

Free-Catalysed Synthesis of Thiazolidine-Thiourea Ligands for Metal Coordination (Au and Ag) and Preliminary Cytotoxic Studies

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1. NMR spectra of 2-amino-2-thiazolines and 2-iminothiazolidines

Figure S1. ^1H NMR (300 MHz, CDCl_3) spectrum of compound 4.

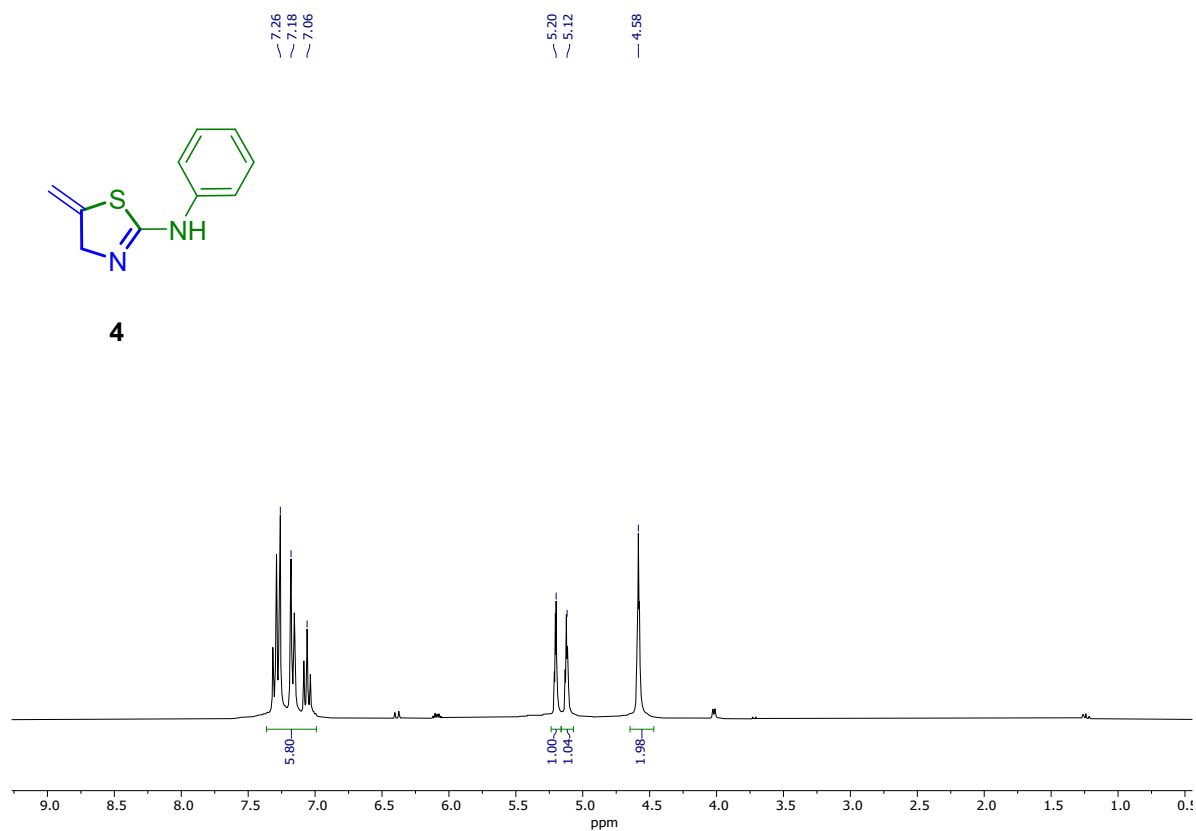


Figure S2. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, CDCl_3) spectrum of compound 4.

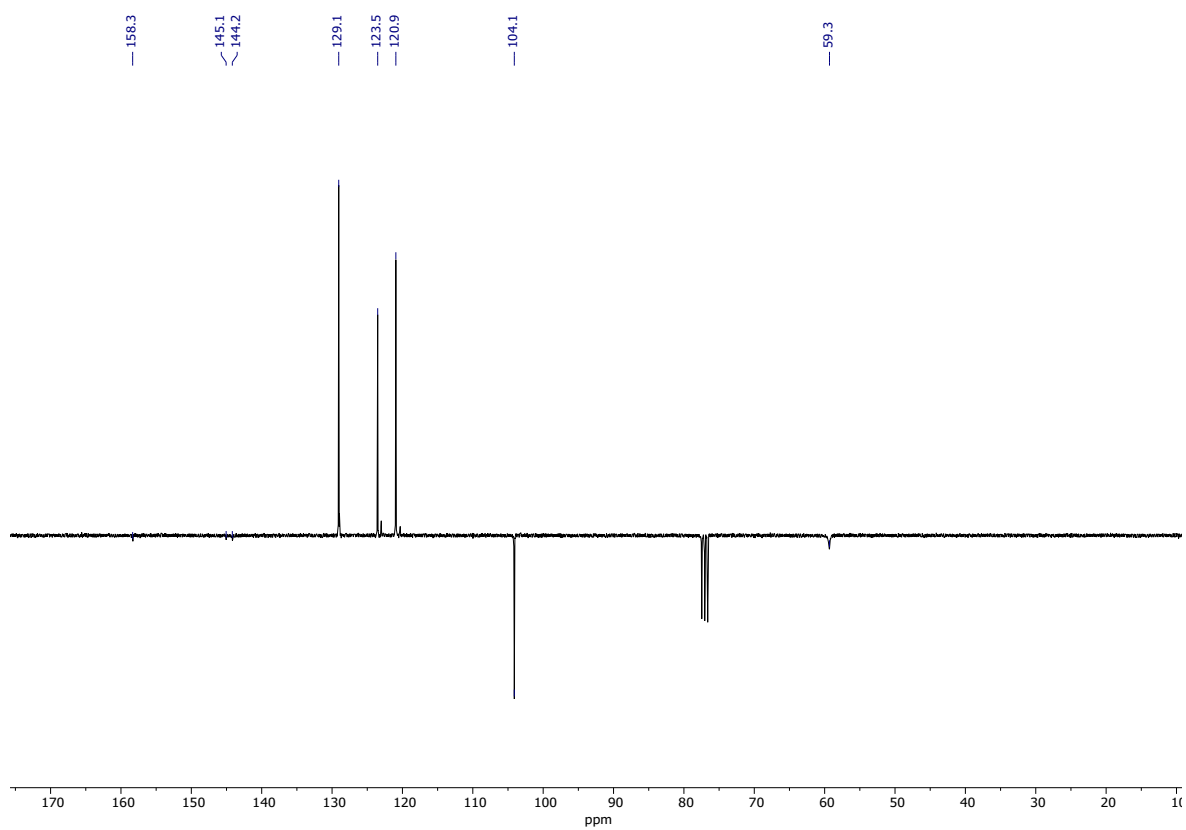


Figure S3. ^1H NMR (400 MHz, CDCl_3) spectrum of compound **5**.

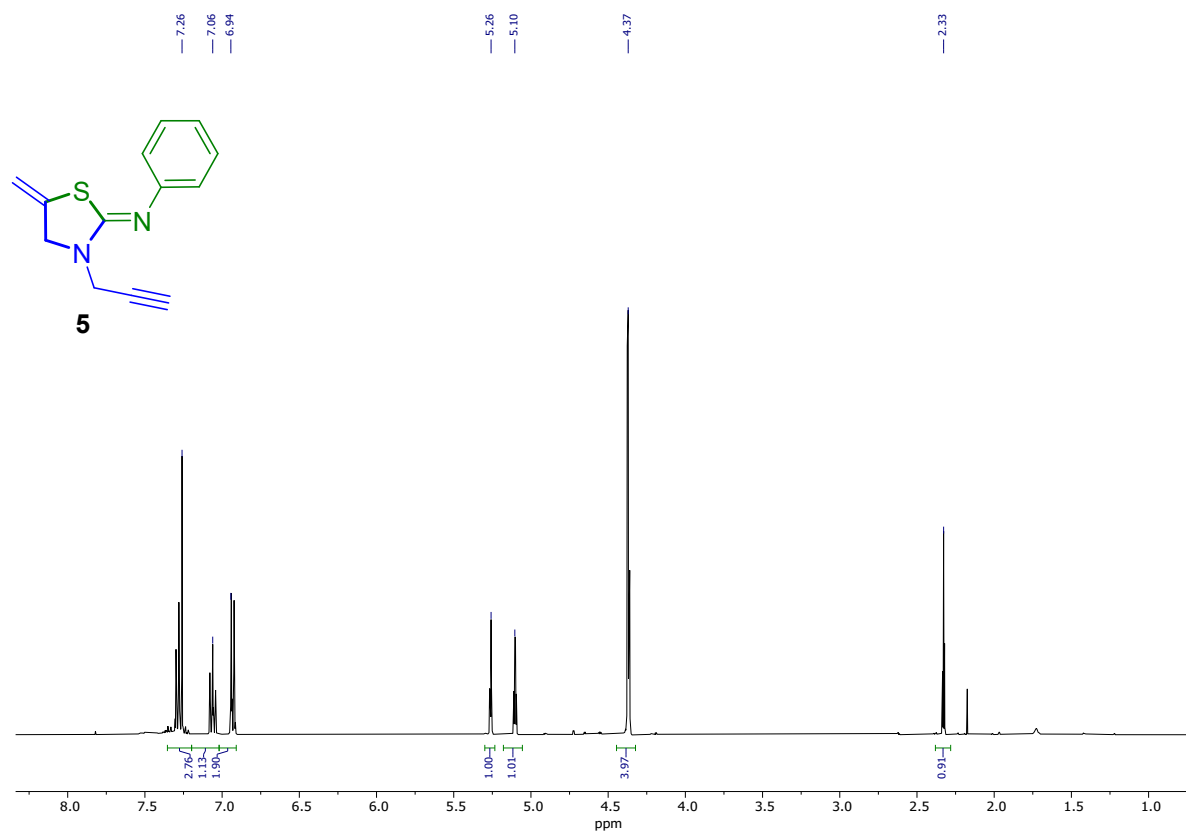


Figure S4. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, CDCl_3) spectrum of compound **5**.

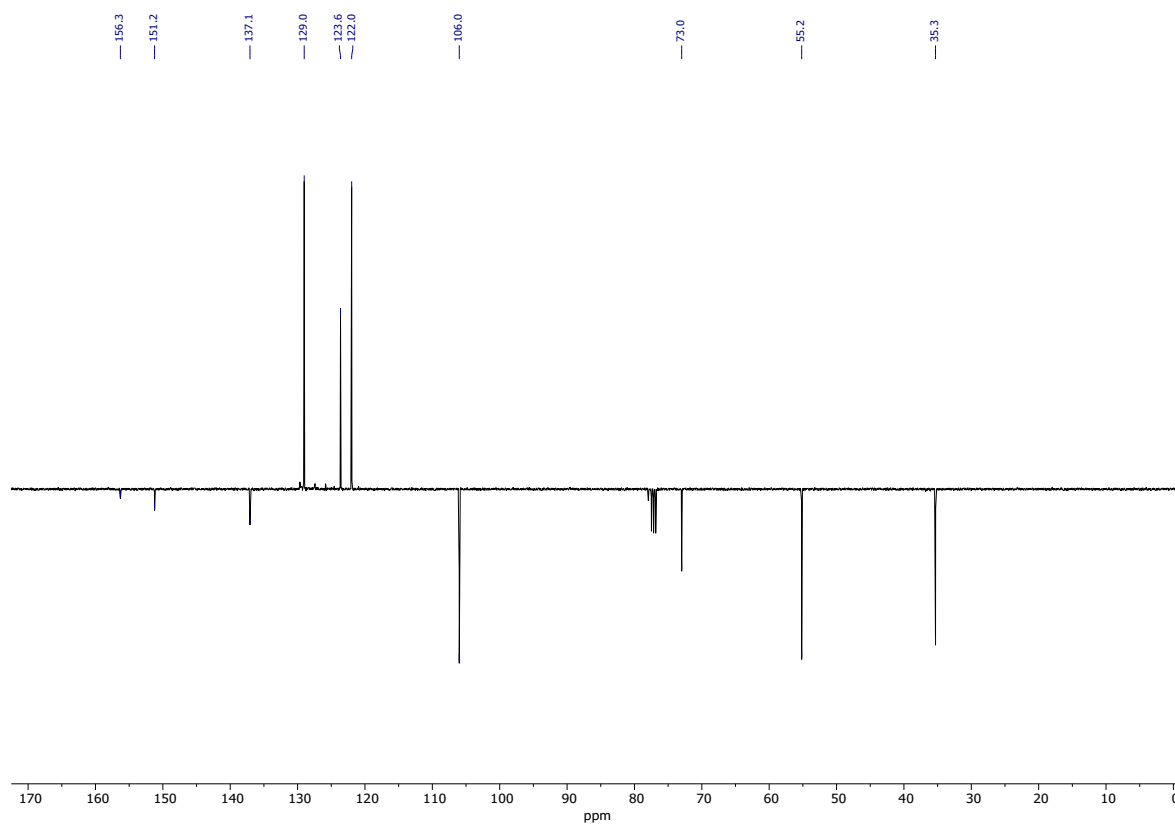


Figure S5. ^1H NMR (400 MHz, CDCl_3) spectrum of compound **6**.

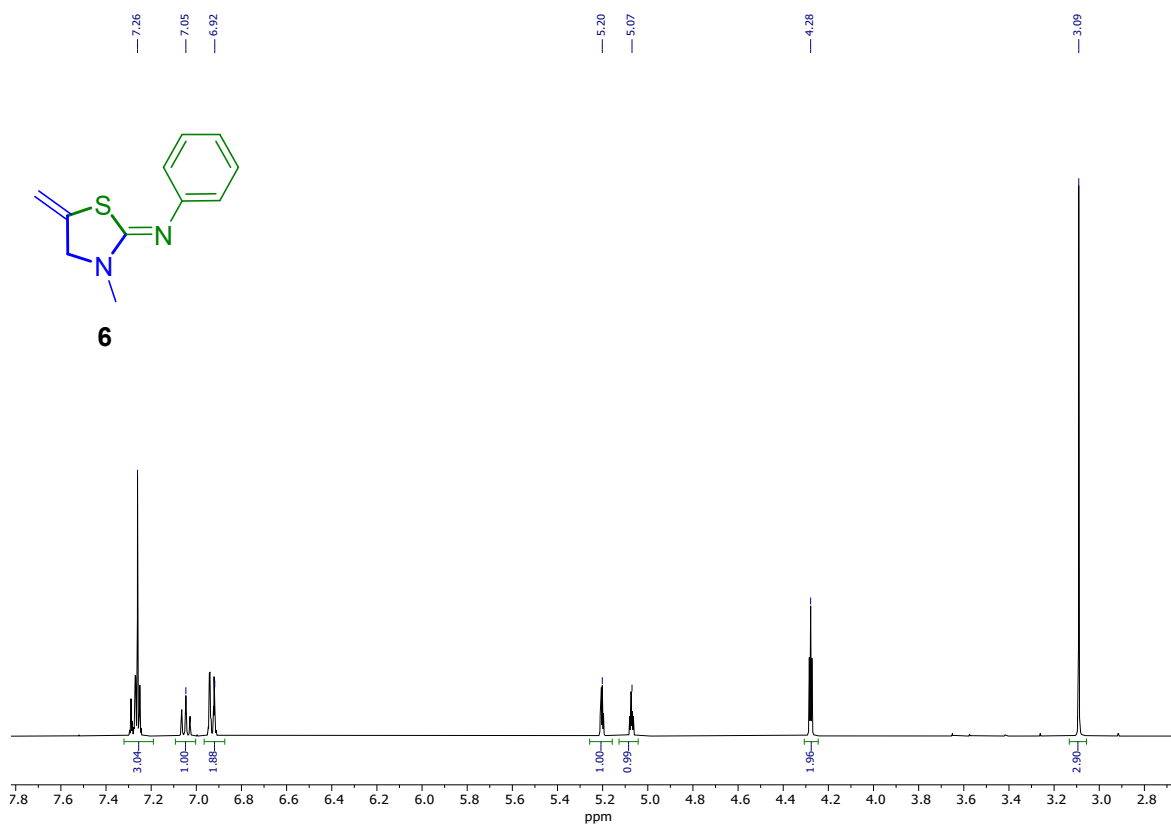


Figure S6. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, CDCl_3) spectrum of compound **6**.

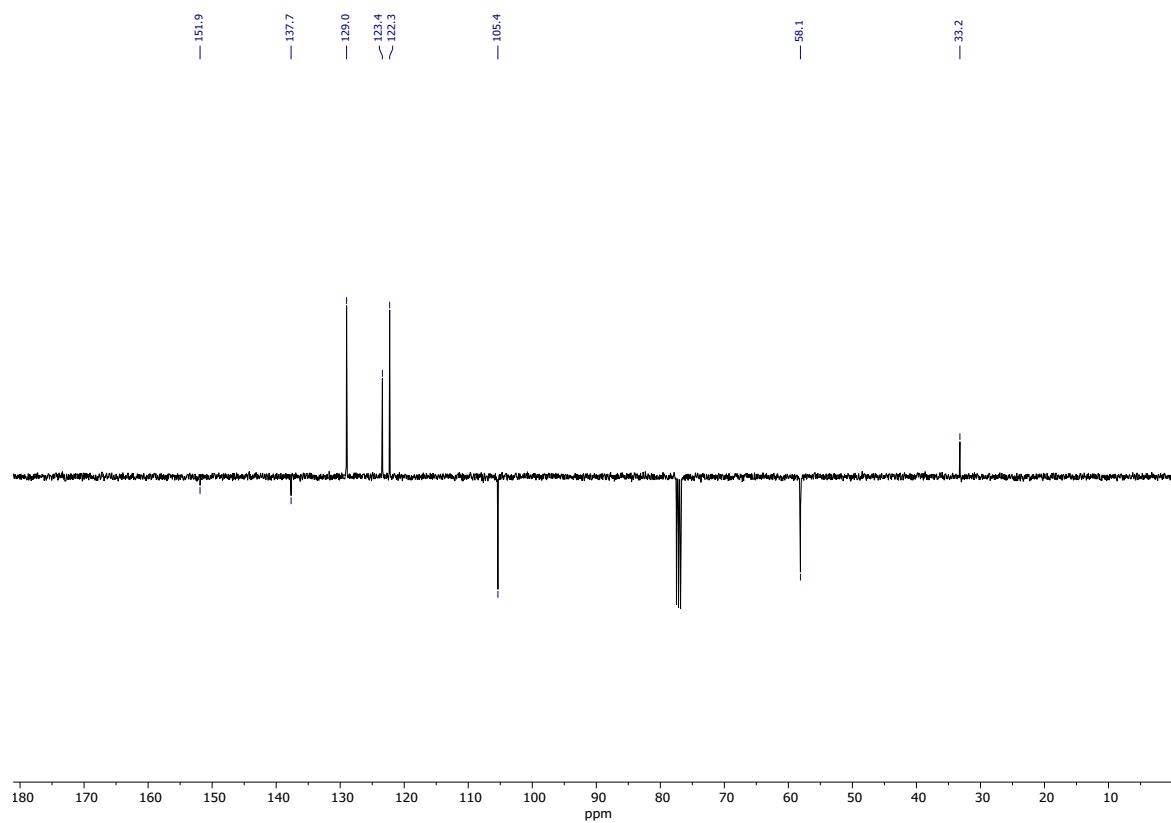


Figure S7. ^1H NMR (400 MHz, CDCl_3) spectrum of compound **7**.

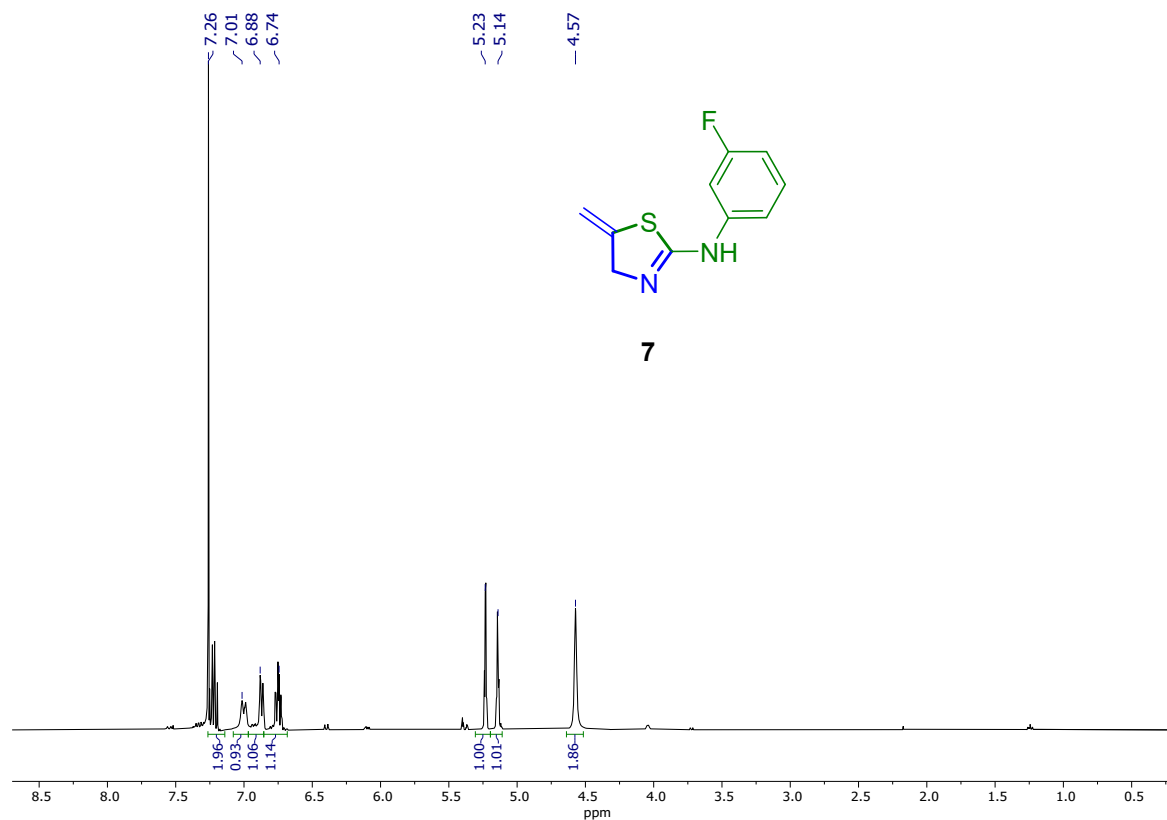


Figure S8. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, CDCl_3) spectrum of compound **7**.

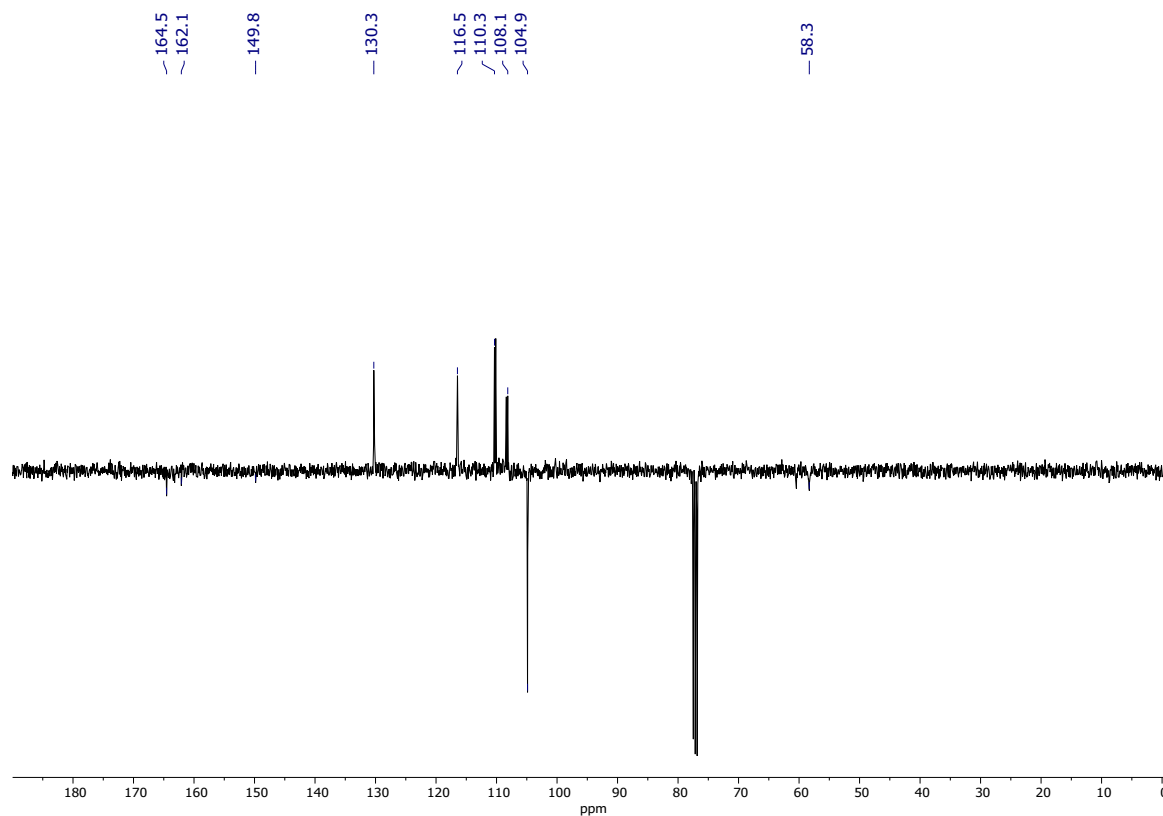


Figure S9. ^{19}F NMR (376 MHz, CDCl_3) spectrum of compound **7**.

