

Electronic Supplementary Information

Synthesis of 1-aryl-2,3-diaroyl cyclopropanes from 1,3,5-triaryl-1,5-diketones and their transformation into *E,E*-1,4-diaryl-1,3-butadienes

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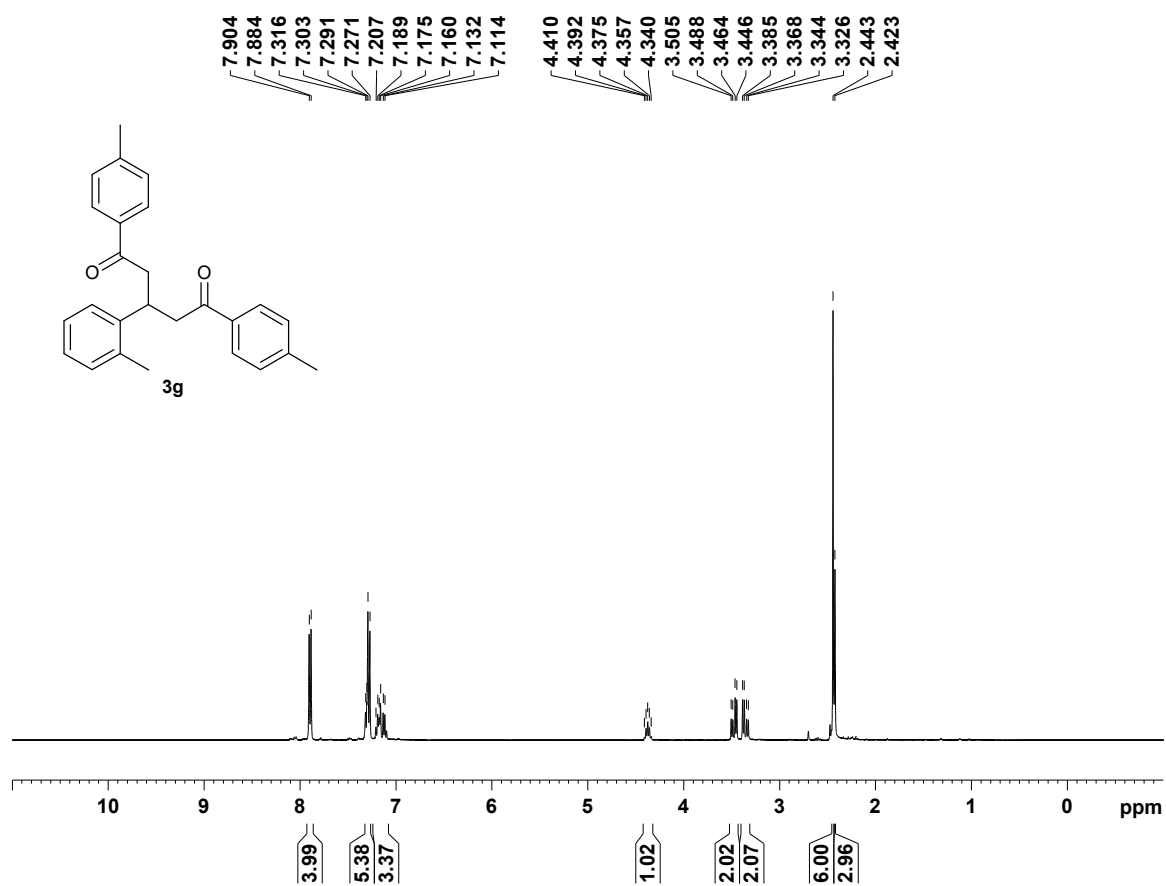


