

Supplementary Information

Solvent-free Knoevenagel Reaction Catalyzed by Reusable Pyrrolidinium Based Protic Ionic Liquids (PyrrILs): synthesis of long chain alkylidenes

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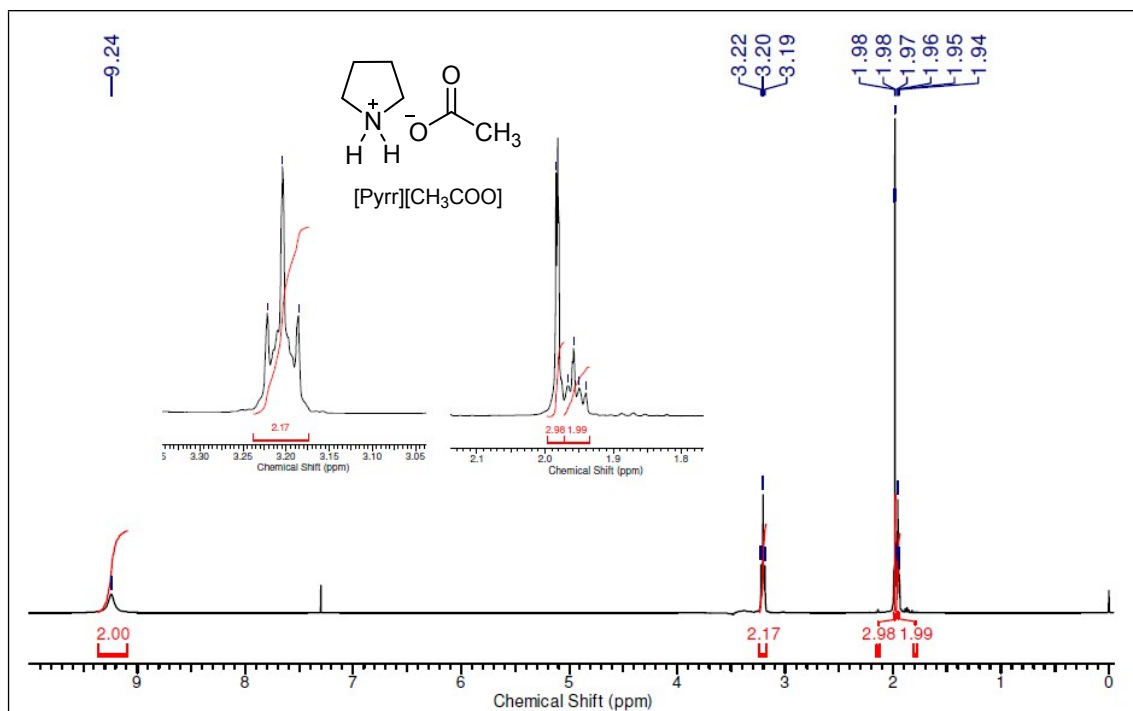


Figure S1. ¹H NMR spectrum (CDCl₃, 400 MHz) of [Pyr][CH₃COO] (2).¹

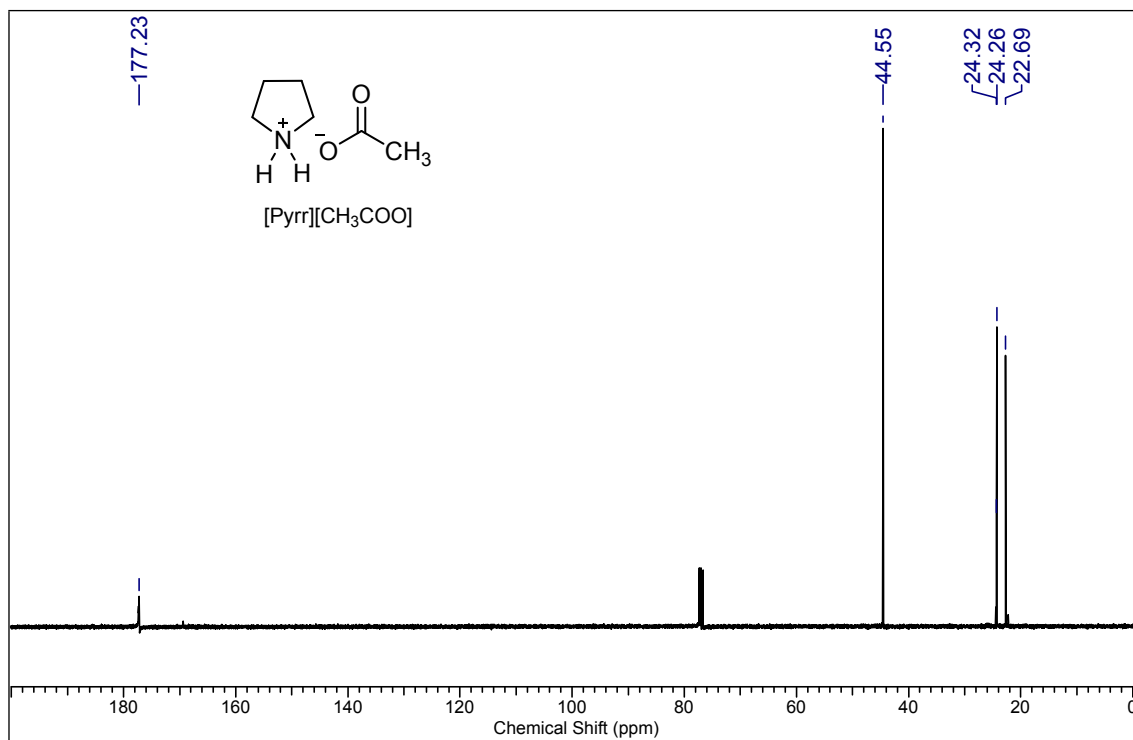


Figure S2. ¹³C NMR spectrum (CDCl₃, 100 MHz) of [Pyr][CH₃COO] (2).

1. M. Anouti, M. Caillon-Caravanier, Y. Dridi, H. Galiano and D. Lemordant, *J. Phys. Chem. B*, 2008, **112**, 13335.

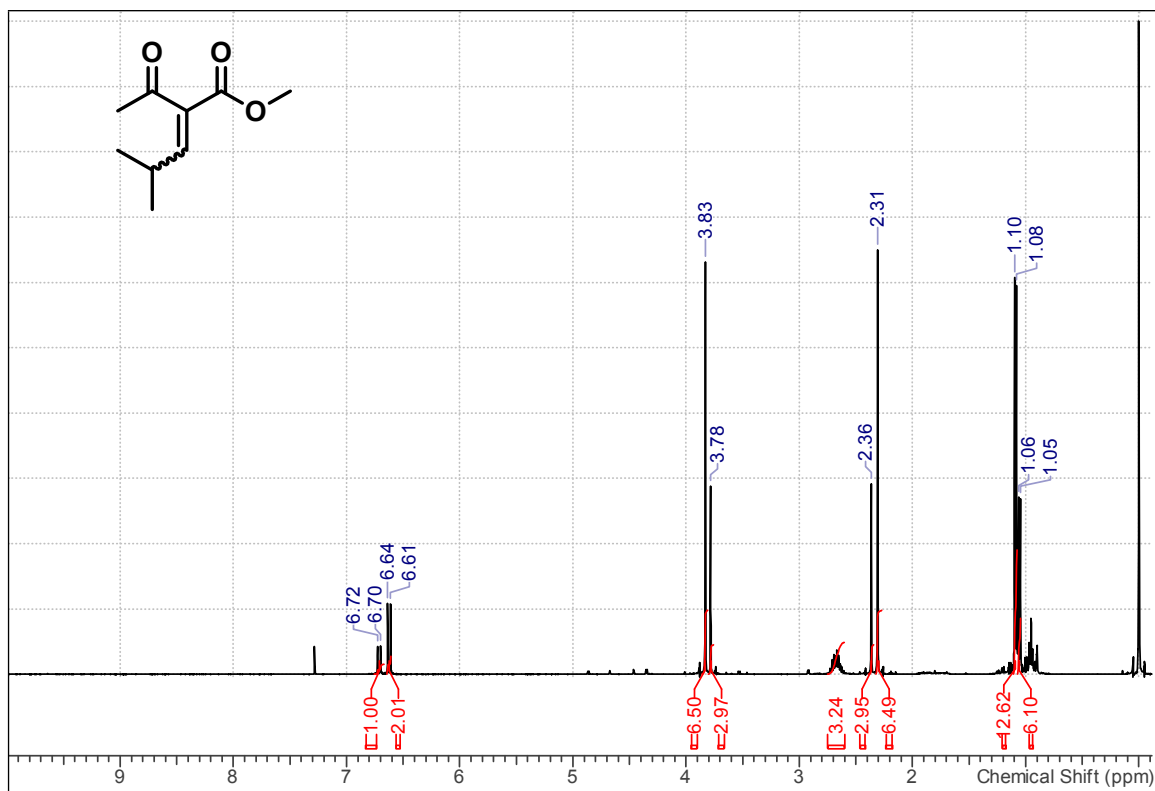


Figure S3. ^1H NMR spectrum (CDCl_3 , 400 MHz) of 6a.

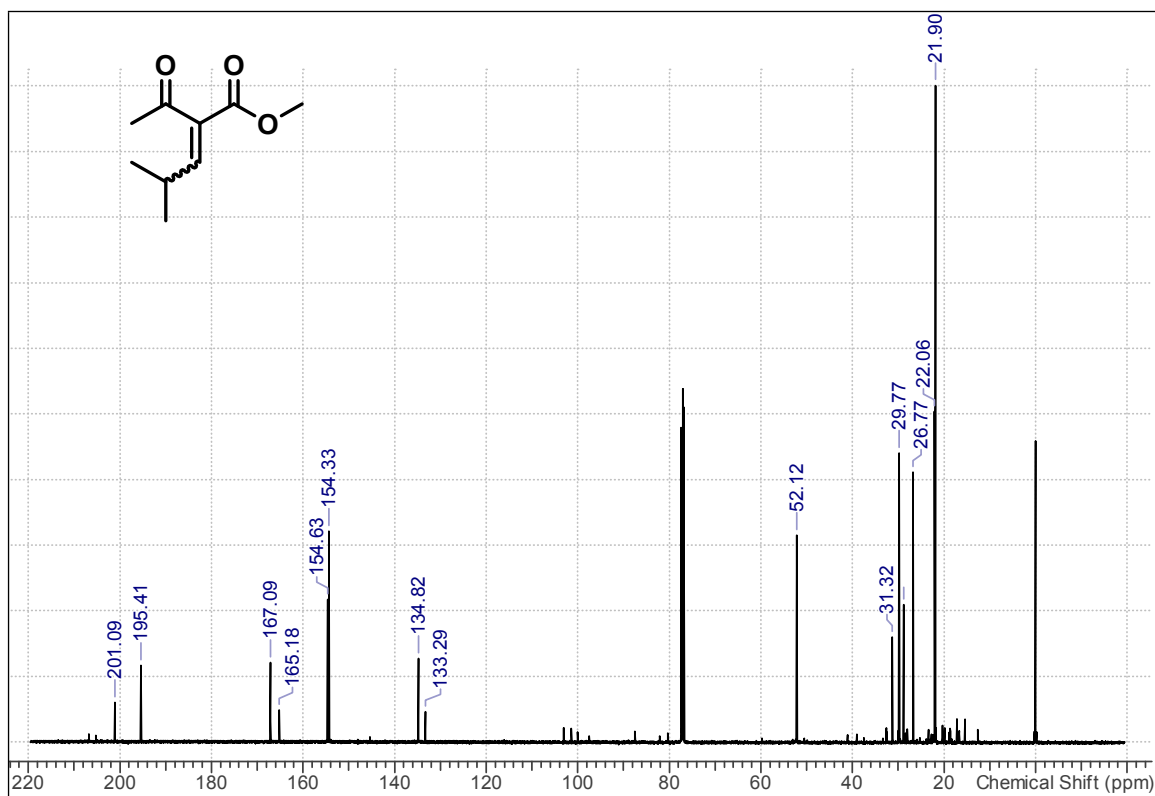


Figure S4. ^{13}C NMR spectrum (CDCl_3 , 100 MHz) of 6a.

