

SUPPORTING INFORMATION

Clean protocol for deoxygenation of epoxides to alkenes via catalytic hydrogenation using gold

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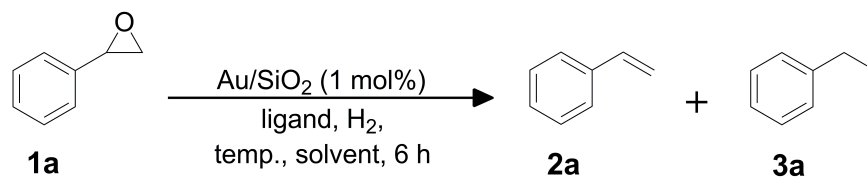
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Table of contents

1. Supplementary Figures and Tables.....	3
2. Characterization of Hydrogenated Products.....	6

1. Supplementary Figures and Tables.

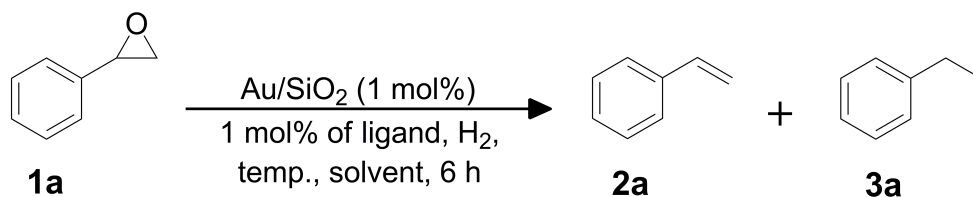
Table S1. Amount of ligand screening.^a



Entry	Amount of ligand (mol%)	Conversion of 1a (%)	Yield of 2a (%)
1	2	>99	>99
2	1	>99	>99
3	0.5	75	>99

^aReaction conditions: 1 mmol of epoxide, 1 mol% of Au, P(OEt)₃, 2 mL of *i*-PrOH, temperature, 6 bar of H₂, 6 h. Determined by GC using internal standard technique.

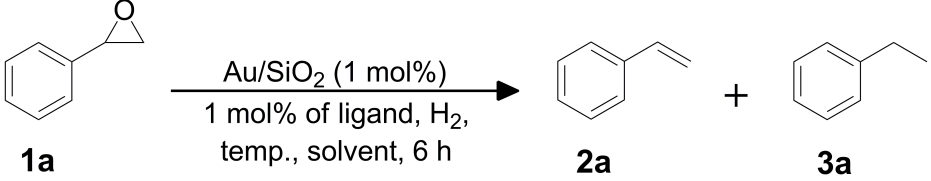
Table S2. Reaction temperature screening.^a



Entry	Reaction temperature (°C)	Conversion of 1a (%)	Yield of 2a (%)
1	100	>99	>99
2	80	86	>99
3	60	43	>99

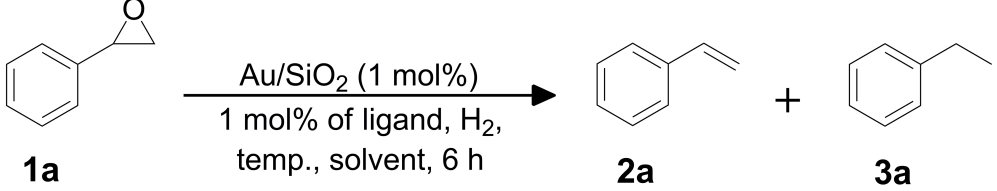
^aReaction conditions: 1 mmol of epoxide, 1 mol% of Au, 1 mol% of P(OEt)₃, 2 mL of *i*-PrOH, temperature, 6 bar of H₂, 6 h. Determined by GC using internal standard technique.

Table S3. Solvent screening.^a

			
Entry	Solvent	Conversion of 1a (%)	Yield of 2a (%)
1	EtOH	>99	93
2	Toluene	96	>99
3	DMF	65	>99
4	THF	42	>99
5	Hexane	32	>99
6	1,4-dioxane	61	>99
7	MeCN	38	>99

^aReaction conditions: 1 mmol of epoxide, 1 mol% of Au, 1 mol% of P(OEt)₃, 2 mL of solvent, 100 °C, 6 bar of H₂, 6 h. Determined by GC using internal standard technique.

Table S4 Molecular hydrogen pressure.^a

			
Entry	H ₂ pressure (bar)	Conversion of 1a (%)	Yield of 2a (%)
1	6	>99	>99

2	4	88	>99
3	2	40	>99

^aReaction conditions: 1 mmol of epoxide, 1 mol% of Au, 1 mol% of P(OEt)₃, 2 mL of *i*-PrOH, 100 °C, H₂, 6 h. Determined by GC using internal standard technique.

2. Characterization of Hydrogenated Products

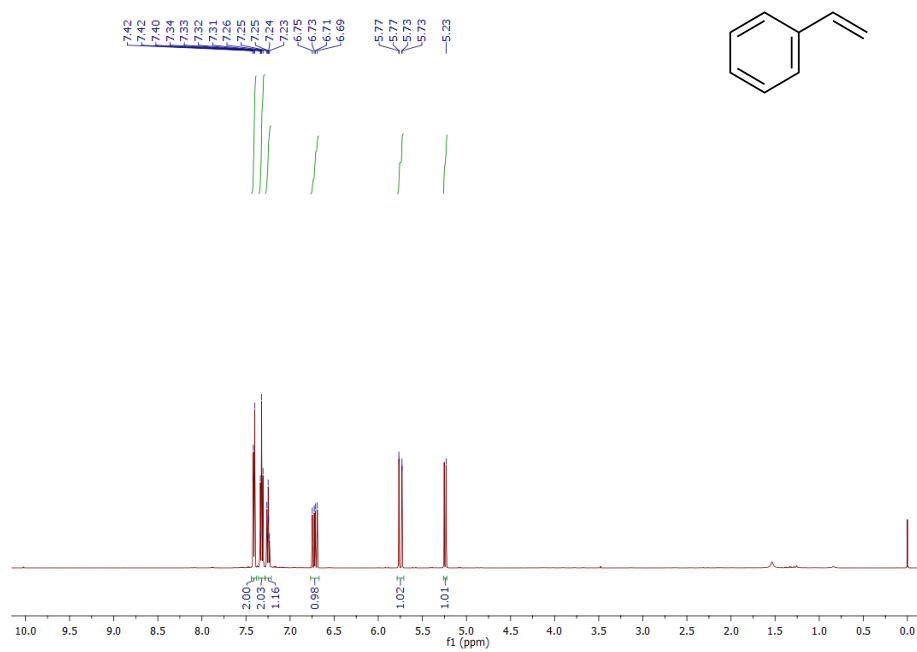


Figure S1. ¹H NMR Spectrum of **2a**.

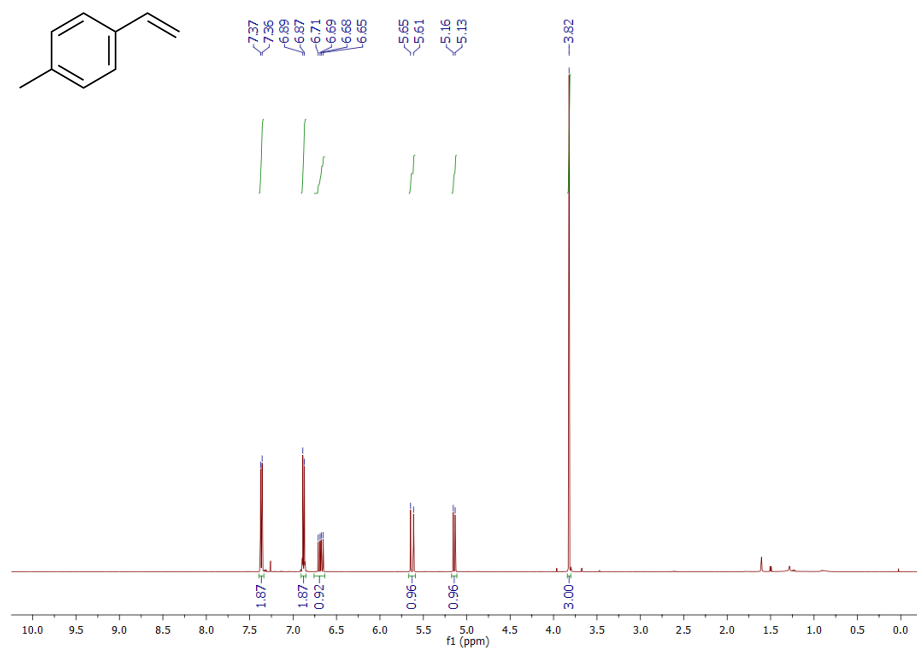


Figure S2. ¹H NMR Spectrum of **2b**.

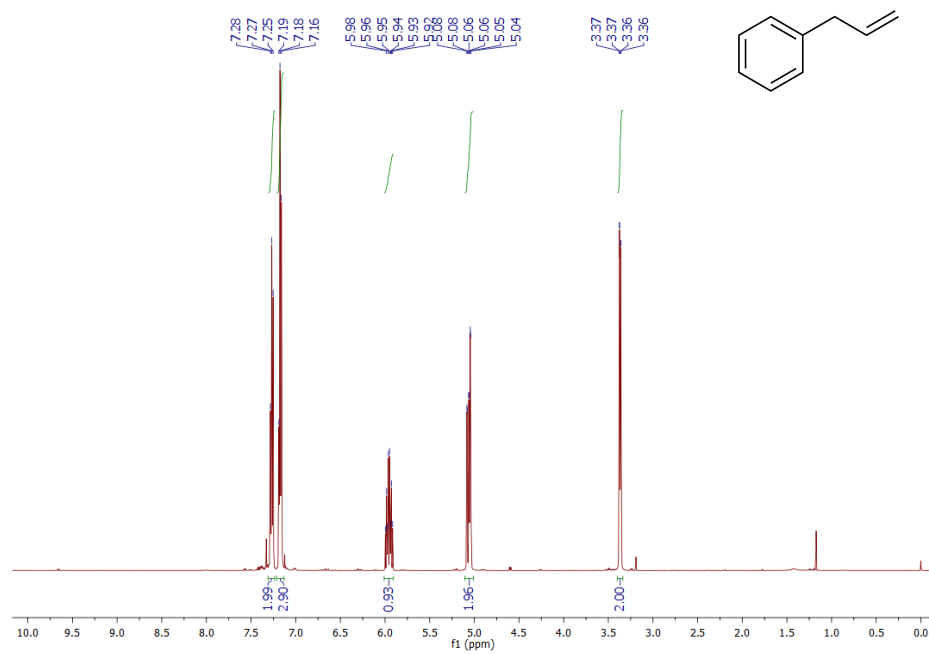


Figure S3. ¹H NMR Spectrum of **2c**.

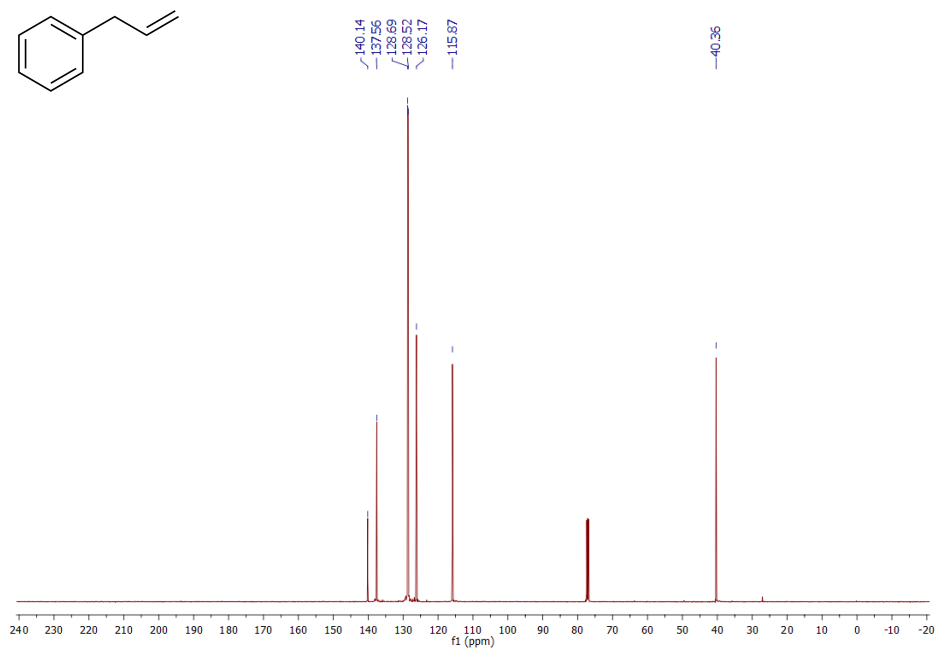


Figure S4. ¹³C NMR Spectrum of **2c**.

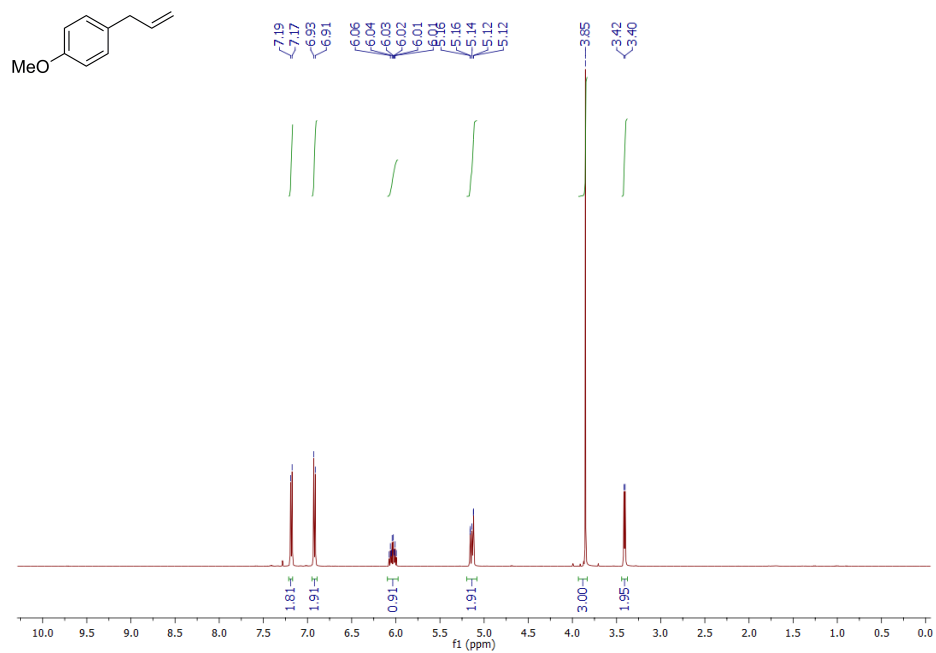


Figure S5. ¹H NMR Spectrum of **2d**.

