

Supporting Information

Synthesis of 1-azaspiro[4.4]nonane derivatives enabled by domino radical bicyclization involving formation and capture of alkoxyaminyl radicals

Alejandro Guerrero-Caicedo,^a Diana M. Soto-Martínez,^a David A. Osorio,^a Muskendol Novoa,^a Alix E. Loaiza,^b Luz M. Jaramillo-Gómez^{a*}

^a Department of Chemistry, Universidad del Valle, Calle 13 # 100-00 Cali, Colombia

^b Department of Chemistry, Pontificia Universidad Javeriana, Cra 7 No 40-62, Edificio 52, Bogotá D. C.

E-mail: luz.m.jaramillo@correounivalle.edu.co

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1. ^1H NMR and ^{13}C NMR spectra

For diastereomers **19** and **25** only was shown an enantiomer in the structures drawn over the spectra.

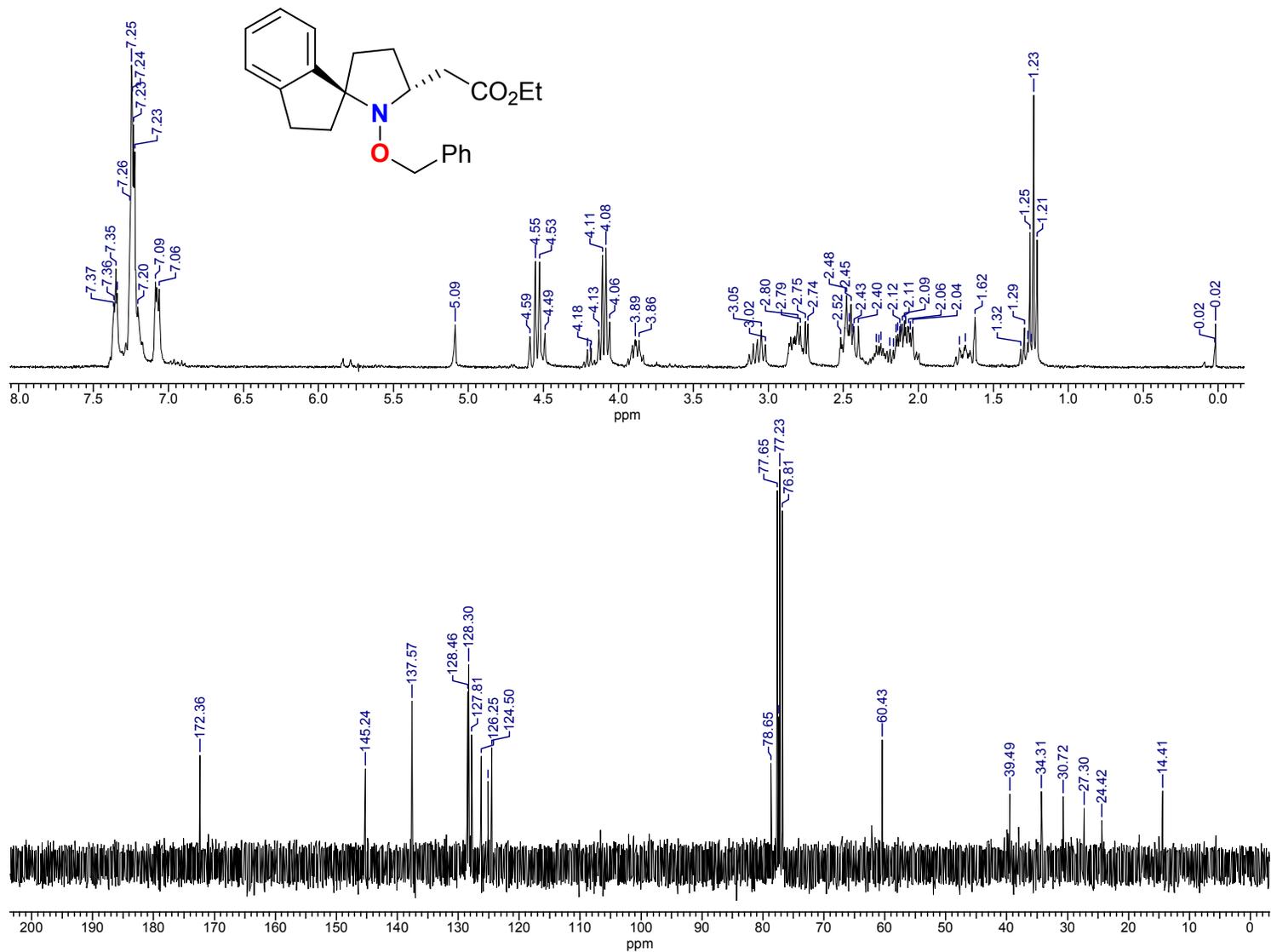


Figure S1. ¹H (upper) and ¹³C (lower) NMR spectra of the *trans* diastereomer **19a** from Method (A).

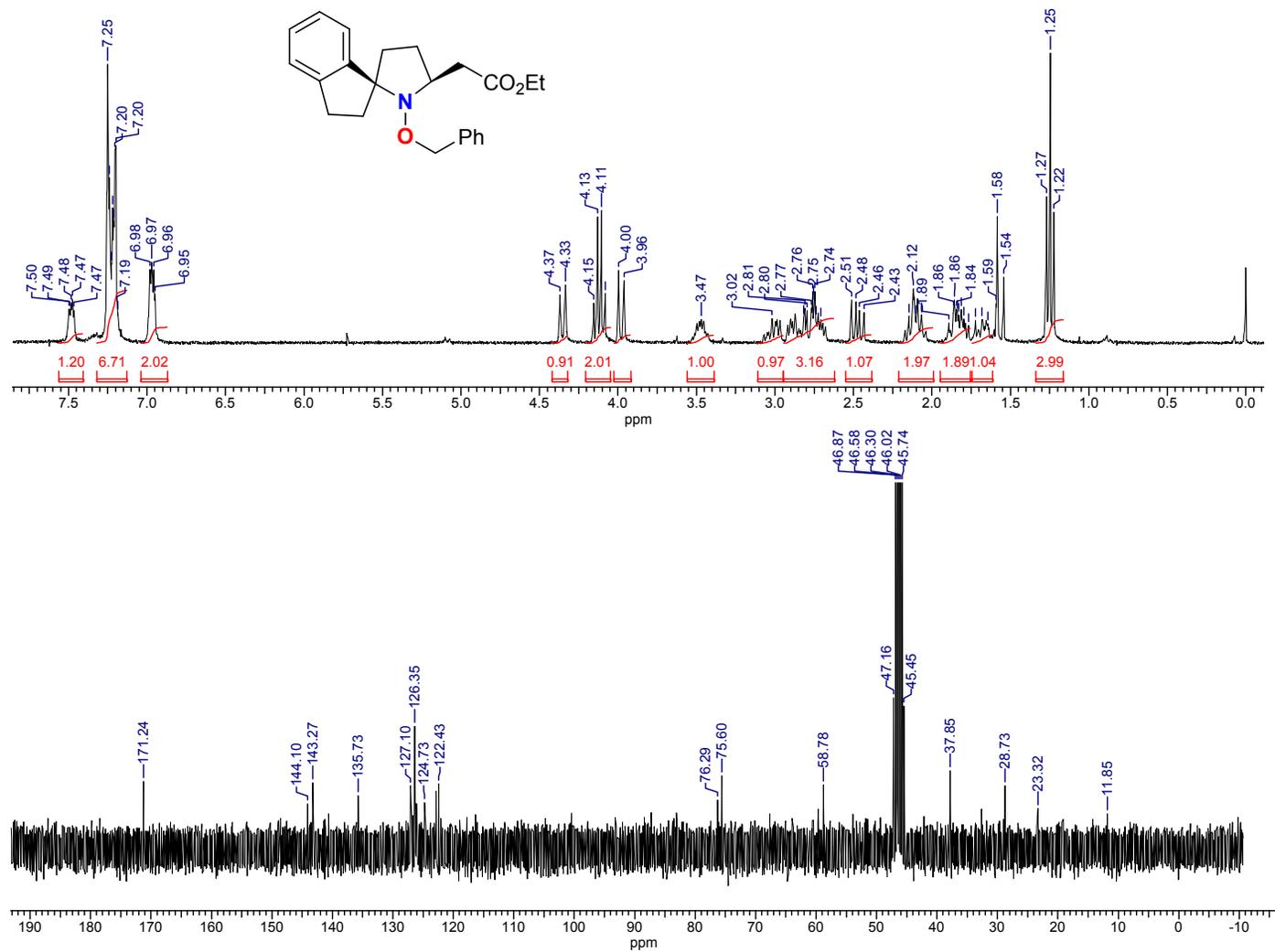


Figure S2. ¹H (upper) and ¹³C (lower) NMR spectra of the *cis* diastereomer **19a** from Method (A).

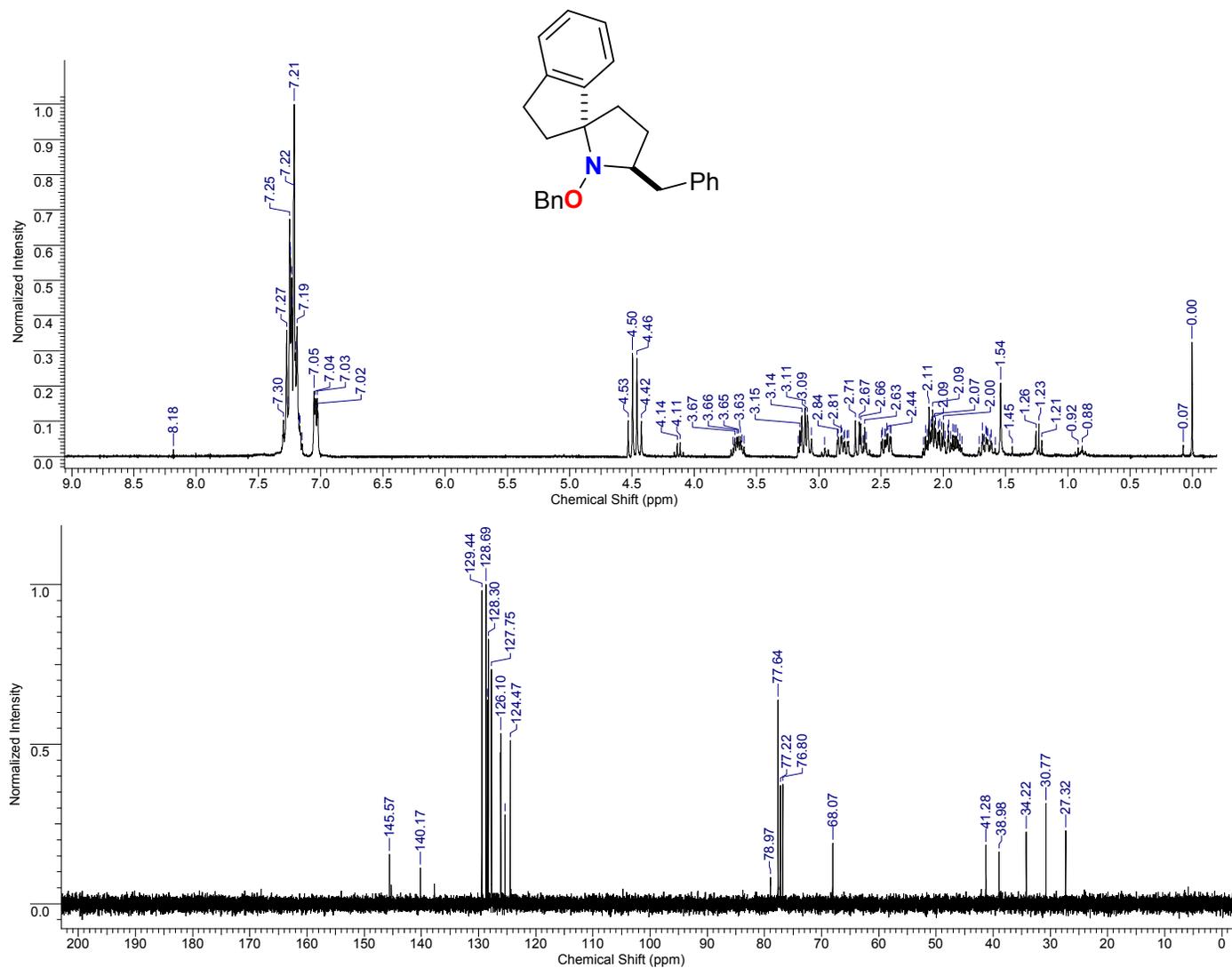


Figure S3. ¹H (upper) and ¹³C (lower) NMR spectra of *trans* diastereomer **19b** from Method (A).

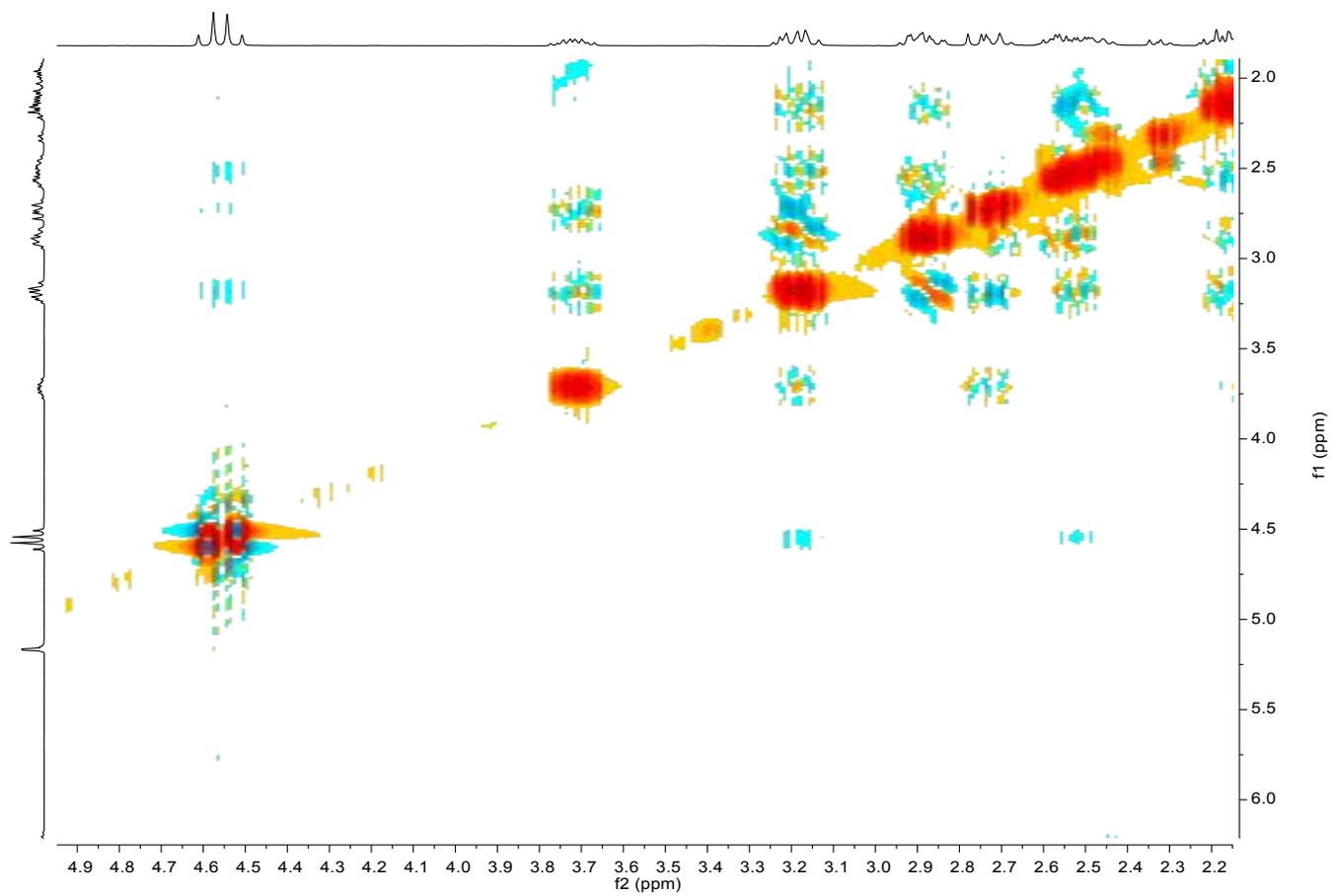


Figure S4. NOESY of *trans* diastereomer **19b** from Method (A).

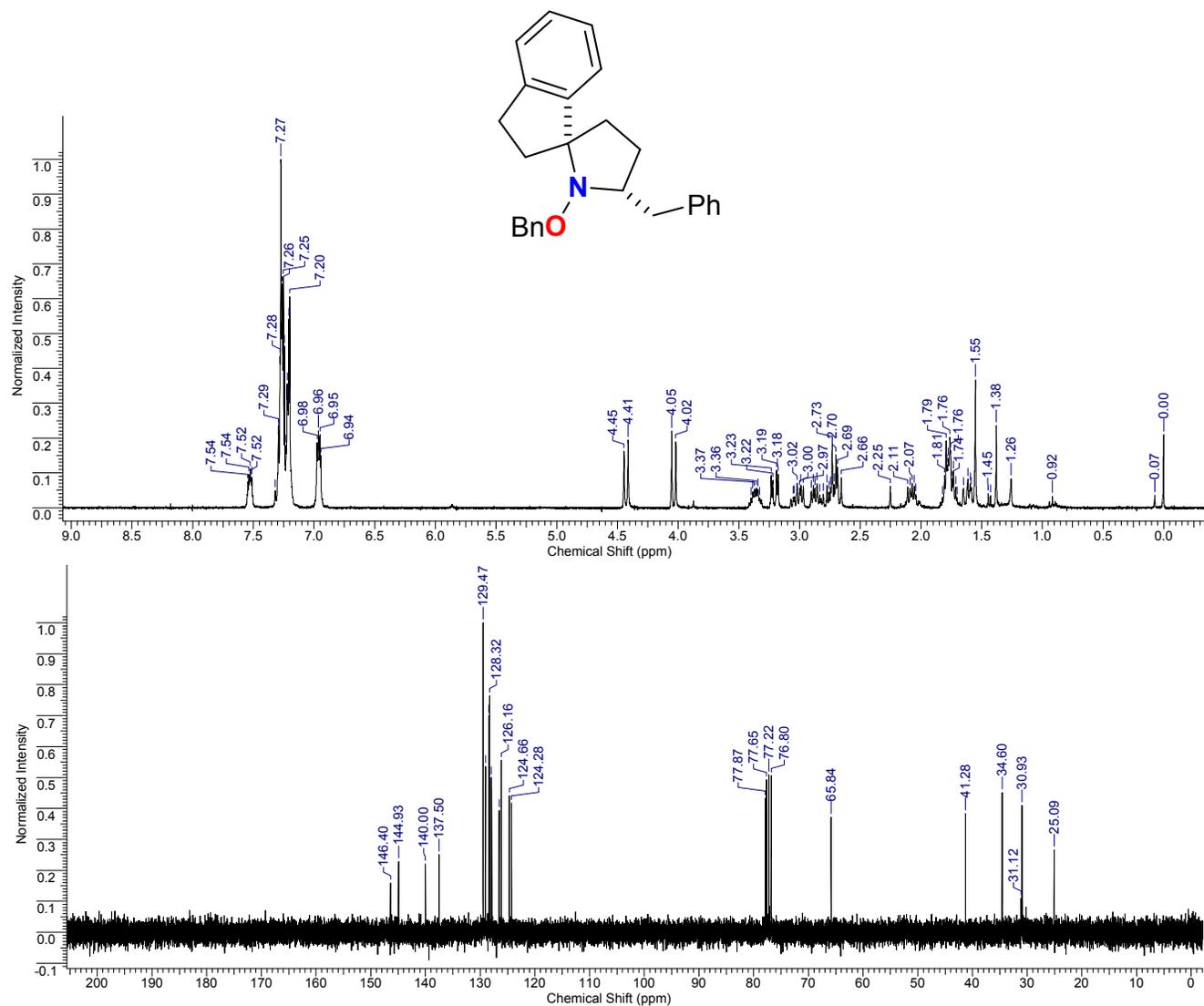


Figure S5. ¹H (upper) and ¹³C (lower) NMR spectra of *cis* diastereomer **19b** from Method (A).

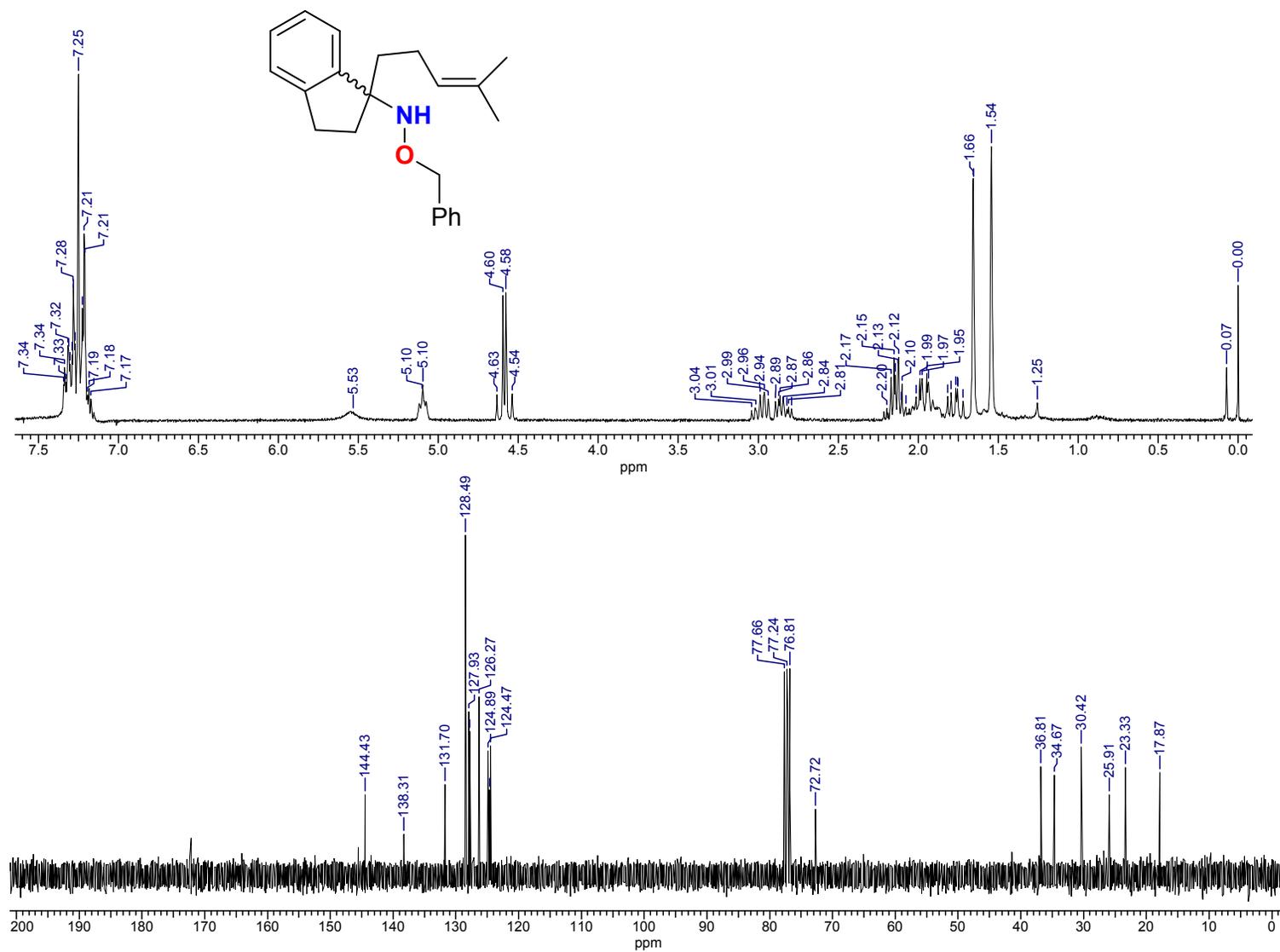


Figure S6. ^1H (upper) and ^{13}C (lower) NMR spectra of compound **23c** from Method (A).

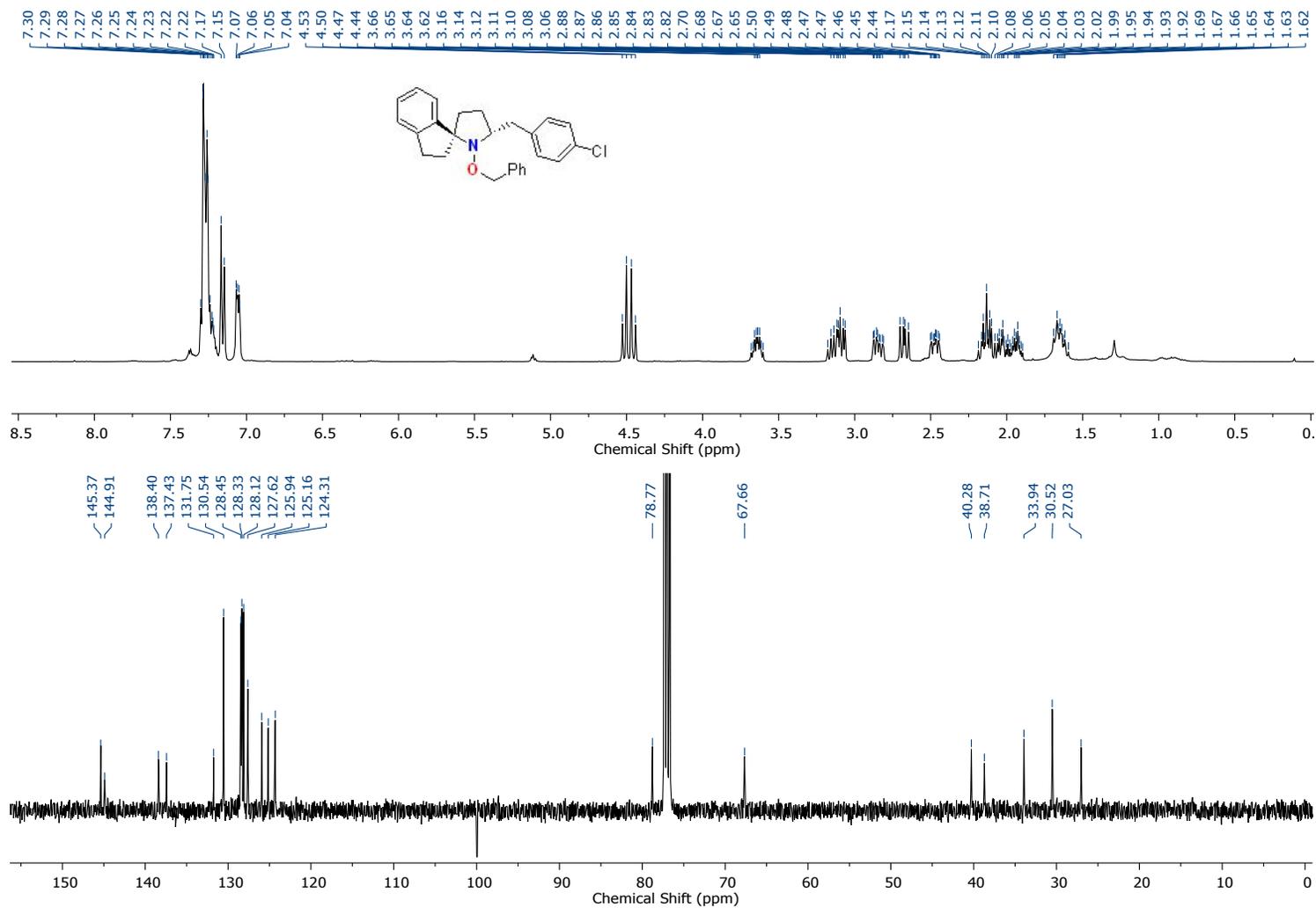


Figure S7. ^1H (upper) and ^{13}C (lower) NMR spectra of *trans* diastereomer **19d** from Method (A).