Figure S1. ^1H NMR (400 MHz, CDCl_3) spectrum of **3g**

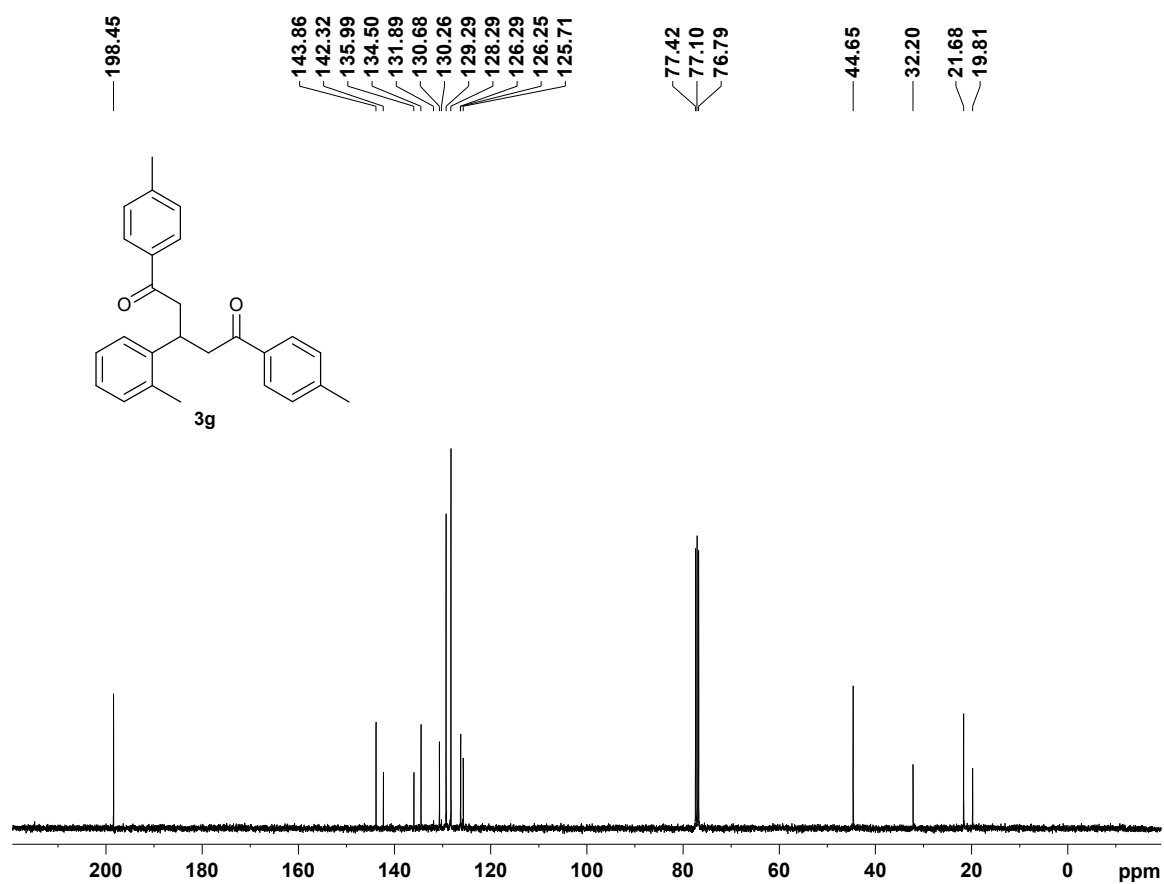


Figure S2. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **3g**

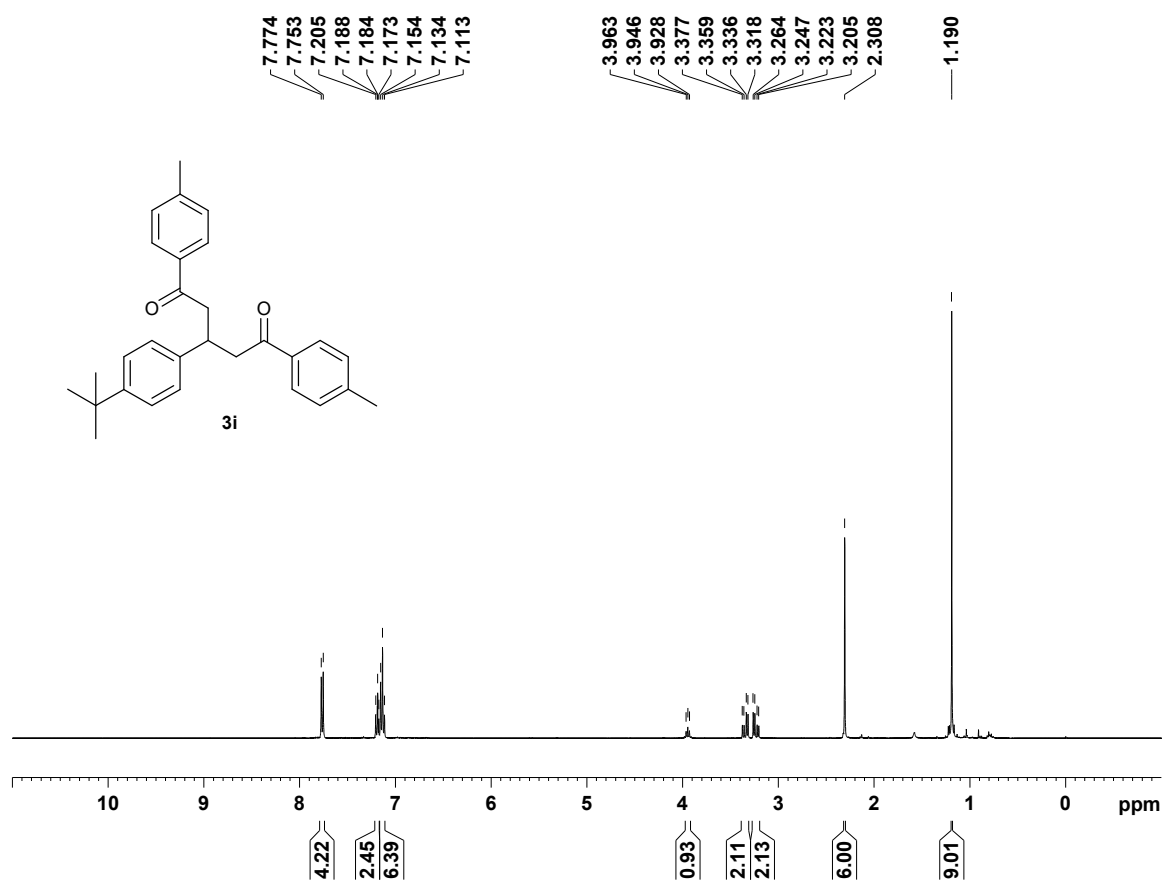


Figure S3. ¹H NMR (400 MHz, CDCl₃) spectrum of **3i**

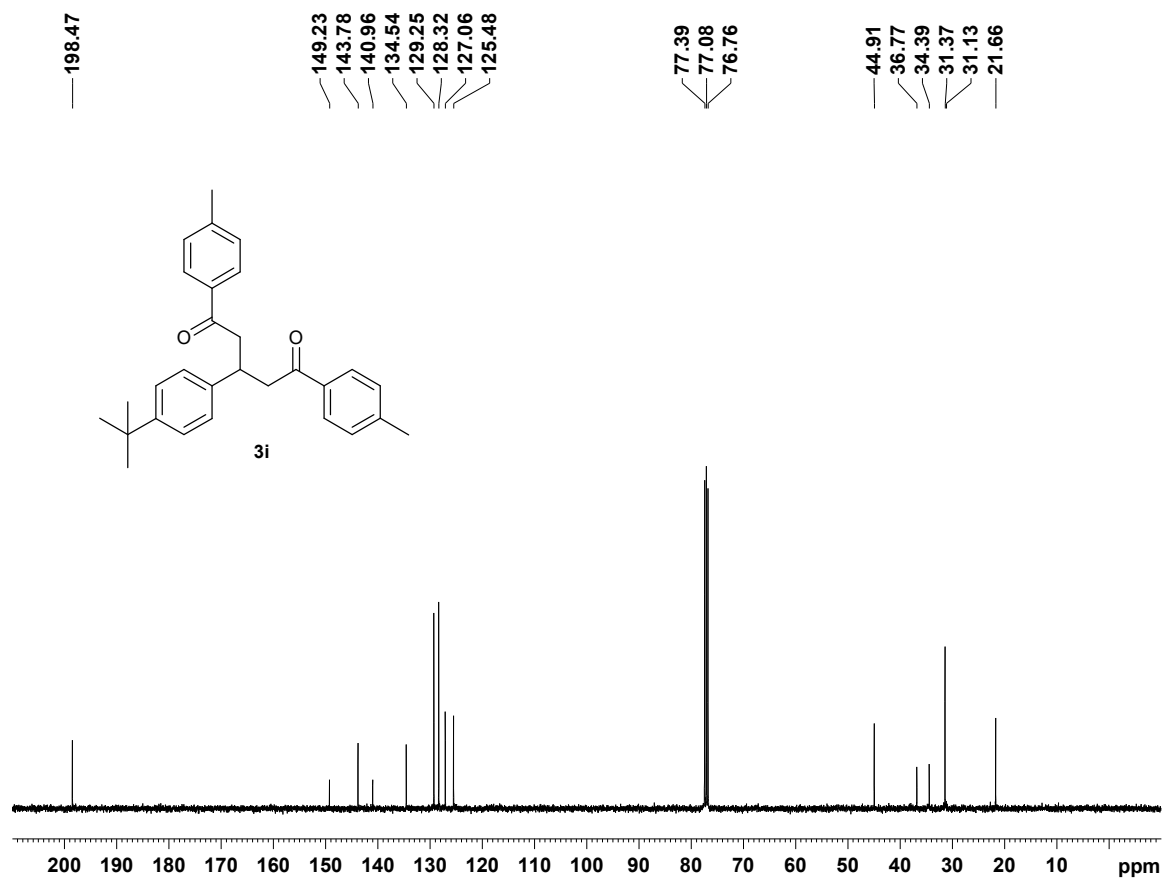


Figure S4. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **3i**

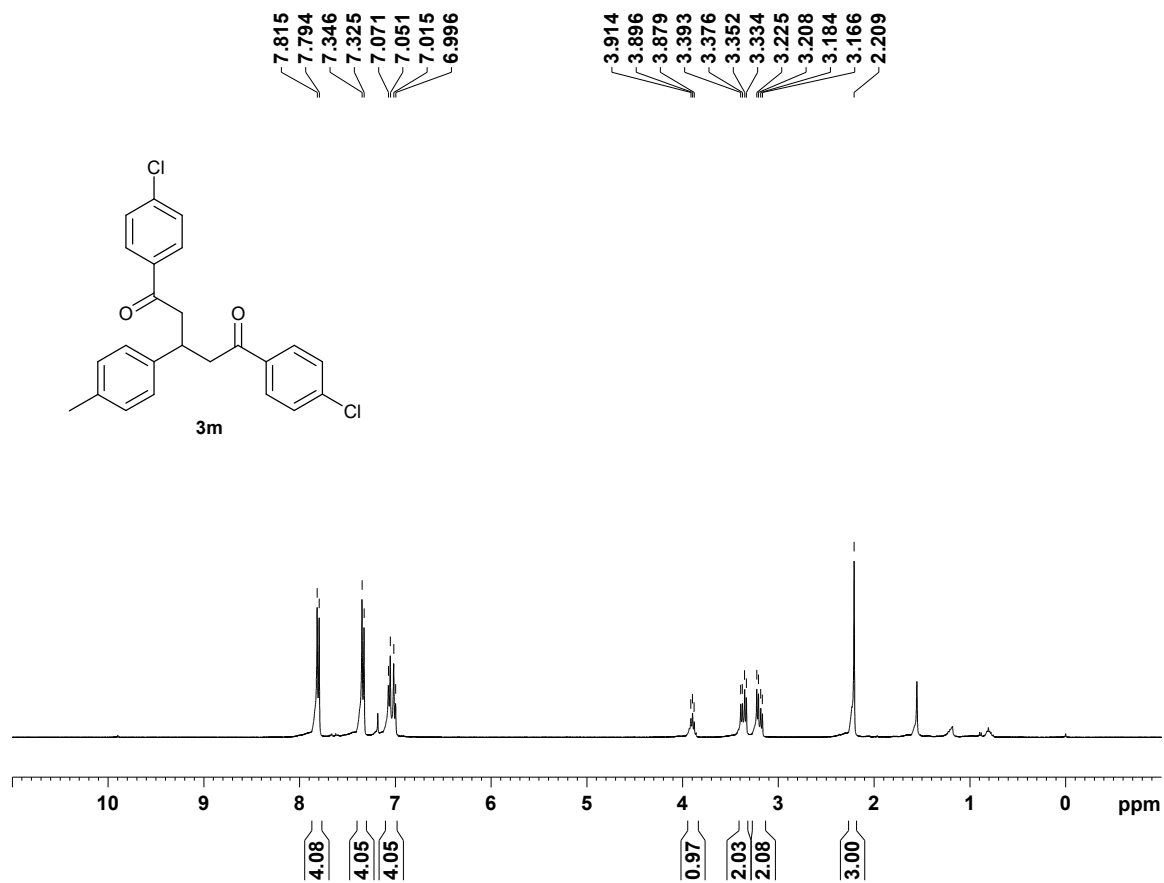


Figure S5. ^1H NMR (400 MHz, CDCl_3) spectrum of **3m**

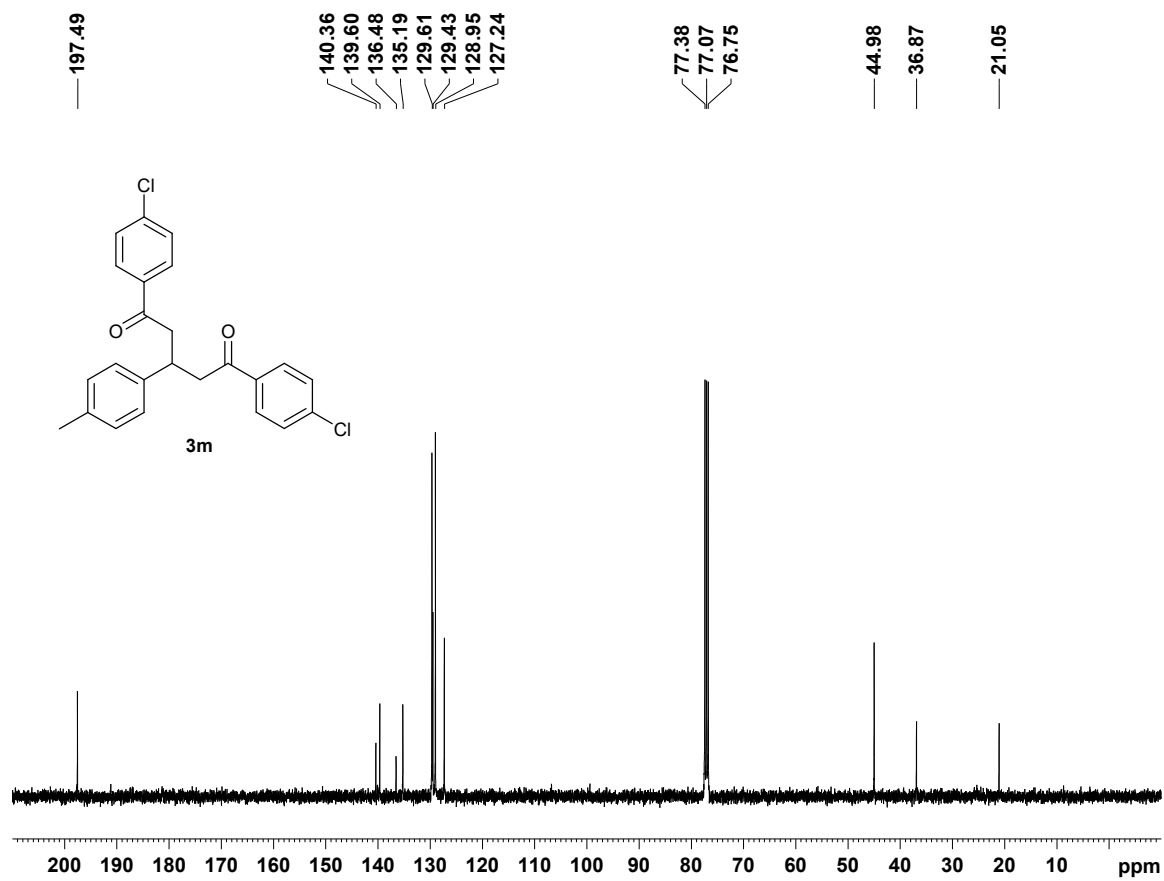


Figure S6. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **3m**

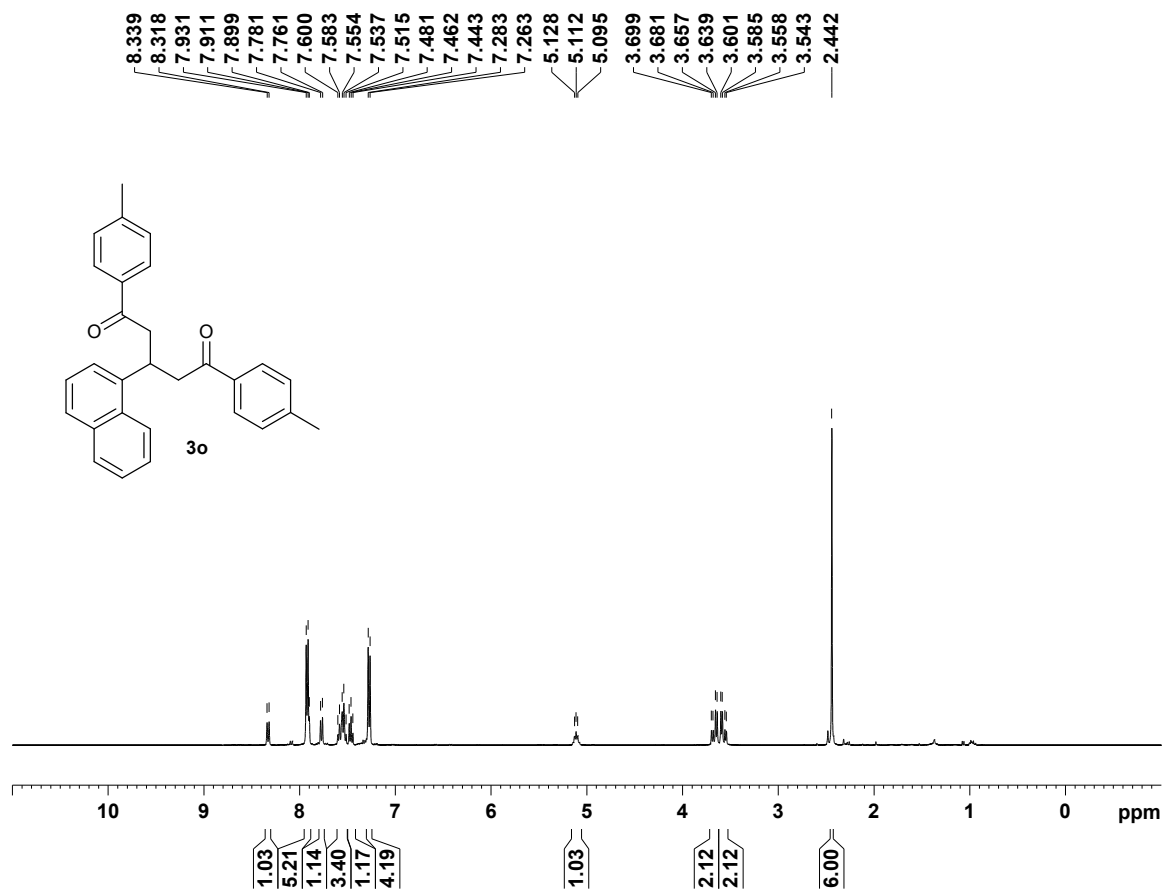


Figure S7. ¹H NMR (400 MHz, CDCl₃) spectrum of **3o**

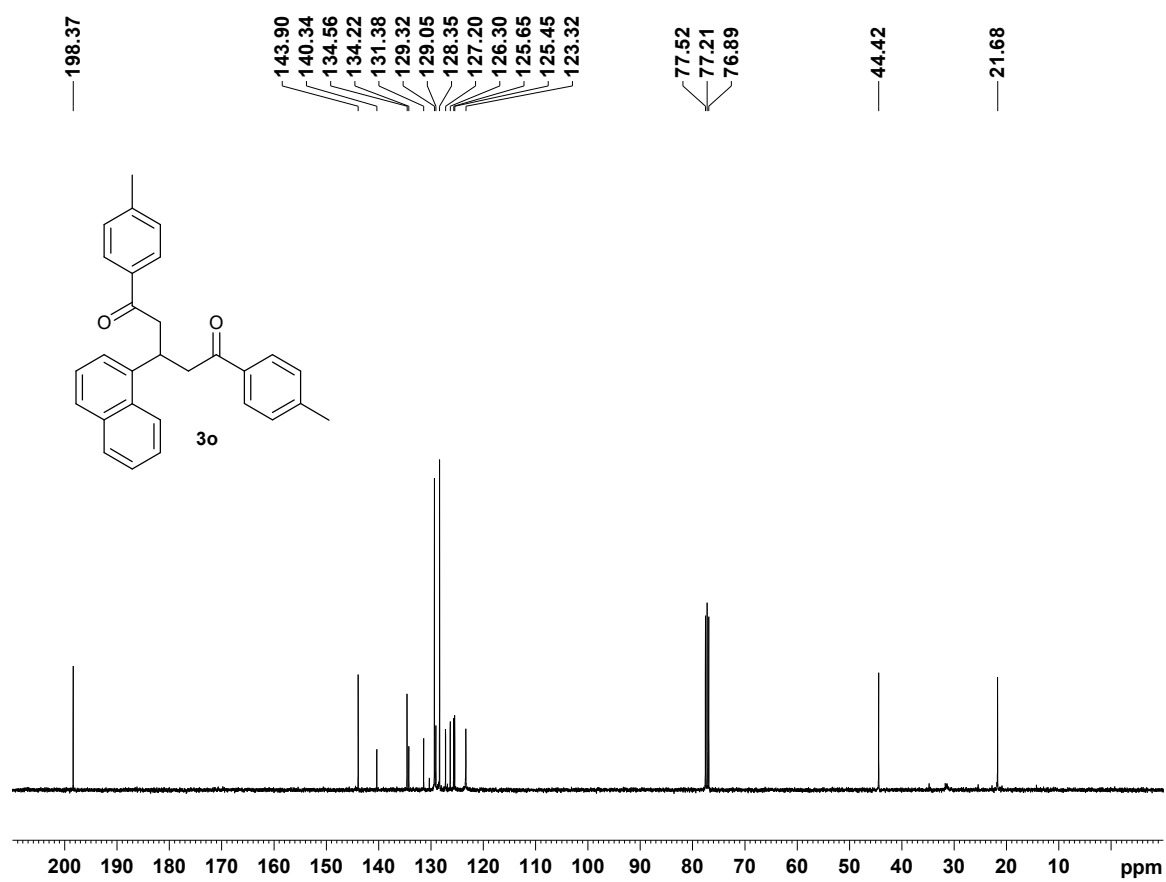


Figure S8. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **3o**

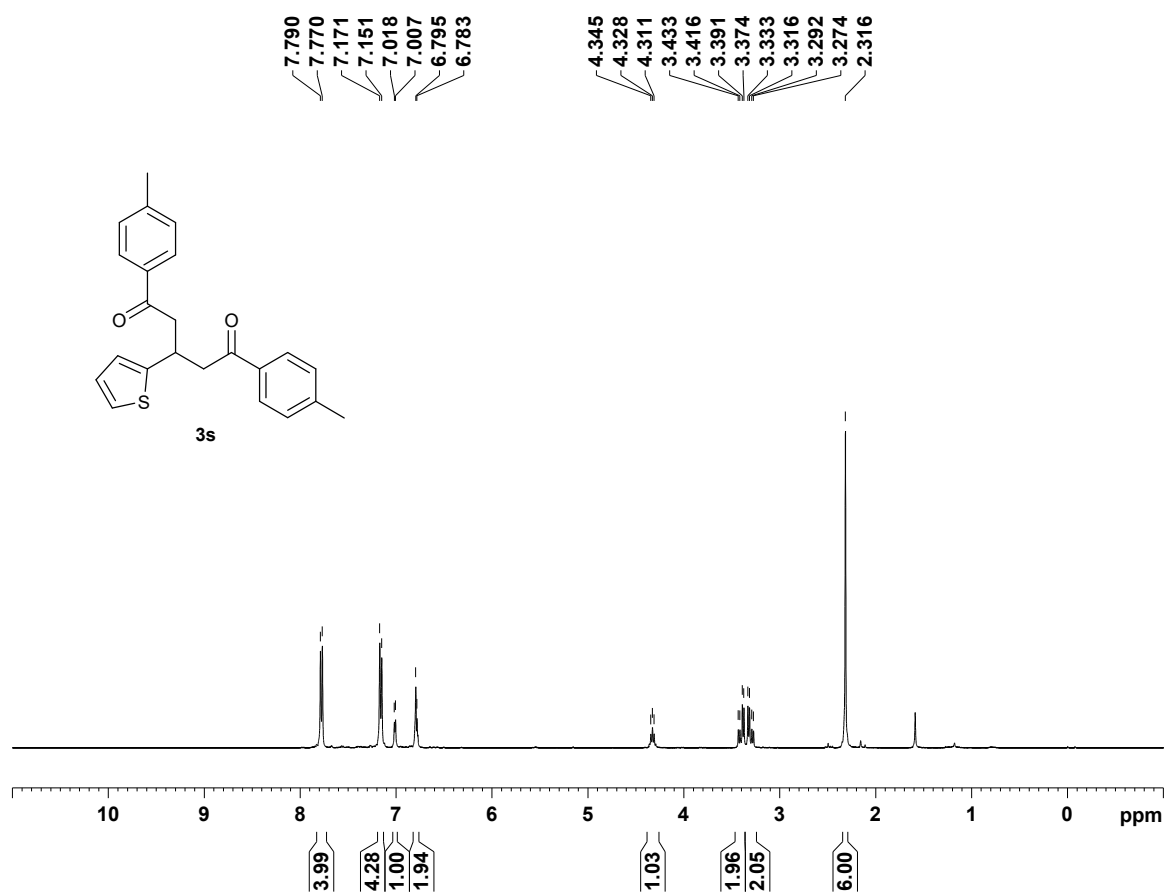


Figure S9. ¹H NMR (400 MHz, CDCl₃) spectrum of **3s**

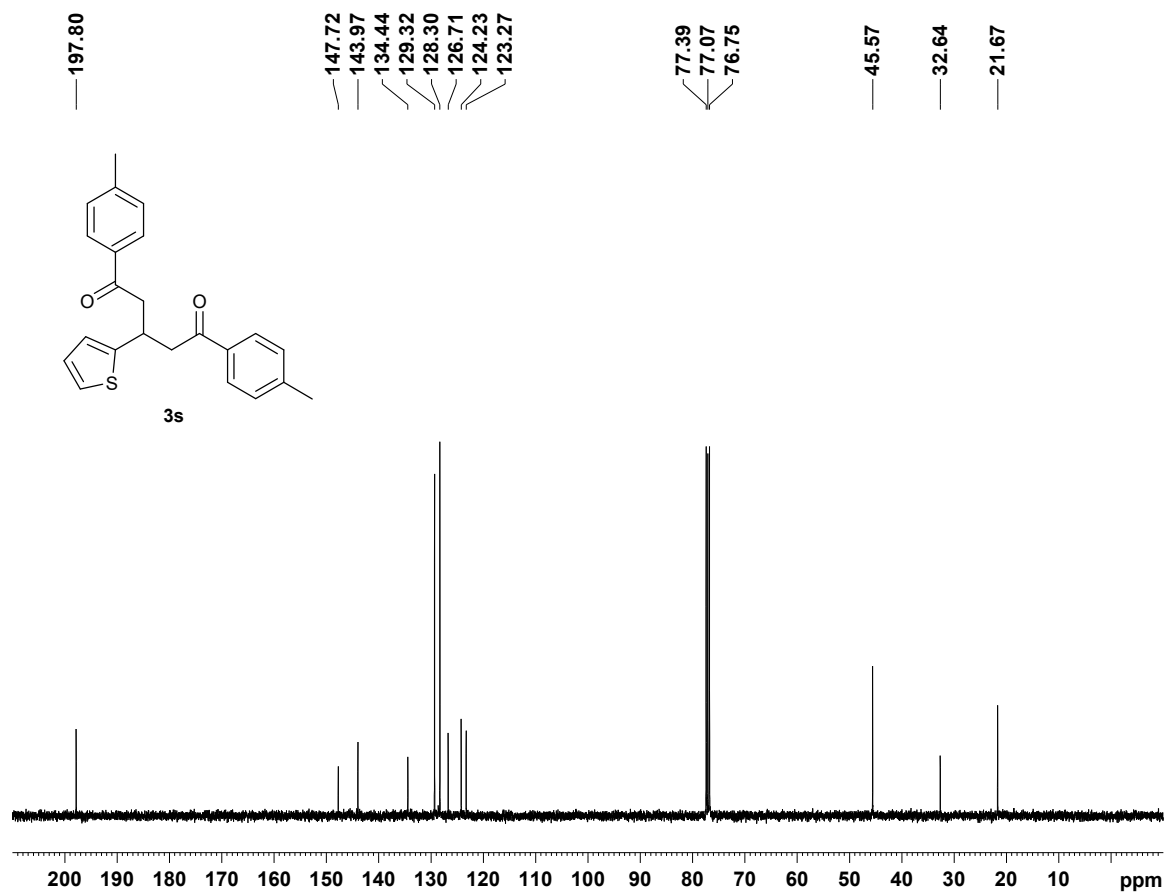


Figure S10. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **3s**

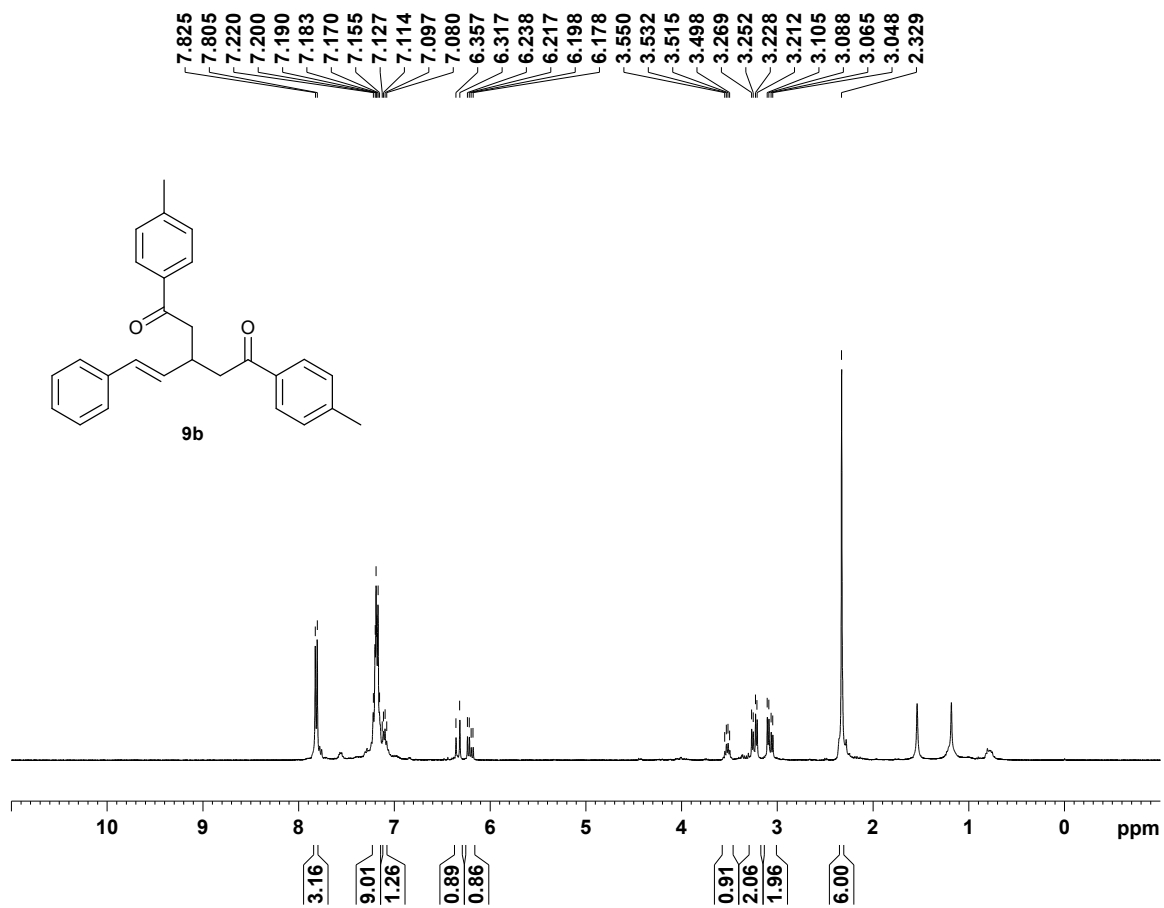


Figure S11. ¹H NMR (400 MHz, CDCl₃) spectrum of **9b**

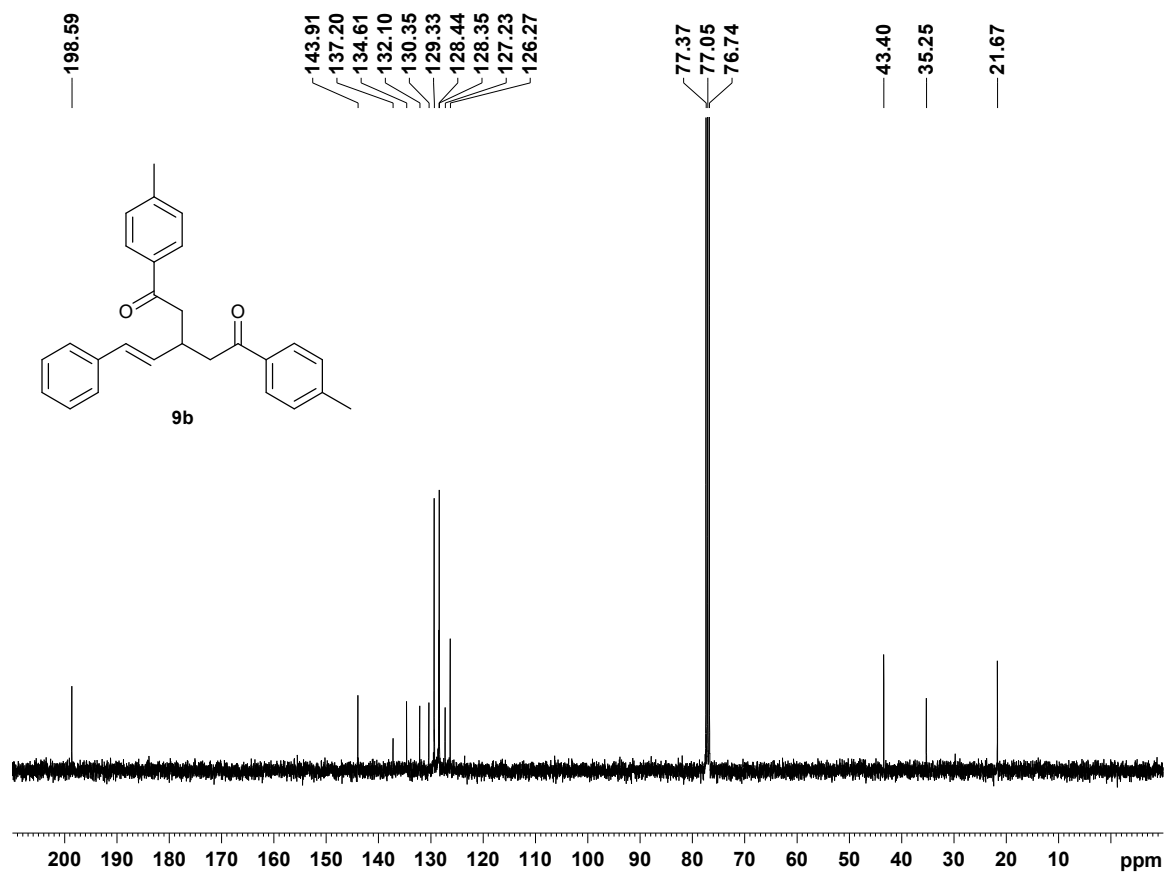


Figure S12. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **9b**

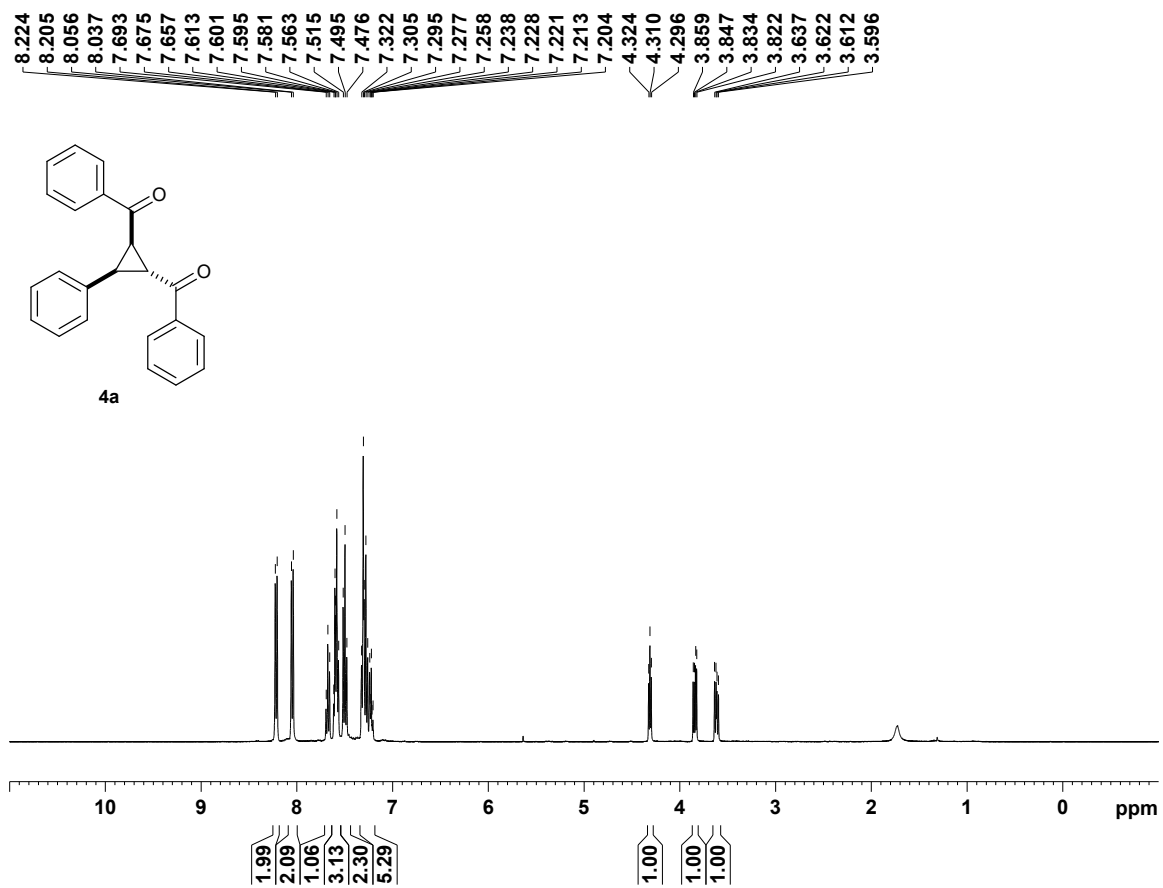


Figure S13. ¹H NMR (400 MHz, CDCl₃) spectrum of **4a**

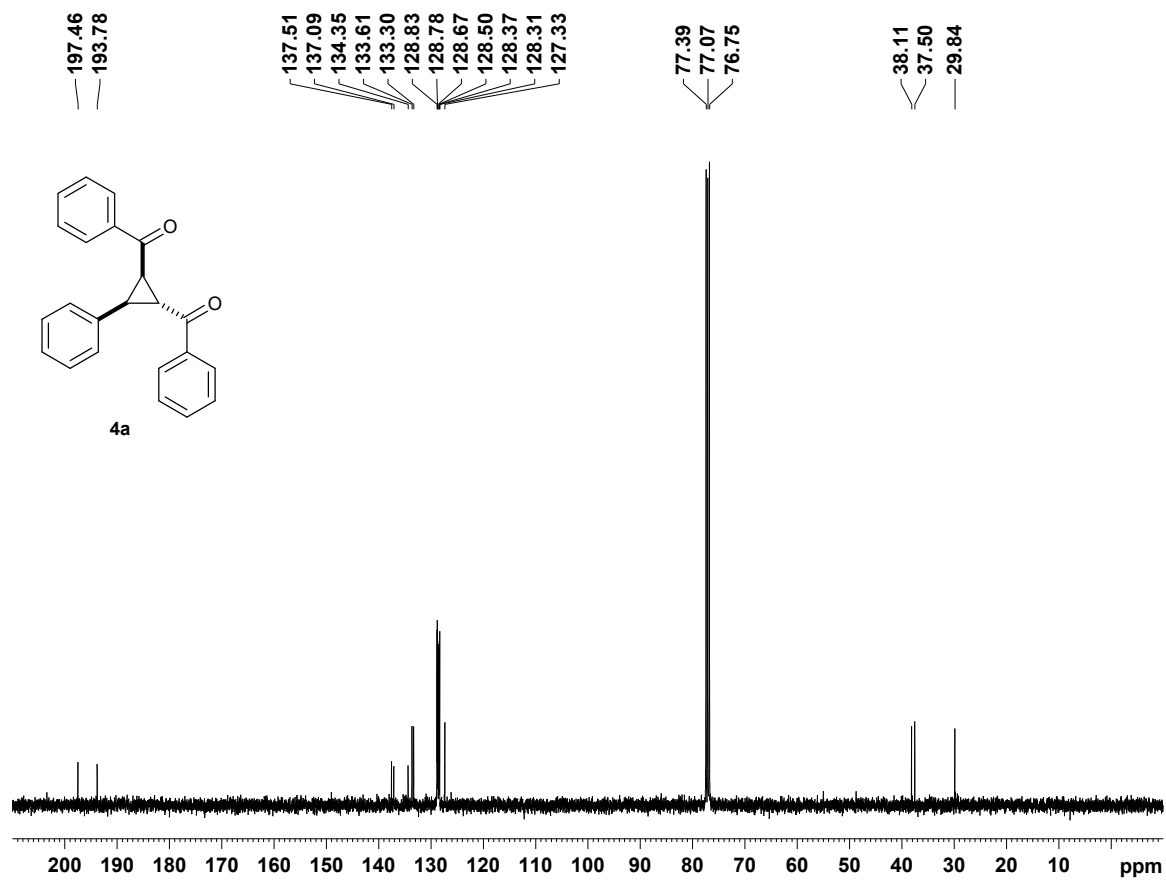


Figure S14. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of 4a

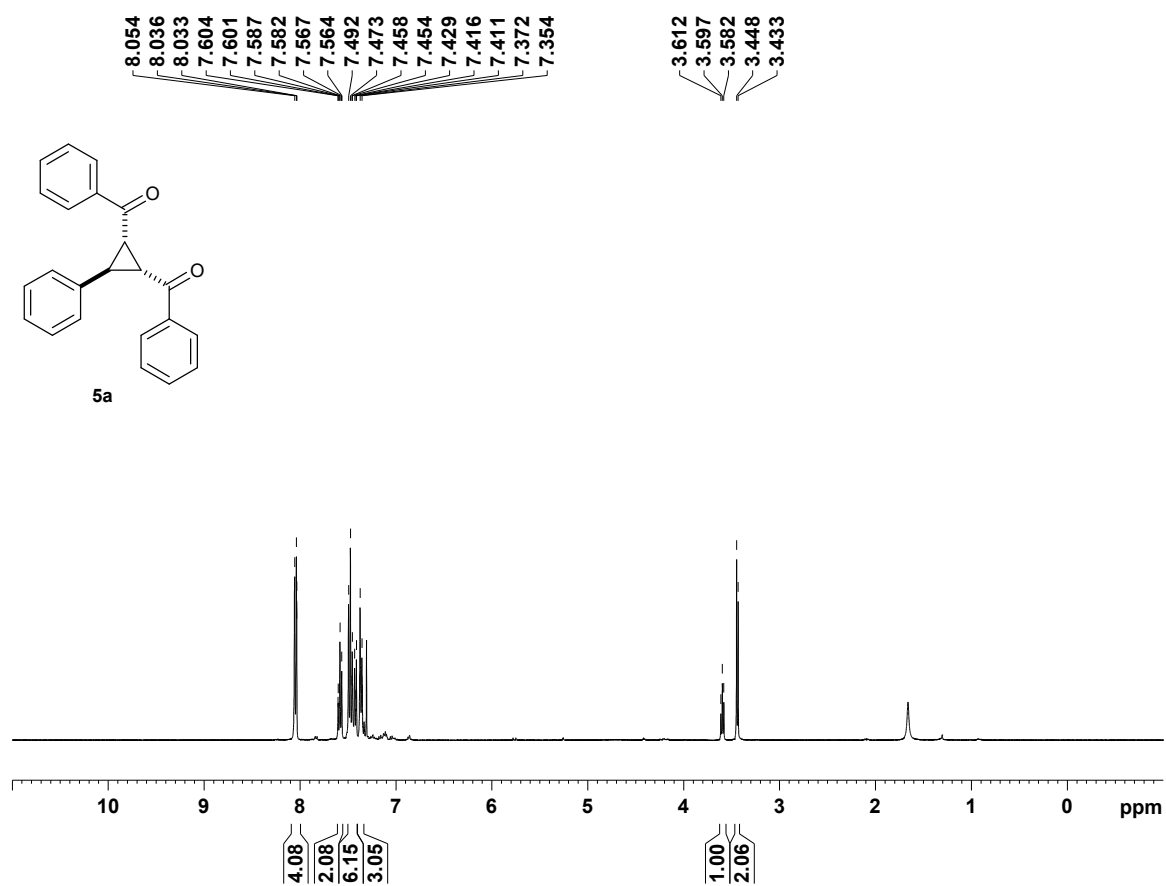


Figure S15. ¹H NMR (400 MHz, CDCl₃) spectrum of **5a**