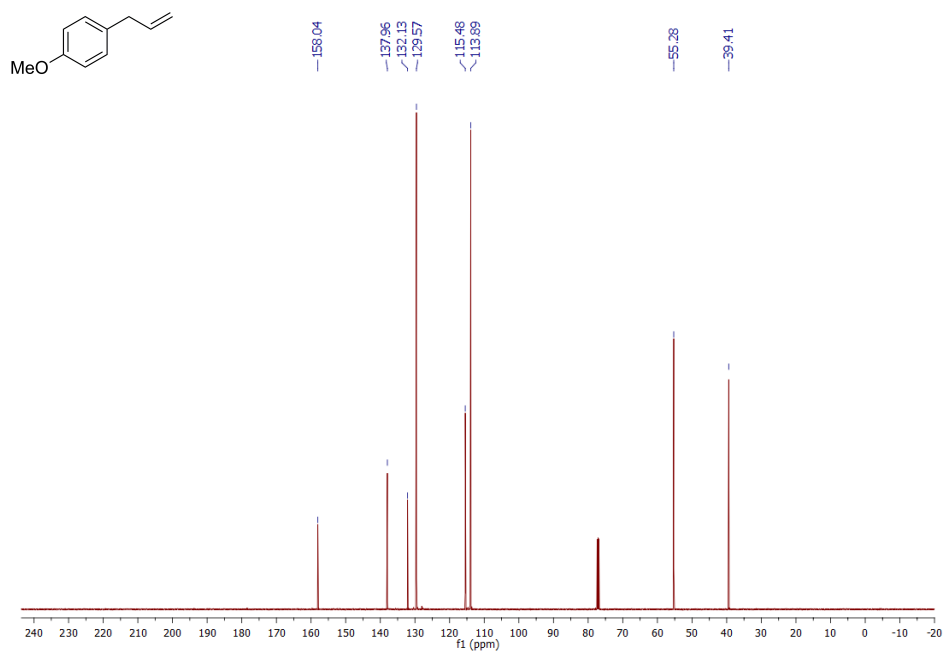


Figure S6. ¹³C NMR Spectrum of **2d**.

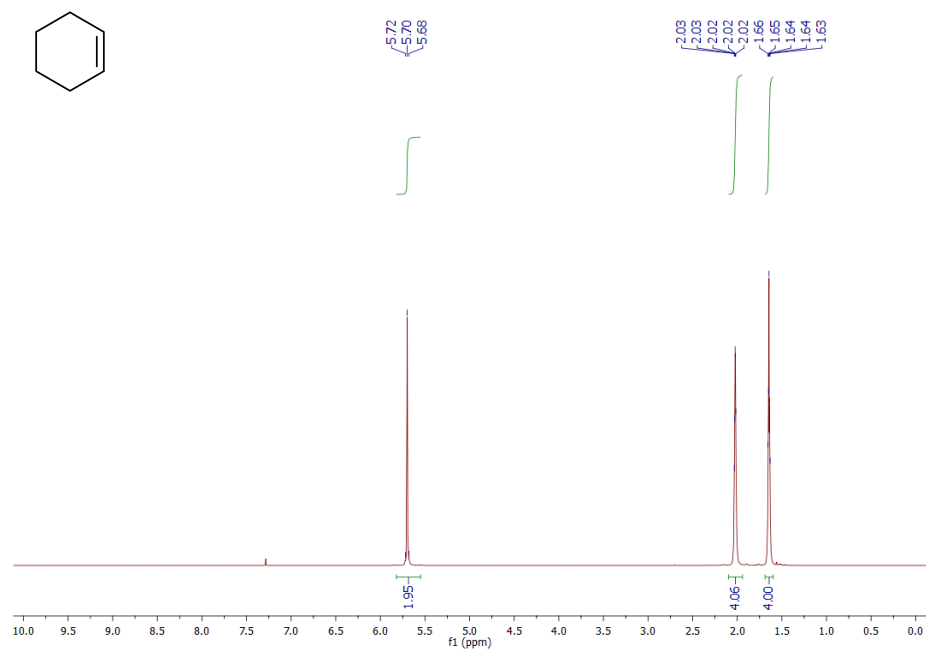


Figure S7. ¹H NMR Spectrum of **21**.

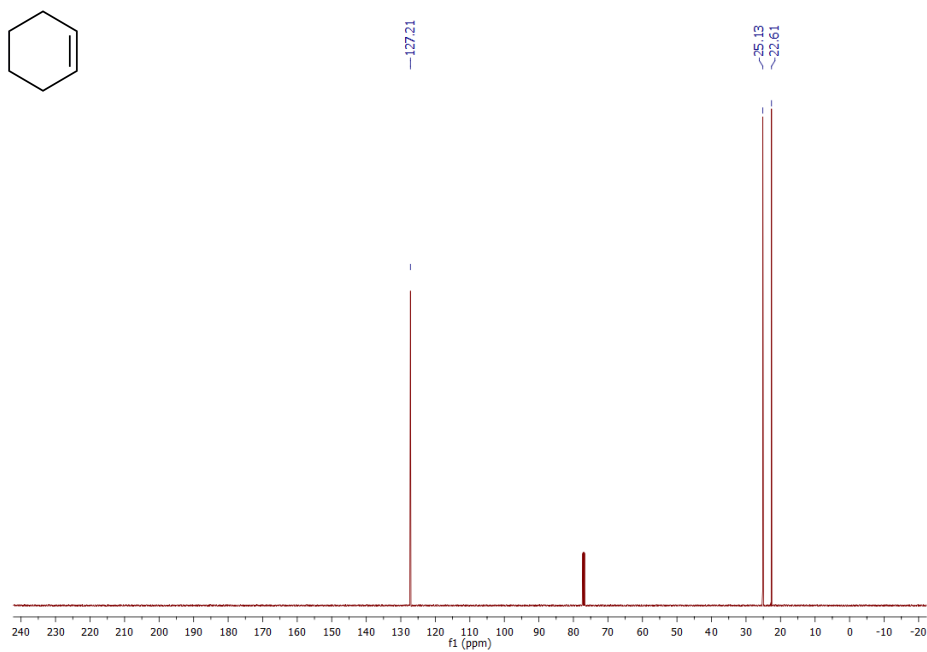


Figure S8. ¹³C NMR Spectrum of **21**.

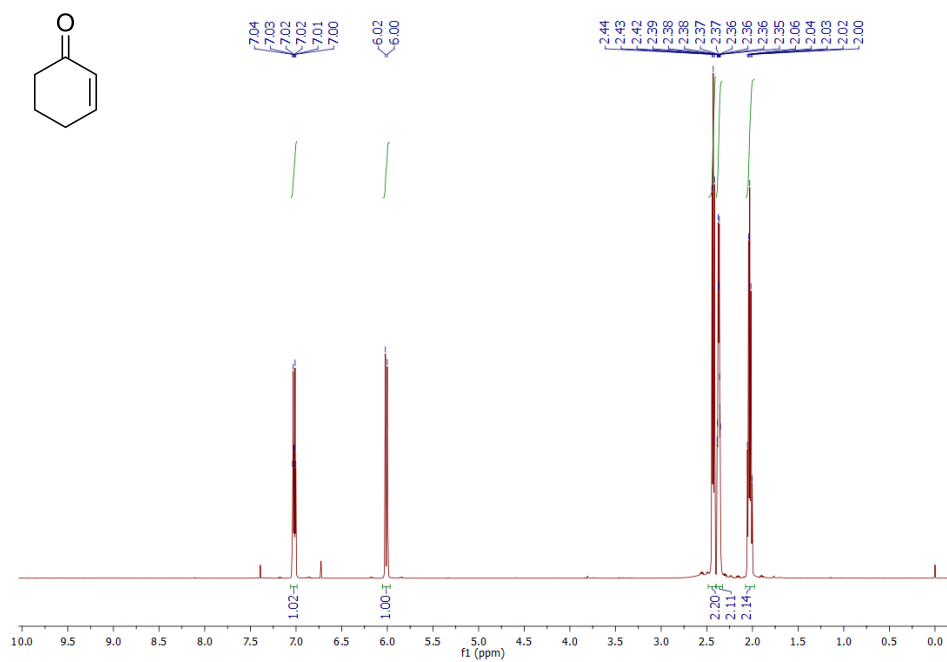


Figure S9. ¹H NMR Spectrum of **2m**.

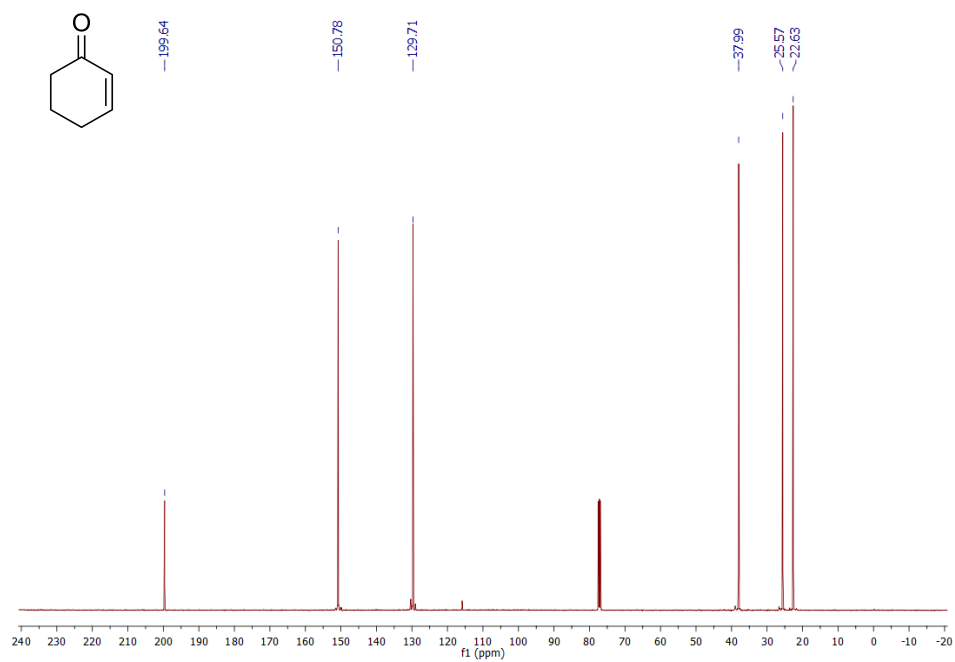


Figure S10. ¹³C NMR Spectrum of **2m**.

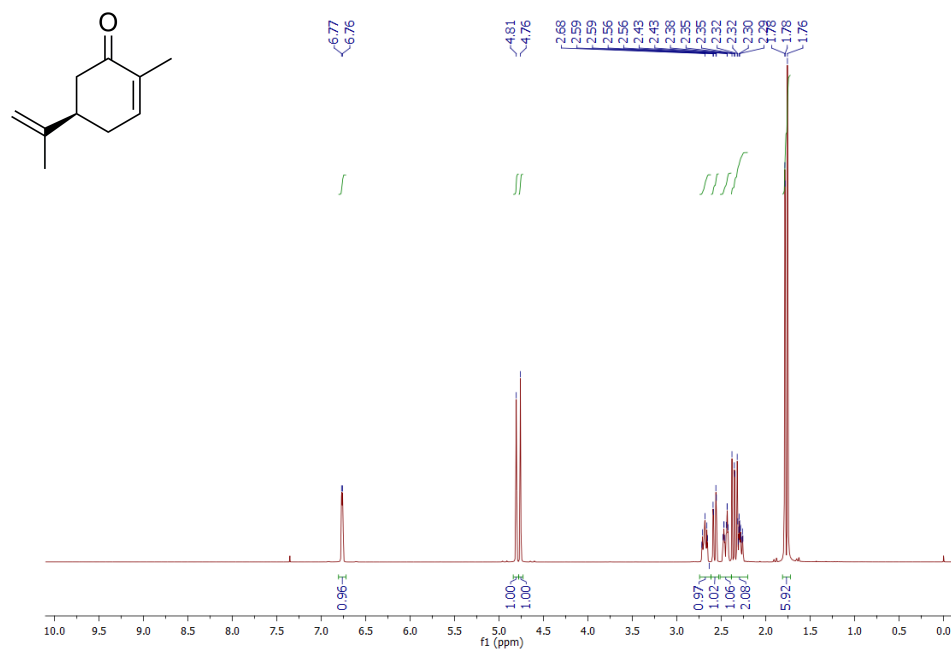


Figure S11. ¹H NMR Spectrum of **2n**.

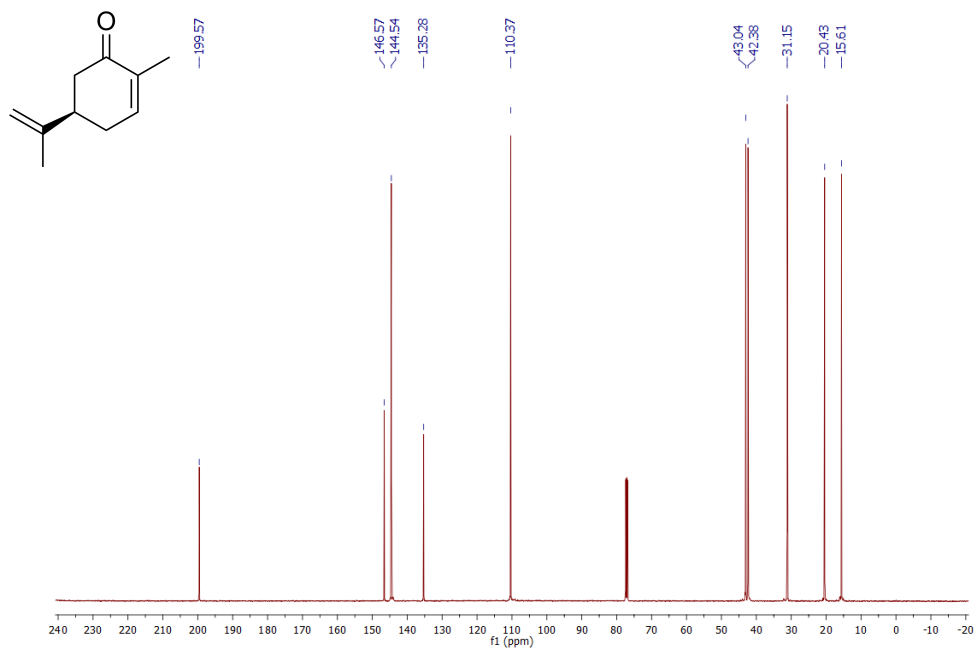


Figure S12. ¹³C NMR Spectrum of **2n**.

