Synthesis of 3,6-dihydro-2H-thiopyrans via diffusion-controlled generation of thioaldehydes as dienophiles for [4+2] cycloaddition

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Supplementary Information

NMR spectra of compounds **1-17**……Pages 2-23
MALDI-TOF mass spectra of the reaction mixtures……..Pages 24-26

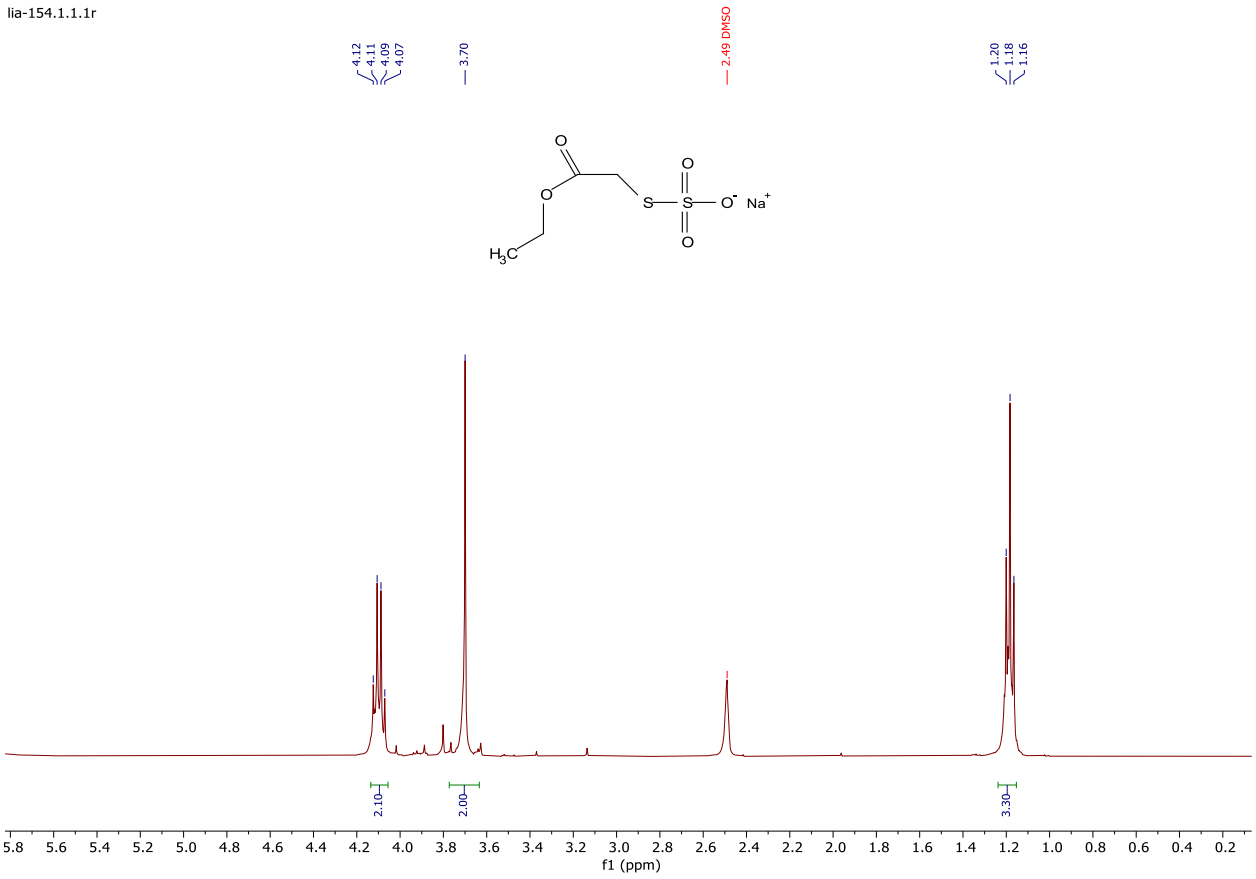


Figure S1. ^{1}H NMR spectra of compound **1**.

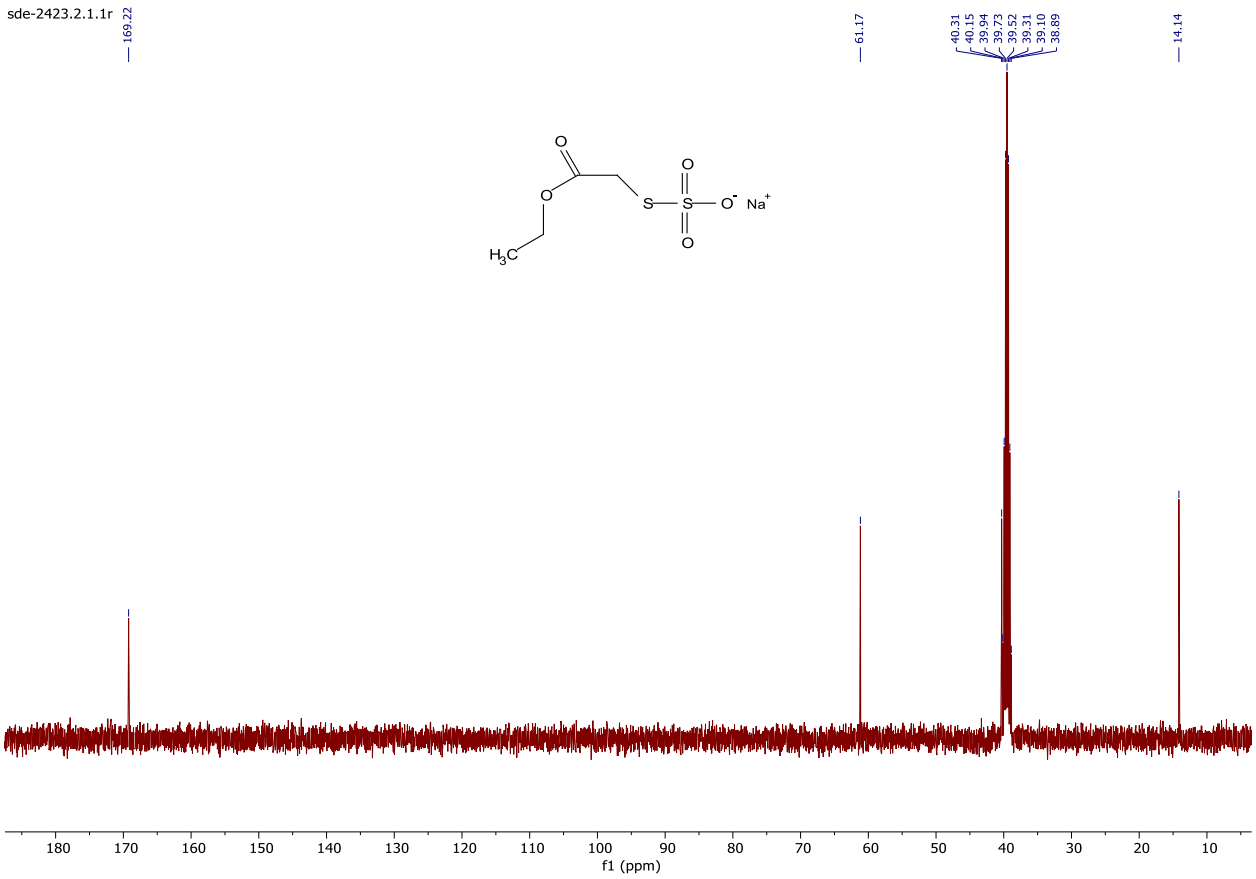


Figure S2. ^{13}C NMR spectra of compound **1**.

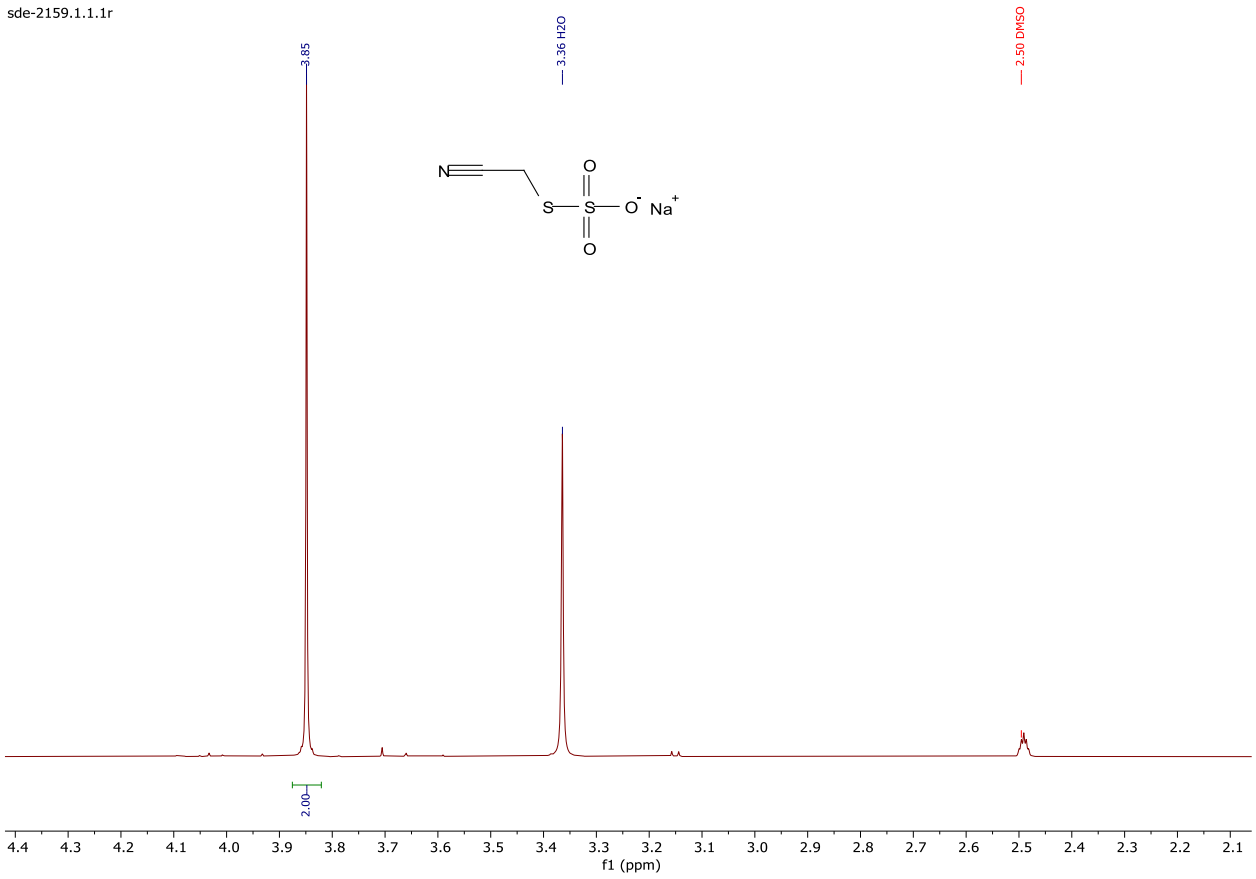


Figure S3. ^{1}H NMR spectra of compound **2**.

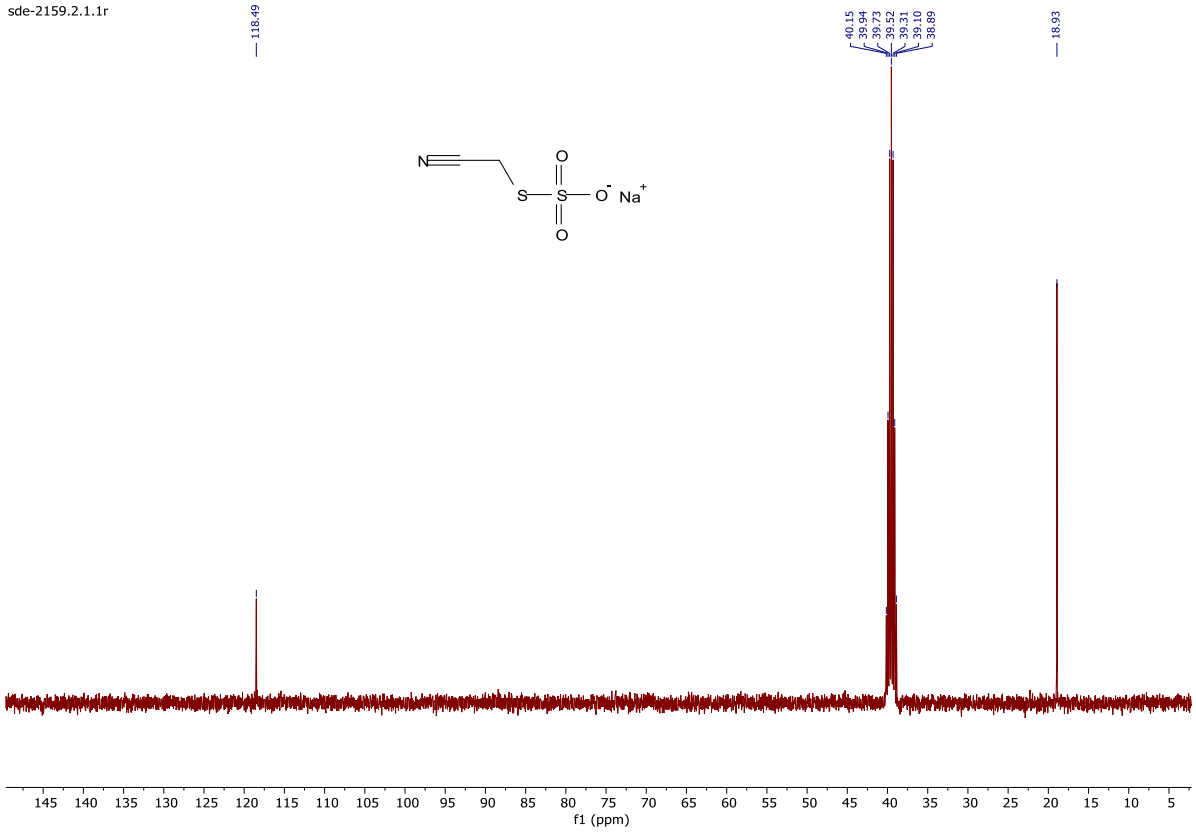


Figure S4. ^{13}C NMR spectra of compound **2**.

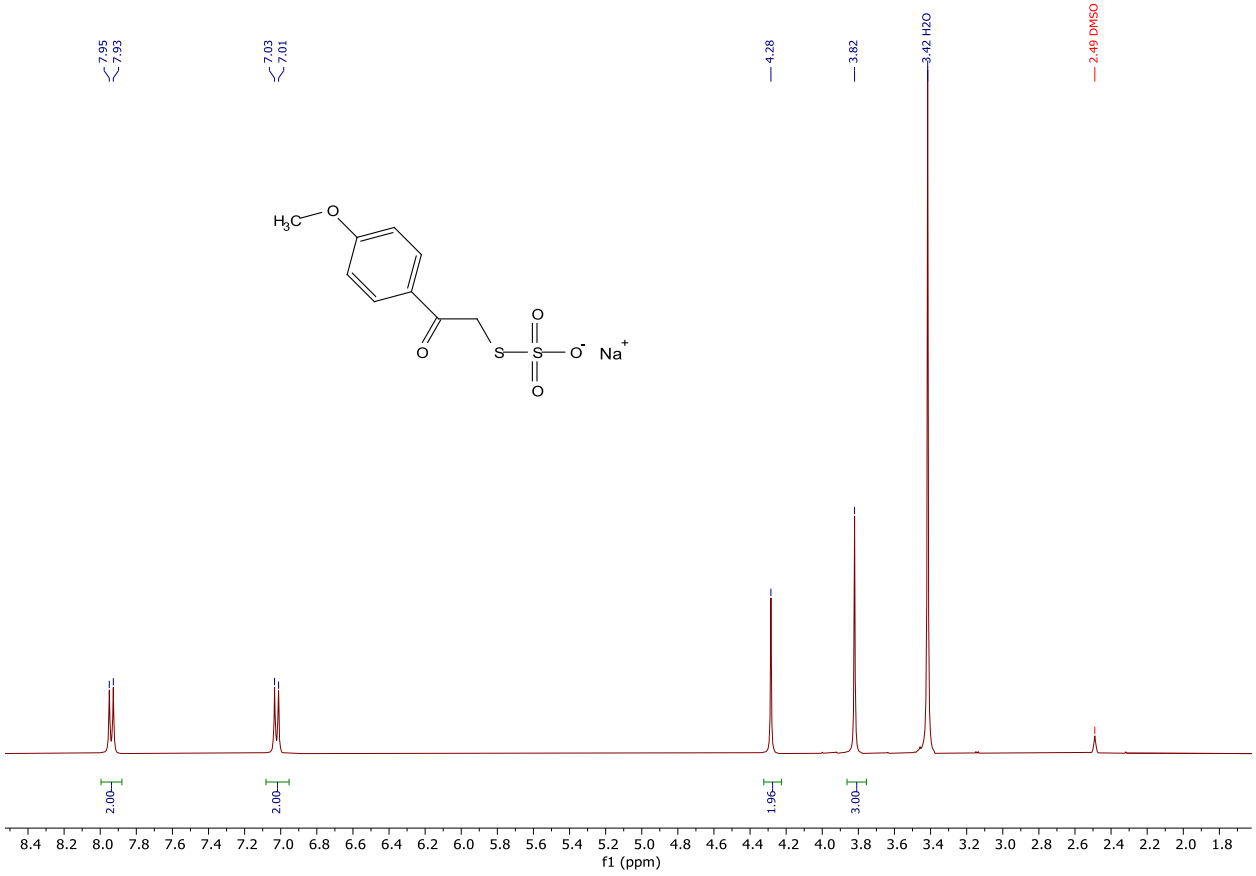


Figure S5. ^{1}H NMR spectra of compound **3**.

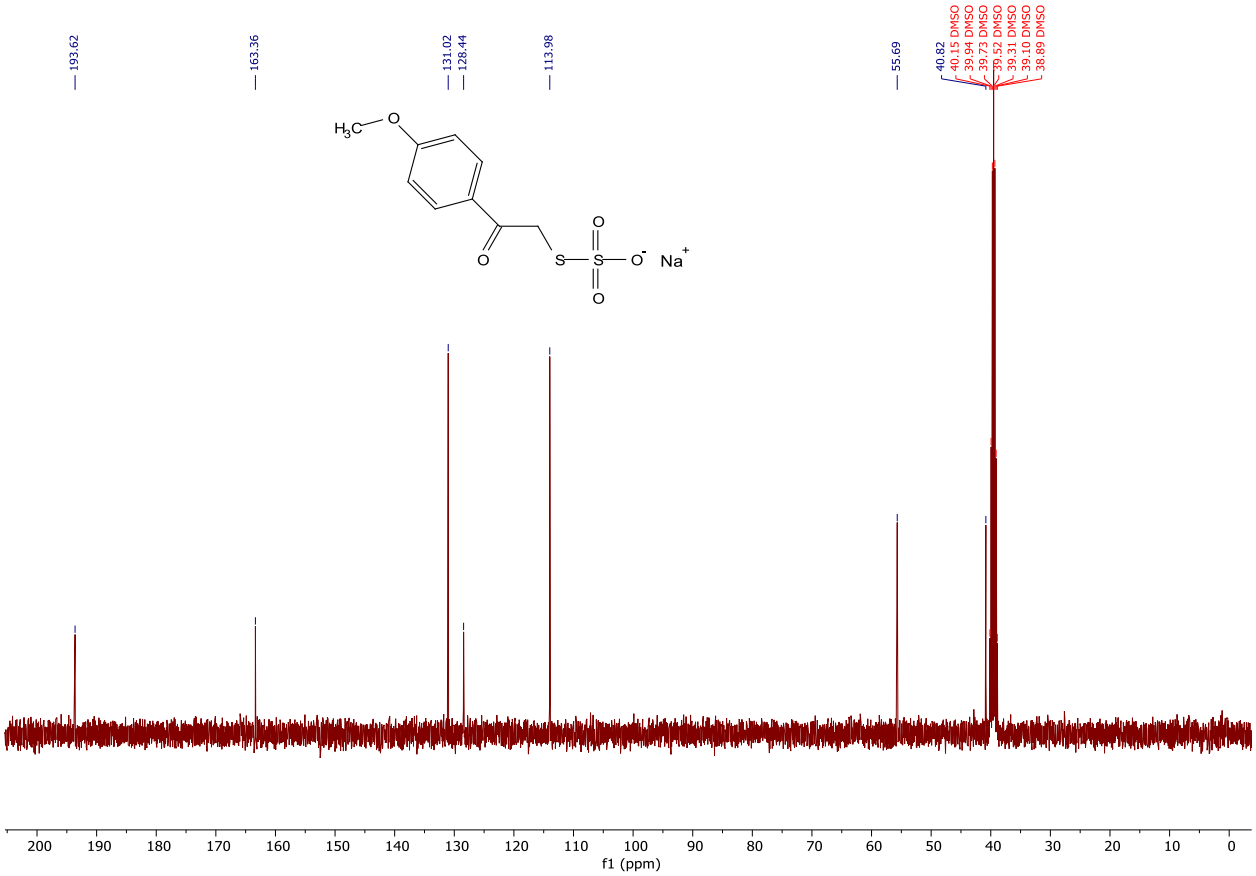


Figure S6. ^{13}C NMR spectra of compound **3**.

