Supporting Information For

Synthesis of Unsaturated Precursors for Parahydrogen Induced Polarization and Molecular Imaging of 1-^{13}C-acetates and 1-^{13}C-pyruvates via Side Arm Hydrogenation

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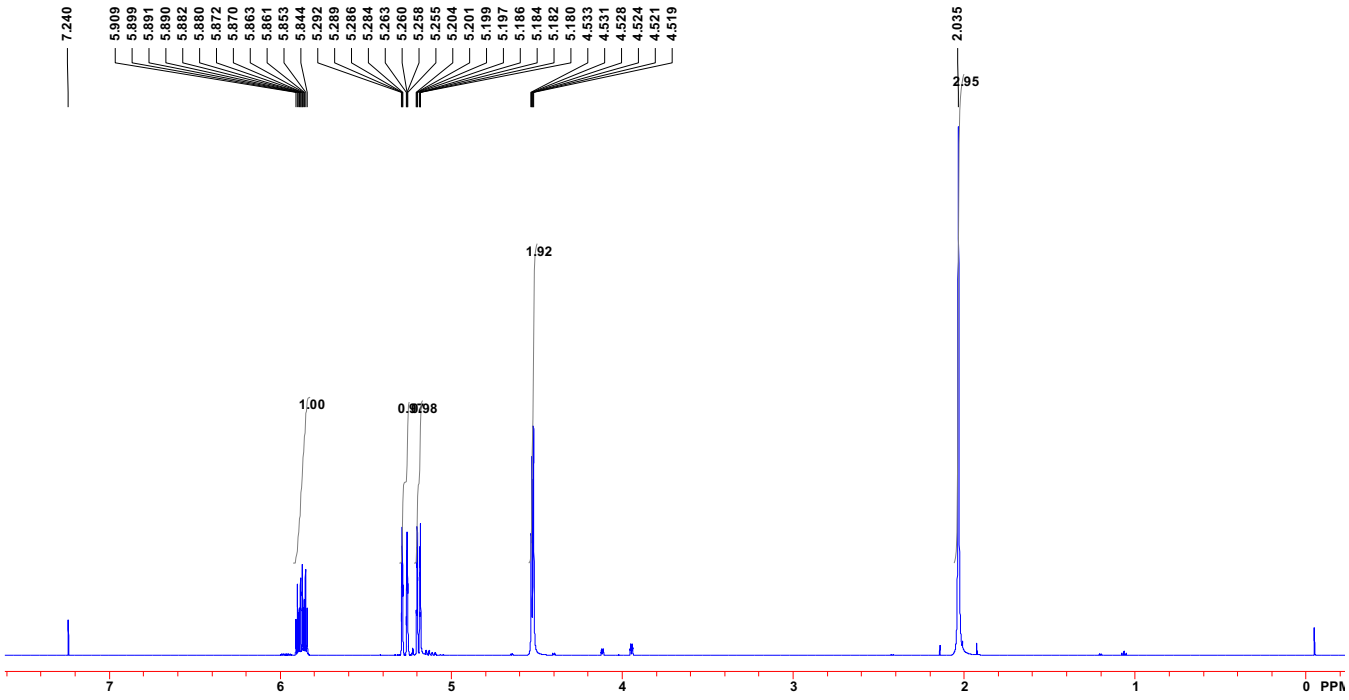


