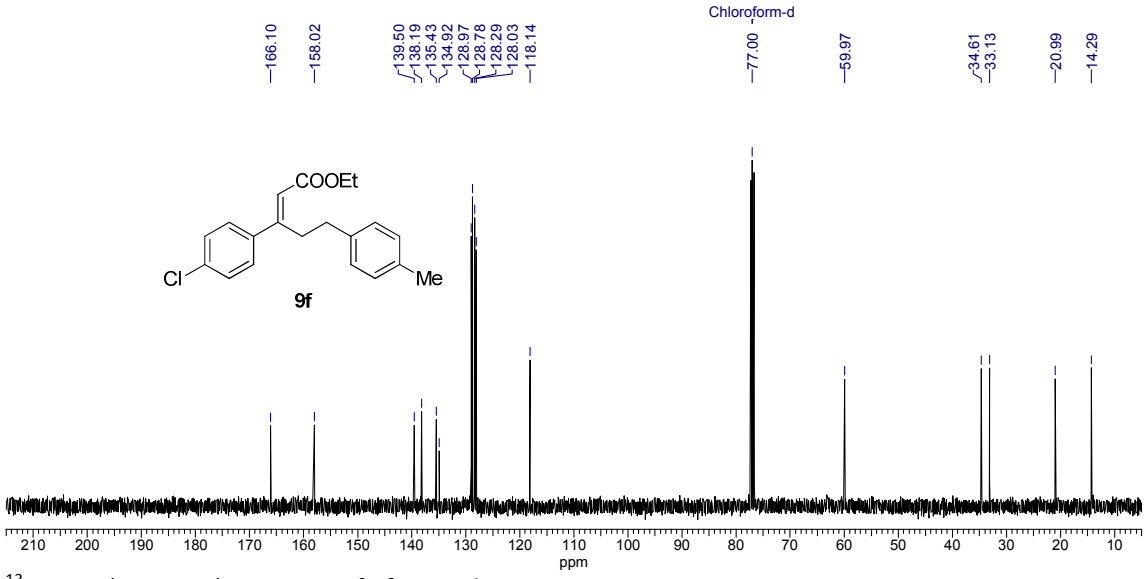


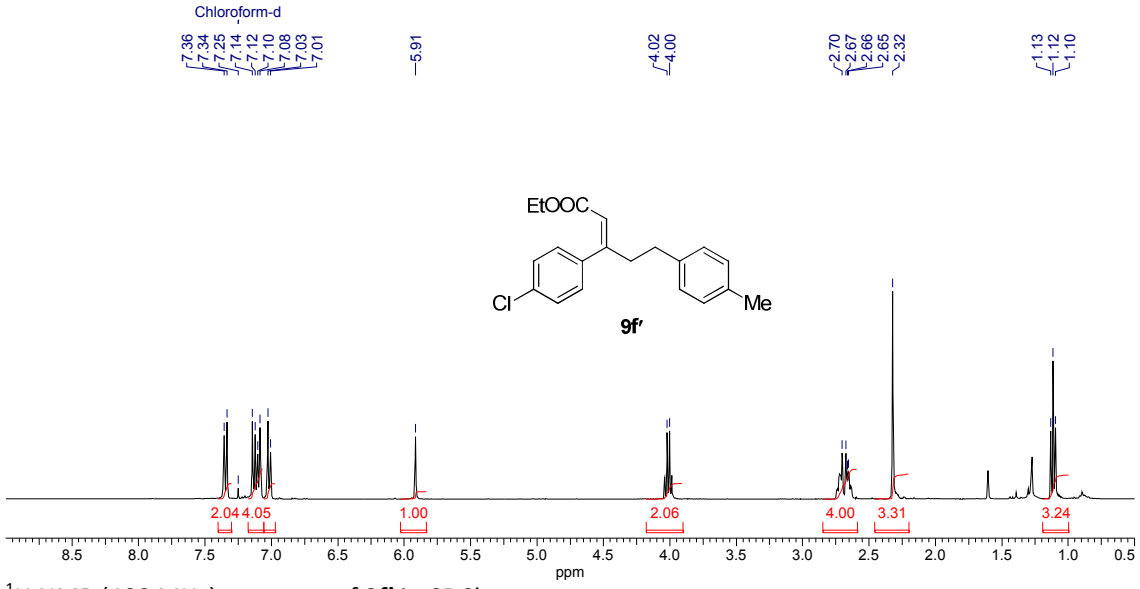
^{13}C NMR (100 MHz) spectrum of **9e′** in $CDCl_3$



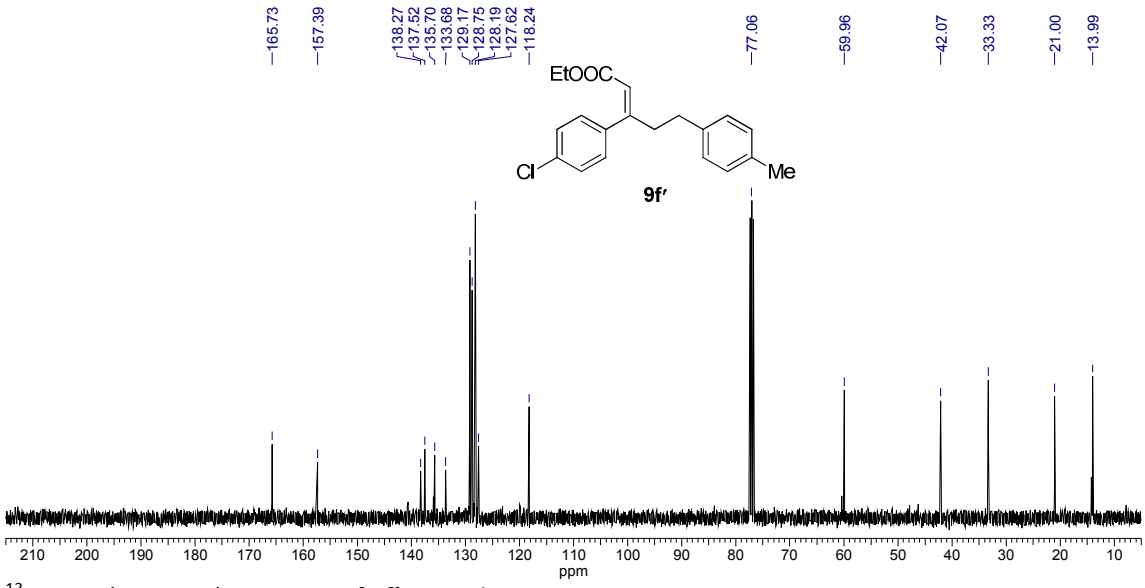
^{1}H NMR (400 MHz) spectrum of **9f** in $CDCl_3$



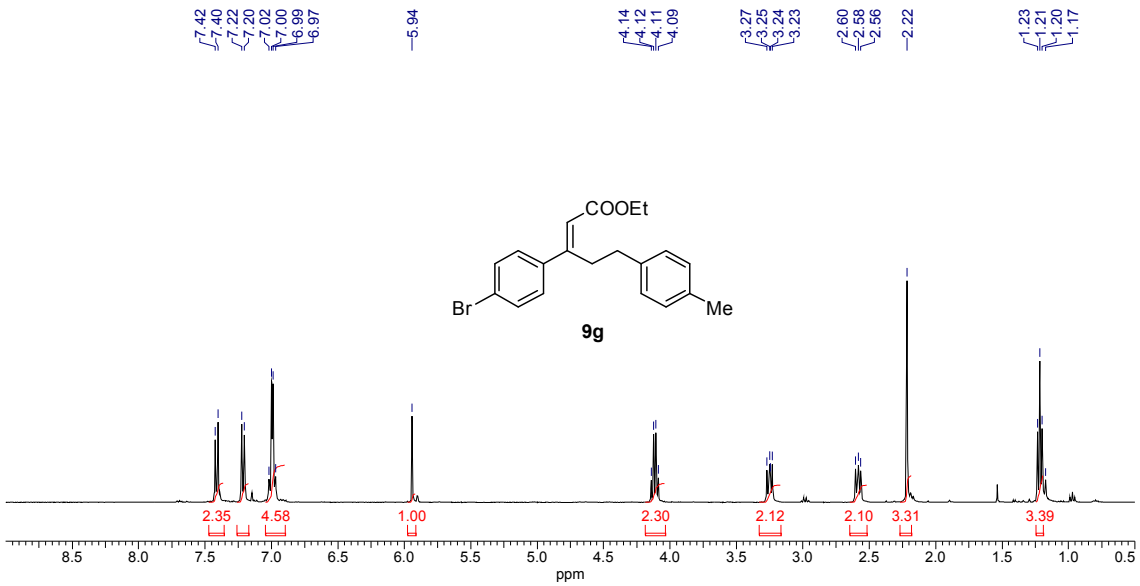
^{13}C NMR (100 MHz) spectrum of **9f** in $CDCl_3$



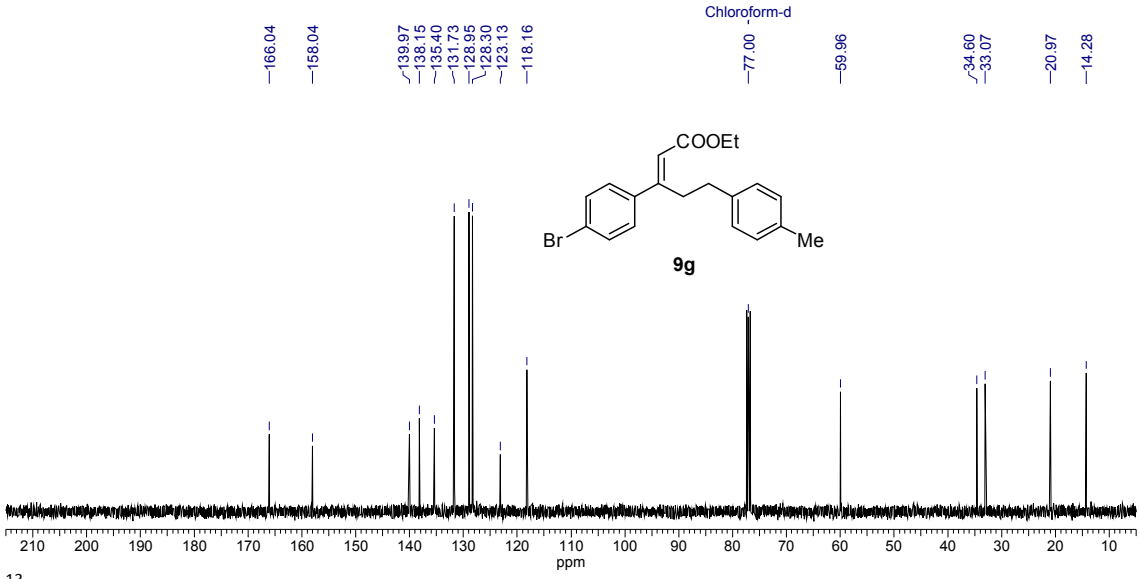
^{1}H NMR (400 MHz) spectrum of **9f′** in $CDCl_3$



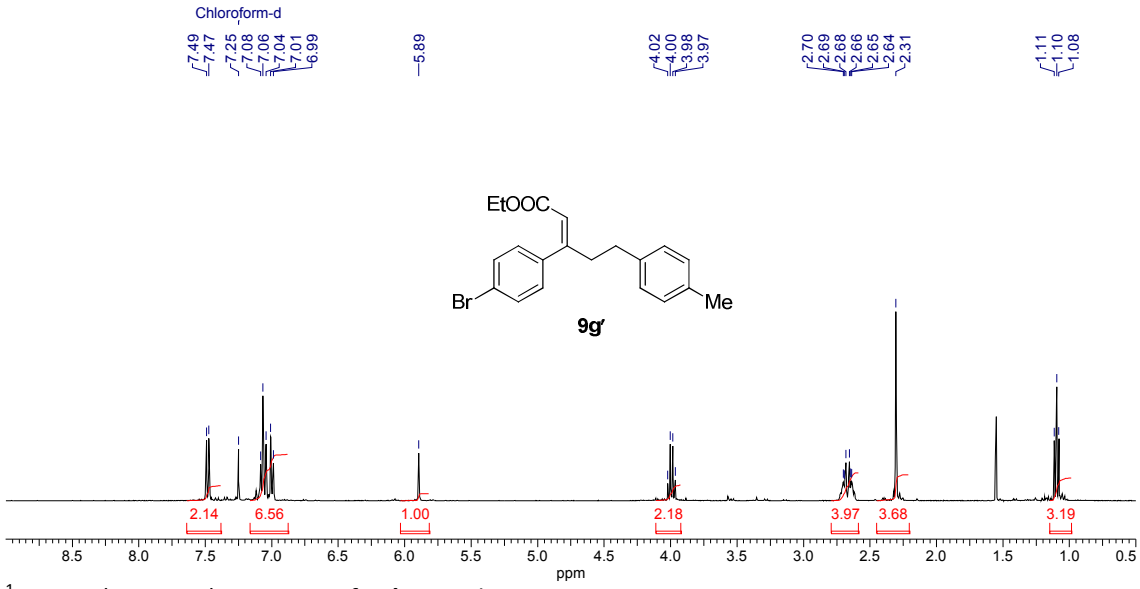
^{13}C NMR (100 MHz) spectrum of **9f′** in $CDCl_3$