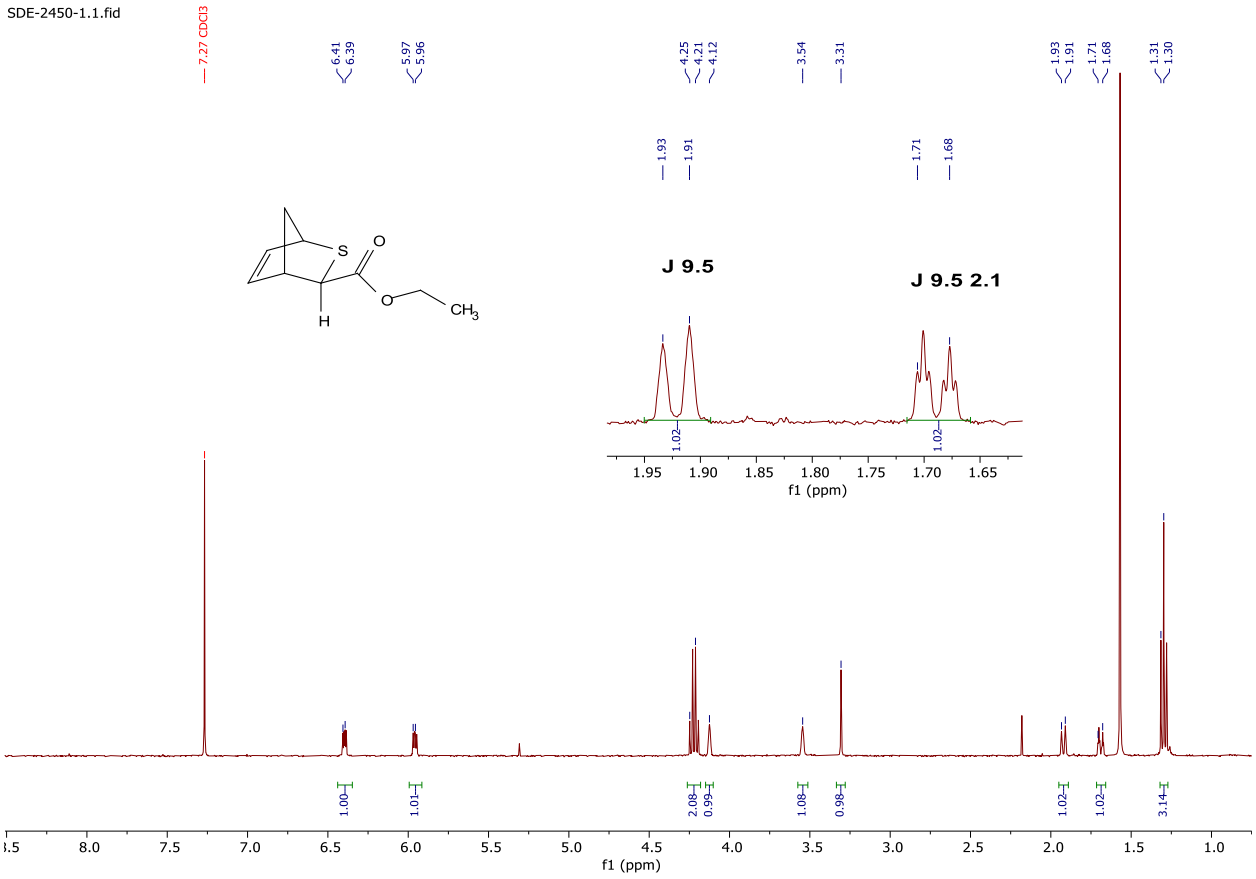


Figure S7. ^{1}H NMR spectra of compound **4a**.

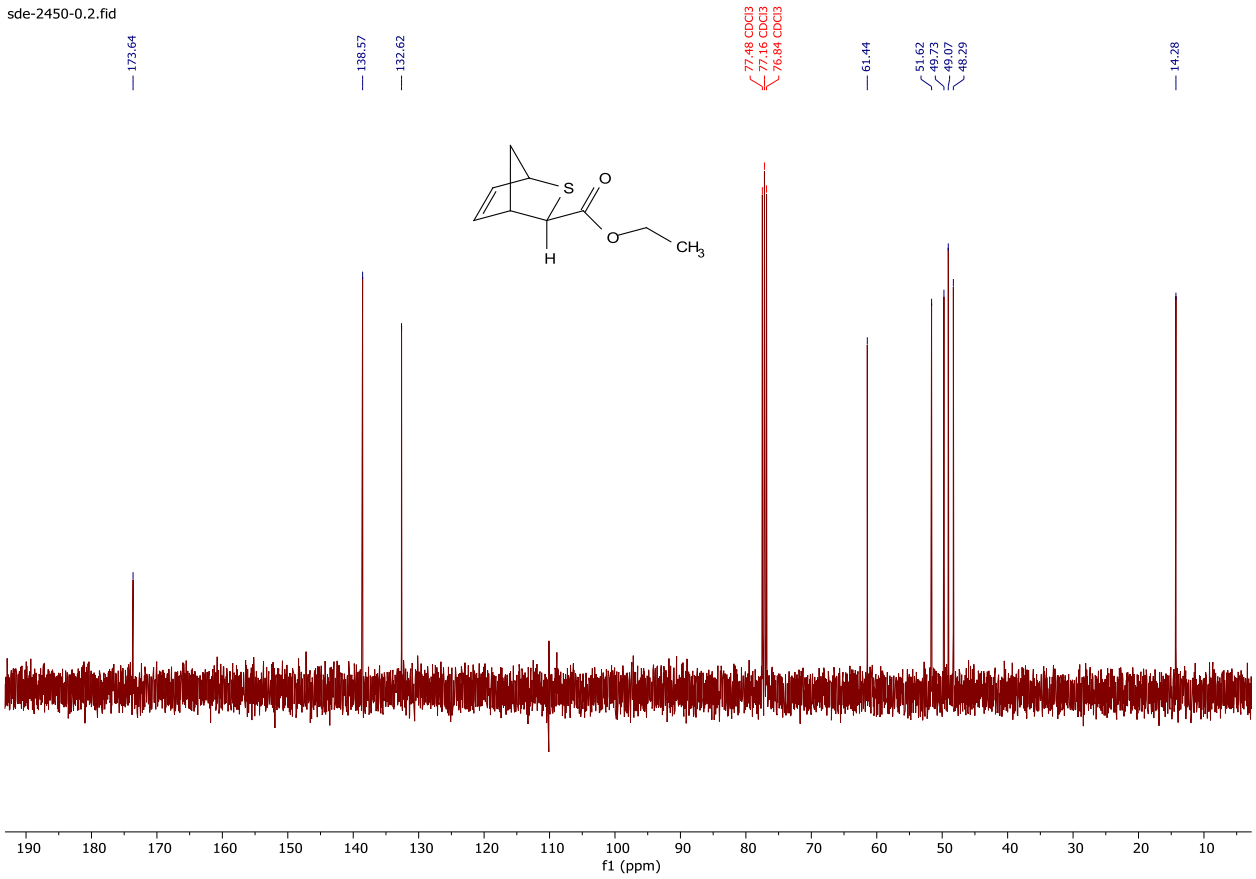


Figure S8. ^{13}C NMR spectra of compound **4a**.

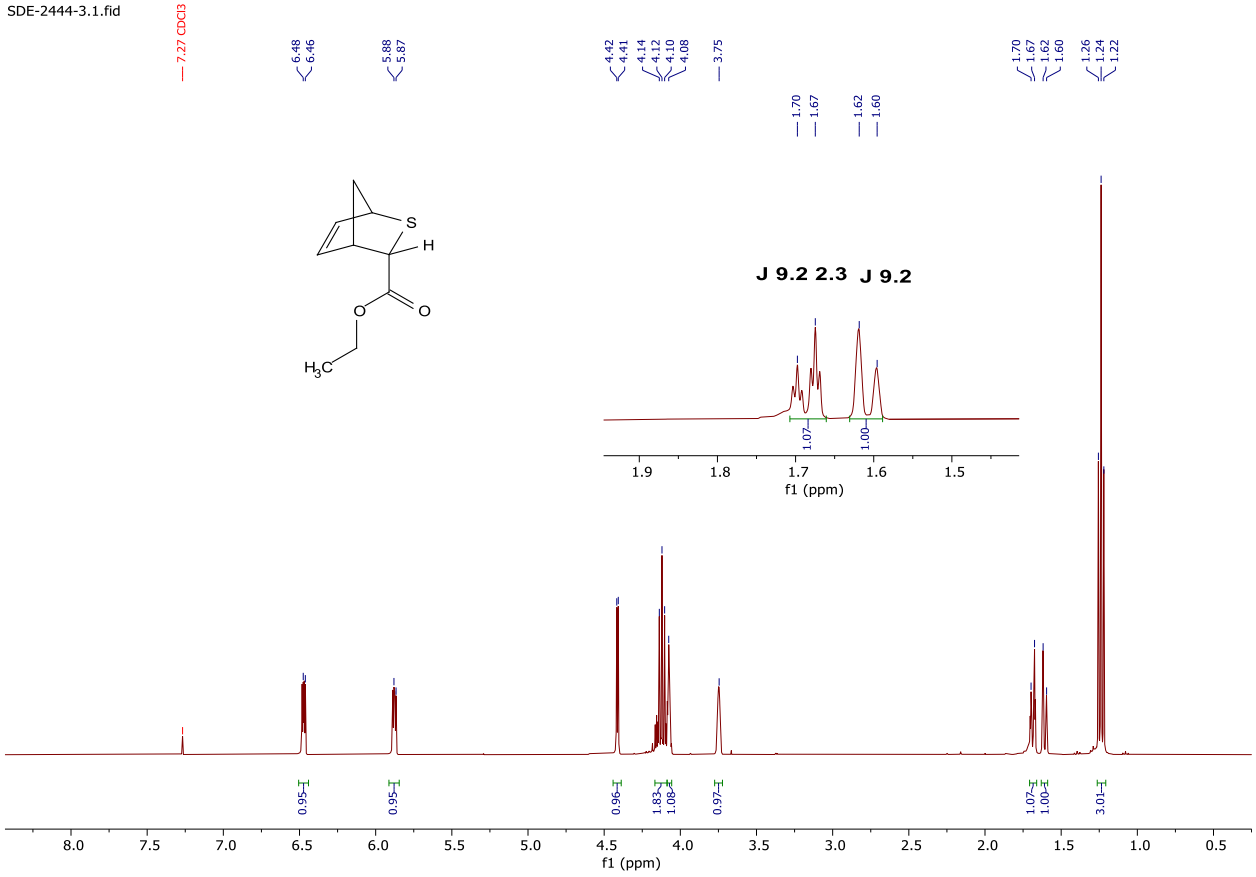


Figure S9. ^{1}H NMR spectra of compound **4b**.

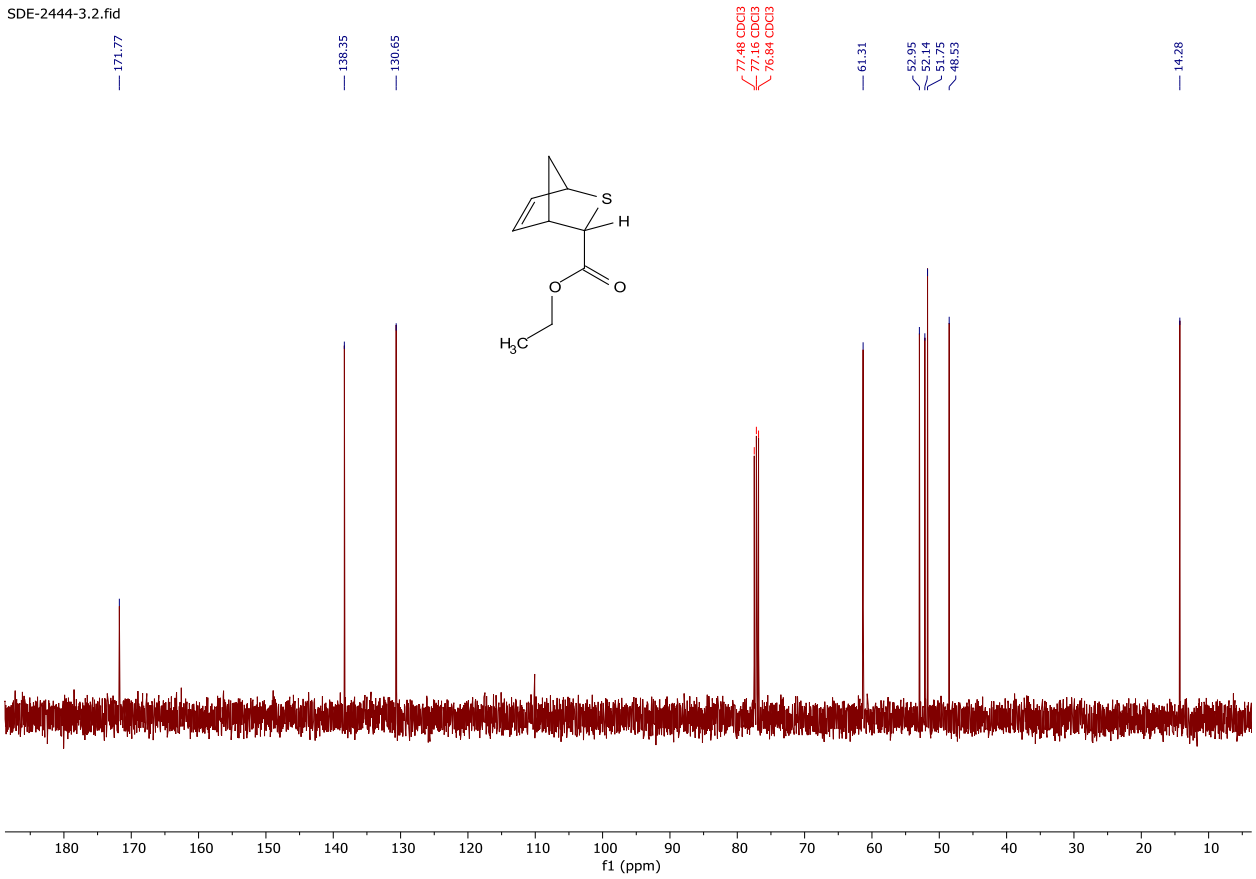


Figure S10. ^{13}C NMR spectra of compound **4b**.

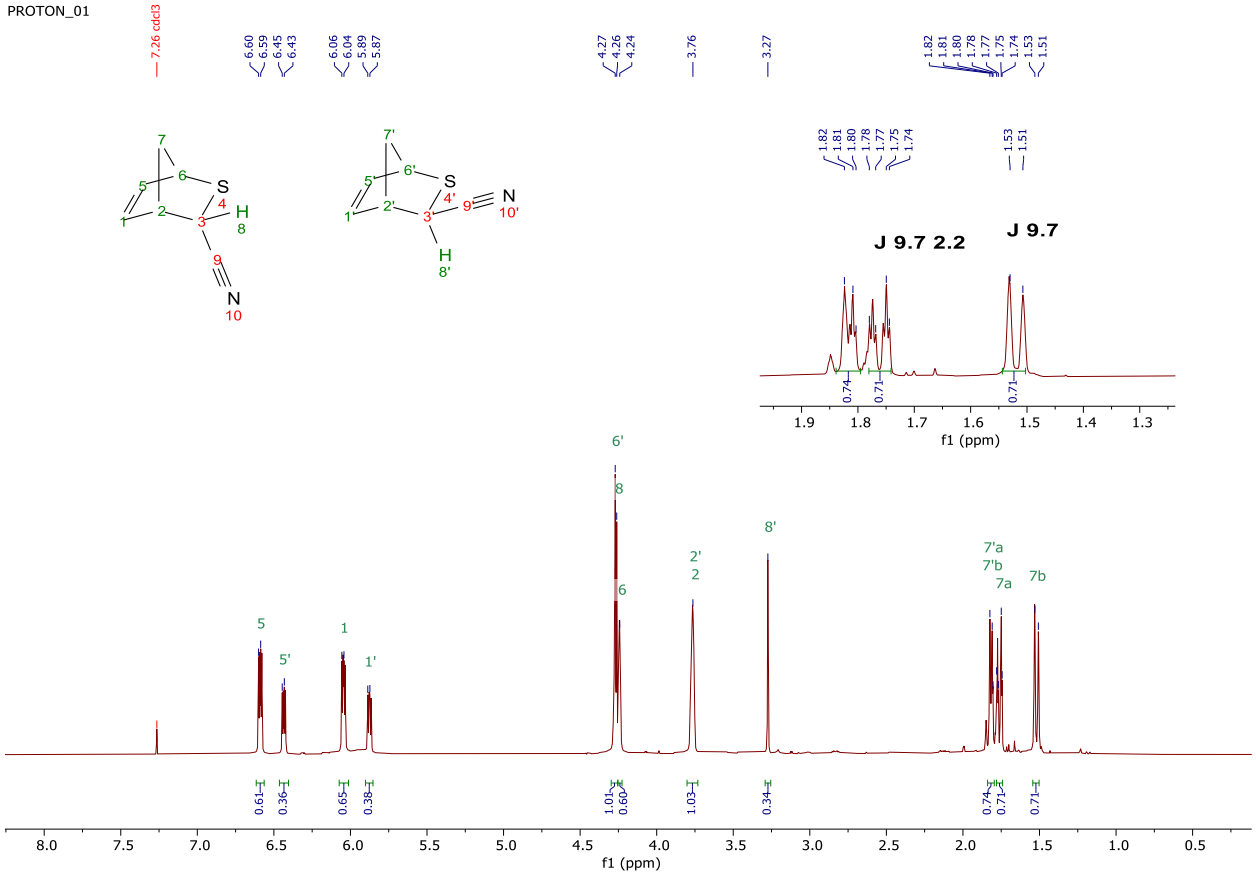


Figure S11. ^{1}H NMR spectra of compounds **5a** and **5b**.

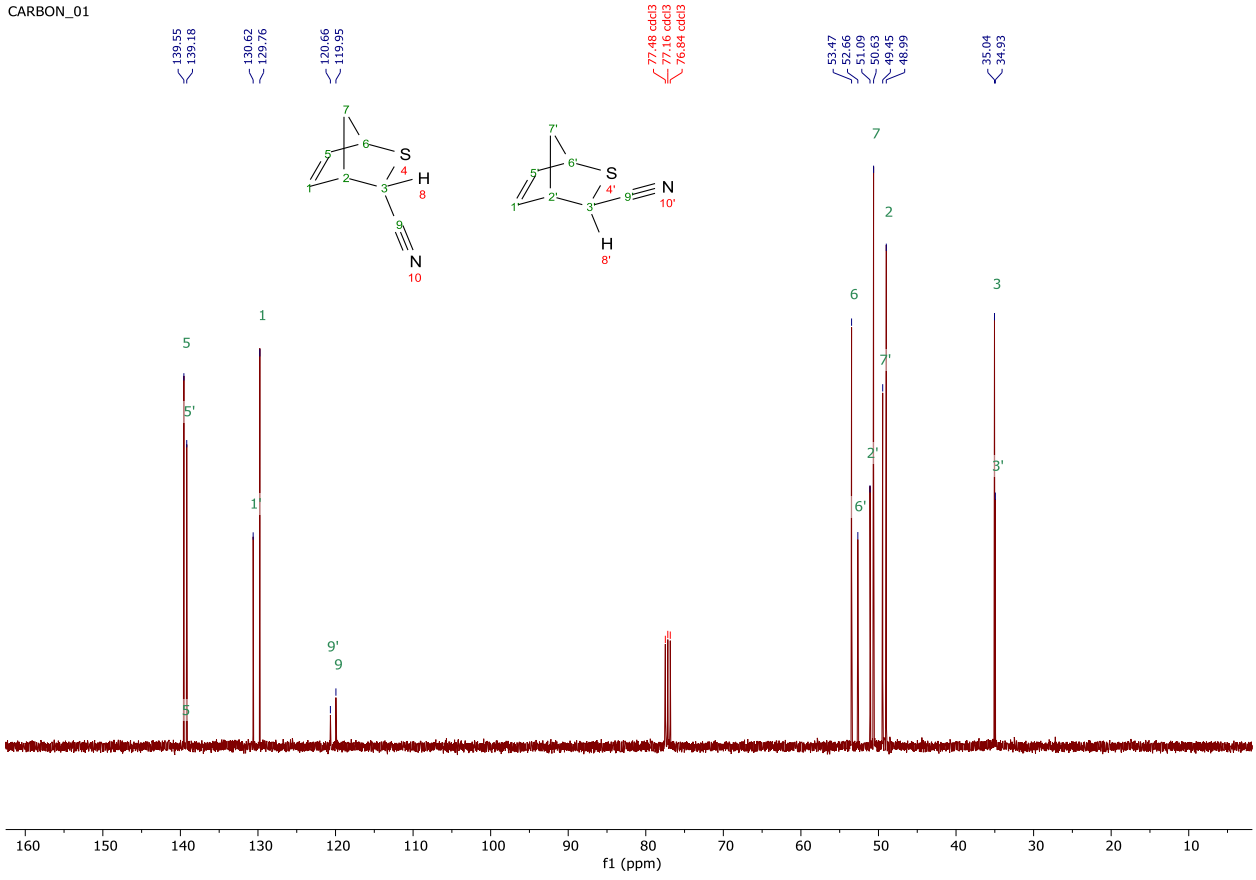


Figure S12. ^{13}C NMR spectra of compounds **5a** and **5b**.