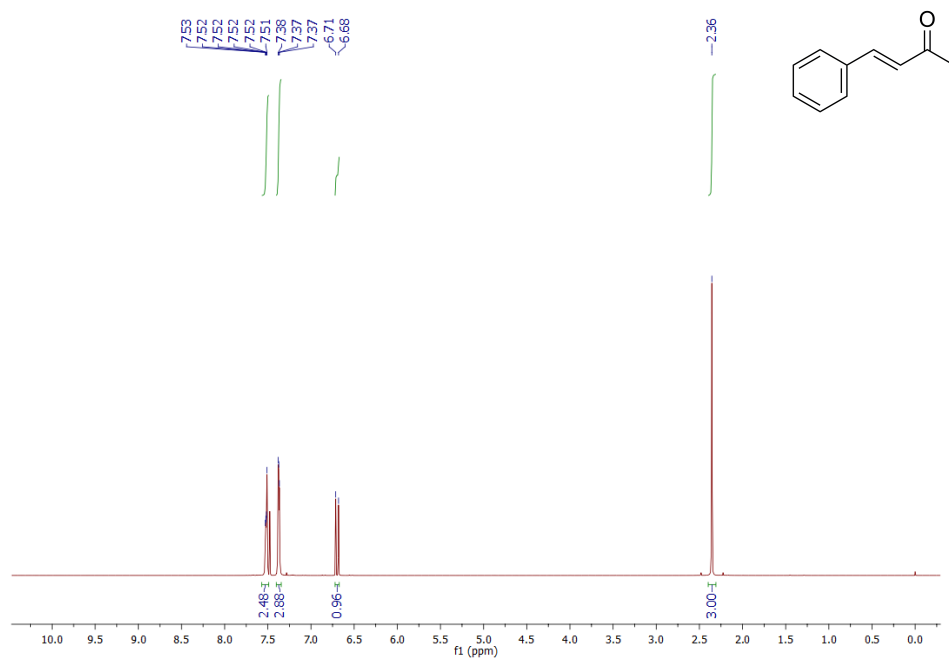


Figure S13. ¹H NMR Spectrum of **2o**.

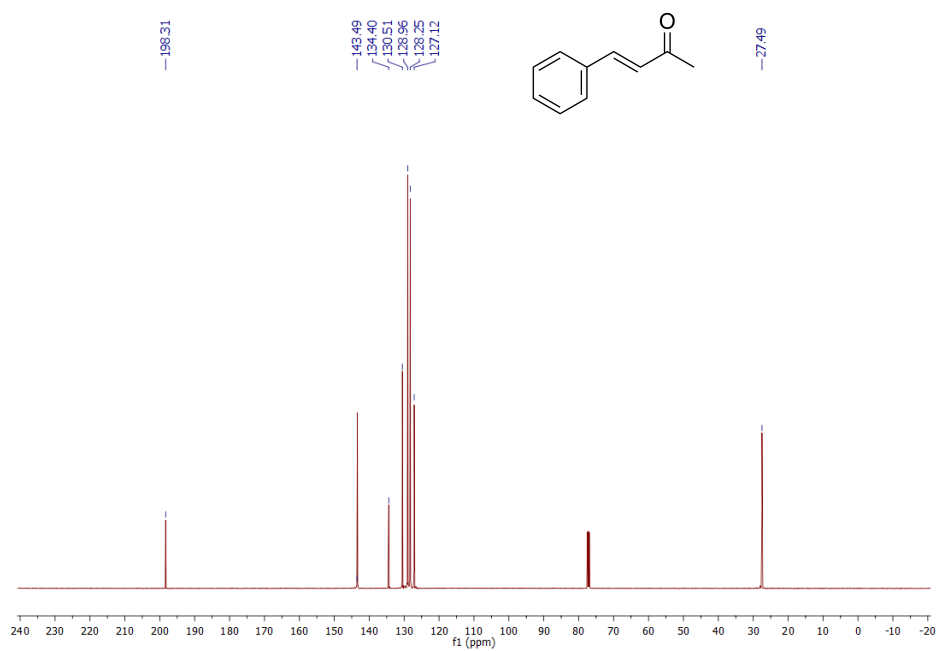


Figure S14. ¹³C NMR Spectrum of **2o**.

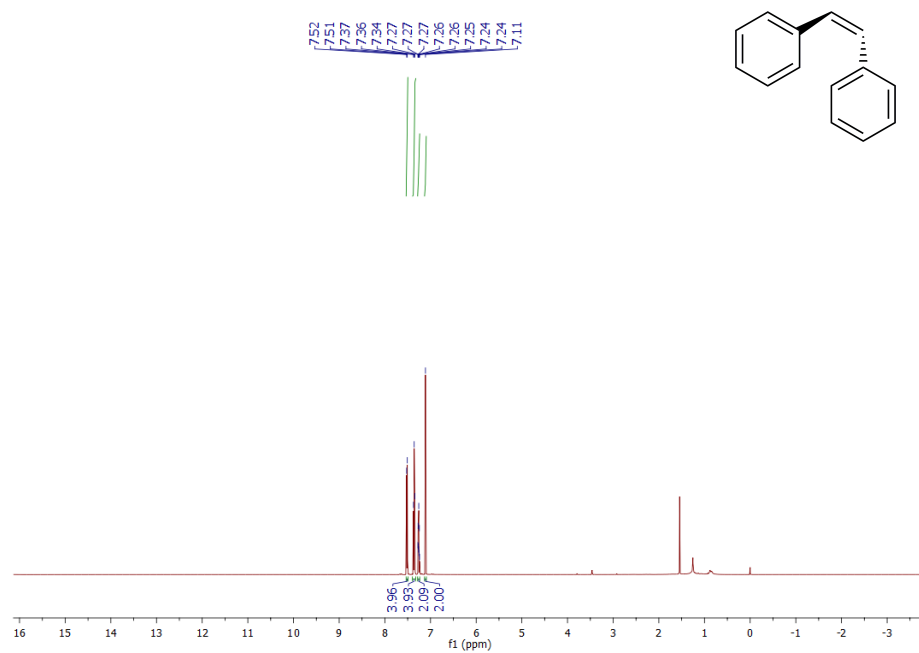


Figure S15. ¹H NMR Spectrum of **2p**.

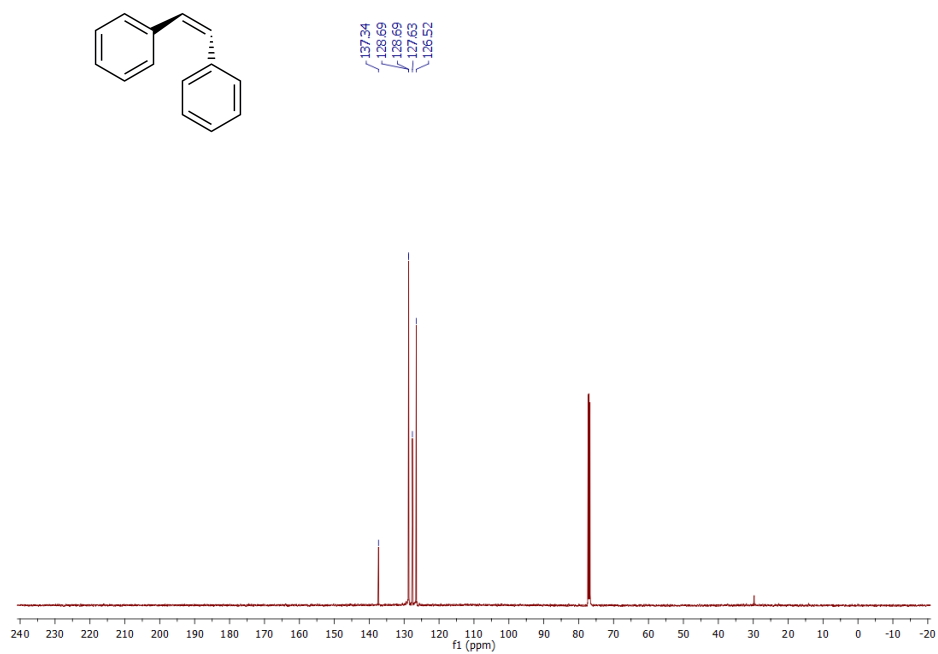


Figure S16. ¹³C NMR Spectrum of **2p**.

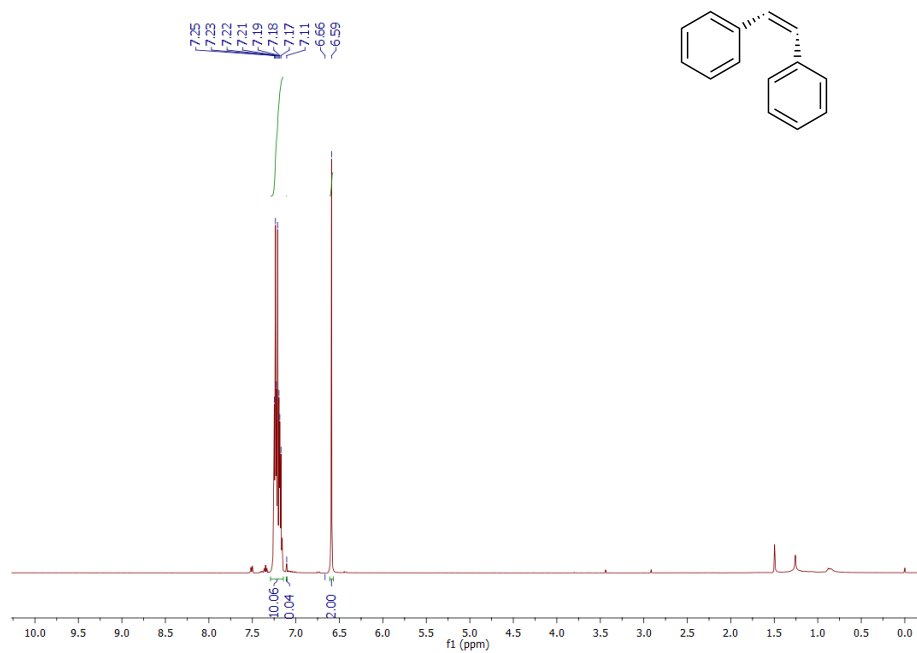


Figure S17. ¹H NMR Spectrum of **2q**.

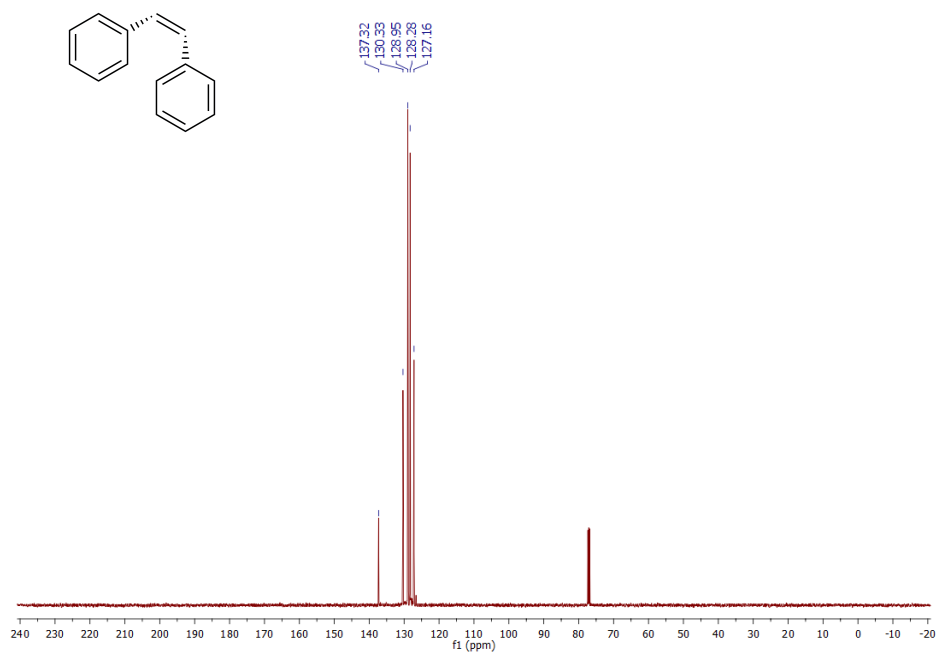


Figure S18. ¹³C NMR Spectrum of **2q**.

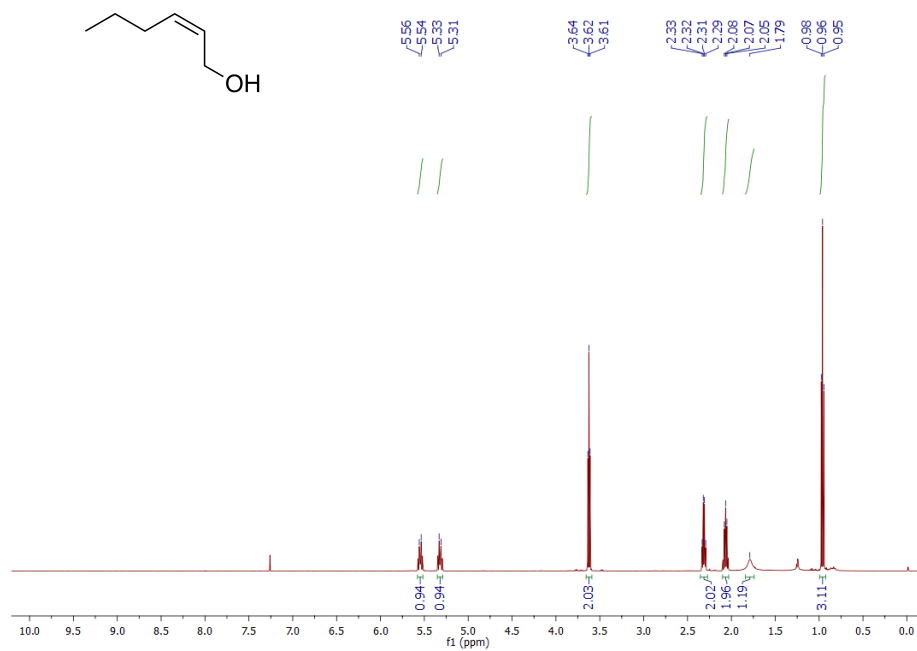


Figure S19. ¹H NMR Spectrum of **2r**.