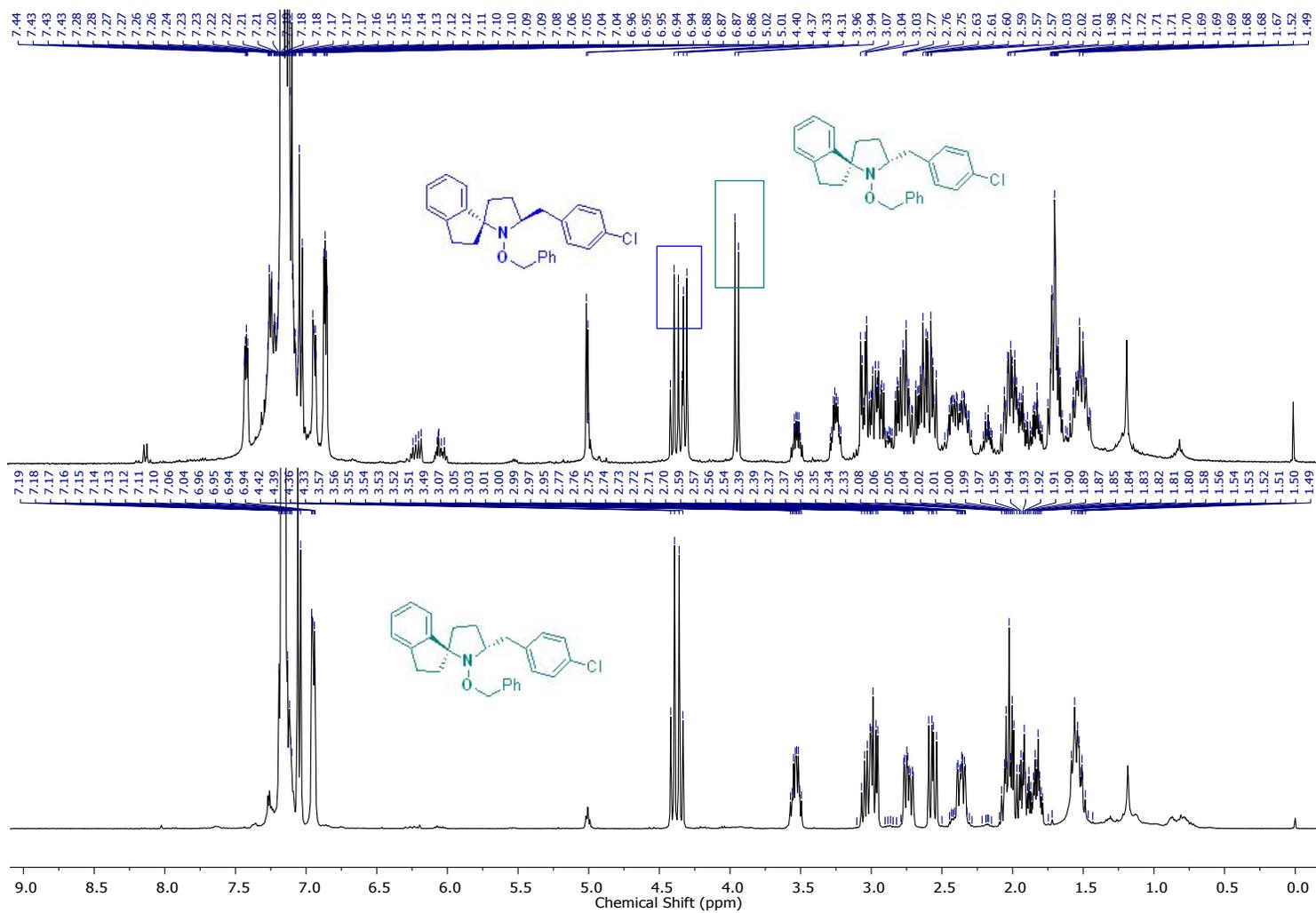


Figure S8. ¹H NMR spectra (upper) of mixture reaction and (lower) *trans* diastereomer **19d** both from Method (A).

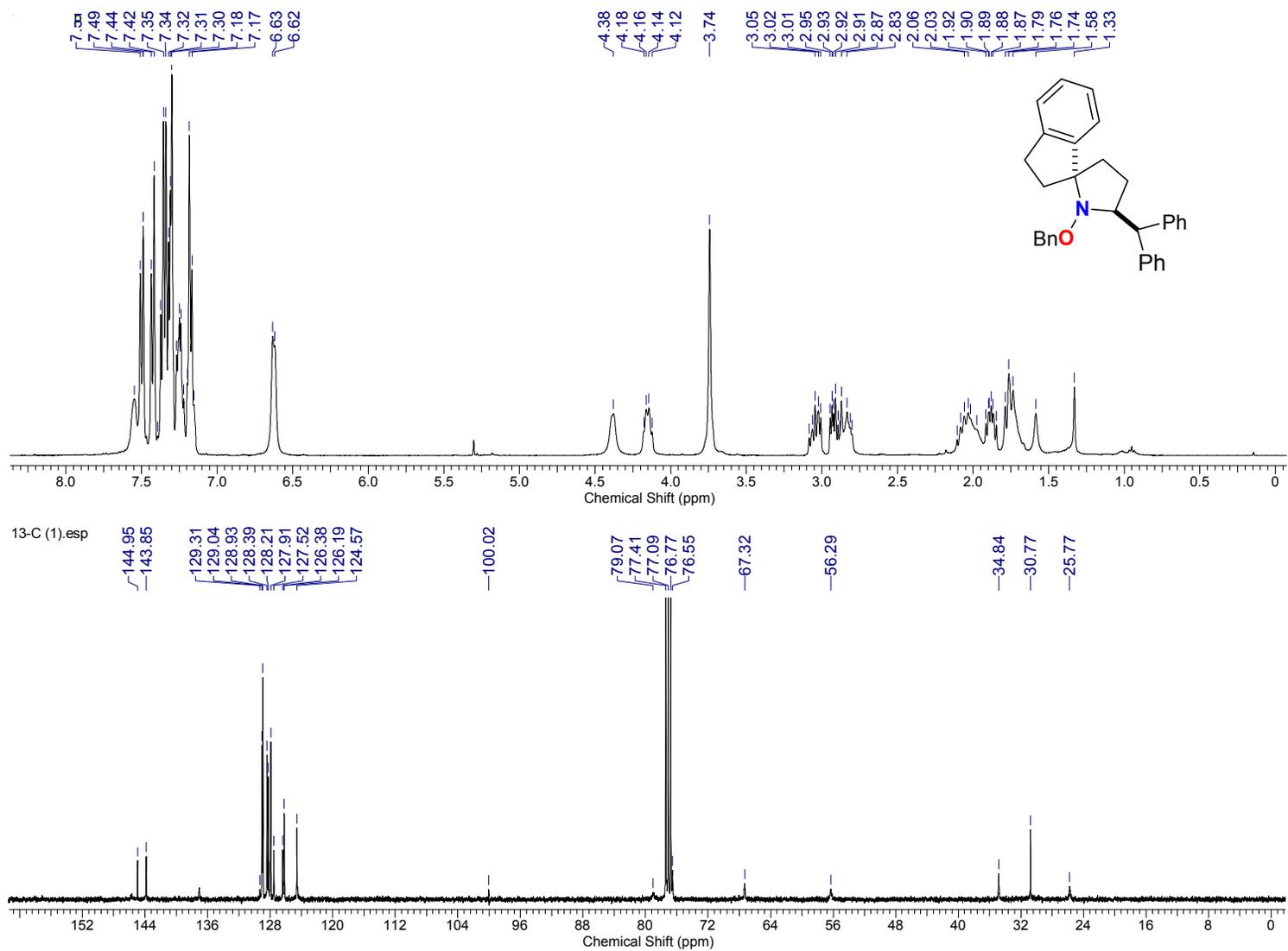


Figure S9. ¹H (upper) and ¹³C (lower) NMR spectra of *trans* diastereomer **19e** from Method (A).

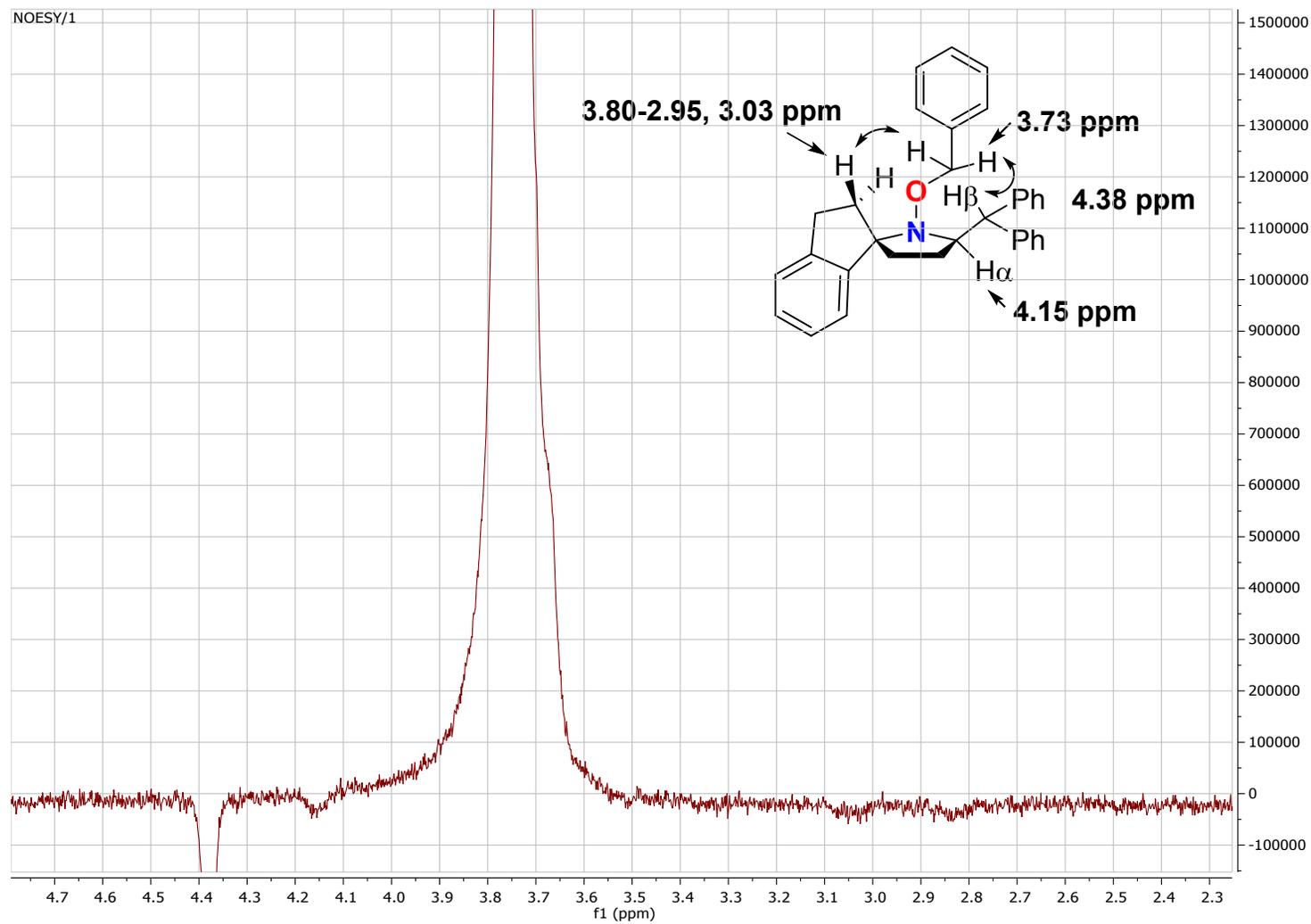


Figure S10. NOESY-1D selective of *trans* diastereomer **19e** from Method (A).

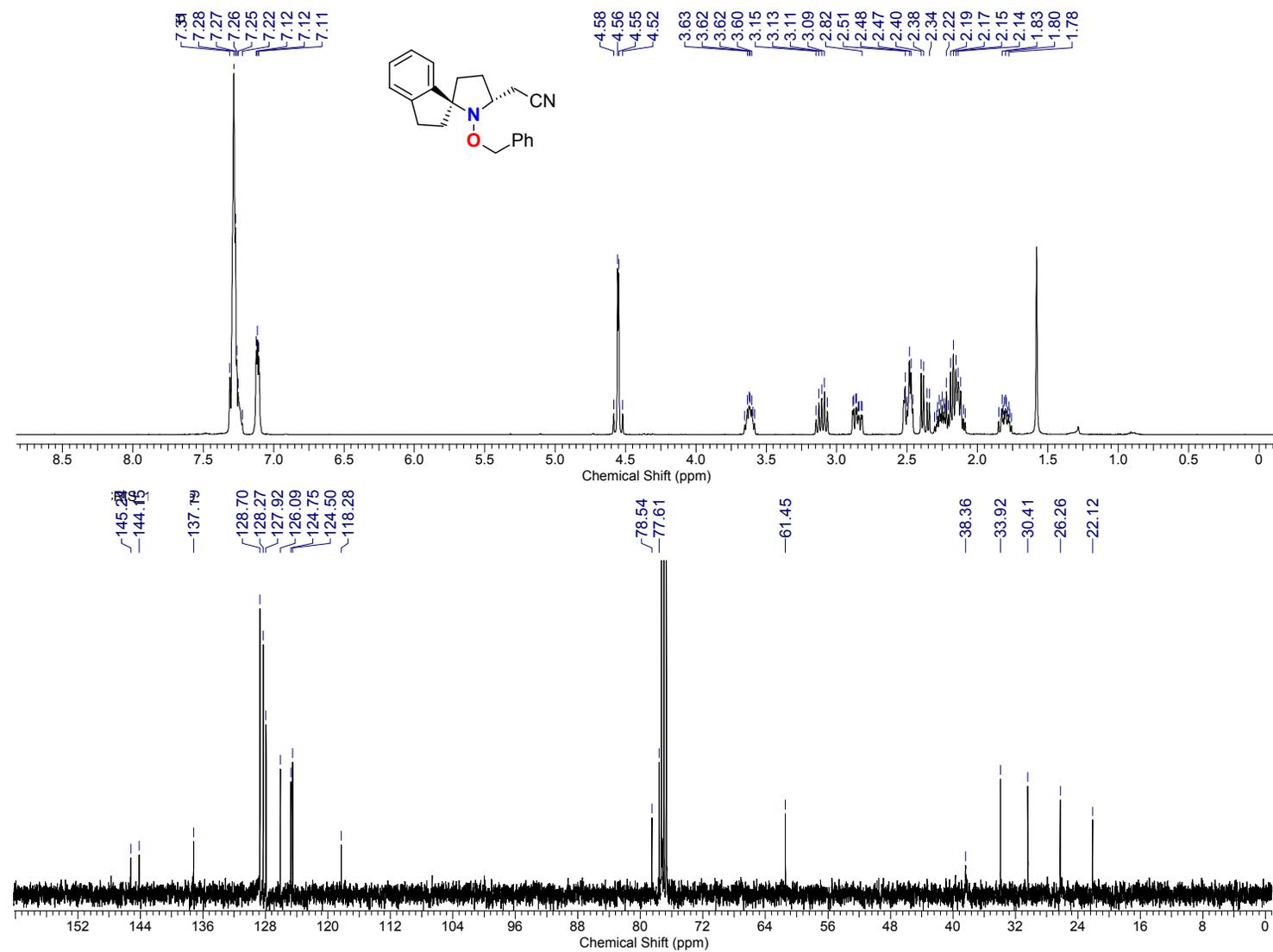


Figure S11. ¹H (upper) and ¹³C (lower) NMR spectra of *trans* diastereomer **9** from Method (A).

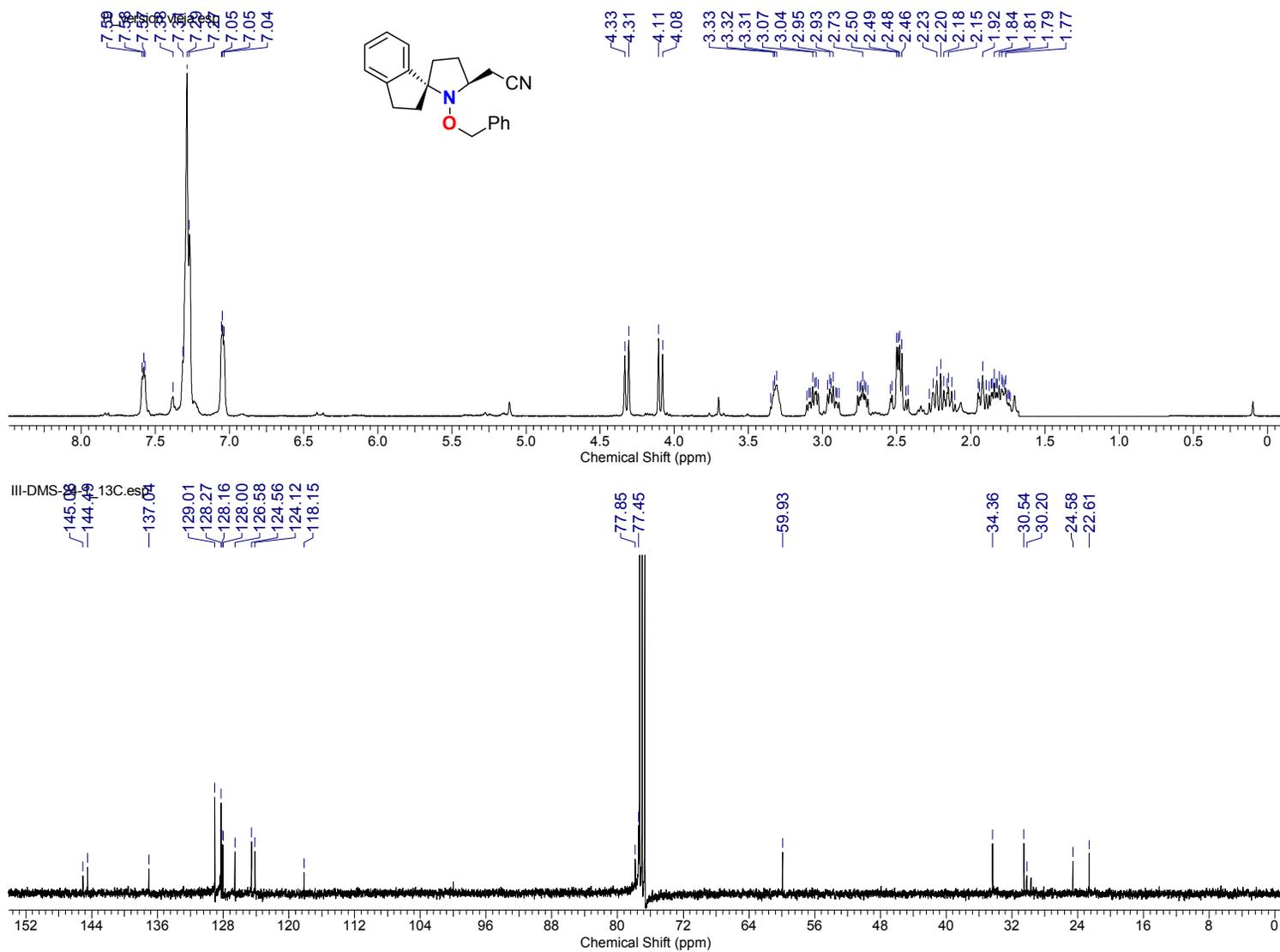


Figure S12. ¹H (upper) and ¹³C (lower) NMR spectra of *cis* diastereomer **9** from Method (A).

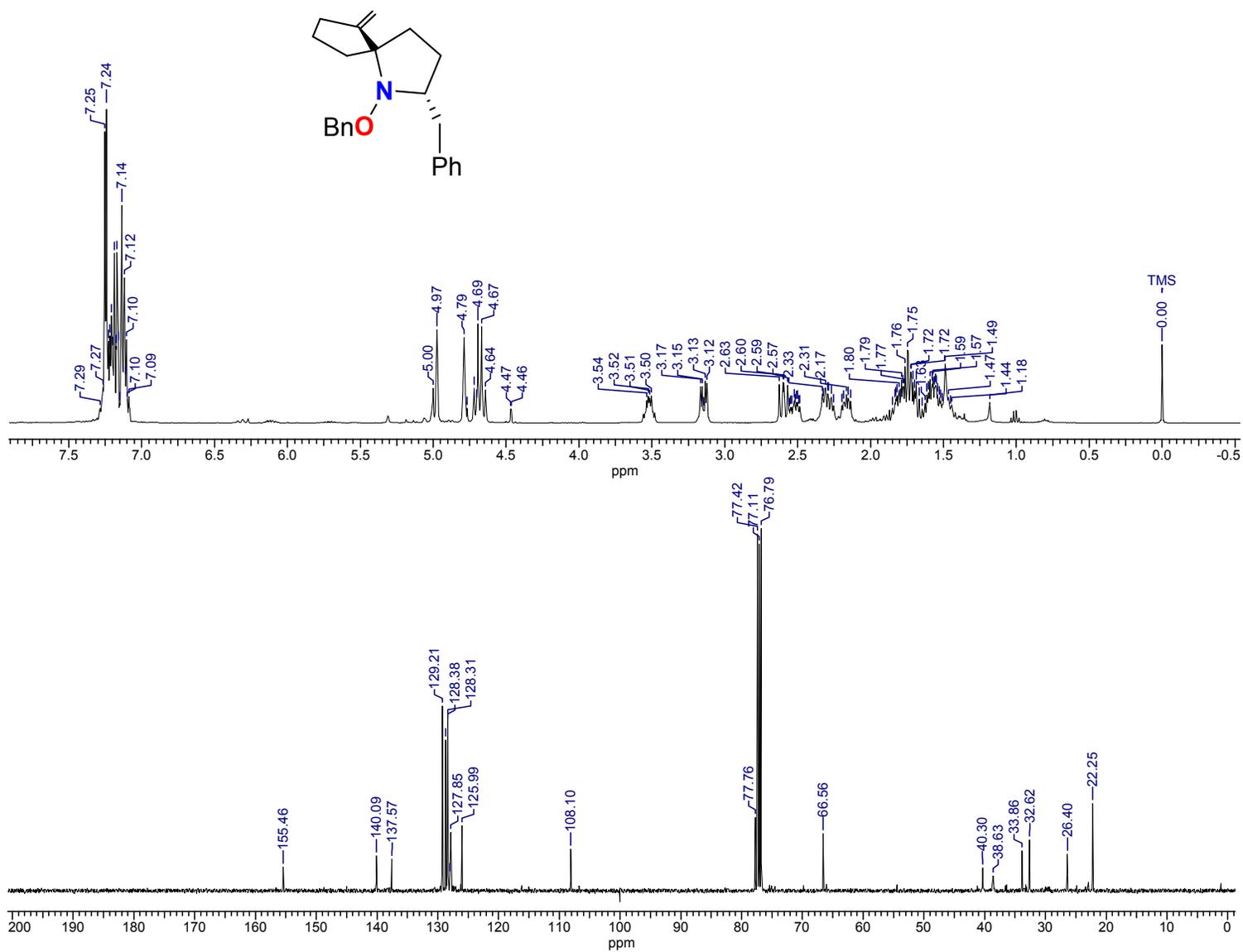


Figure S13. ¹H (upper) and ¹³C (lower) NMR spectra of *trans* diastereomer **25i** from Method (A).

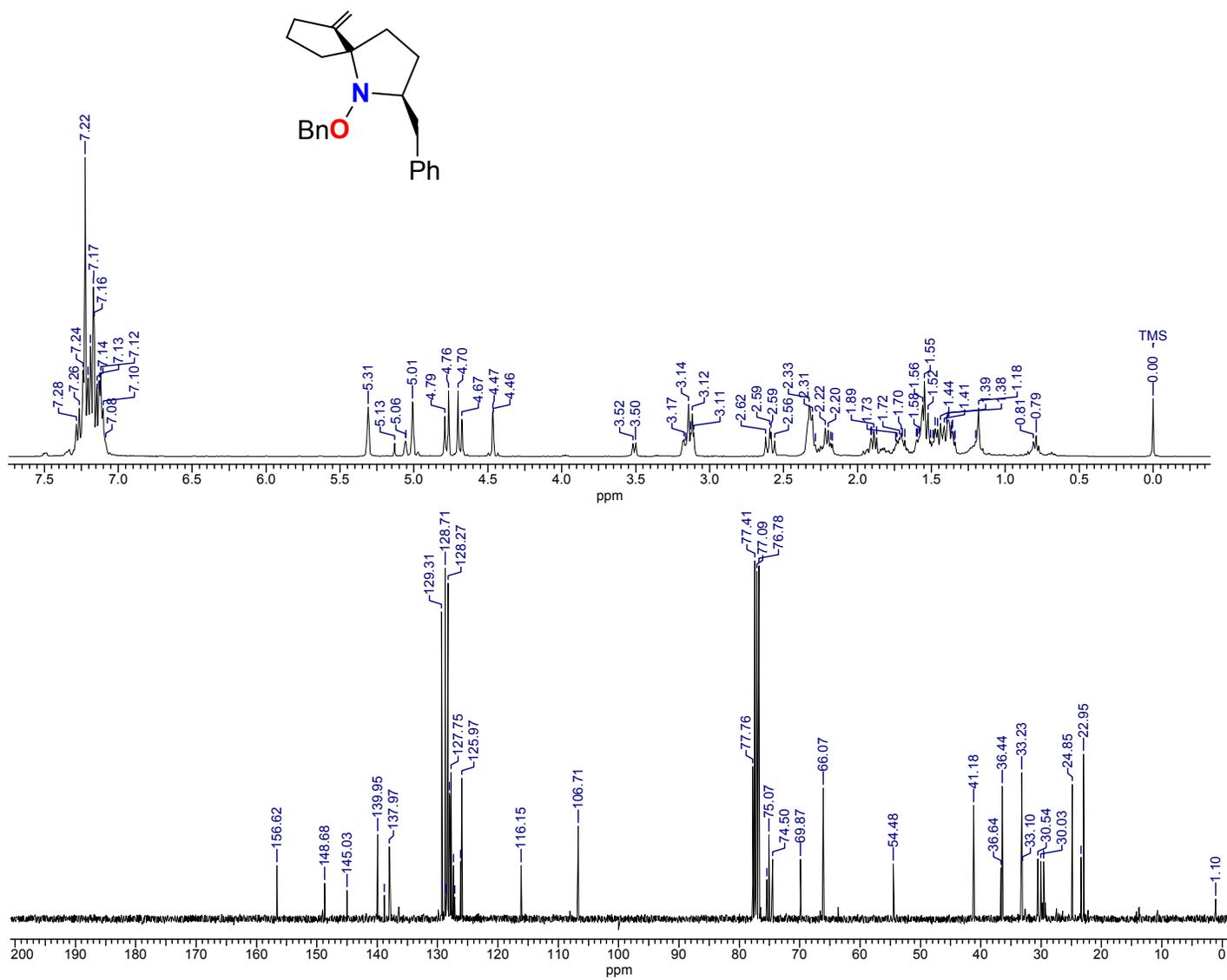


Figure S14. ¹H (upper) and ¹³C (lower) NMR spectra of *cis* diastereomer **25i** from Method (A).