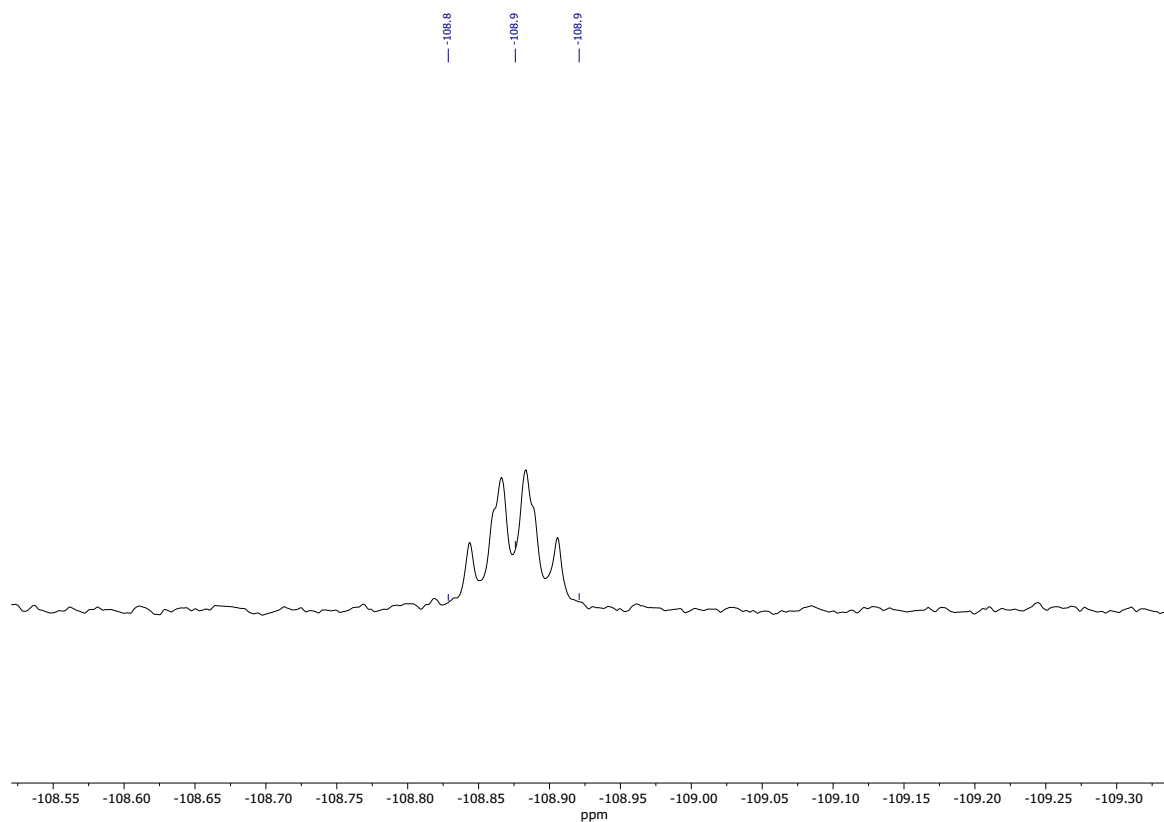


Figure S10. ^1H NMR (400 MHz, CDCl_3) spectrum of compound **8**.

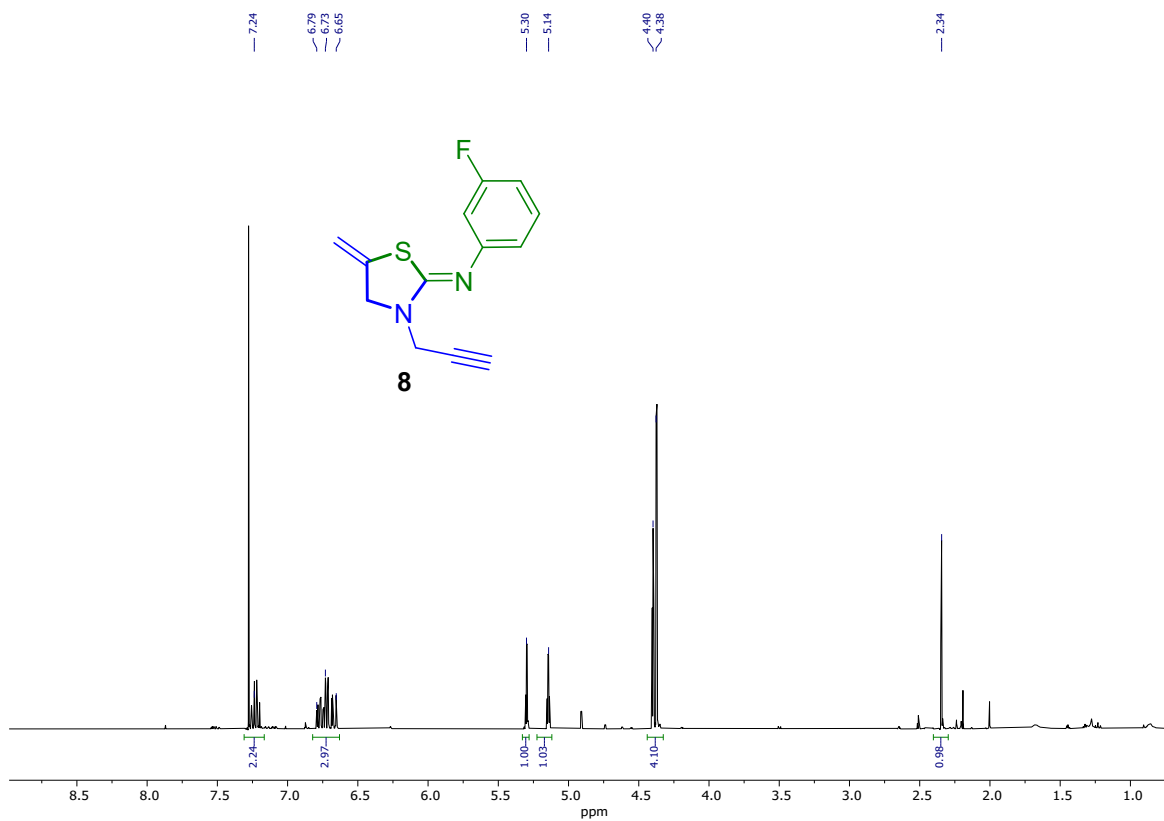


Figure S11. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, CDCl_3) spectrum of compound **8**.

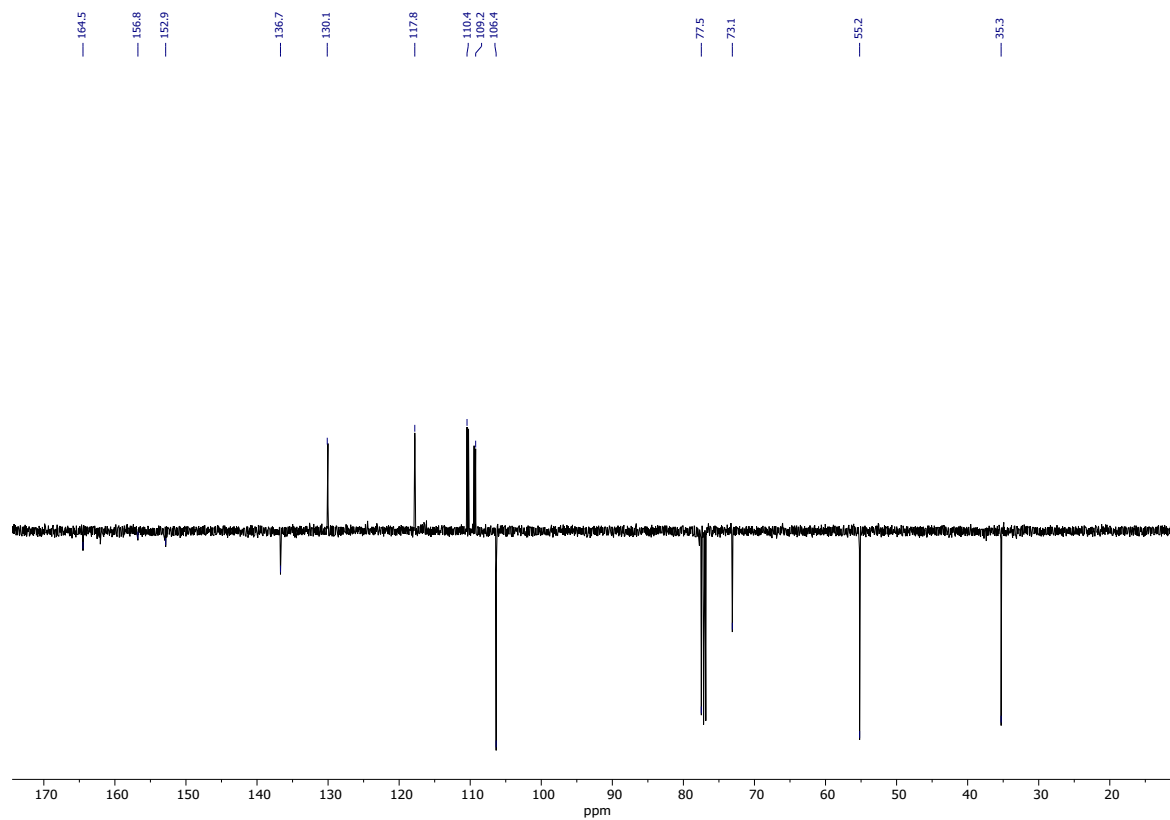


Figure S12. ^{19}F NMR (376 MHz, CDCl_3) spectrum of compound **8**.

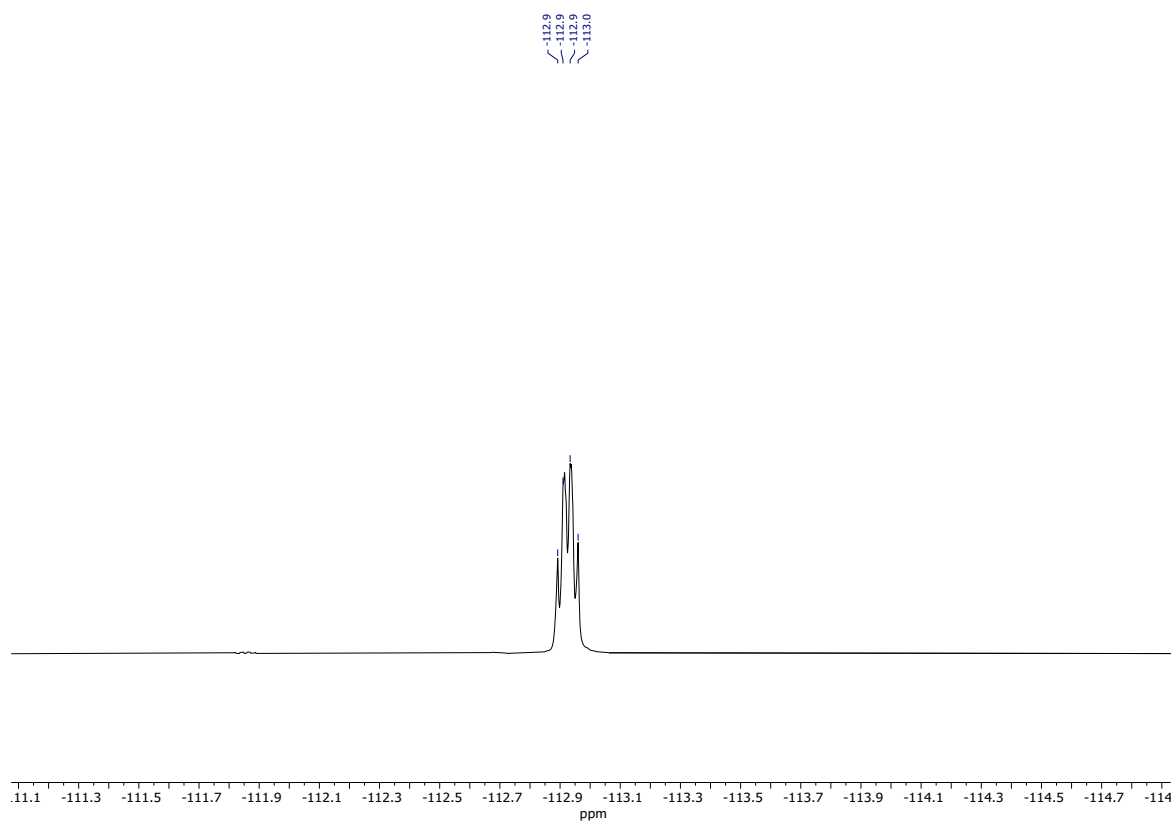


Figure S13. ^1H NMR (400 MHz, CDCl_3) spectrum of compound **9**.

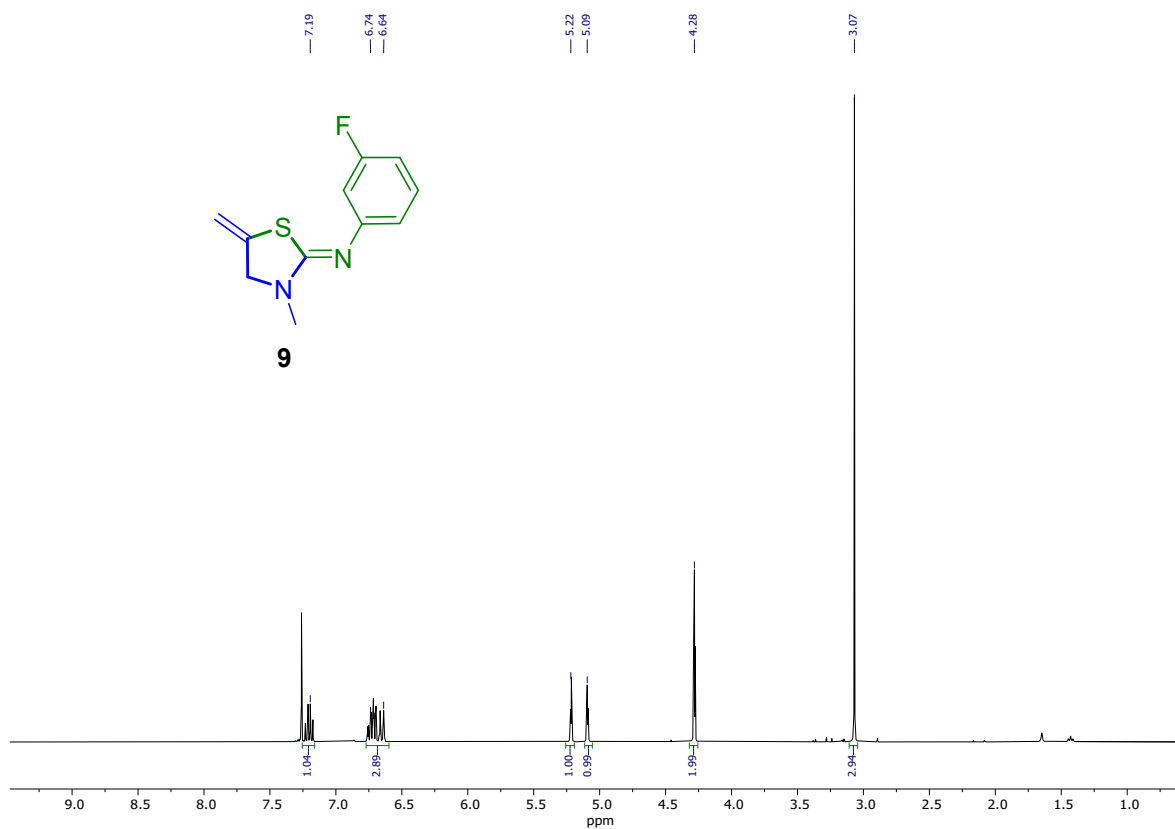


Figure S14. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, CDCl_3) spectrum of compound **9**.

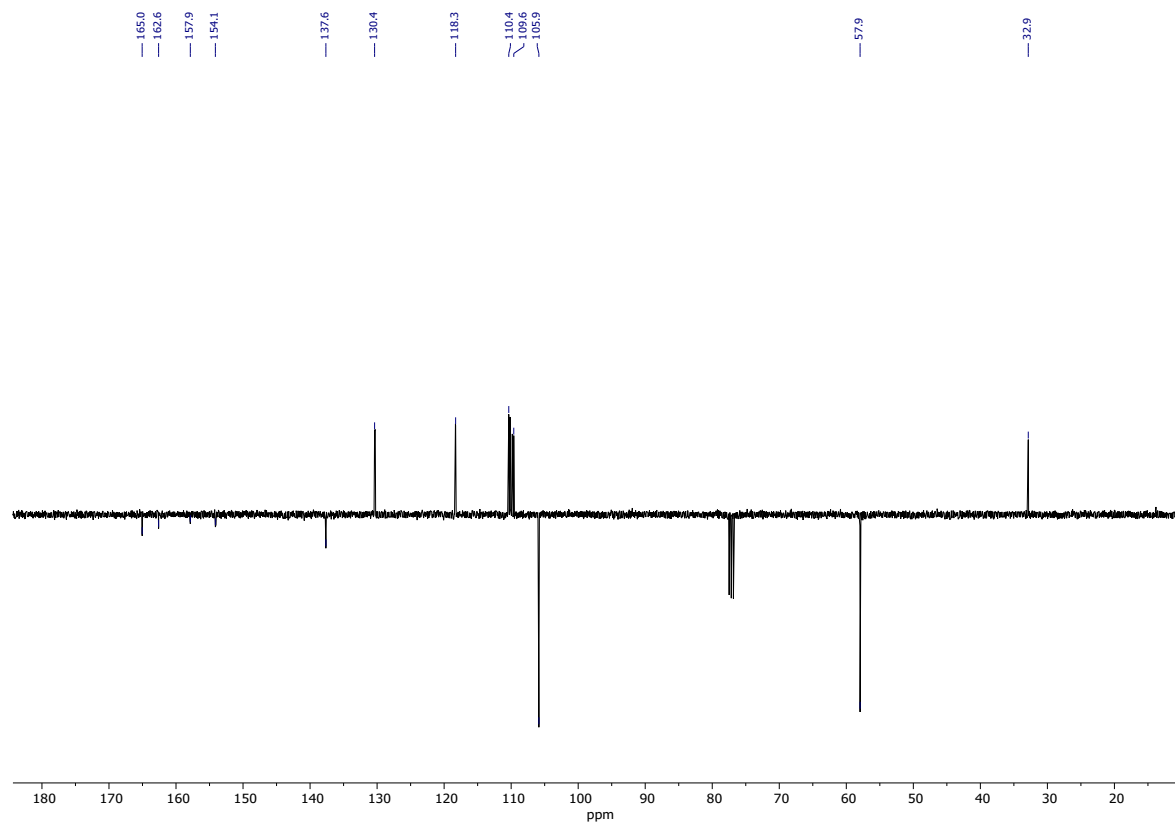
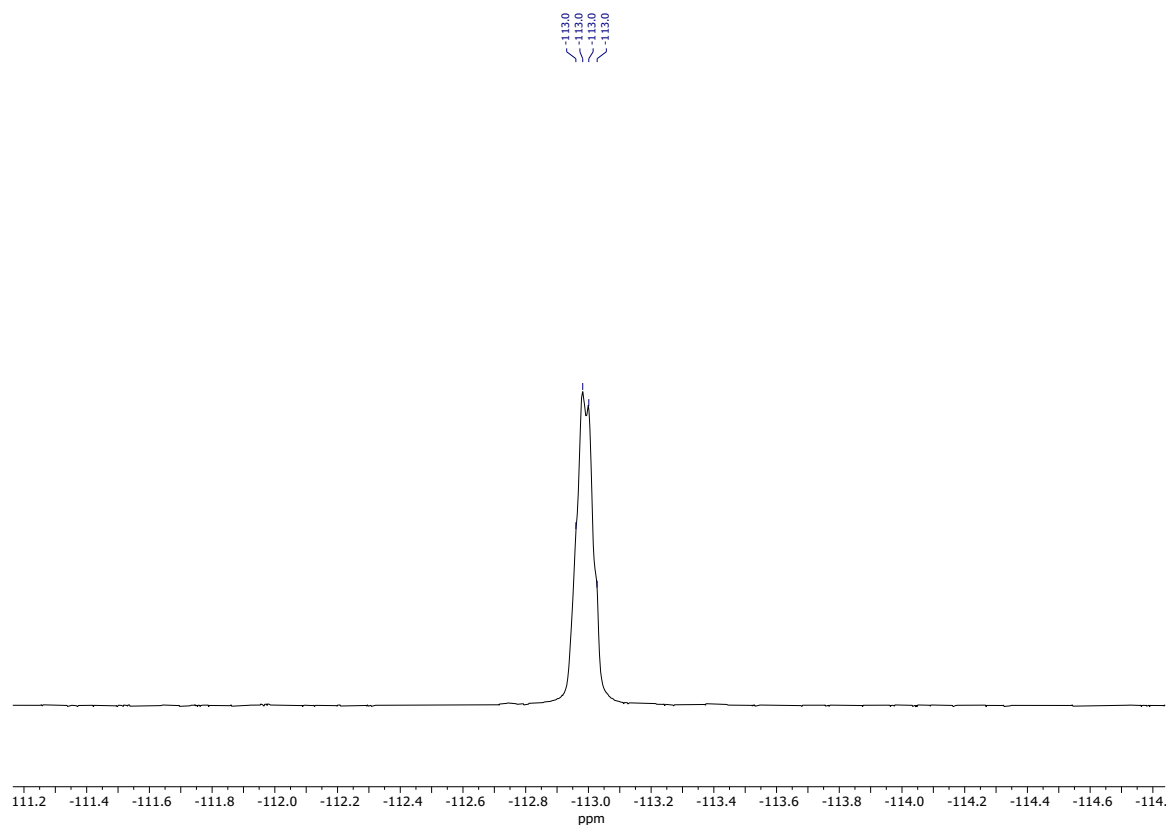


Figure S15. ^{19}F NMR (376 MHz, CDCl_3) spectrum of compound **9**.



2. NMR spectra of thiazolidine-thioureas 10-12

Figure S16. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of compound **10**.

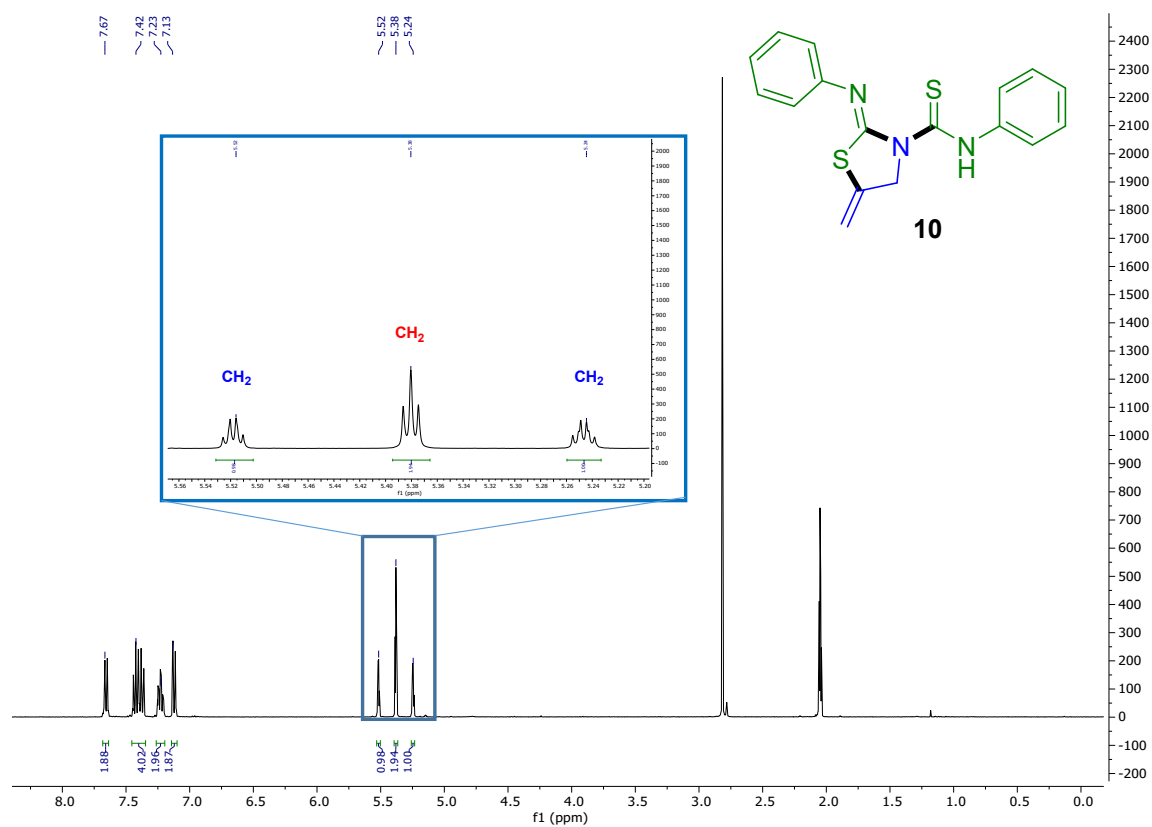


Figure S17. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of compound **10**.