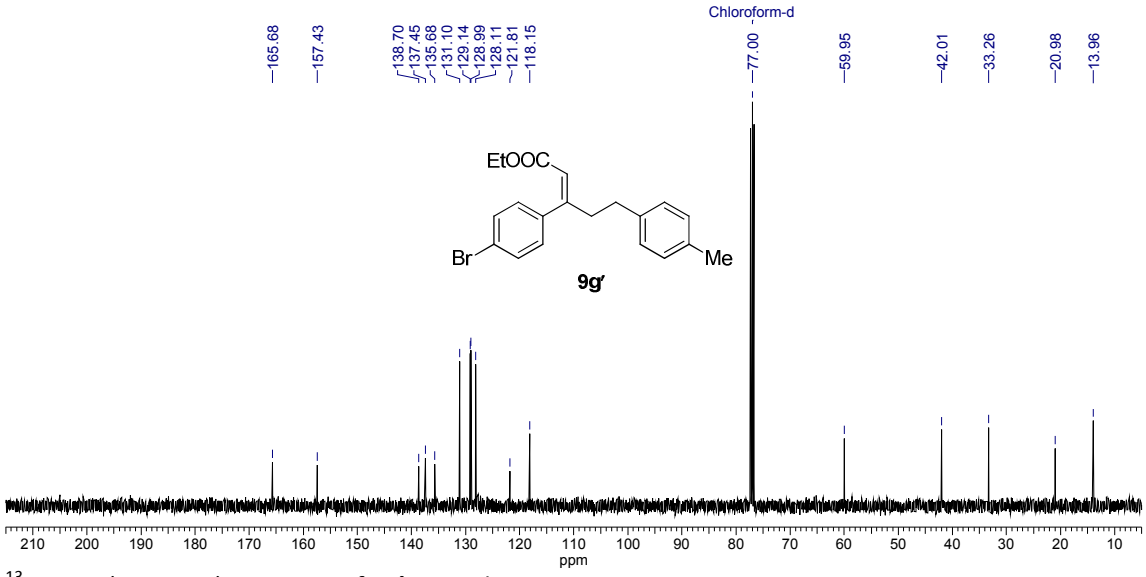
^{1}H NMR (400 MHz) spectrum of **9g** in $CDCl_3$



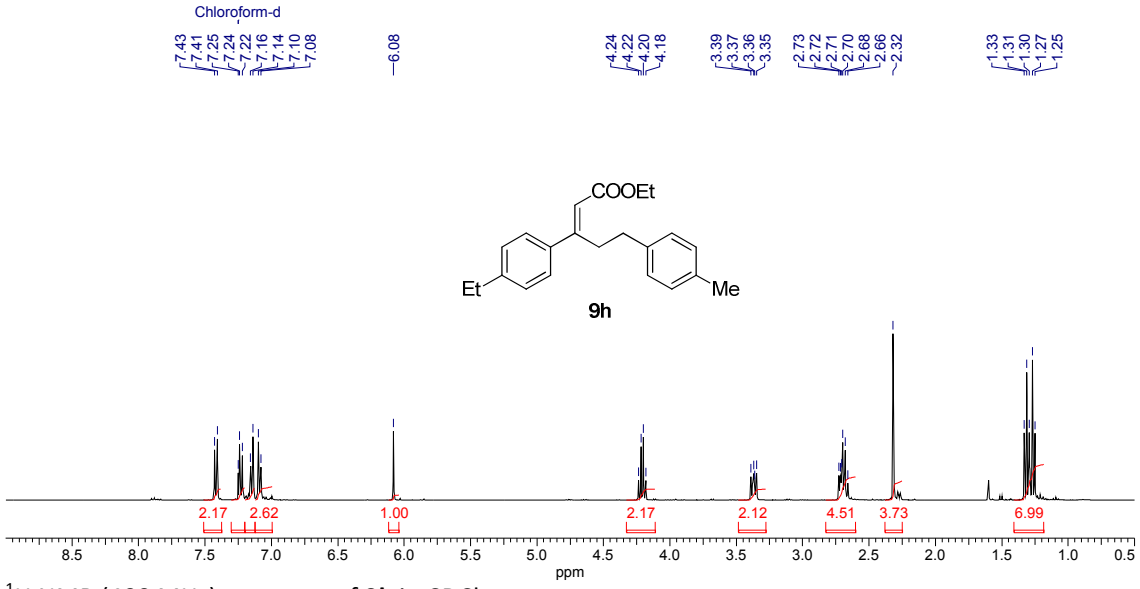
^{13}C NMR (100 MHz) spectrum of **9g** in $CDCl_3$



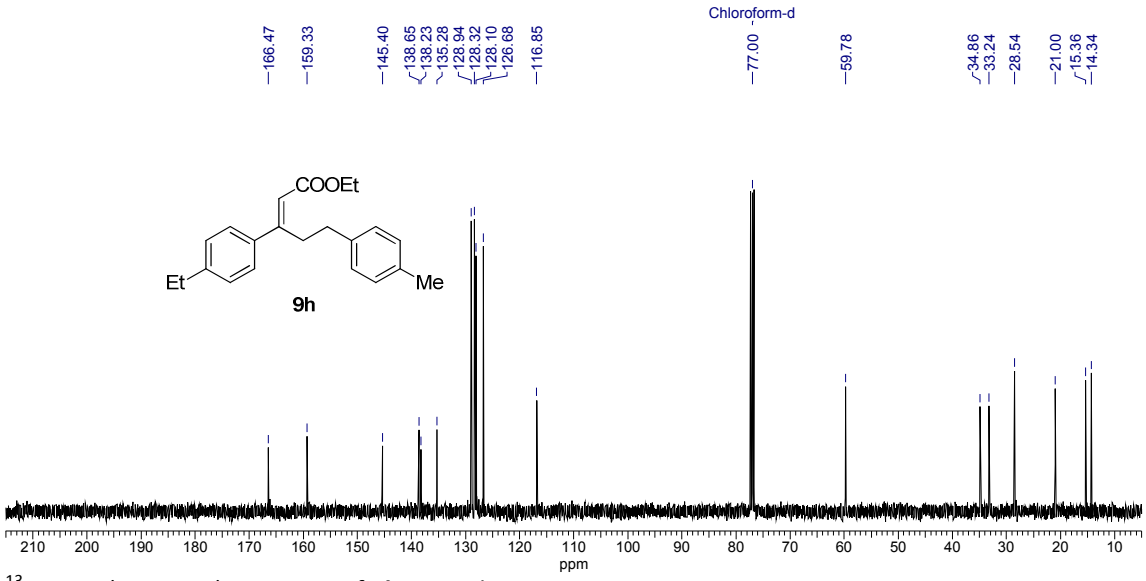
^{1}H NMR (400 MHz) spectrum of **9g'** in $CDCl_3$



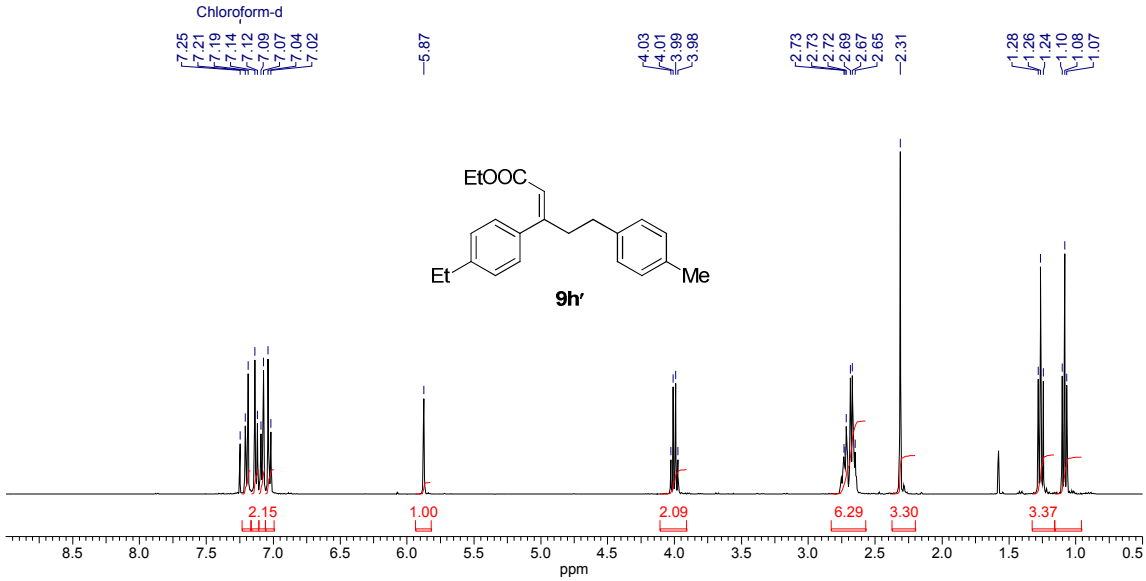
^{13}C NMR (100 MHz) spectrum of **9g'** in $CDCl_3$



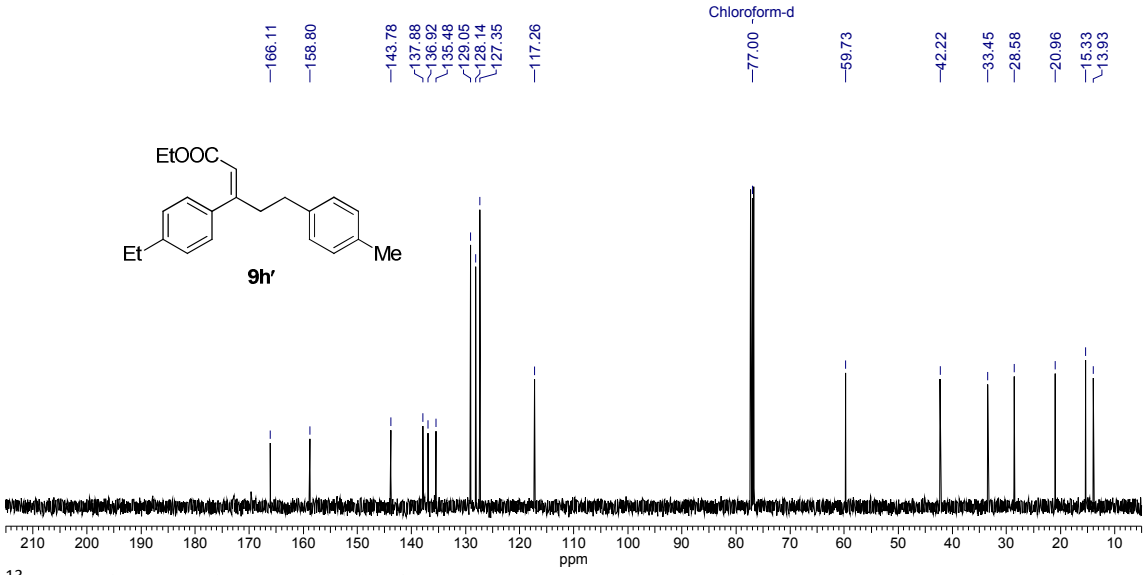
^{1}H NMR (400 MHz) spectrum of **9h** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **9h** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **9h'** in $CDCl_3$



