Supporting information for:

Direct formation of Au(III) acetate, alkoxylato and alkynyl functionalities via halide free tricationic Au(III) precursors

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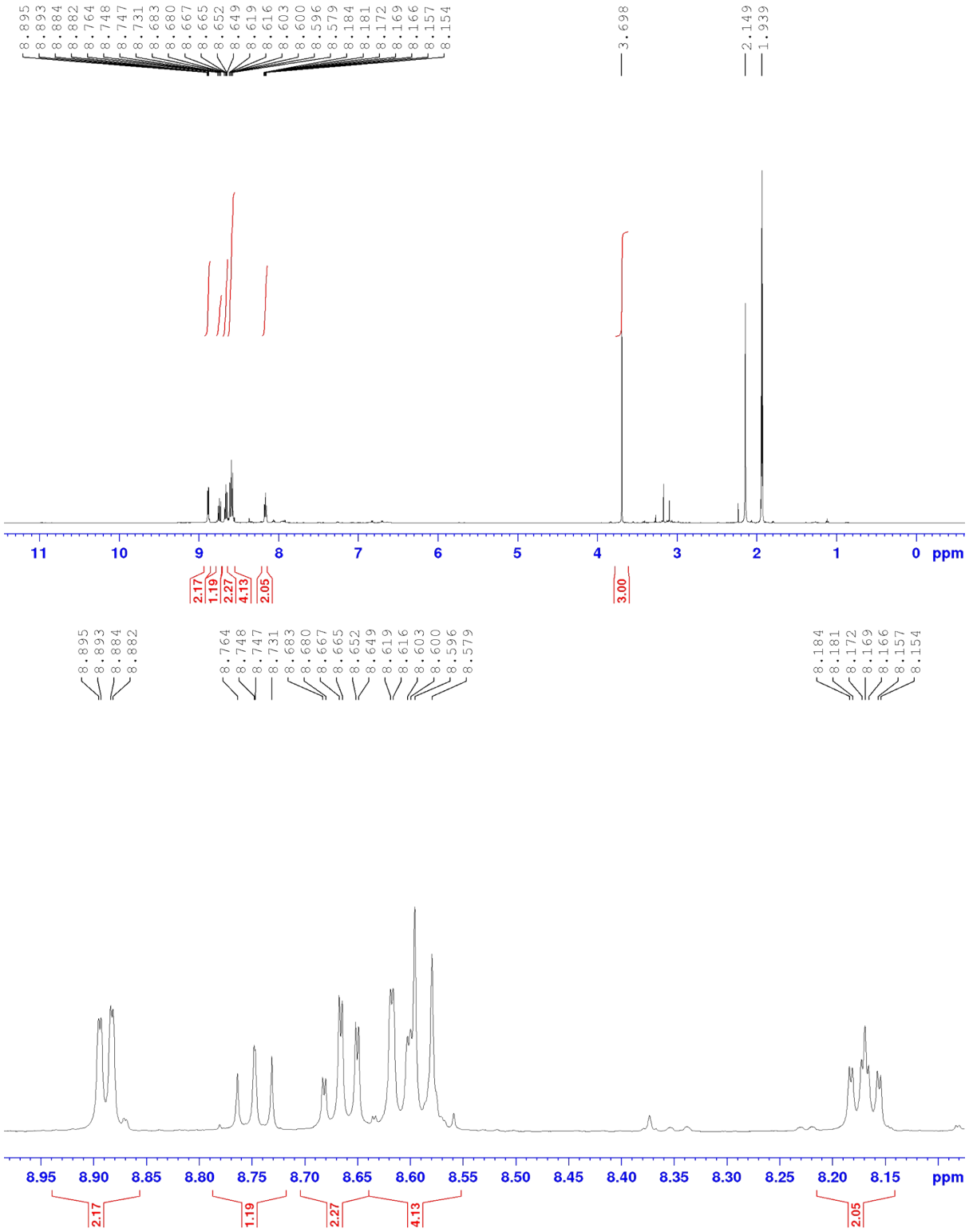
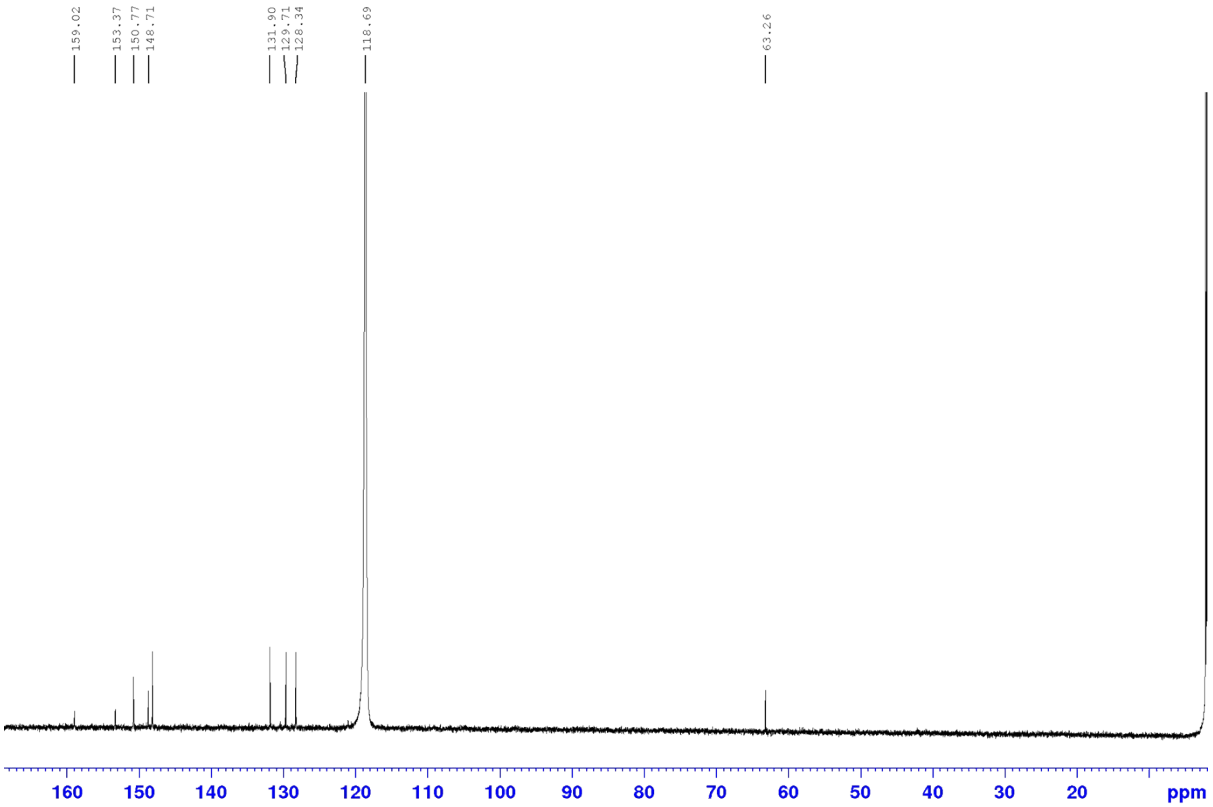