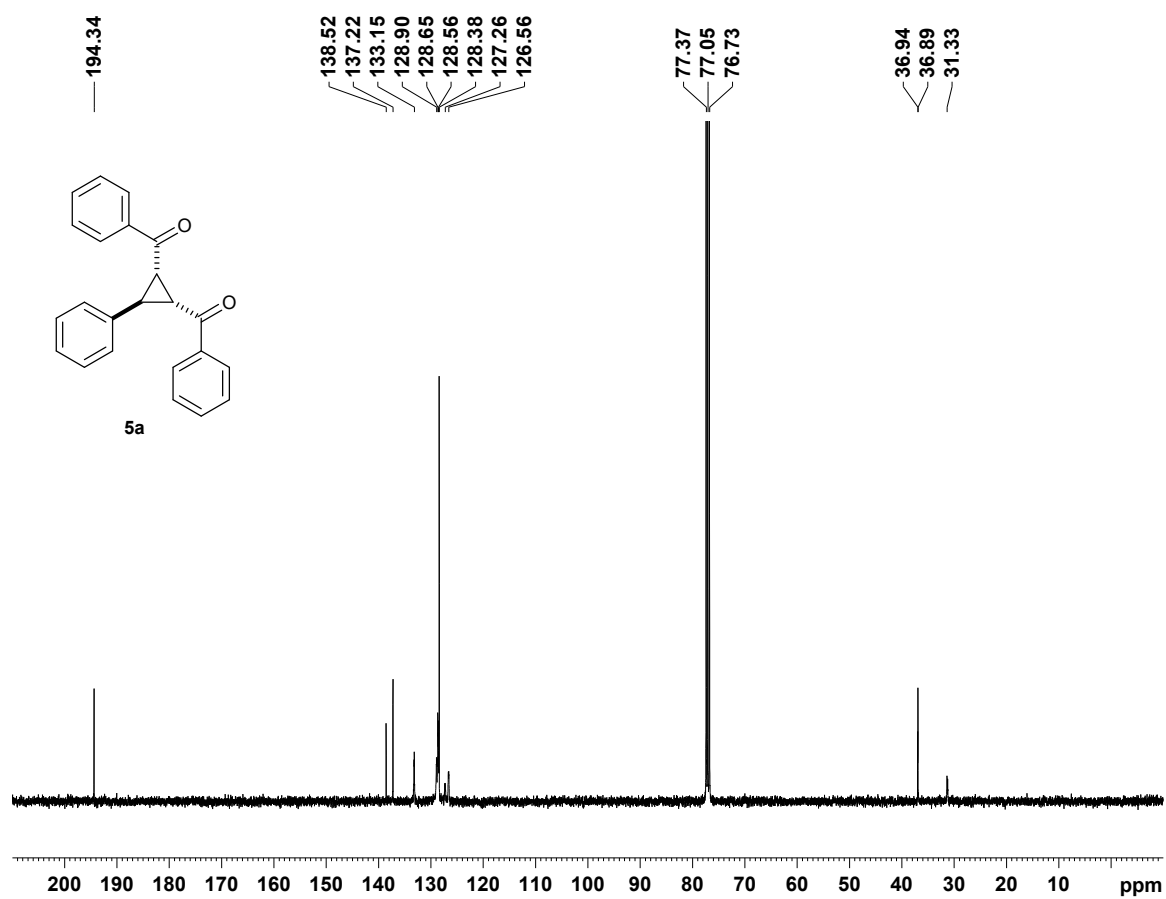


Figure S16. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **5a**

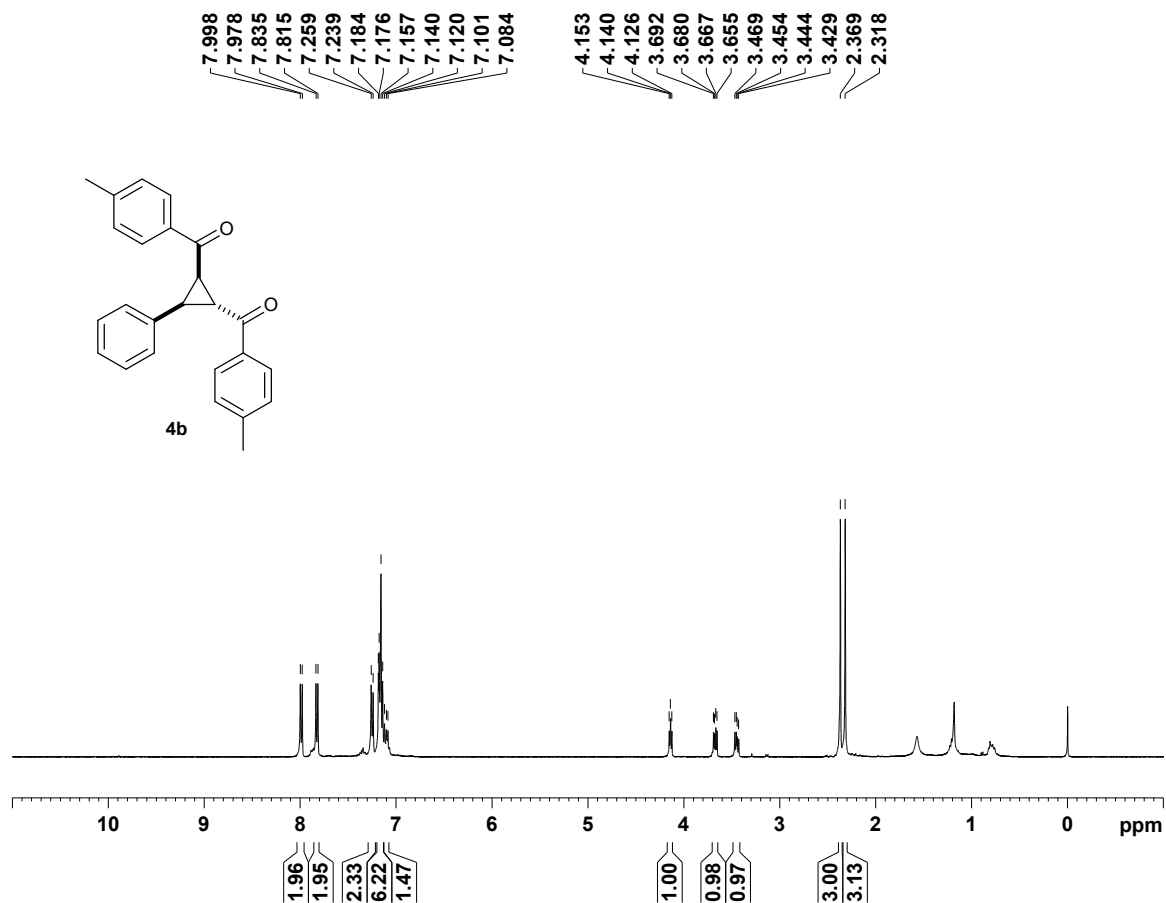


Figure S17. ¹H NMR (400 MHz, CDCl₃) spectrum of **4b**

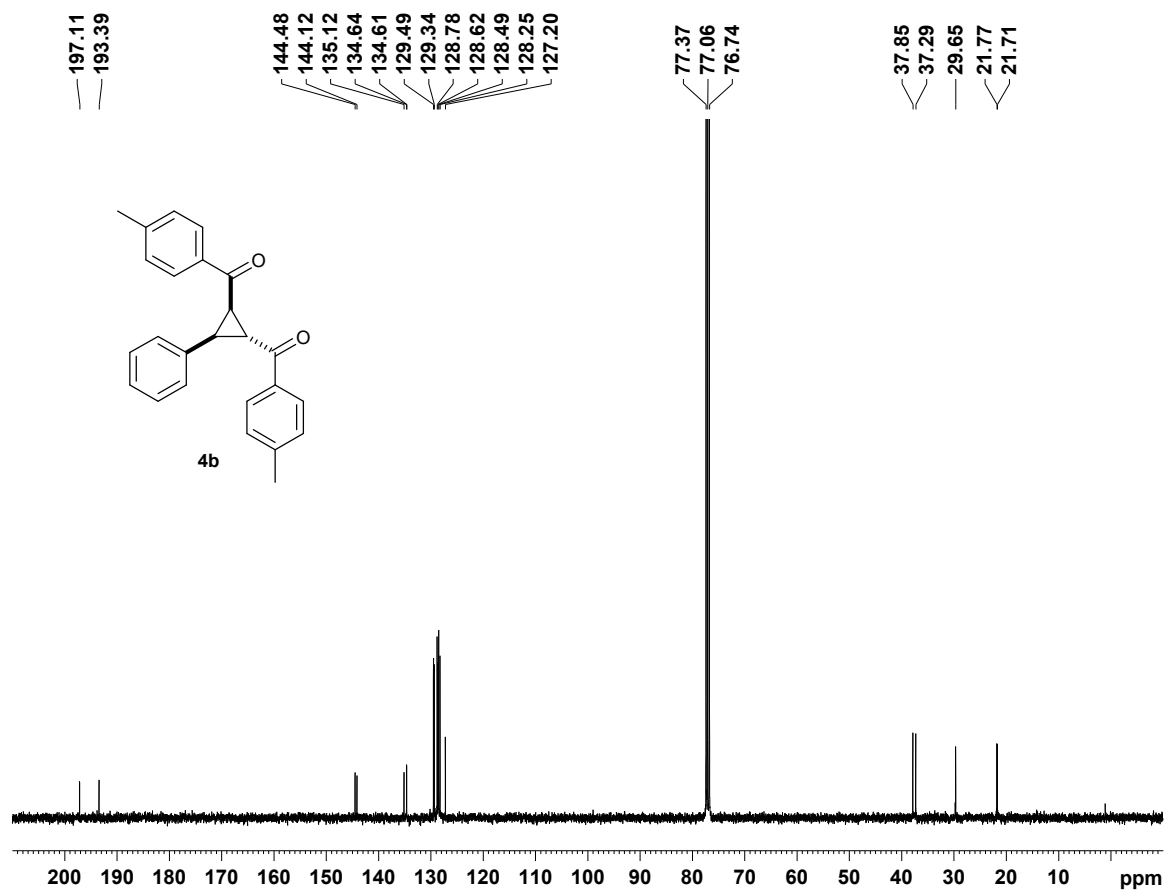


Figure S18. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4b**

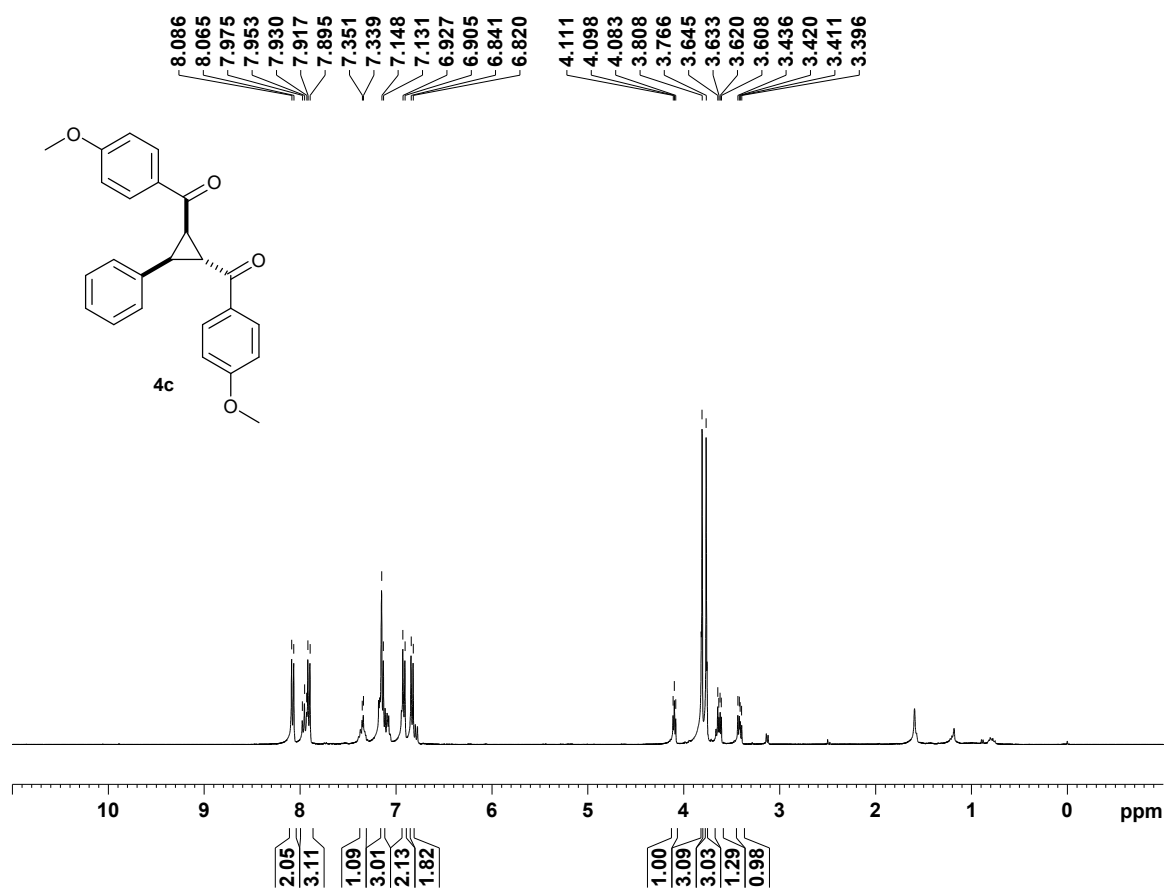


Figure S19. ¹H NMR (400 MHz, CDCl₃) spectrum of **4c**

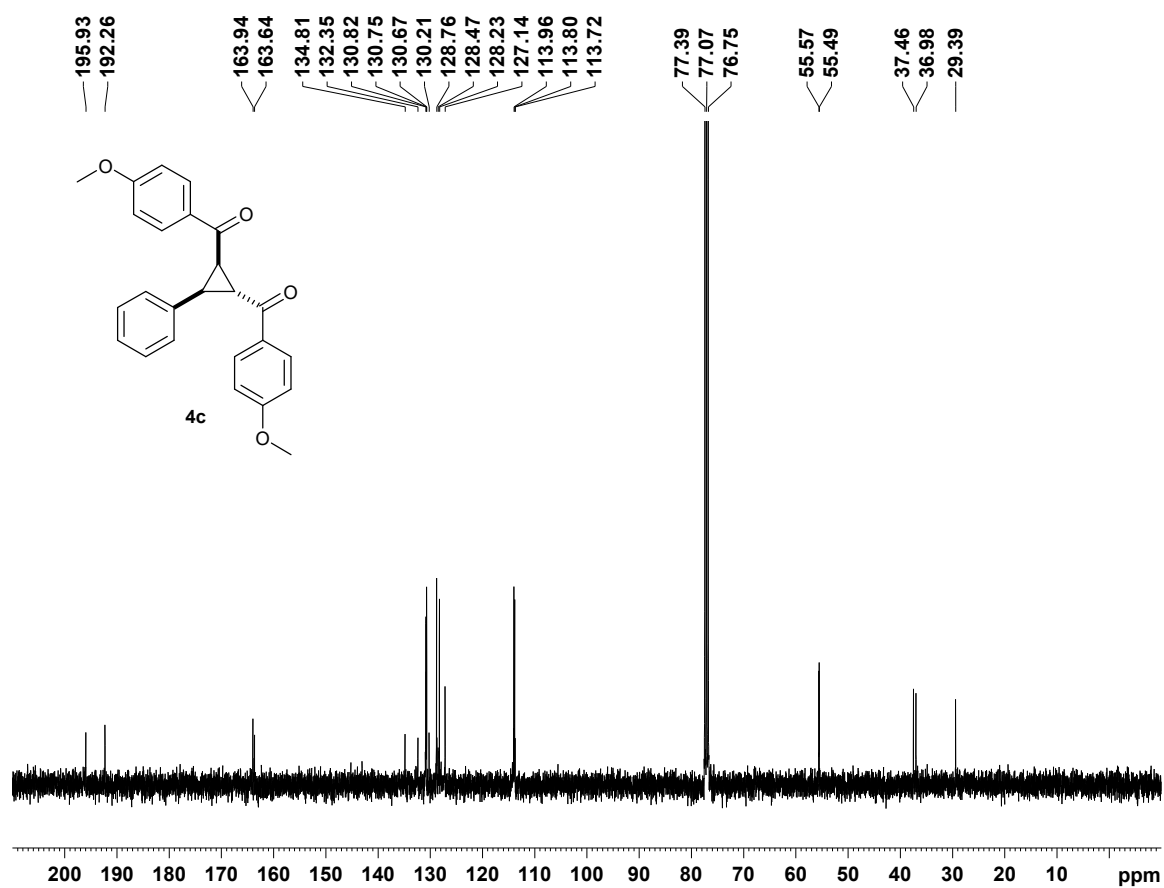


Figure S20. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4c**

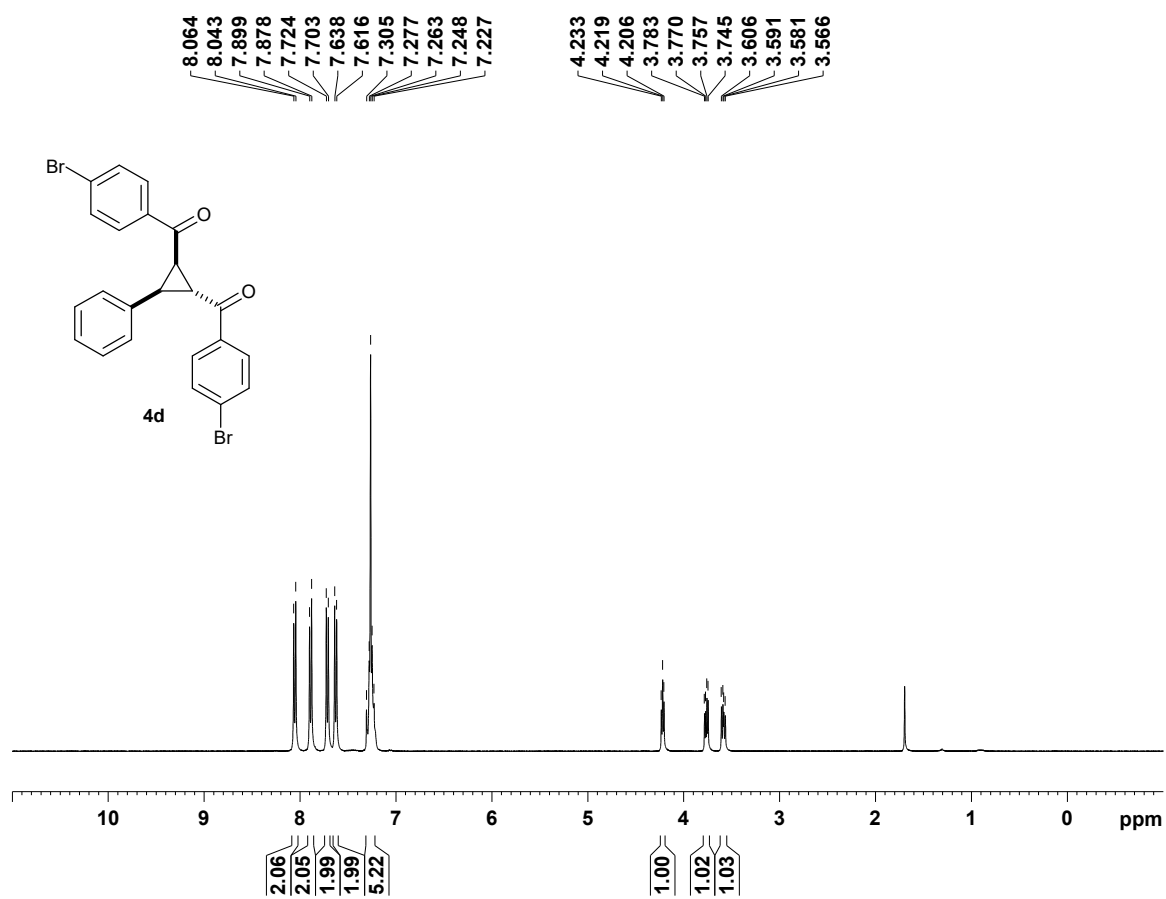


Figure S21. ^1H NMR (400 MHz, CDCl_3) spectrum of **4d**

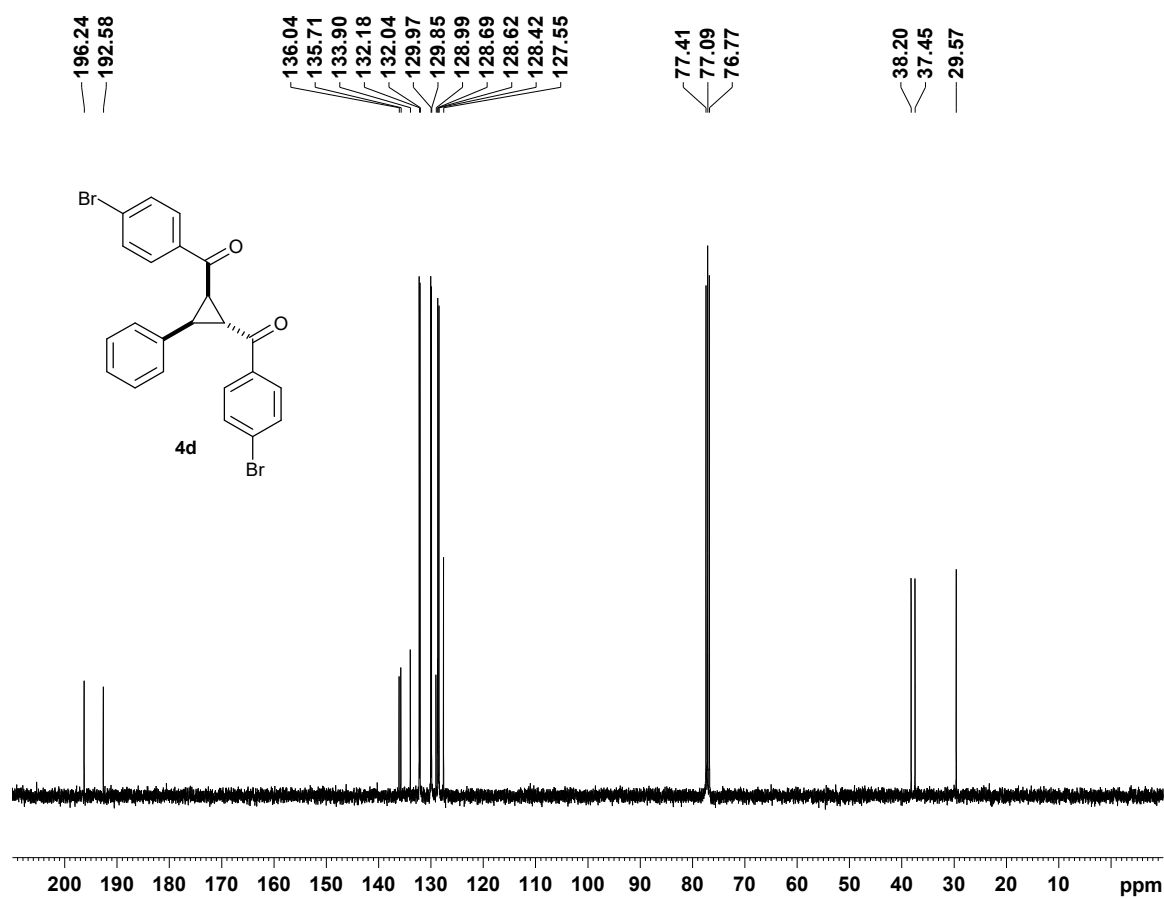


Figure S22. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4d**

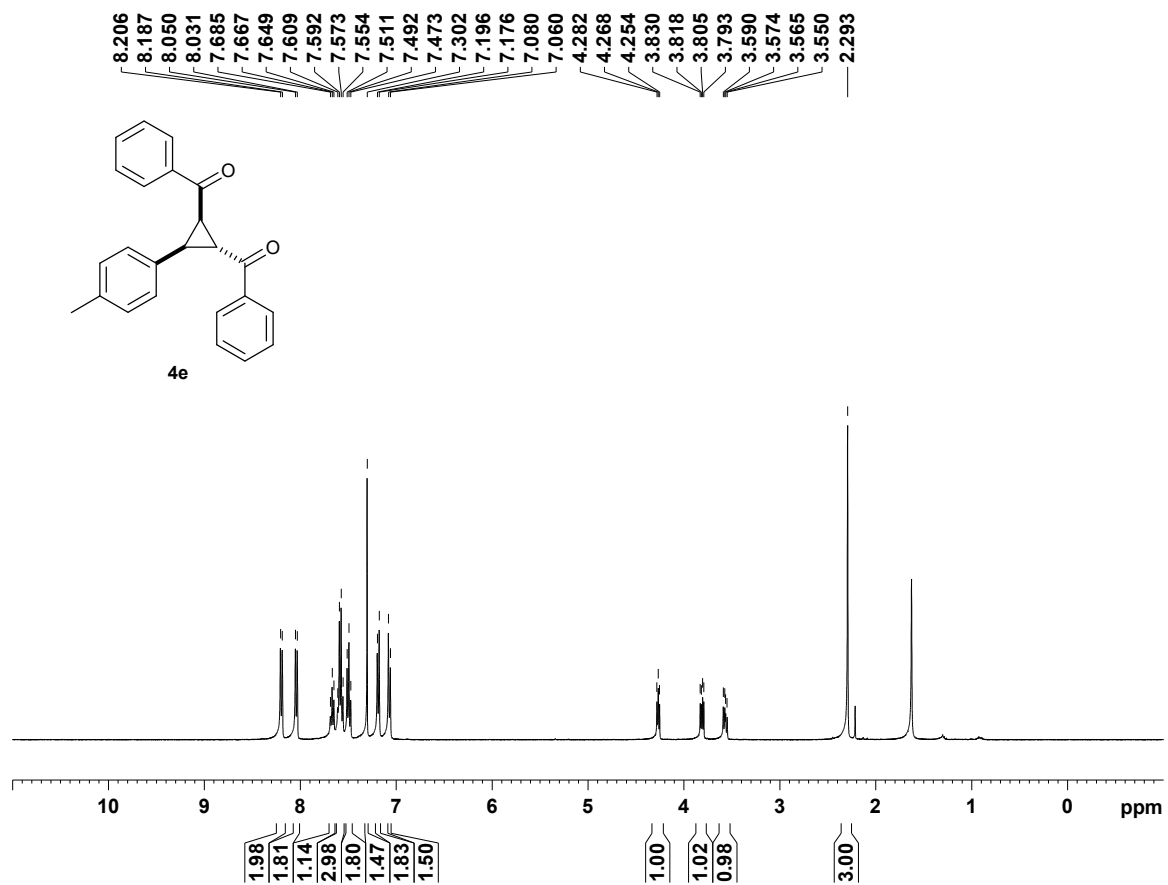


Figure S23. ^1H NMR (400 MHz, CDCl_3) spectrum of **4e**

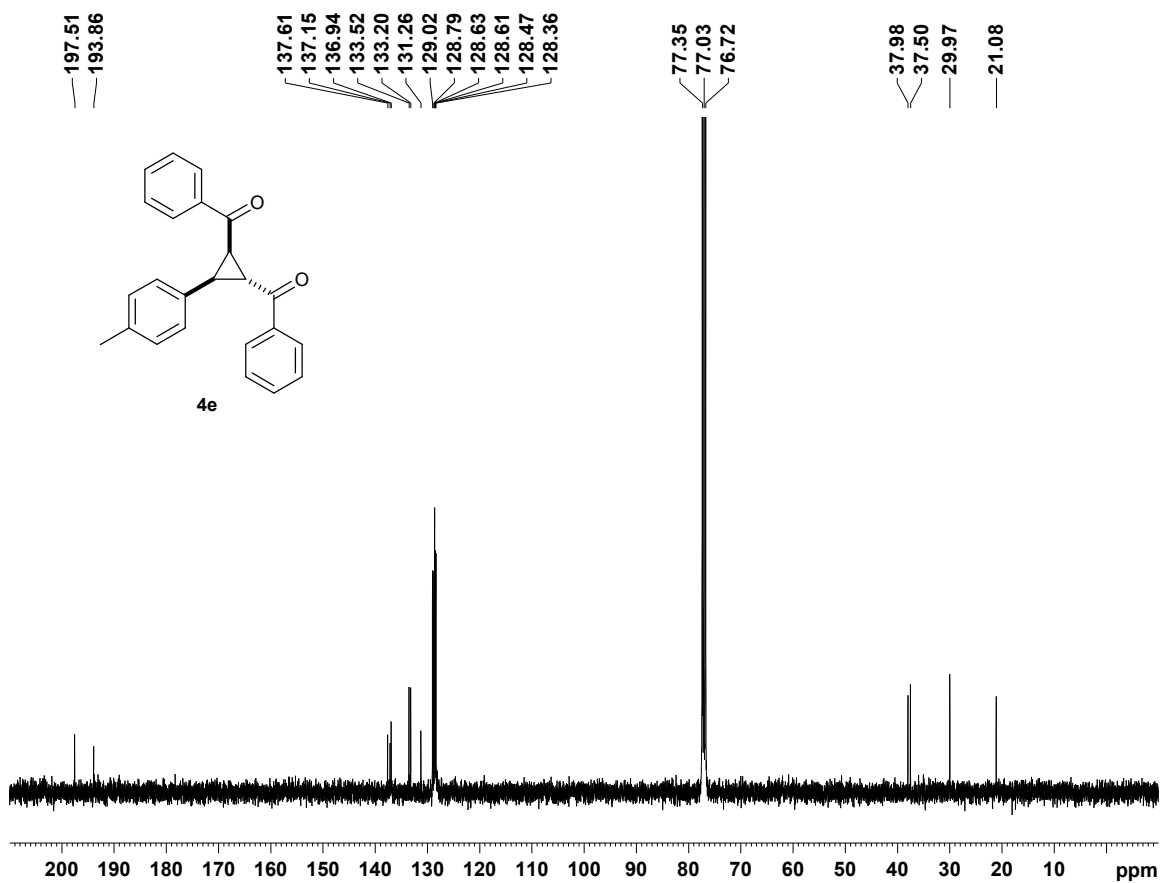


Figure S24. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4e**

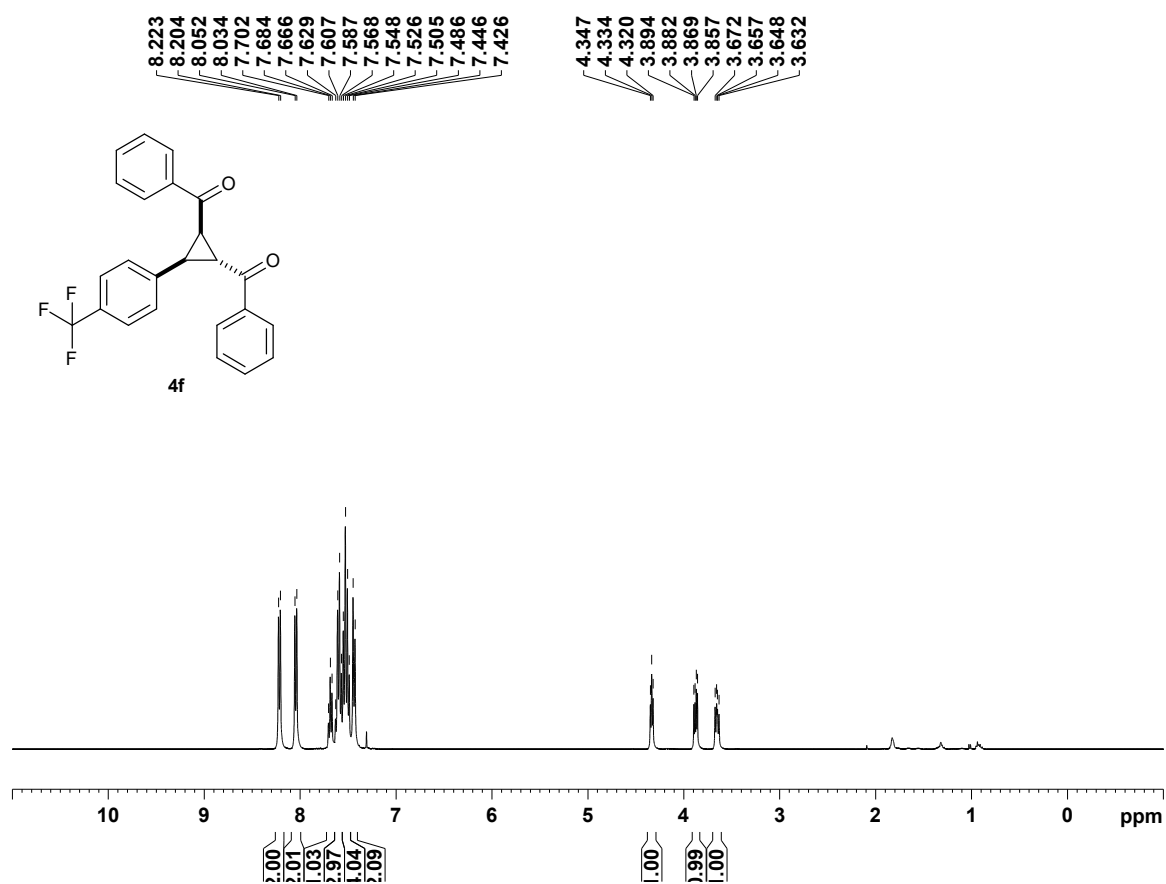


Figure S25. ¹H NMR (400 MHz, CDCl₃) spectrum of **4f**

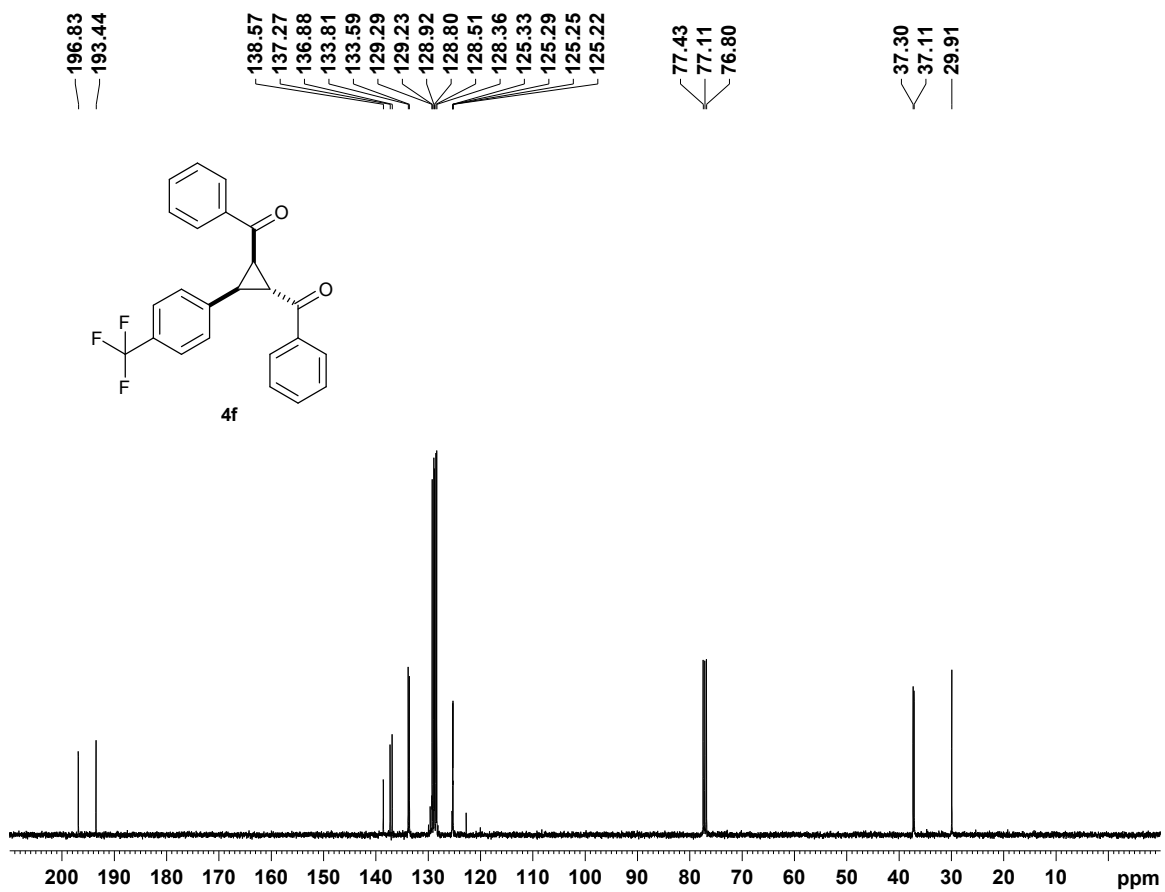


Figure S26. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4f**

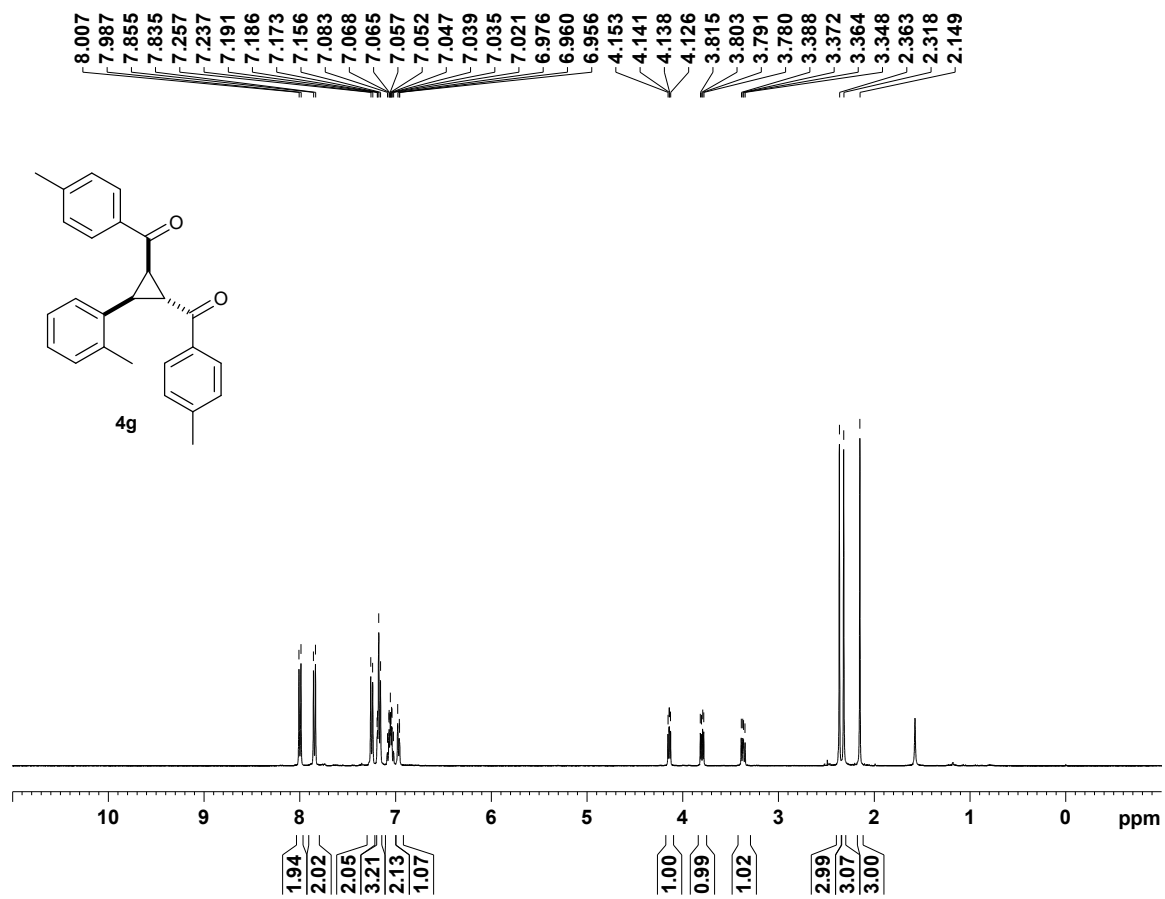


Figure S27. ^1H NMR (400 MHz, CDCl_3) spectrum of **4g**

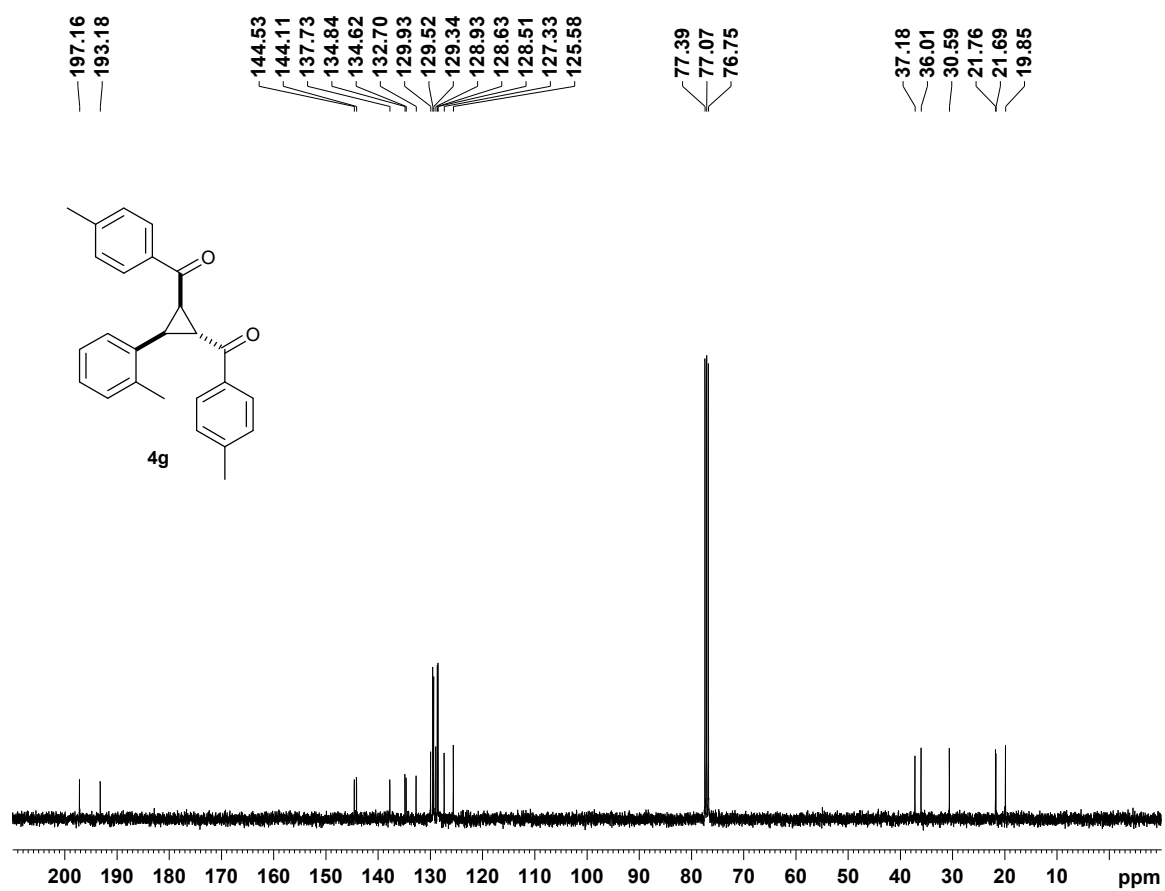


Figure S28. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4g**

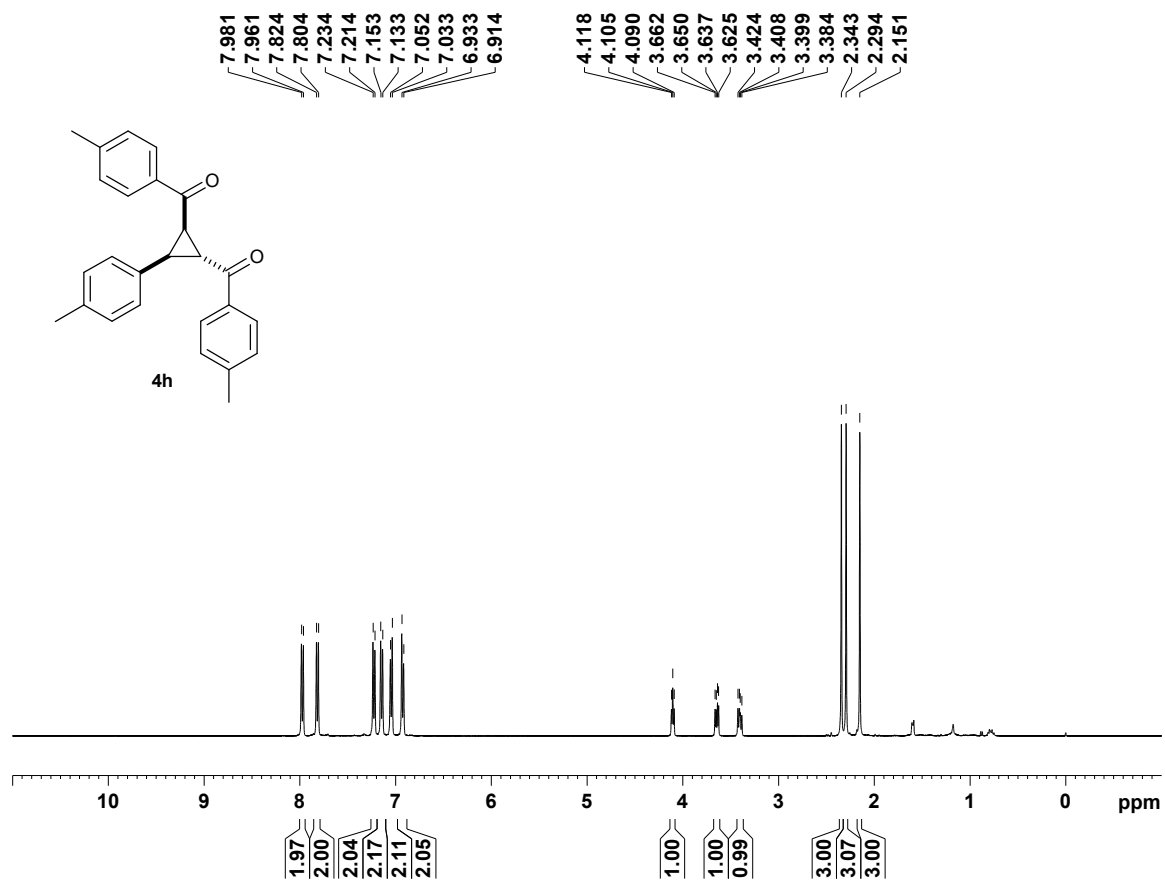


Figure S29. ¹H NMR (400 MHz, CDCl₃) spectrum of **4h**

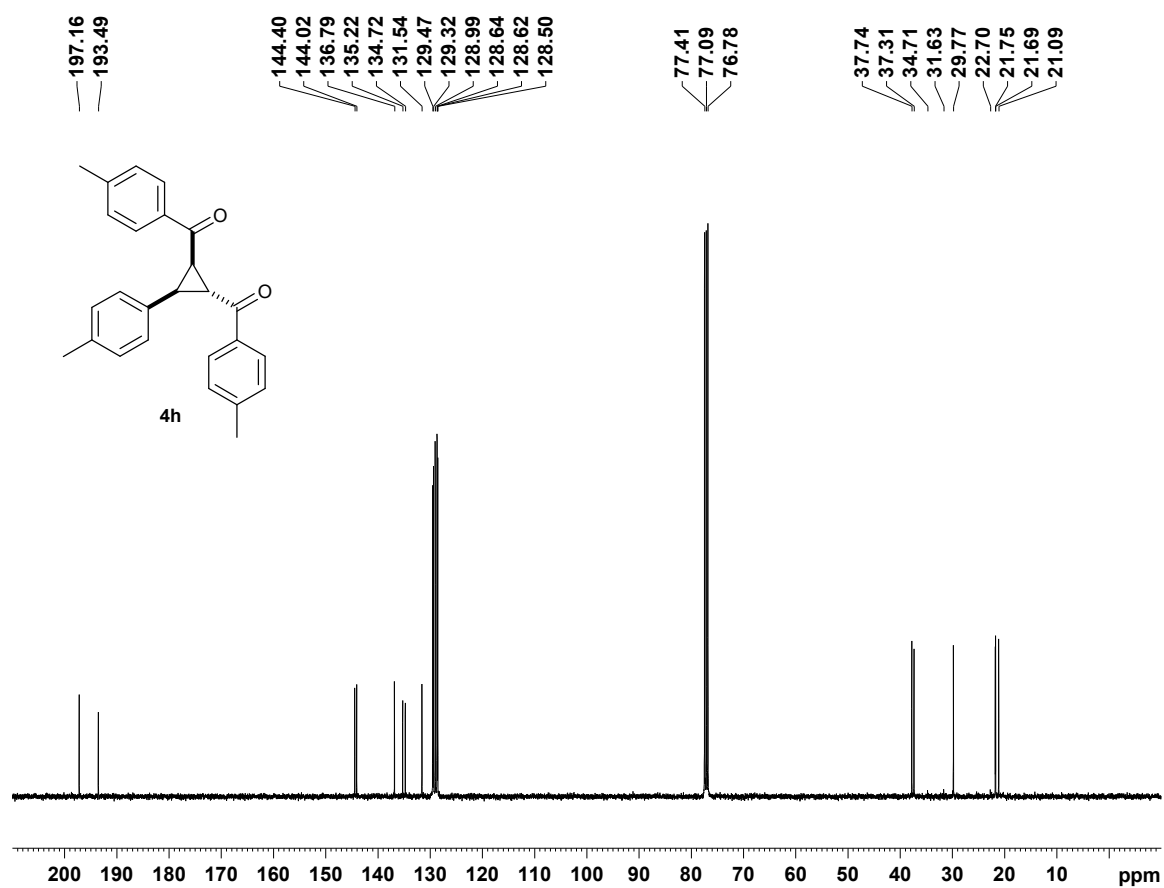


Figure S30. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4h**