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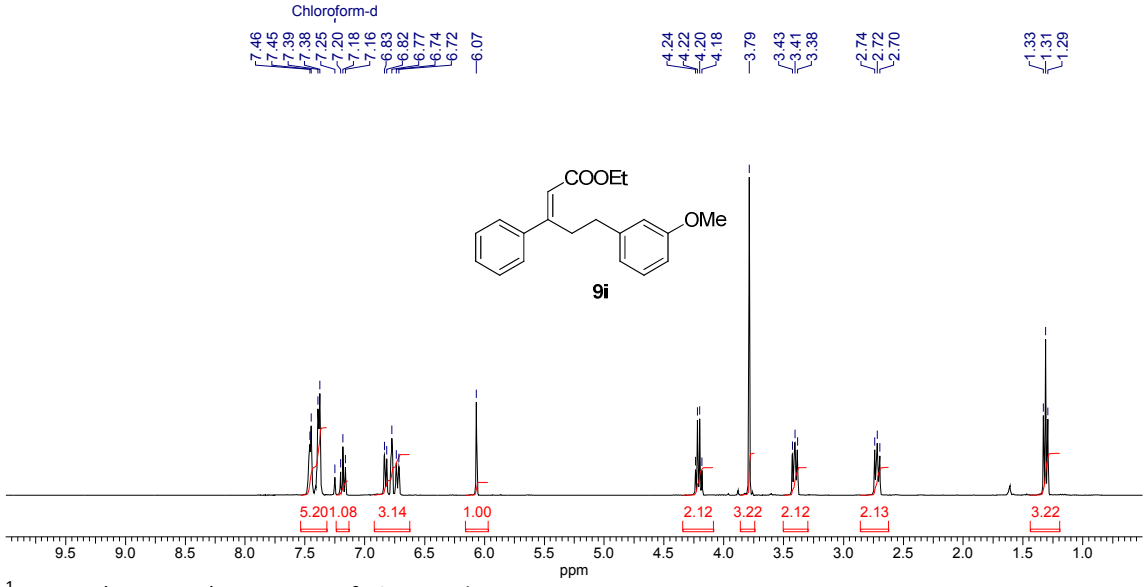
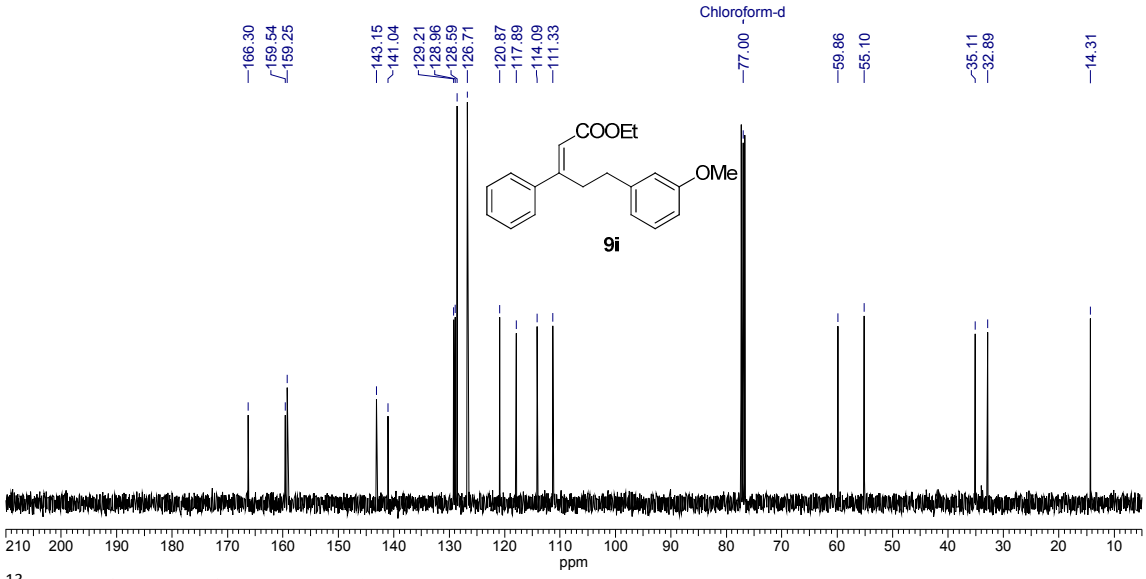
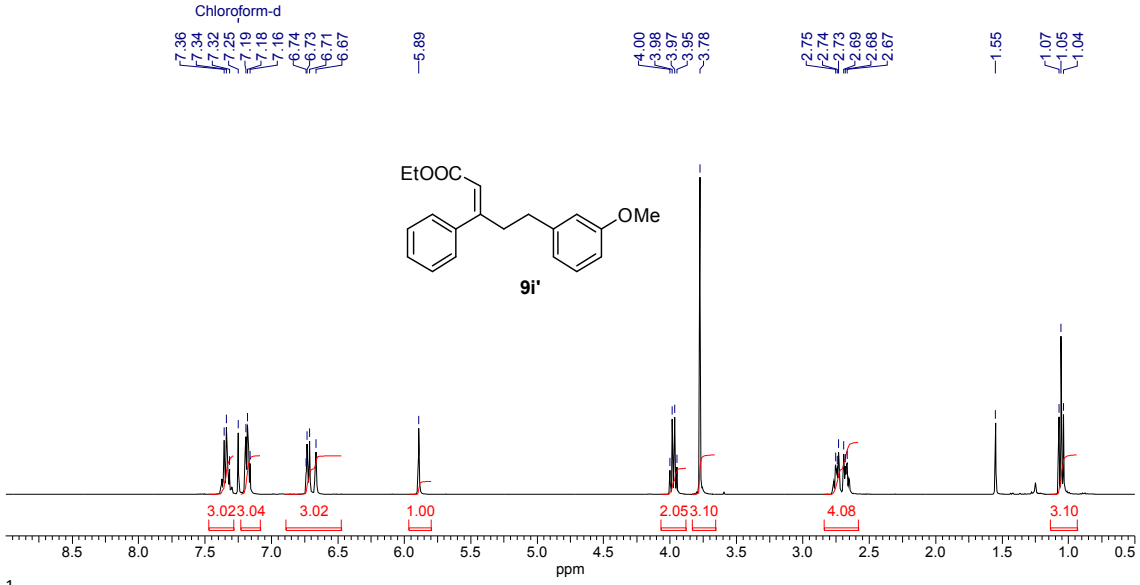


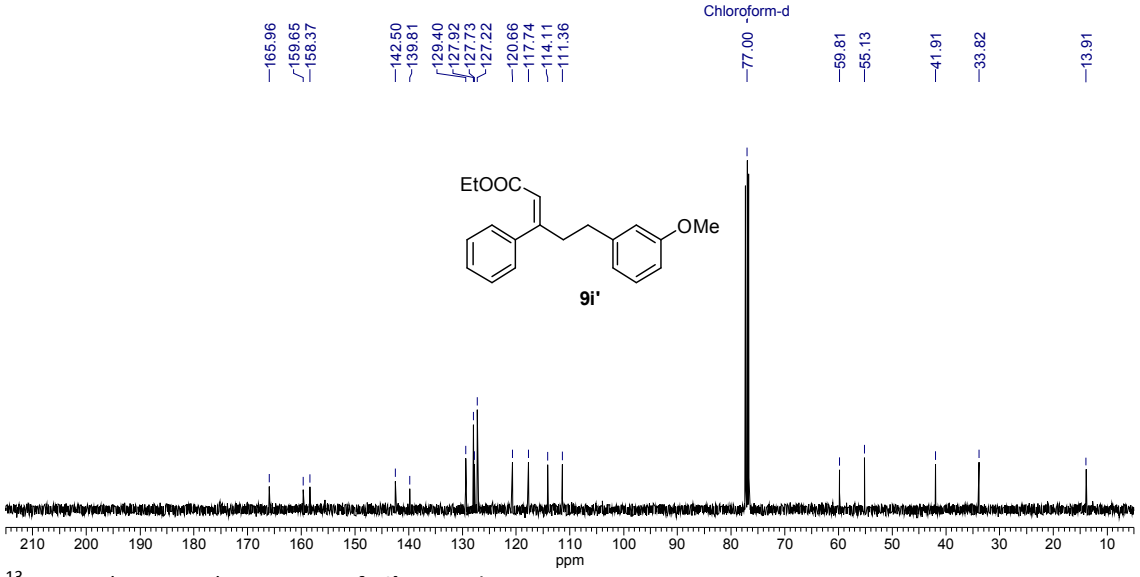
^{1}H NMR (400 MHz) spectrum of **9i** in $CDCl_3$



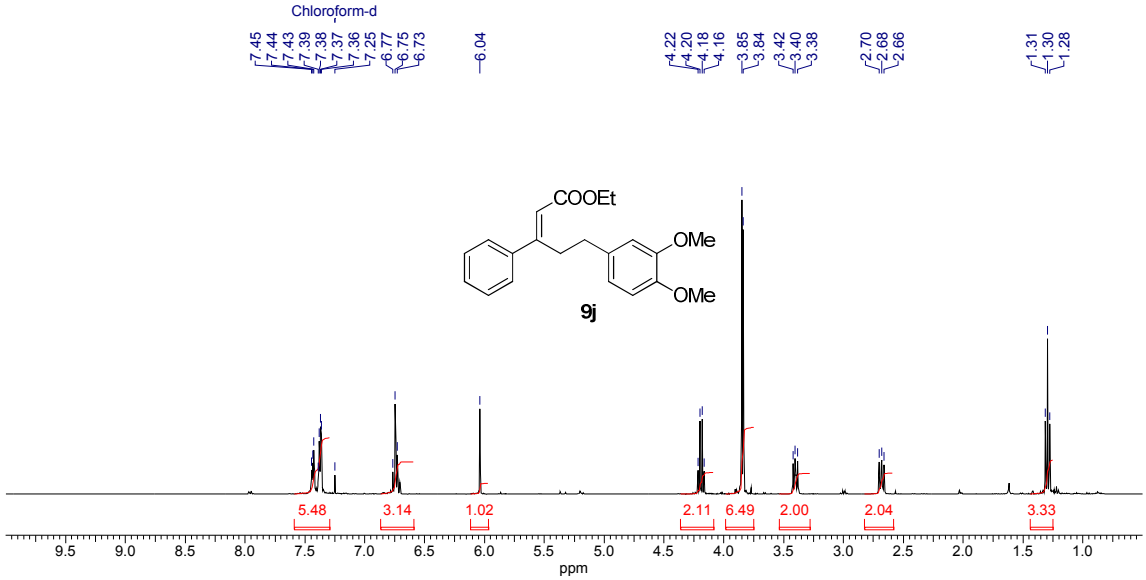
^{13}C NMR (100 MHz) spectrum of **9i** in $CDCl_3$



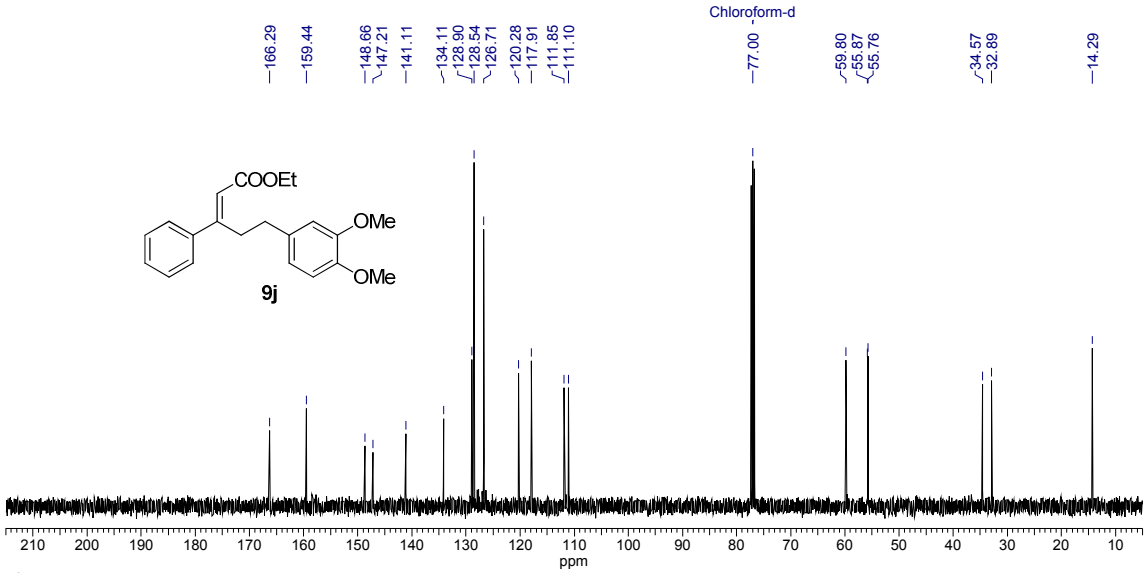
^{1}H NMR (400 MHz) spectrum of **9i'** in $CDCl_3$



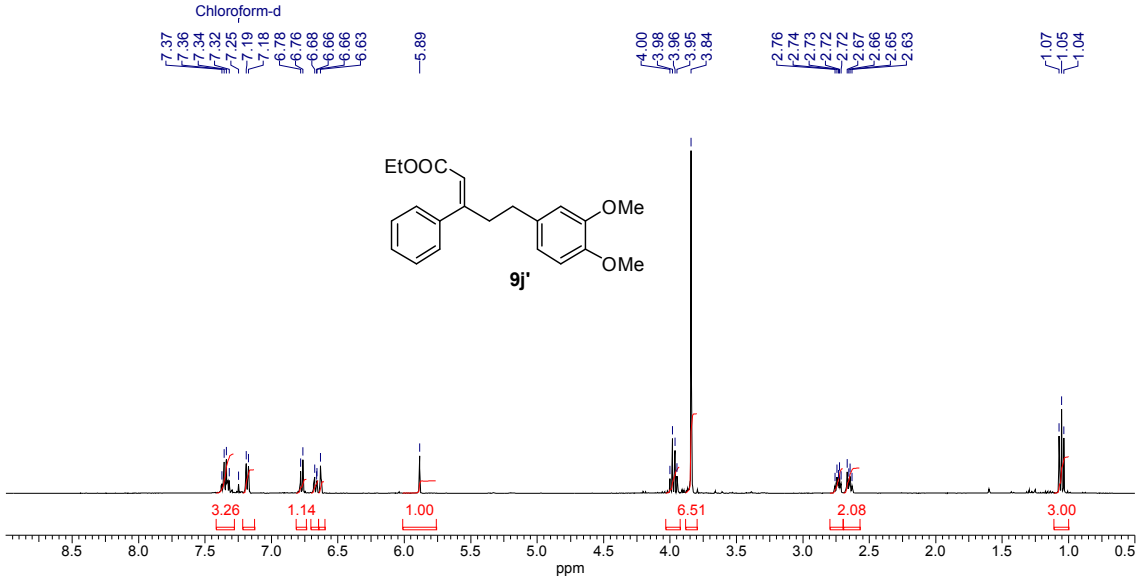
^{13}C NMR (100 MHz) spectrum of **9i'** in $CDCl_3$