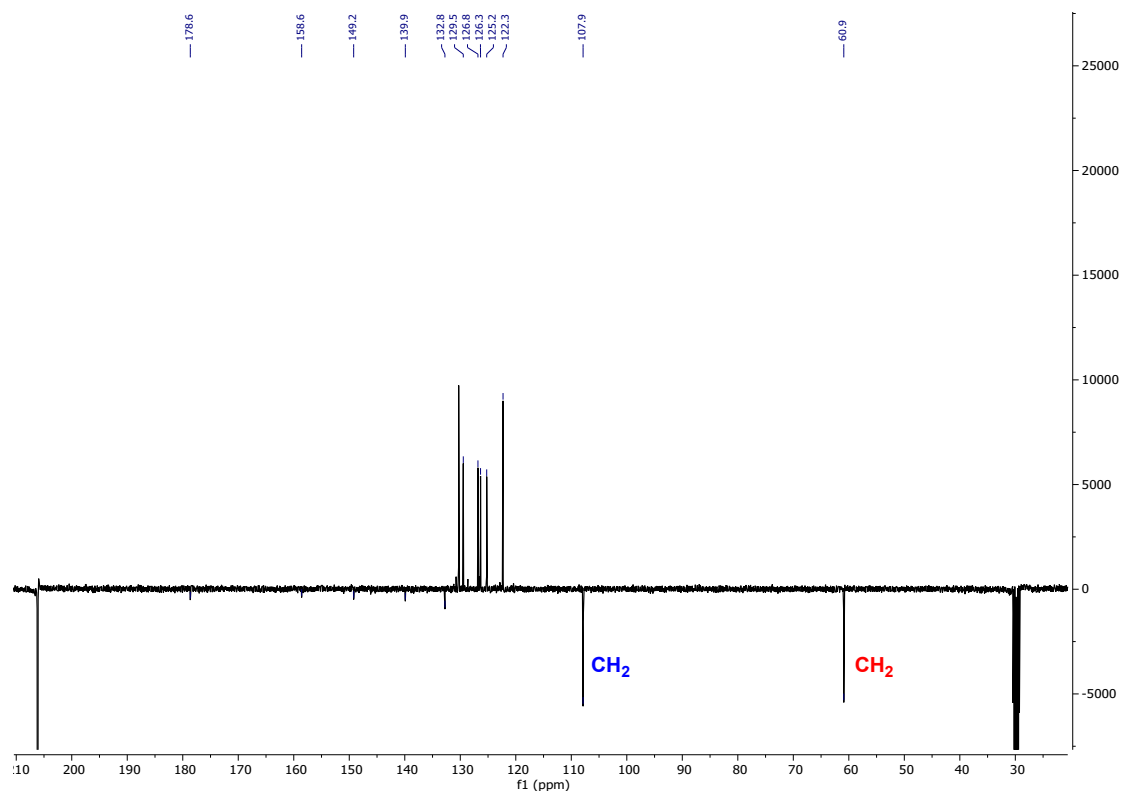


Figure S18. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of compound **11**.

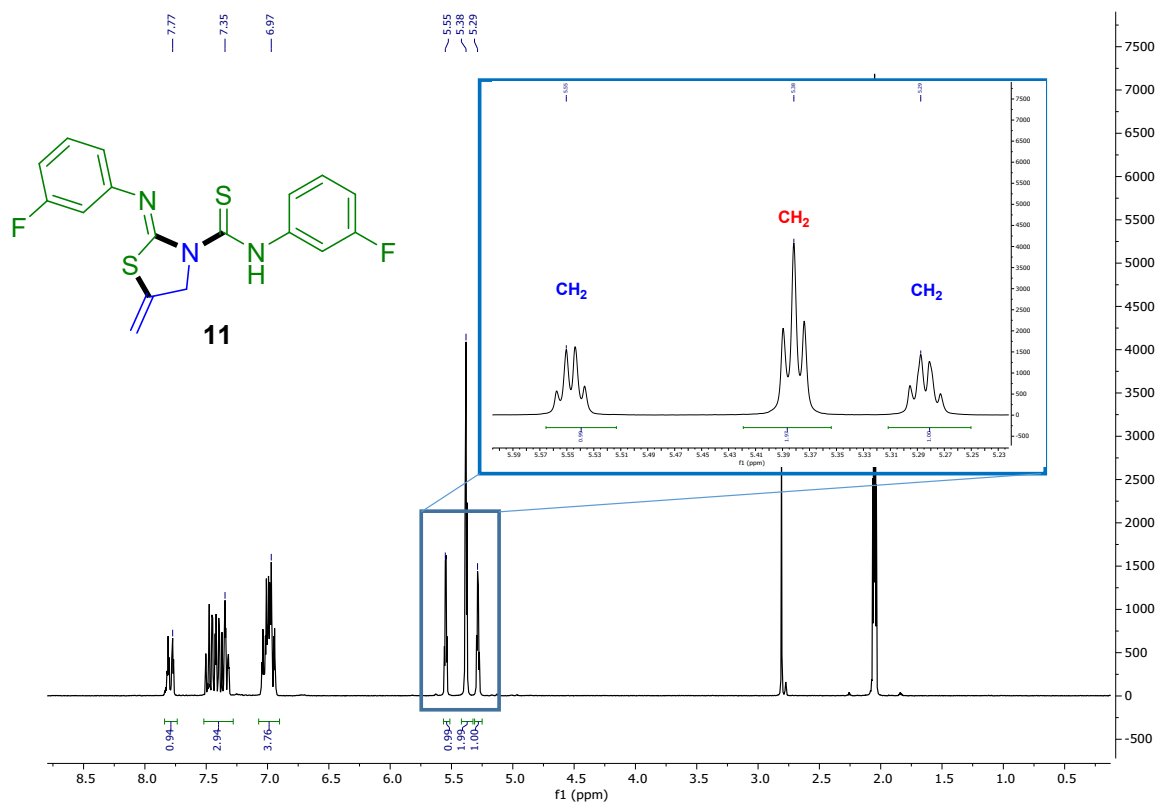


Figure S19. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of compound 11.

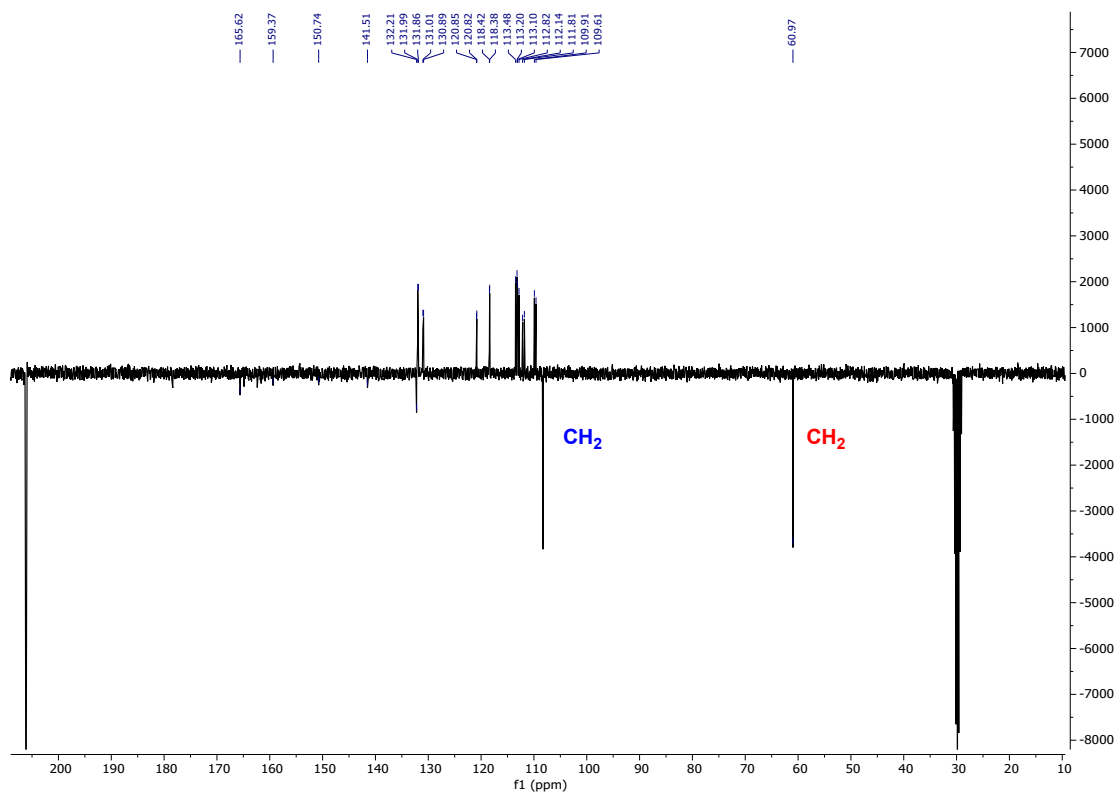


Figure S20. ^{19}F NMR (376 MHz, CDCl_3) spectrum of compound 11.

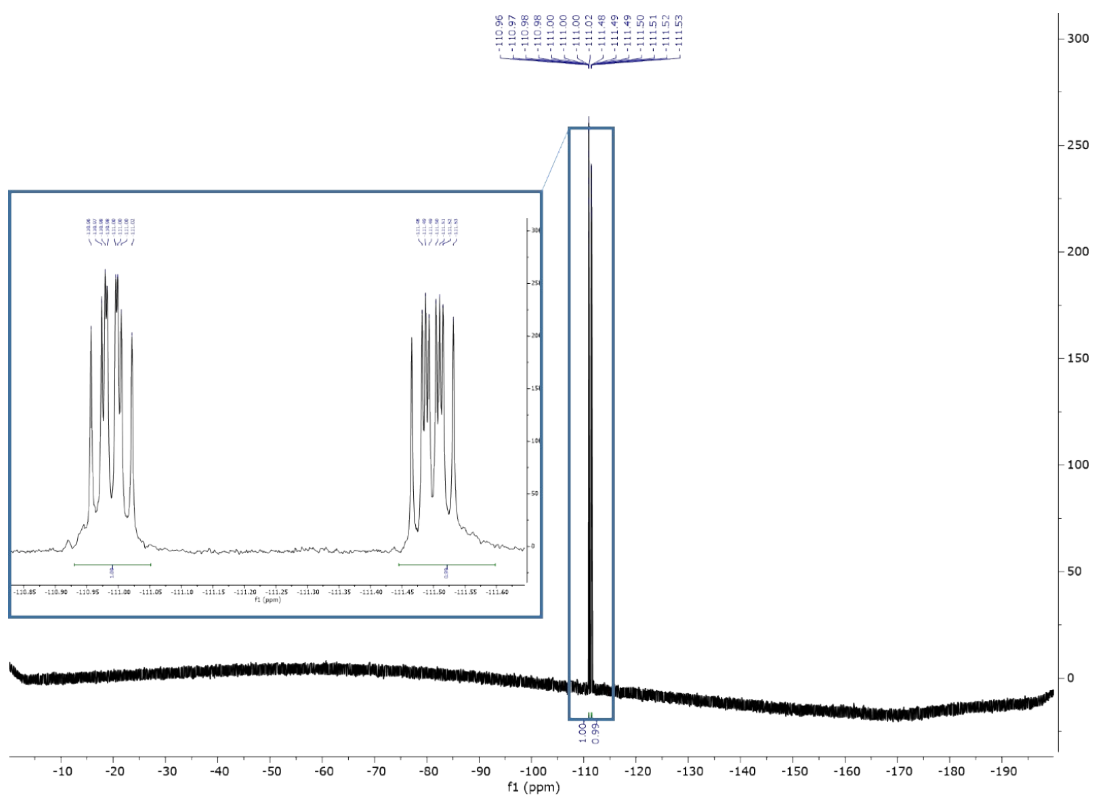


Figure S21. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of compound 12.

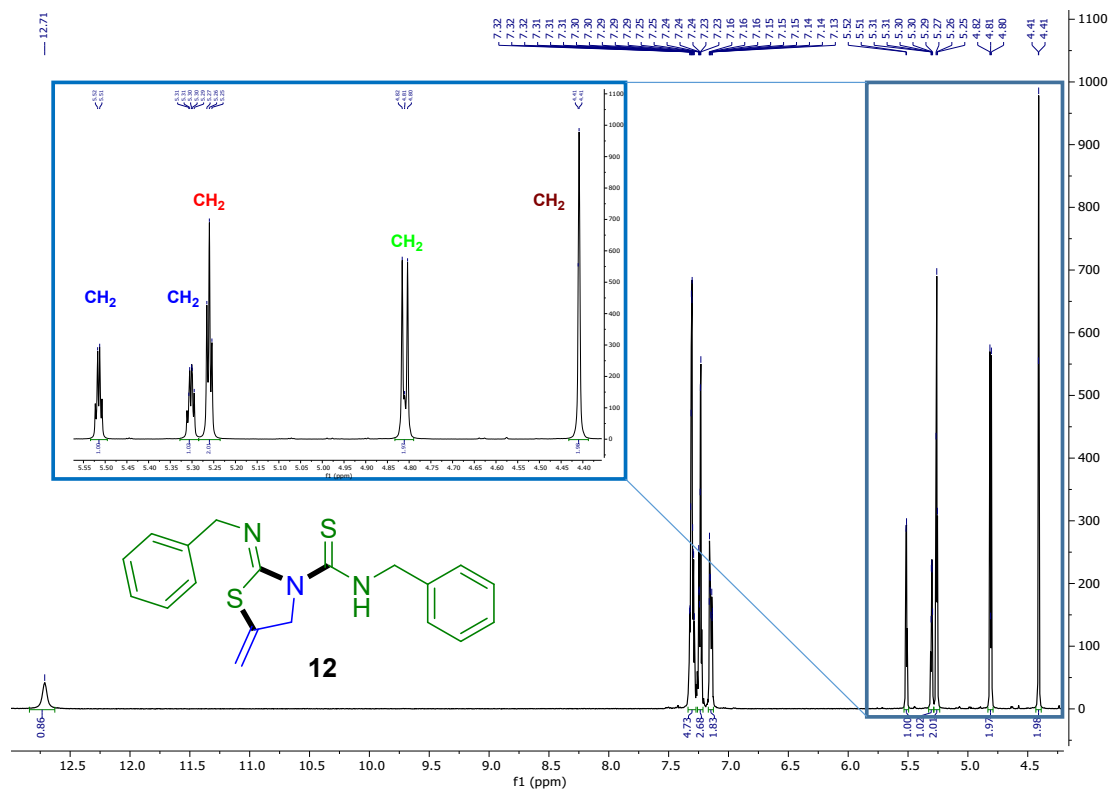
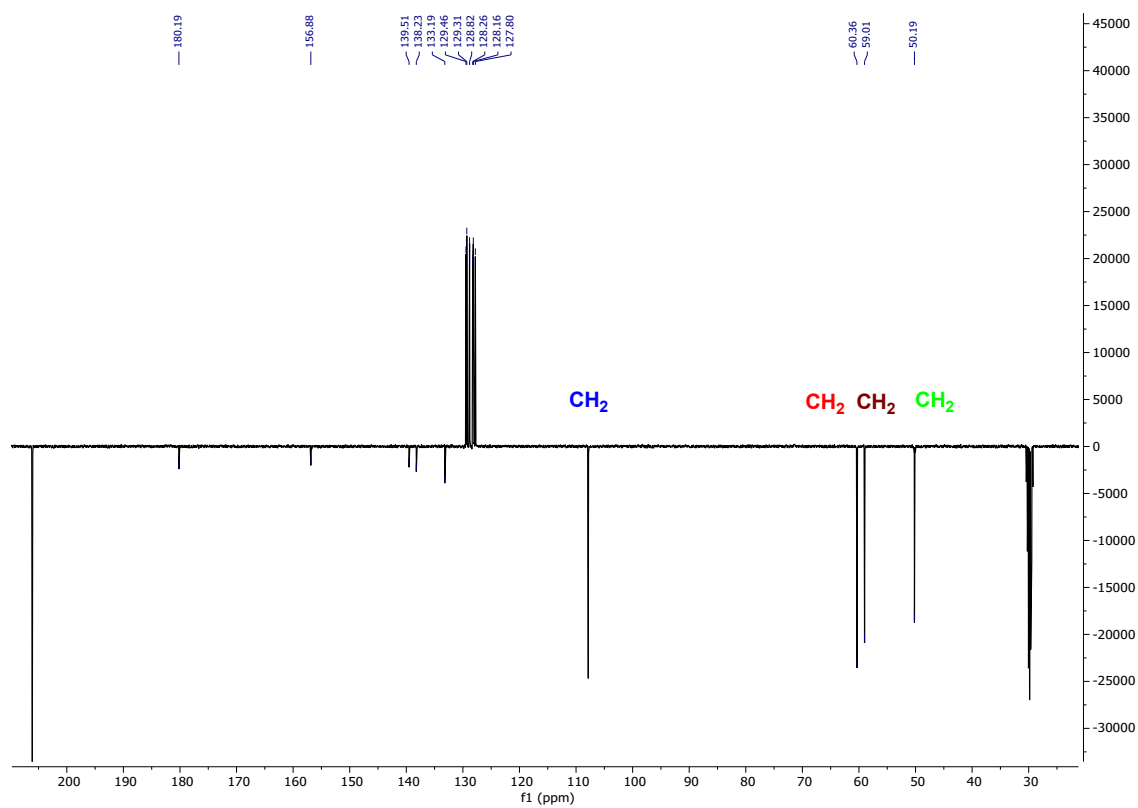


Figure S22. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of compound 12.



2. NMR spectra of silver complexes 13-18

Figure S23. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **13**.

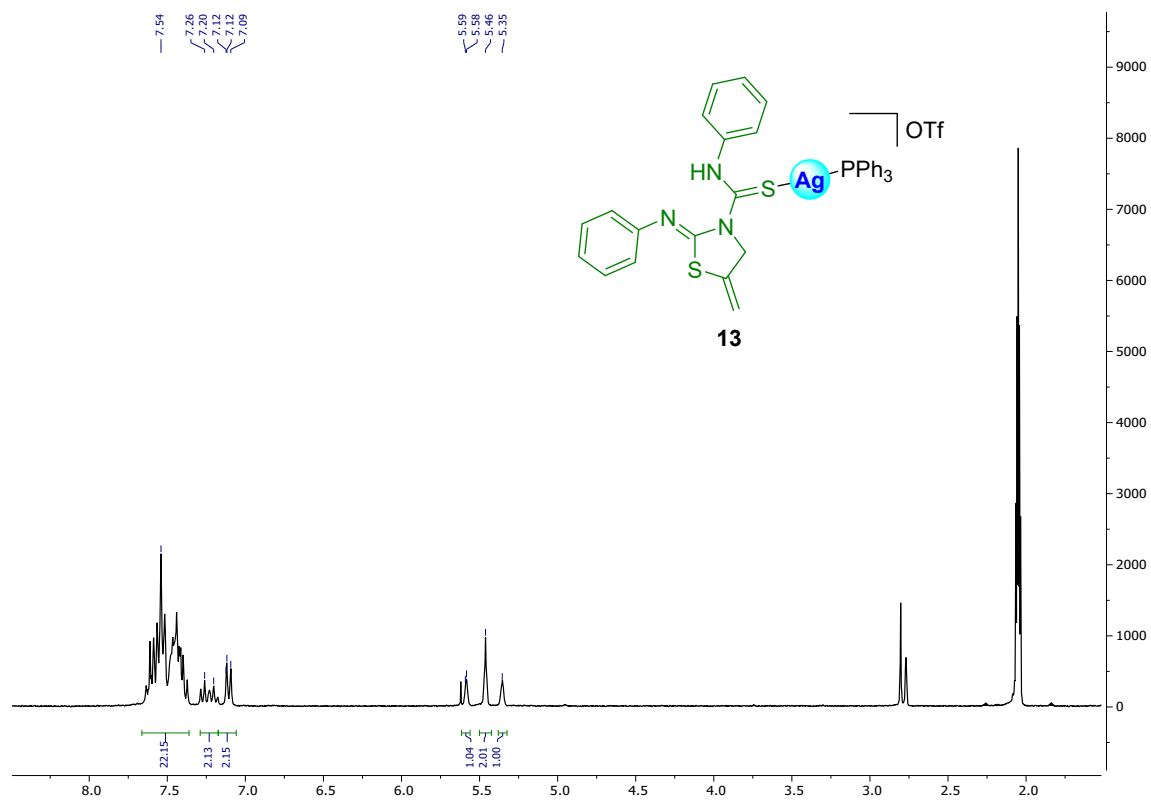


Figure S24. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **13**.

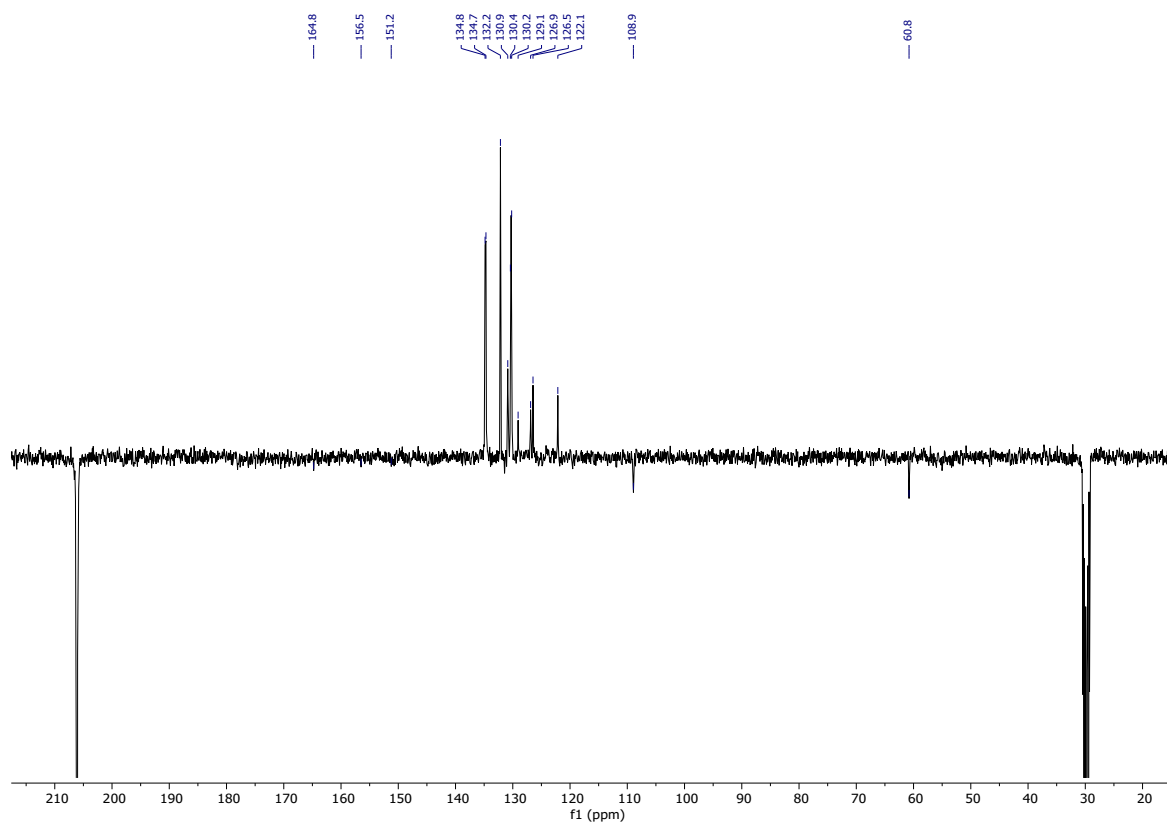


Figure S25. $^{31}\text{P}\{^1\text{H}\}$ NMR (162 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **13**.

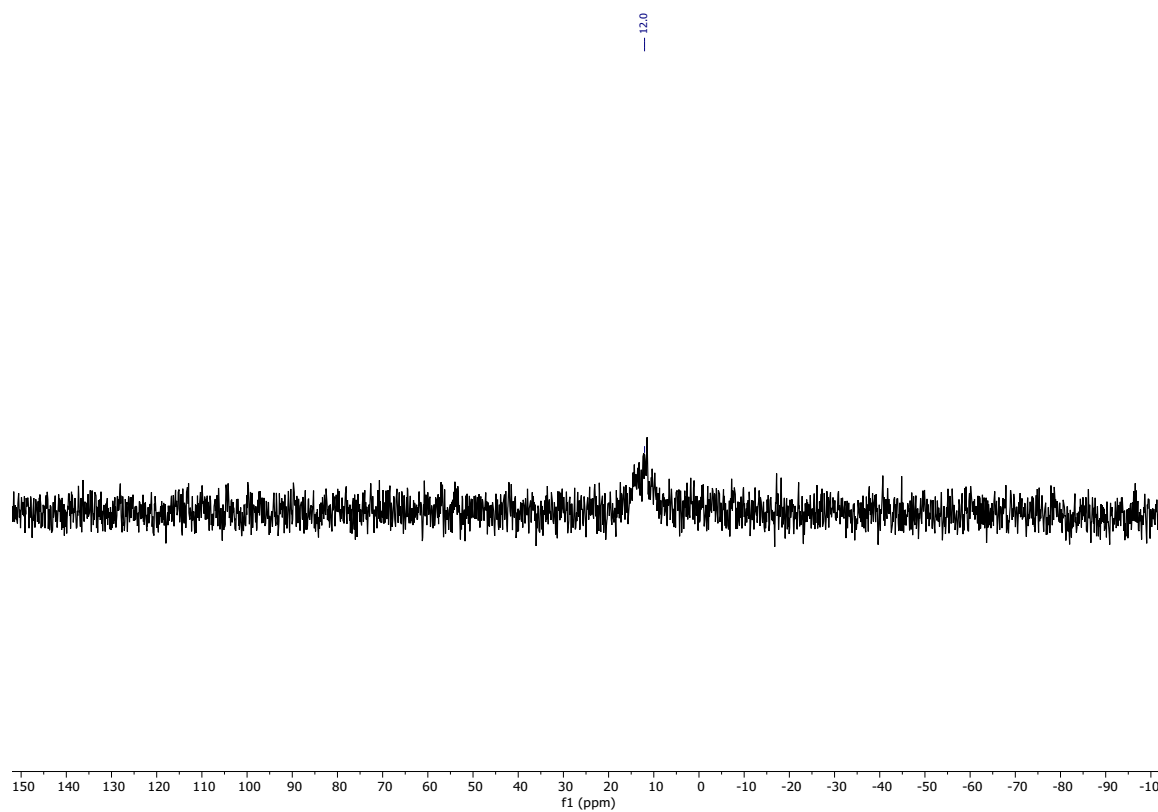


Figure S26. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **14**.