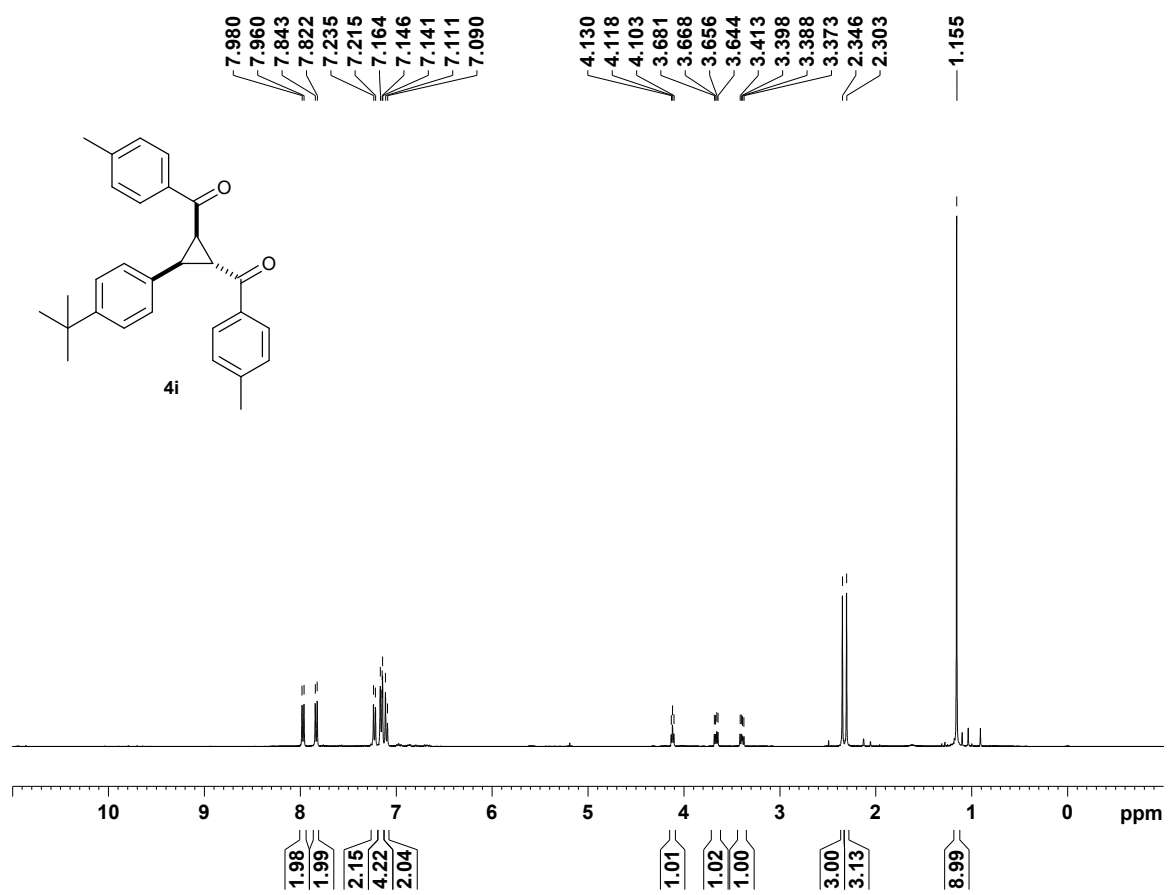


Figure S31. ^1H NMR (400 MHz, CDCl_3) spectrum of **4i**

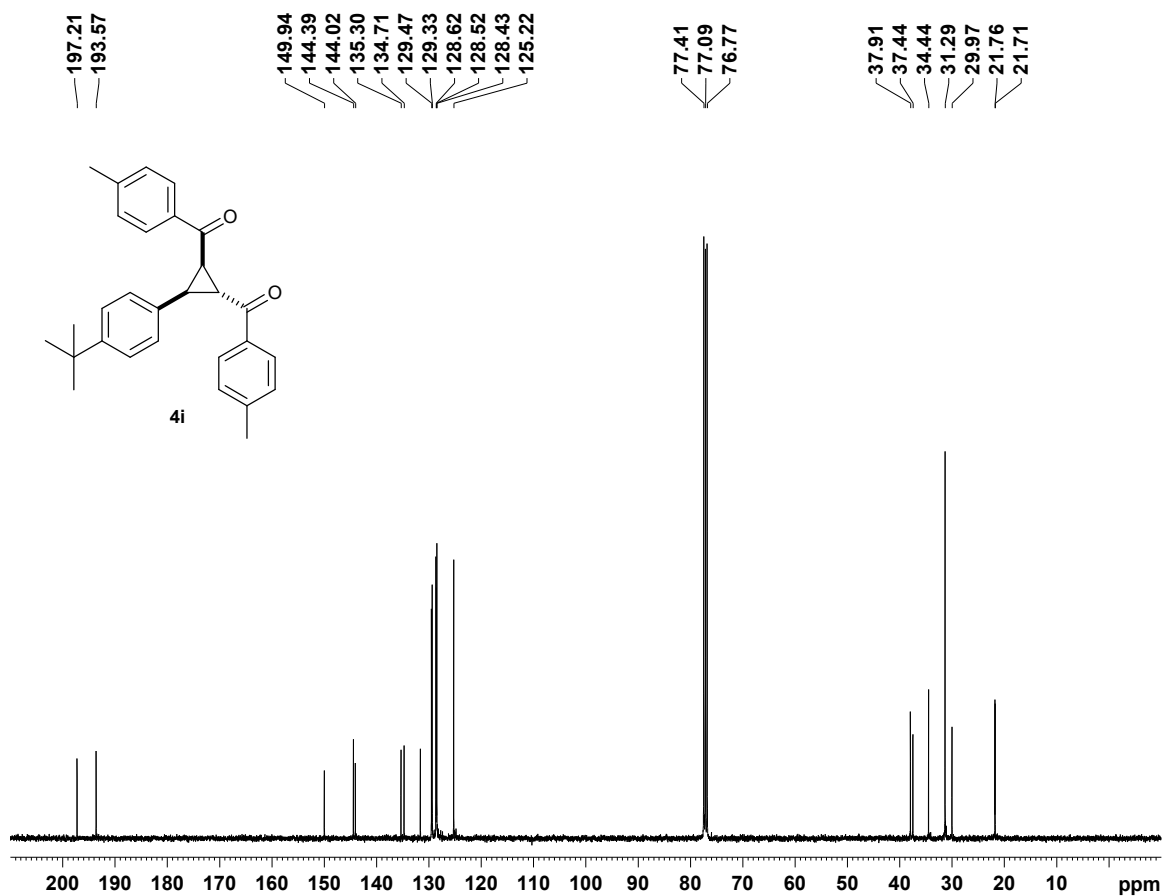


Figure S32. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4i**

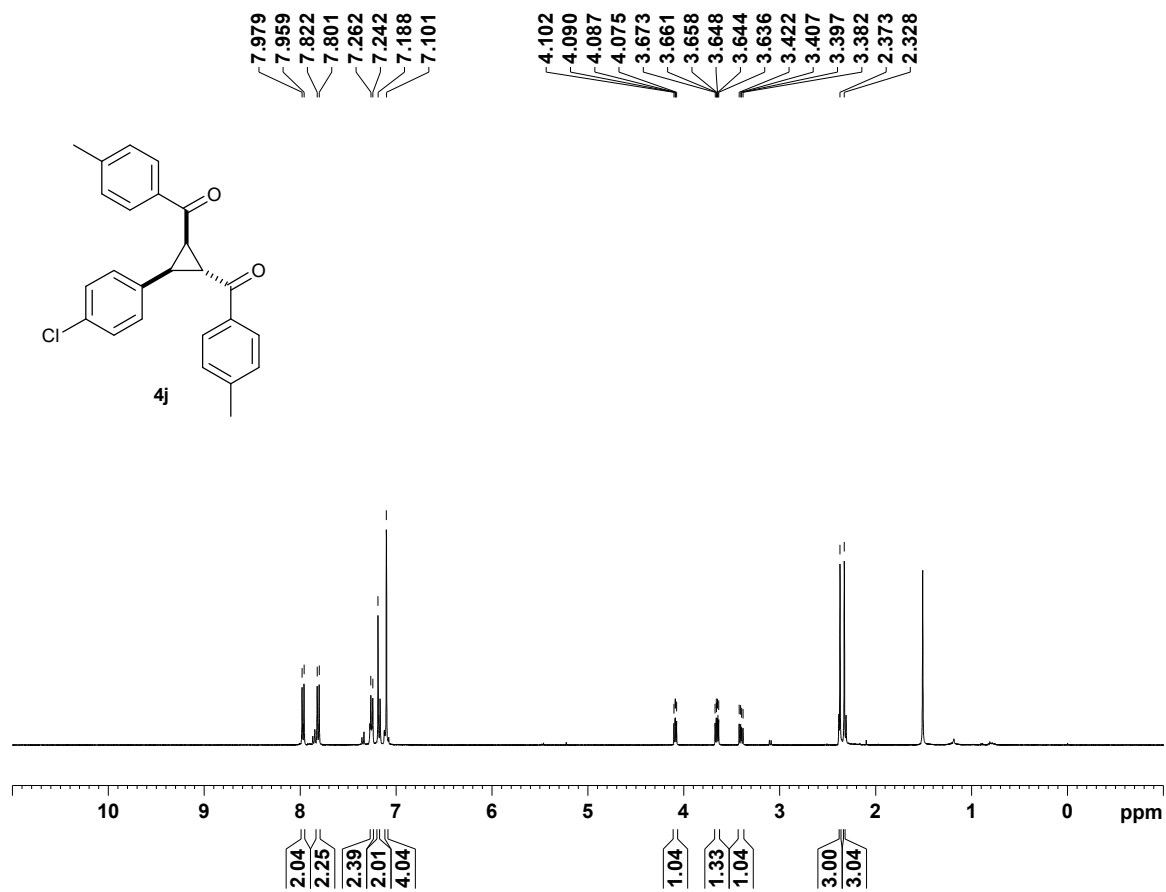


Figure S33. ^1H NMR (400 MHz, CDCl_3) spectrum of **4j**

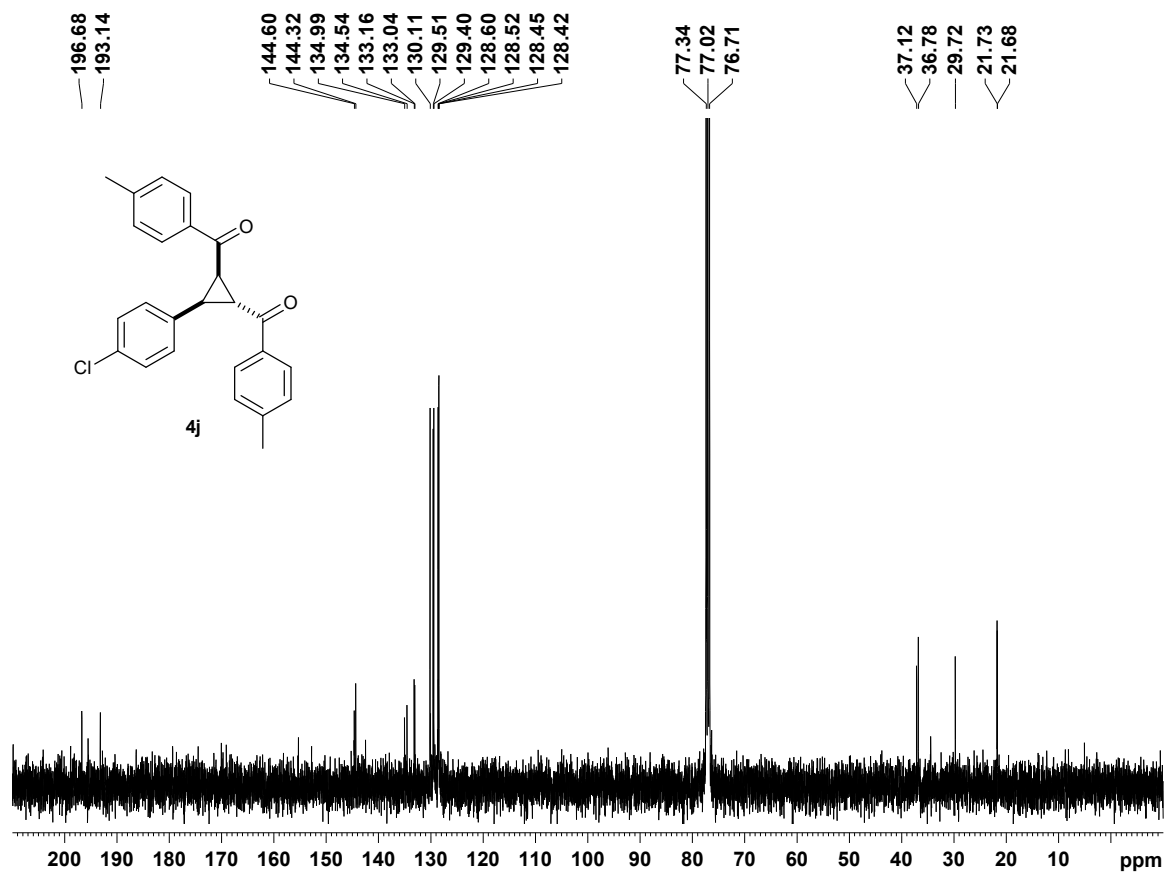


Figure S34. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4j**

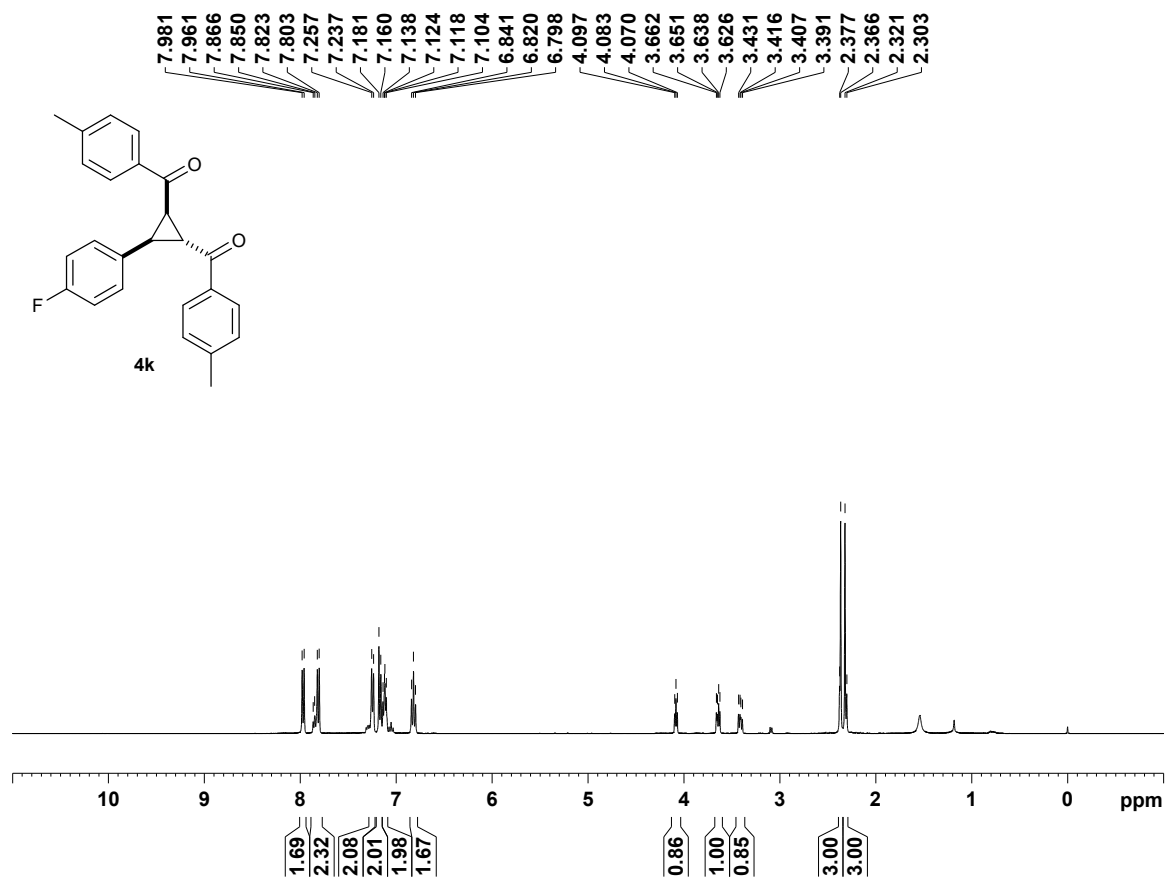


Figure S35. ¹H NMR (400 MHz, CDCl₃) spectrum of **4k**

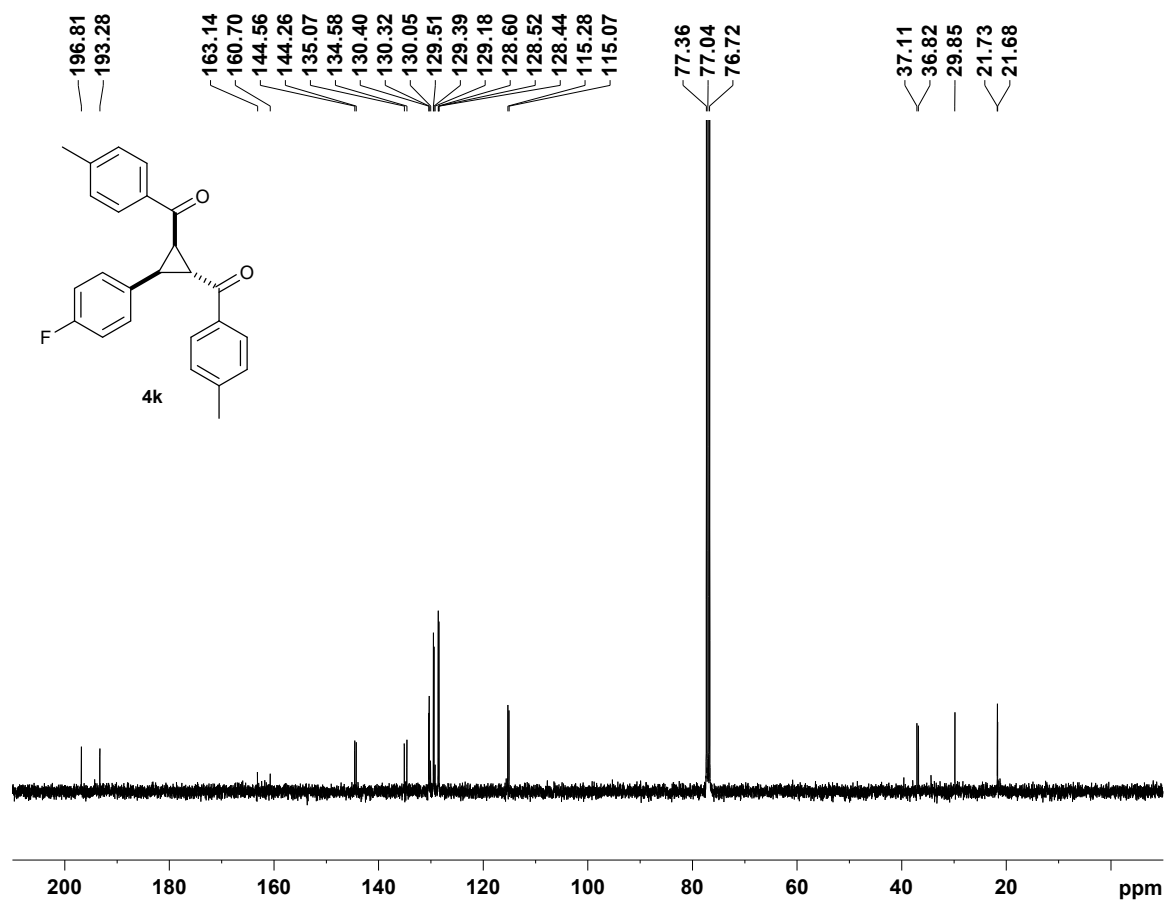


Figure S36. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4k**

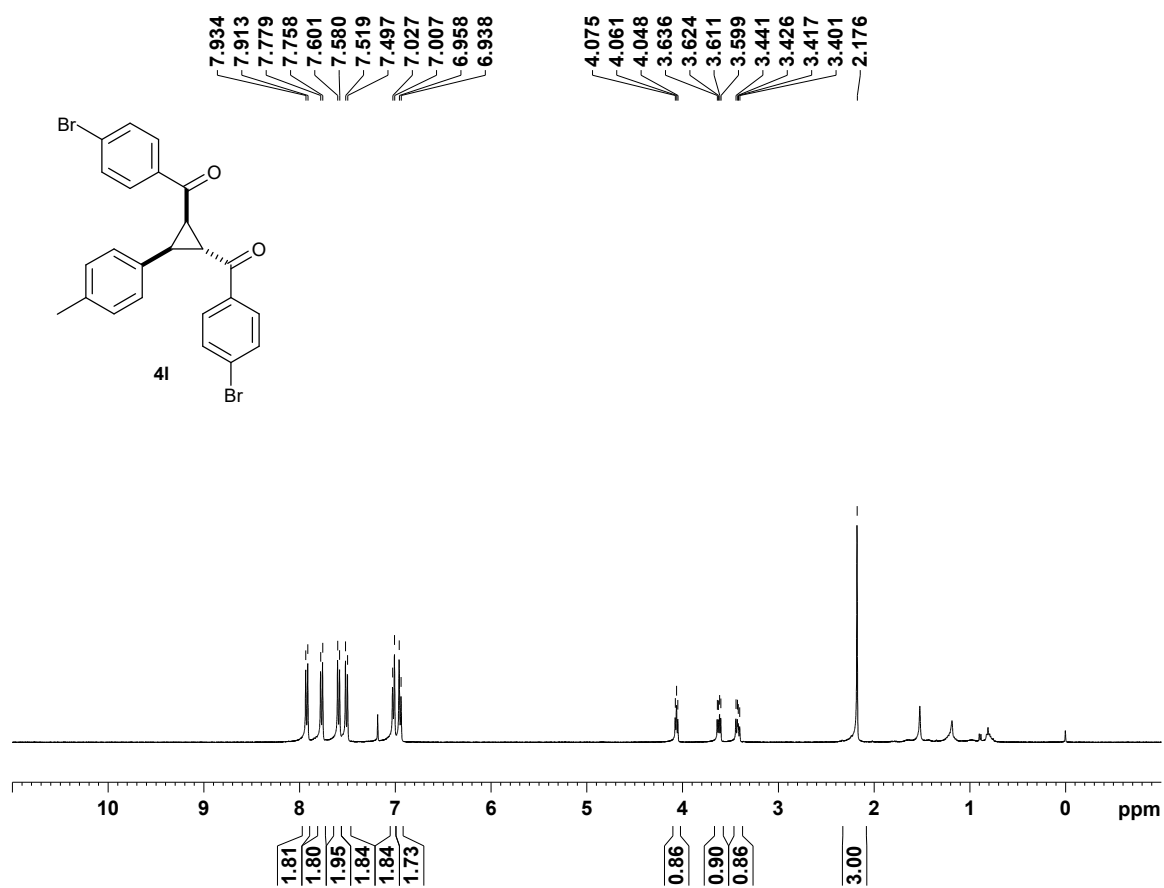


Figure S37. ^1H NMR (400 MHz, CDCl_3) spectrum of **4I**

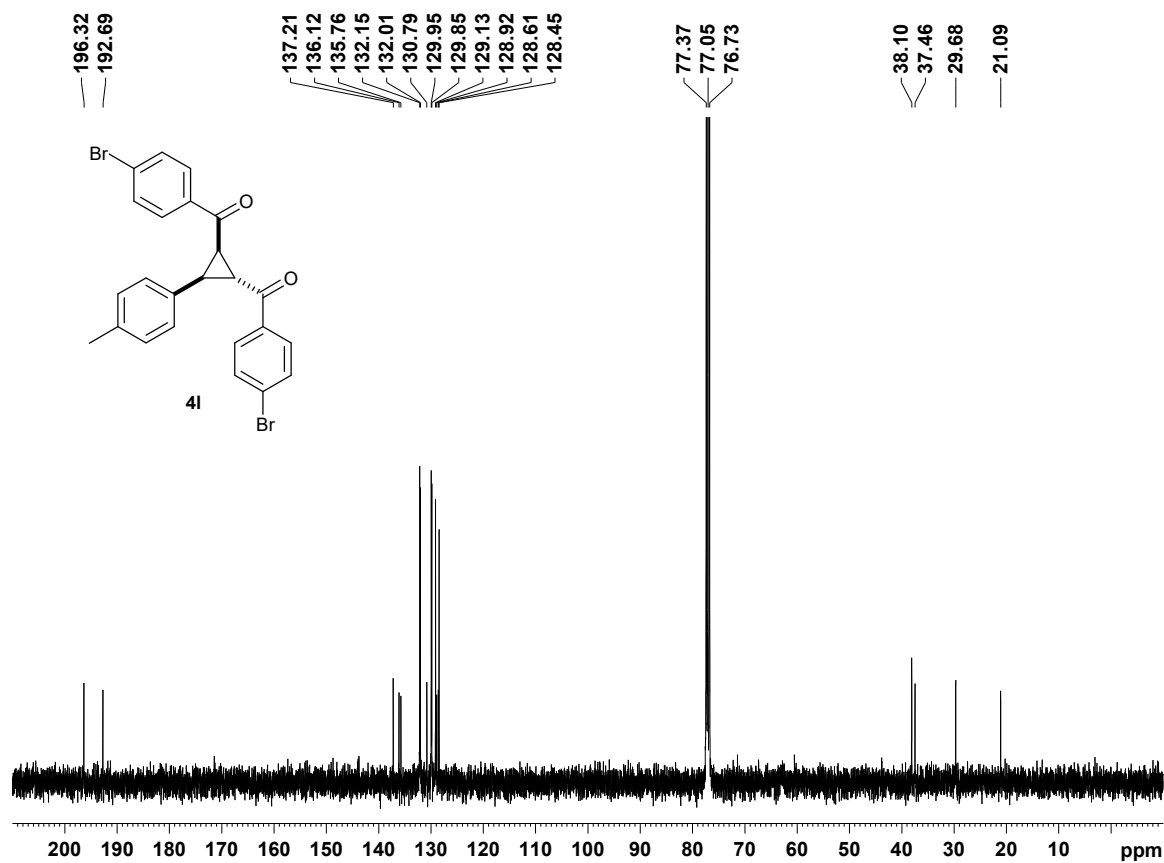


Figure S38. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of 4l

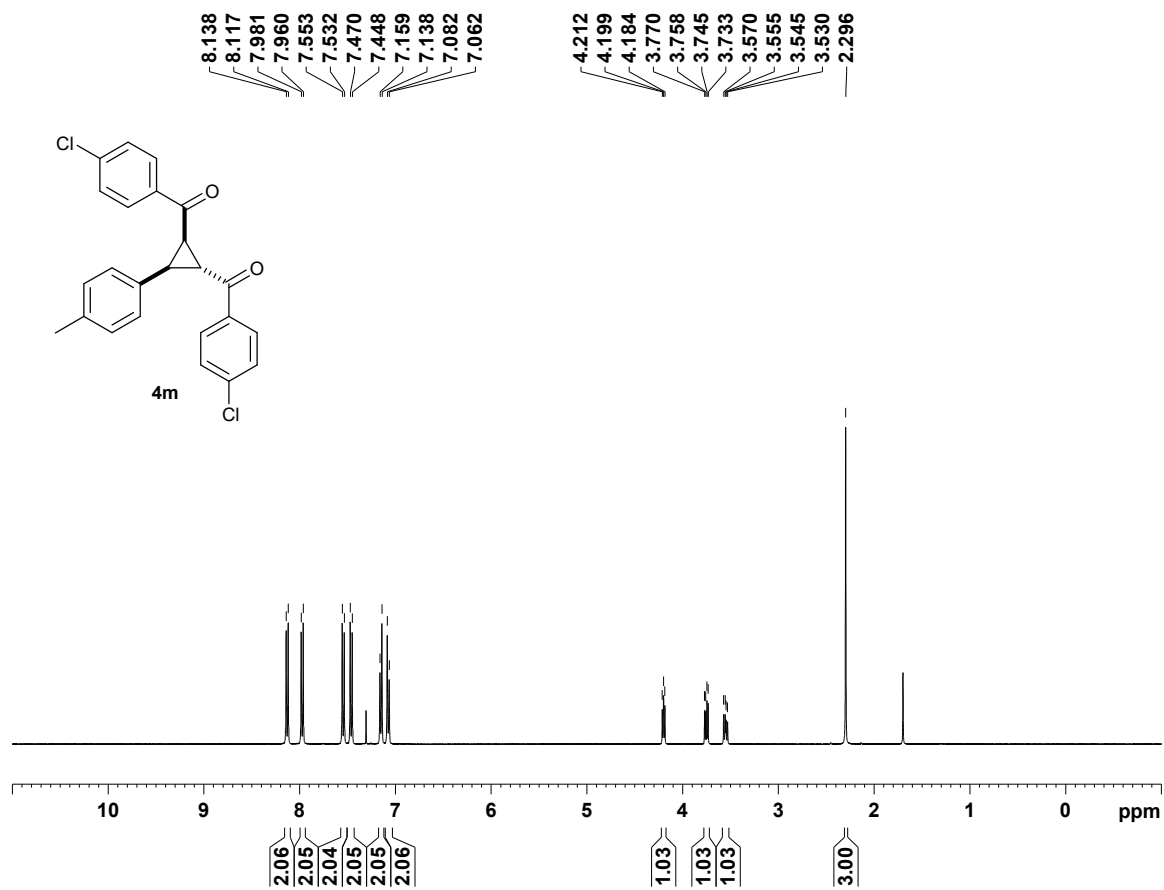


Figure S39. ¹H NMR (400 MHz, CDCl₃) spectrum of **4m**

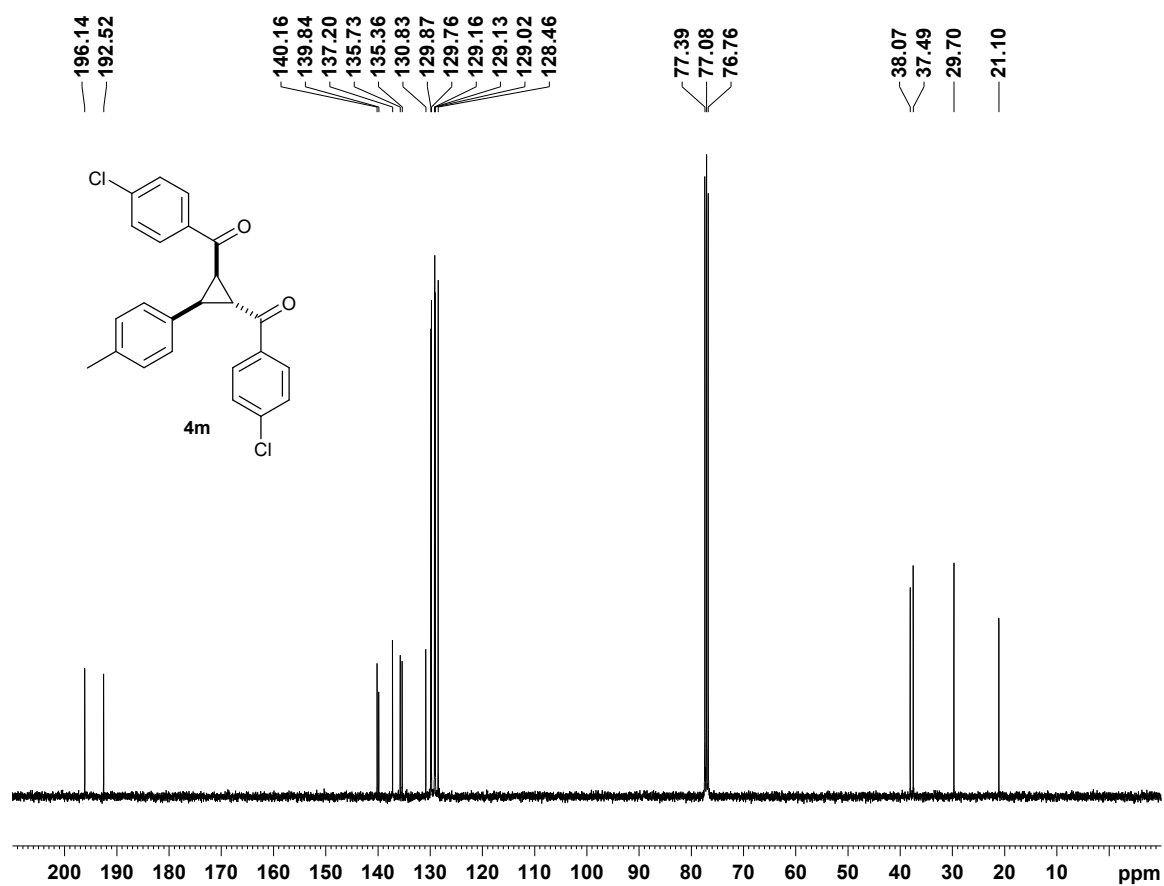


Figure S40. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4m**

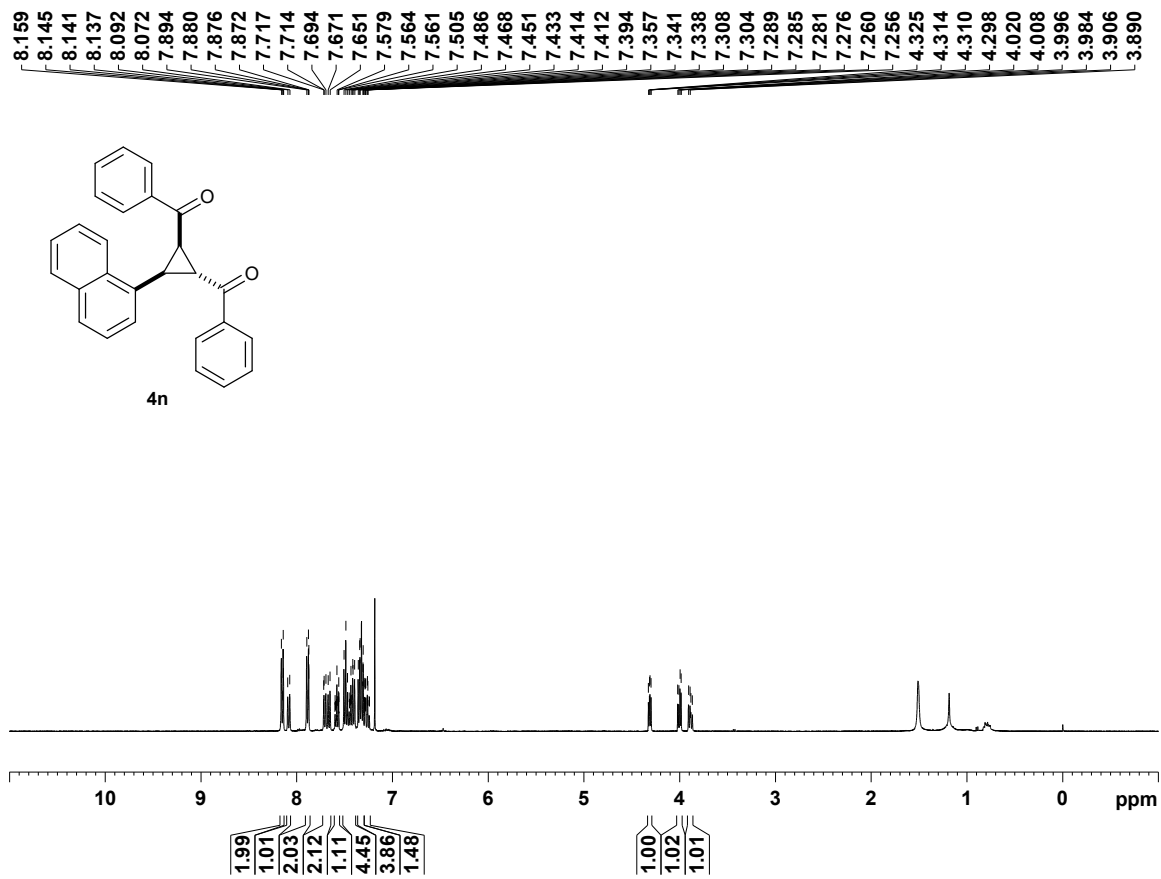


Figure S41. ¹H NMR (400 MHz, CDCl₃) spectrum of **4n**

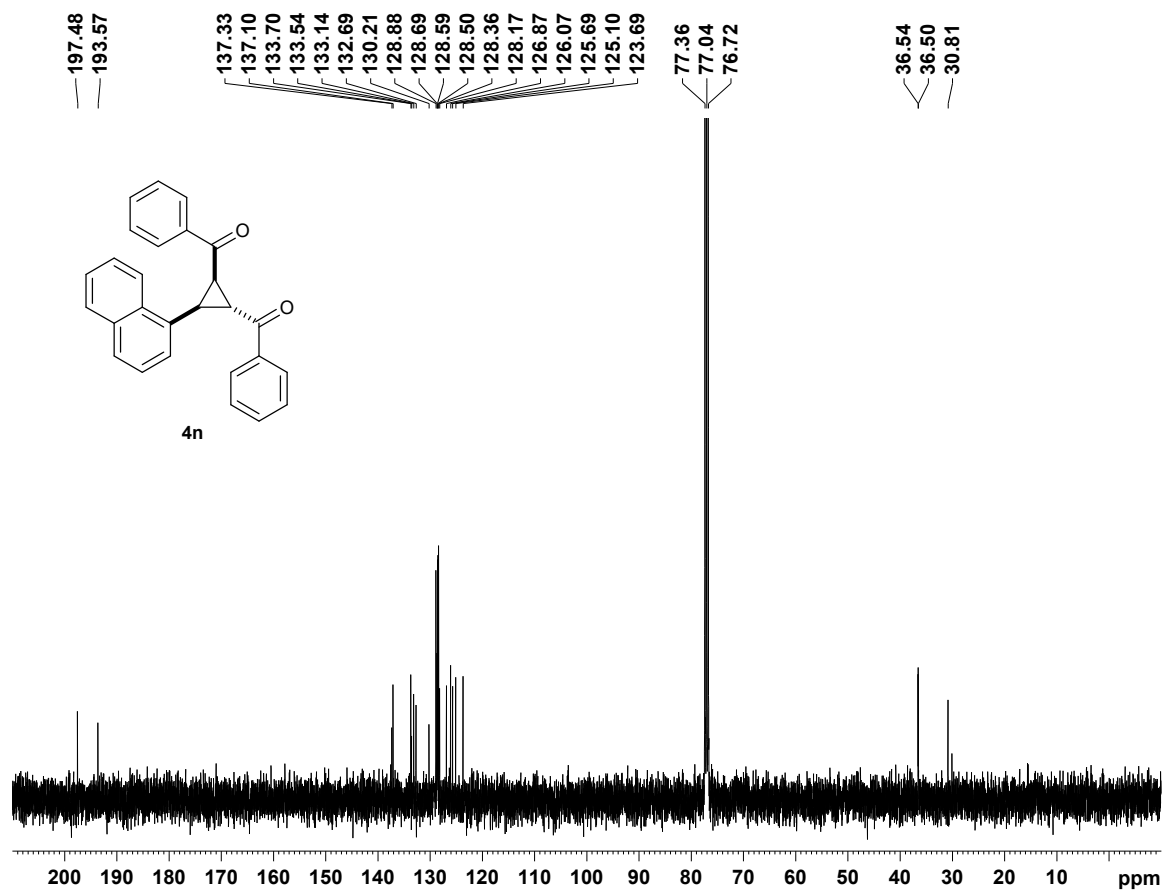


Figure S42. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4n**

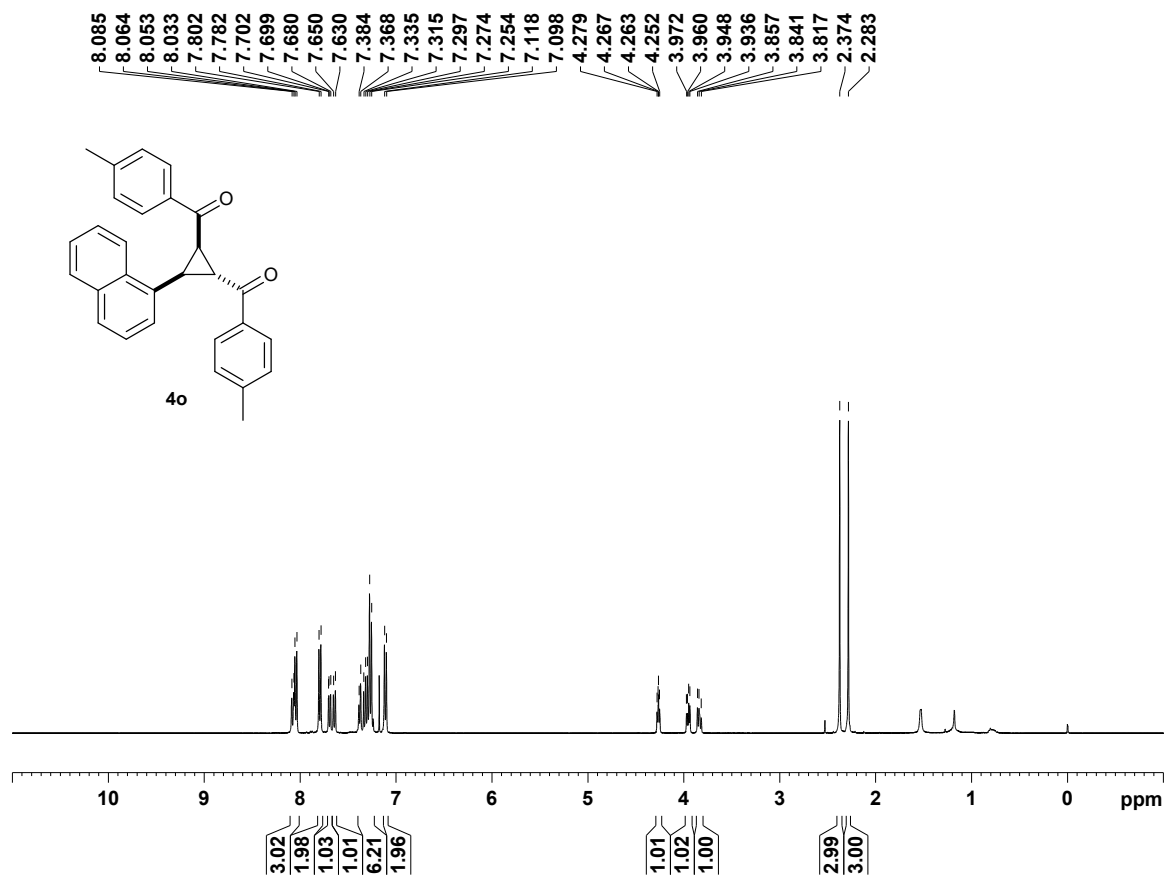


Figure S43. ¹H NMR (400 MHz, CDCl₃) spectrum of **4o**

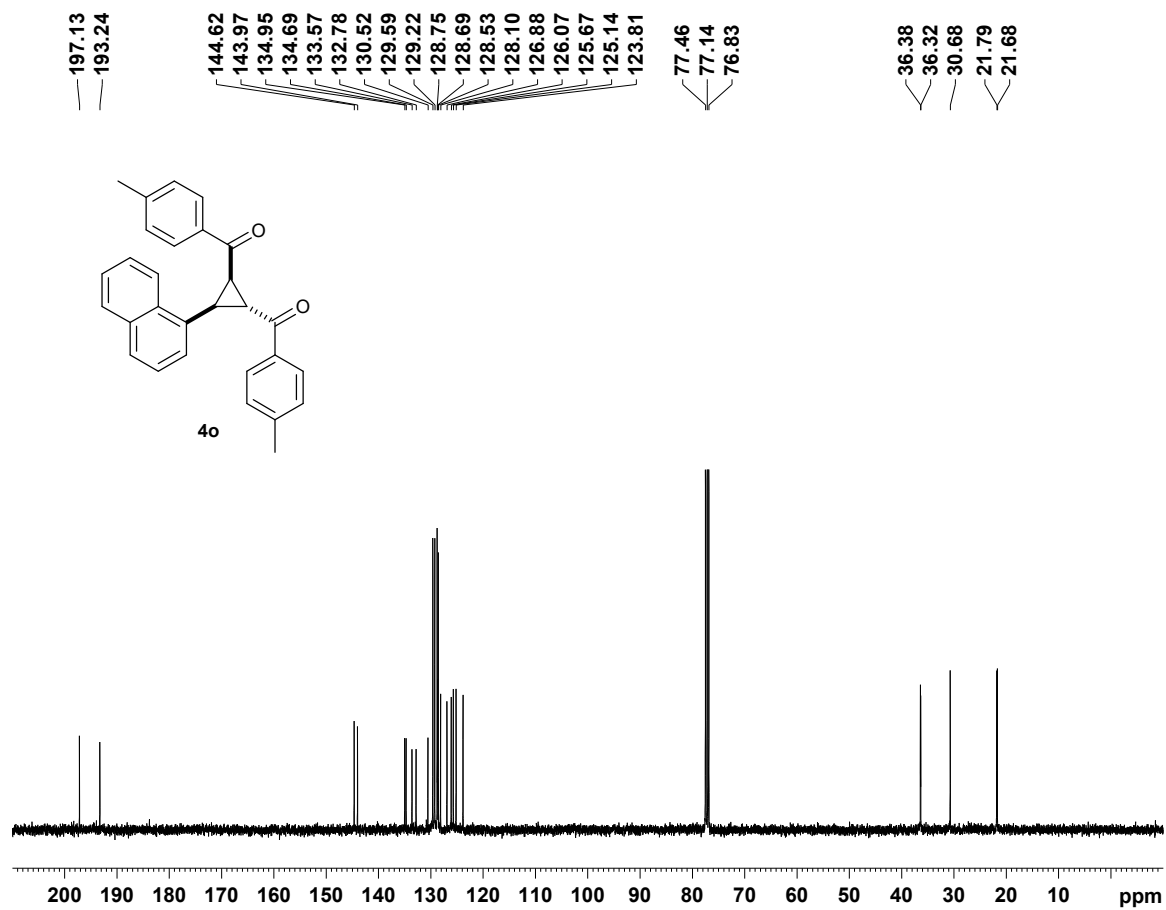


Figure S44. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4o**

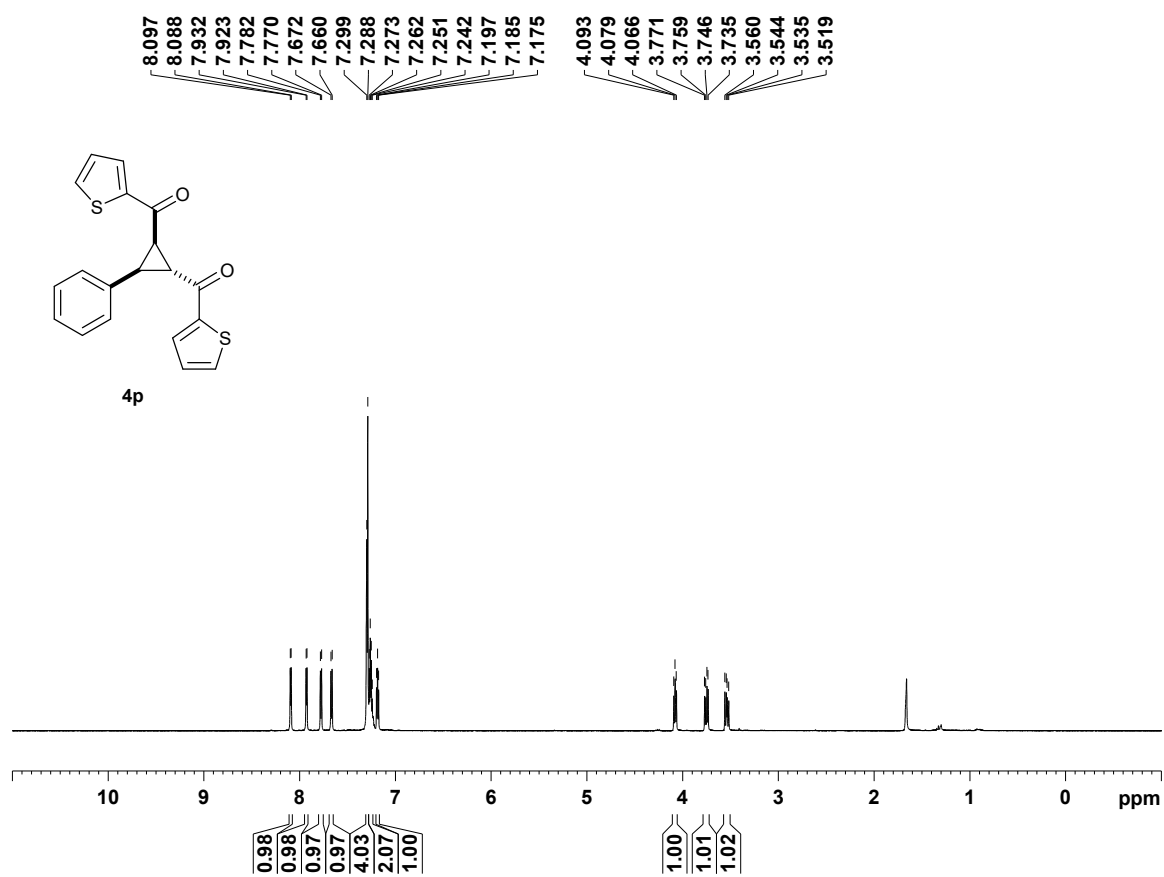


