Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

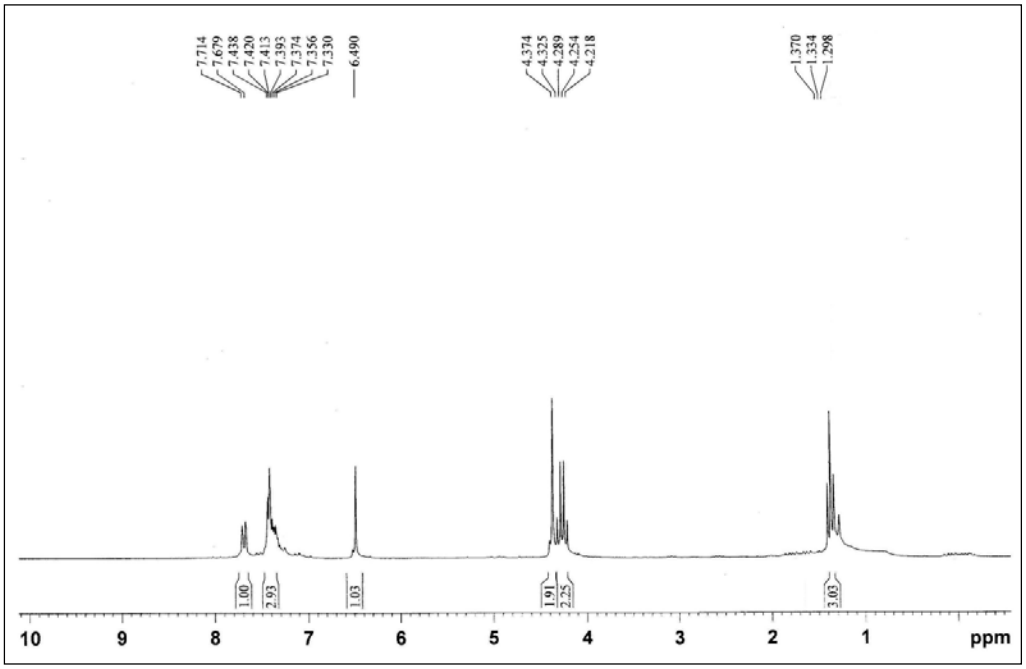
P_4S_{10} and Na_2S-mediated novel annulation routes to *c*-fused thiophenes

Nasima Yasmin,[a] Munmun Ghosh[b] and Jayanta K. Ray[b,*]

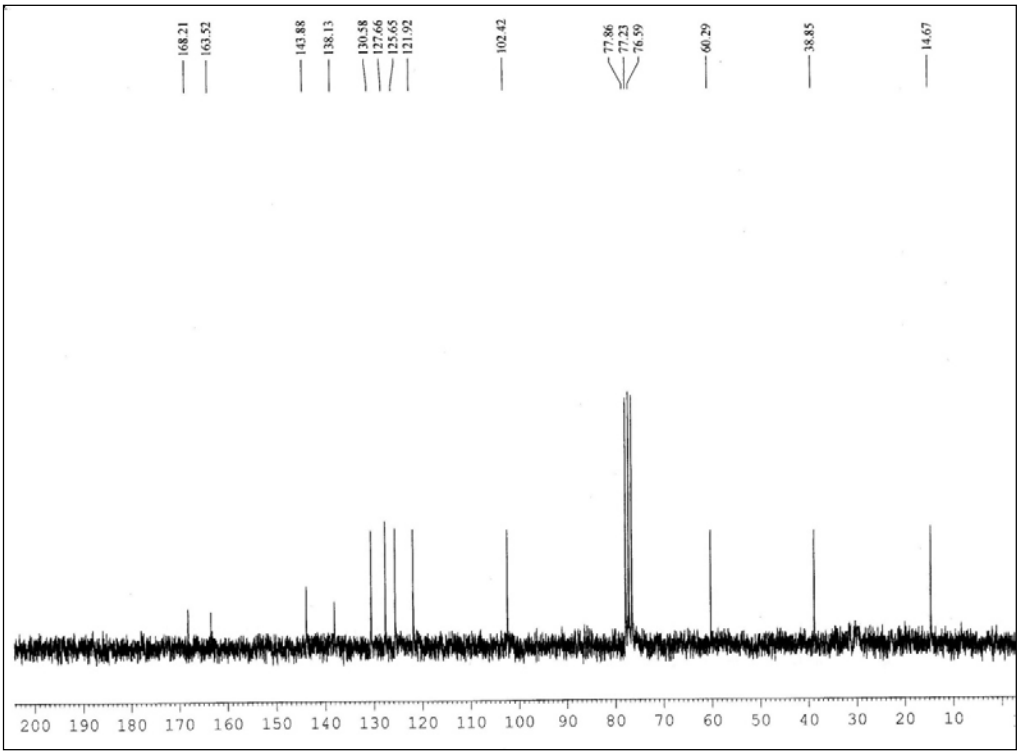
a: *Department of Chemistry, Aliah University, Kolkata 700016, India*

b: *Department of Chemistry, Indian Institute of Technology, Kharagpur 721302, India*

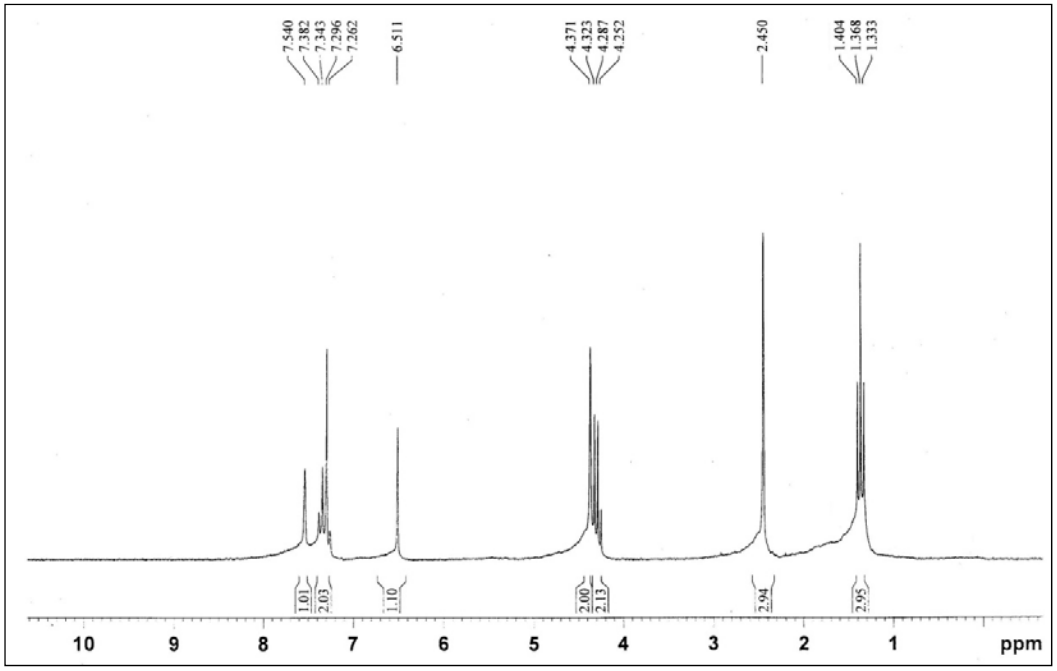
^{1}H NMR of **5a** ($CDCl_3$, 200 MHz):



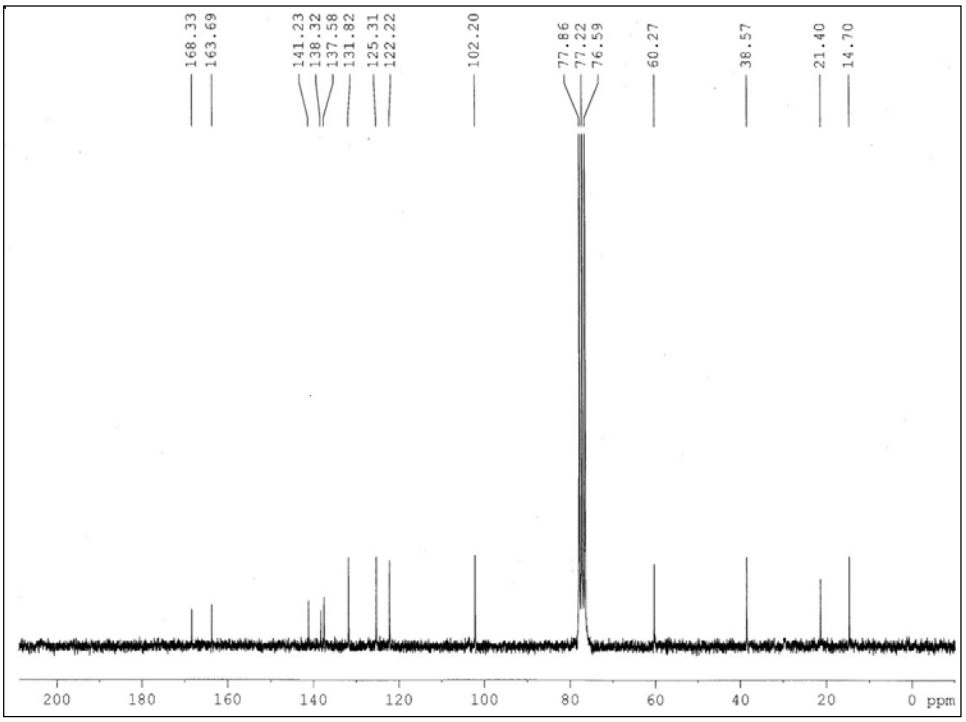
^{13}C NMR of **5a** ($CDCl_3$, 50 MHz):



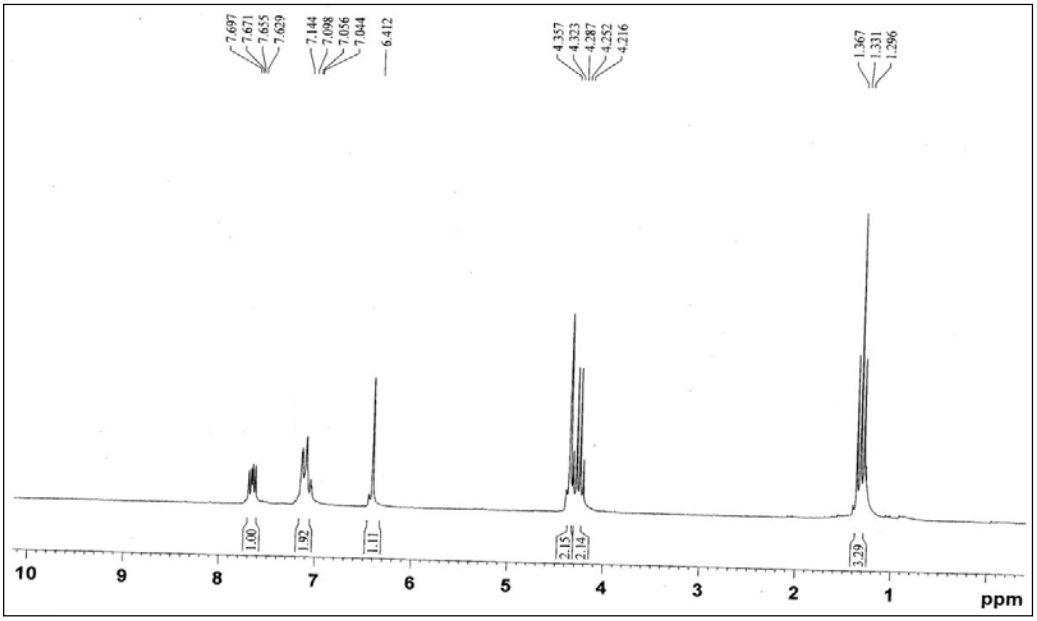
^{1}H NMR of **5b** ($CDCl_3$, 200 MHz):