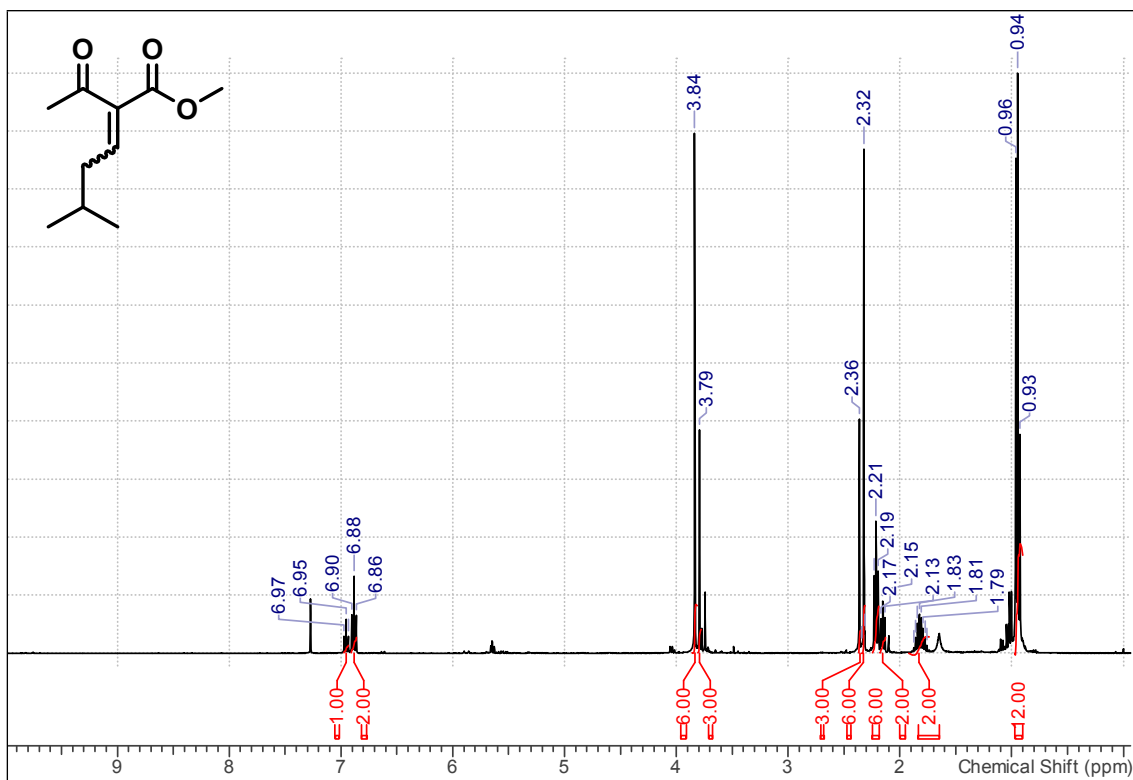


Figure S5. ¹H NMR spectrum (CDCl₃, 400 MHz) of 6b.

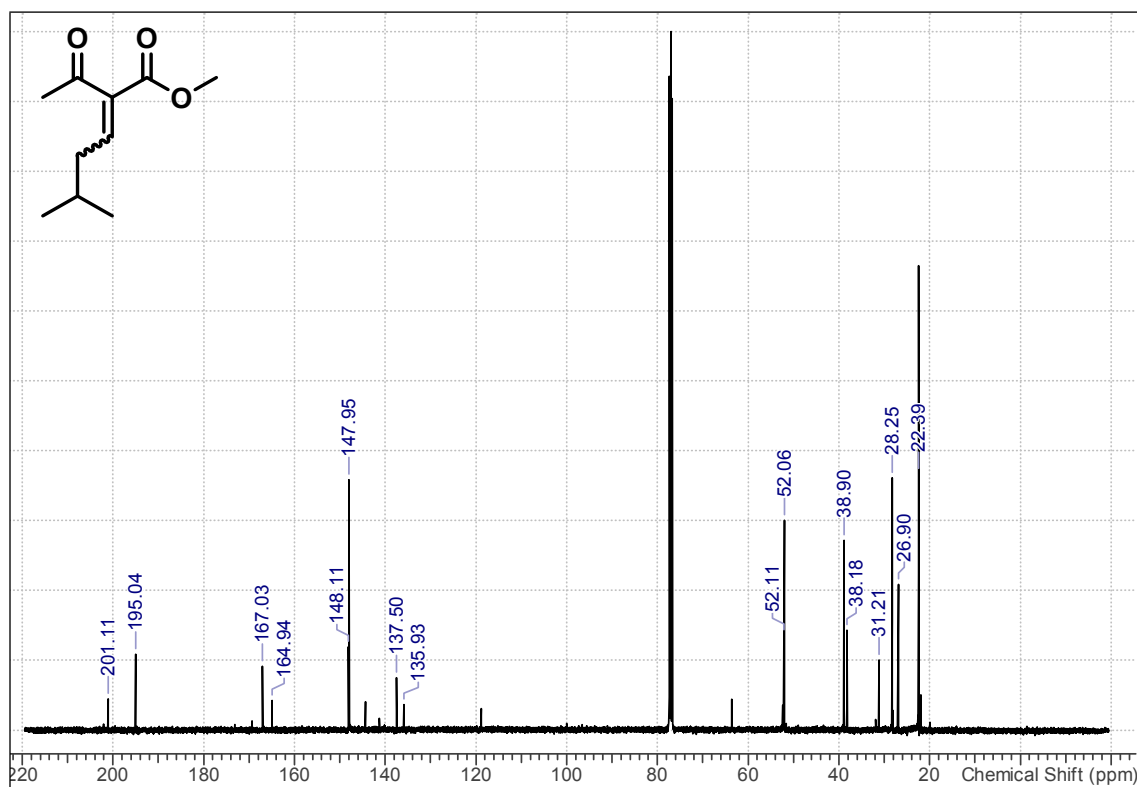


Figure S6. ¹³C NMR spectrum (CDCl₃, 100 MHz) of 6b.

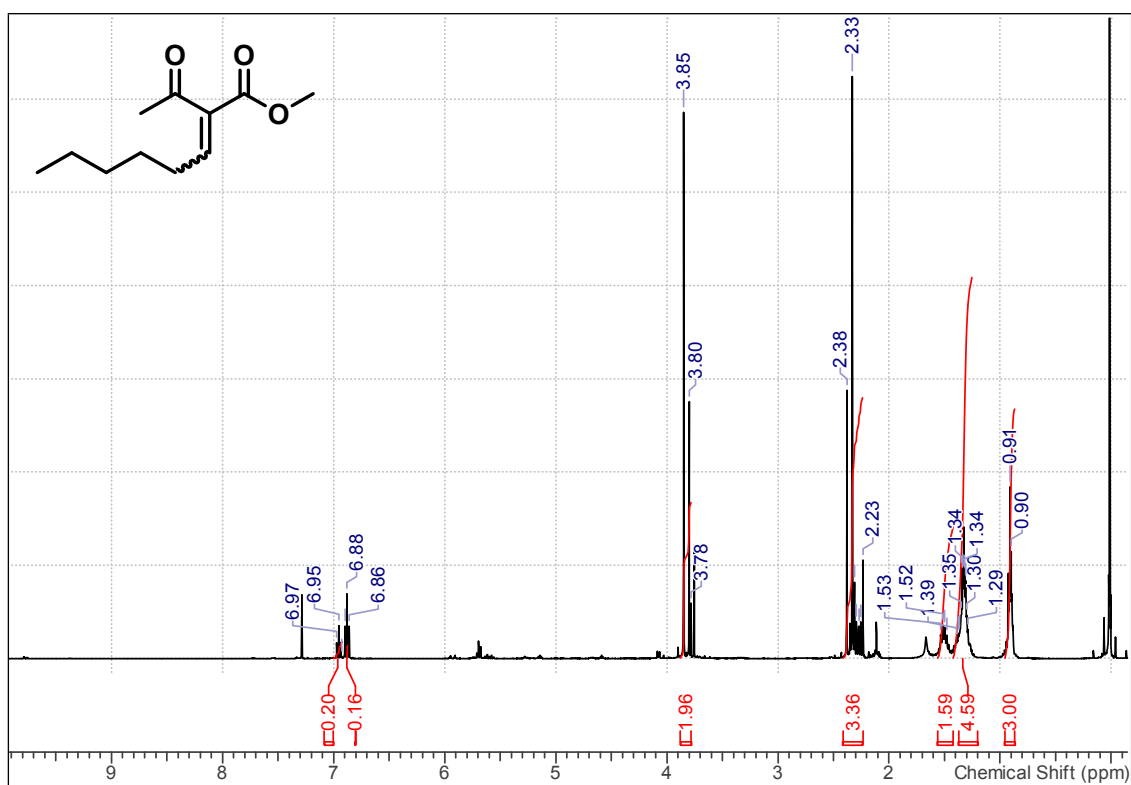


Figure S7. ¹H NMR spectrum (CDCl₃, 400 MHz) of **6c**.

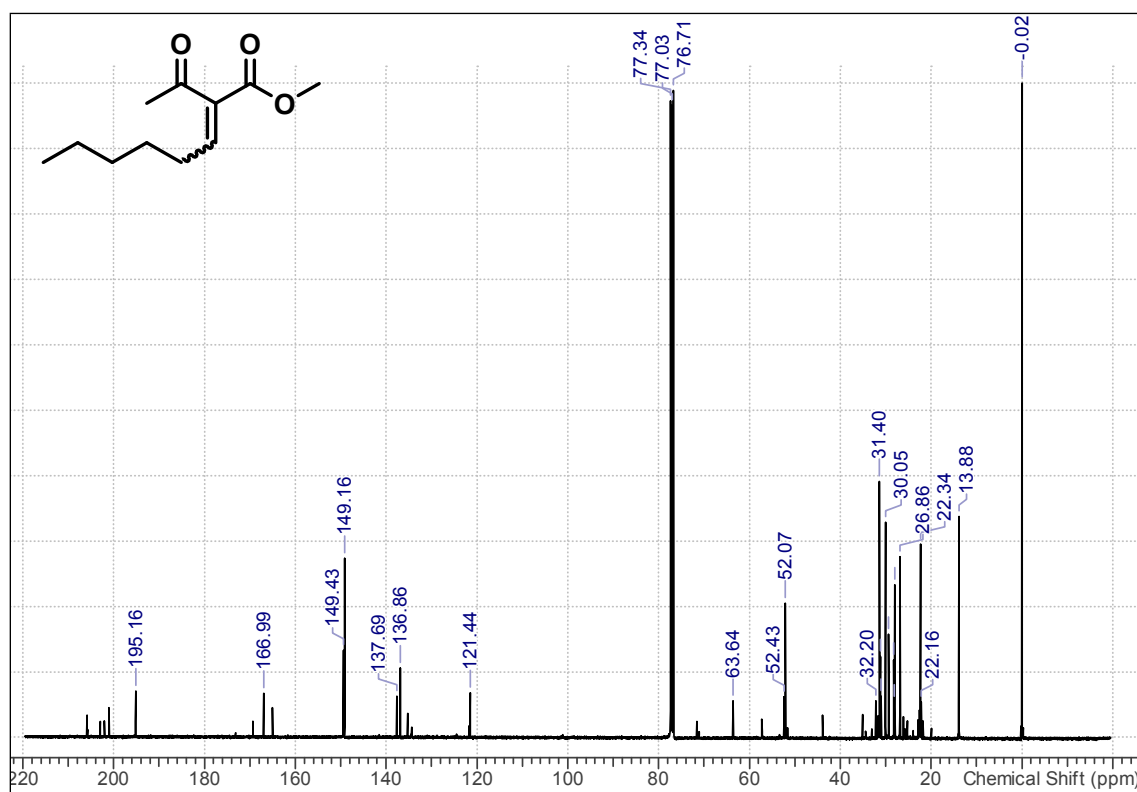


Figure S8. ¹³C NMR spectrum (CDCl₃, 100 MHz) of **6c**.