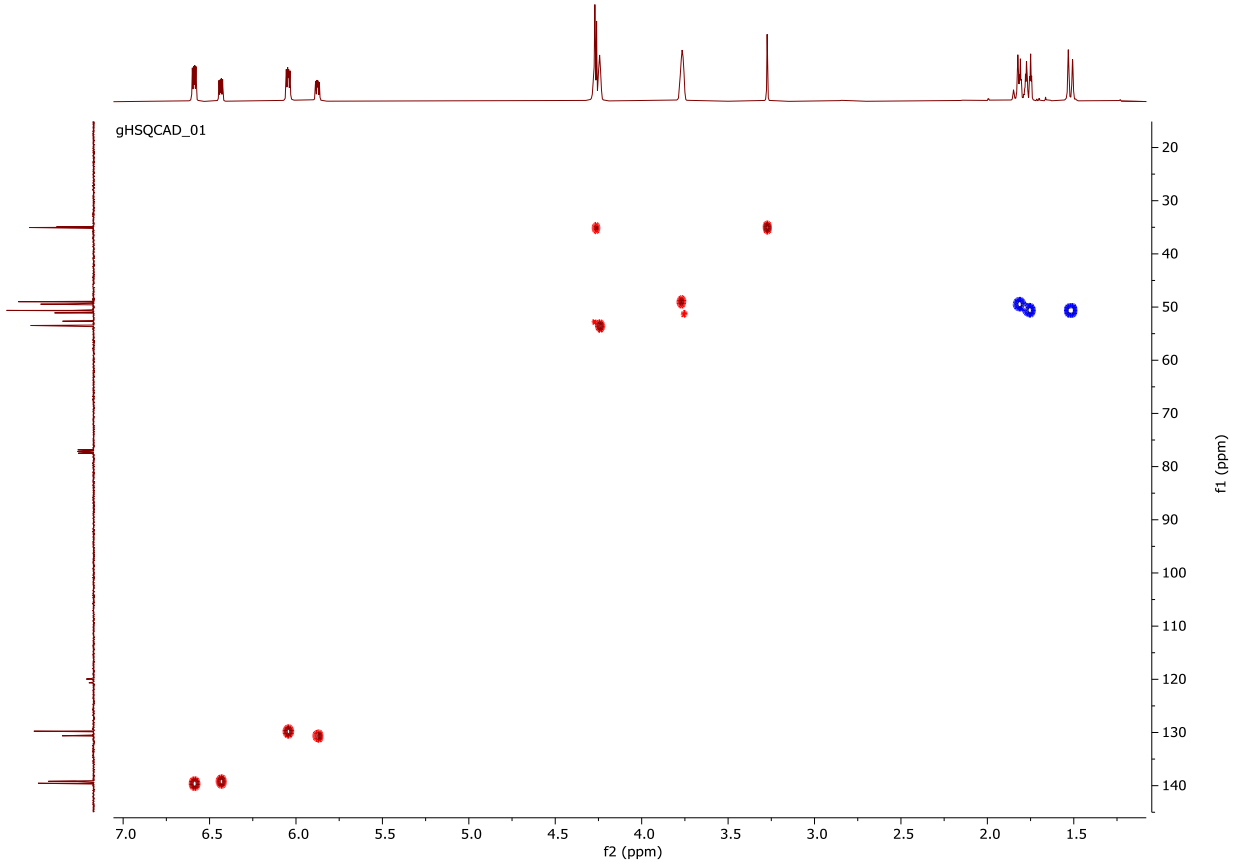


Figure S13. HSQC ^{1}H-^{13}C NMR spectra of compounds **5a** and **5b**.

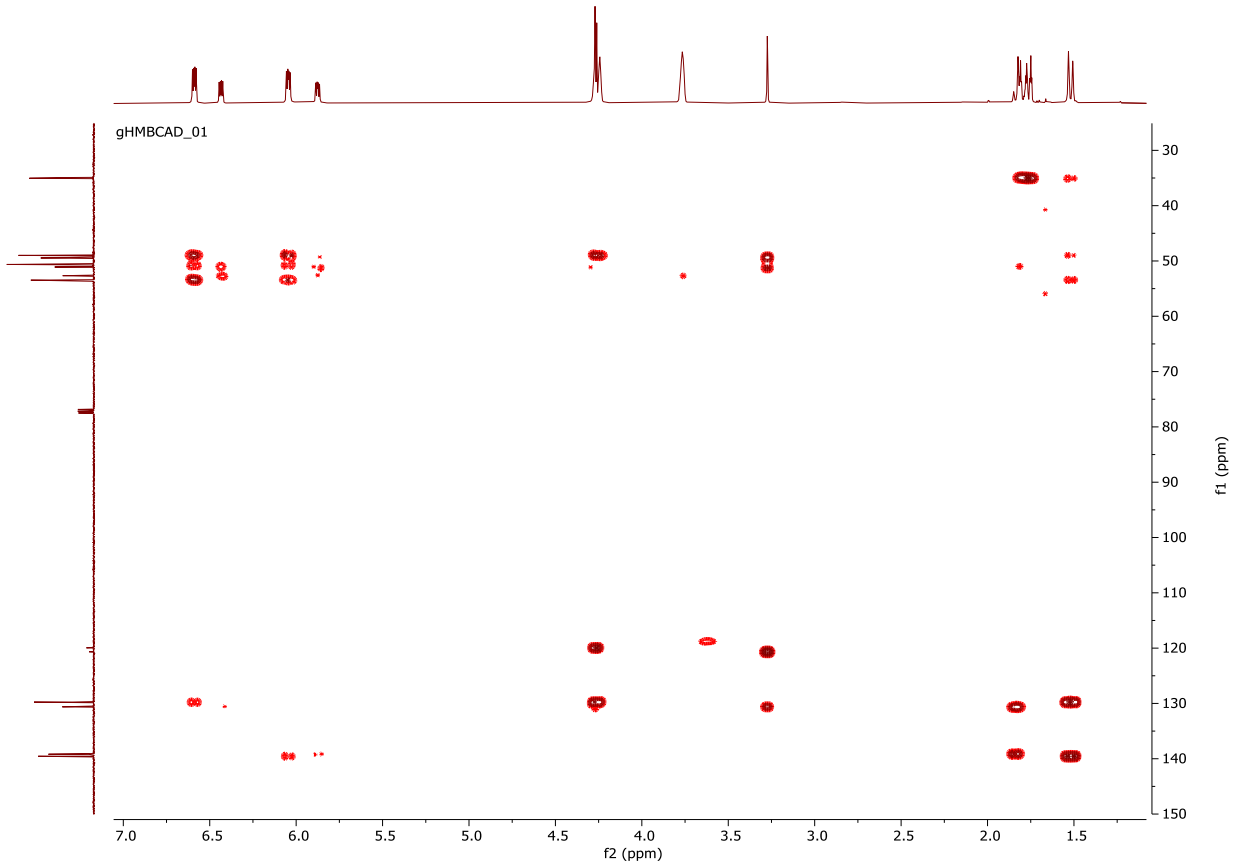


Figure S14. HMBC ^{1}H-^{13}C NMR spectra of compounds **5a** and **5b**.

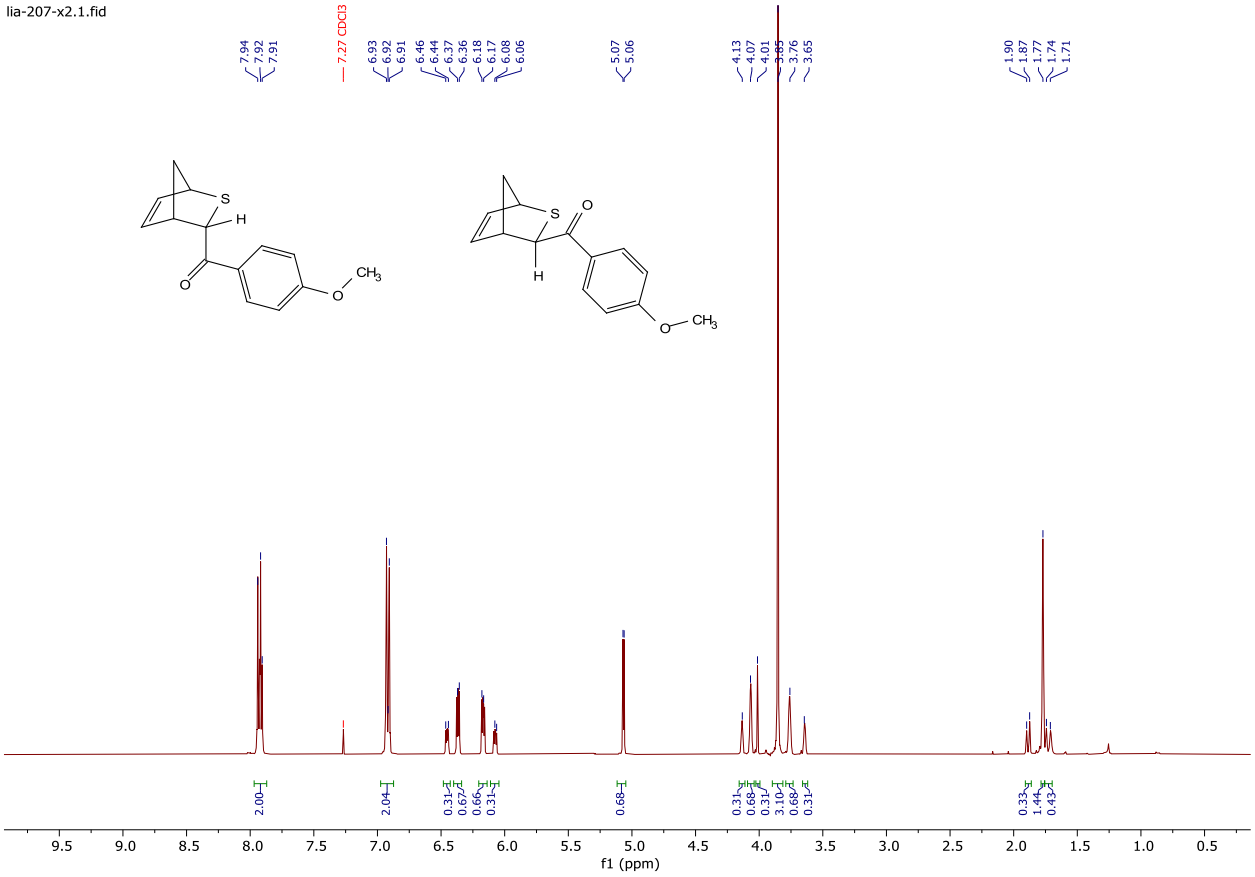


Figure S15. ^{1}H NMR spectra of compounds **6a** and **6b**.

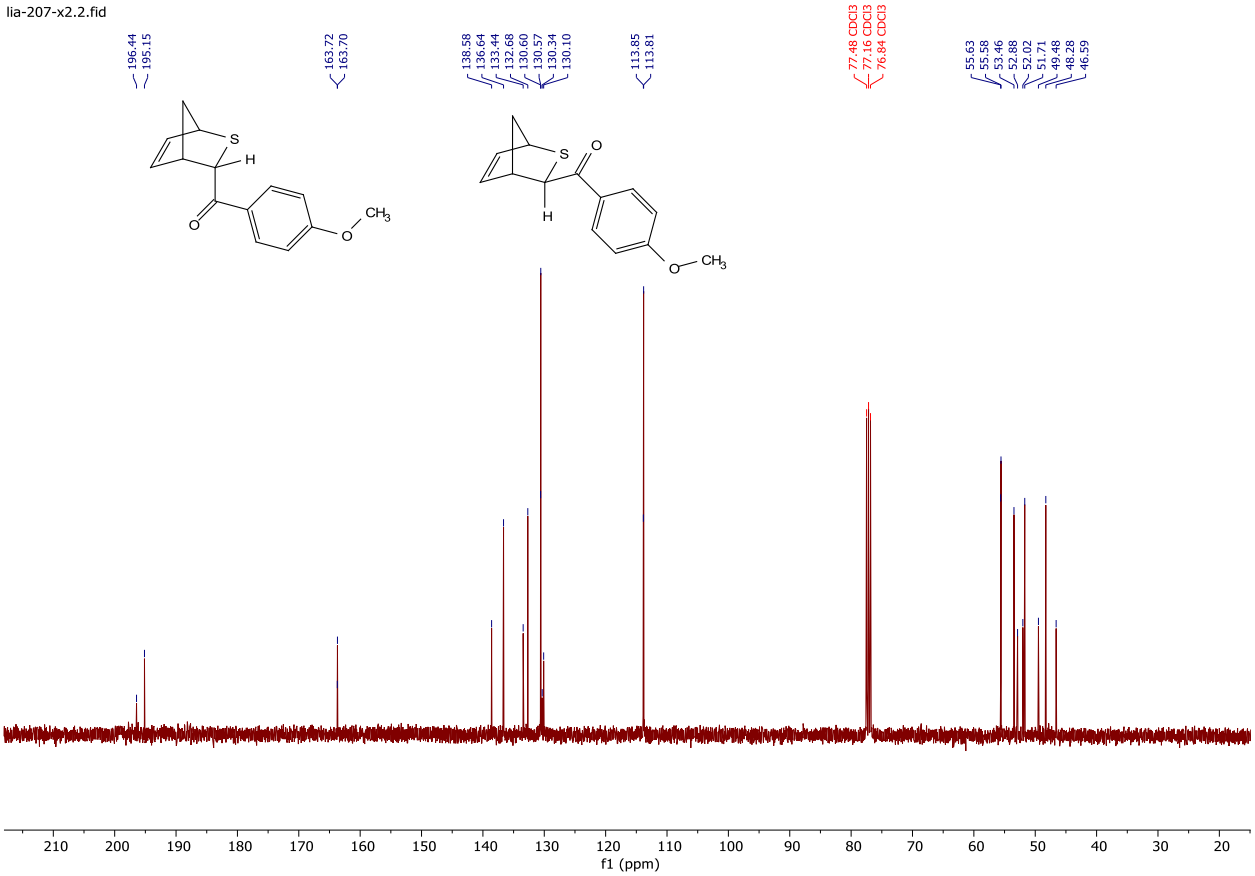


Figure S16. ^{13}C NMR spectra of compounds **6a** and **6b**.

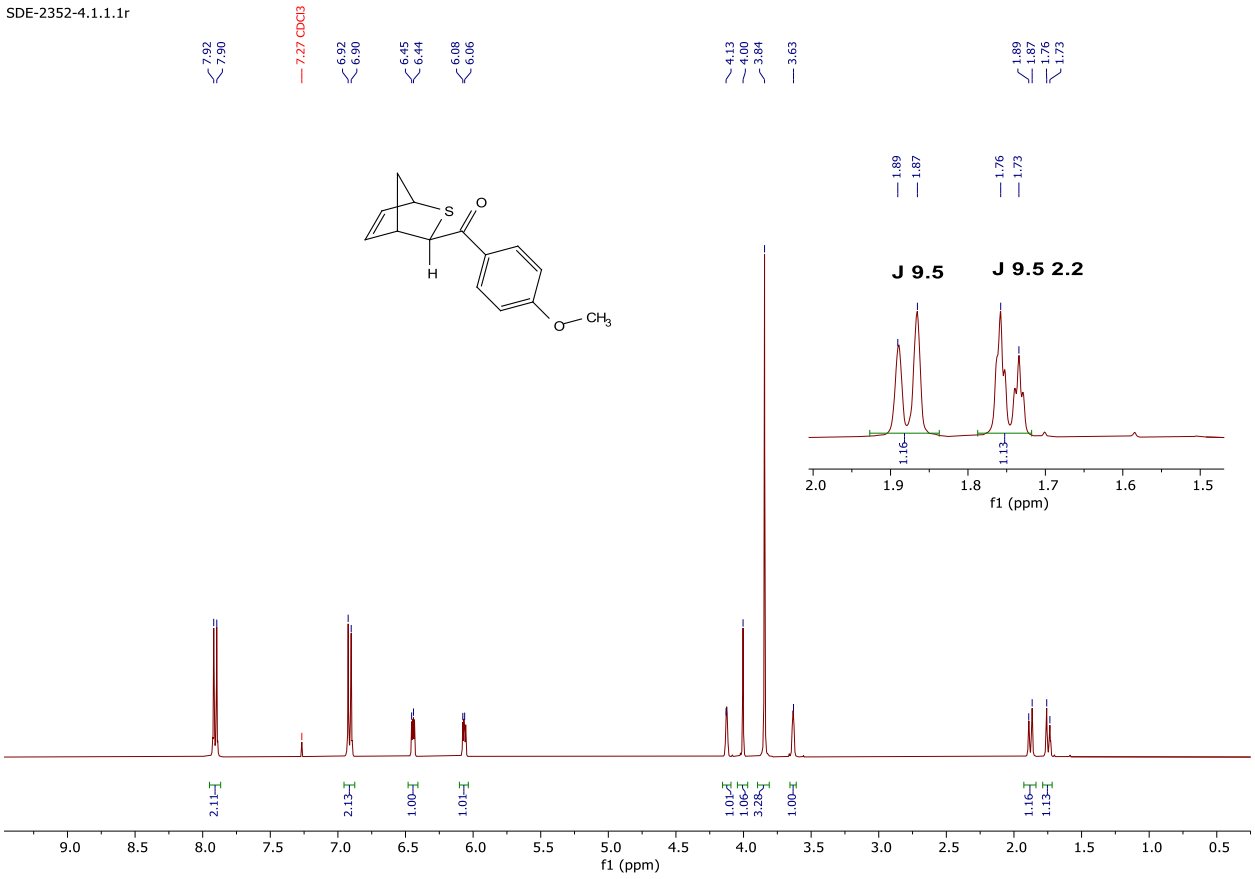


Figure S17. ^{1}H NMR spectra of compound **6a**.

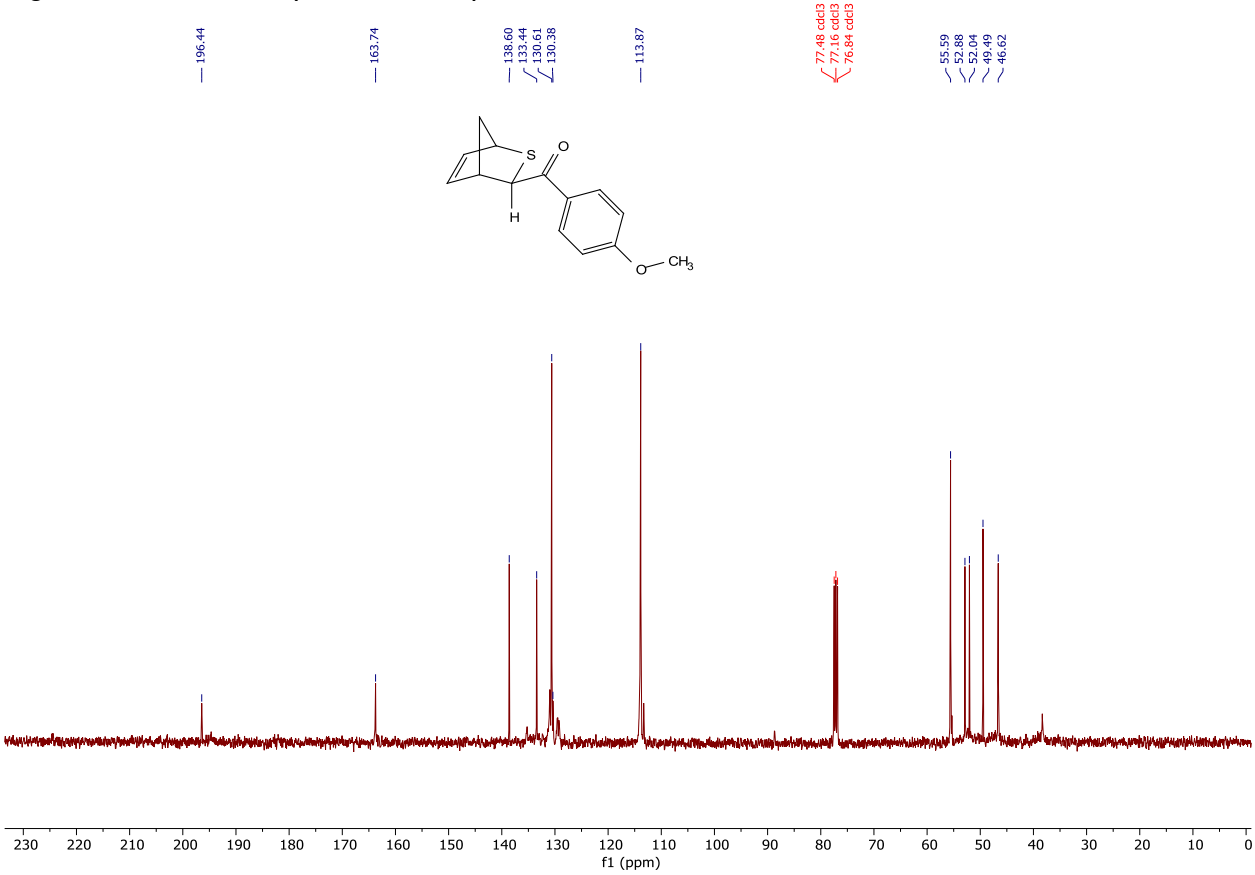


Figure S18. ^{13}C NMR spectra of compound **6a**.