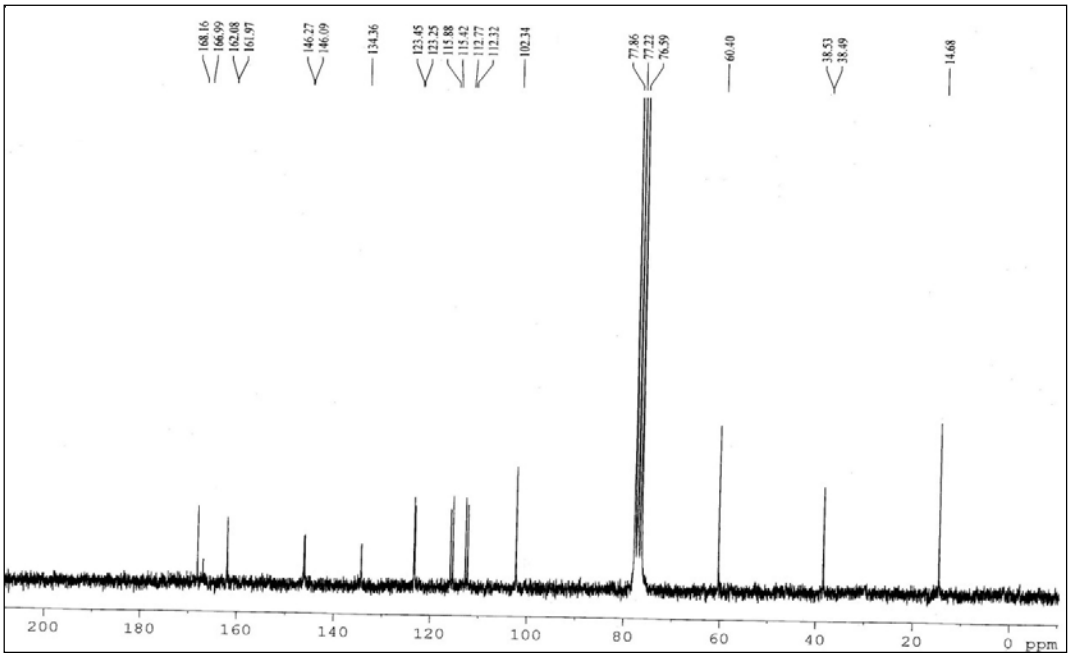
^{13}C NMR of **5b** ($CDCl_3$, 50 MHz):



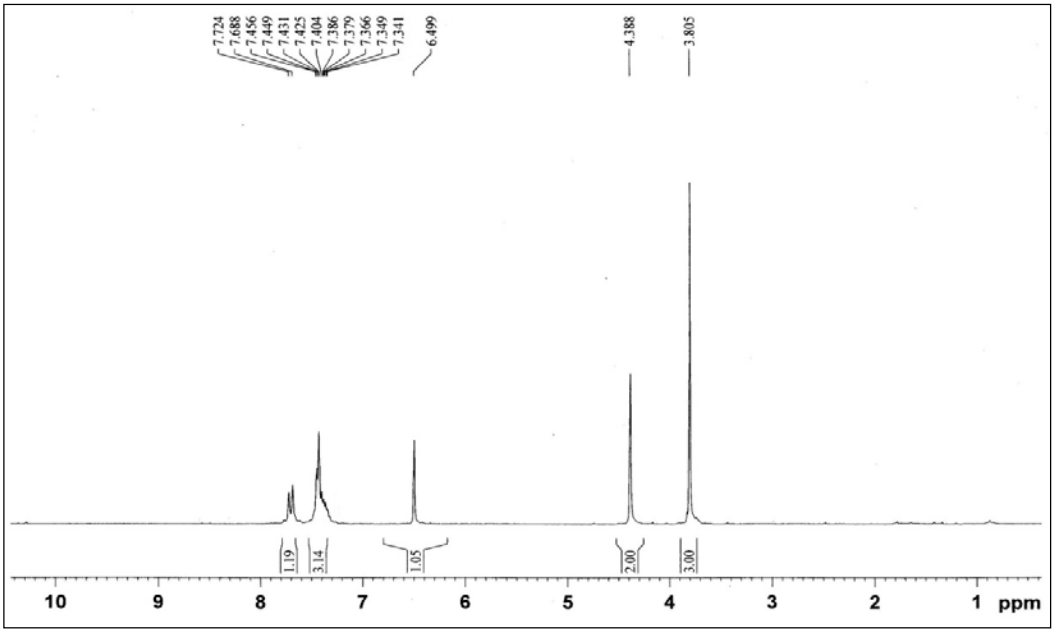
^{1}H NMR of **5c** ($CDCl_3$, 200 MHz):



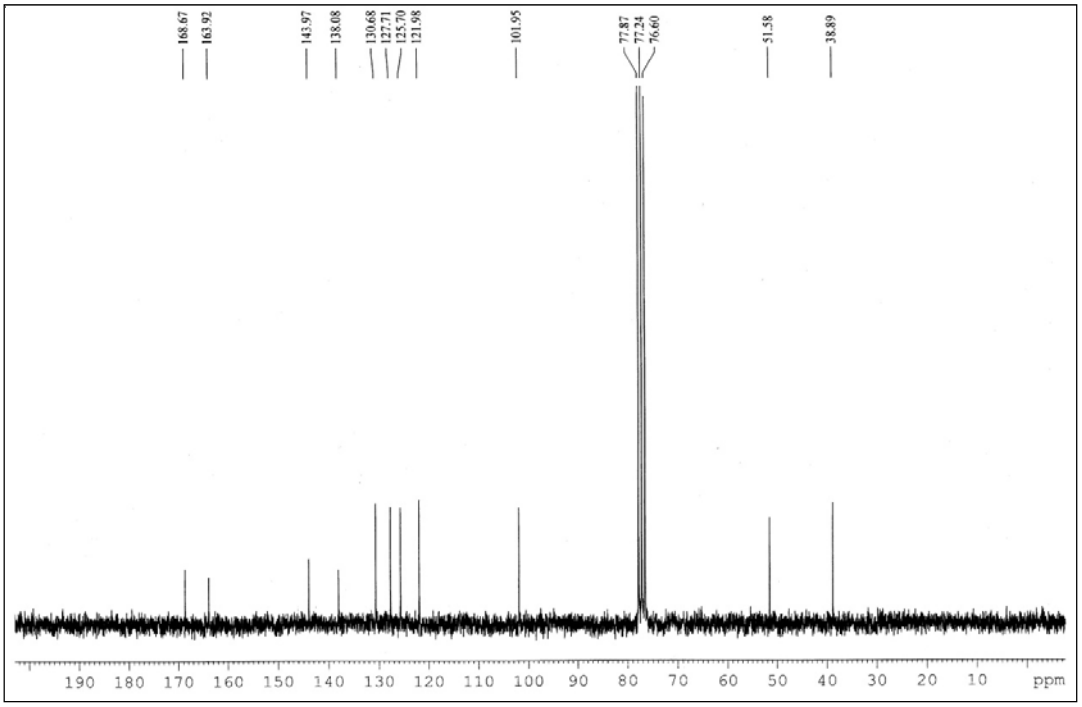
^{13}C NMR of **5c** ($CDCl_3$, 50 MHz):



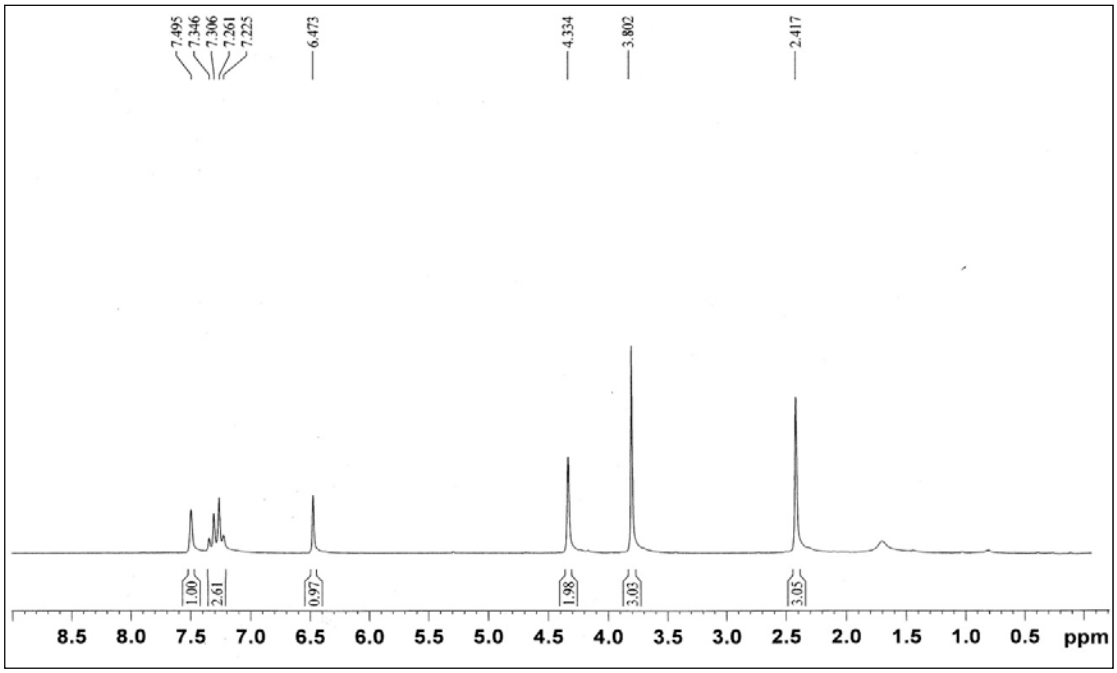
^{1}H NMR of **5d** ($CDCl_3$, 200 MHz):



