

Supplementary Material

Synthesis of ten membered di-oxa-carbocyclic annulated flavones and olefin tethered bisflavone derivatives—olefin ring closing / cross metathesis

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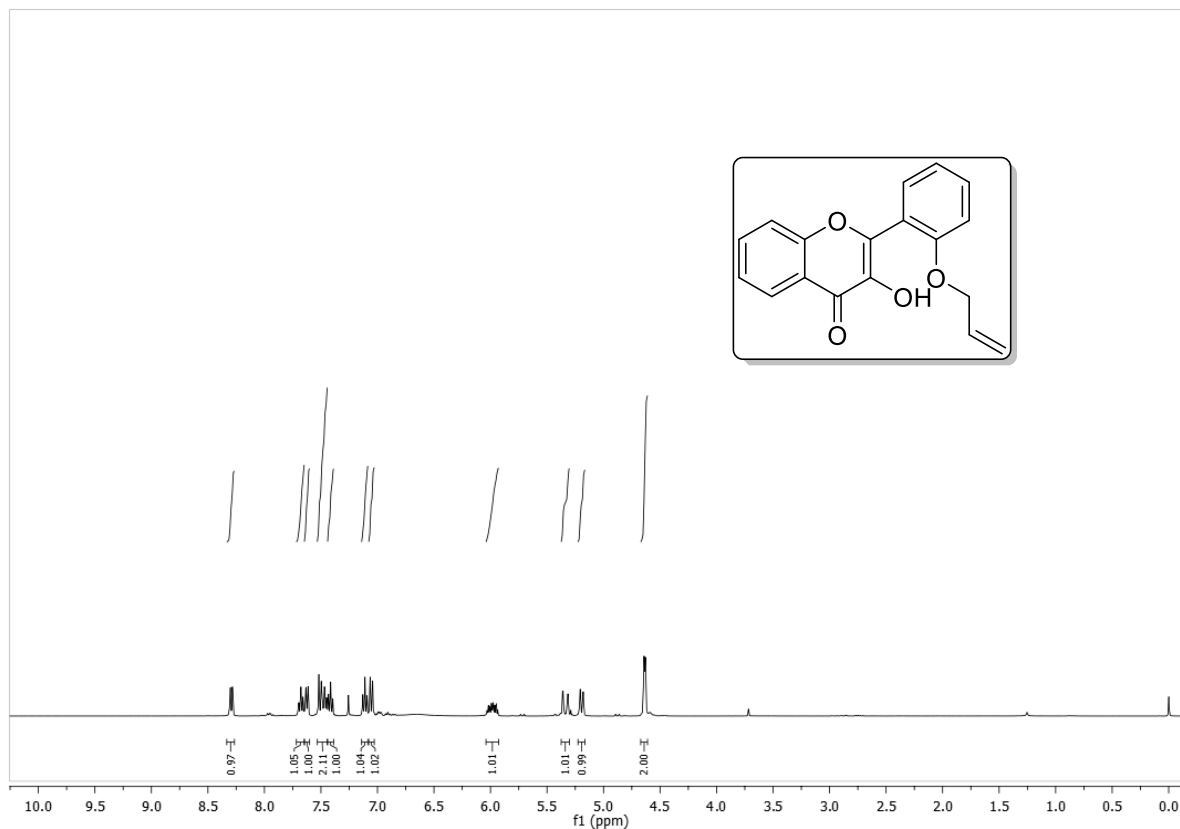


Figure S1. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-4a.

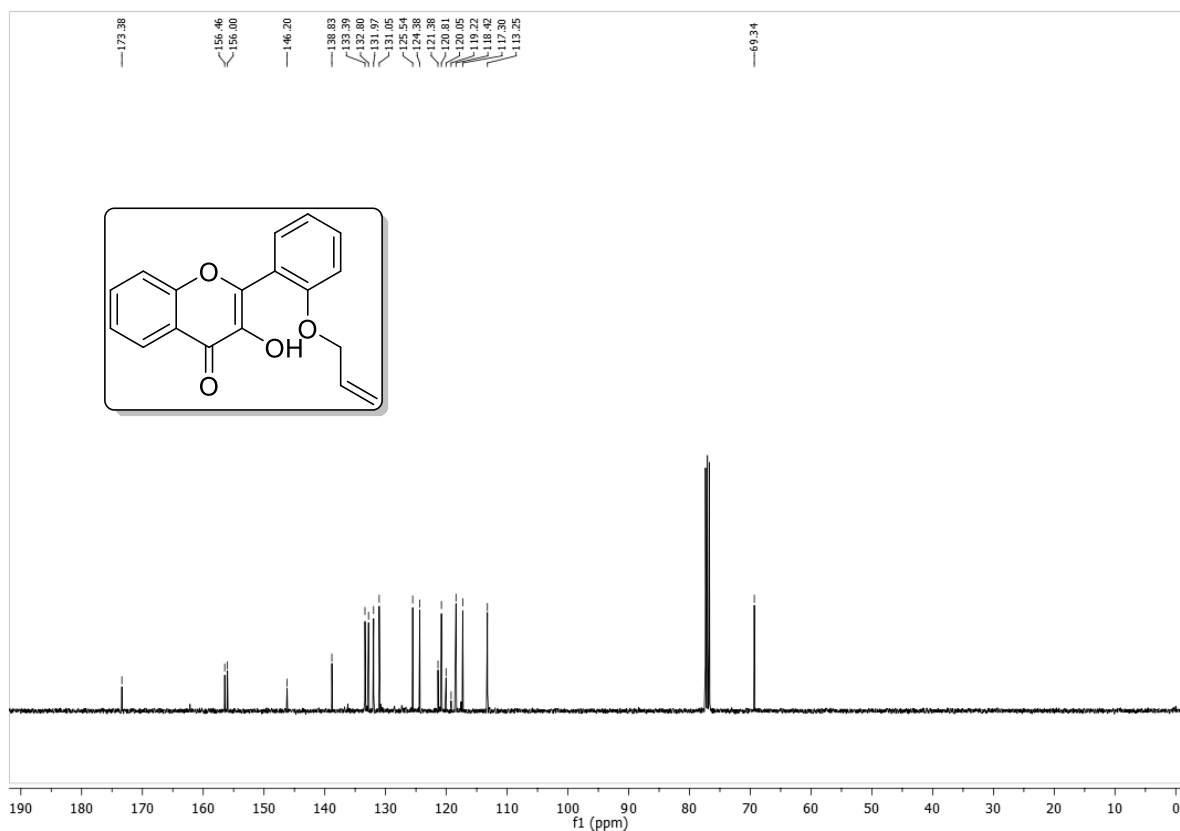


Figure S2. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-4a.

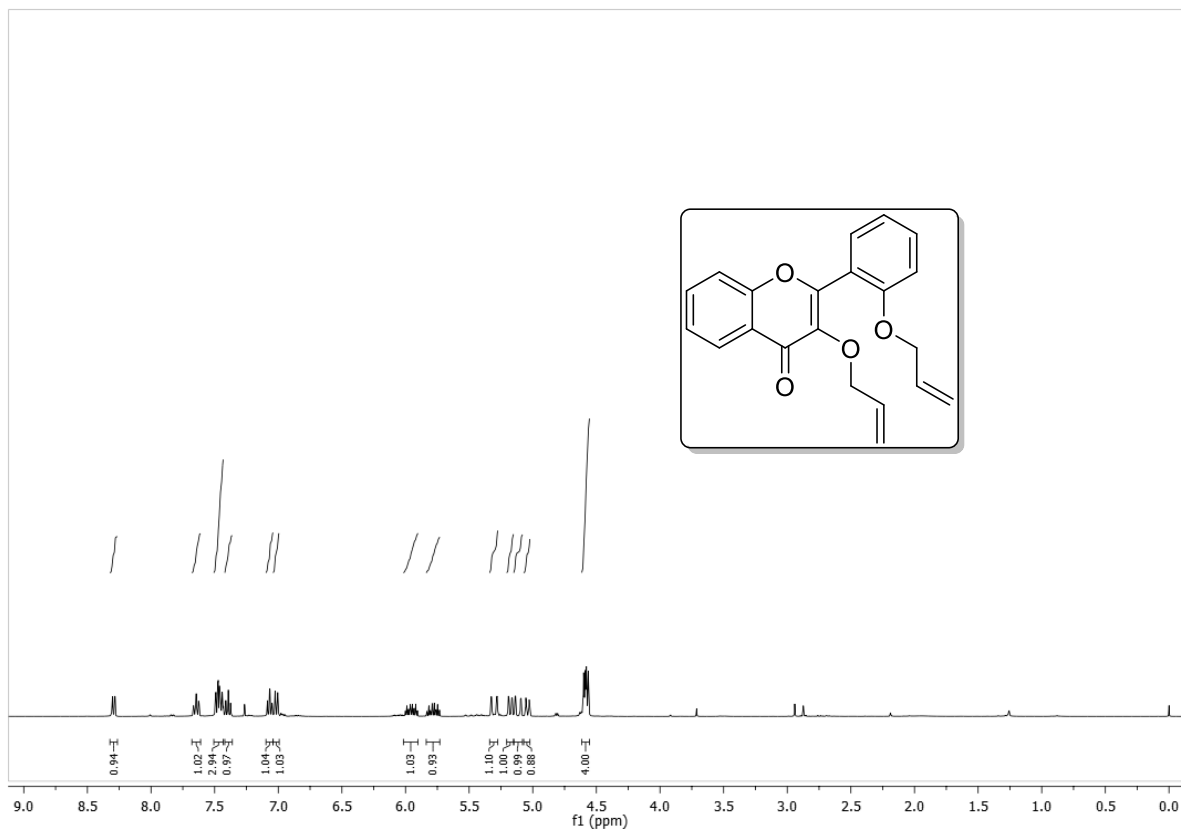


Figure S3. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-5a.

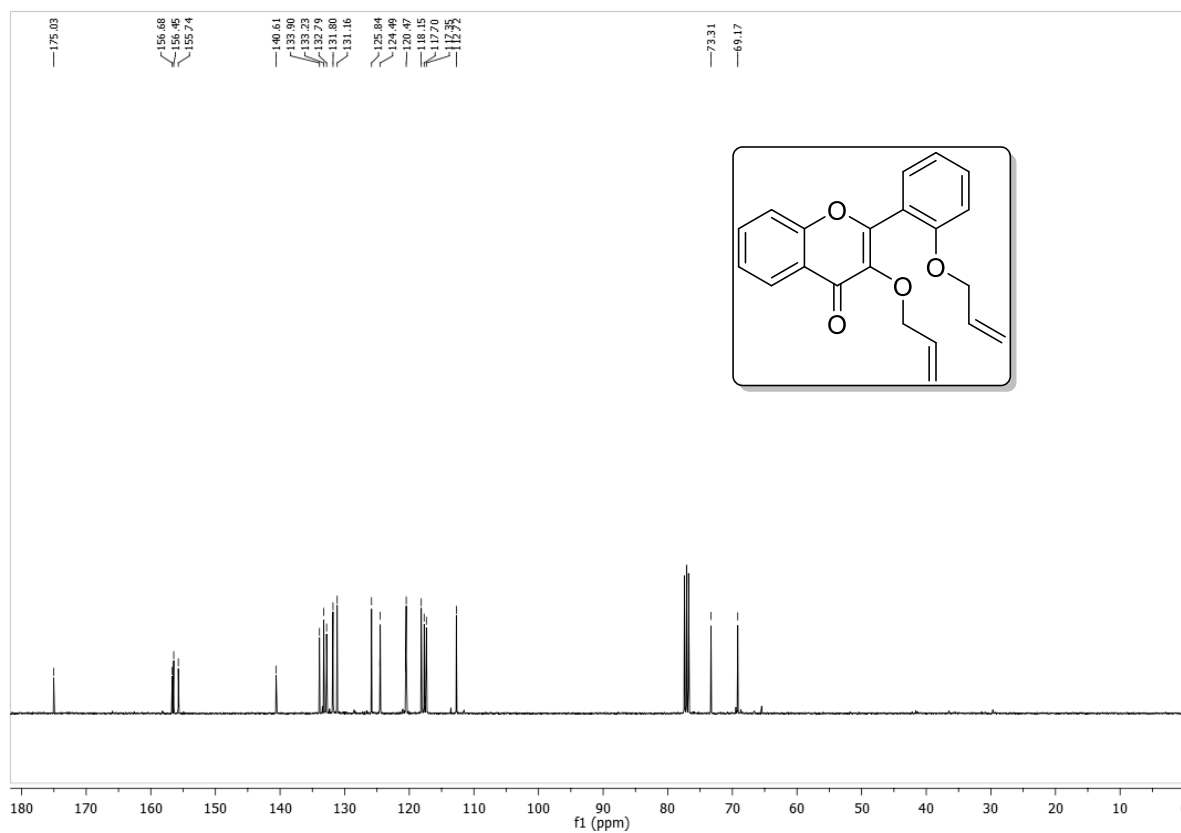


Figure S4. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-5a.

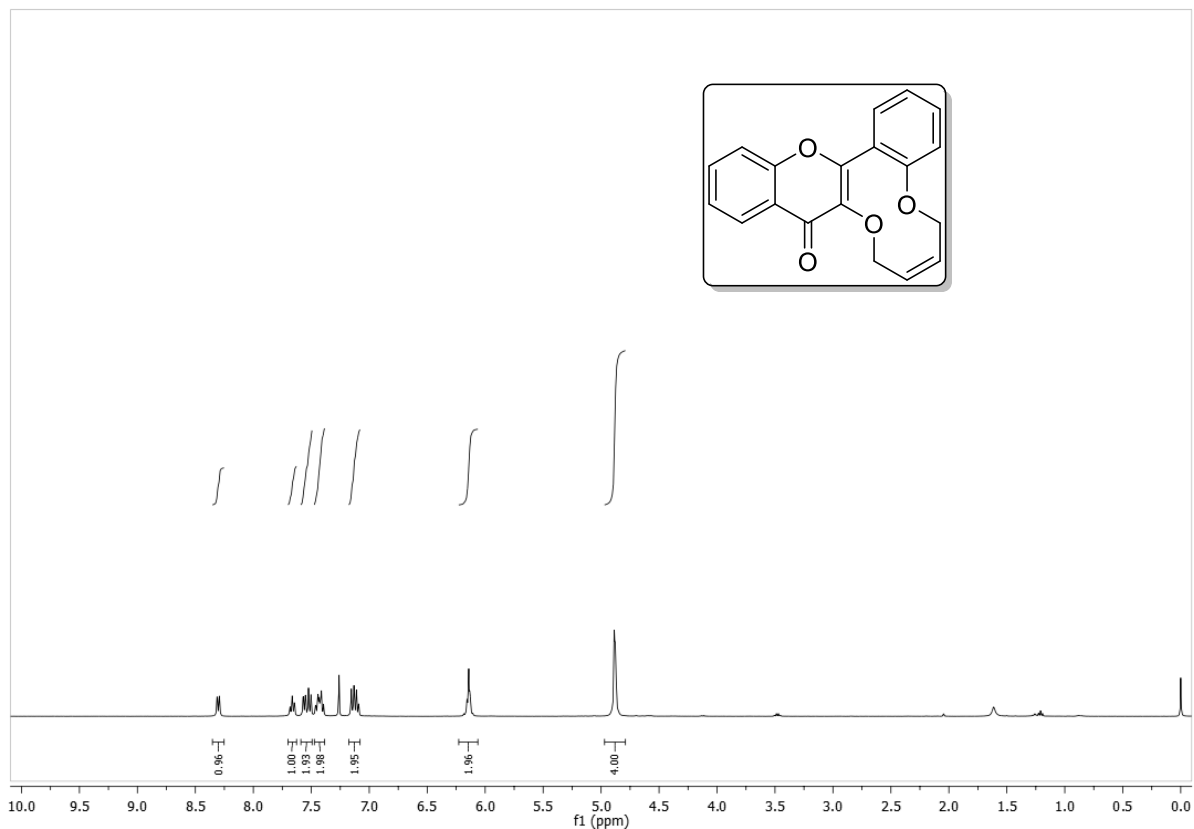


Figure S5. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-6a.

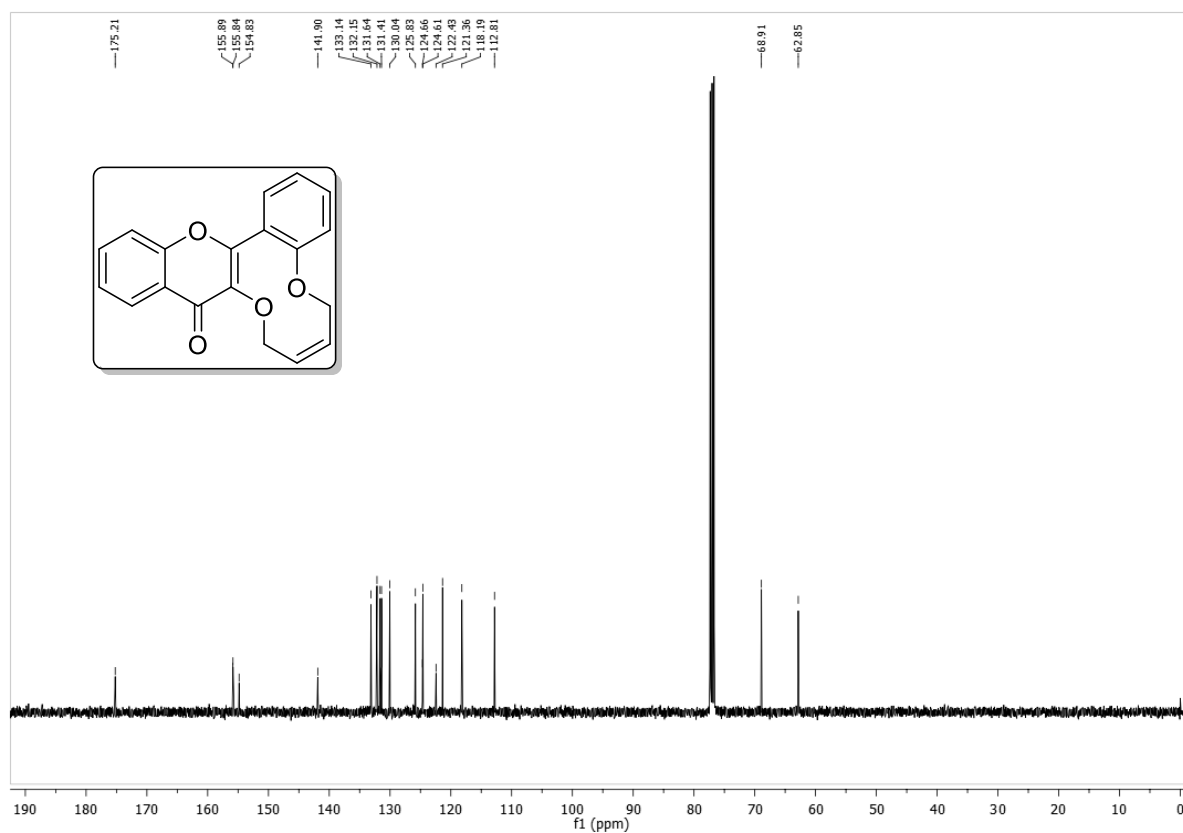


Figure S6. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-6a.

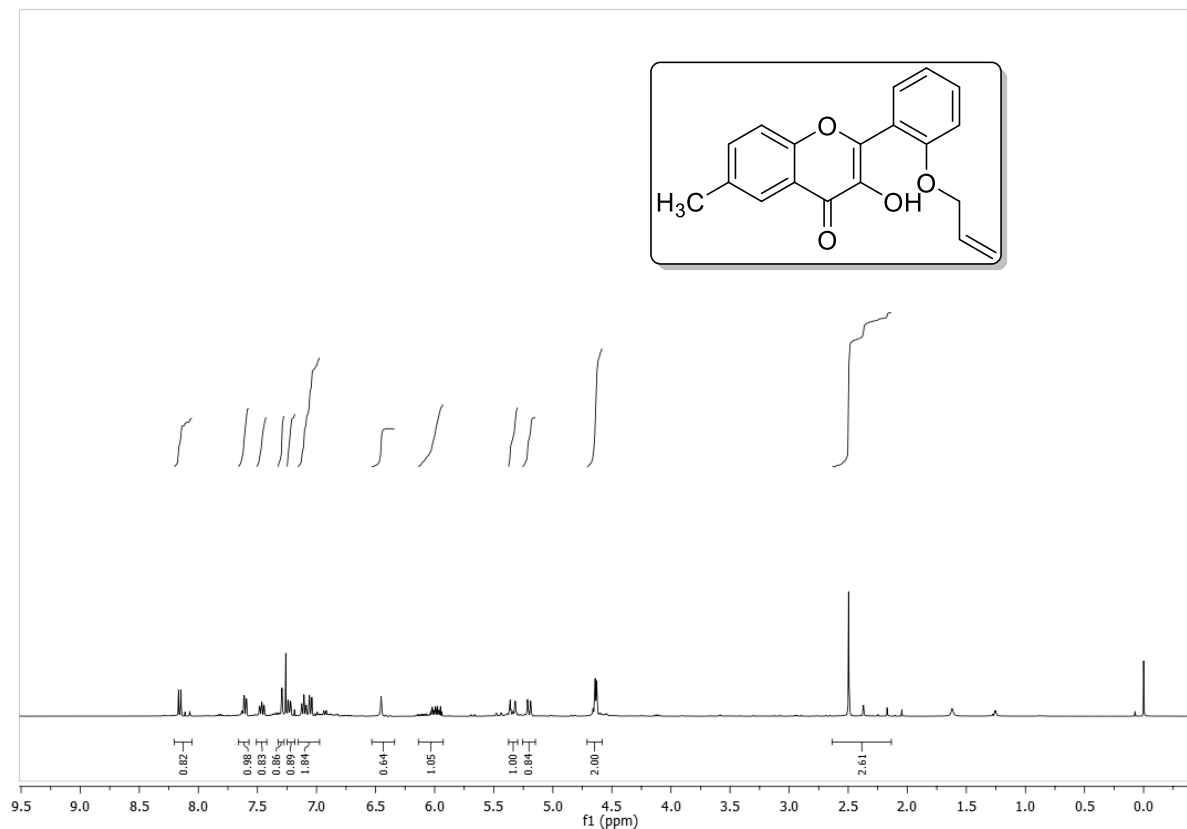


Figure S7. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-**4b**.

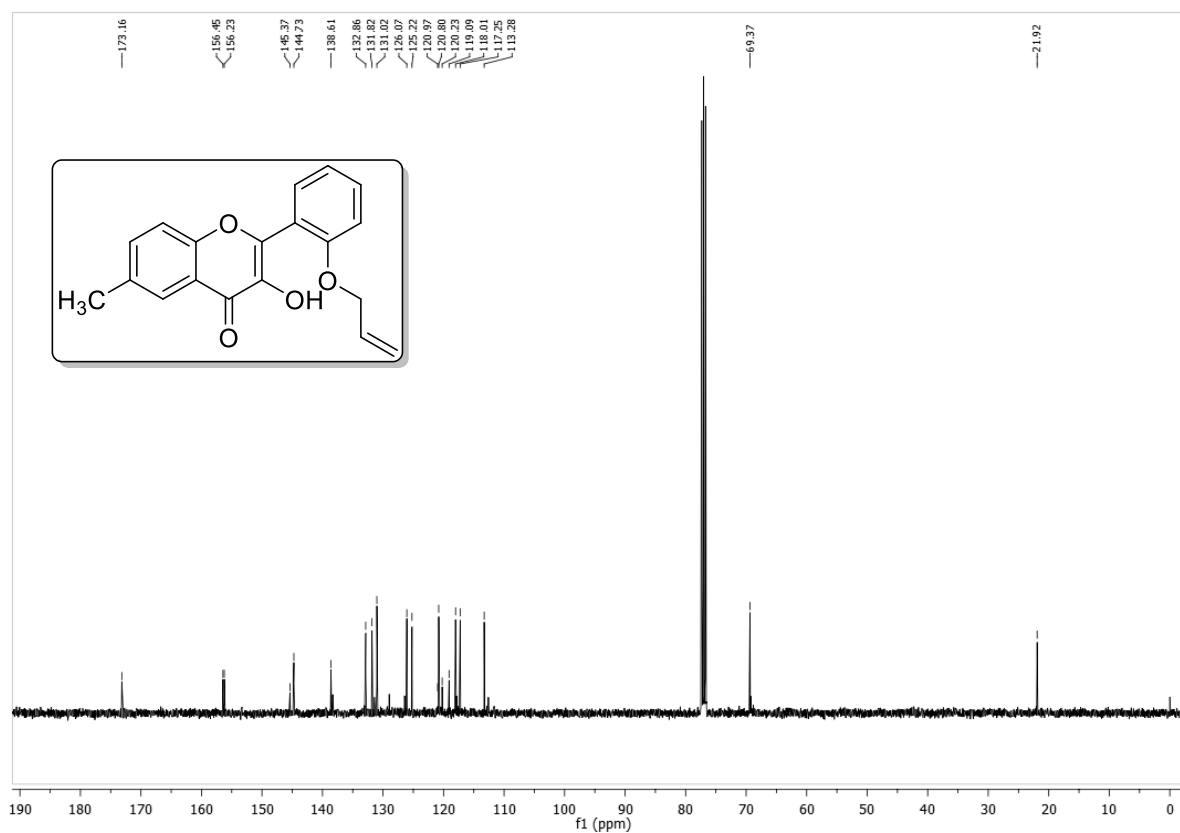


Figure S8. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-**4b**.