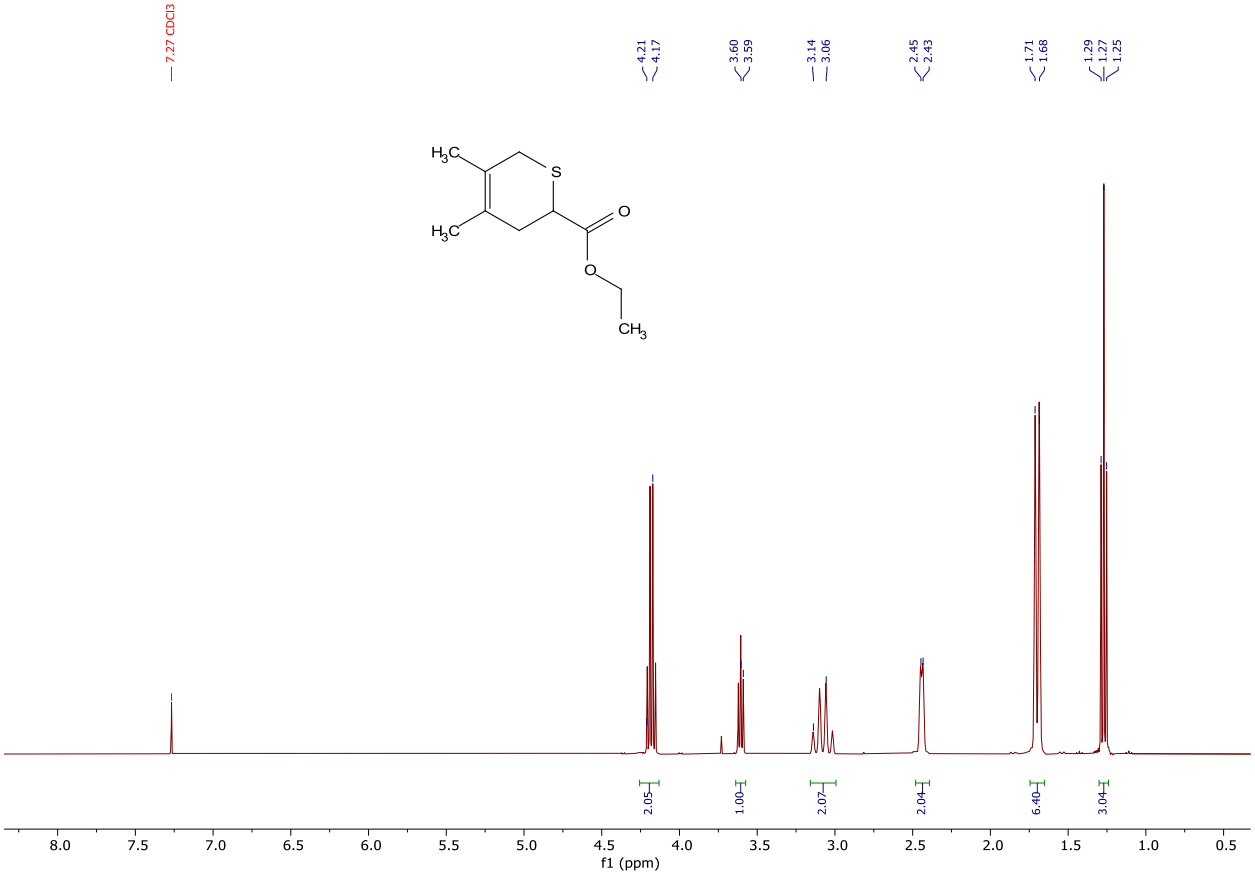


Figure S19. ^{1}H NMR spectra of compound **7**.

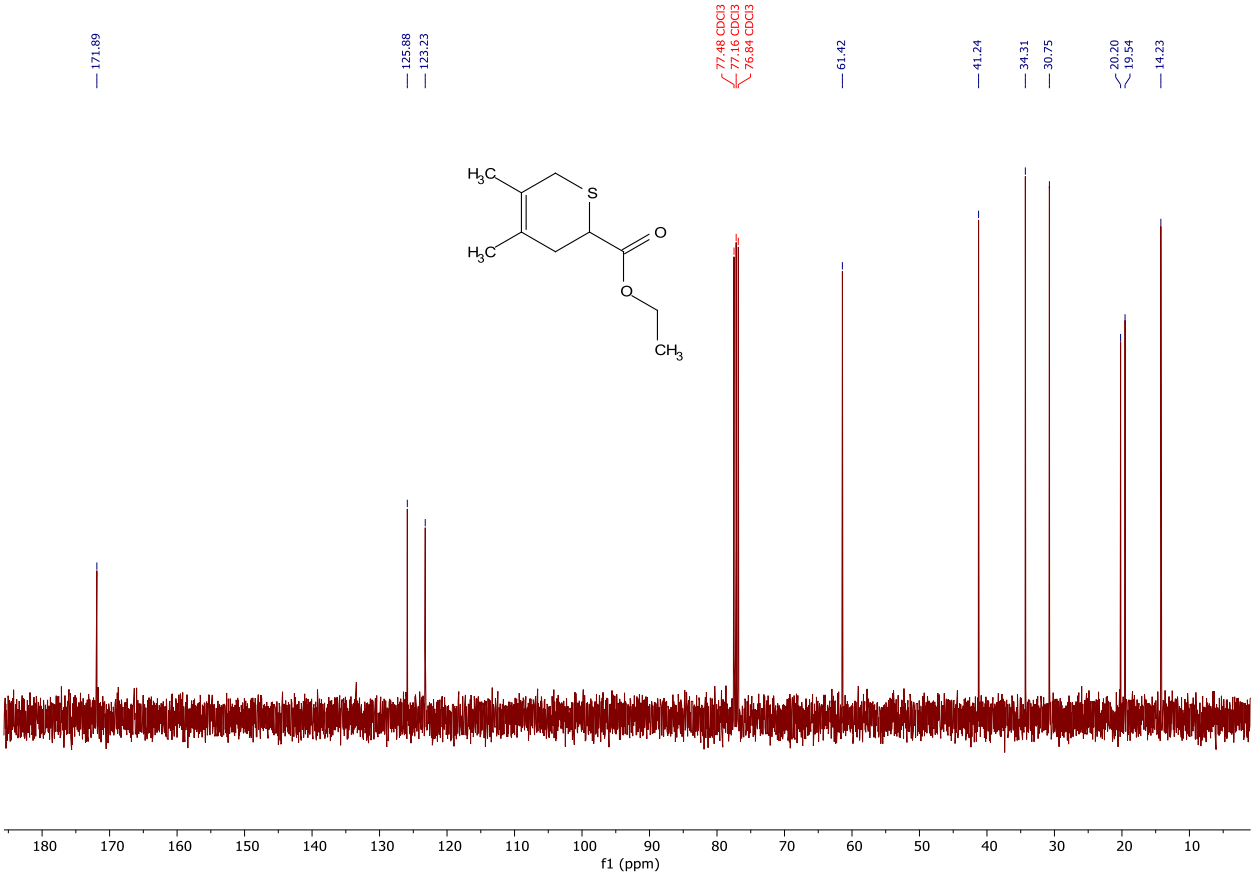


Figure S20. ^{13}C NMR spectra of compound **7**.

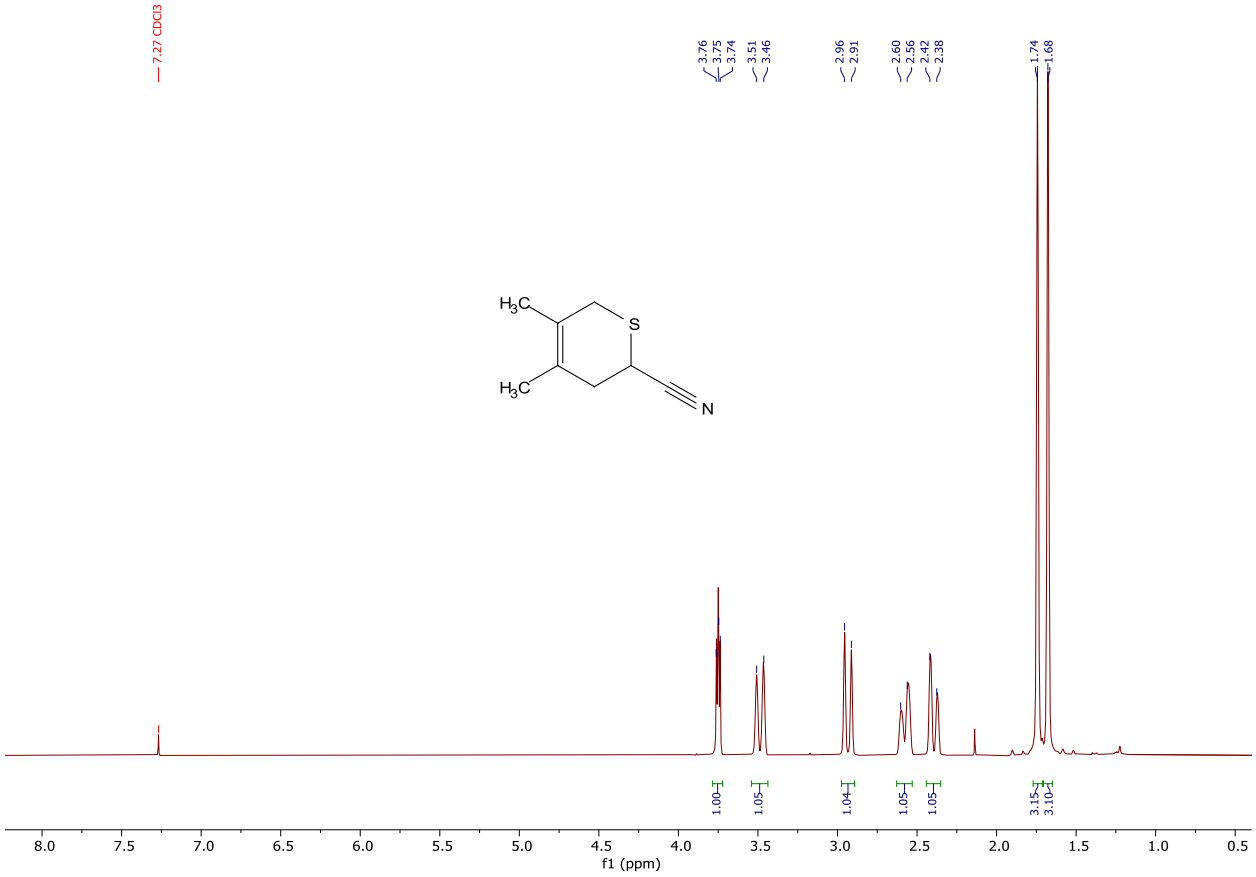


Figure S21. ^{1}H NMR spectra of compound **8**.

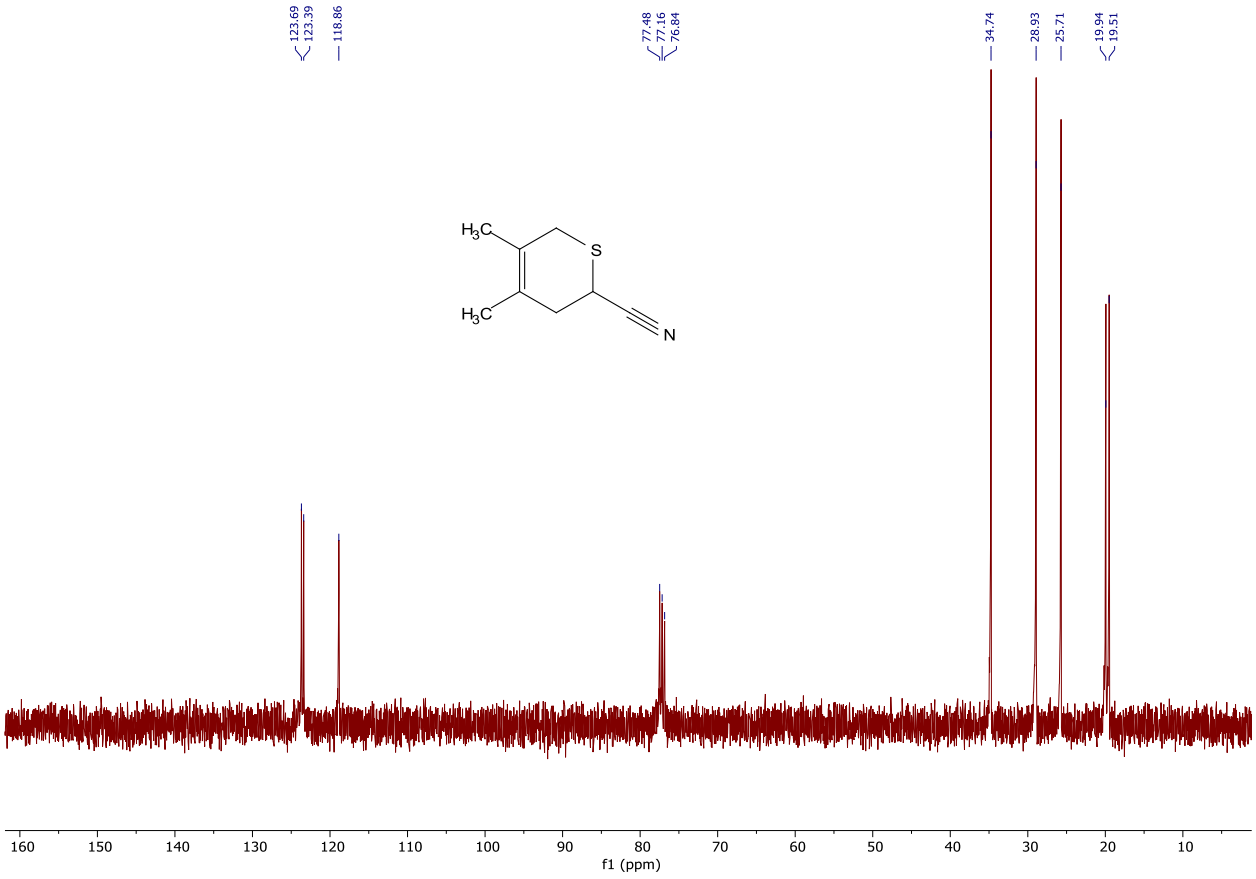


Figure S22. ^{13}C NMR spectra of compound **8**.

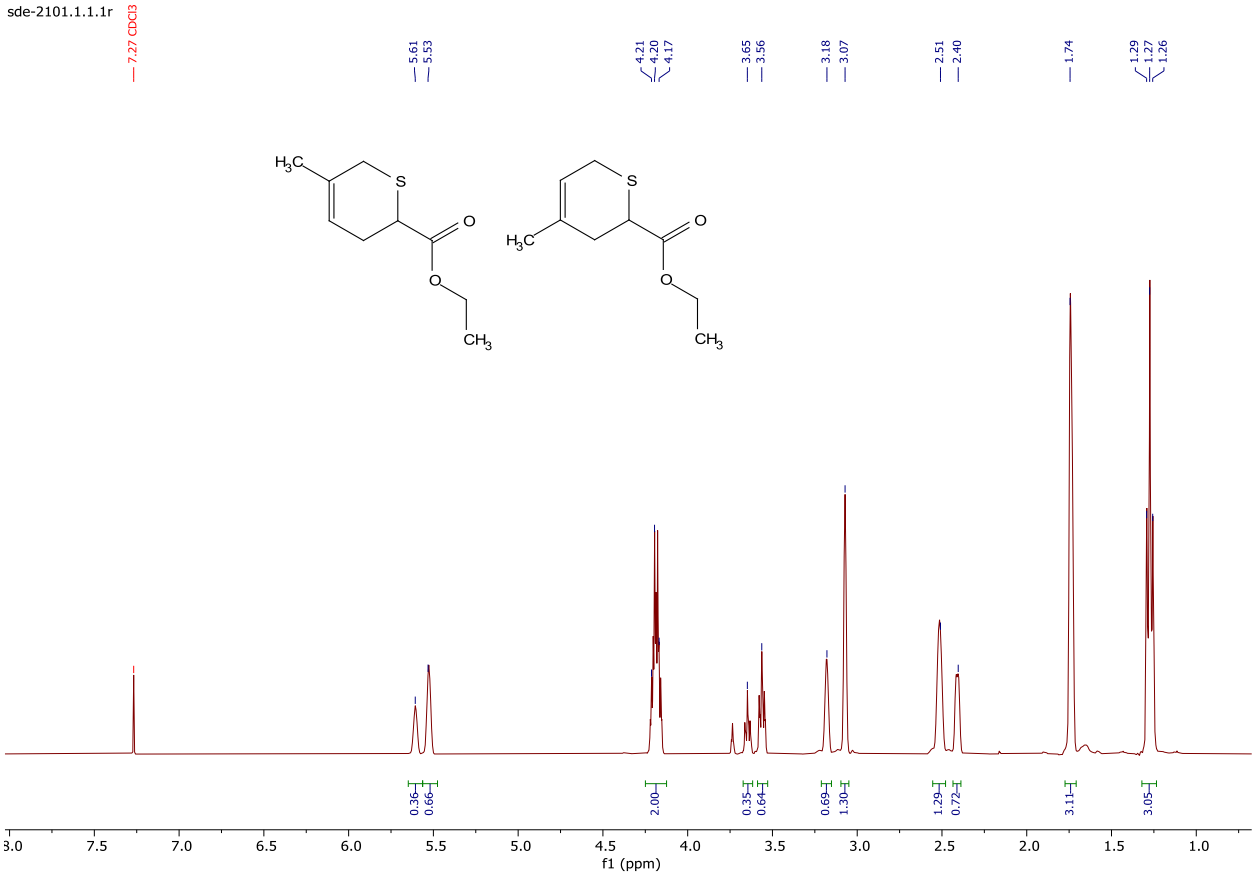


Figure S23. ^{1}H NMR spectra of compounds **9a** and **9b**.

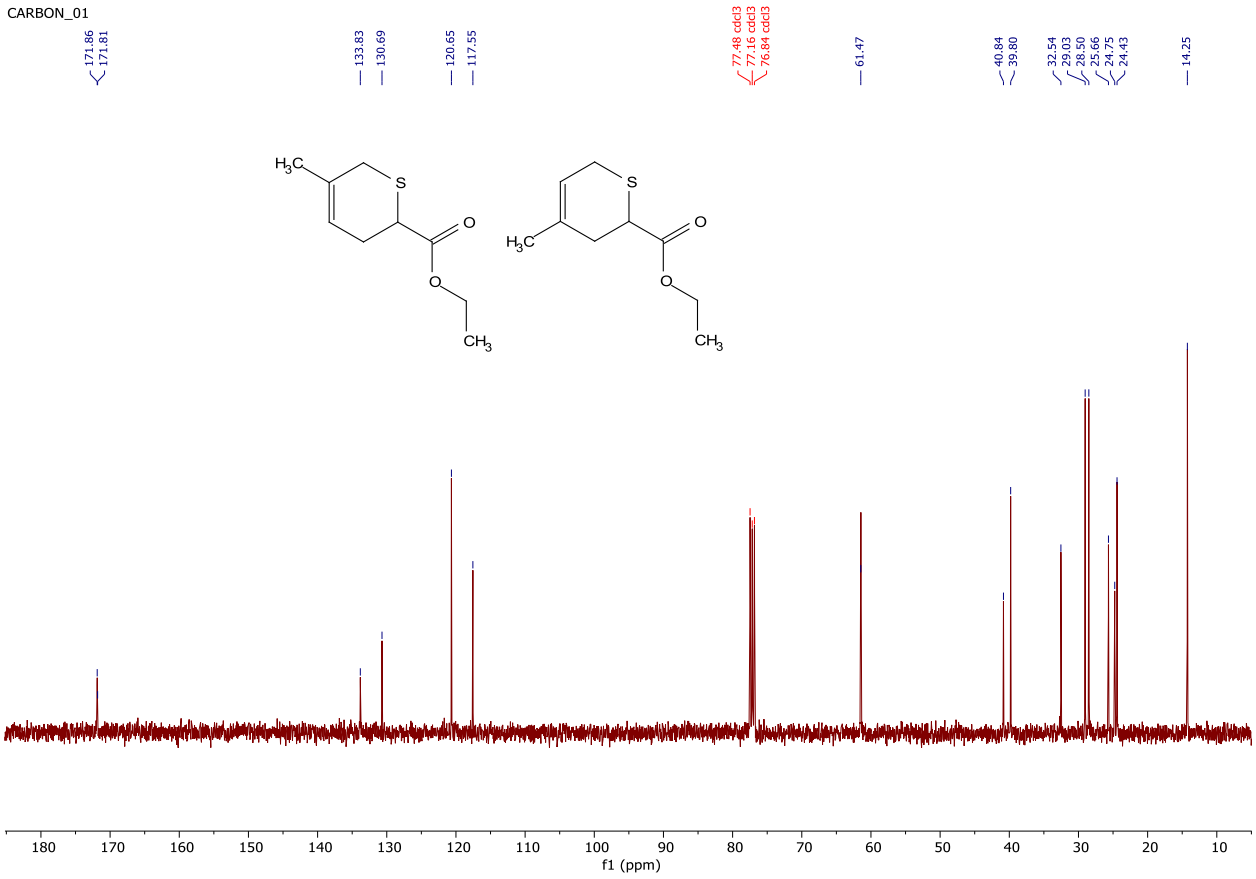


Figure S24. ^{13}C NMR spectra of compounds **9a** and **9b**.