Figure S1. ^{1}H NMR spectroscopy of allyl acetate **5a**

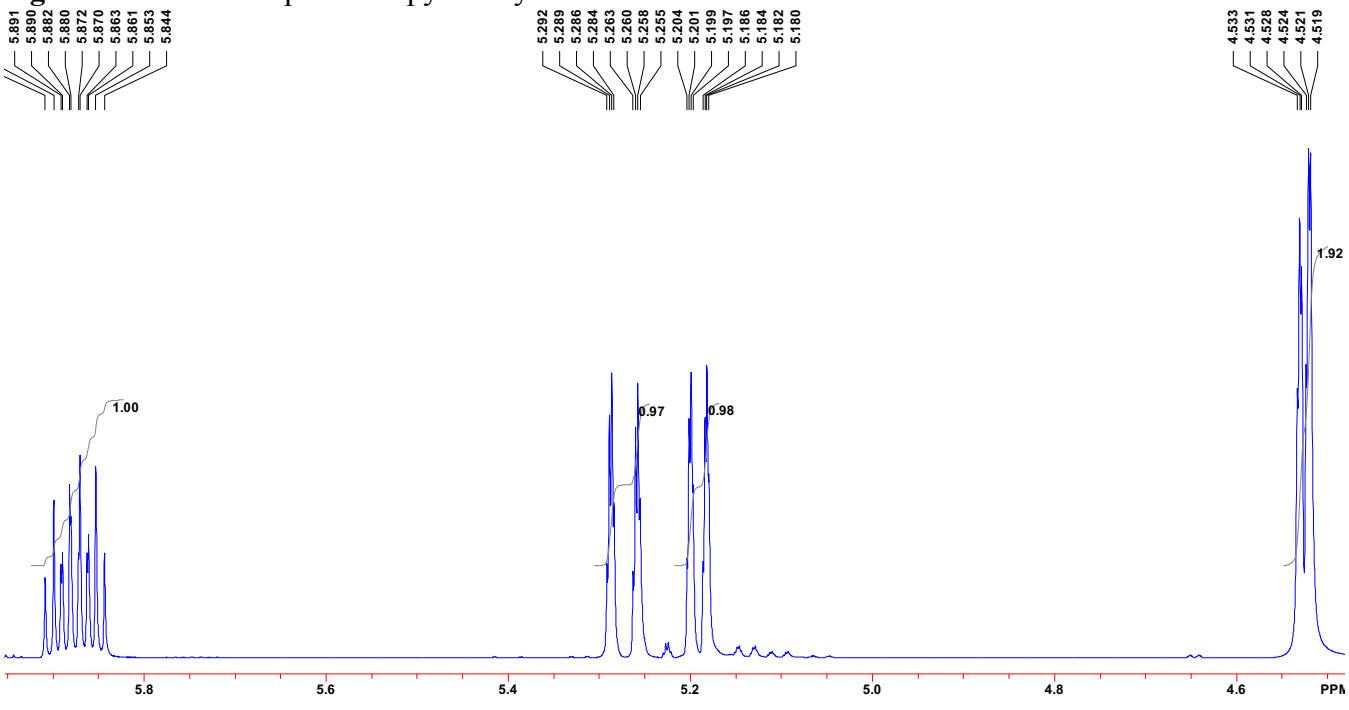


Figure S2. ^{1}H NMR spectroscopy of allyl acetate **5a**

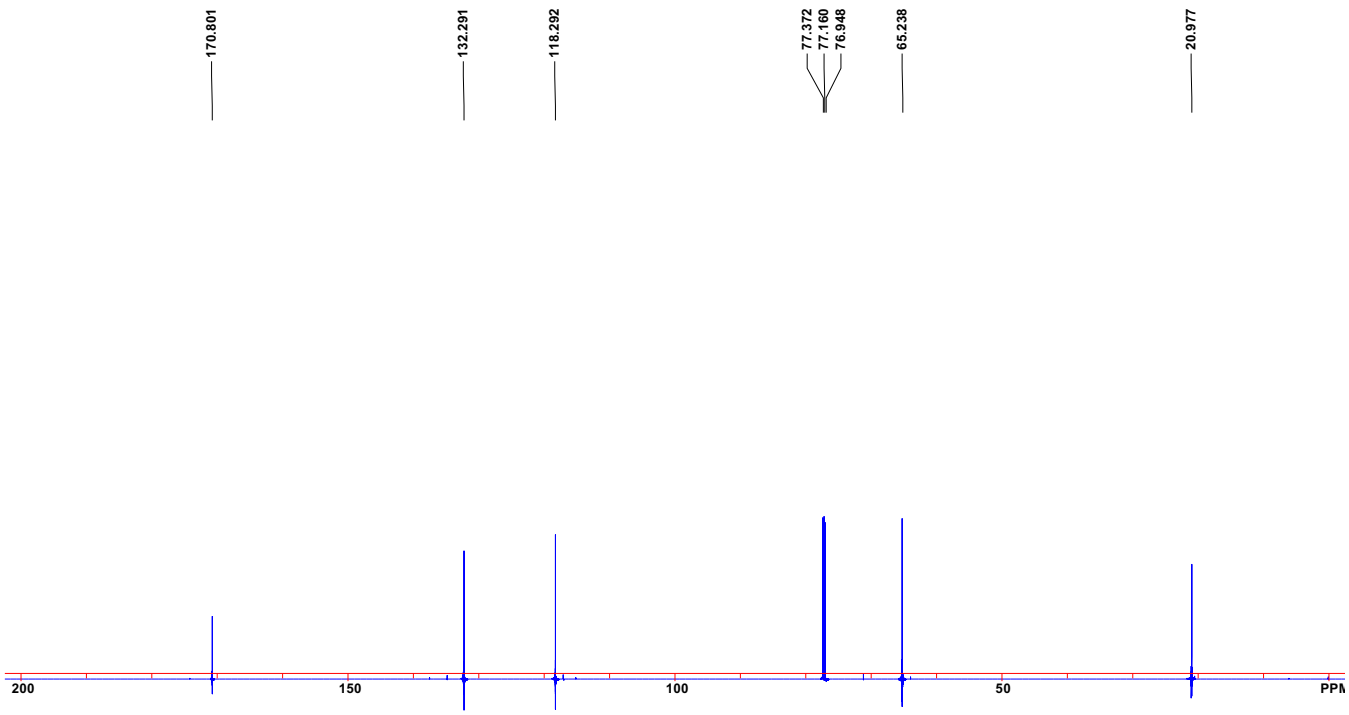


Figure S3. ^{13}C NMR spectroscopy of allyl acetate **5a**

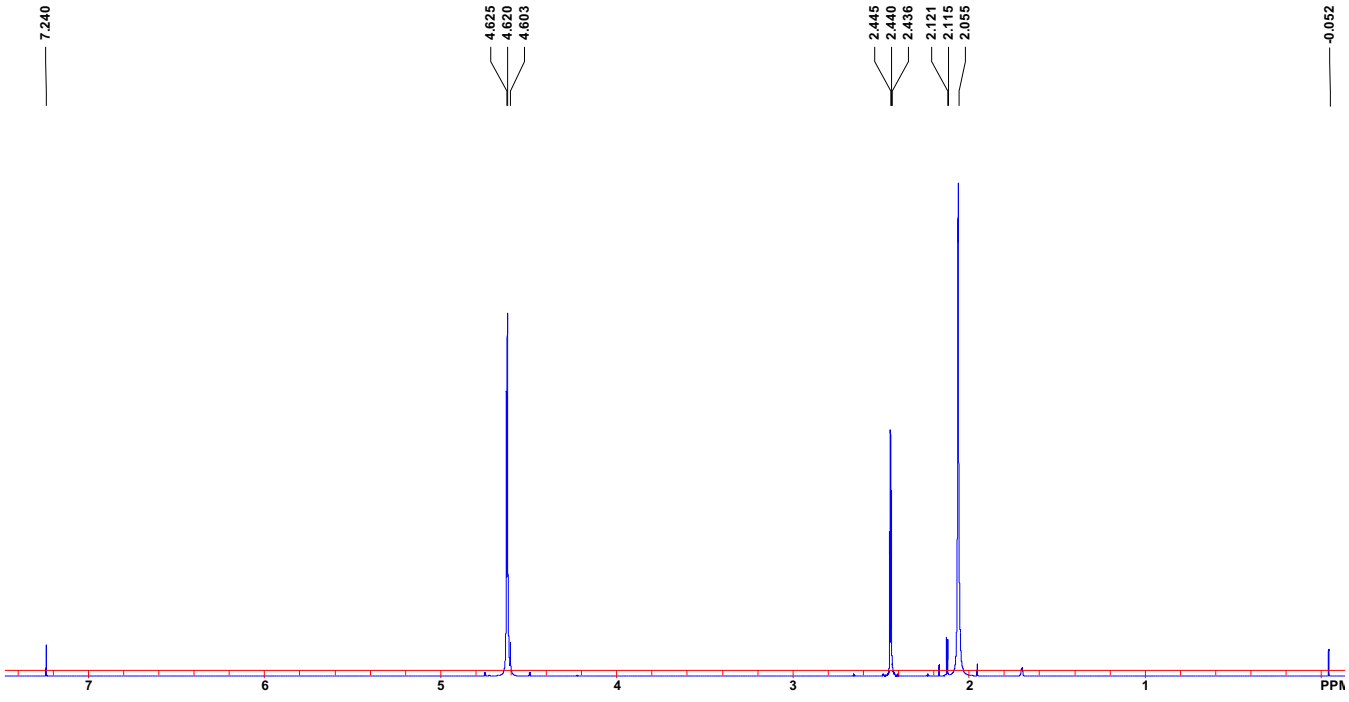


Figure S4. ^{1}H NMR spectroscopy of propargyl acetate **6a**

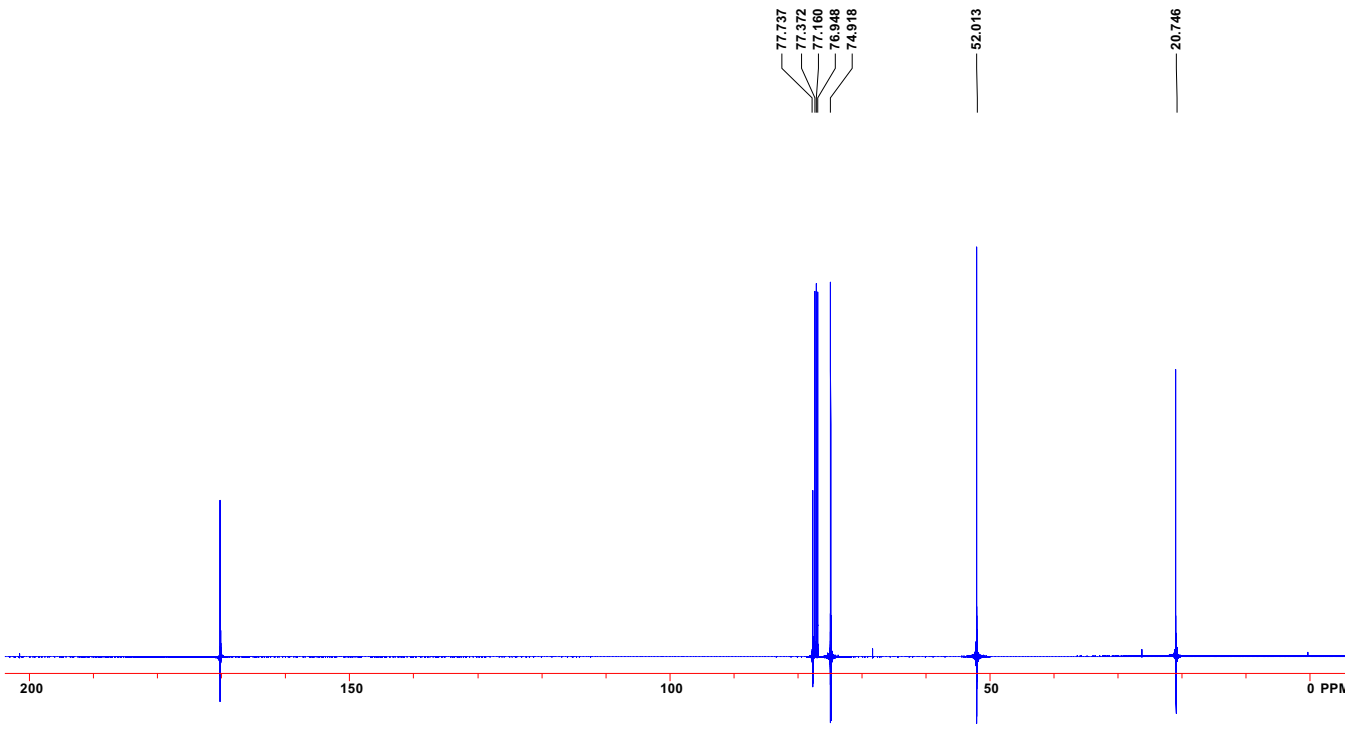


Figure S5. ^{13}C NMR spectroscopy of propargyl acetate **6a**

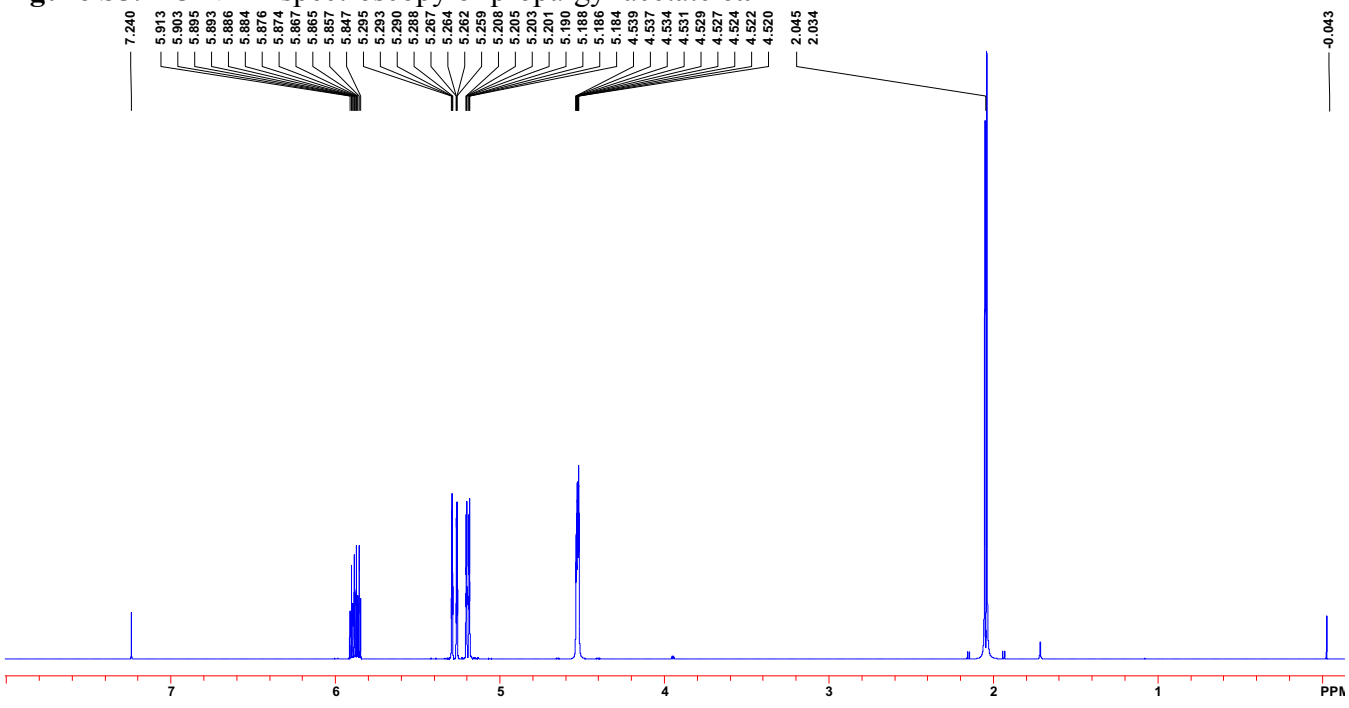


Figure S6. ^{1}H NMR spectroscopy of allyl acetate-1-^{13}C **5b**

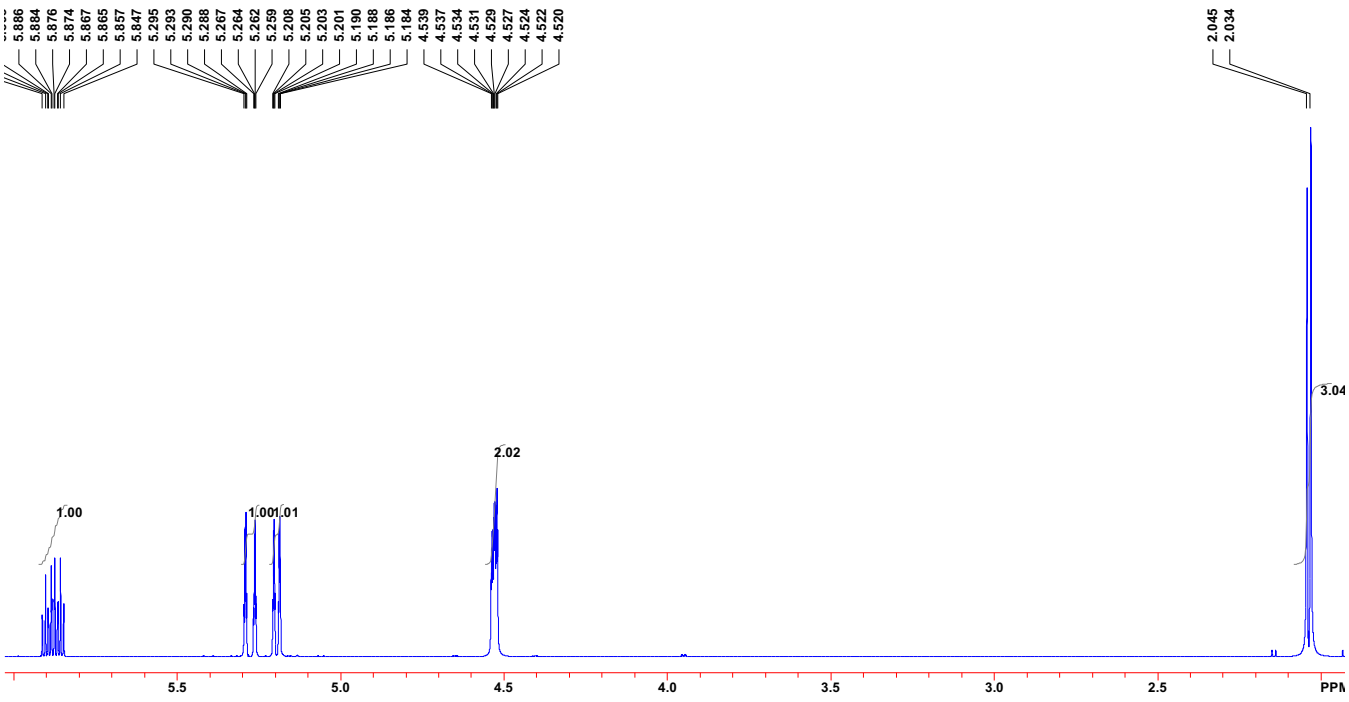


Figure S7. ^{1}H NMR spectroscopy of allyl acetate-1-^{13}C **5b**

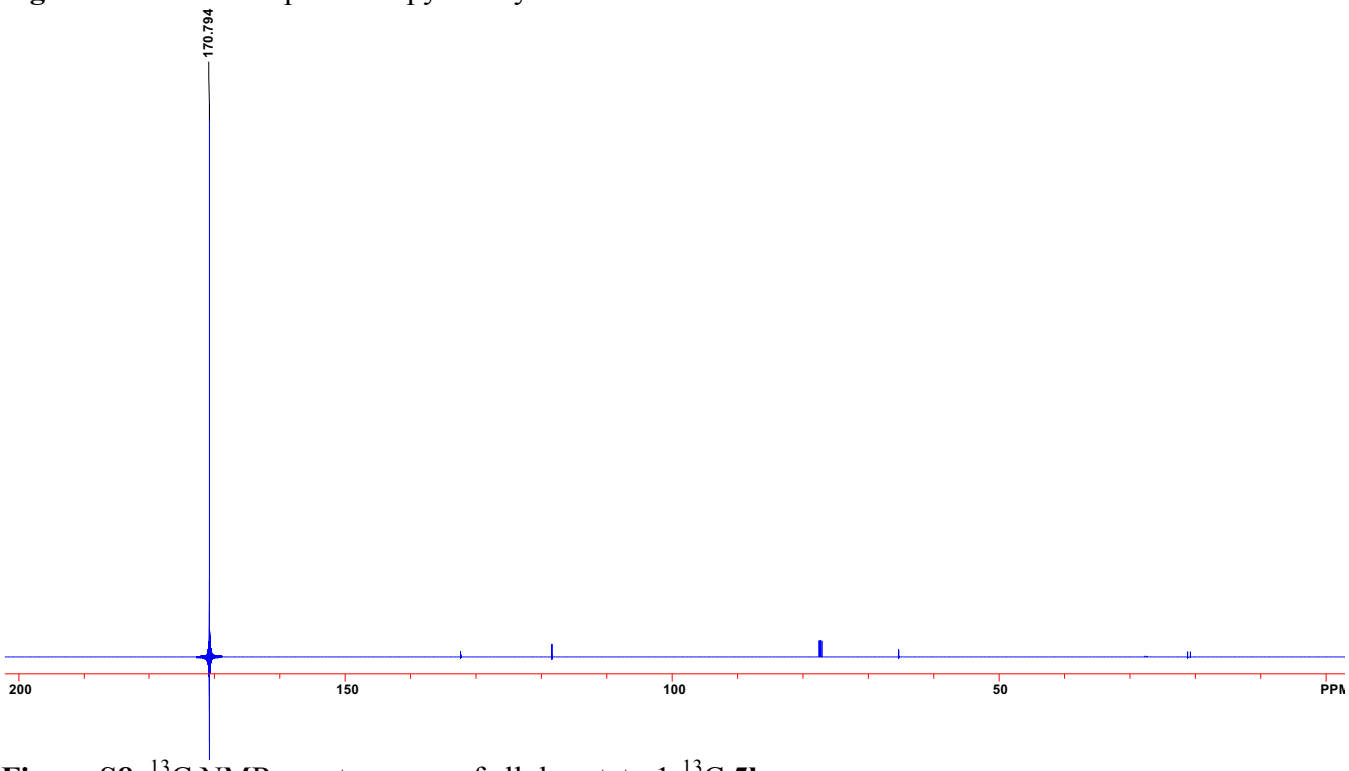


Figure S8. ^{13}C NMR spectroscopy of allyl acetate-1-^{13}C **5b**

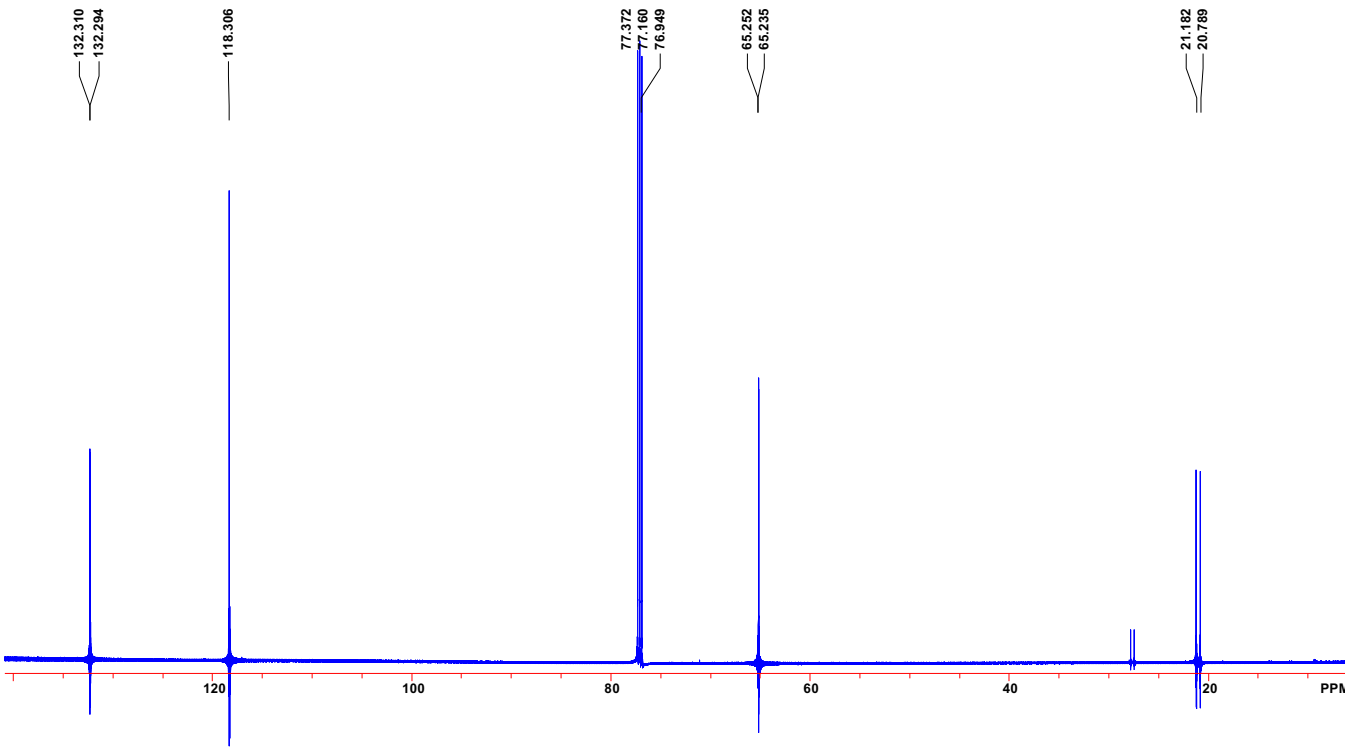


Figure S9. ^{13}C NMR spectroscopy of allyl acetate-1-^{13}C **5b**

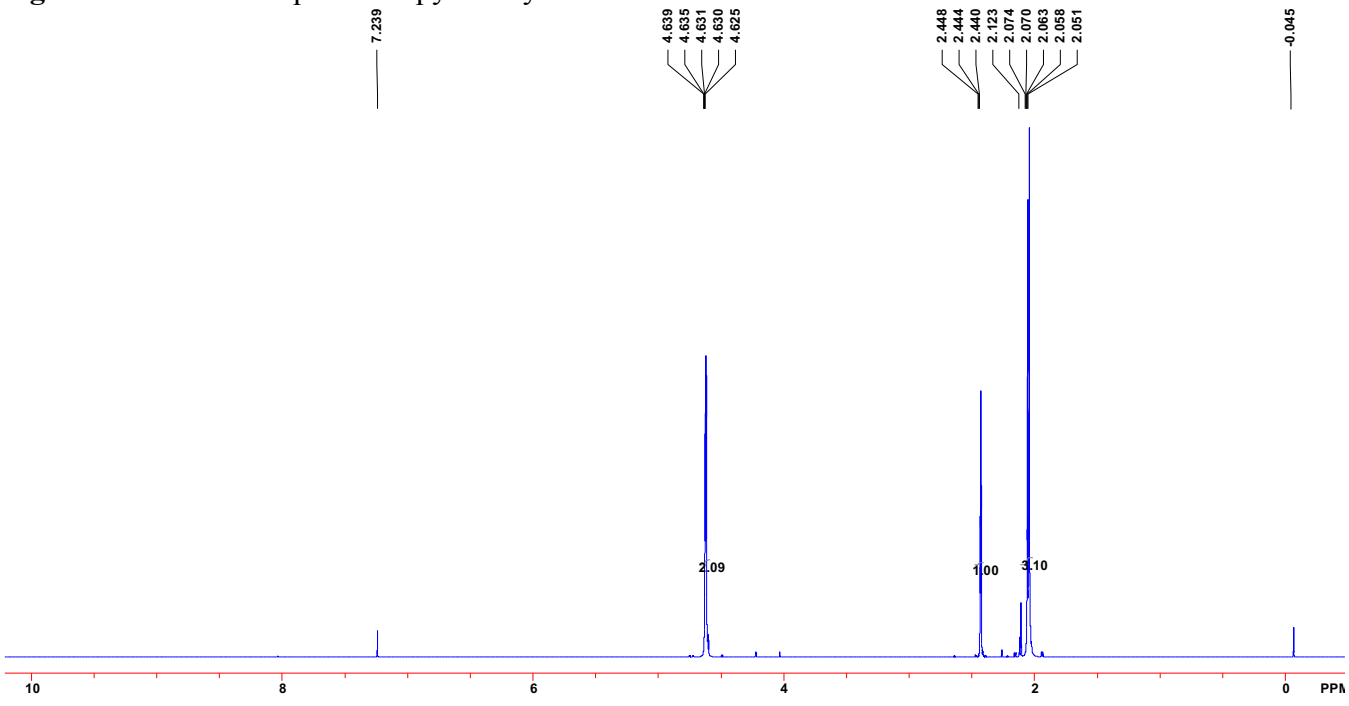
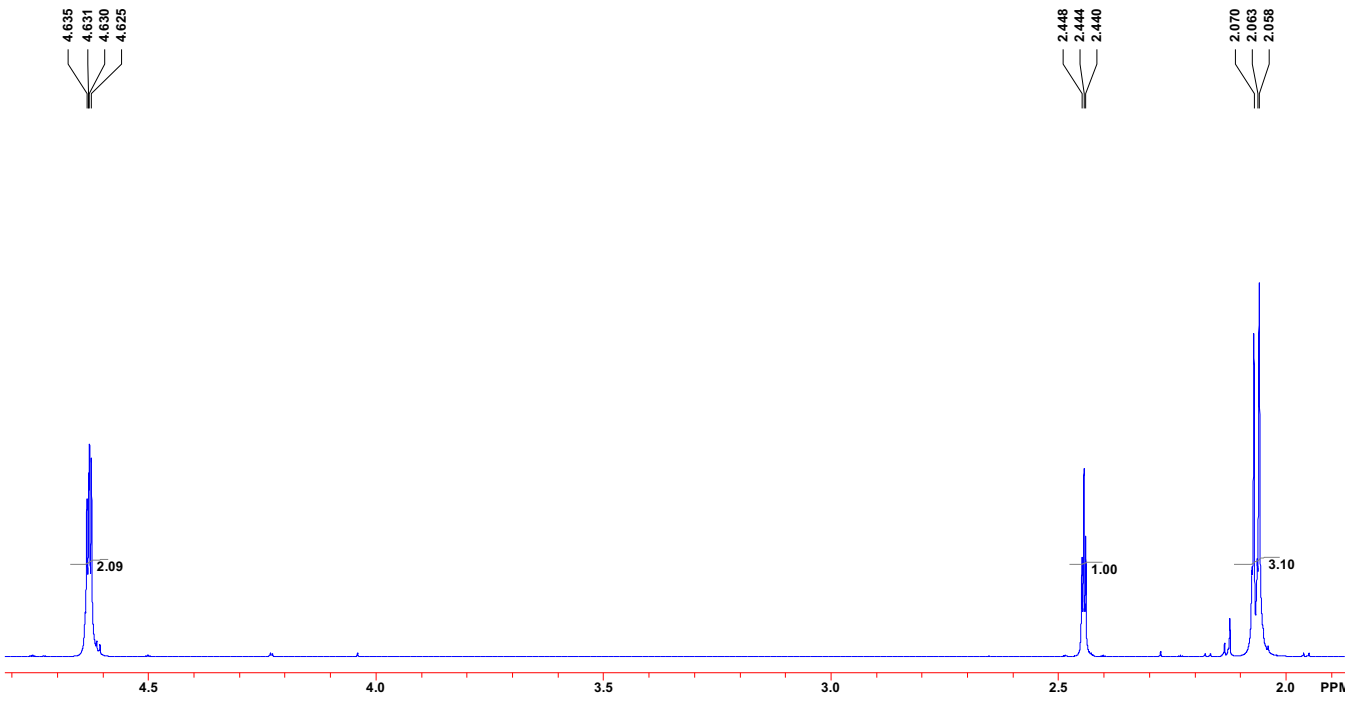


Figure S10. ^{1}H NMR spectroscopy of propargyl acetate-1-^{13}C **6b**



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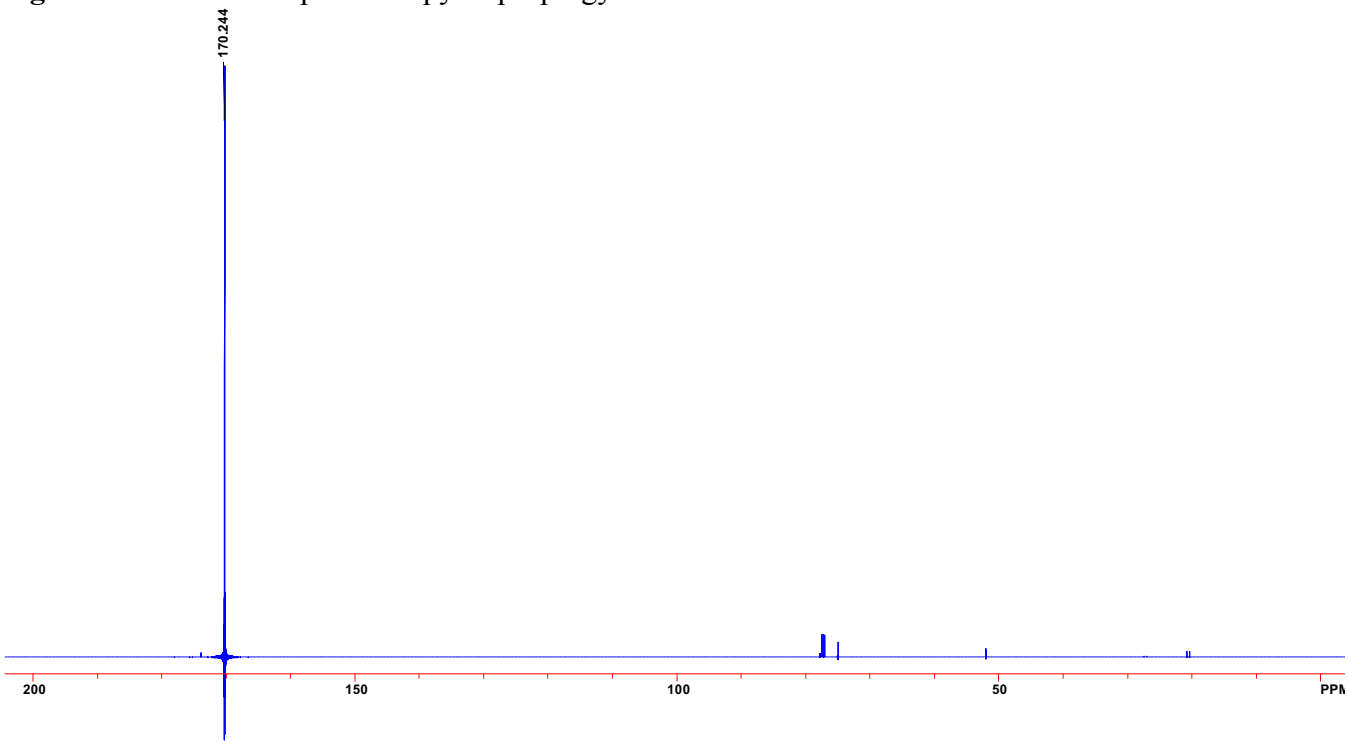