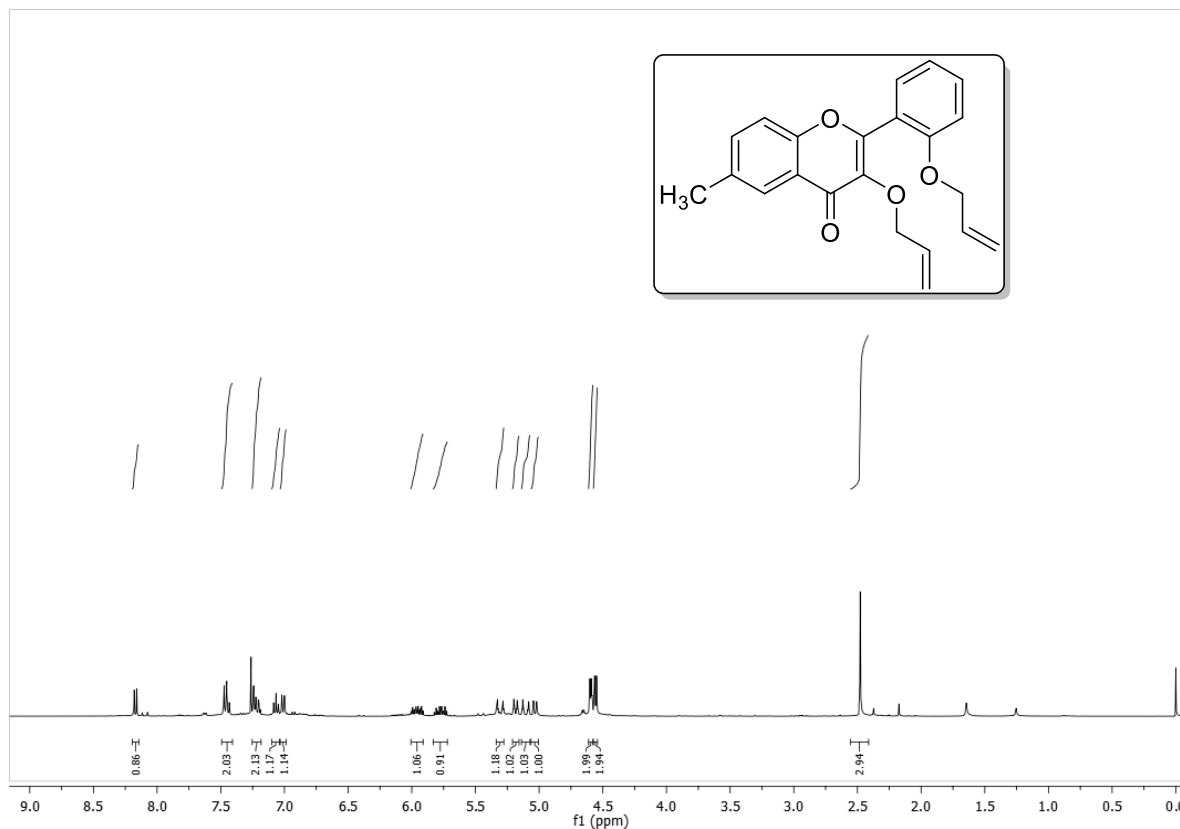


Figure S9. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-5b.

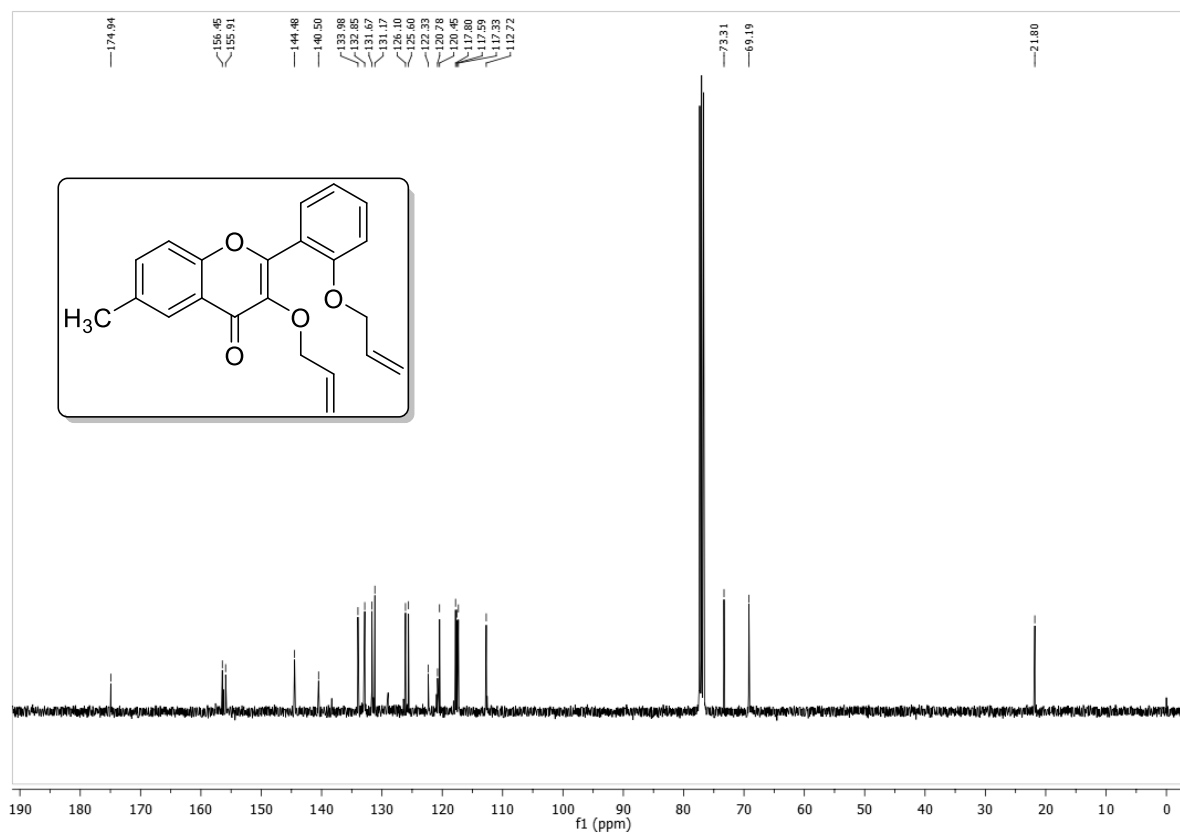


Figure S10. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-5b.

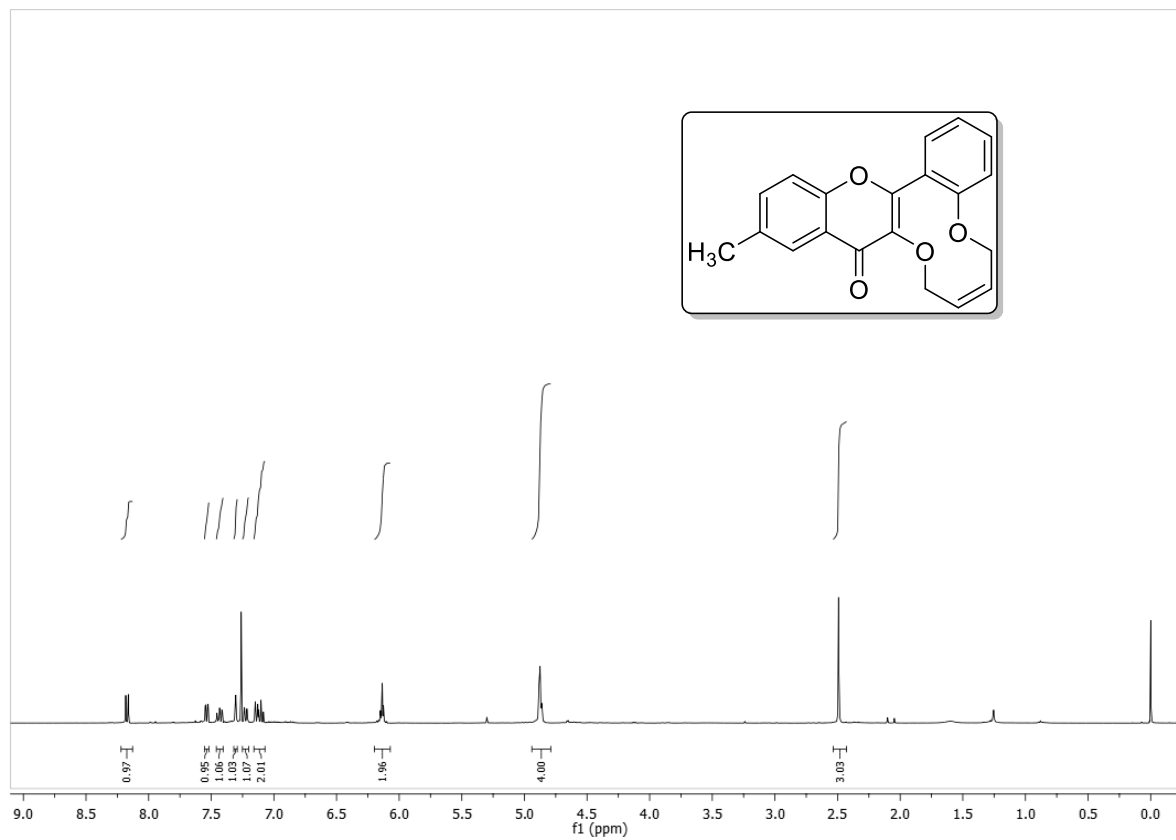


Figure S11. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-**6b**.

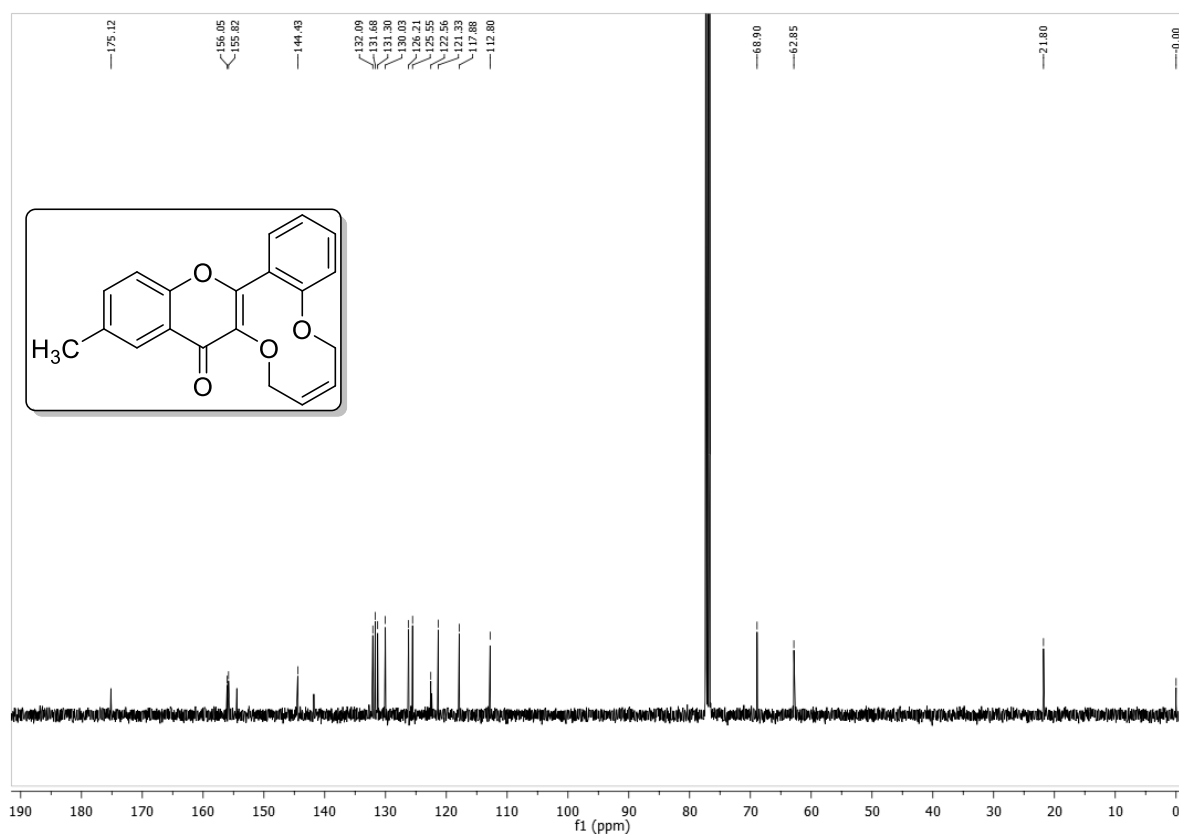


Figure S12. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-**6b**.

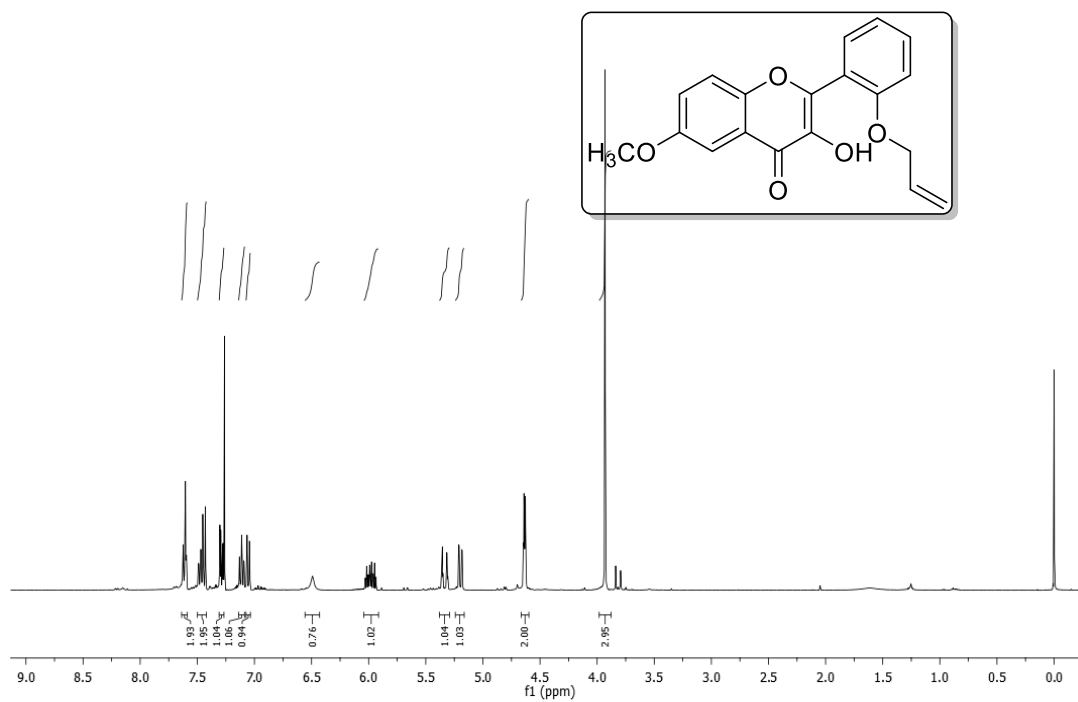


Figure S13. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-4c.

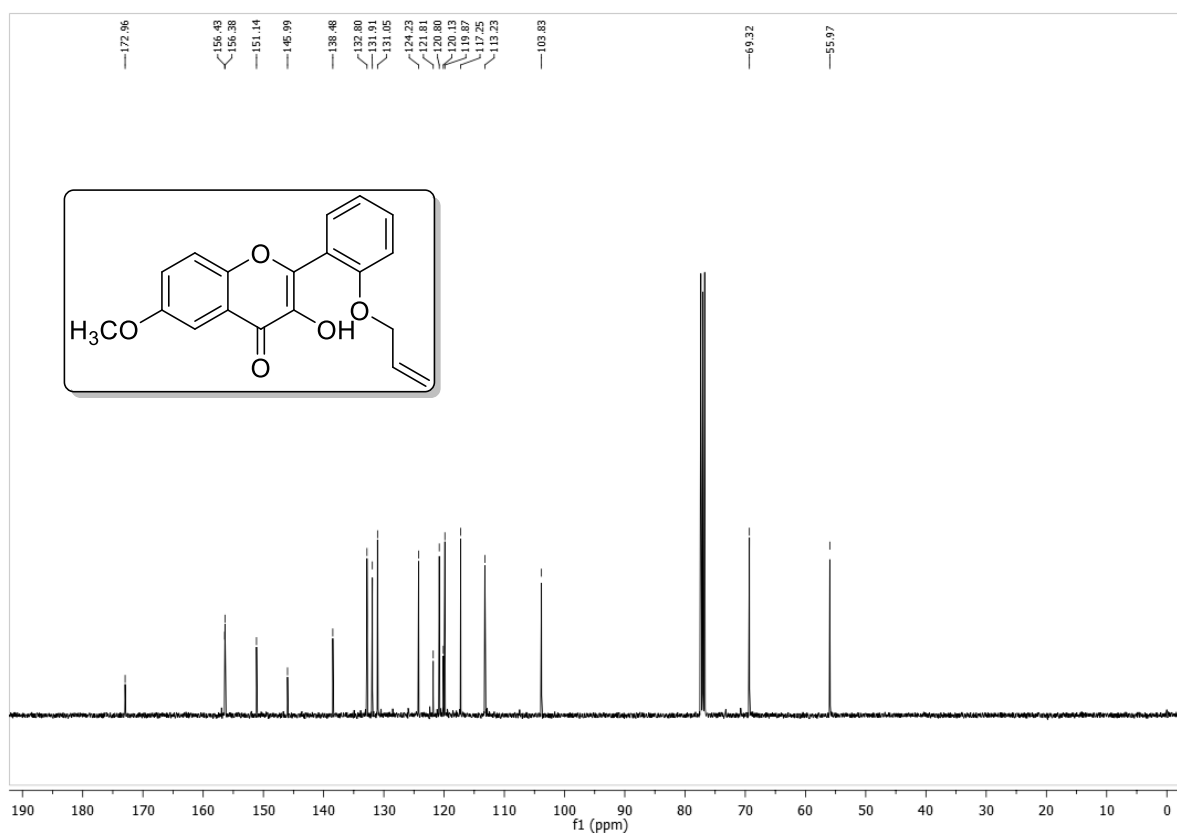


Figure S14. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-4c.

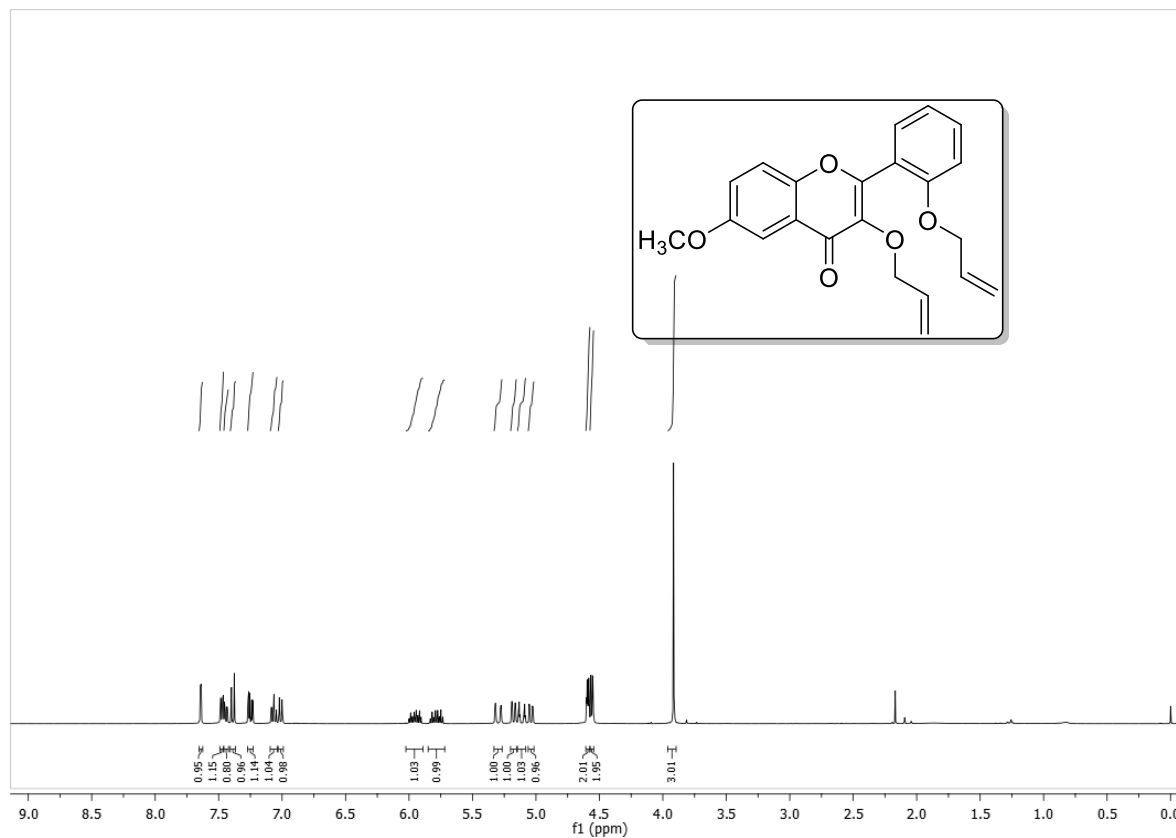


Figure S15. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-5c.

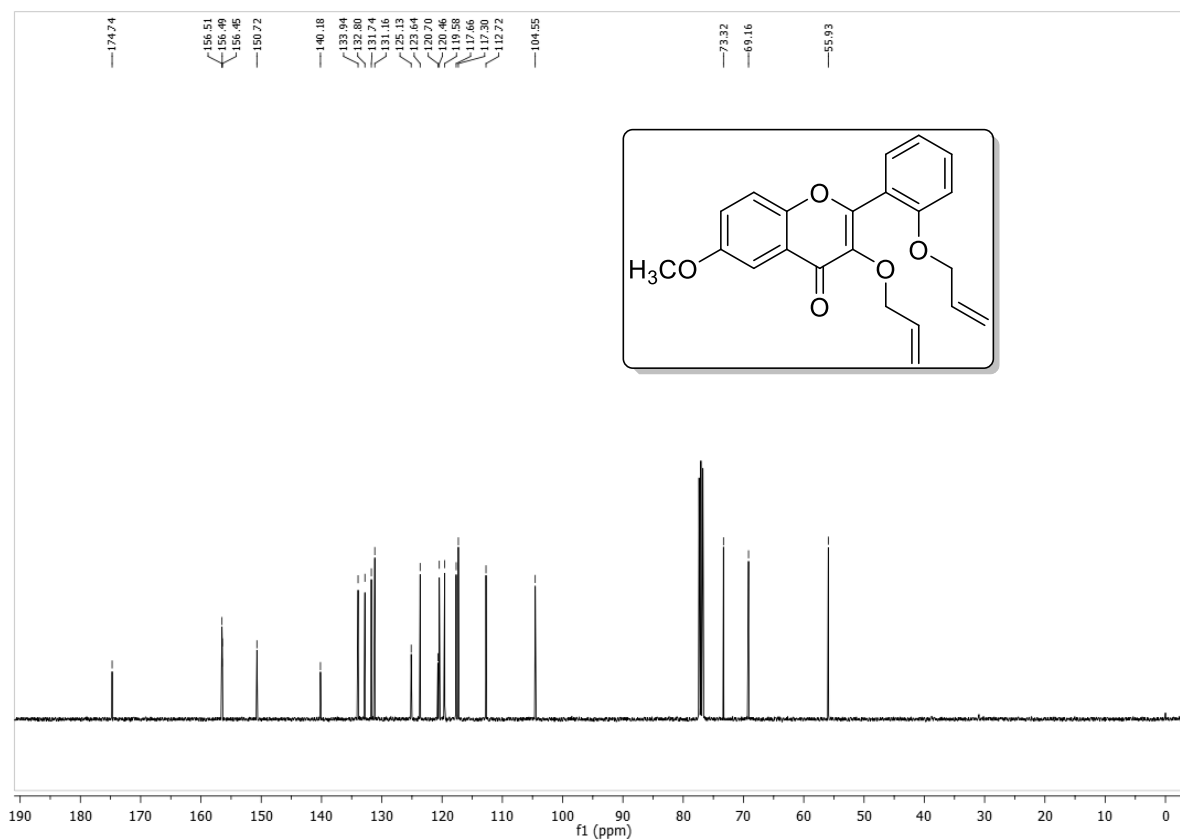


Figure S16. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-5c.

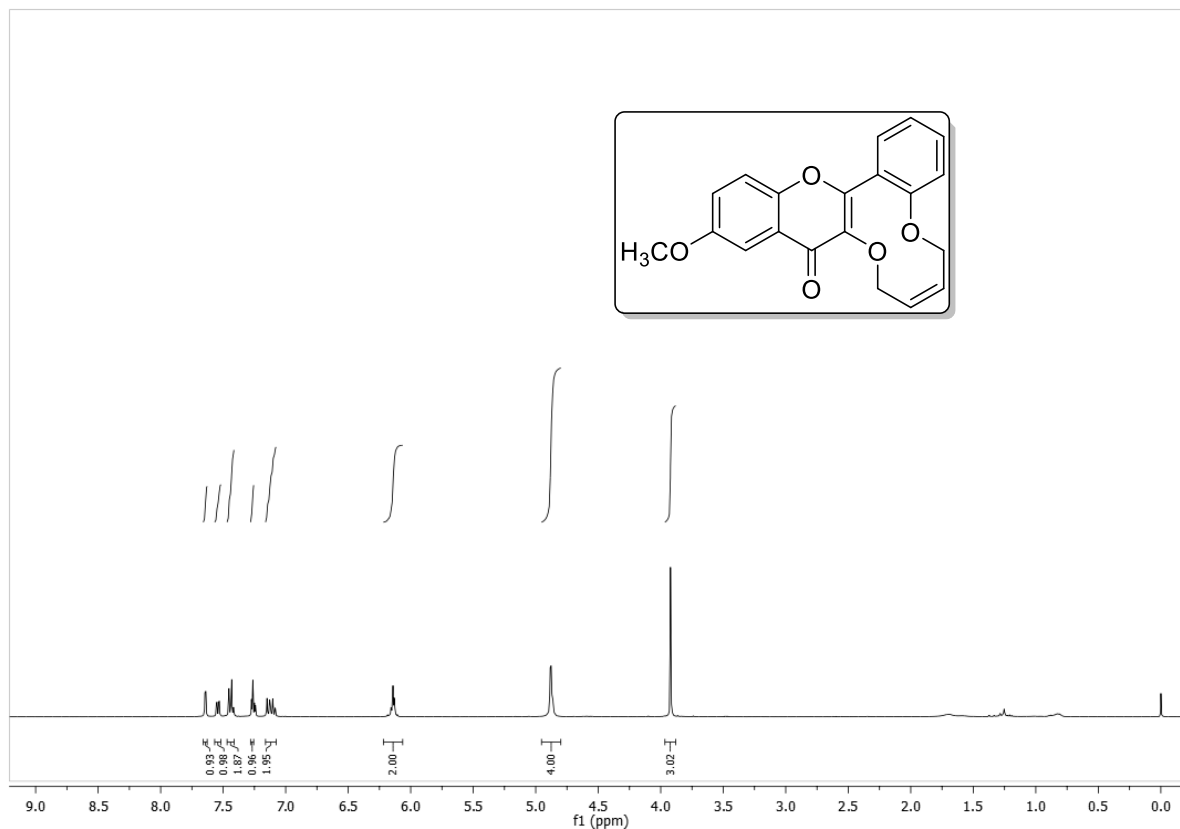


Figure S17. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-6c.