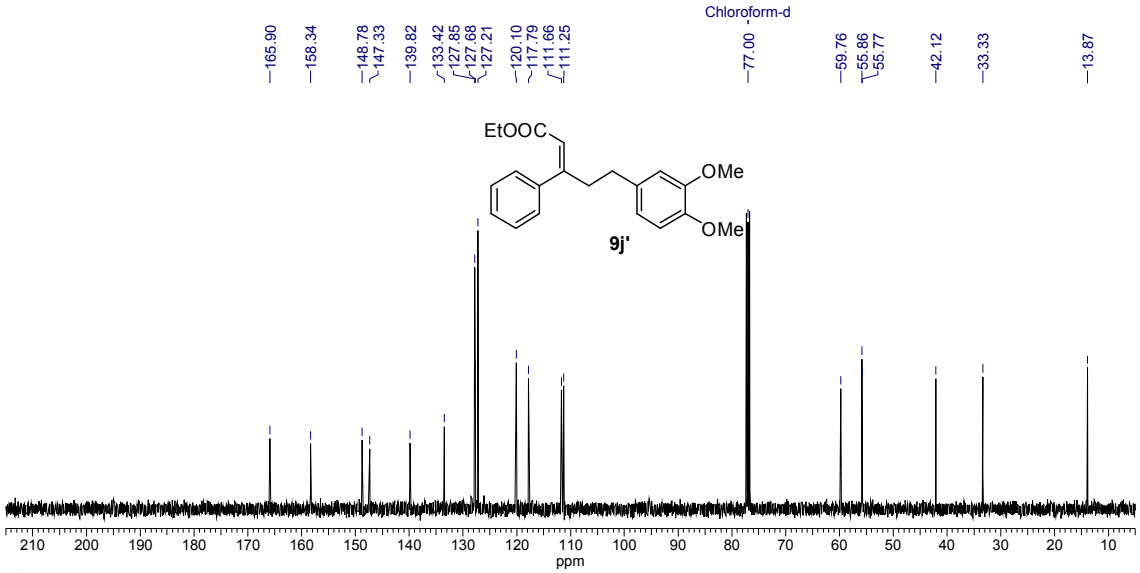
^{1}H NMR (400 MHz) spectrum of **9j** in $CDCl_3$



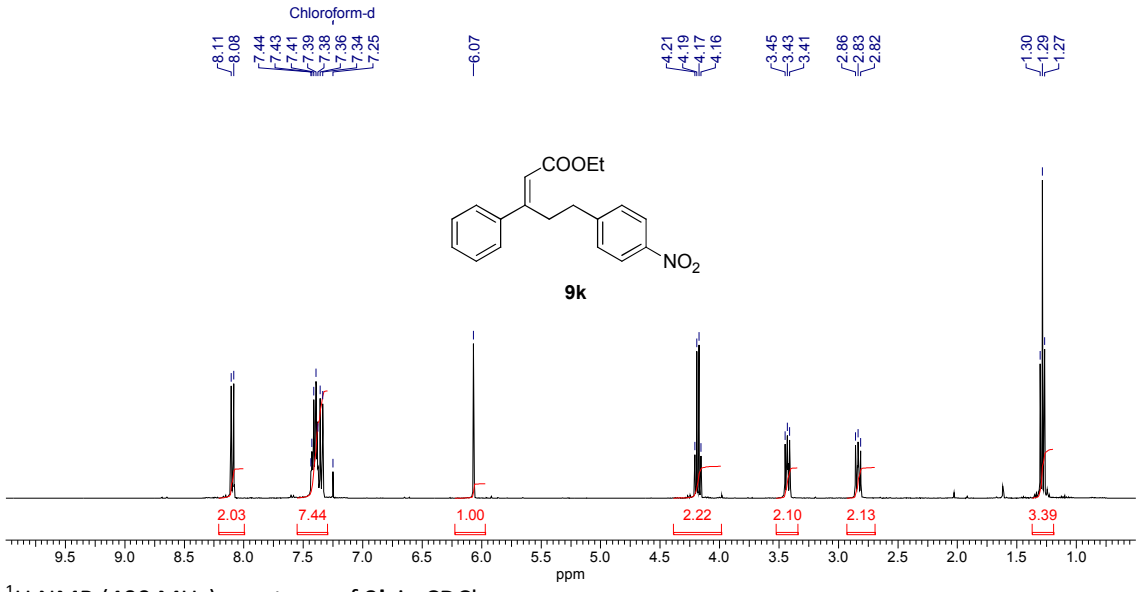
^{13}C NMR (100 MHz) spectrum of **9j** in $CDCl_3$



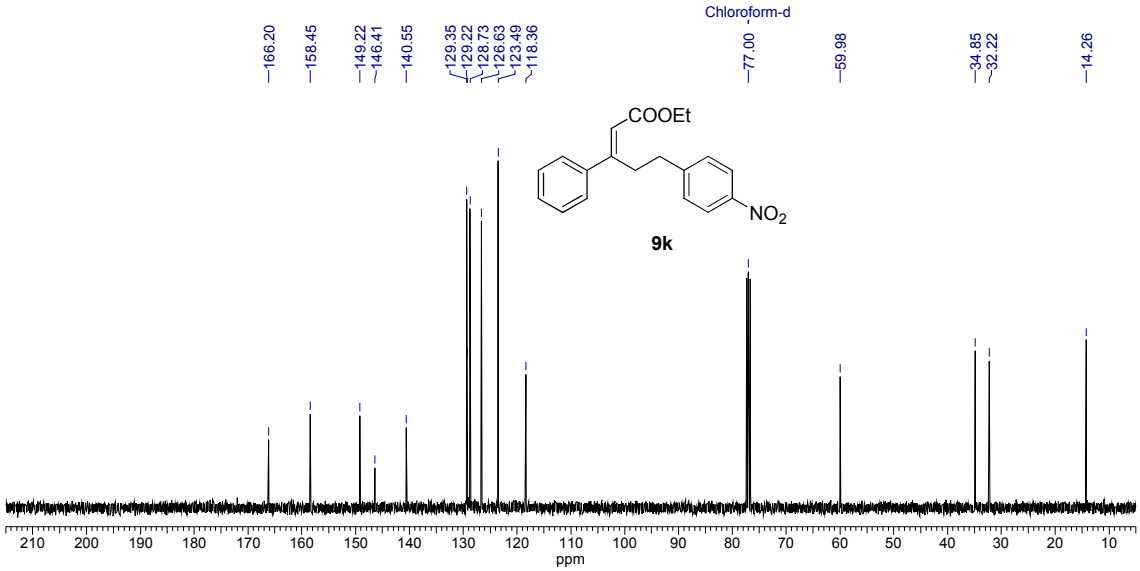
^{1}H NMR (400 MHz) spectrum of **9j'** in $CDCl_3$



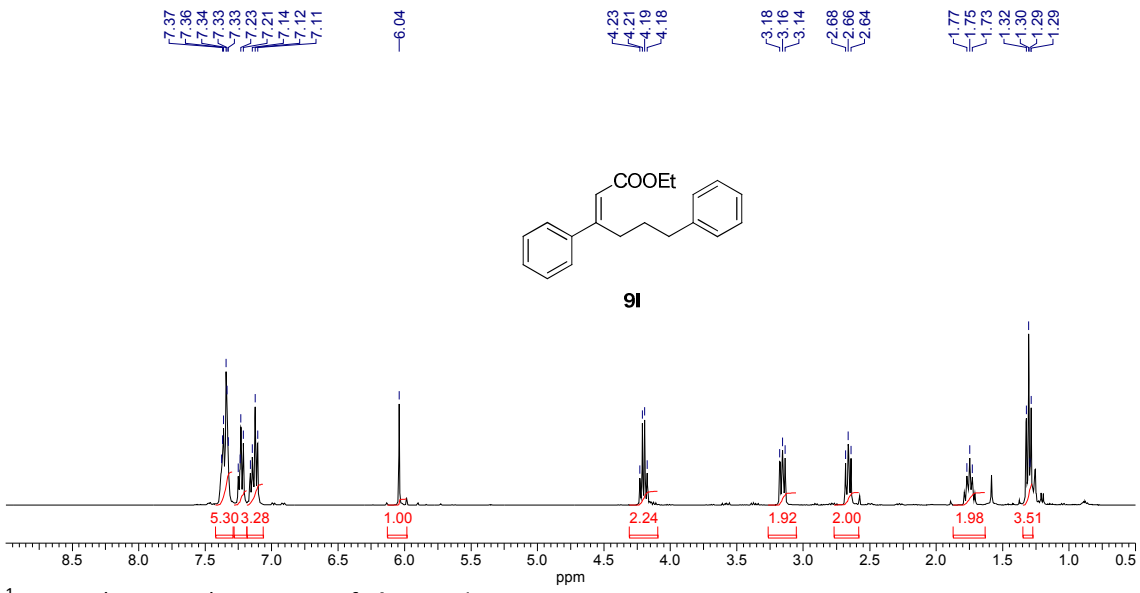
^{13}C NMR (100 MHz) spectrum of **9j'** in $CDCl_3$



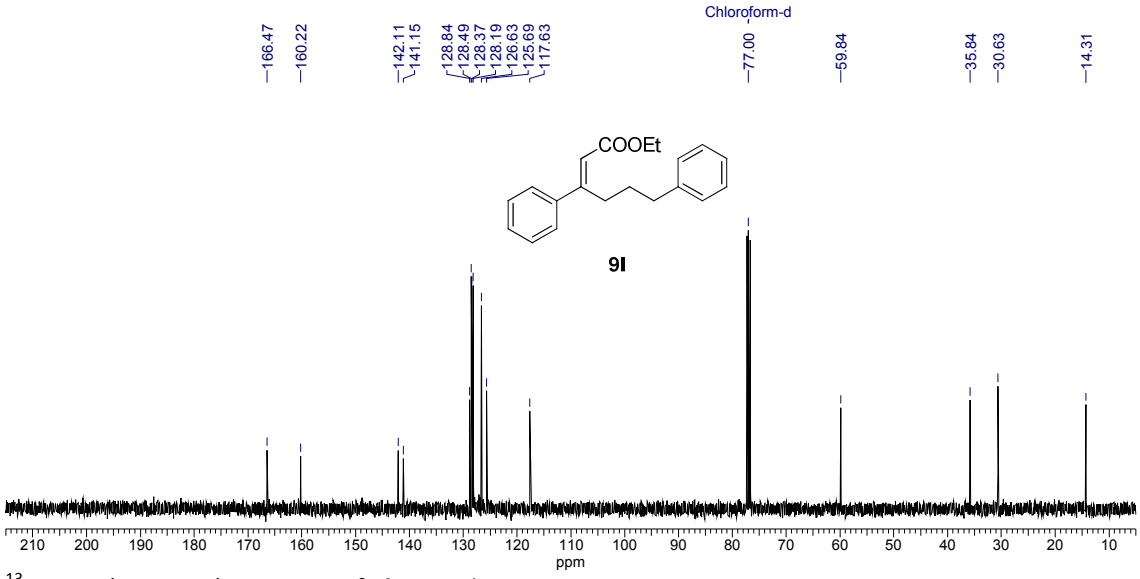
^{1}H NMR (400 MHz) spectrum of **9k** in $CDCl_3$



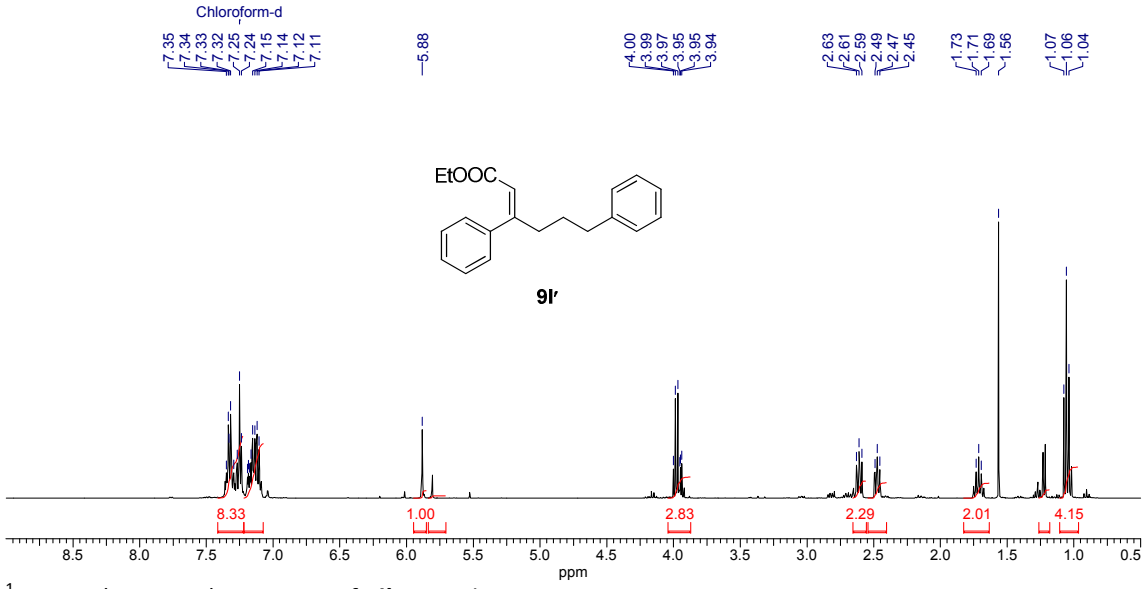
^{13}C NMR (100 MHz) spectrum of **9k** in $CDCl_3$