Figure S45. ¹H NMR (400 MHz, CDCl₃) spectrum of **4p**

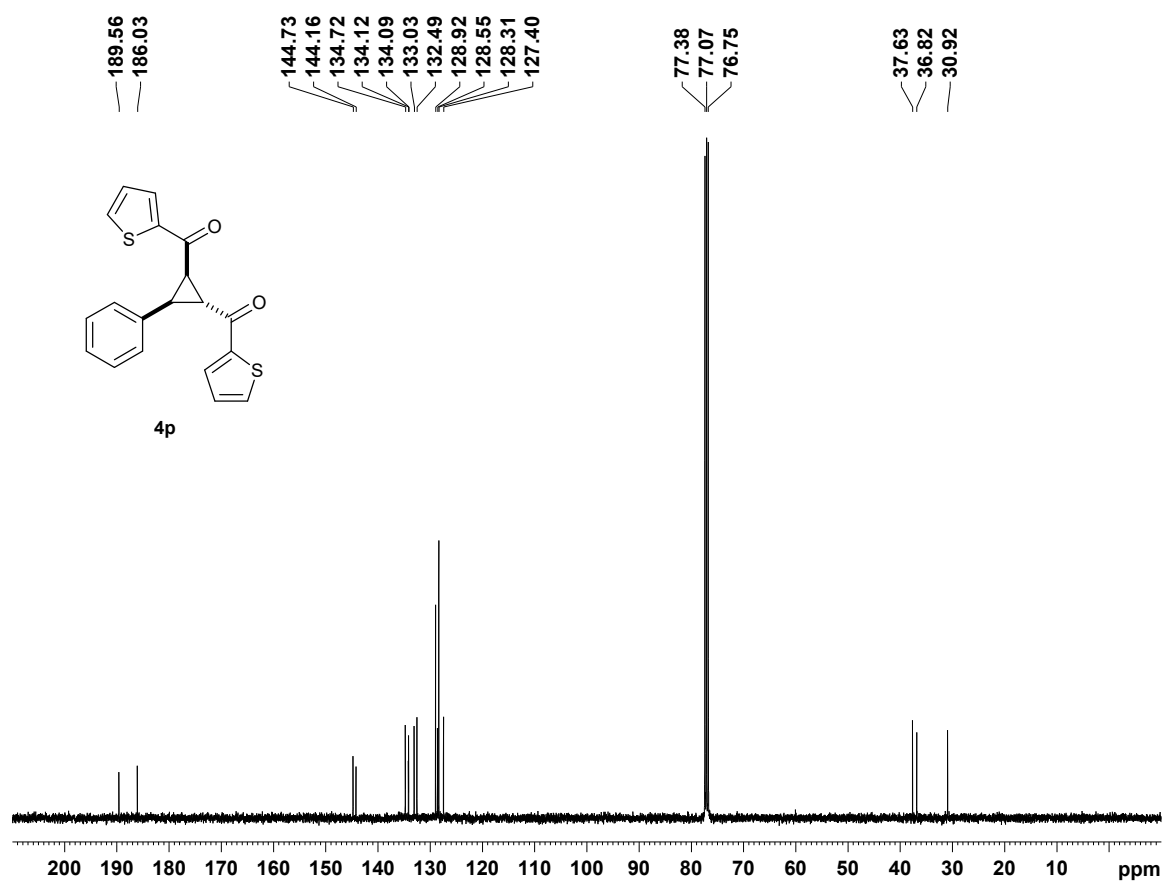


Figure S46. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4p**

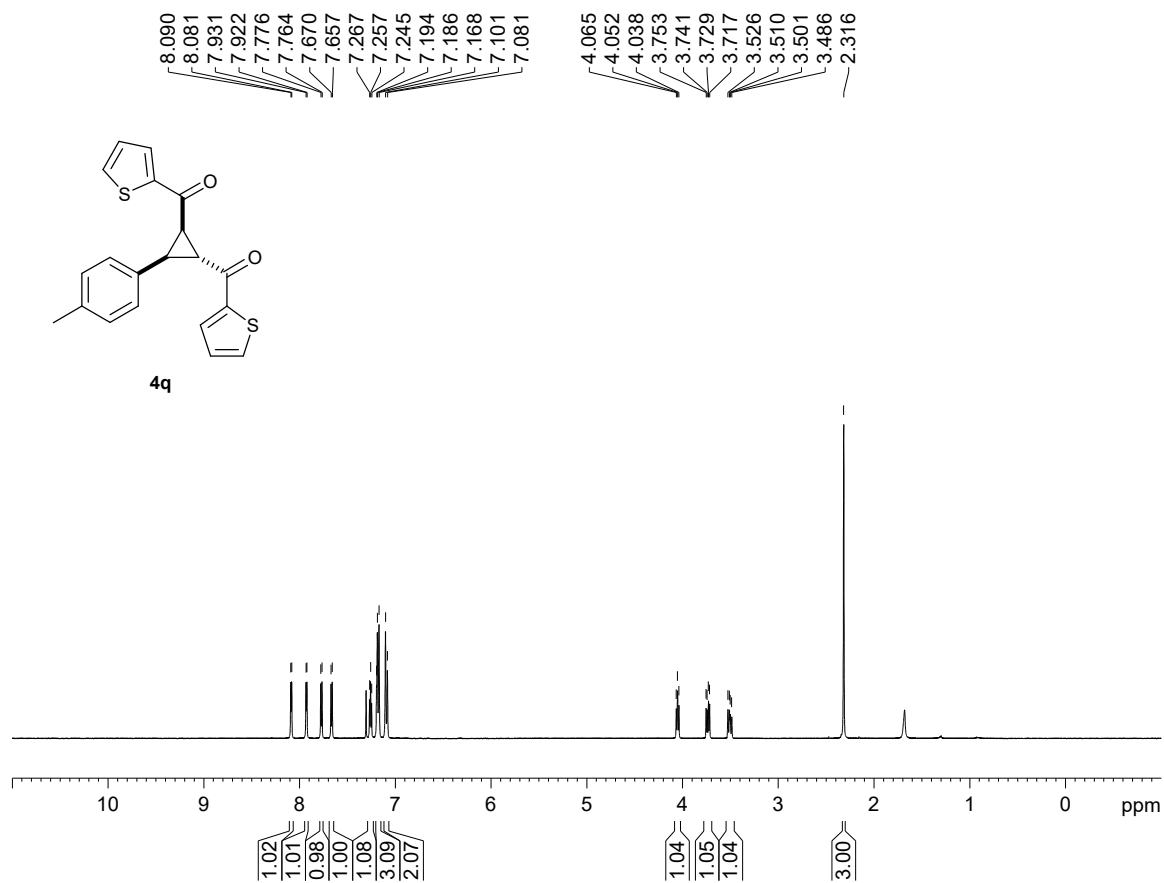


Figure S47. ¹H NMR (400 MHz, CDCl₃) spectrum of **4q**

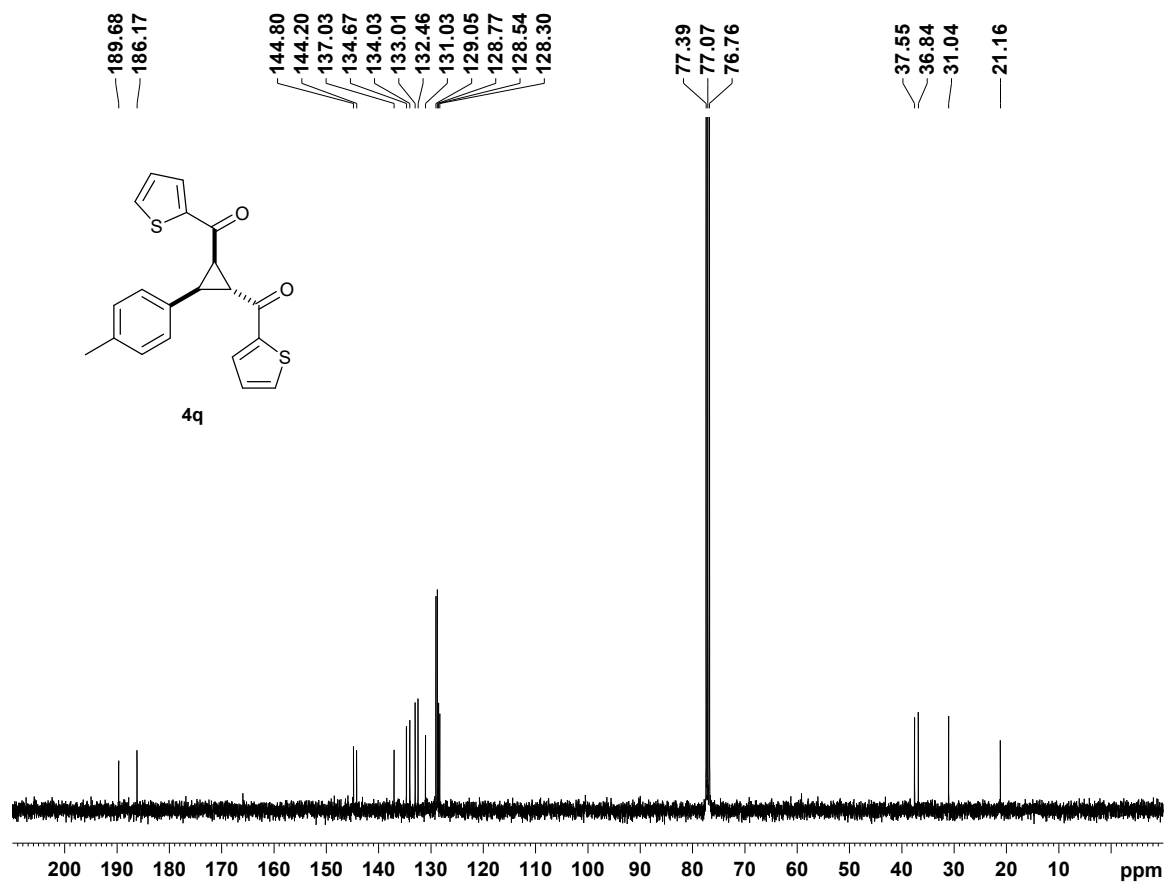


Figure S48. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4q**

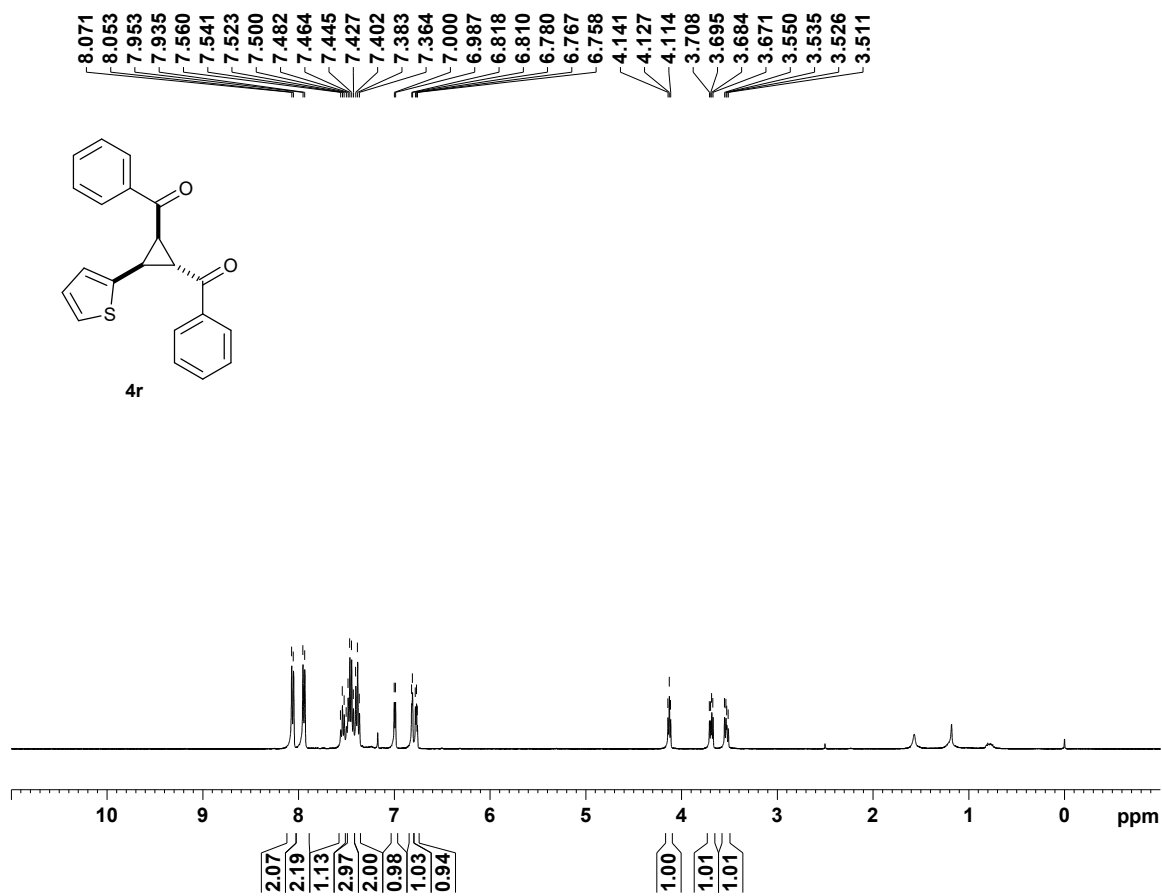


Figure S49. ¹H NMR (400 MHz, CDCl₃) spectrum of **4r**

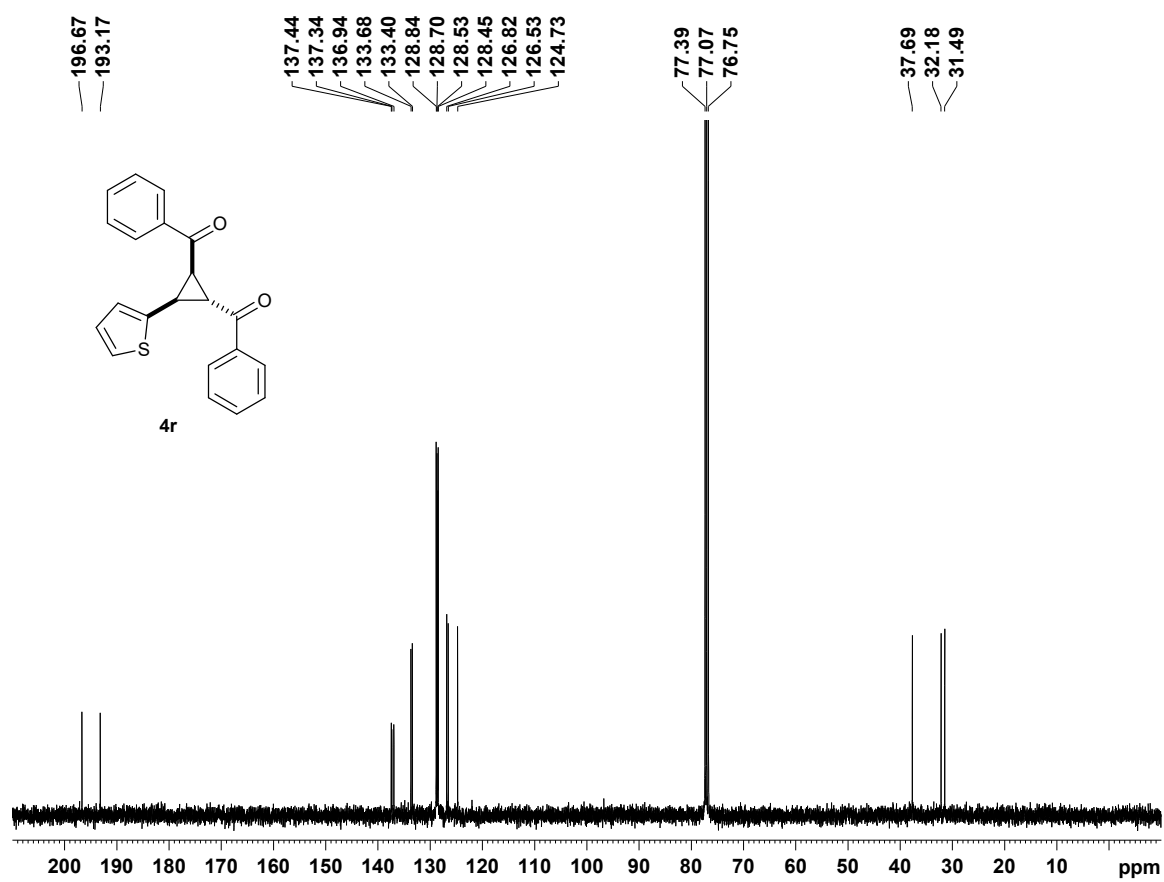


Figure S50. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4r**

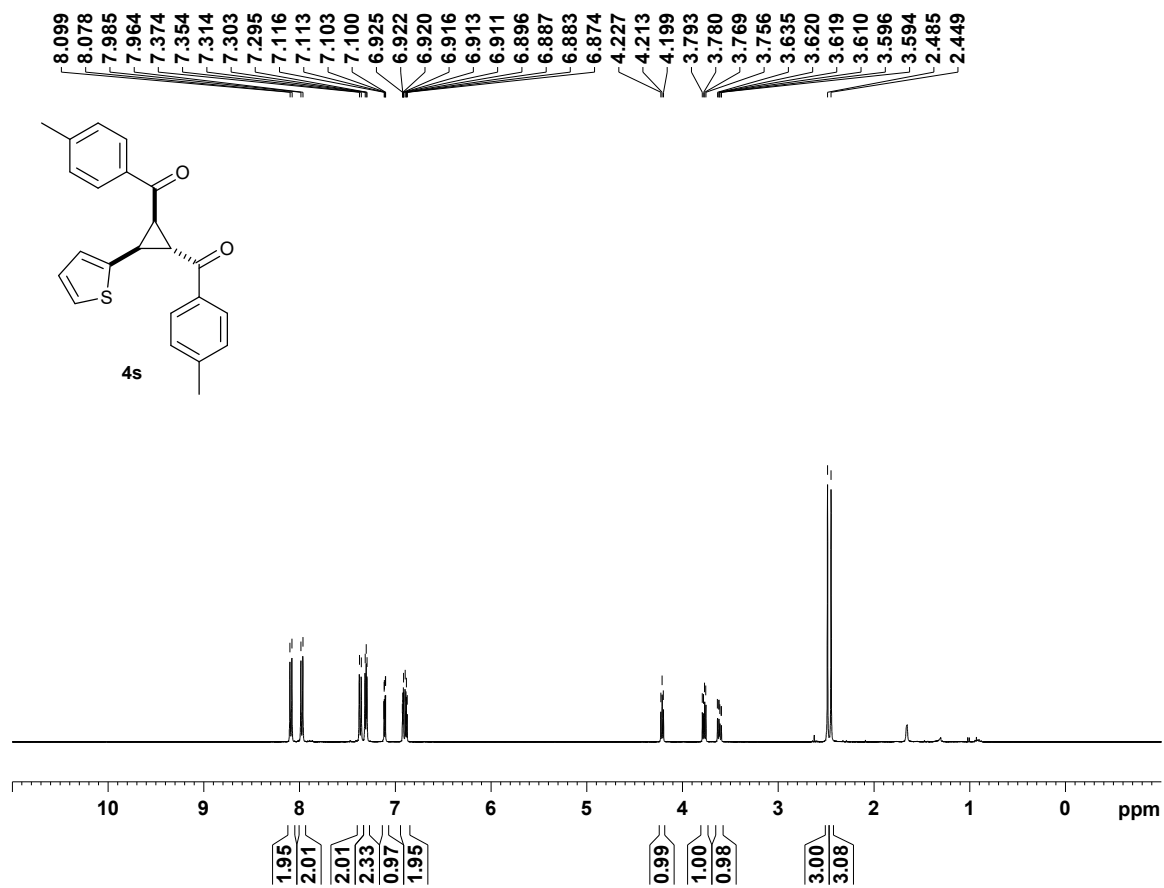


Figure S51. ¹H NMR (400 MHz, CDCl₃) spectrum of **4s**

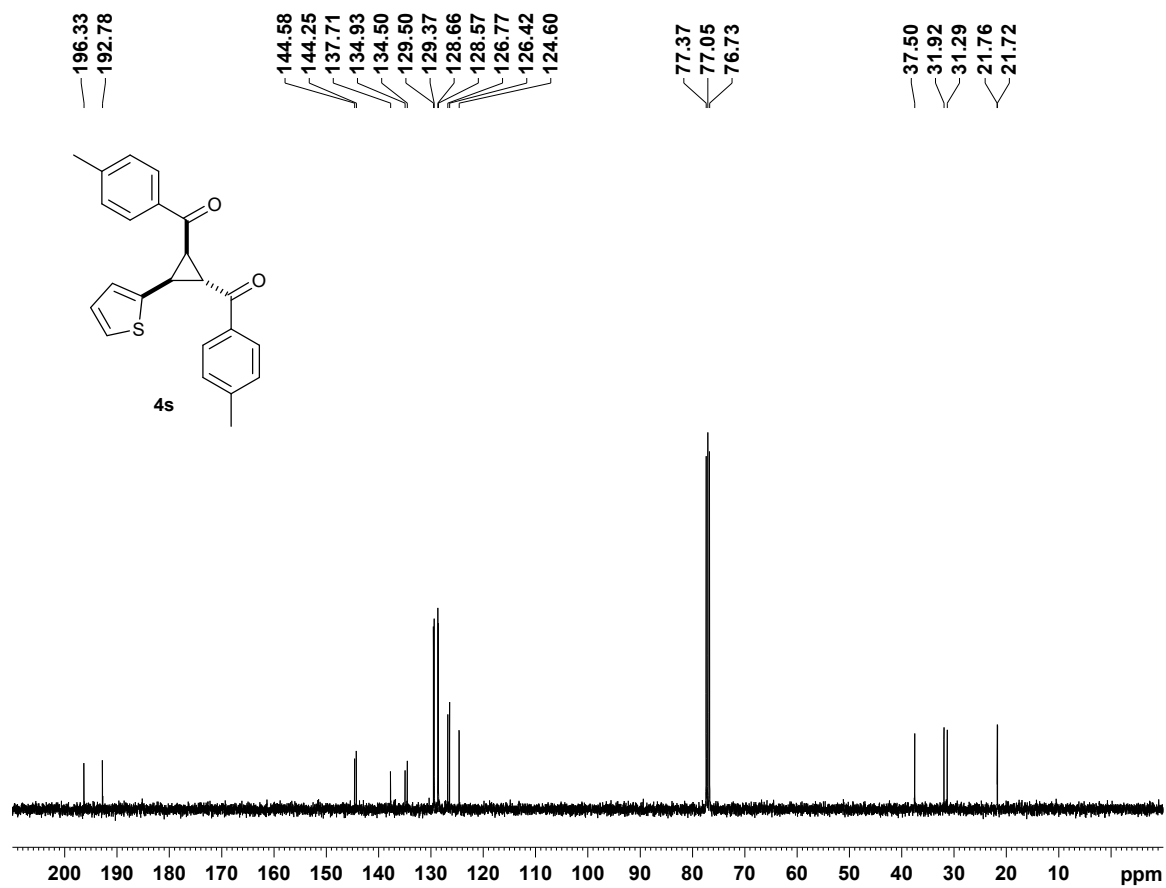


Figure S52. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **4s**

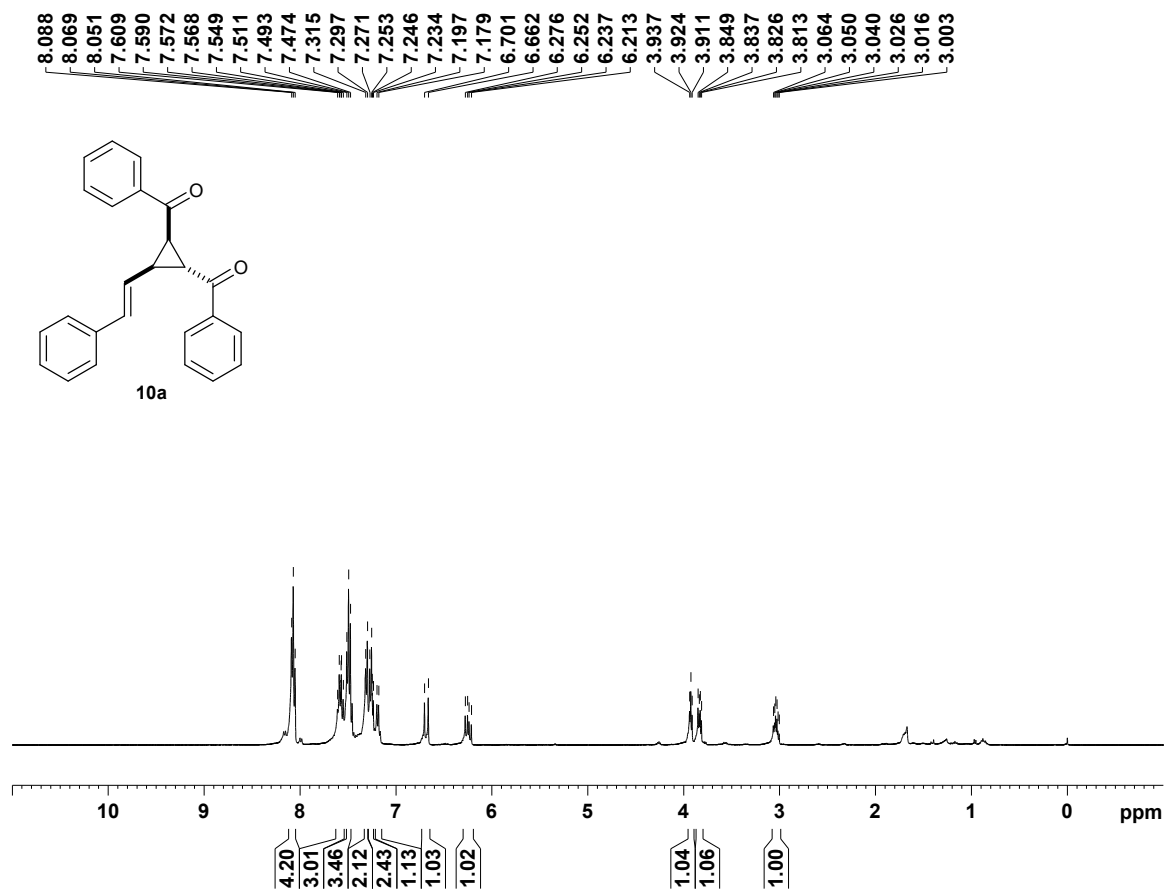


Figure S53. ¹H NMR (400 MHz, CDCl₃) spectrum of **10a**

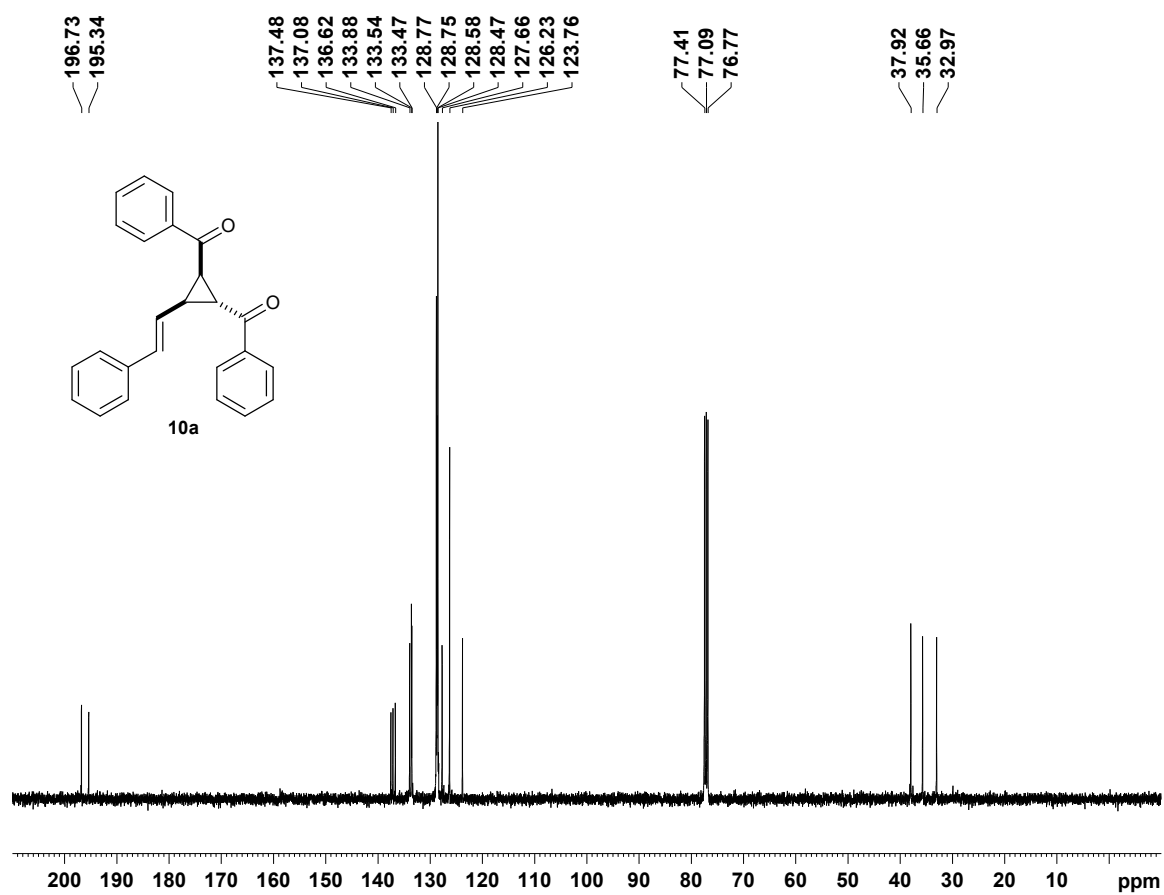


Figure S54. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **10a**

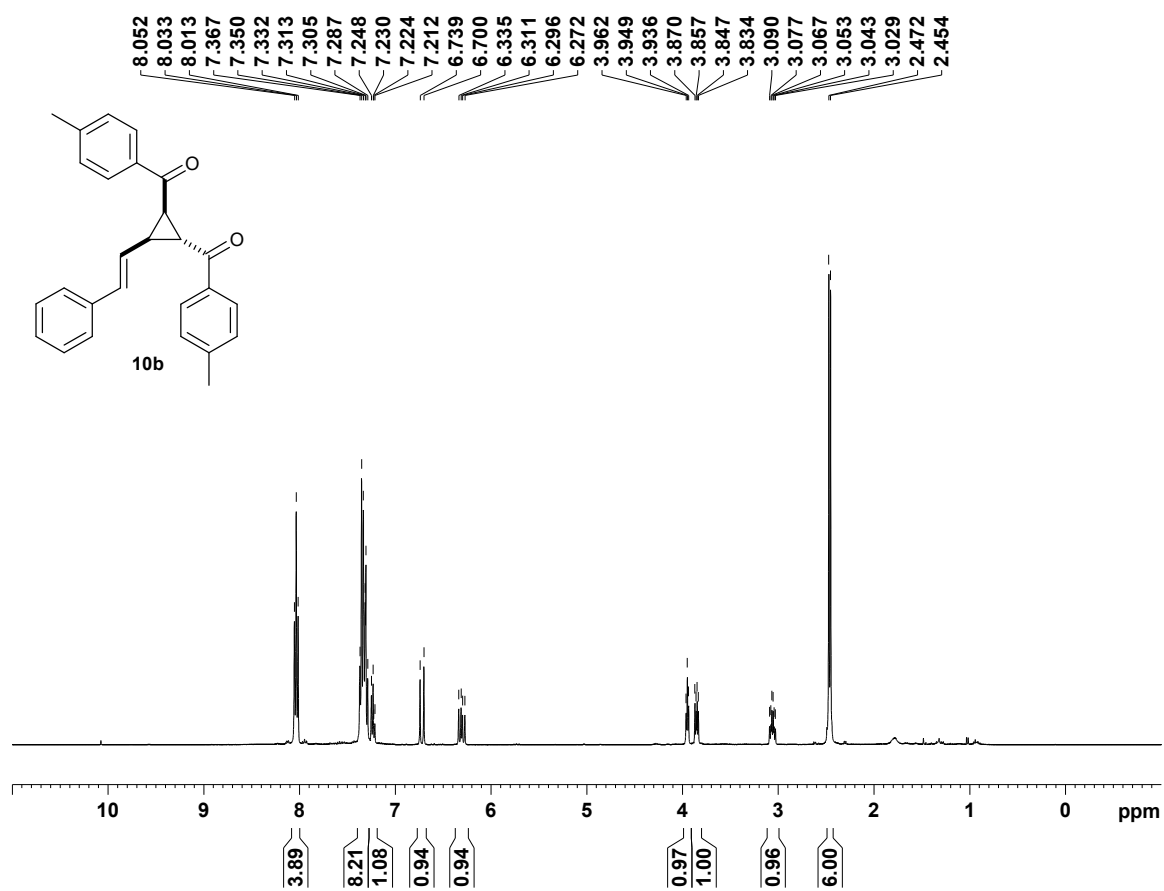


Figure S55. ¹H NMR (400 MHz, CDCl₃) spectrum of **10b**

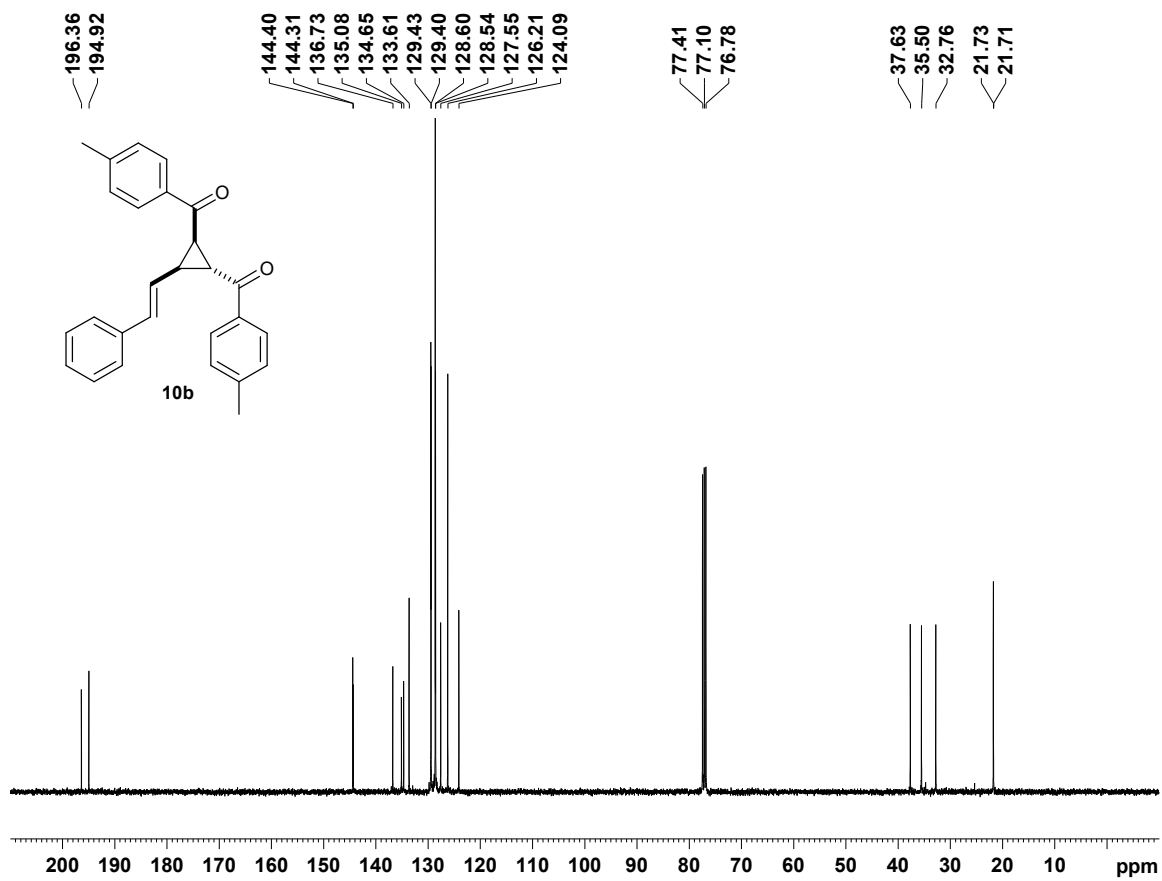


Figure S56. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **10b**

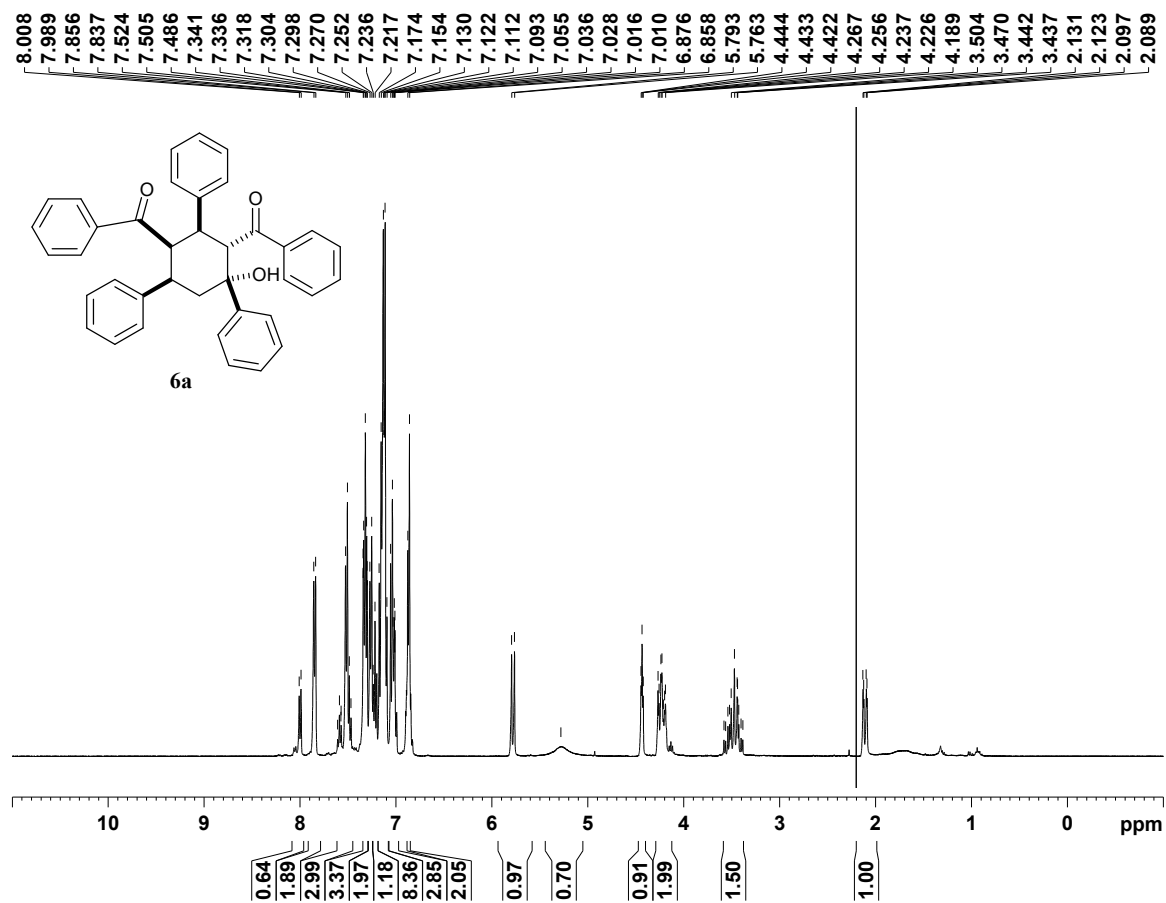


Figure S57. ^1H NMR (400 MHz, CDCl_3) spectrum of **6a**

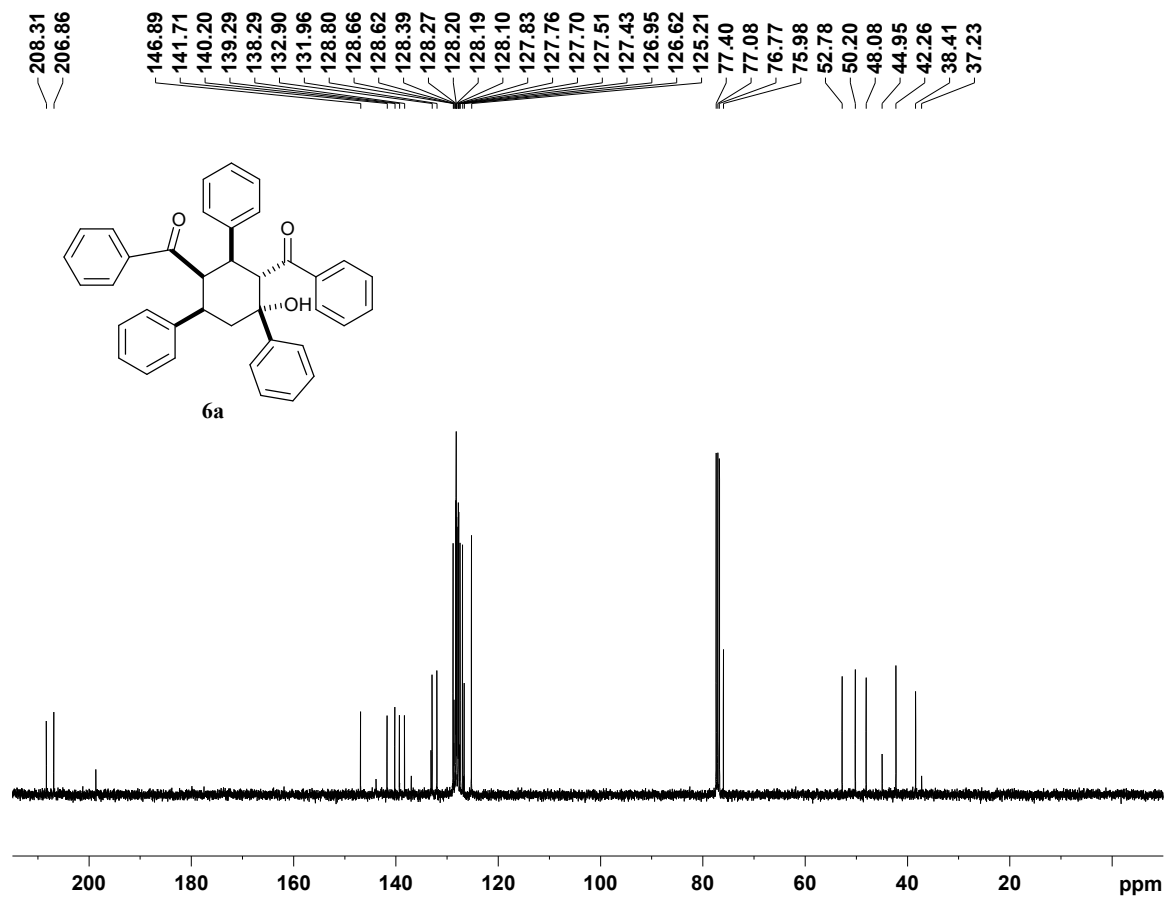


Figure S58. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **6a**

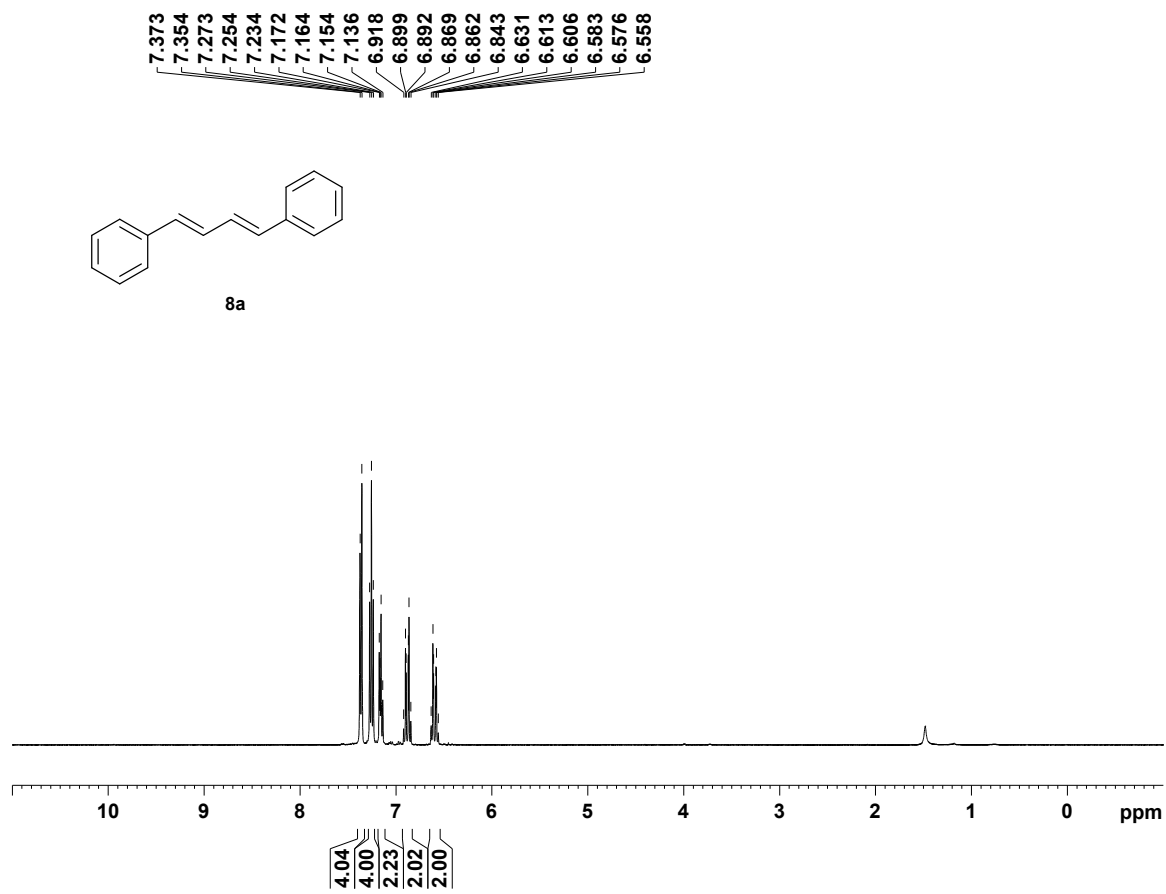


Figure S59. ¹H NMR (400 MHz, CDCl₃) spectrum of **8a**