Figure S12. ^{13}C NMR spectroscopy of propargyl acetate-1-^{13}C **6b**

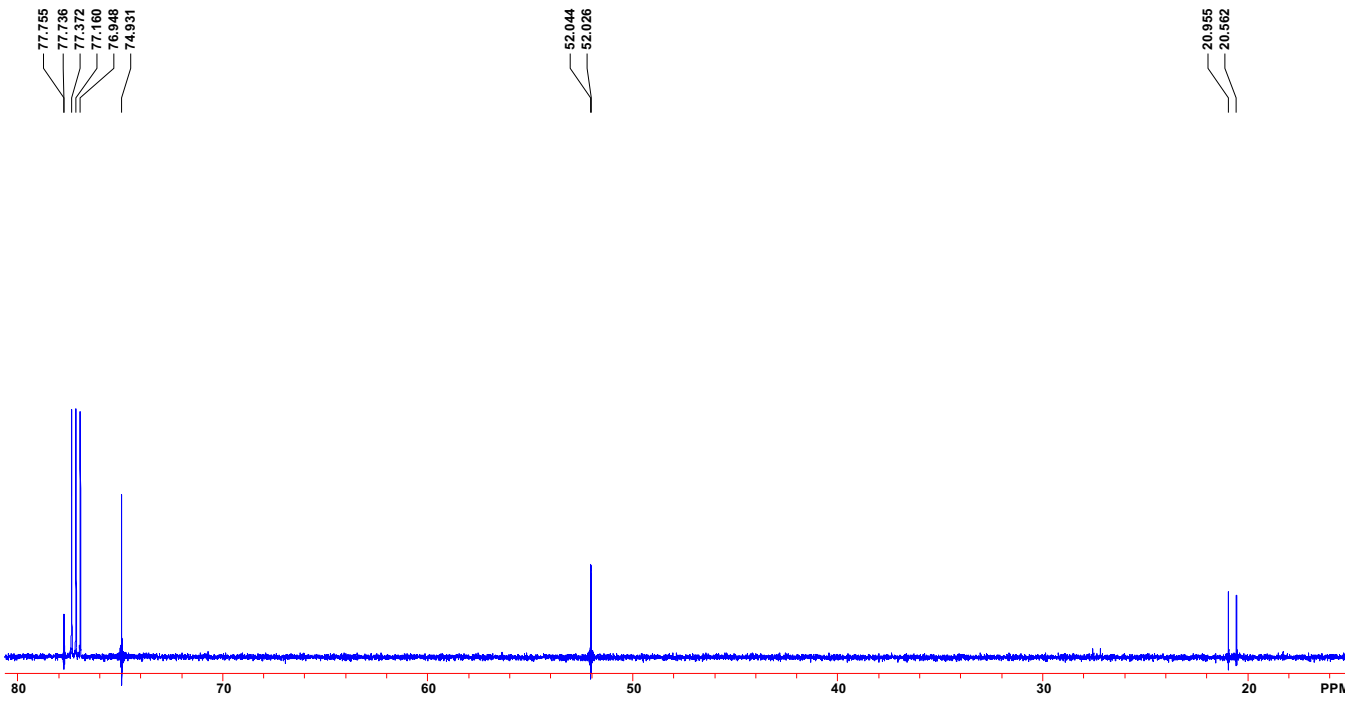

Figure S13. ^{13}C NMR spectroscopy of propargyl acetate-1-^{13}C **6b**

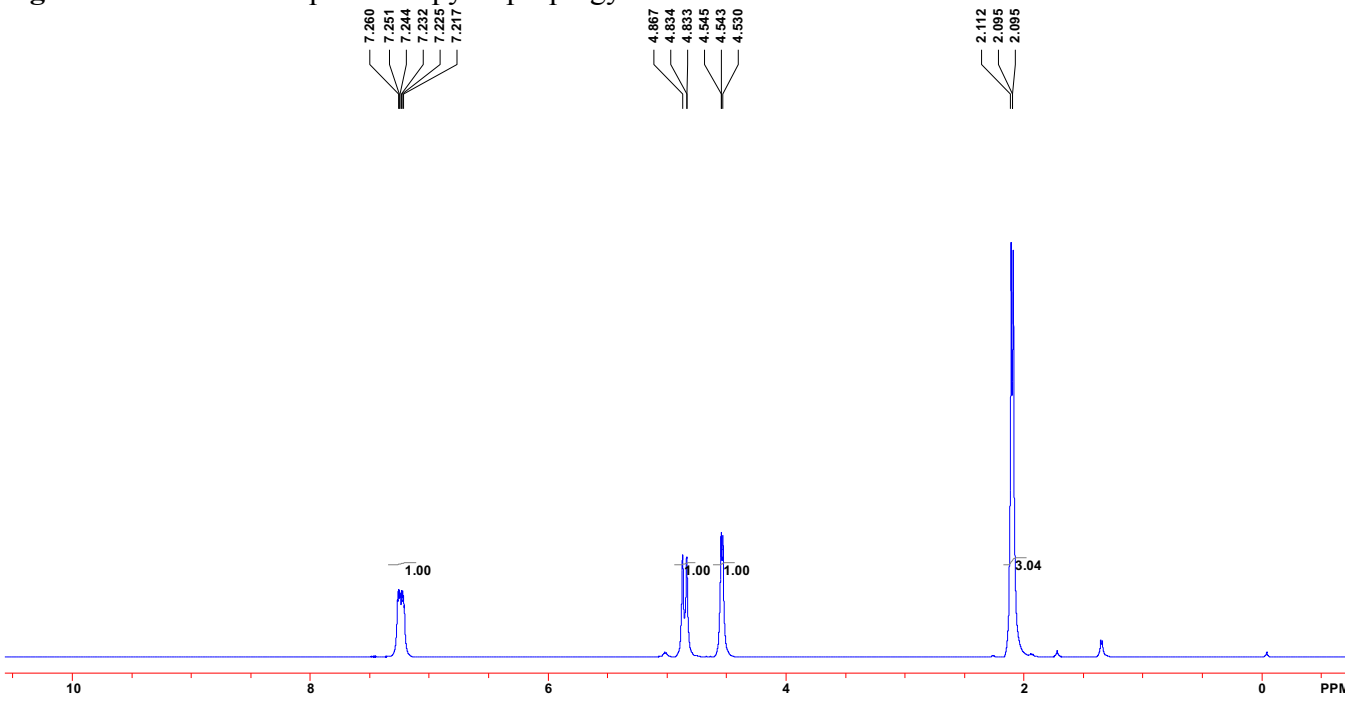

Figure S14. ^{1}H NMR spectroscopy of vinyl acetate-1-^{13}C **7b**

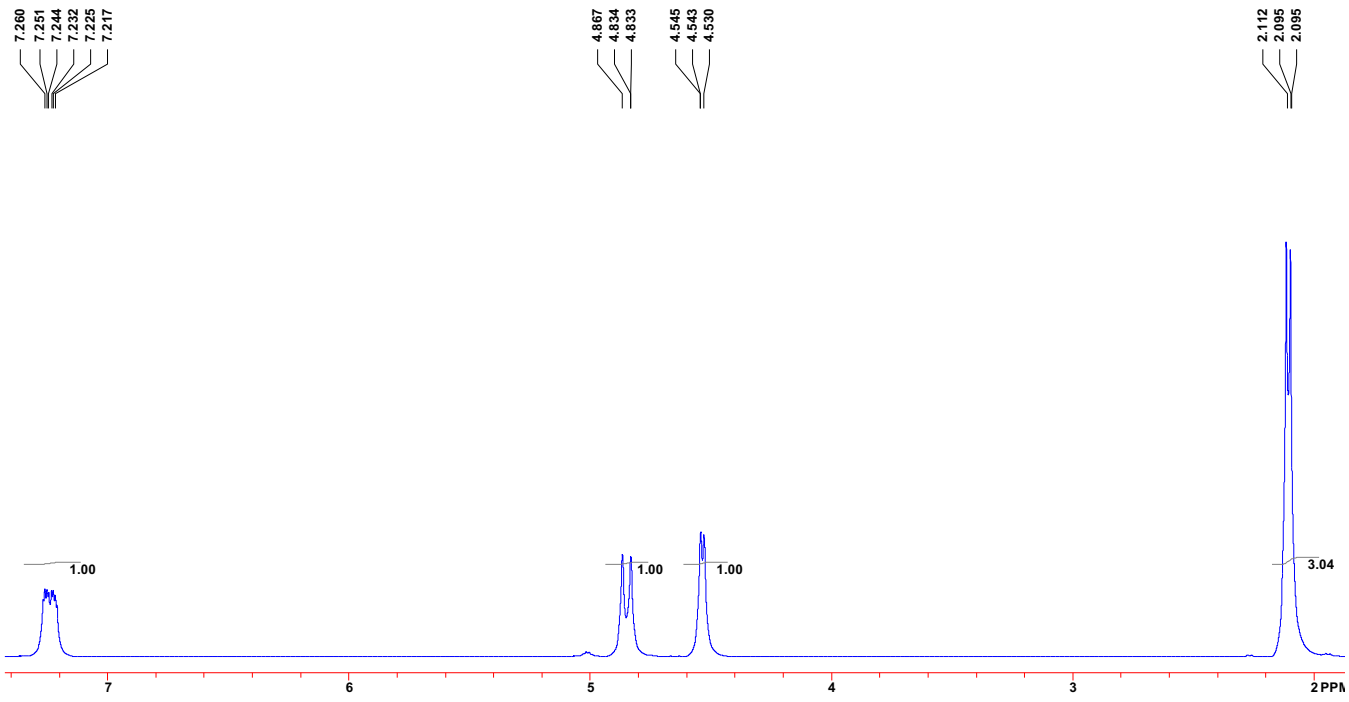

Figure S15. ^{1}H NMR spectroscopy of vinyl acetate-1-^{13}C **7b**

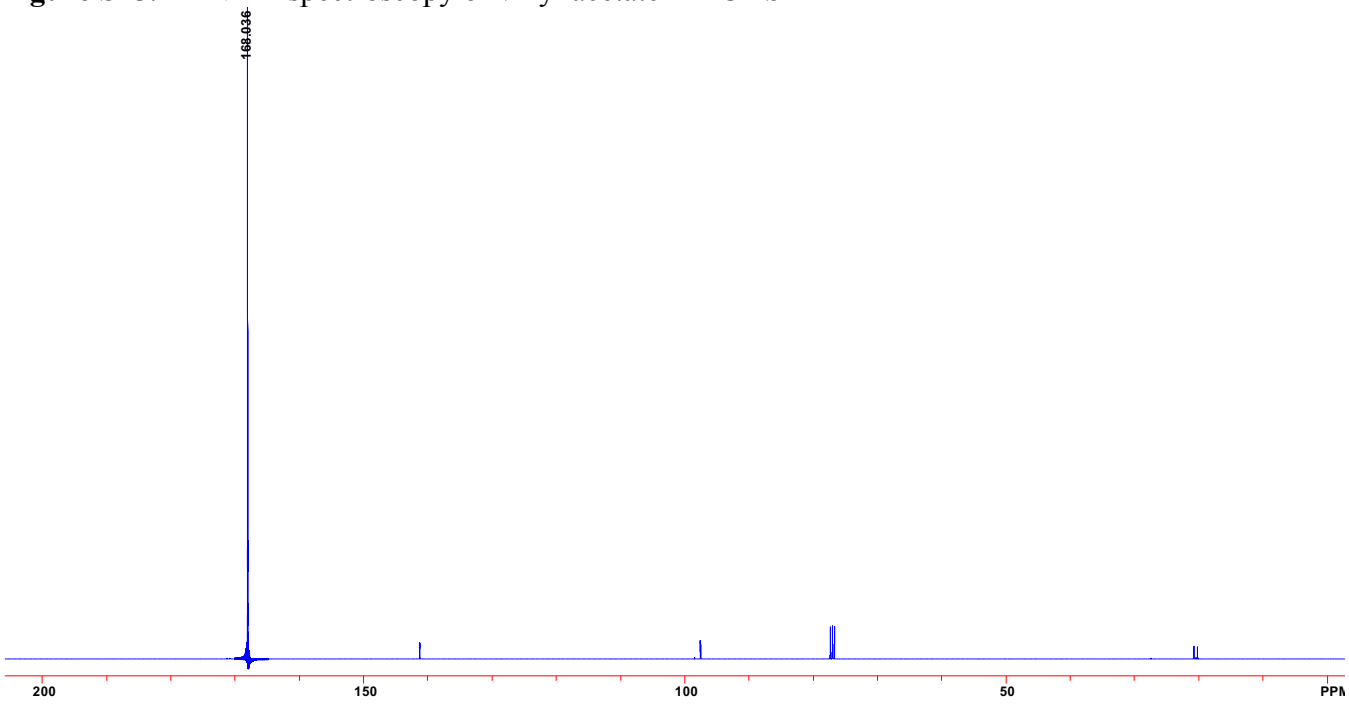

Figure S16. ^{13}C NMR spectroscopy of vinyl acetate-1-^{13}C **7b**

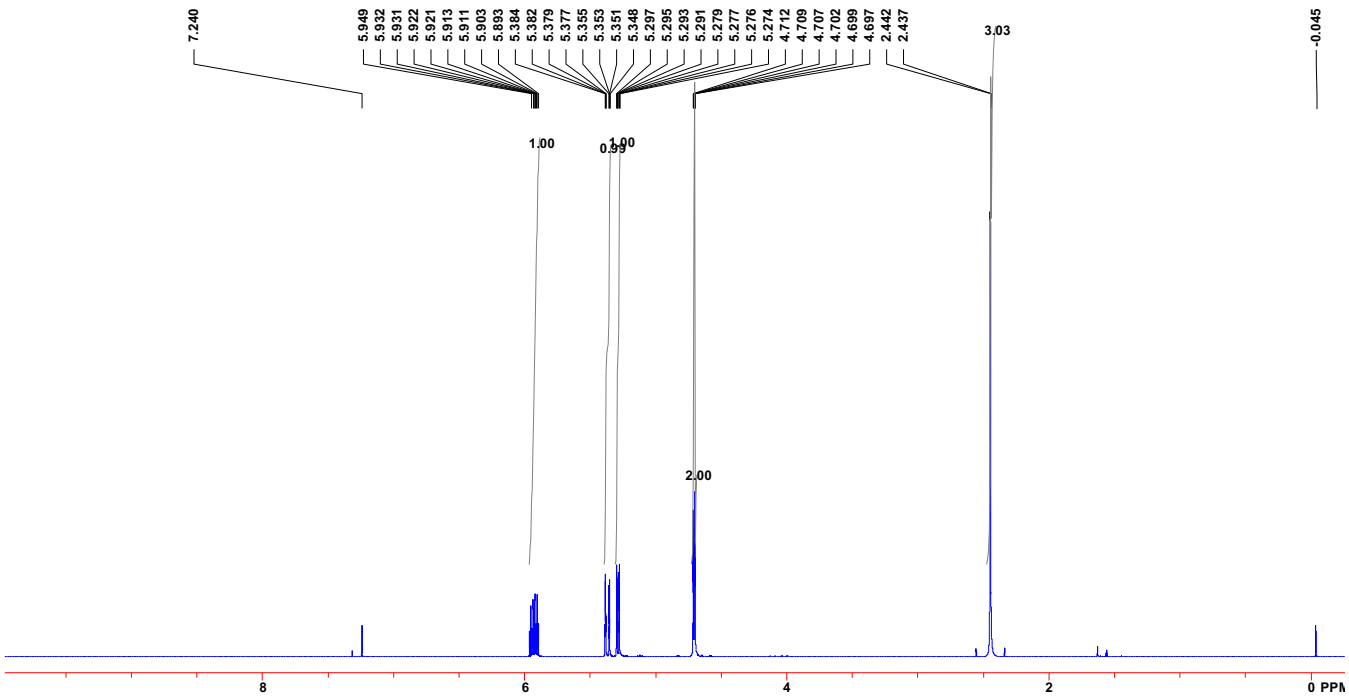

Figure S17. [1]H NMR spectroscopy of allyl pyruvate **8a**

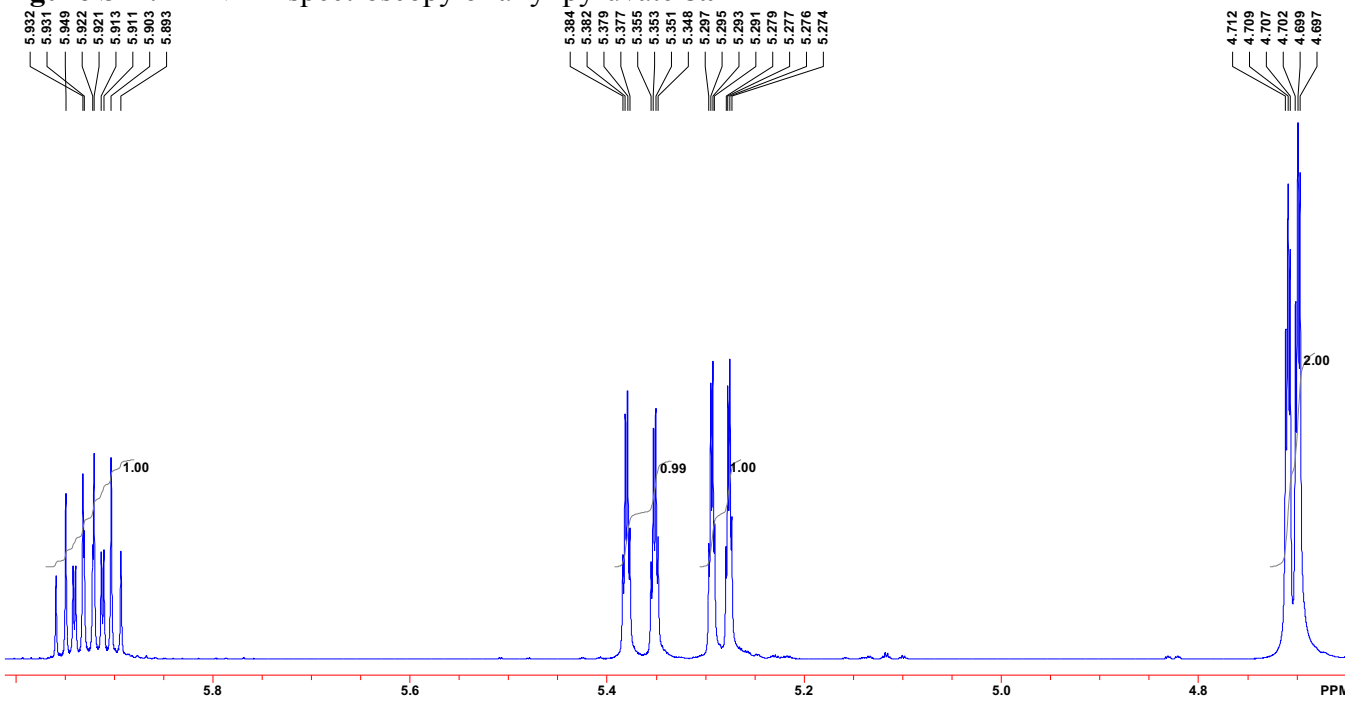

Figure S18. [1]H NMR spectroscopy of allyl pyruvate **8a**

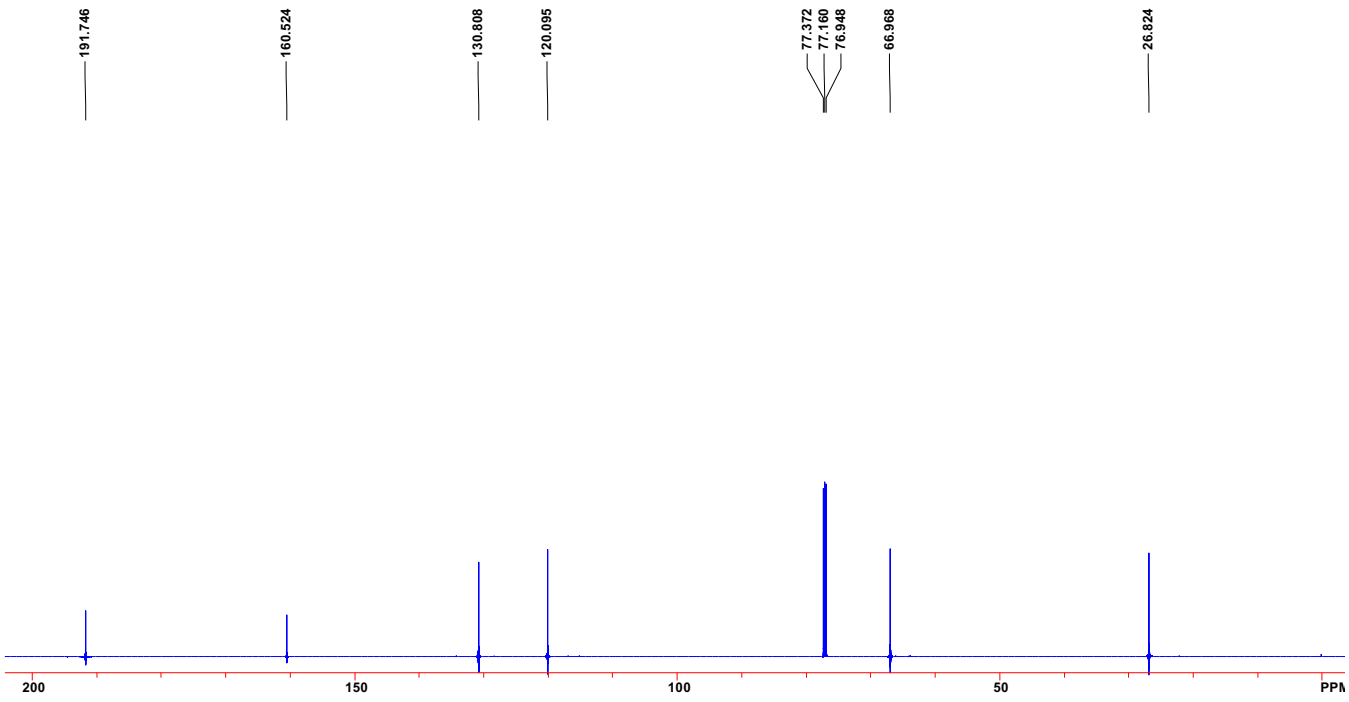

Figure S19. ^{13}C NMR spectroscopy of allyl pyruvate **8a**

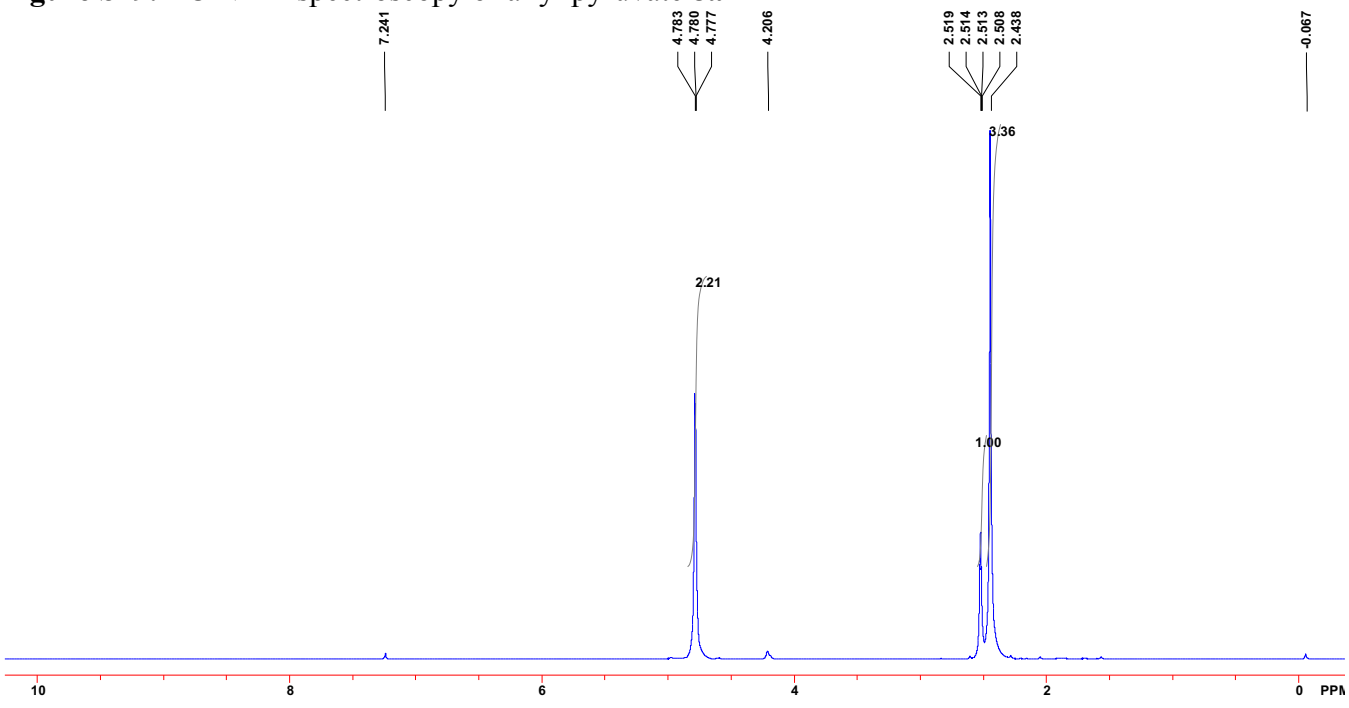