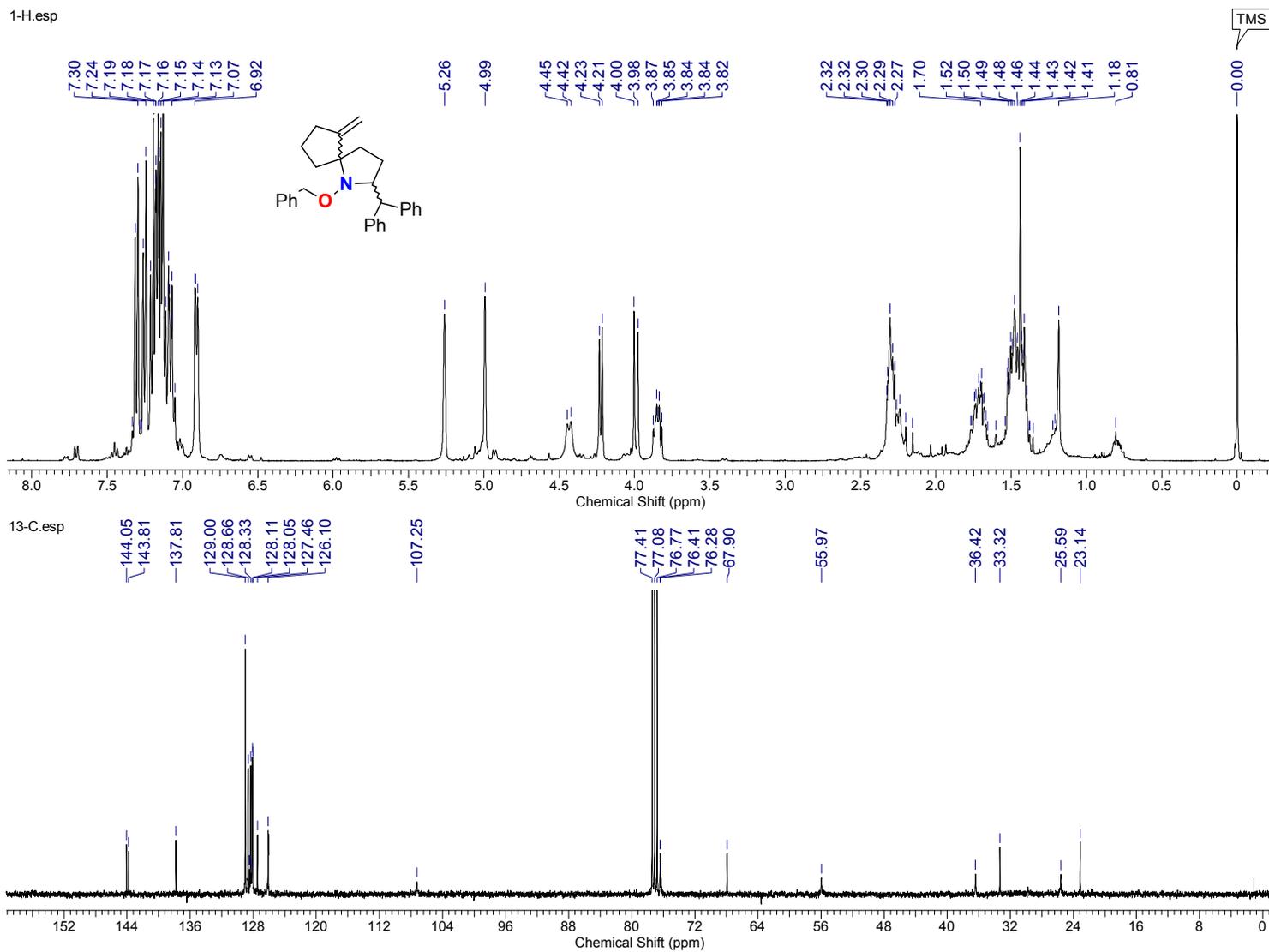


Figure S15. ¹H (upper) and ¹³C (lower) NMR spectra of *trans* diastereomer **25j** from Method (A).

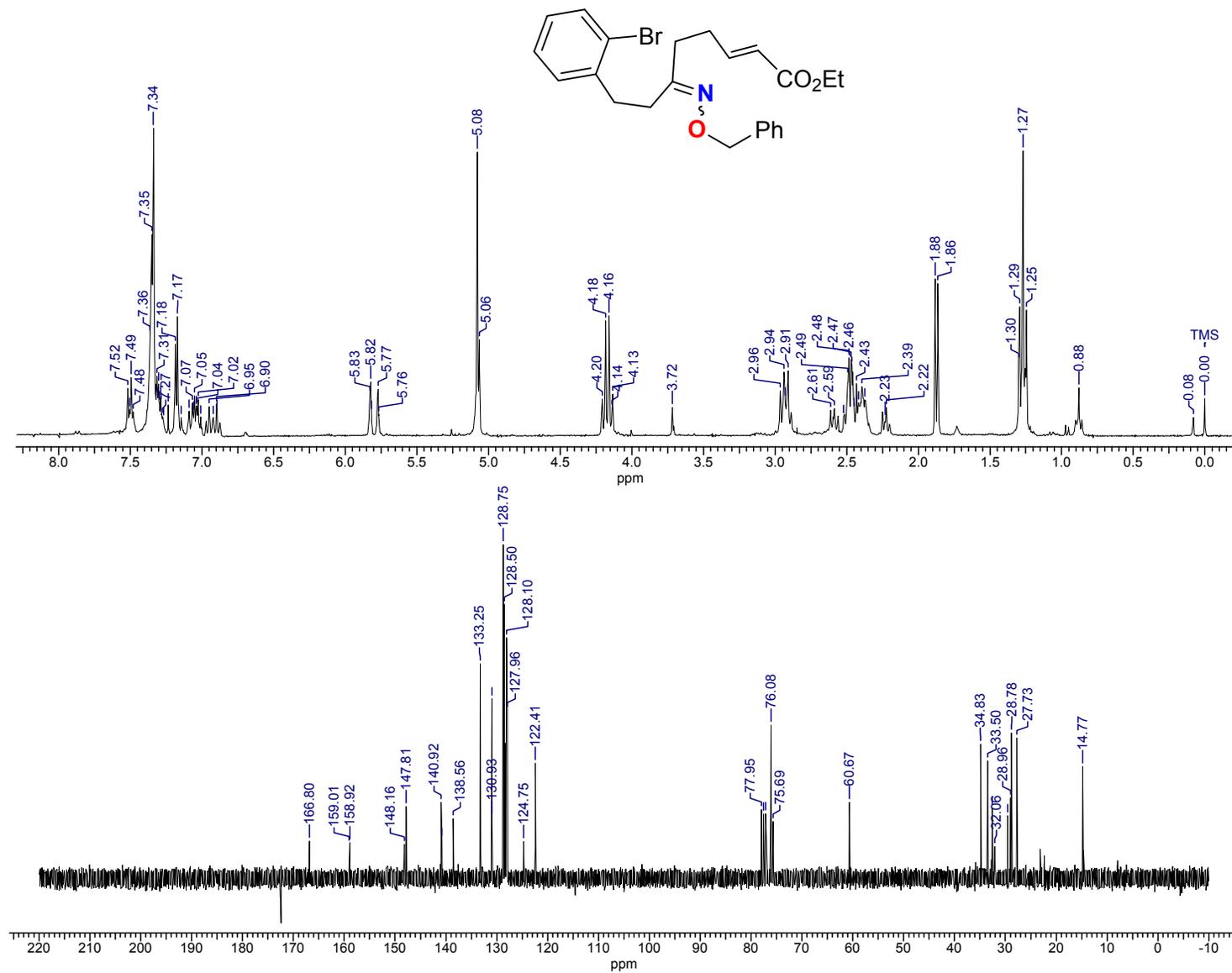


Figure S16. ¹H (upper) and ¹³C (lower) NMR spectra of compound 18a.

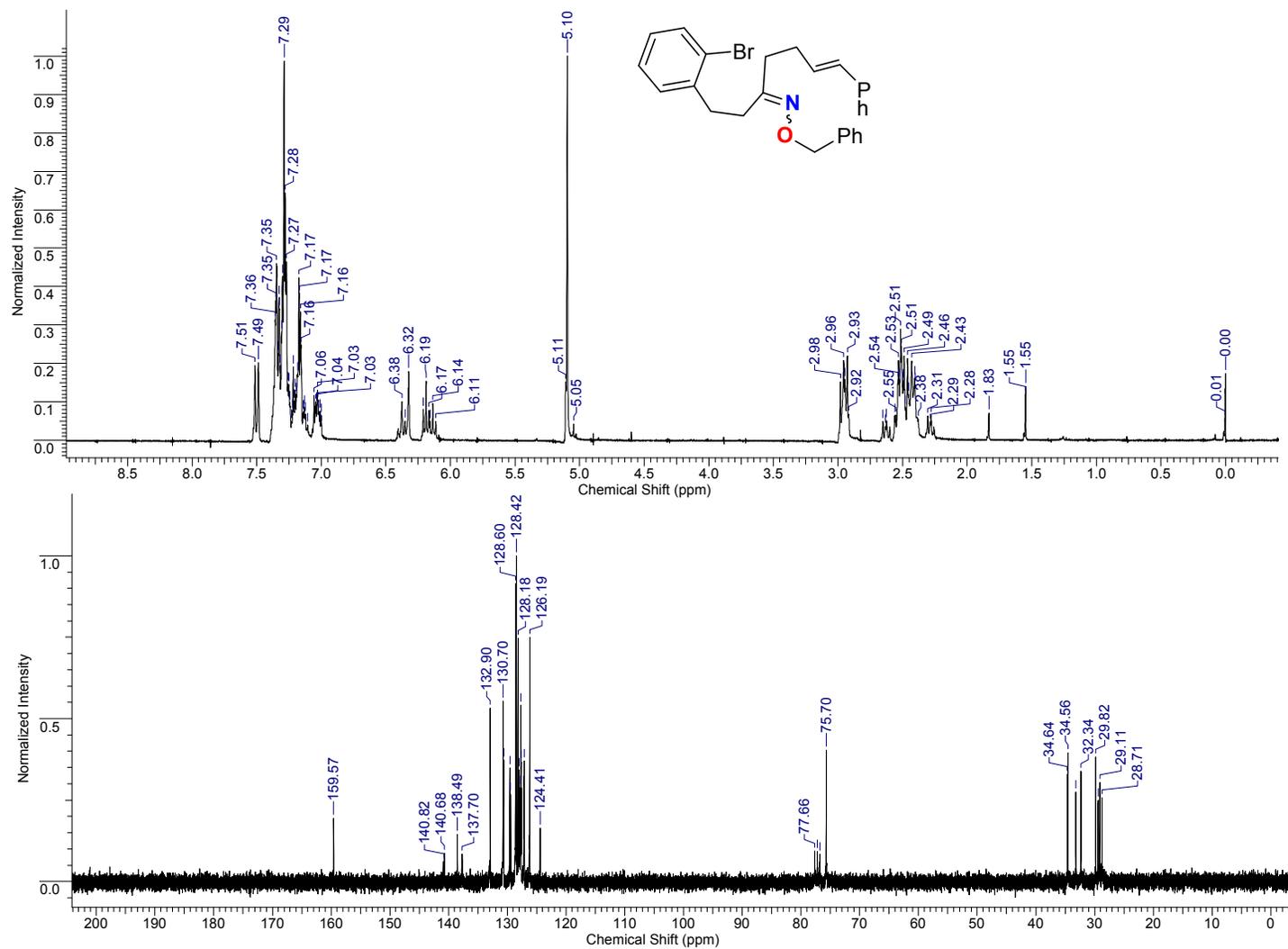


Figure S17. ^1H (upper) and ^{13}C (lower) NMR spectra of compound **18b**.

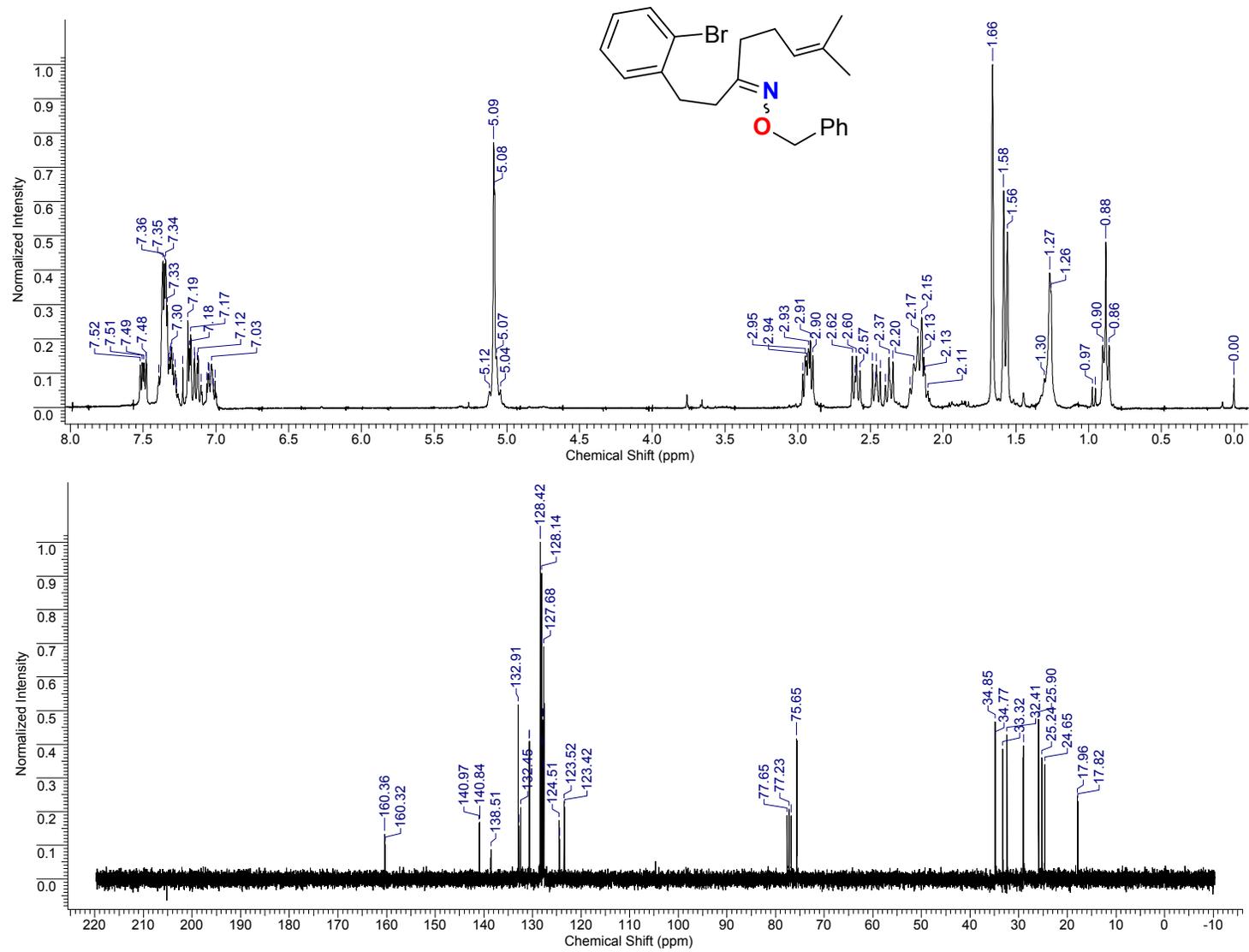


Figure S18. ¹H (upper) and ¹³C (lower) NMR spectra of compound 18c.

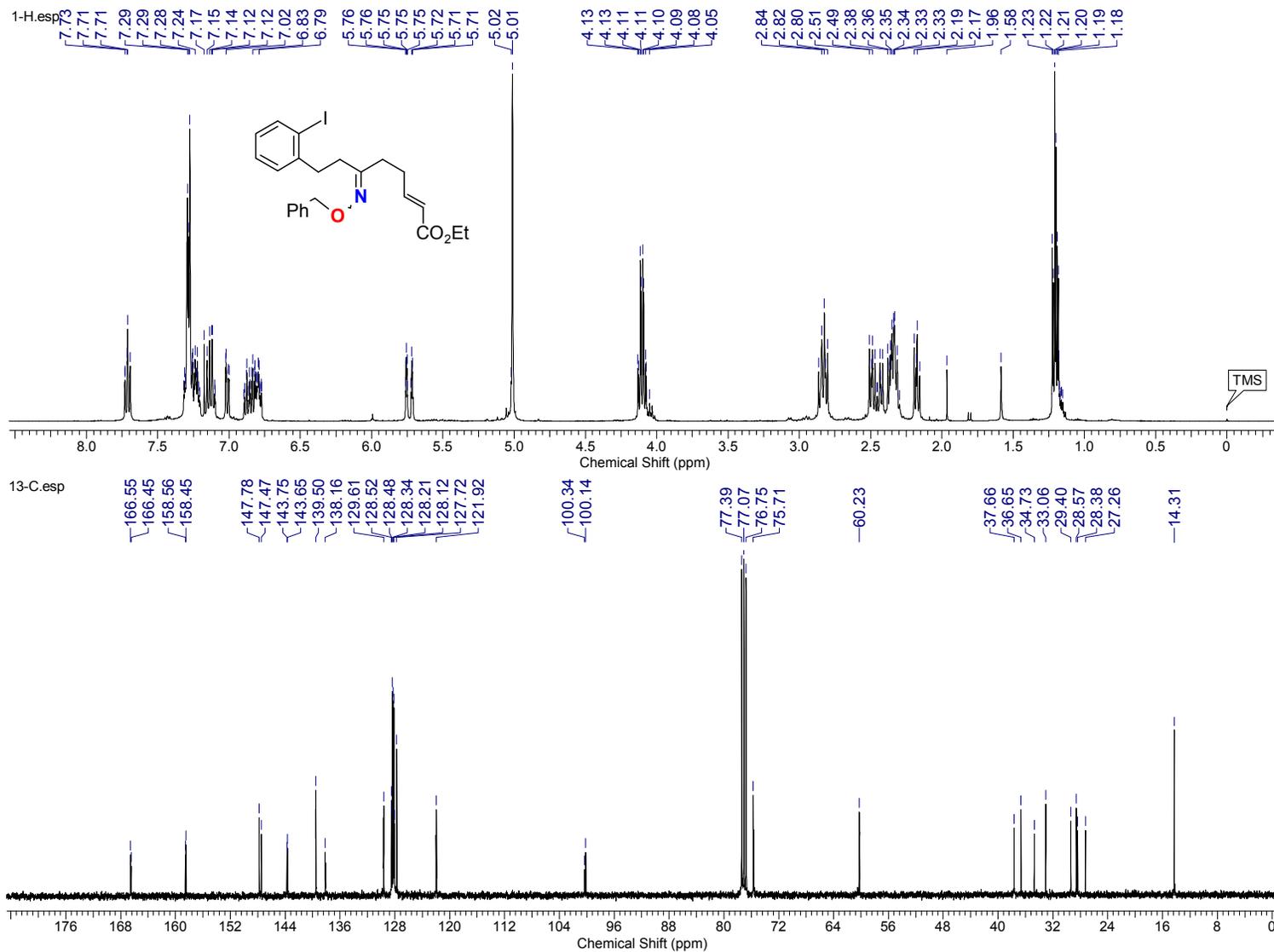


Figure S19. ¹H (upper) and ¹³C (lower) NMR spectra of compound **18d**.

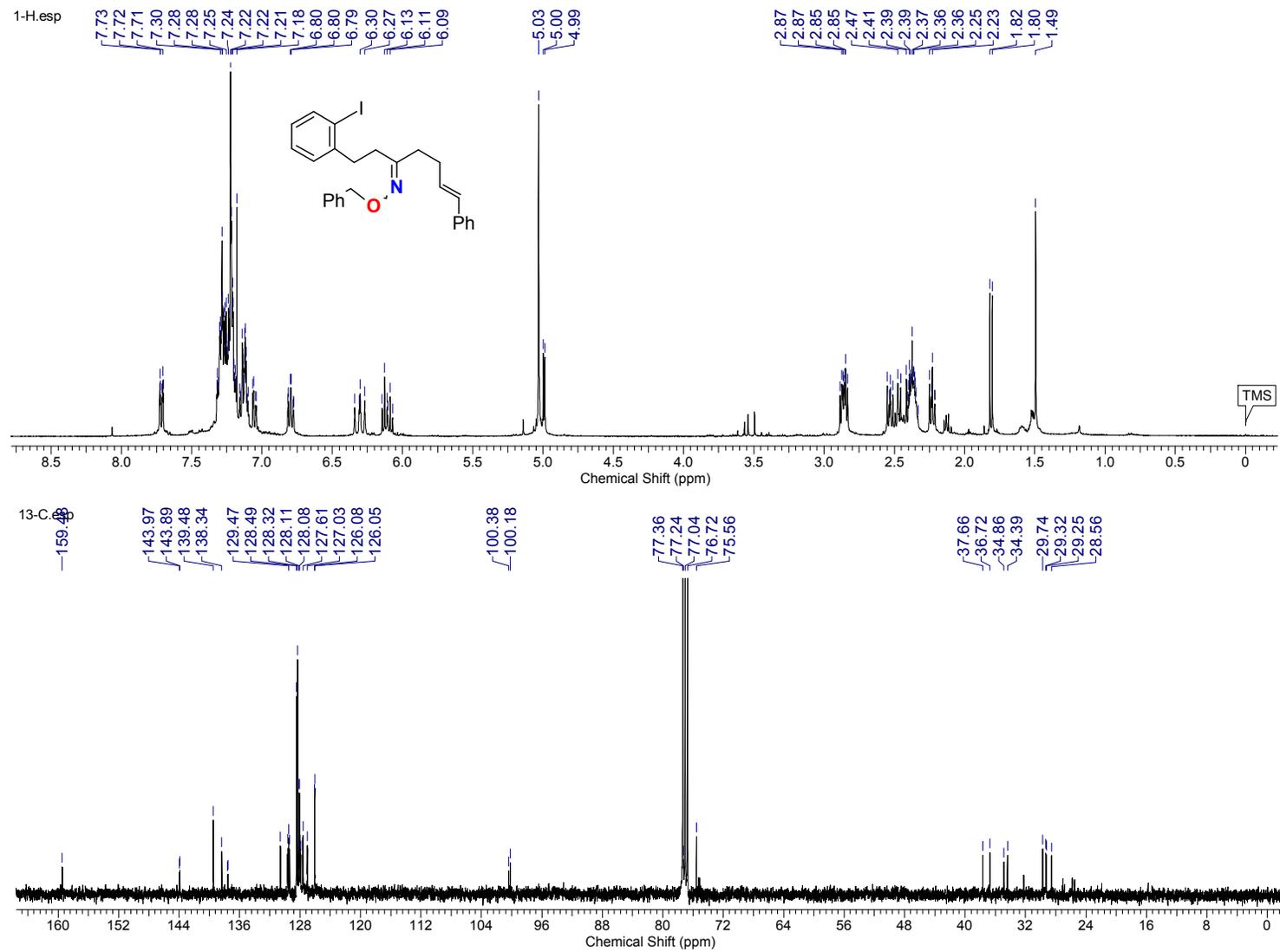


Figure S20. ^1H (upper) and ^{13}C (lower) NMR spectra of compound 18e.

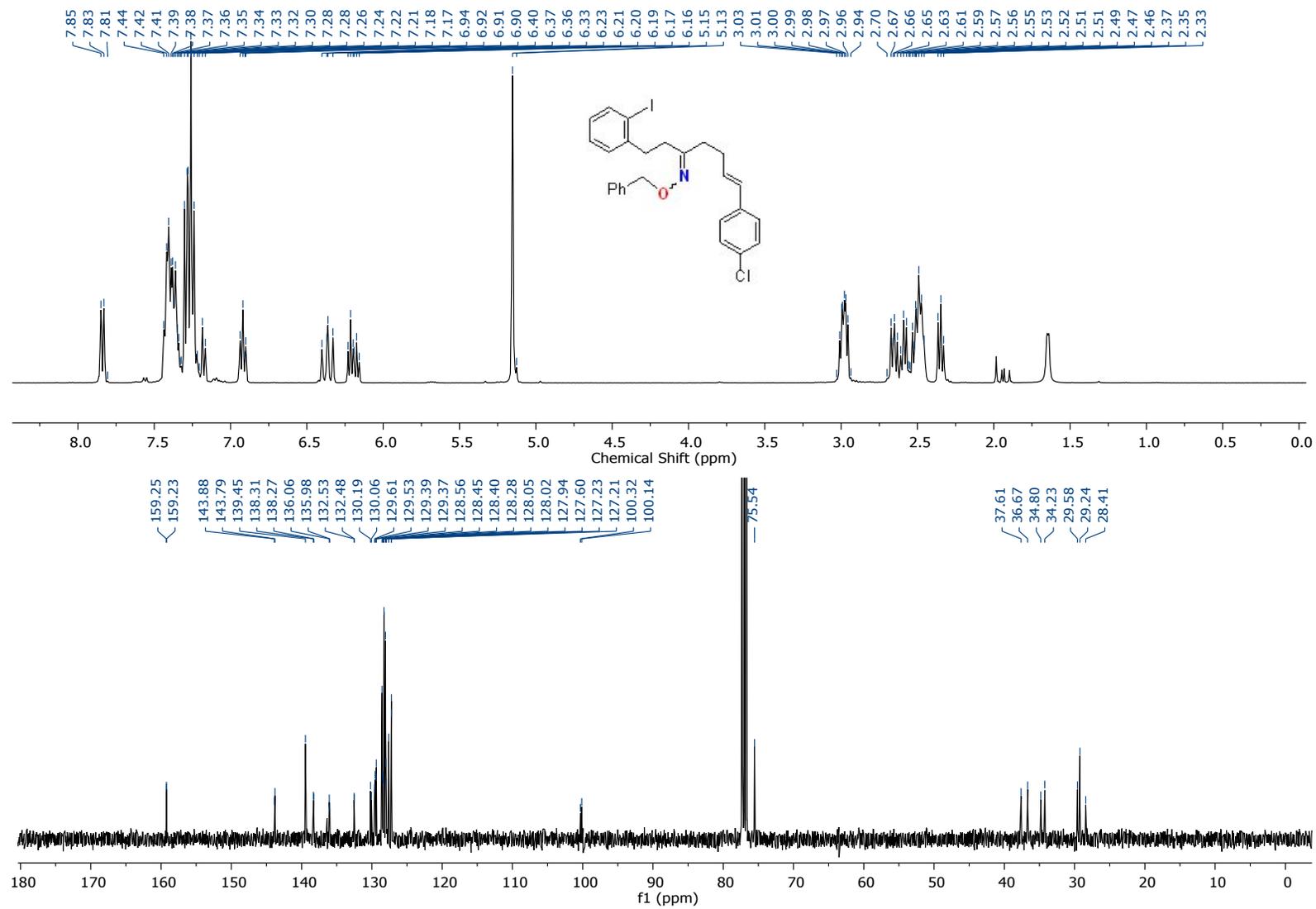


Figure S21. ^1H (upper) and ^{13}C (lower) NMR spectra of compound **18f**.

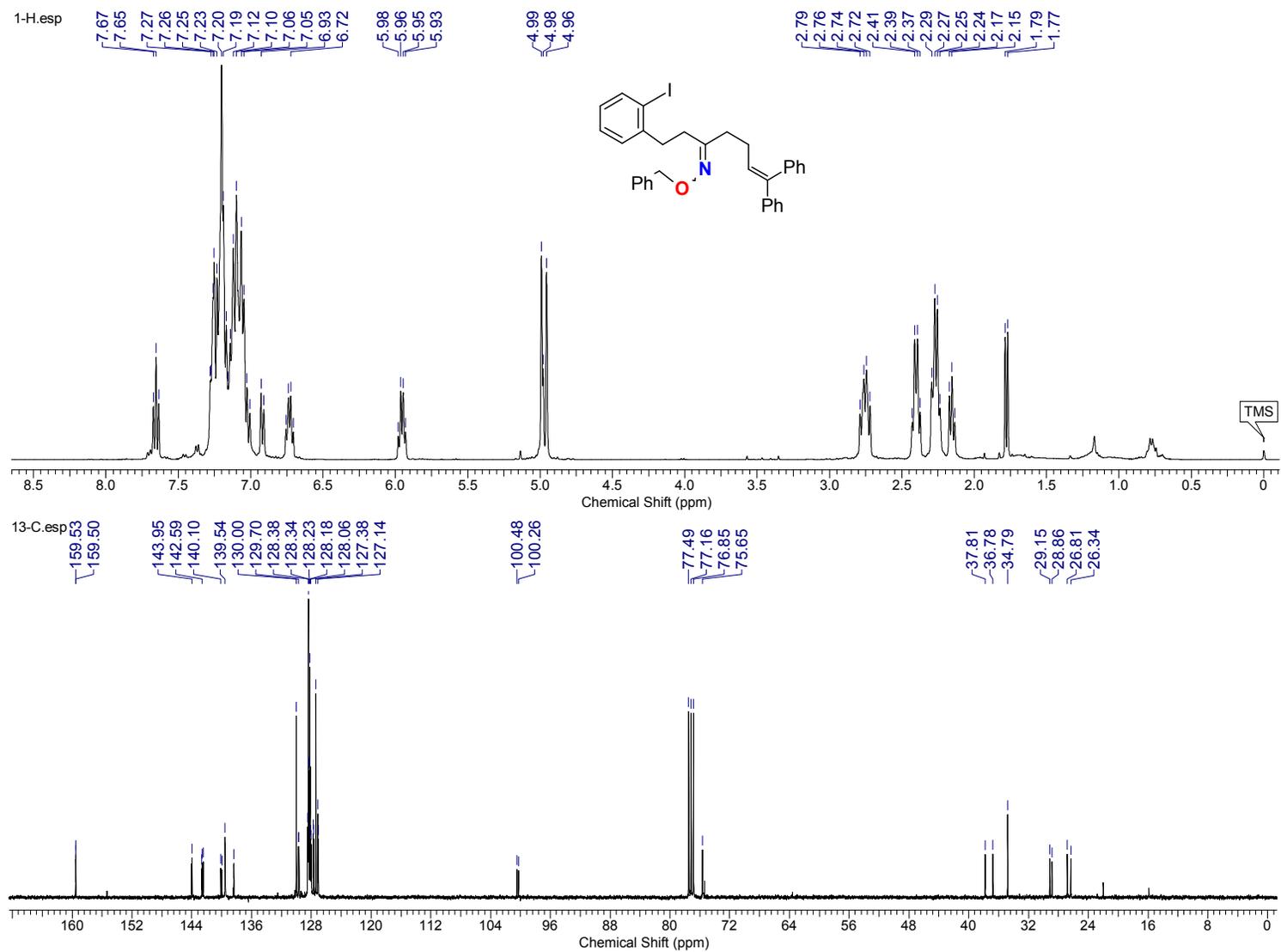


Figure S22. ¹H (upper) and ¹³C (lower) NMR spectra of compound 18g.