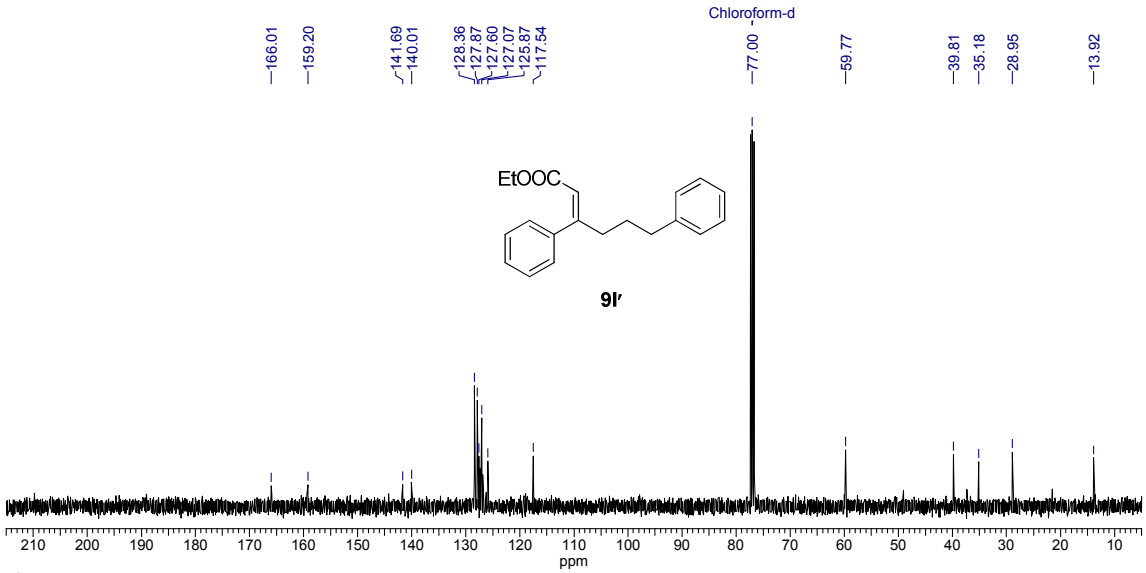
^{1}H NMR (400 MHz) spectrum of **9l** in $CDCl_3$



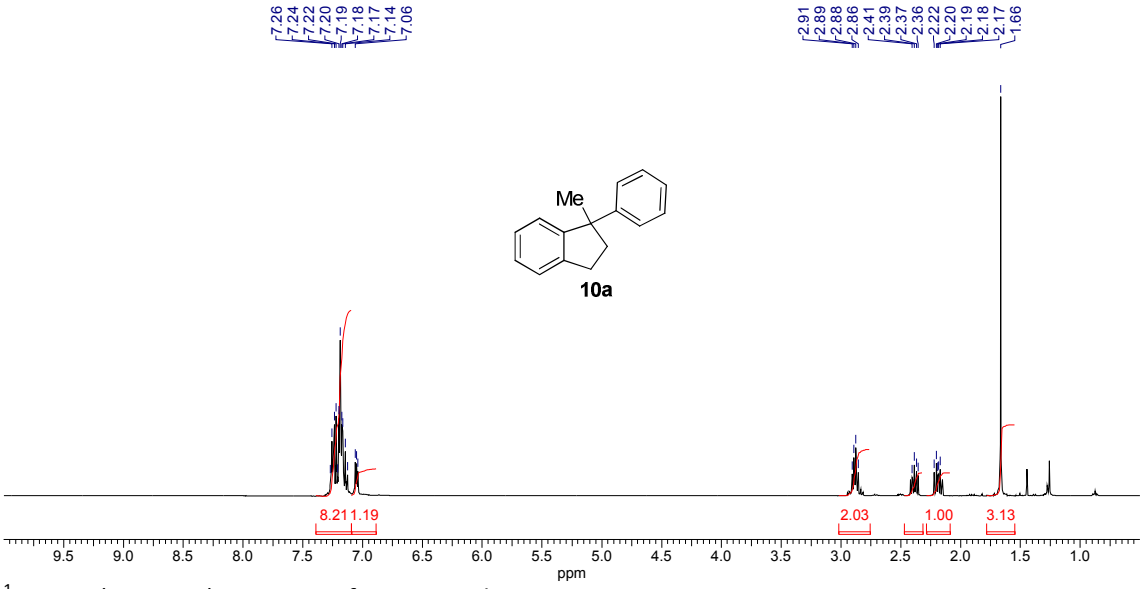
^{13}C NMR (100 MHz) spectrum of **9l** in $CDCl_3$



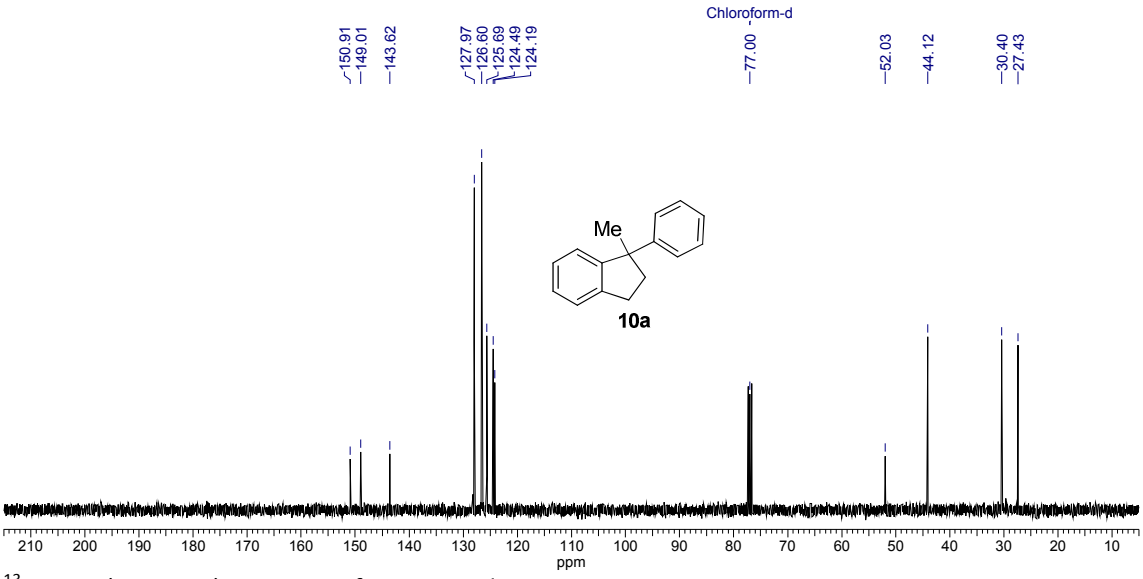
^{1}H NMR (400 MHz) spectrum of **9l′** in $CDCl_3$



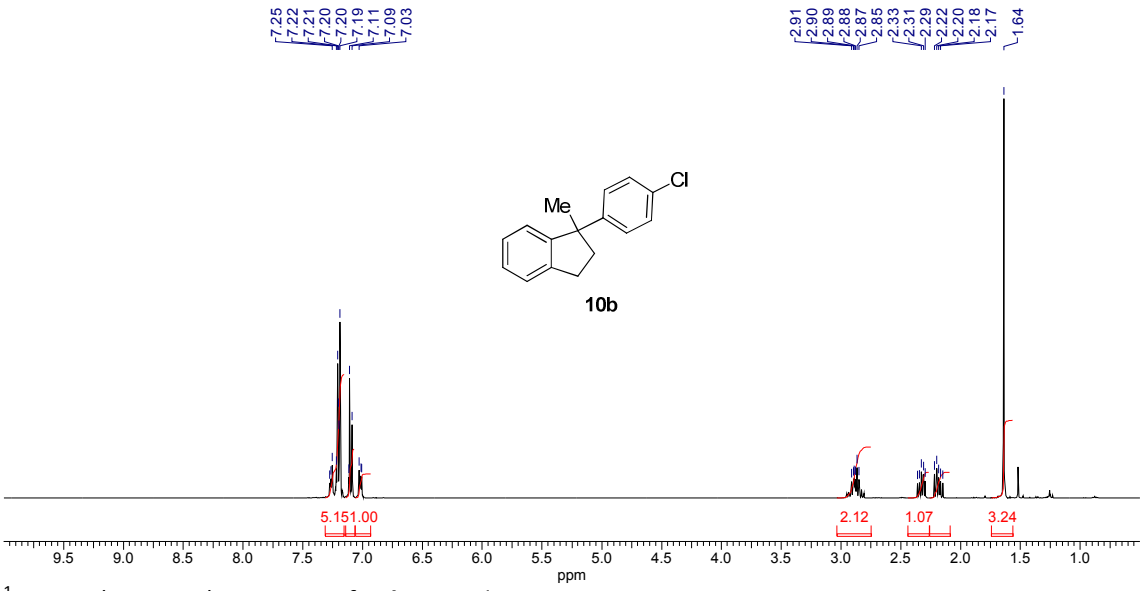
^{13}C NMR (100 MHz) spectrum of **9l′** in $CDCl_3$



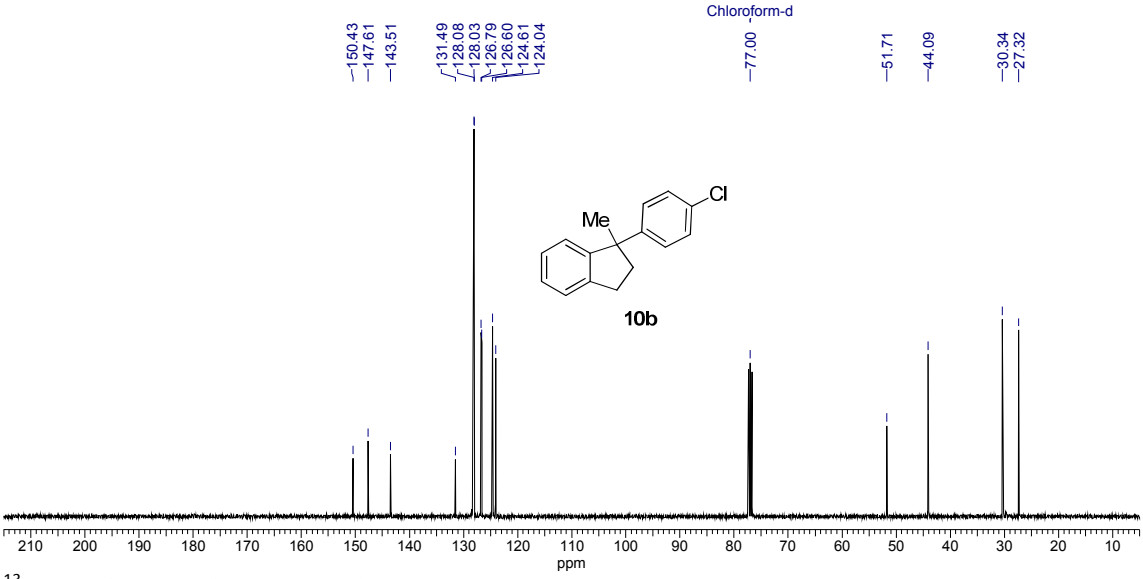
^{1}H NMR (400 MHz) spectrum of **10a** in $CDCl_3$



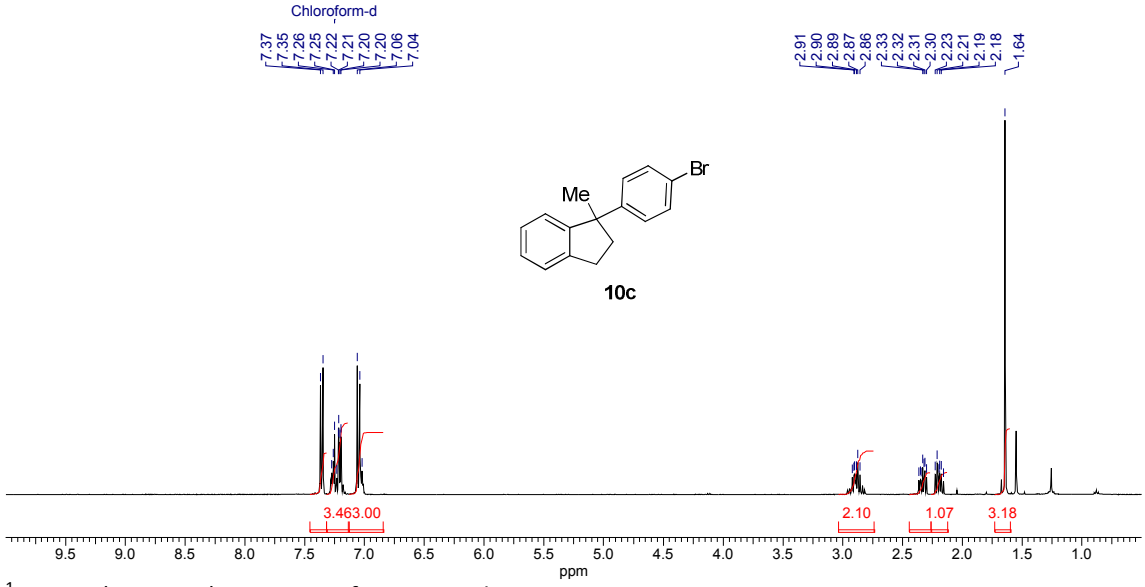
^{13}C NMR (100 MHz) spectrum of **10a** in $CDCl_3$



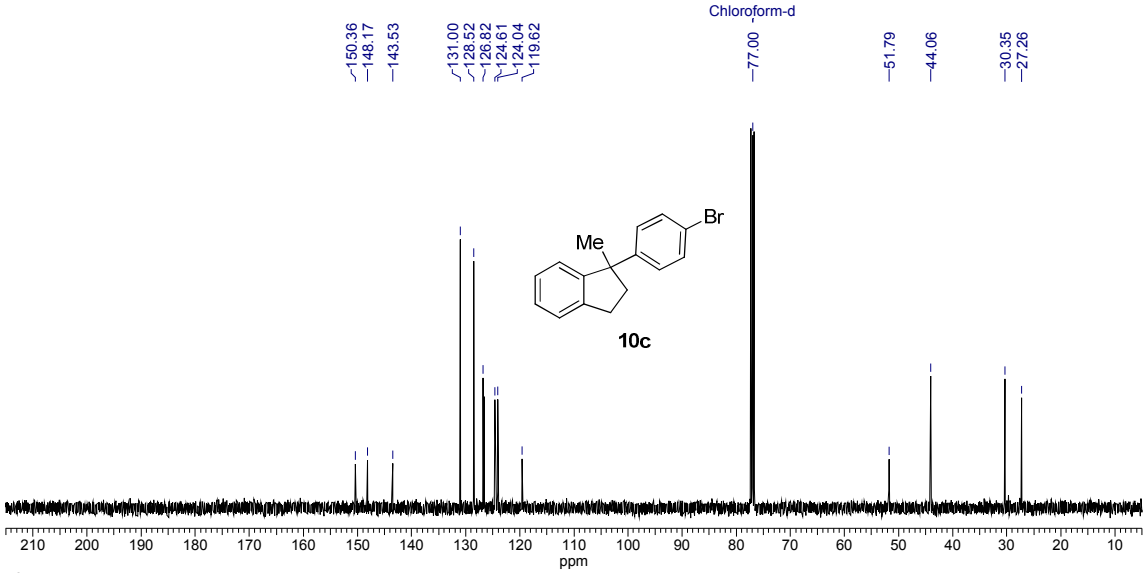
^{1}H NMR (400 MHz) spectrum of **10b** in $CDCl_3$