Figure S20. ^{1}H NMR spectroscopy of propargyl pyruvate **9a**

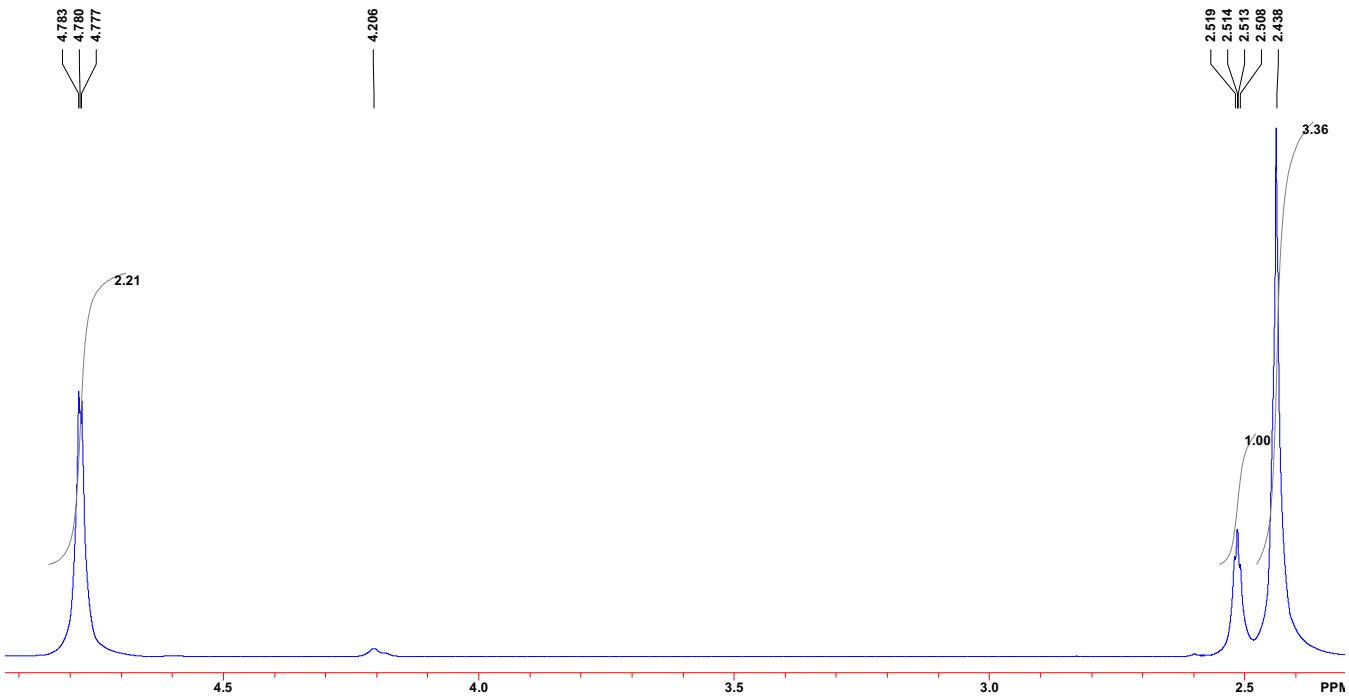

Figure S21. ^{1}H NMR spectroscopy of propargyl pyruvate **9a**

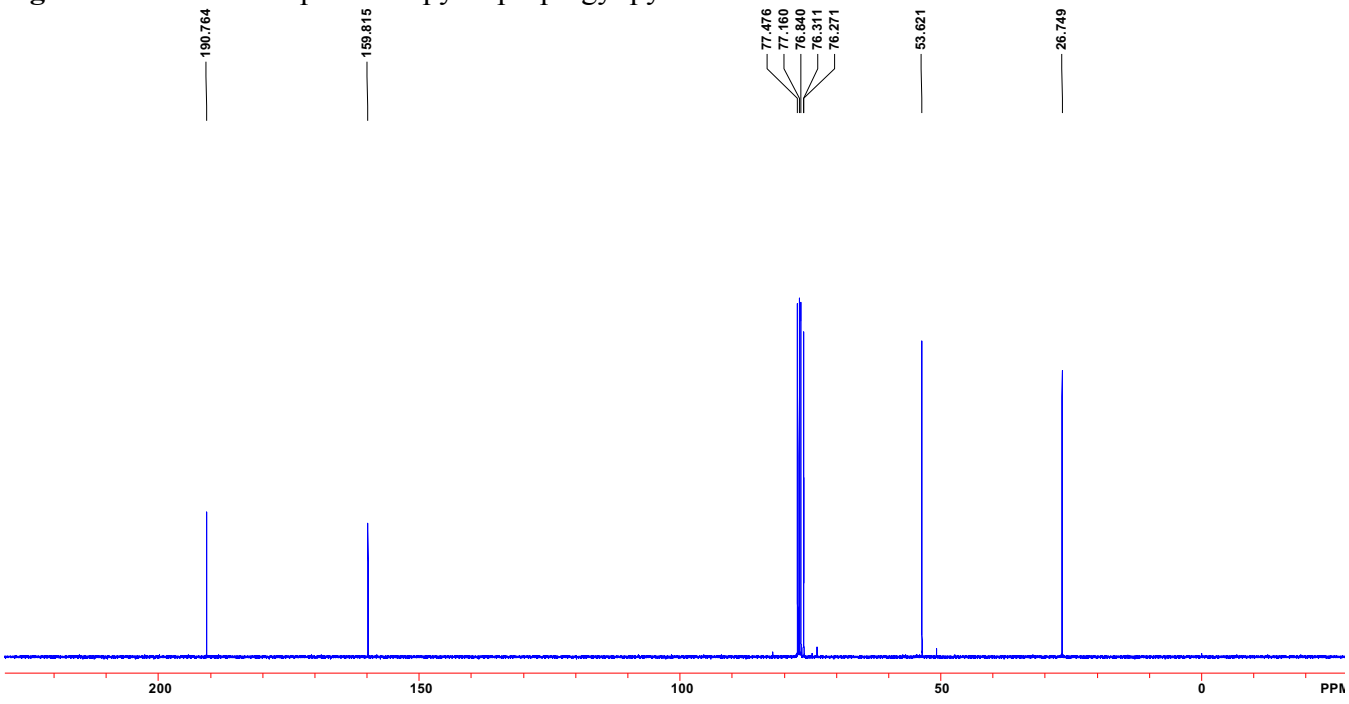

Figure S22. ^{13}C NMR spectroscopy of propargyl pyruvate **9a**

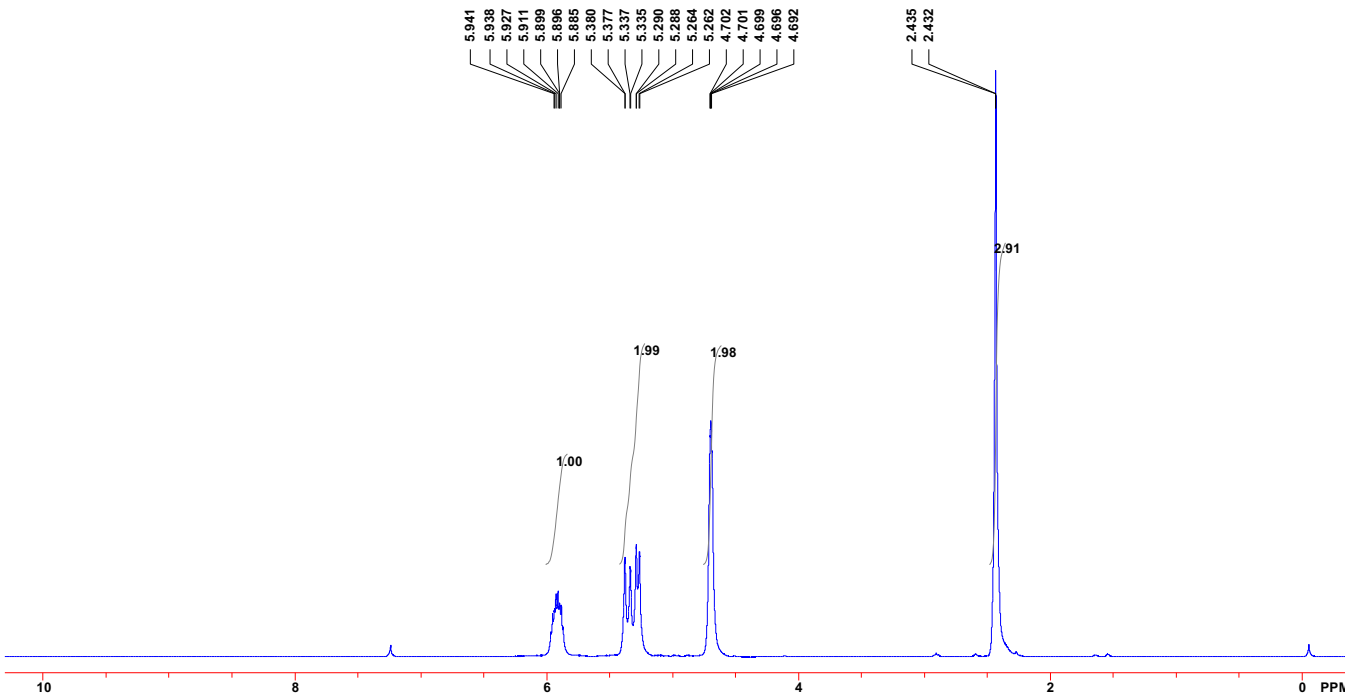

Figure S23. ^{1}H NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

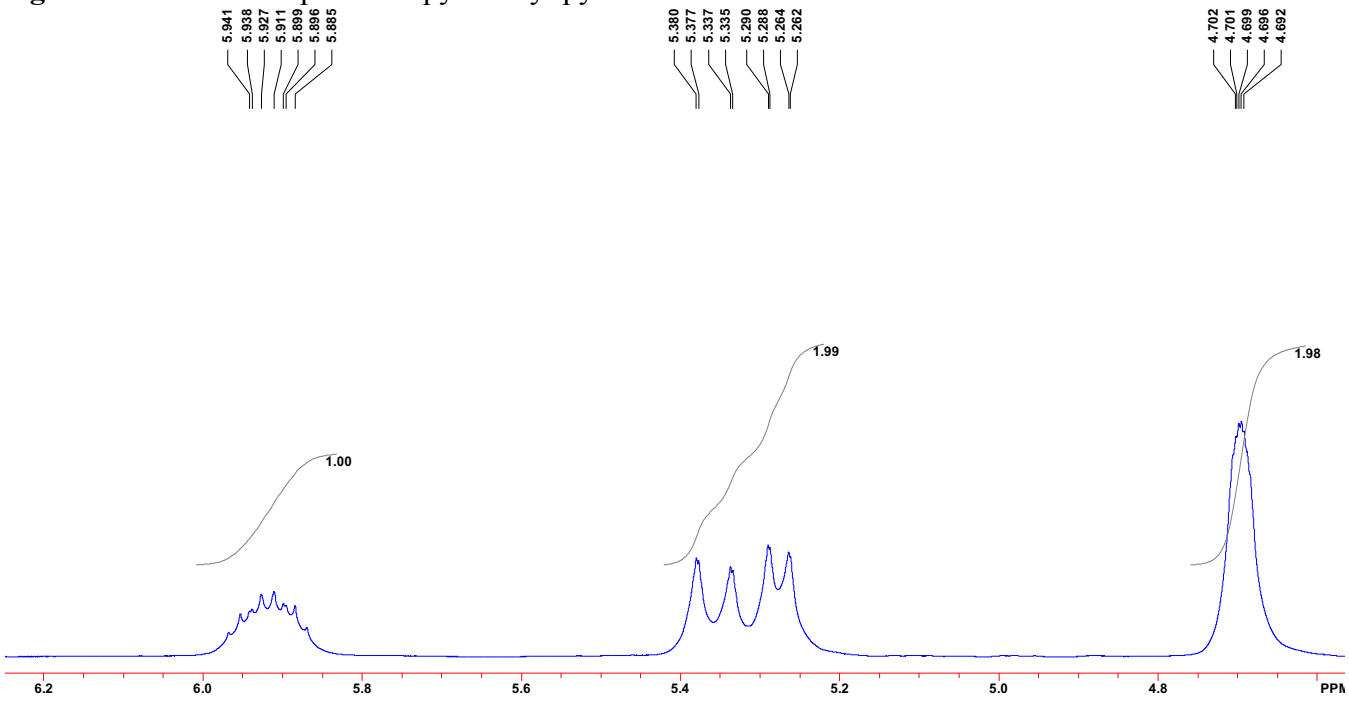

Figure S24. ^{1}H NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

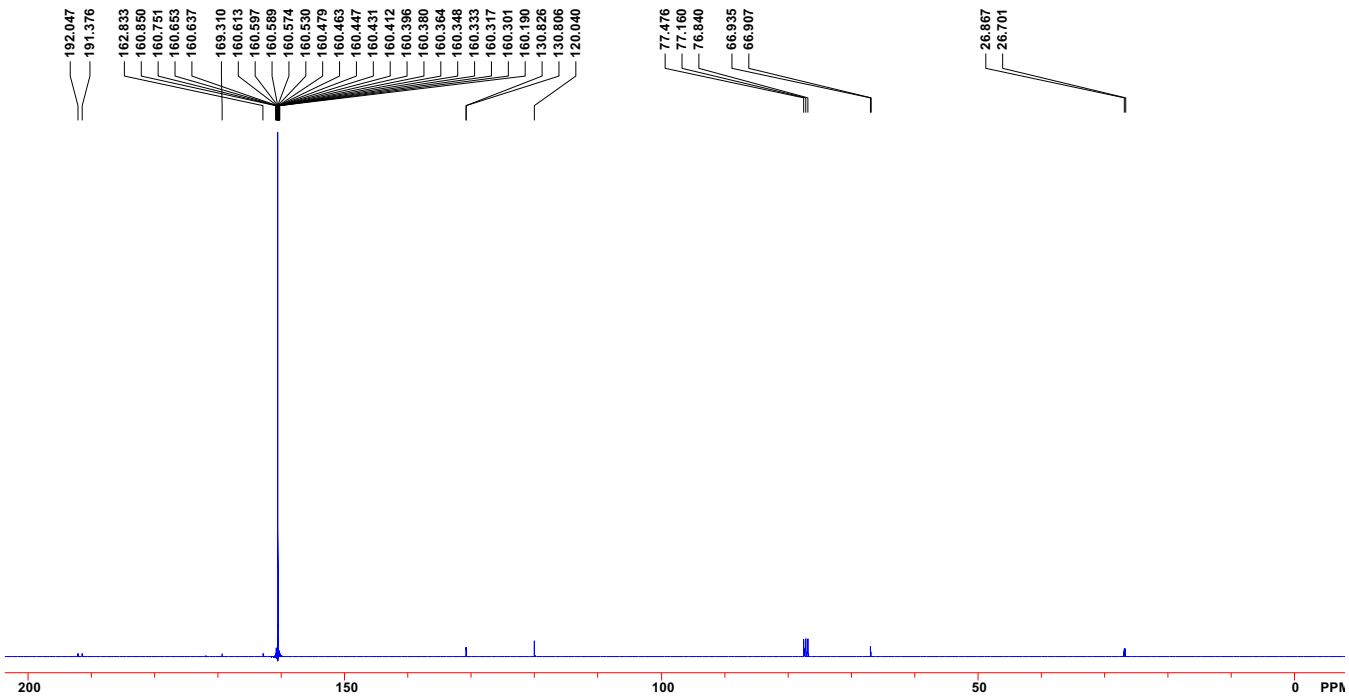

Figure S25. ^{13}C NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

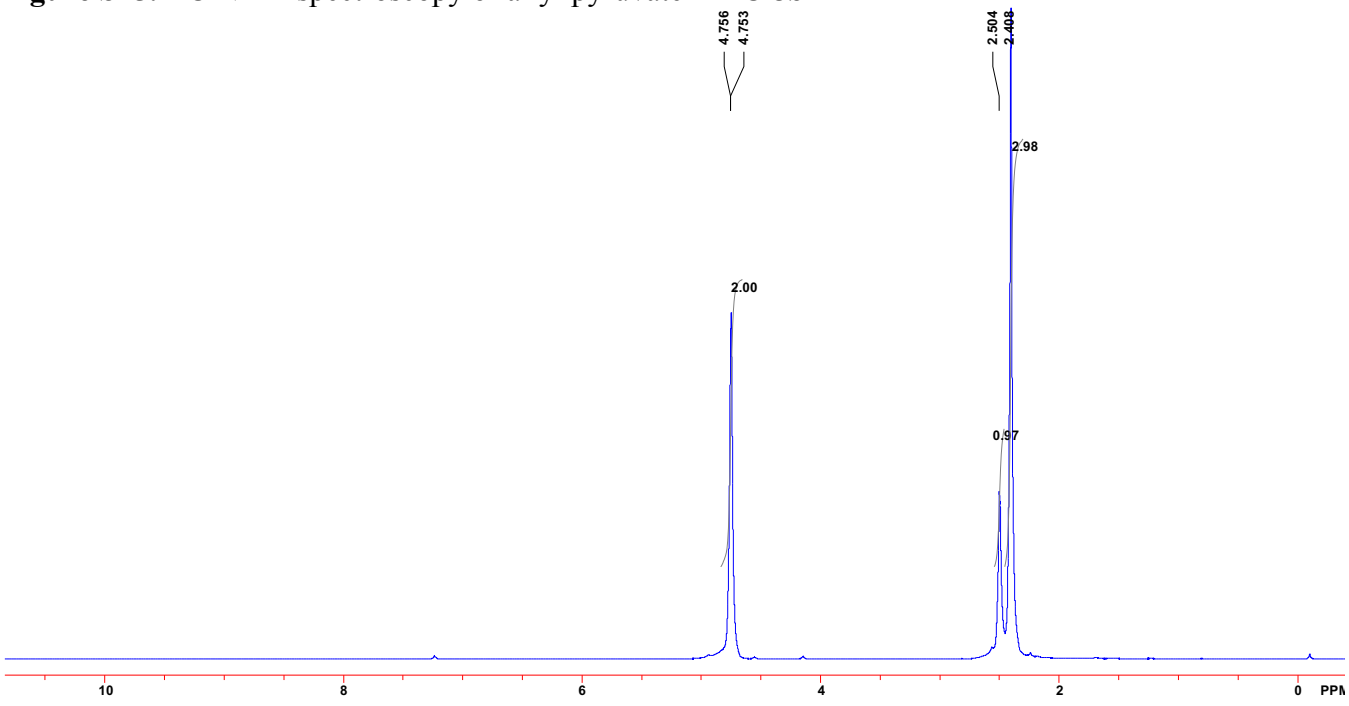

Figure S26. ^{1}H NMR spectroscopy of propargyl pyruvate-1-^{13}C

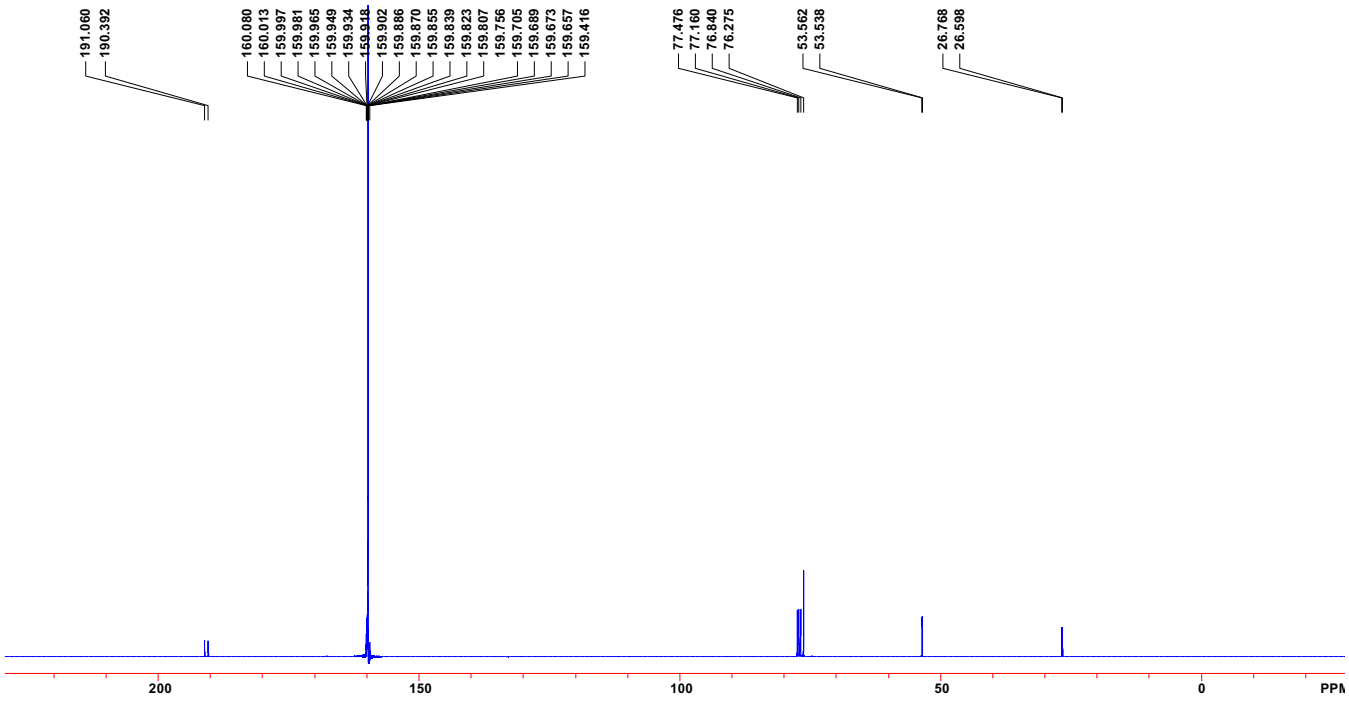

Figure S27. ^{13}C NMR spectroscopy of propargyl pyruvate-1-^{13}C **9b**