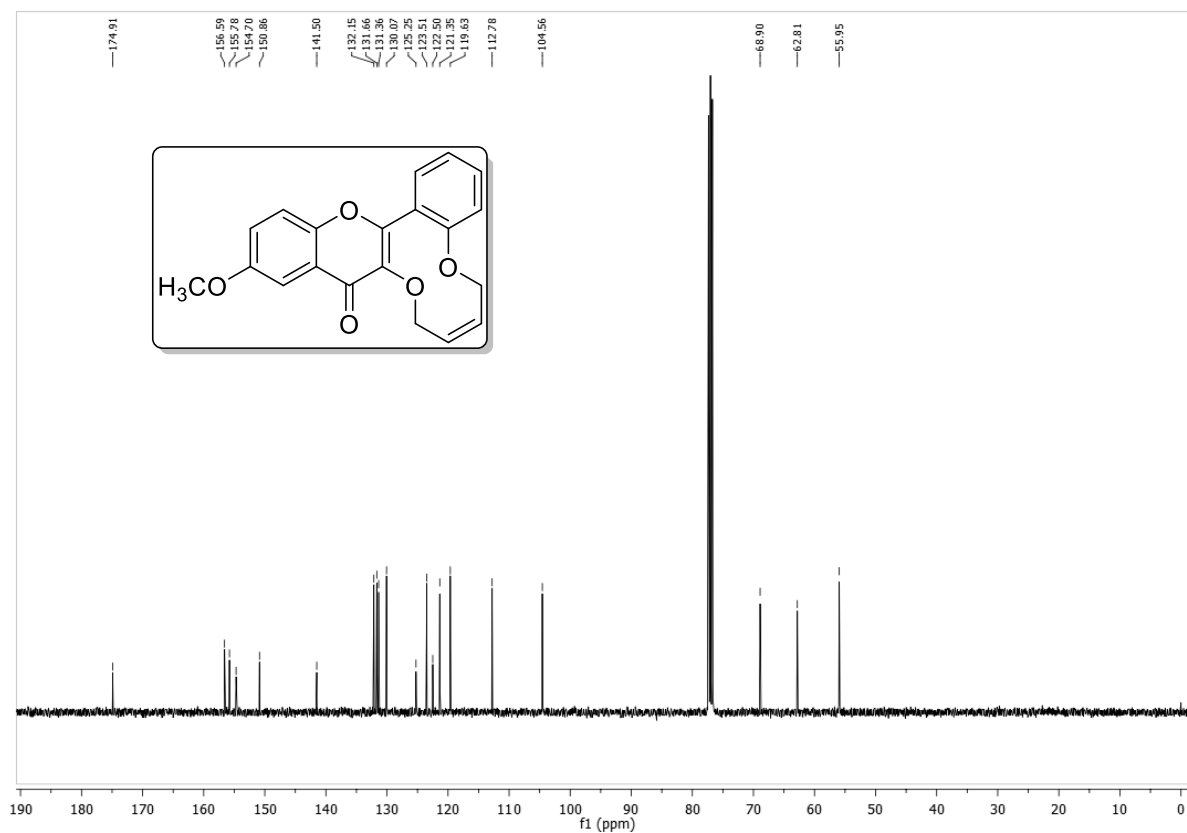


Figure S18. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-6c.

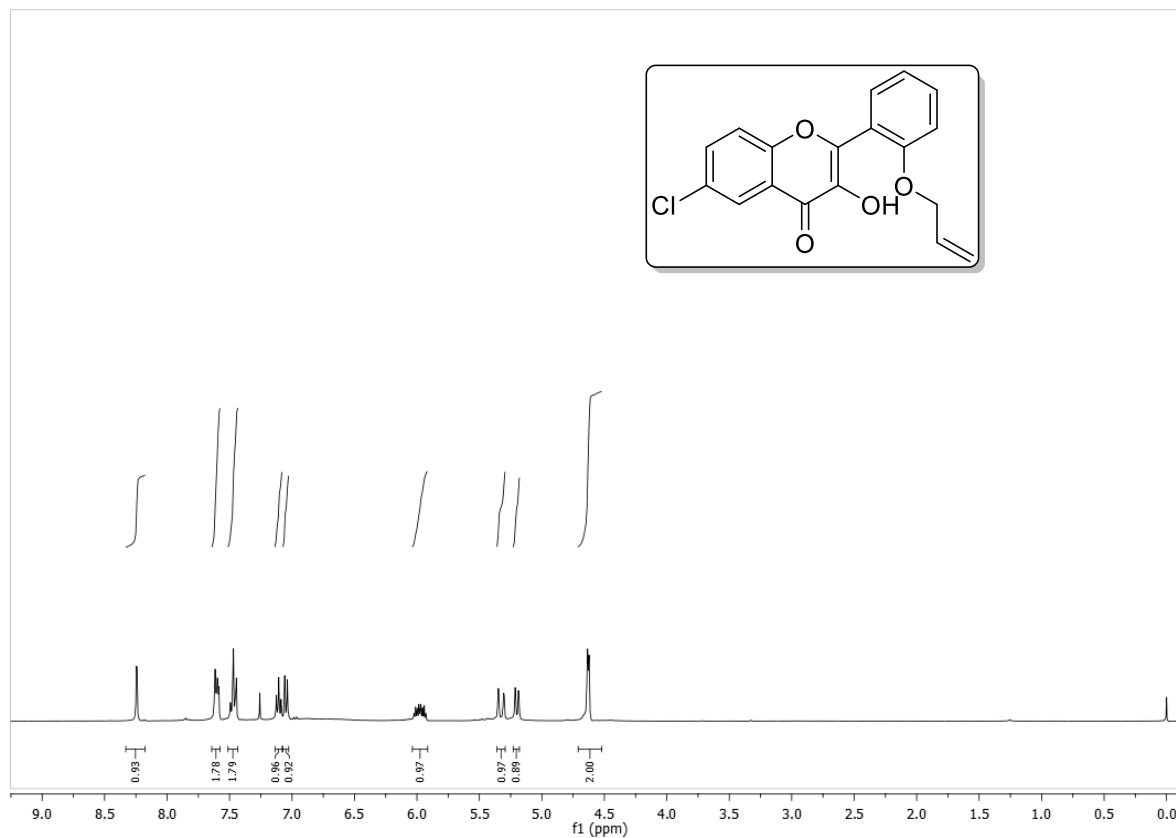


Figure S19. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-4d.

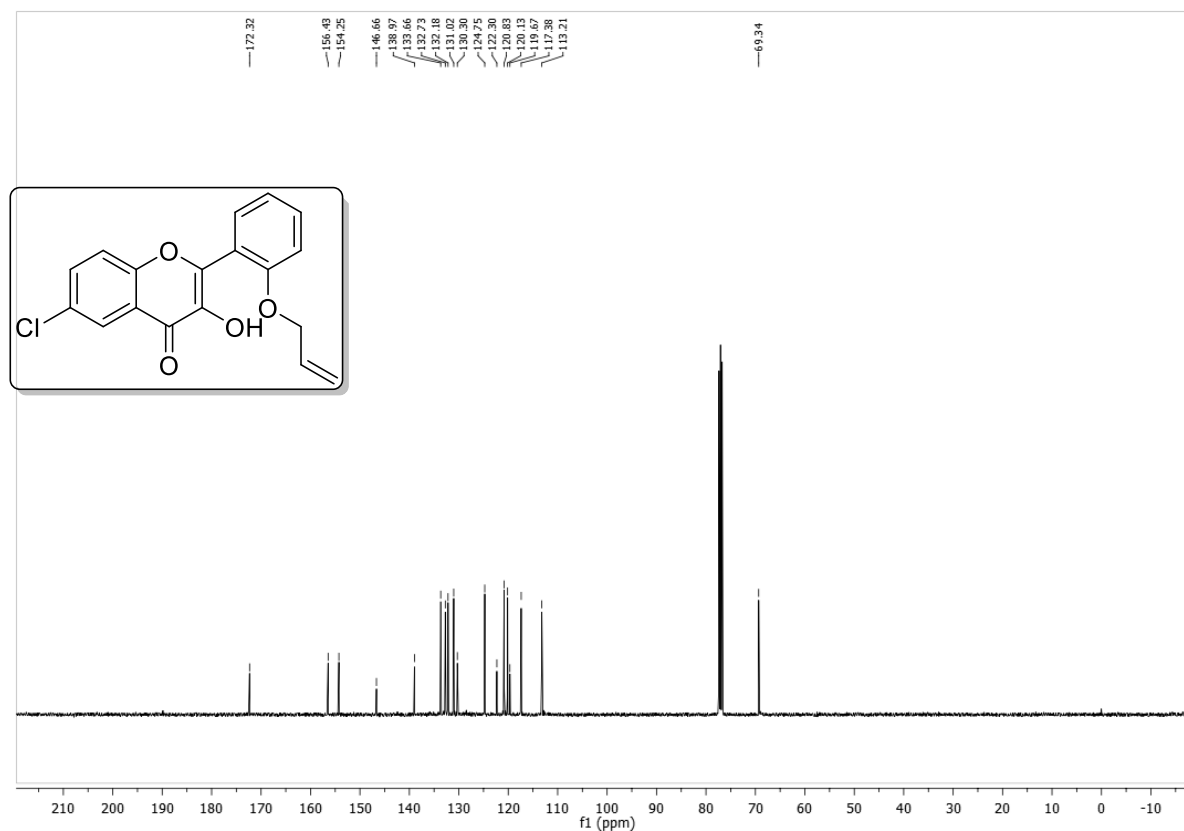


Figure S20. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-4d.

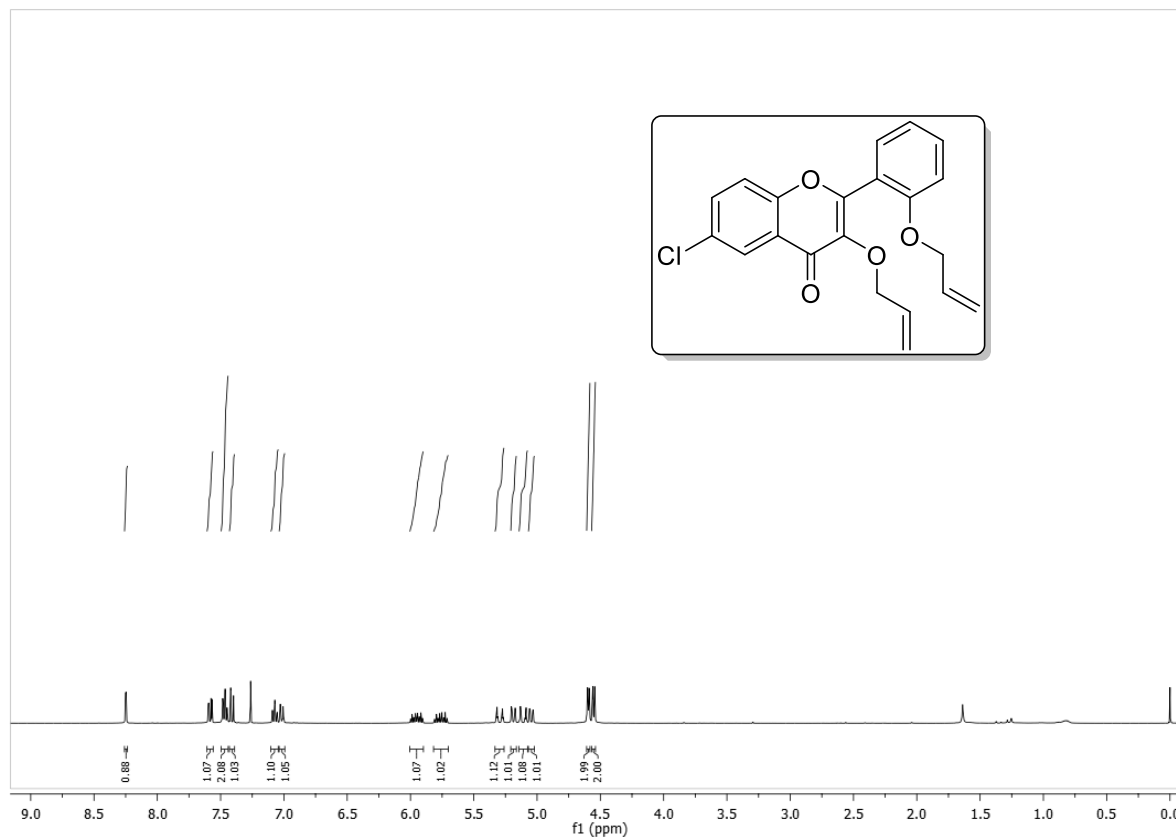


Figure S21. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-5d.

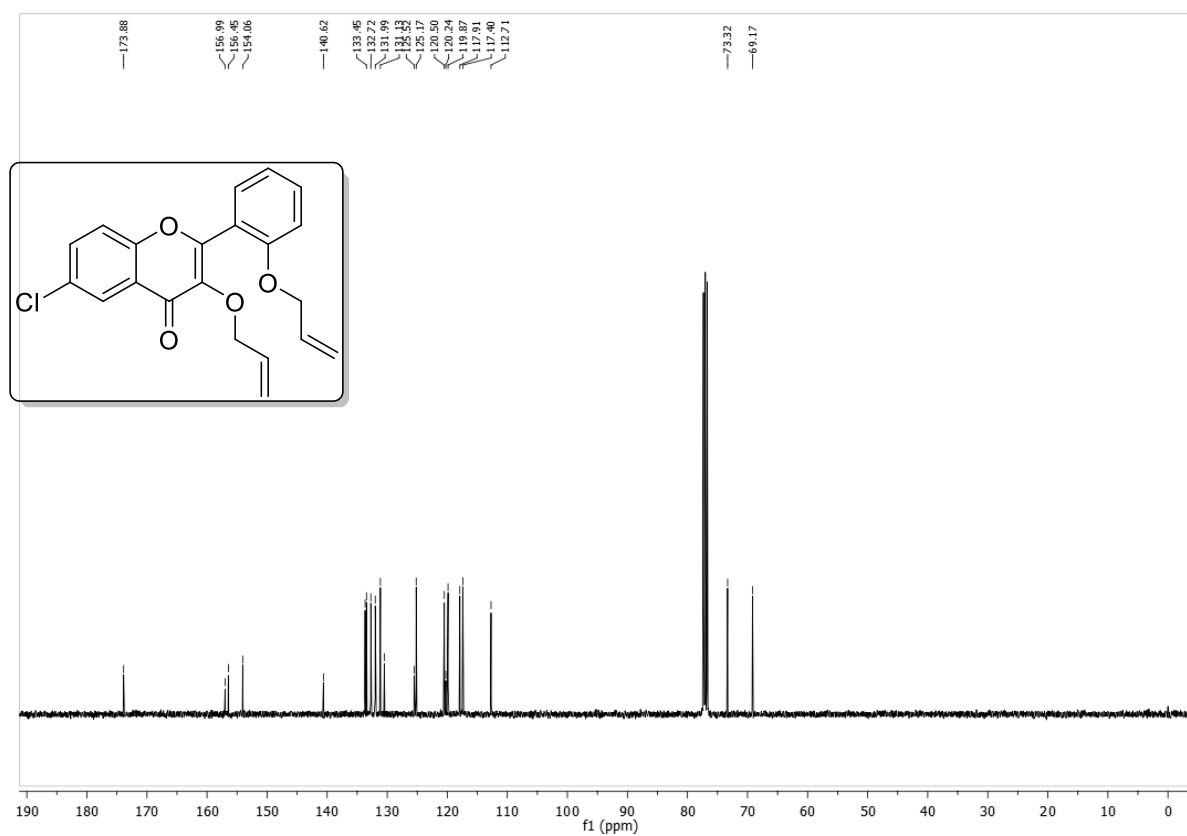


Figure S22. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-5d.

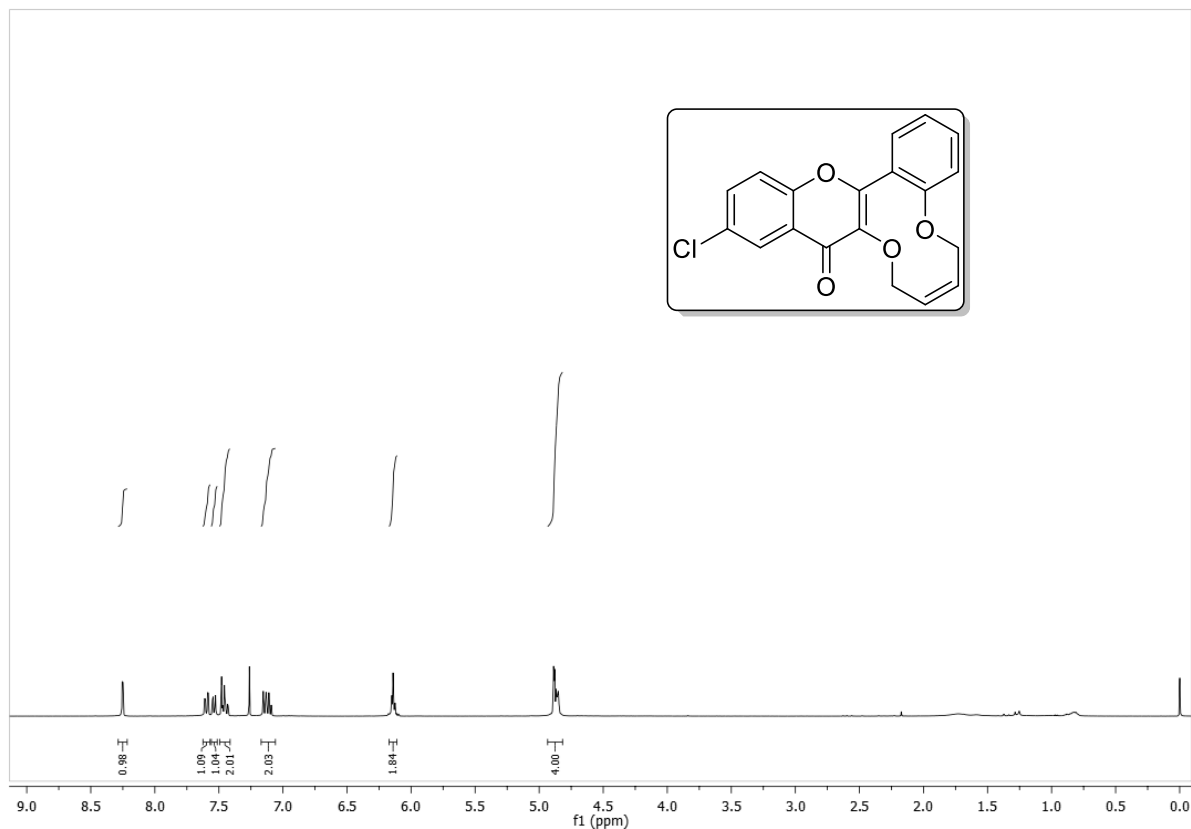


Figure S23. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-6d.

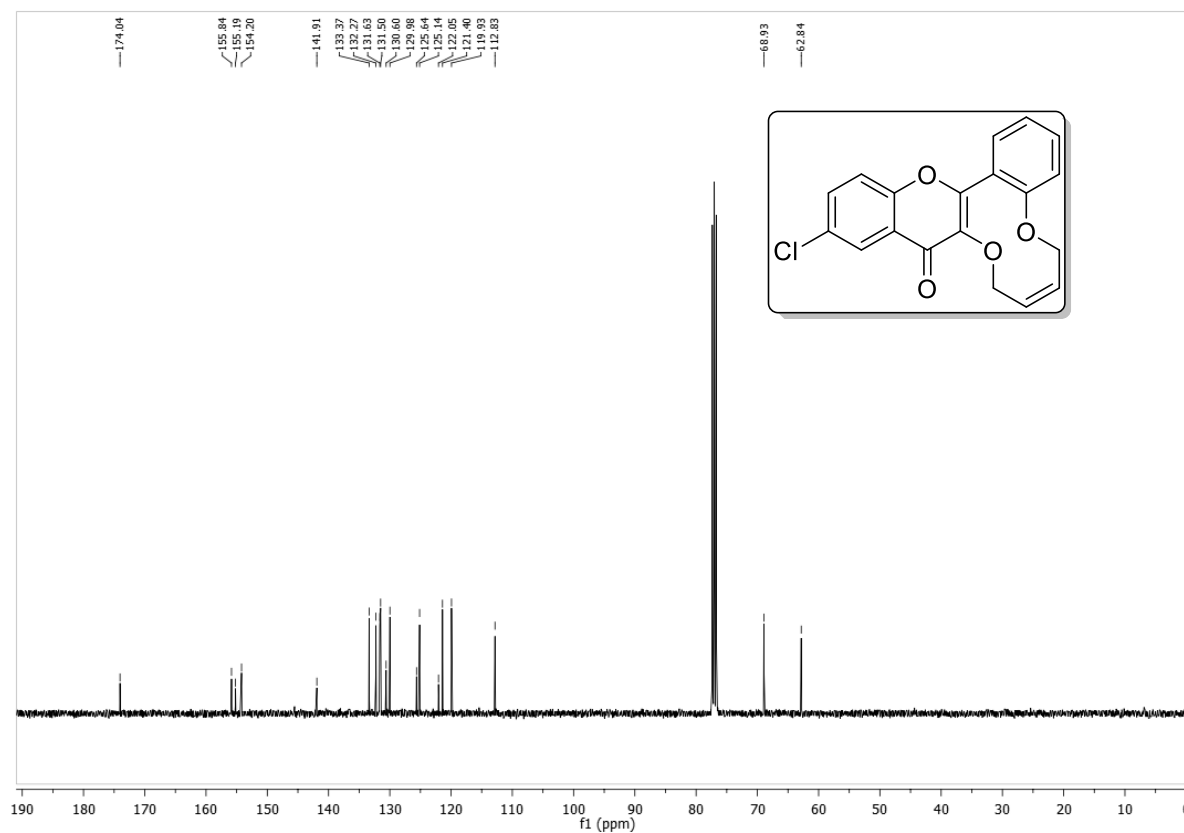


Figure S24. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-6d.

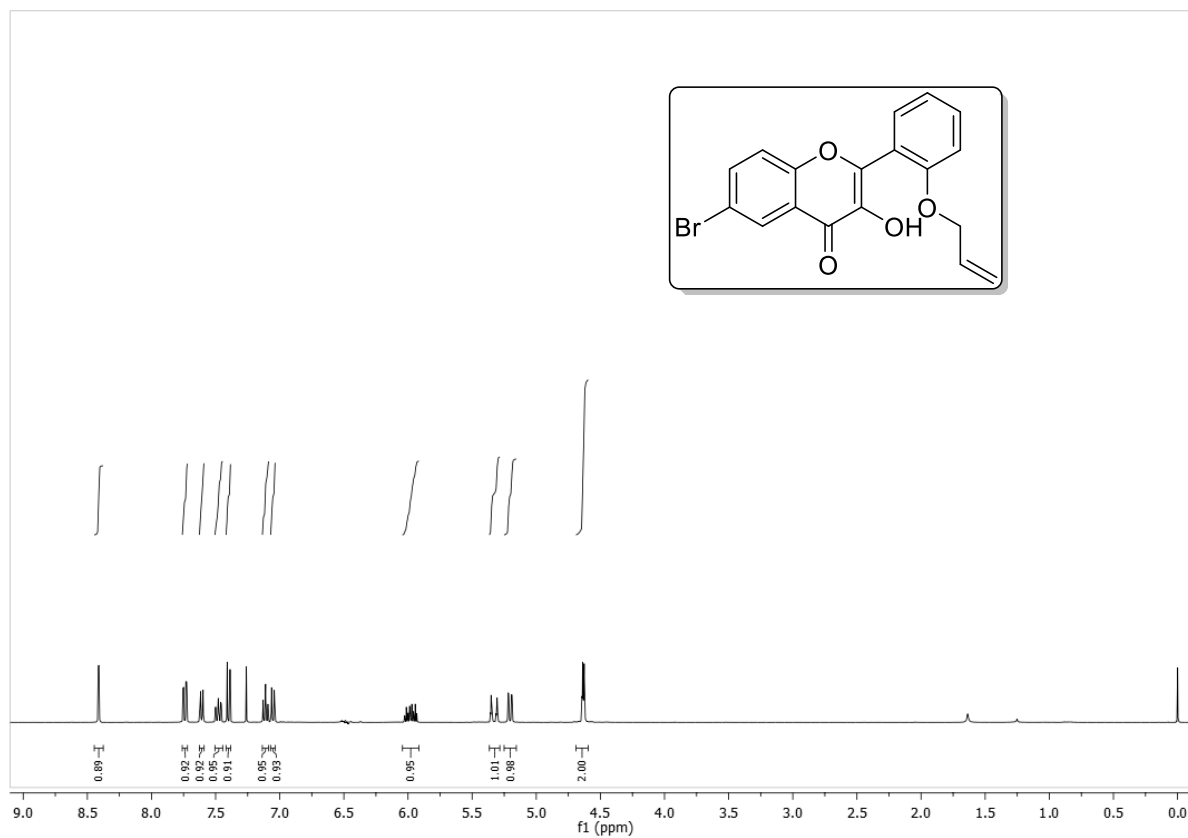


Figure S25. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-4e.

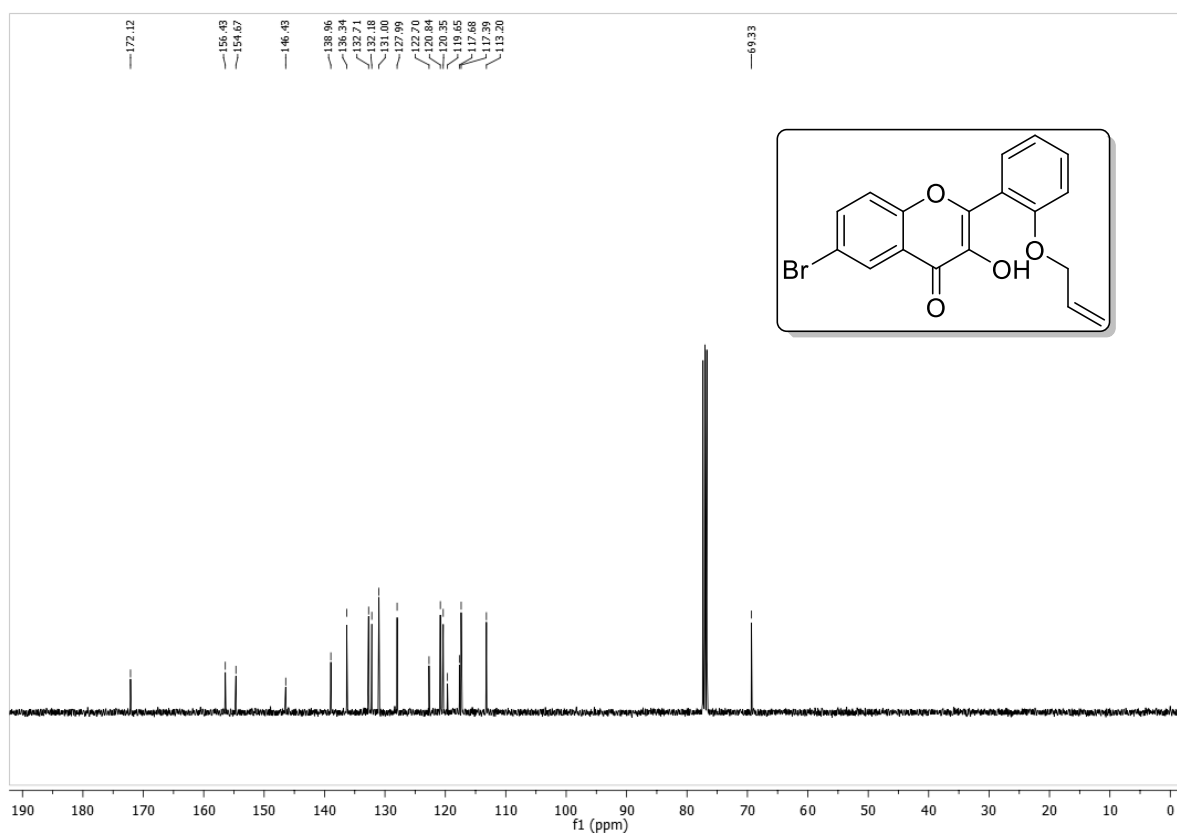


Figure S26. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-4e.