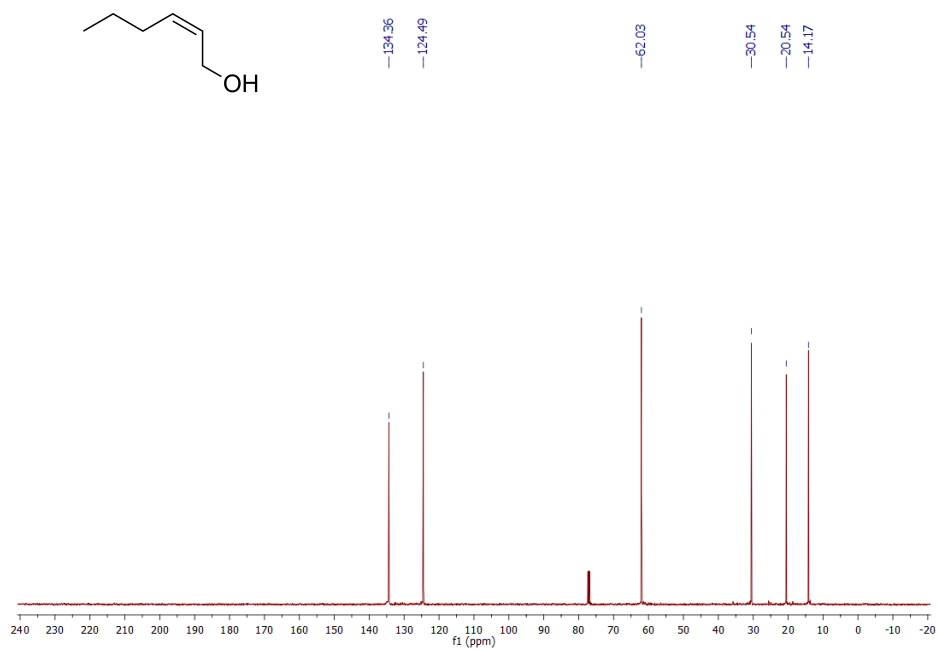


Figure S20. ¹³C NMR Spectrum of **2r**.

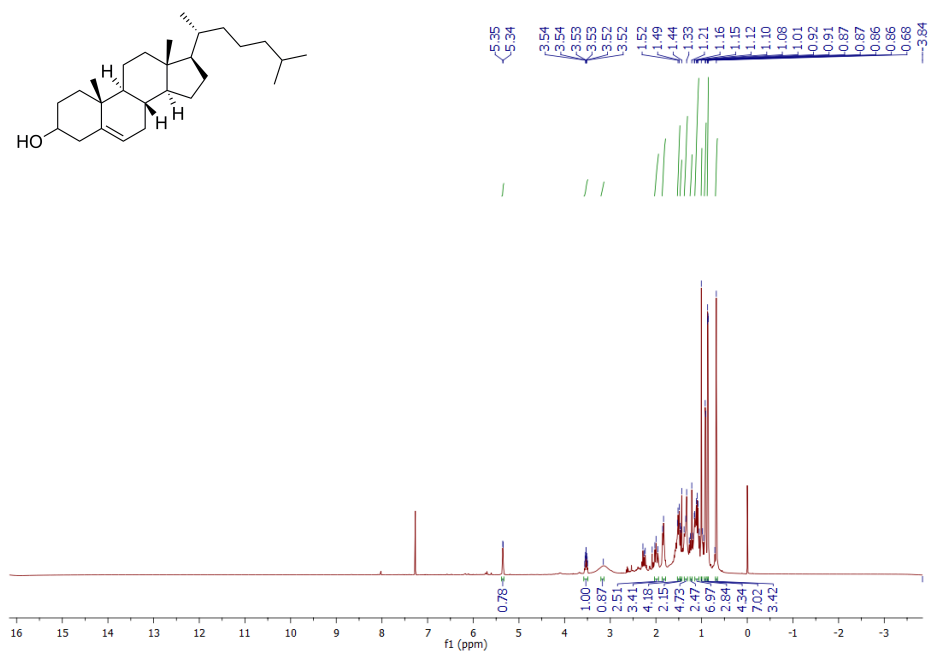


Figure S21. ^1H NMR Spectrum of **2s**.

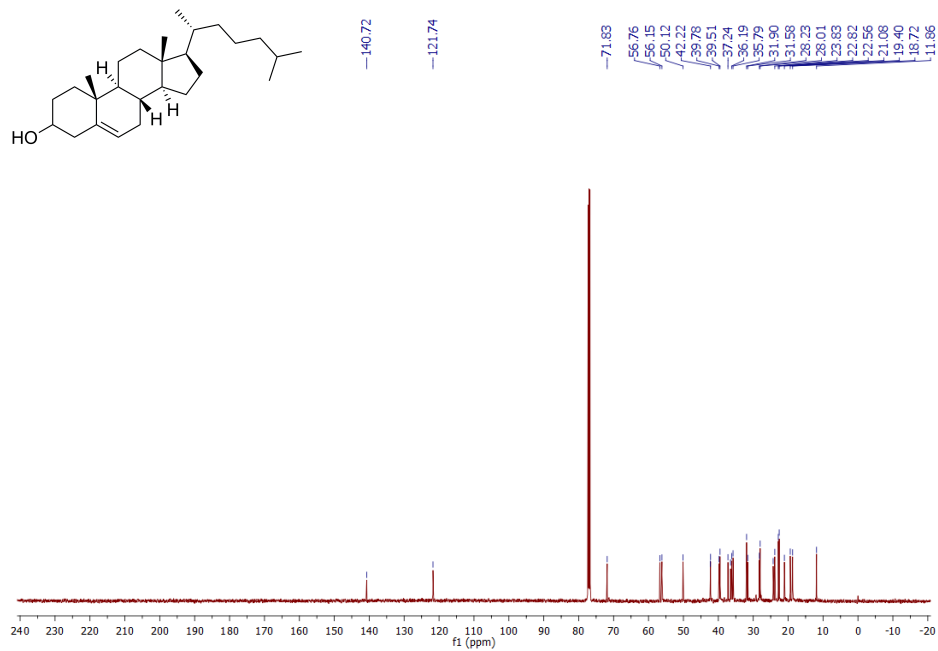


Figure S22. ^{13}C NMR Spectrum of **2s**.

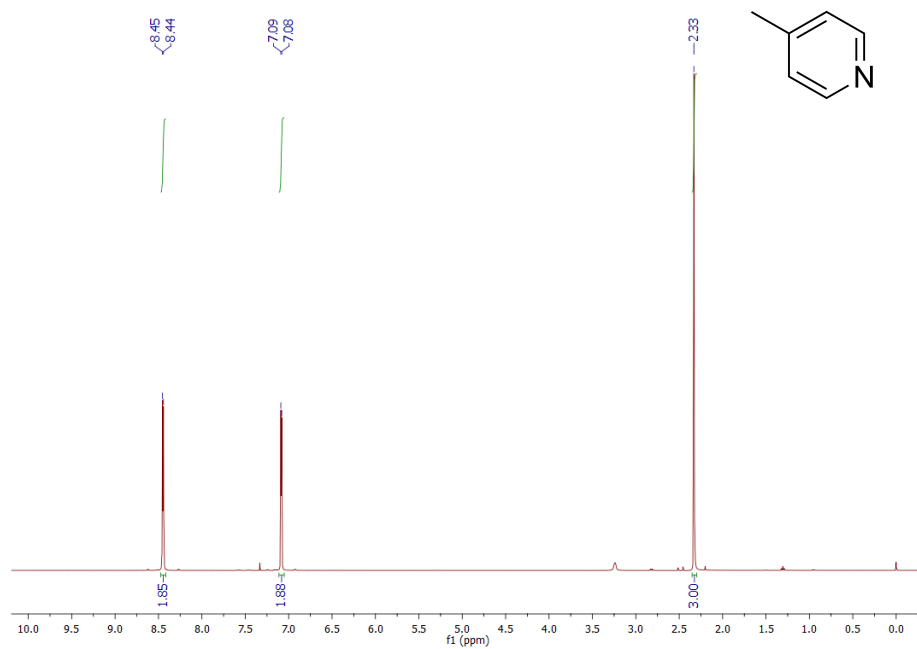


Figure S23. ¹H NMR Spectrum of **4b**.

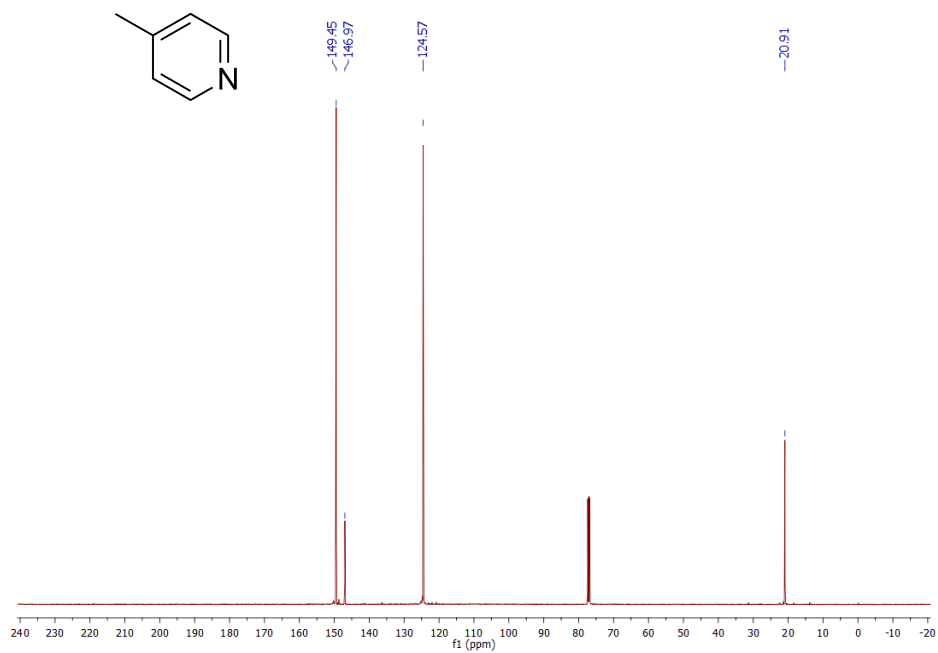


Figure S24. ¹³C NMR Spectrum of **4b**.

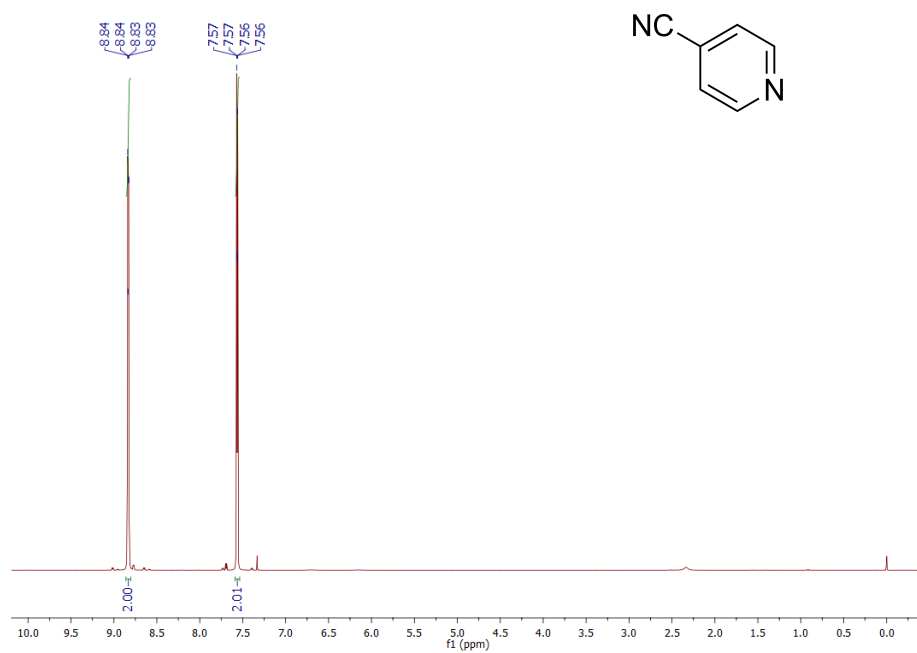


Figure S25. ¹H NMR Spectrum of **4c**.

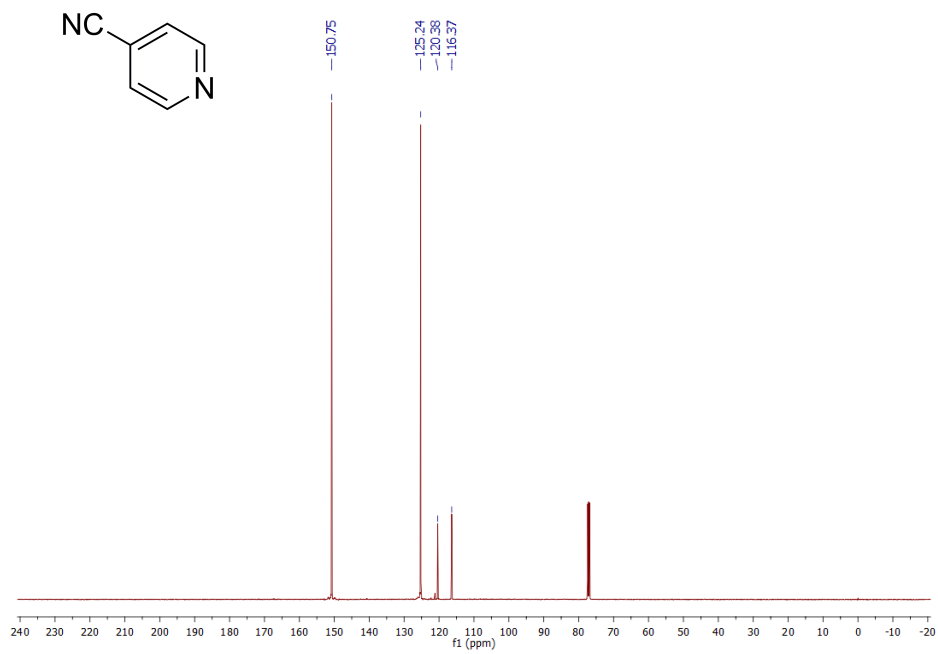


Figure S26. ¹³C NMR Spectrum of **4c**.

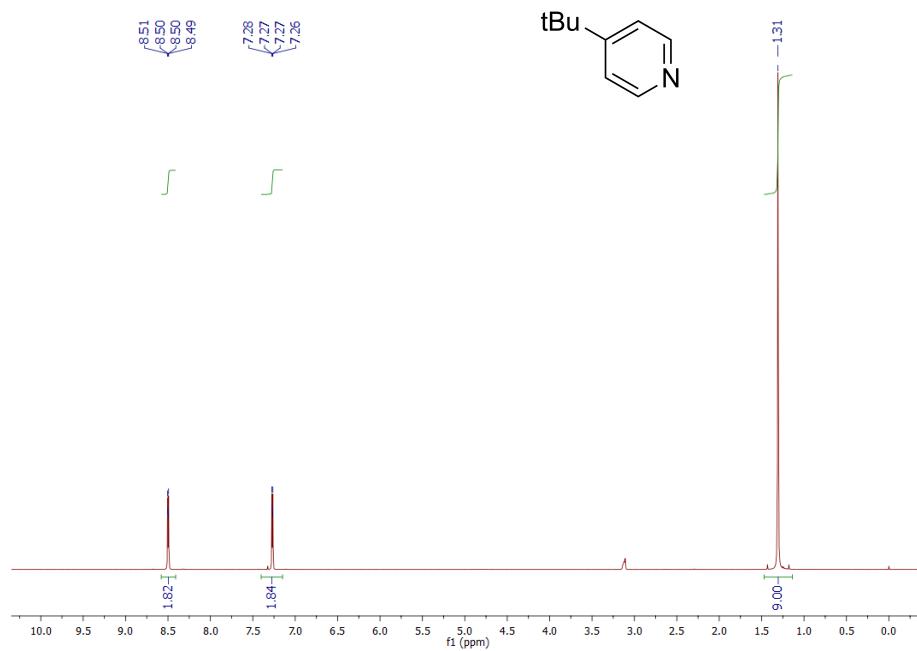


Figure S27. ¹H NMR Spectrum of **4d**.