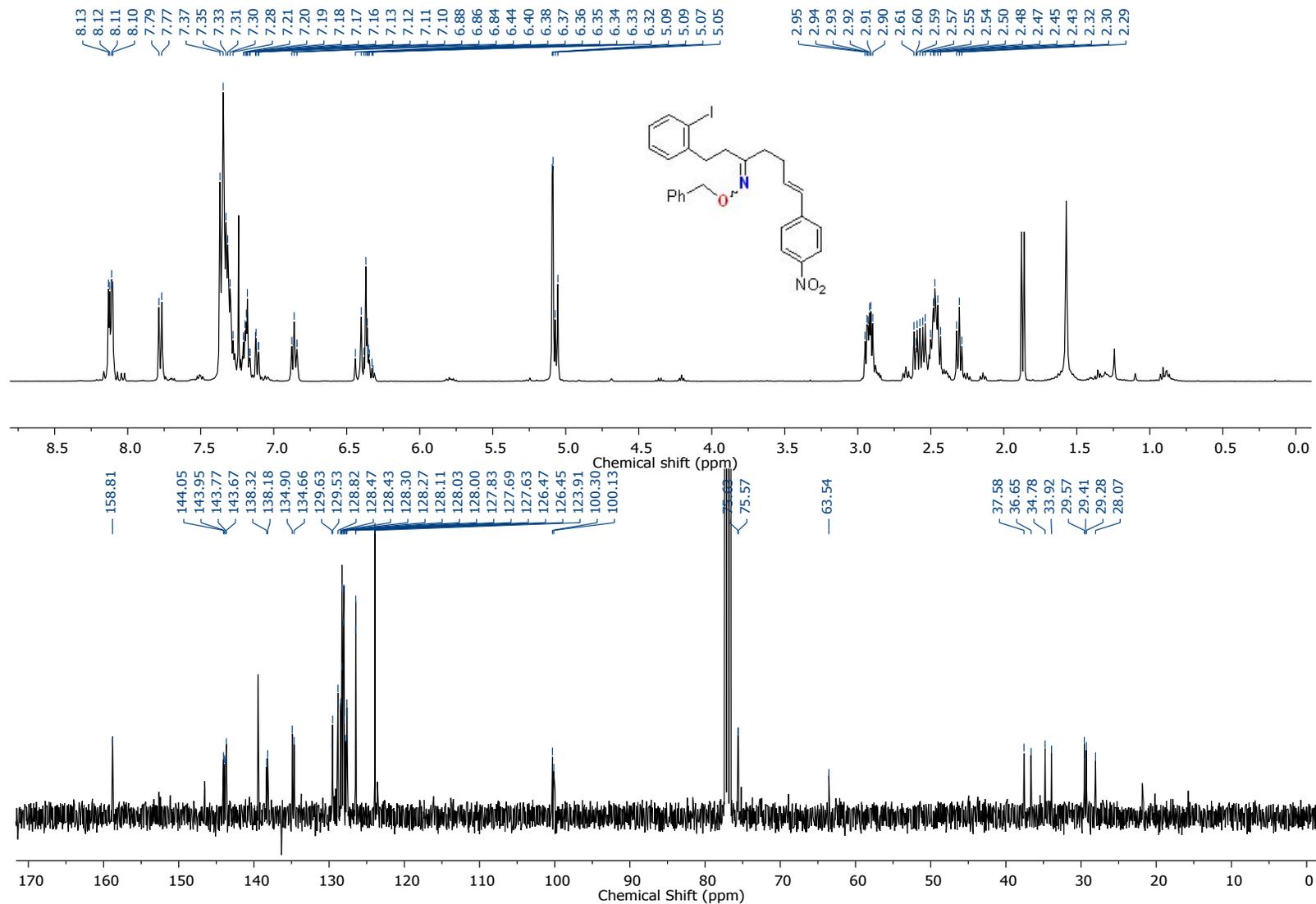


Figure S23. ¹H (upper) and ¹³C (lower) NMR spectra of compound 18h.

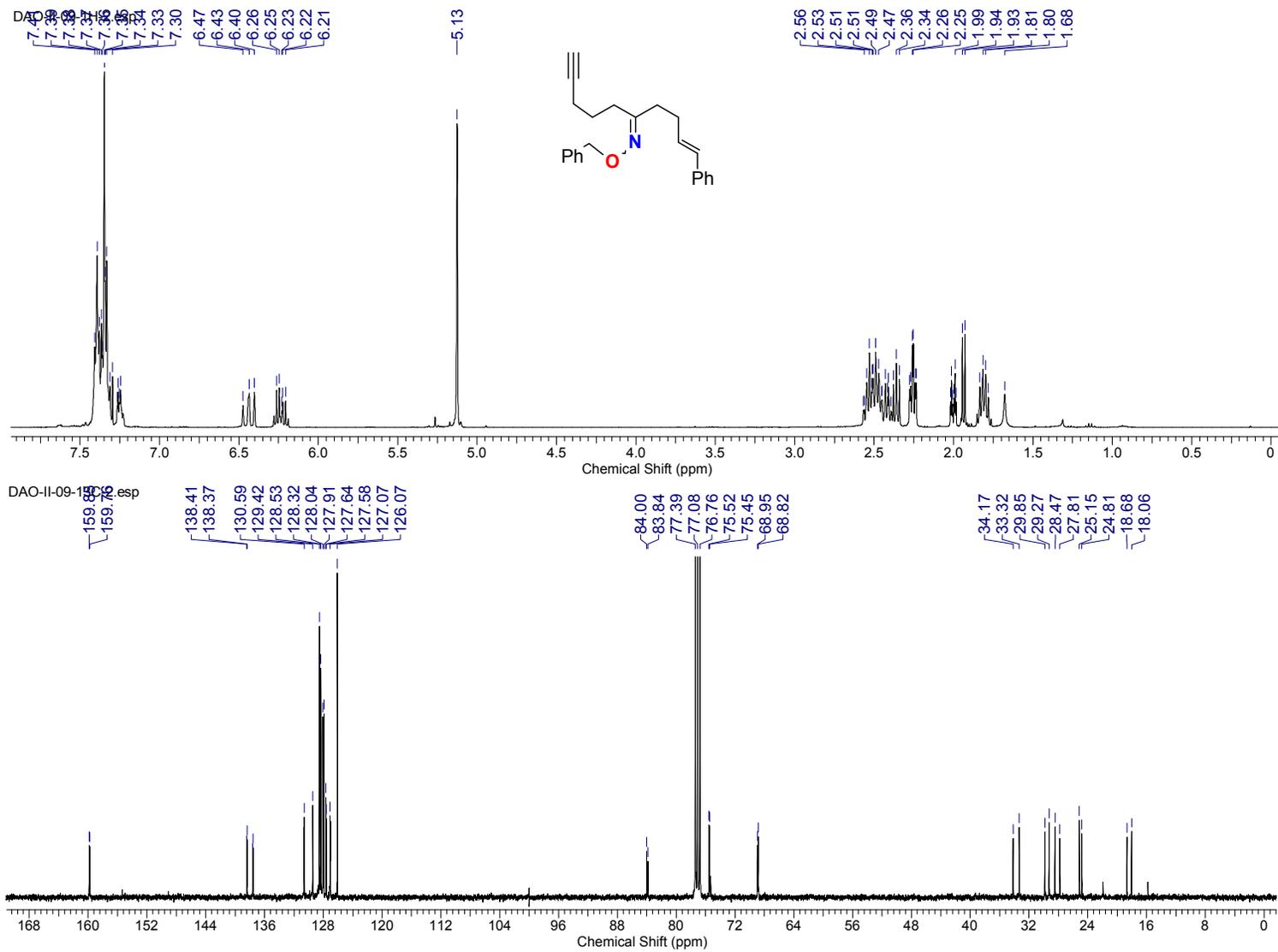


Figure S24. ¹H (upper) and ¹³C (lower) NMR spectra of compound 18i.

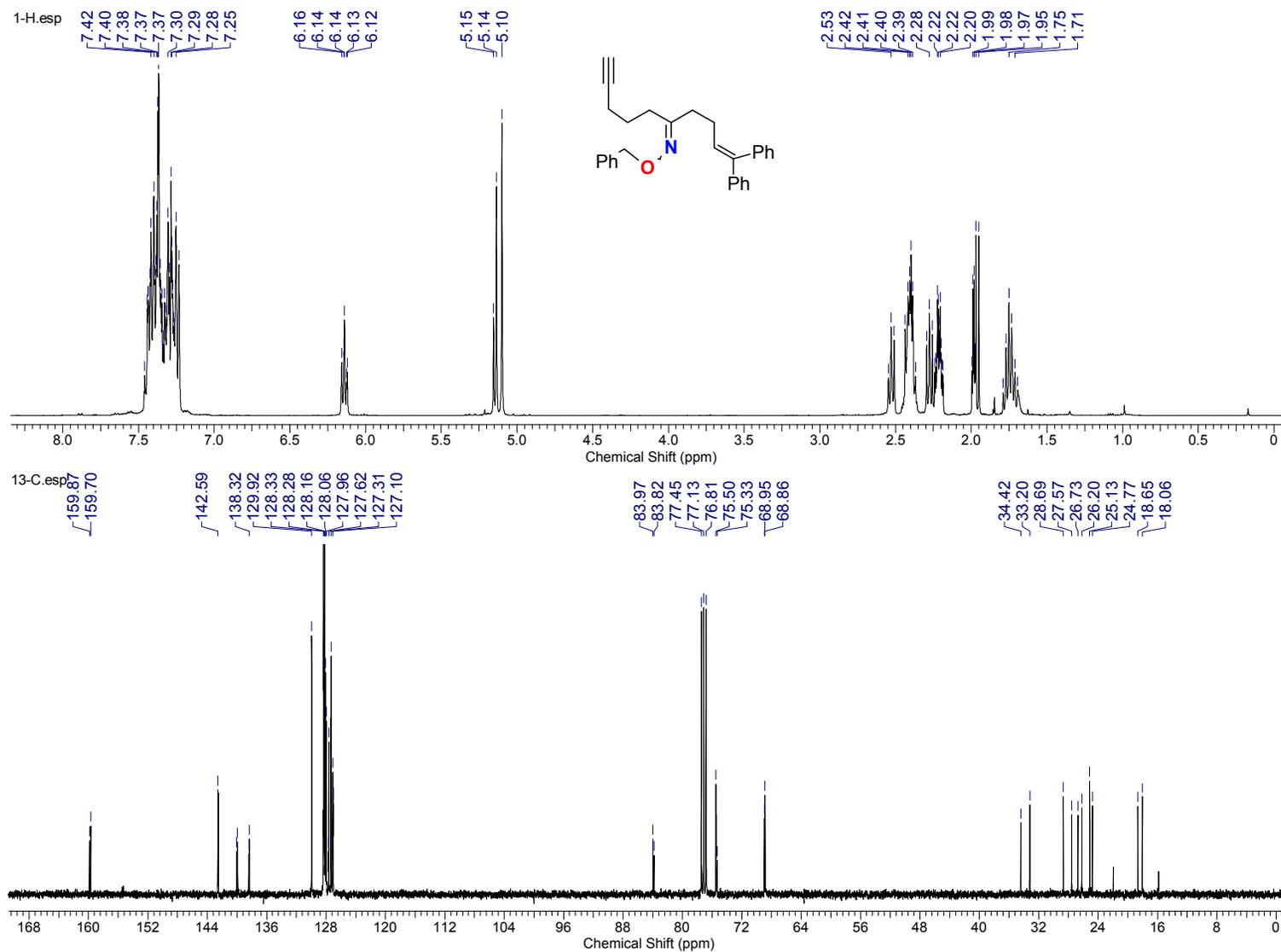


Figure S25. ¹H (upper) and ¹³C (lower) NMR spectra of compound 18j.

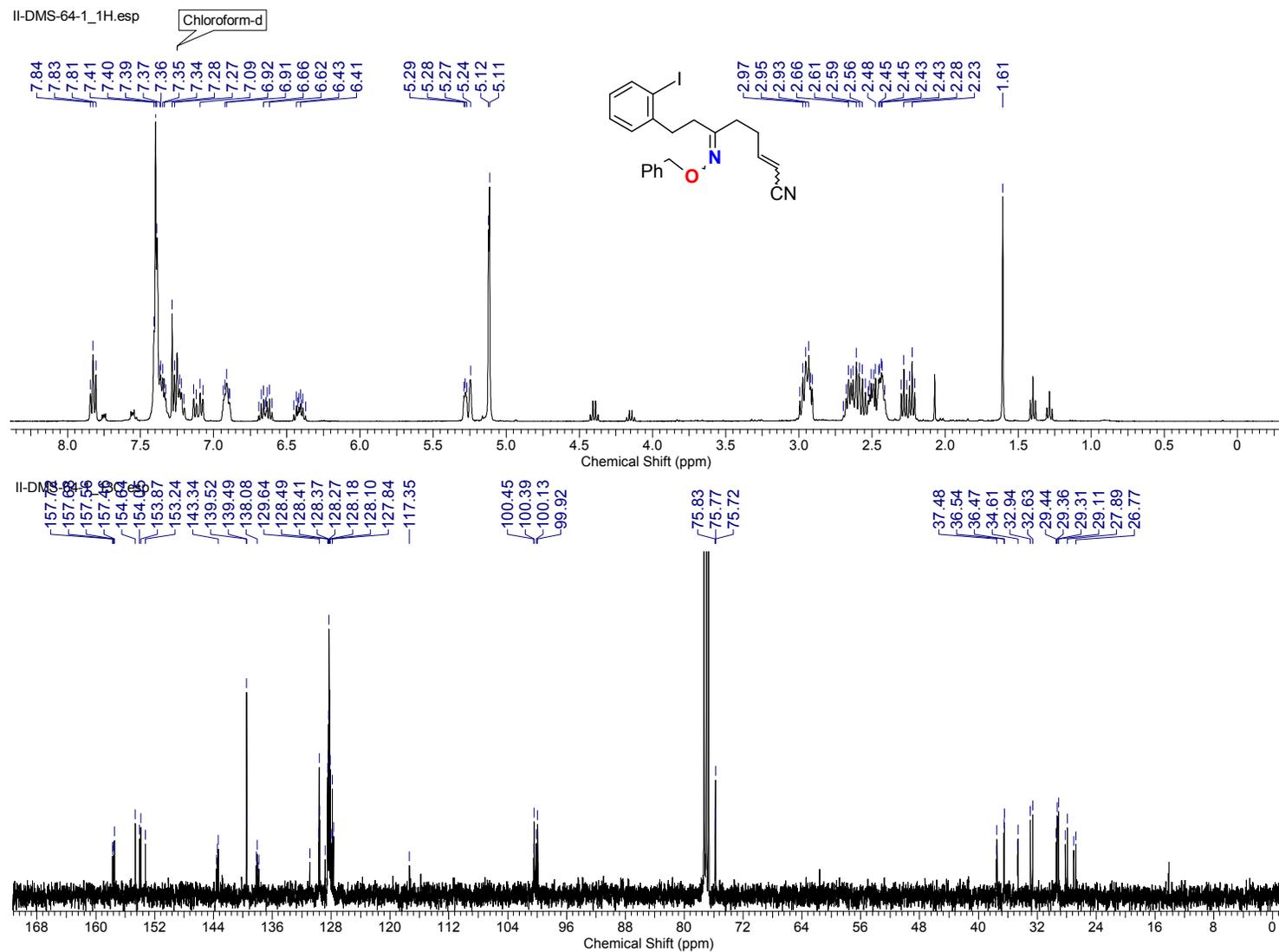


Figure S26. ¹H (upper) and ¹³C (lower) NMR spectra of compound 8.

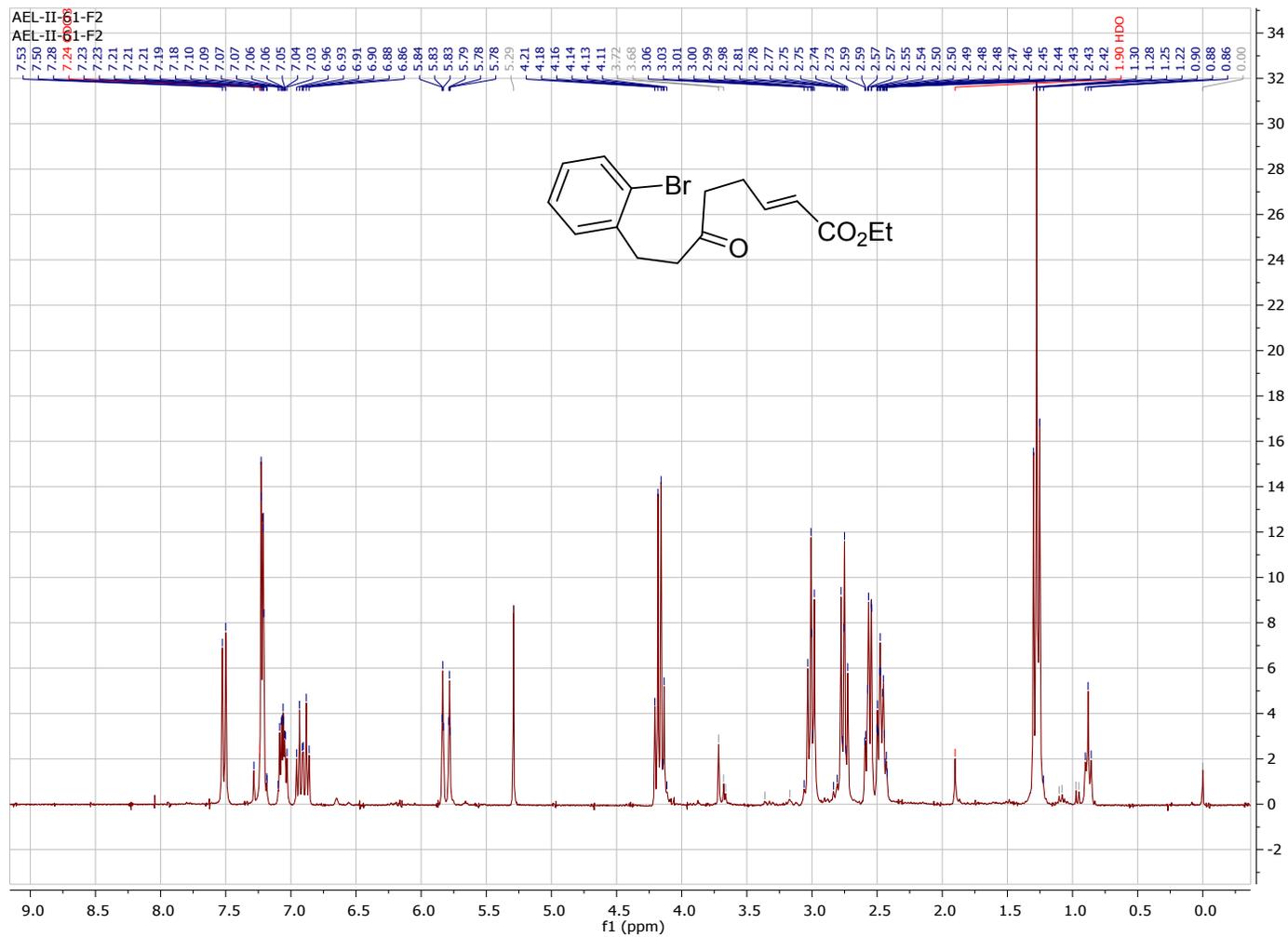


Figure S27. ¹H NMR spectra of compound 17a.

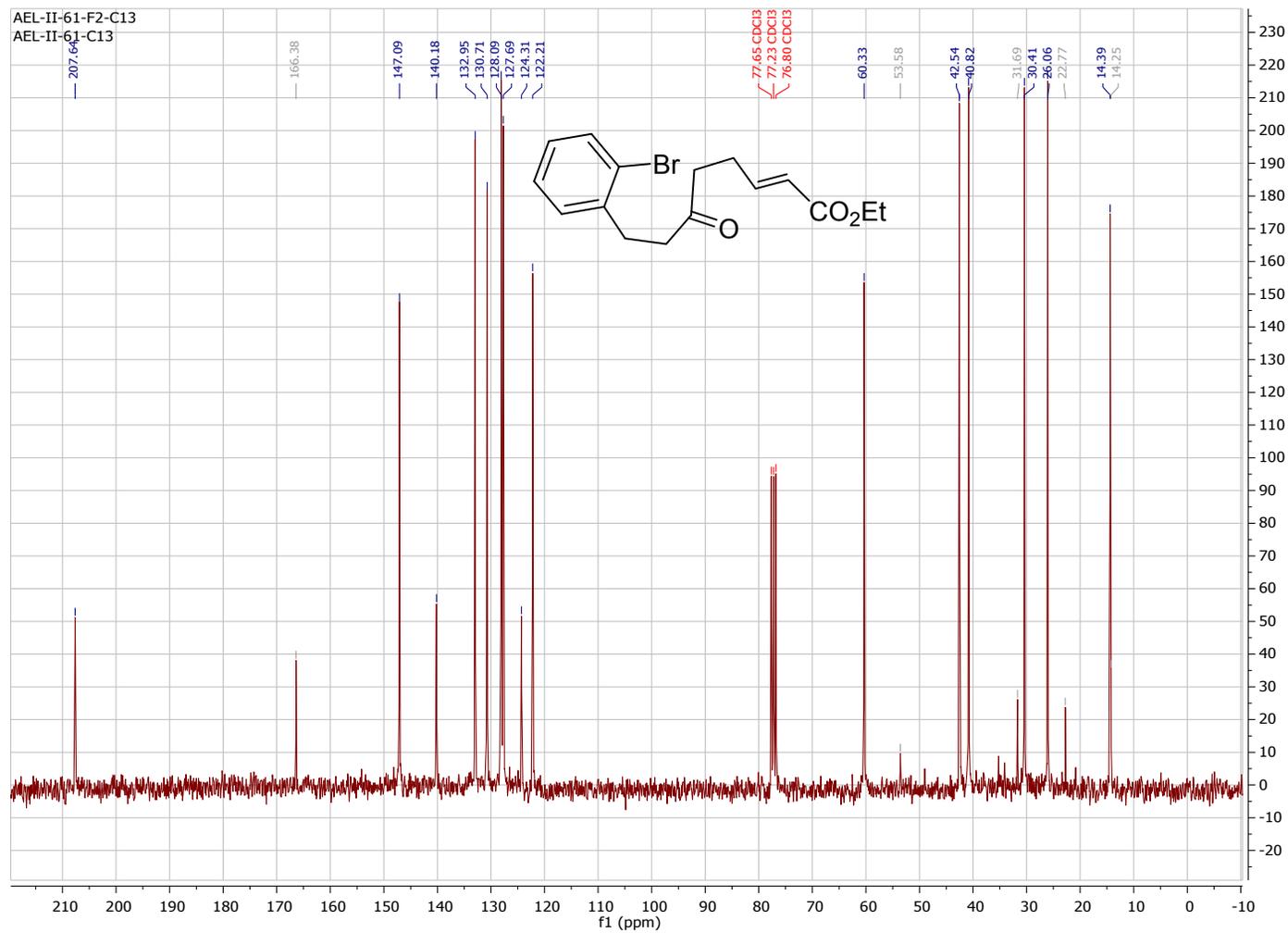


Figure S28. ¹³C NMR spectra of compound 17a.

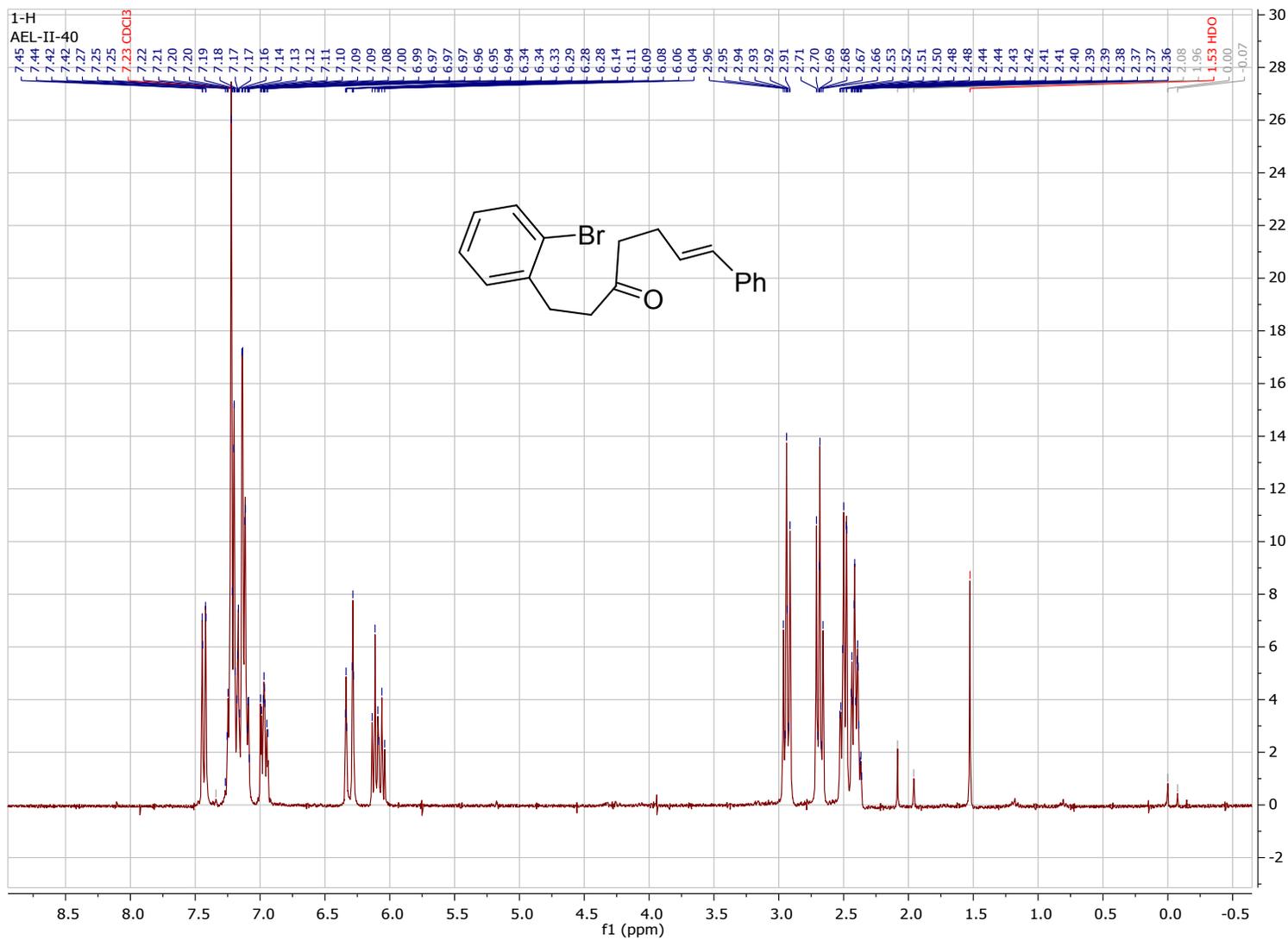


Figure S29. ¹H NMR spectra of compound 17b.