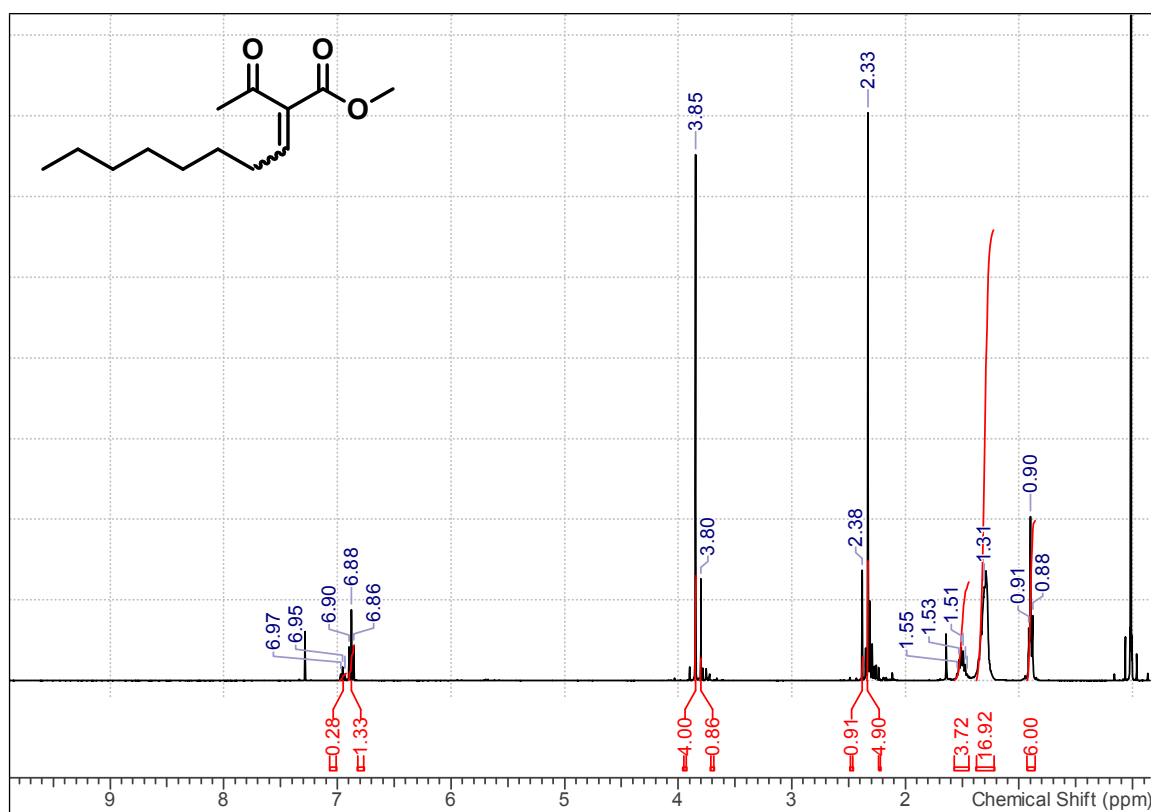


Figure S9. ¹H NMR spectrum (CDCl₃, 400 MHz) of 6d.

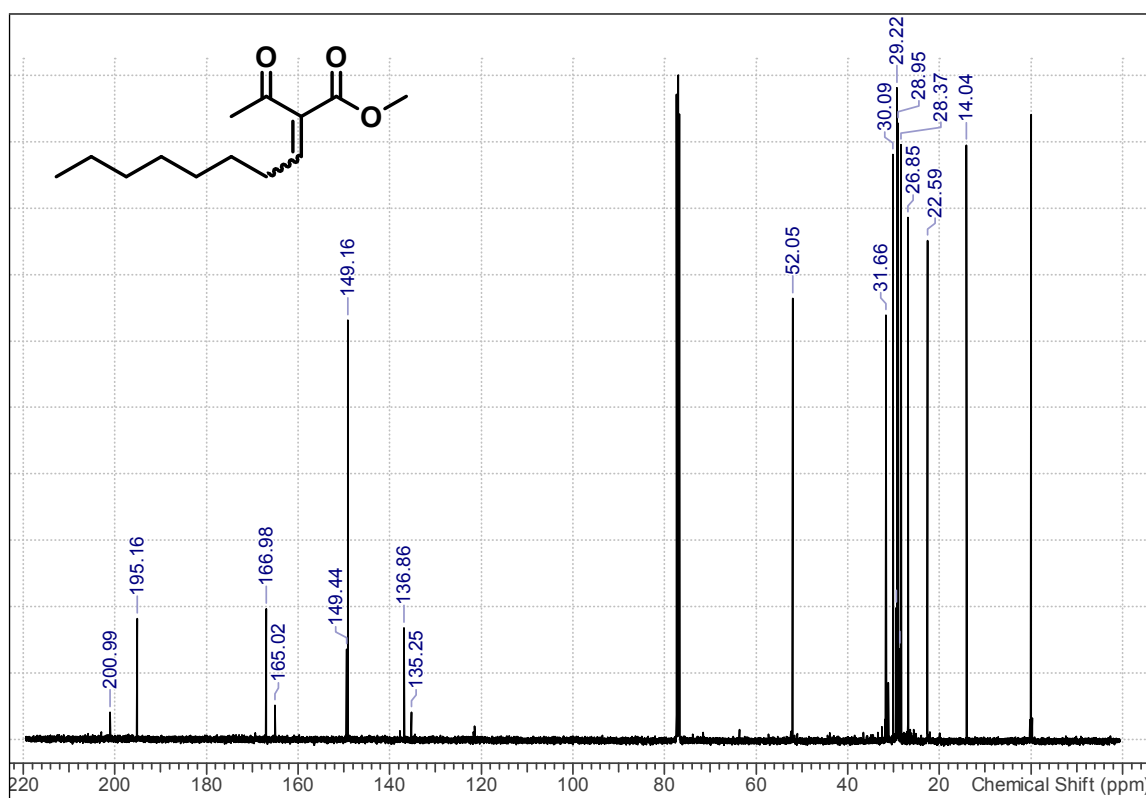


Figure S10. ¹³C NMR spectrum (CDCl₃, 100 MHz) of 6d.

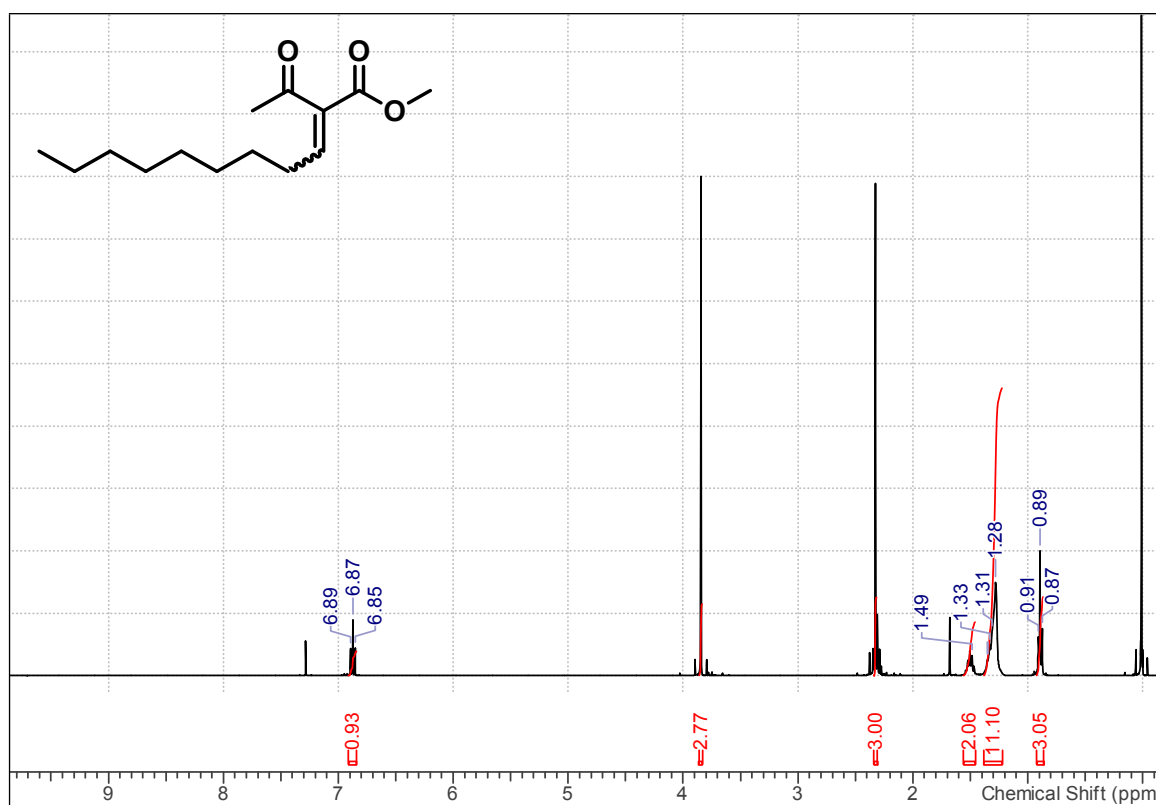


Figure S11. ^1H NMR spectrum (CDCl_3 , 400 MHz) of **6e**.

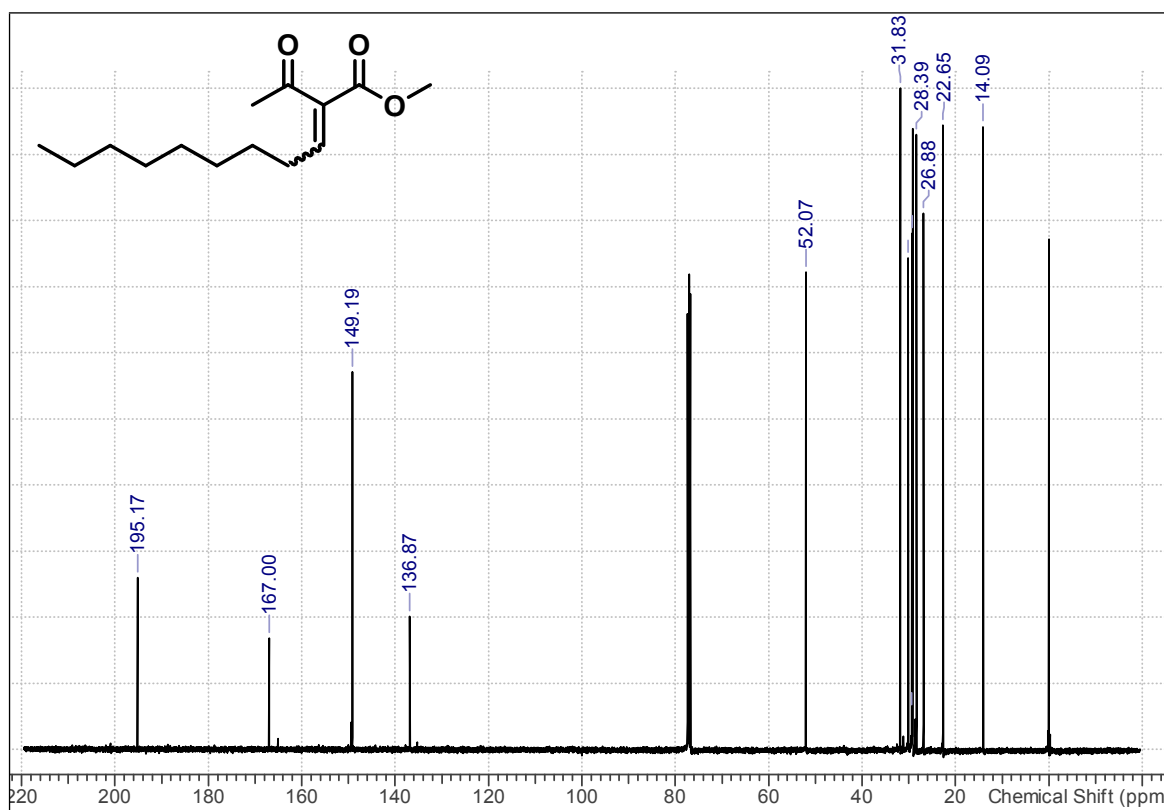


Figure S12. ^{13}C NMR spectrum (CDCl_3 , 100 MHz) of **6e**.

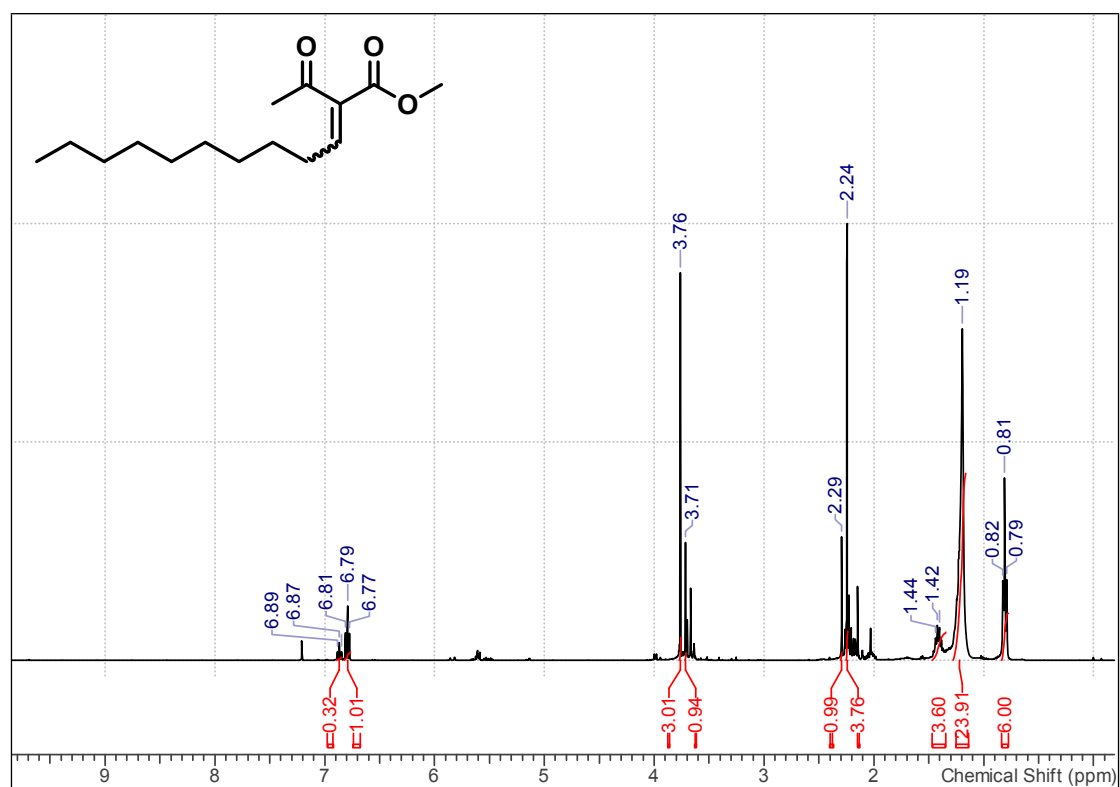


Figure S13. ¹H NMR spectrum (CDCl₃, 400 MHz) of 6f.