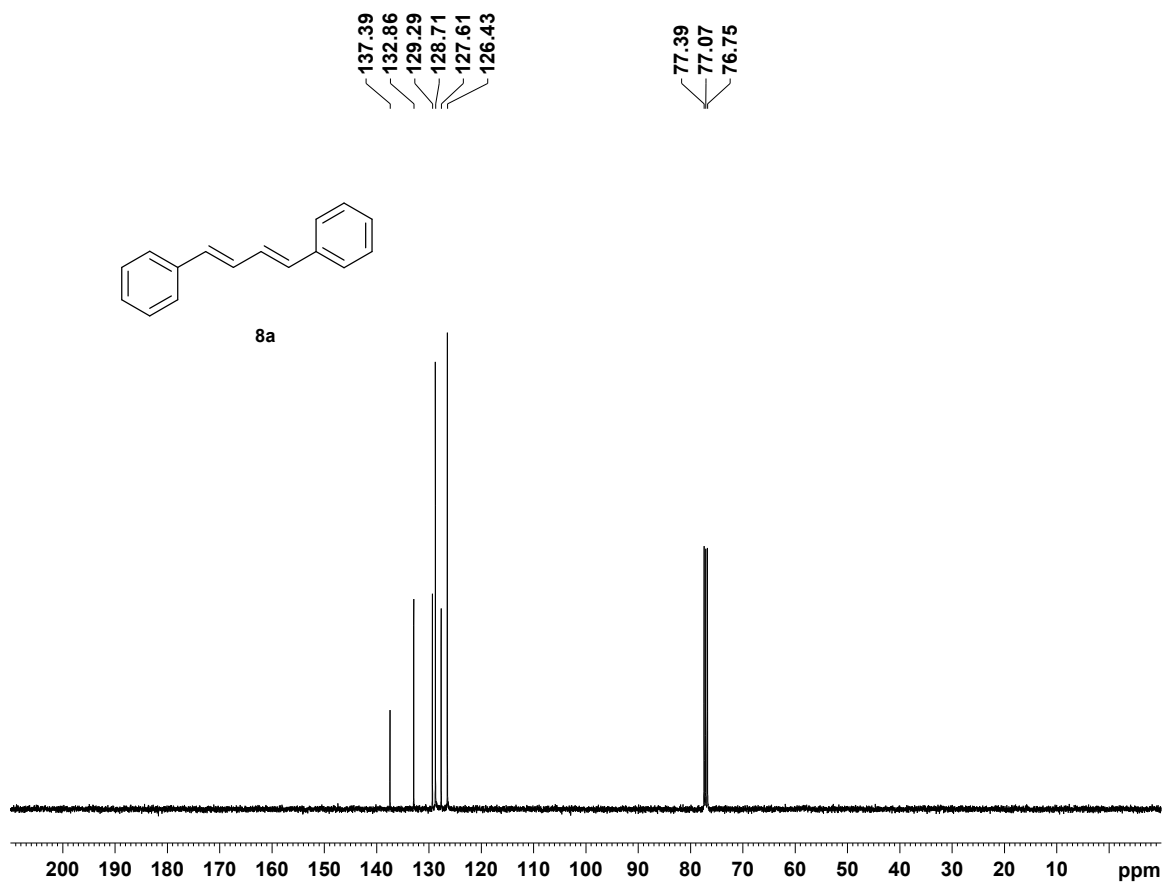


Figure S60. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8a**

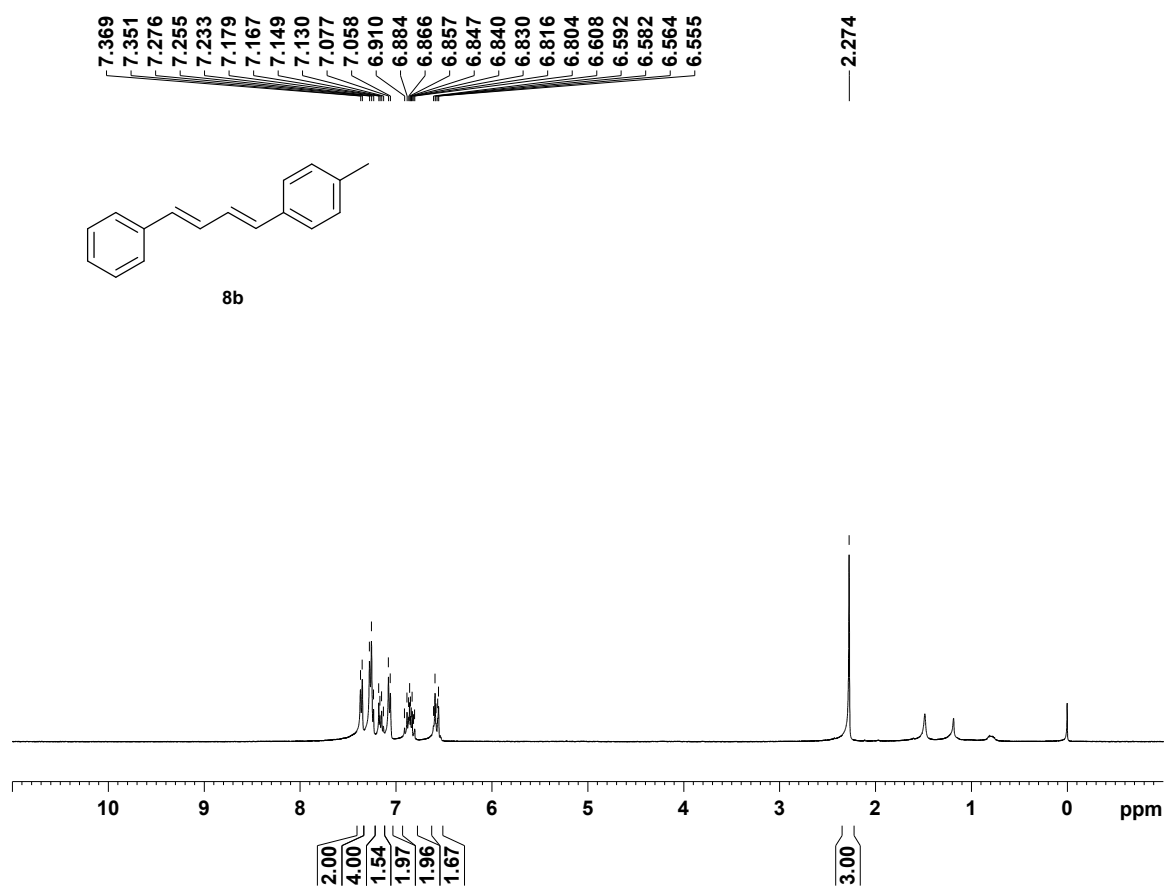


Figure S61. ¹H NMR (400 MHz, CDCl₃) spectrum of **8b**

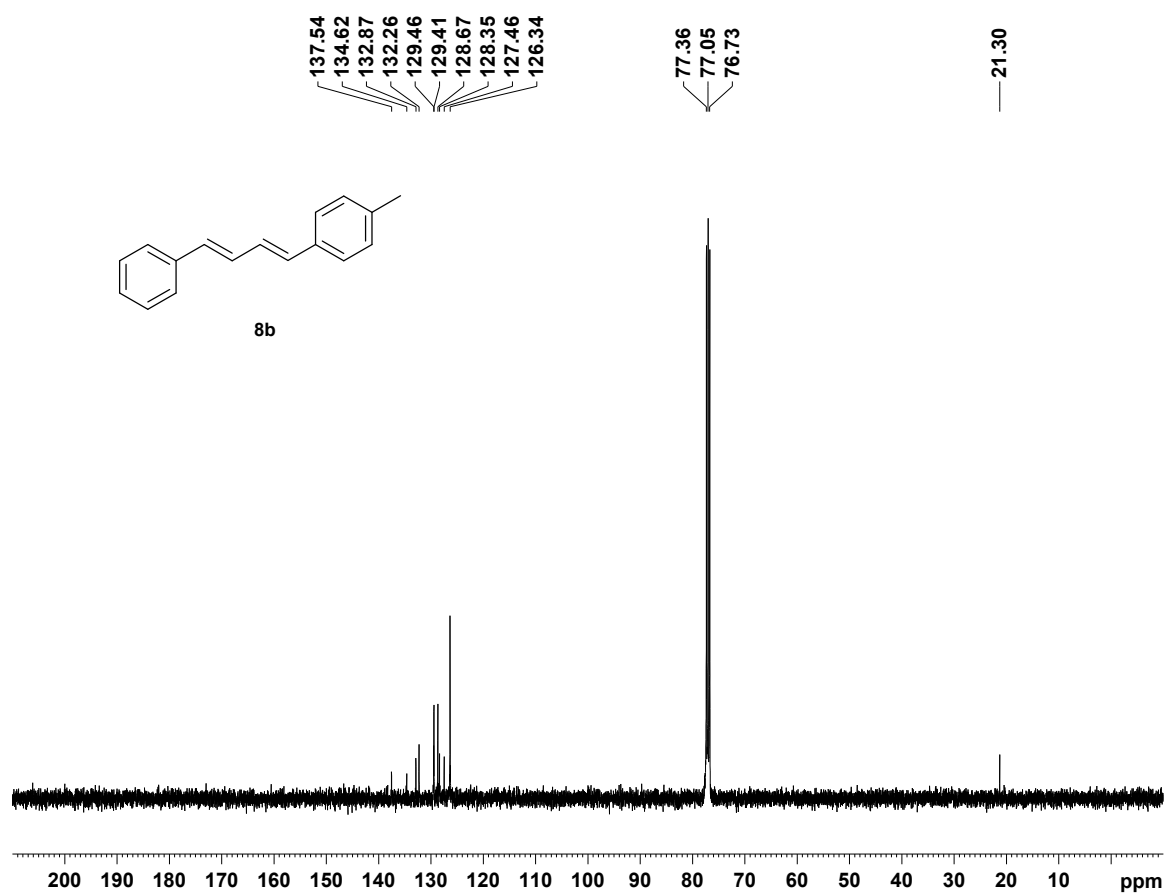


Figure S62. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8b**

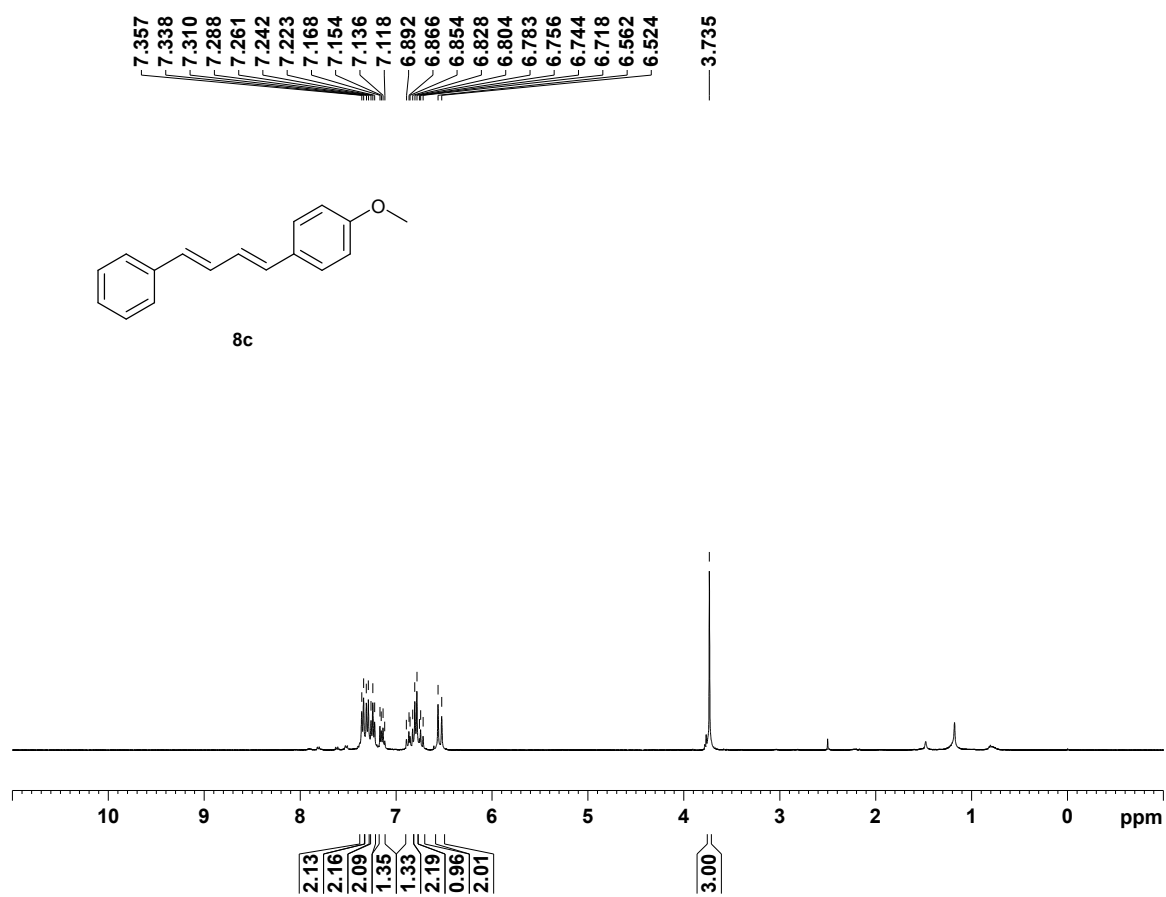


Figure S63. ¹H NMR (400 MHz, CDCl₃) spectrum of **8c**

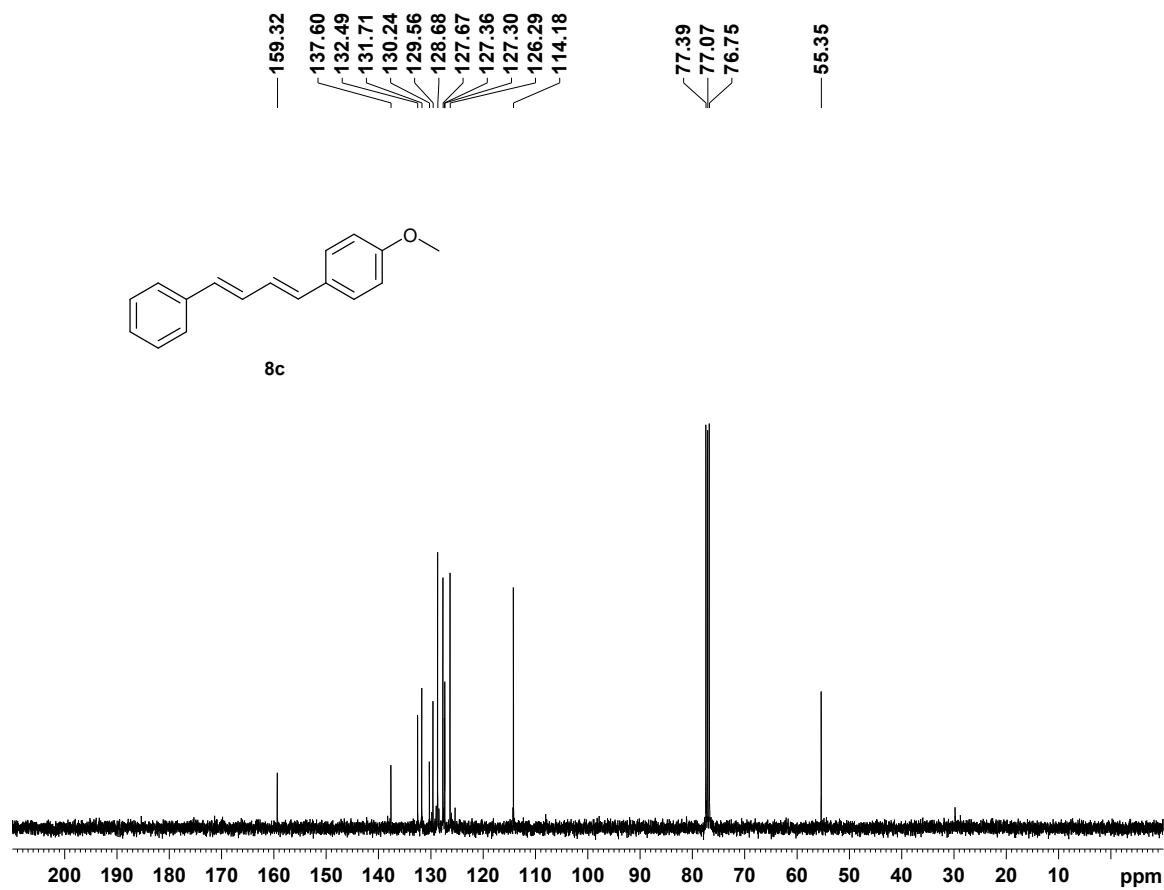


Figure S64. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8c**

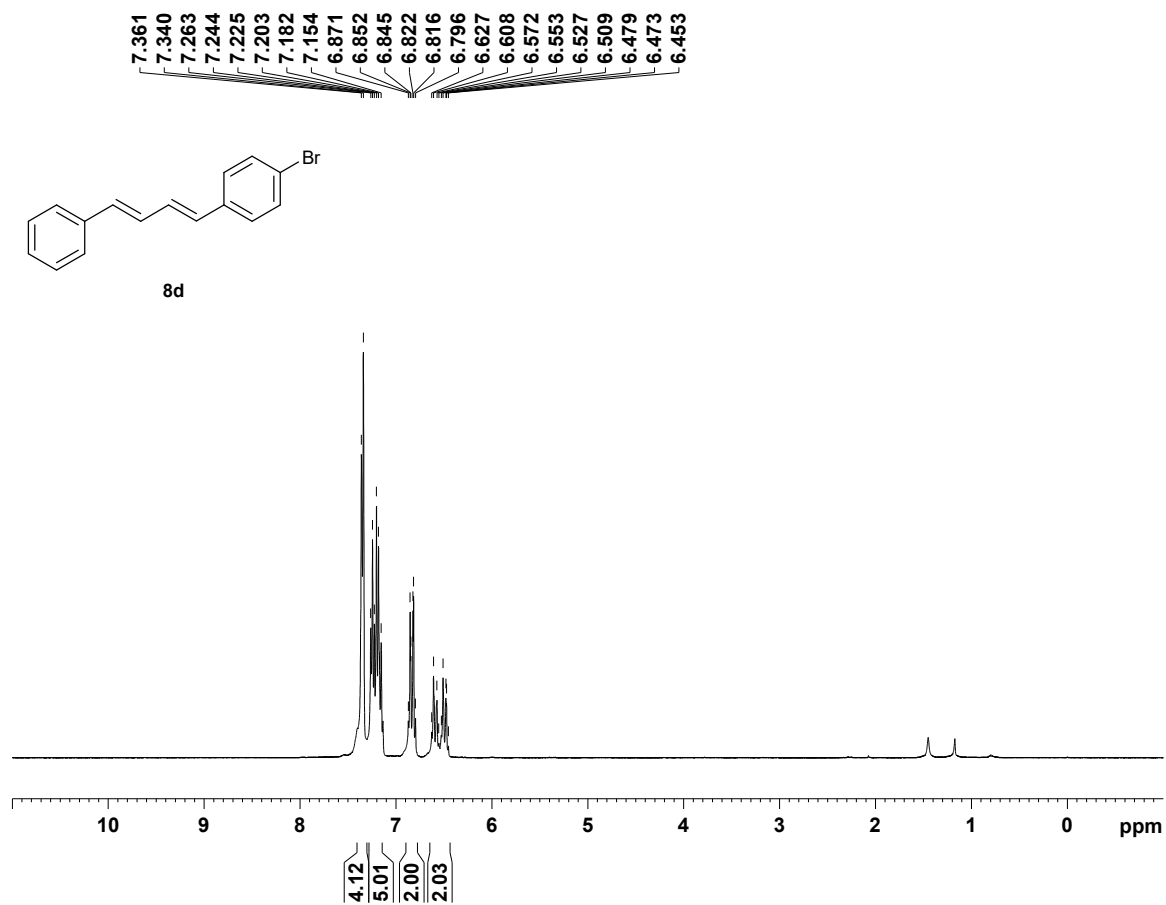


Figure S65. ¹H NMR (400 MHz, CDCl₃) spectrum of **8d**

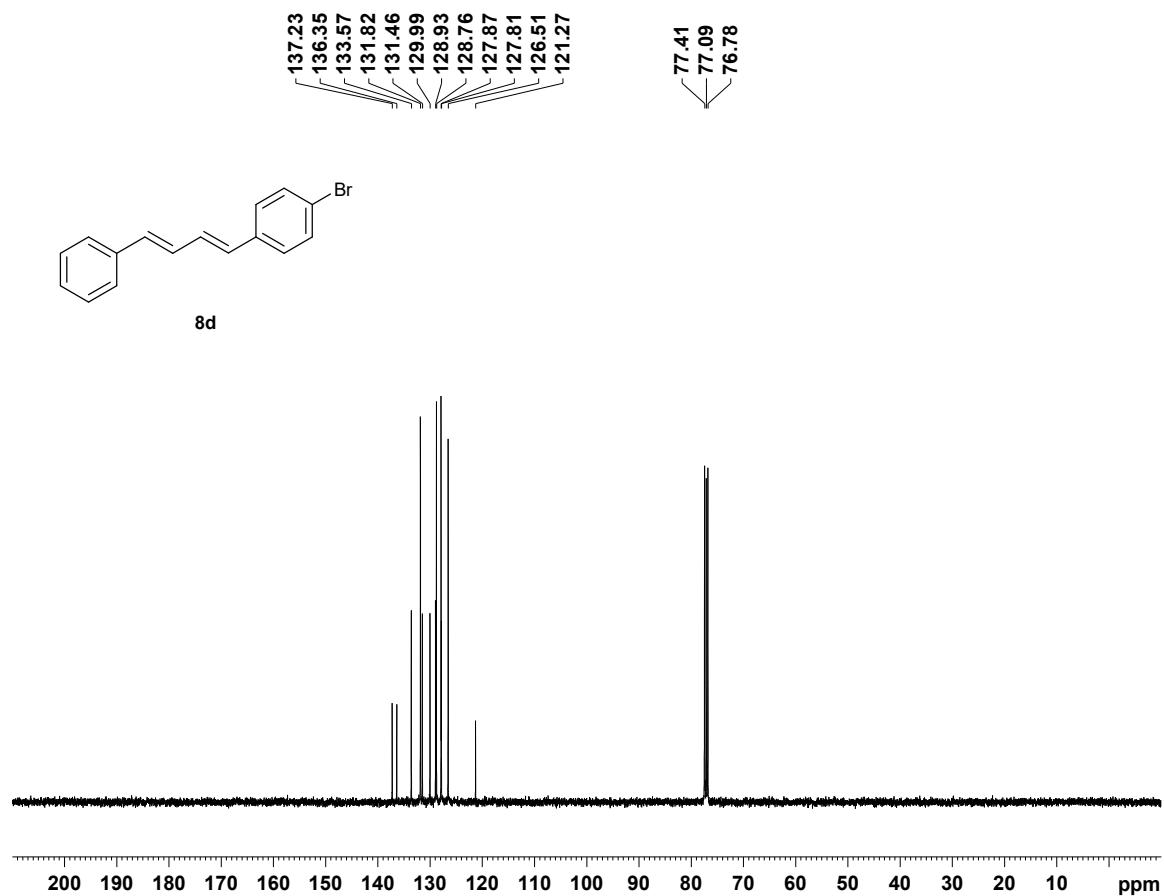


Figure S66. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8d**

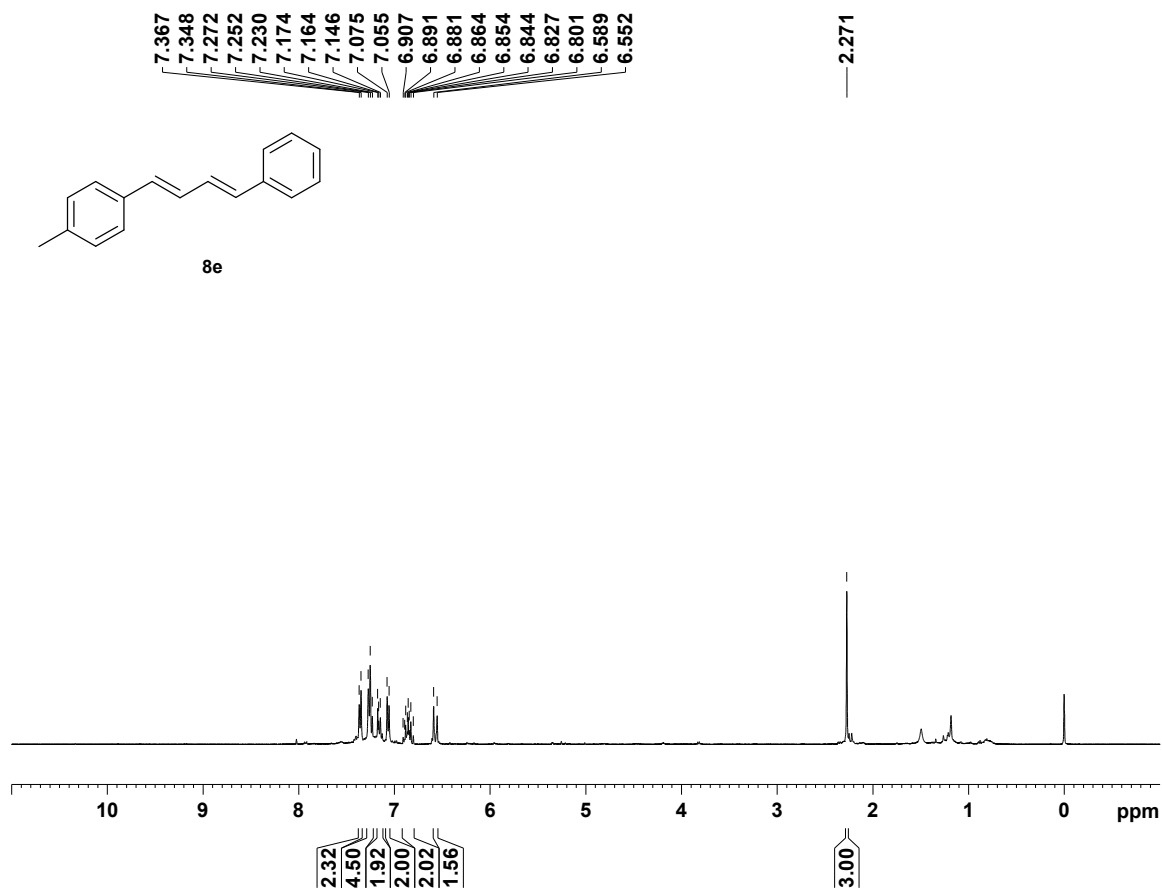


Figure S67. ^1H NMR (400 MHz, CDCl_3) spectrum of **8e**

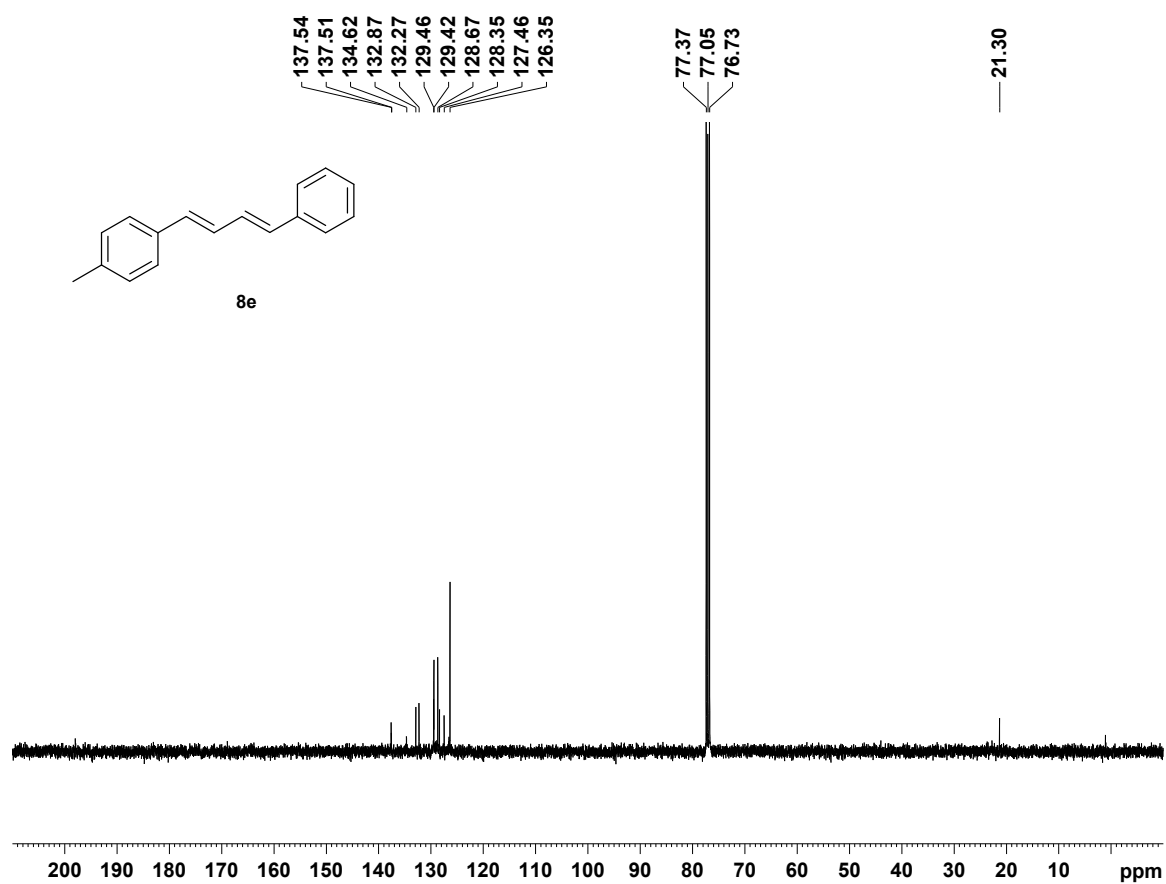


Figure S68. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8e**

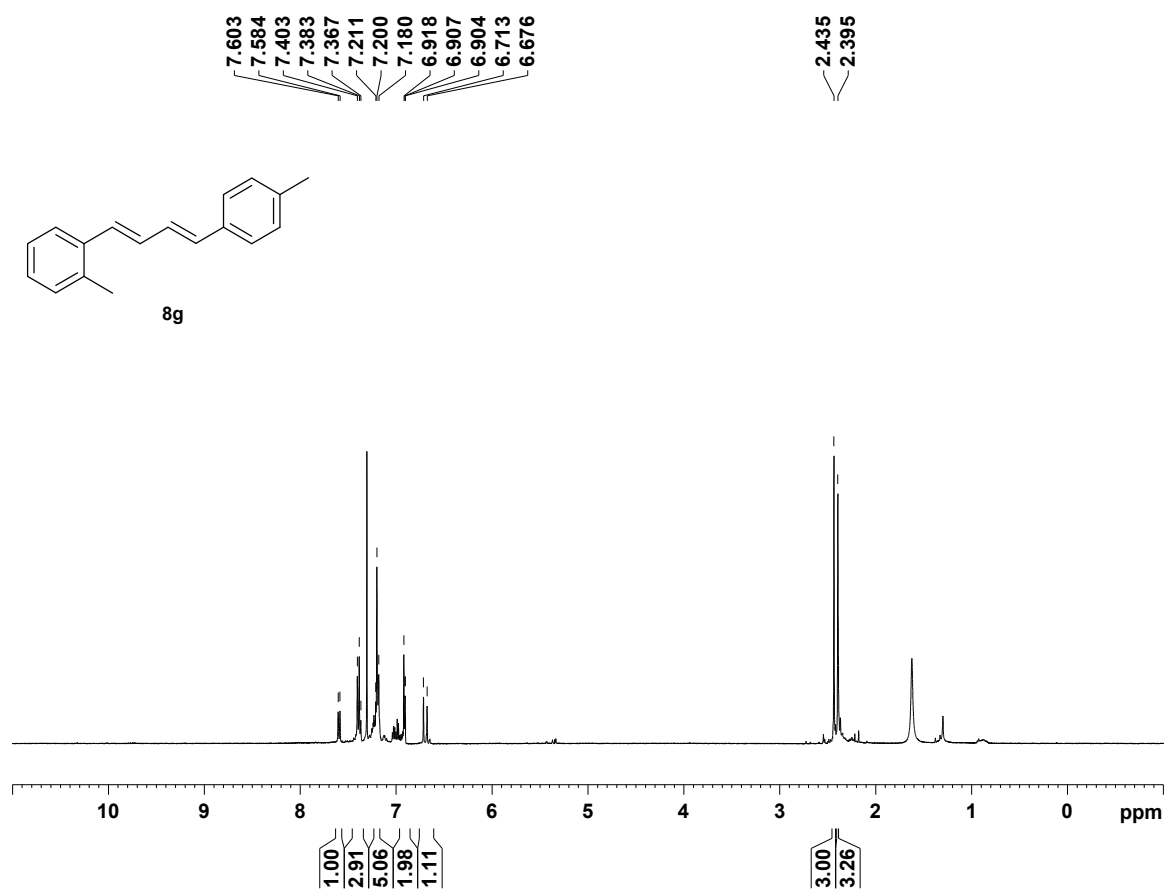


Figure S69. ¹H NMR (400 MHz, CDCl₃) spectrum of **8g**

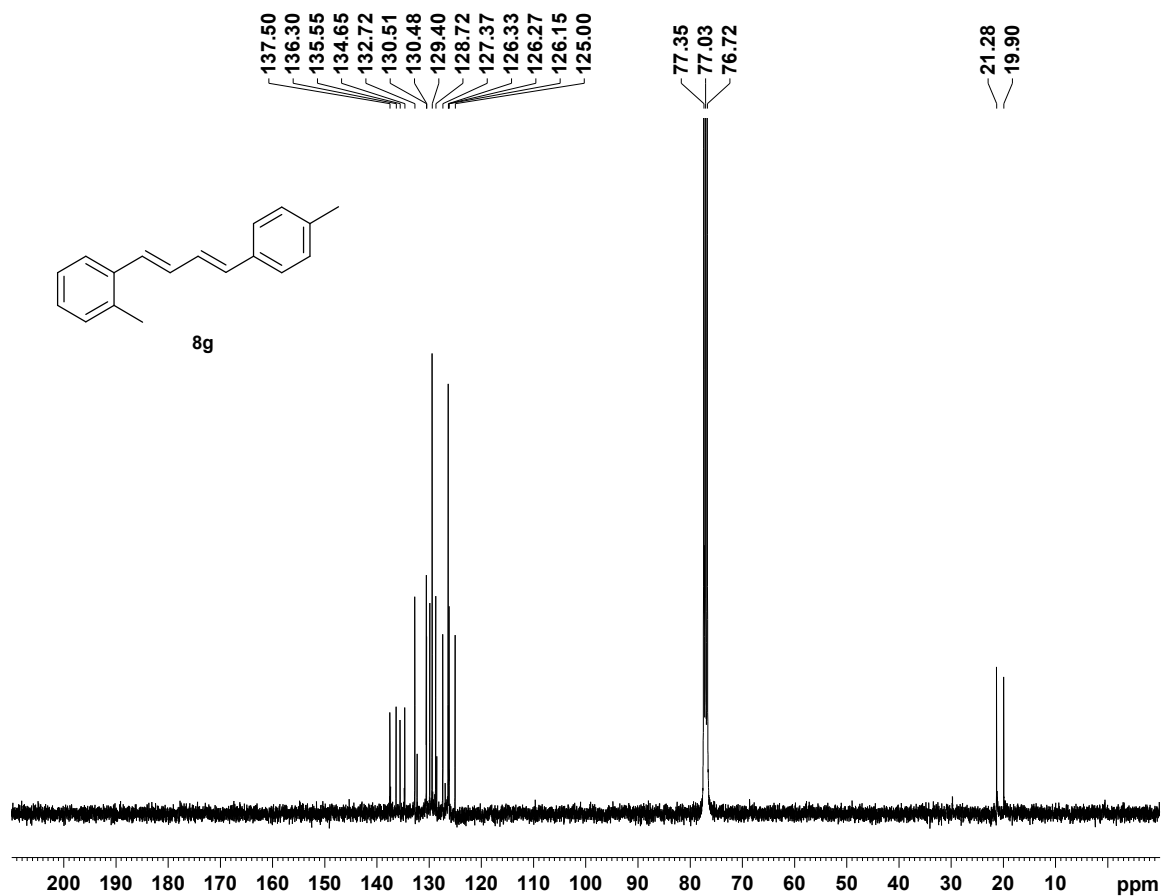


Figure S70. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8g**

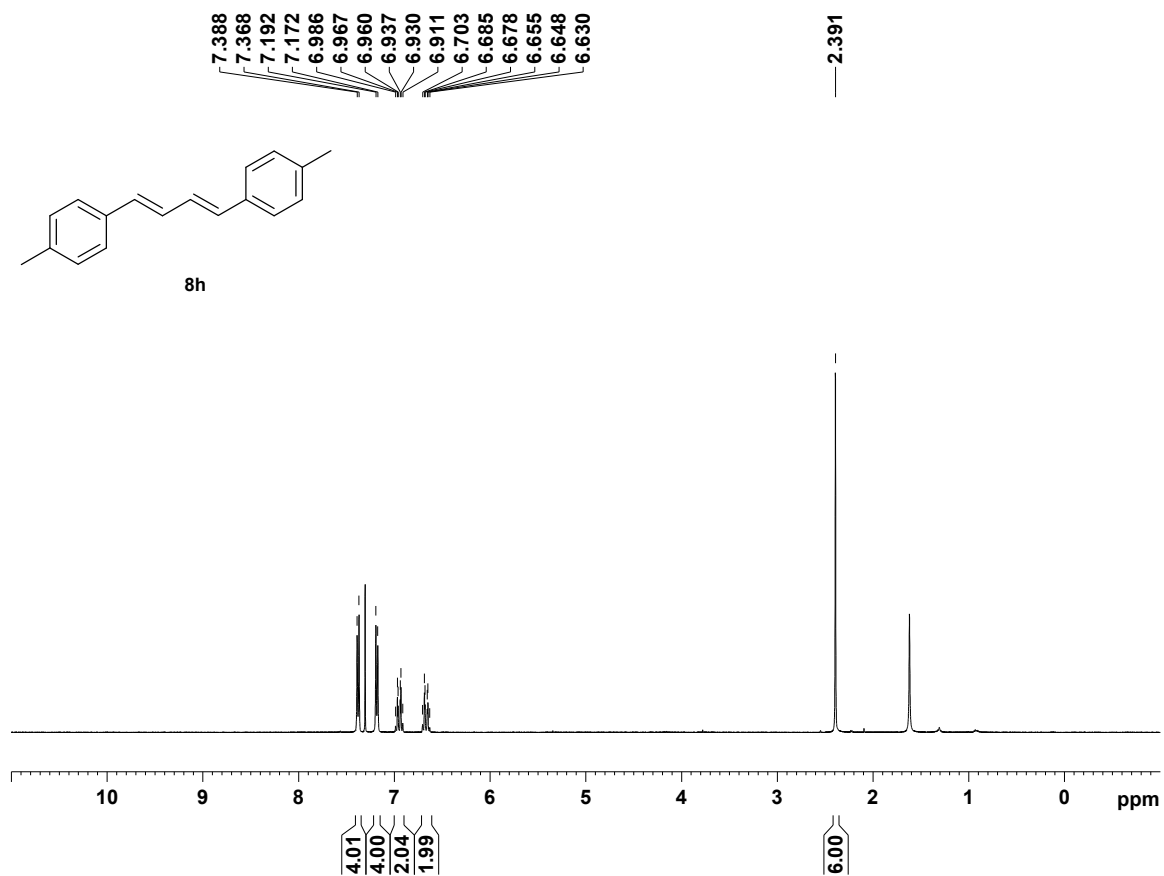


Figure S71. ¹H NMR (400 MHz, CDCl₃) spectrum of **8h**

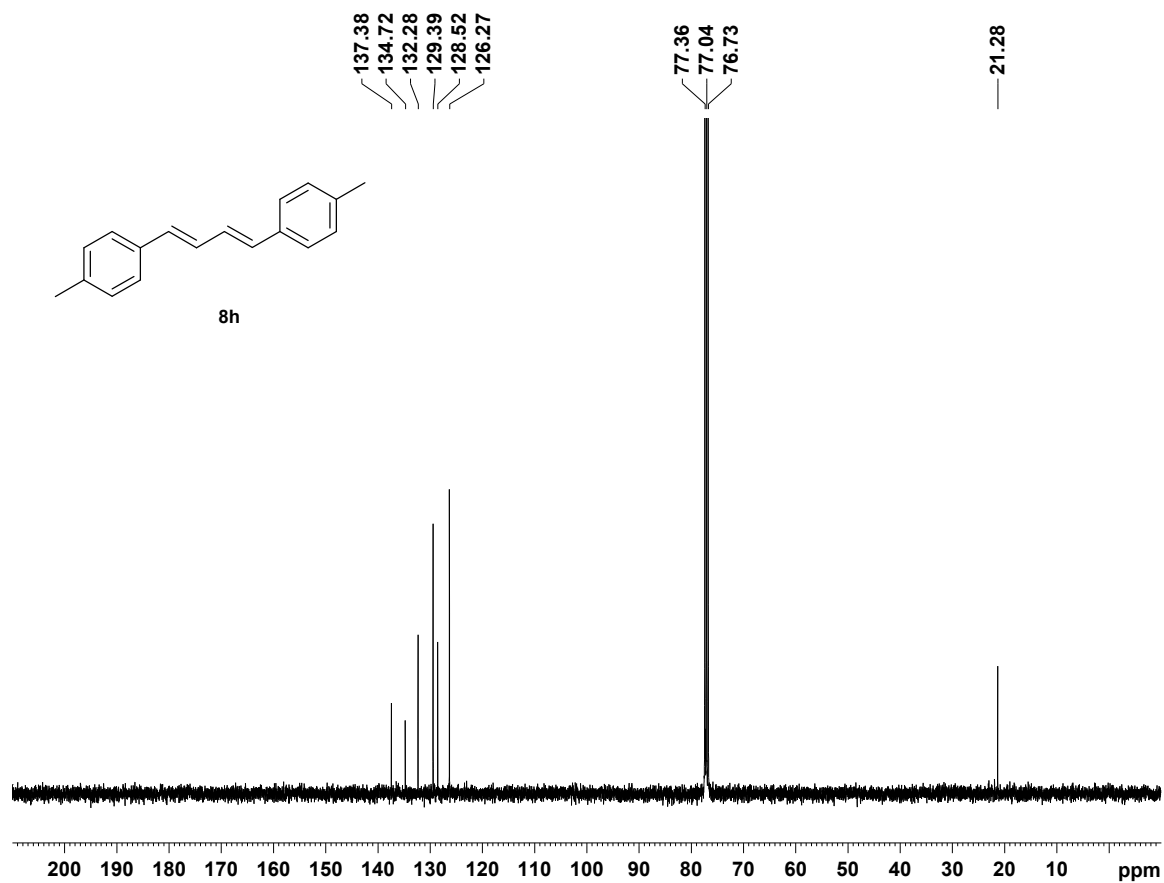


Figure S72. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8h**

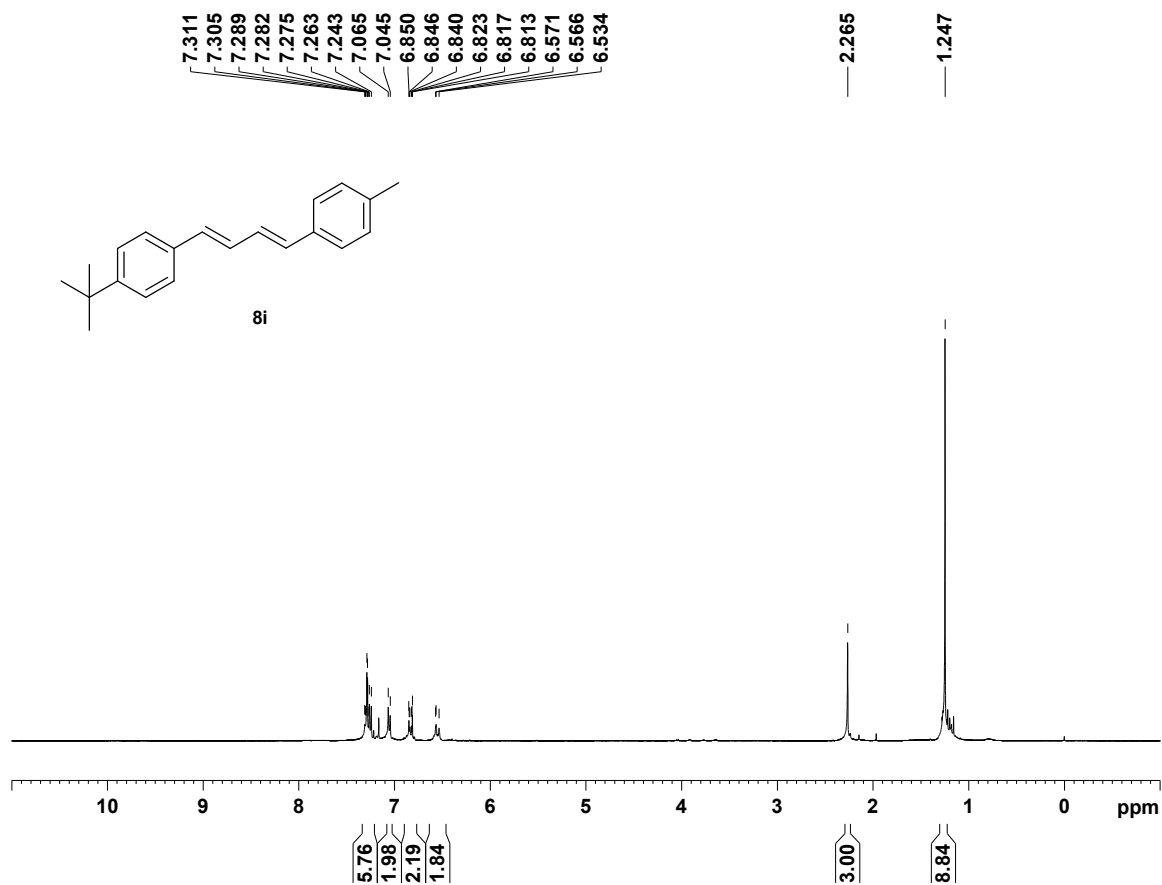


Figure S73. ¹H NMR (400 MHz, CDCl₃) spectrum of **8i**

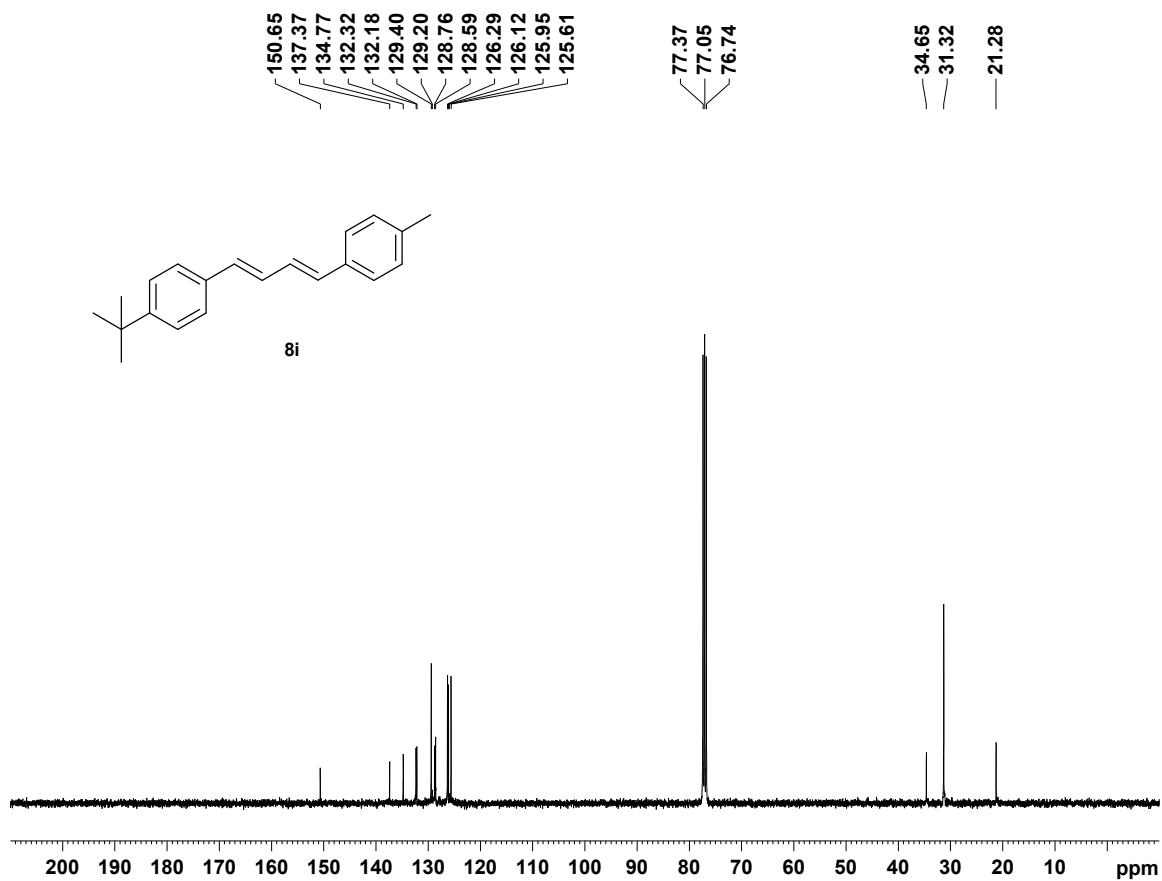


Figure S74. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8i**