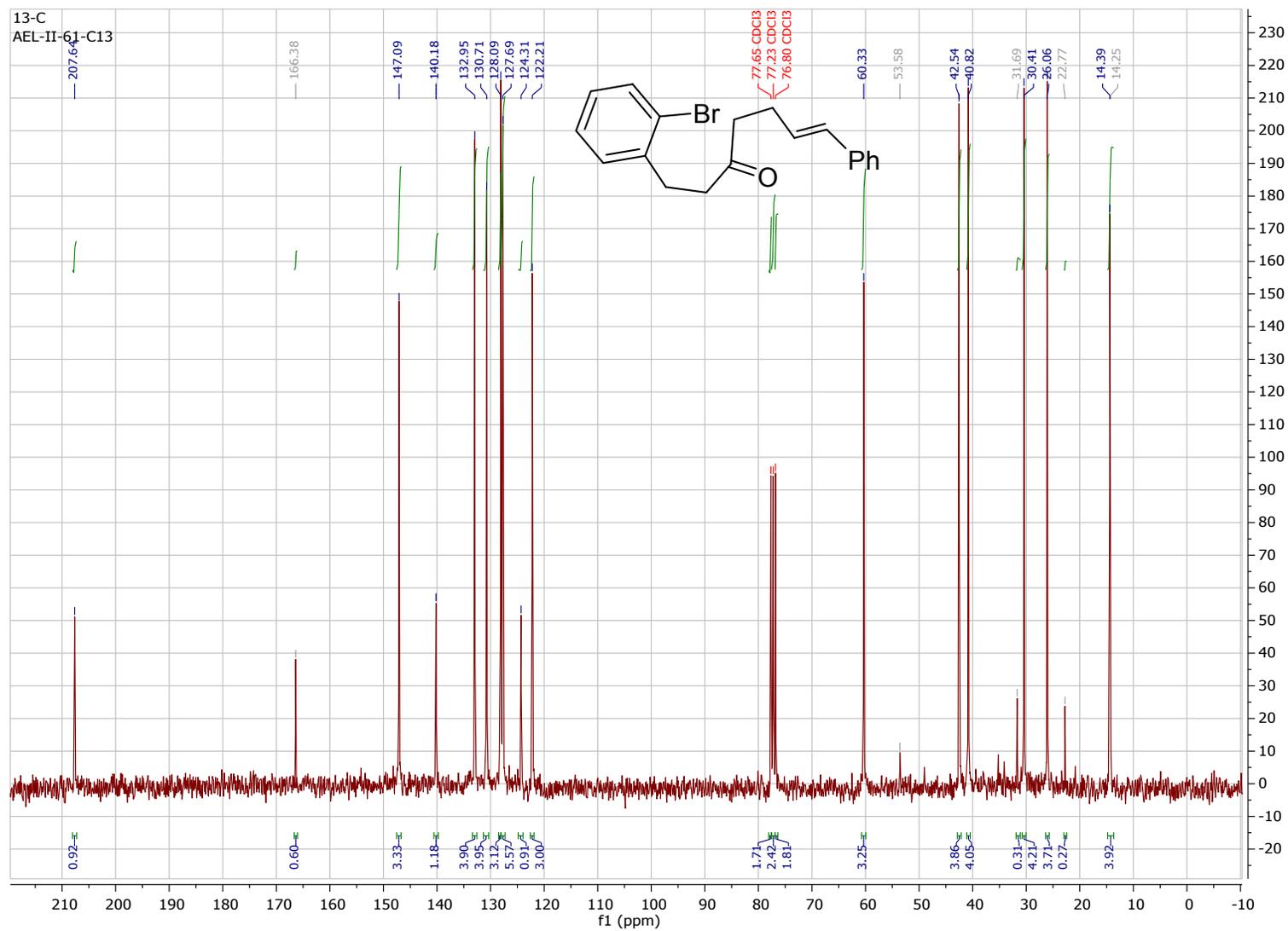


Figure S30. ^{13}C NMR spectra of compound 17b.

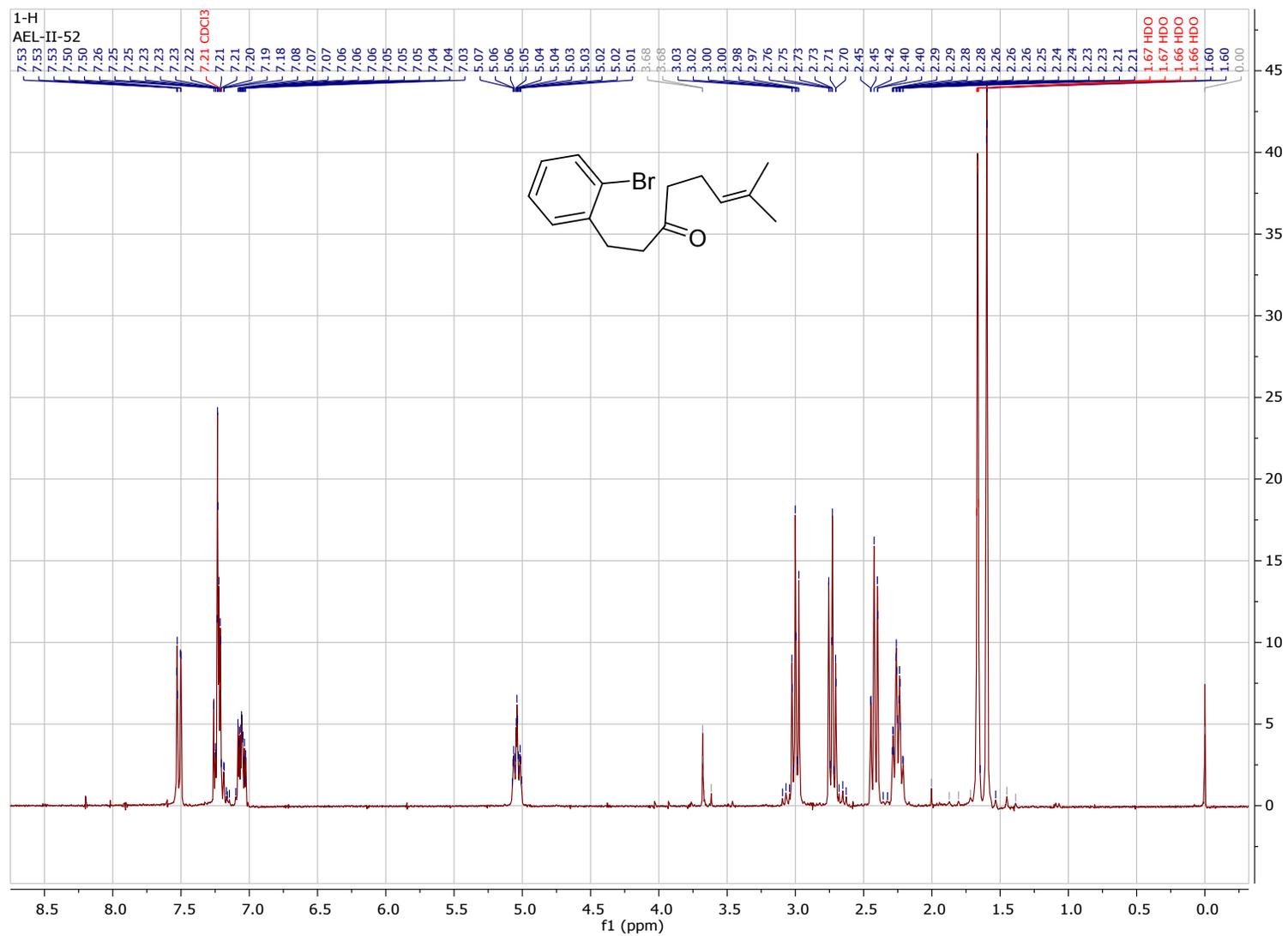


Figure S31. ¹H NMR spectra of compound 17c.

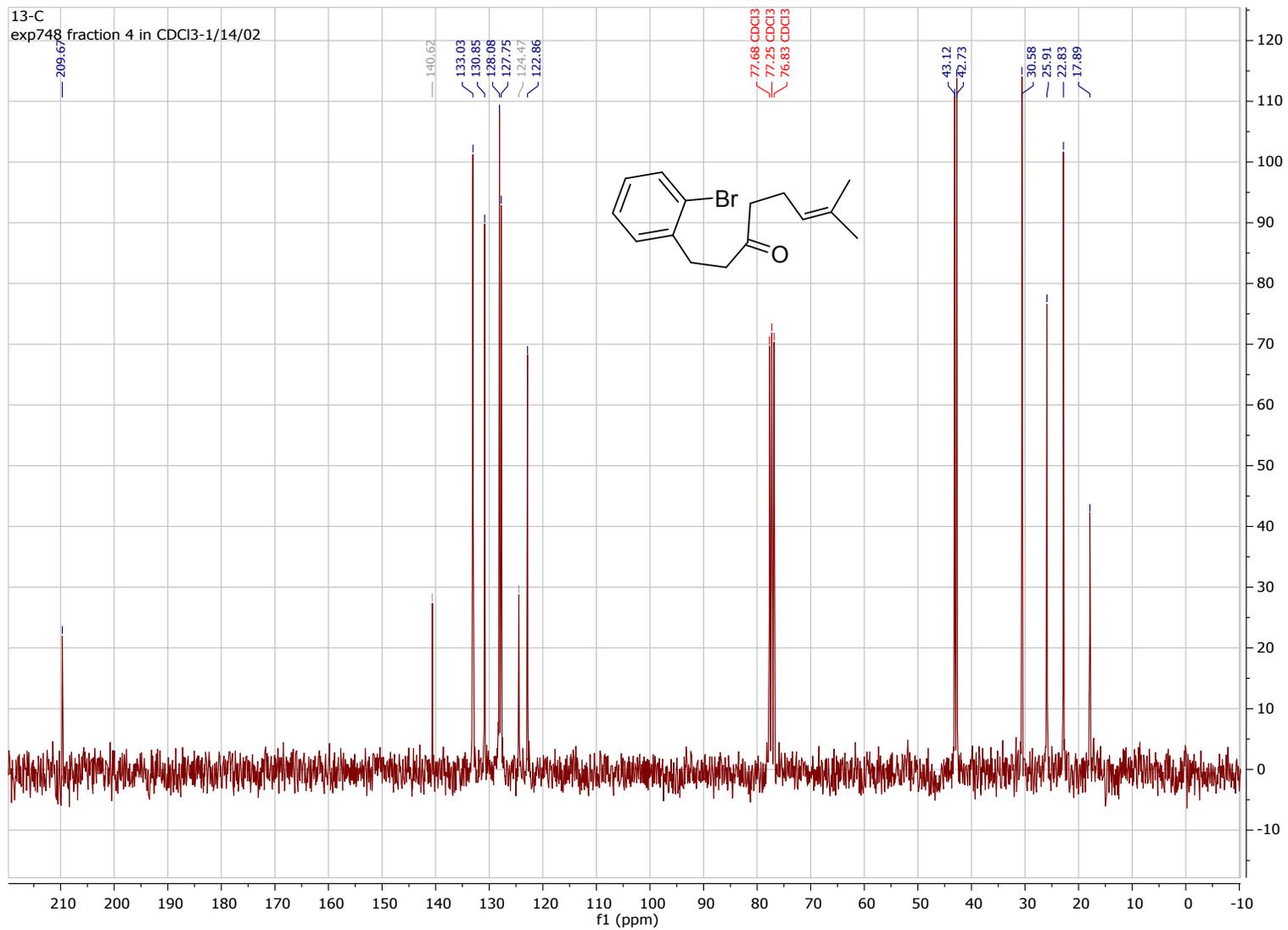


Figure S32. ¹³C NMR spectra of compound 17b.

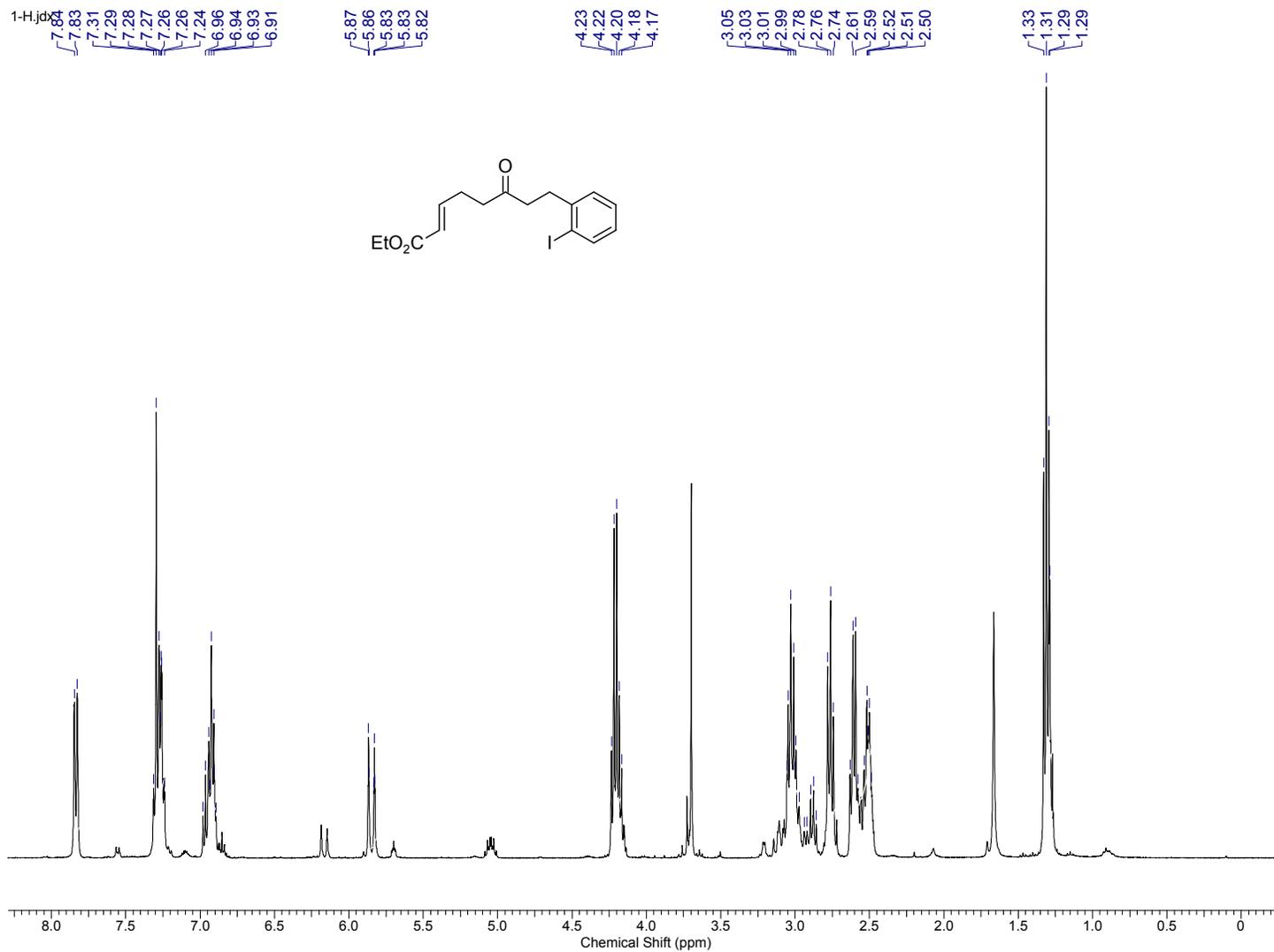


Figure S33. ¹H NMR spectra of compound 17d.

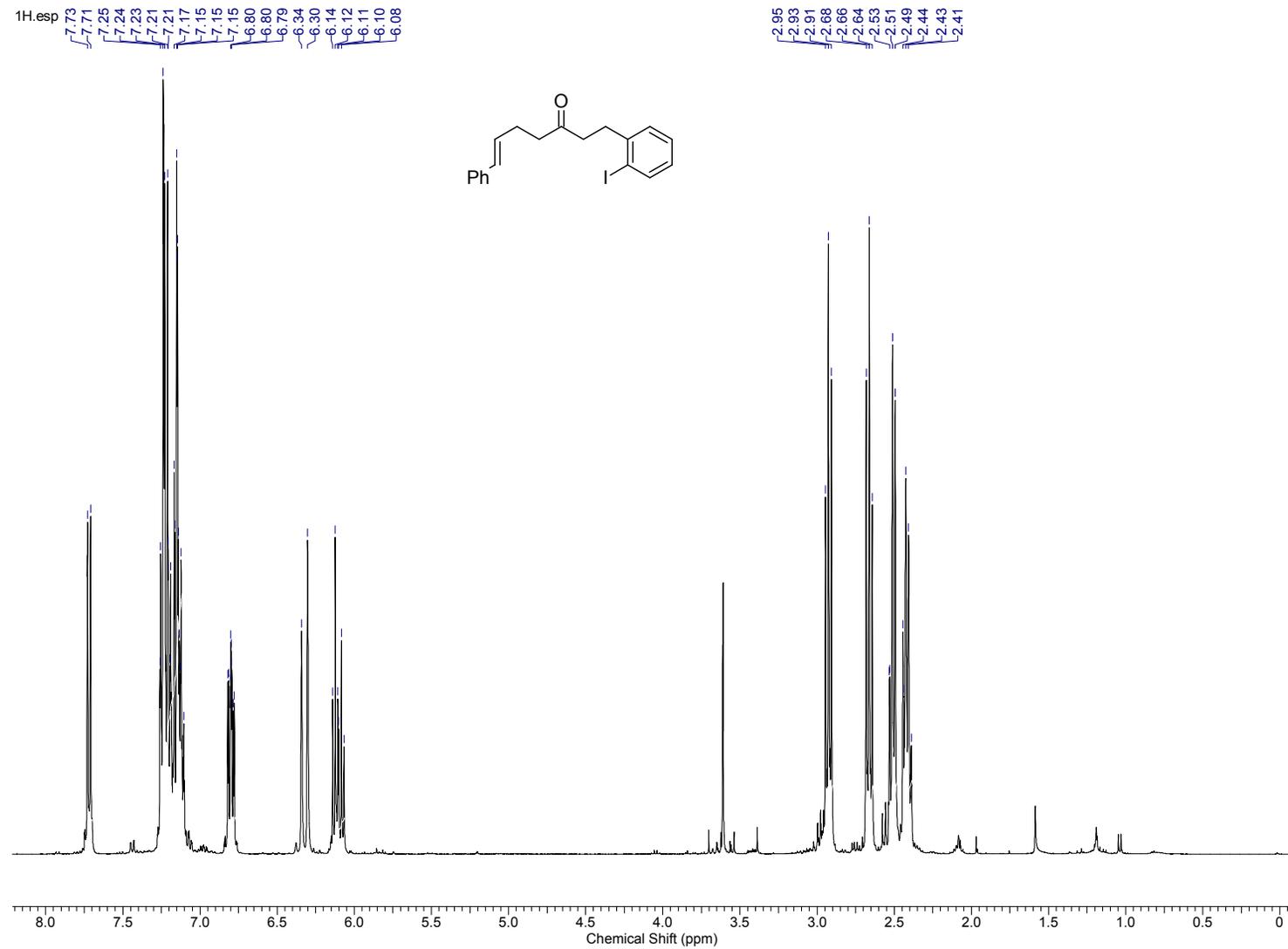


Figure S34. ¹H NMR spectra of compound 17e.

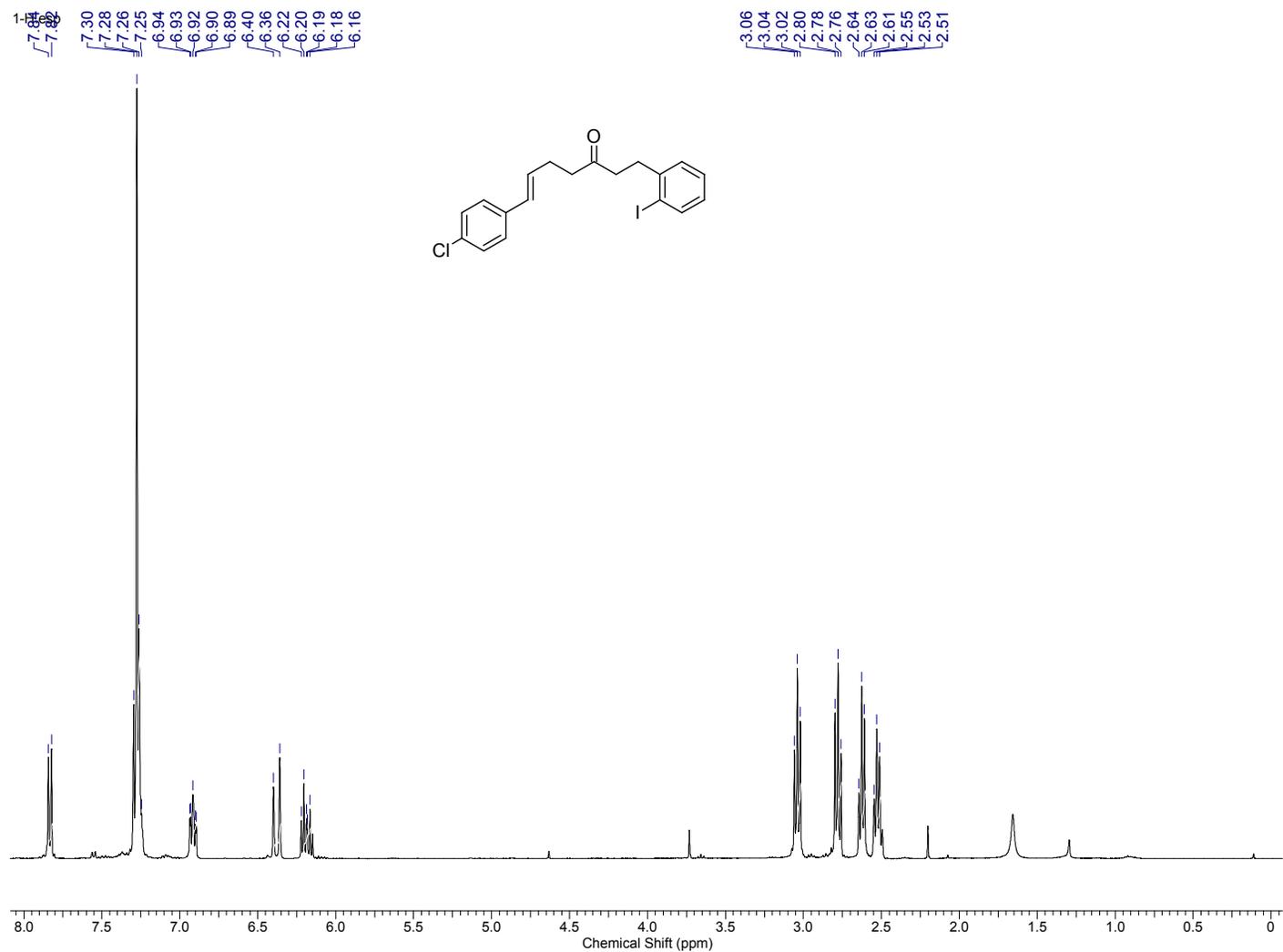


Figure S35. ^1H NMR spectra of compound 17f.

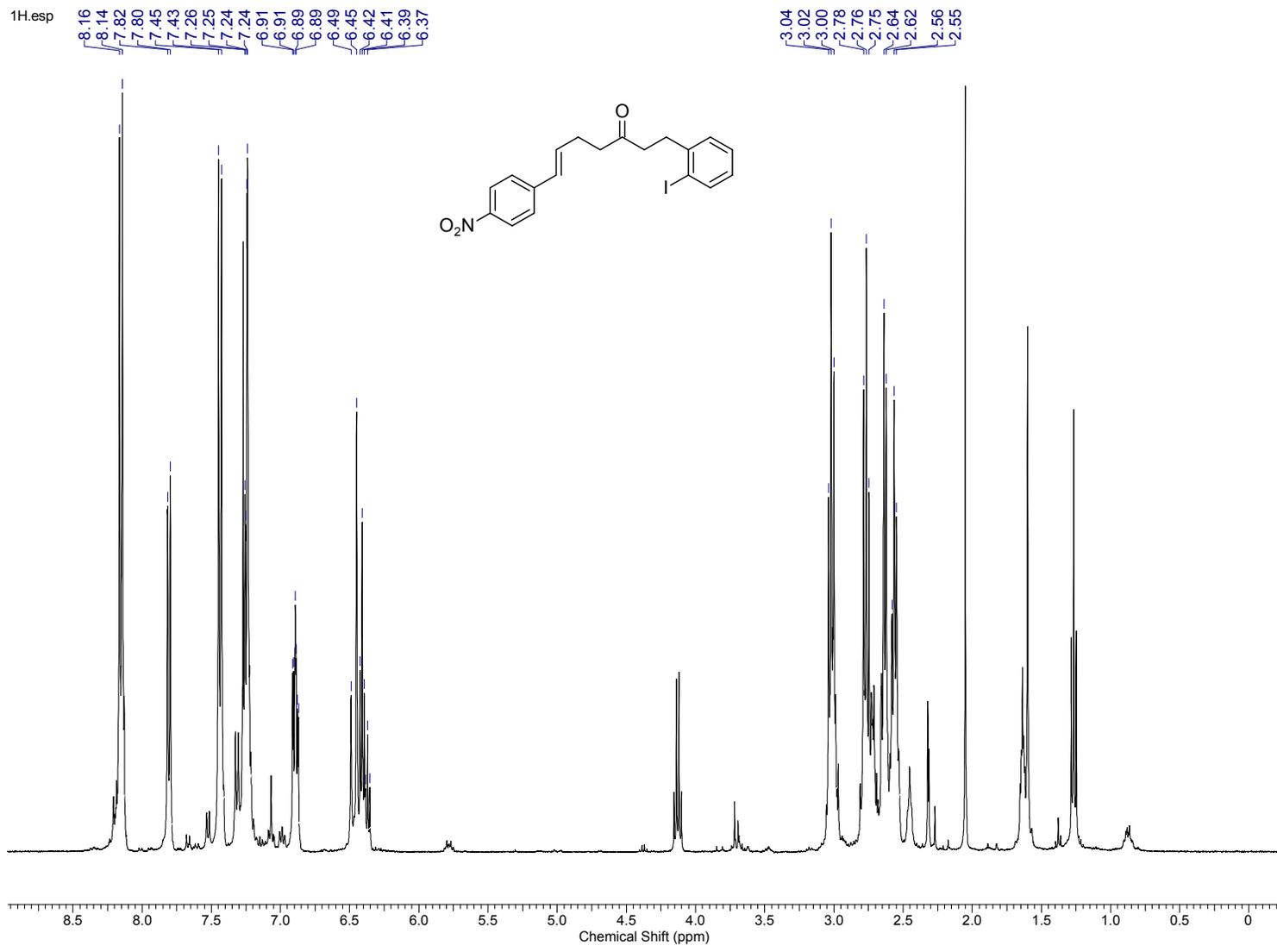


Figure S37. ¹H NMR spectra of compound 17h.