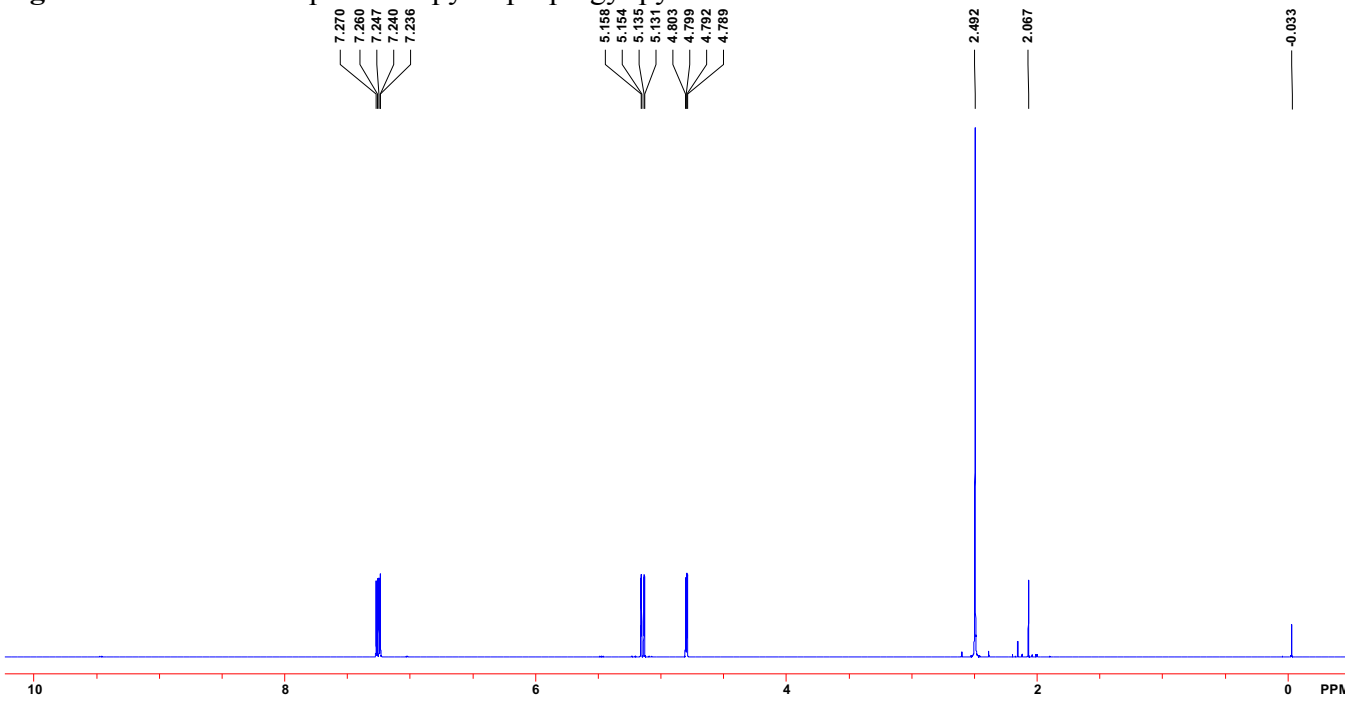

Figure S28. ^{1}H NMR spectroscopy of vinyl pyruvate **10a**

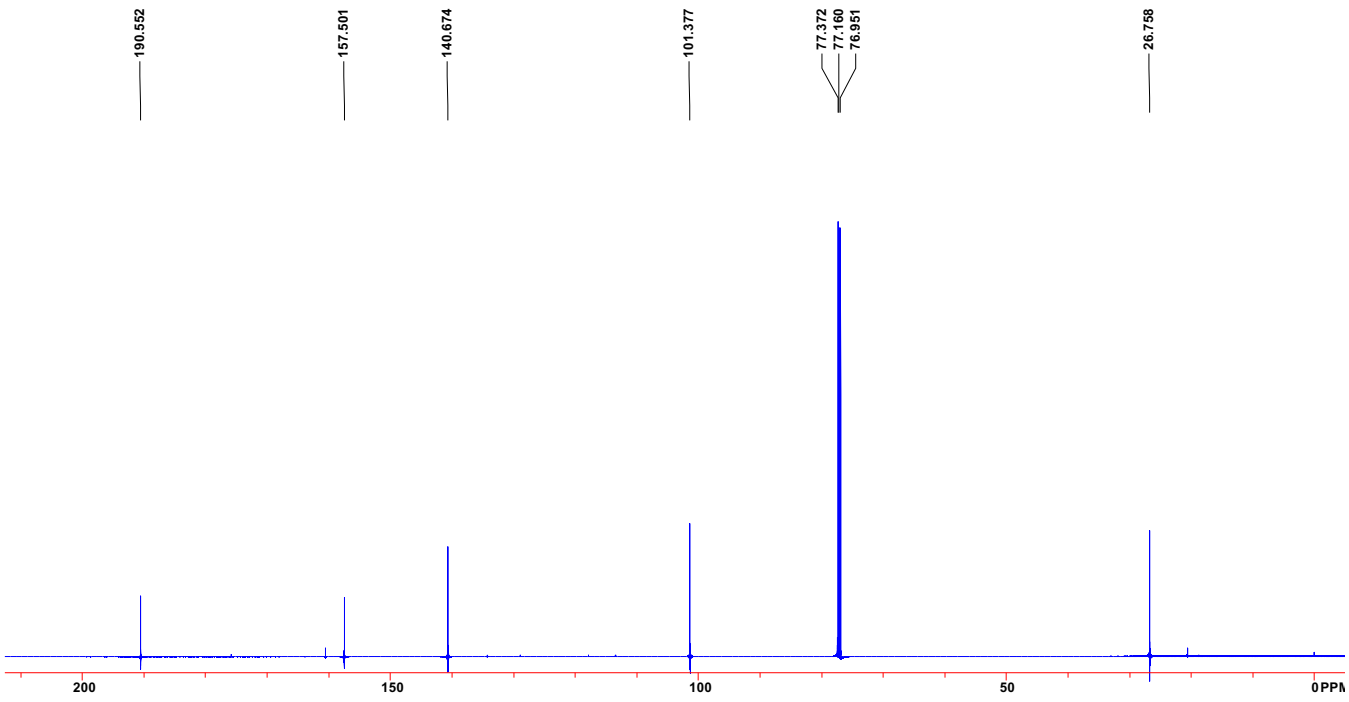

Figure S29. ^{13}C NMR spectroscopy of vinyl pyruvate **10a**

2. Additional Figures (S30-S39): ^{1}H NMR and ^{13}C NMR spectra of pyruvates in CD_3OD.

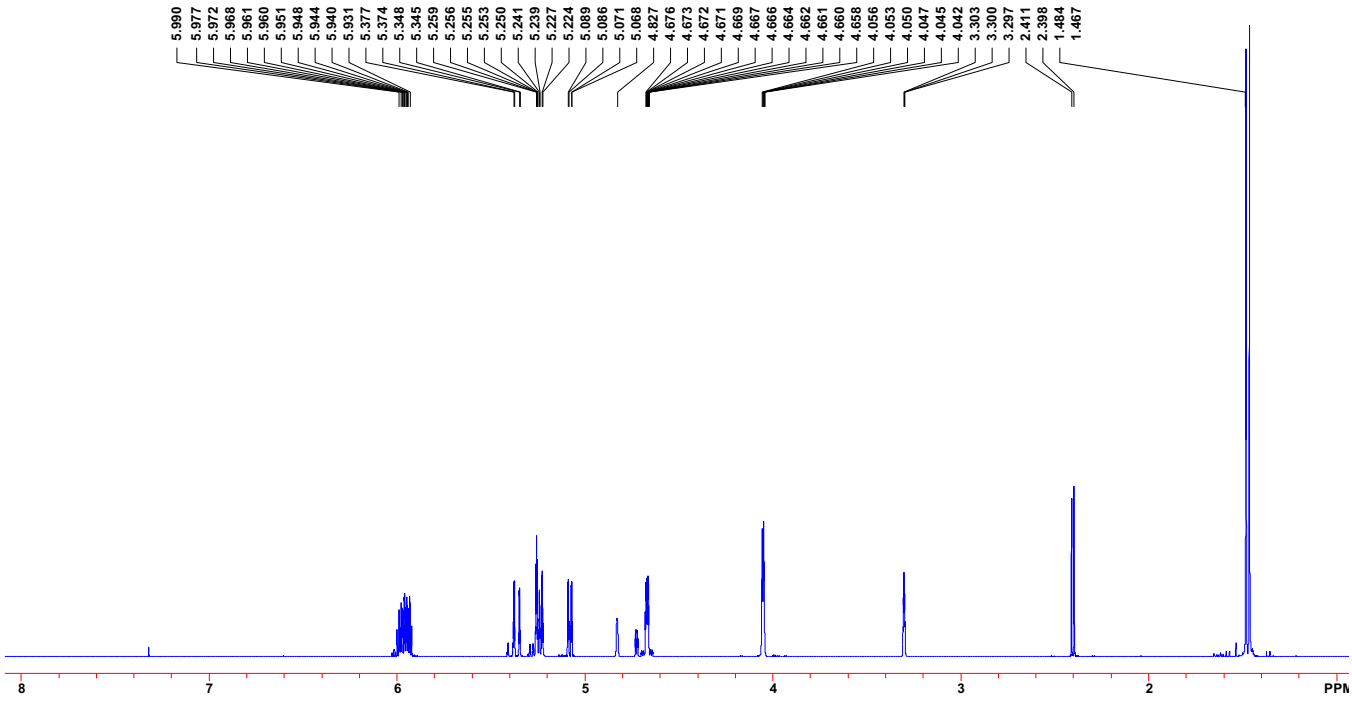

Figure S30. ^{1}H NMR spectroscopy of allyl pyruvate **8a**

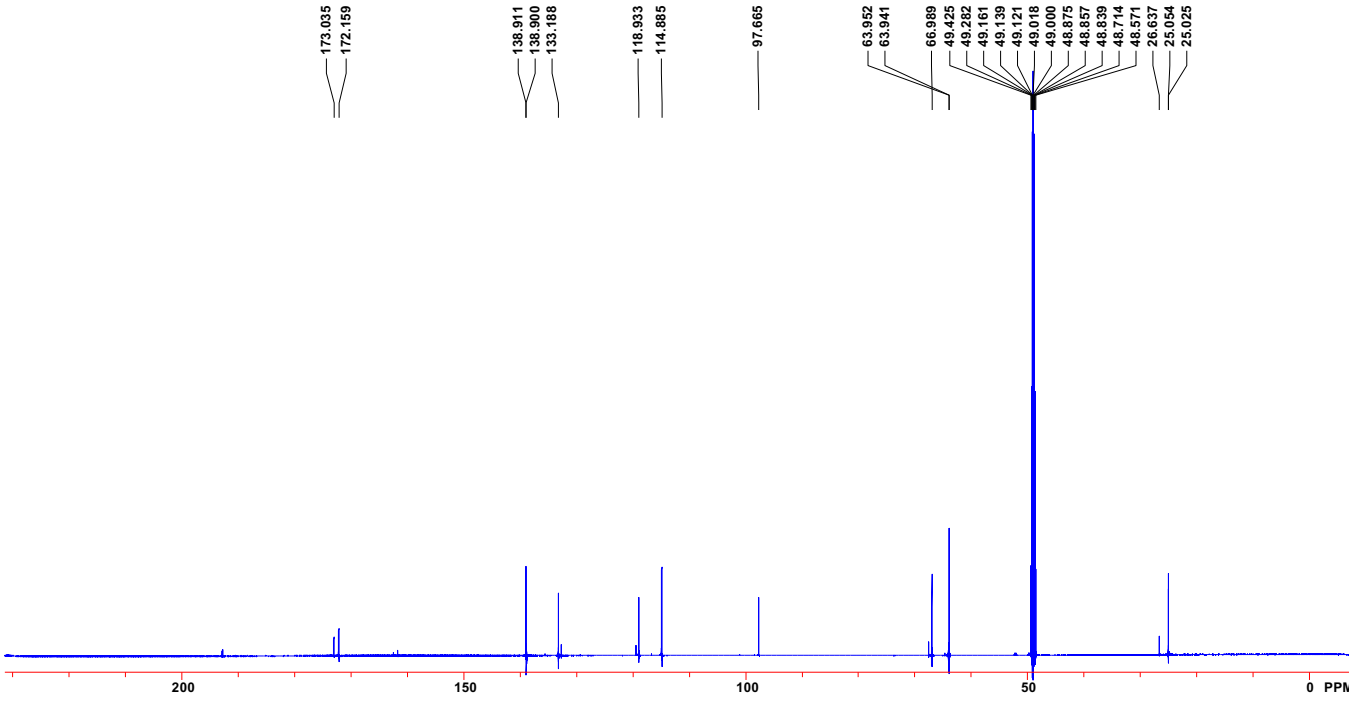

Figure S31. ^{13}C NMR spectroscopy of allyl pyruvate **8a**

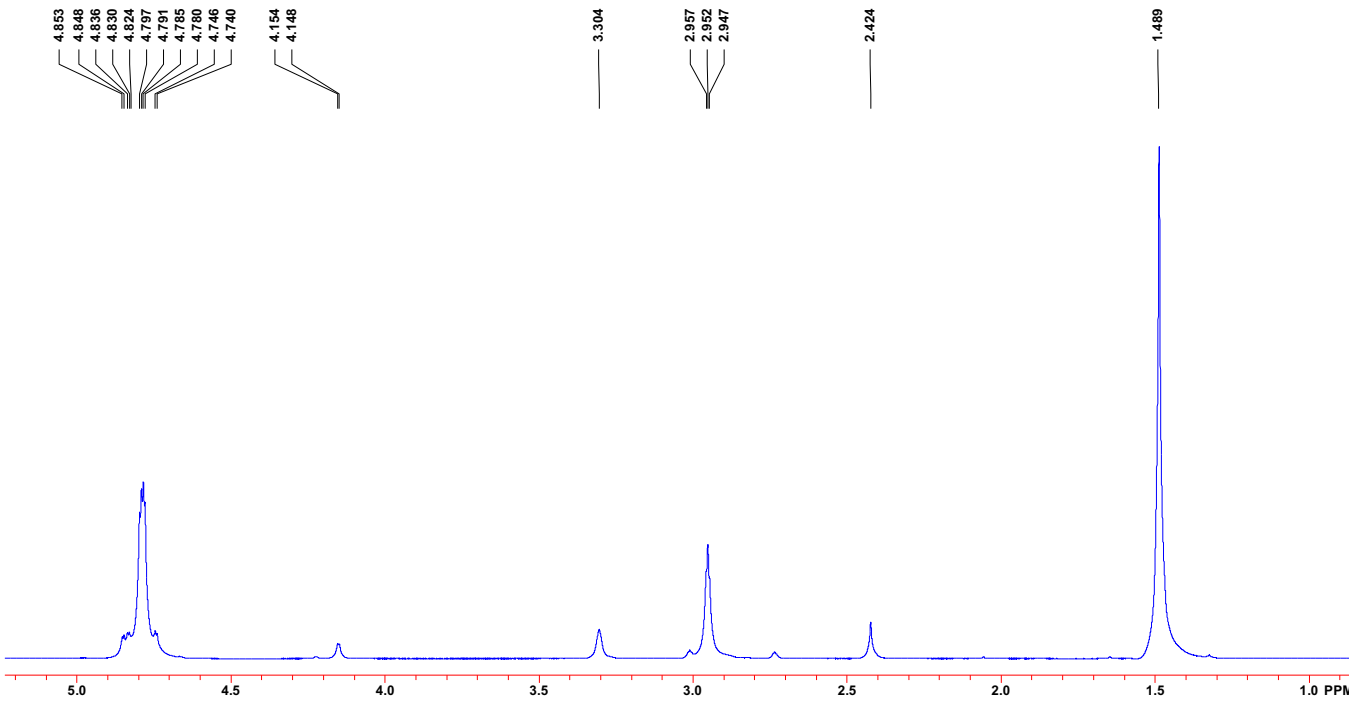

Figure S32. ^{1}H NMR spectroscopy of propargyl pyruvate **9a**

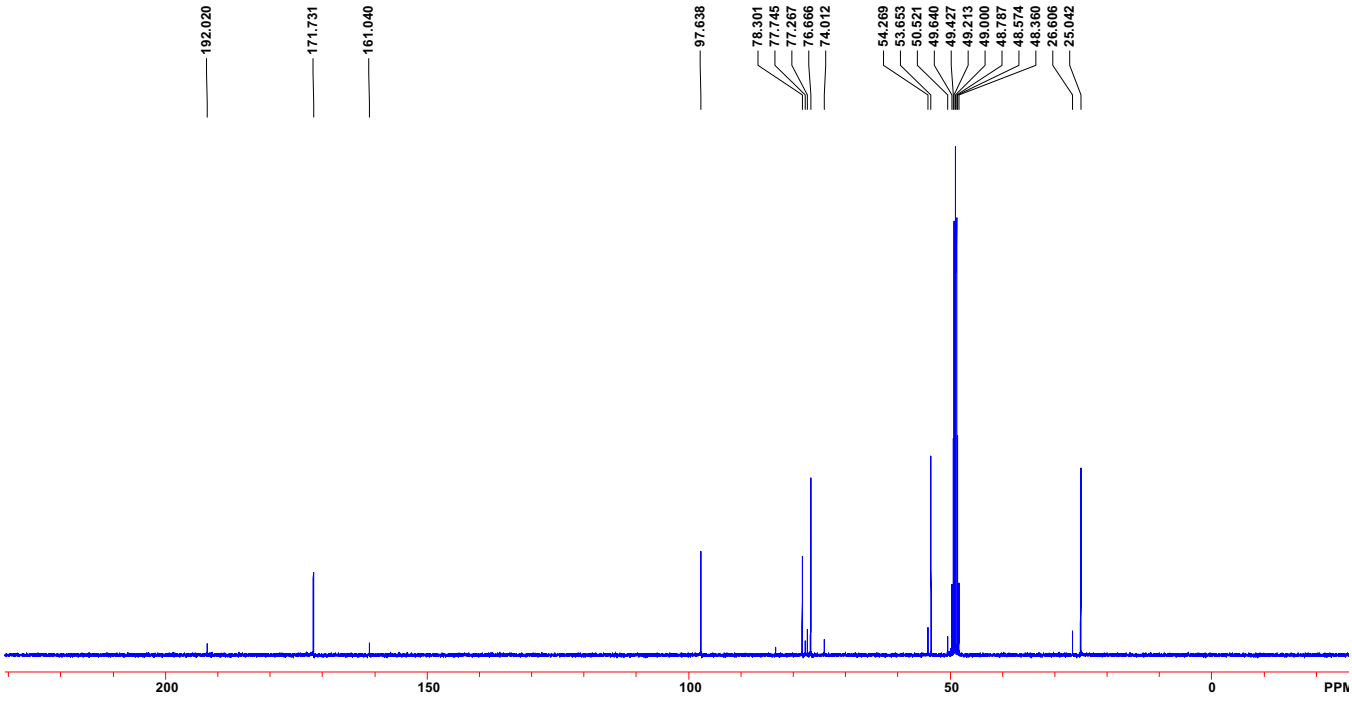

Figure S33. ^{13}C NMR spectroscopy of propargyl pyruvate **9a**

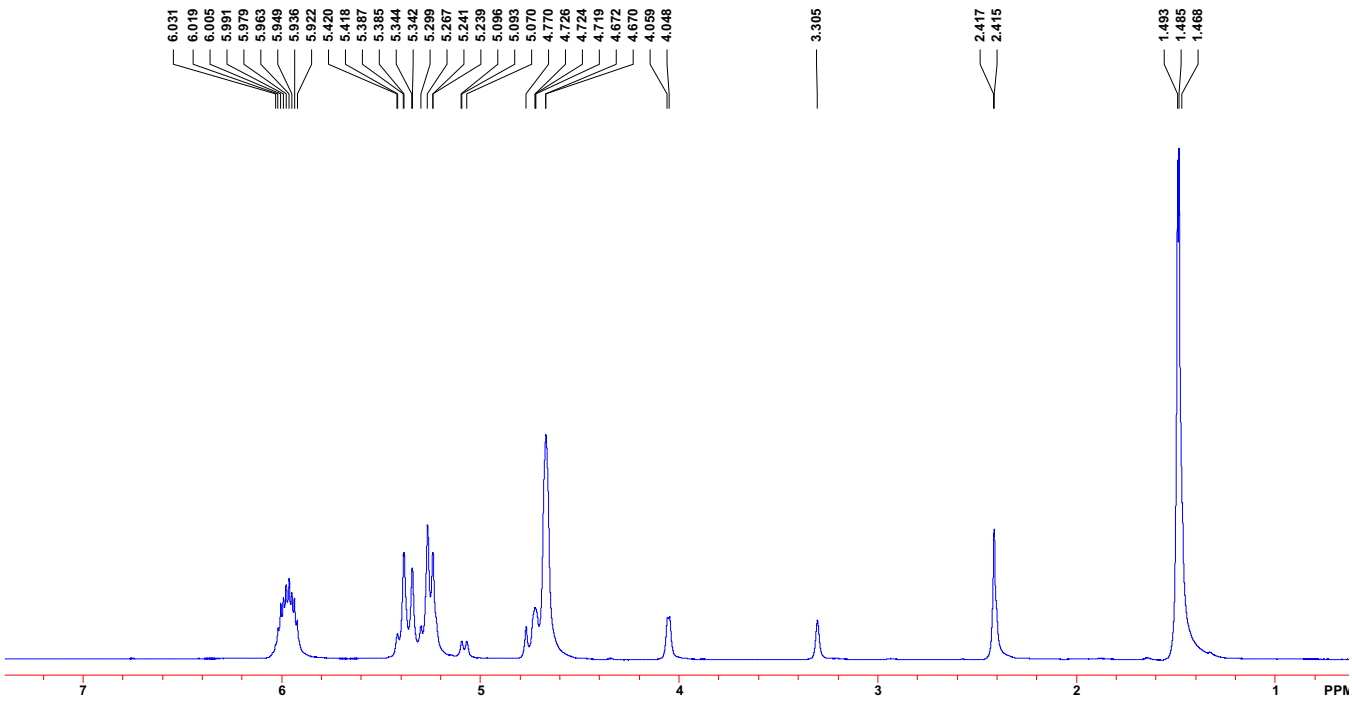

Figure S34. ^{1}H NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

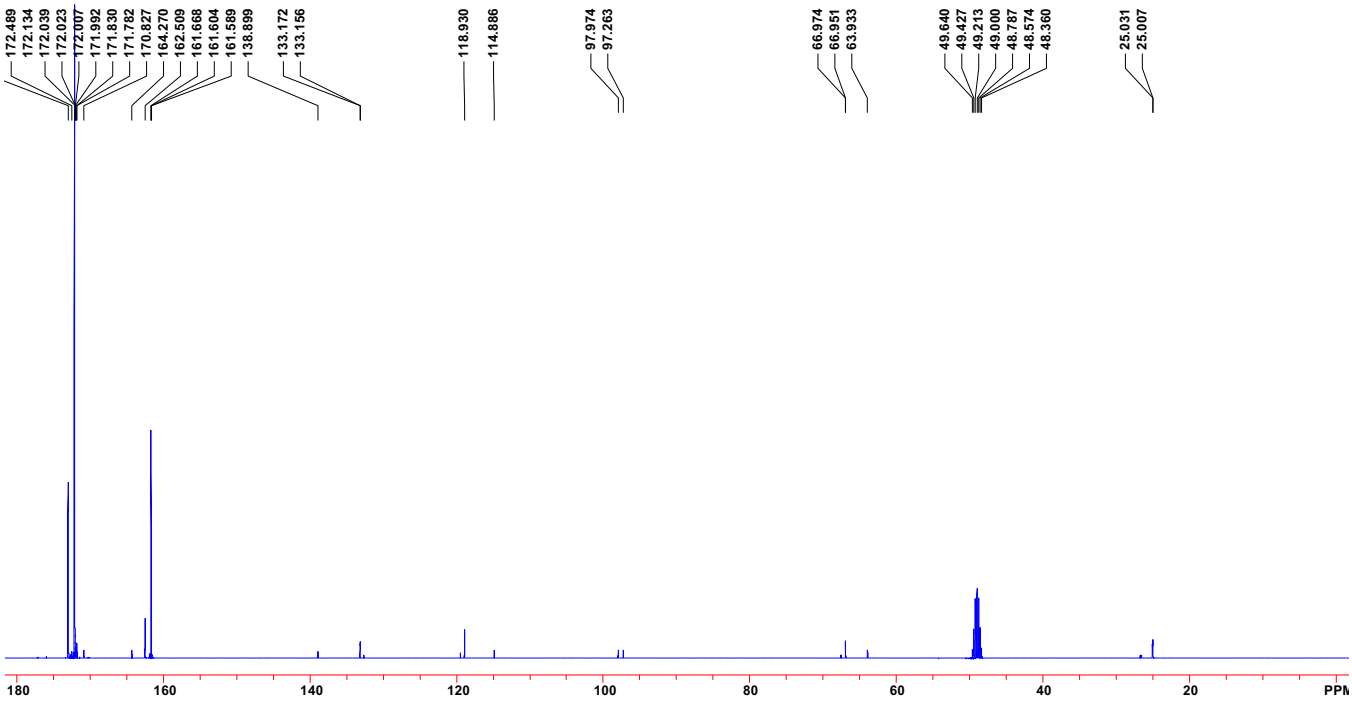