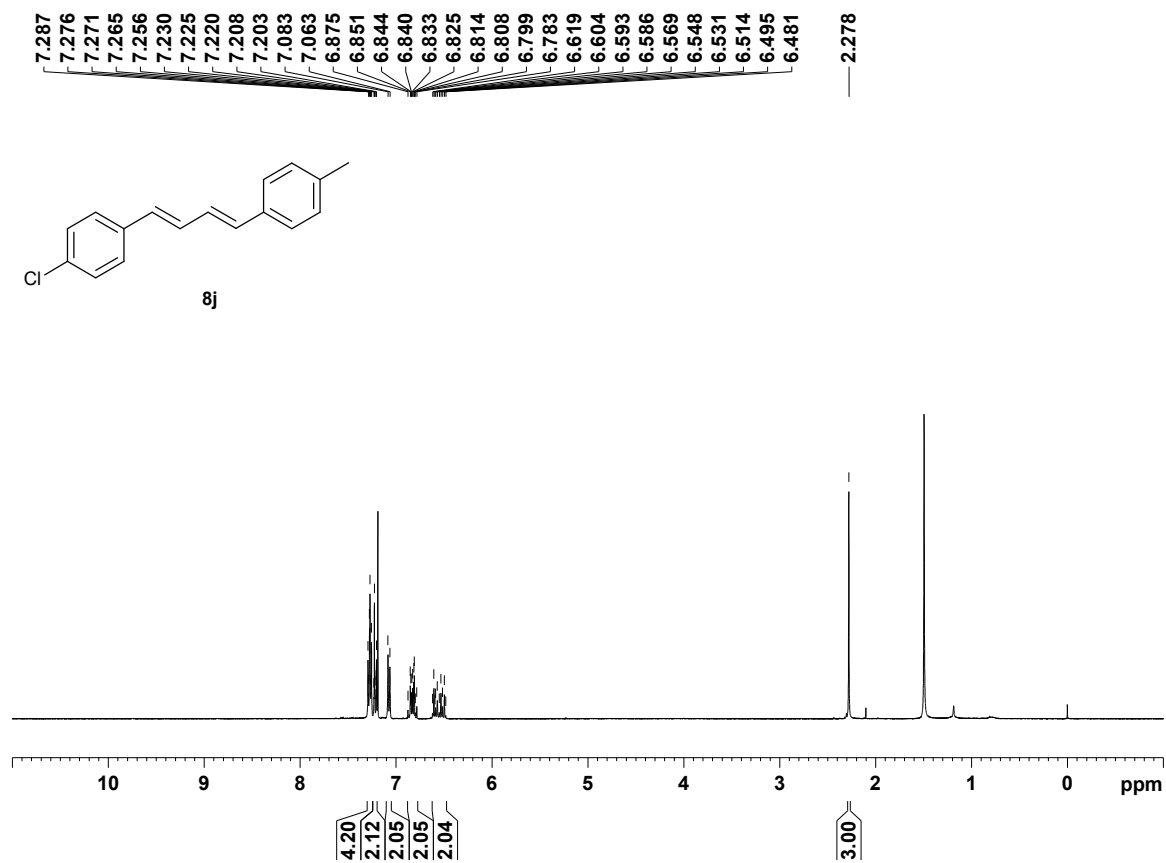


Figure S75. ¹H NMR (400 MHz, CDCl₃) spectrum of **8j**

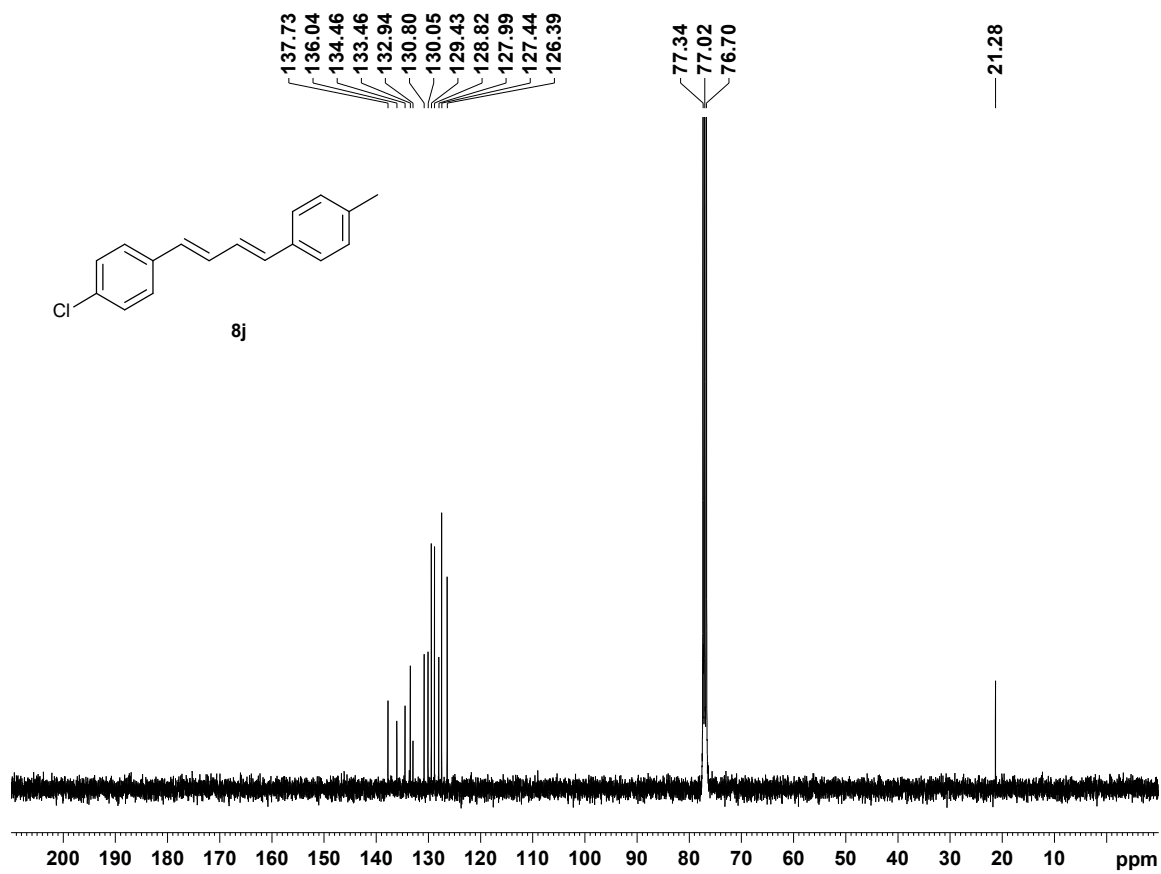


Figure S76. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8j**

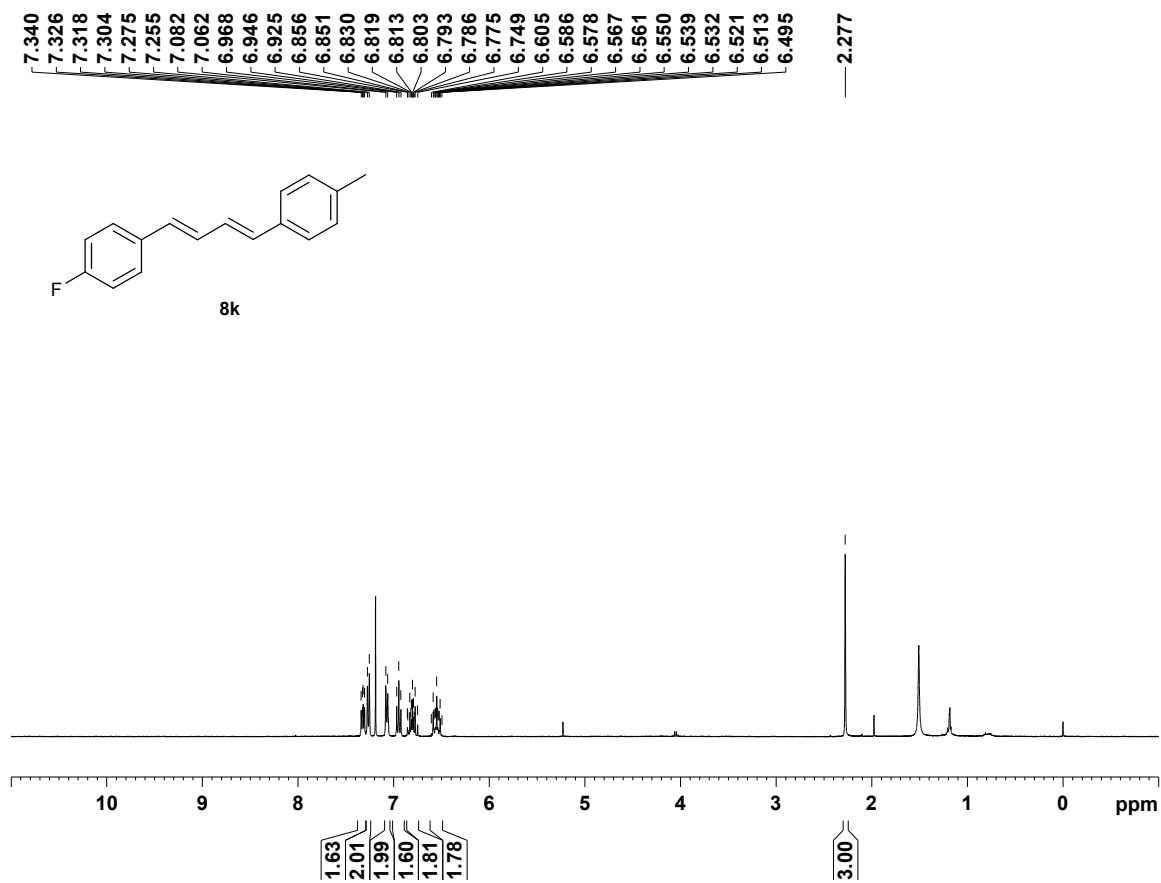


Figure S77. ¹H NMR (400 MHz, CDCl₃) spectrum of **8k**

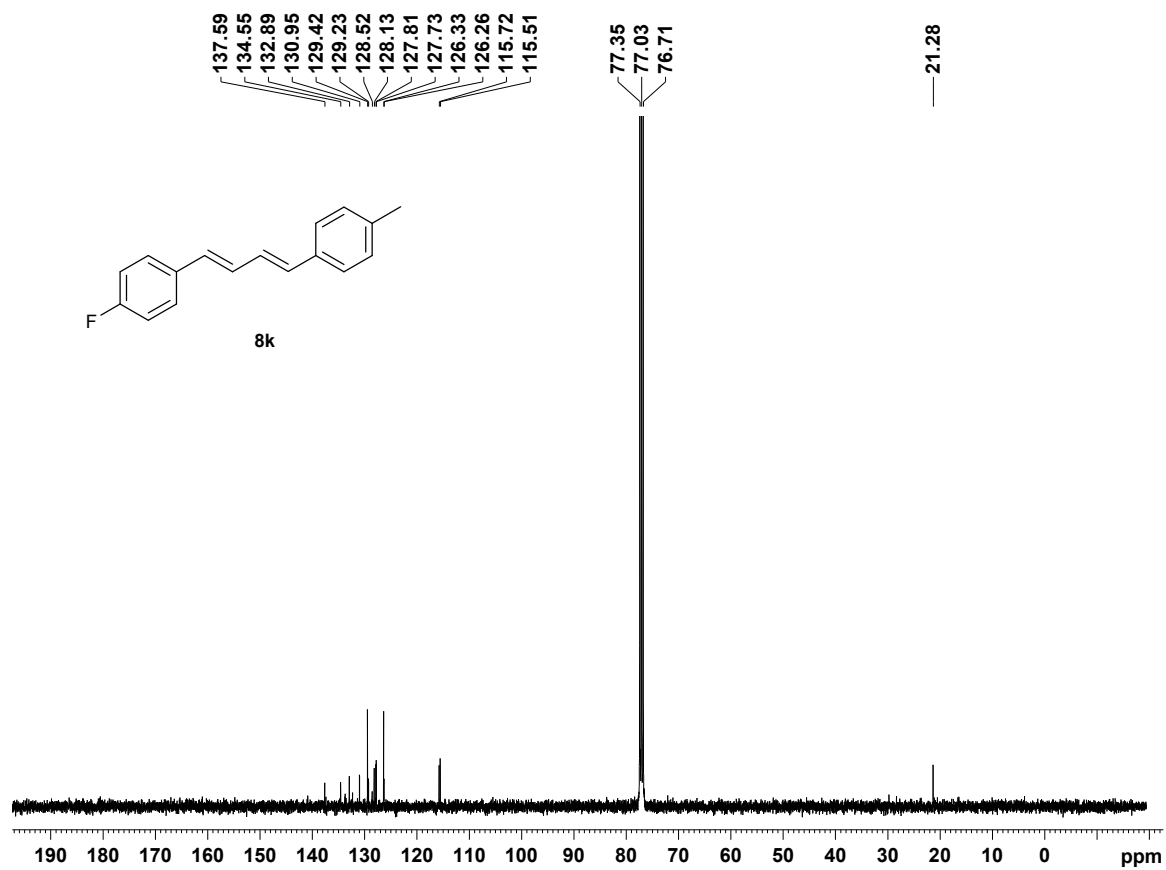


Figure S78. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8k**

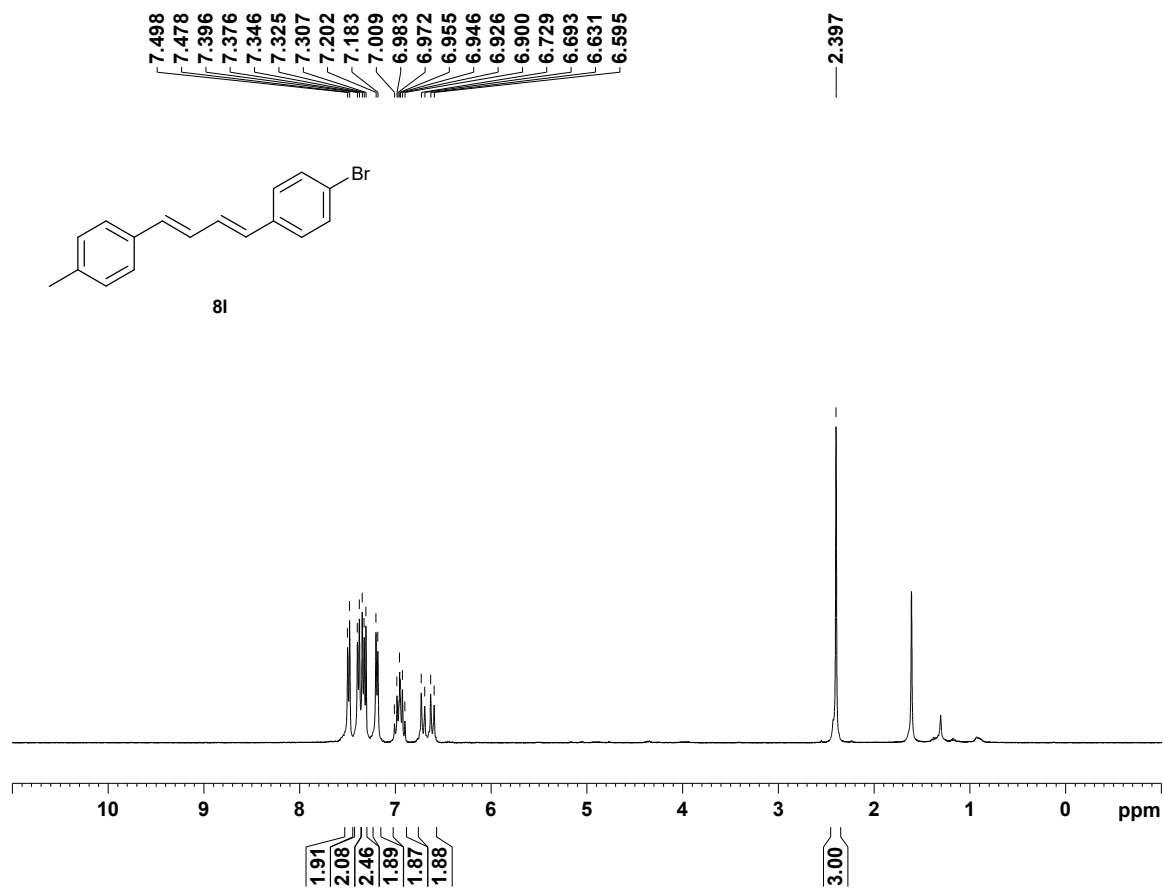


Figure S79. ¹H NMR (400 MHz, CDCl₃) spectrum of **8I**

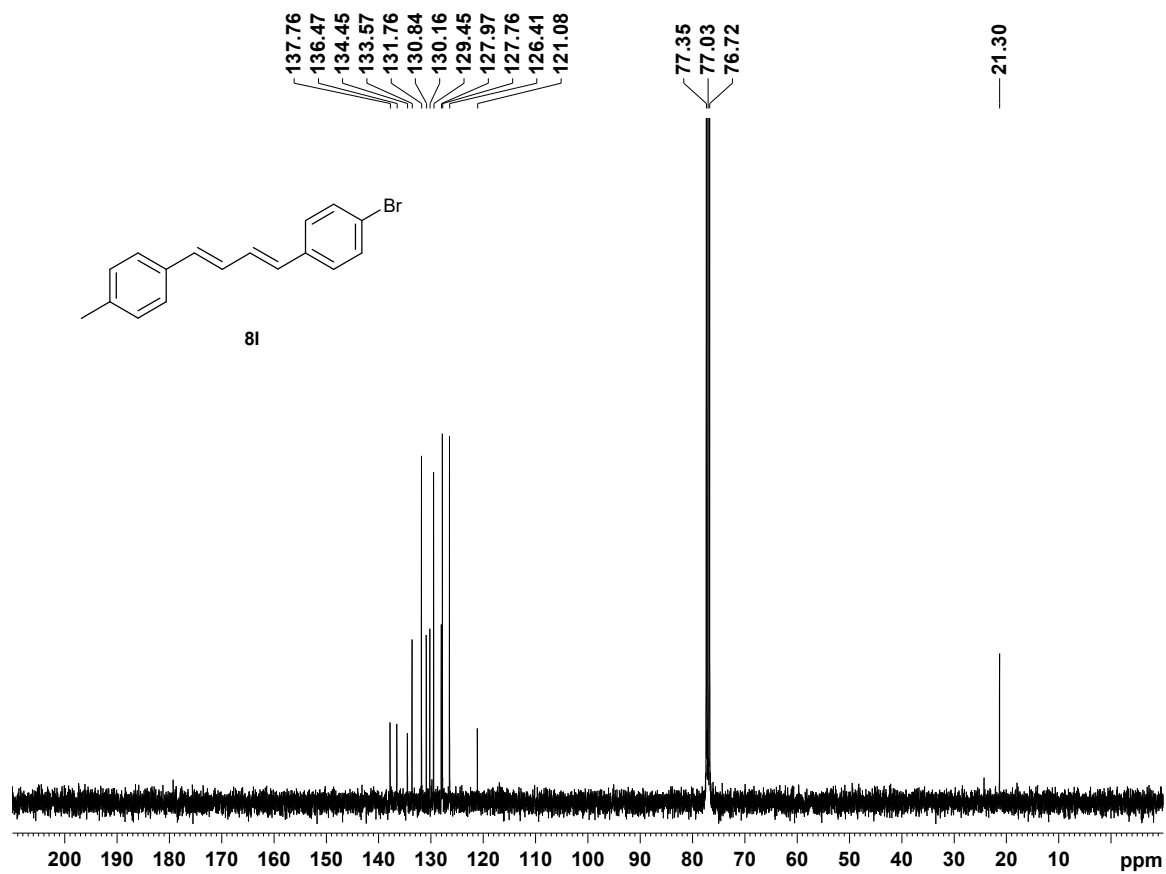


Figure S80. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **81**

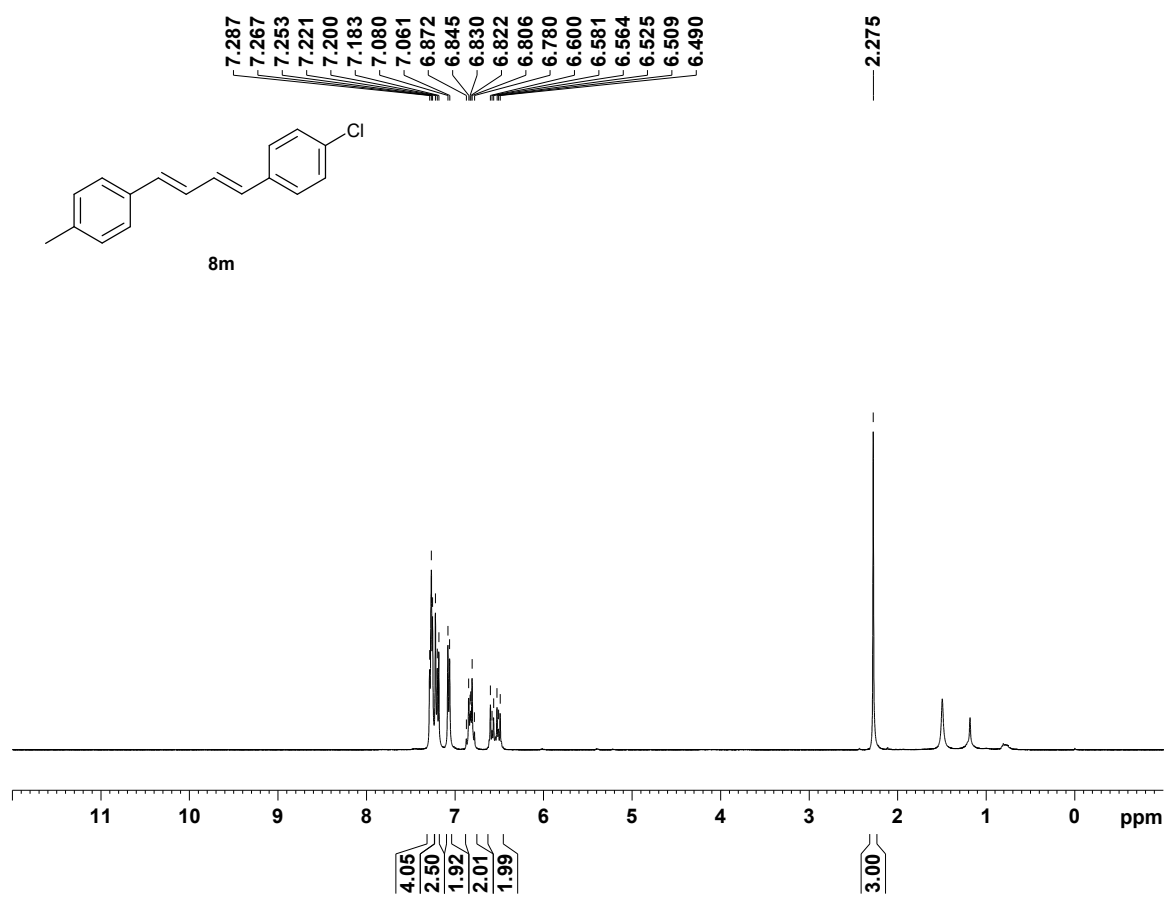


Figure S81. ¹H NMR (400 MHz, CDCl₃) spectrum of **8m**

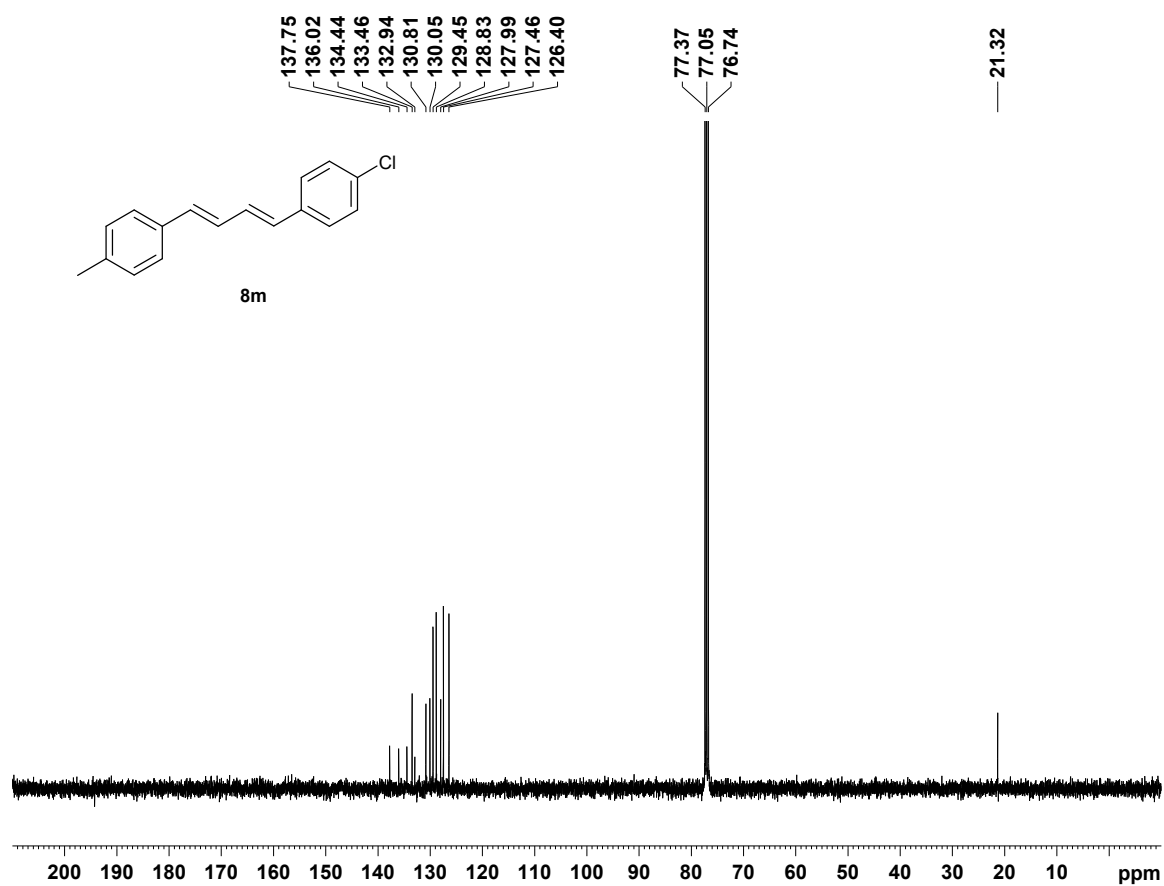


Figure S82. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8m**

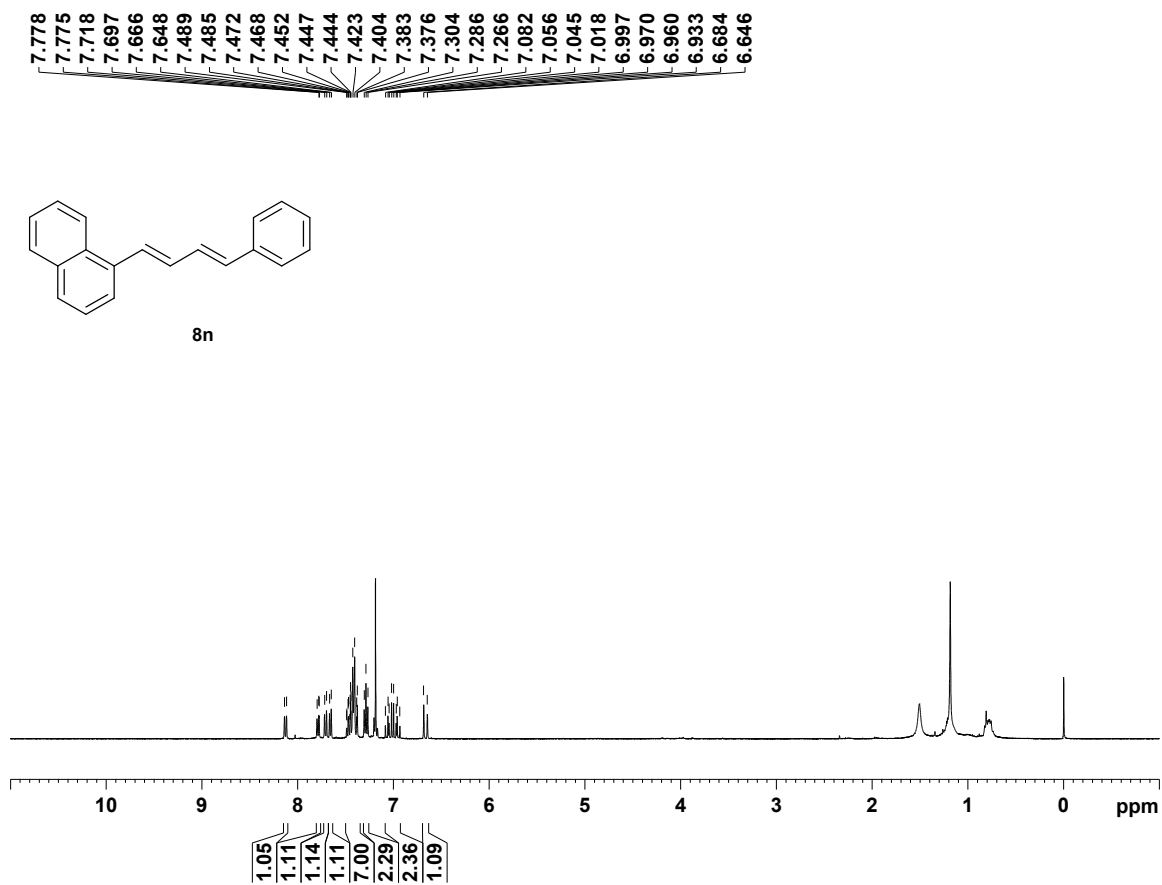


Figure S83. ¹H NMR (400 MHz, CDCl₃) spectrum of **8n**

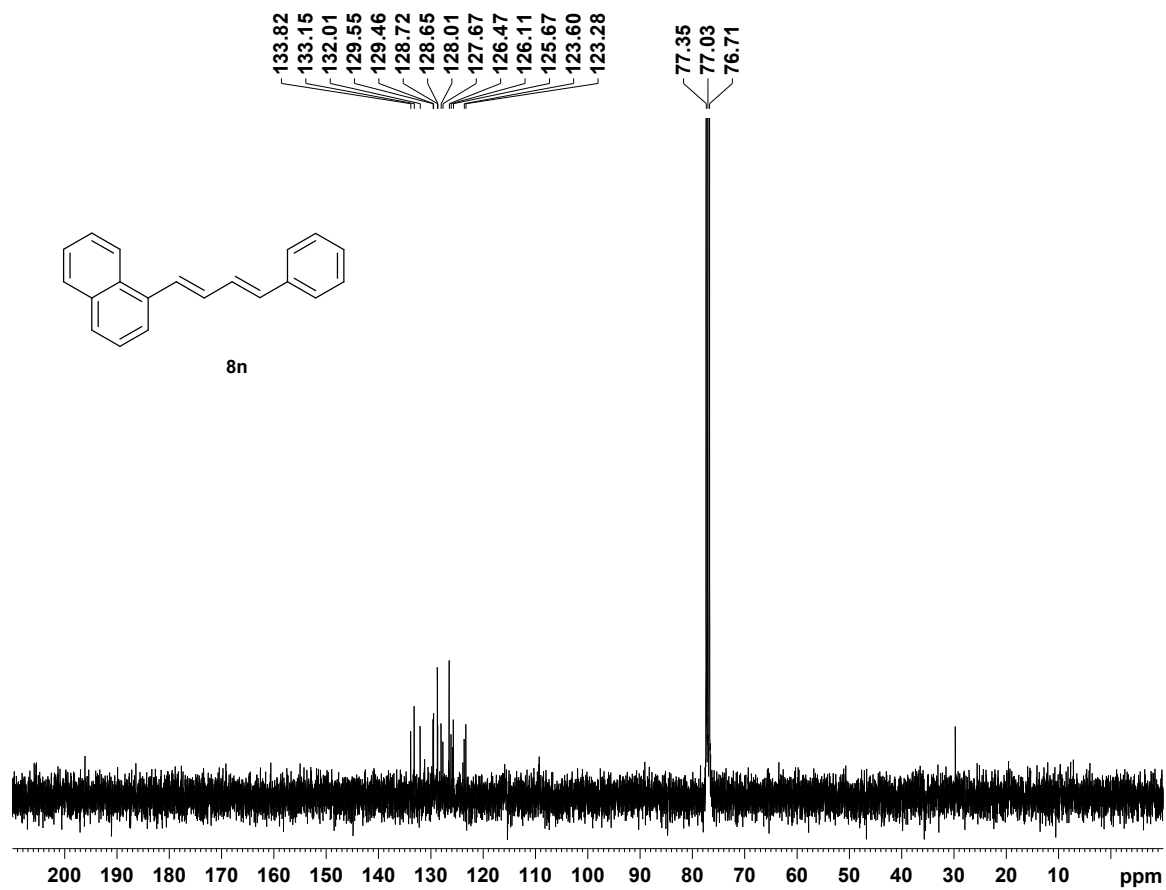


Figure S84. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8n**

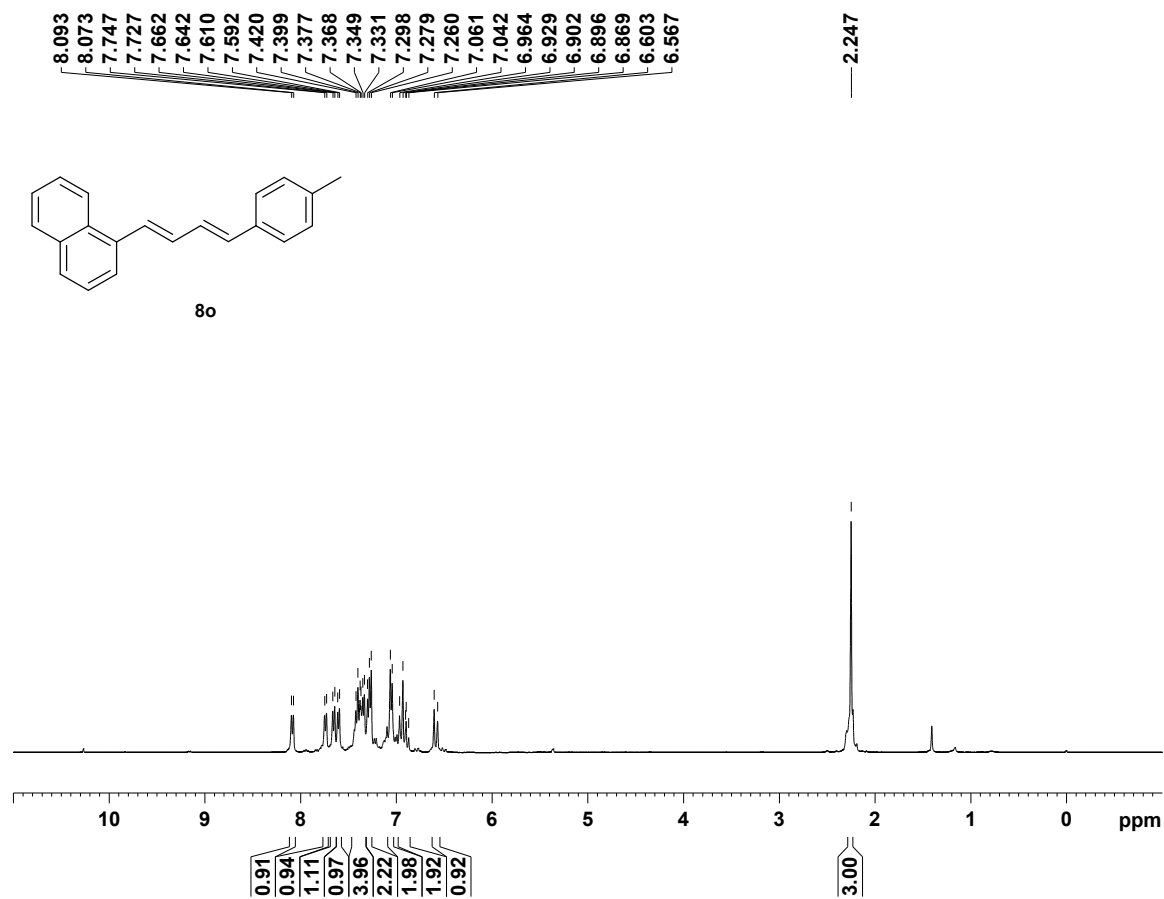


Figure S85. ¹H NMR (400 MHz, CDCl₃) spectrum of **8o**

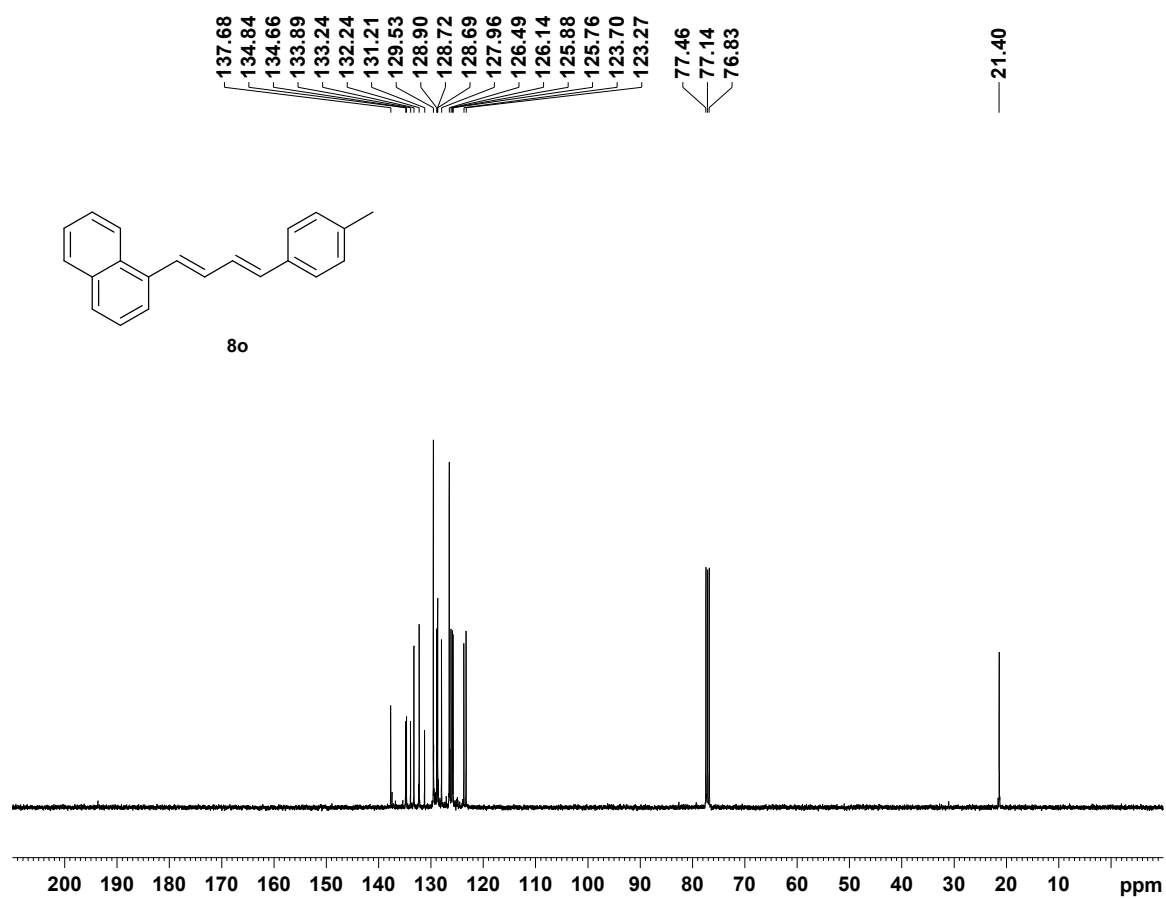


Figure S86. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8o**

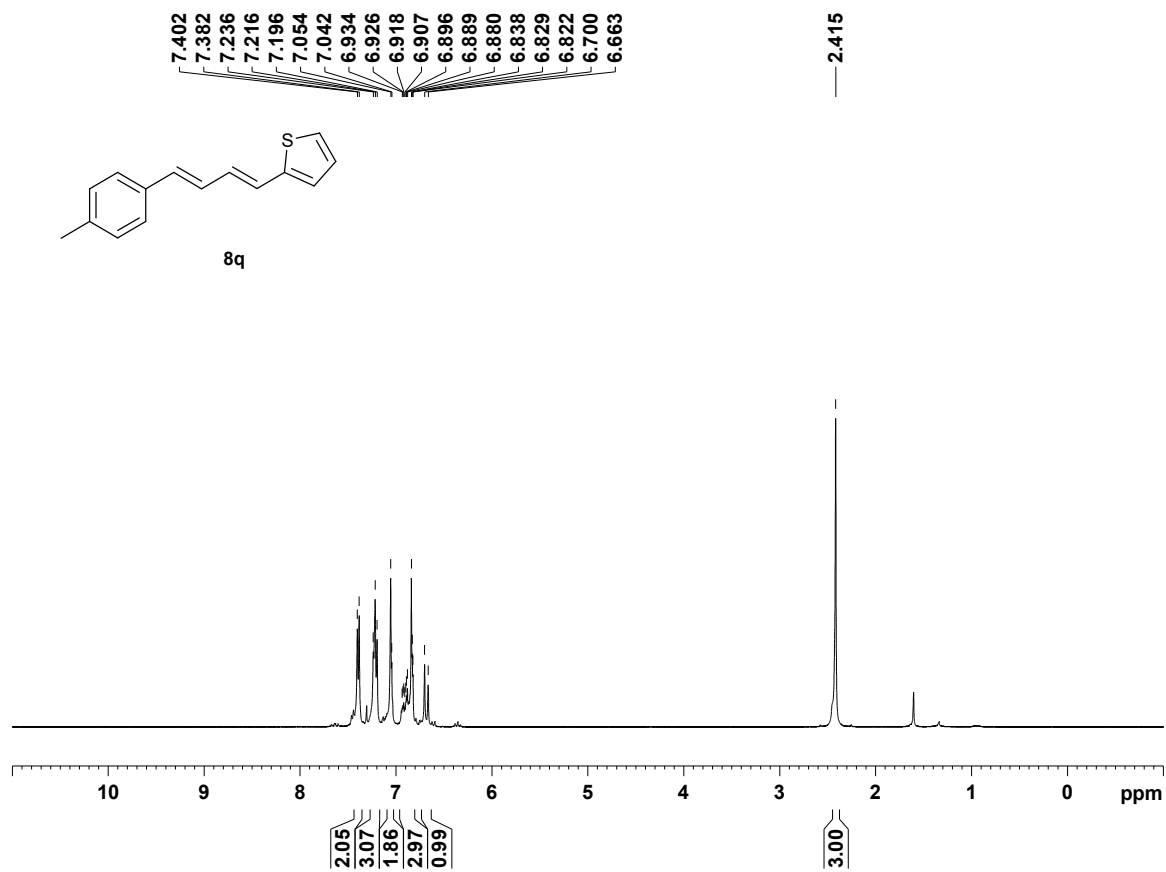


Figure S87. ¹H NMR (400 MHz, CDCl₃) spectrum of **8q**

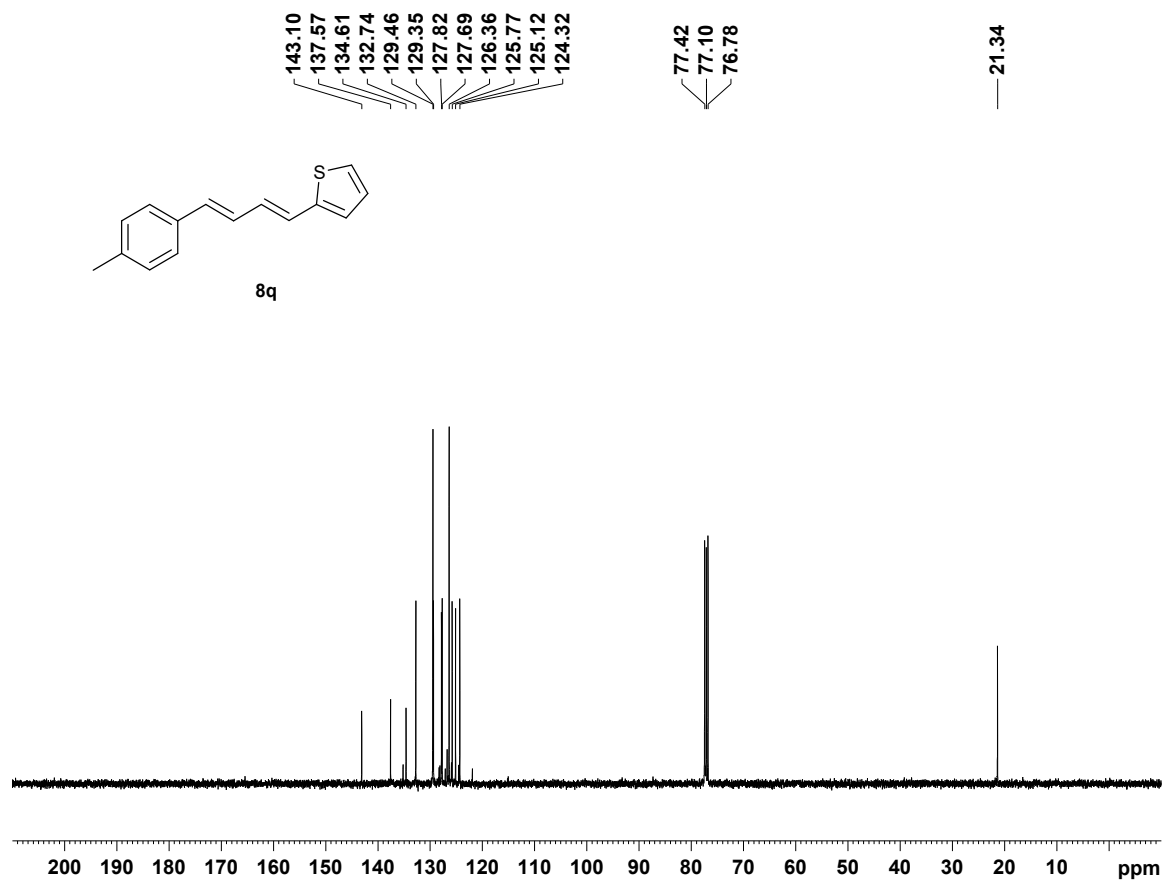


Figure S88. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8q**

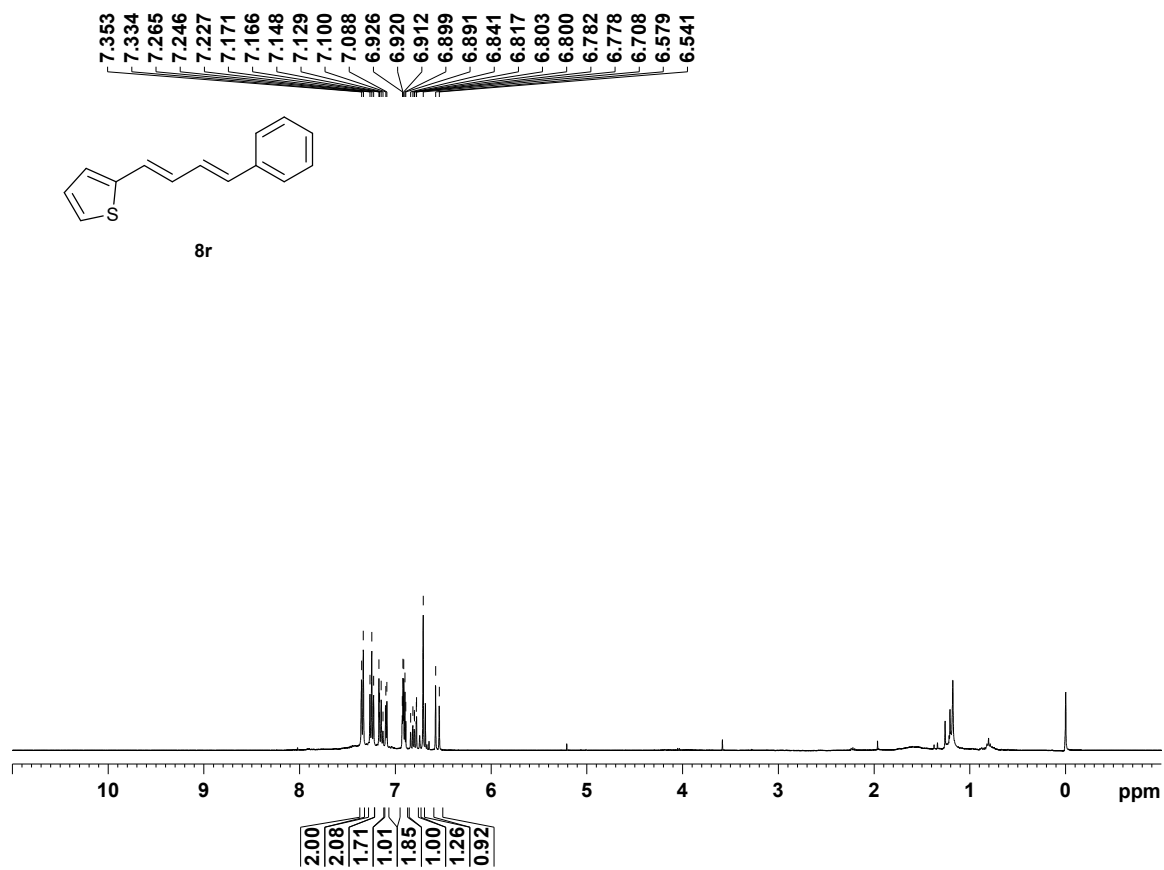