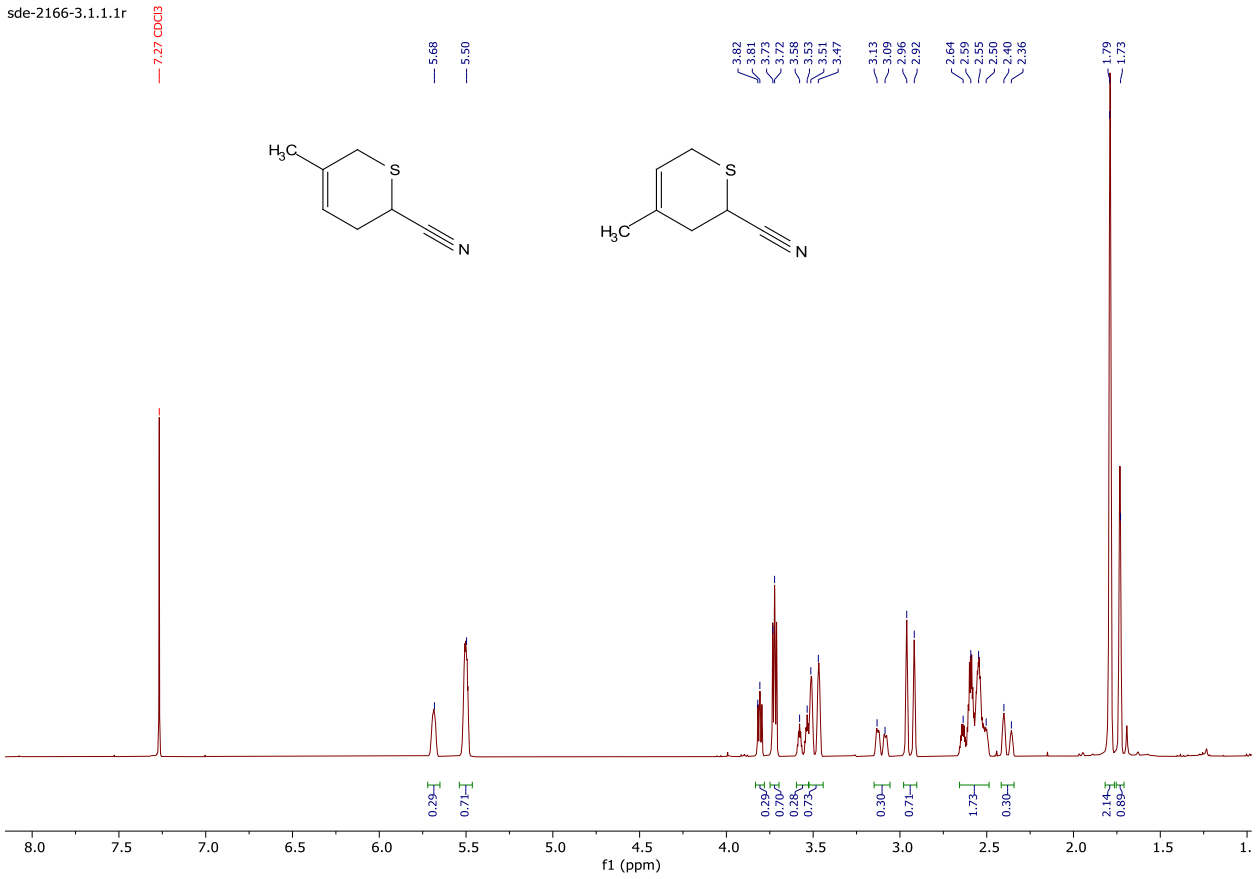


Figure S25. ^{1}H NMR spectra of compounds **10a** and **10b**.

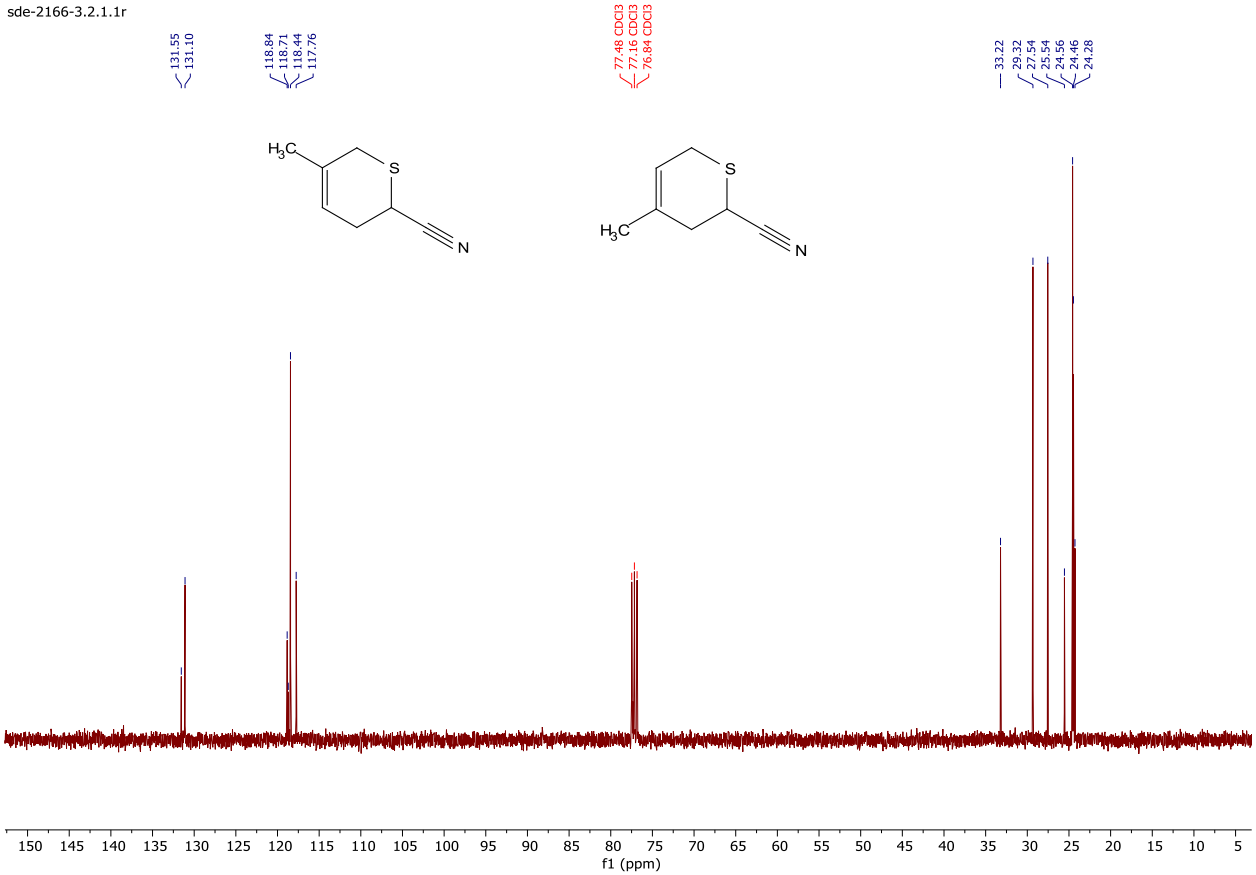


Figure S26. ^{13}C NMR spectra of compounds **10a** and **10b**.

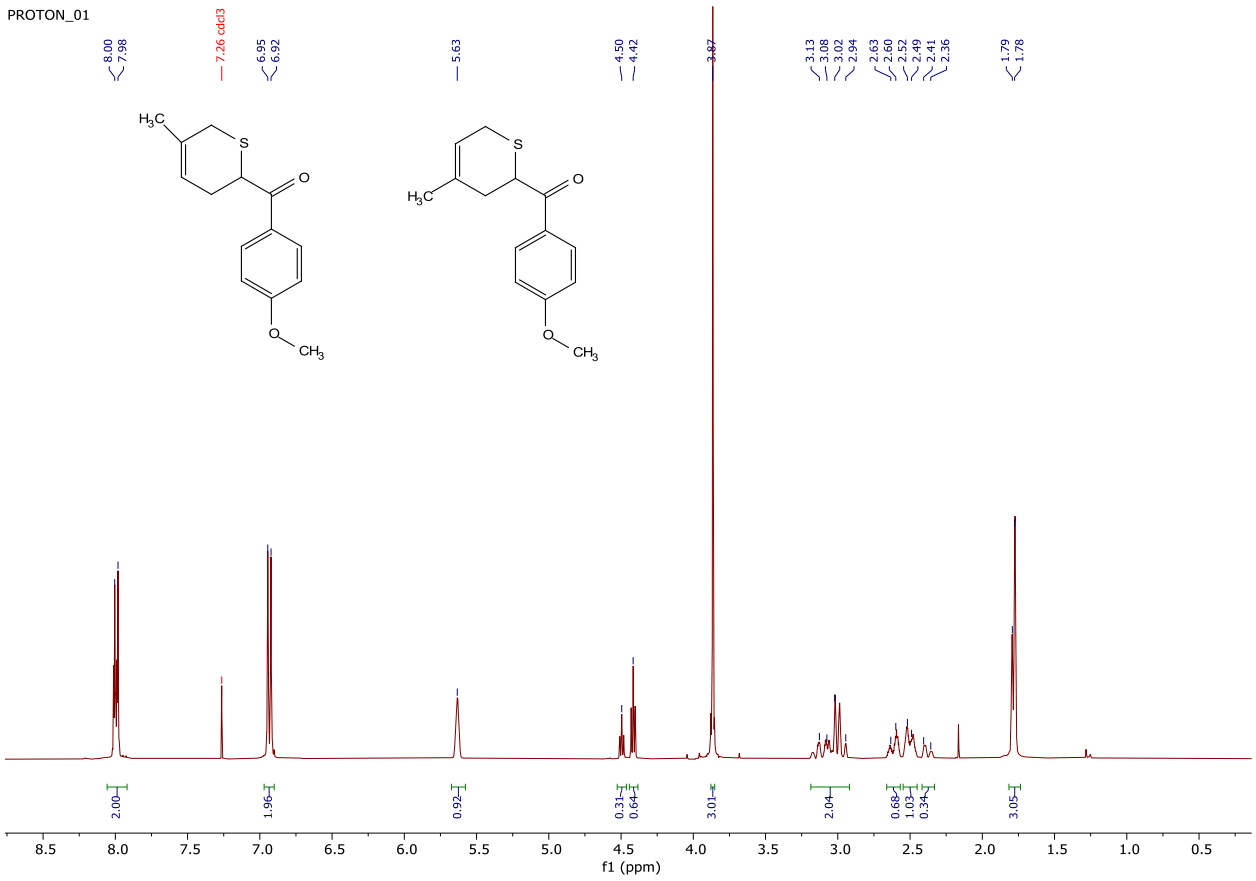


Figure S27. ^{1}H NMR spectra of compounds **11a** and **11b**.

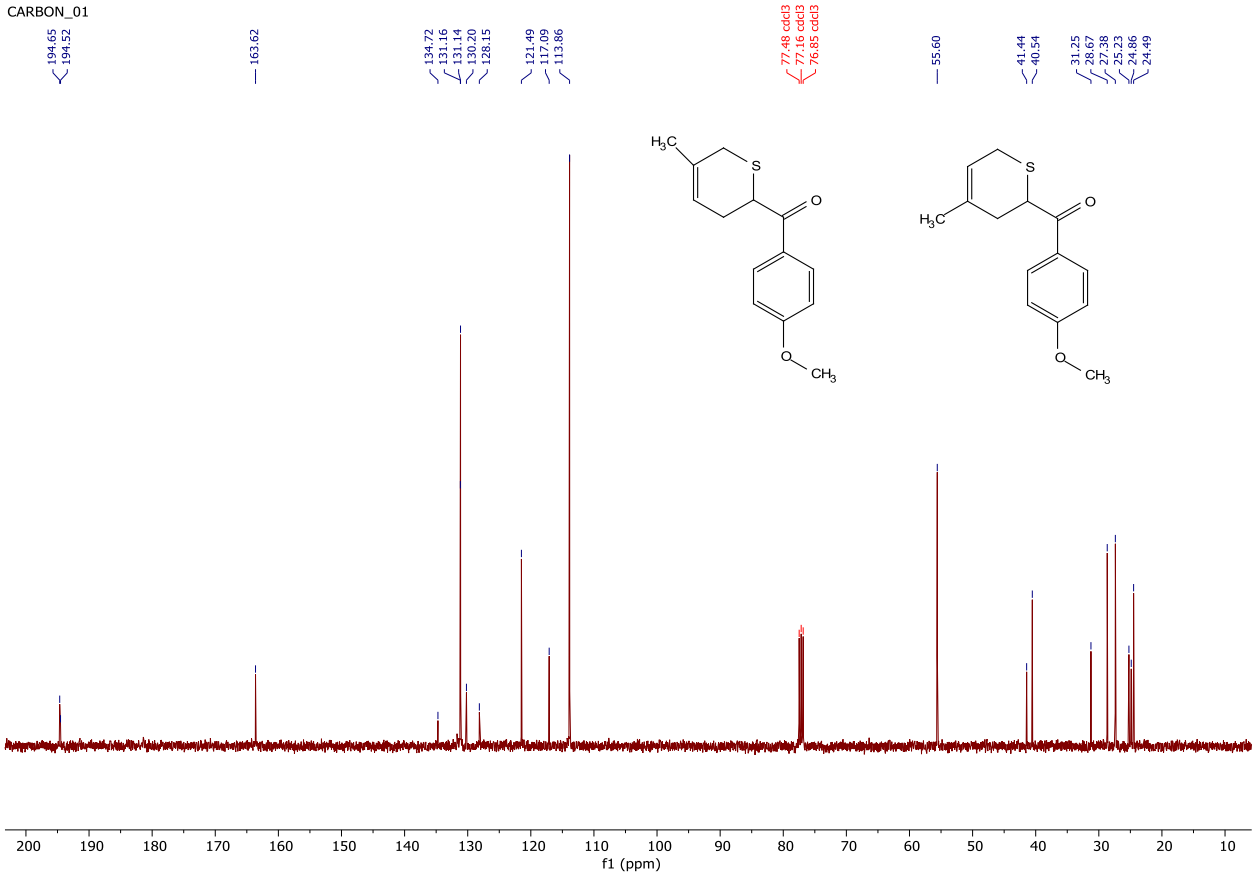


Figure S28. ^{13}C NMR spectra of compounds **11a** and **11b**.

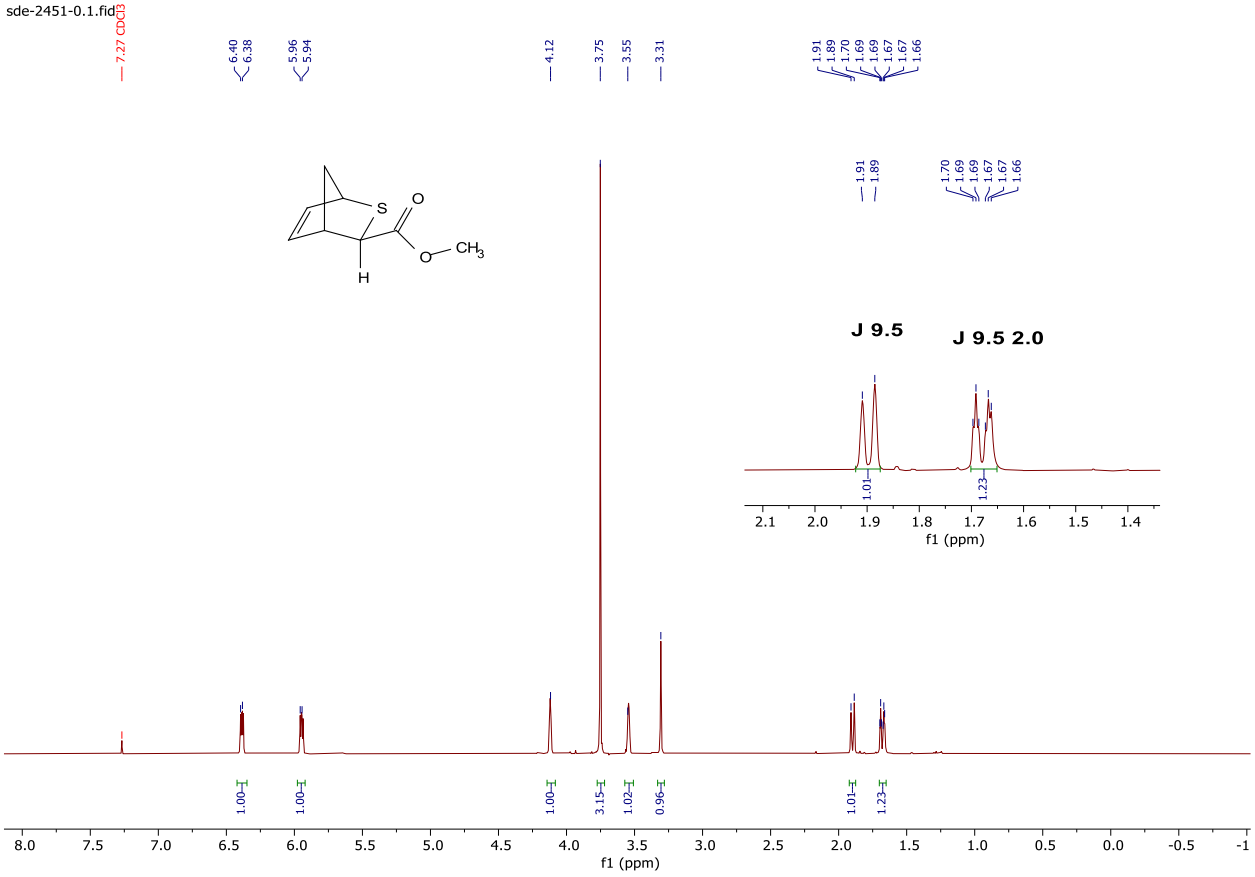


Figure S29. ^{1}H NMR spectra of compound **12a**.

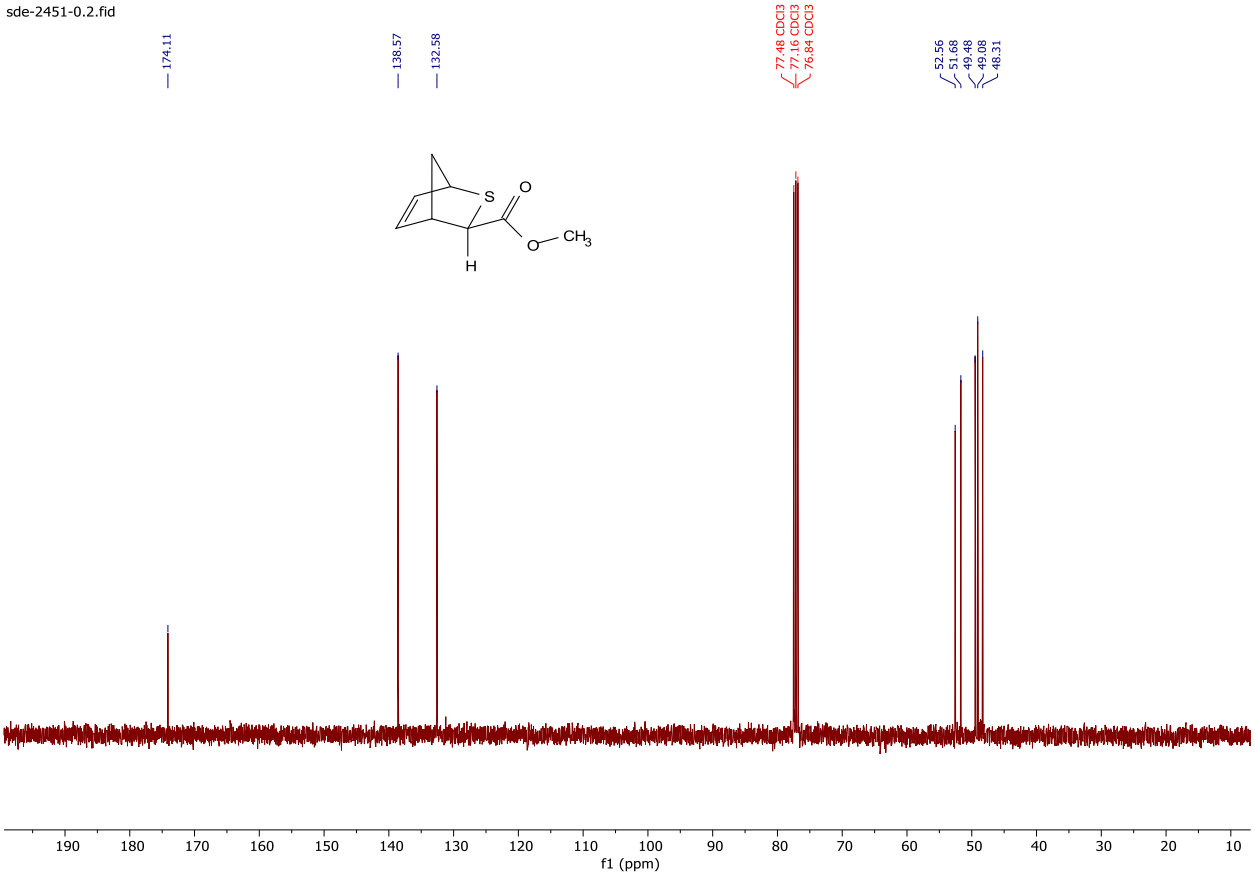


Figure S30. ^{13}C NMR spectra of compound **12a**.