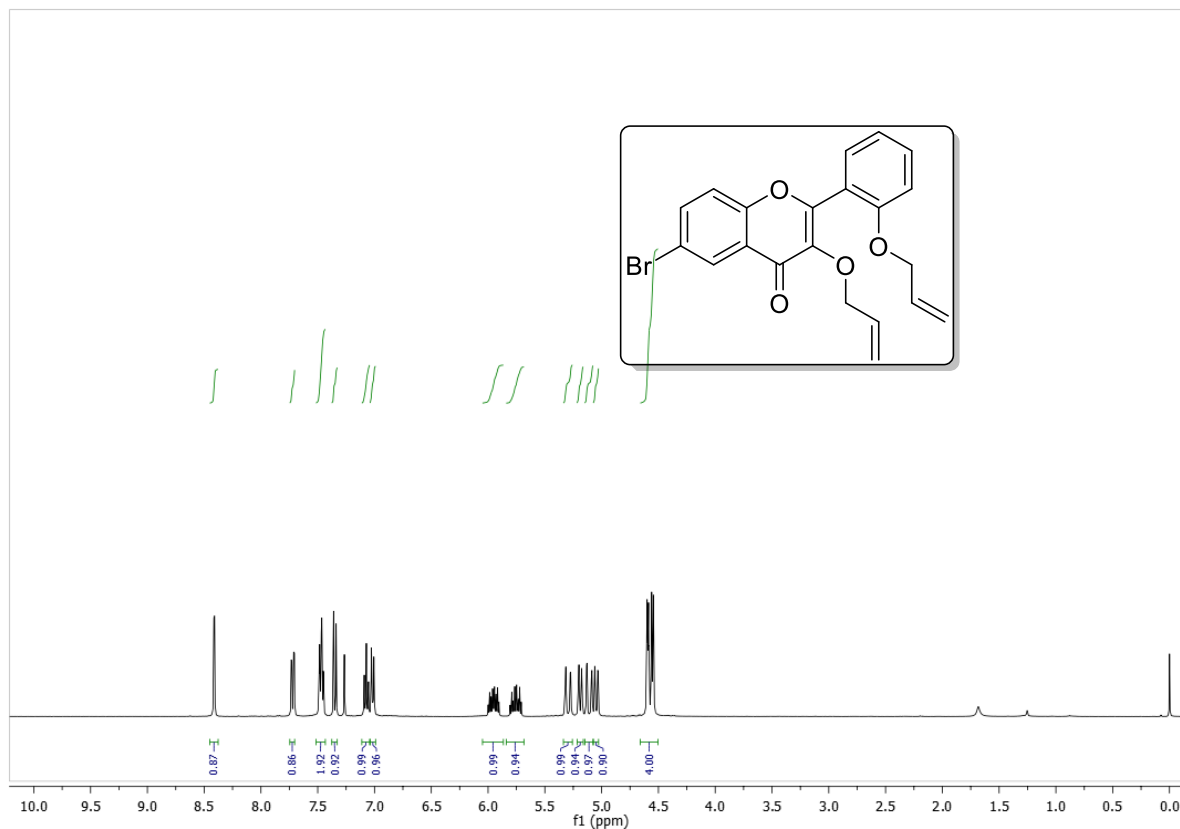


Figure S27. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**5e**.

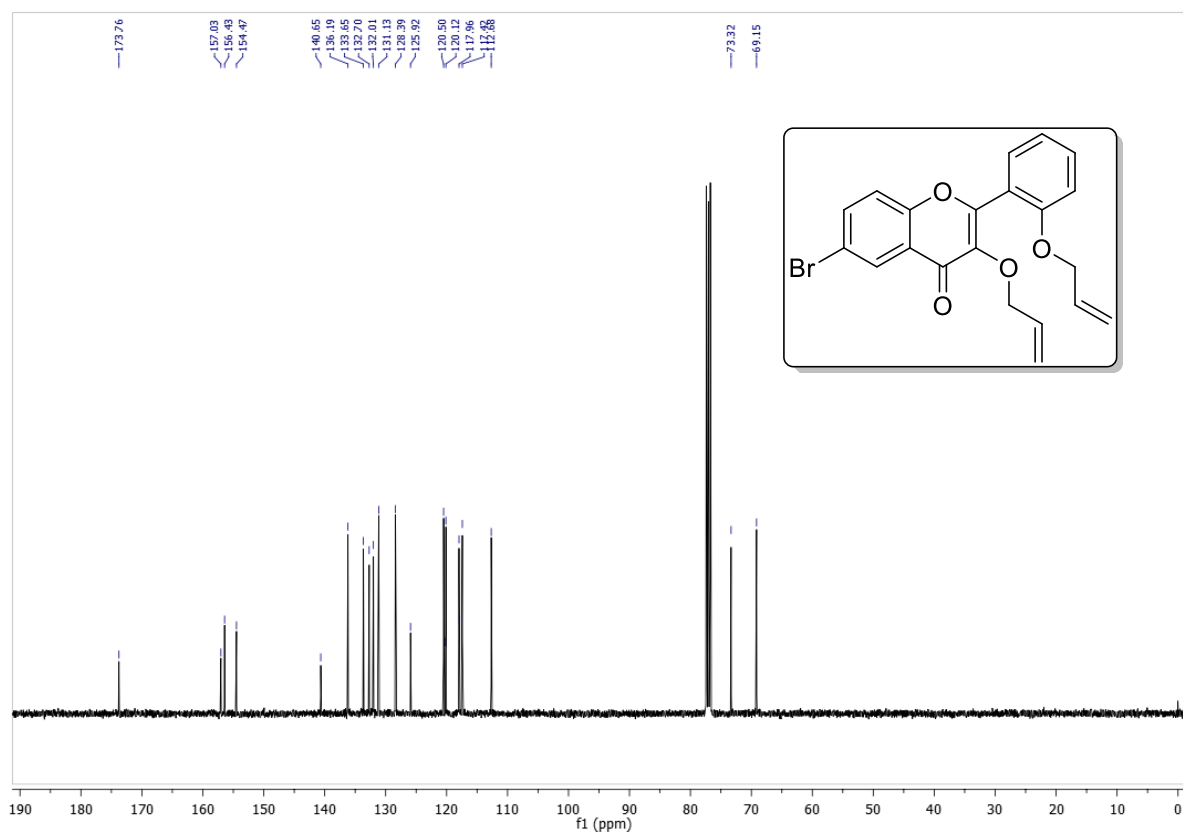


Figure S28. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**5e**.

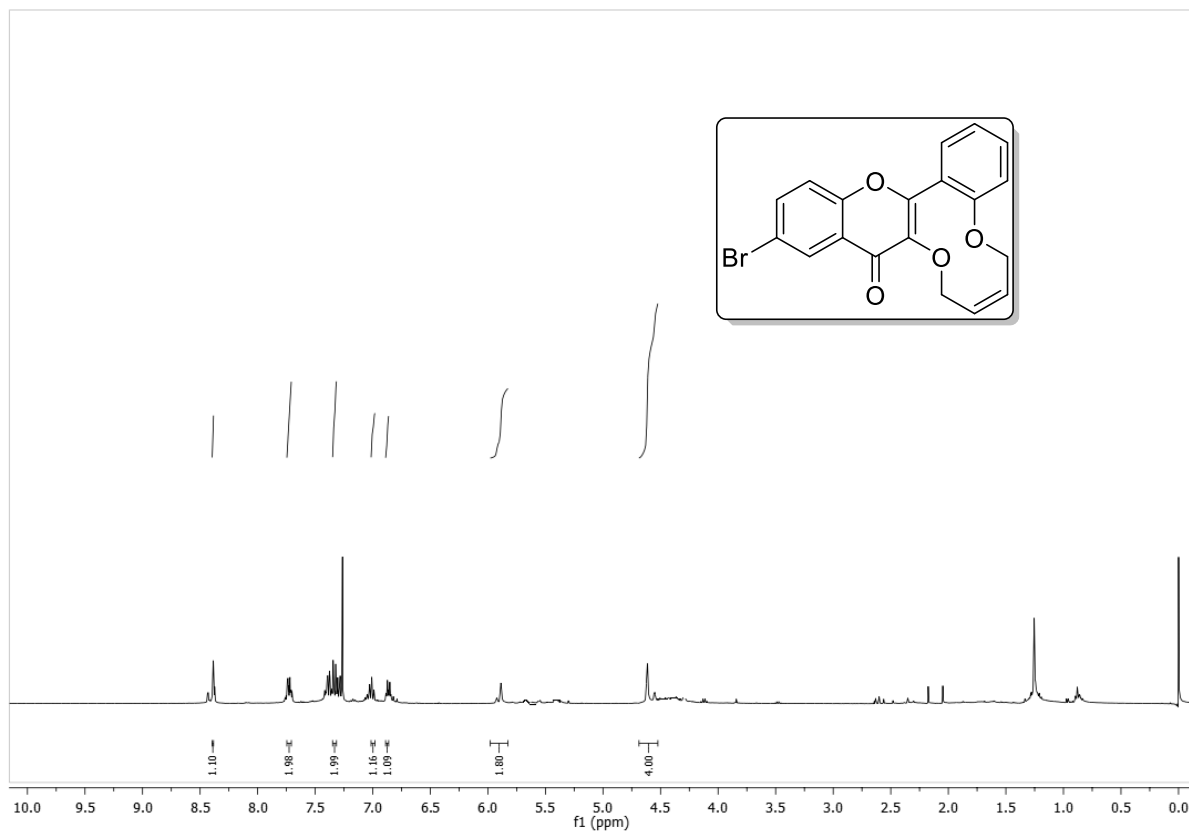


Figure S29. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-6e.

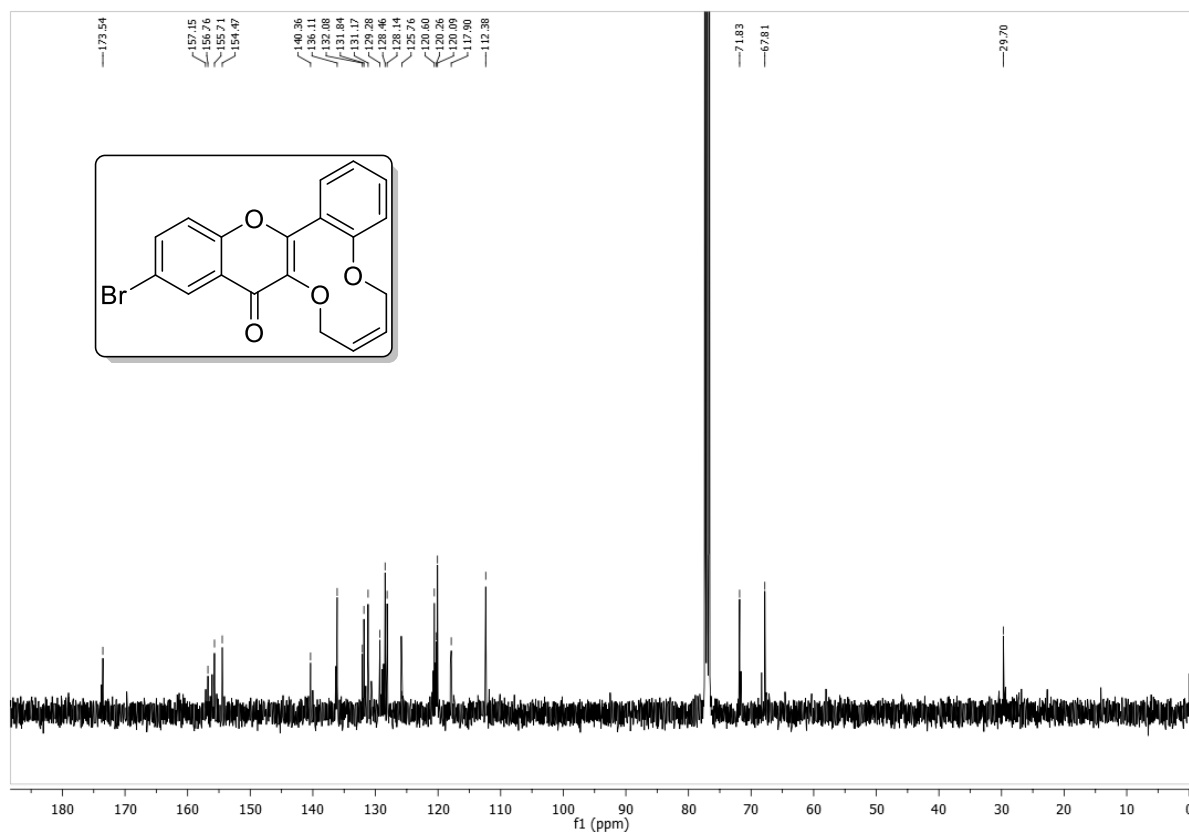


Figure S30. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-6e.

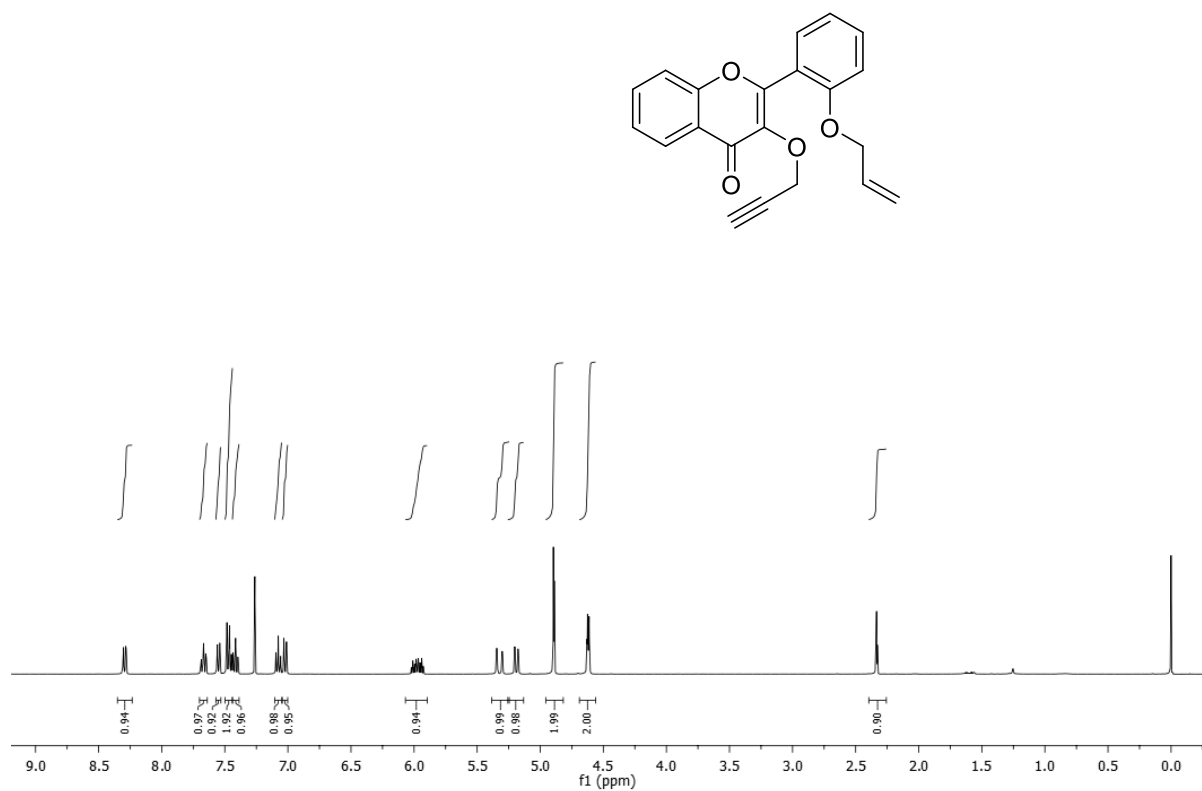


Figure S31. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound **7a**.

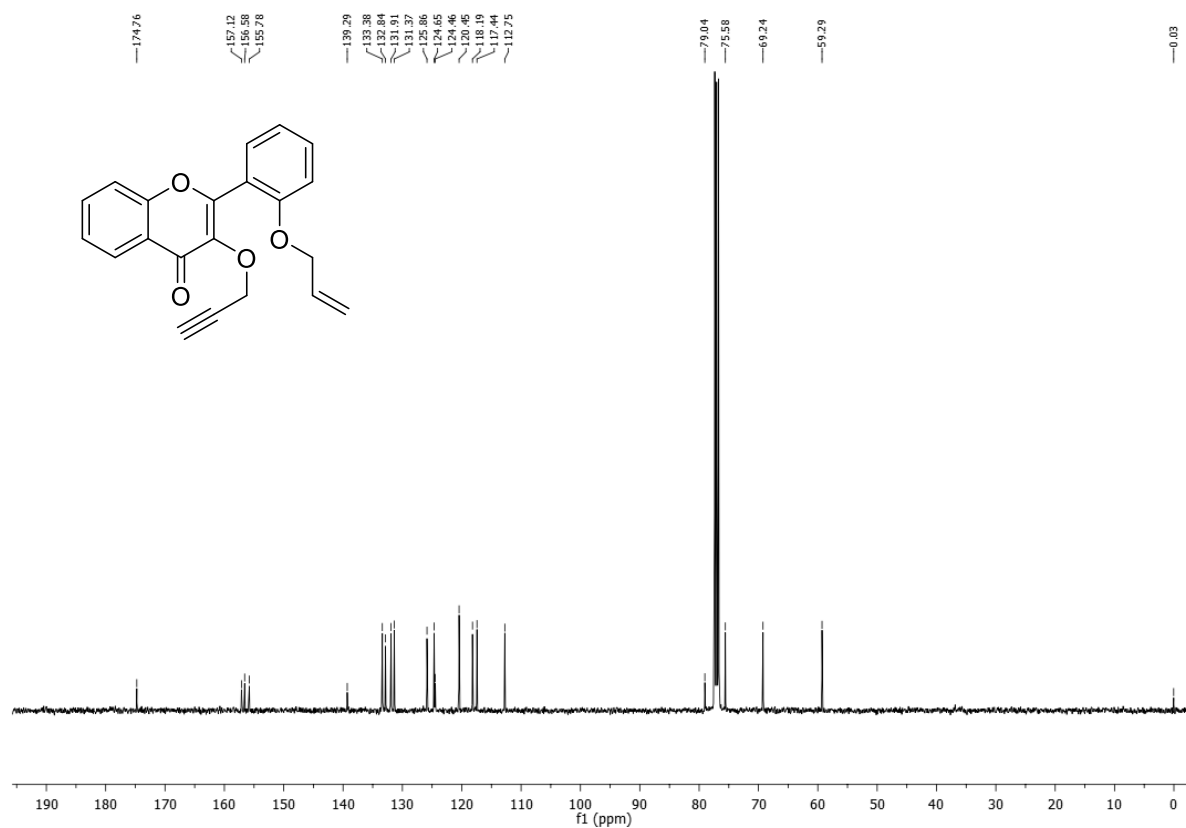


Figure S32. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound **7a**.

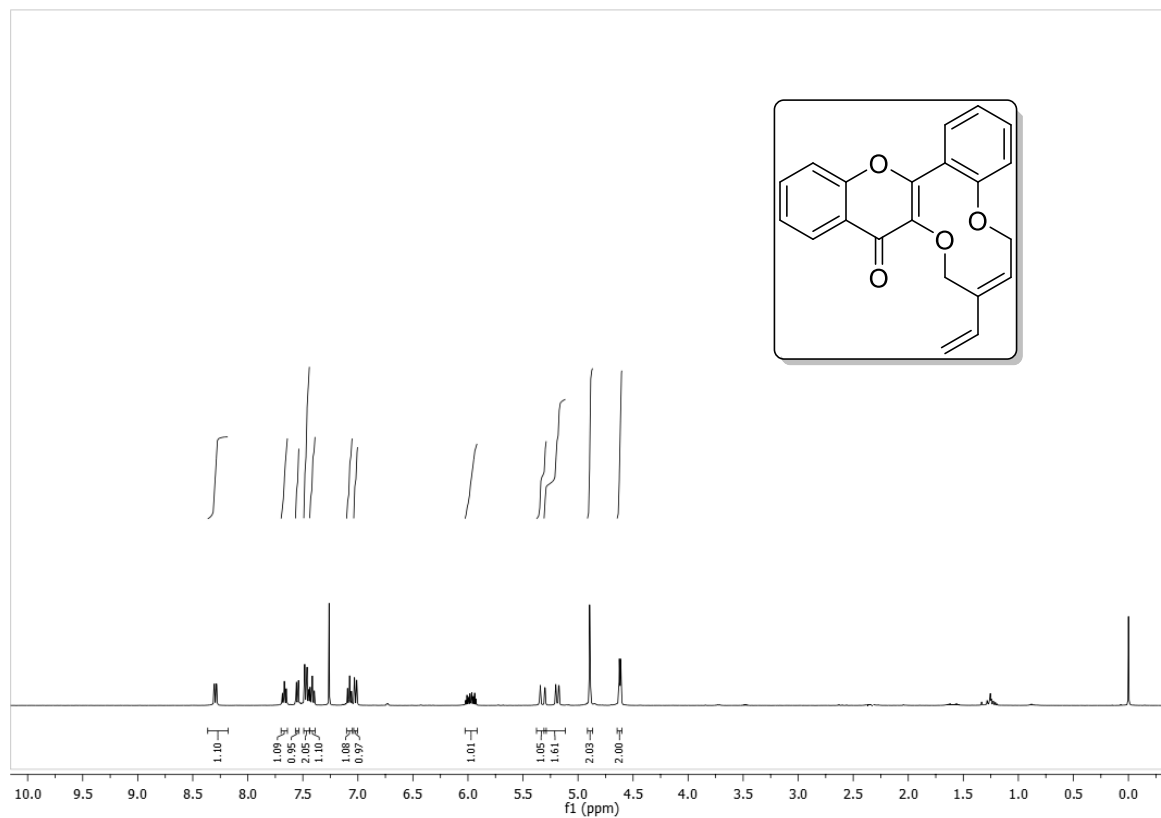


Figure S33. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-8a.

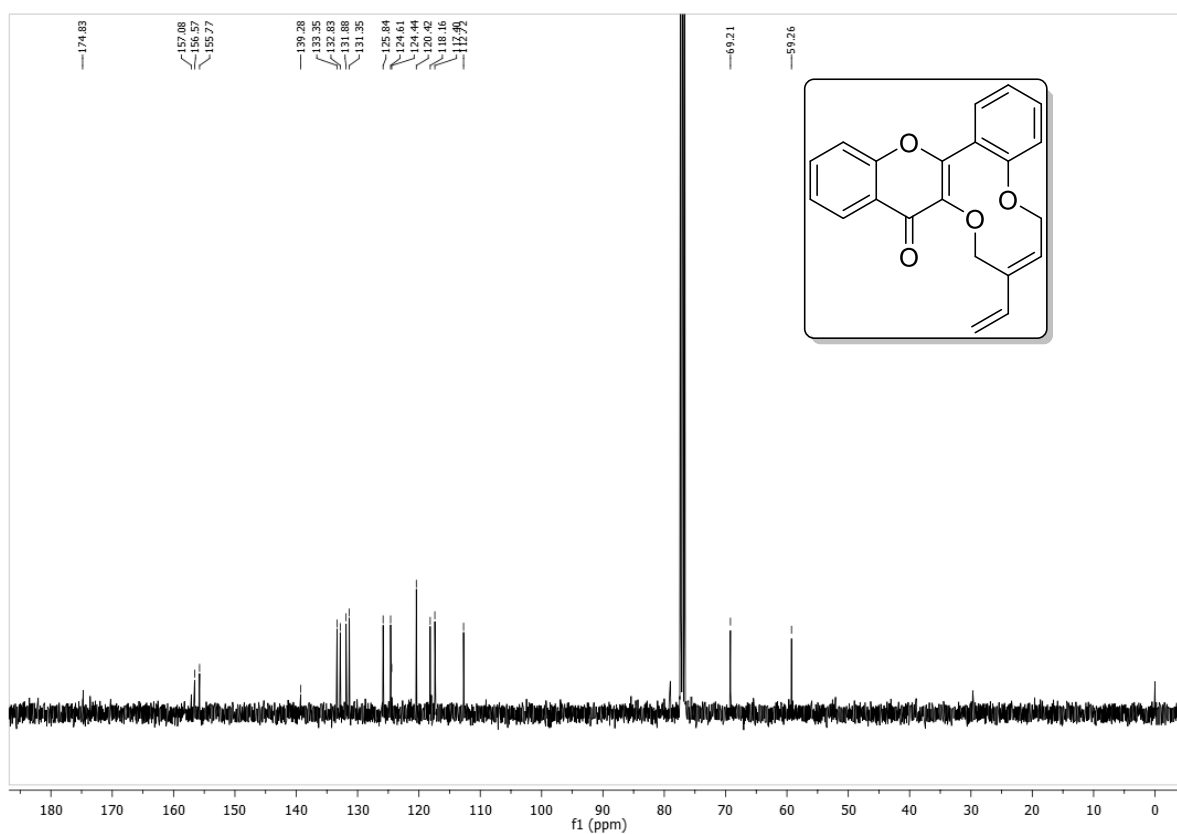


Figure S34. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-8a.