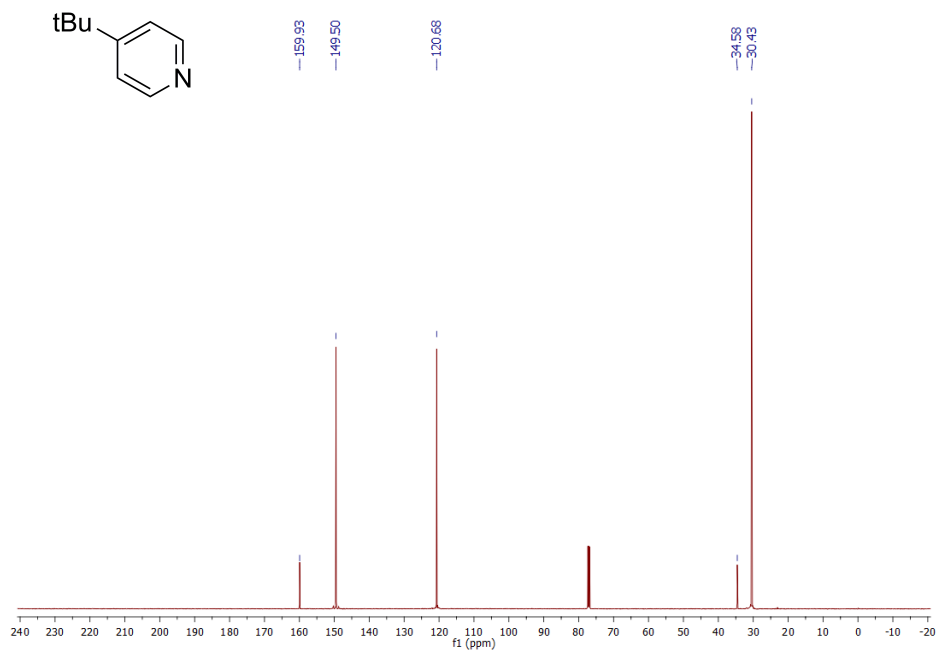


Figure S28. ¹³C NMR Spectrum of **4d**.

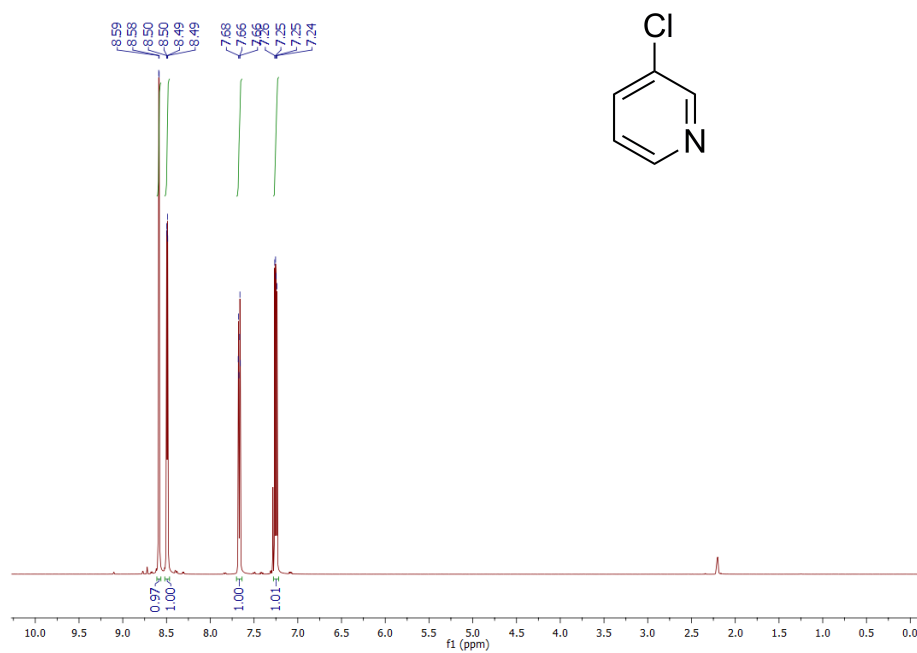


Figure S29. ¹H NMR Spectrum of **4e**.

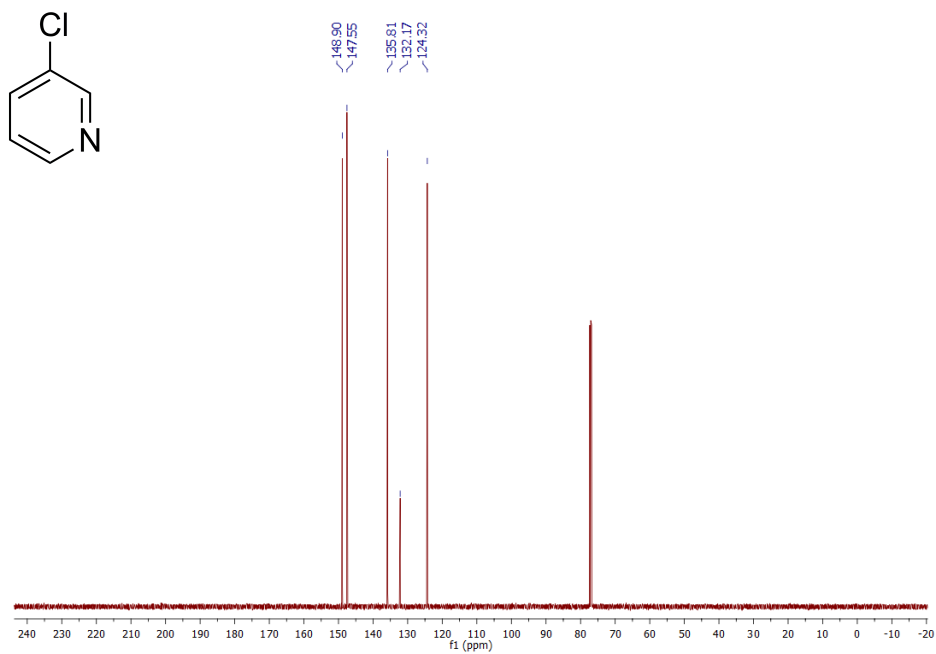


Figure S30. ¹³C NMR Spectrum of **4e**.

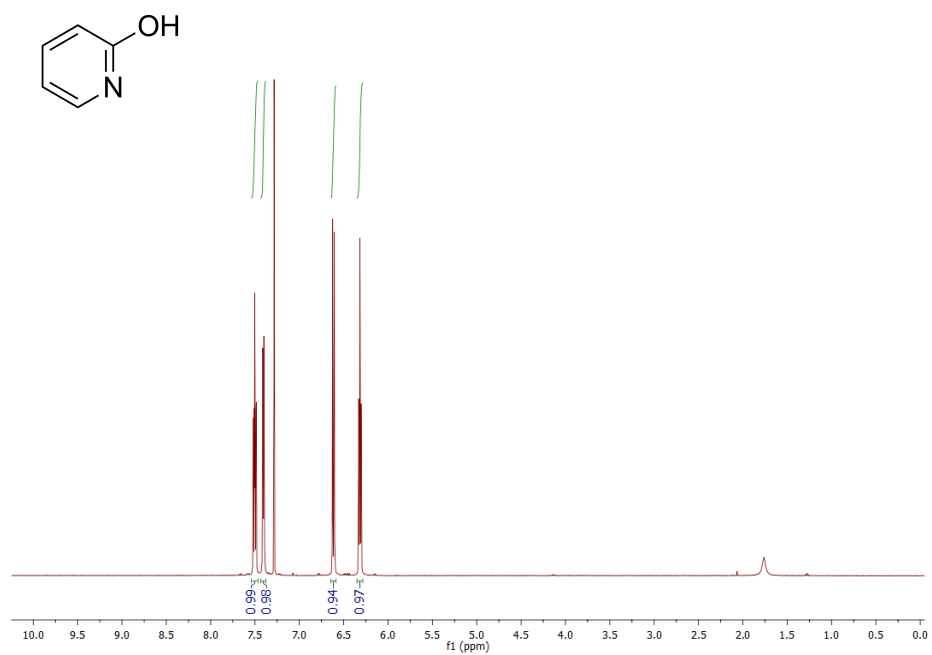


Figure S31. ^1H NMR Spectrum of **4f**.

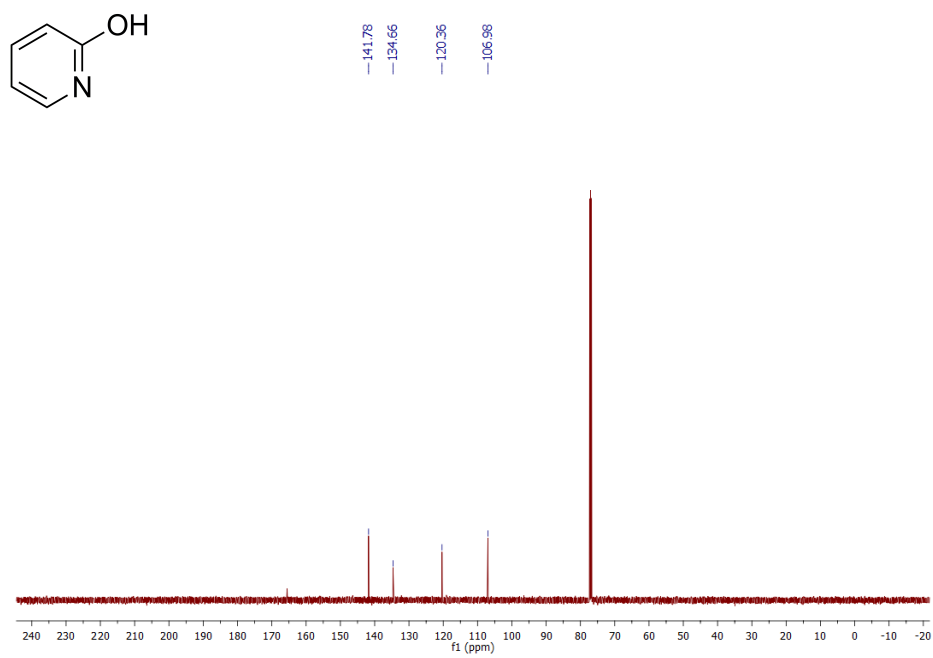


Figure S32. ^{13}C NMR Spectrum of **4f**.

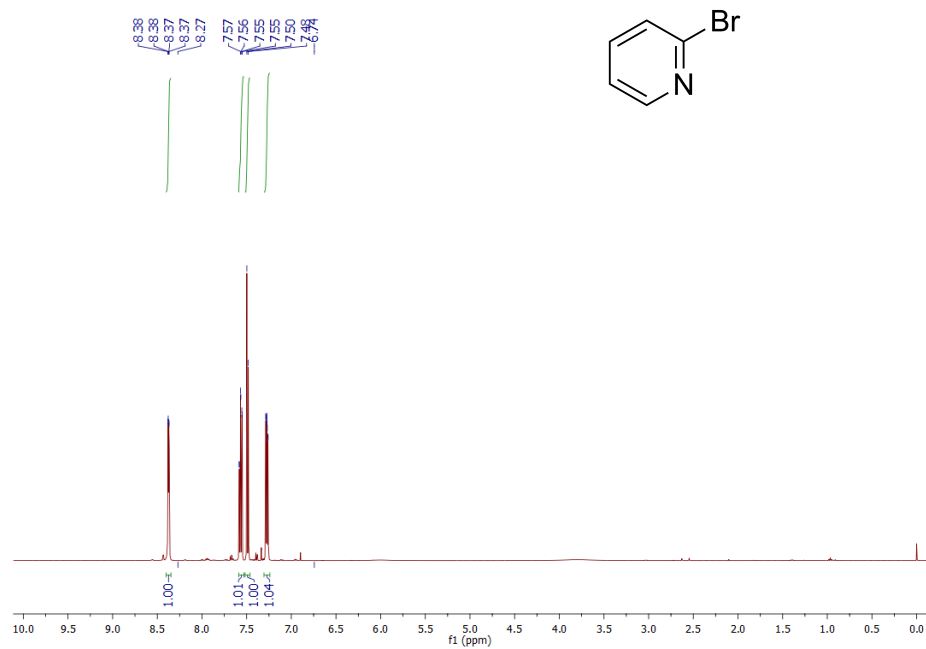


Figure S33. ¹H NMR Spectrum of **4g**.

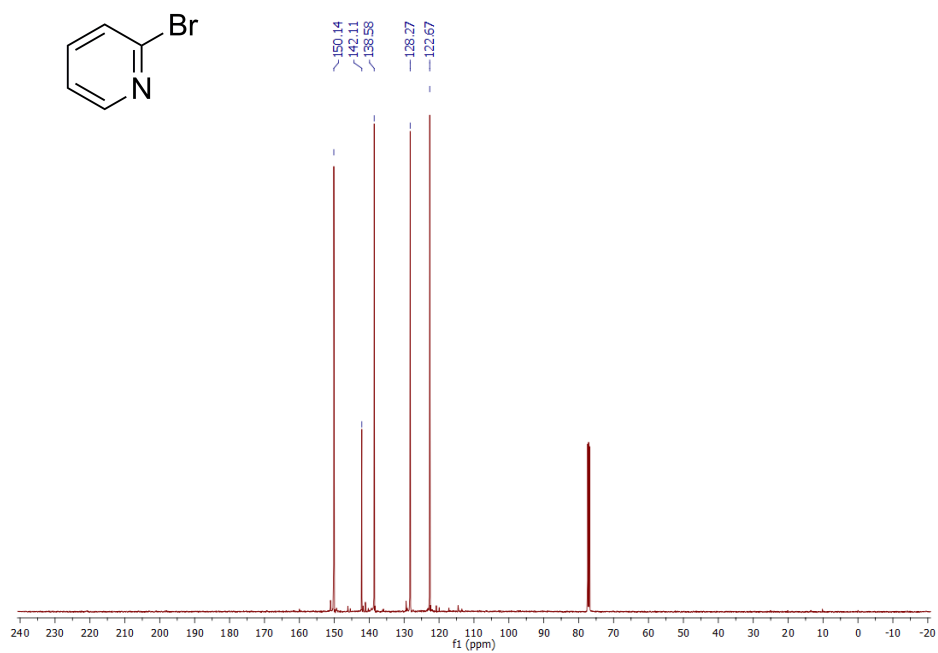


Figure S34. ¹³C NMR Spectrum of **4g**.