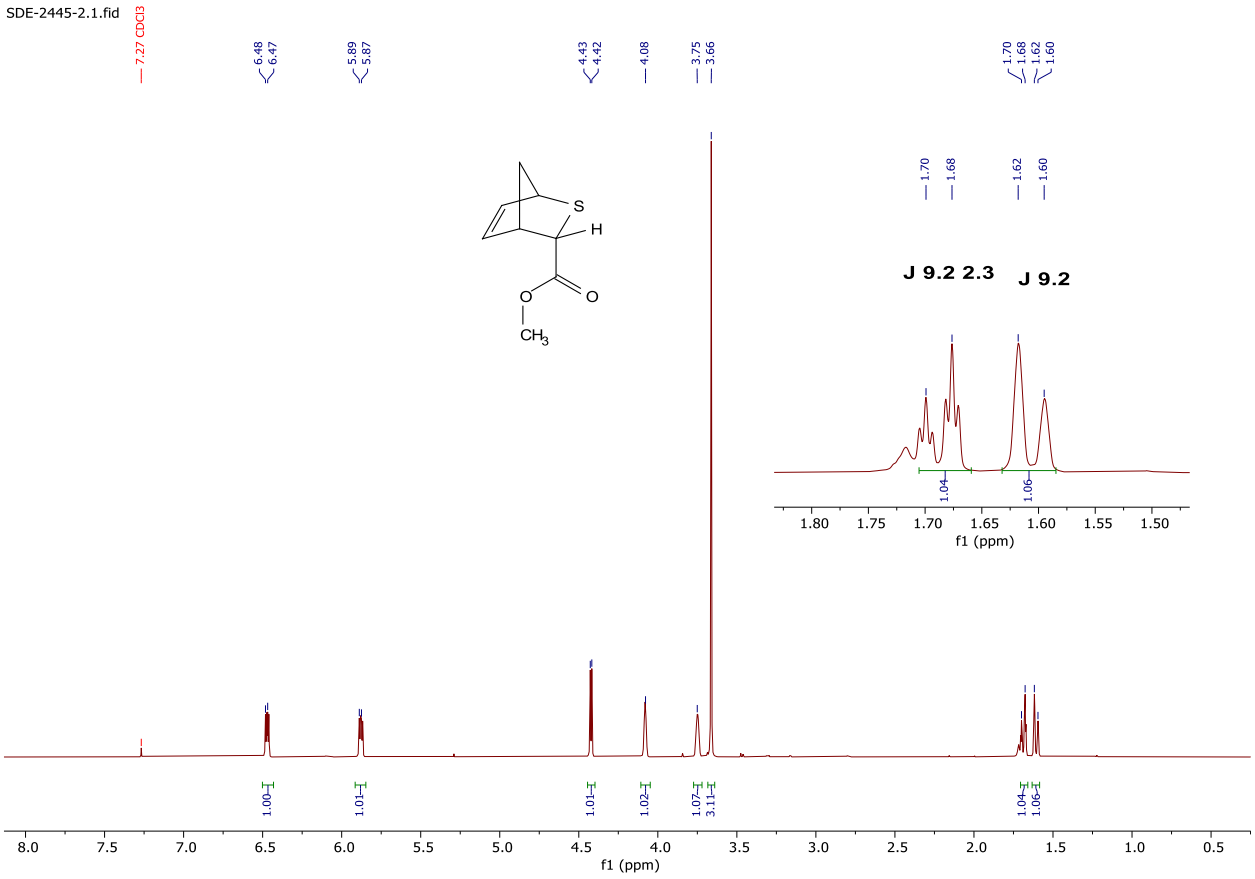


Figure S31. ^{1}H NMR spectra of compound **12b**.

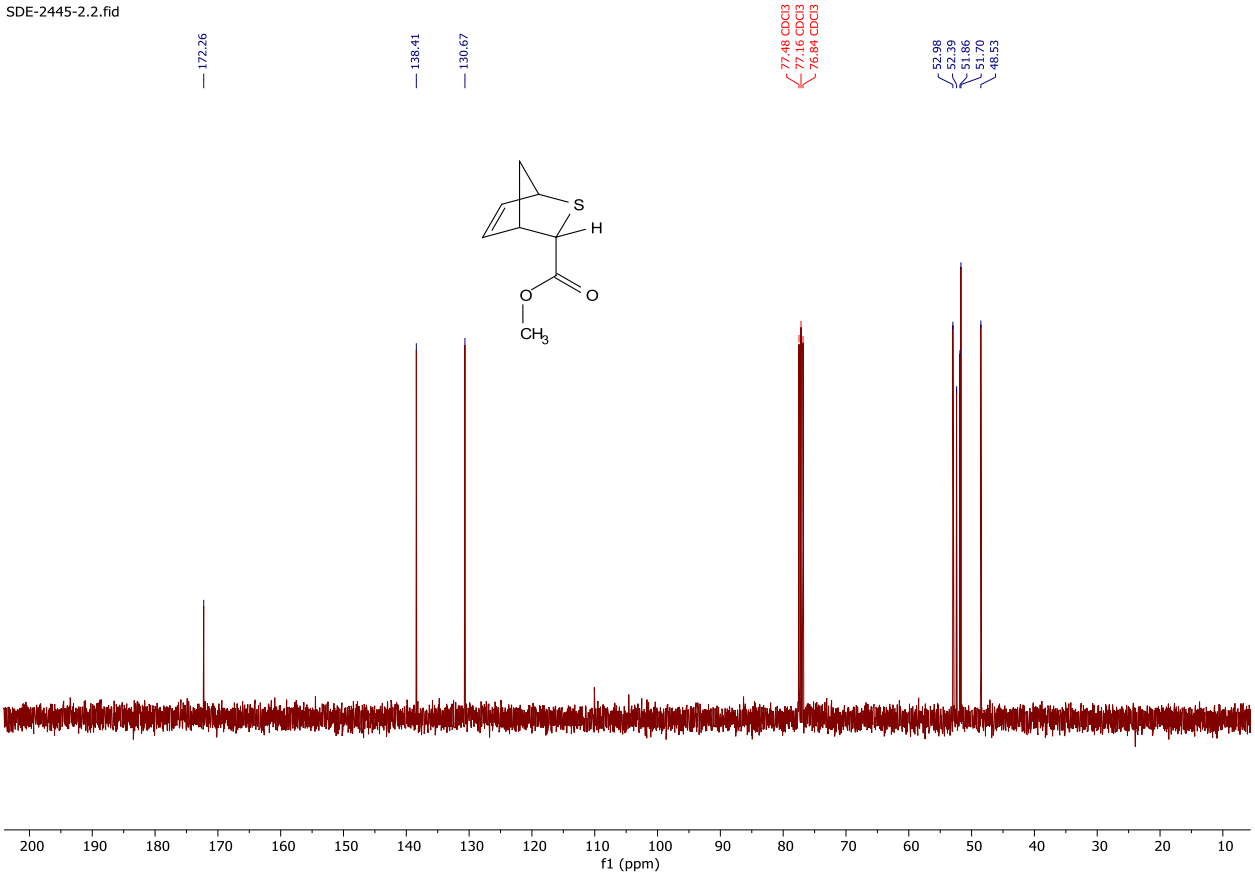


Figure S32. ^{13}C NMR spectra of compound **12b**.

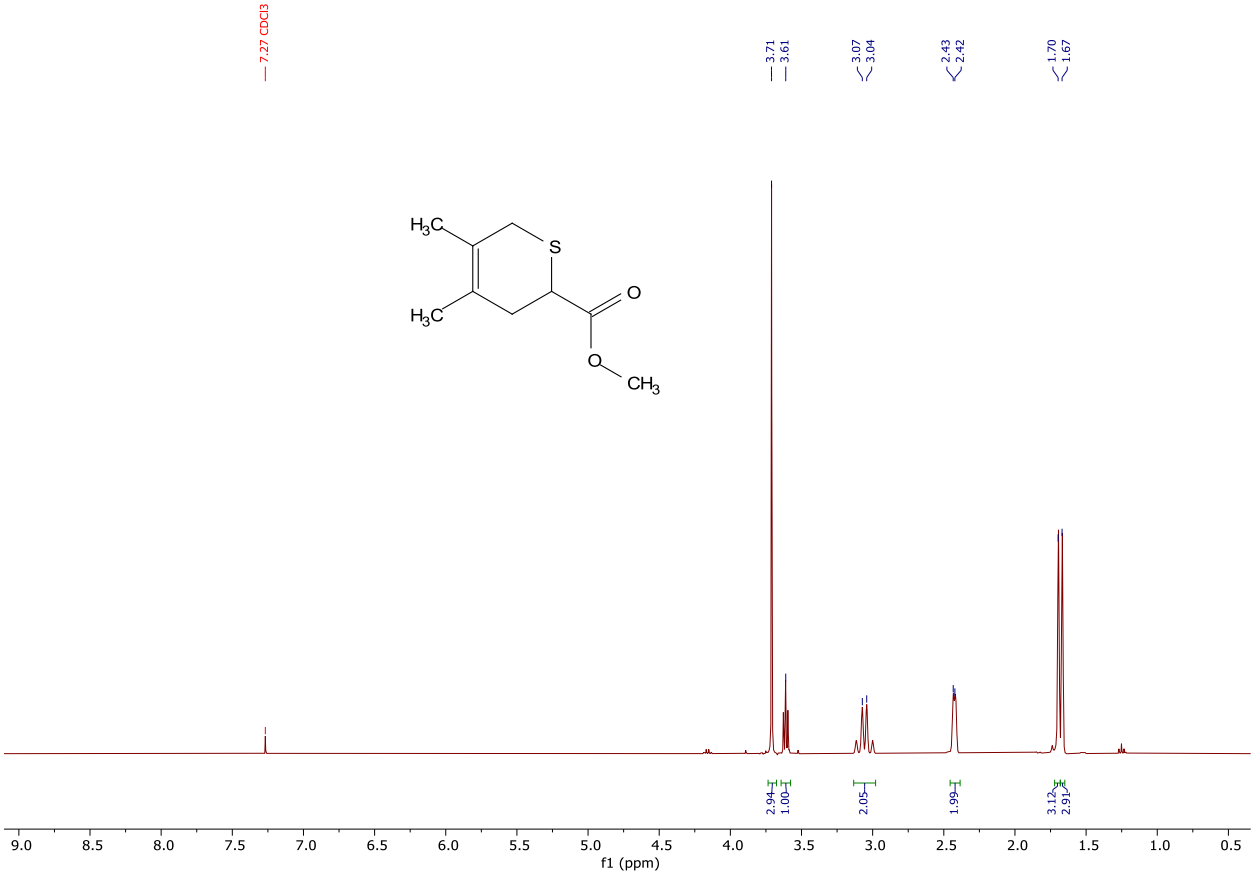


Figure S33. ^{1}H NMR spectra of compound **13**.

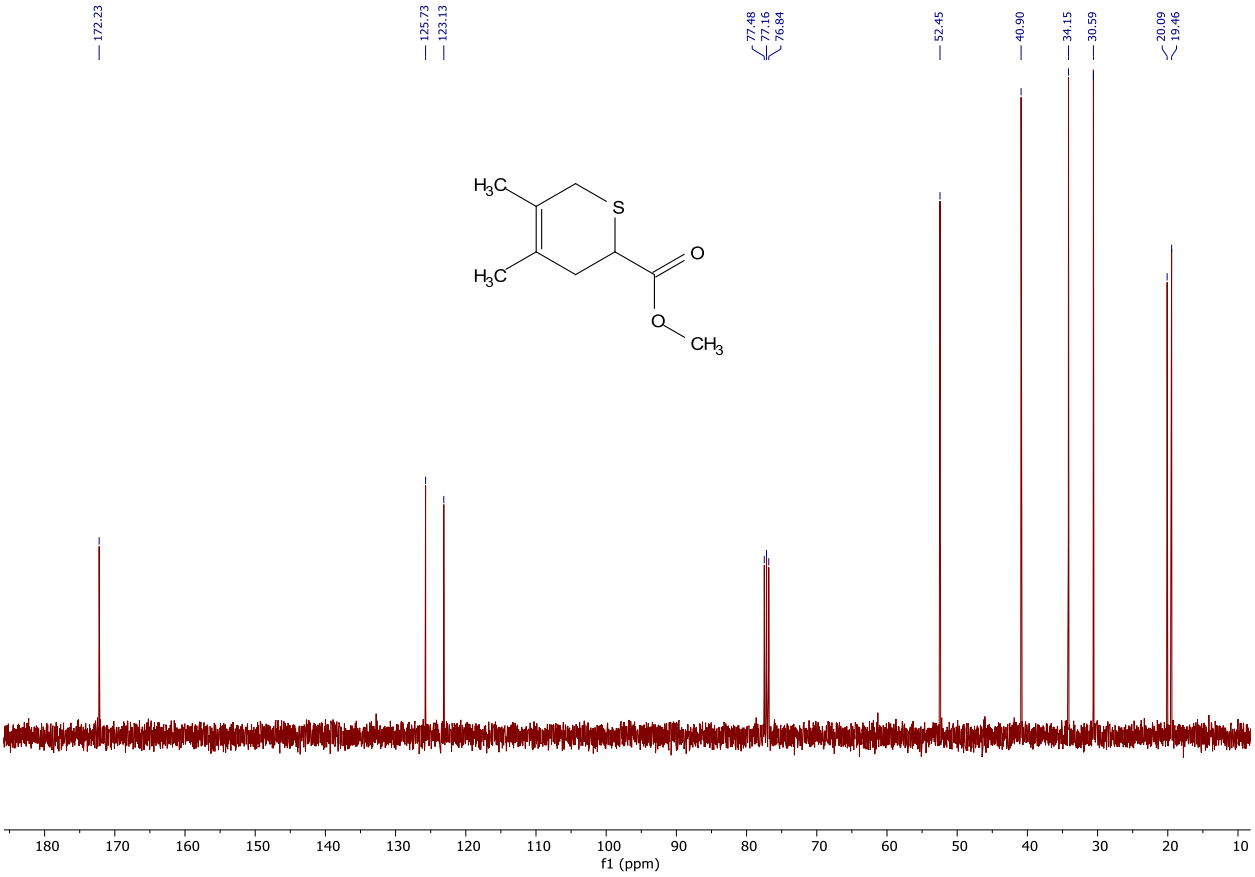


Figure S34. ^{13}C NMR spectra of compound **13**.

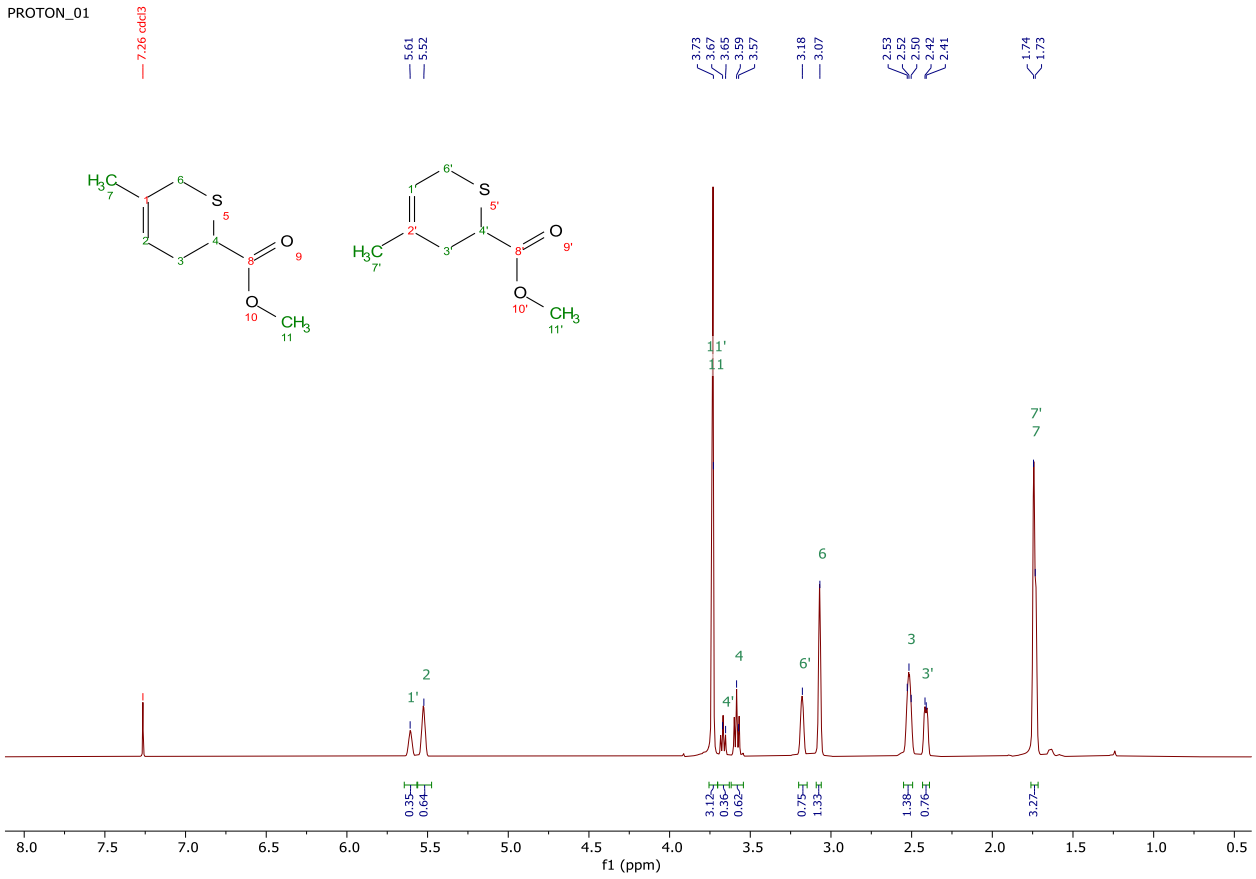


Figure S35. ^{1}H NMR spectra of compounds **14a** and **14b**.