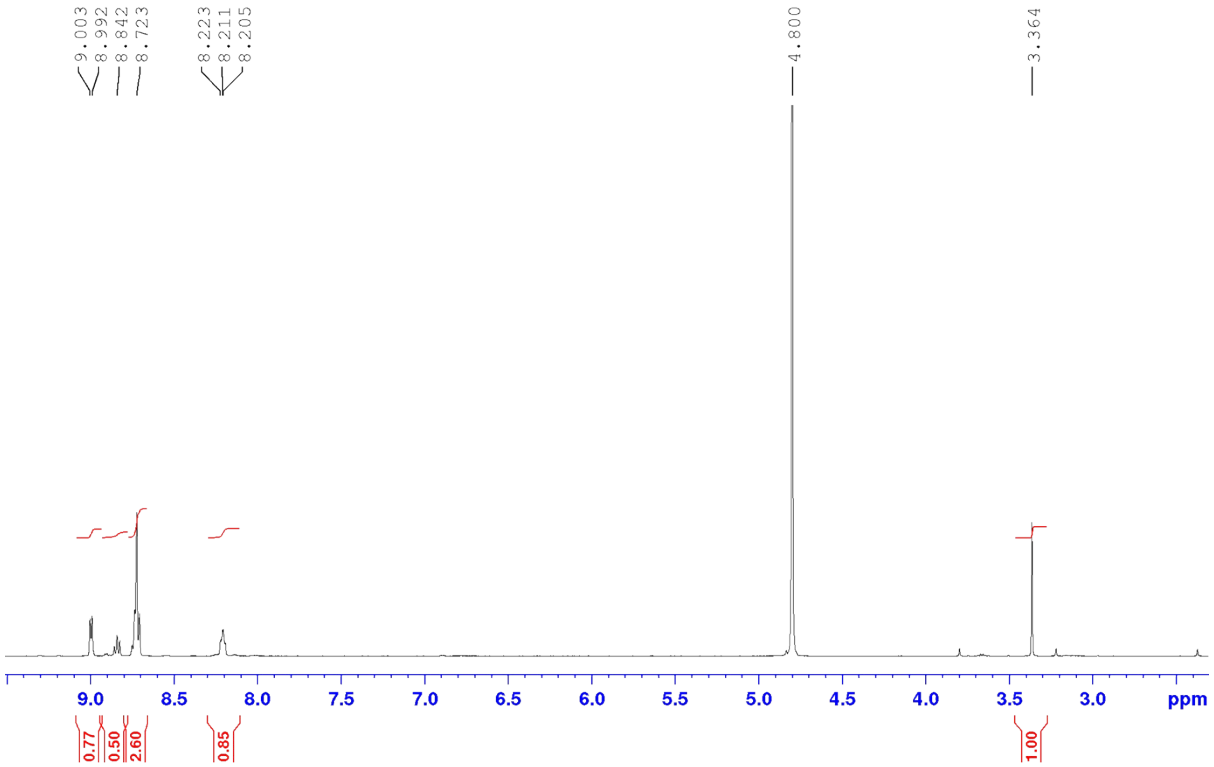
^{1}H NMR spectrum of compound **13** (CD_3CN; 500 MHz)



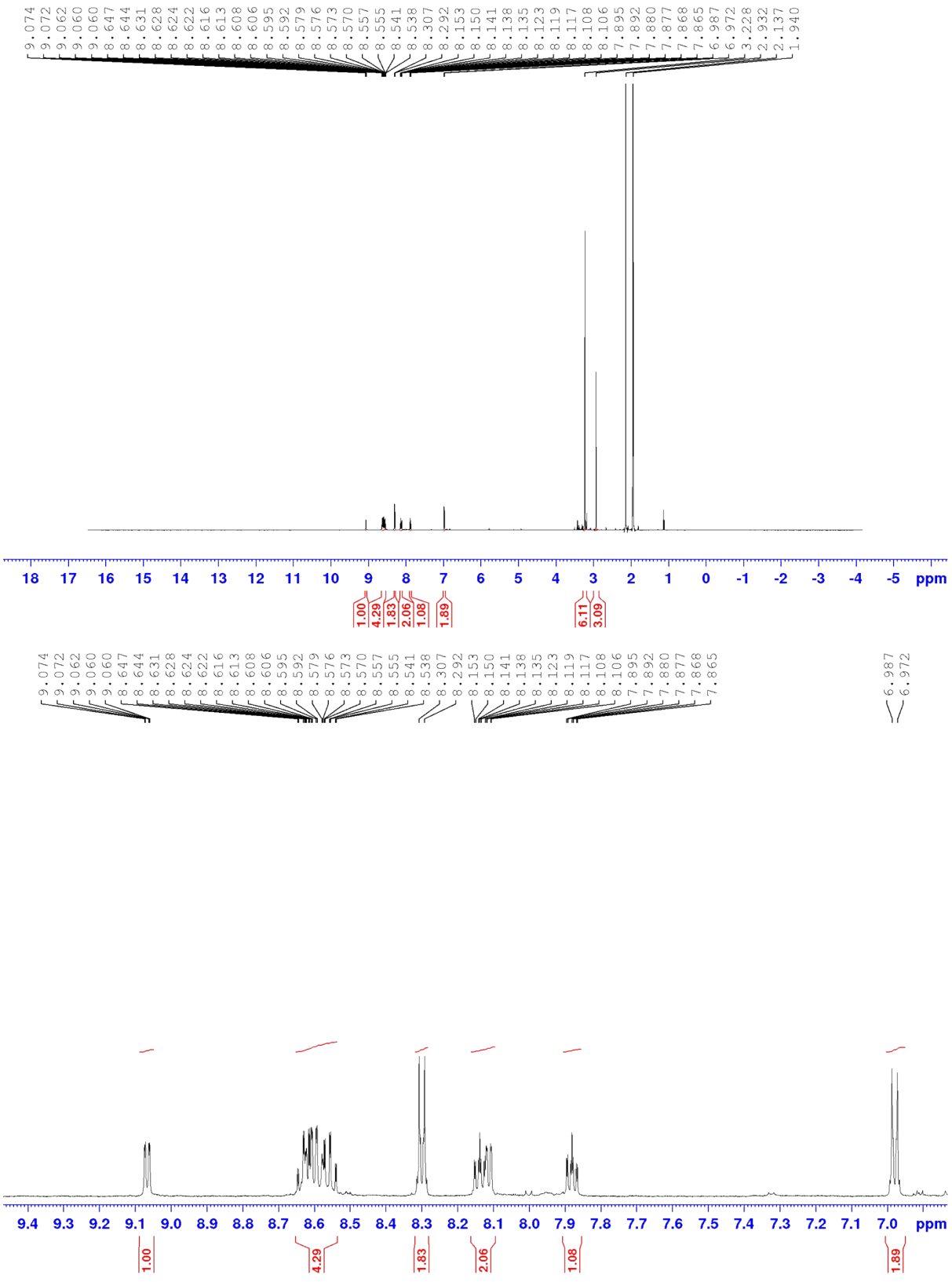