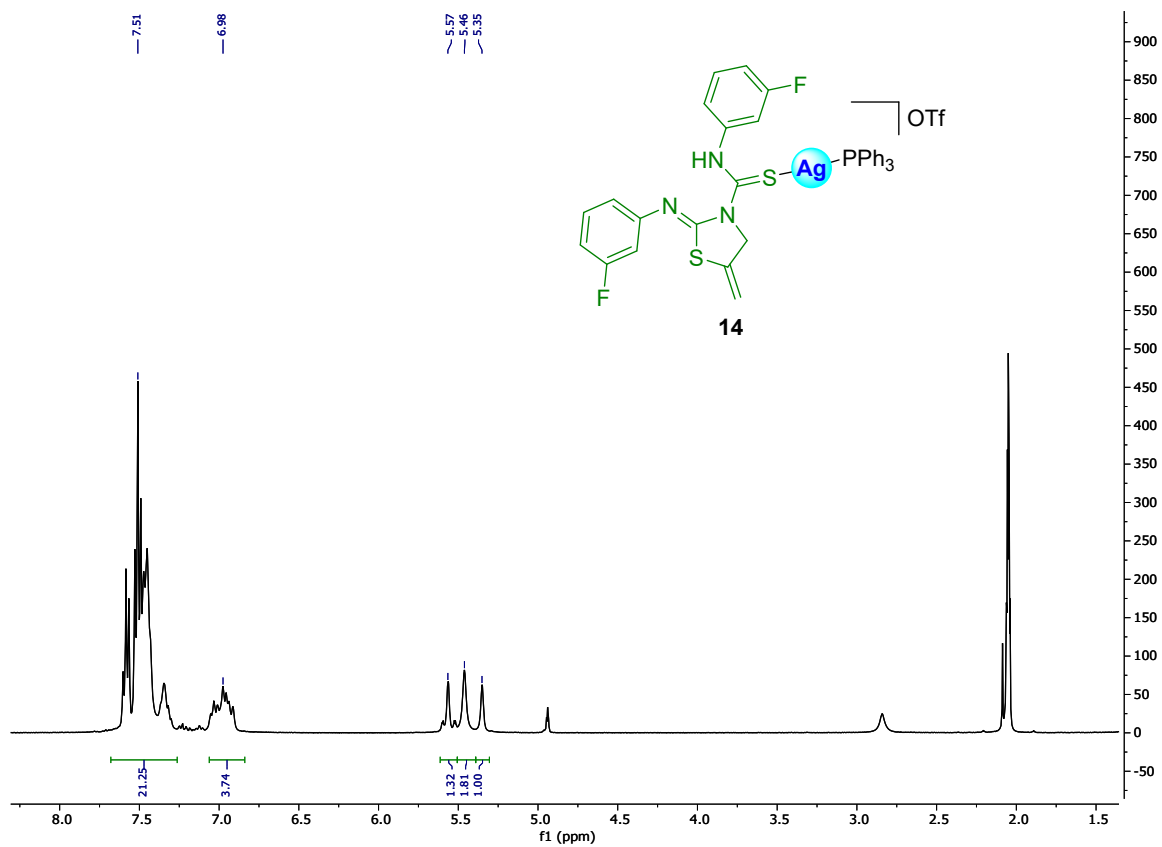


Figure S27. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **14**.

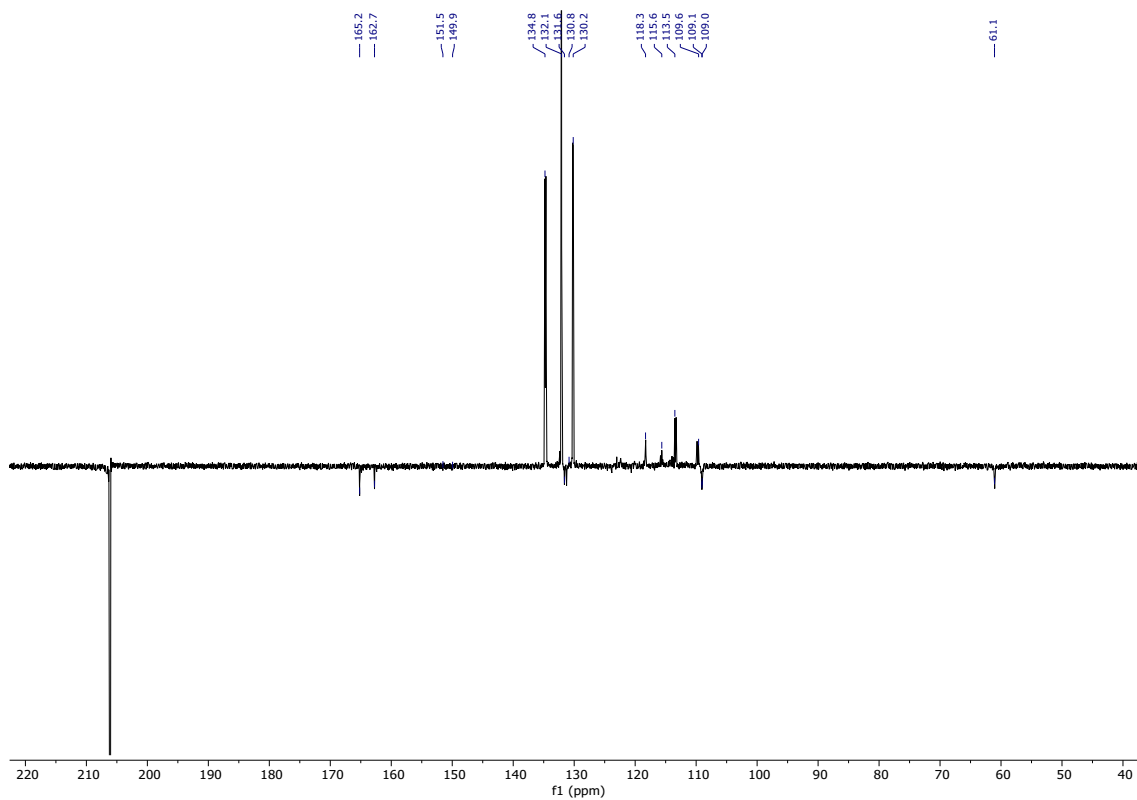


Figure S28. ^{19}F NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **14**.

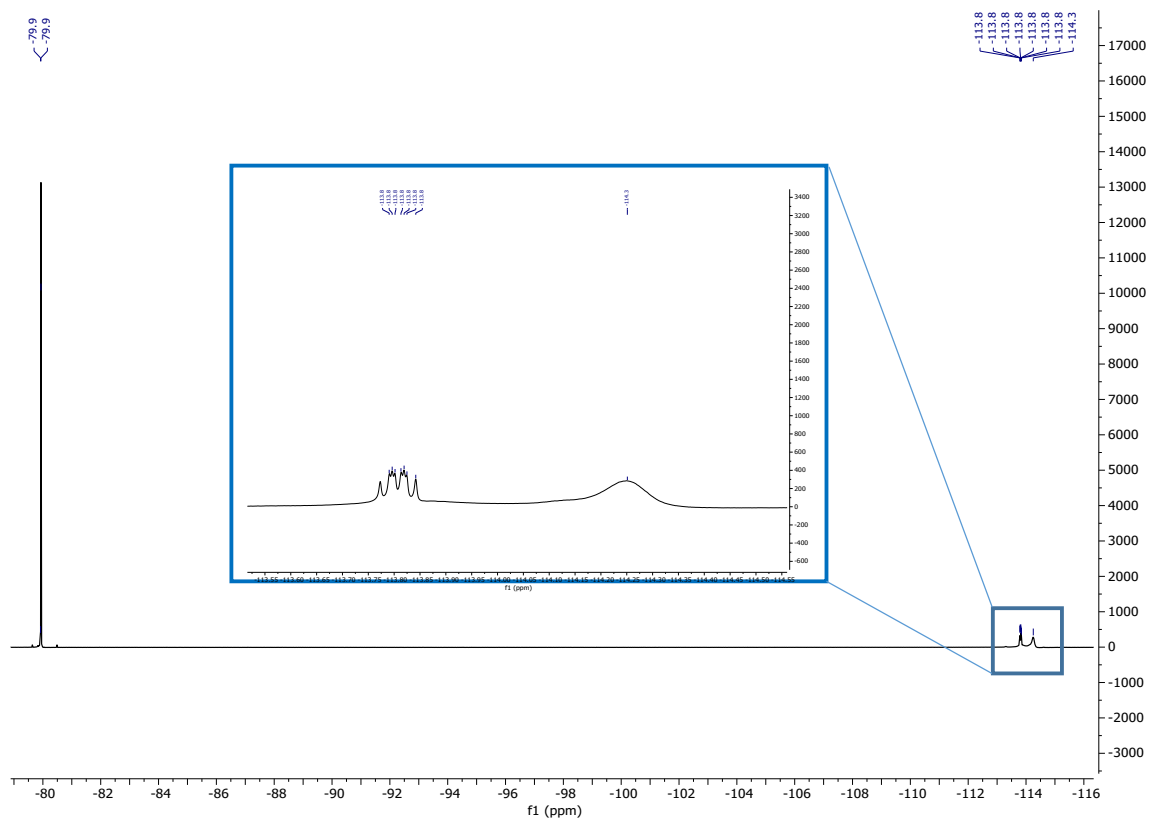


Figure S29. $^{31}\text{P}\{^1\text{H}\}$ NMR (162 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **14**.

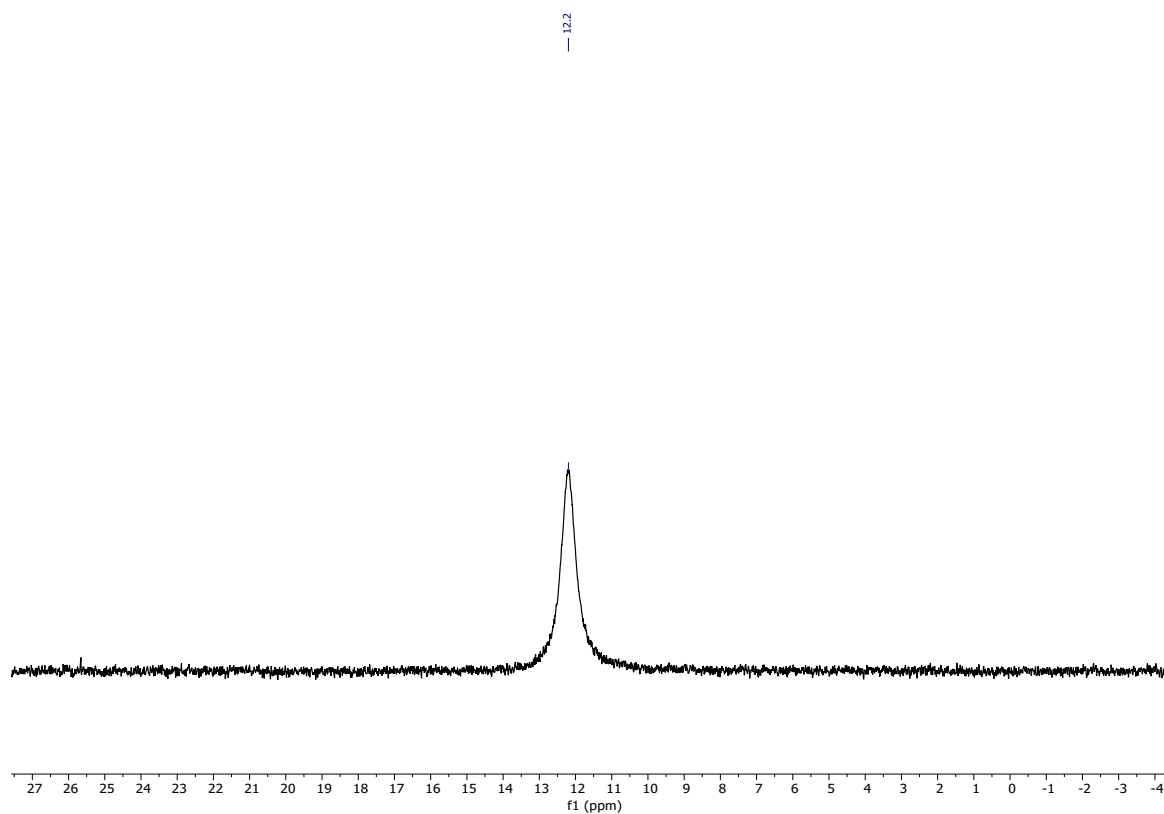


Figure S30. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **15**.

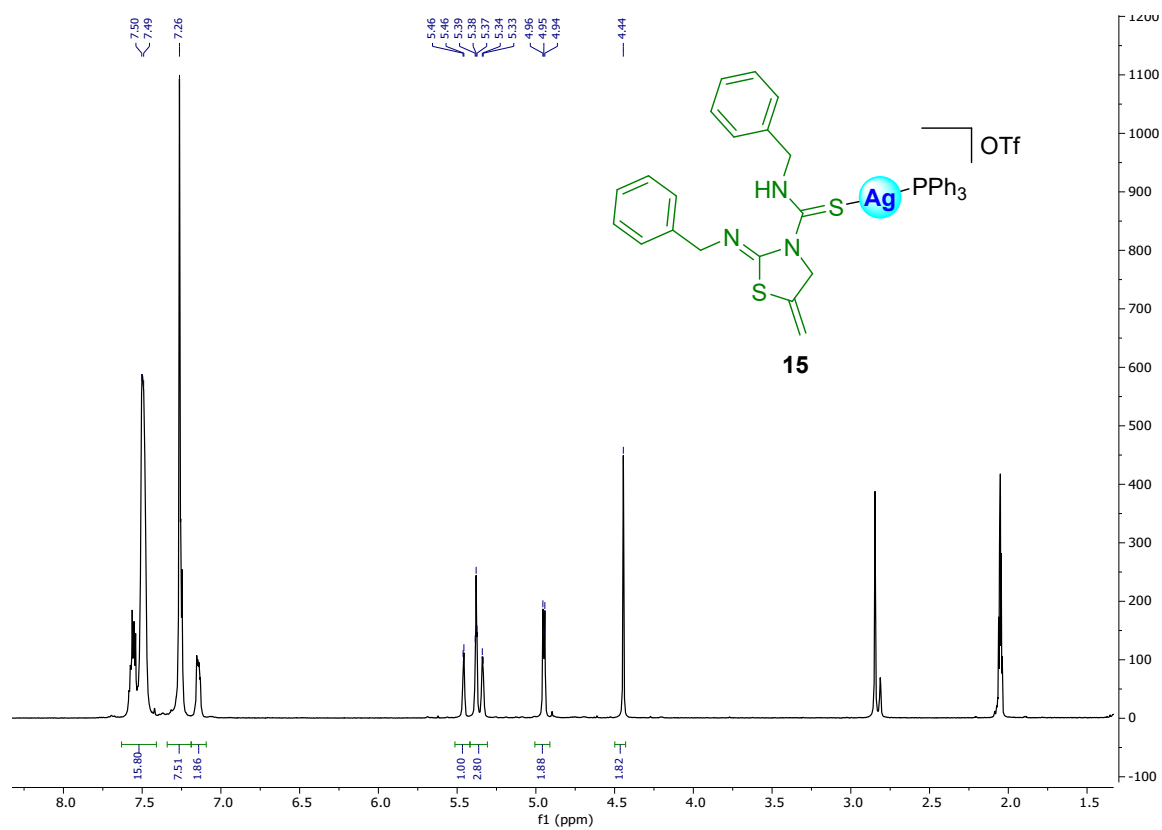


Figure S31. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **15**.

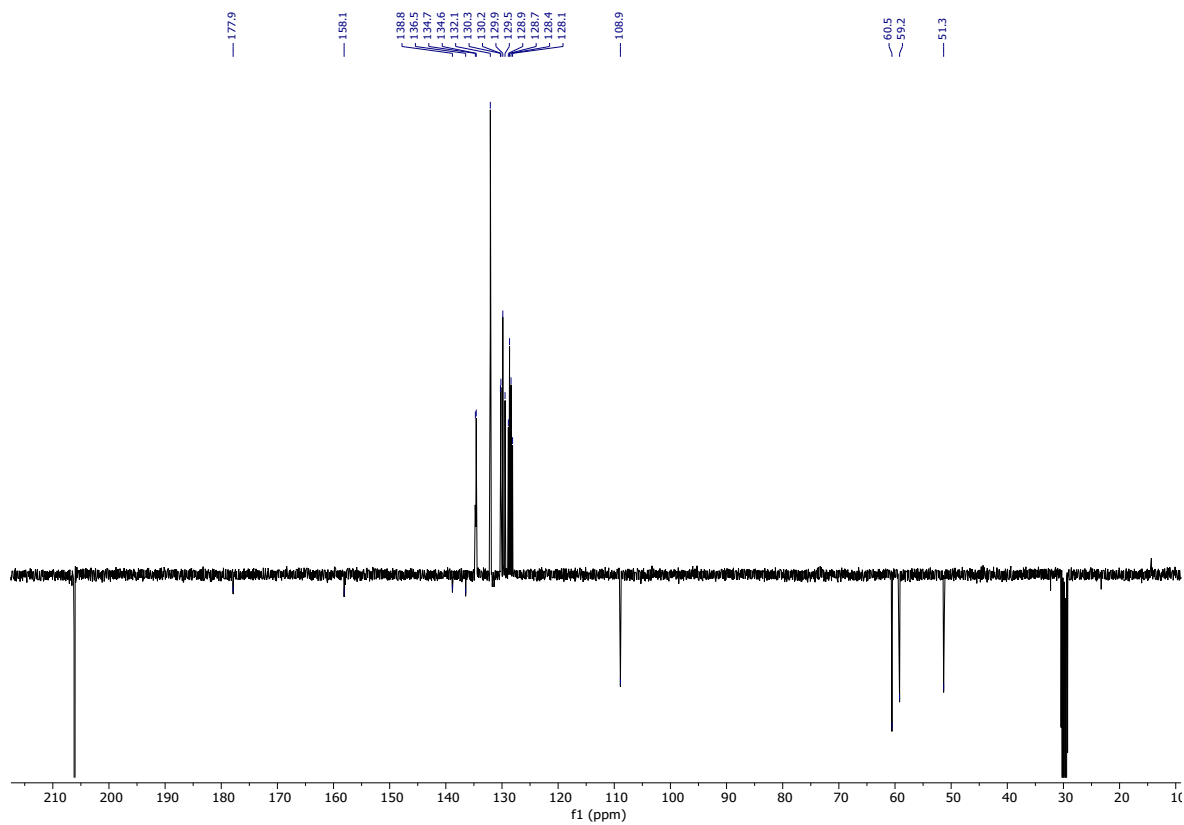


Figure S32. $^{31}\text{P}\{^1\text{H}\}$ NMR (ppm) (162 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **15**.

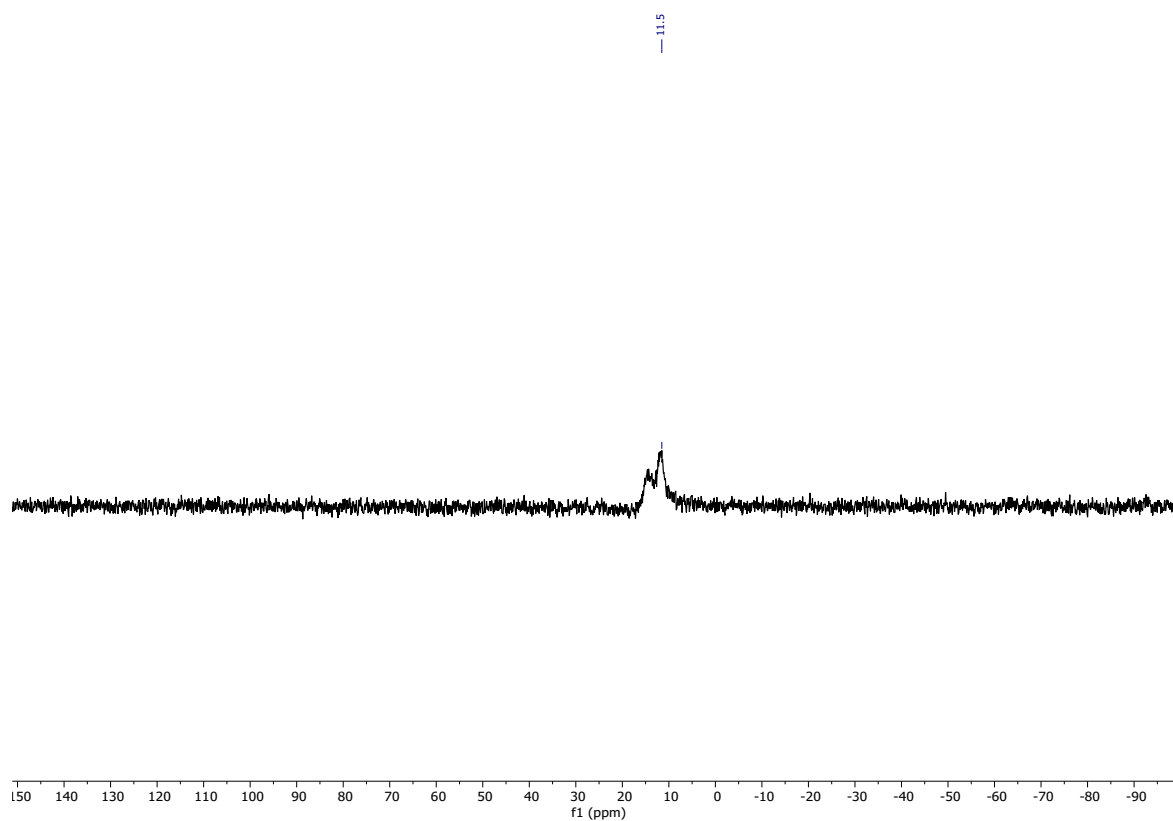


Figure S33. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **16**.

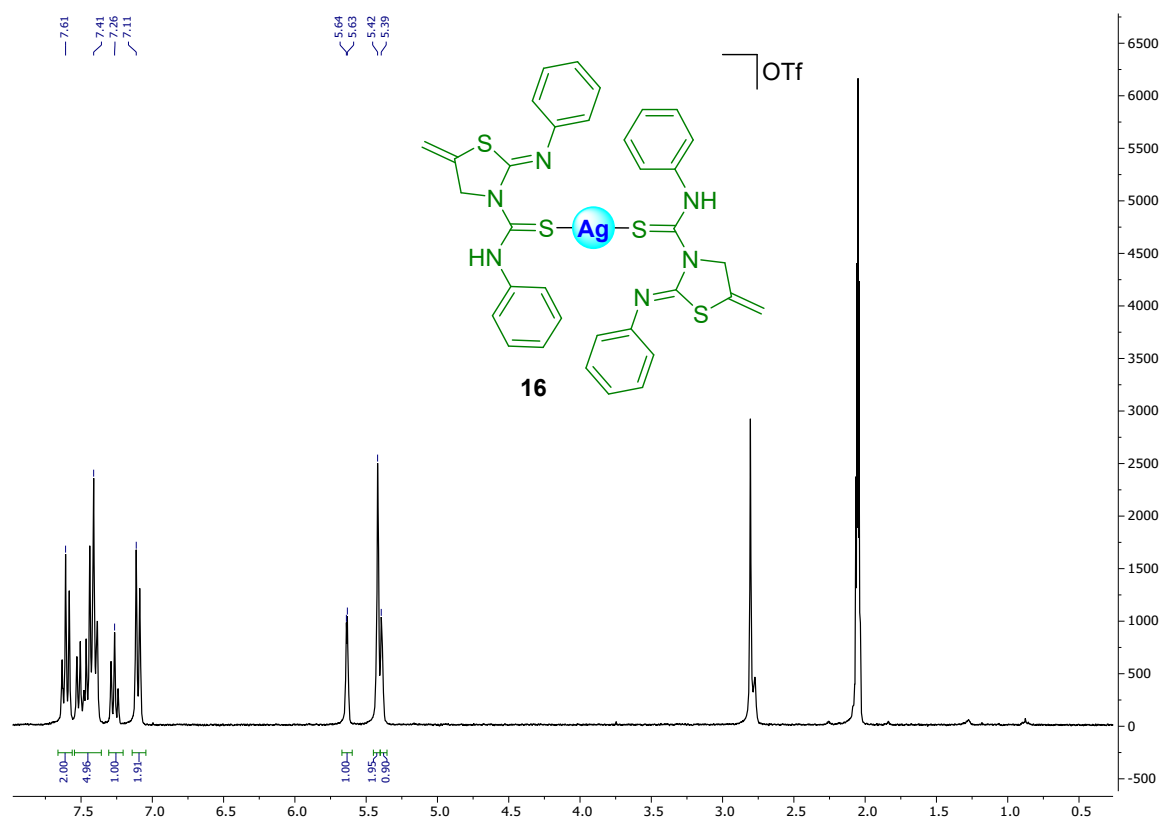


Figure S34. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **16**.