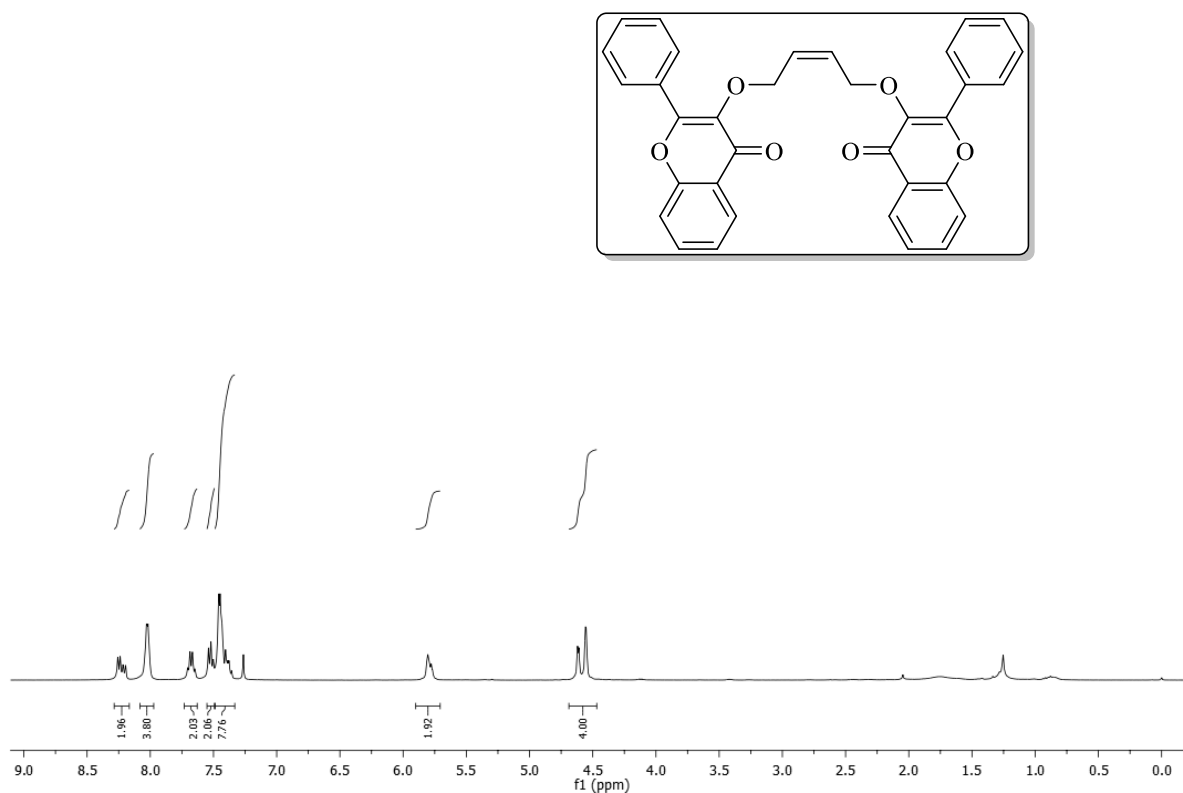


Figure S35. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**13a**.

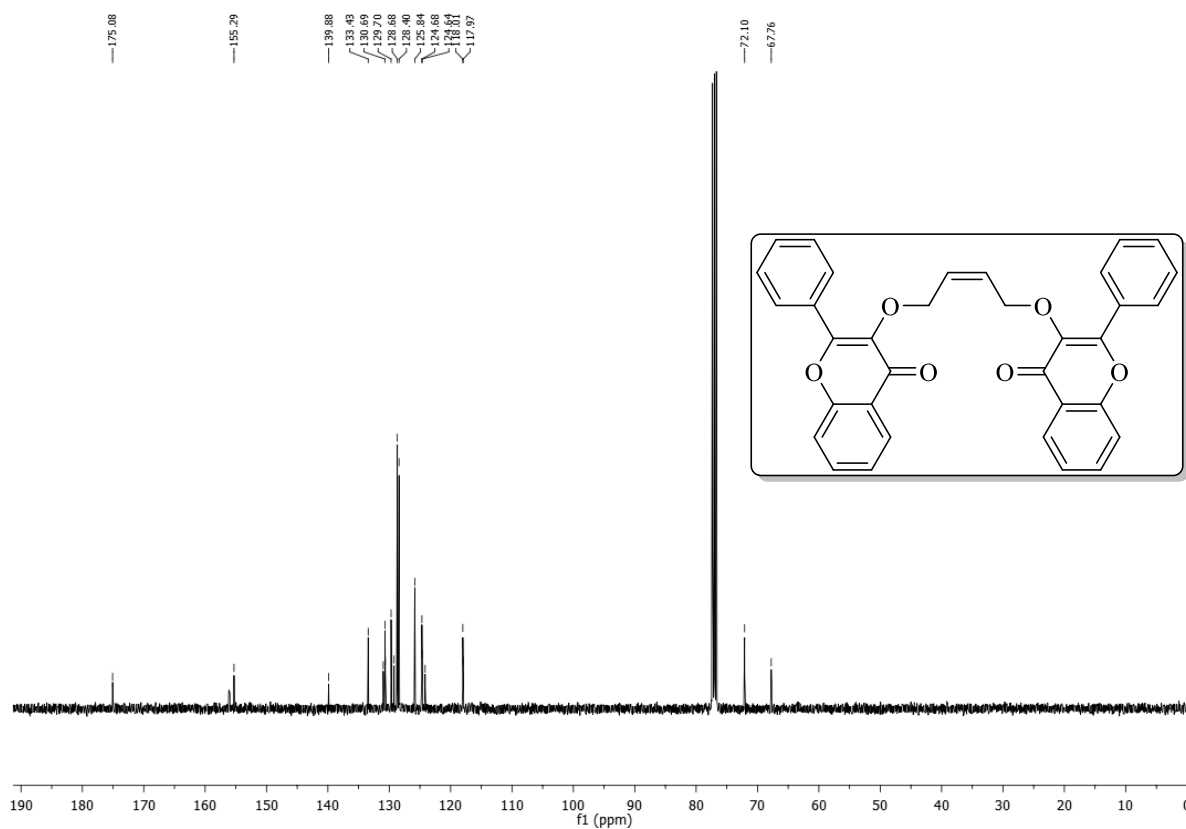


Figure S36. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**13a**.

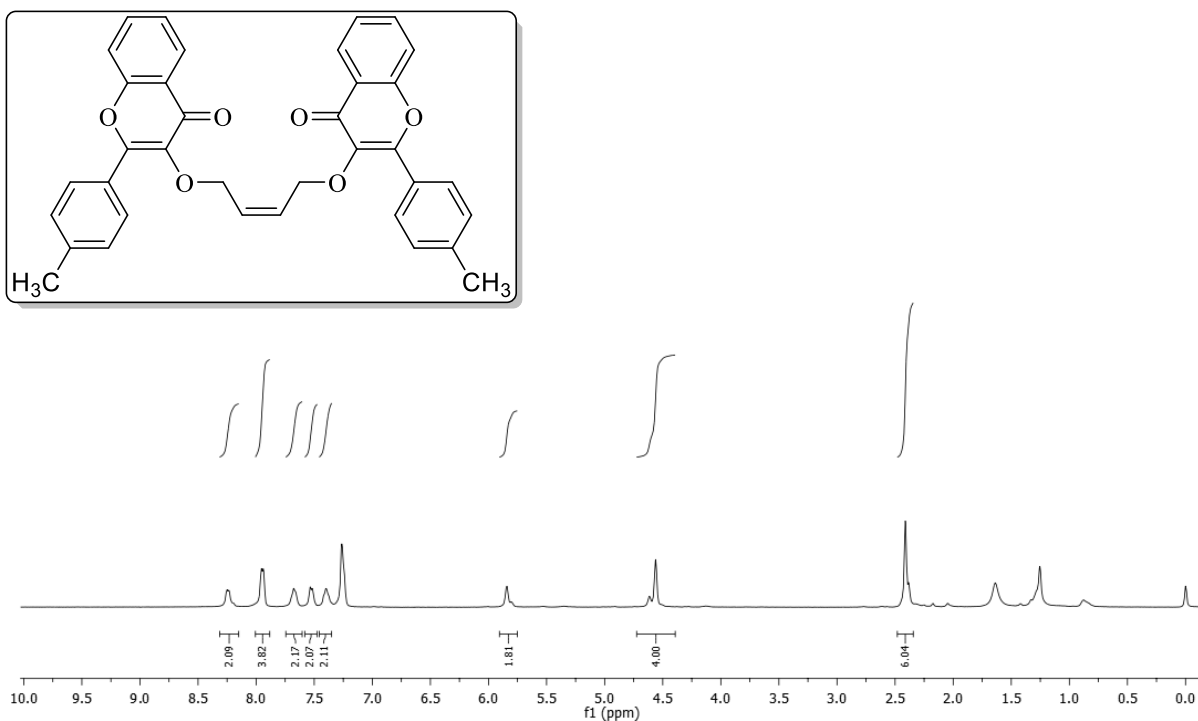


Figure S37. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**13b**.

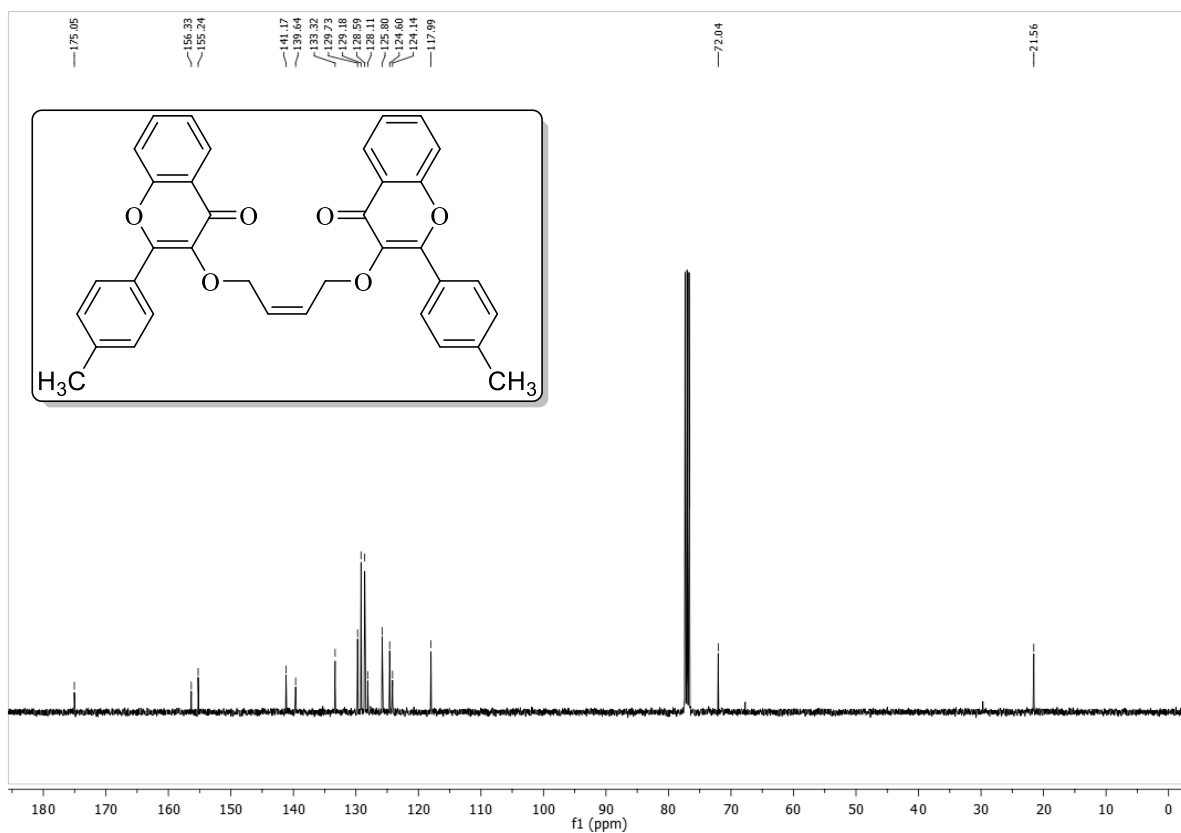


Figure S38. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**13b**.



Figure S39. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-**13c**.

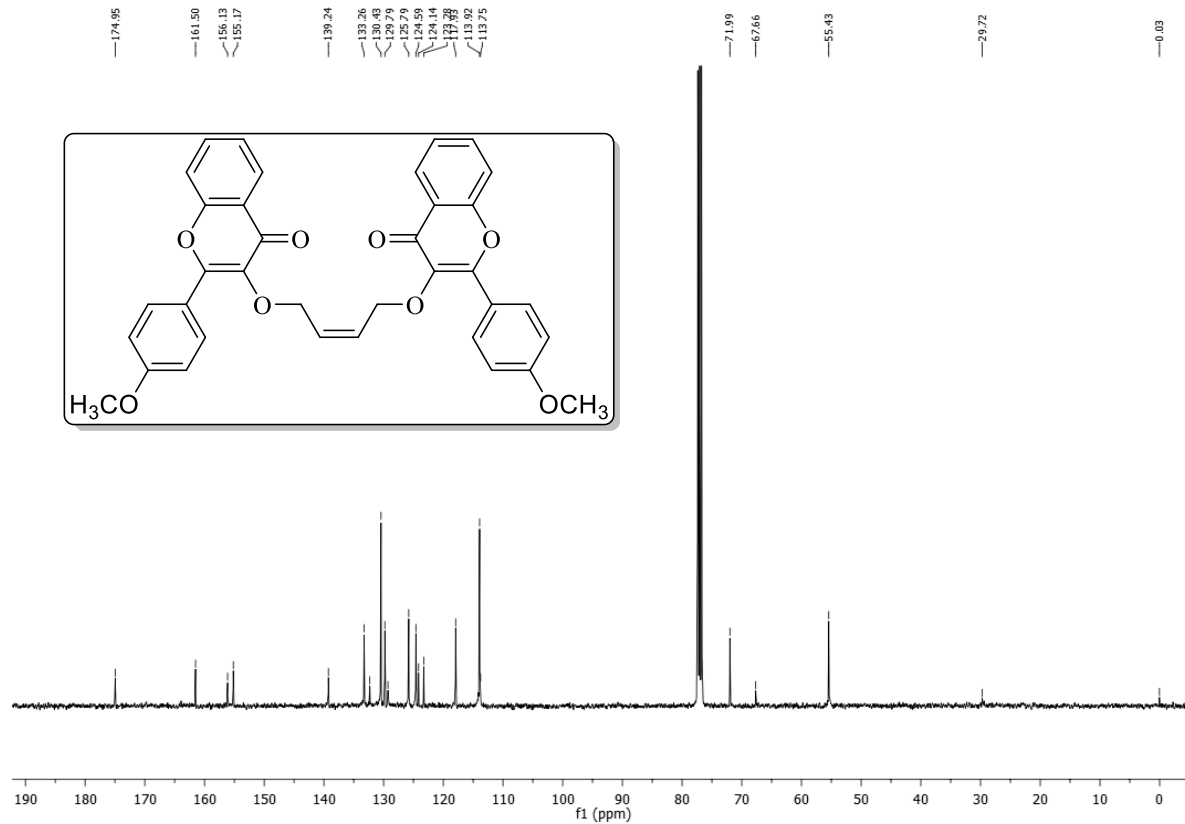


Figure S40. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-**13c**.

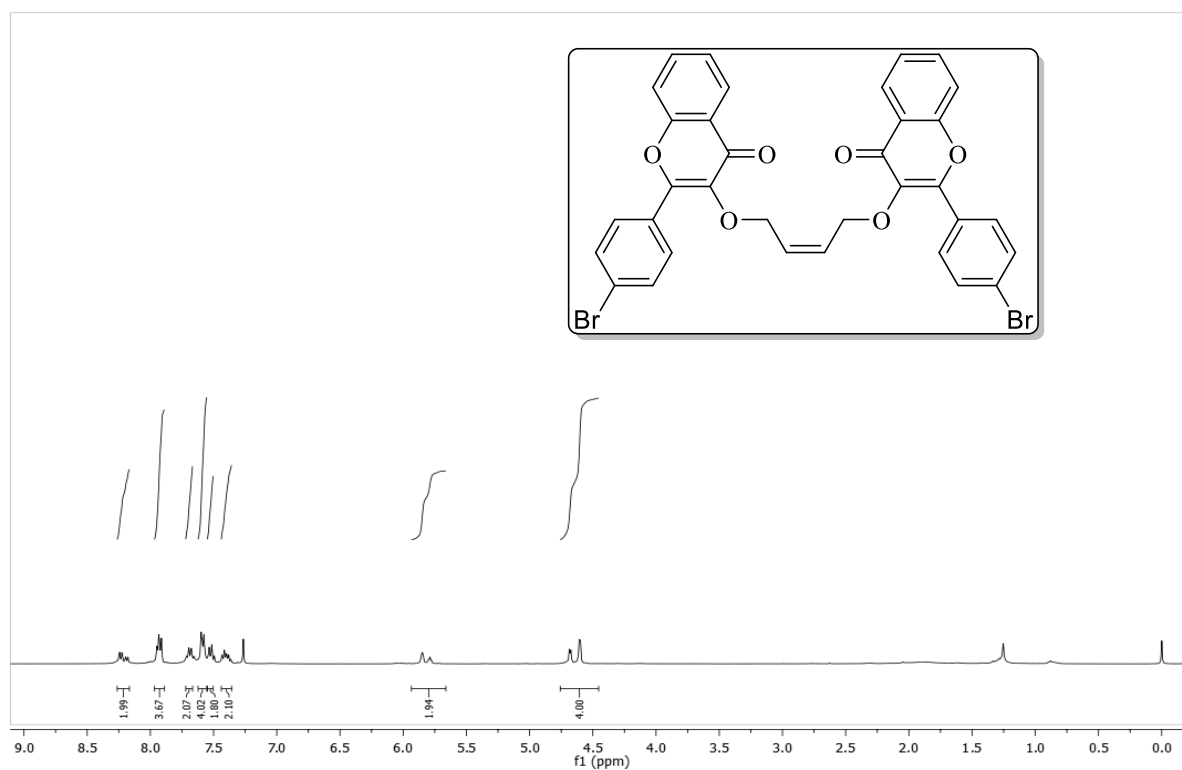


Figure S41. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**13d**.

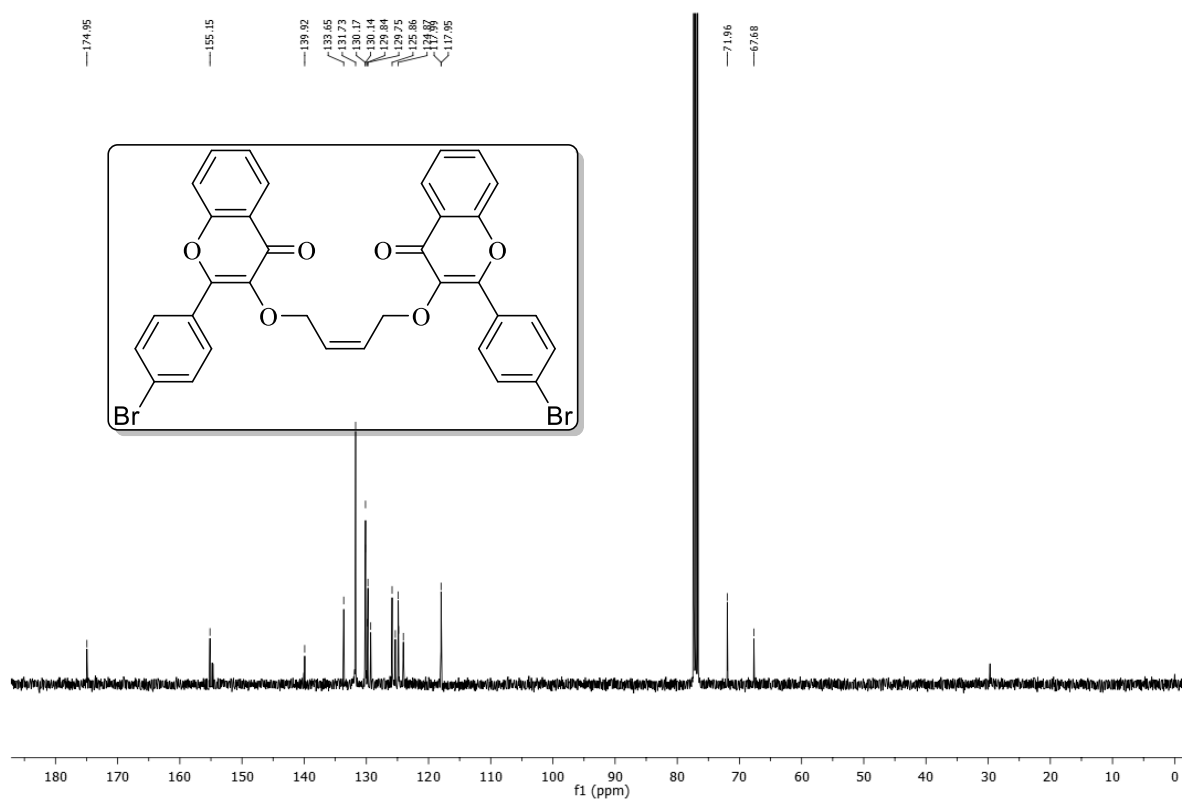


Figure S42. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**13d**.

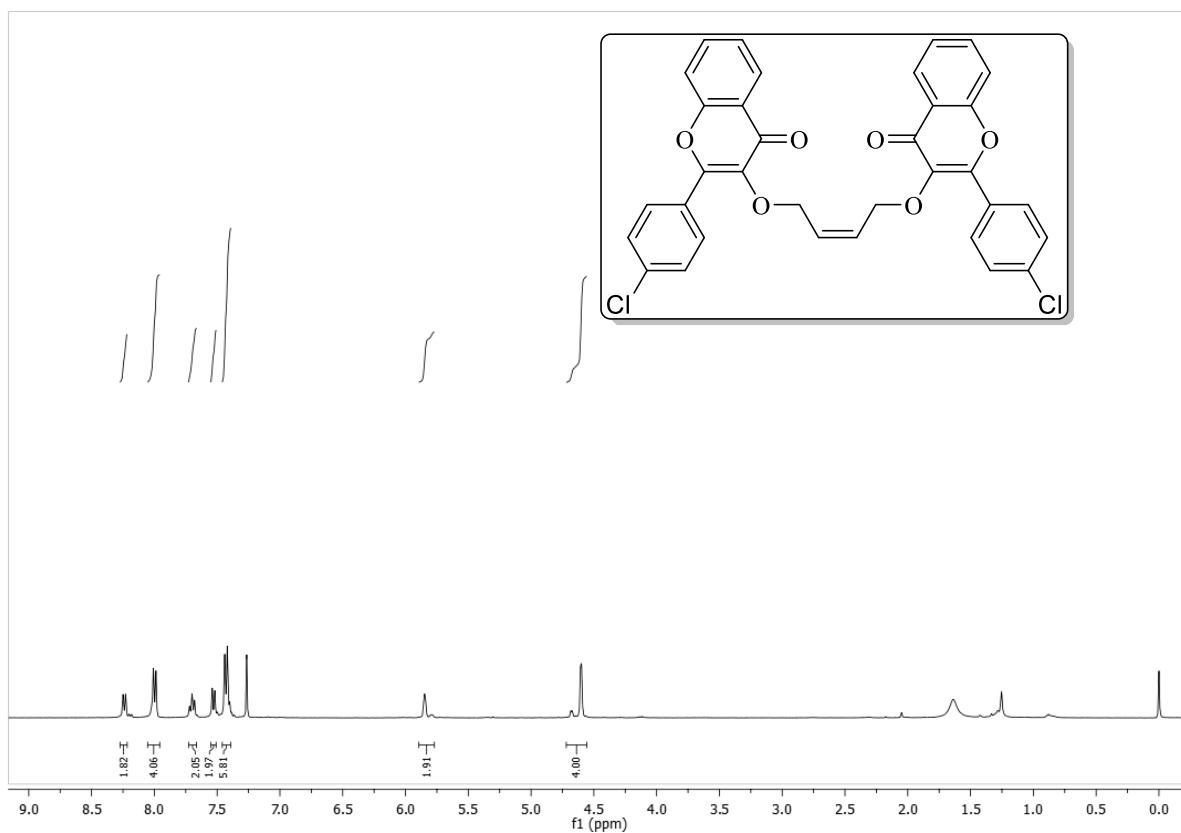


Figure S43. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**13e**.

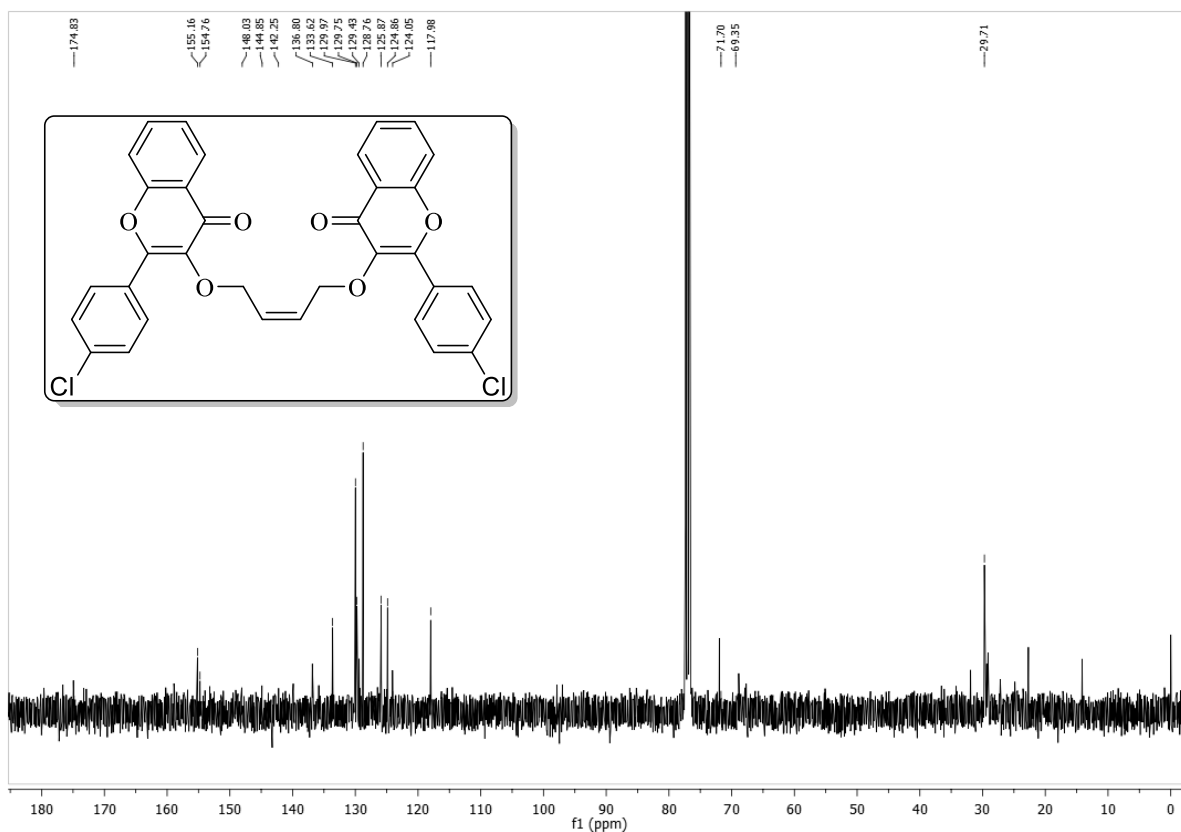


Figure S44. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**13e**.