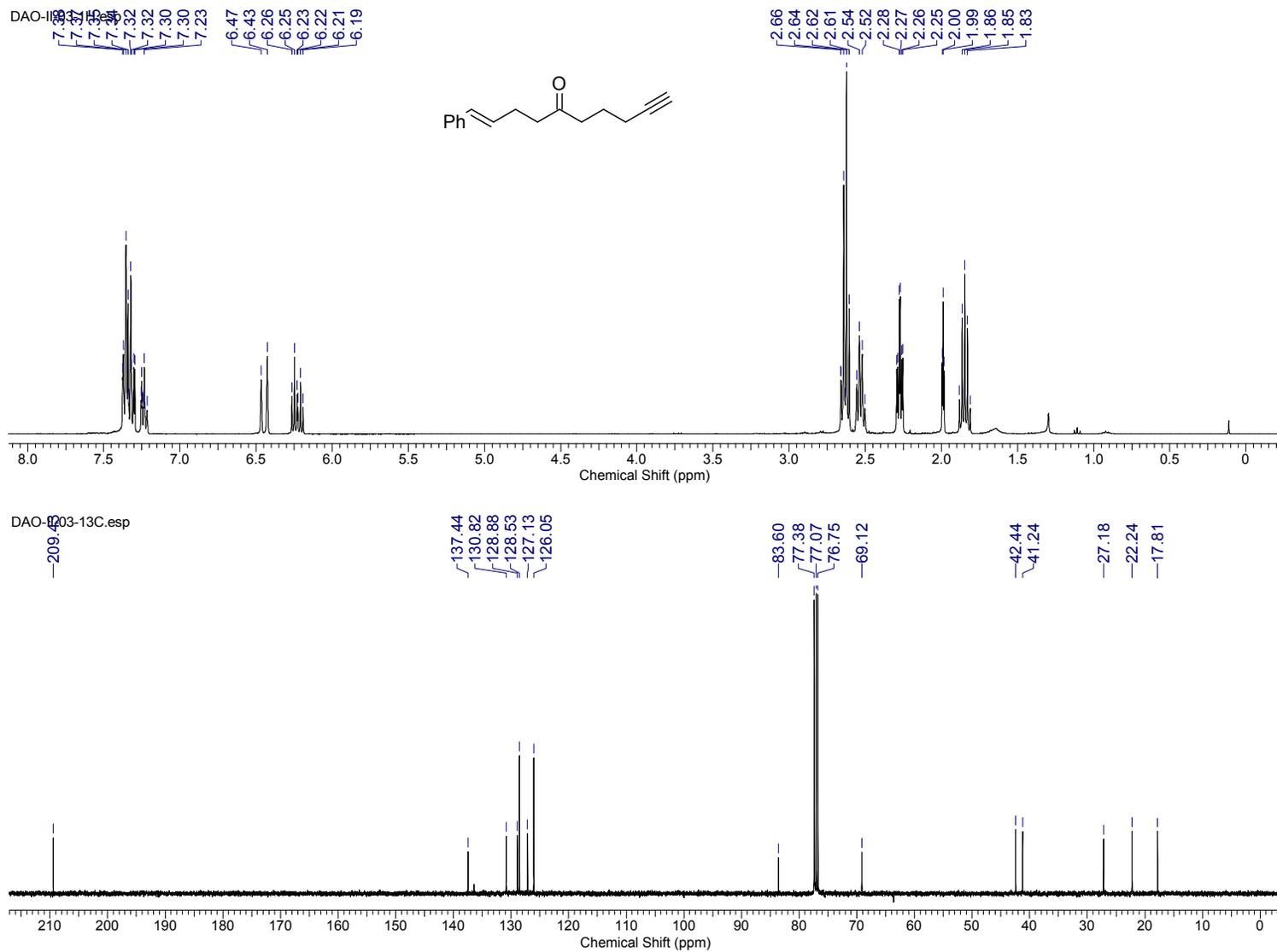


Figure S38. ¹H (upper) and ¹³C (lower) NMR spectra of compound 17i.

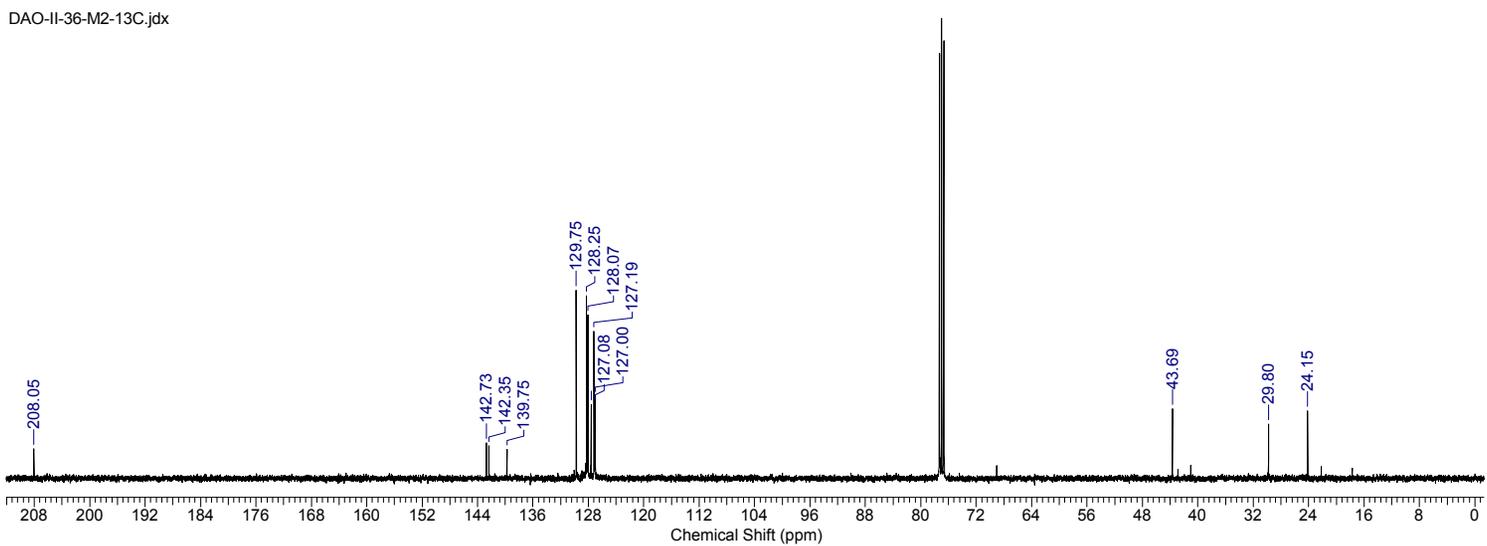
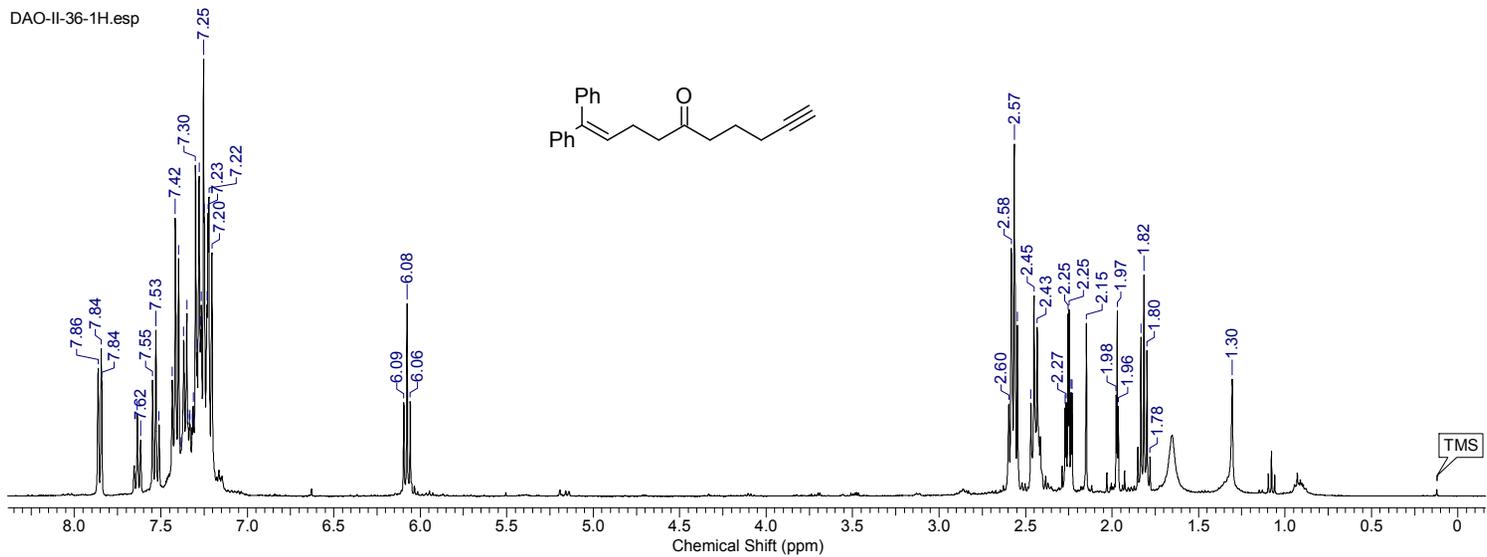


Figure S39. ¹H (upper) and ¹³C (lower) NMR spectra of compound 17j.

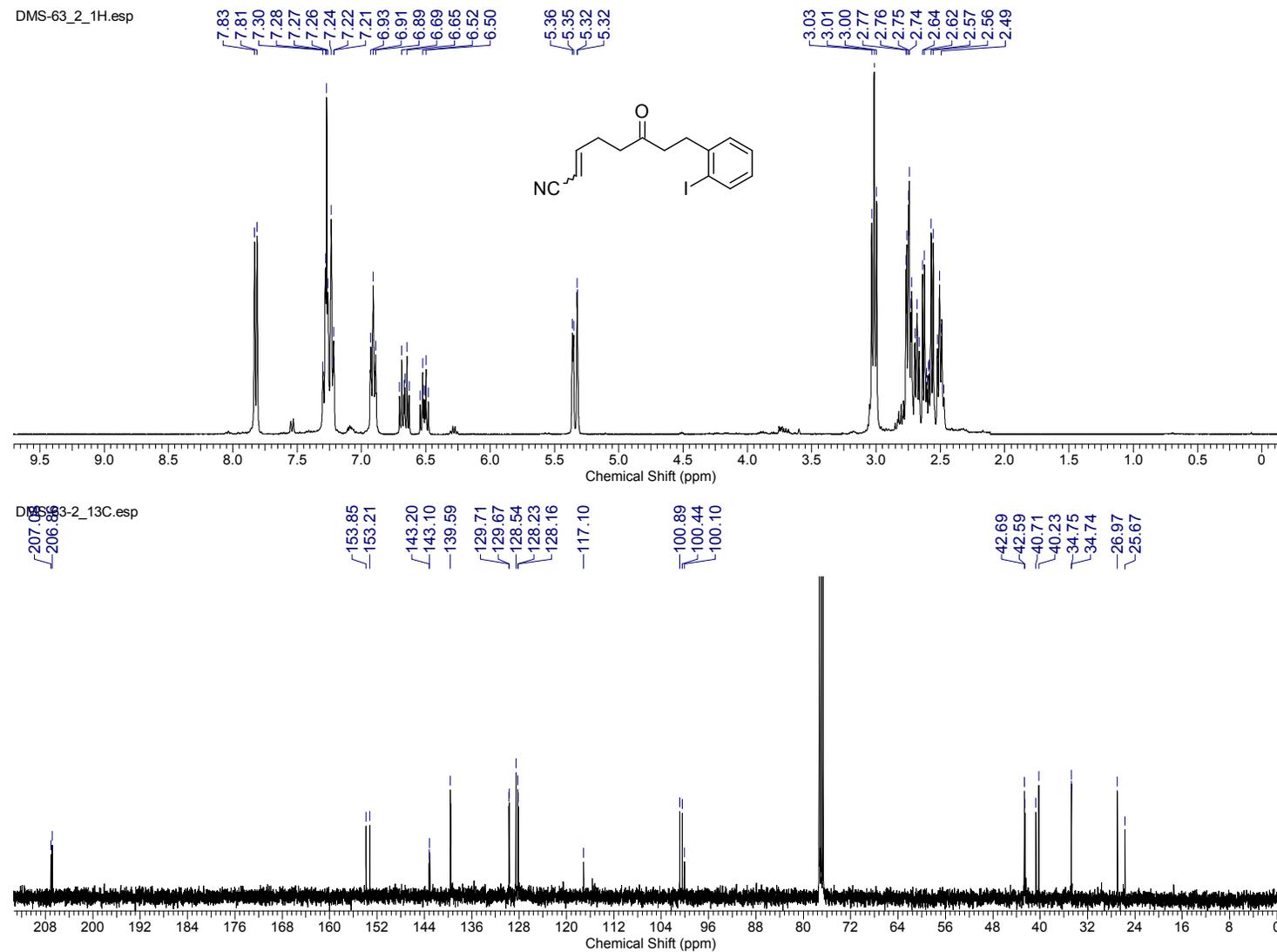


Figure S40. ¹H (upper) and ¹³C (lower) NMR spectra of compound 17k.

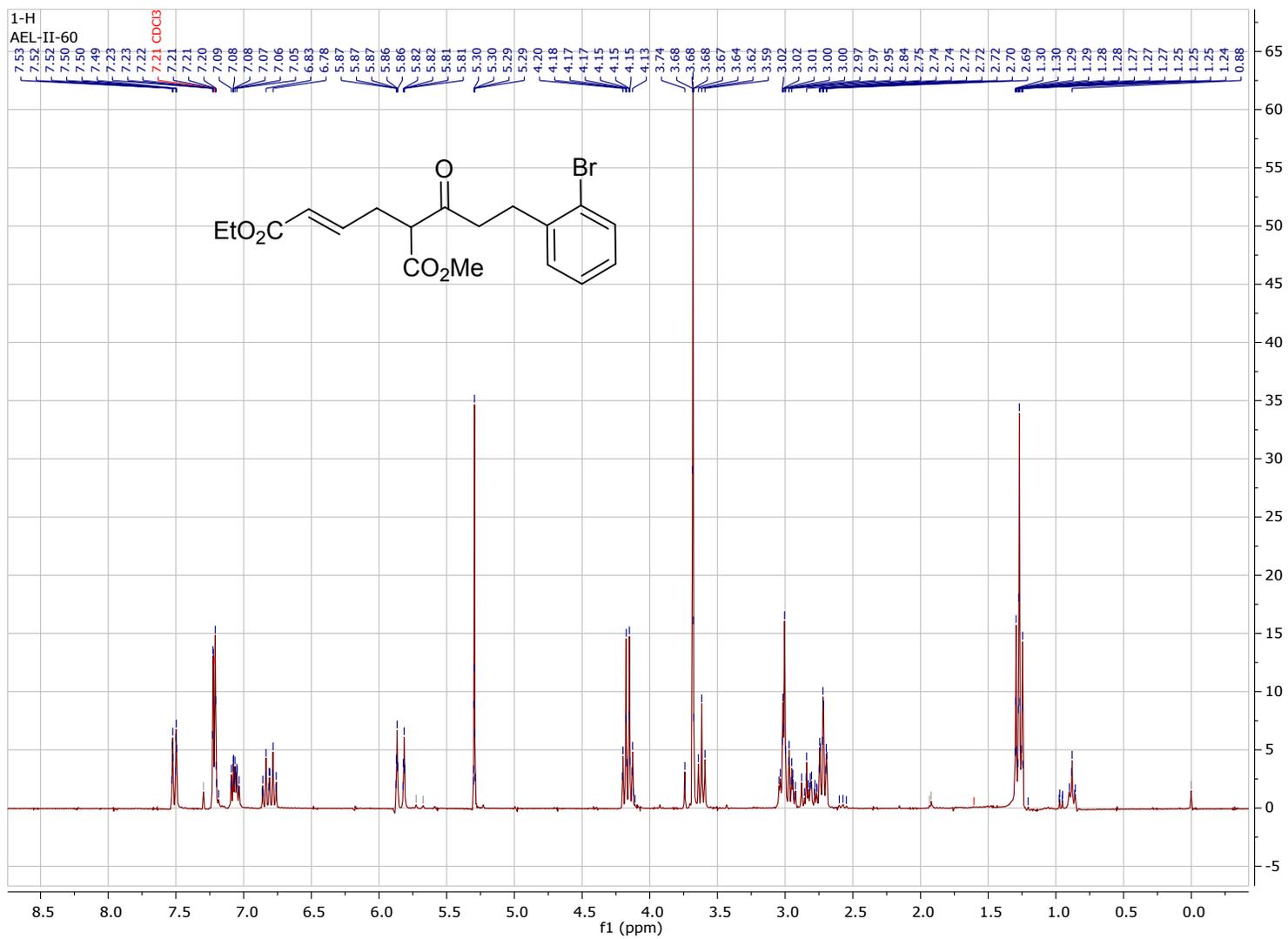


Figure S41. ¹H NMR spectra of compound 16a.

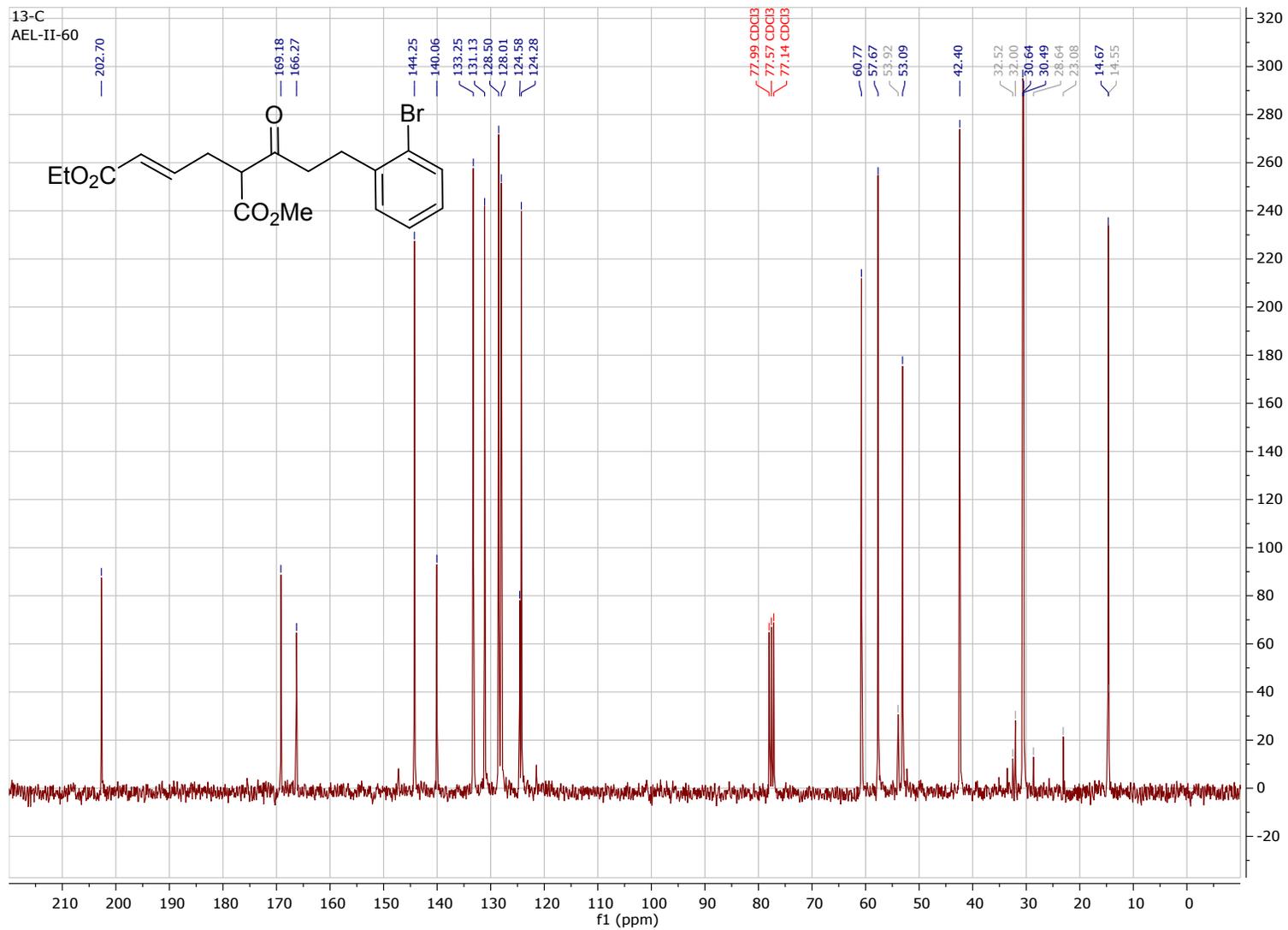


Figure S42. ¹³C NMR spectra of compound 16a.

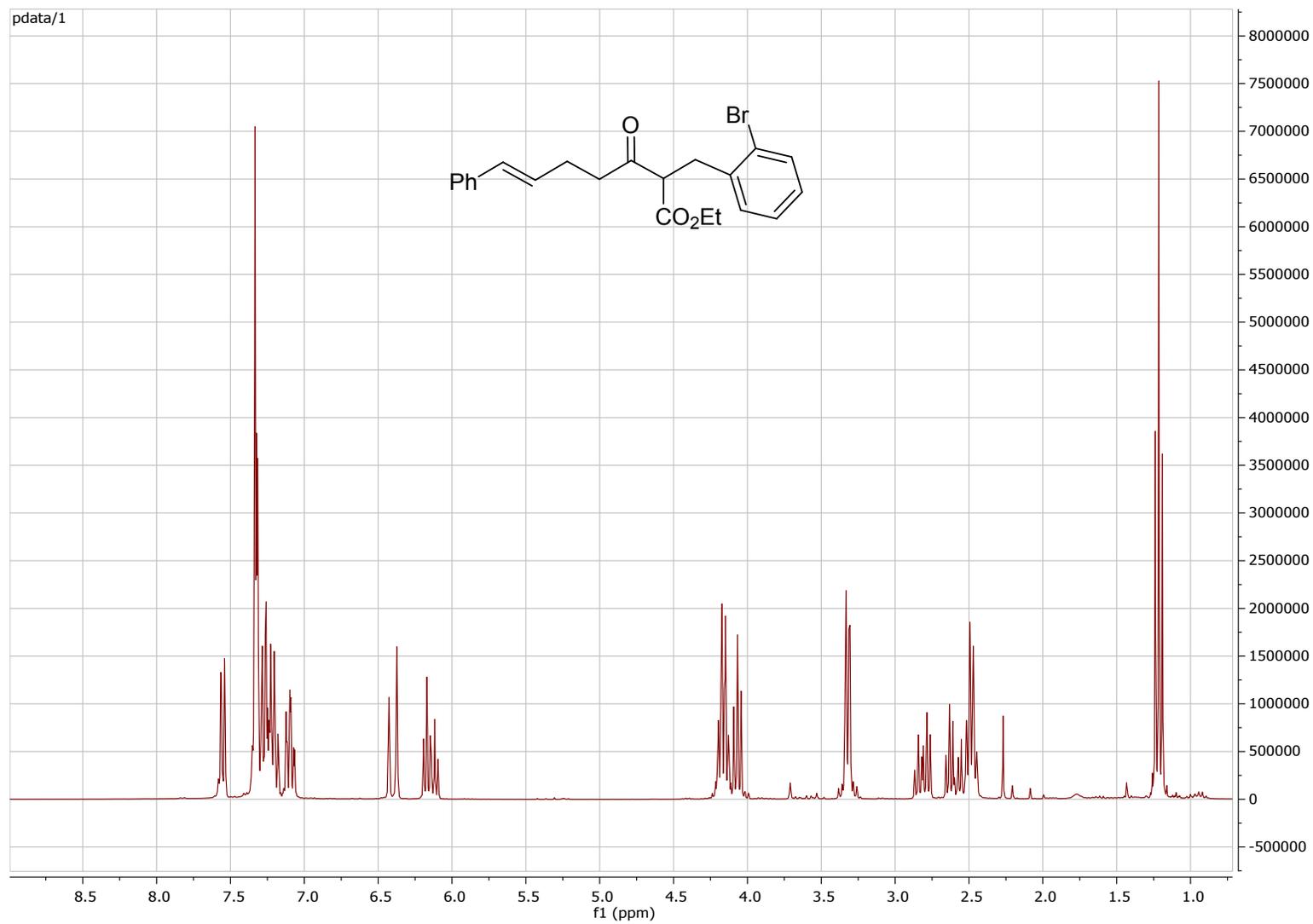


Figure S43. ^1H NMR spectra of compound **16b**.



Figure S44. ^{13}C NMR spectra of compound 16b.

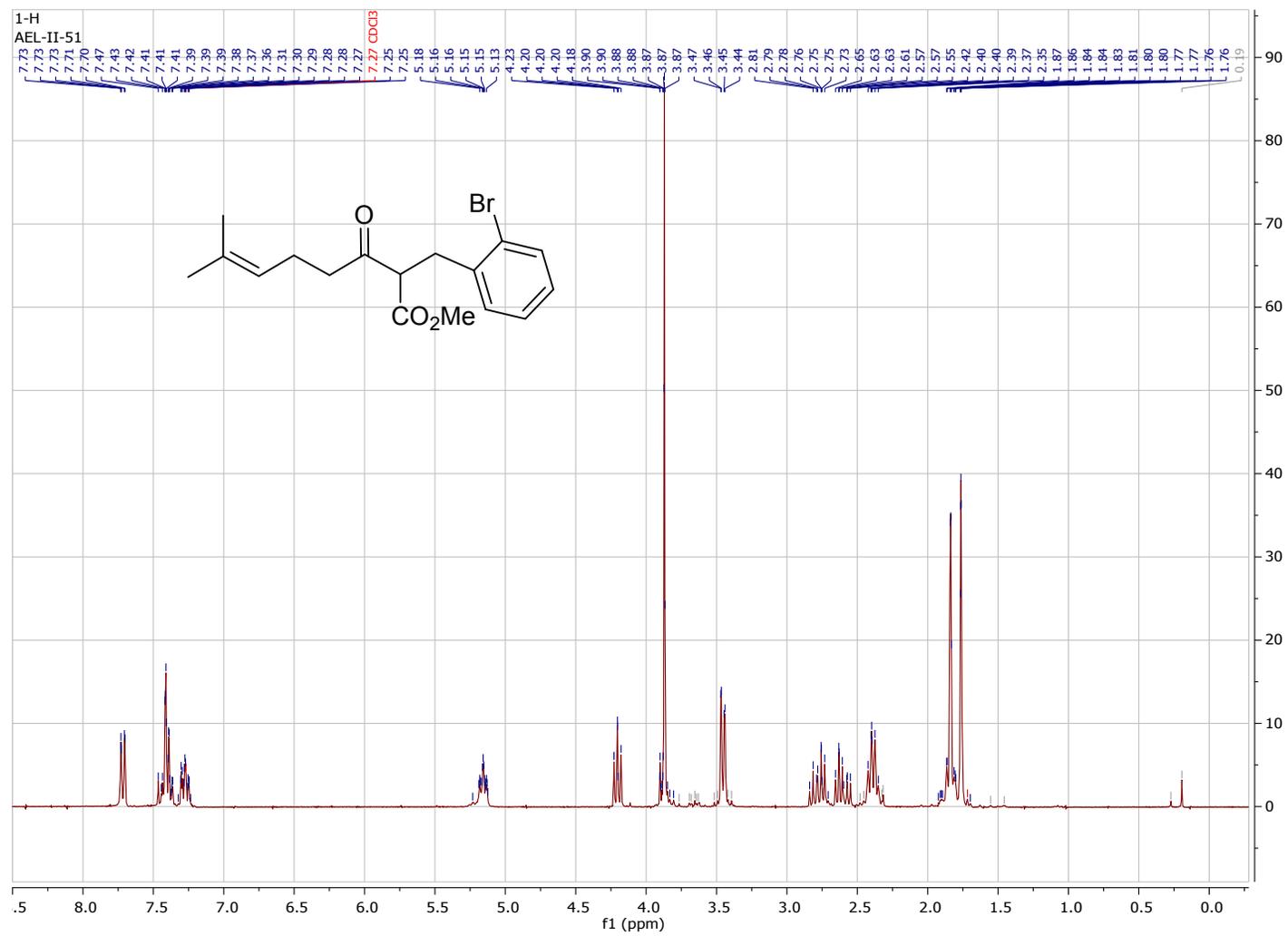


Figure S45. ¹H NMR spectra of compound 16c.