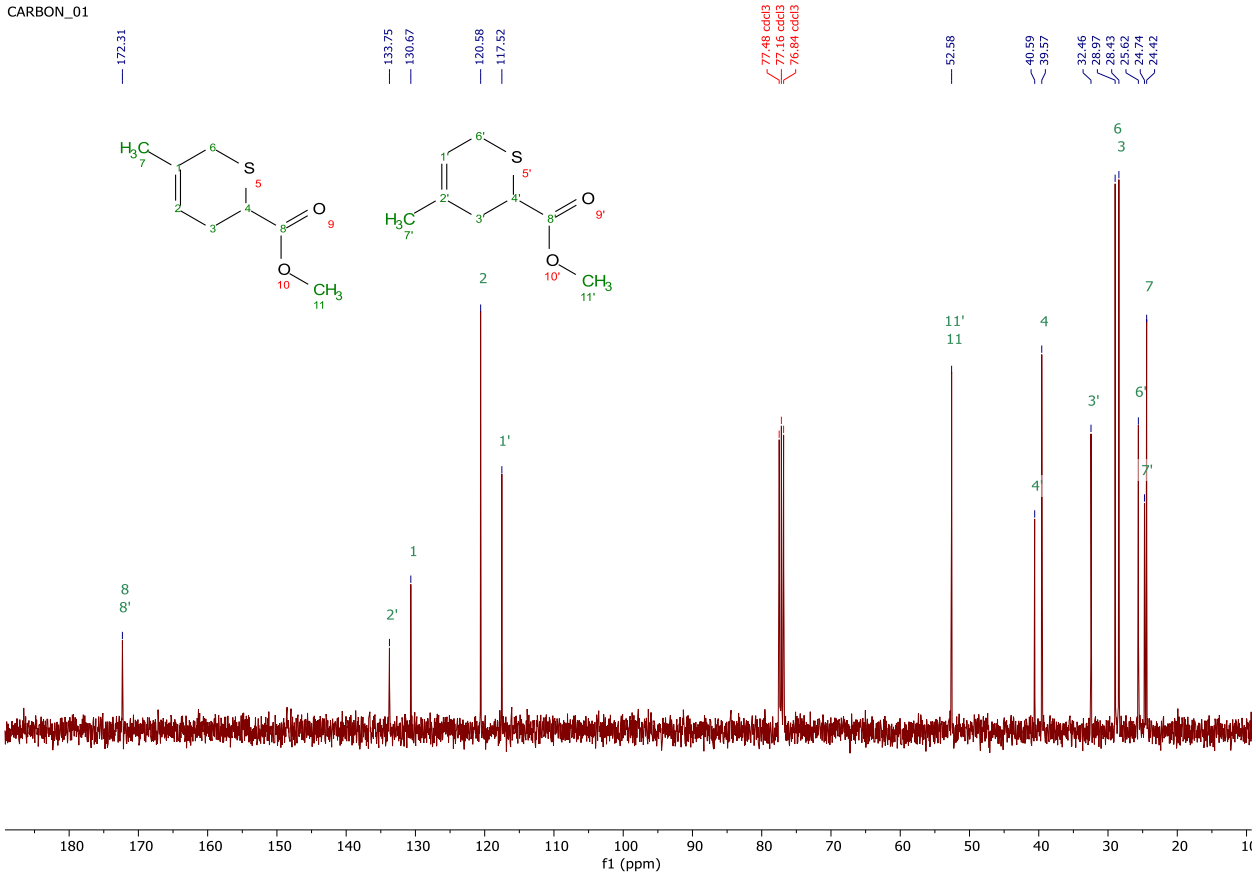


Figure S36. ^{13}C NMR spectra of compounds **14a** and **14b**.

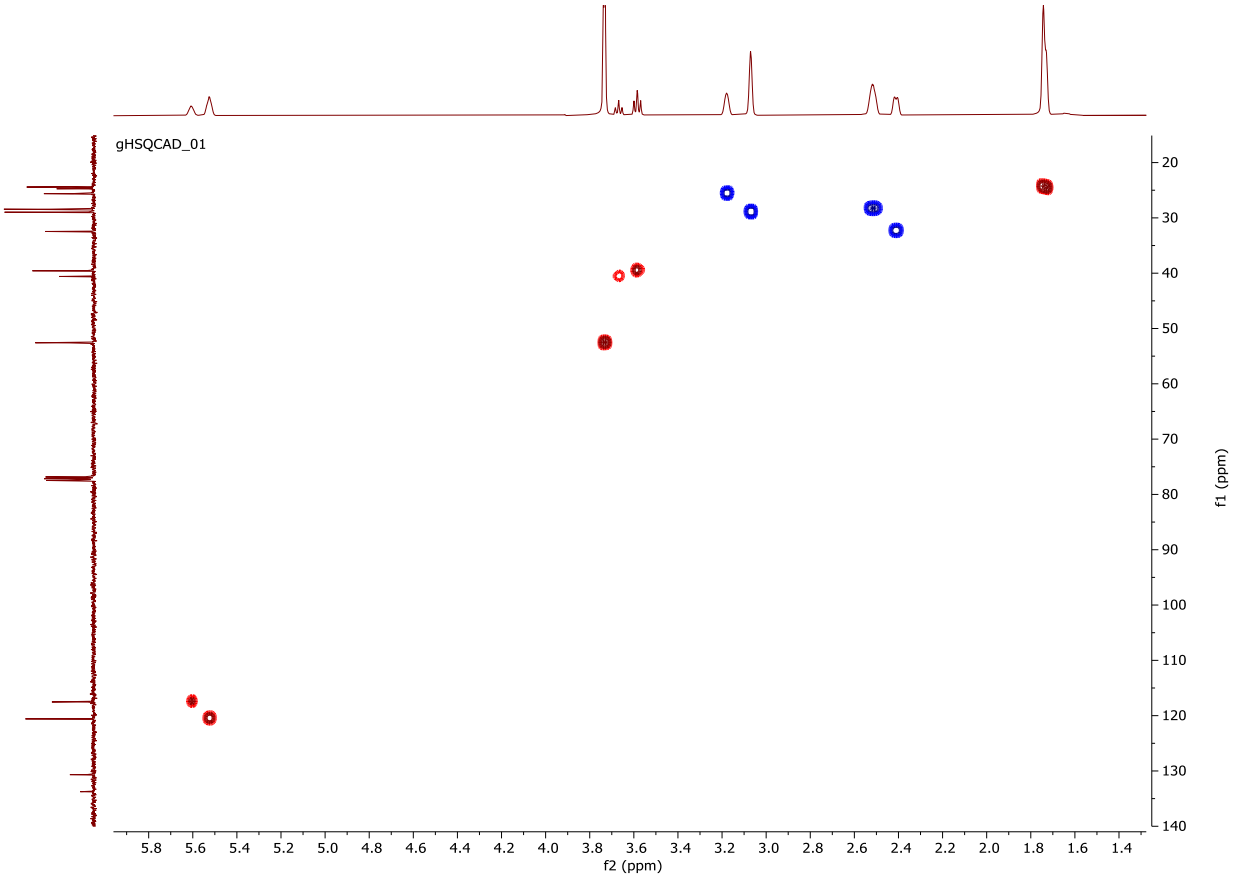


Figure S37. HSQC ^{1}H-^{13}C NMR spectra of compounds **14a** and **14b**.

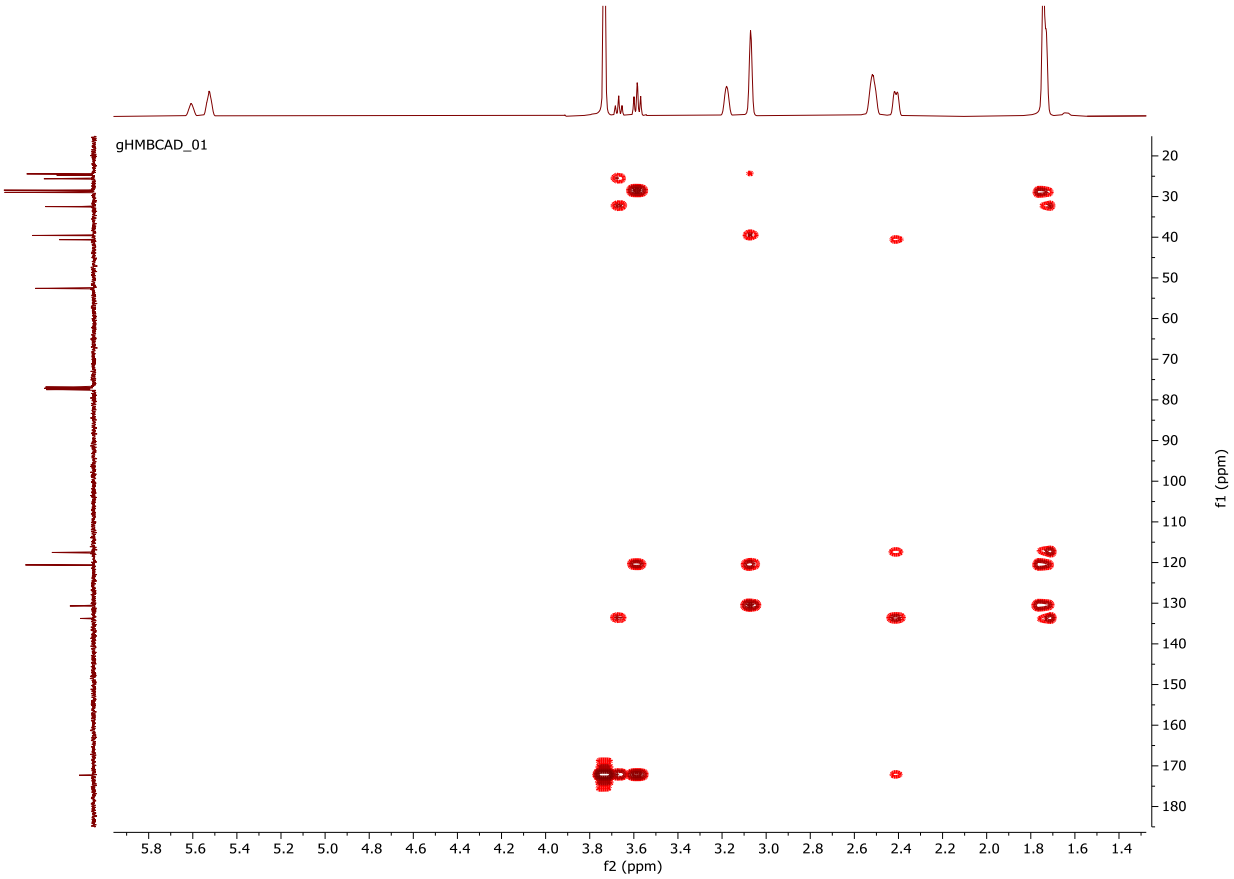


Figure S38. HMBC ^{1}H-^{13}C NMR spectra of compounds **14a** and **14b**.

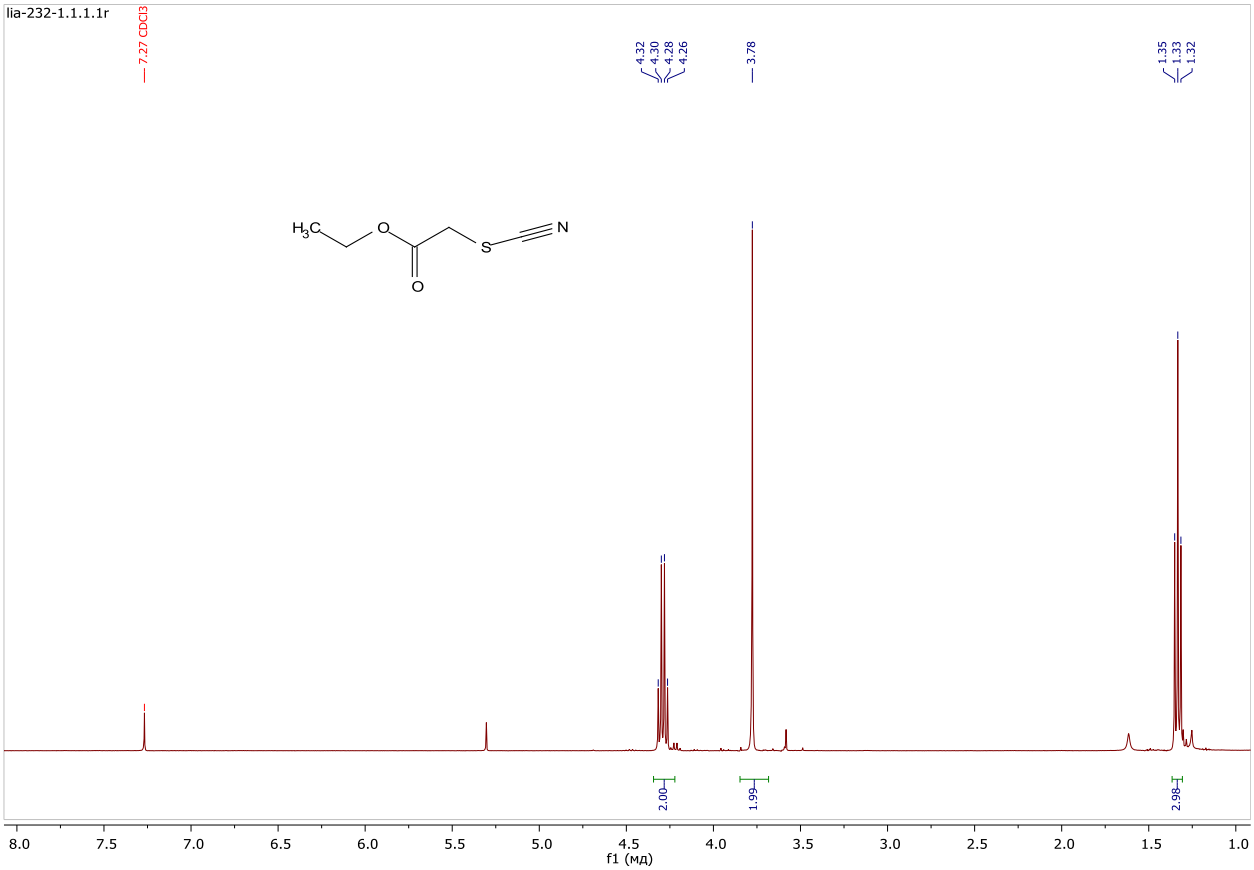


Figure S39. ^{1}H NMR spectra of compound **15**.

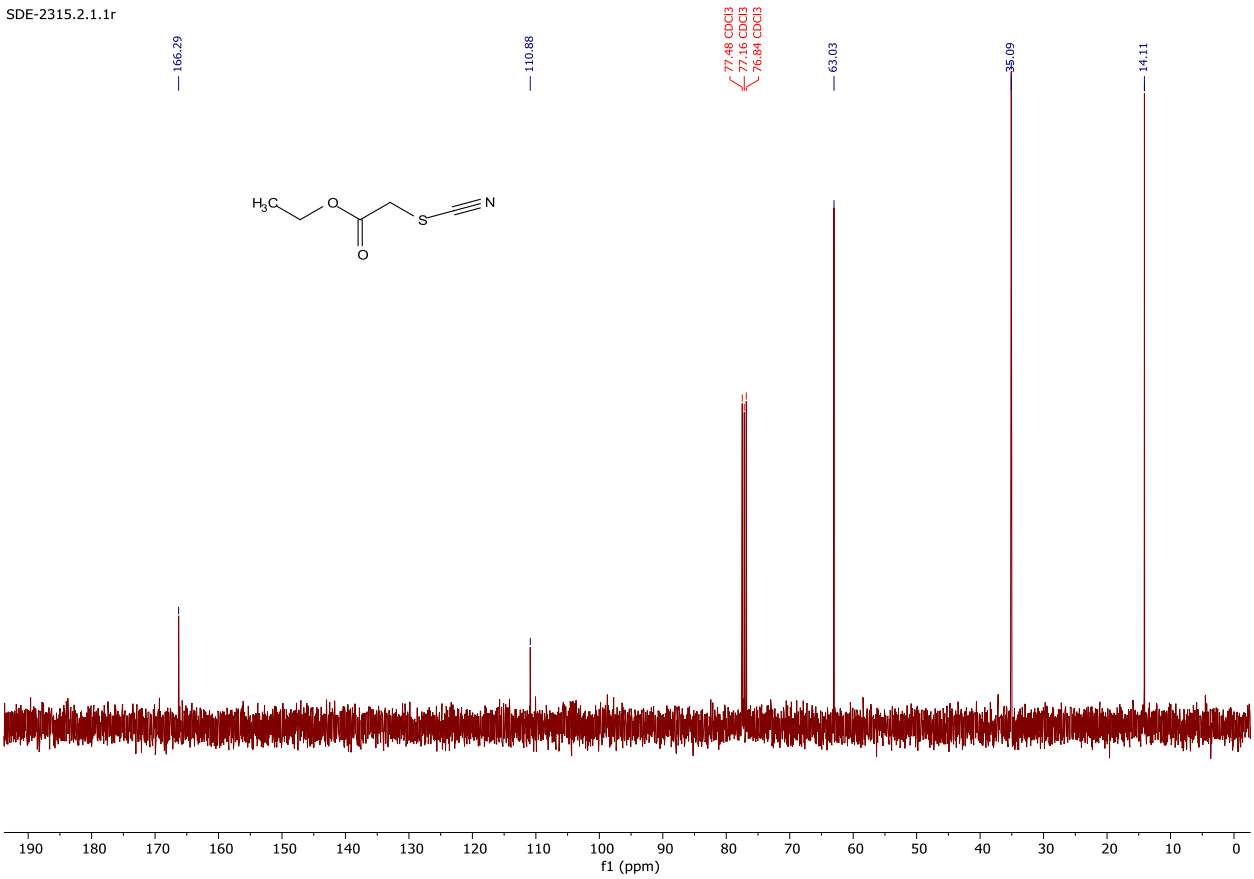


Figure S40. ^{13}C NMR spectra of compound **15**.

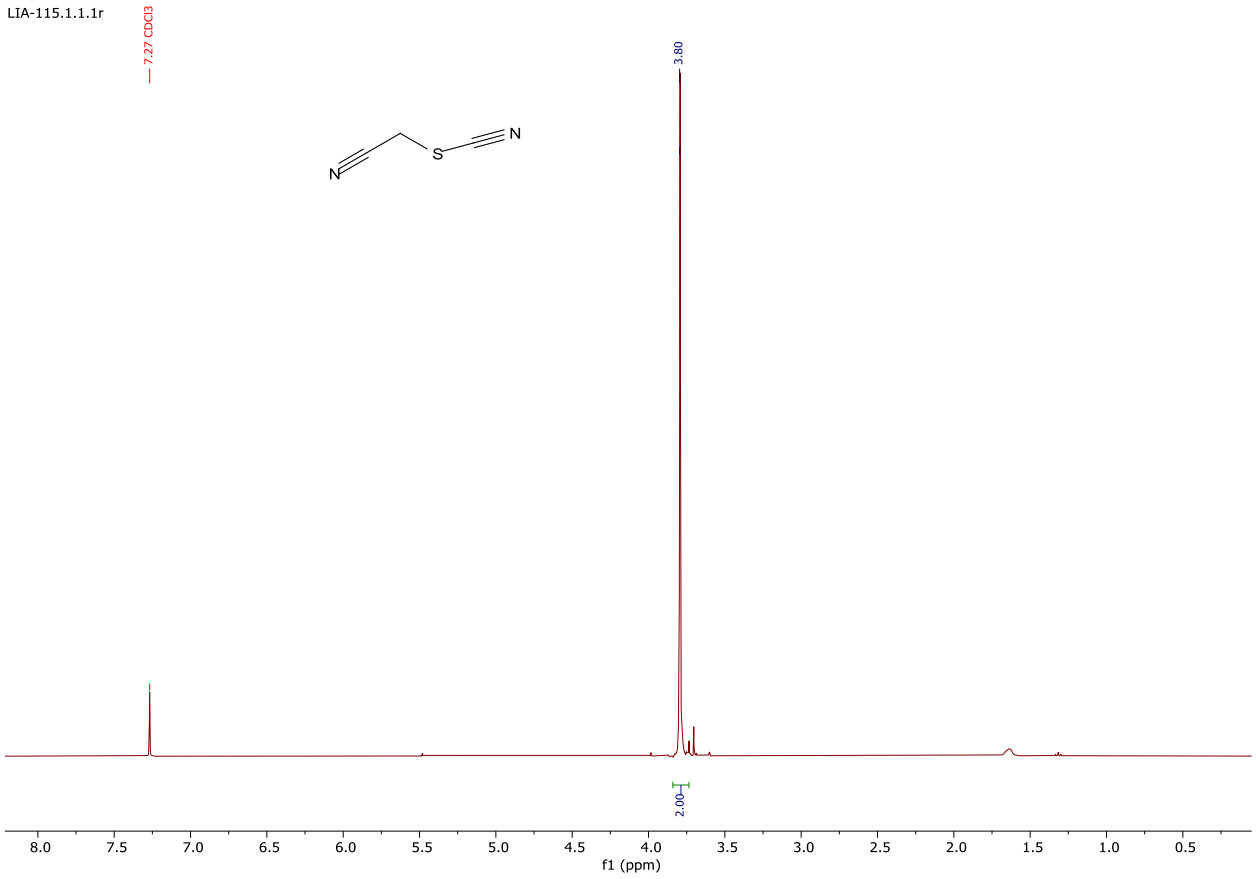


Figure S41. ^{1}H NMR spectra of compound **16**.