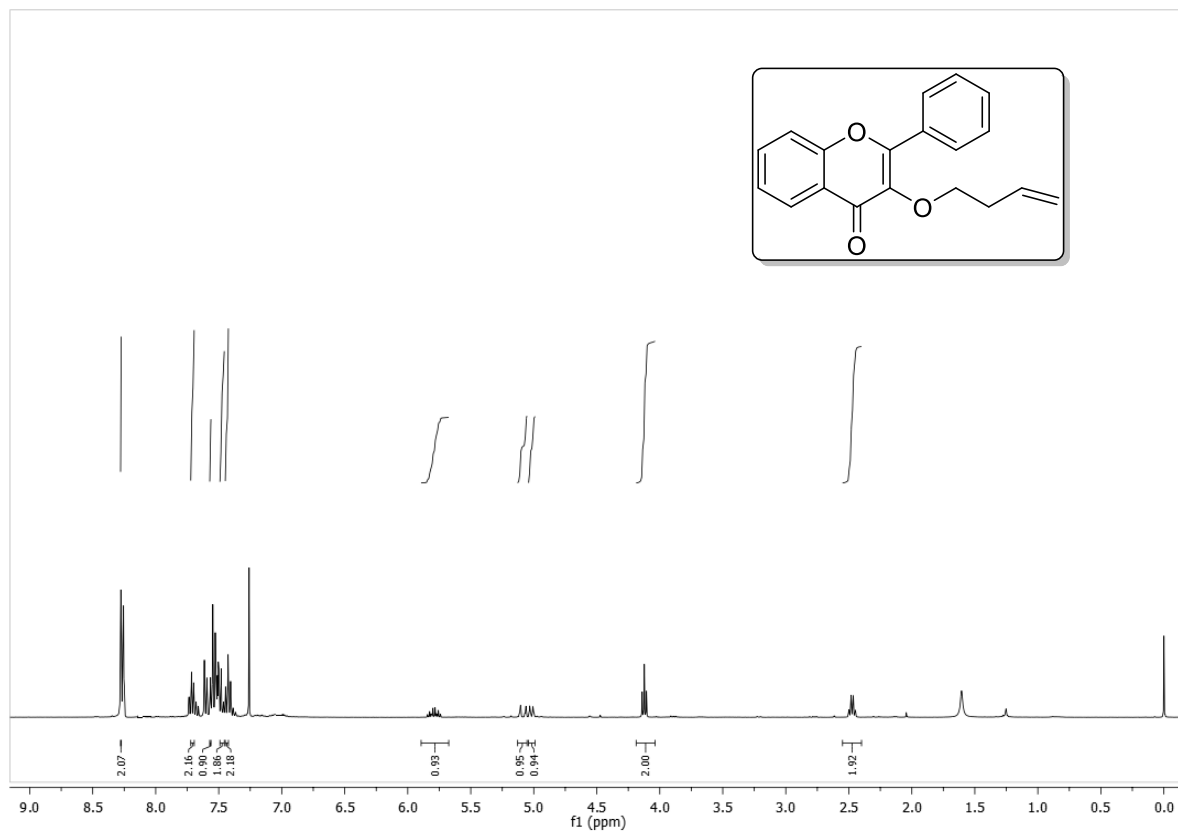


Figure S45. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**12f**.

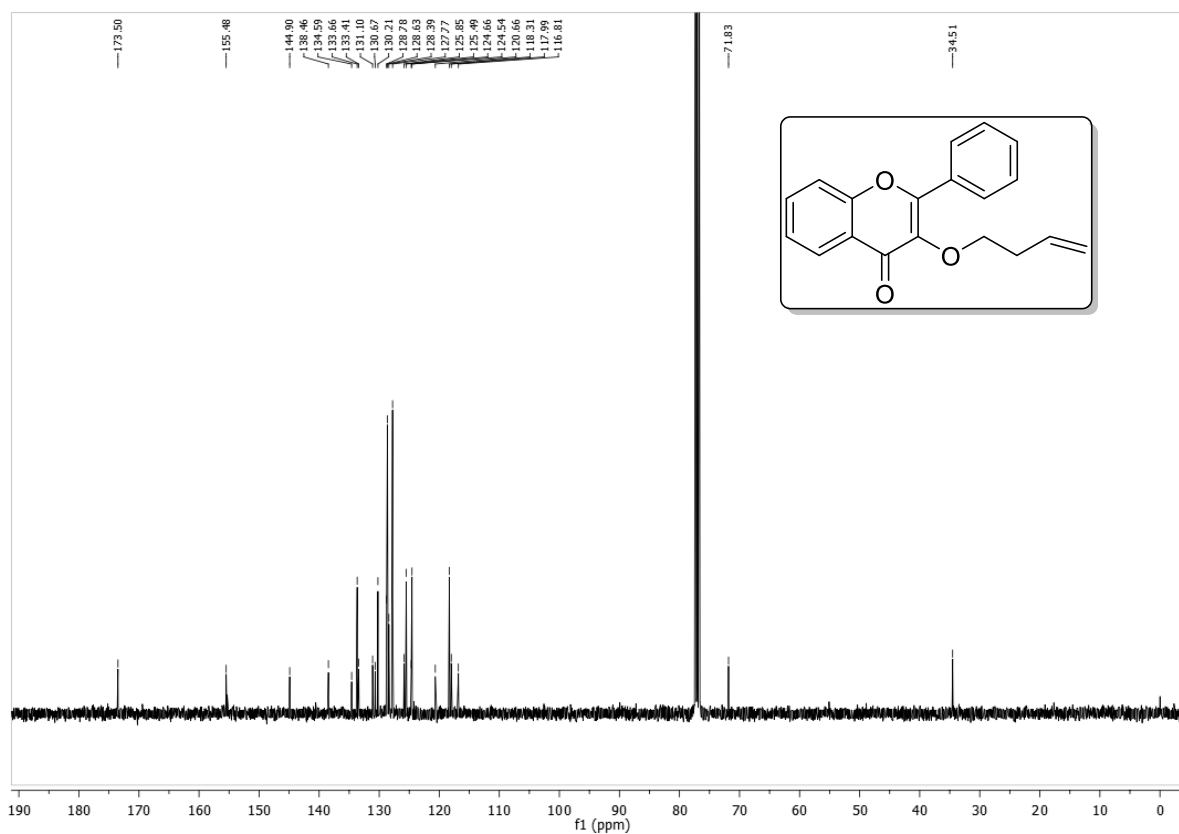


Figure S46. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**12f**.

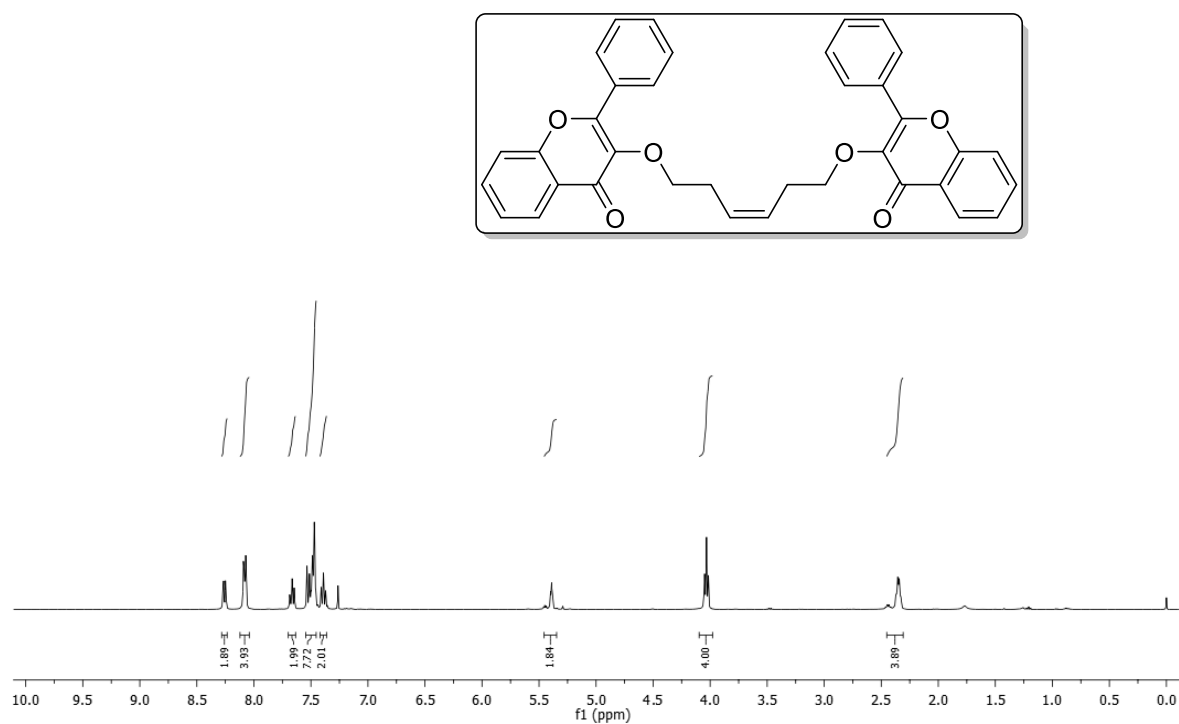


Figure S47. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-13f.

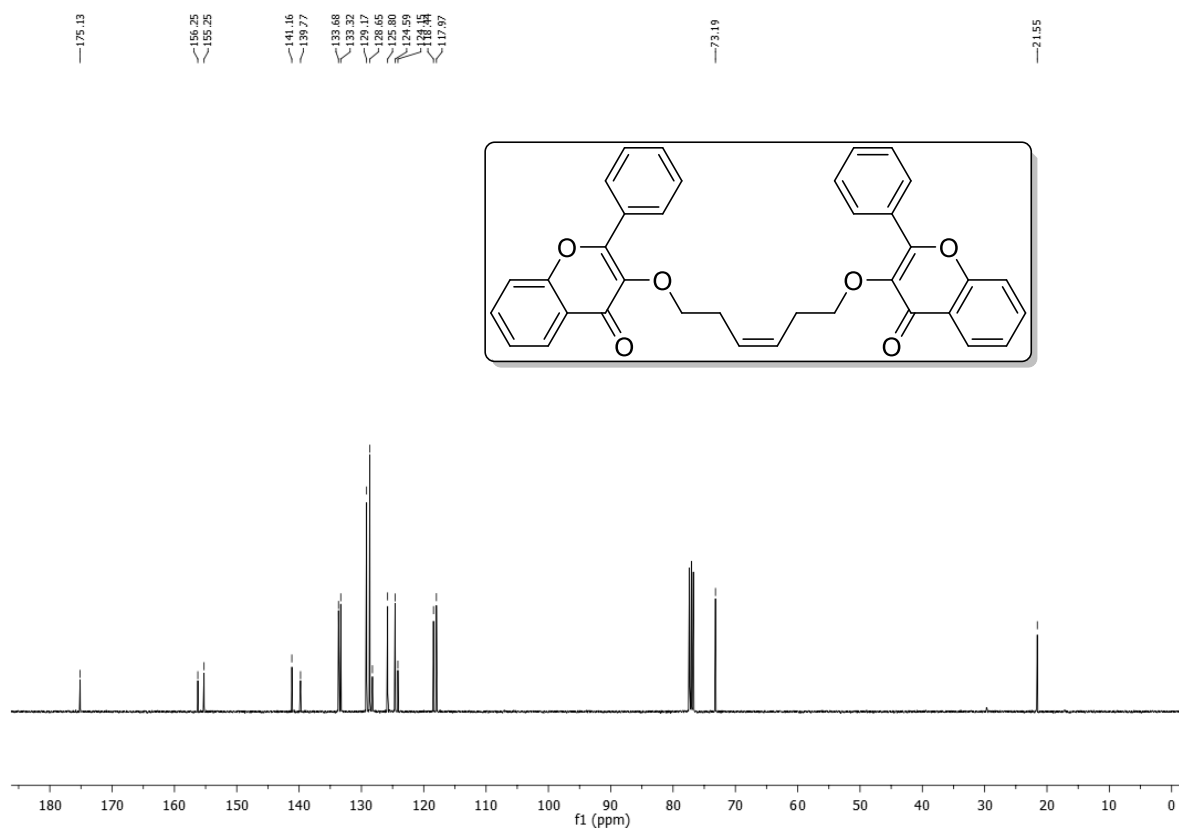


Figure S48. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-13f.

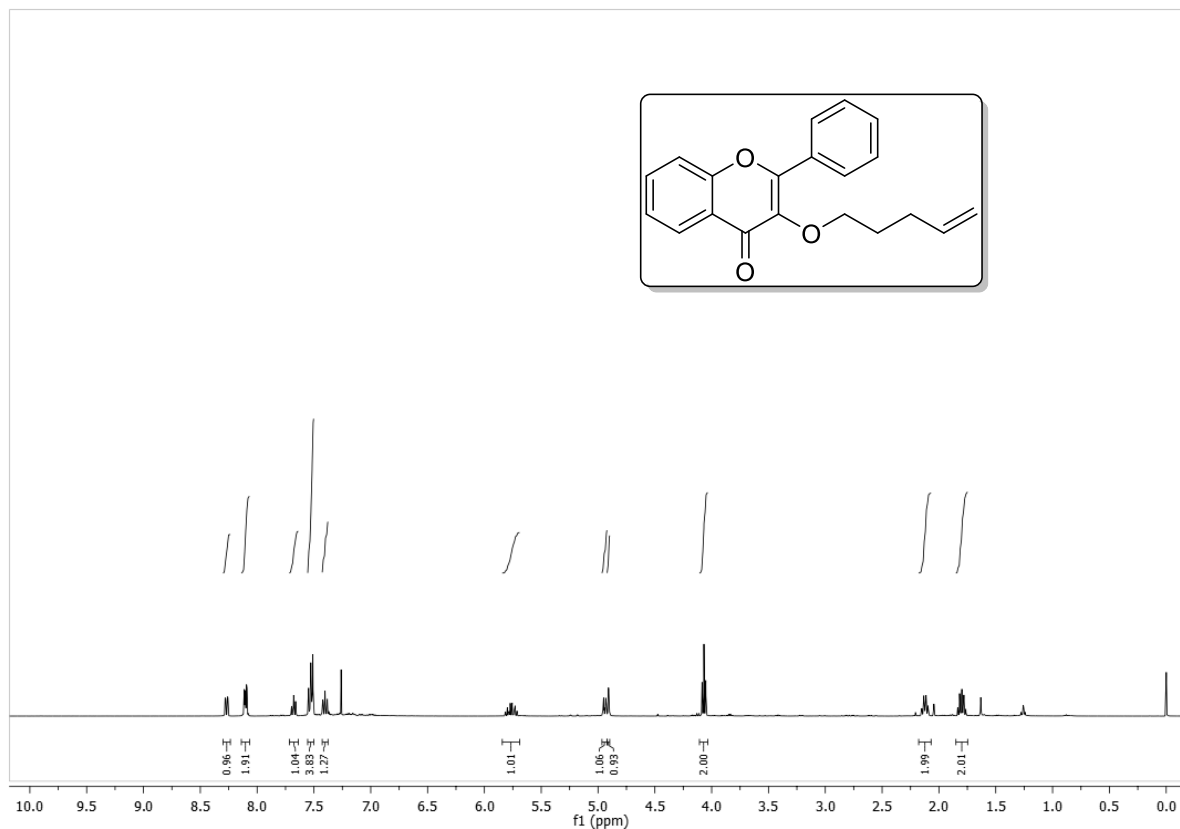


Figure S49. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-12g.

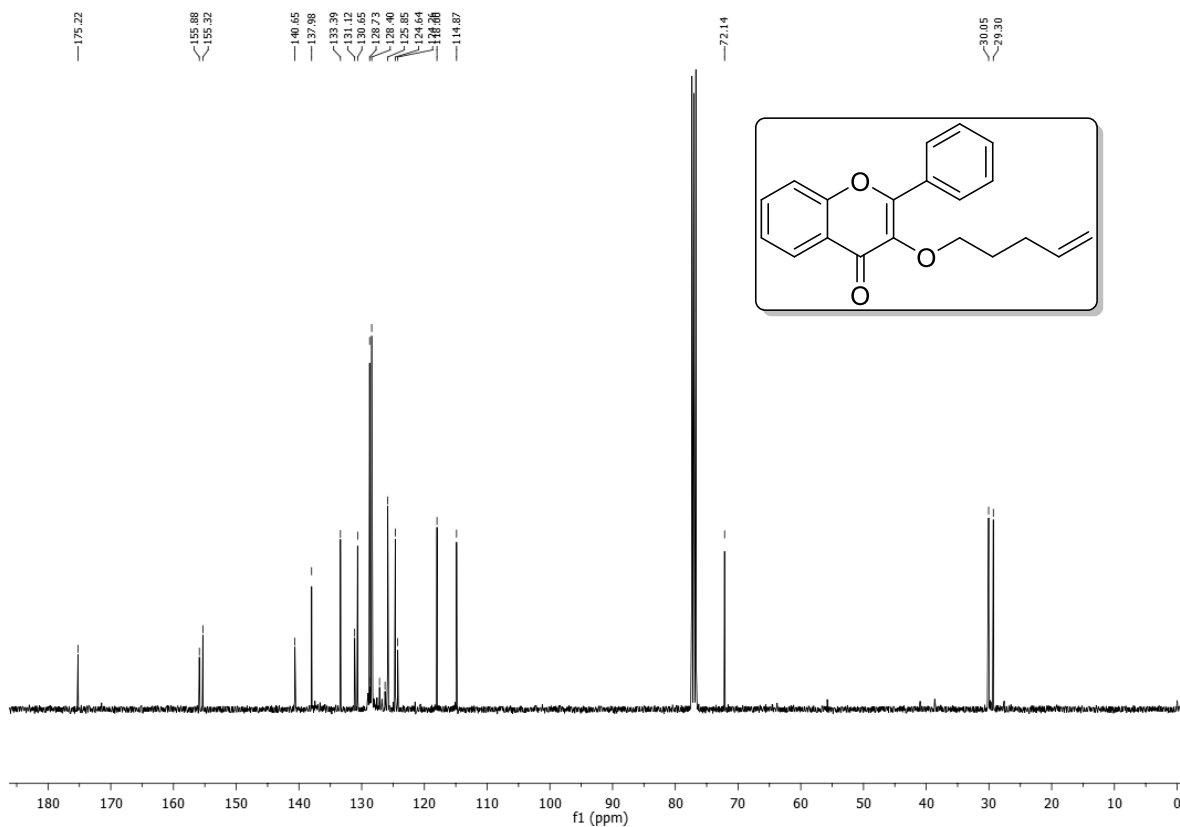


Figure S50. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-12g.

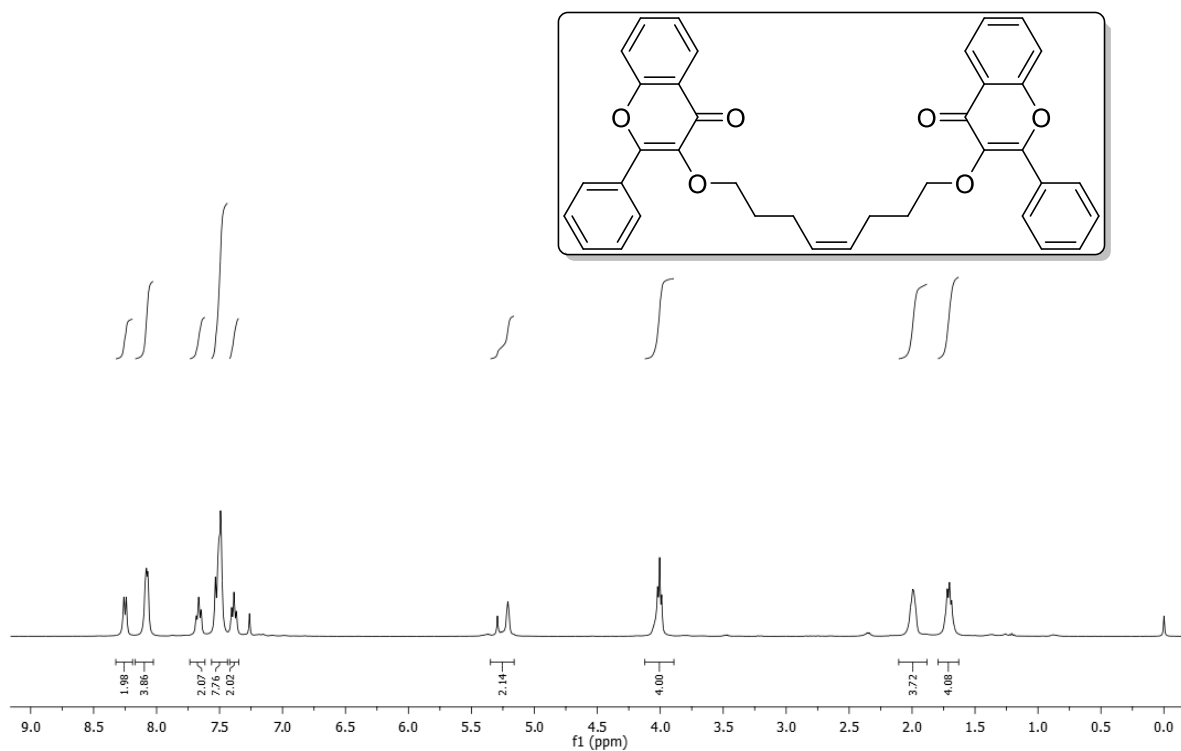


Figure S51. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**13g**.

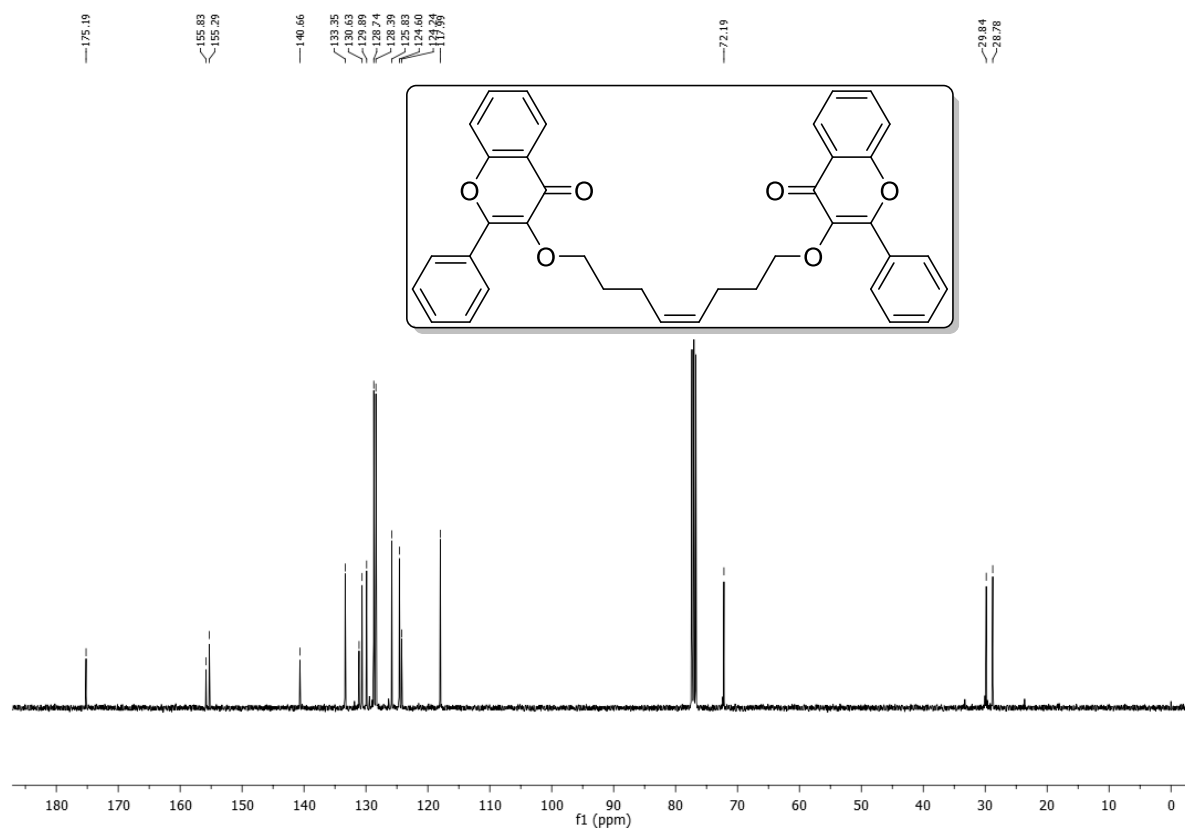


Figure S52. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**13g**.