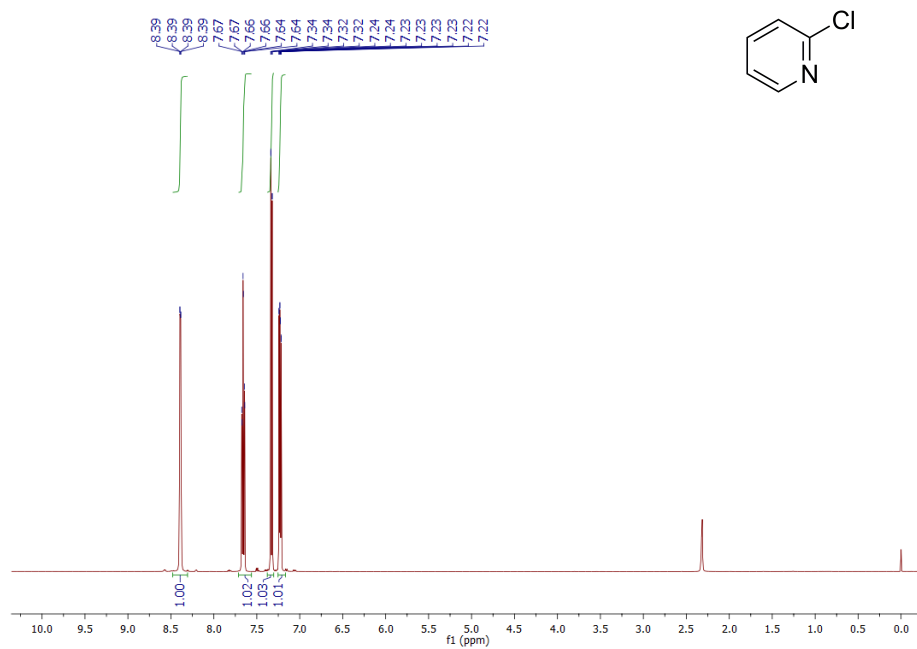


Figure S35. ^1H NMR Spectrum of **4h**.

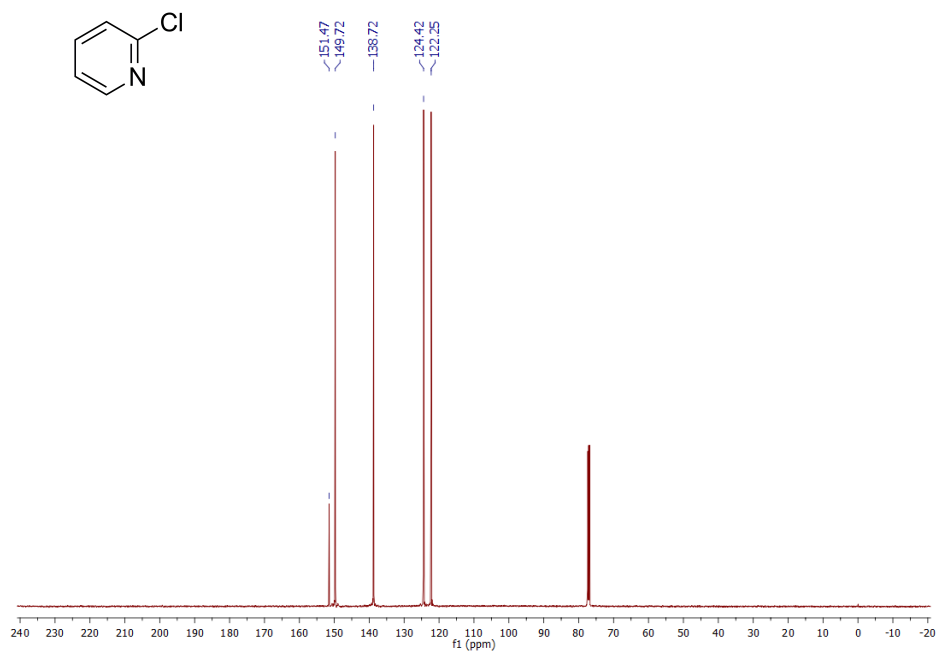


Figure S36. ^{13}C NMR Spectrum of **4h**.

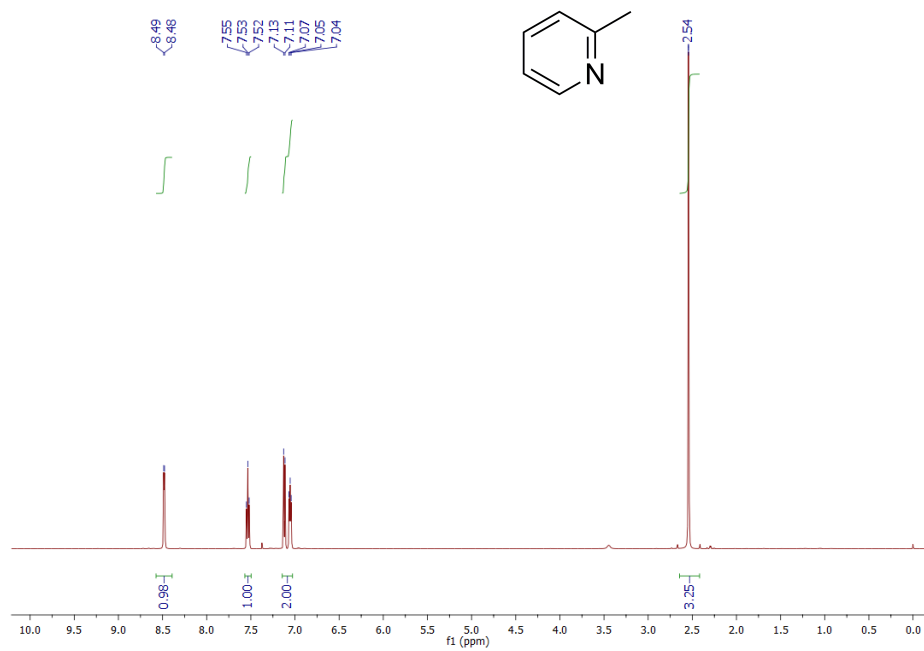


Figure S37. ¹H NMR Spectrum of **4i**.

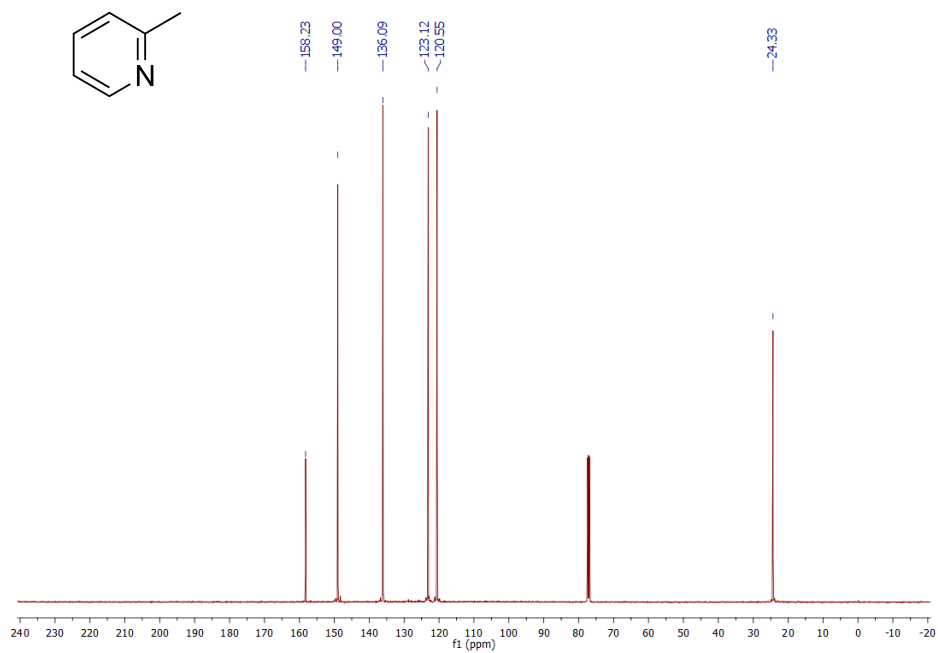


Figure S38. ¹³C NMR Spectrum of **4i**.

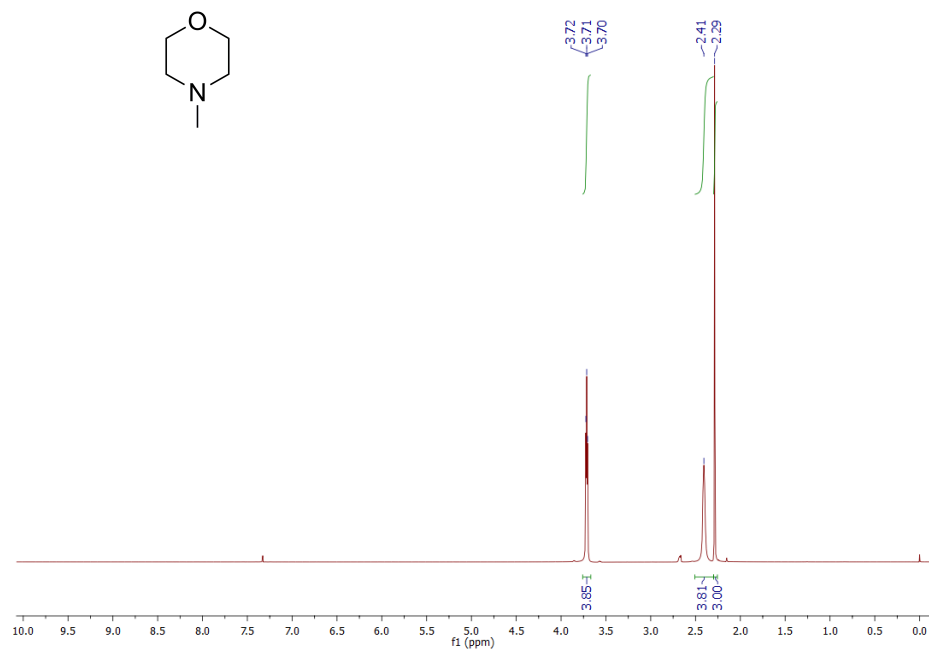


Figure S39. ^1H NMR Spectrum of **4j**.

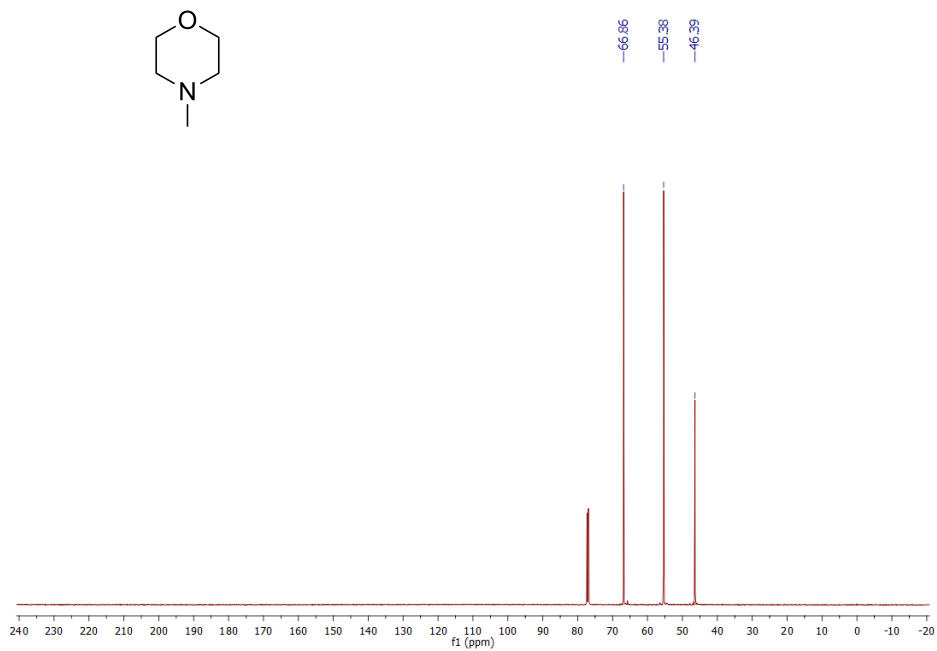


Figure S40. ^{13}C NMR Spectrum of **4j**.

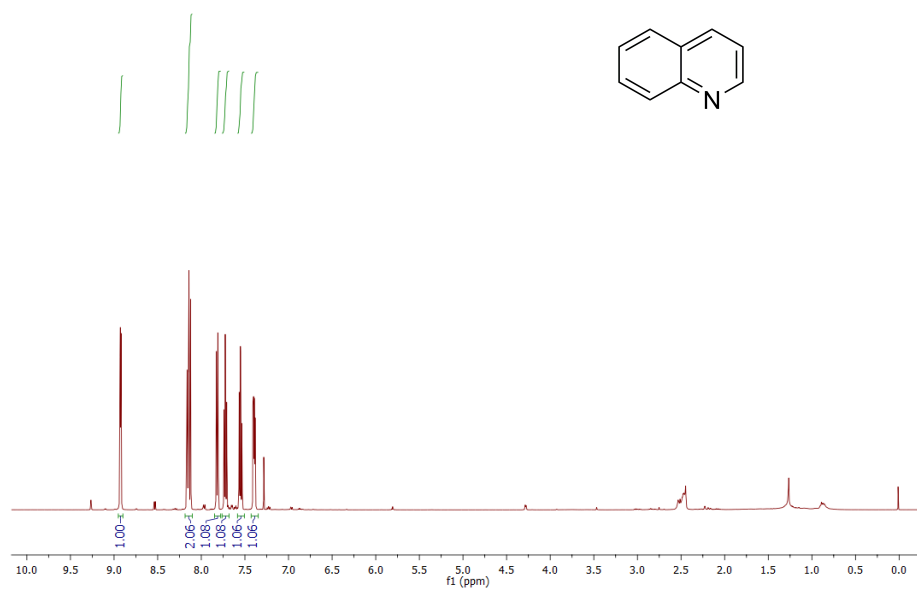


Figure S41. ¹H NMR Spectrum of **4k**.