Figure S35. ^{13}C NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

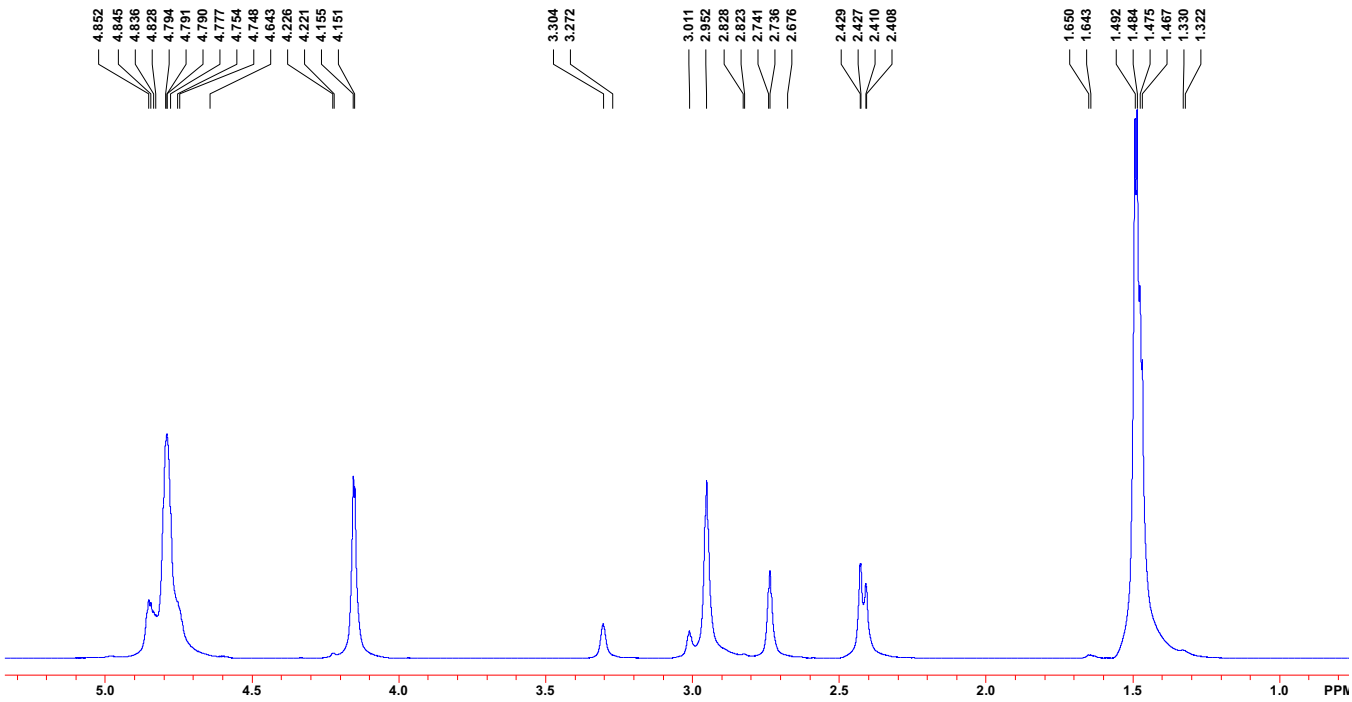

Figure S36. ^{1}H NMR spectroscopy of propargyl pyruvate-1-^{13}C **9b**

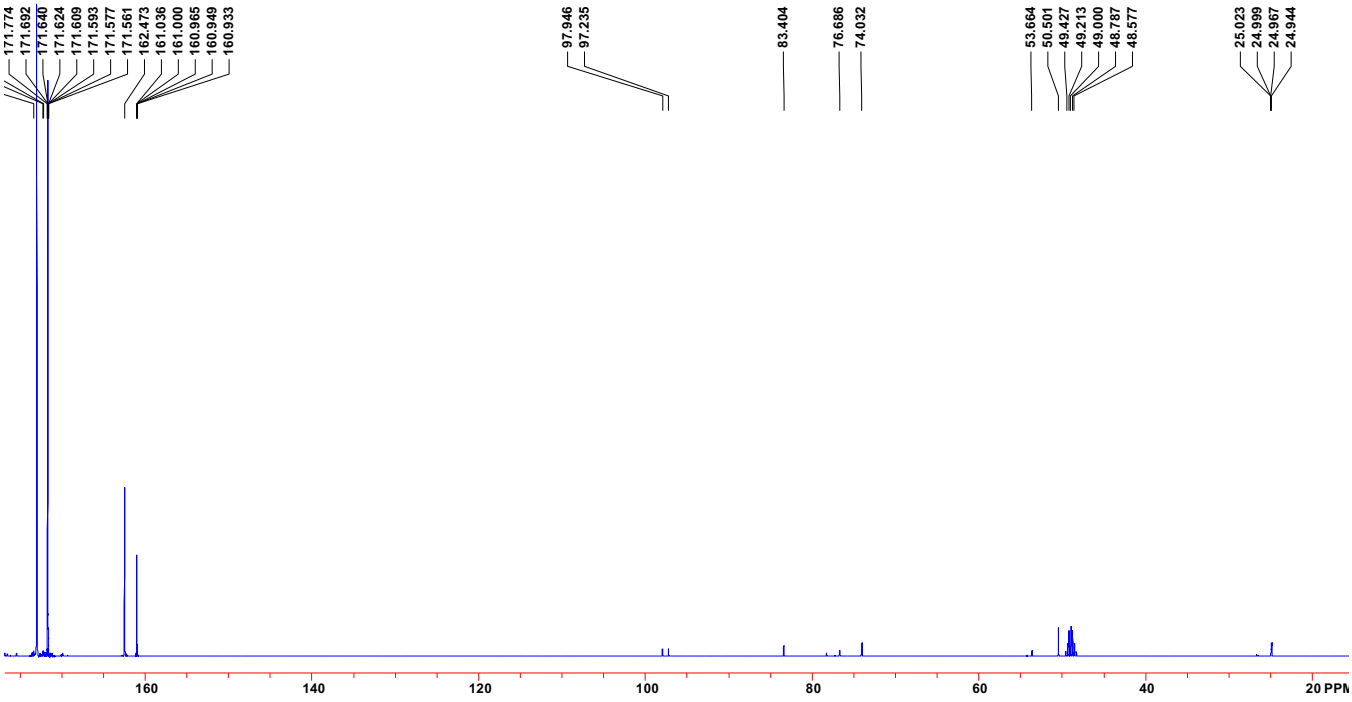

Figure S37. ^{13}C NMR spectroscopy of propargyl pyruvate-1-^{13}C **9b**

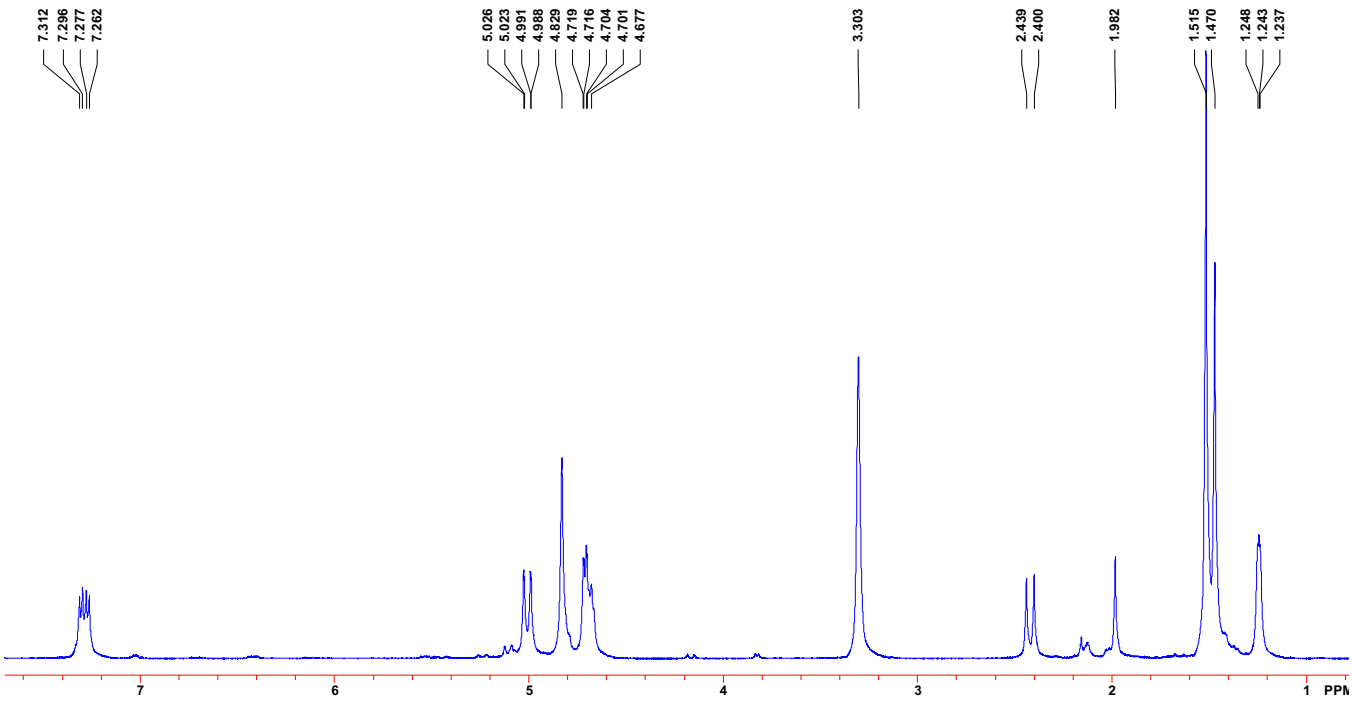

Figure S38. ^{1}H NMR spectroscopy of vinyl pyruvate **10a**

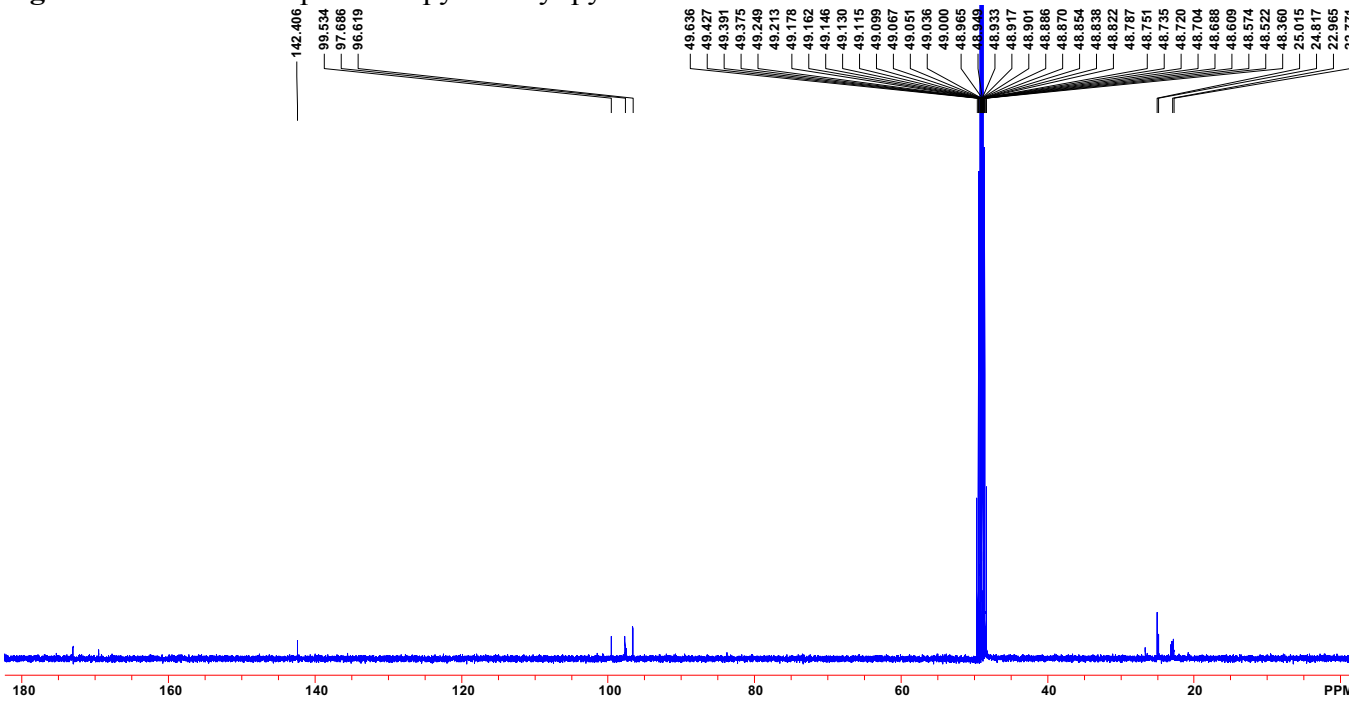

Figure S39. ^{13}C NMR spectroscopy of vinyl pyruvate **10a**

3. Additional Figures (S40-S57): ^{1}H NMR and ^{13}C NMR spectra of neat acetates and pyruvates.

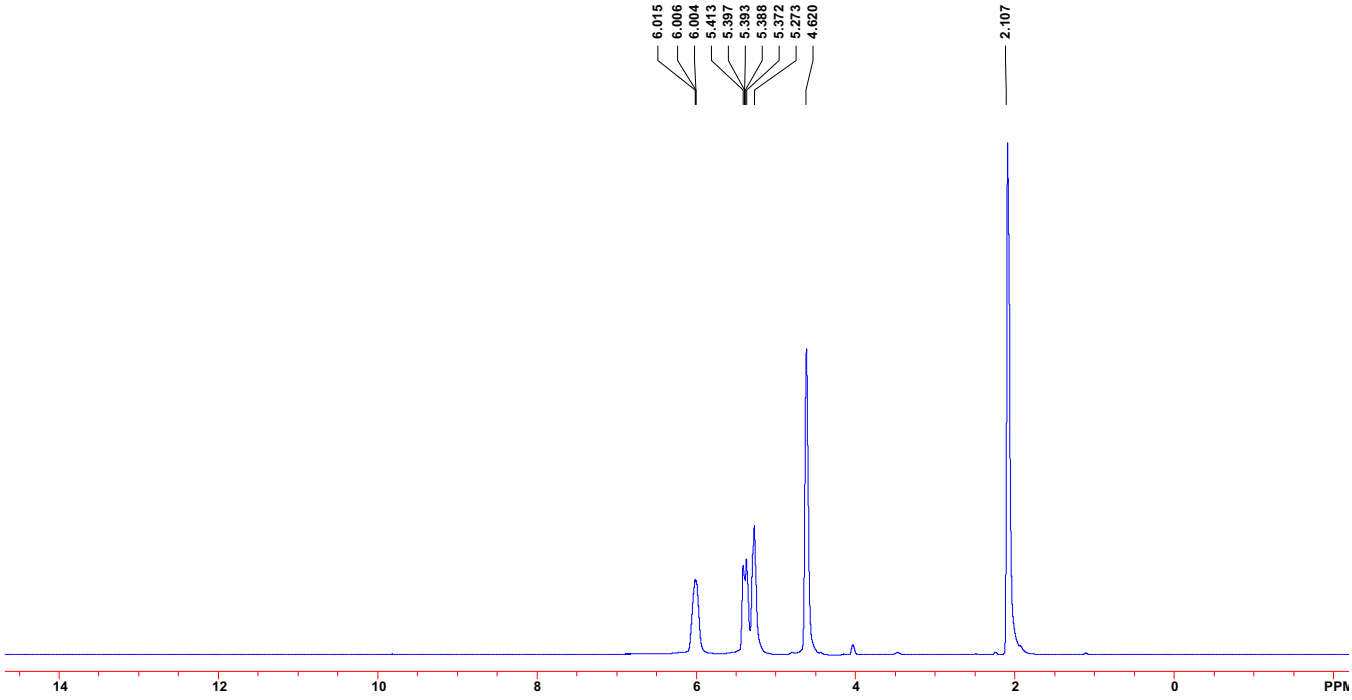

Figure S40. ^{1}H NMR spectroscopy of allyl acetate **5a**

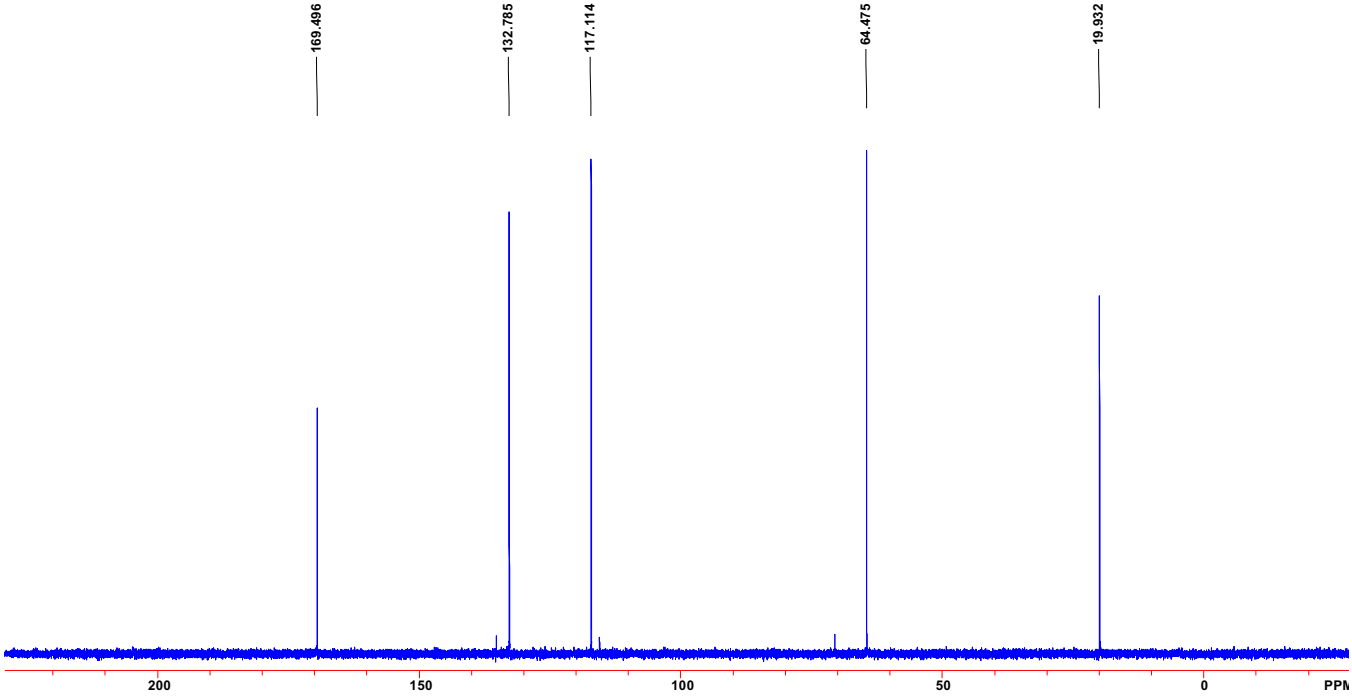

Figure S41. ^{13}C NMR spectroscopy of allyl acetate **5a**

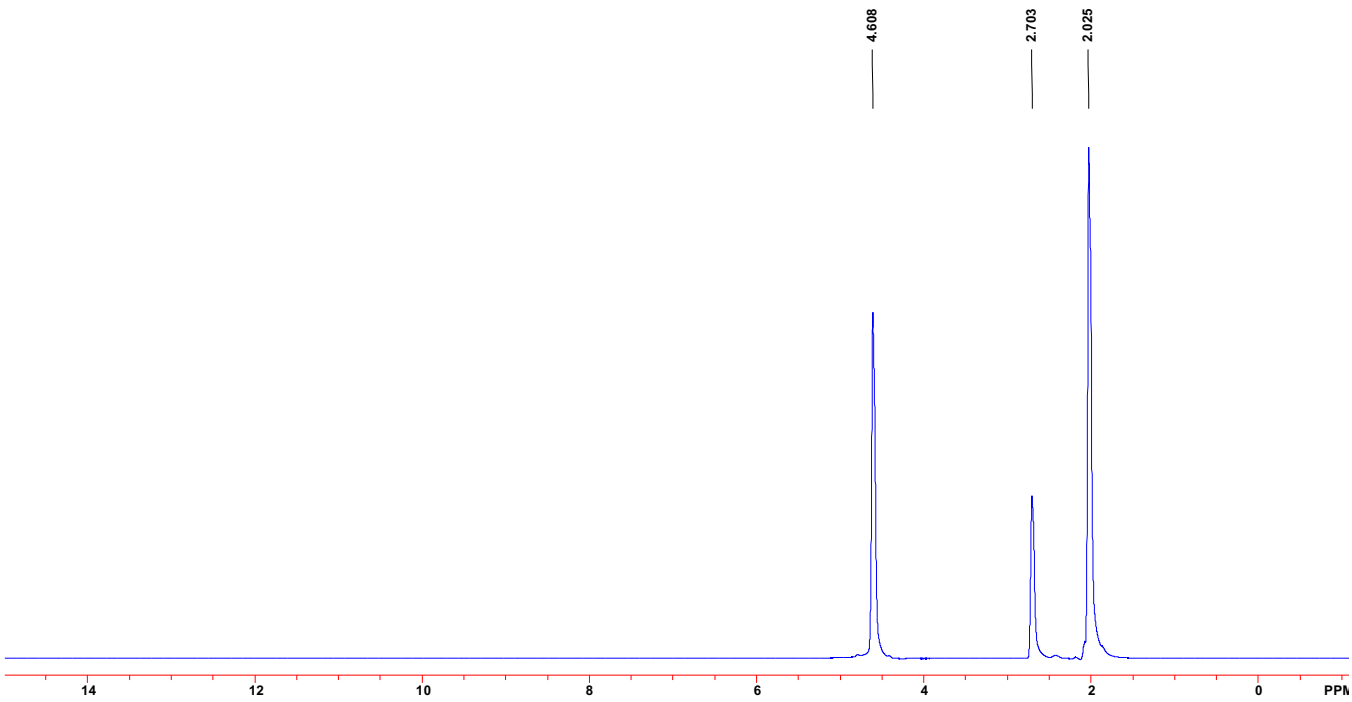