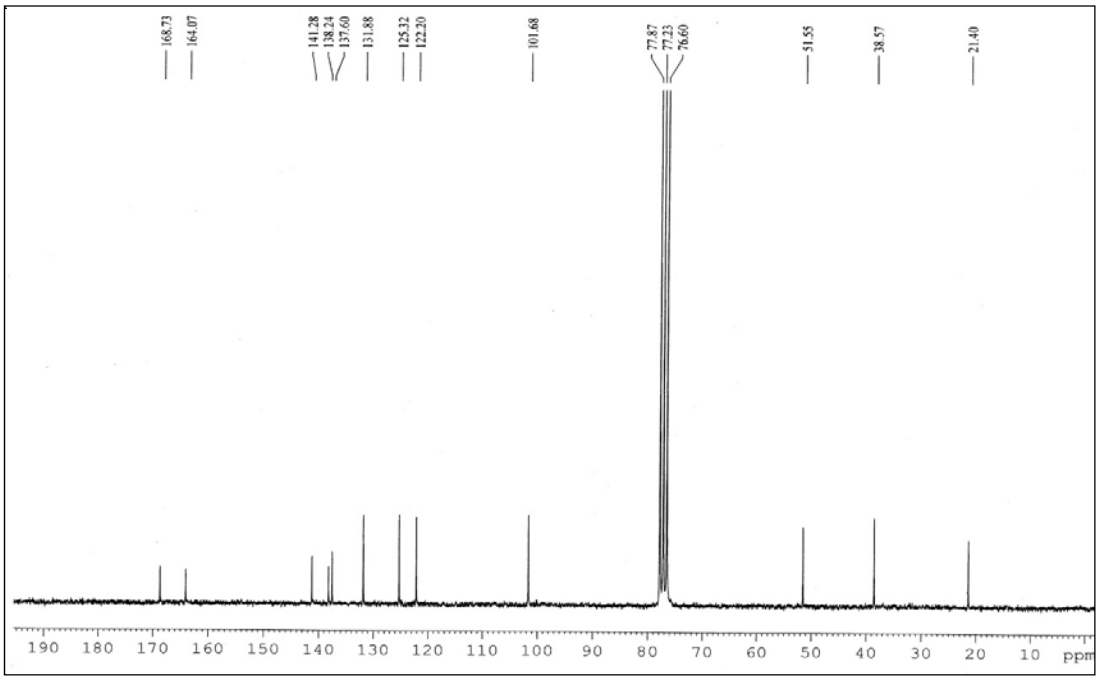
^{13}C NMR of **5d** ($CDCl_3$, 50 MHz):



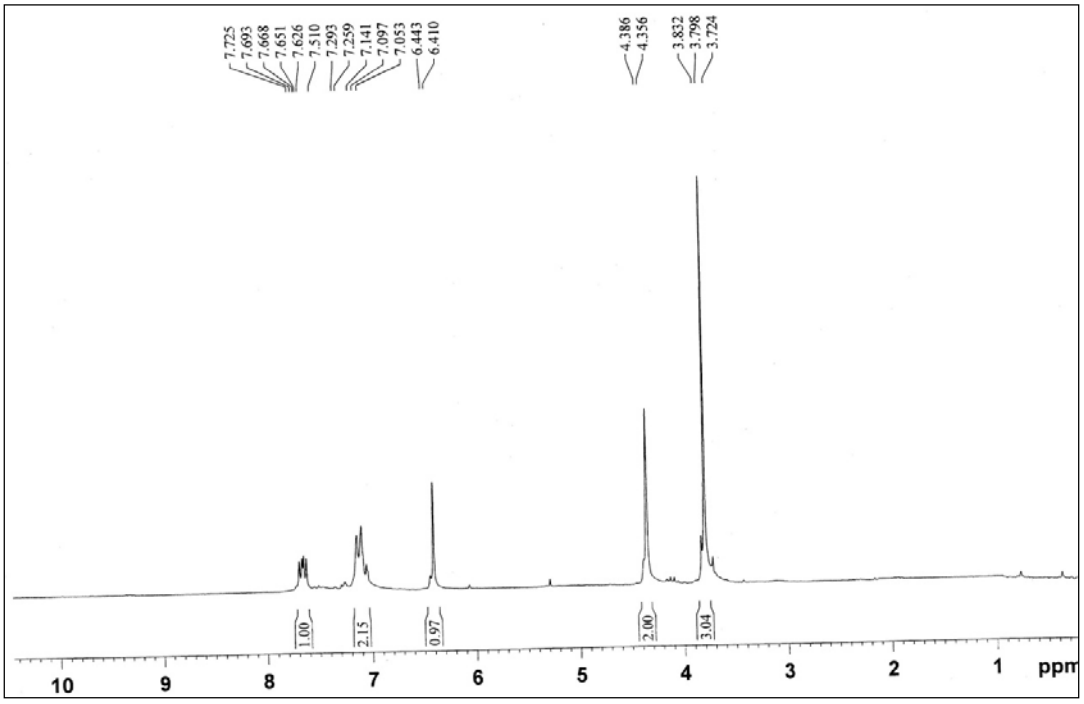
^{1}H NMR of **5e** ($CDCl_3$, 200 MHz):



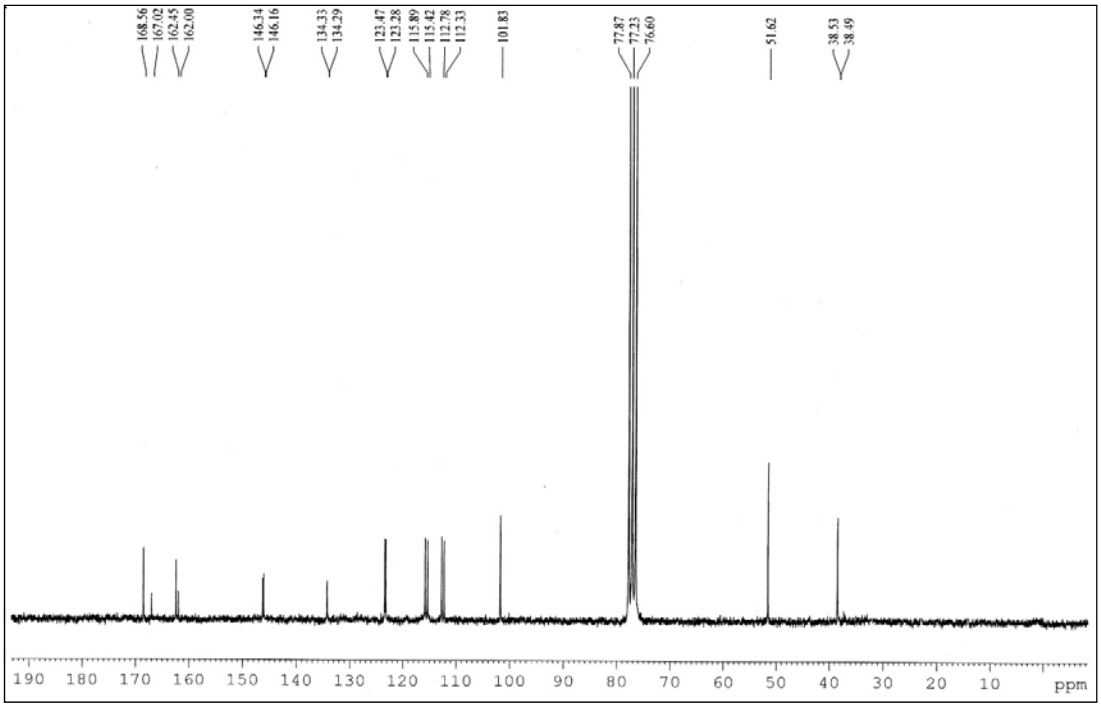
^{13}C NMR of **5e** ($CDCl_3$, 50 MHz):



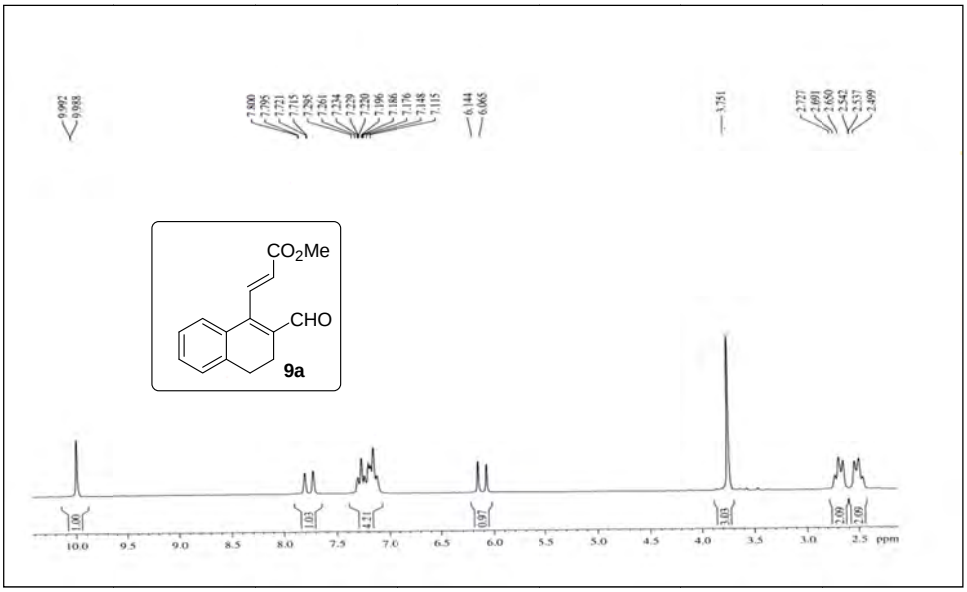
^{1}H NMR of **5f** ($CDCl_3$, 200 MHz):



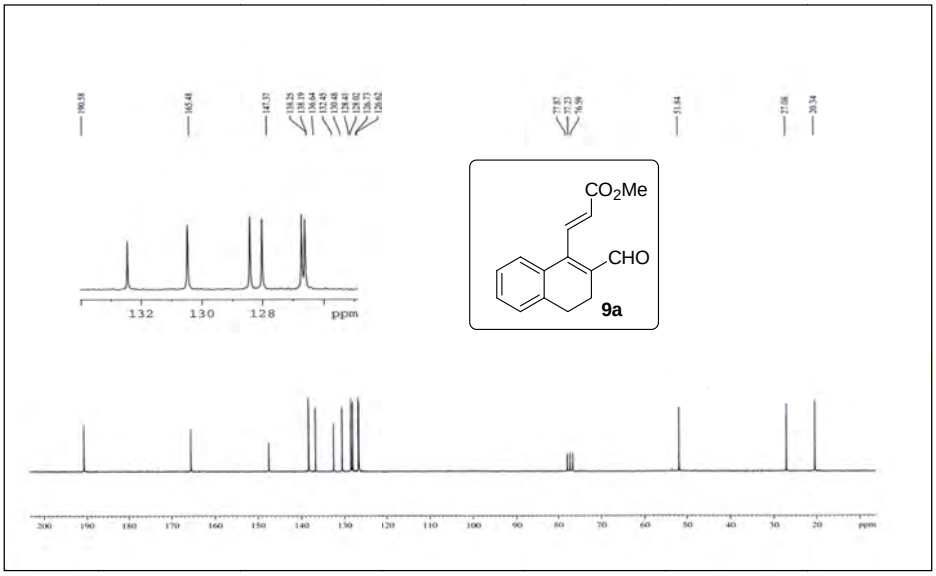
^{13}C NMR of **5f** ($CDCl_3$, 50 MHz):