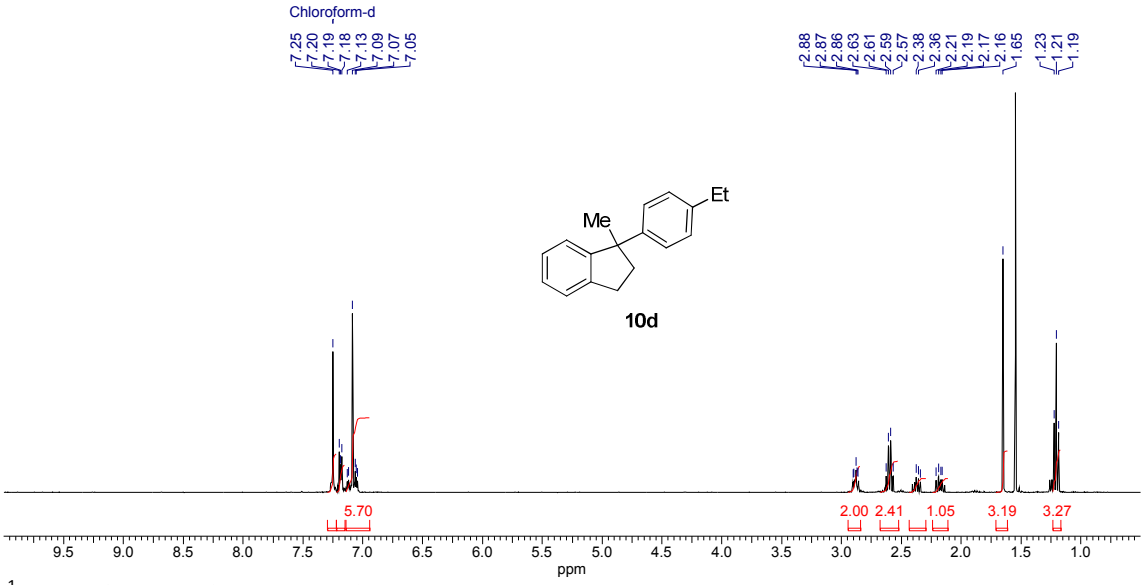
^{13}C NMR (100 MHz) spectrum of **10b** in $CDCl_3$



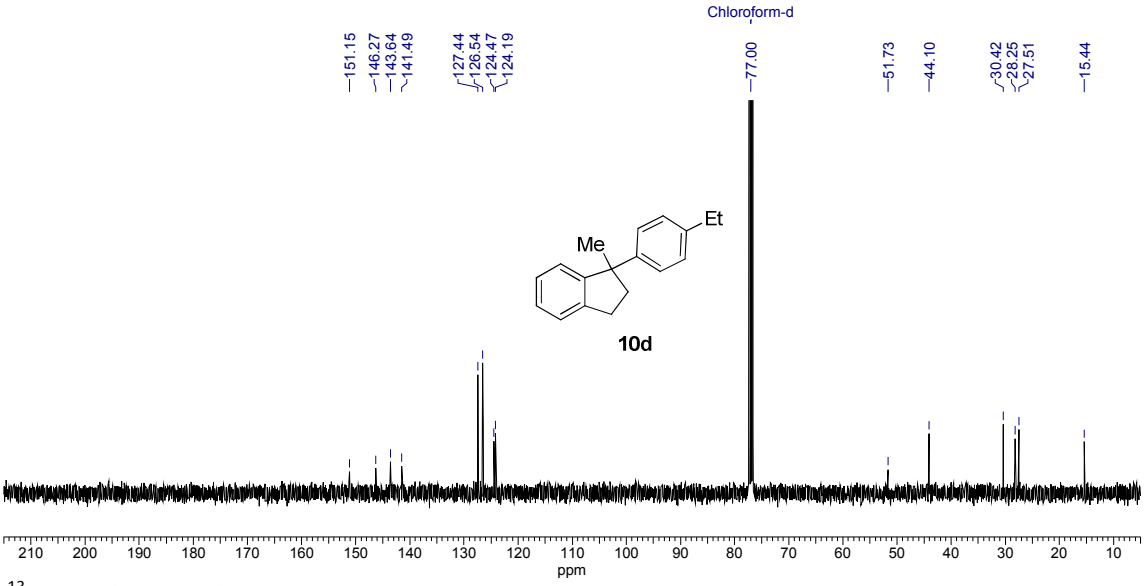
^{1}H NMR (400 MHz) spectrum of **10c** in $CDCl_3$



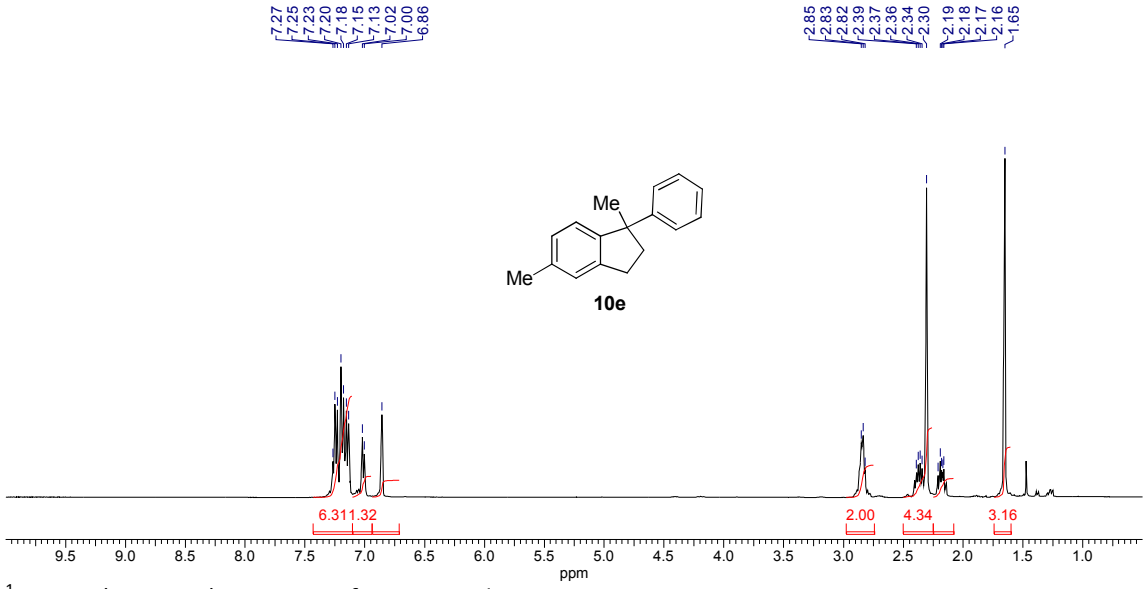
^{13}C NMR (100 MHz) spectrum of **10c** in $CDCl_3$



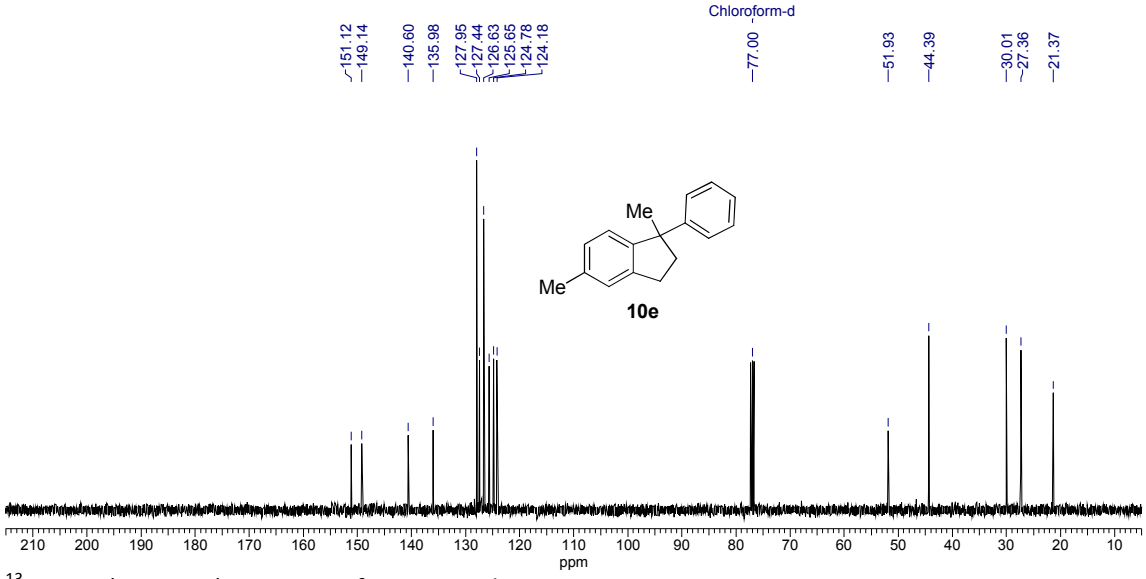
^{1}H NMR (400 MHz) spectrum of **10d** in $CDCl_3$



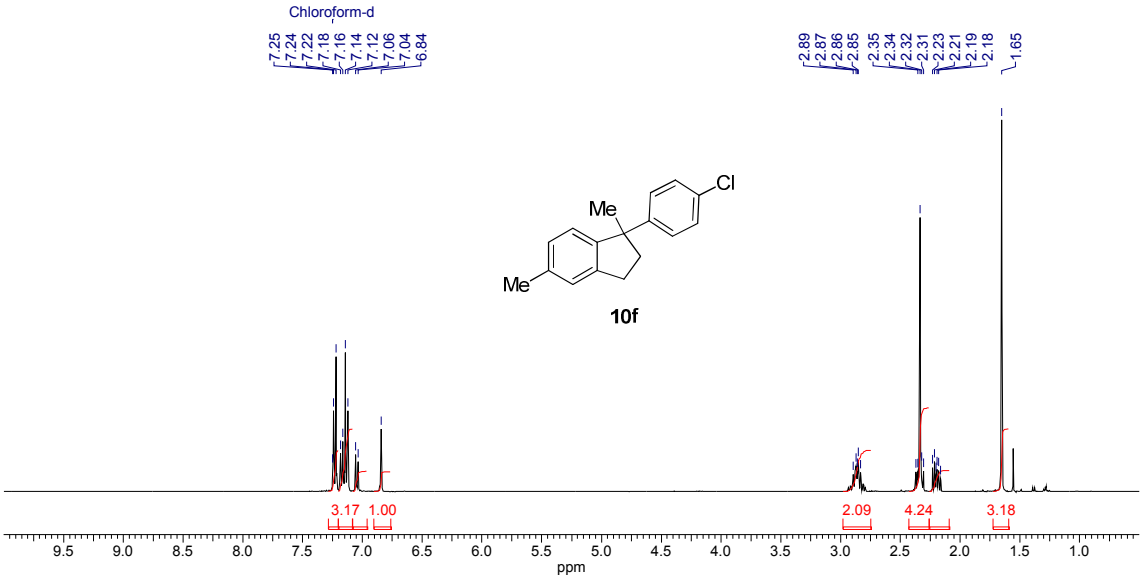
^{13}C NMR (100 MHz) spectrum of **10d** in $CDCl_3$



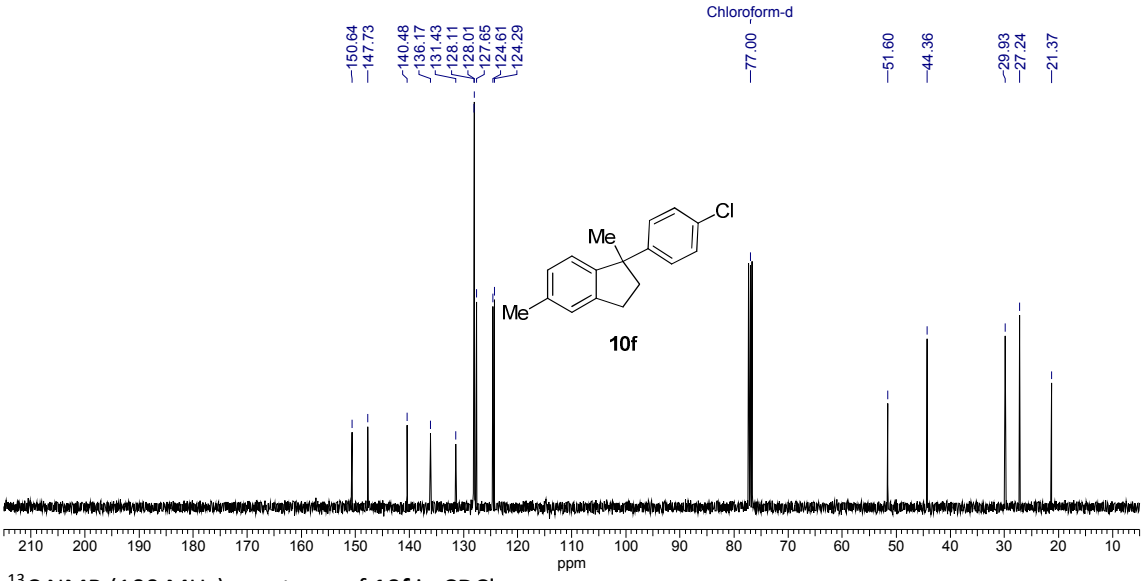
^{1}H NMR (400 MHz) spectrum of **10e** in $CDCl_3$