Figure S42. ^{1}H NMR spectroscopy of propargyl acetate **6a**

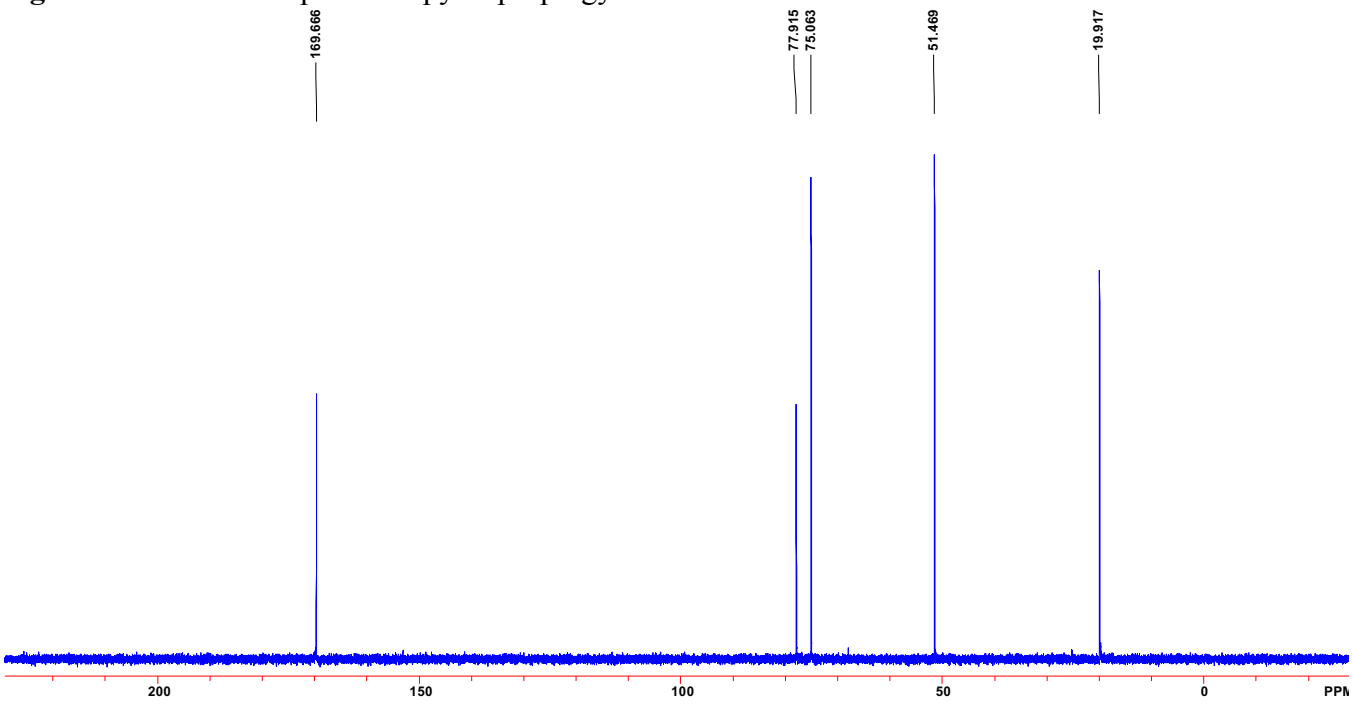

Figure S43. ^{13}C NMR spectroscopy of propargyl acetate **6a**

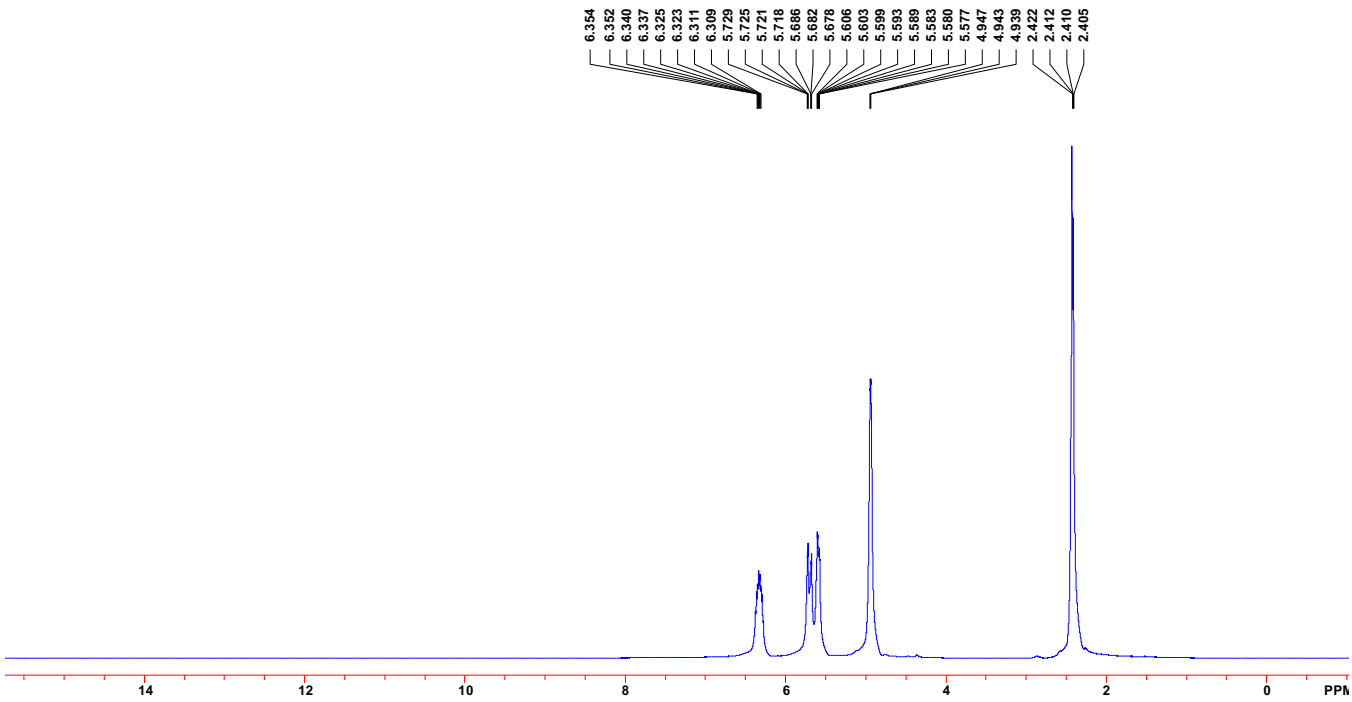

Figure S44. ^{1}H NMR spectroscopy of allyl acetate-1-^{13}C **5b**

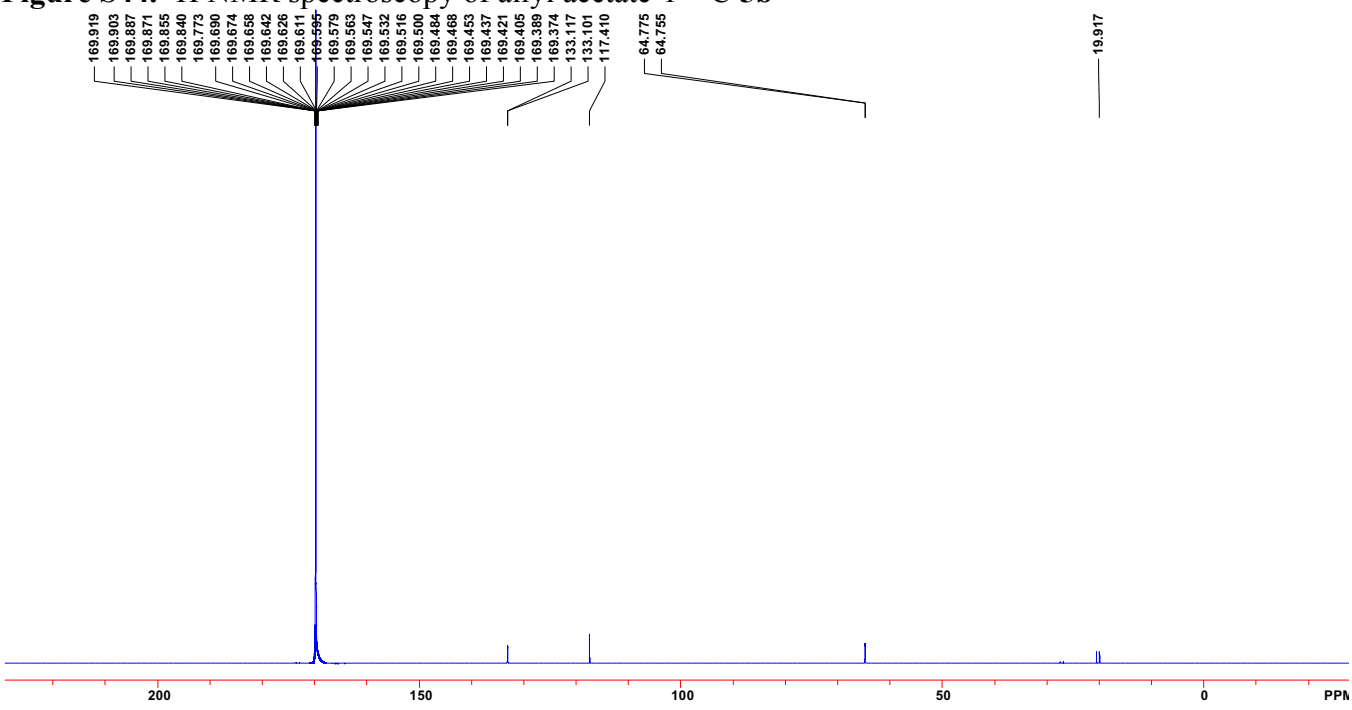

Figure S45. ^{13}C NMR spectroscopy of allyl acetate-1-^{13}C **5b**

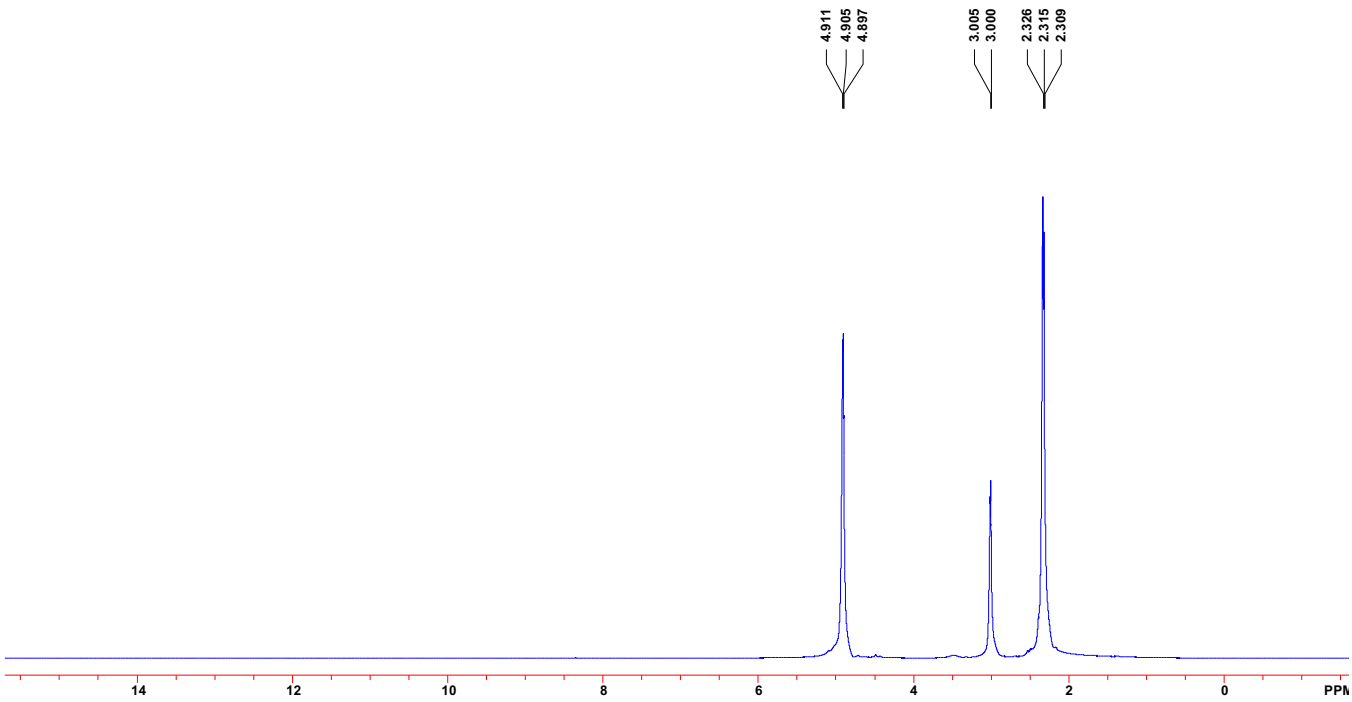

Figure S46. ^{1}H NMR spectroscopy of propargyl acetate-1-^{13}C **6b**

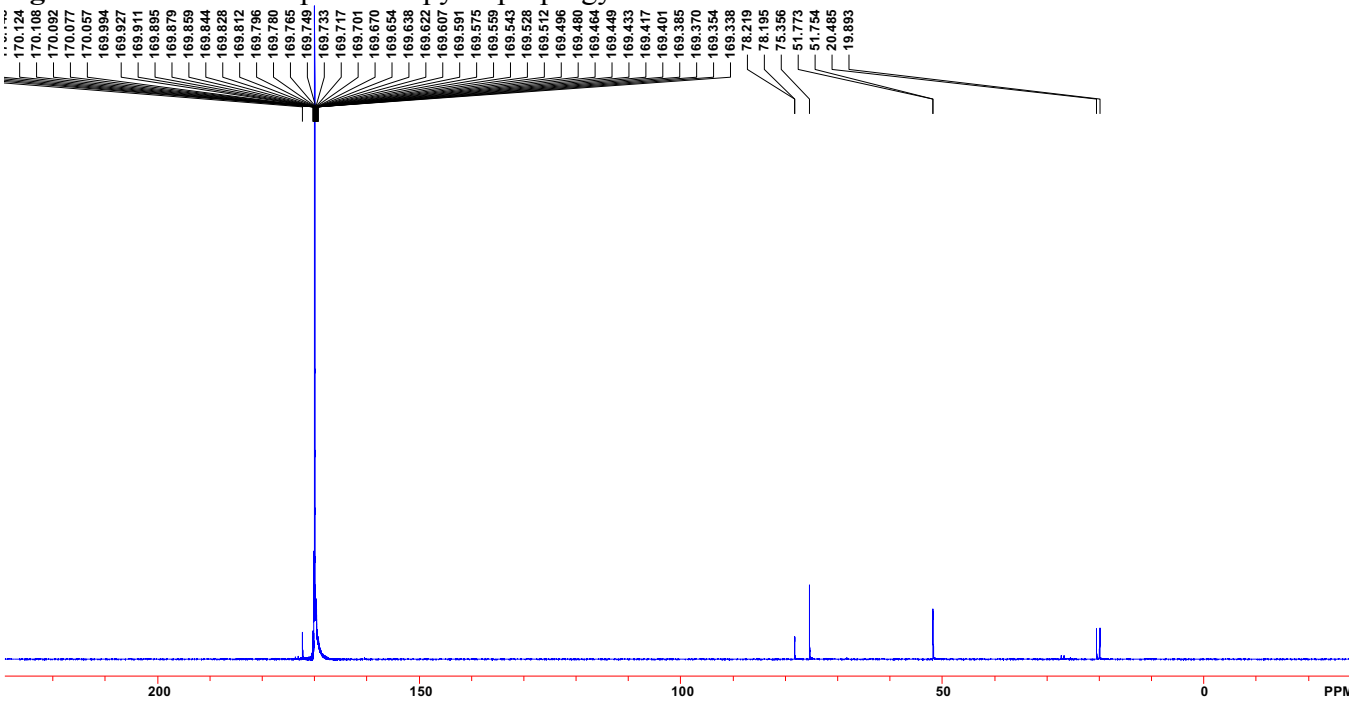

Figure S47. ^{13}C NMR spectroscopy of propargyl acetate-1-^{13}C **6b**

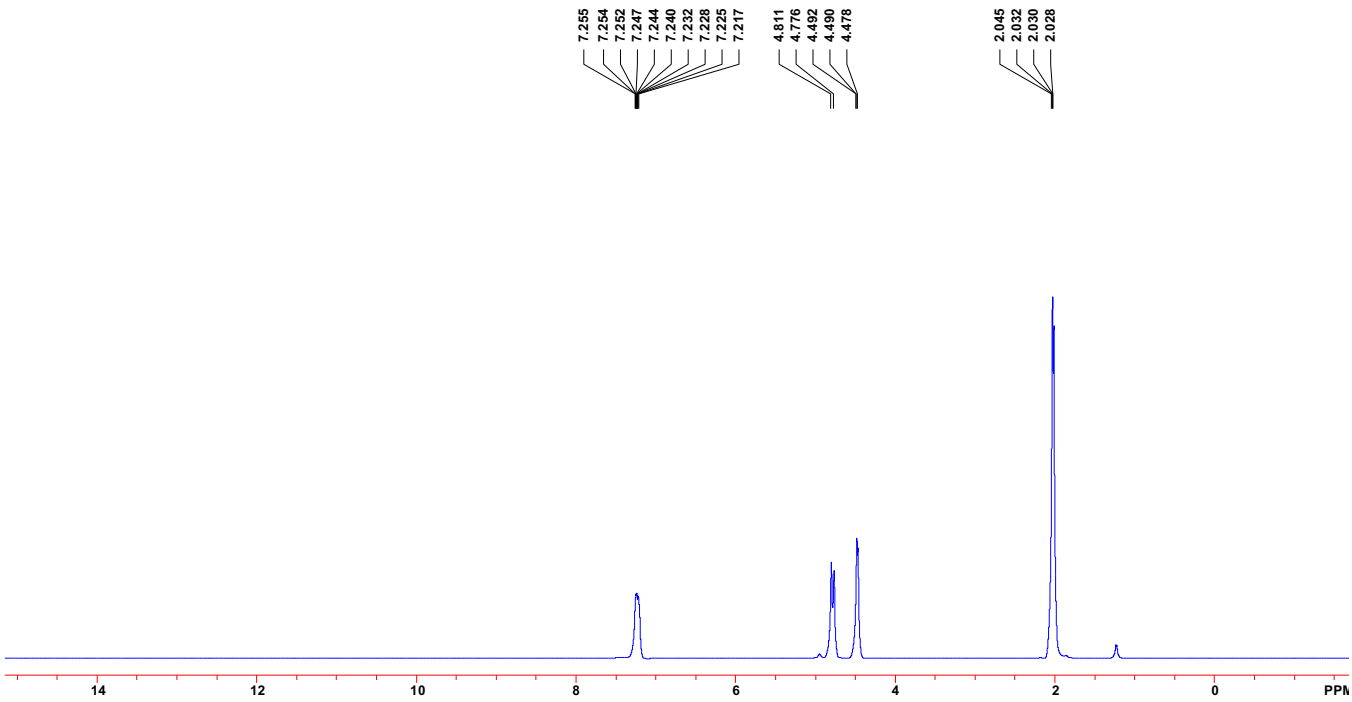

Figure S48. ^{1}H NMR spectroscopy of vinyl acetate-1-^{13}C **7b**

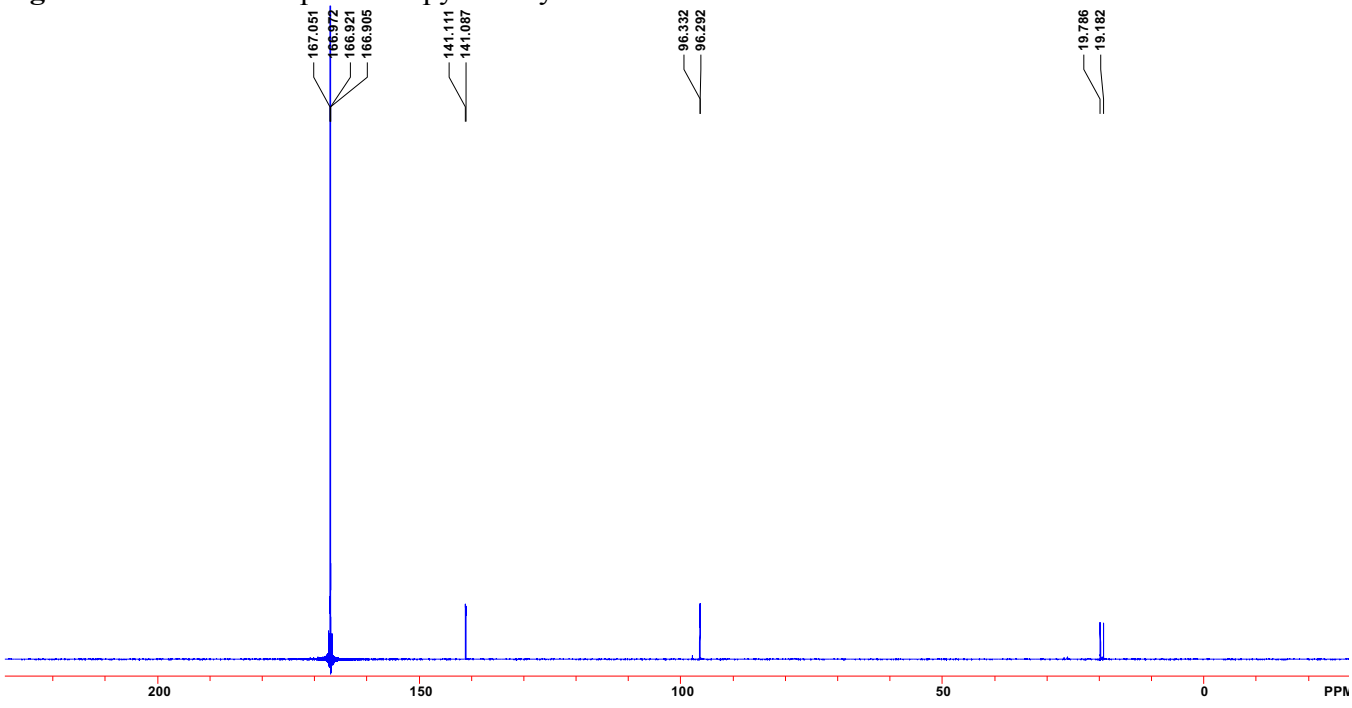

Figure S49. ^{13}C NMR spectroscopy of vinyl acetate-1-^{13}C **7b**