^{13}C NMR spectrum of compound **13** (CD_3CN; 125 MHz)



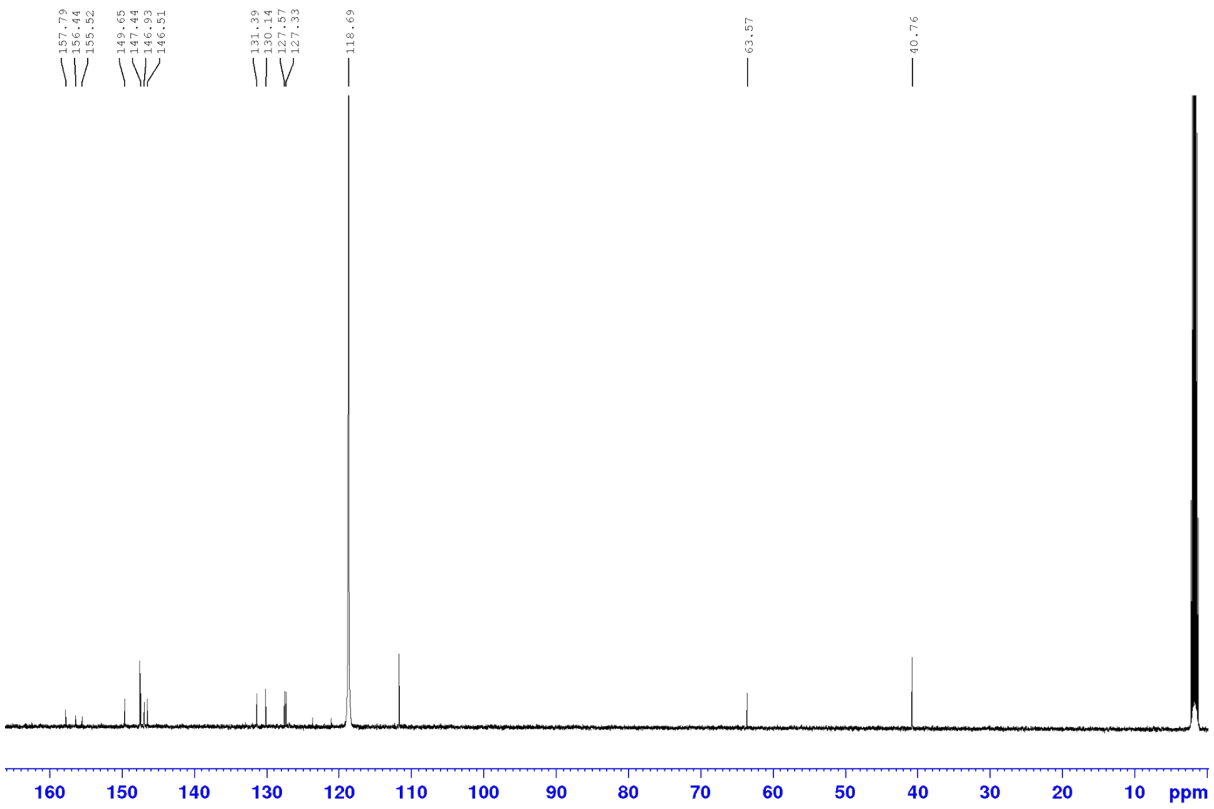
^{1}H NMR spectrum showing the formation