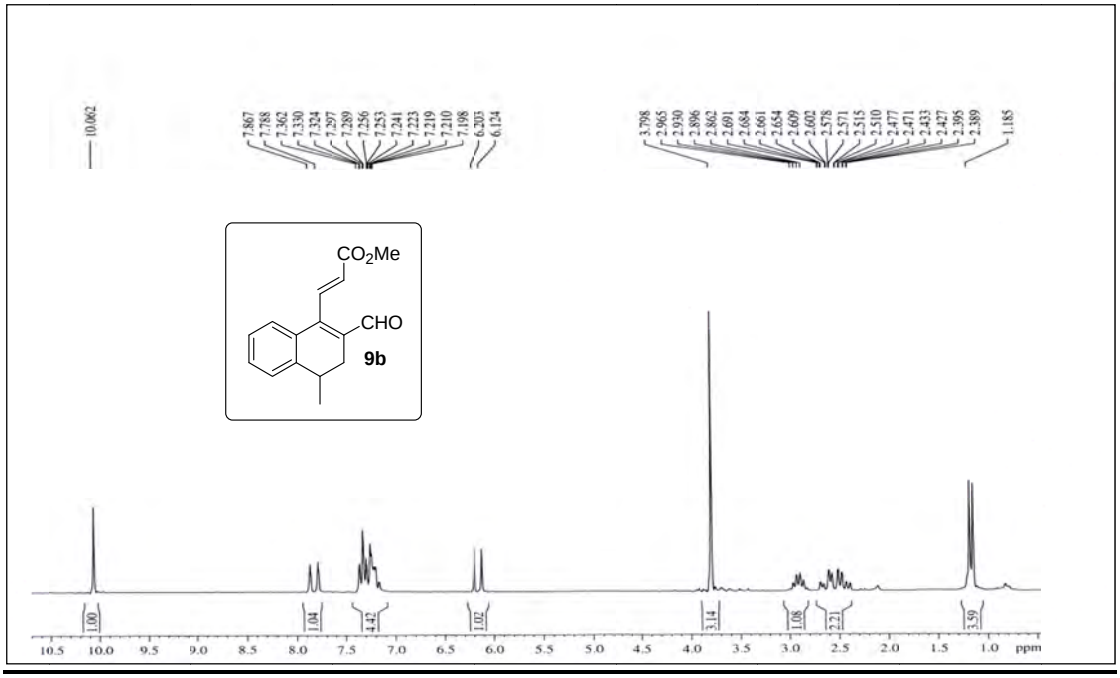
^{1}H NMR of **9a** ($CDCl_3$, 200 MHz)



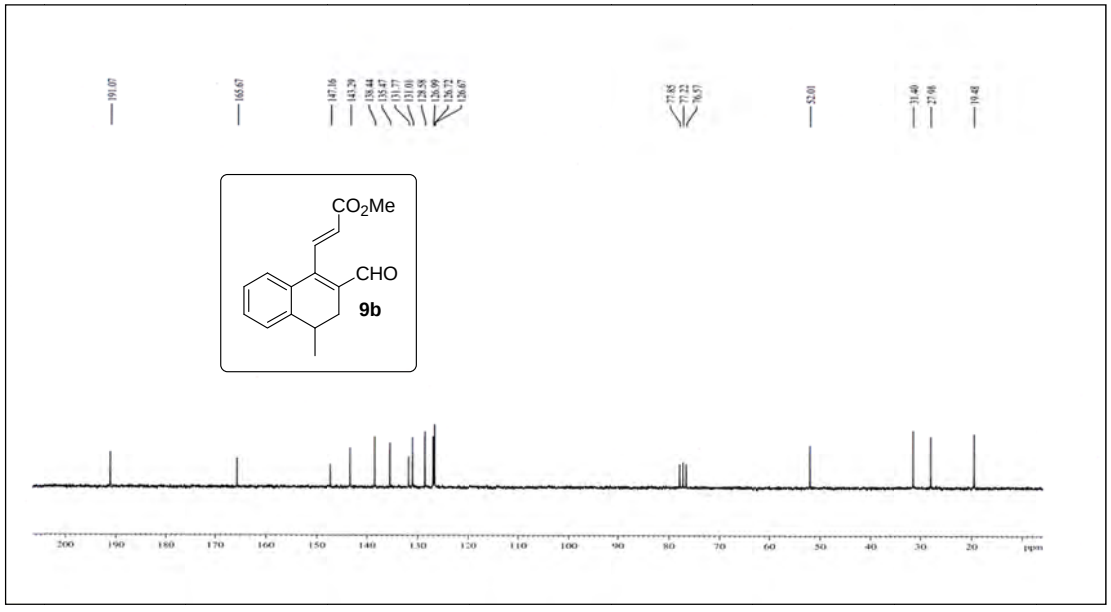
^{13}C NMR of **9a** ($CDCl_3$, 50 MHz)



^{1}H NMR of **9b** ($CDCl_3$, 200 MHz)

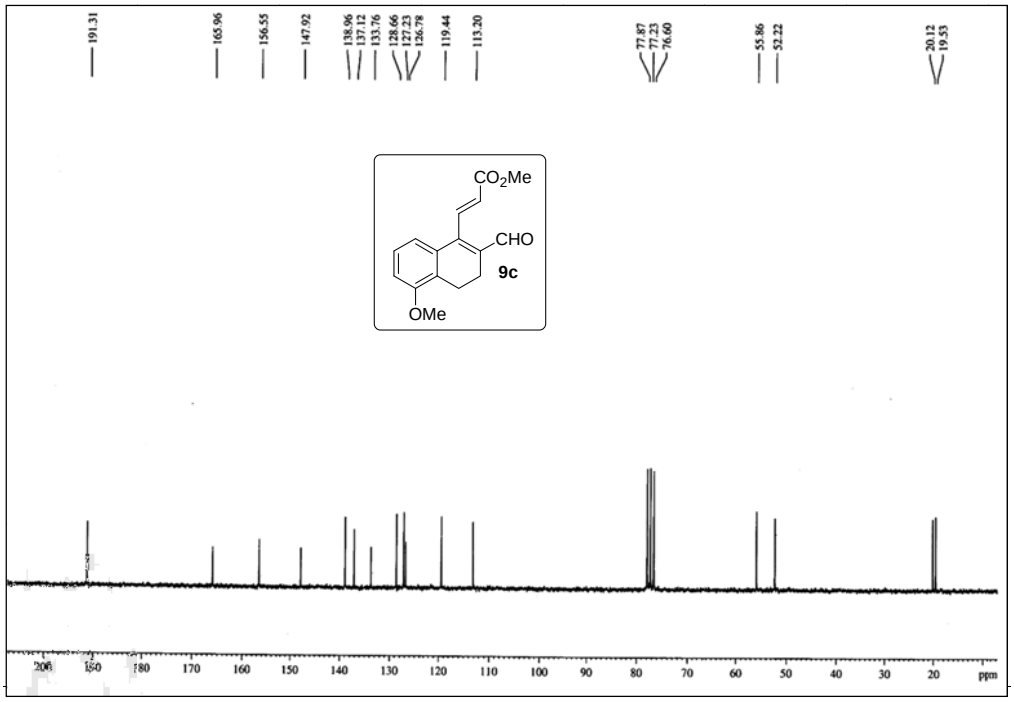


^{13}C NMR of **9b** ($CDCl_3$, 50 MHz)

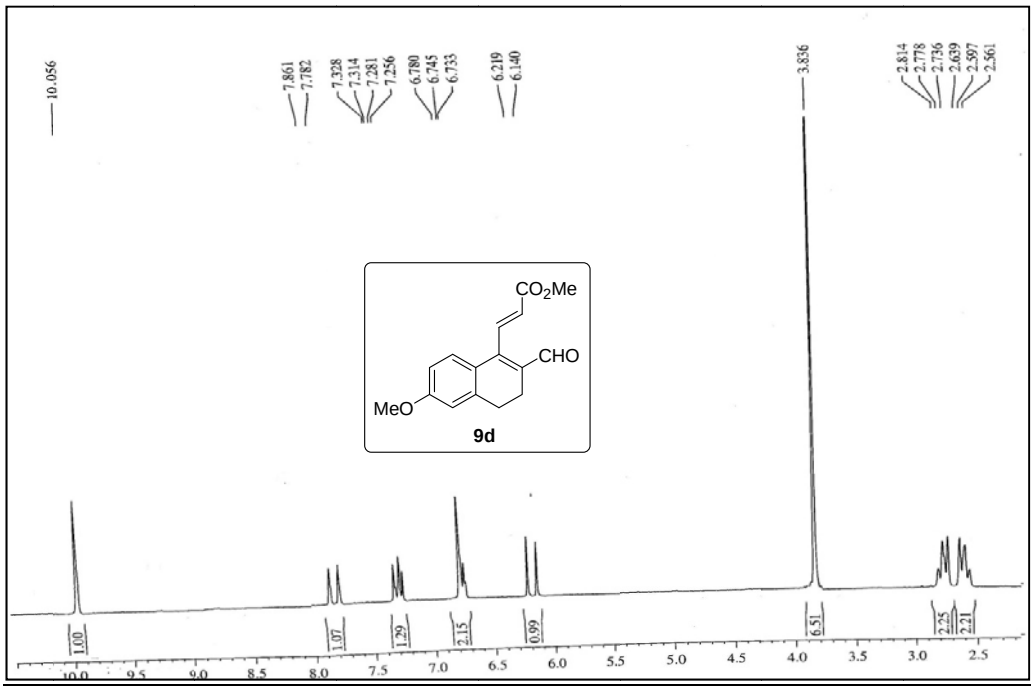


^{1}H NMR of **9c** ($CDCl_3$, 200 MHz)

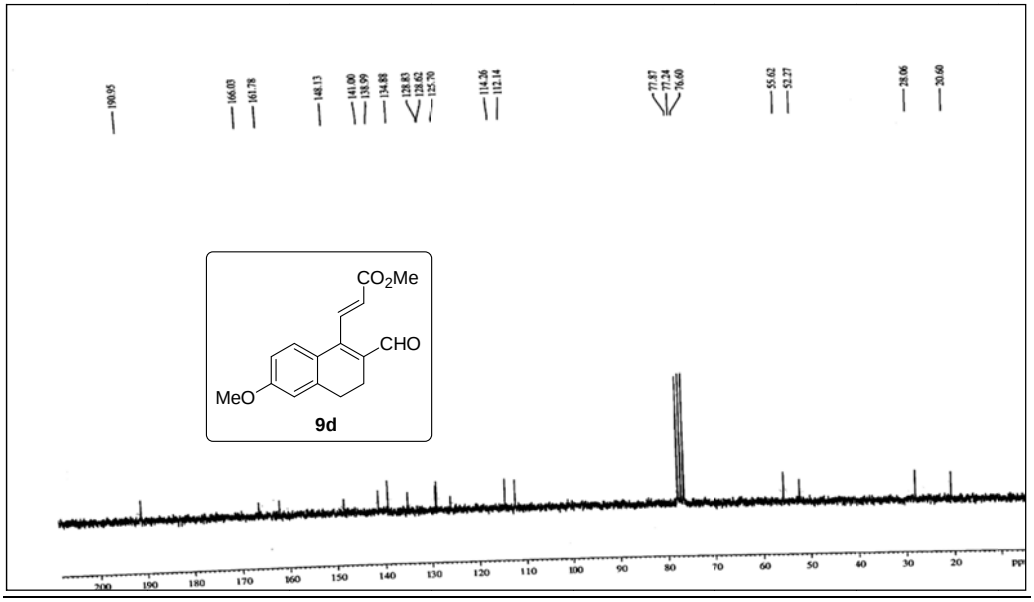
^{13}C NMR of **9c** ($CDCl_3$, 50 MHz)