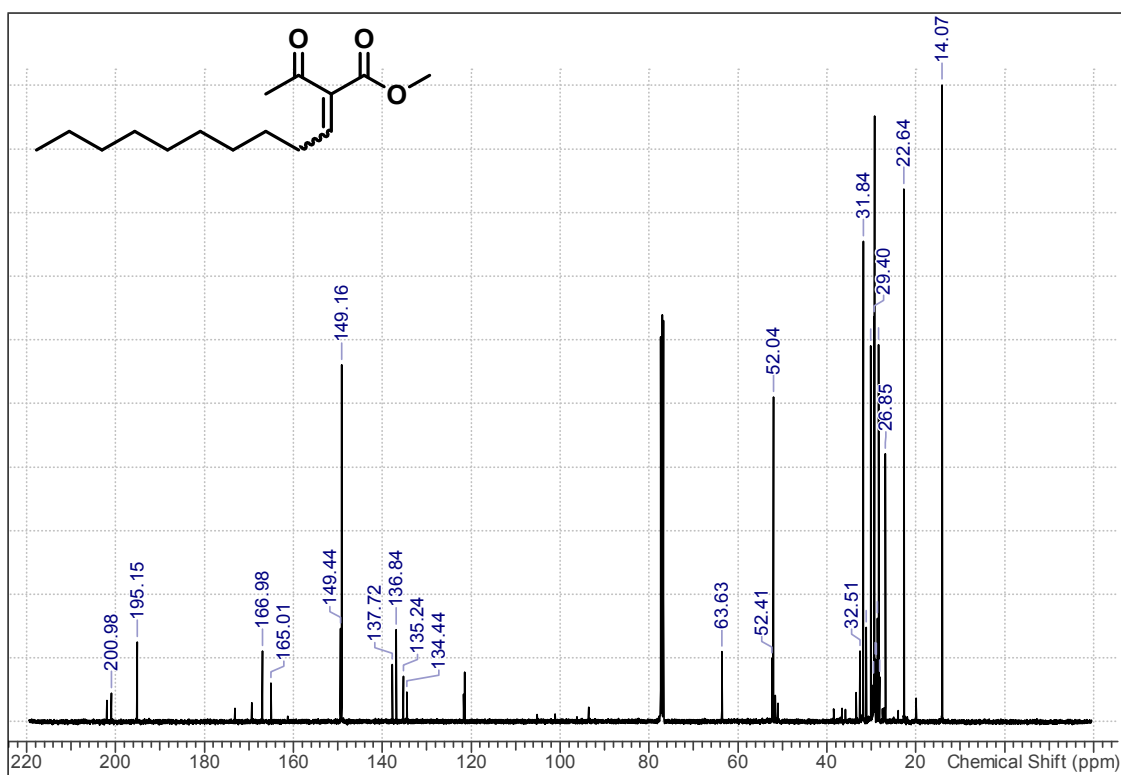


Figure S14. ¹³C NMR spectrum (CDCl₃, 100 MHz) of 6f.

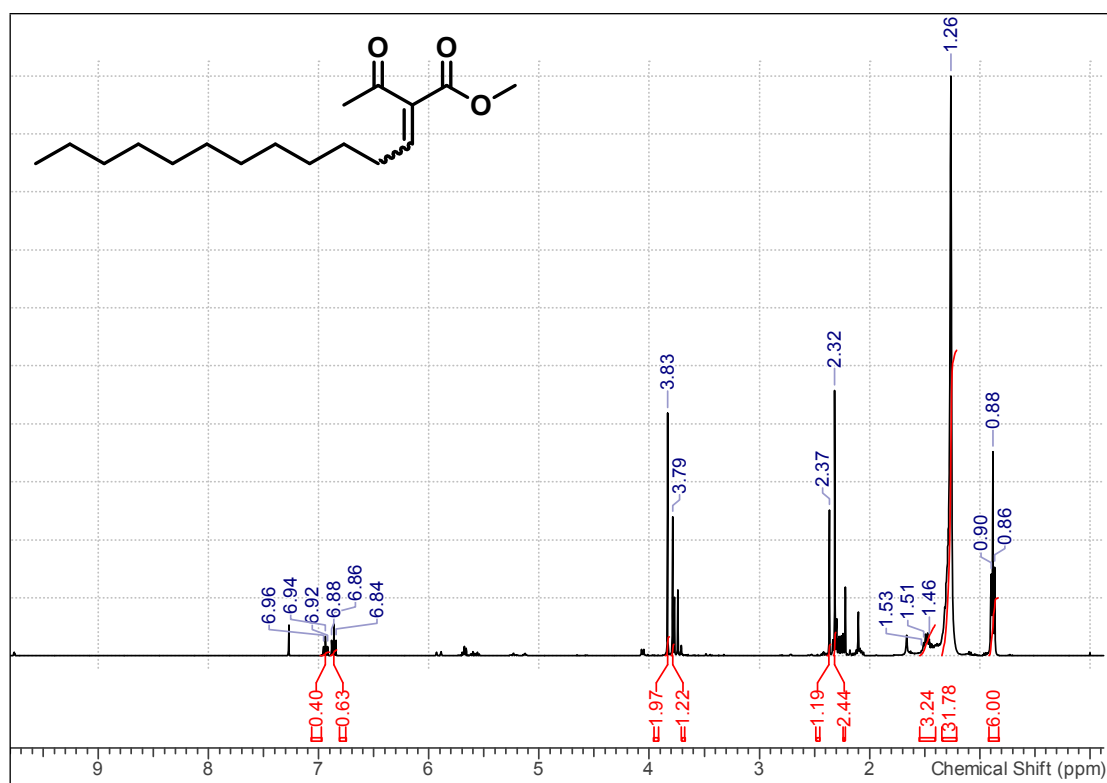


Figure S15. ¹H NMR spectrum (CDCl₃, 400 MHz) of **6g**.

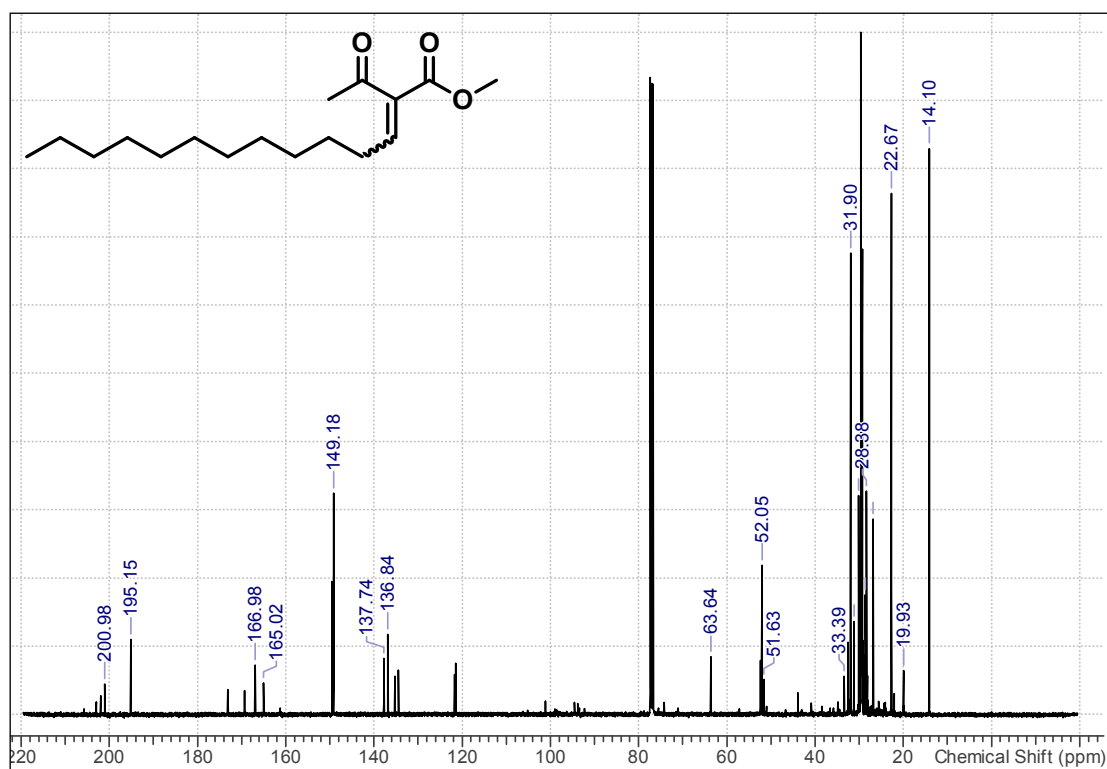


Figure S16. ¹³C NMR spectrum (CDCl₃, 100 MHz) of **6g**.

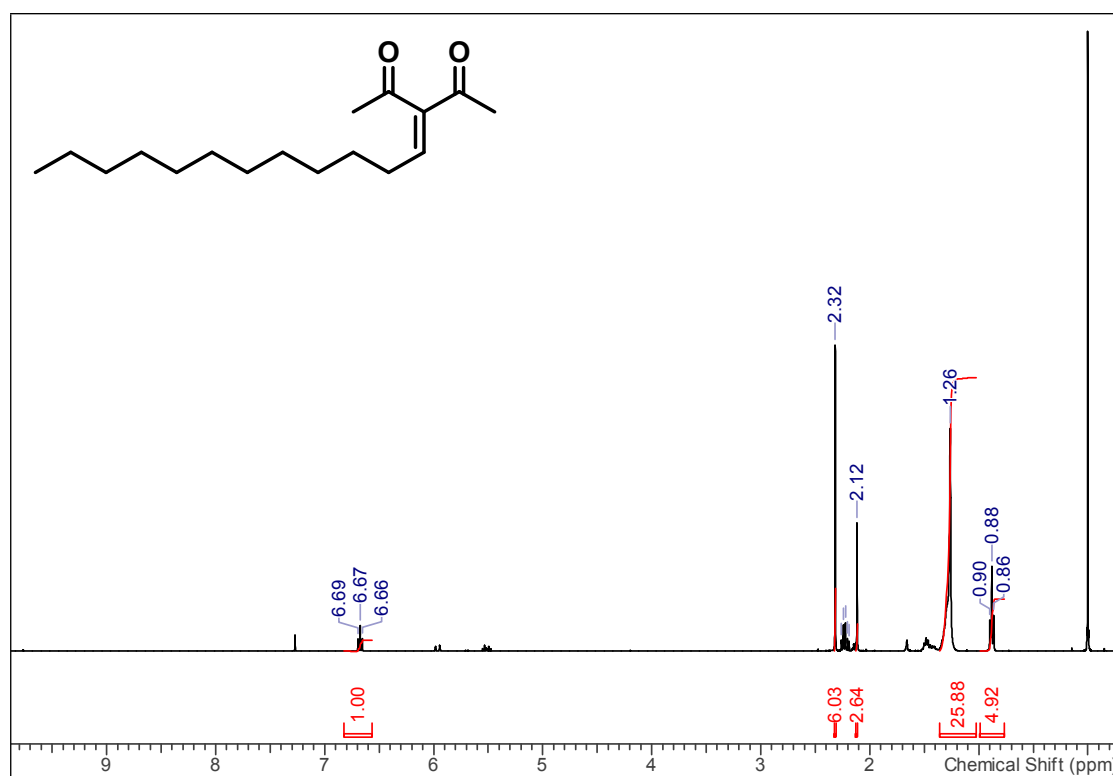


Figure S17. ¹H NMR spectrum (CDCl₃, 400 MHz) of **6h**.