Figure S89. ¹H NMR (400 MHz, CDCl₃) spectrum of **8r**

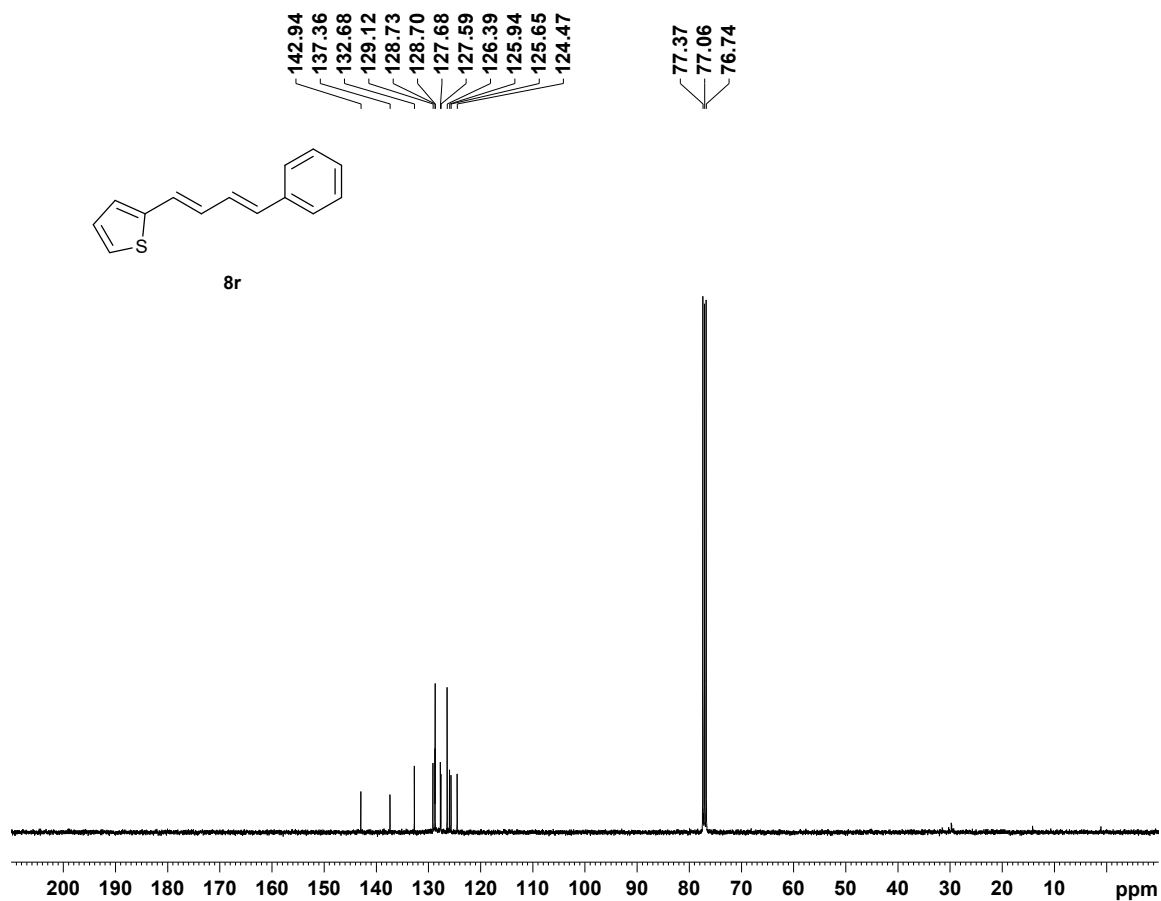


Figure S90. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8r**

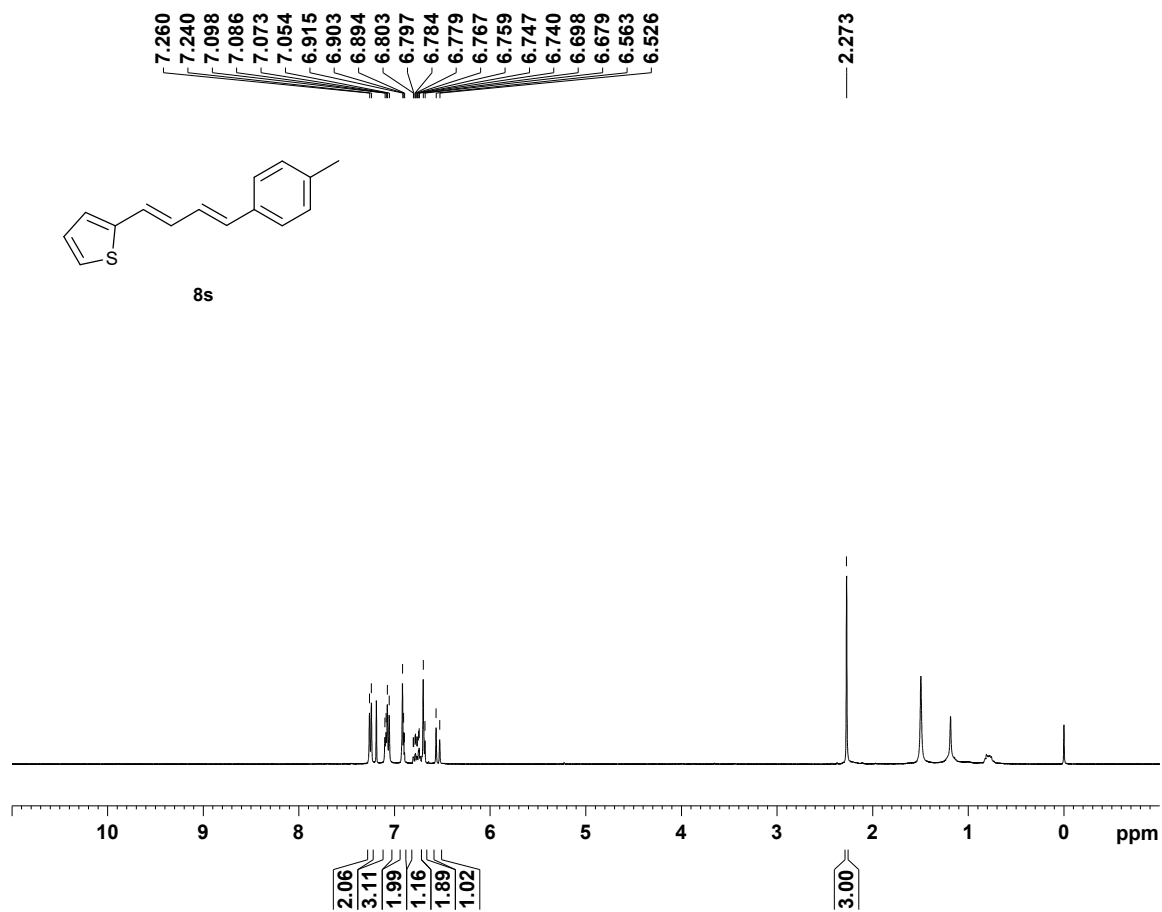


Figure S91. ¹H NMR (400 MHz, CDCl₃) spectrum of **8s**

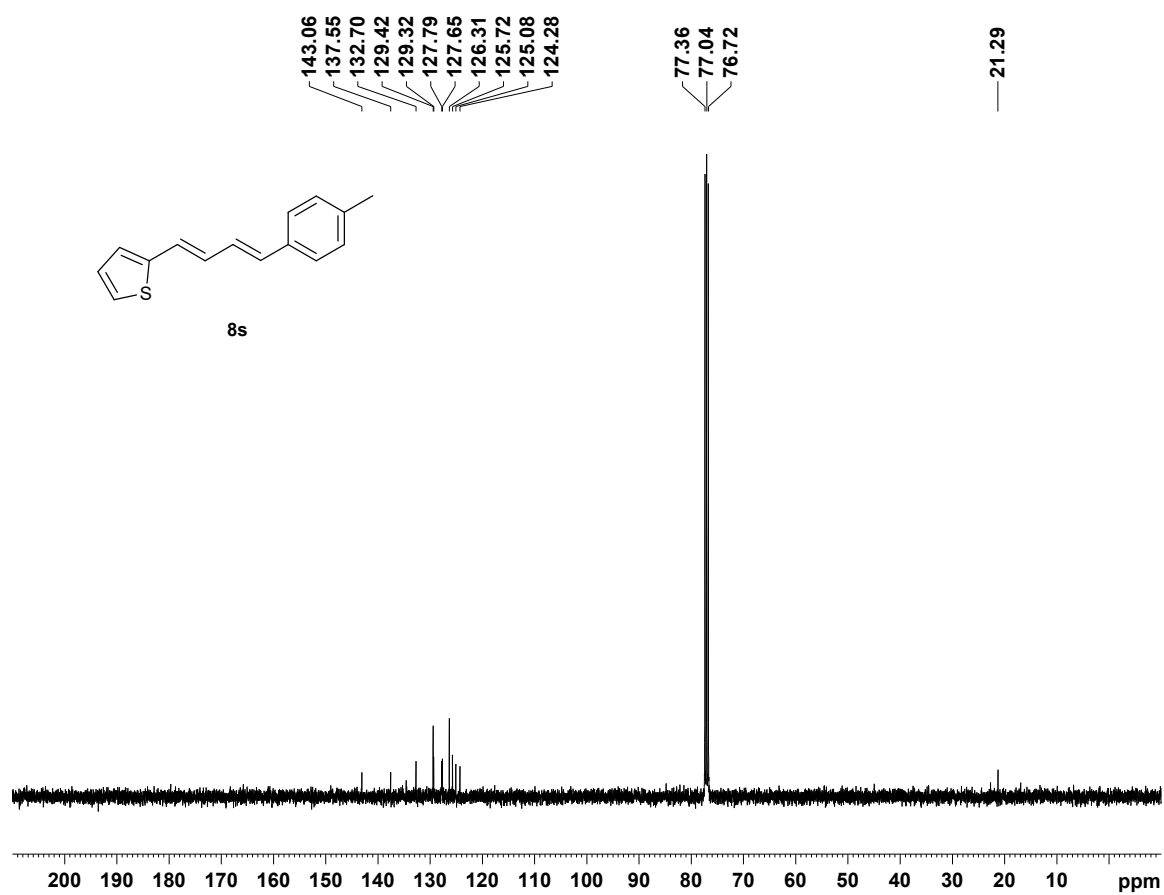


Figure S92. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **8s**

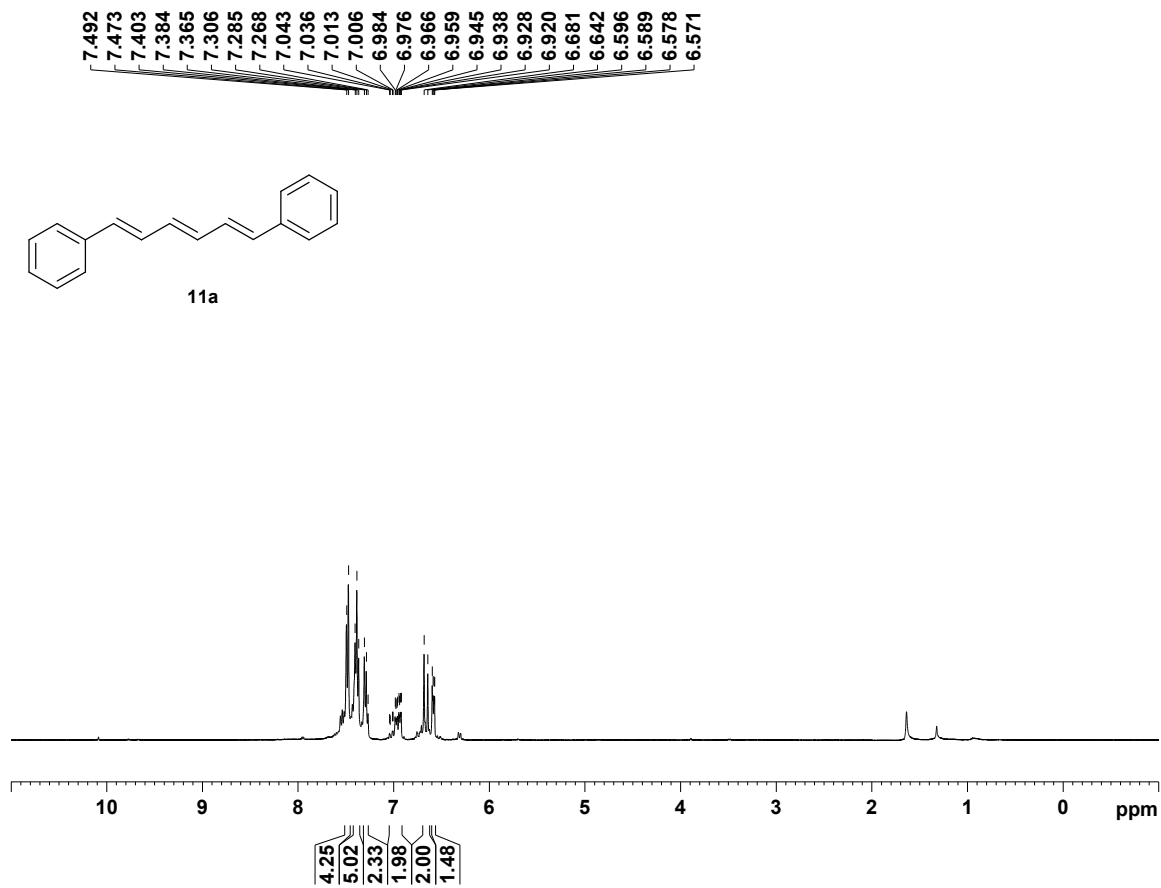


Figure S93. ¹H NMR (400 MHz, CDCl₃) spectrum of 11a

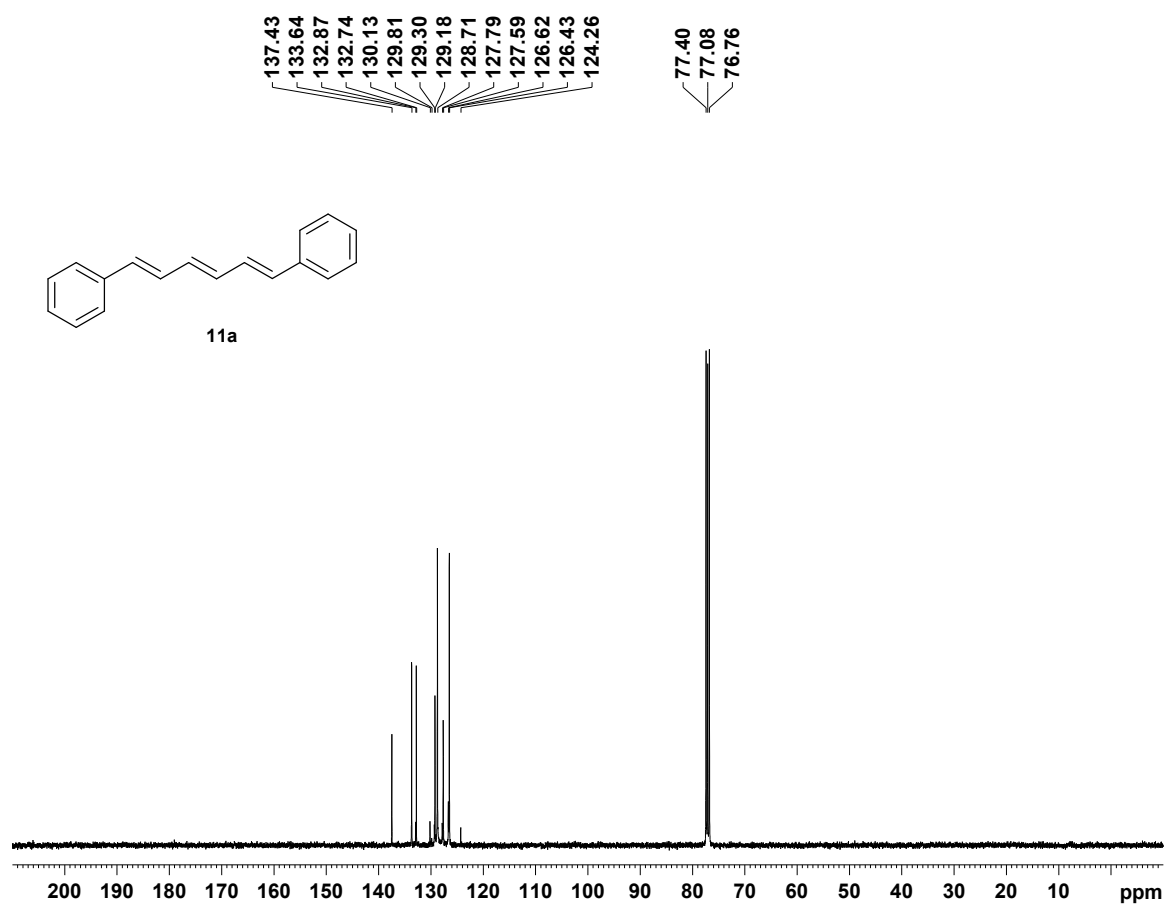


Figure S94. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of 11a

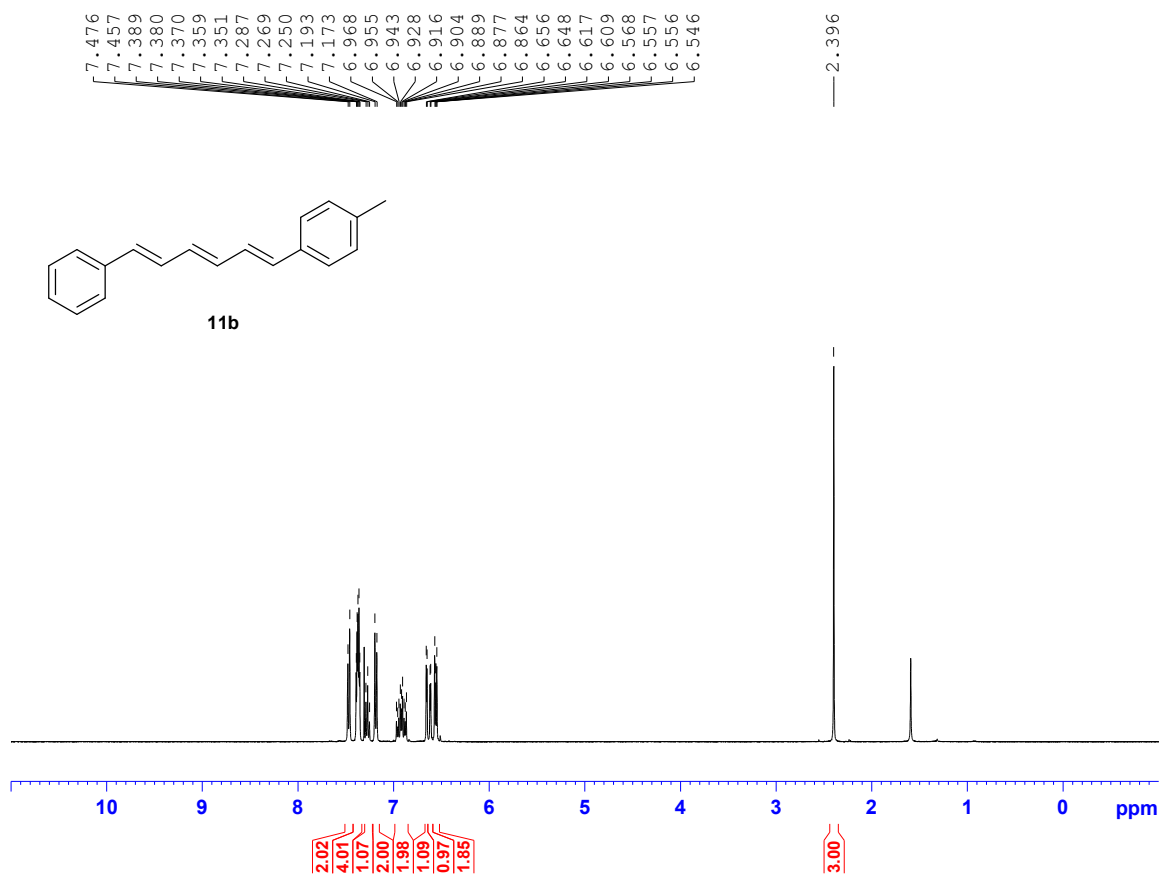


Figure S95. ¹H NMR (400 MHz, CDCl₃) spectrum of **11b**

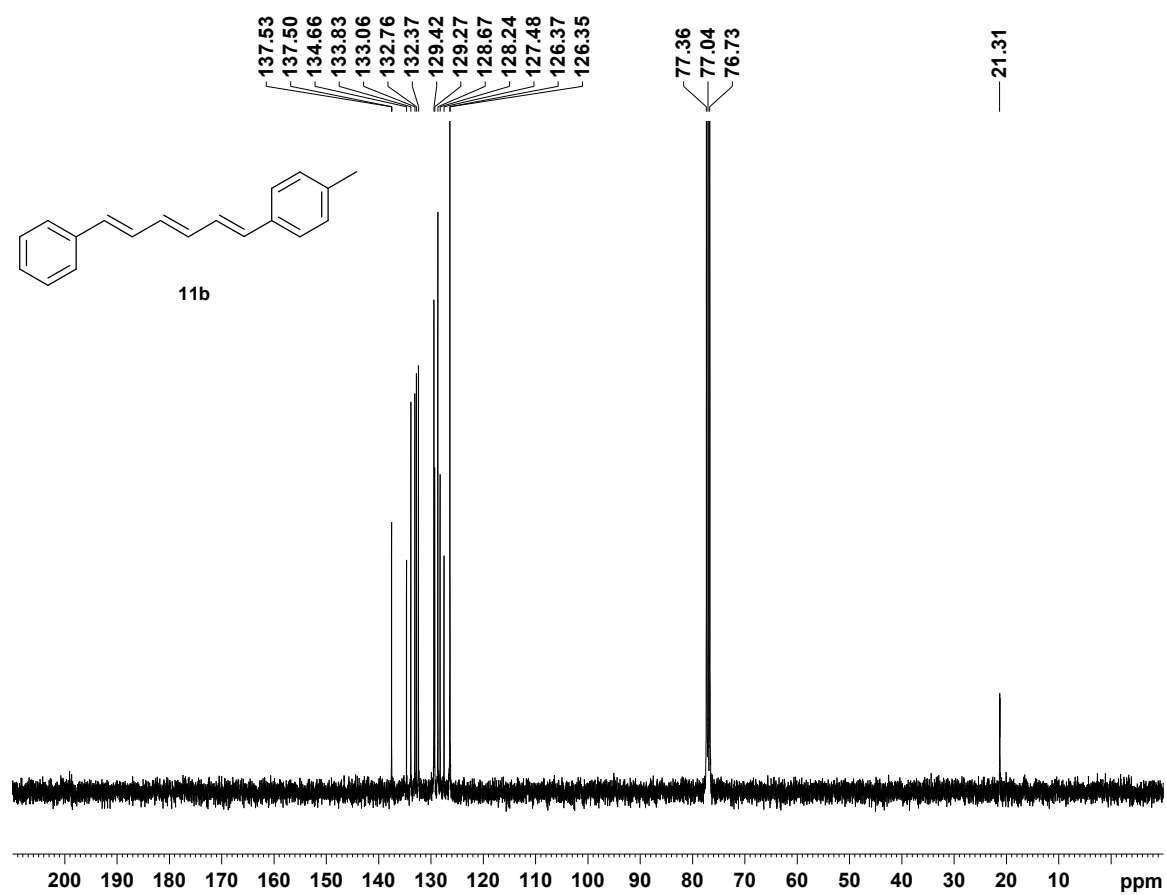


Figure S96. $^{13}\text{C}\{^1\text{H}\}$ NMR (100 MHz, CDCl_3) spectrum of **11b**

X-Ray structure of 8h

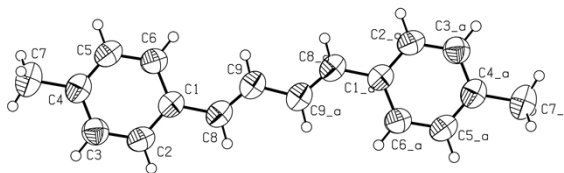


Figure S97. ORTEP plot of the crystal structure of **8h** (at 30% probability level)

Crystal structure determination: Single crystals suitable for X-ray studies were grown by recrystallization of **8h** from hexane/DCM (9:1). X-ray data were collected on a CCD diffractometer using graphite-monochromated Mo-K α radiation.

Table 1. Selected crystal parameters and refinement metrics for **8h**

CCDC Number for 8h	2338084
Chemical formula	C ₁₈ H ₁₈
Formula weight	234.14
Crystal system	Monoclinic
Space group	P 2 ₁ /c
a (Å)	12.3661(6) Å
b (Å)	7.7969(4) Å
c (Å)	7.2005(3) Å
α (°)	90 deg
β (°)	92.930(4) deg
γ (°)	90 deg
Volume (Å ³)	693.35(6)
Z	2
R, wR2	0.0539, 0.1719
Goodness-of-fit on F ²	1.122