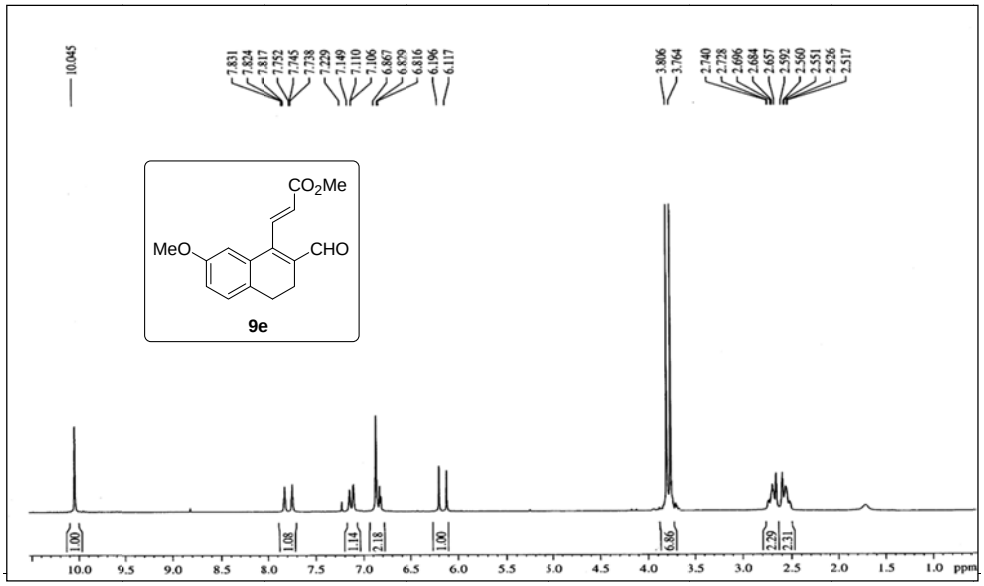
^{1}H NMR of **9d** ($CDCl_3$, 200 MHz)



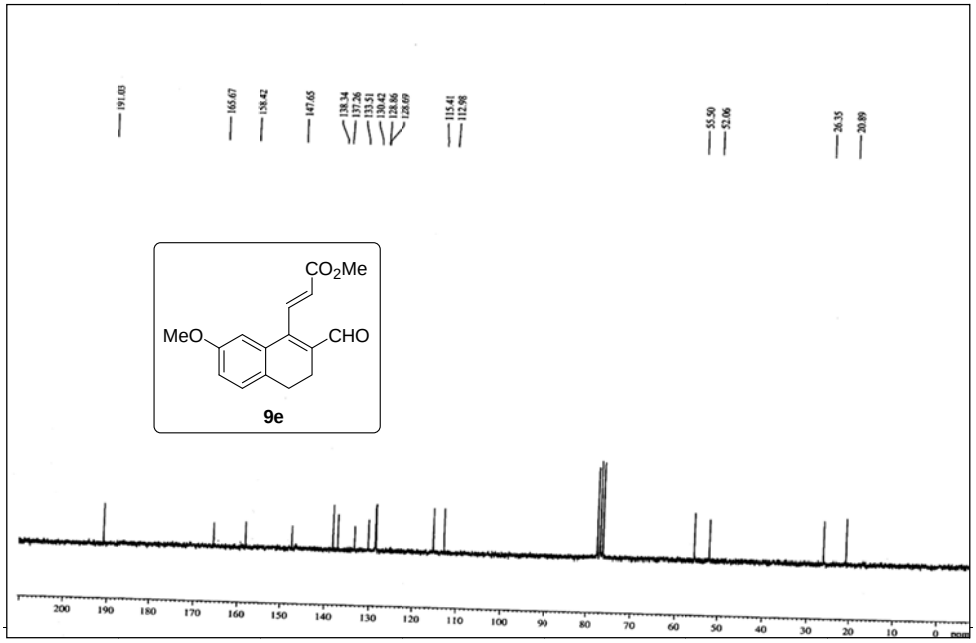
^{13}C NMR of **9d** ($CDCl_3$, 50 MHz)



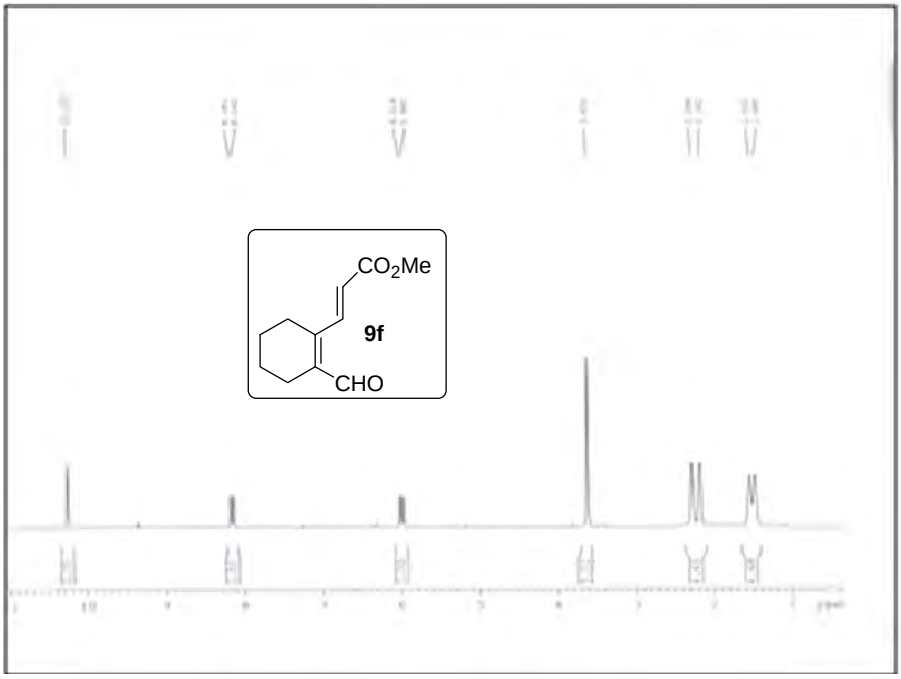
^{1}H NMR of **9e** ($CDCl_3$, 200 MHz)



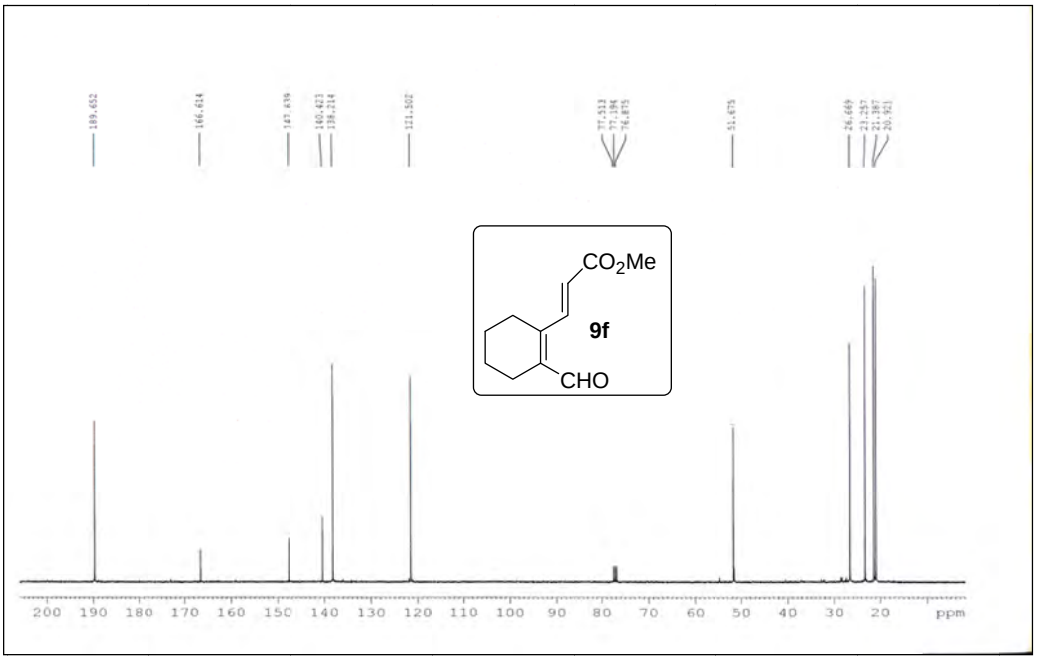
^{13}C NMR of **9e** ($CDCl_3$, 50 MHz)



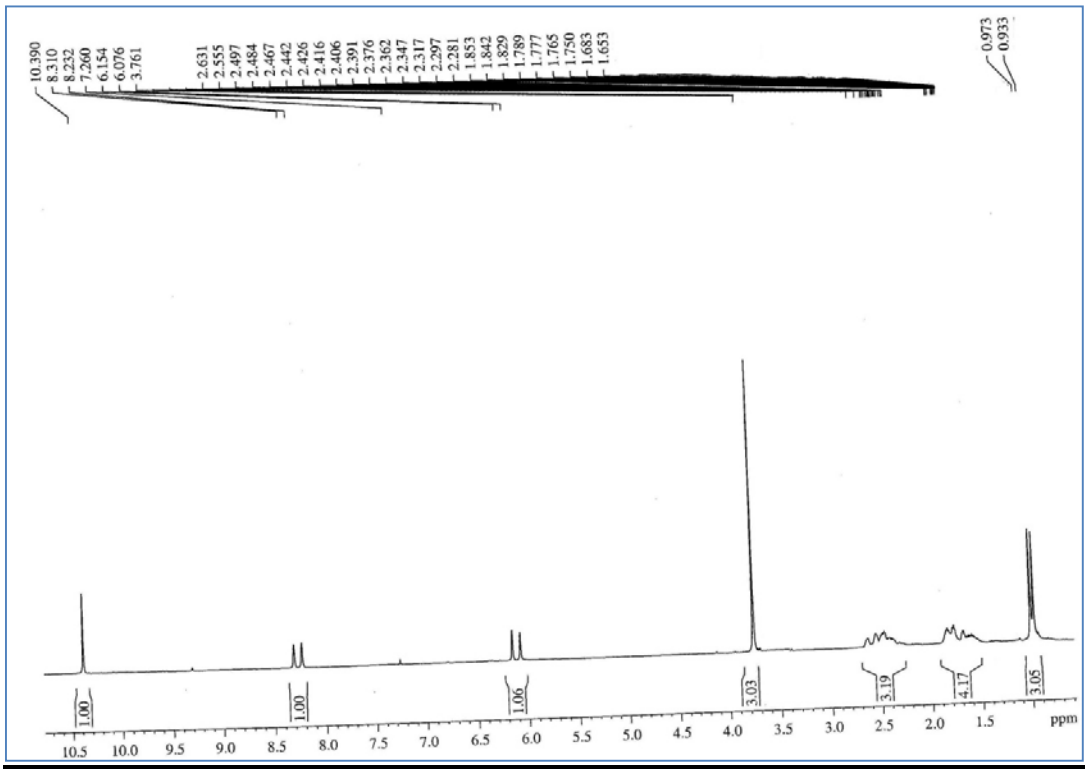
^{1}H NMR of **9f** ($CDCl_3$, 400 MHz)