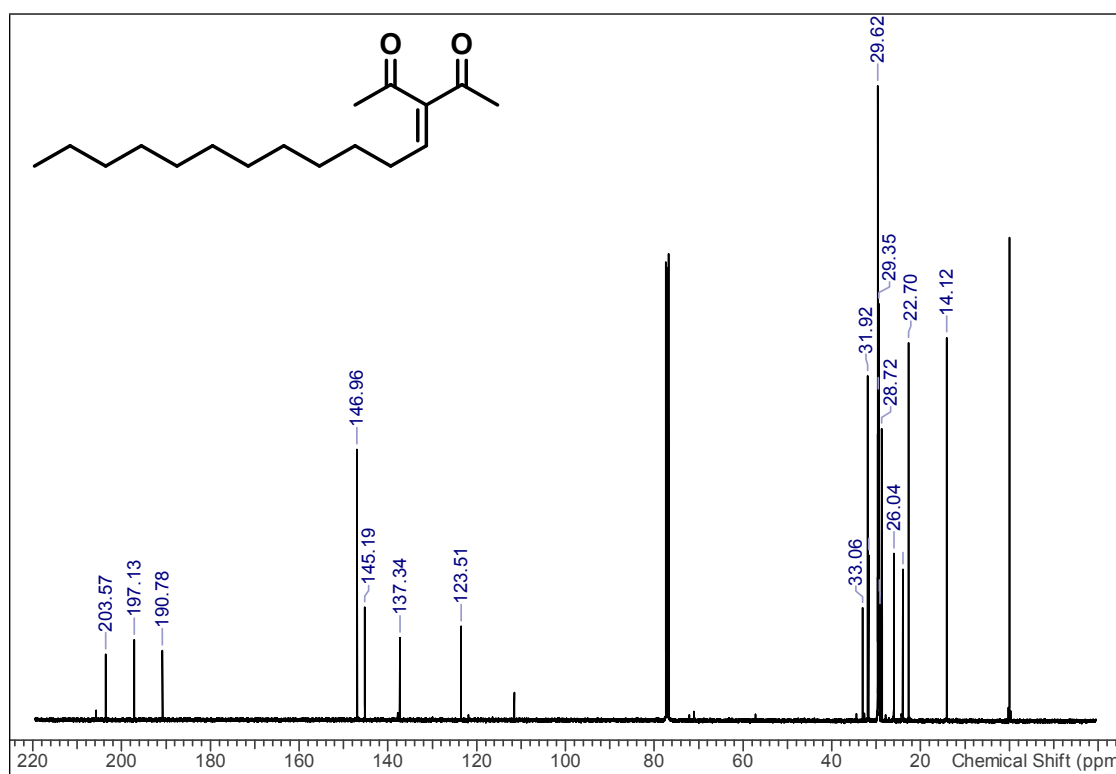


Figure S18. ¹³C NMR spectrum (CDCl₃, 100 MHz) of **6h**.

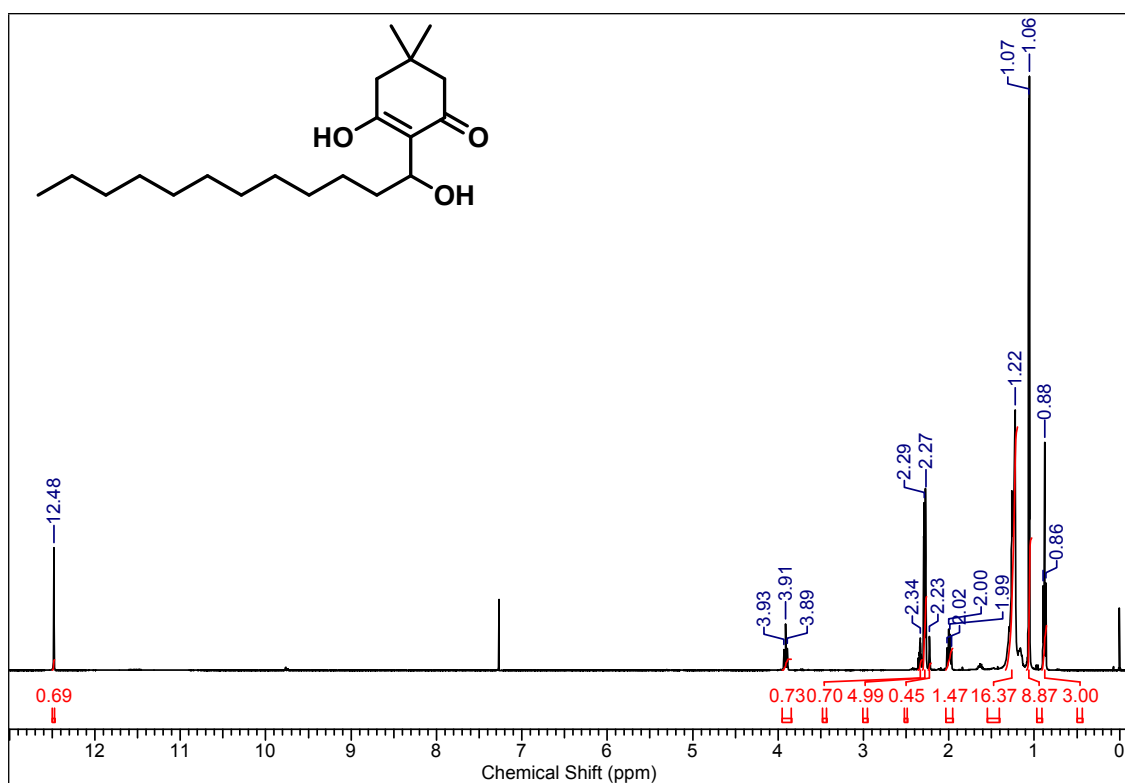


Figure S19. ¹H NMR spectrum (CDCl₃, 400 MHz) of **6i** (enol form).

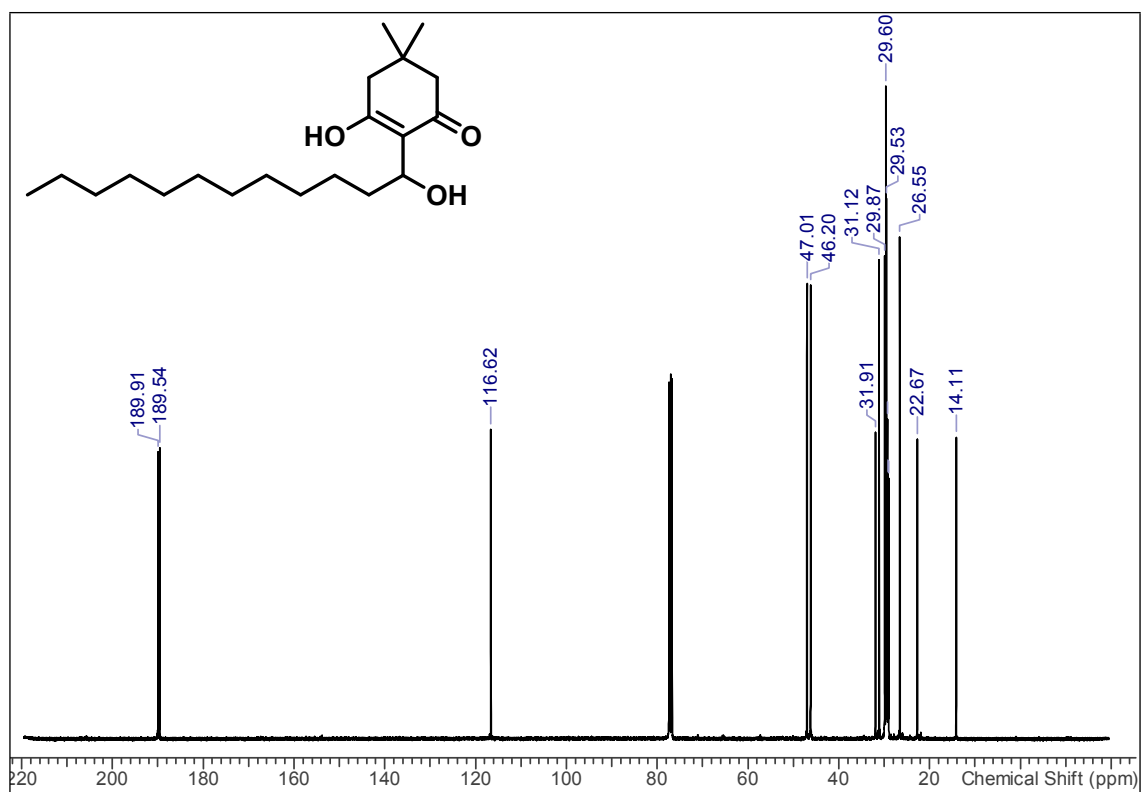


Figure S20. ¹³C NMR spectrum (CDCl₃, 100 MHz) of **6i** (enol form).

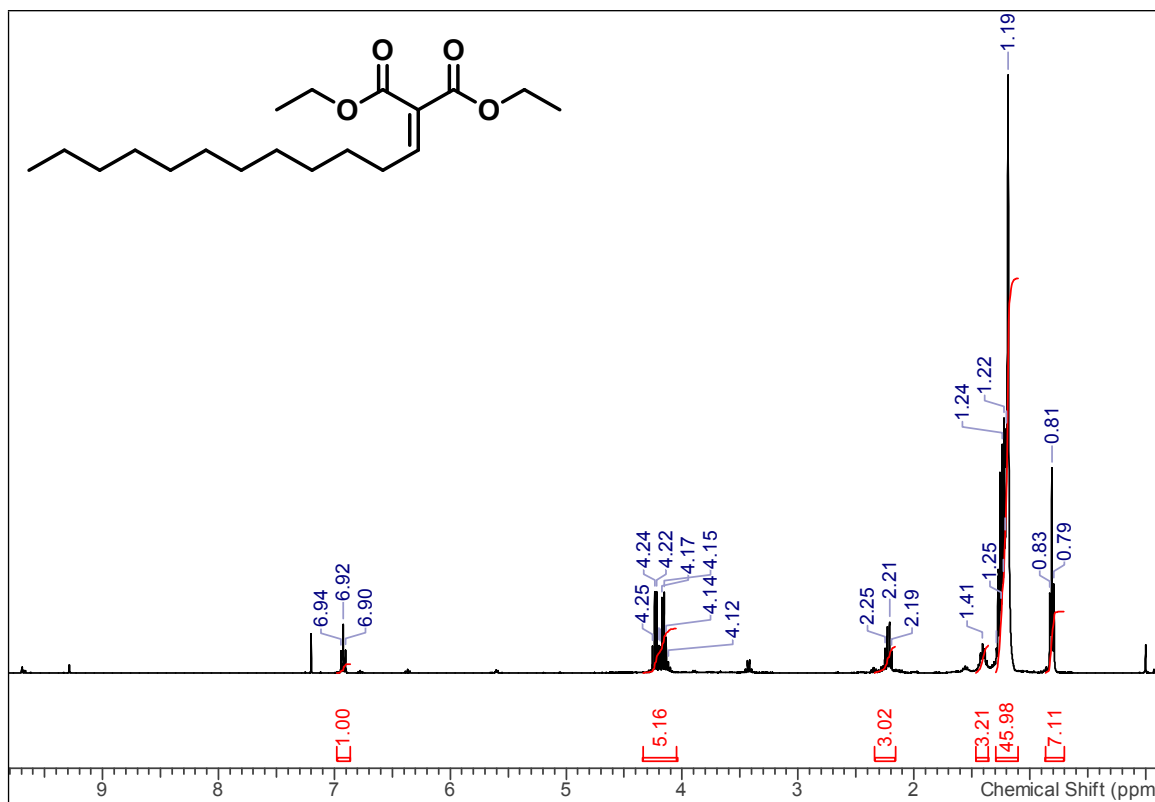


Figure S21. ¹H NMR spectrum (CDCl₃, 400 MHz) of **6j**.