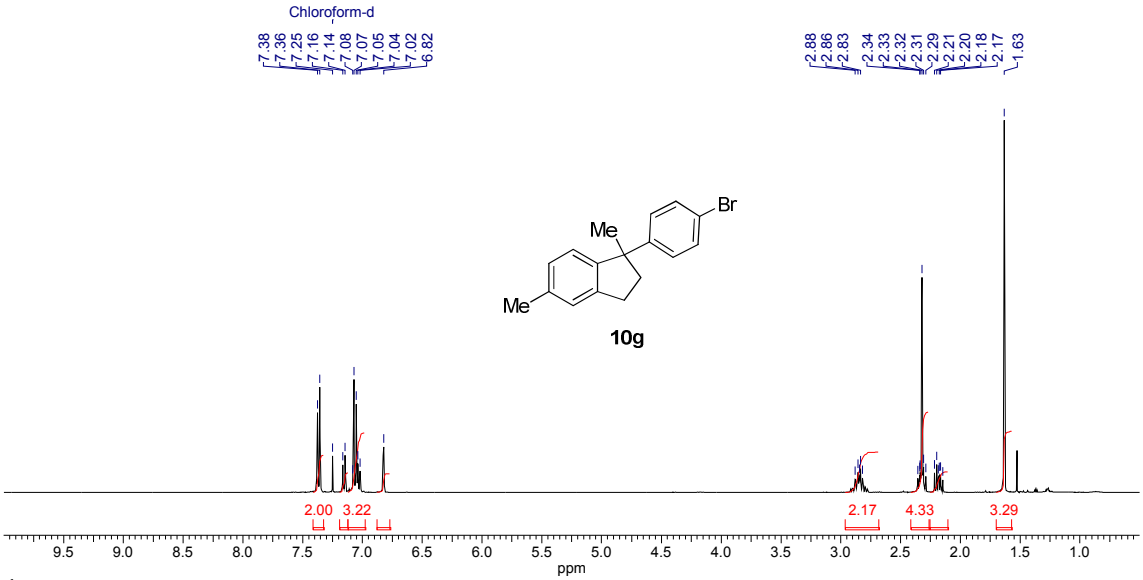
^{13}C NMR (100 MHz) spectrum of **10e** in $CDCl_3$



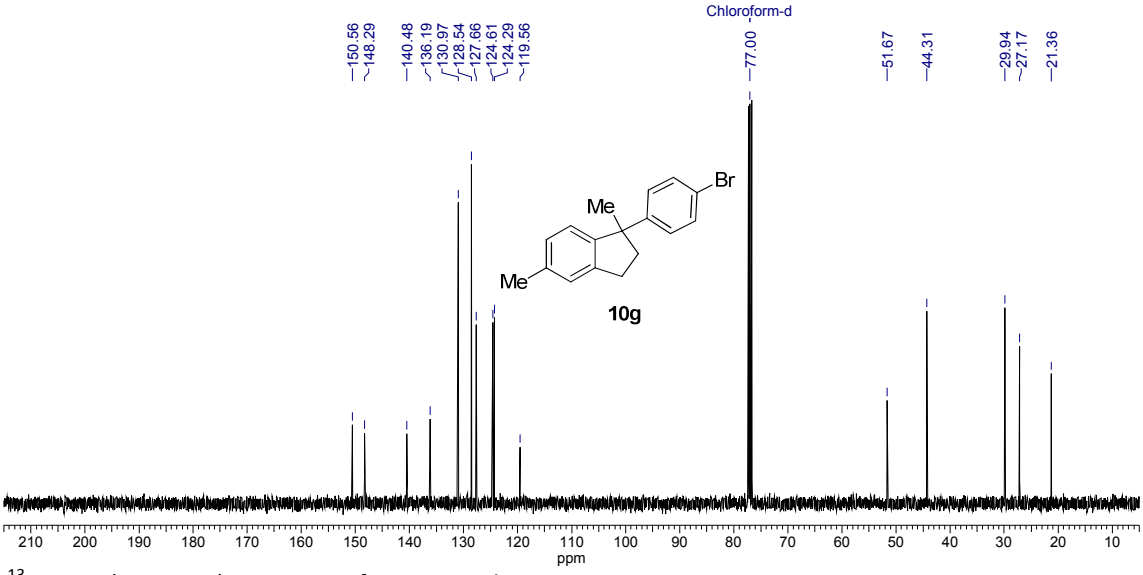
^{1}H NMR (400 MHz) spectrum of **10f** in $CDCl_3$



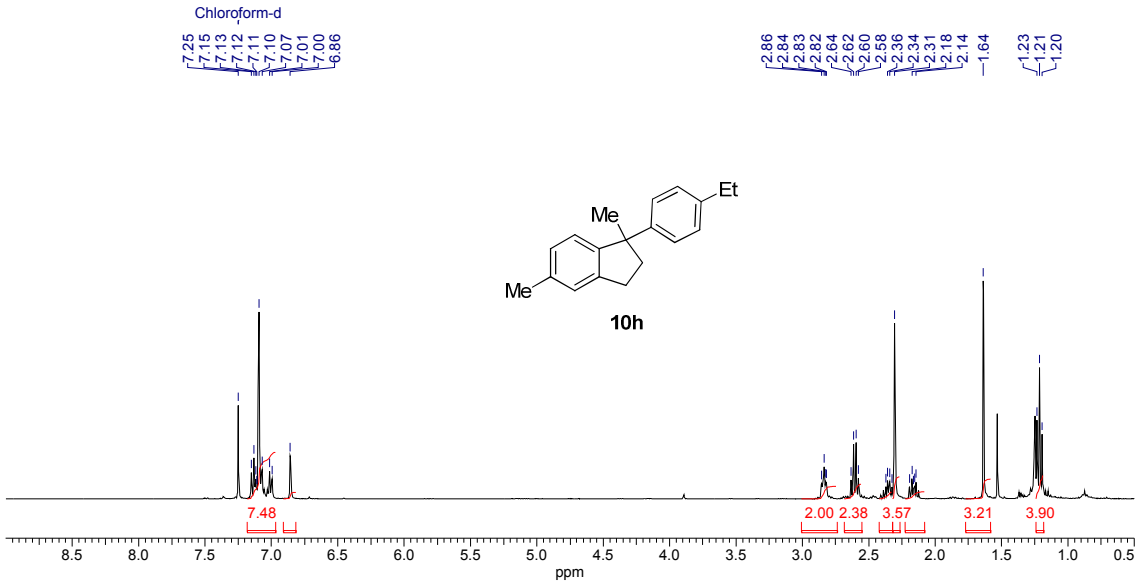
^{13}C NMR (100 MHz) spectrum of **10f** in $CDCl_3$



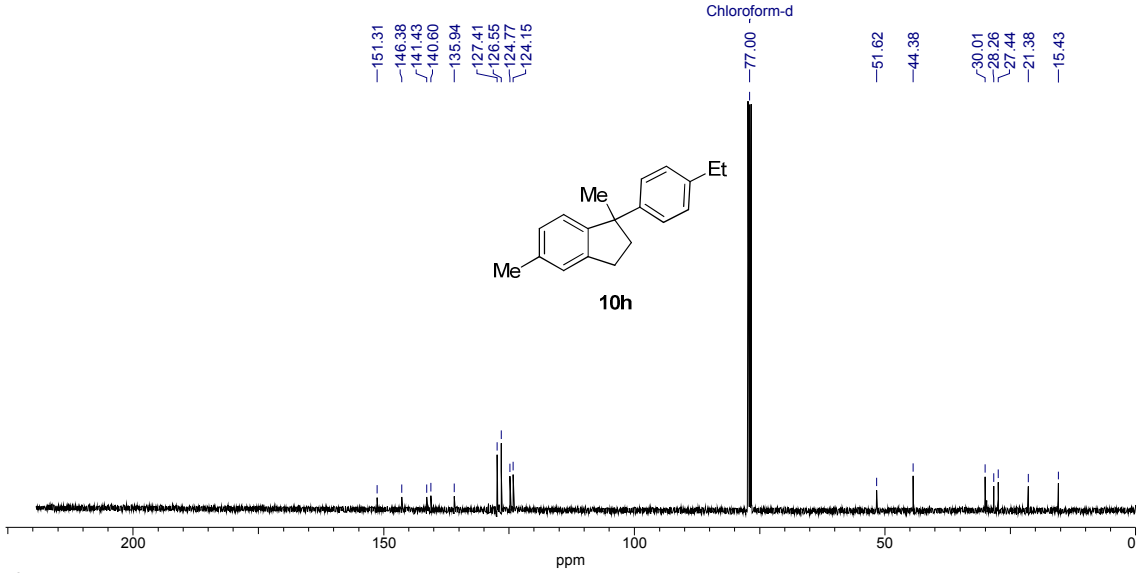
^{1}H NMR (400 MHz) spectrum of **10g** in $CDCl_3$



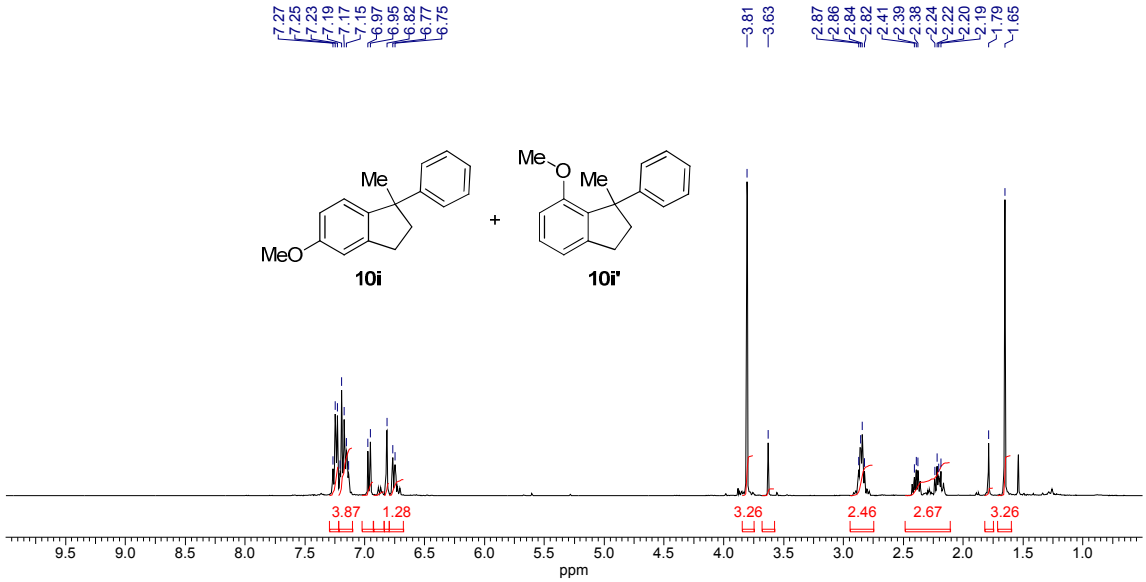
^{13}C NMR (100 MHz) spectrum of **10g** in $CDCl_3$



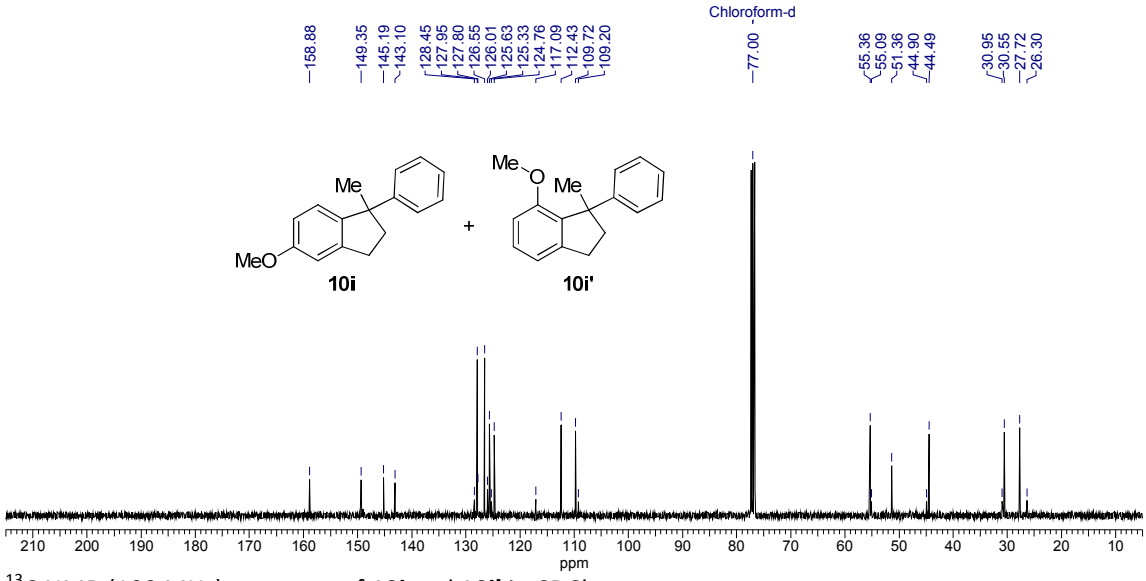
^{1}H NMR (400 MHz) spectrum of **10h** in $CDCl_3$