of compound **17** upon stirring of **13** in D_2O for 2 days (D_2O; 500 MHz)



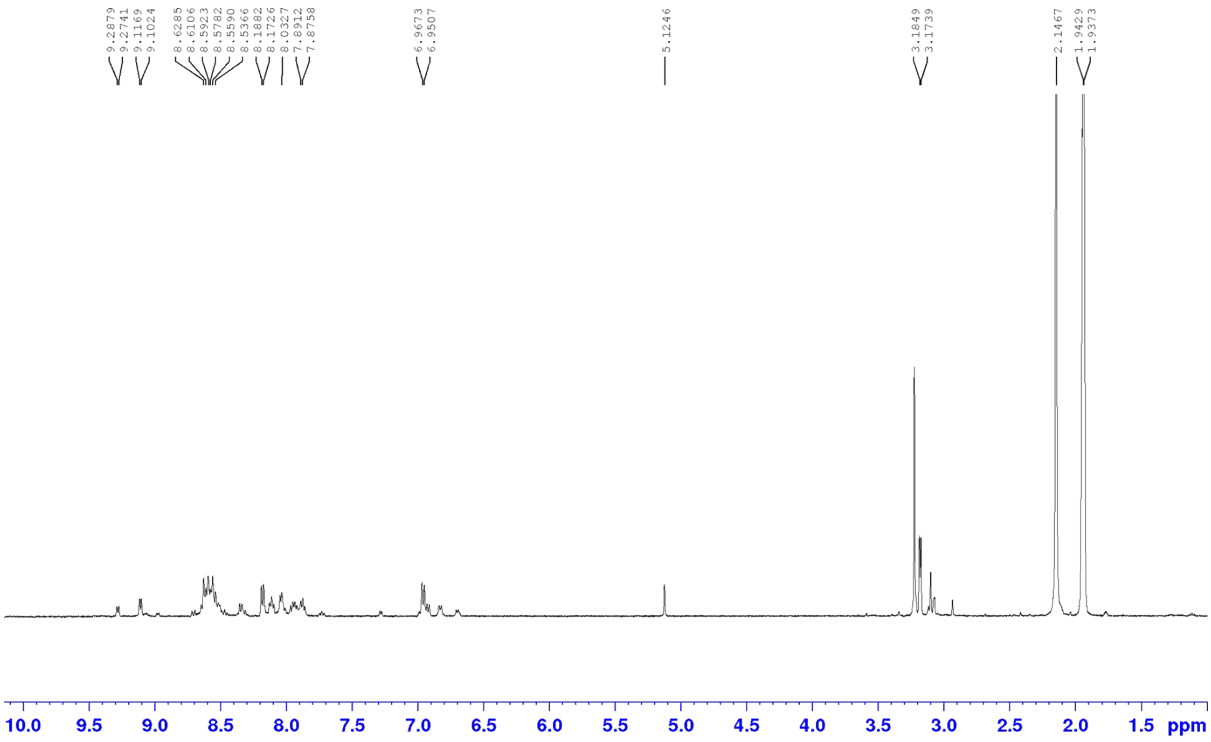