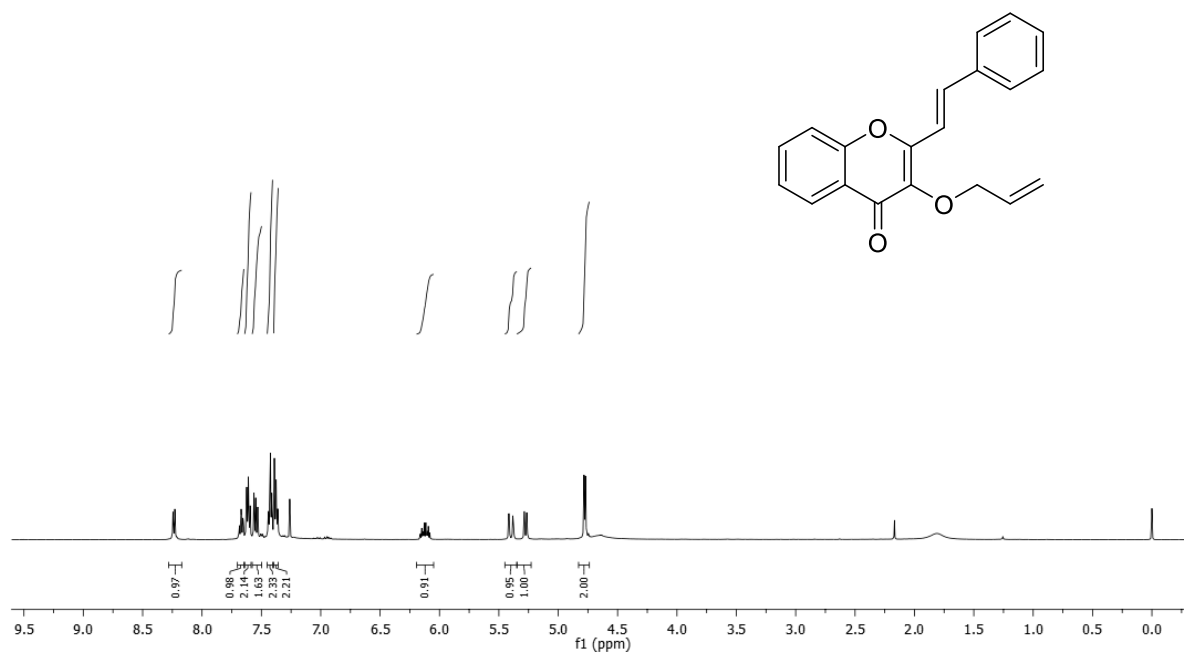


Figure S53. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-17.

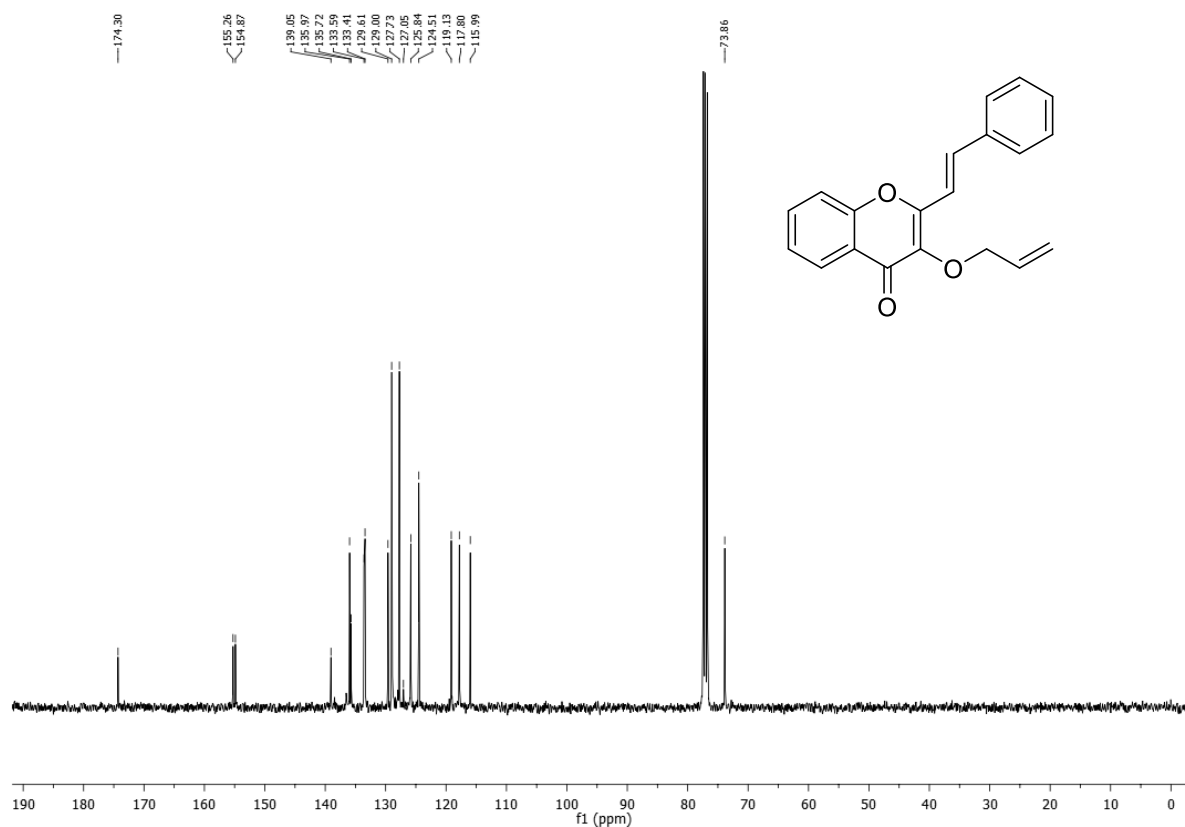


Figure S54. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-17.

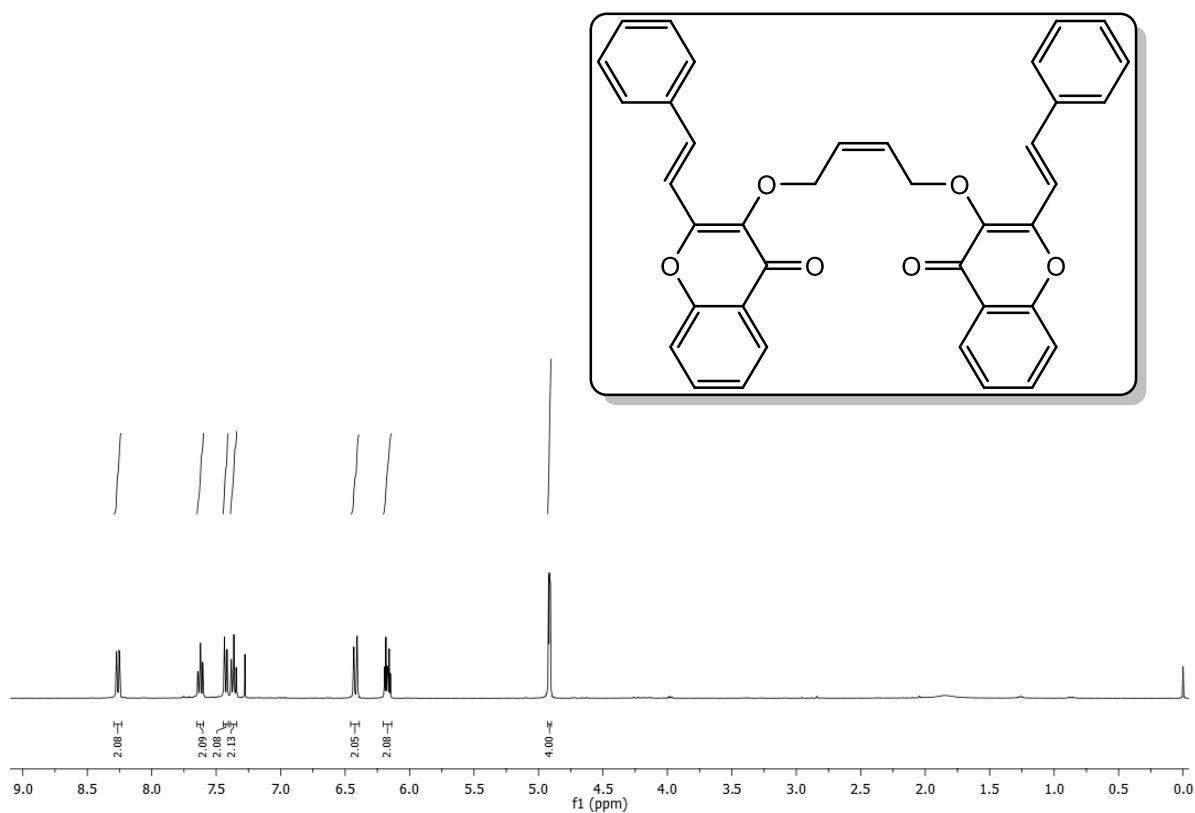


Figure S55. ^1H NMR Spectrum (400 MHz, CDCl_3) of compound-**18**.

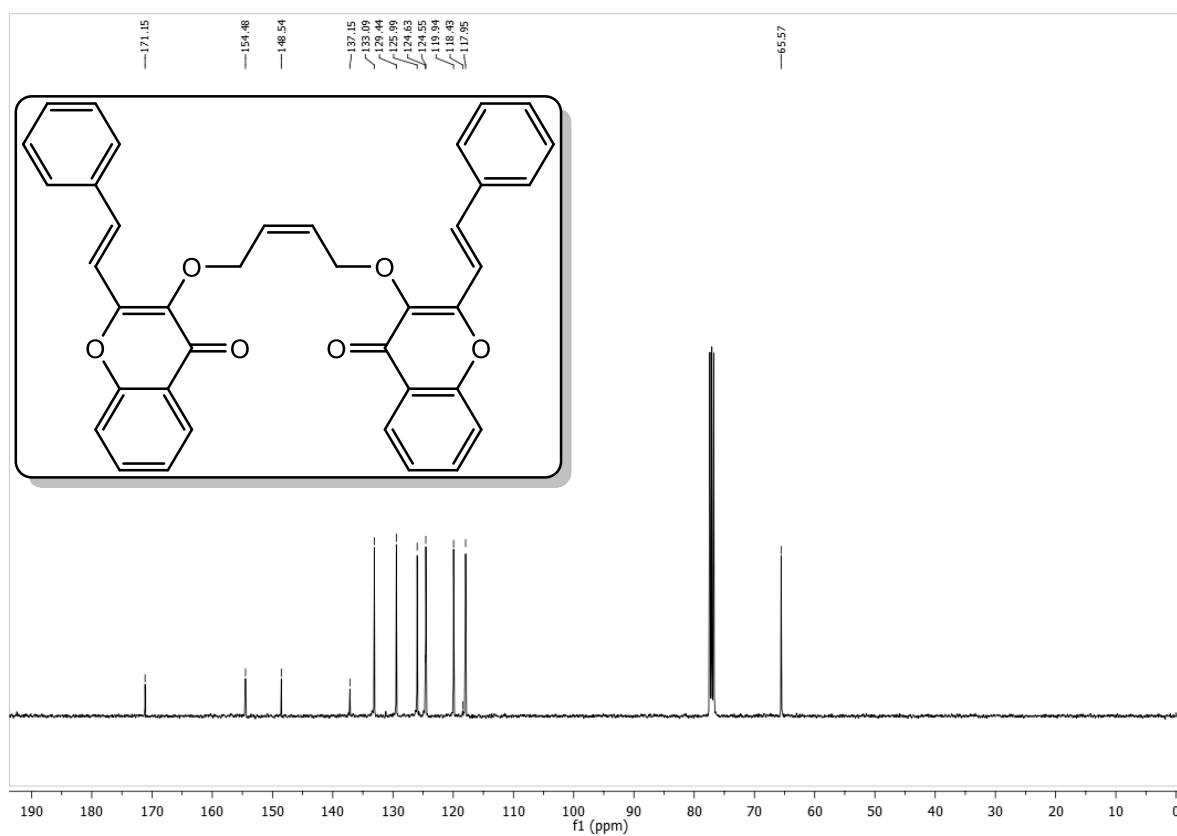


Figure S56. ^{13}C NMR Spectrum (101 MHz, CDCl_3) of compound-**18**.

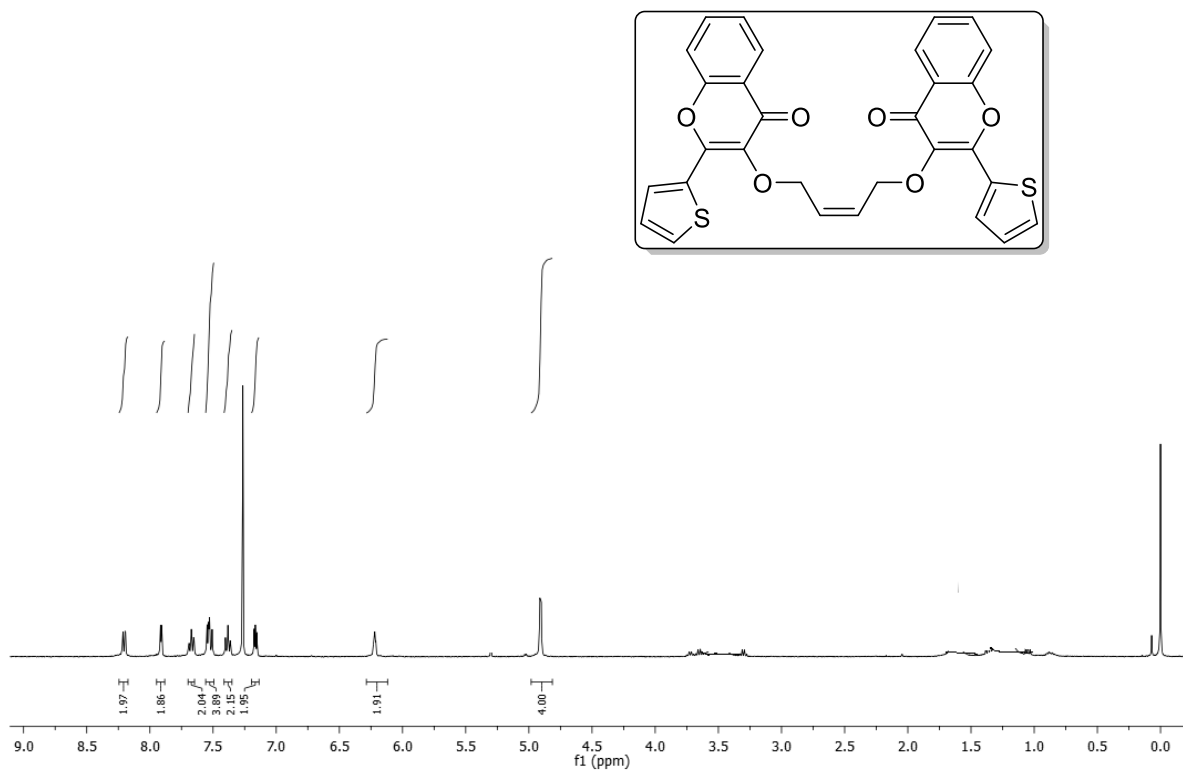


Figure S57. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-21a.

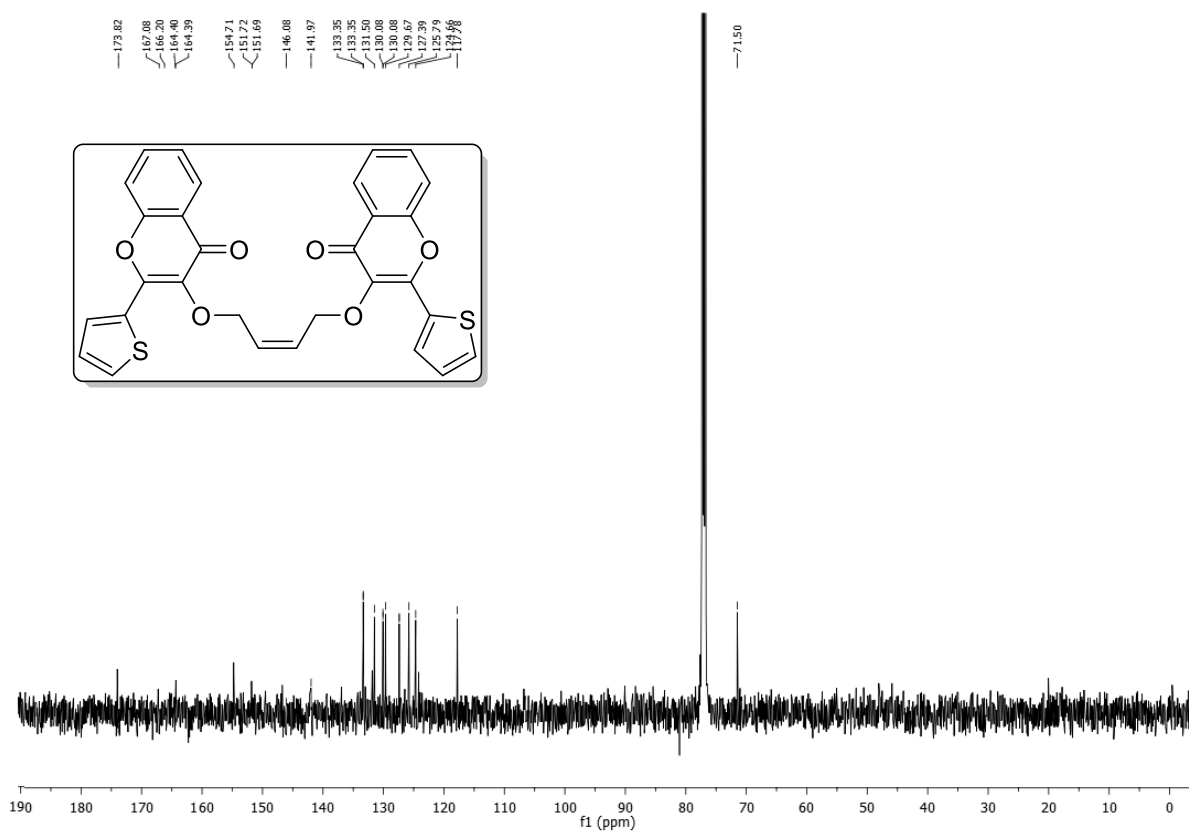


Figure 58. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-21a.

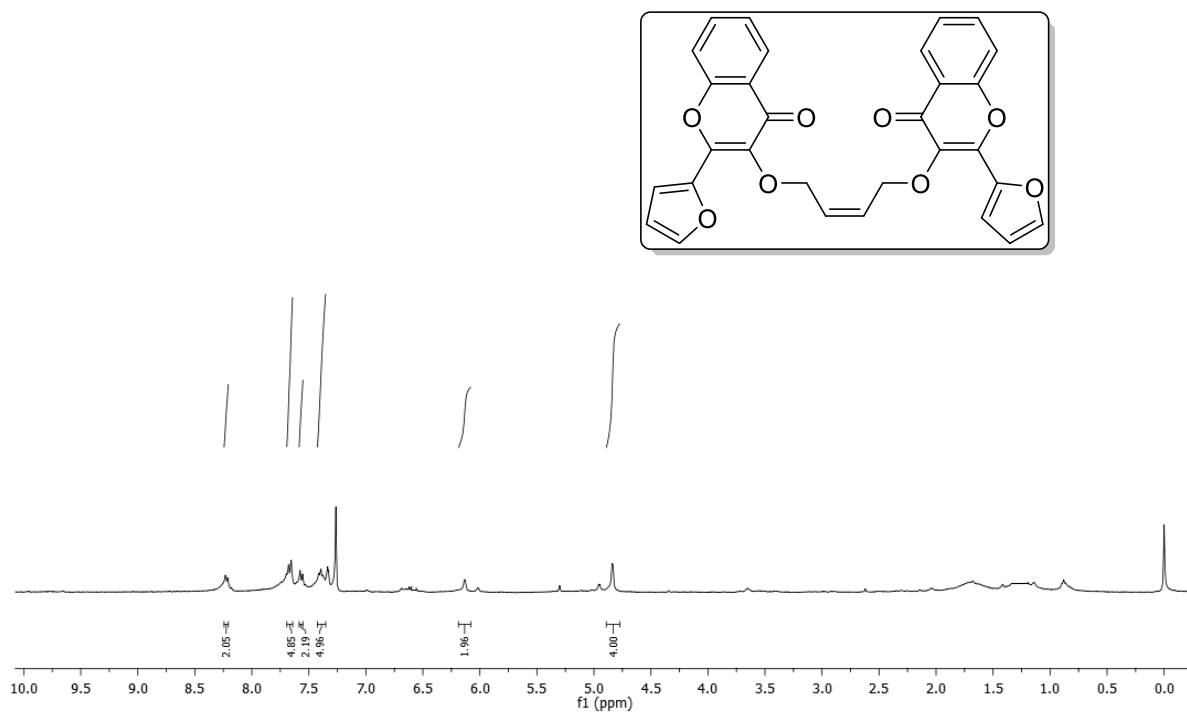


Figure S59. ¹H NMR Spectrum (400 MHz, CDCl₃) of compound-**21b**.

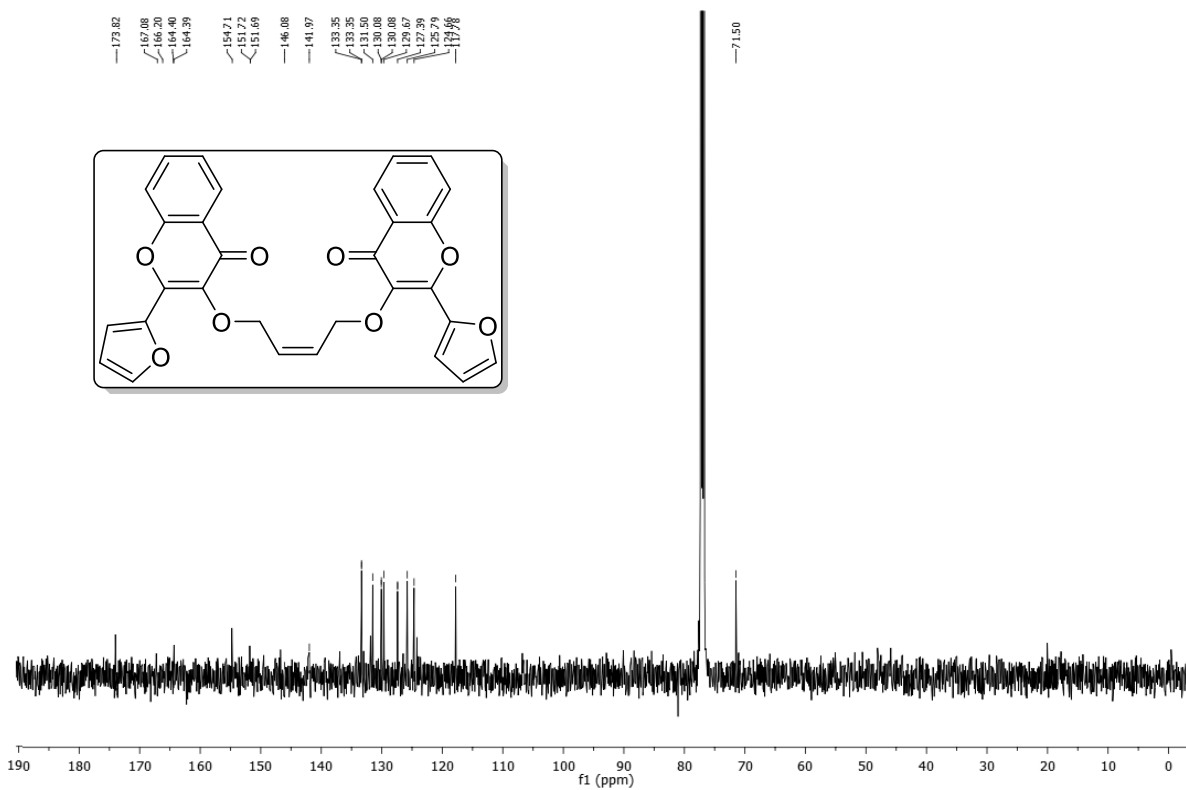
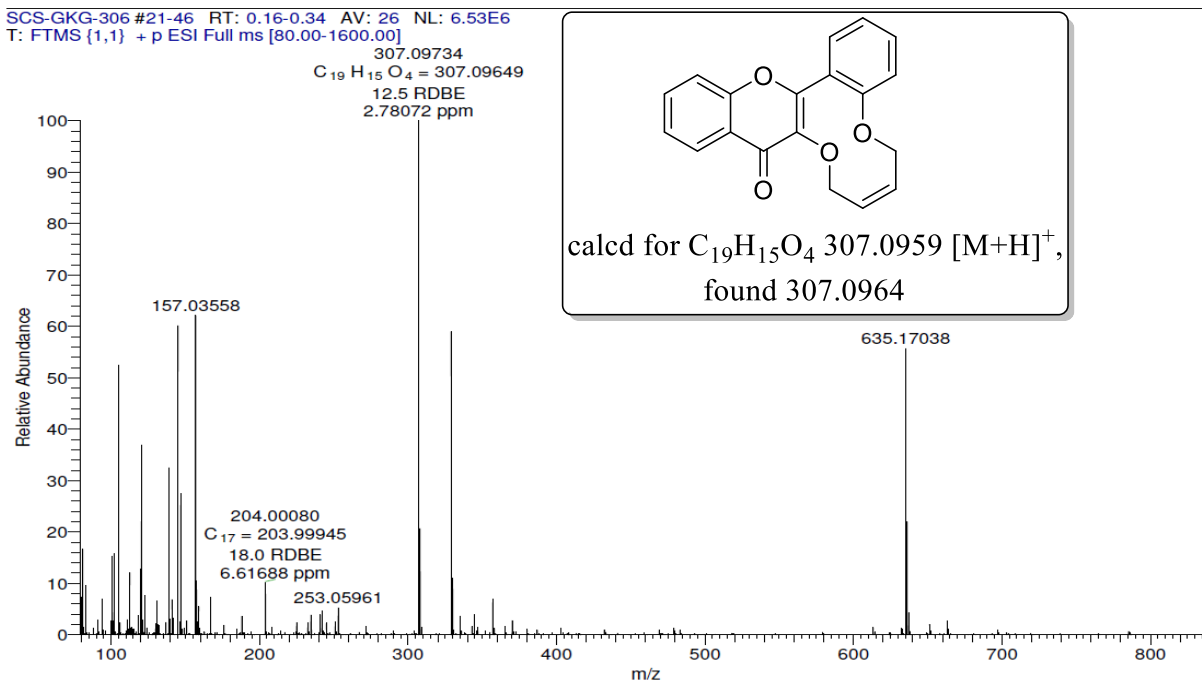
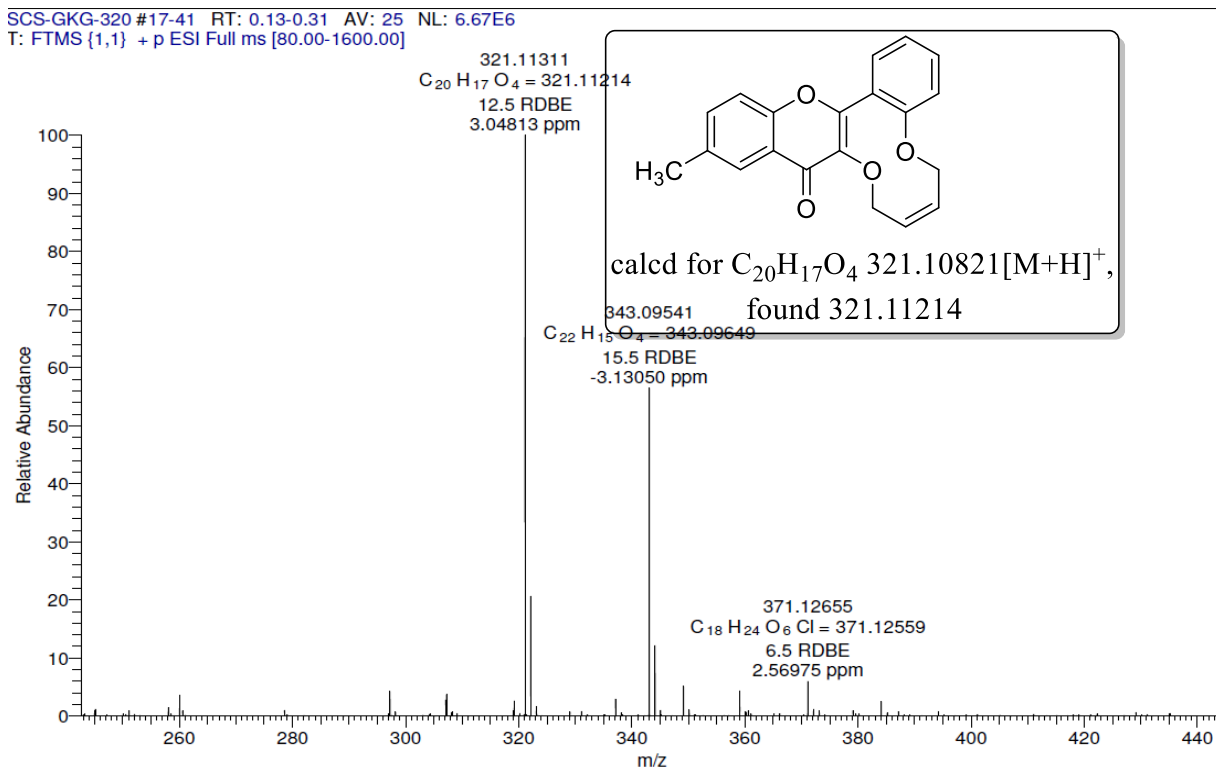
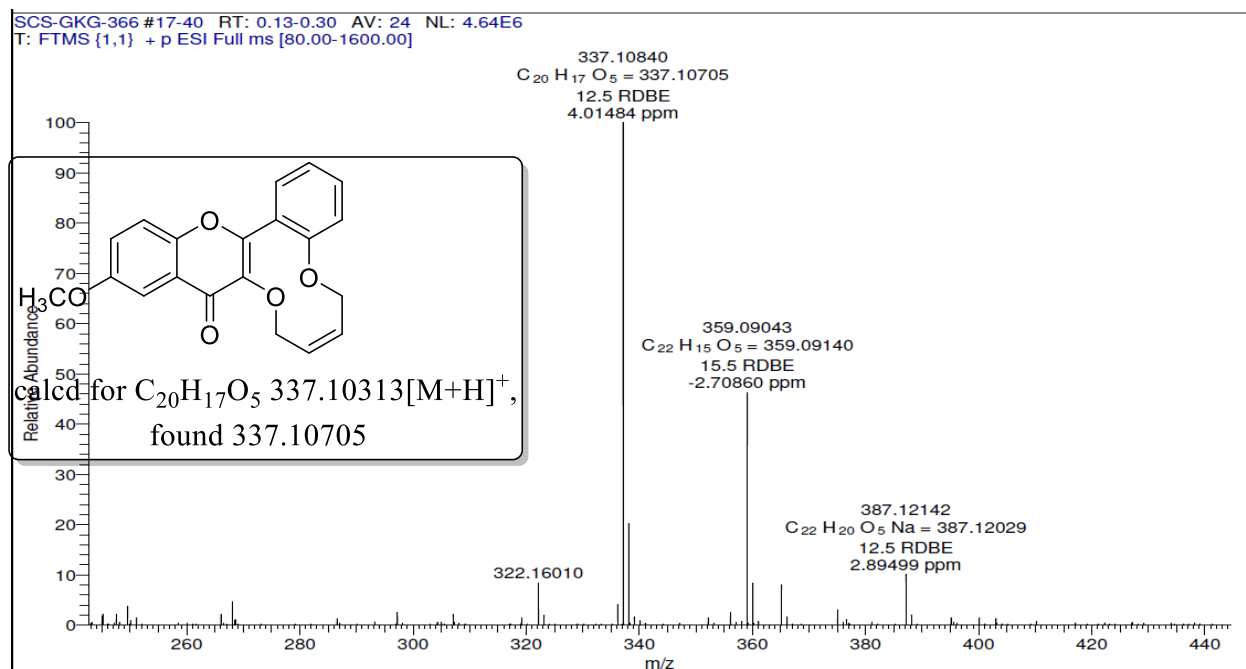