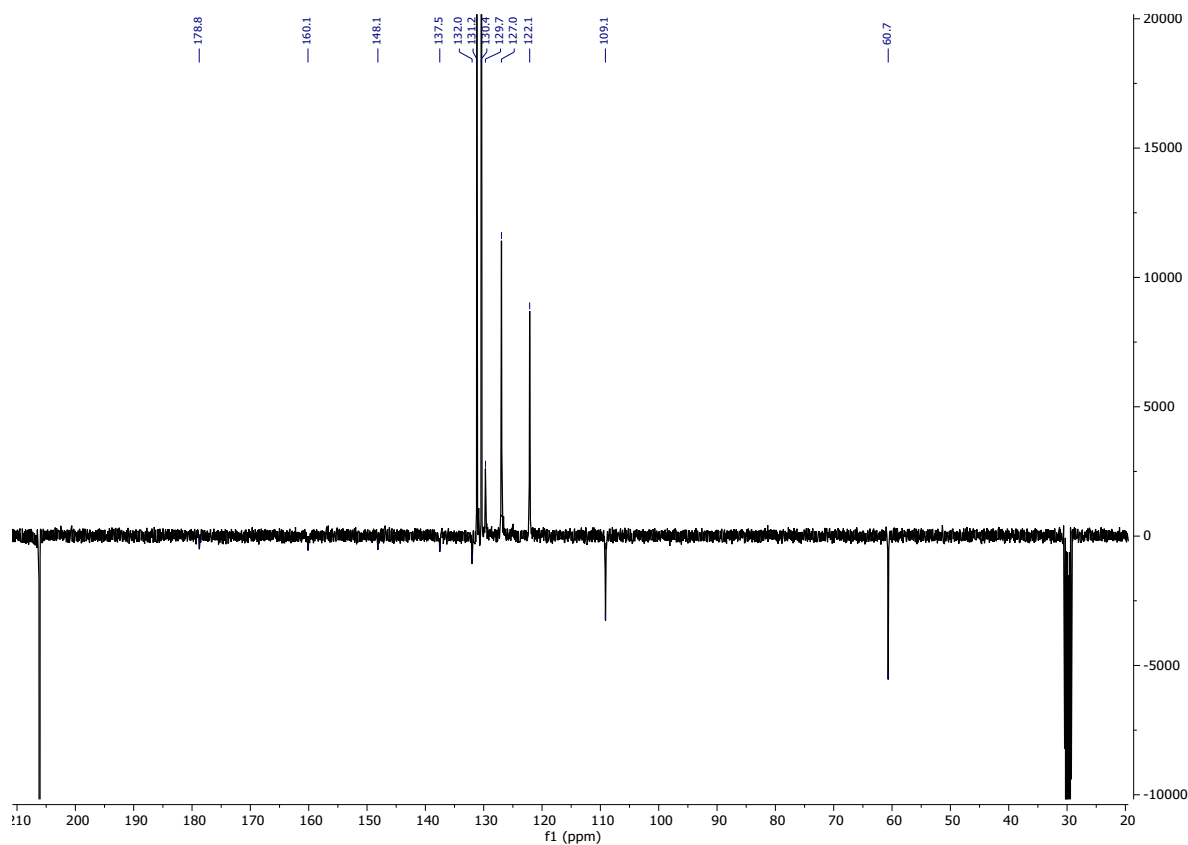


Figure S35. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **17**.

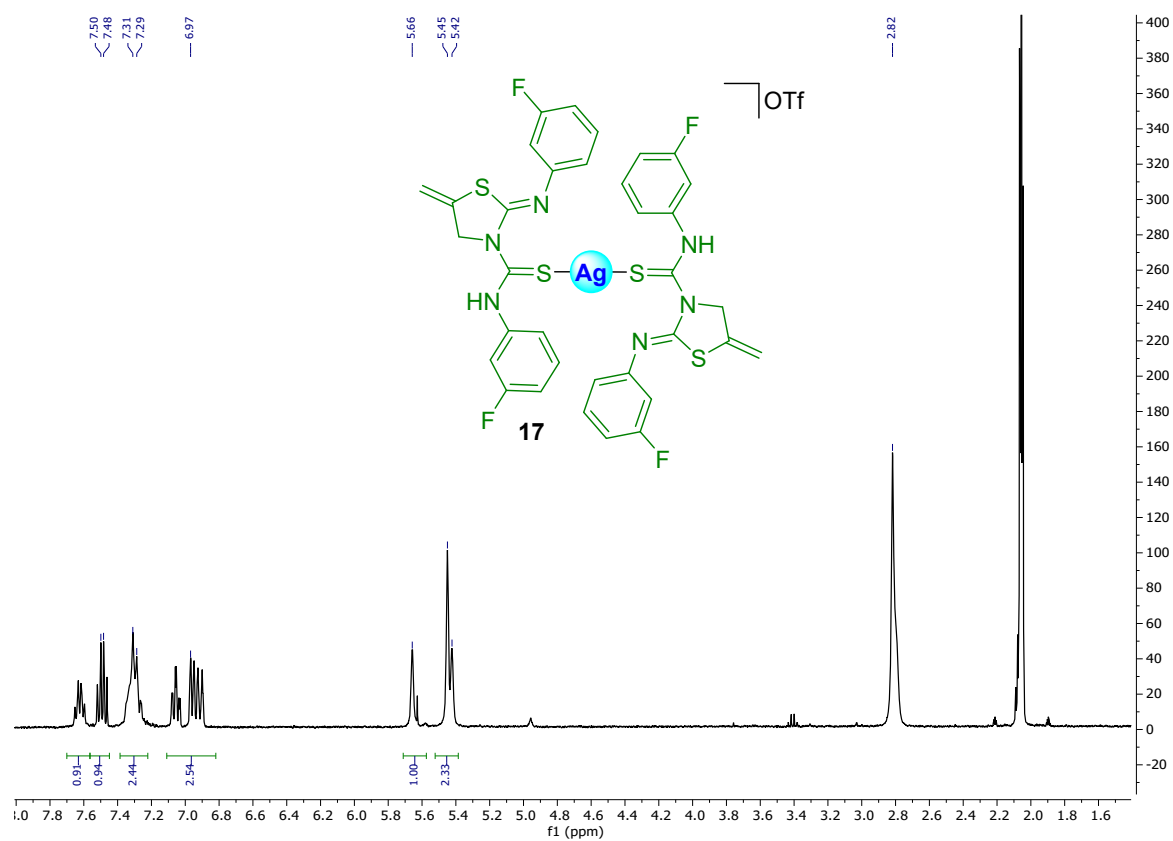


Figure S36. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **17**.

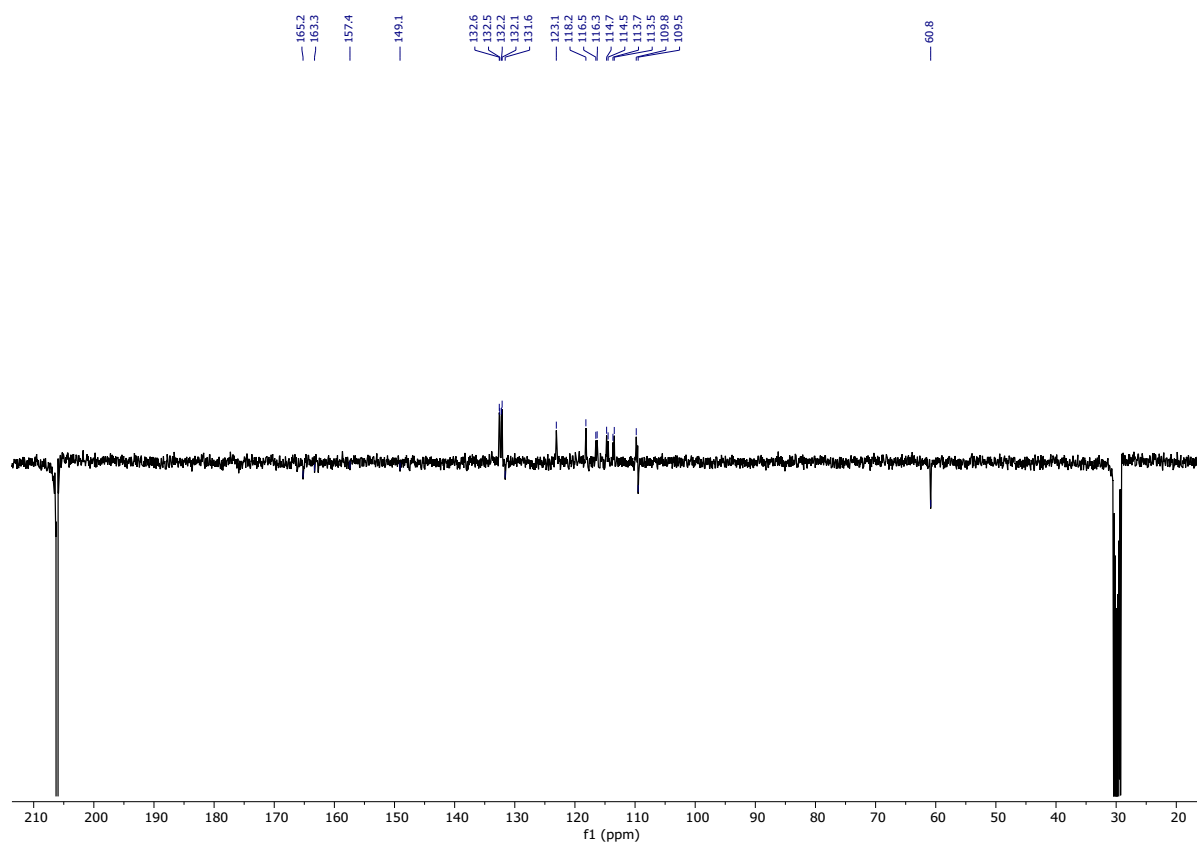


Figure 37. ^{19}F NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **17**.

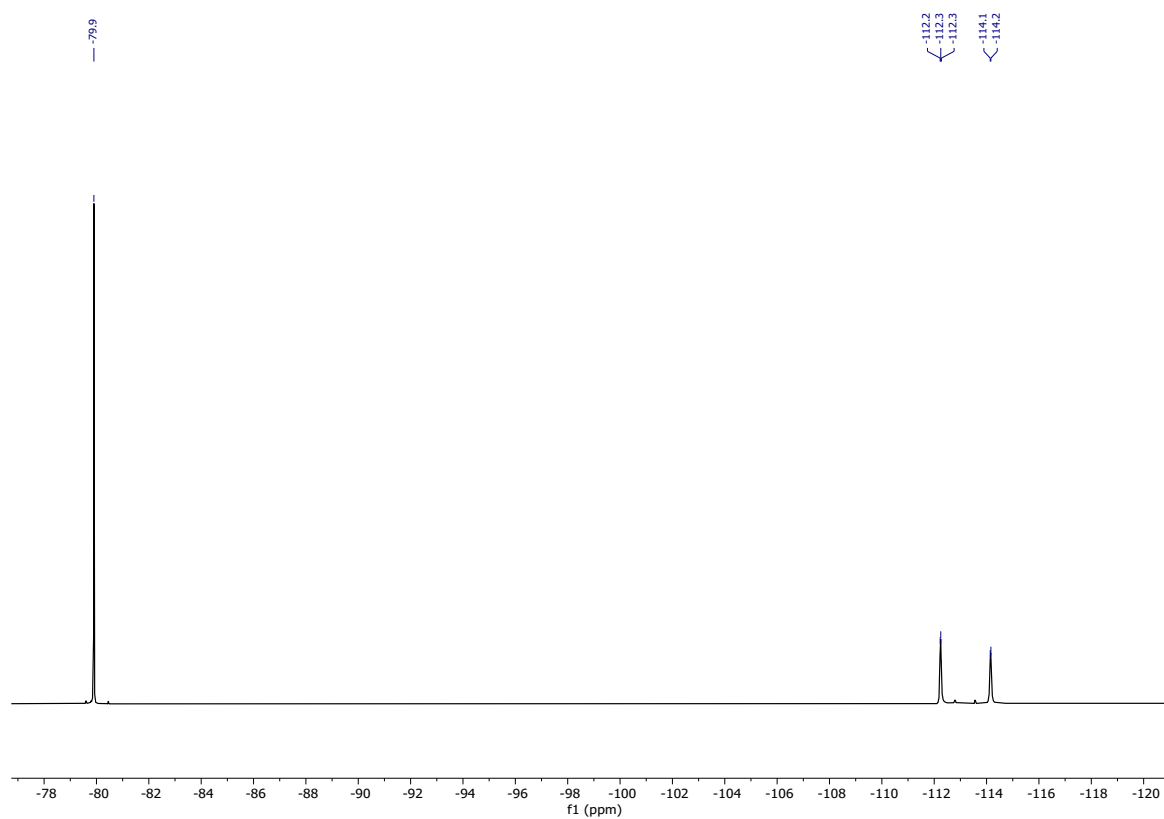


Figure S38. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **18**.

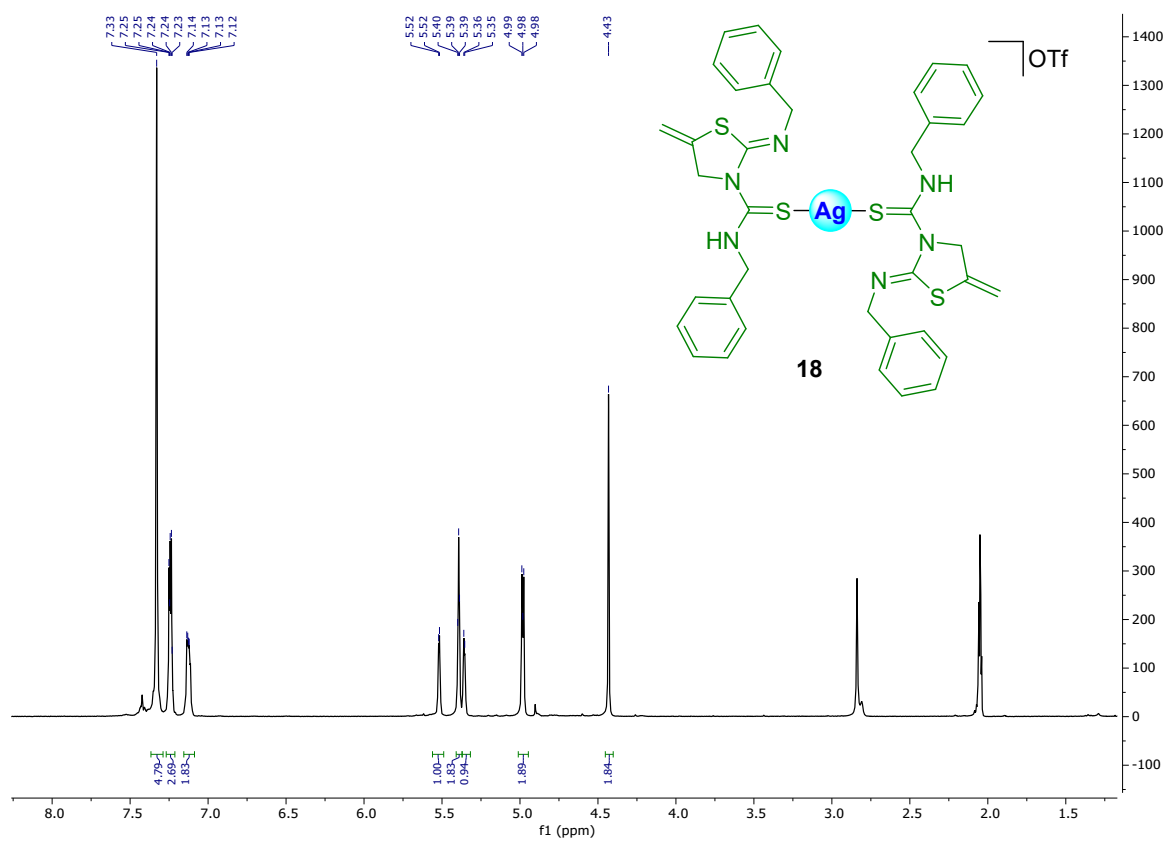
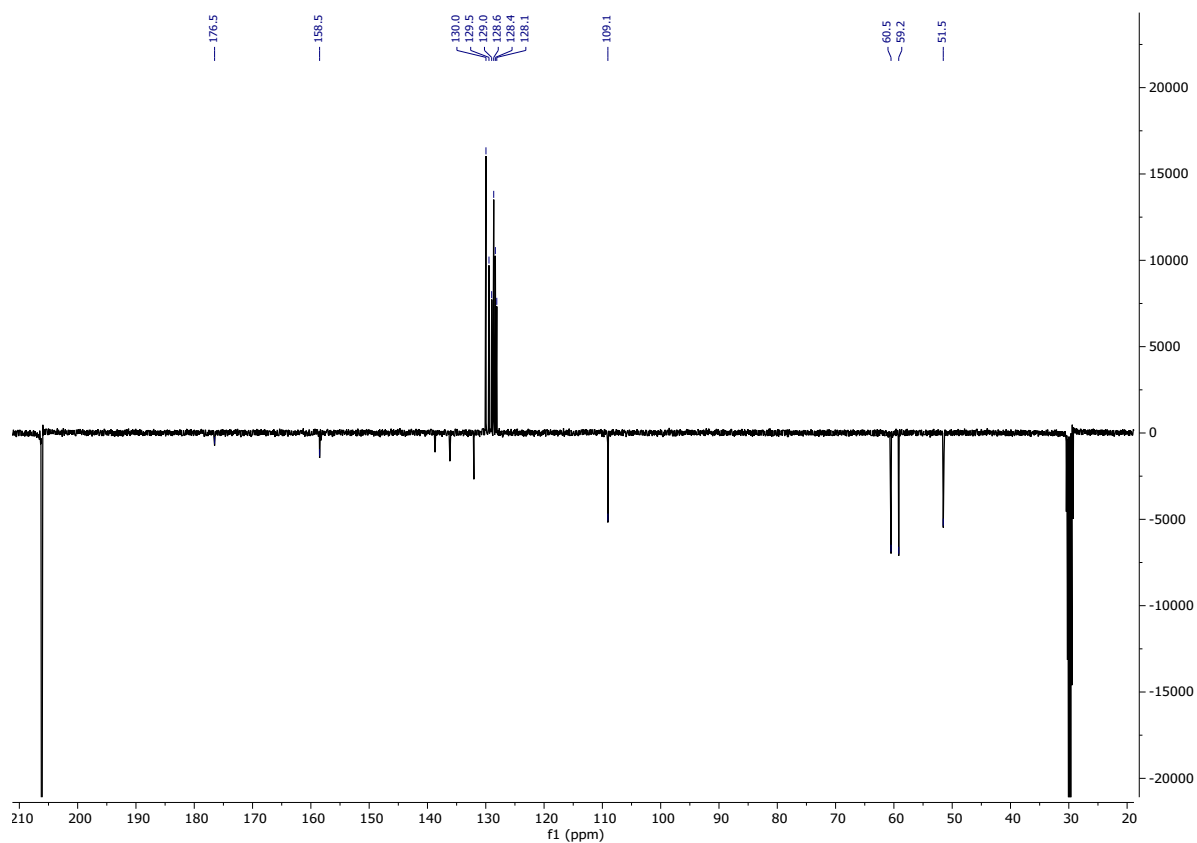
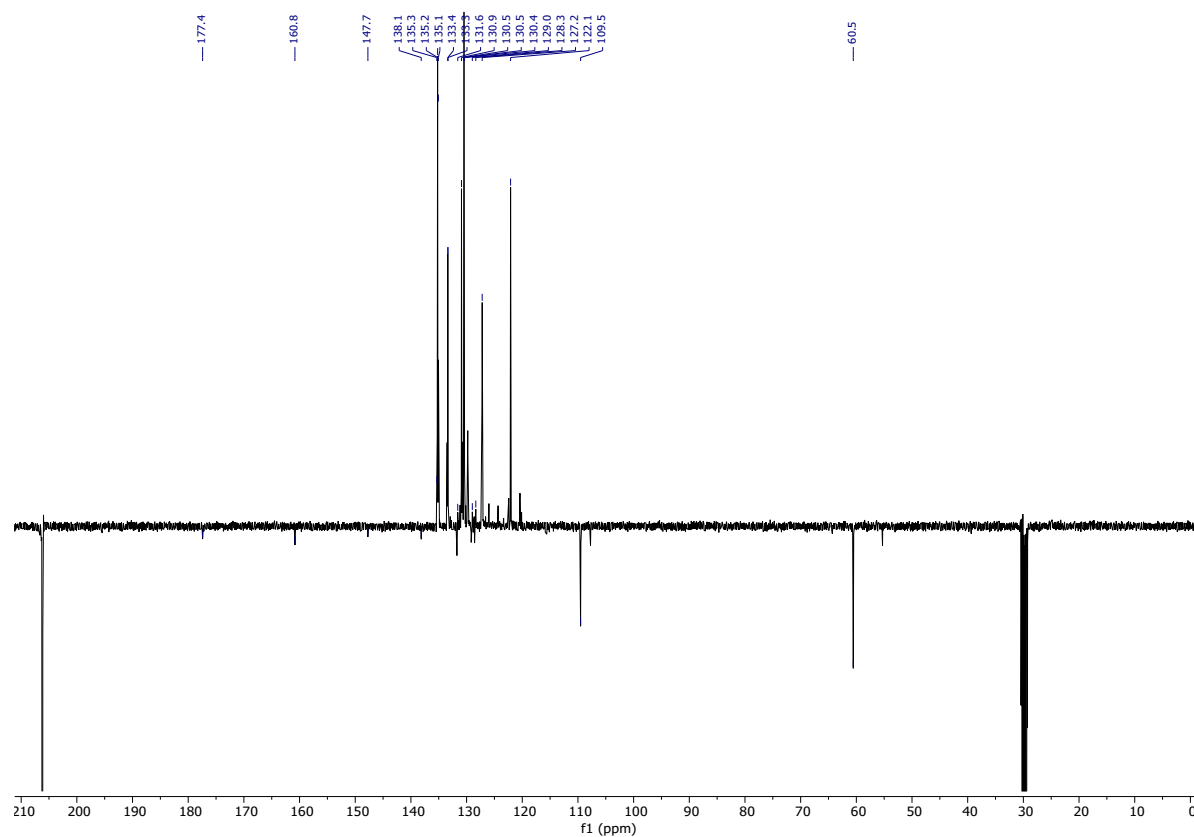
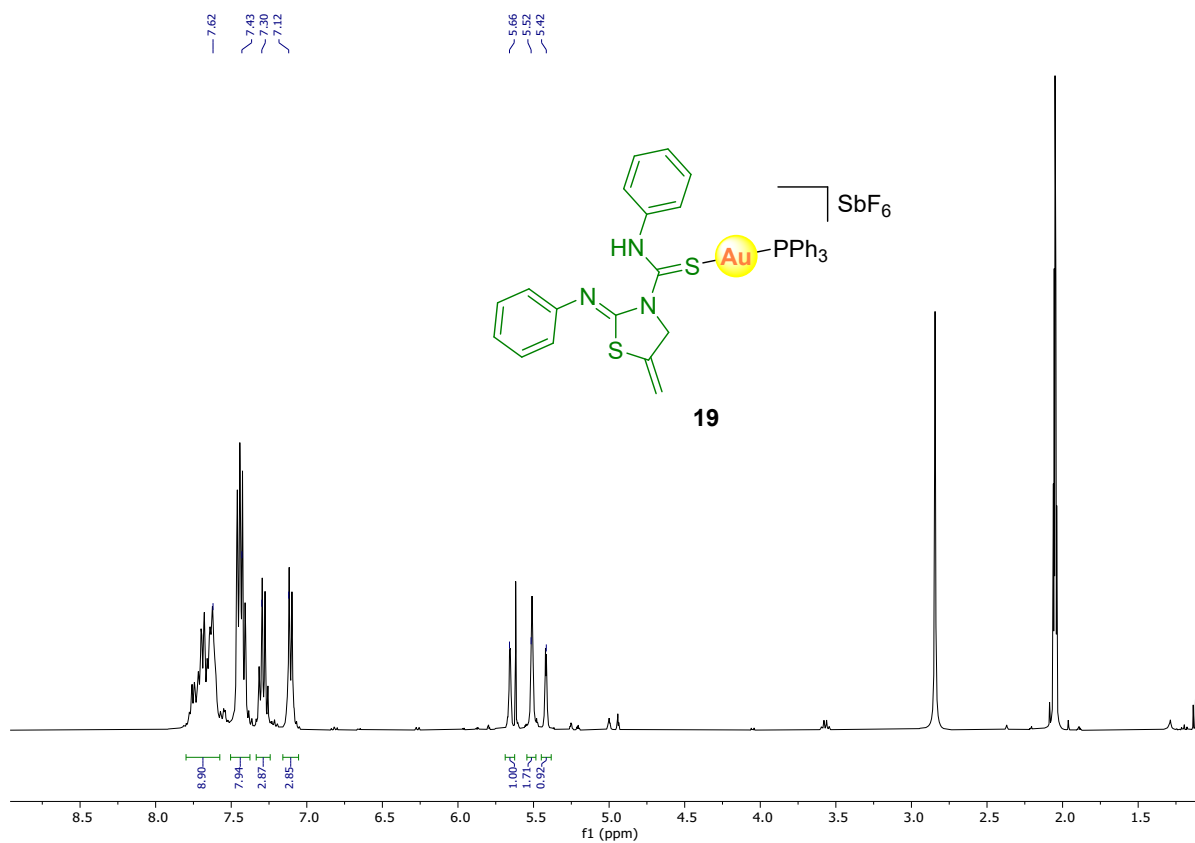


Figure S39. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **18**.



3. NMR spectra of gold complexes 19-27

Figure S40. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **19**.