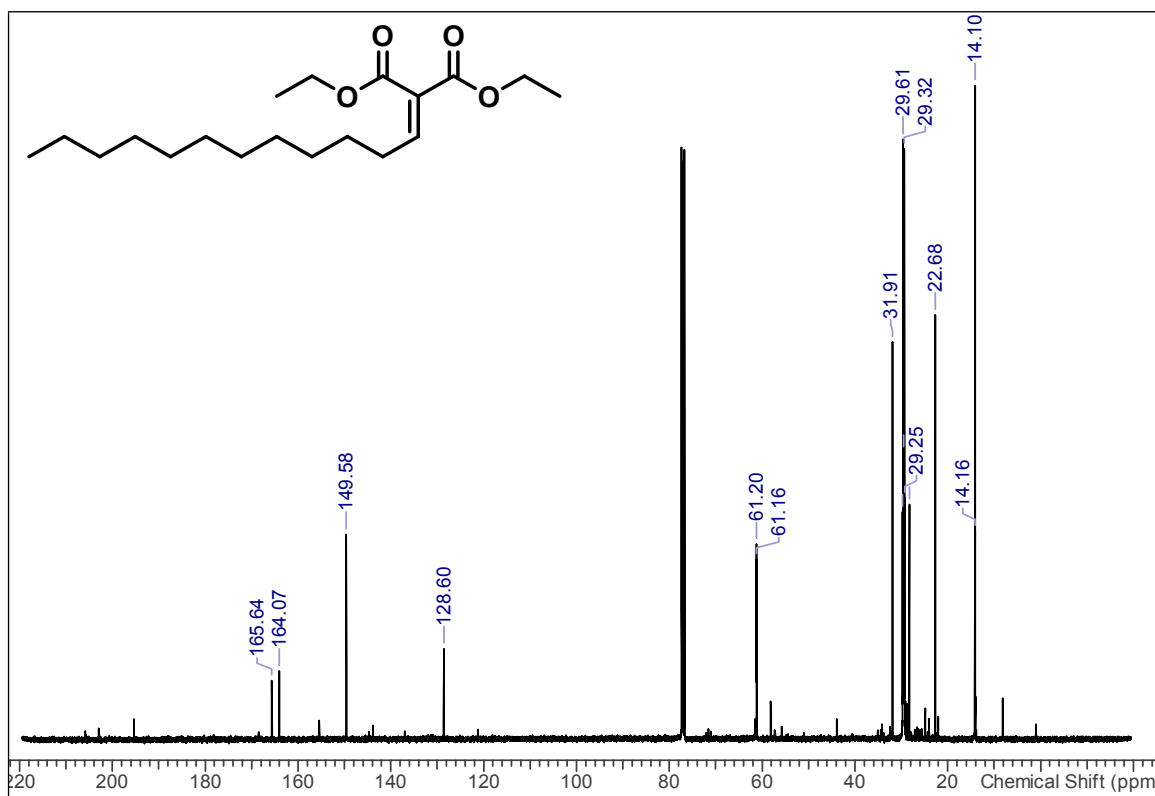


Figure S22. ¹³C NMR spectrum (CDCl₃, 100 MHz) of **6j**.

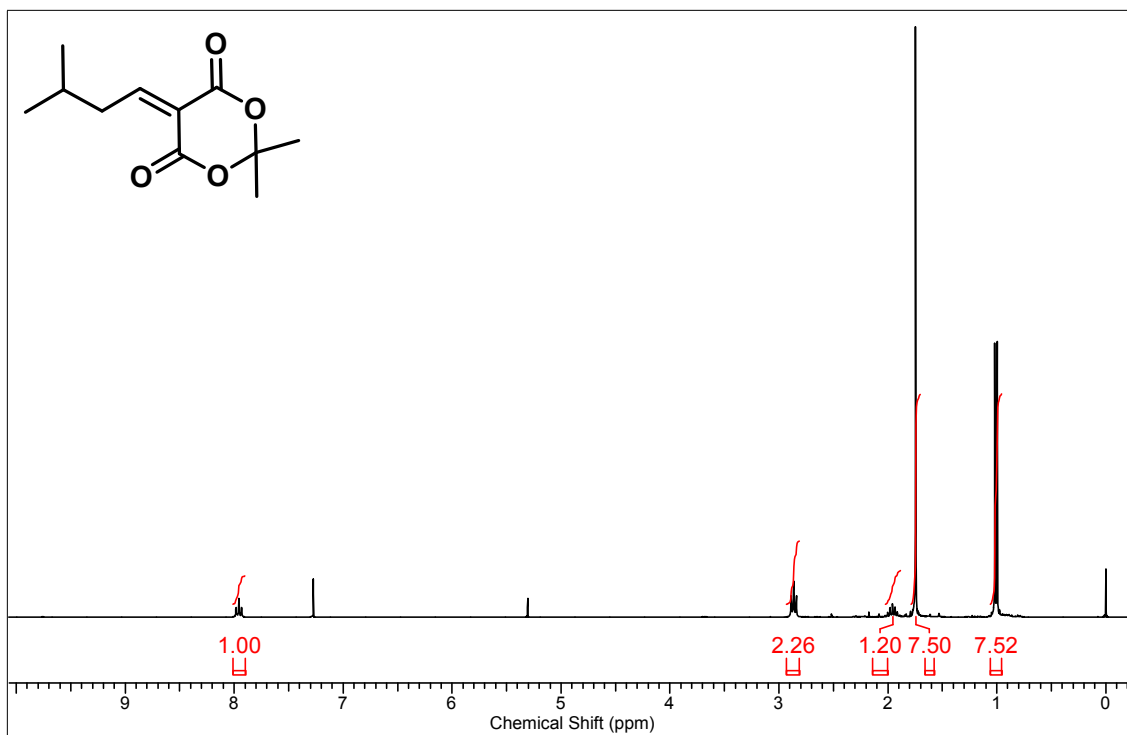


Figure S23. ¹H NMR spectrum (CDCl₃, 300 MHz) of 6k.

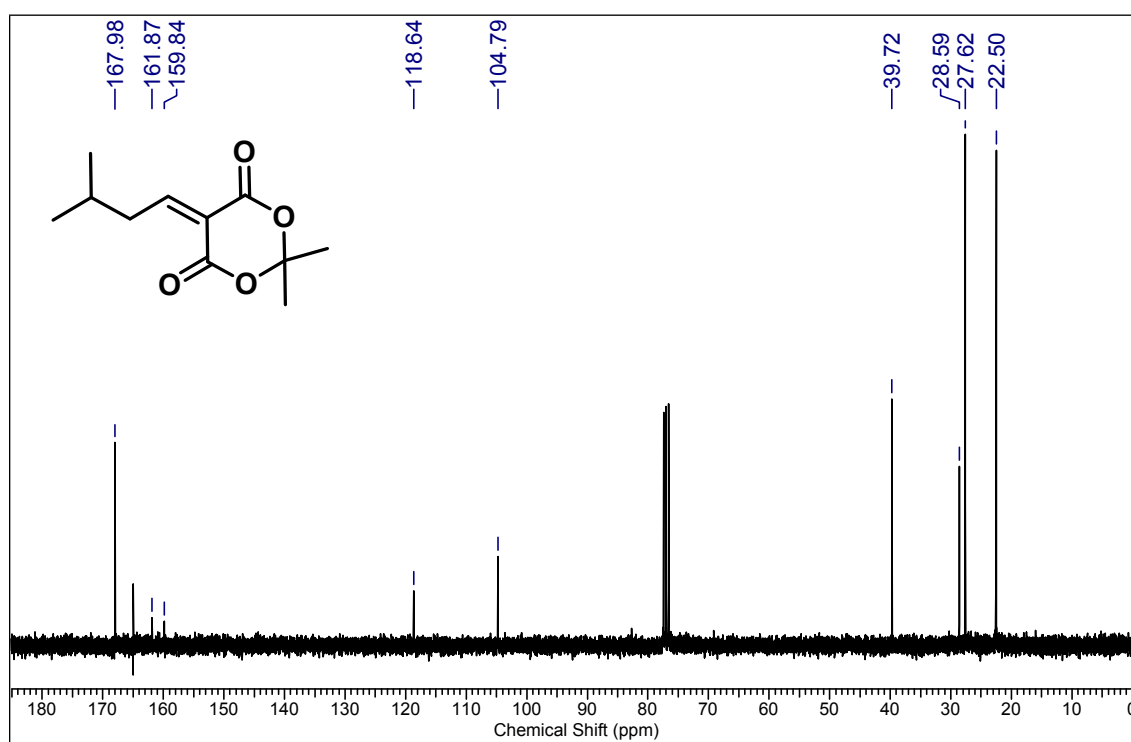


Figure S24. ¹³C NMR spectrum (CDCl₃, 75 MHz) of 6k.

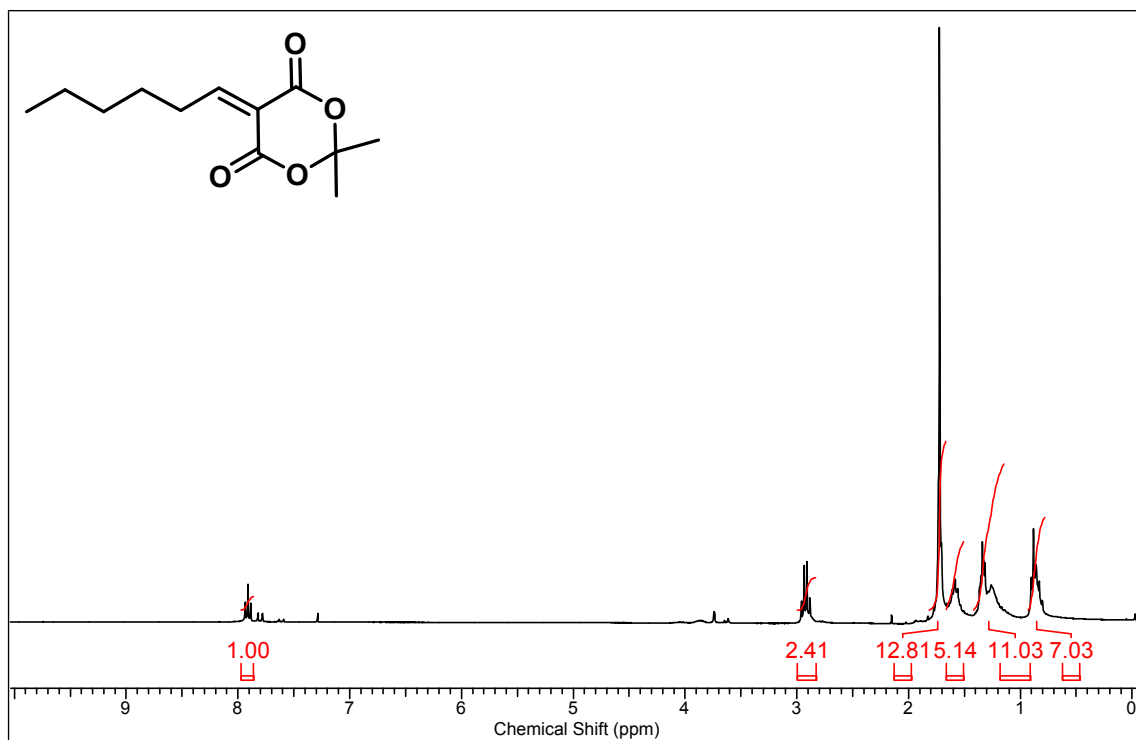


Figure S25. ¹H NMR spectrum (CDCl₃, 300 MHz) of **6l**.

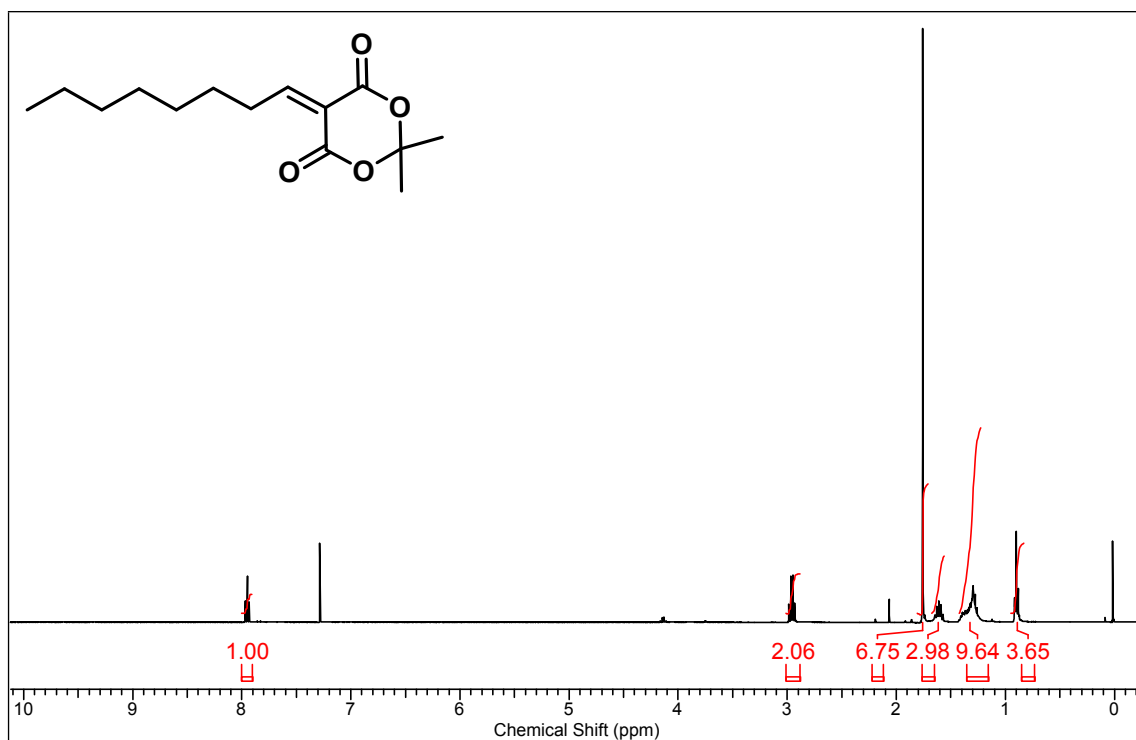


Figure S26. ¹H NMR spectrum (CDCl₃, 300 MHz) of **6m**.