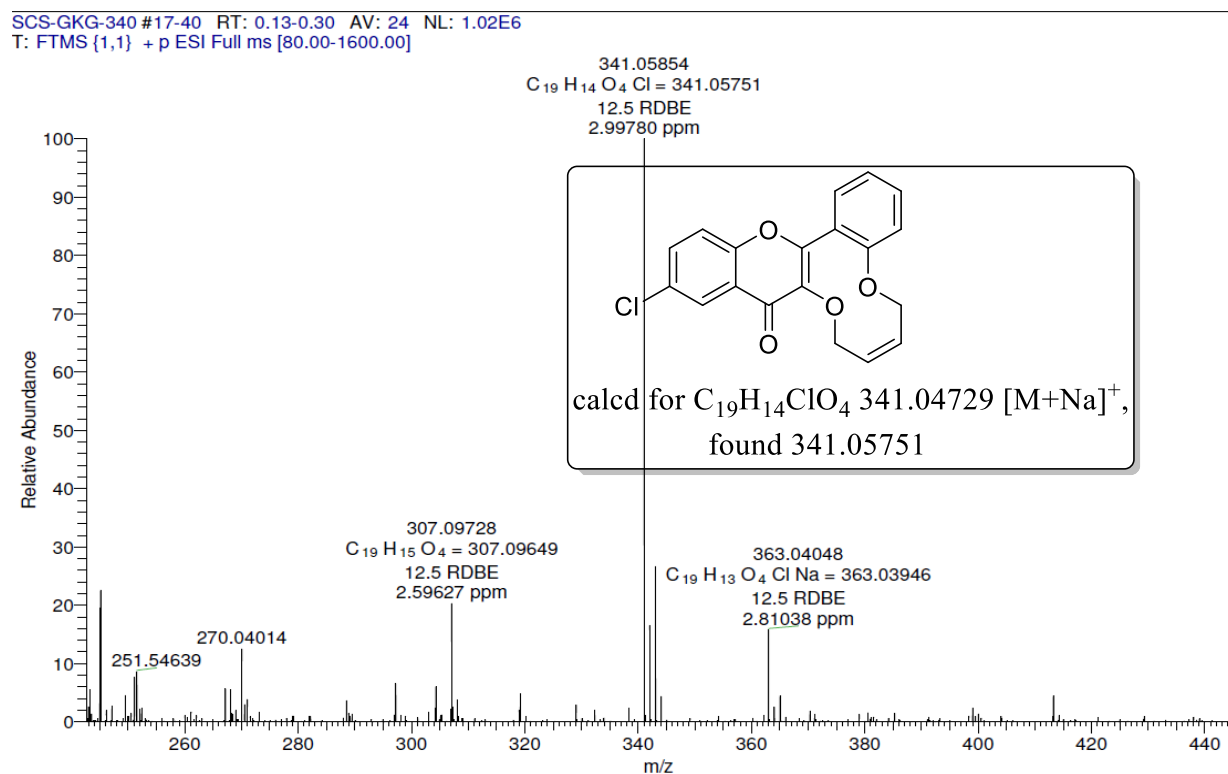
Figure S60. ¹³C NMR Spectrum (101 MHz, CDCl₃) of compound-**21b**.

ESI-HRMS spectrum of (Z)-6,9-dihydro-11H-benzo[4,5][1,6]dioxecino[3,2-b]chromen-11-one (**6a**)ESI-HRMS spectrum of (Z)-13-methyl-6,9-dihydro-11H-benzo[4,5][1,6]dioxecino[3,2-b]chromen-11-one (**6b**)

ESI-HRMS spectrum of (Z)-13-methoxy-6,9-dihydro-11H-benzo[4,5][1,6]dioxecino[3,2-b]chromen-11-one (6c)

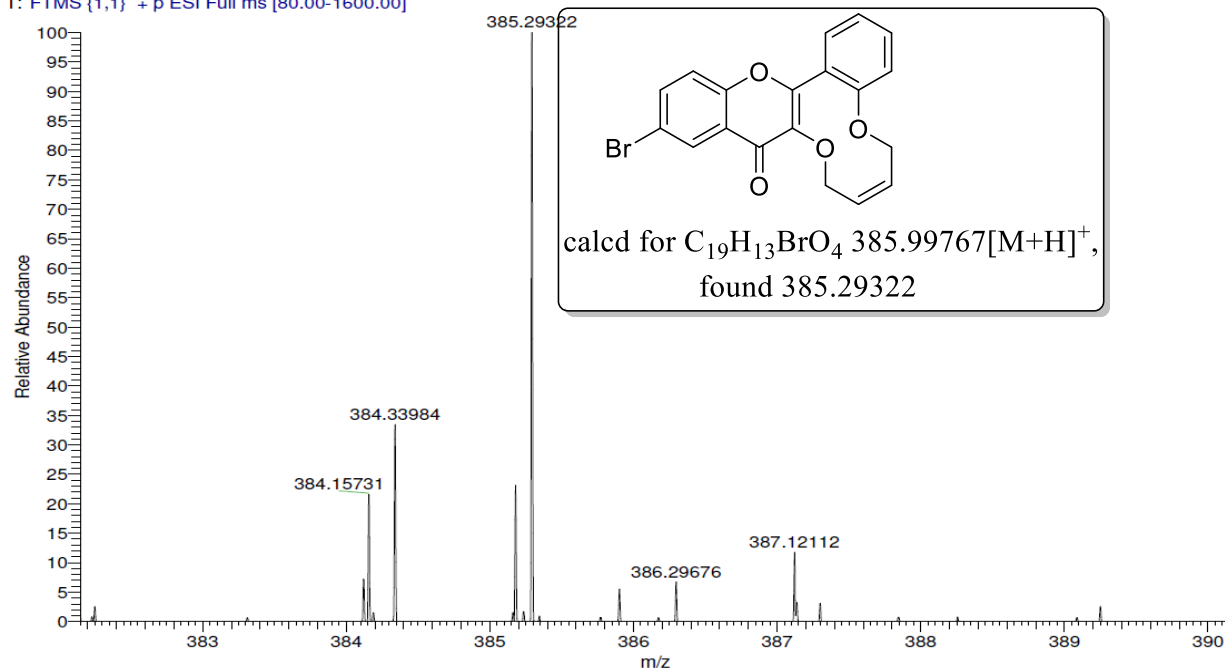


ESI-HRMS spectrum of (Z)-13-chloro-6,9-dihydro-11H-benzo[4,5][1,6]dioxecino[3,2-b]chromen-11-one (6d)

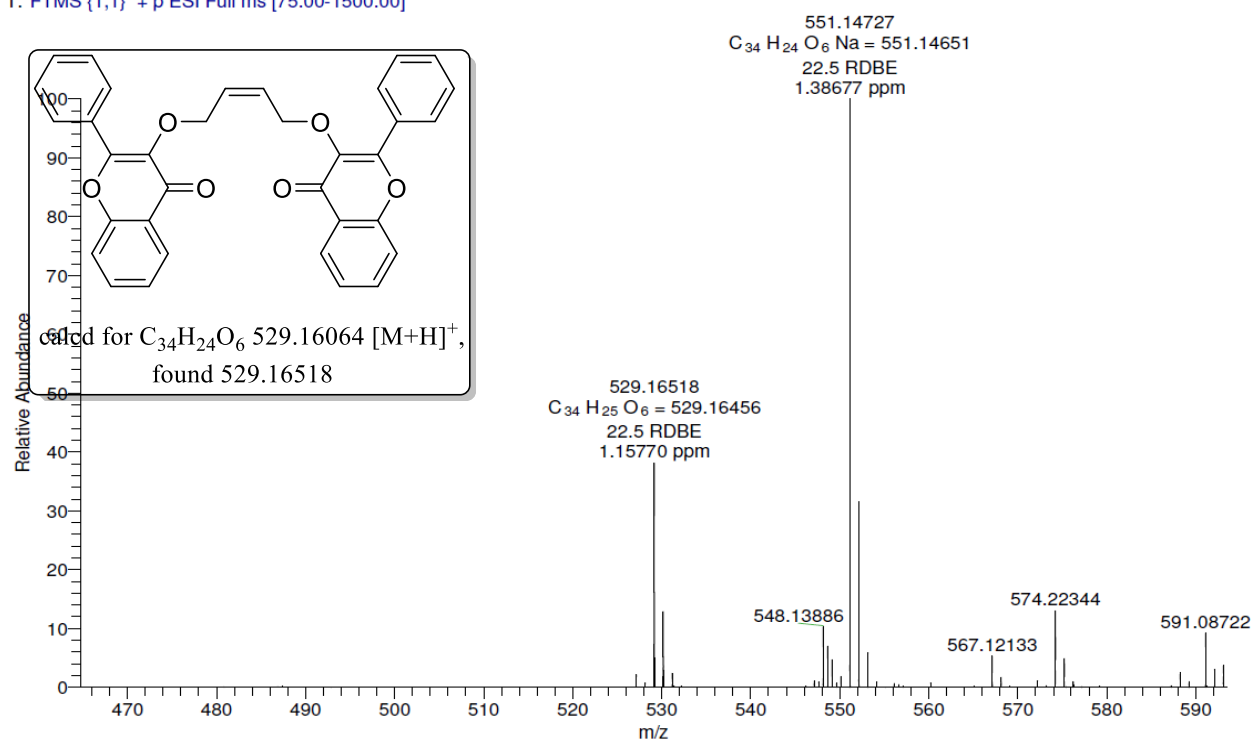


ESI-HRMS spectrum of (Z)-13-bromo-6,9-dihydro-11H-benzo[4,5][1,6]dioxecino[3,2-b]chromen-11-one (**6e**)

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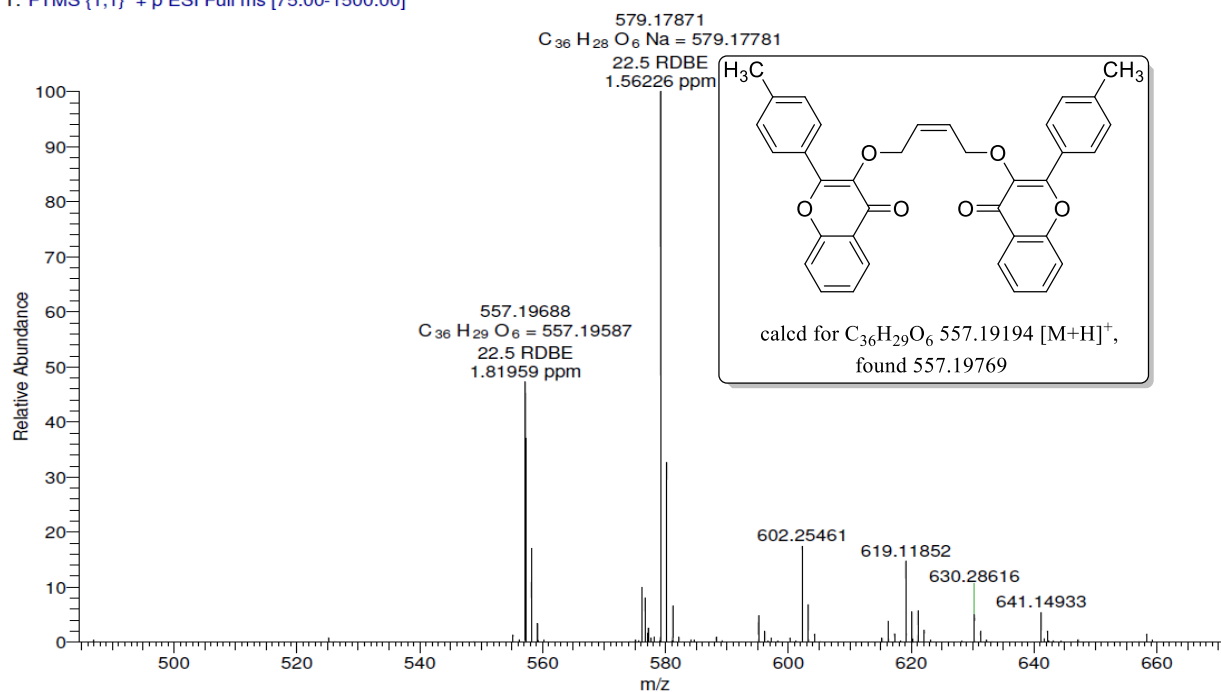
ESI-HRMS spectrum of (Z)-3,3'-(but-2-ene-1,4-diylbis(oxy))bis(2-phenyl-4H-chromen-4-one) (**13a**)

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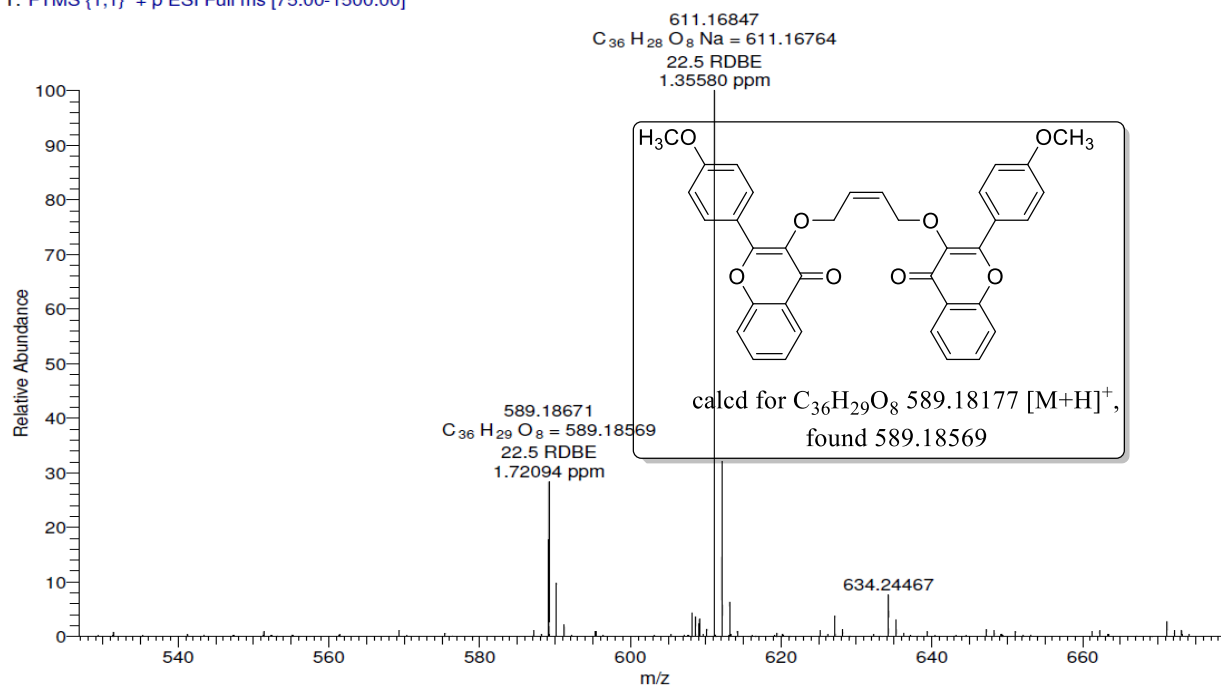


ESI-HRMS spectrum of (Z)-3, 3'-(but-2-ene-1,4-diylbis(oxy))bis(2-(p-tolyl)-4H-chromen-4-one) (**13b**)

SCS-GKG-556 #24-49 RT: 0.18-0.37 AV: 26 NL: 8.63E5
T: FTMS {1,1} + p ESI Full ms [75.00-1500.00]

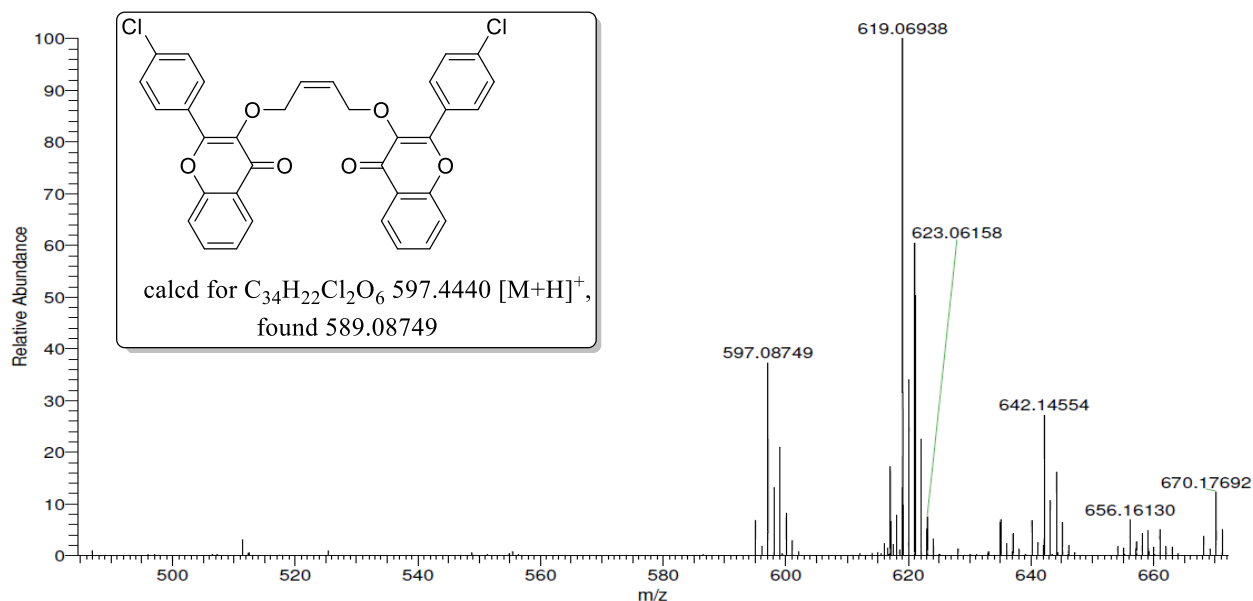
ESI-HRMS spectrum of (Z)-3, 3'-(but-2-ene-1,4-diylbis(oxy))bis(2-(4-methoxyphenyl)-4H-chromen-4-one) (**13c**)

SCS-GKG-589 #23-38 RT: 0.17-0.29 AV: 16 NL: 9.57E5
T: FTMS {1,1} + p ESI Full ms [75.00-1500.00]

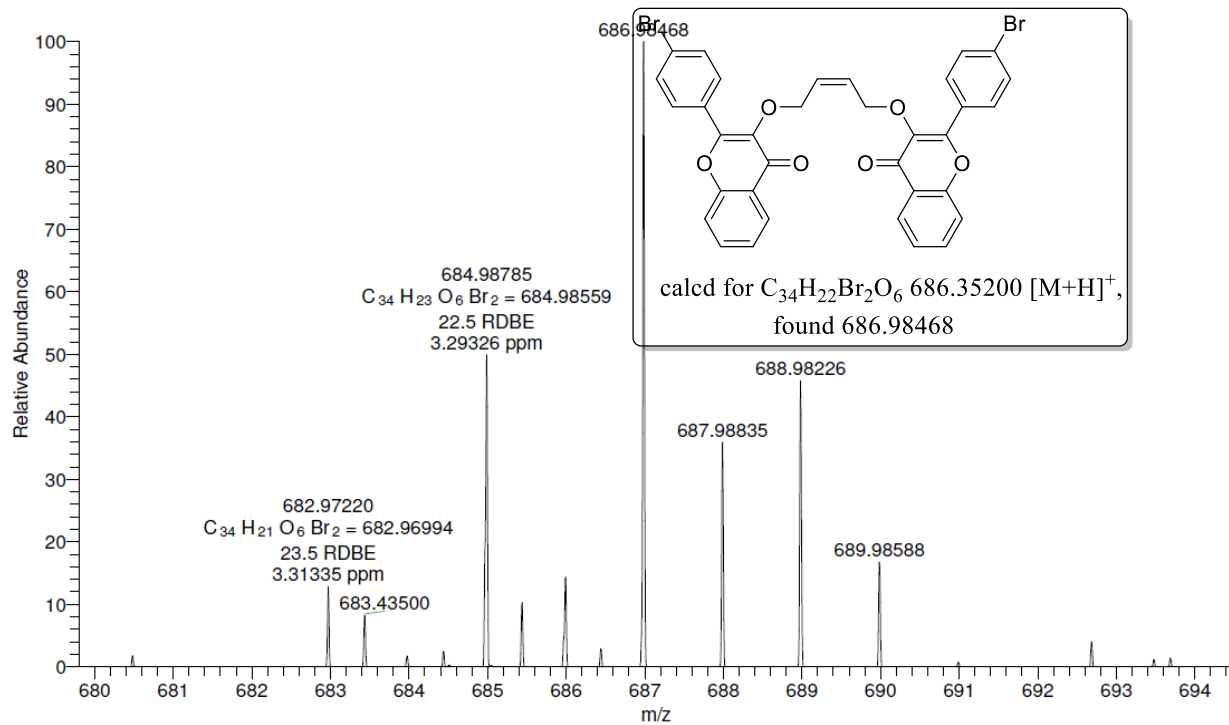


ESI-HRMS spectrum of (Z)-3, 3'-(but-2-ene-1, 4-diylbis(oxy))bis(2-(4-chlorophenyl)-4H-chromen-4-one) (**13d**)

SCS-GKG-596 #23-46 RT: 0.17-0.34 AV: 24 NL: 3.05E5
T: FTMS {1,1} + p ESI Full ms [75.00-1500.00]

ESI-HRMS spectrum of (Z)-3, 3'-(but-2-ene-1,4-diylbis(oxy))bis(2-(4-bromophenyl)-4H-chromen-4-one) (**13e**)

SCS-GKG-686 #30-45 RT: 0.23-0.34 AV: 16 NL: 5.82E4
T: FTMS {1,1} + p ESI Full ms [75.00-1500.00]



ESI-HRMS spectrum of (Z)-3, 3'-(hex-3-ene-1, 6-diylbis(oxy))bis(2-phenyl-4H-chromen-4-one) (**13f**)