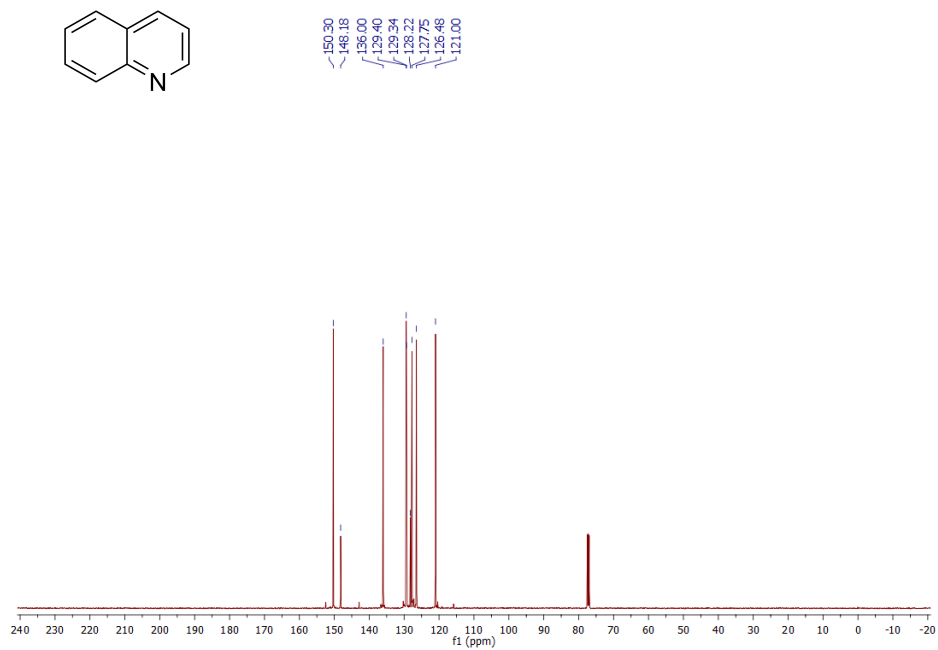


Figure S42. ¹³C NMR Spectrum of **4k**.

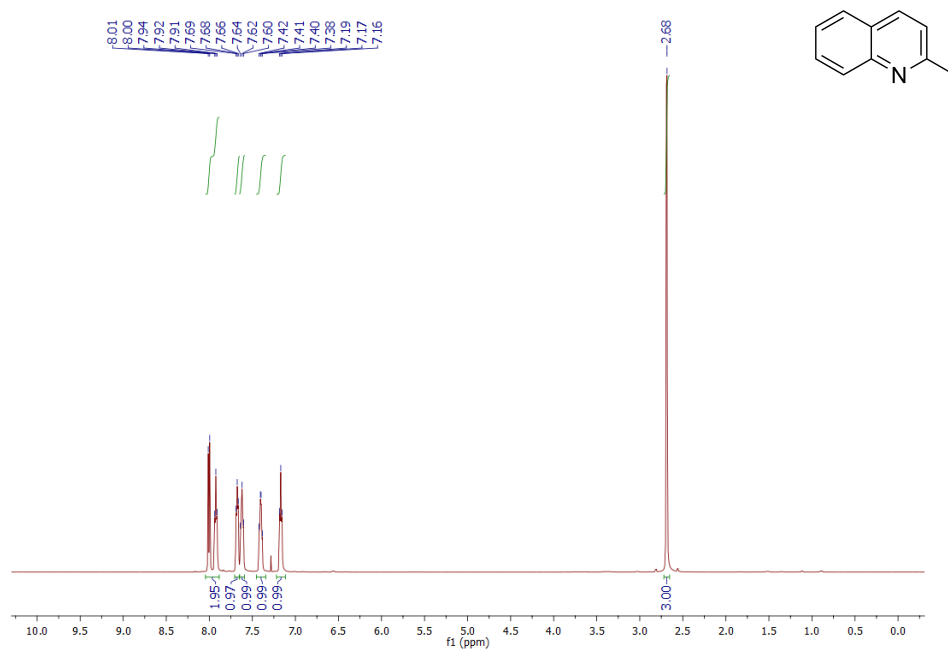


Figure S43. ¹H NMR Spectrum of **4I**

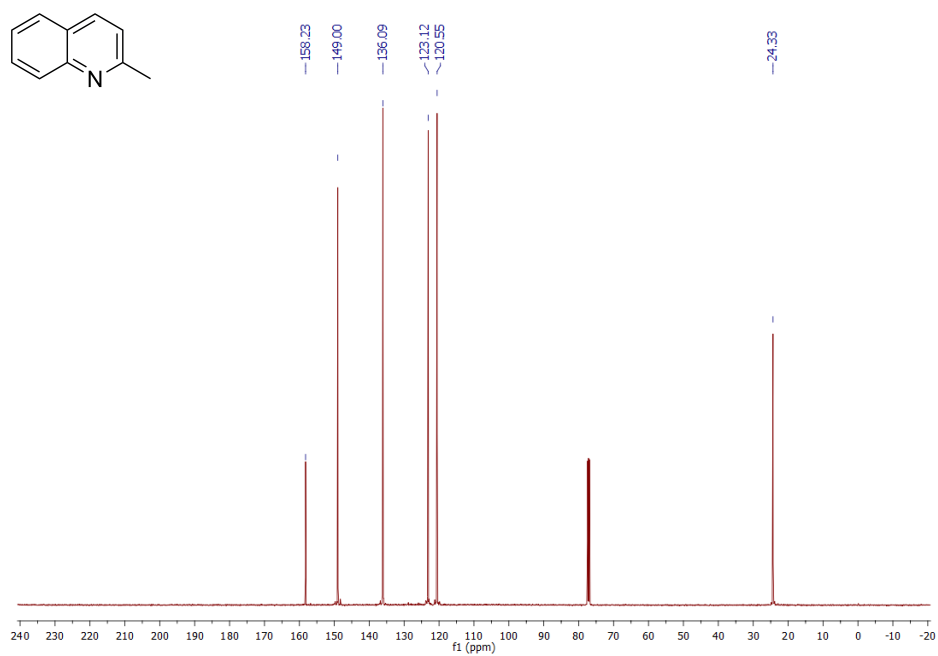


Figure S44. ¹³C NMR Spectrum of **4I**

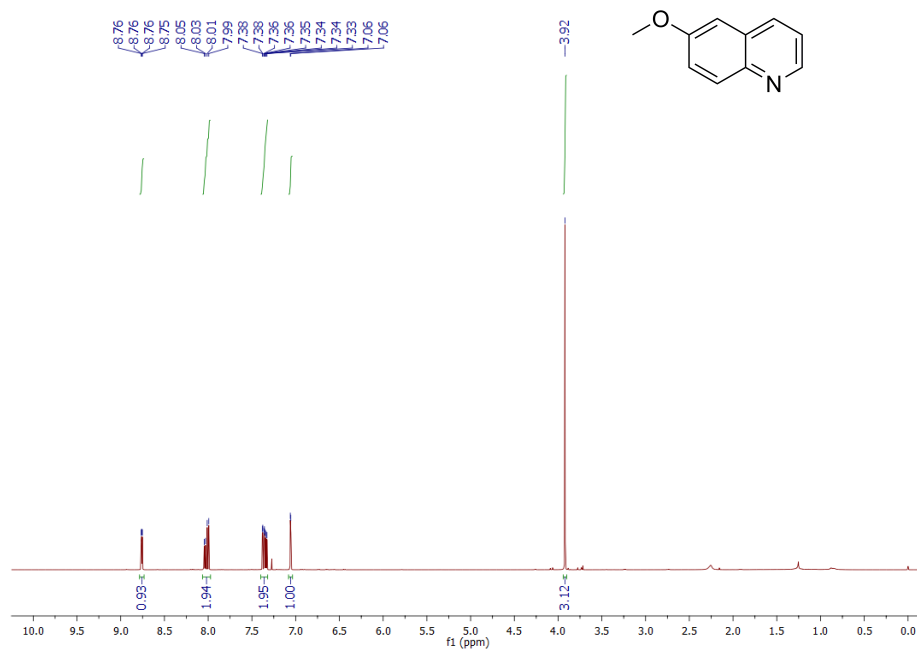


Figure S45. ¹H NMR Spectrum of **4m**.

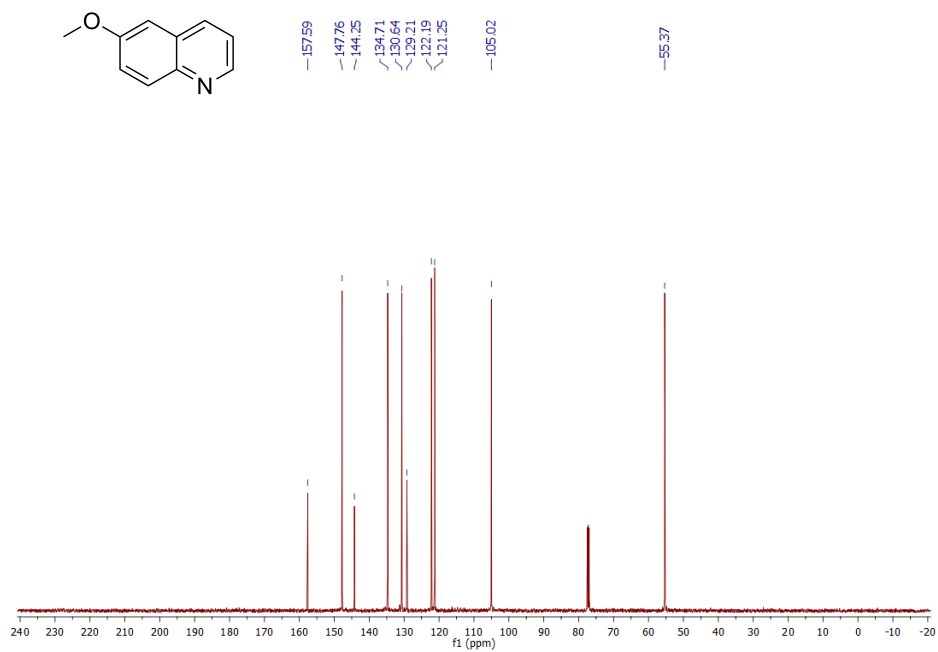


Figure S46. ¹³C NMR Spectrum of **4m**.

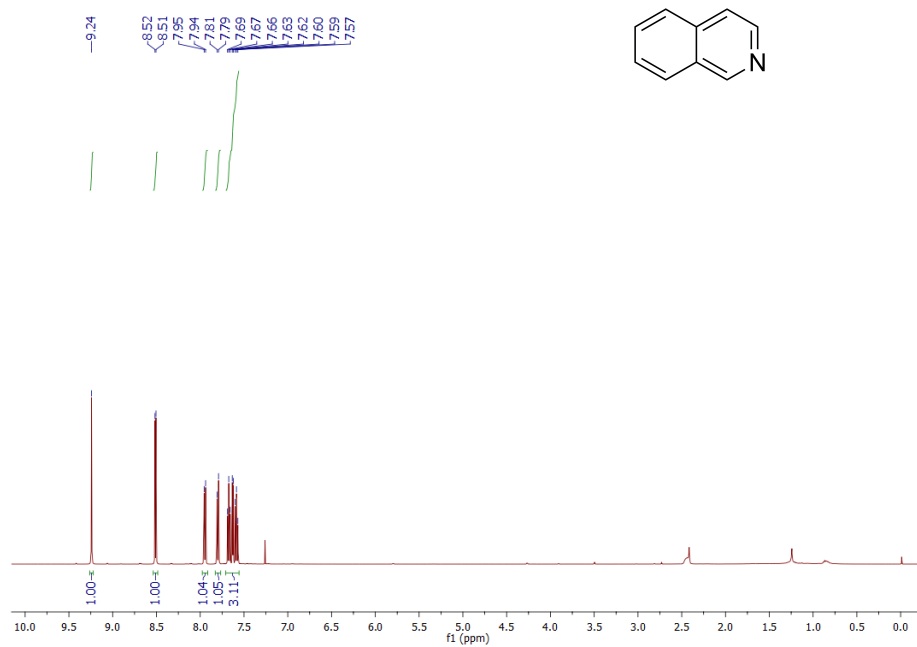


Figure S47. ¹H NMR Spectrum of **4n**.

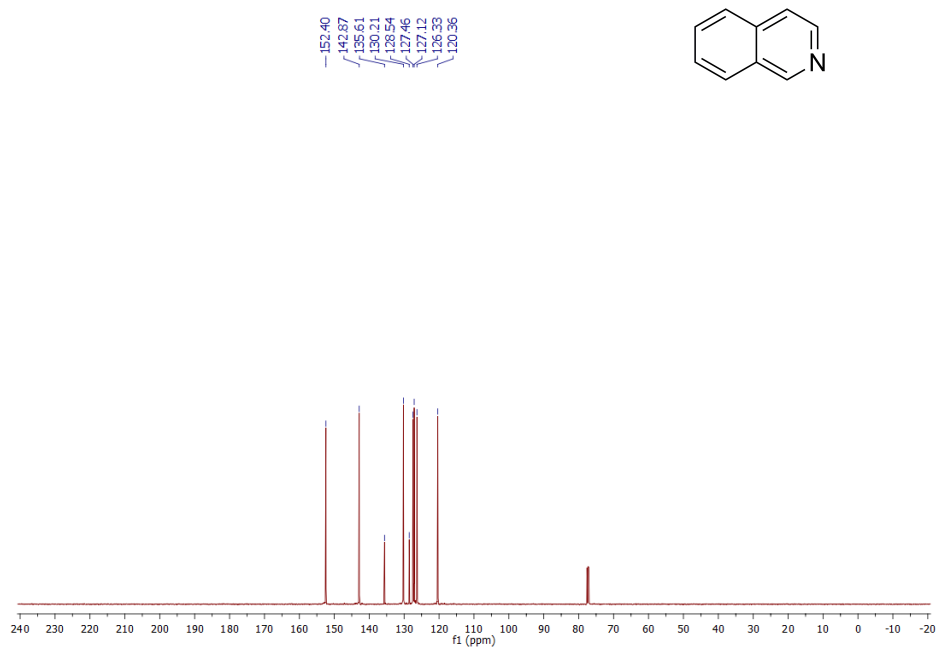


Figure S48. ¹³C NMR Spectrum of **4n**.

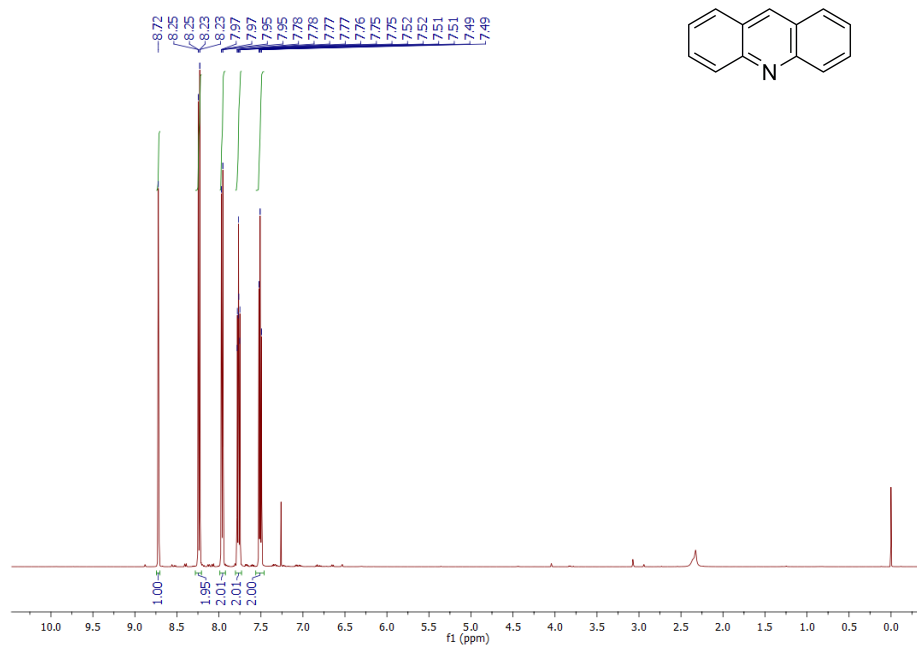


Figure S49. ¹H NMR Spectrum of **4o**.