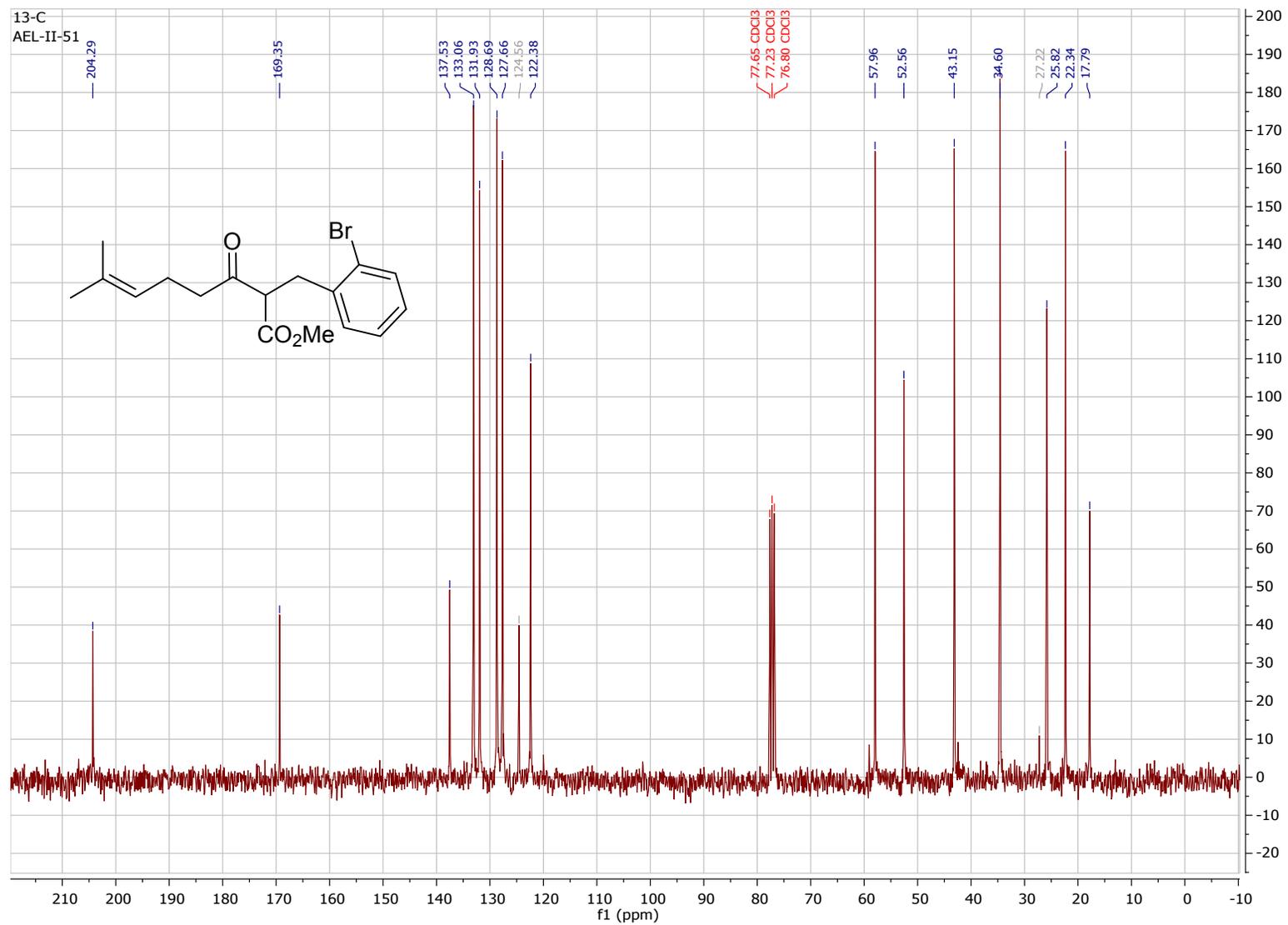


Figure S46. ¹³C NMR spectra of compound 16c.

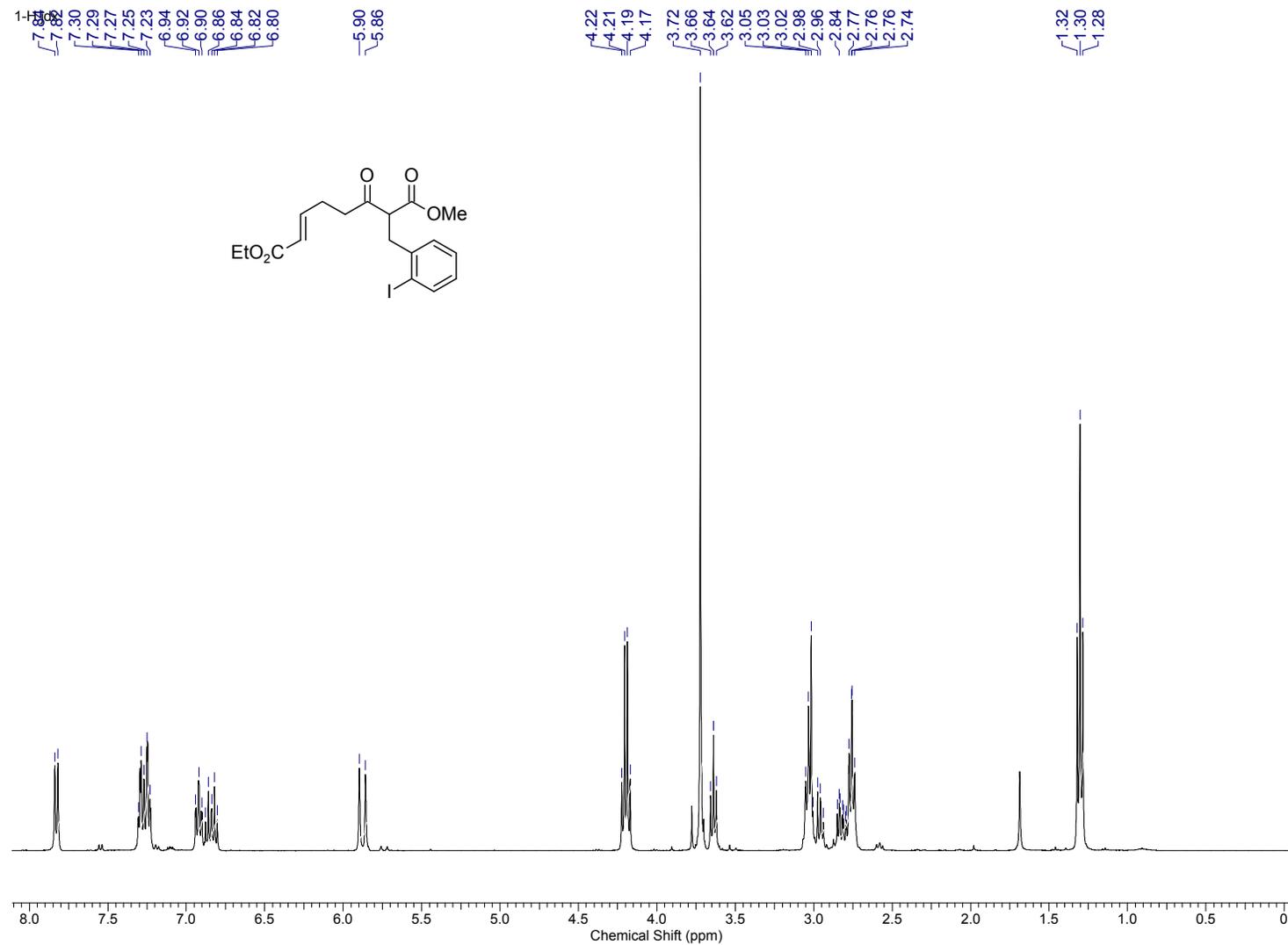


Figure S47. ¹H NMR spectra of compound 16d.

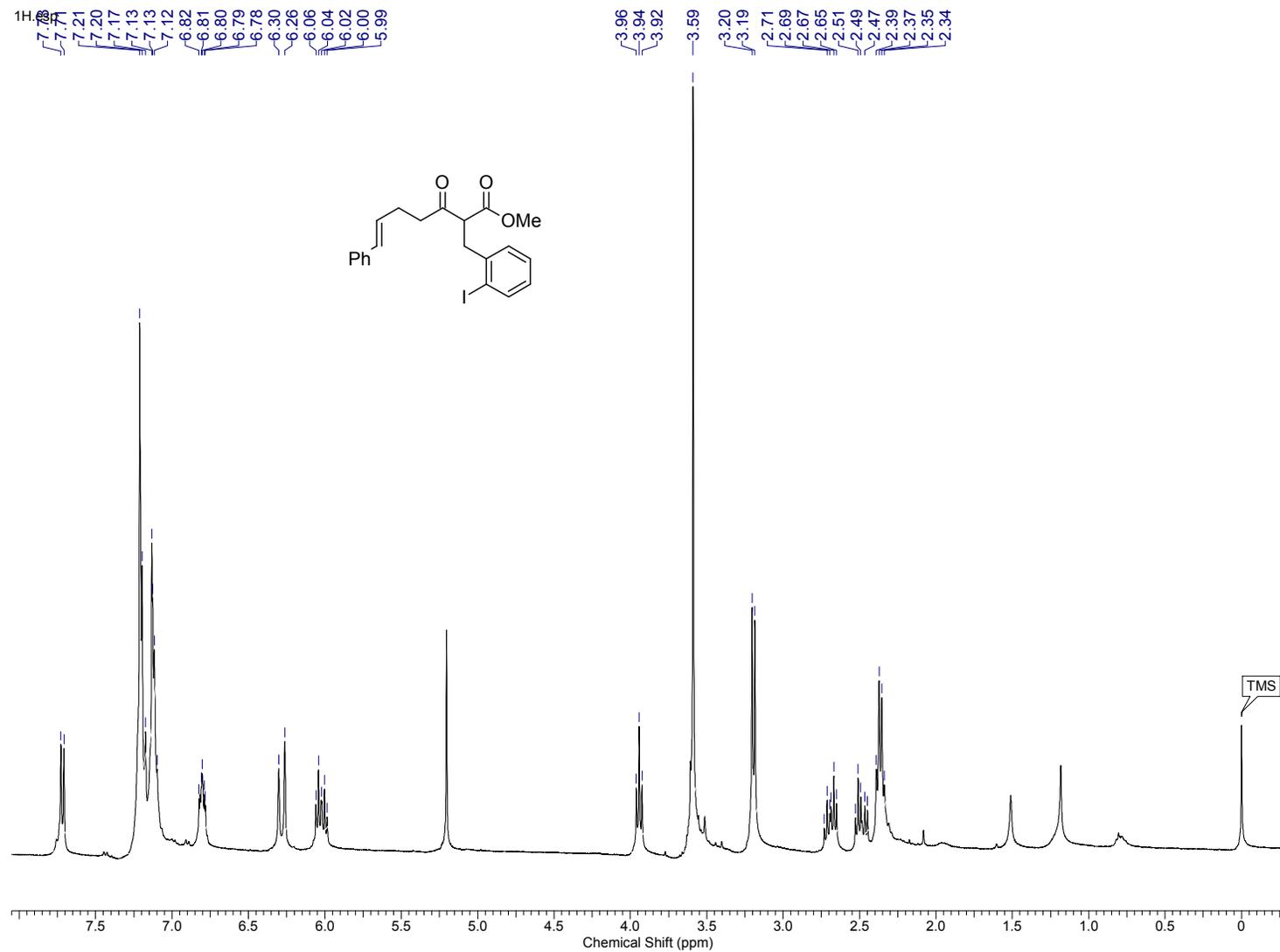


Figure S48. ^1H NMR spectra of compound **16e**.

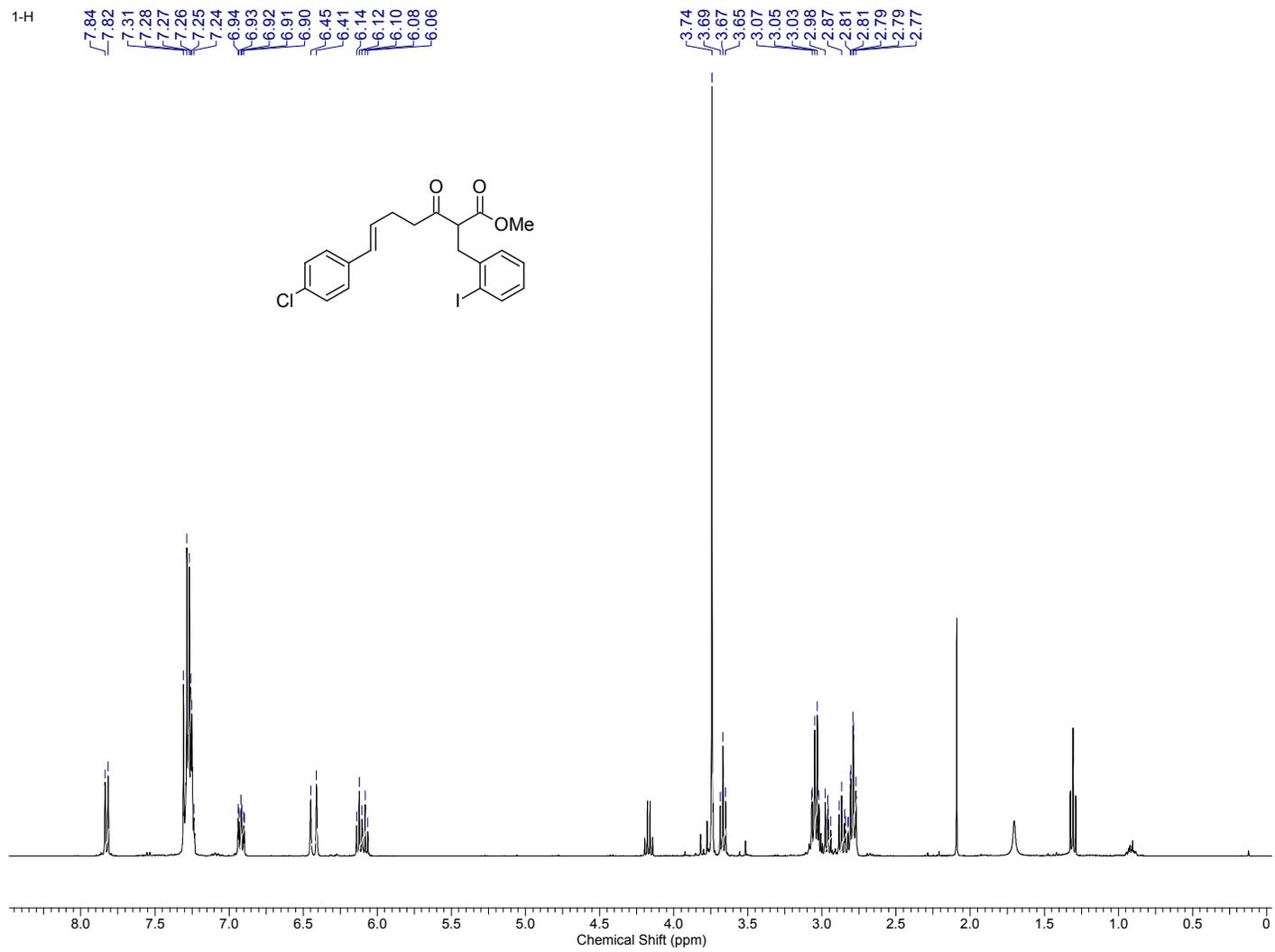


Figure S49. ¹H NMR spectra of compound 16f.

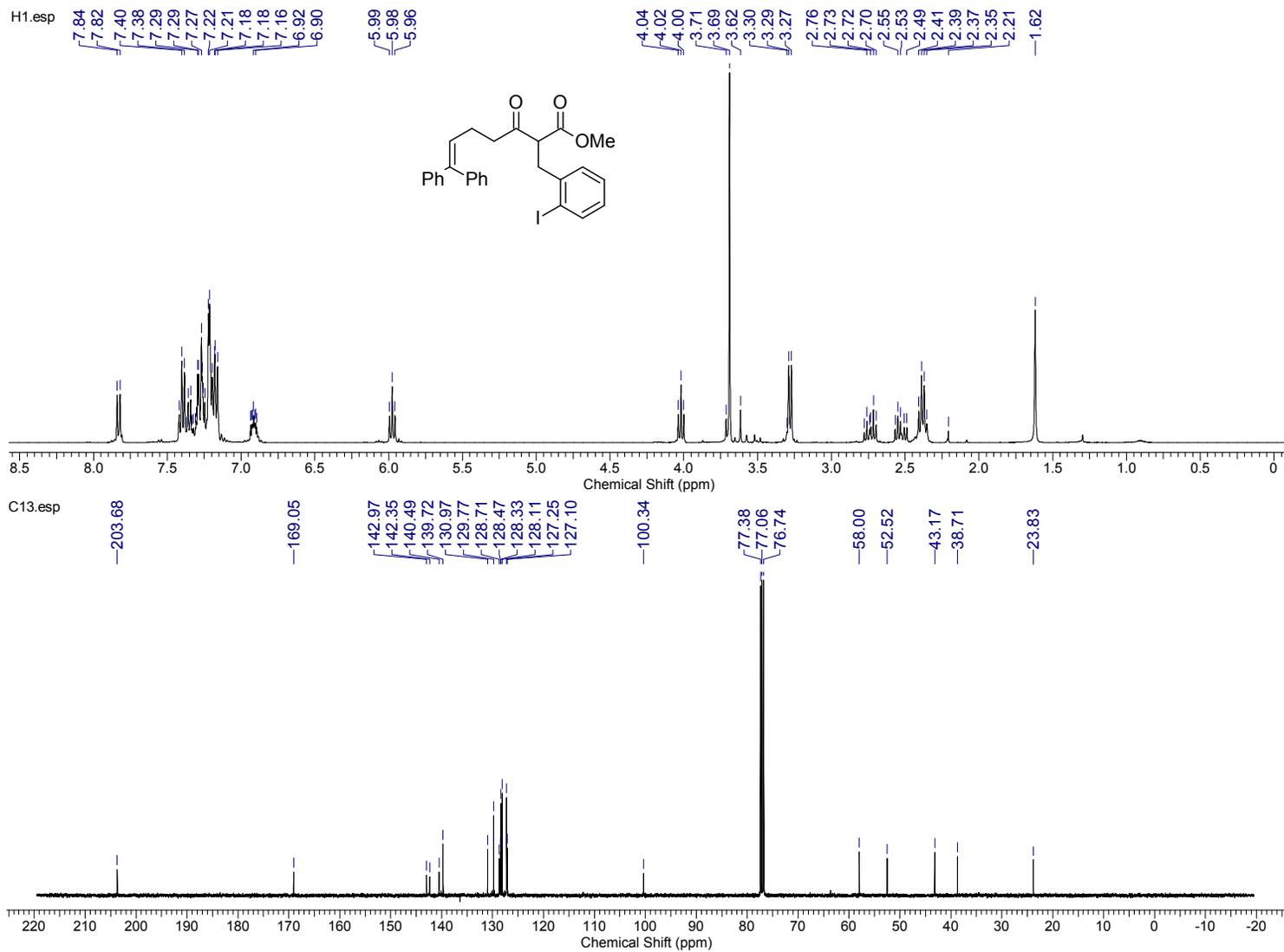


Figure S50. ¹H (upper) and ¹³C (lower) NMR spectra of compound 16g.

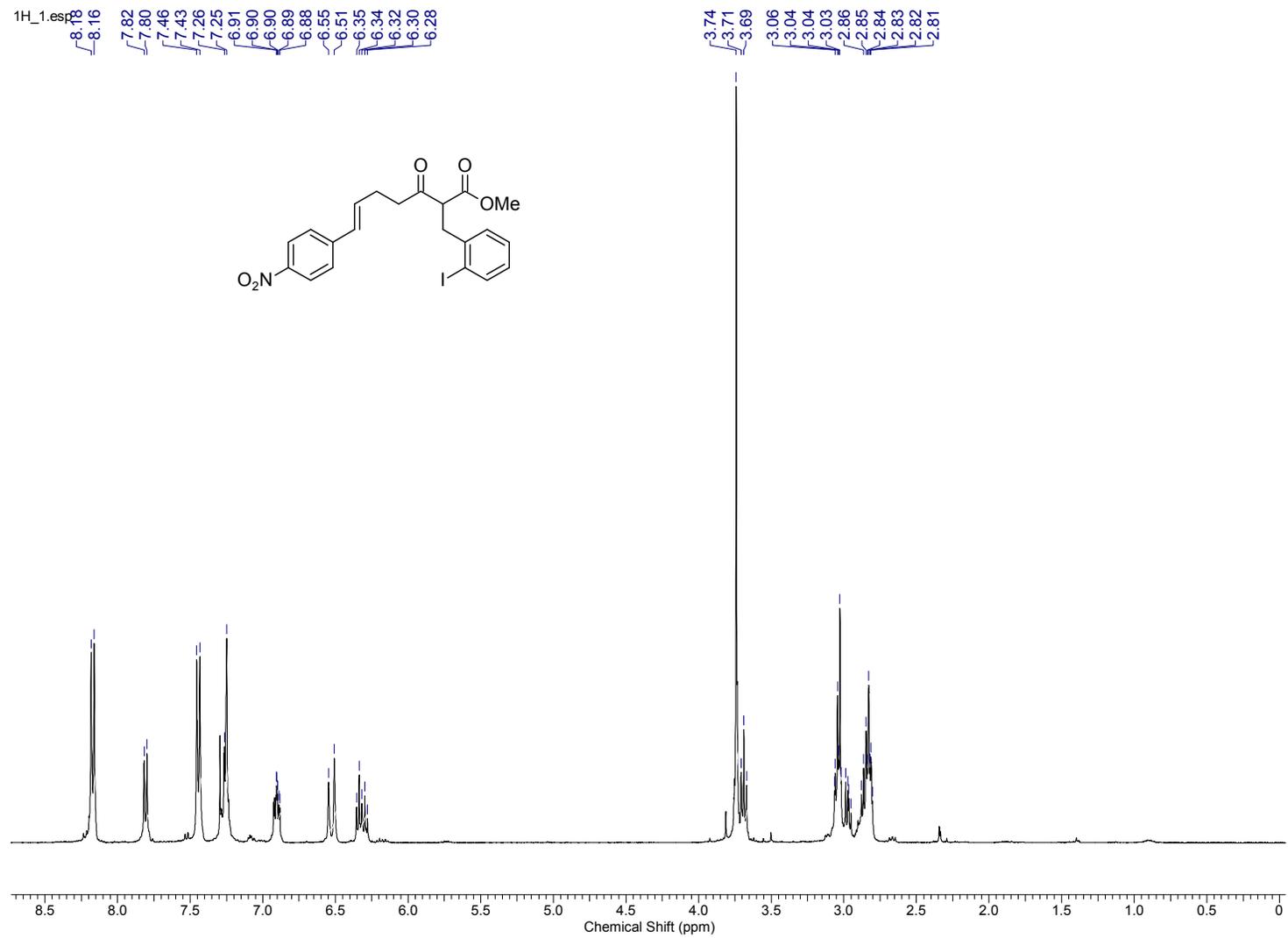


Figure S51. ¹H NMR spectra of compound 16h.

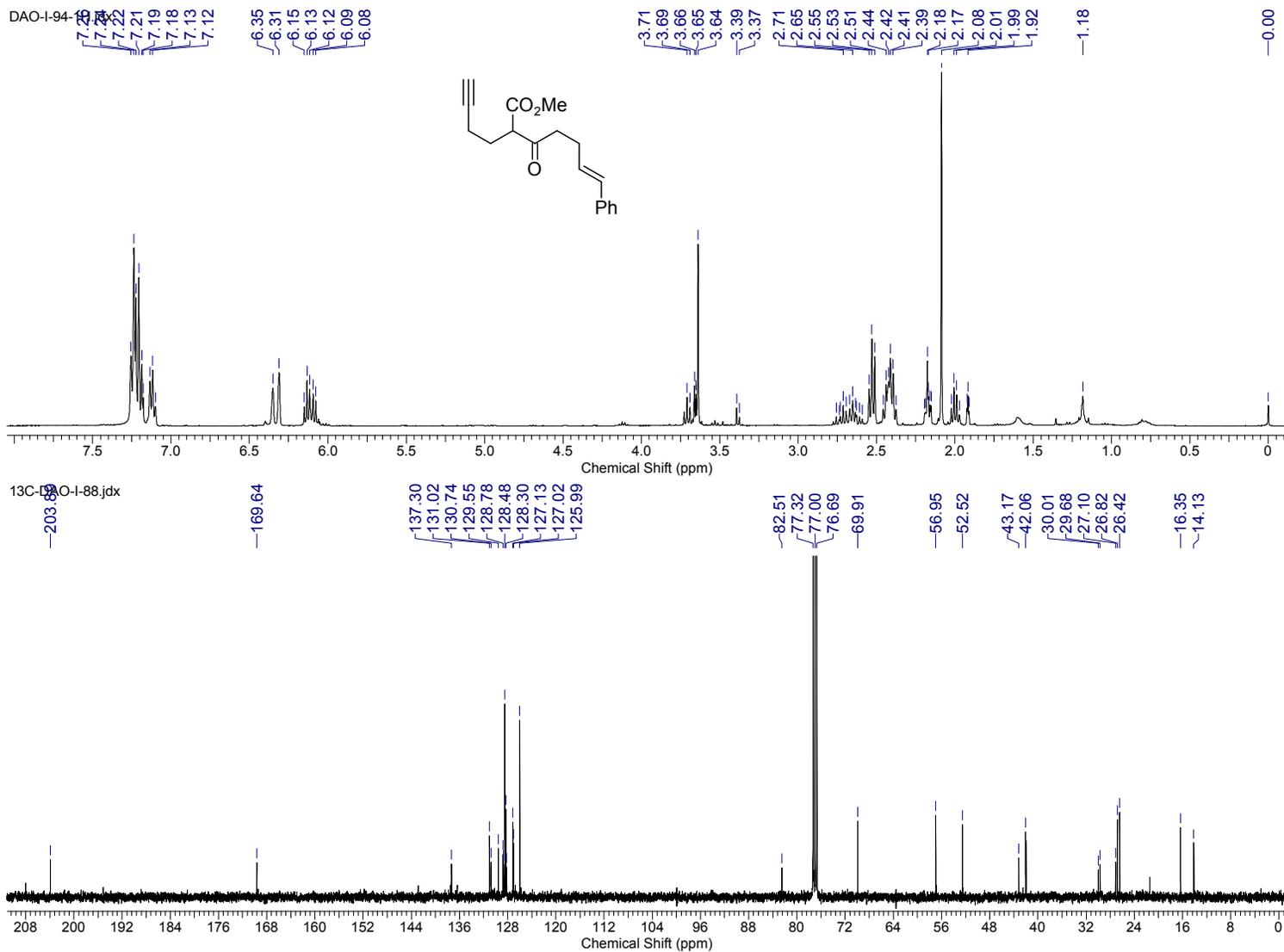


Figure S52. ^1H (upper) and ^{13}C (lower) NMR spectra of compound **16i**.

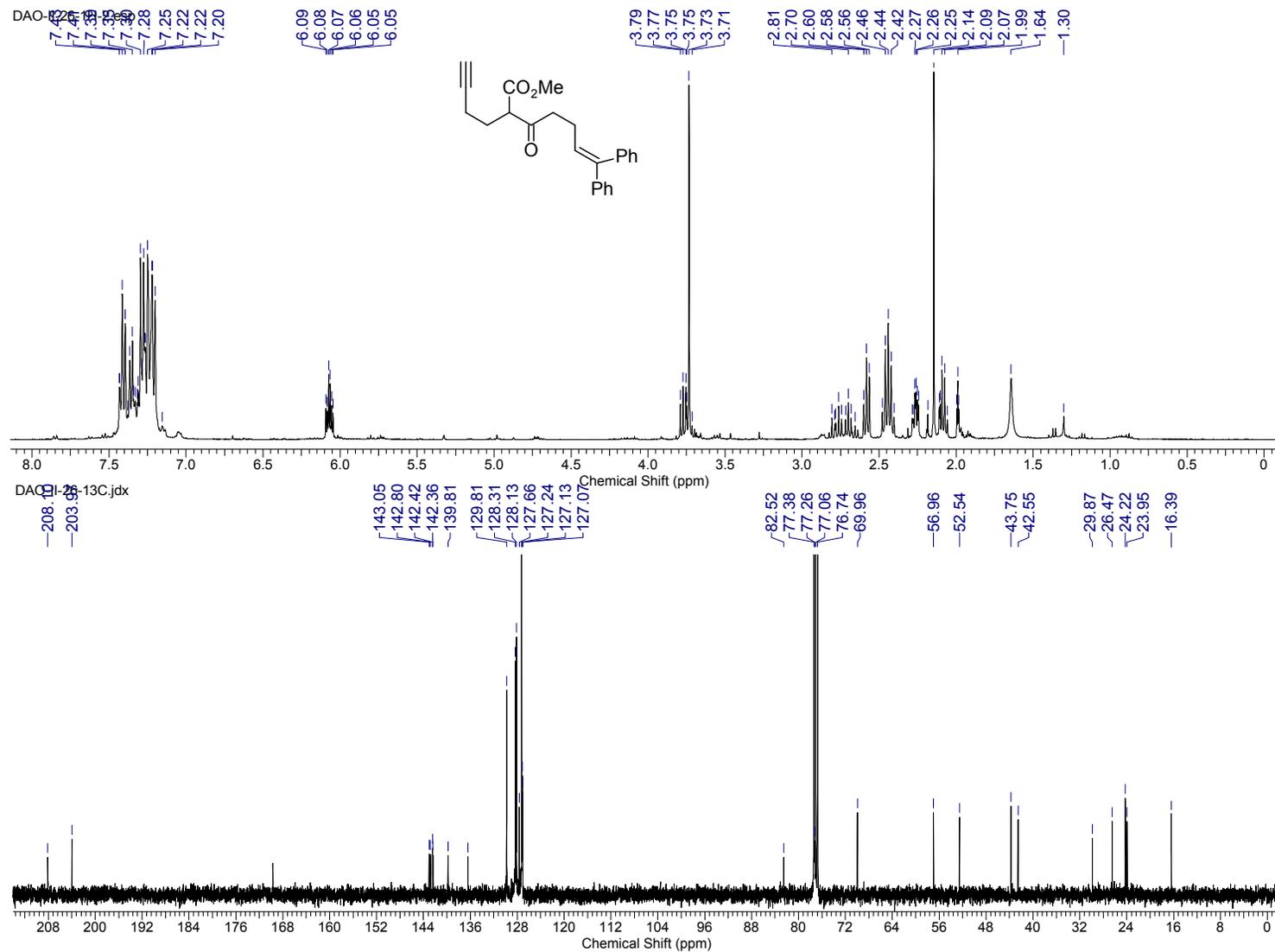


Figure S53. ¹H (upper) and ¹³C (lower) NMR spectra of compound 16j.