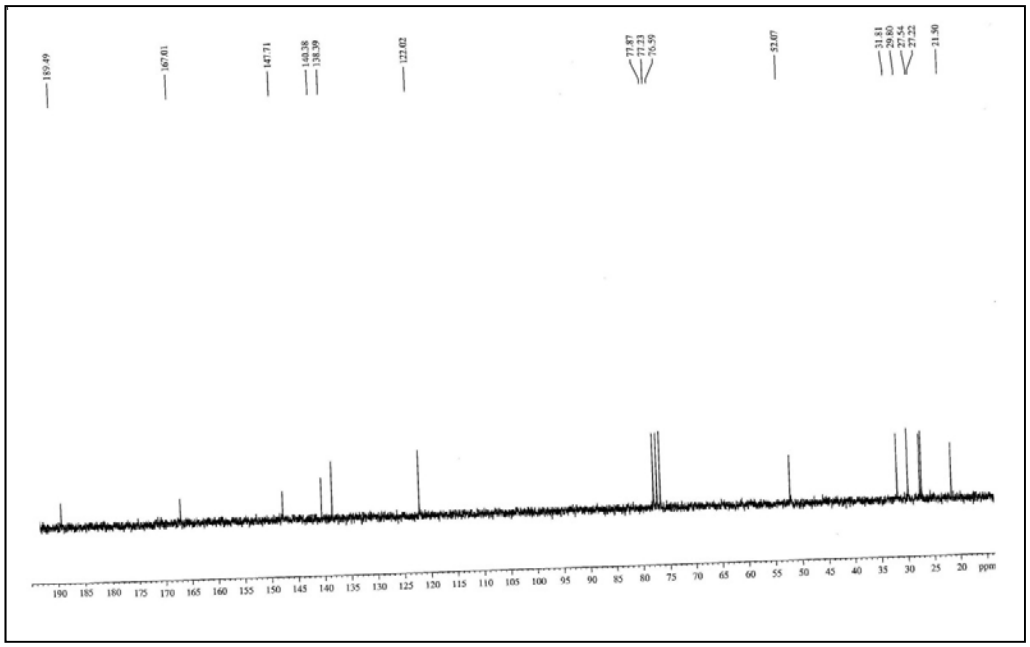
^{13}C NMR ($CDCl_3$, 100 MHz) of **9f**



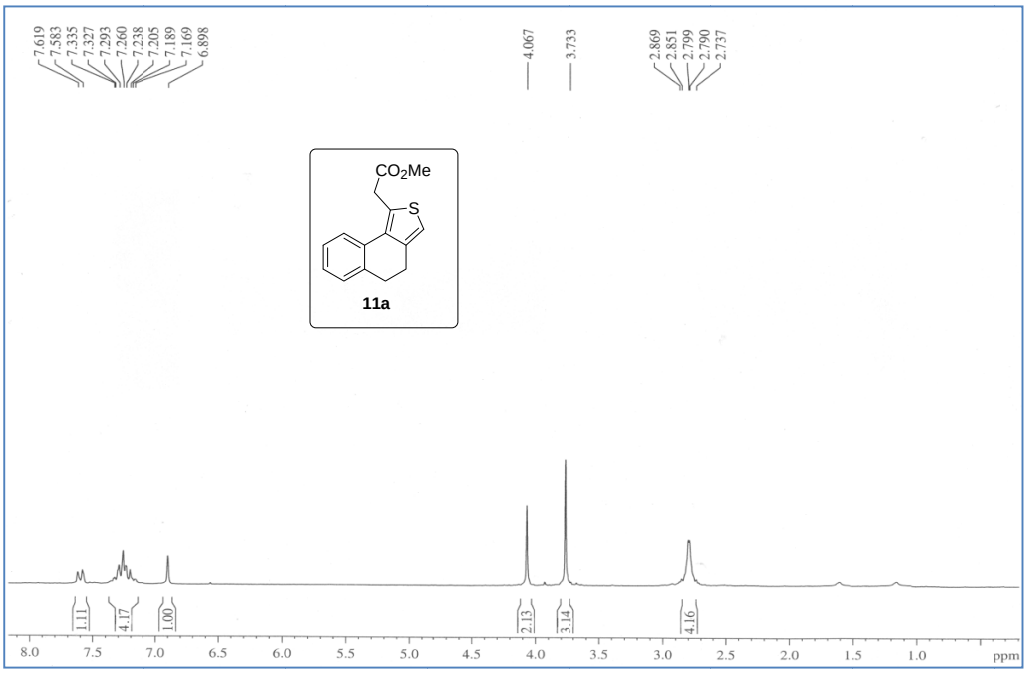
^{1}H NMR of **9g** ($CDCl_3$, 200 MHz)



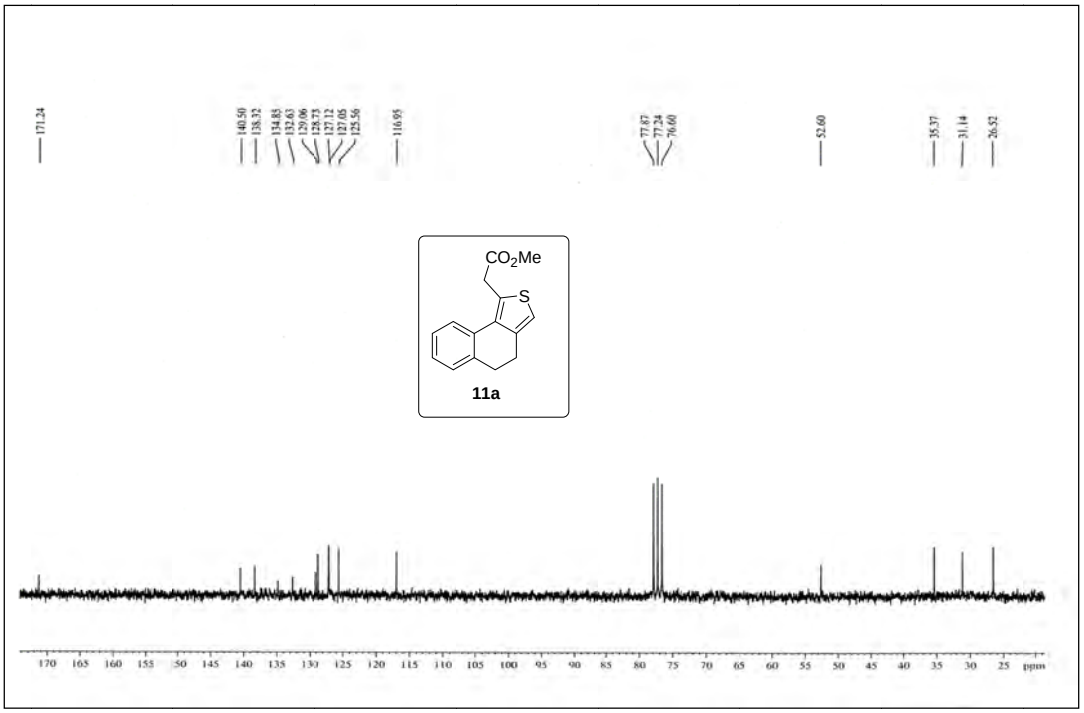
^{13}C NMR of **9g** ($CDCl_3$, 50 MHz)



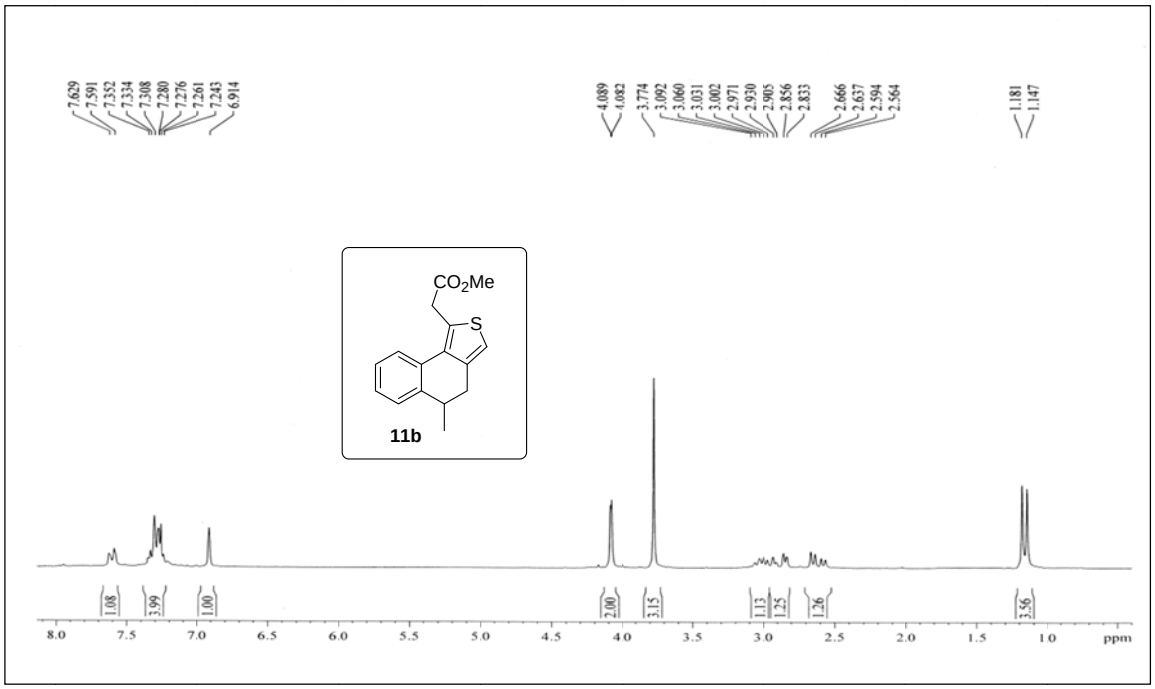
^{1}H NMR of **11a** ($CDCl_3$, 200 MHz)