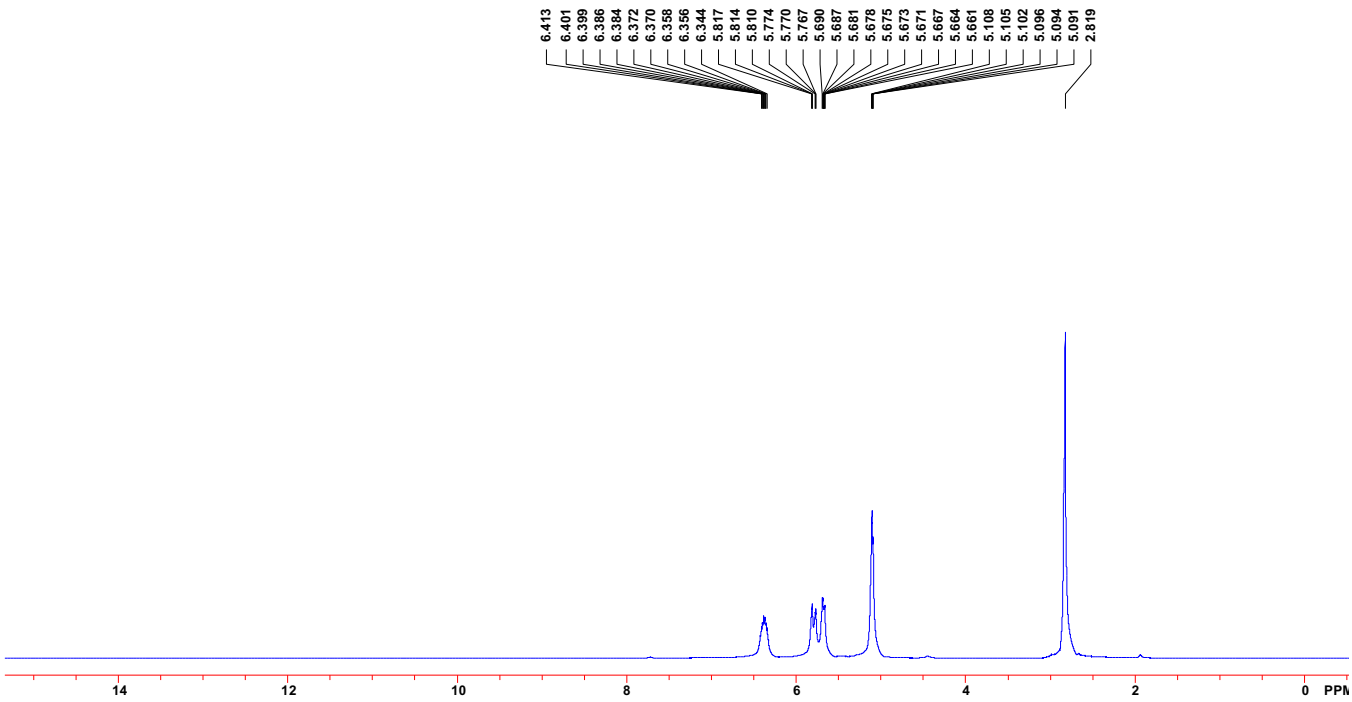

Figure S50. ^{1}H NMR spectroscopy of allyl pyruvate **8a**

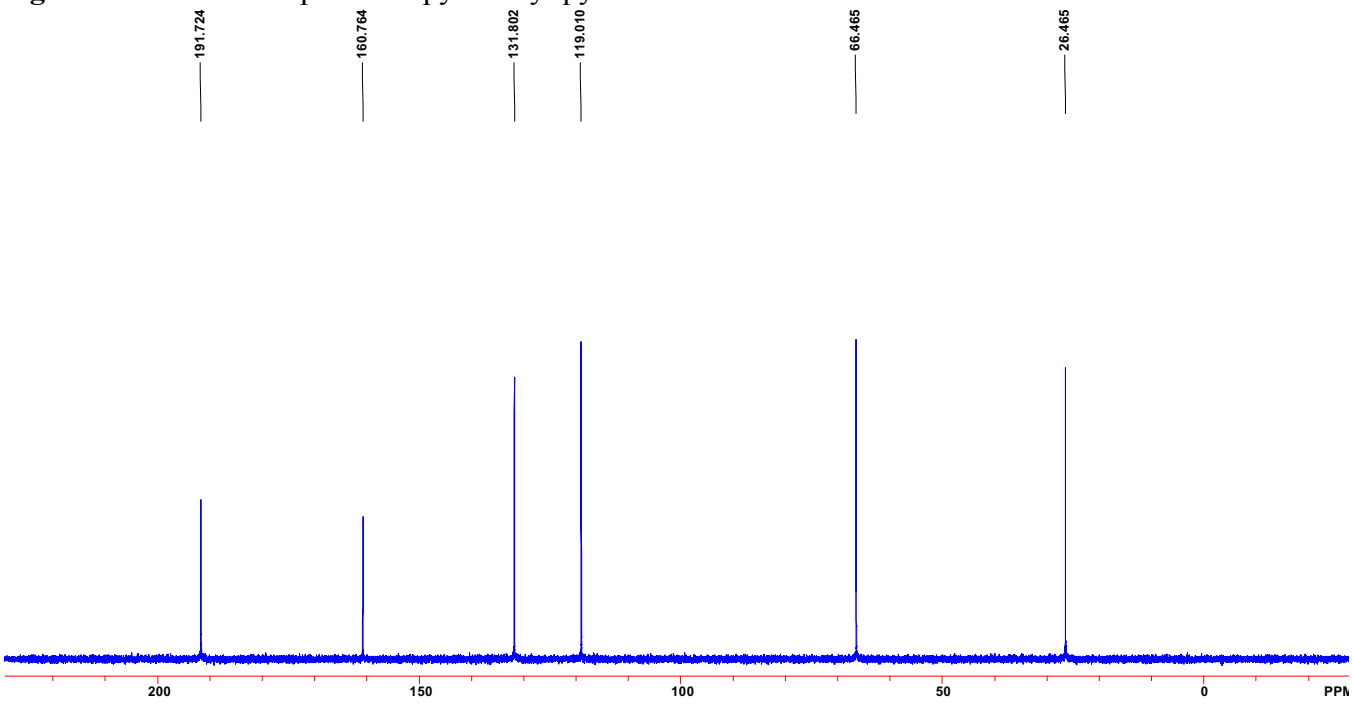

Figure S51. ^{13}C NMR spectroscopy of allyl pyruvate **8a**

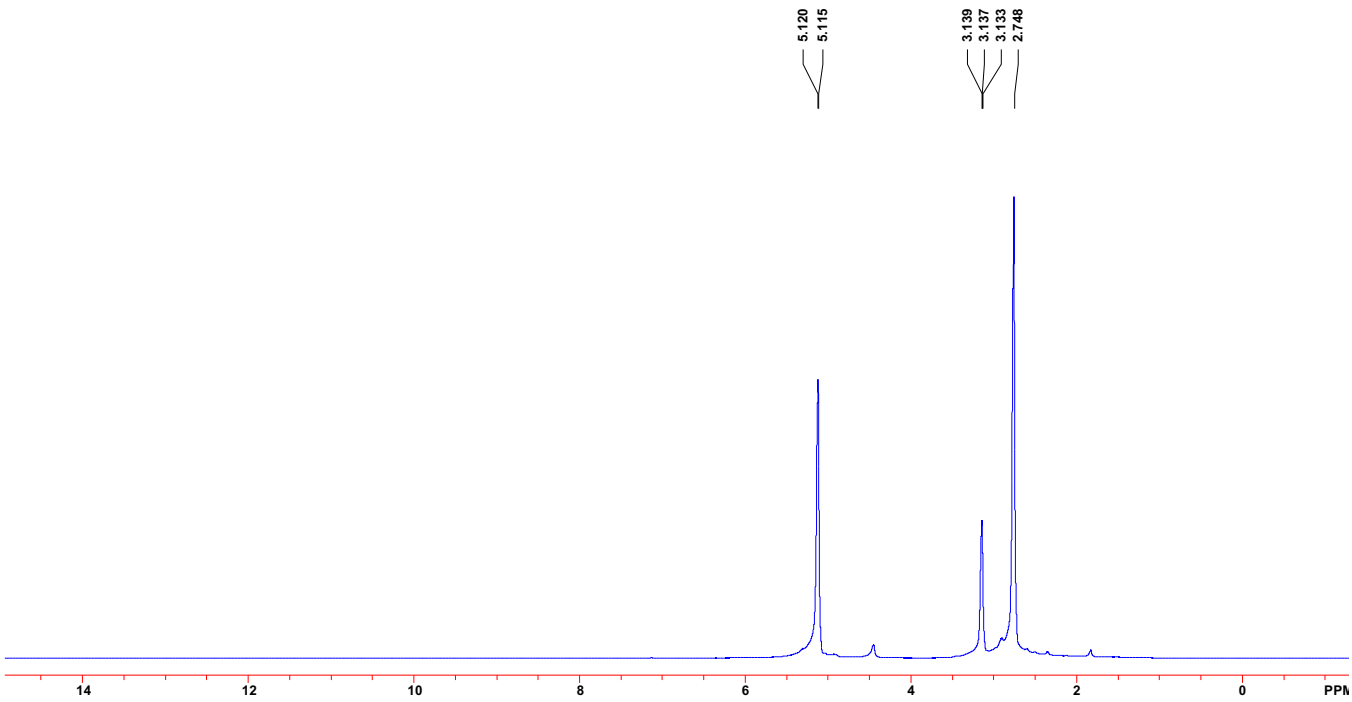

Figure S52. ^{1}H NMR spectroscopy of propargyl pyruvate **9a**

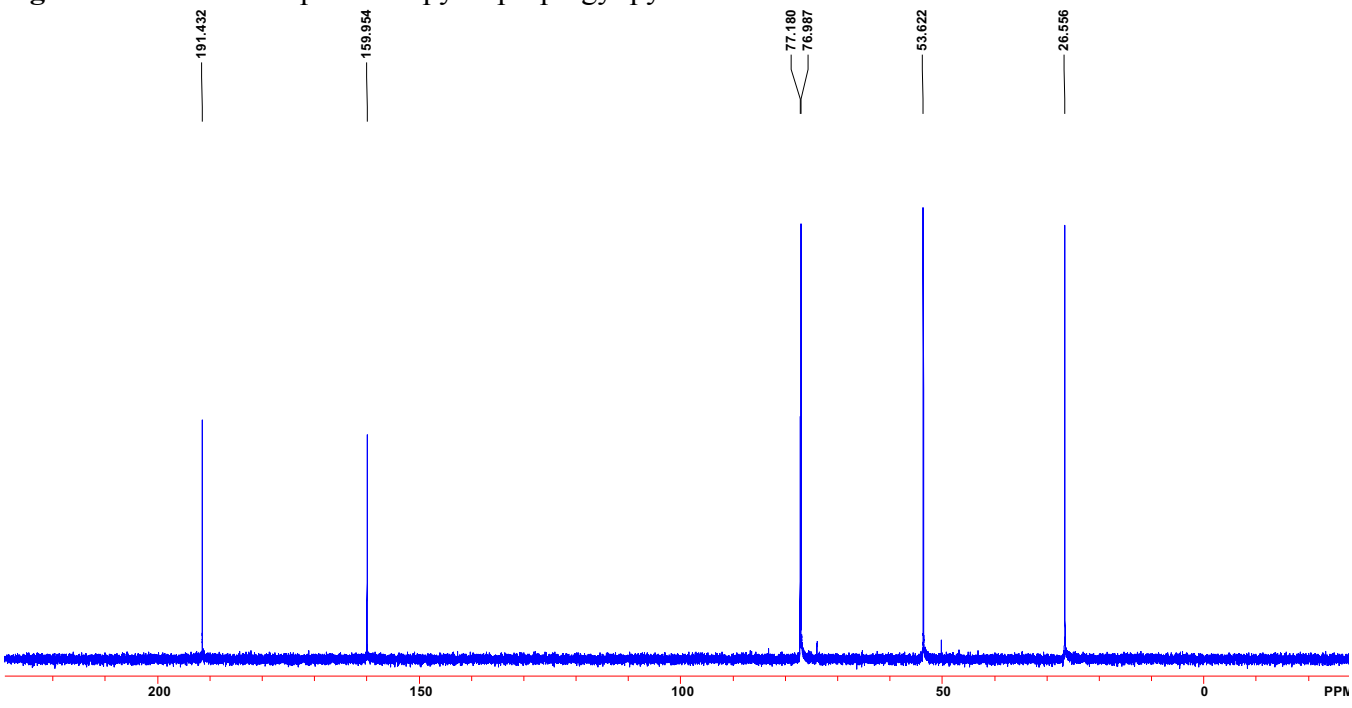

Figure S53. ^{13}C NMR spectroscopy of propargyl pyruvate **9a**

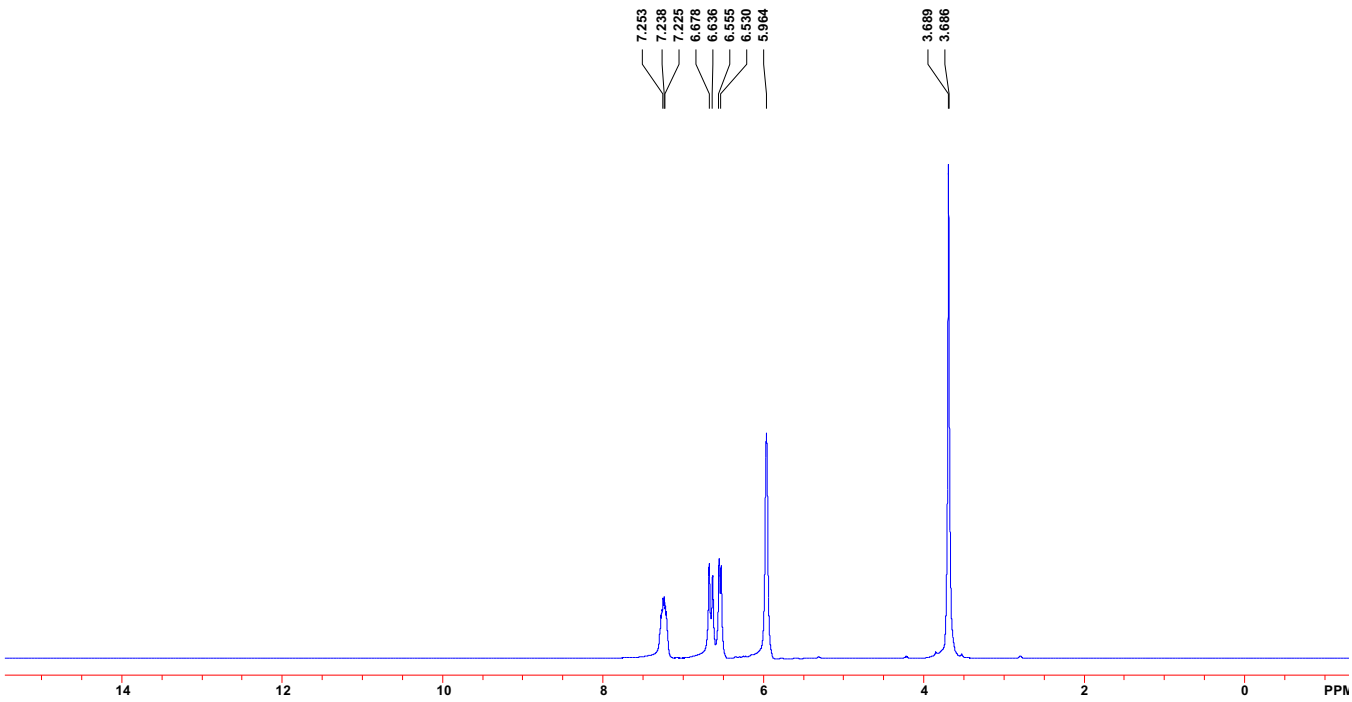

Figure S54. ^{1}H NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

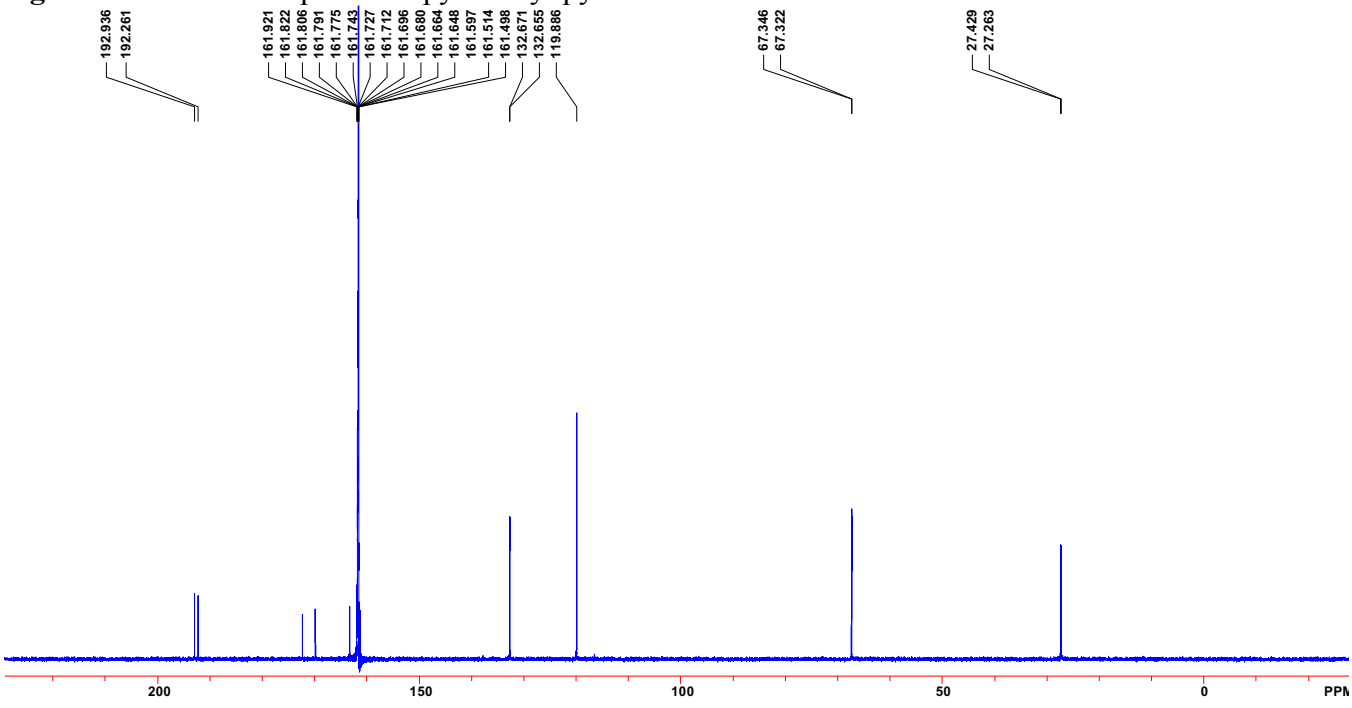

Figure S55. ^{13}C NMR spectroscopy of allyl pyruvate-1-^{13}C **8b**

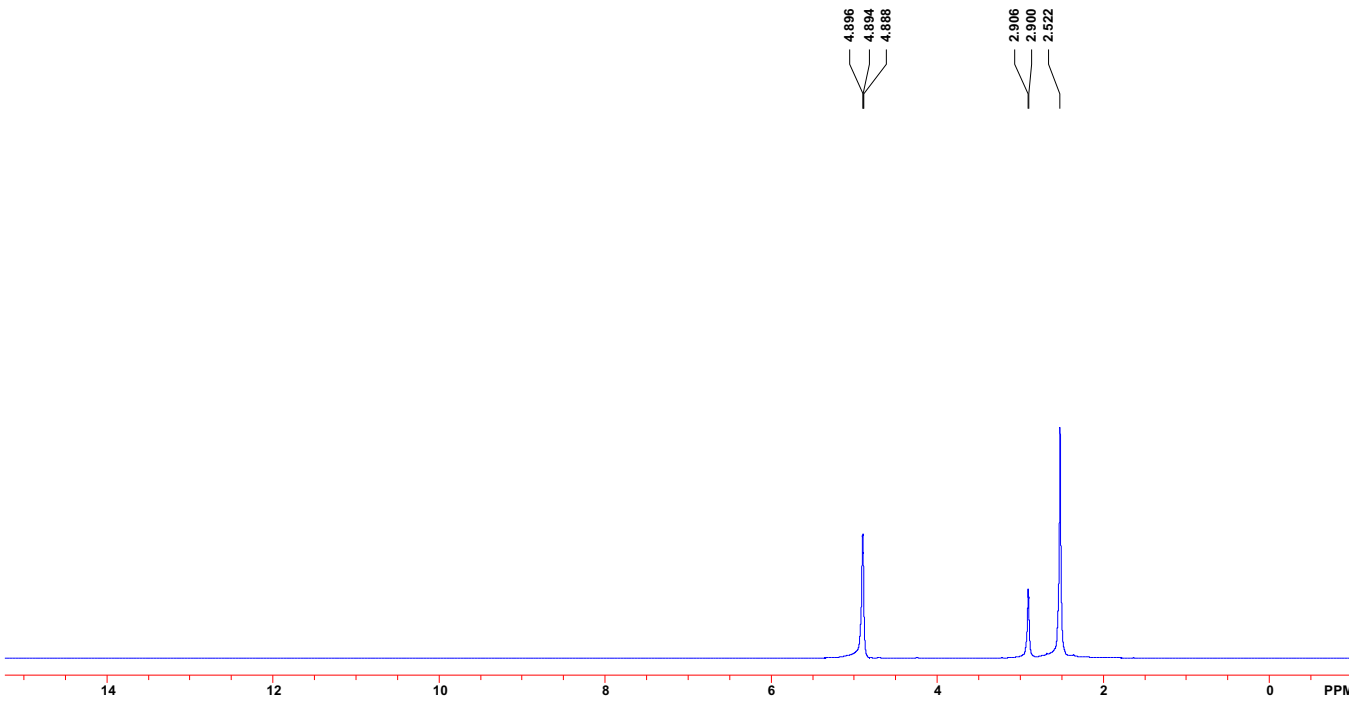

Figure S56. ^{1}H NMR spectroscopy of propargyl pyruvate-1-^{13}C **9b**

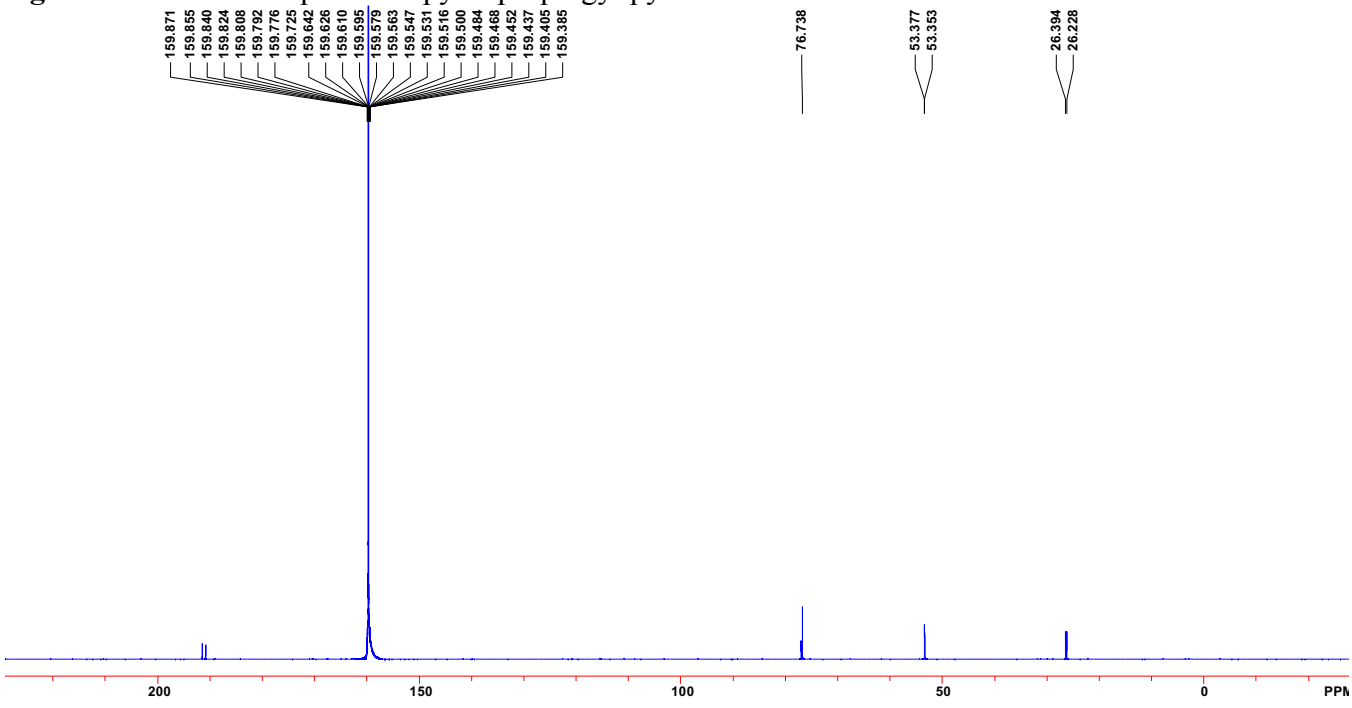

Figure S57. ^{13}C NMR spectroscopy of propargyl pyruvate-1-^{13}C **9b**