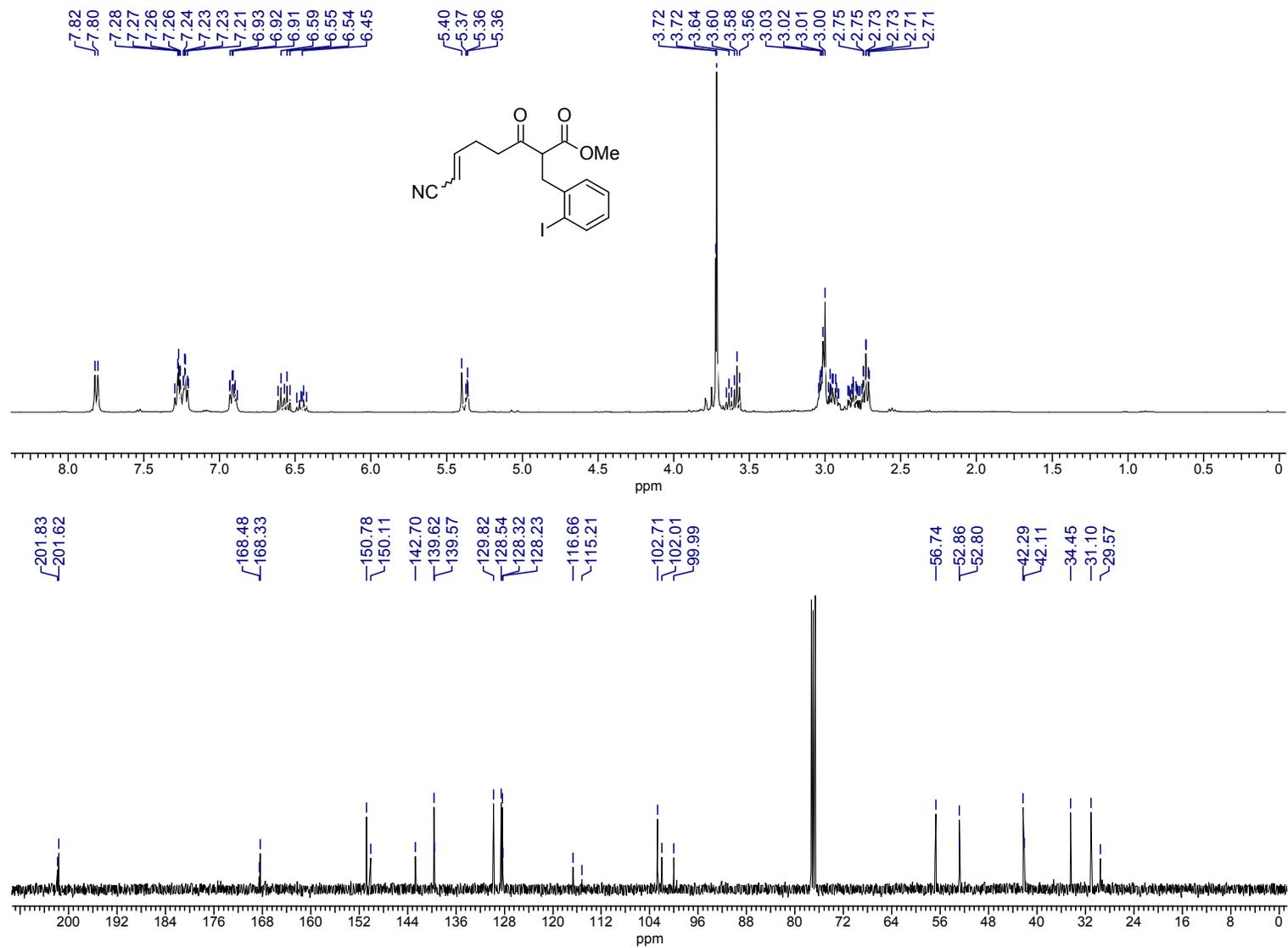


Figure S54. ¹H (upper) and ¹³C (lower) NMR spectra of compound 16k.

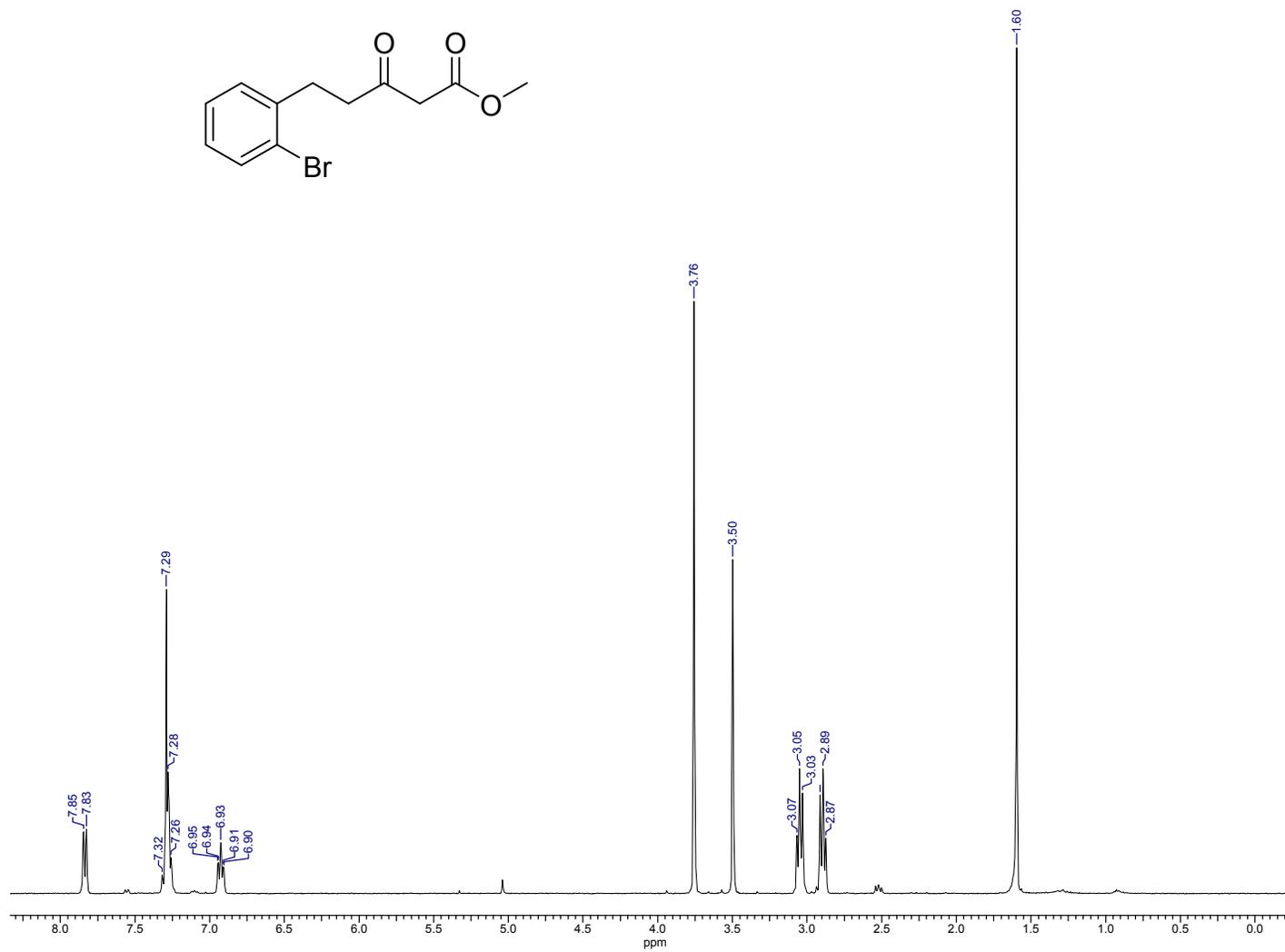


Figure S55. ¹H NMR spectra of compound 11.

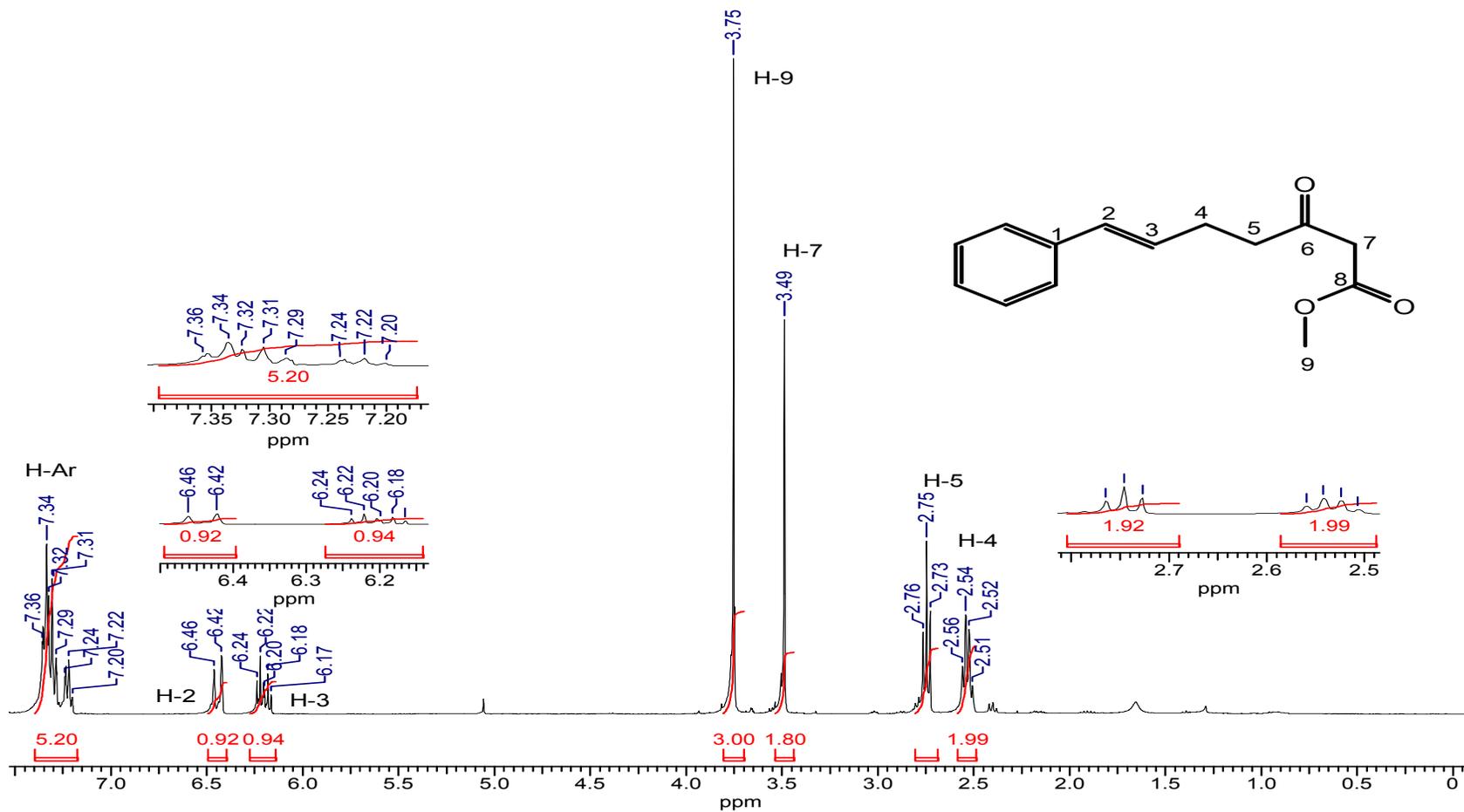


Figure S56. ¹H NMR spectra of compound 12.

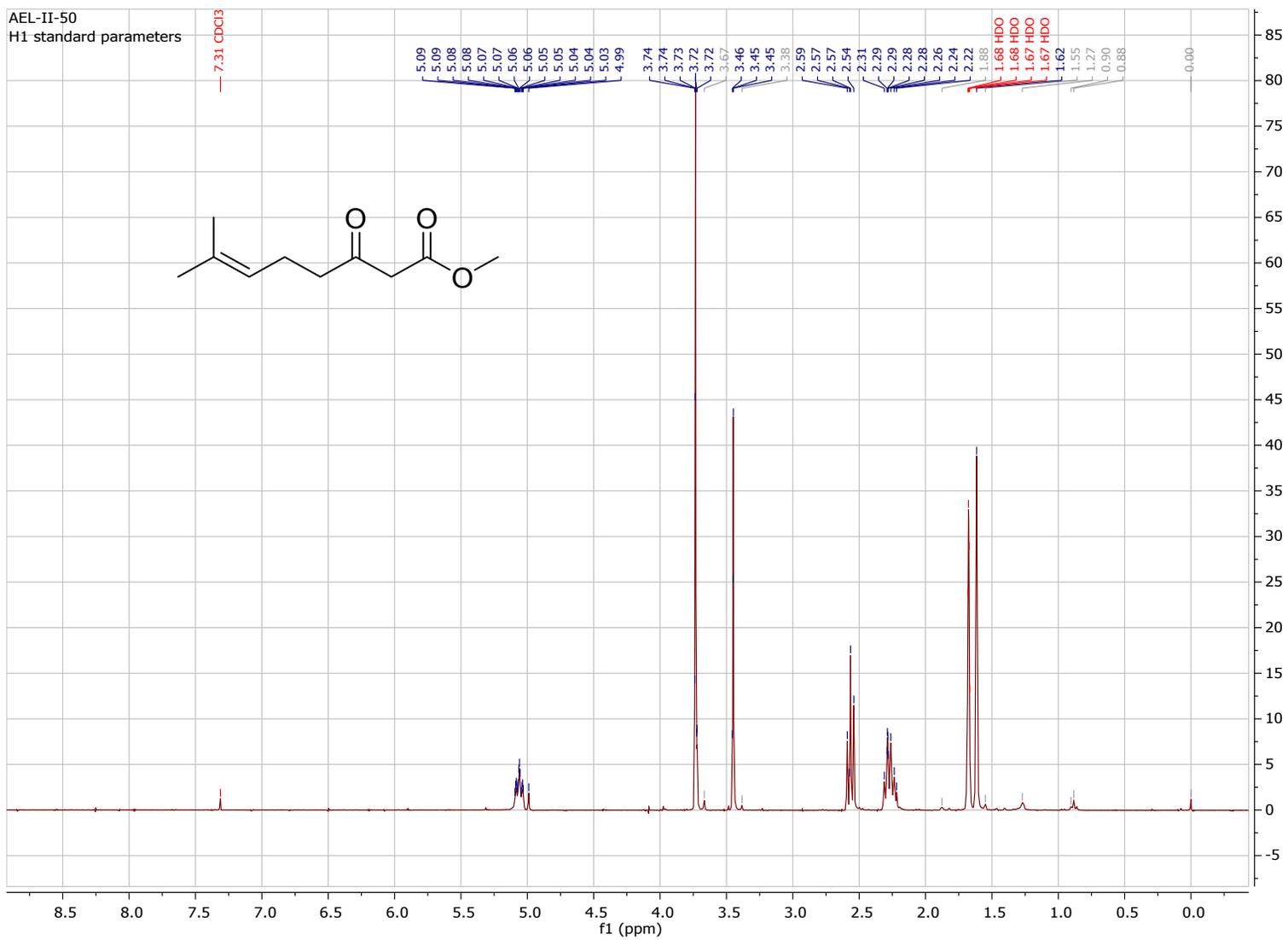


Figure S57. ¹H NMR spectra of compound 13.

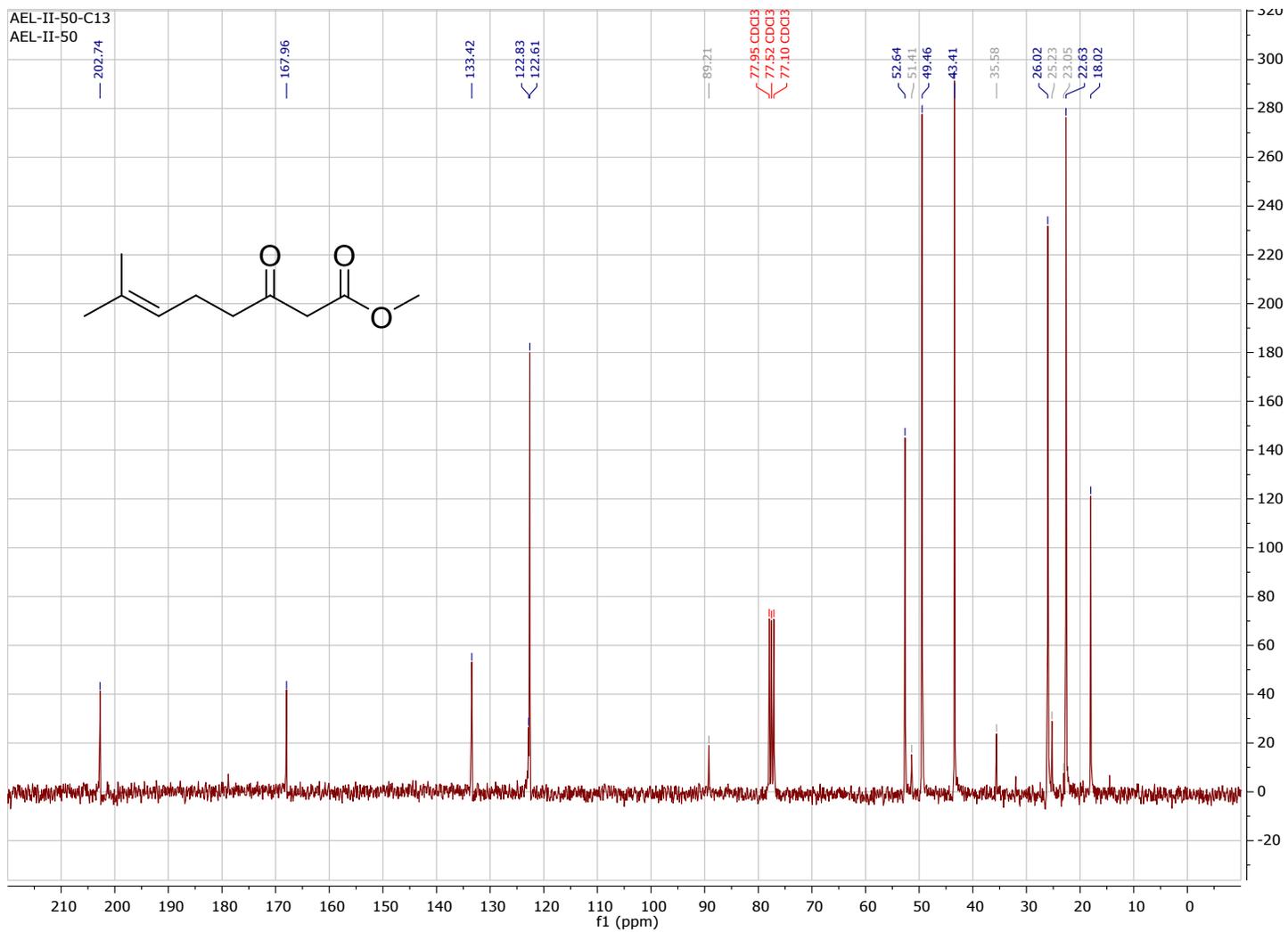


Figure S58. ^{13}C NMR spectra of compound 13.

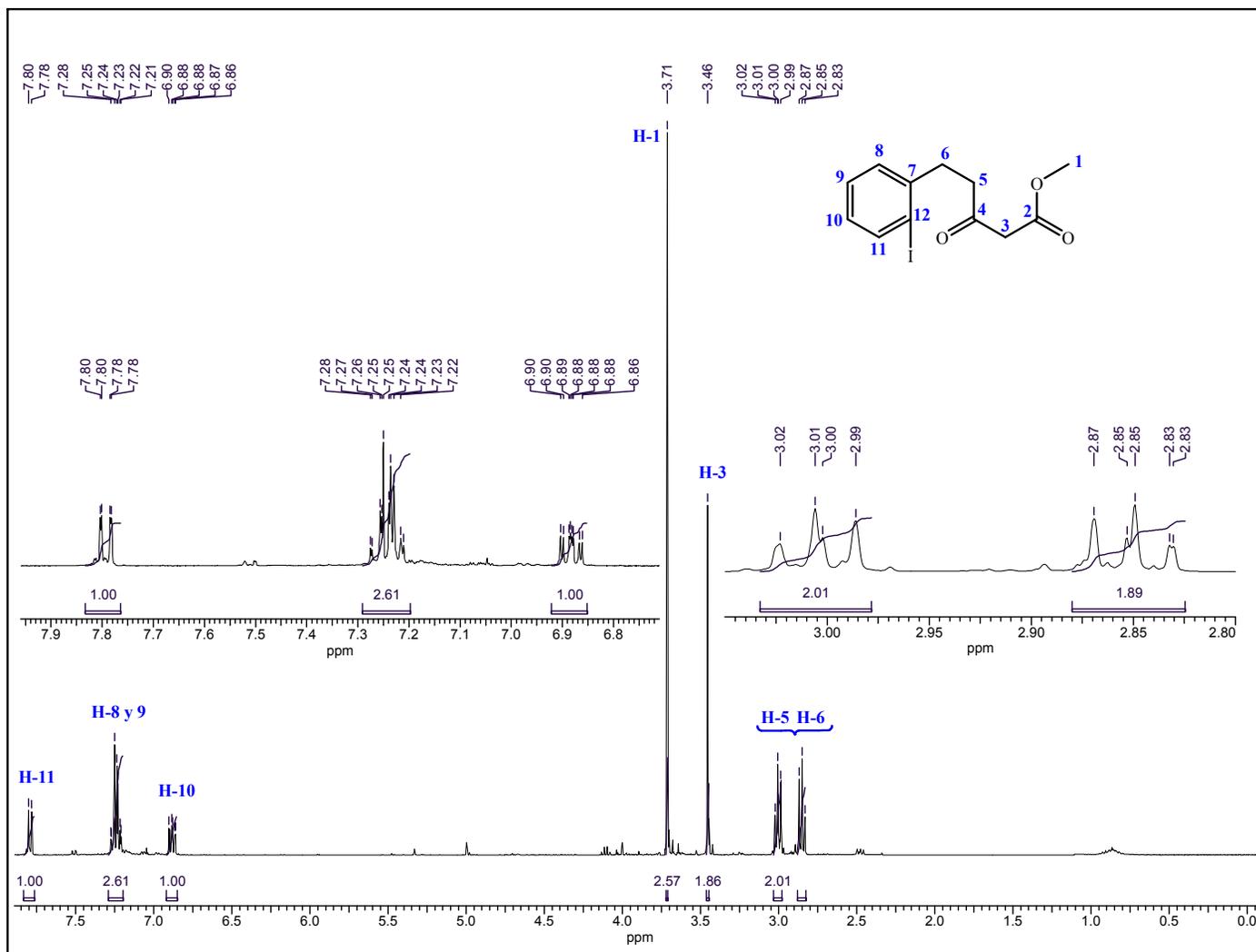


Figure S59. ¹H NMR spectra of compound 14.

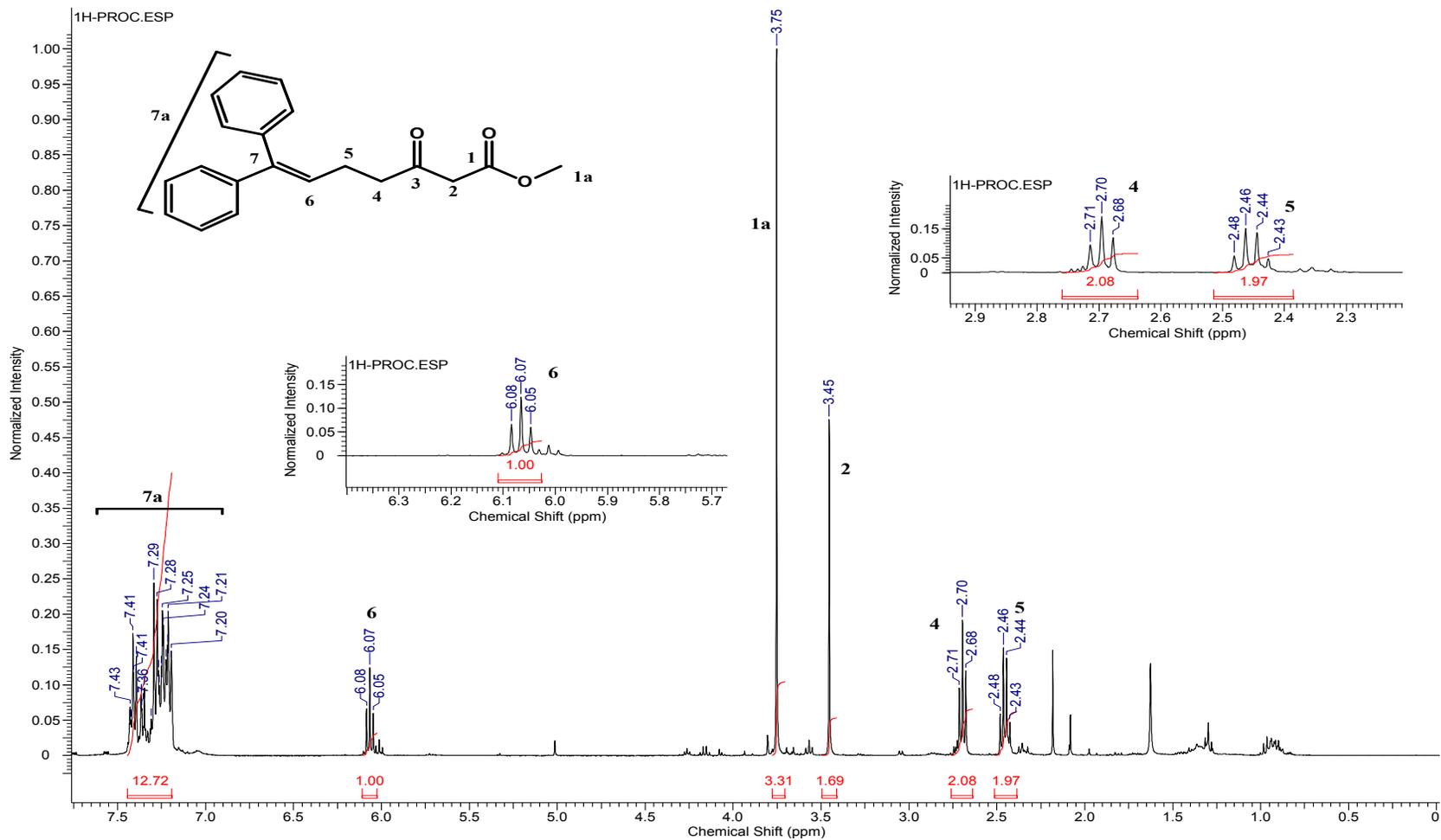


Figure S60. ¹H NMR spectra of compound 15.