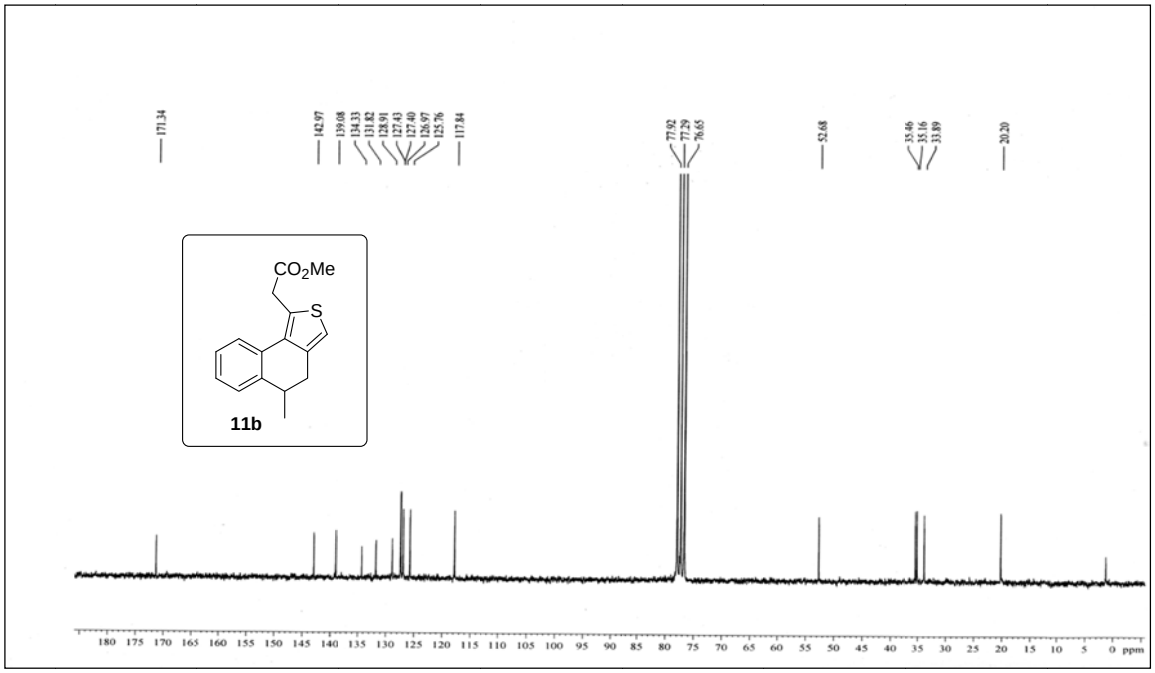
^{13}C NMR of **11a** ($CDCl_3$, 50 MHz)



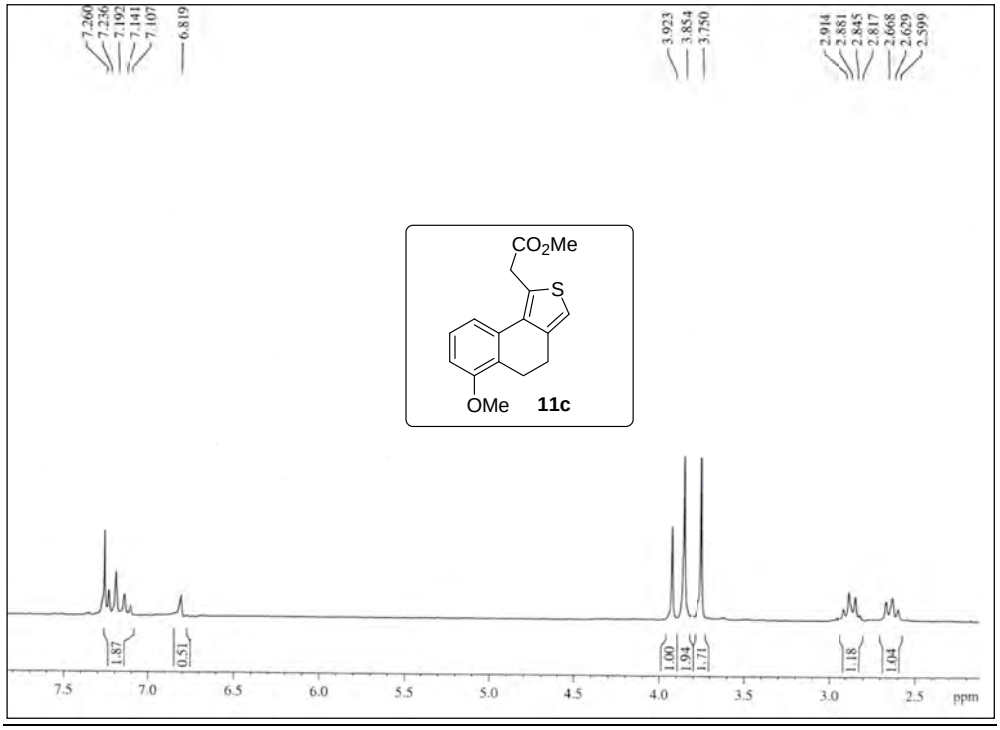
^{1}H NMR of **11b** ($CDCl_3$, 200 MHz)



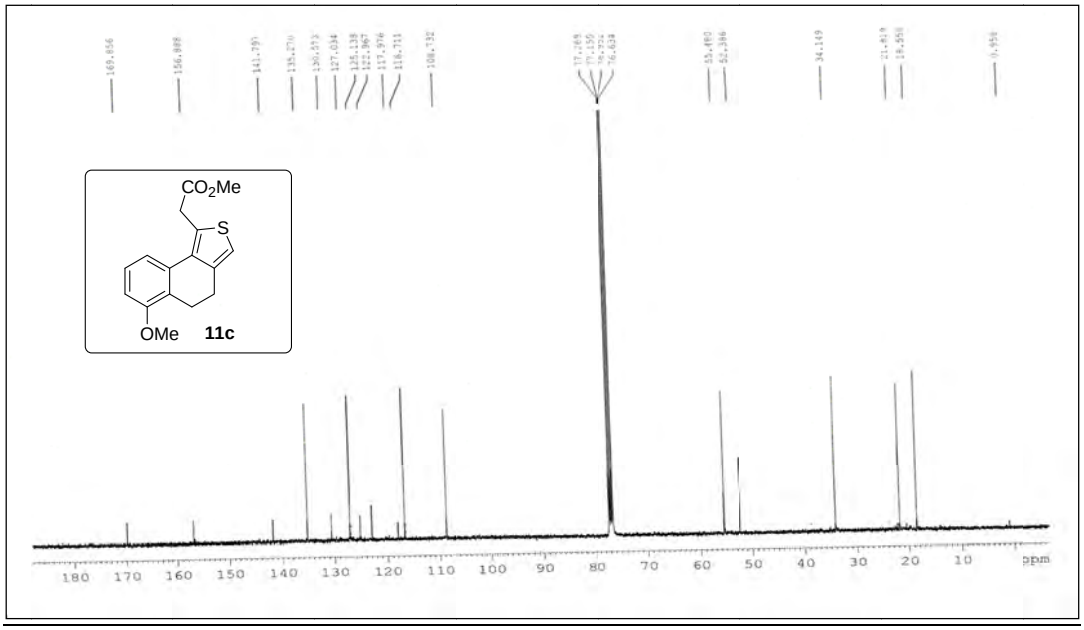
^{13}C NMR of **11b** ($CDCl_3$, 50 MHz)



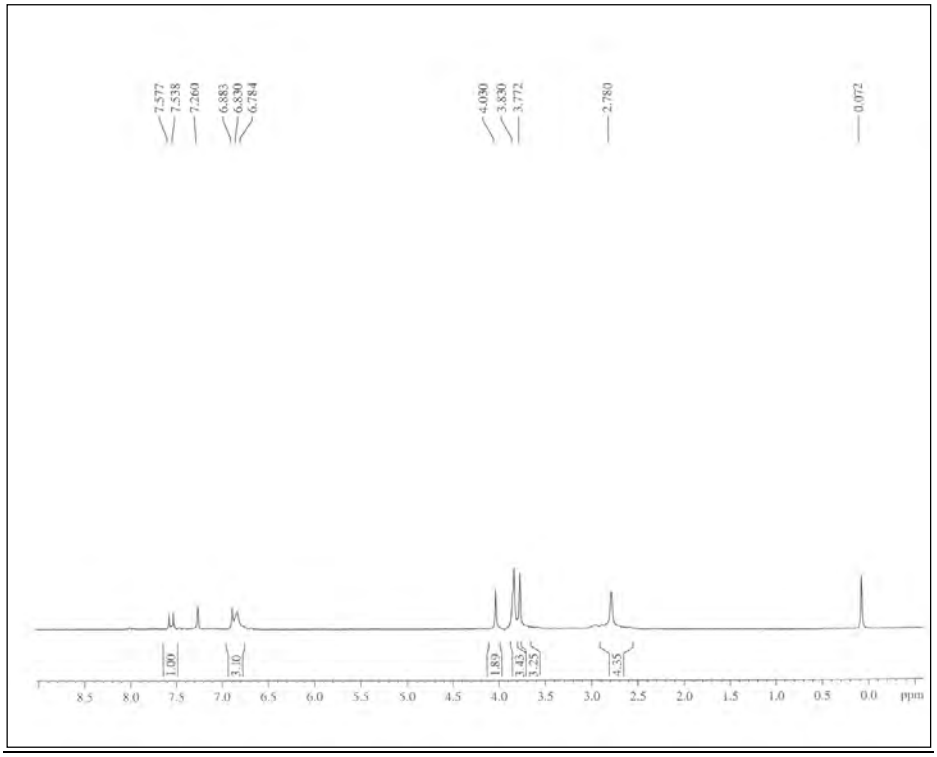
^{1}H NMR of **11c** ($CDCl_3$, 200 MHz)



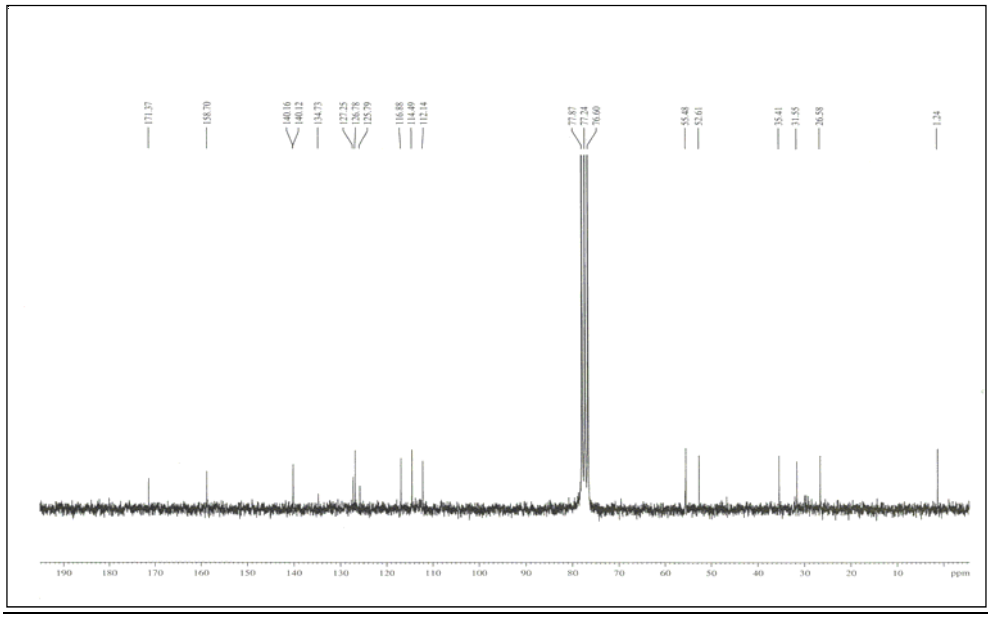
^{13}C NMR of **11c** ($CDCl_3$, 100 MHz)