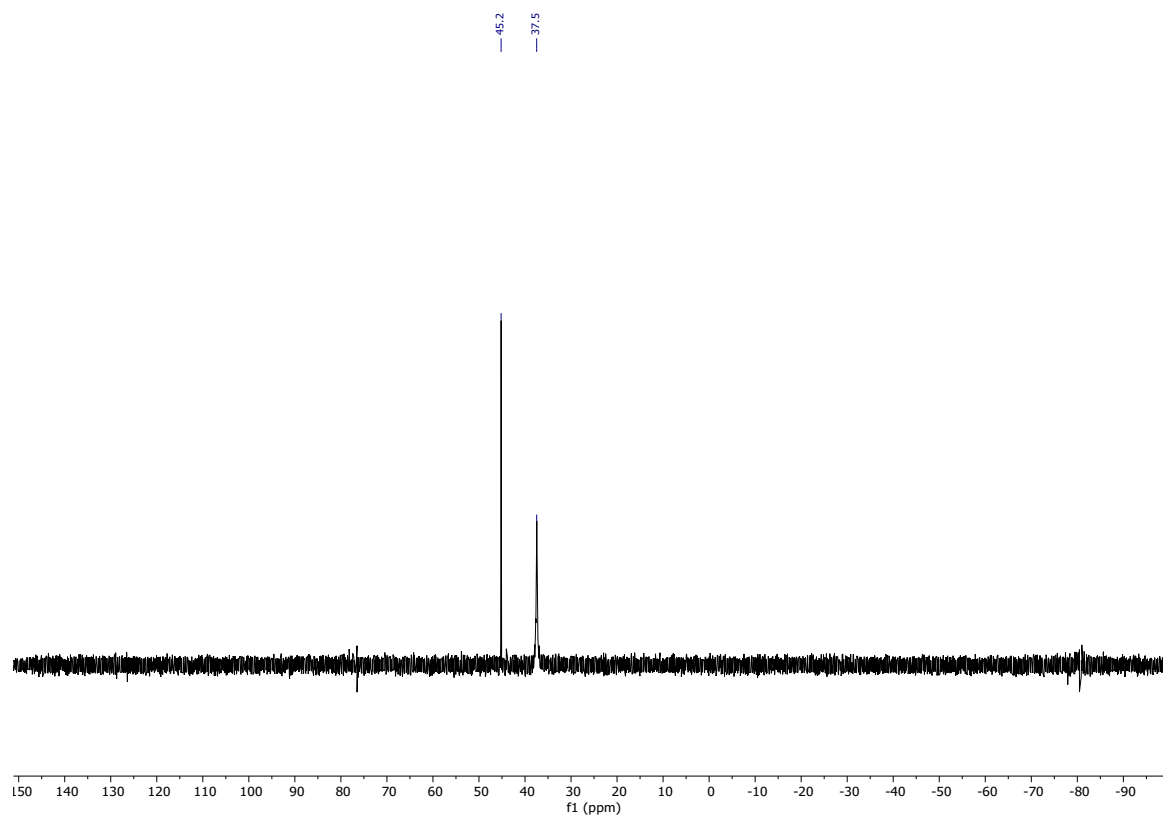


Figure S43. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **20**.

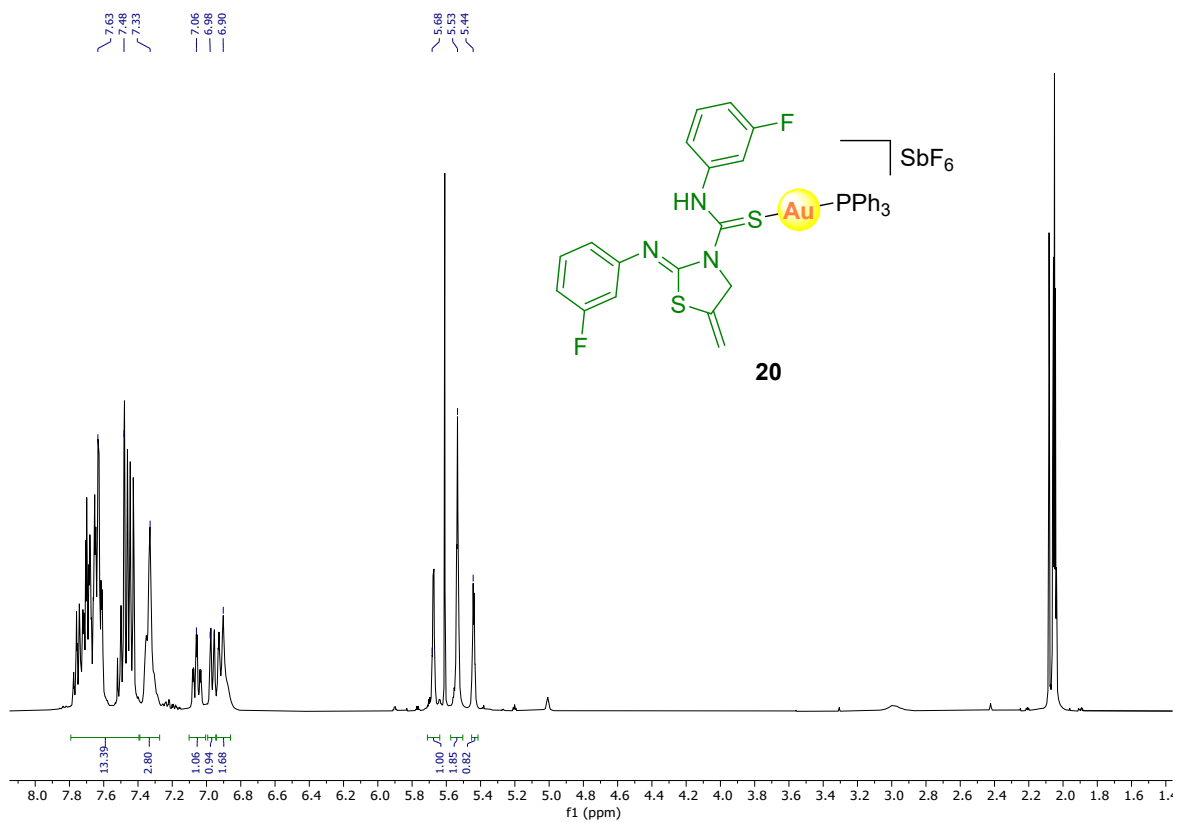


Figure S44. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **20**.

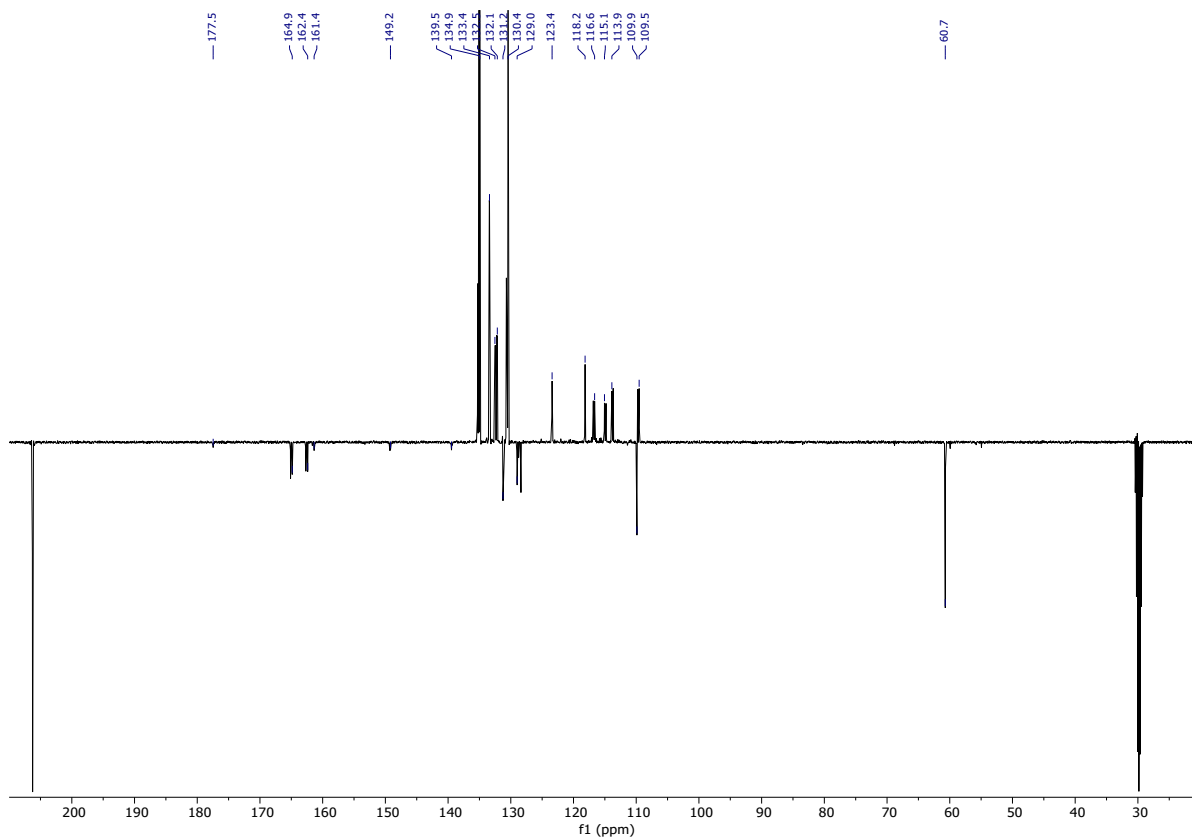


Figure S45. ^{19}F NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **20**.

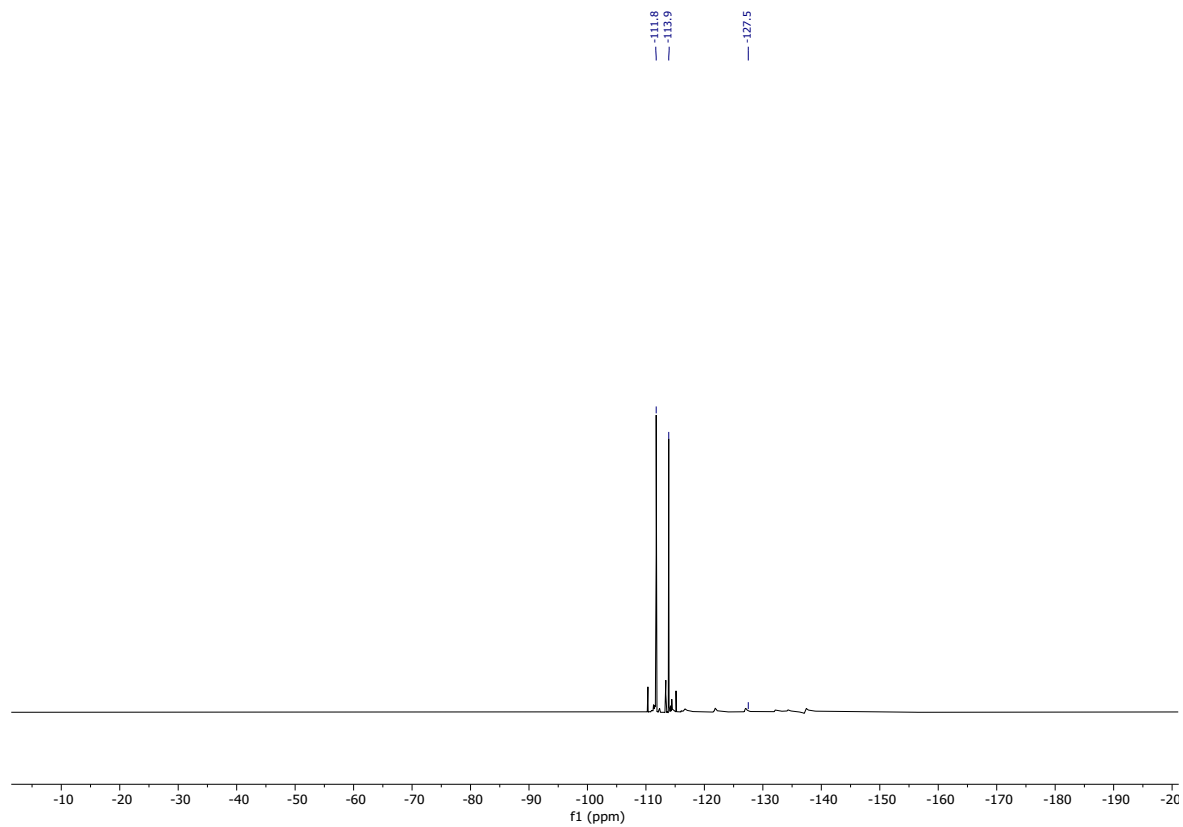


Figure S46. $^{31}\text{P}\{^1\text{H}\}$ NMR (162 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **20**.

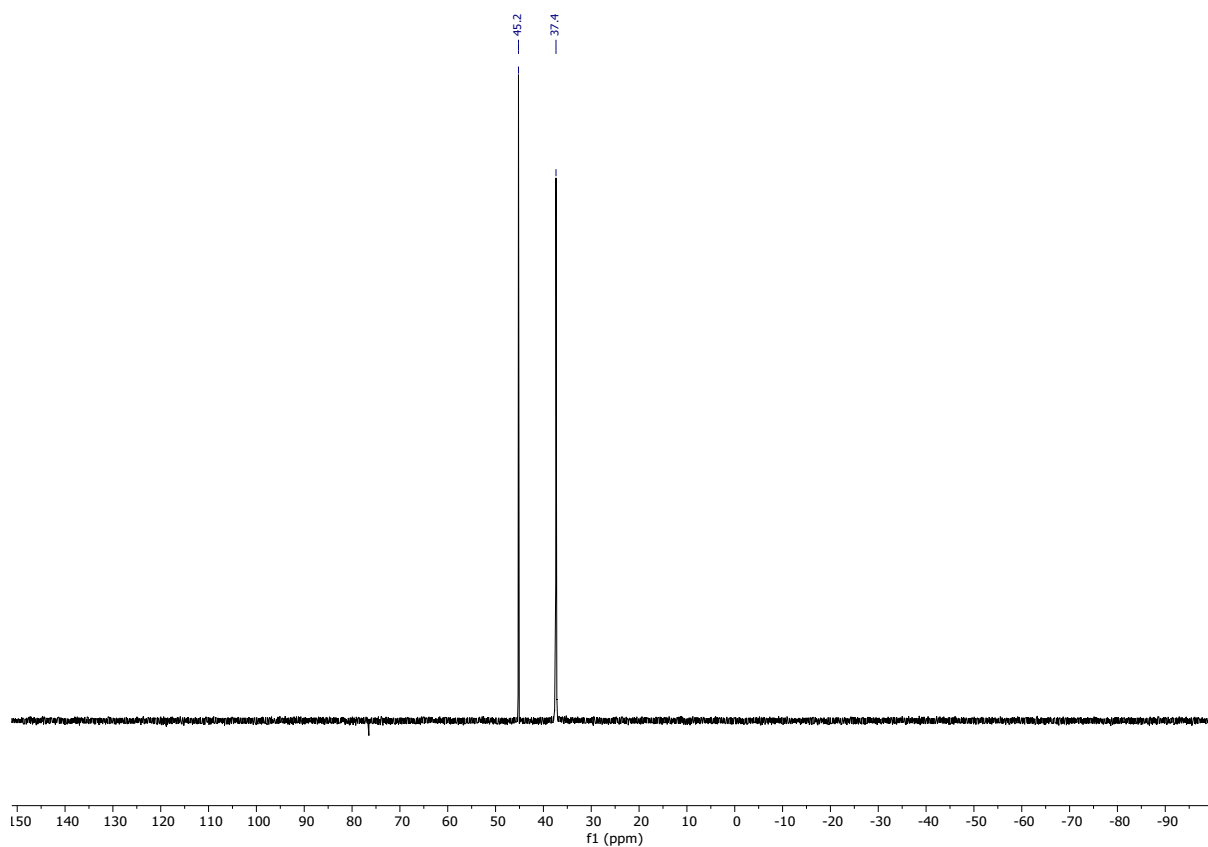


Figure S47. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **21**.

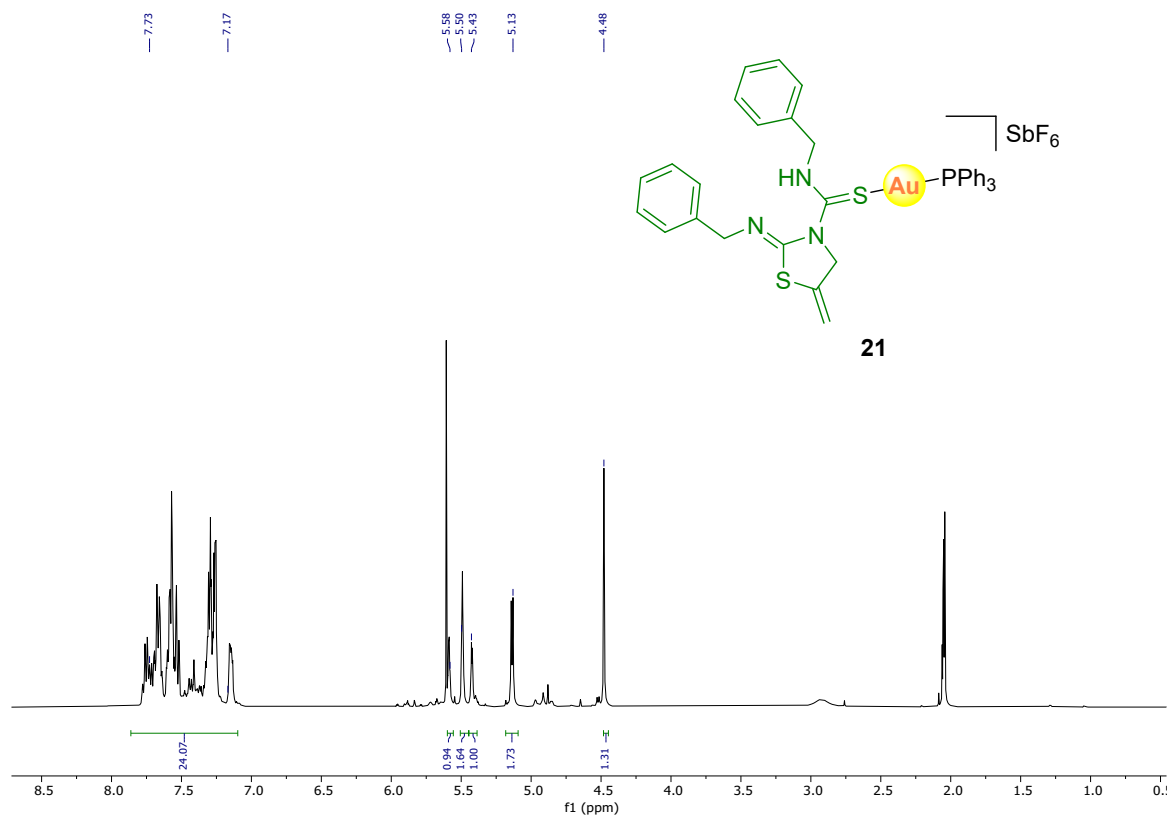


Figure S48. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **21**.

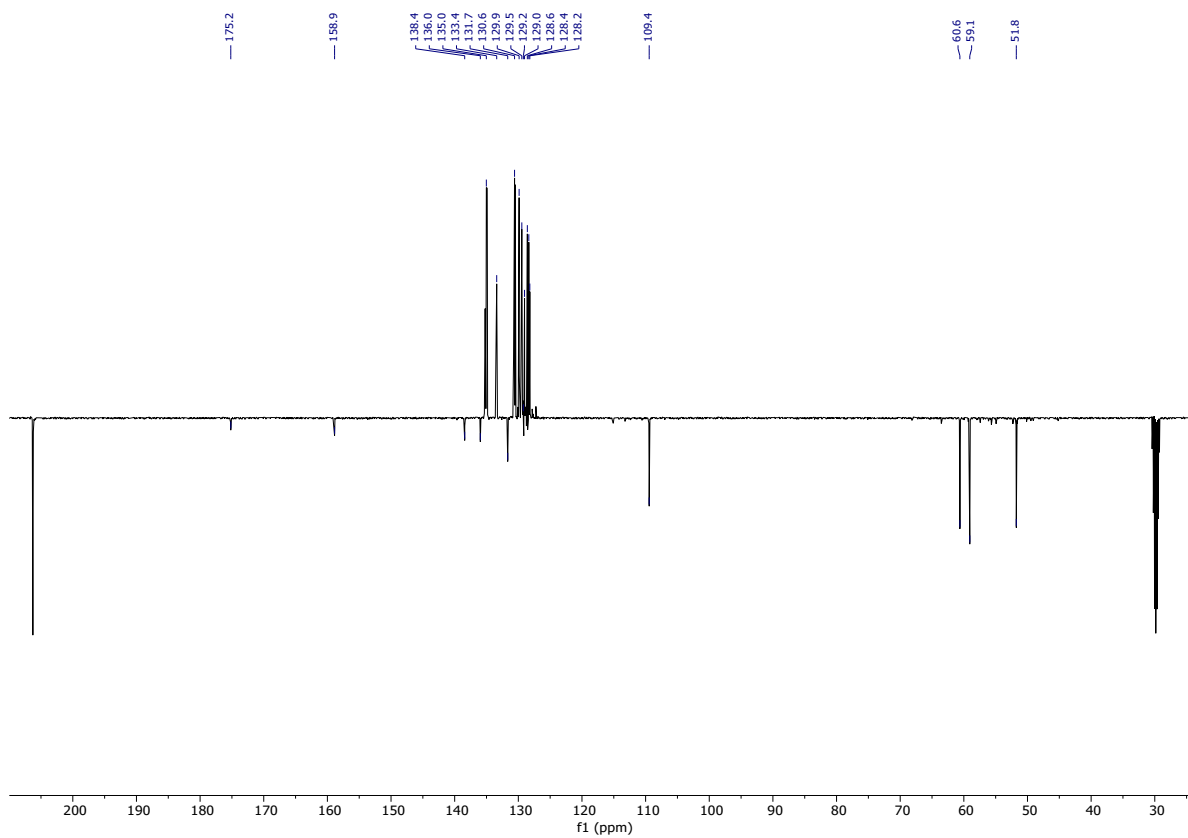


Figure S49. $^{31}\text{P}\{^1\text{H}\}$ NMR (162 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **21**.

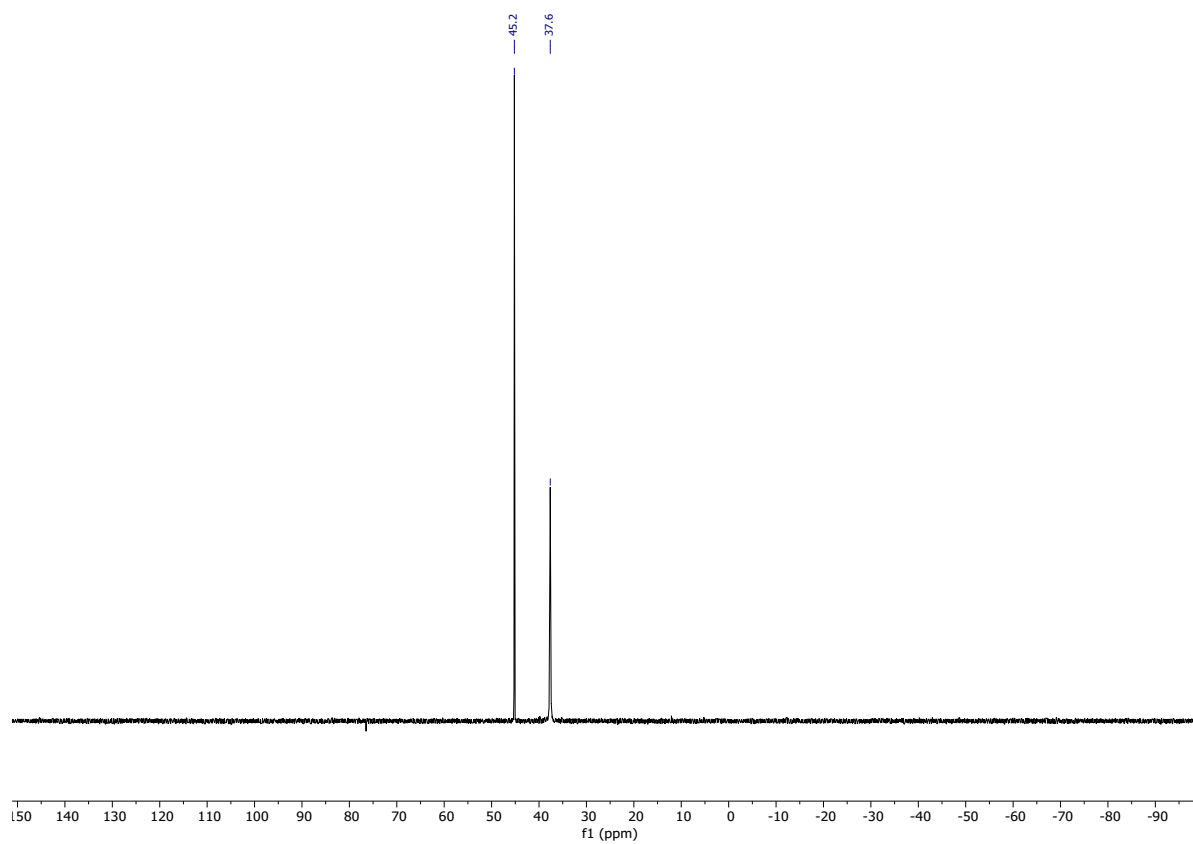


Figure S50. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **22**.