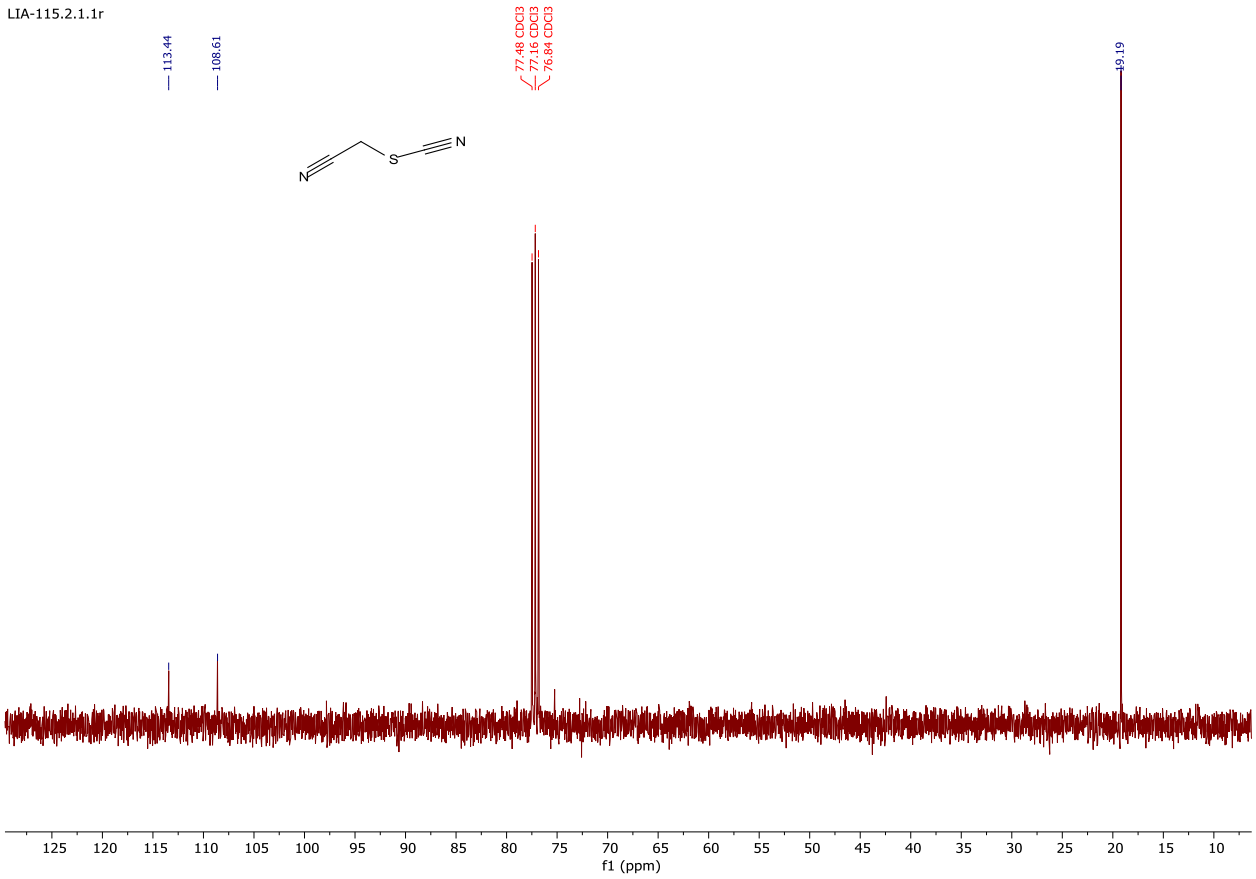


Figure S42. ^{13}C NMR spectra of compound **16**.

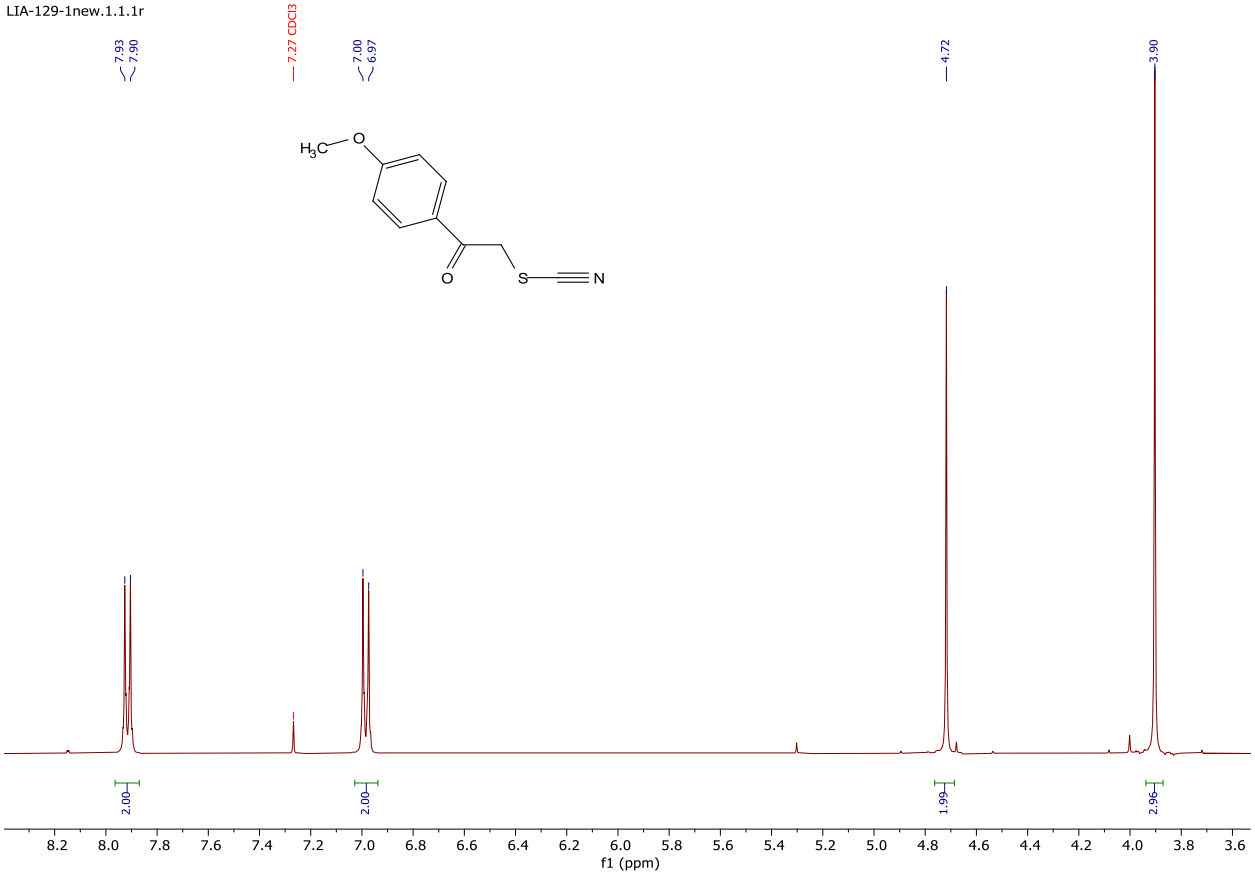


Figure S43. ^{1}H NMR spectra of compound **17**.

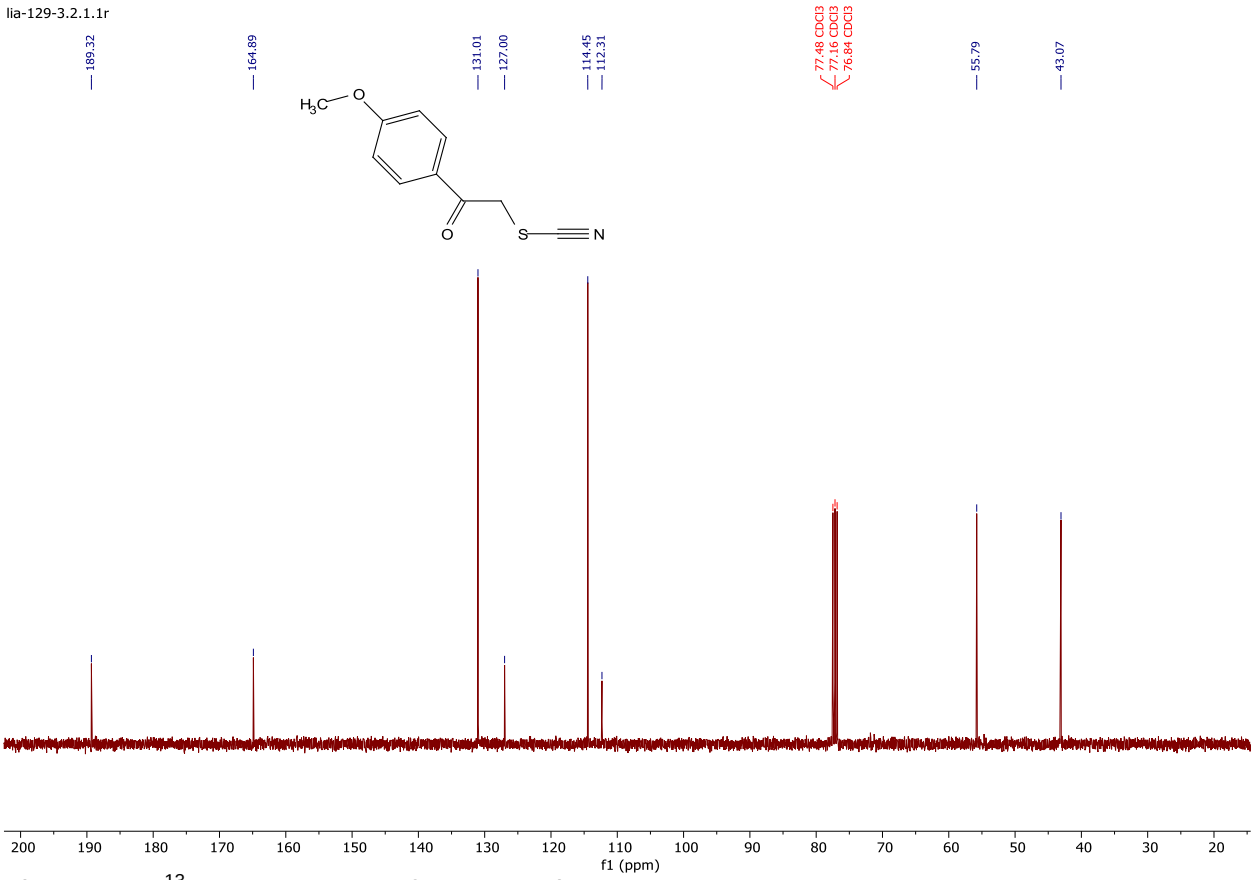


Figure S44. ^{13}C NMR spectra of compound **17**.

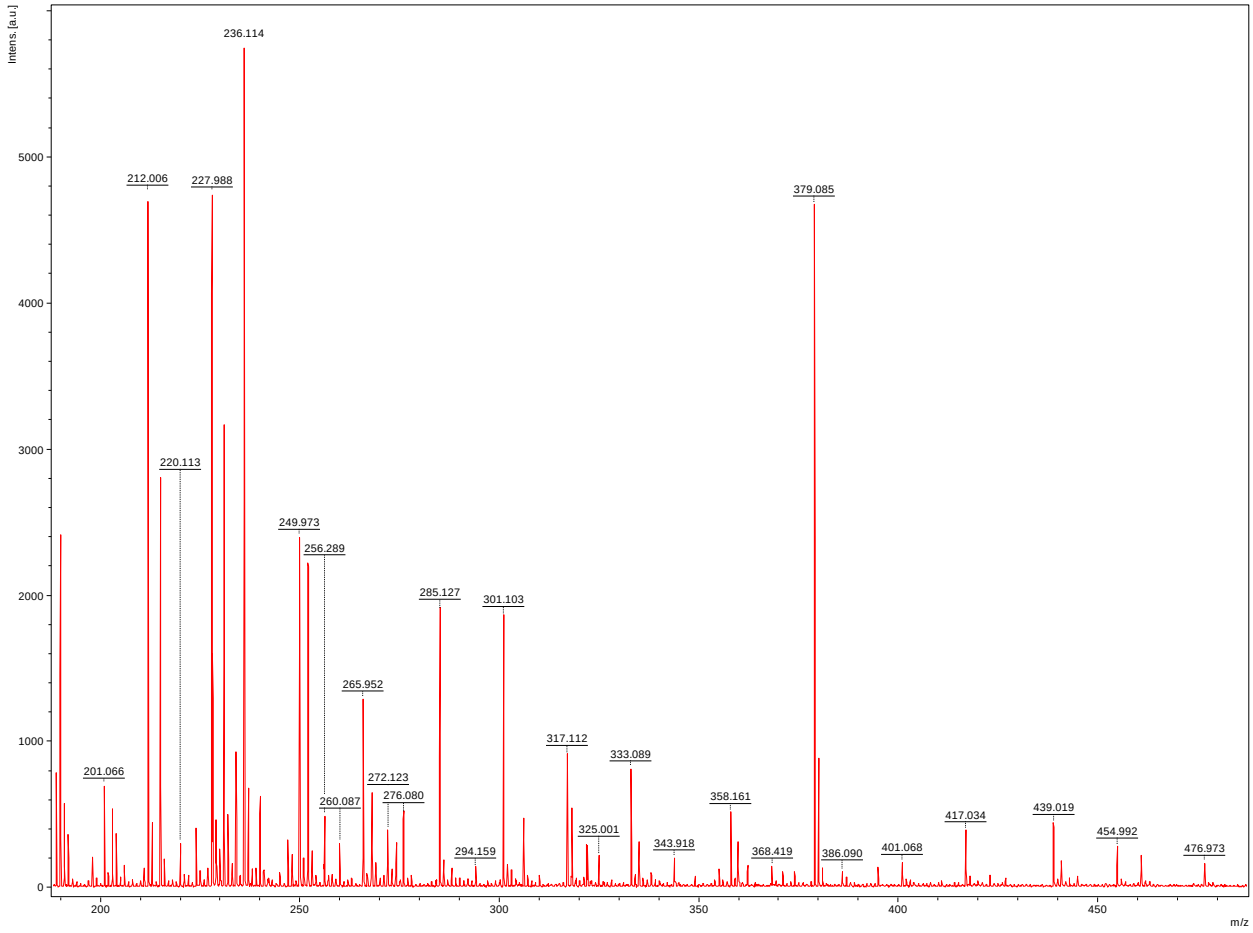


Figure S45. MALDI-TOF mass spectra of the reaction mixture obtained under the syringe-pump base addition protocol.

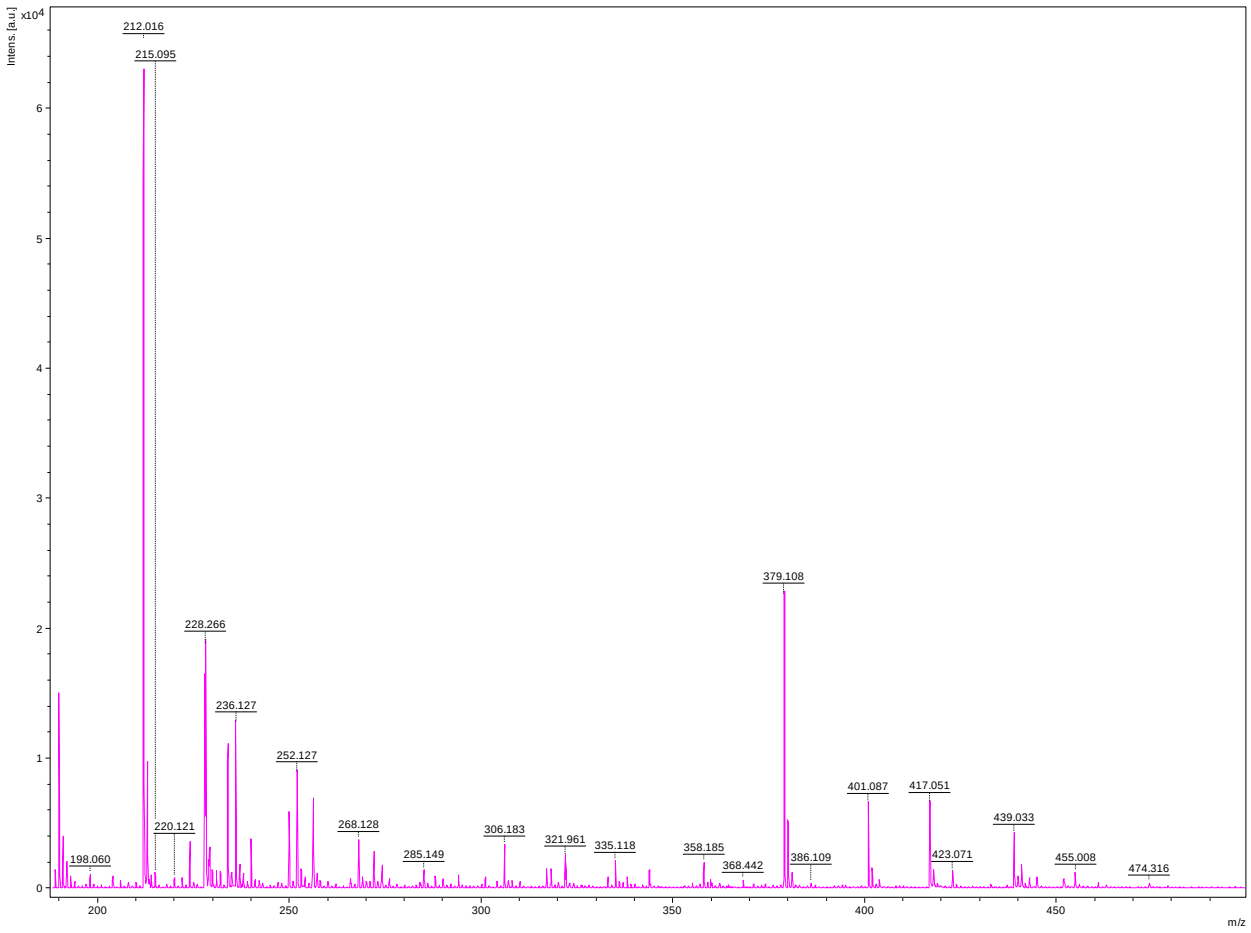


Figure S46. MALDI-TOF mass spectra of the reaction mixture obtained under the one-portion base addition protocol.

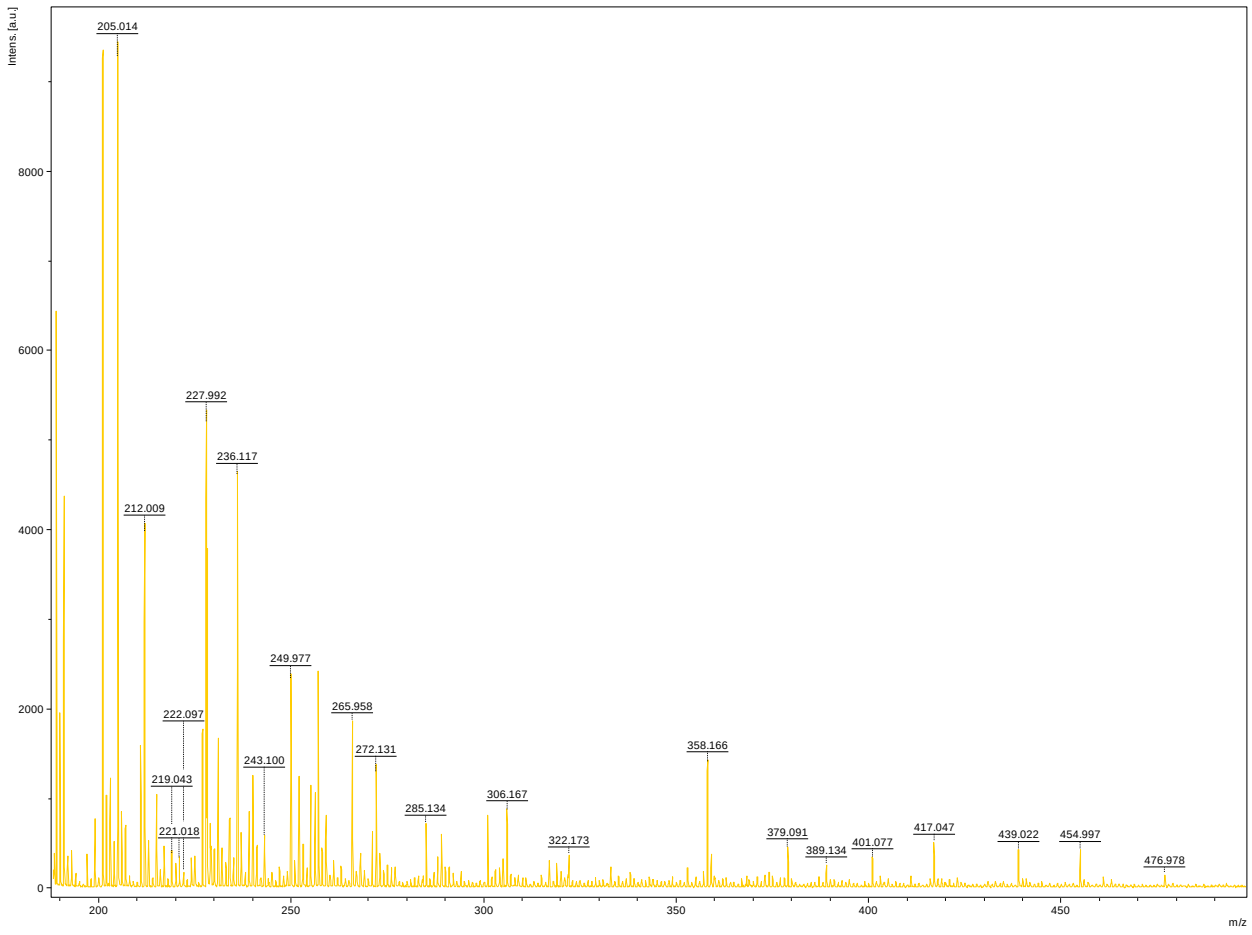


Figure S47. MALDI-TOF mass spectra of the reaction mixture obtained under the diffusive mixing protocol.