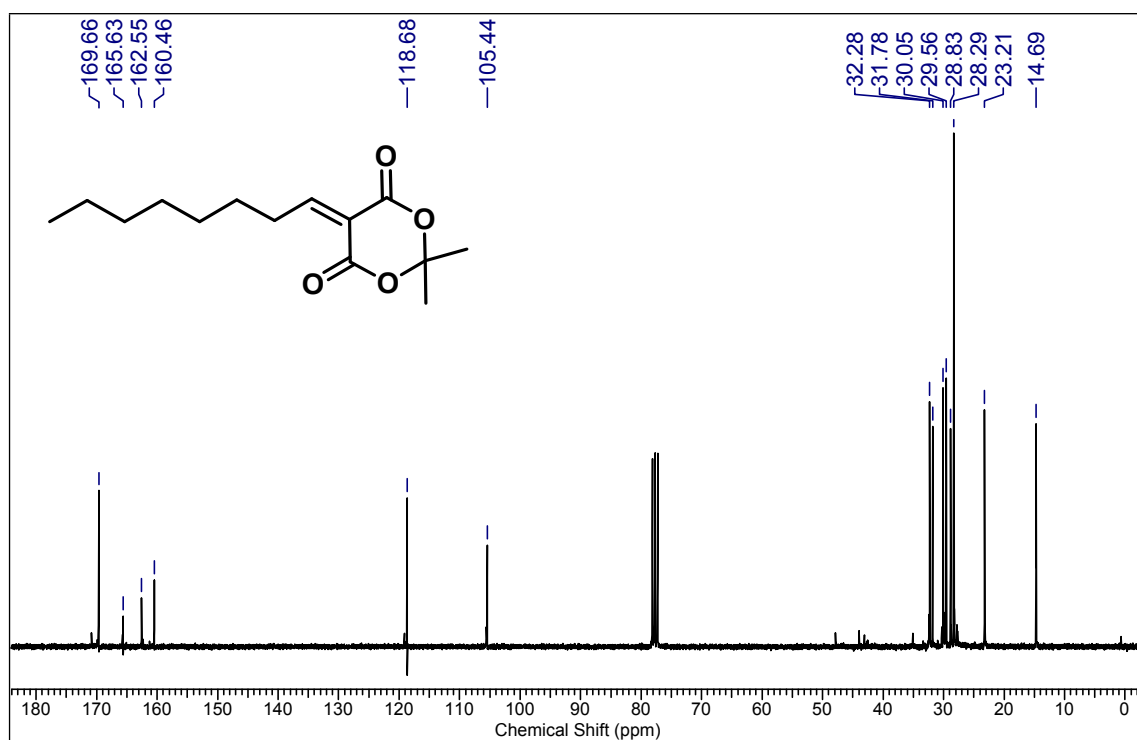


Figure S27. ¹³C NMR spectrum (CDCl₃, 75 MHz) of 6m.

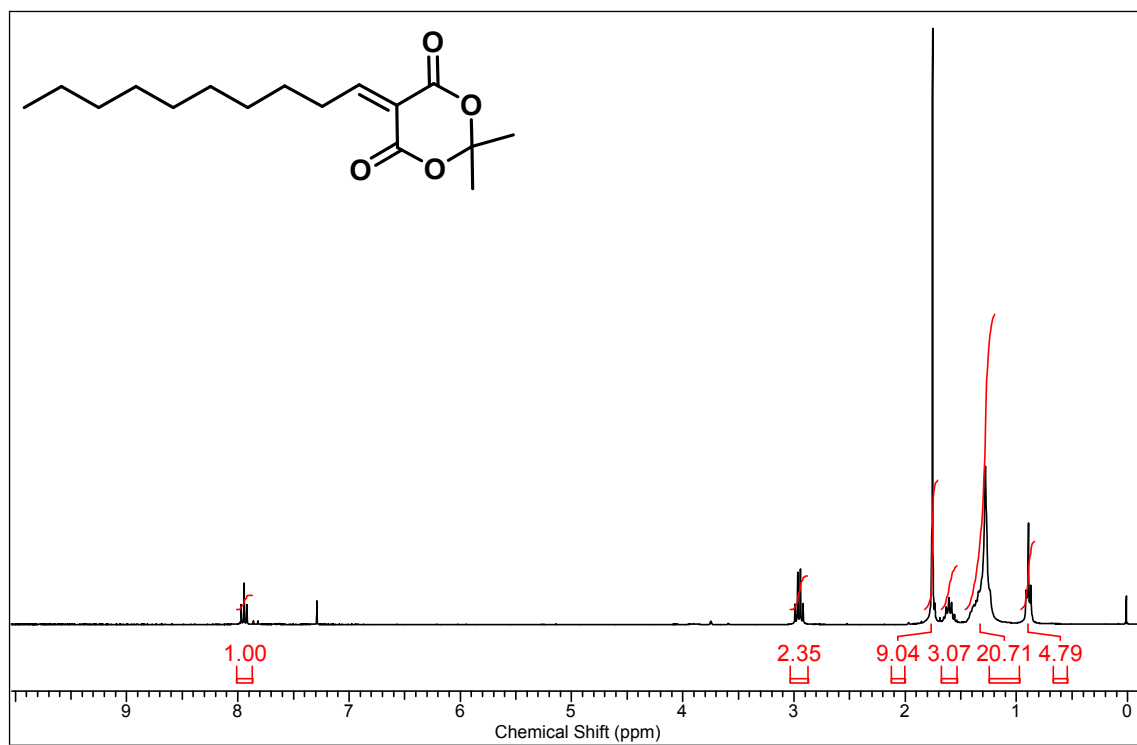


Figure S28. ¹H NMR spectrum (CDCl₃, 300 MHz) of 6n.

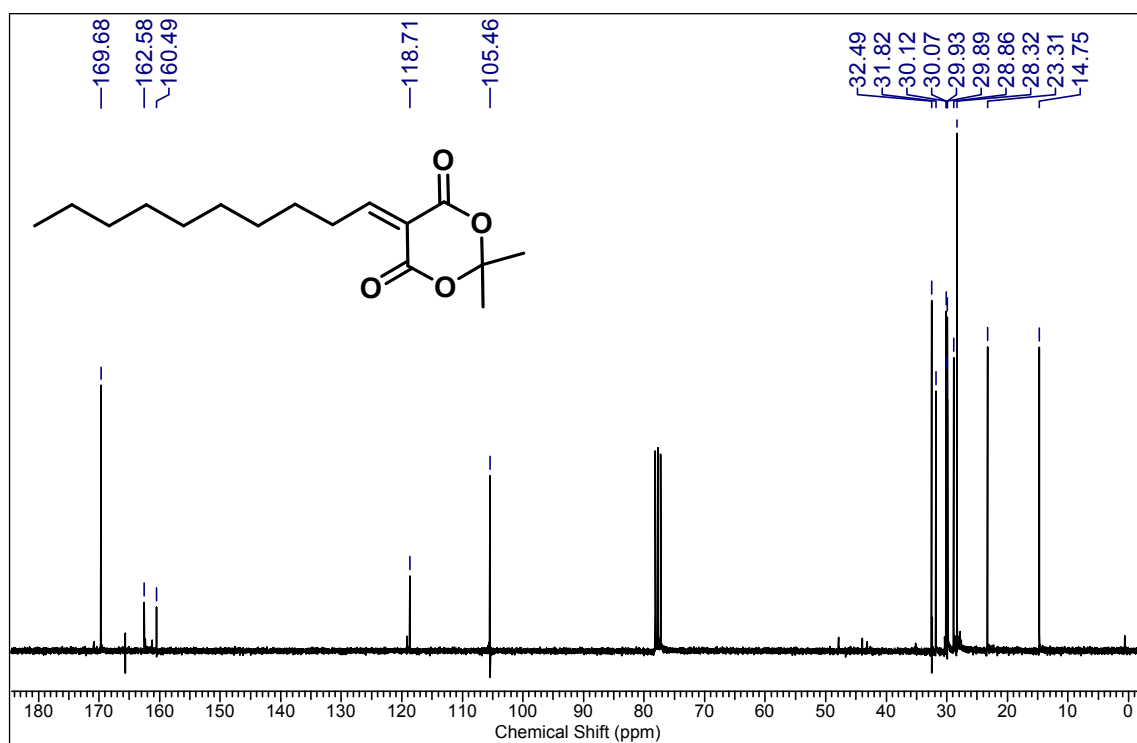


Figure S29. ¹³C NMR spectrum (CDCl₃, 75 MHz) of 6n.

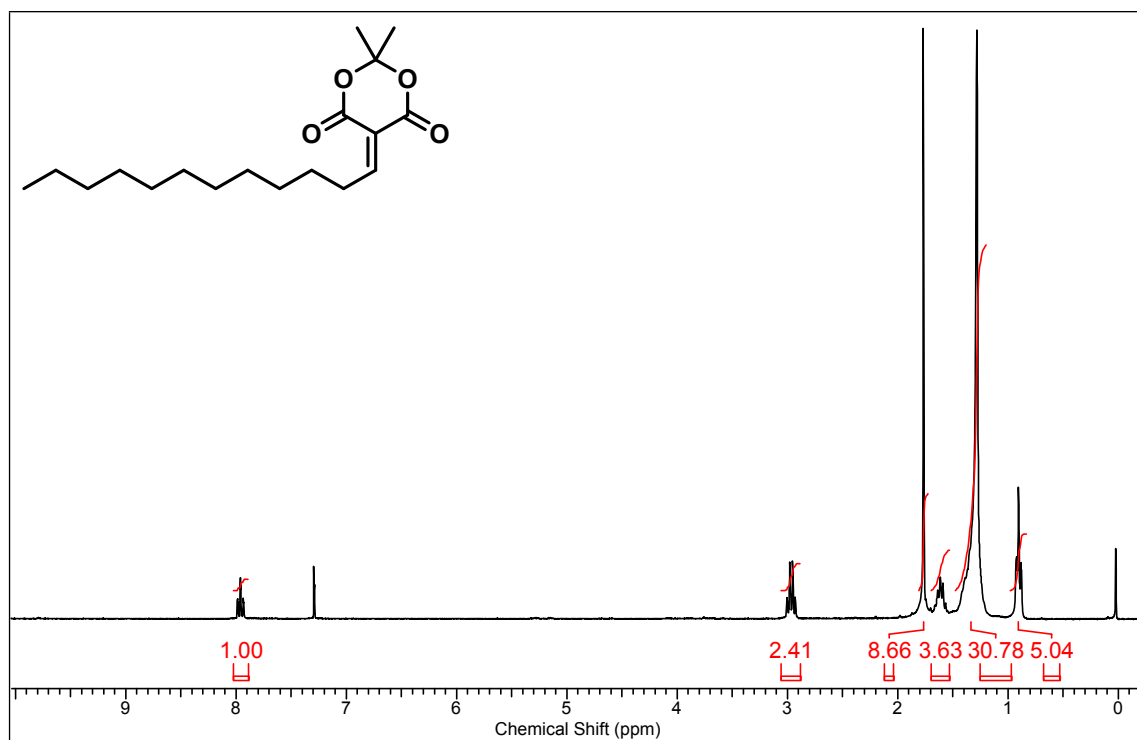


Figure S30. ¹H NMR spectrum (CDCl₃, 300 MHz) of 6o.