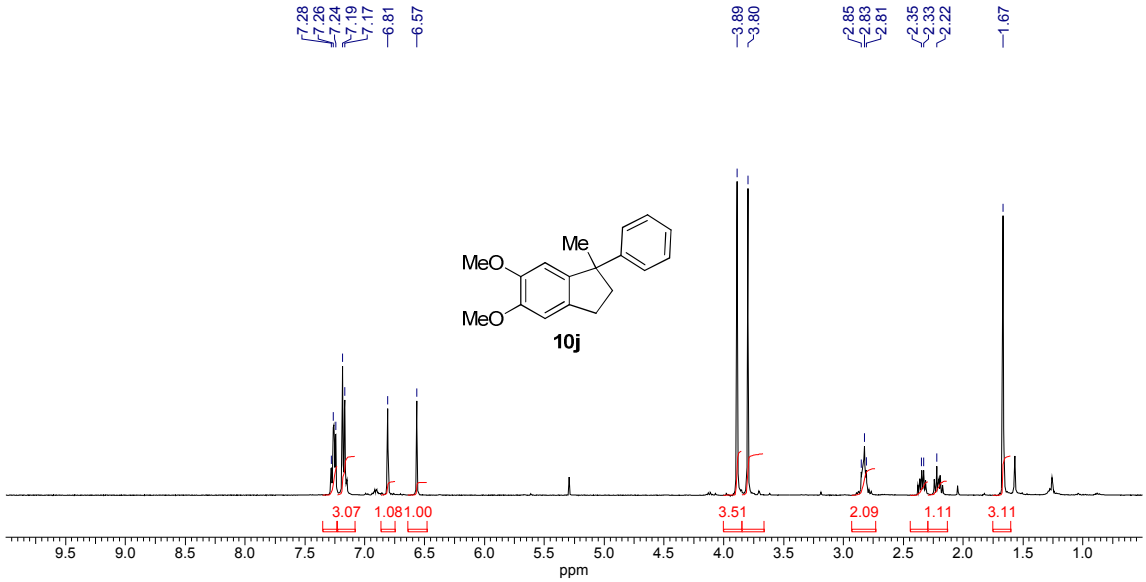
^{13}C NMR (100 MHz) spectrum of **10h** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **10i** and **10i'** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **10i** and **10i'** in $CDCl_3$



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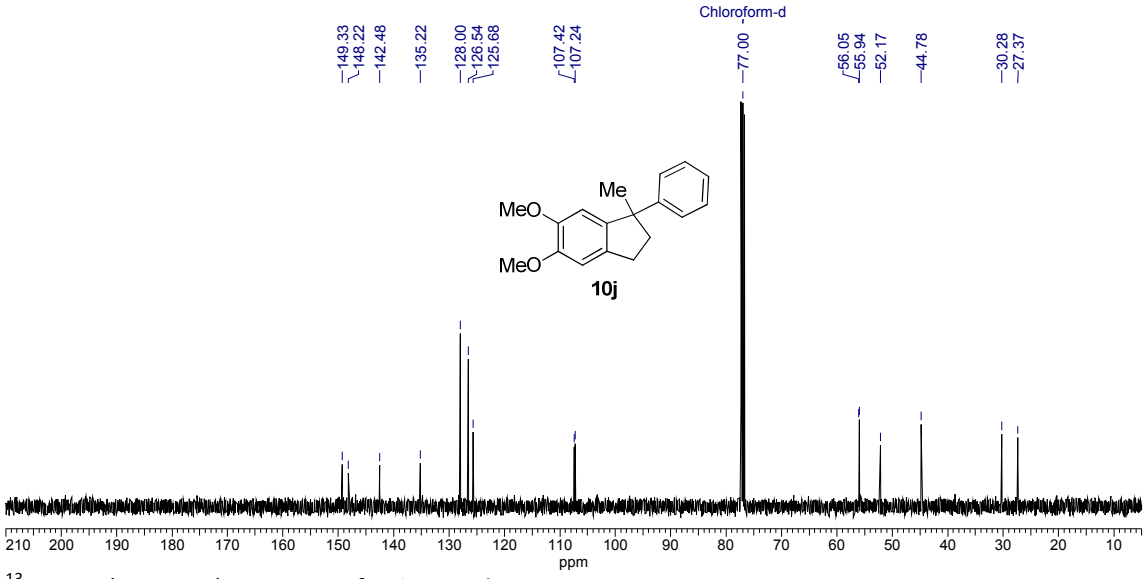
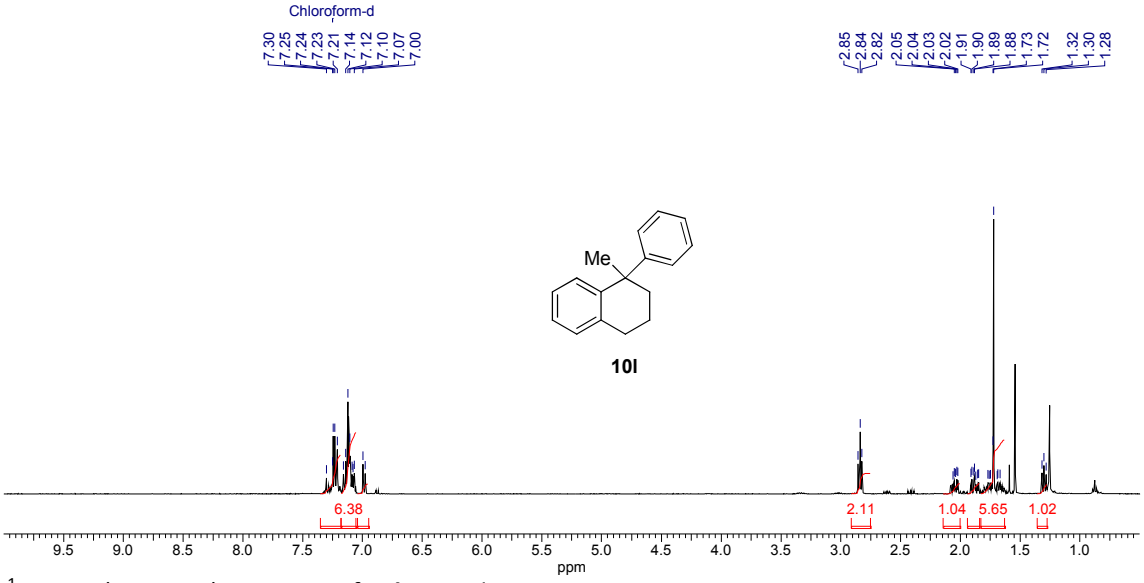
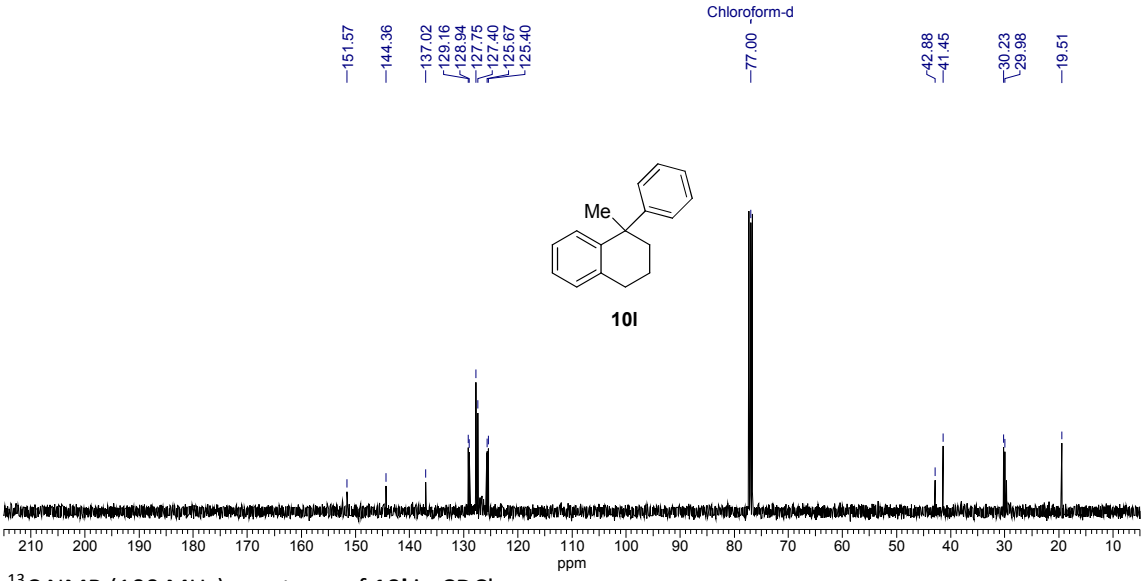


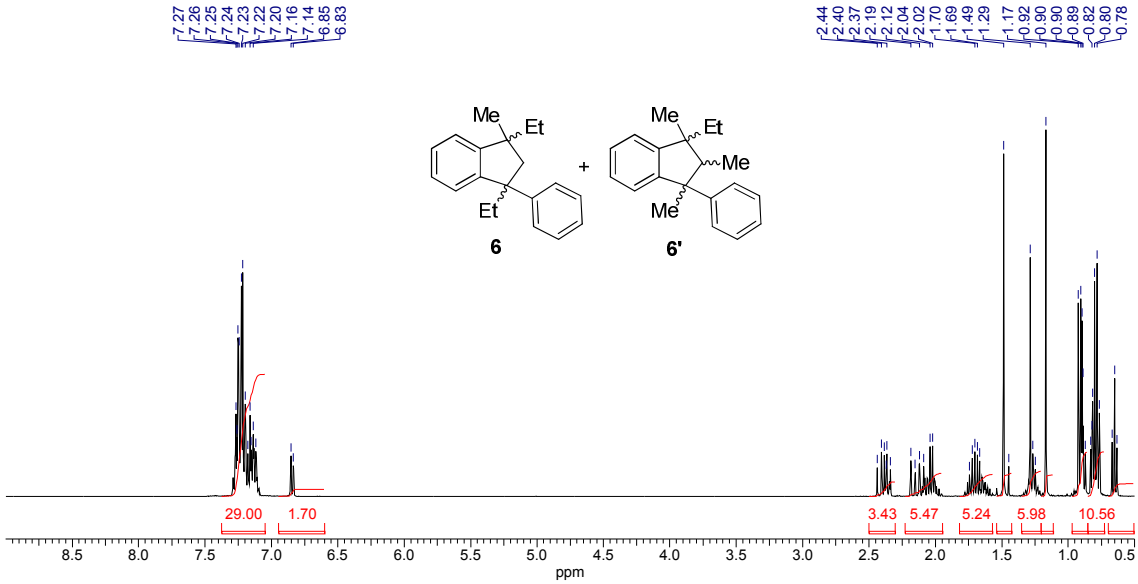
^{13}C NMR (100 MHz) spectrum of **10j** in $CDCl_3$



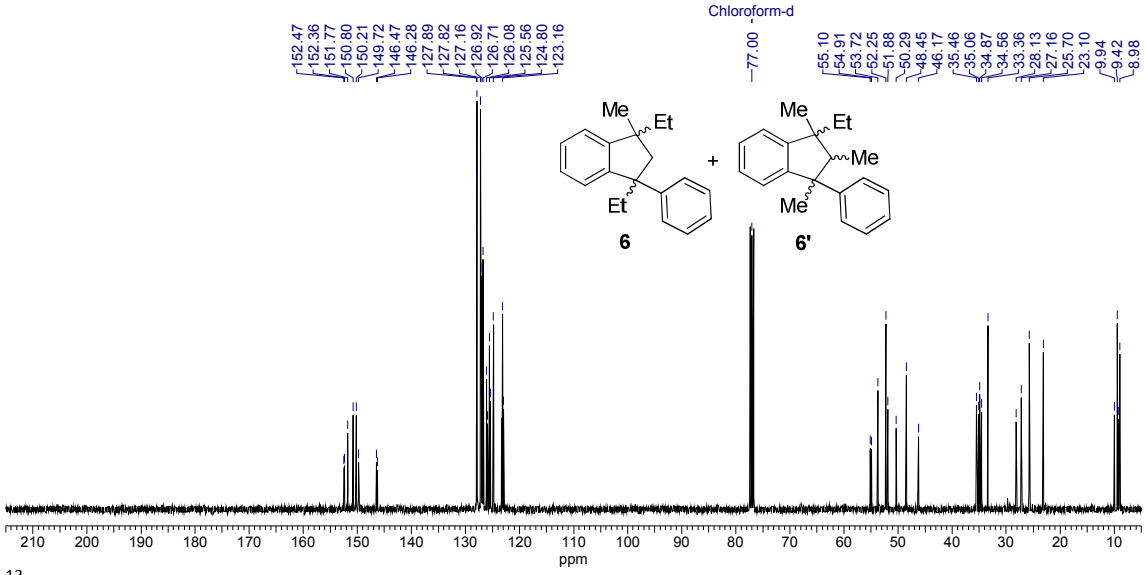
^{1}H NMR (400 MHz) spectrum of **10l** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **10l** in $CDCl_3$



^{1}H NMR (400 MHz) spectrum of **6** and **6'** in $CDCl_3$



^{13}C NMR (100 MHz) spectrum of **6** and **6'** in $CDCl_3$