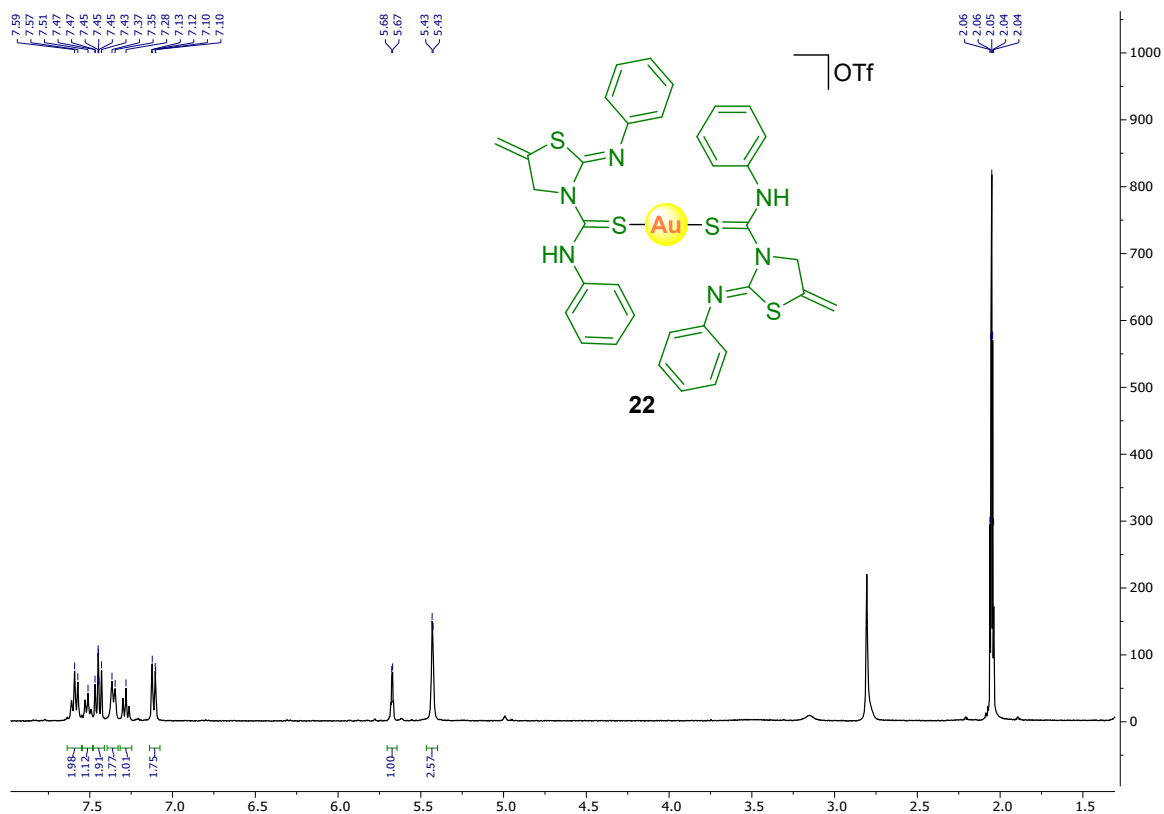


Figure S51. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **22**.

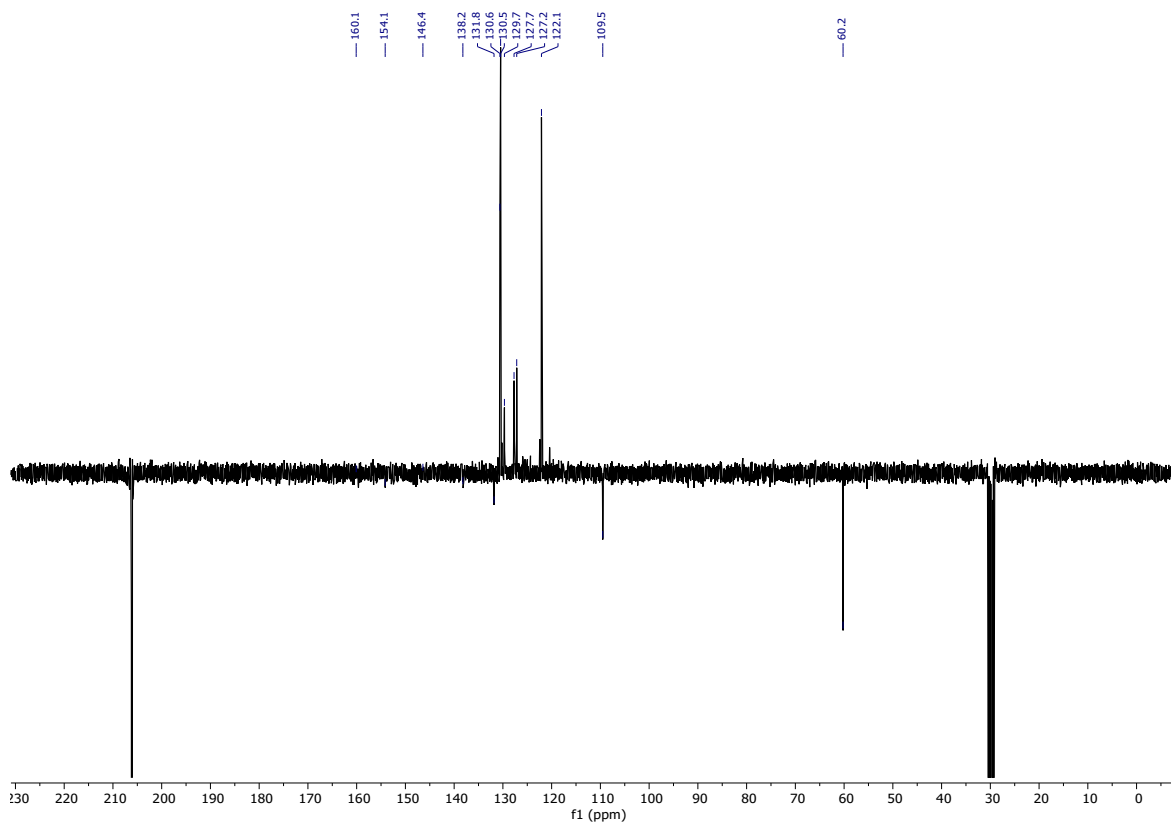


Figure S52. $^{19}\text{F}\{^1\text{H}\}$ NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **22**.

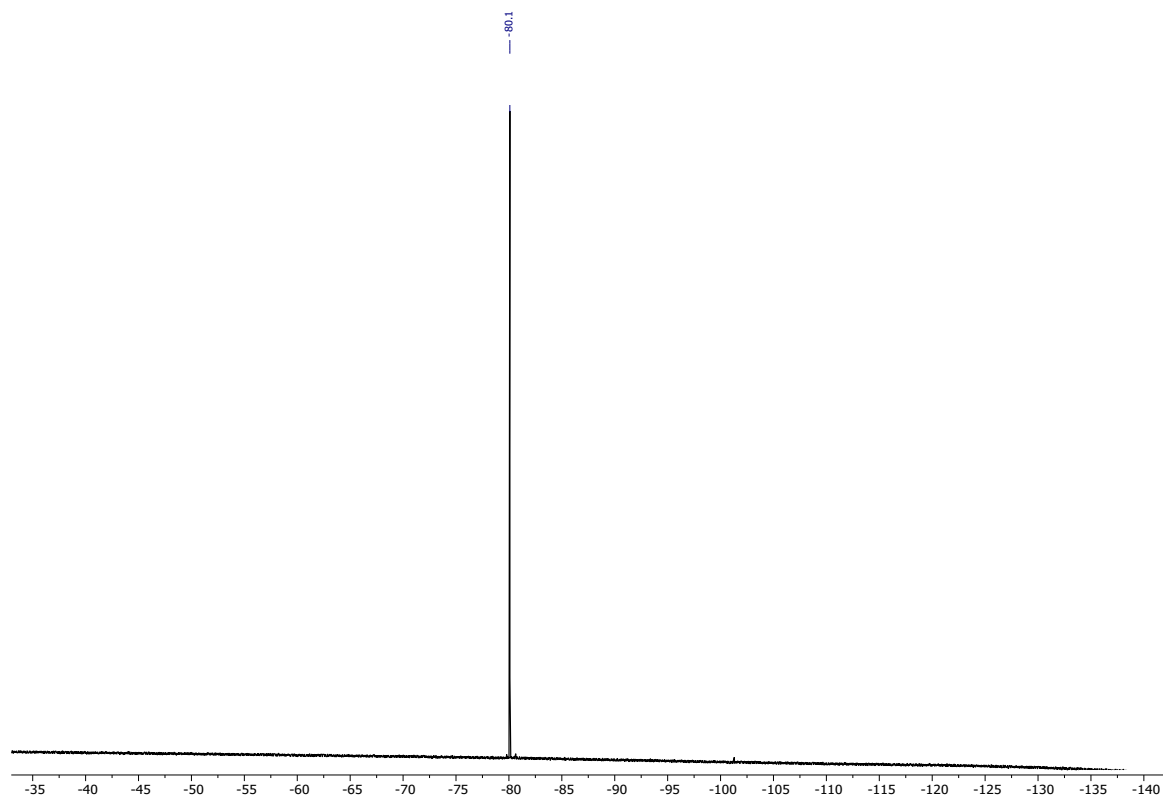


Figure S53. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **23**.

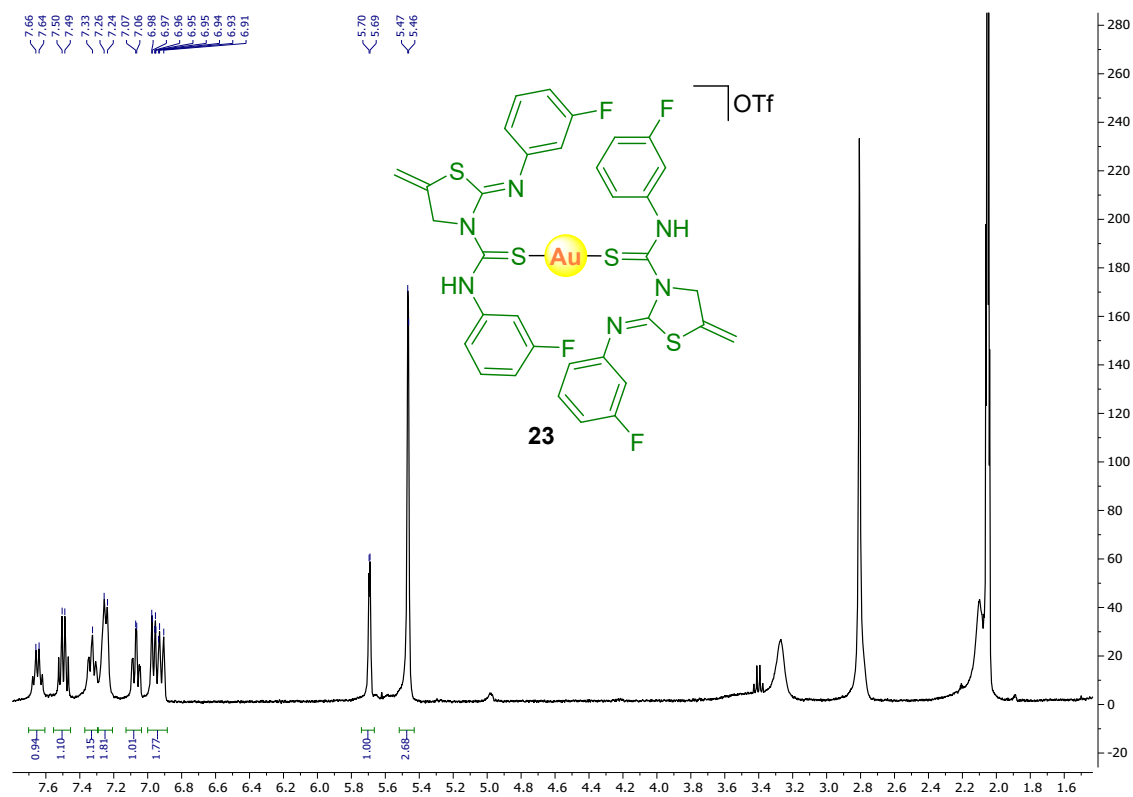


Figure S54. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **23**.

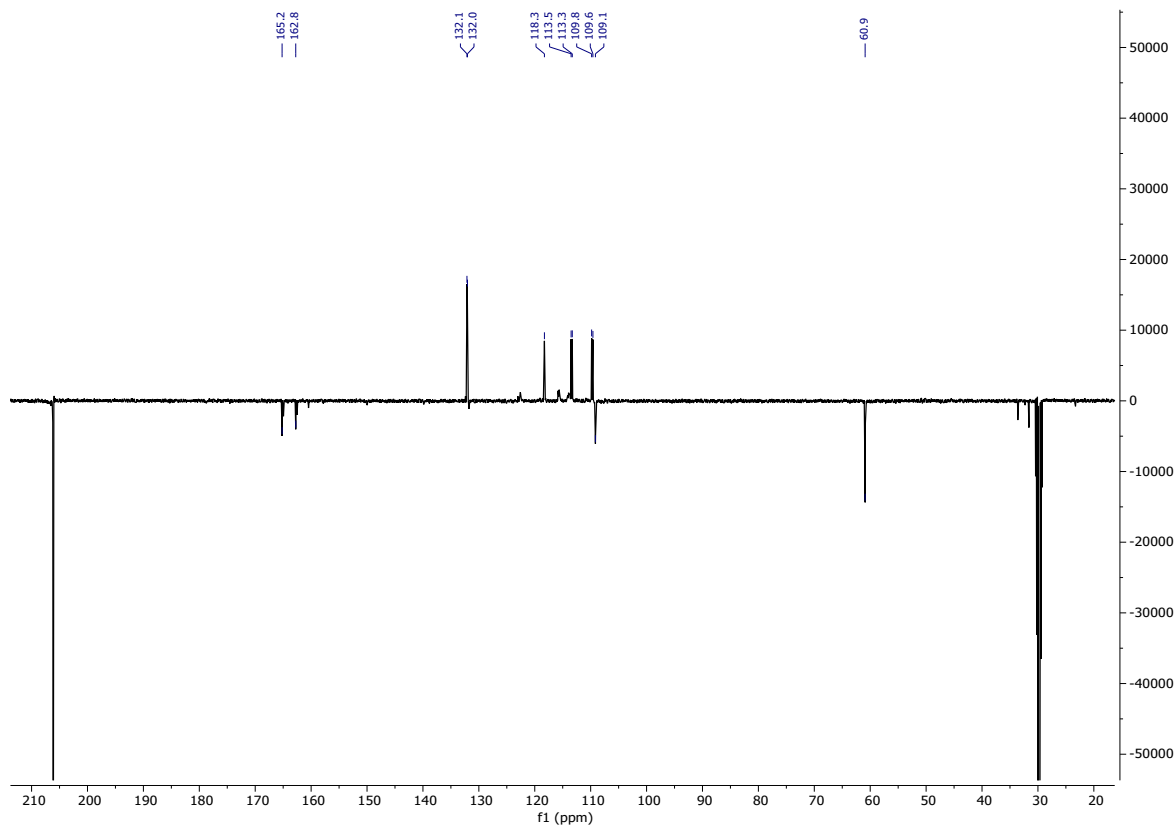


Figure S55. $^{19}\text{F}\{^1\text{H}\}$ NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **23**.

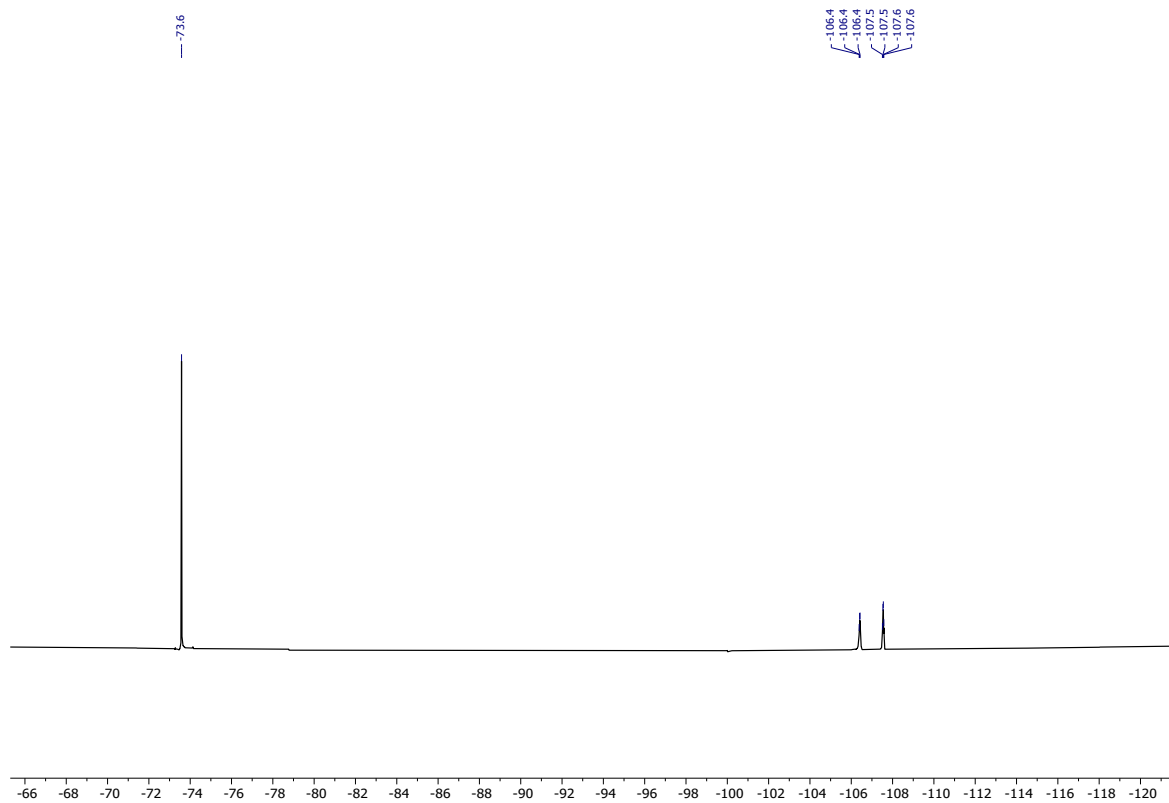


Figure S56. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **24**.

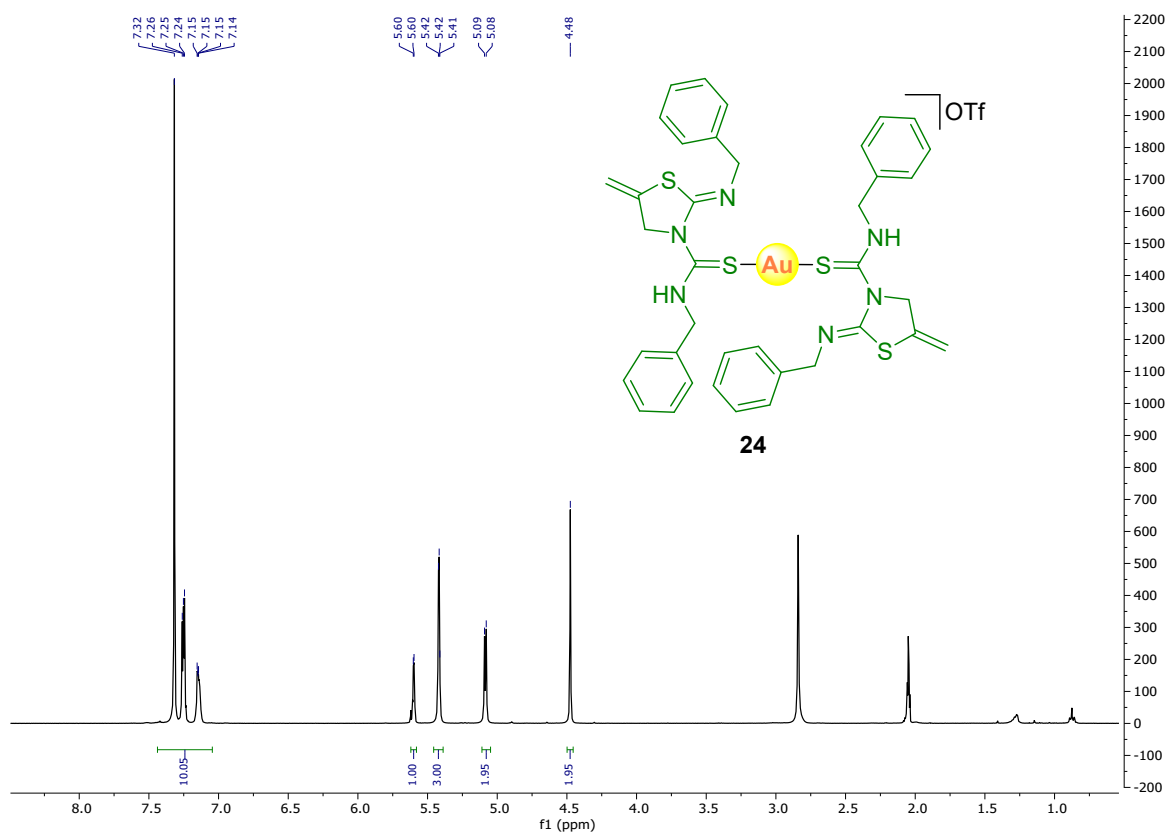


Figure S57. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **24**.

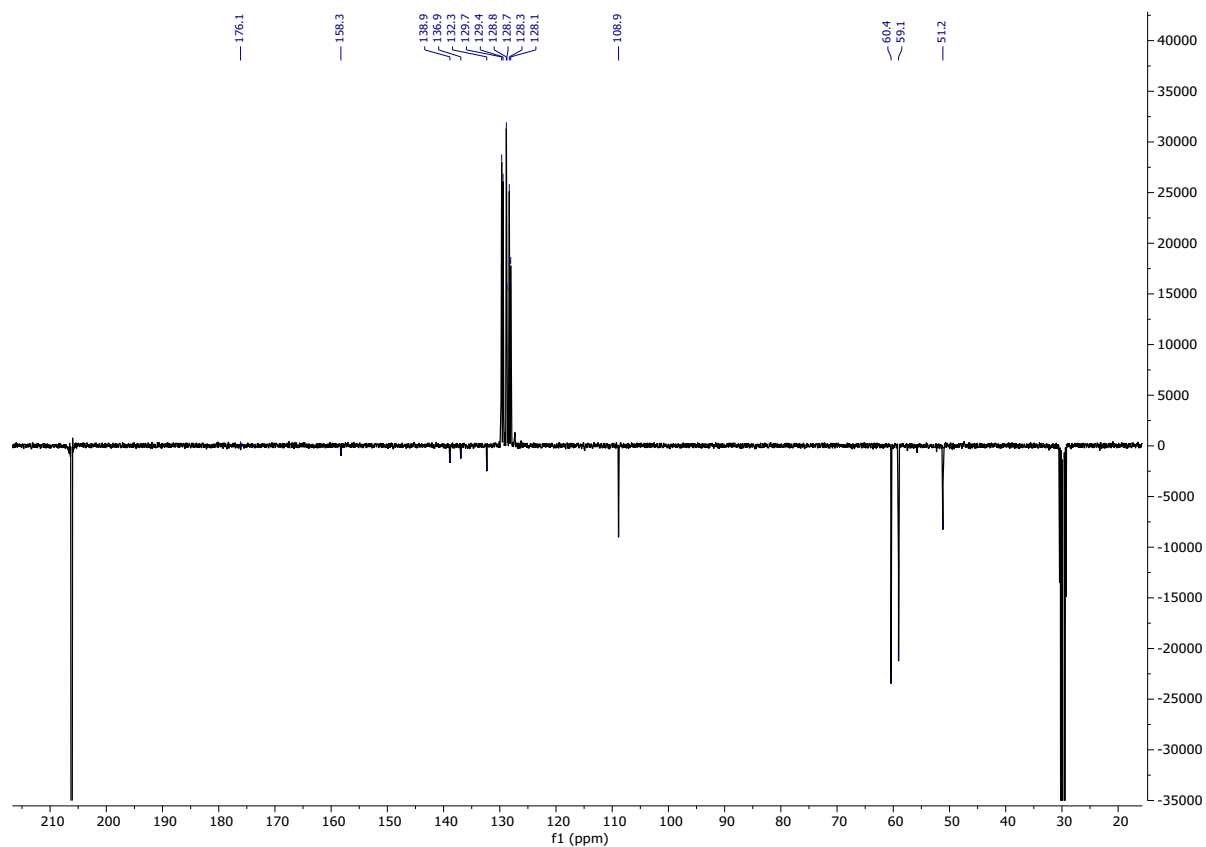


Figure S58. $^{19}\text{F}\{^1\text{H}\}$ NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex 24.

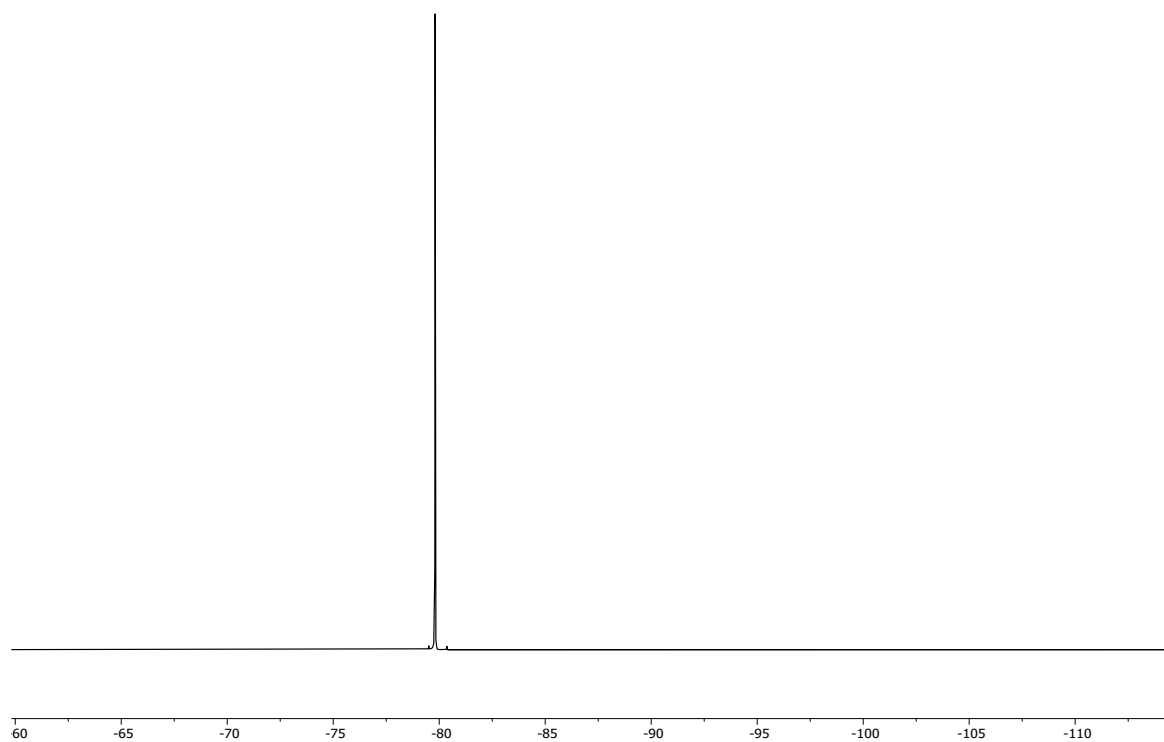


Figure S59. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex 25.