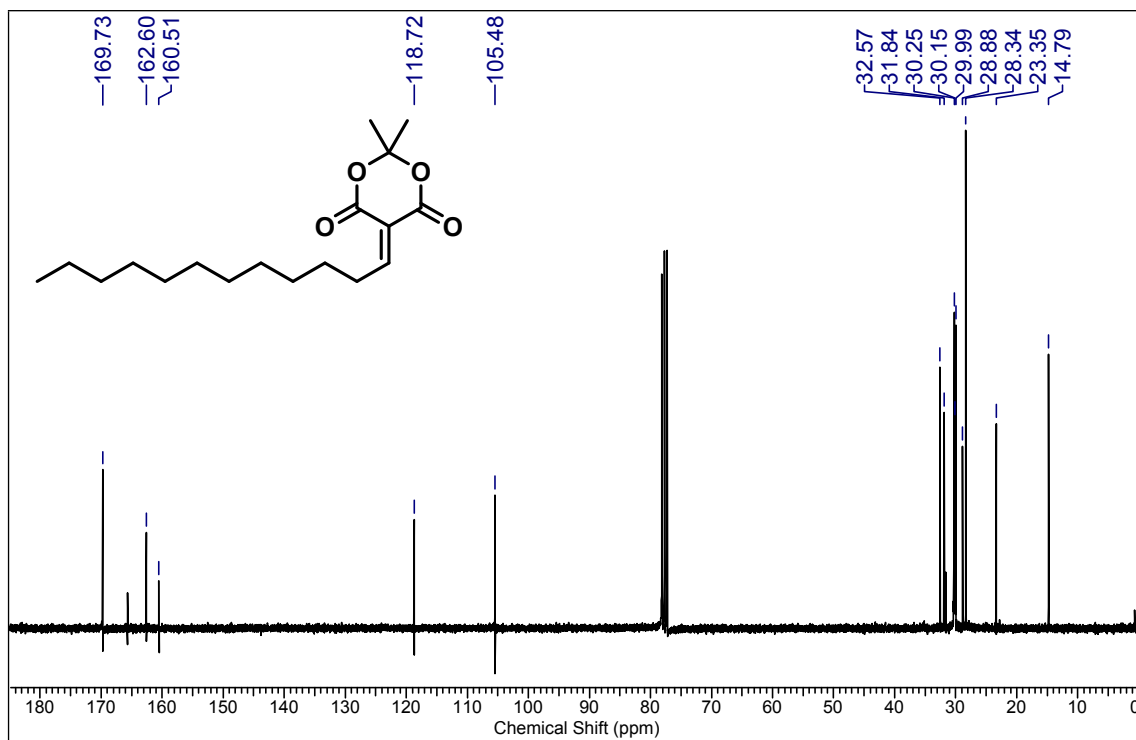


Figure S31. ^{13}C NMR spectrum (CDCl_3 , 75 MHz) of **6o**.

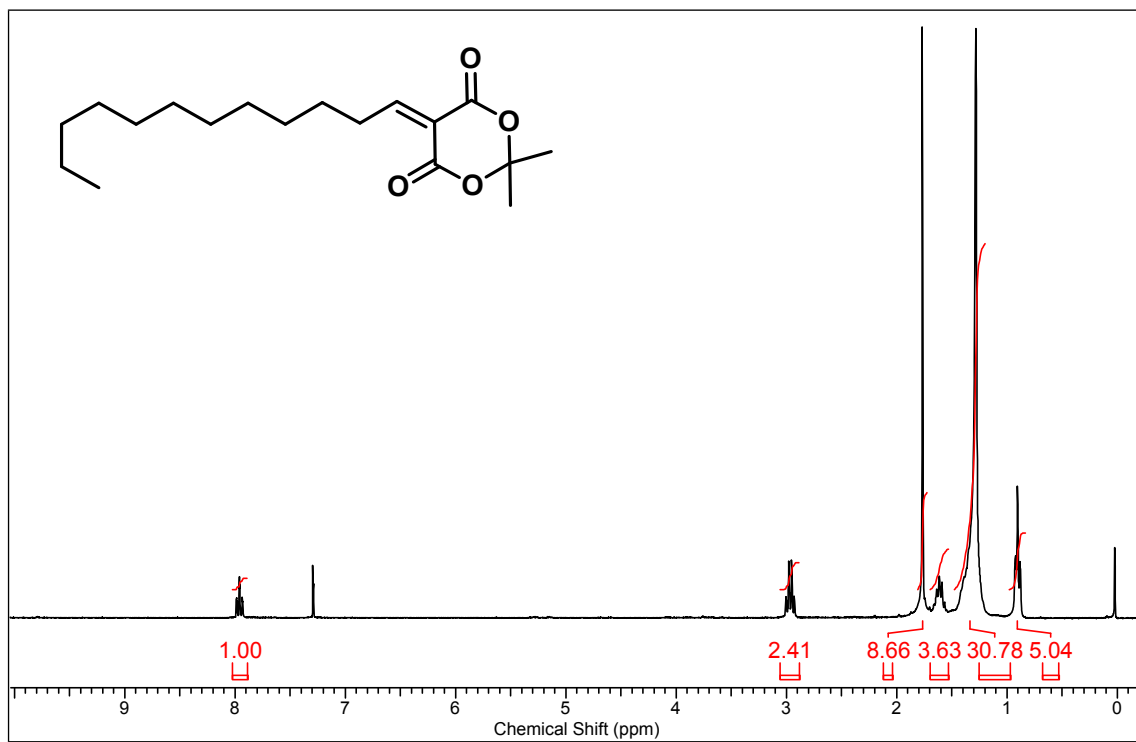


Figure S32. ^1H NMR spectrum (CDCl_3 , 300 MHz) of **6p**.

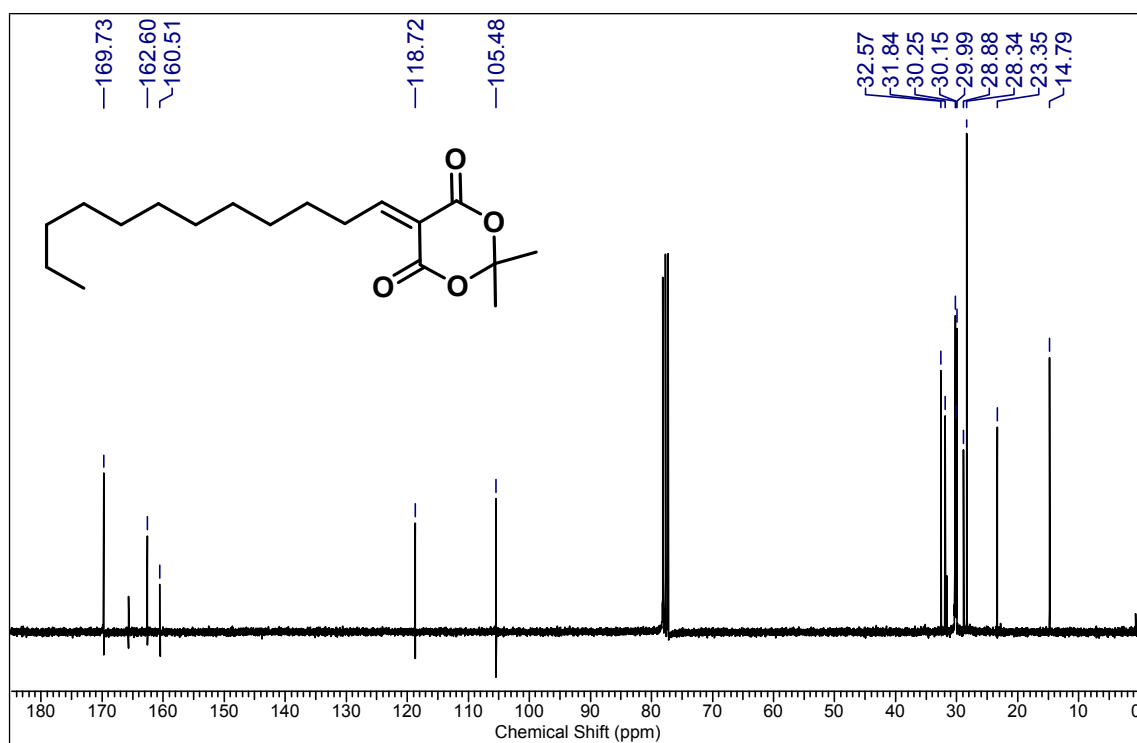


Figure S33. ¹³C NMR spectrum (CDCl₃, 75 MHz) of **6p**.

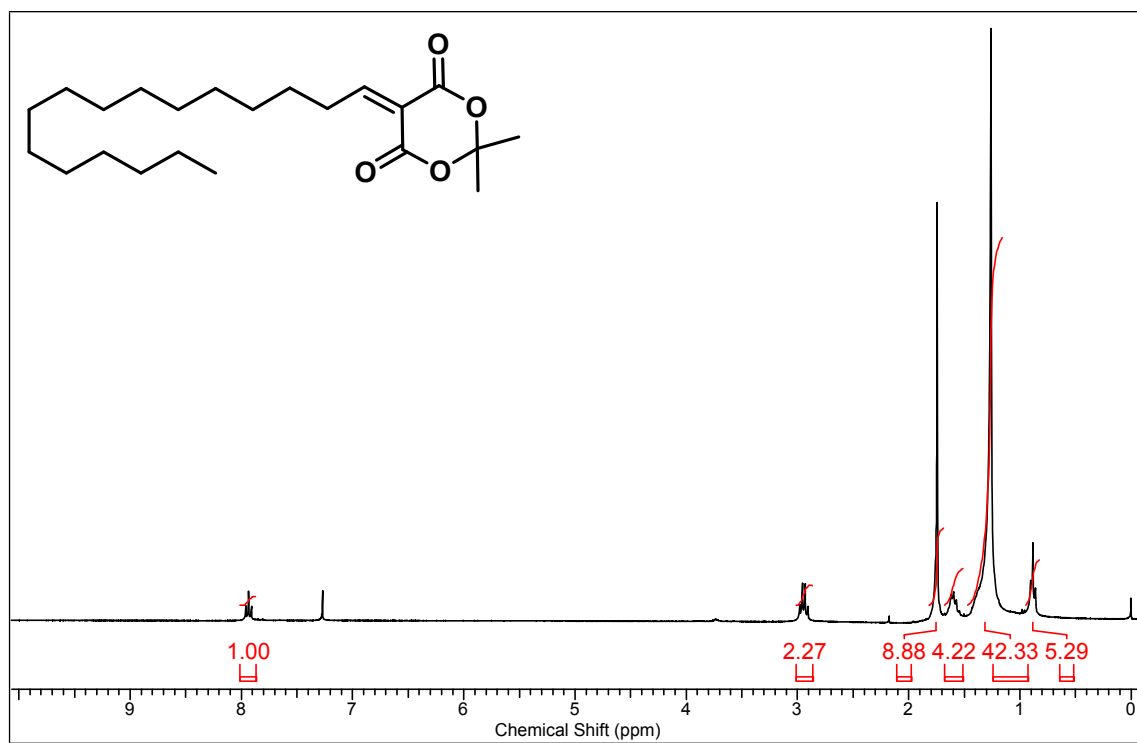


Figure S34. ¹H NMR spectrum (CDCl₃, 300 MHz) of **6q**.

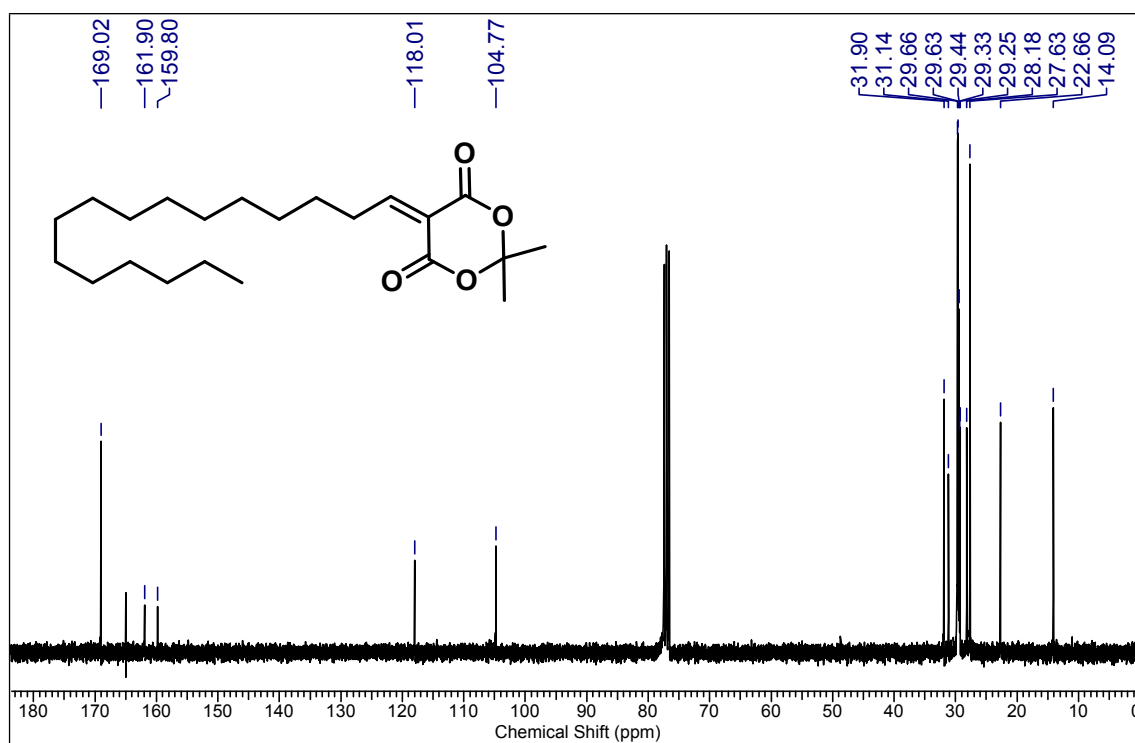


Figure S35. ^{13}C NMR spectrum (CDCl_3 , 75 MHz) of **6q**.