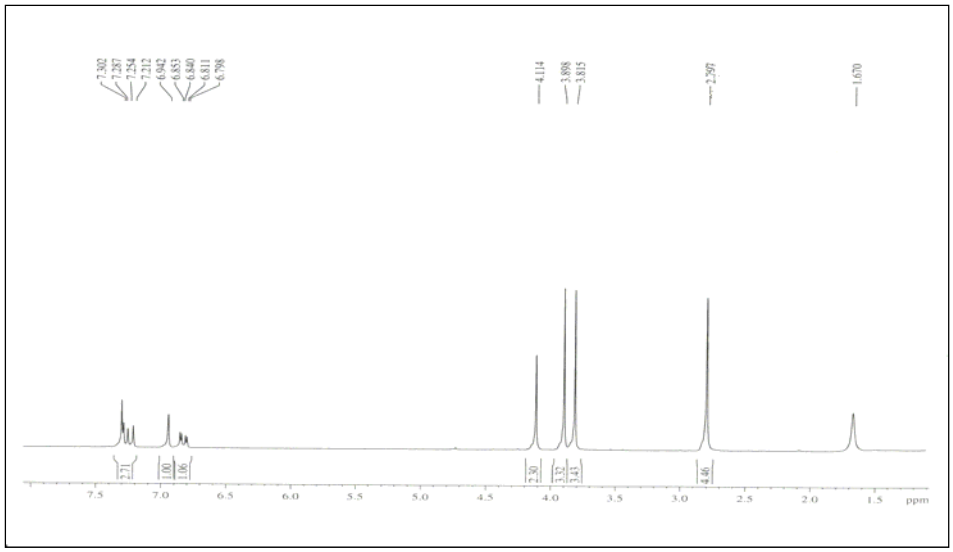
^{1}H NMR of **11d** ($CDCl_3$, 200 MHz)

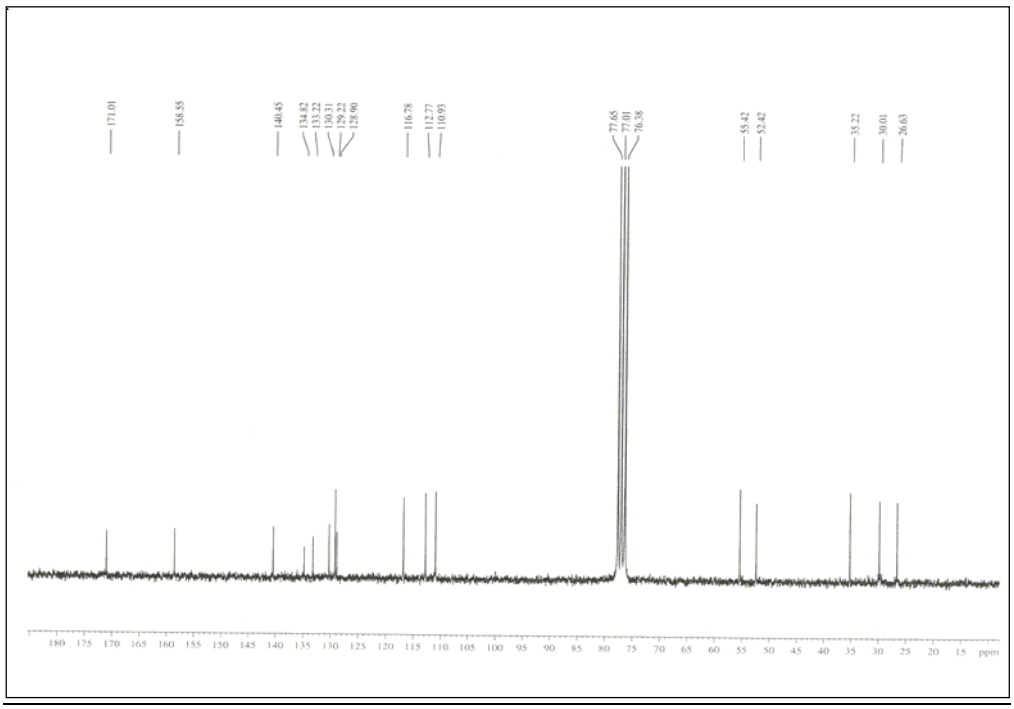


^{13}C NMR of **11d** ($CDCl_3$, 50 MHz)

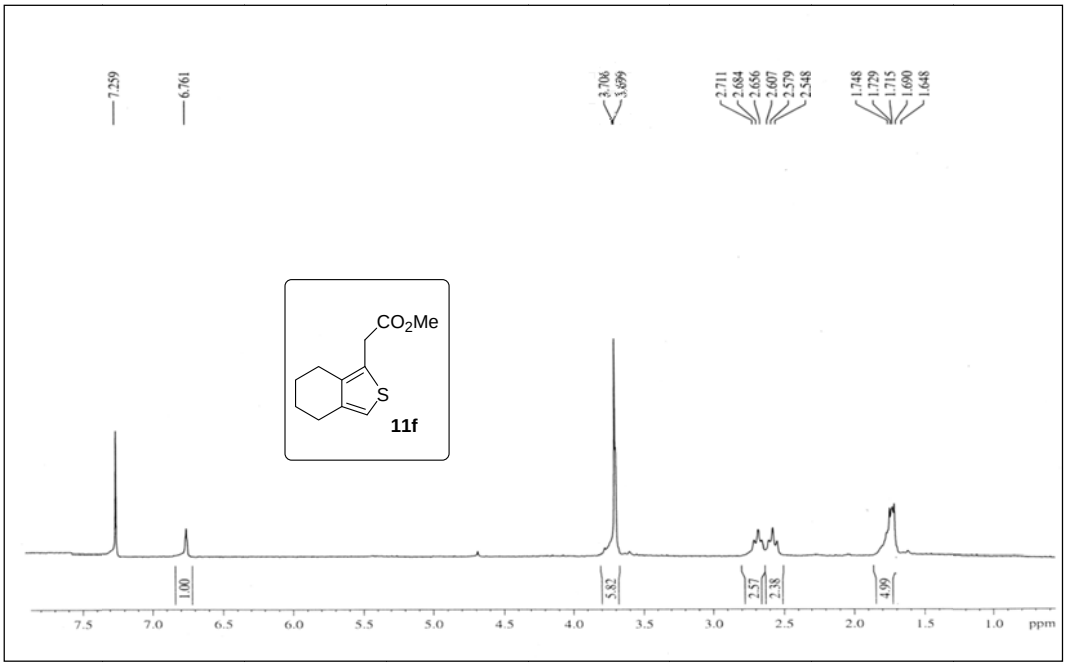


^{1}H NMR ($CDCl_3$, 200 MHz) and ^{13}C NMR ($CDCl_3$, 50 MHz) of **11e**

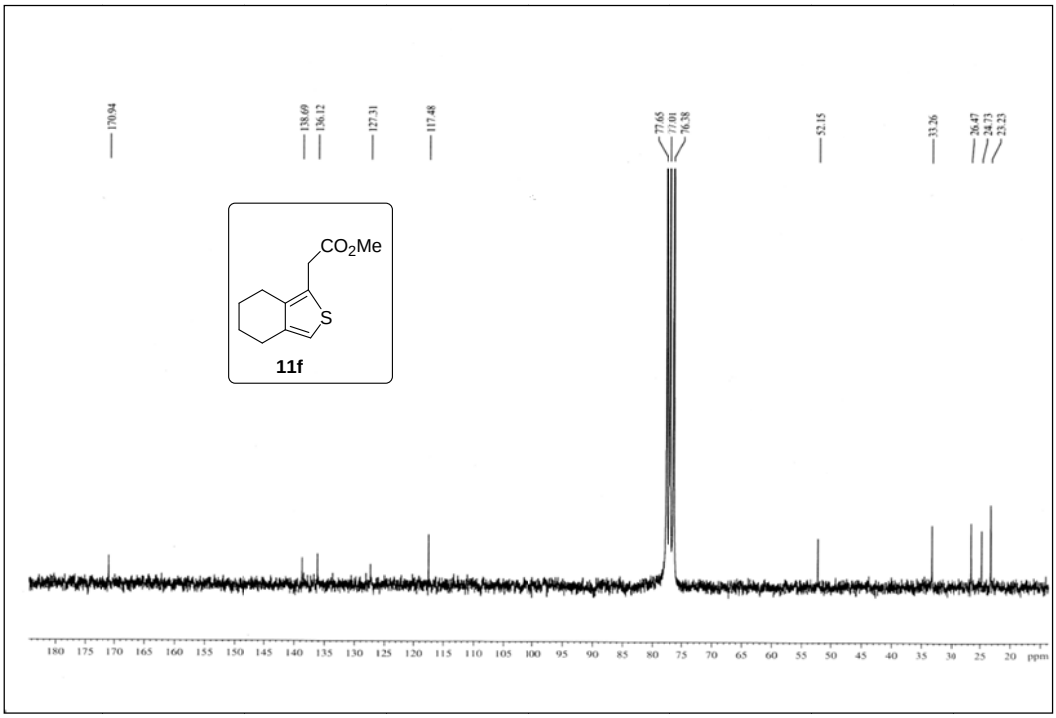




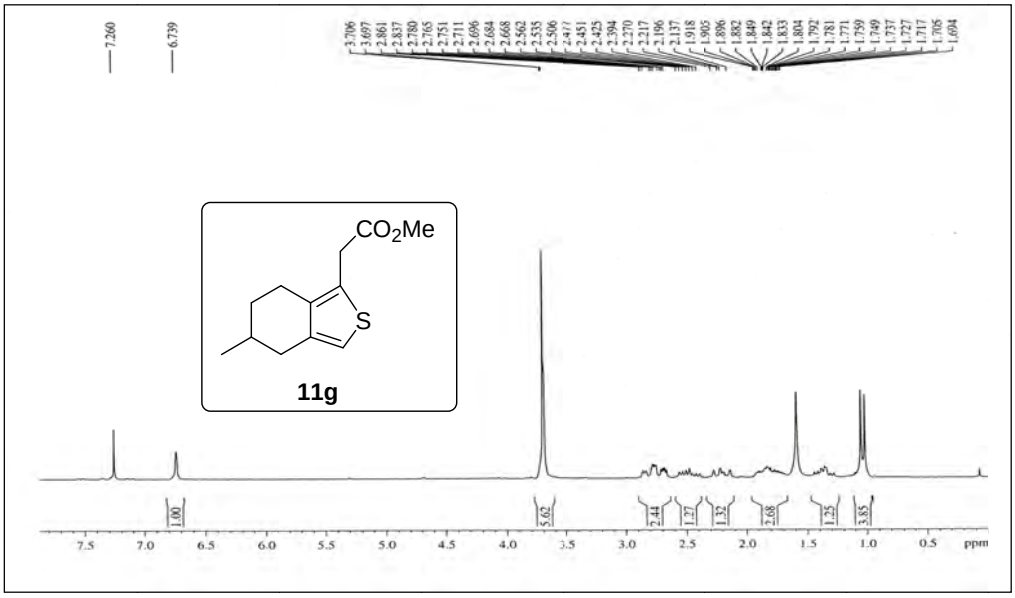
^{1}H NMR of **11f** ($CDCl_3$, 200 MHz)



^{13}C NMR of 1**1f** ($CDCl_3$, 50 MHz)



^{1}H NMR of **11g** ($CDCl_3$, 200 MHz)



^{13}C NMR ($CDCl_3$, 50 MHz) of **11g**