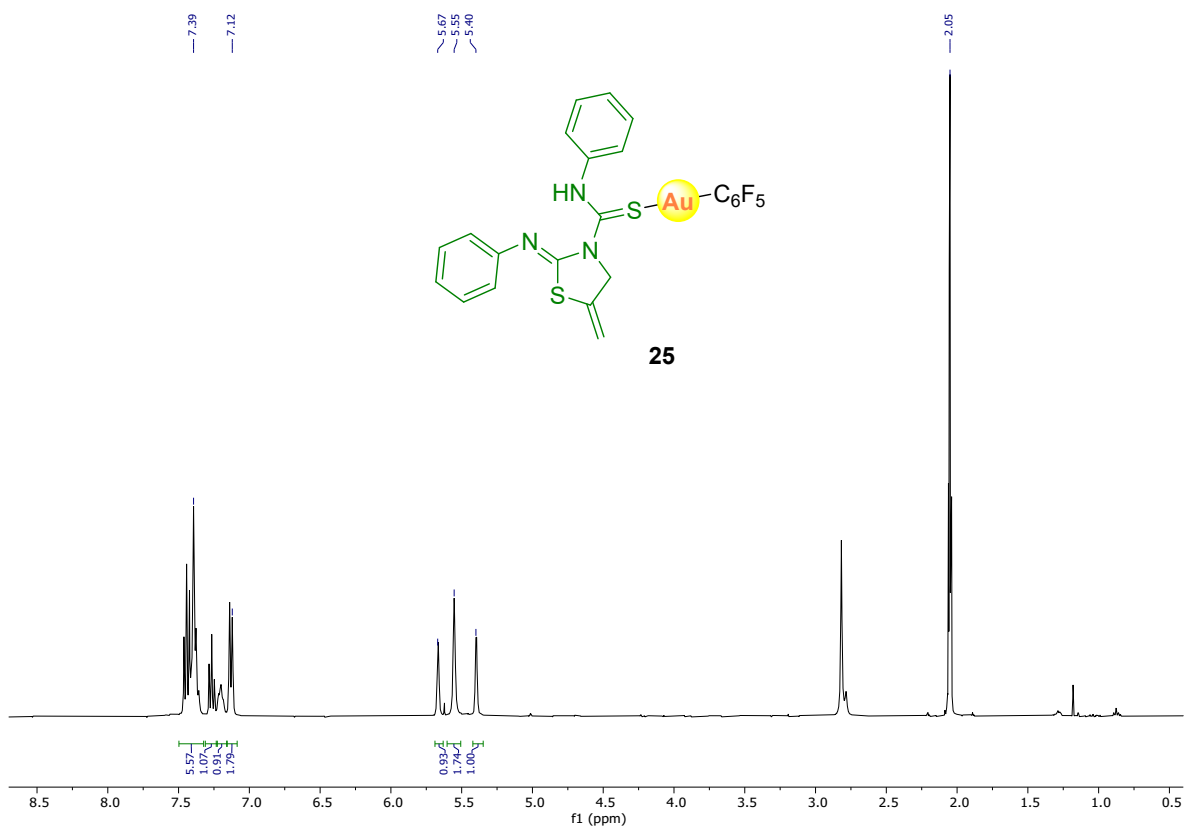


Figure S60. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **25**.

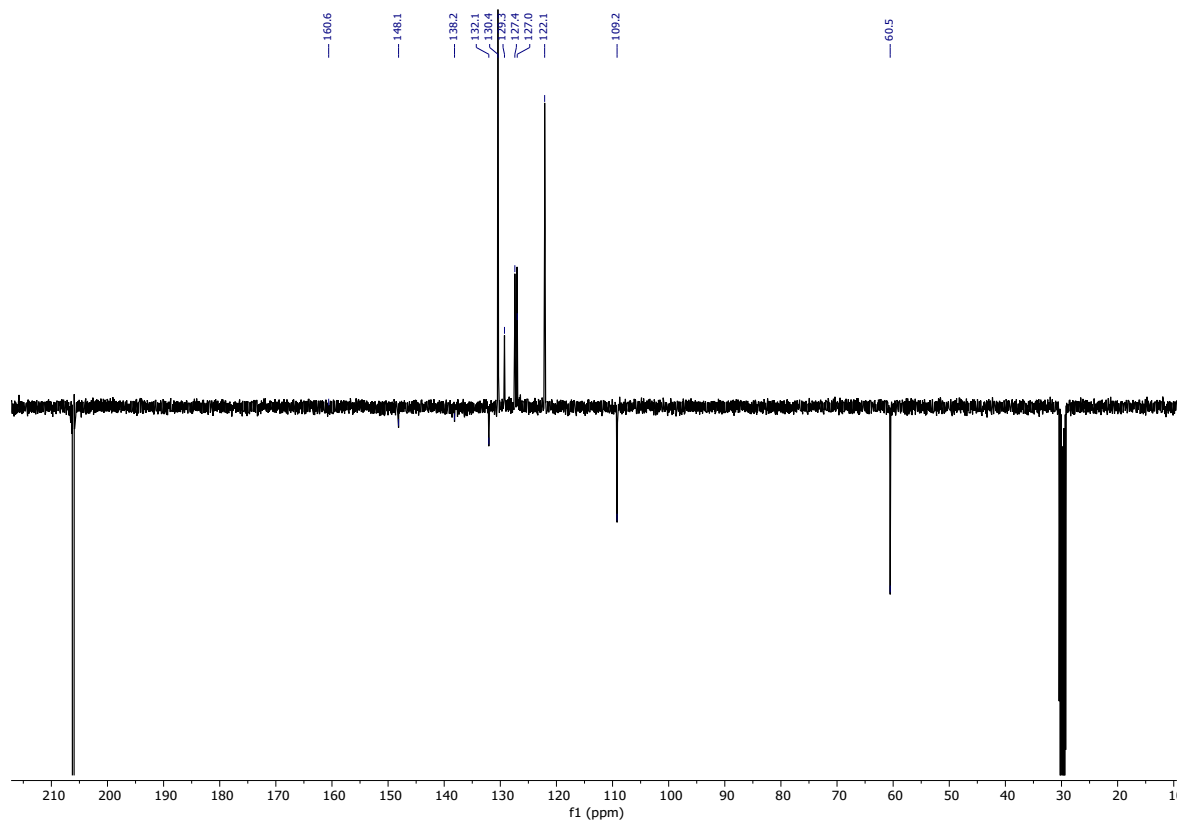


Figure S61. ^{19}F NMR (ppm) (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **25**.

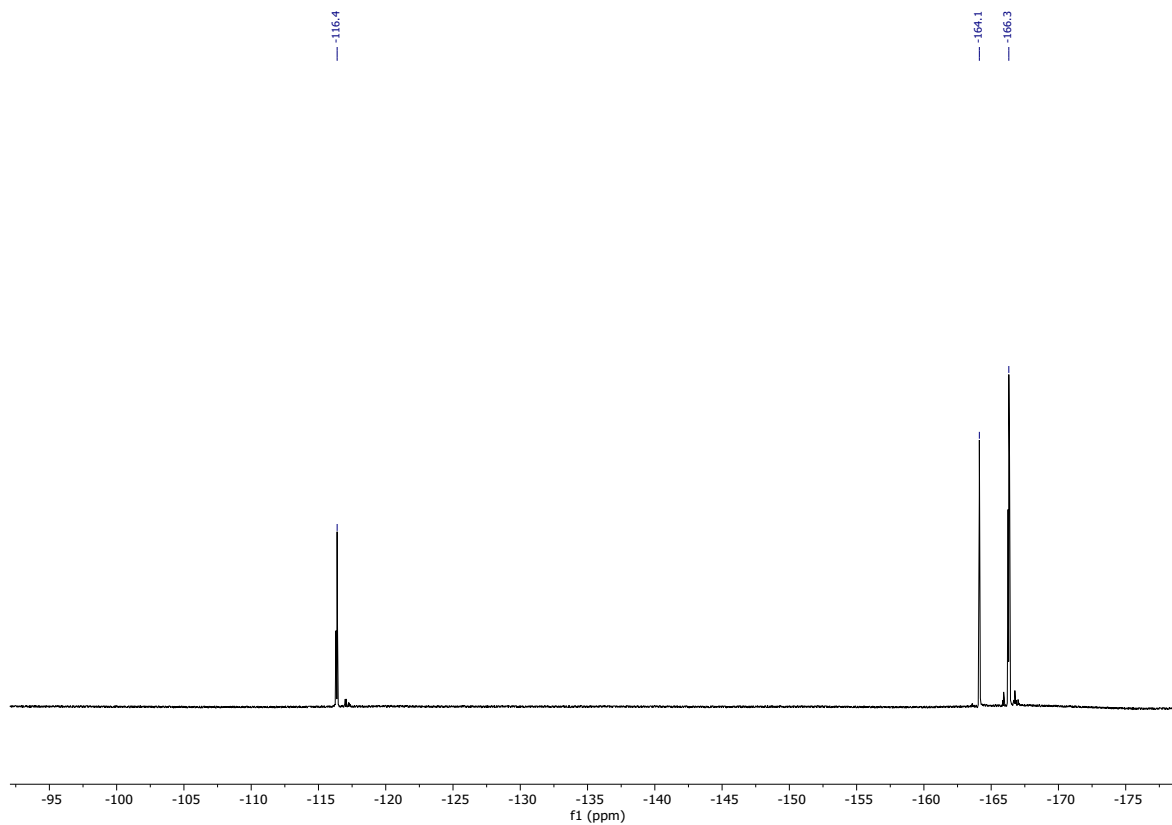


Figure S62. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **26**.

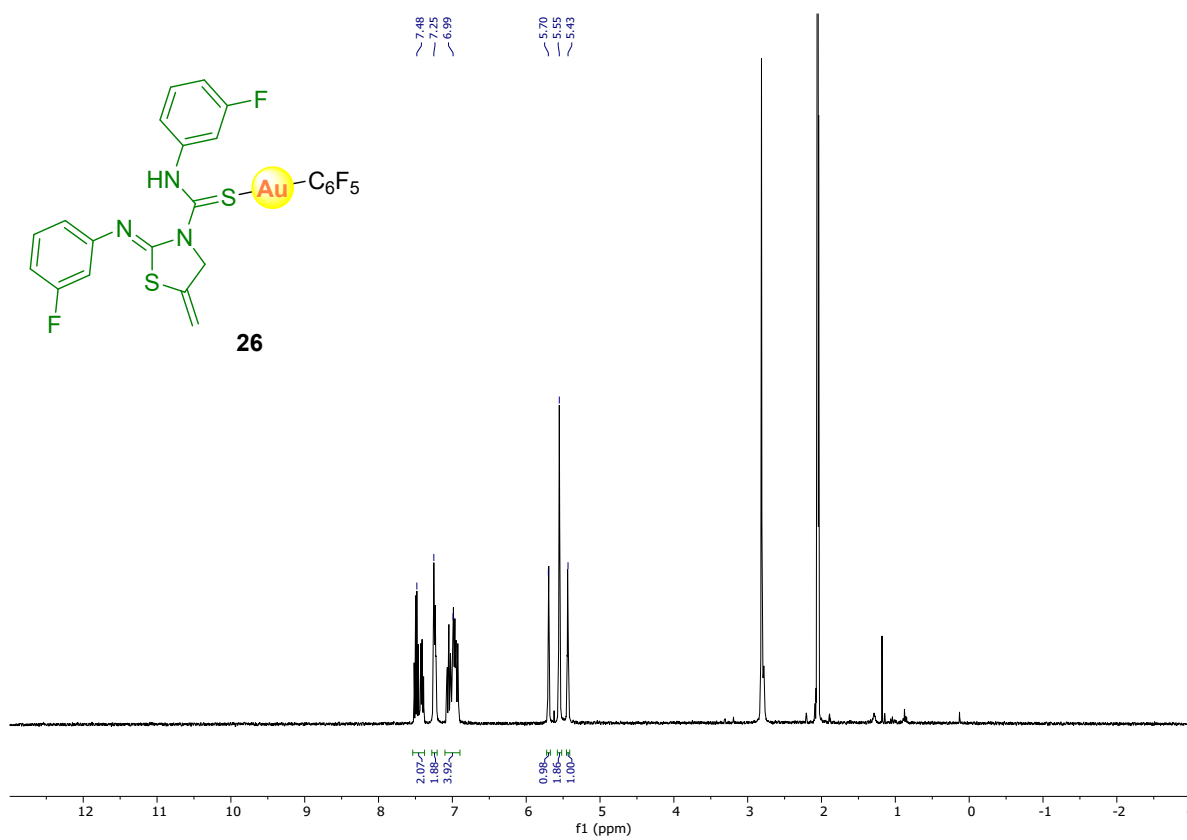


Figure S63. $^{13}\text{C}\{^1\text{H}\}$ APT NMR (101 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **26**.

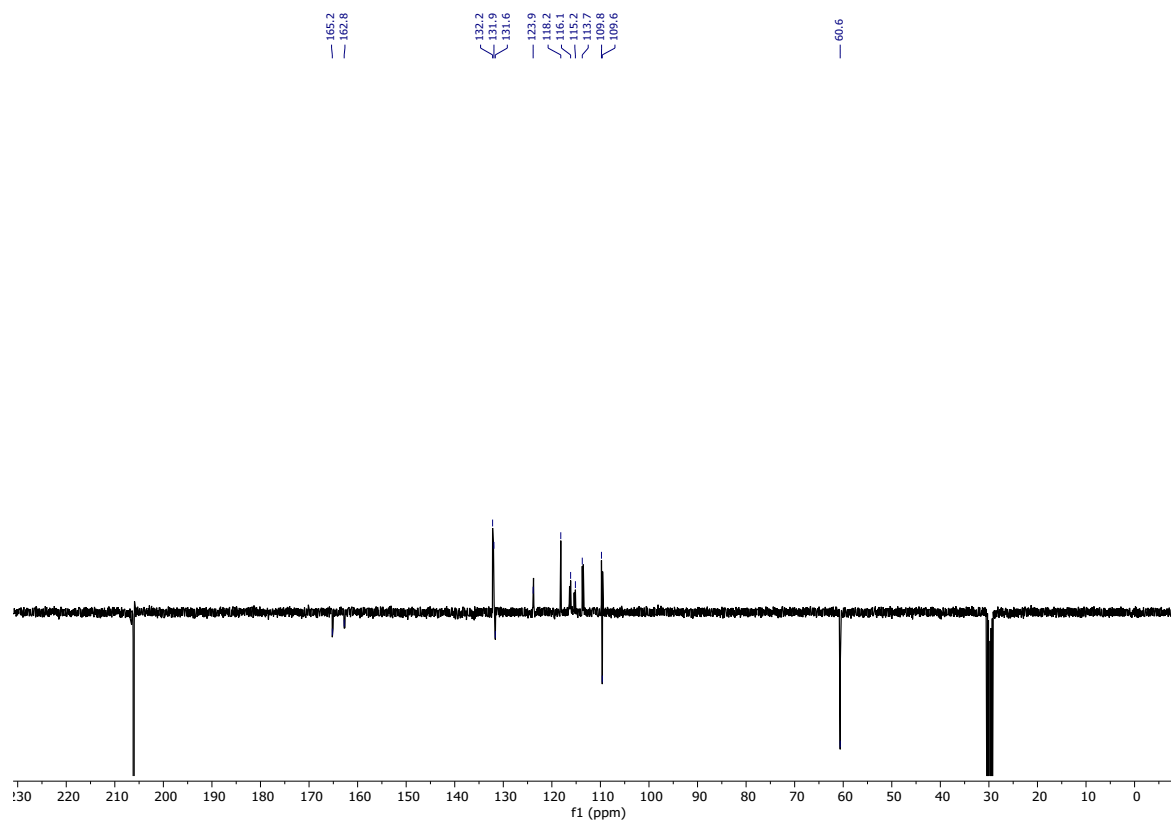


Figure S64. ^{19}F NMR (376 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **26**.

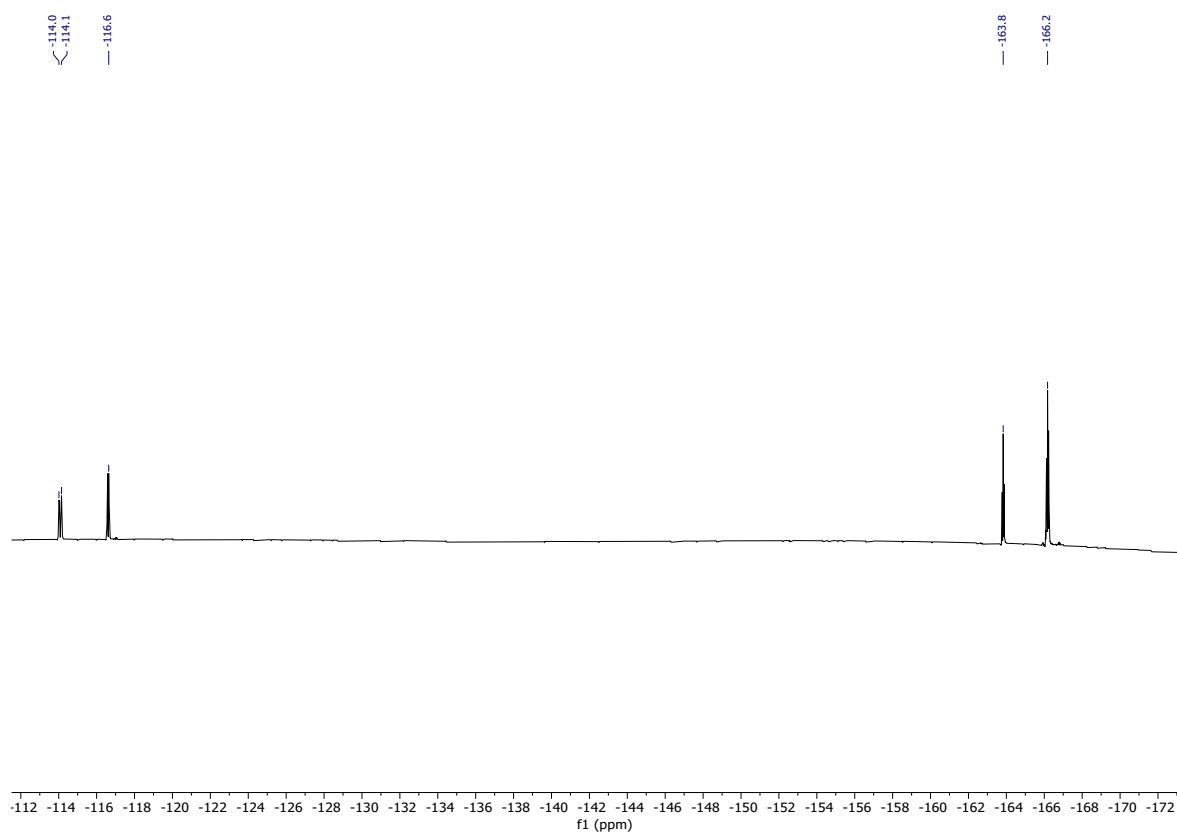


Figure S65. ^1H NMR (400 MHz, $(\text{CD}_3)_2\text{CO}$) spectrum of complex **27**.

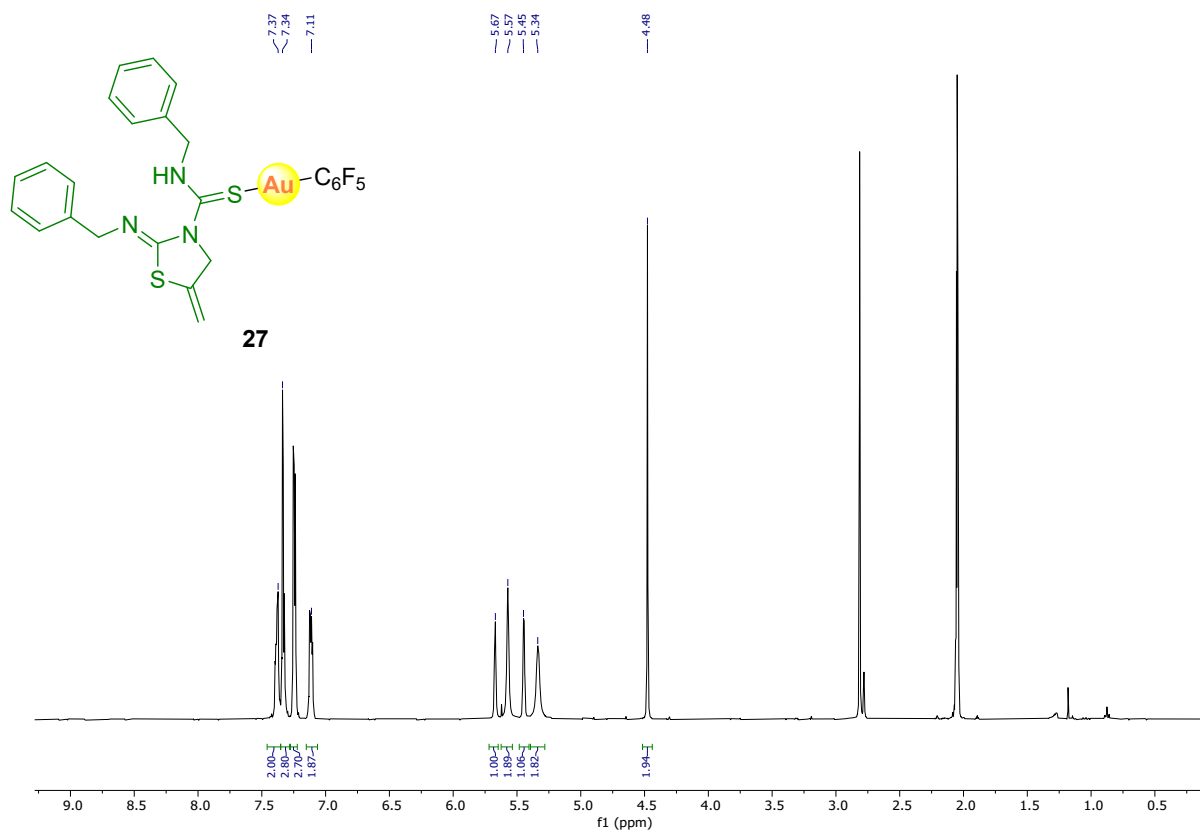


Figure S66. ¹³C{¹H} APT NMR (101 MHz, (CD₃)₂CO) spectrum of complex **27**.

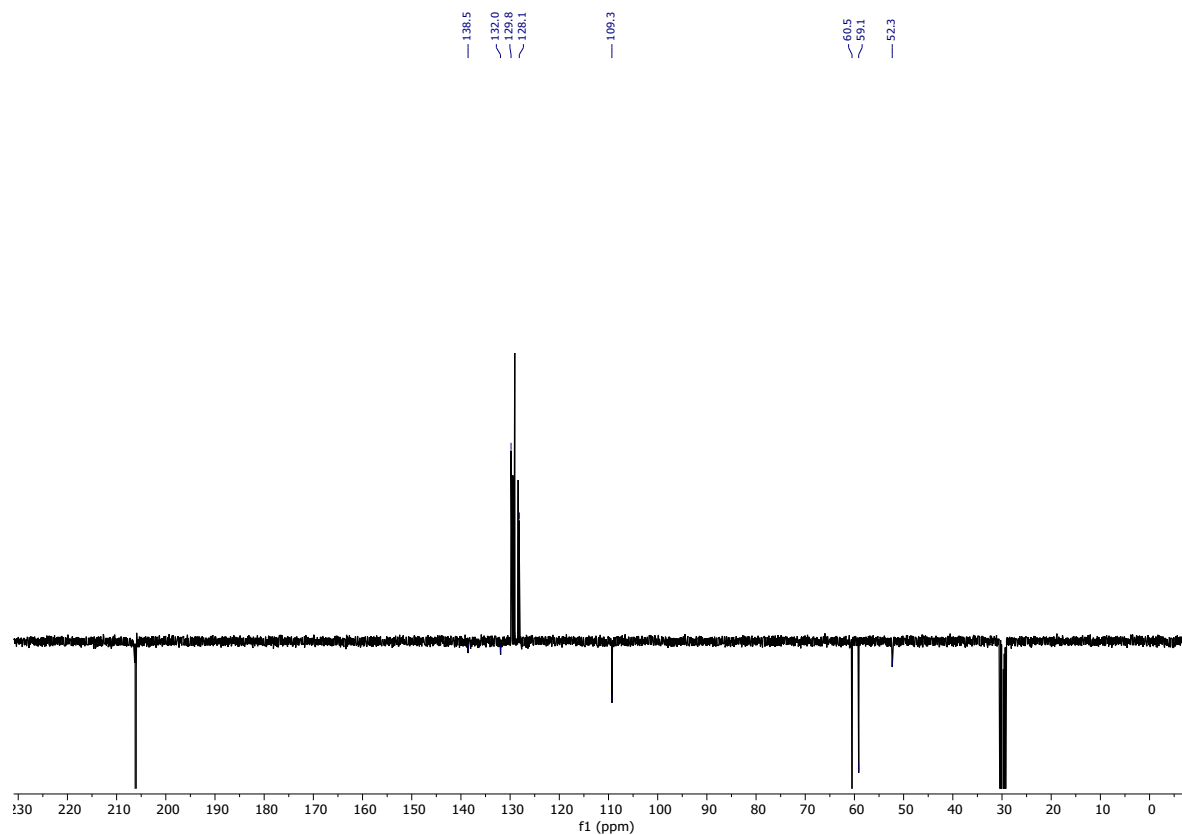


Figure S67. ¹⁹F NMR (376 MHz, (CD₃)₂CO) spectrum of complex **27**.