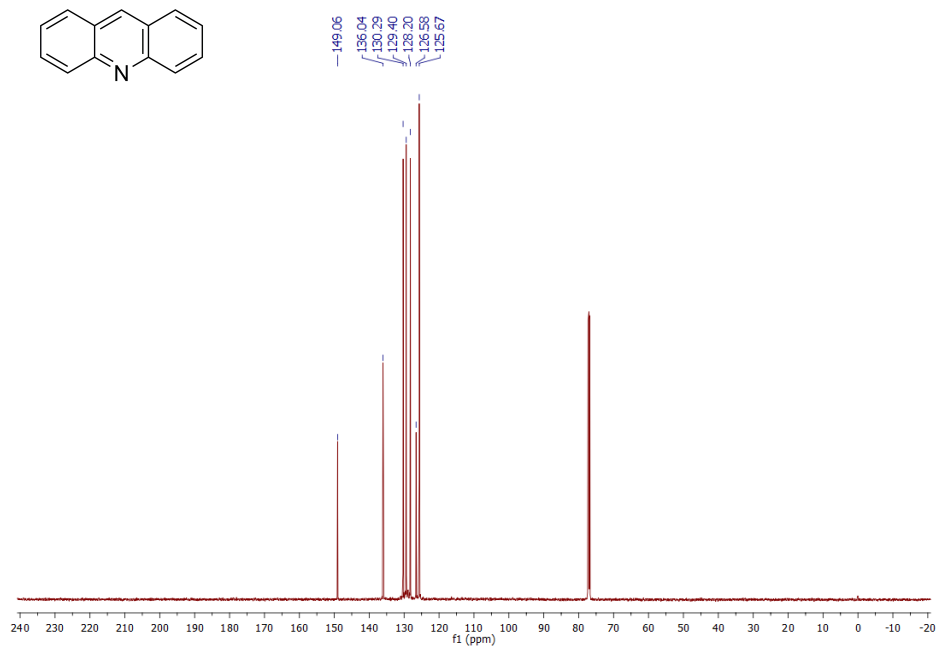


Figure S50. ¹³C NMR Spectrum of **4o**.

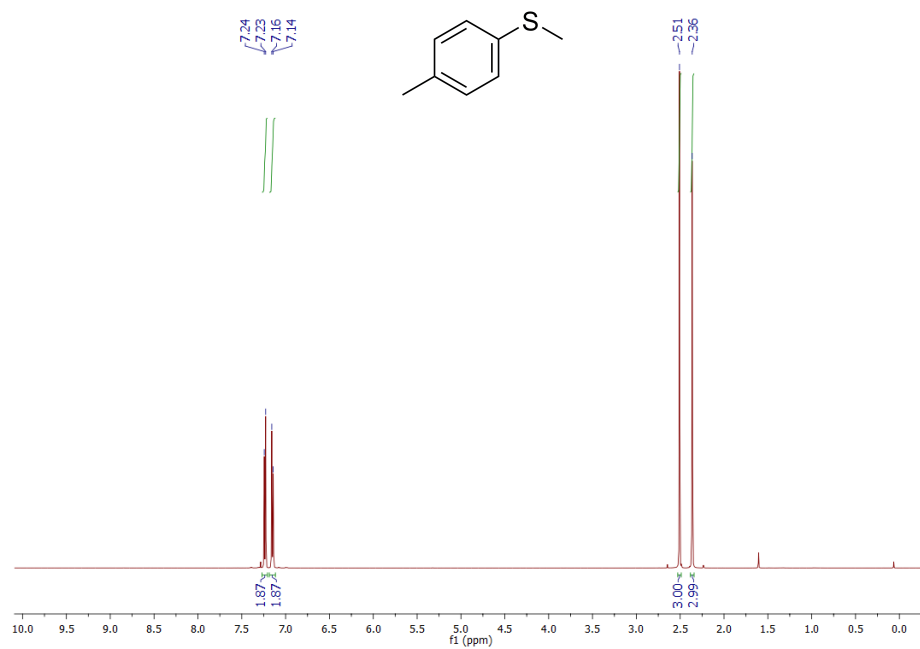


Figure S51. ¹H NMR Spectrum of **9a**.

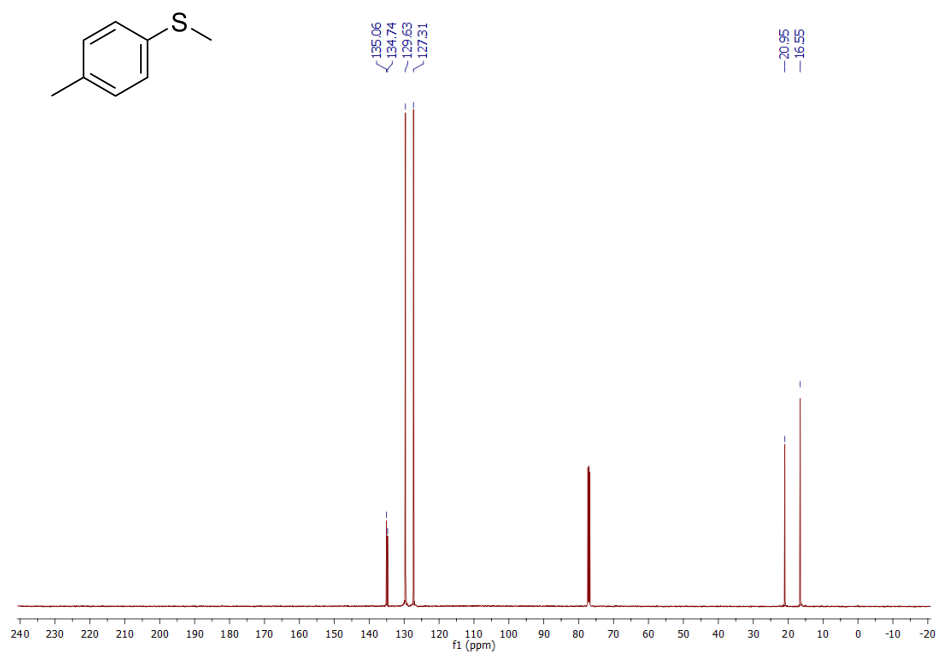


Figure S52. ¹³C NMR Spectrum of **9a**.

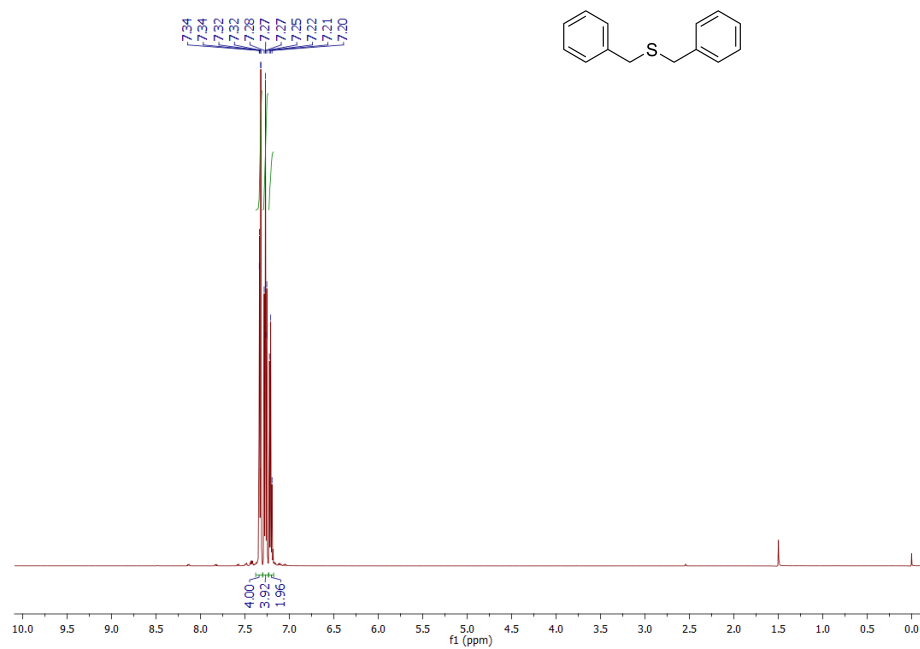


Figure S53. ¹H NMR Spectrum of **9c**.

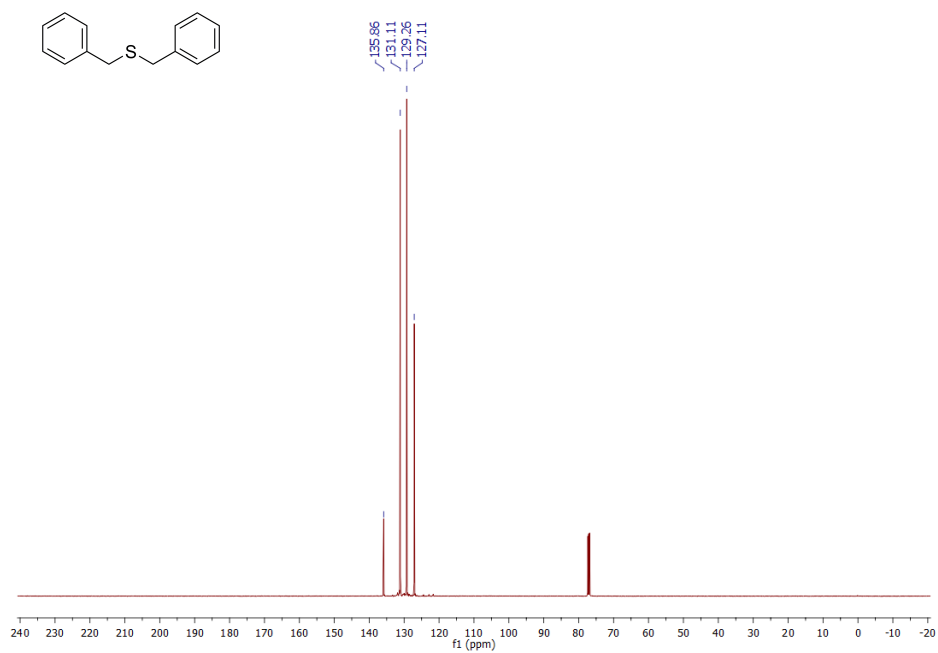


Figure S54. ¹³C NMR Spectrum of **9c**.

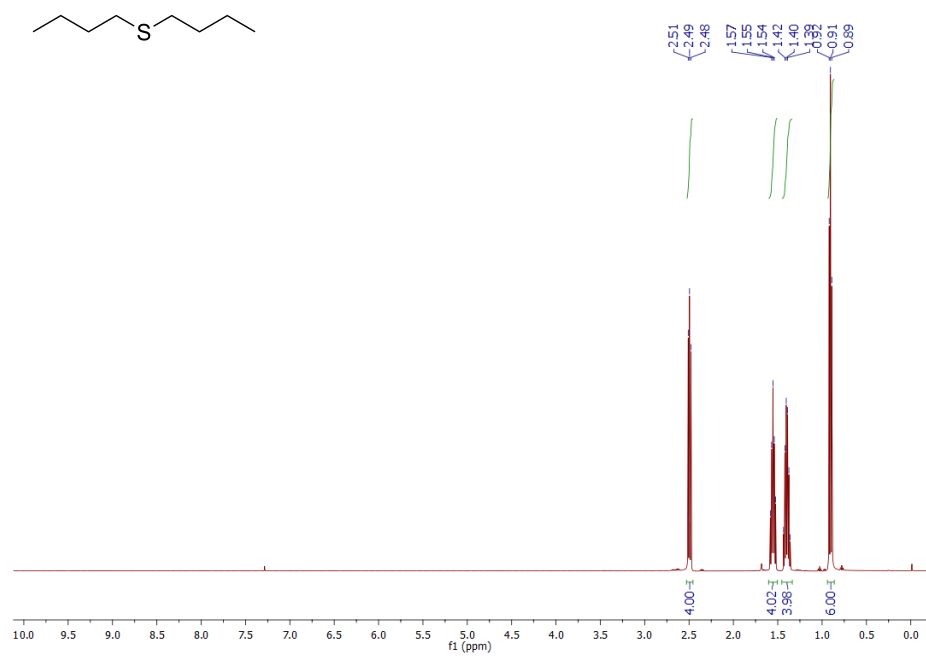


Figure S55. ¹H NMR Spectrum of **9d**.

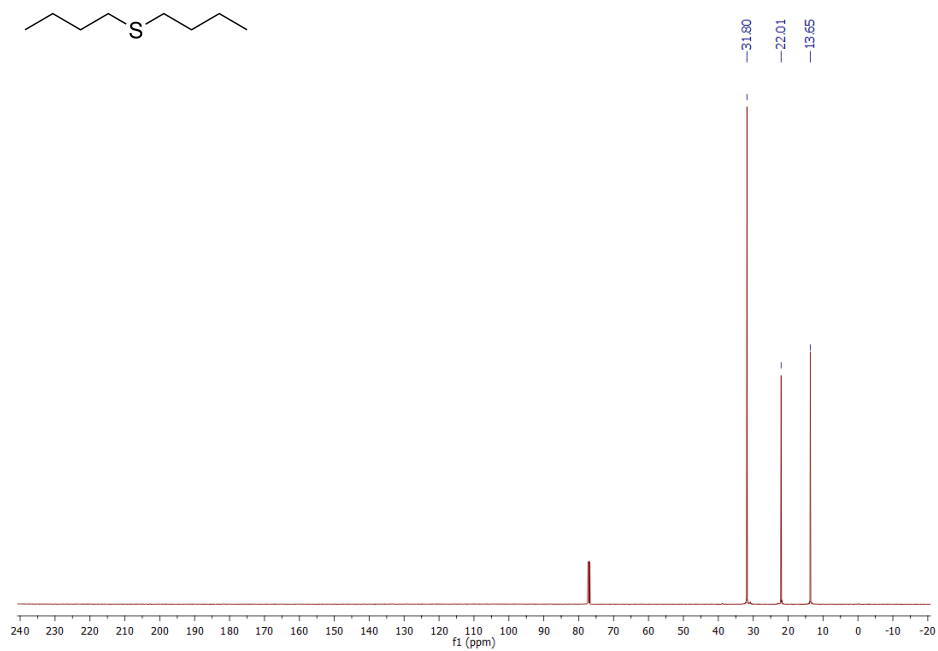


Figure S56. ¹³C NMR Spectrum of **9d**.