^{1}H NMR spectrum of compound **14** (CD_3CN; 500 MHz)



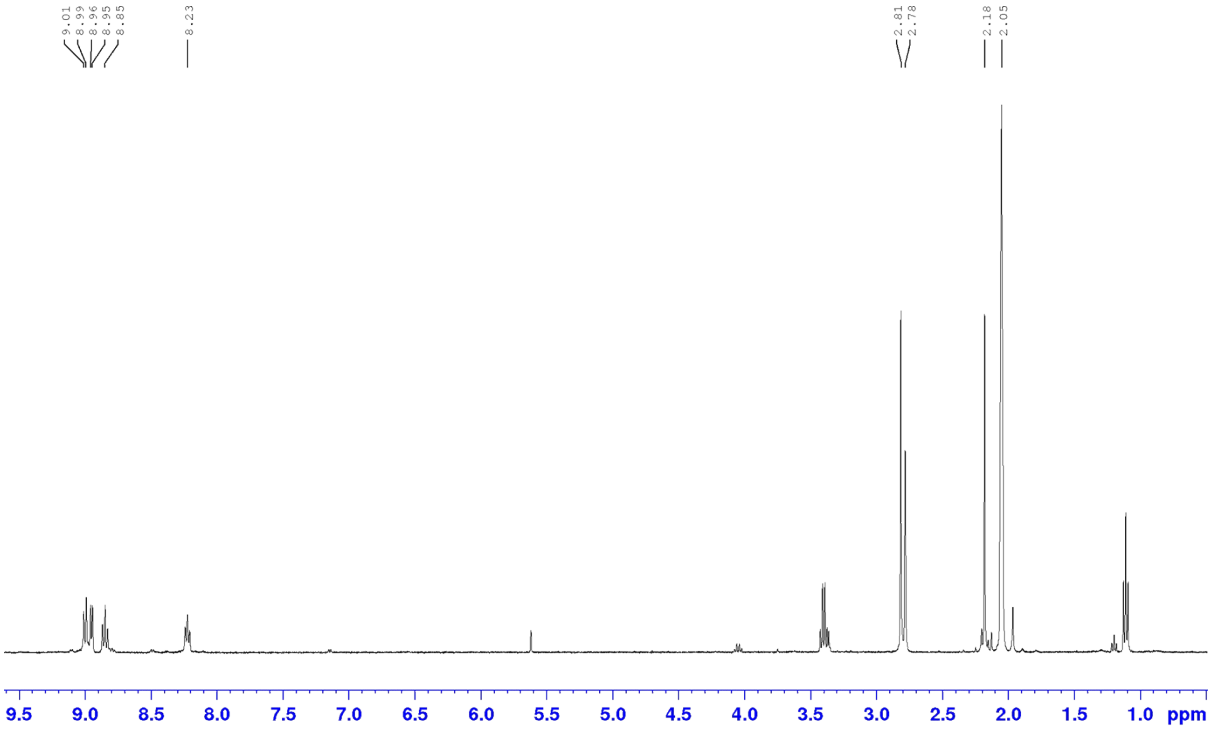
^{13}C NMR spectrum of compound **14** (CD_3CN; 125 MHz)



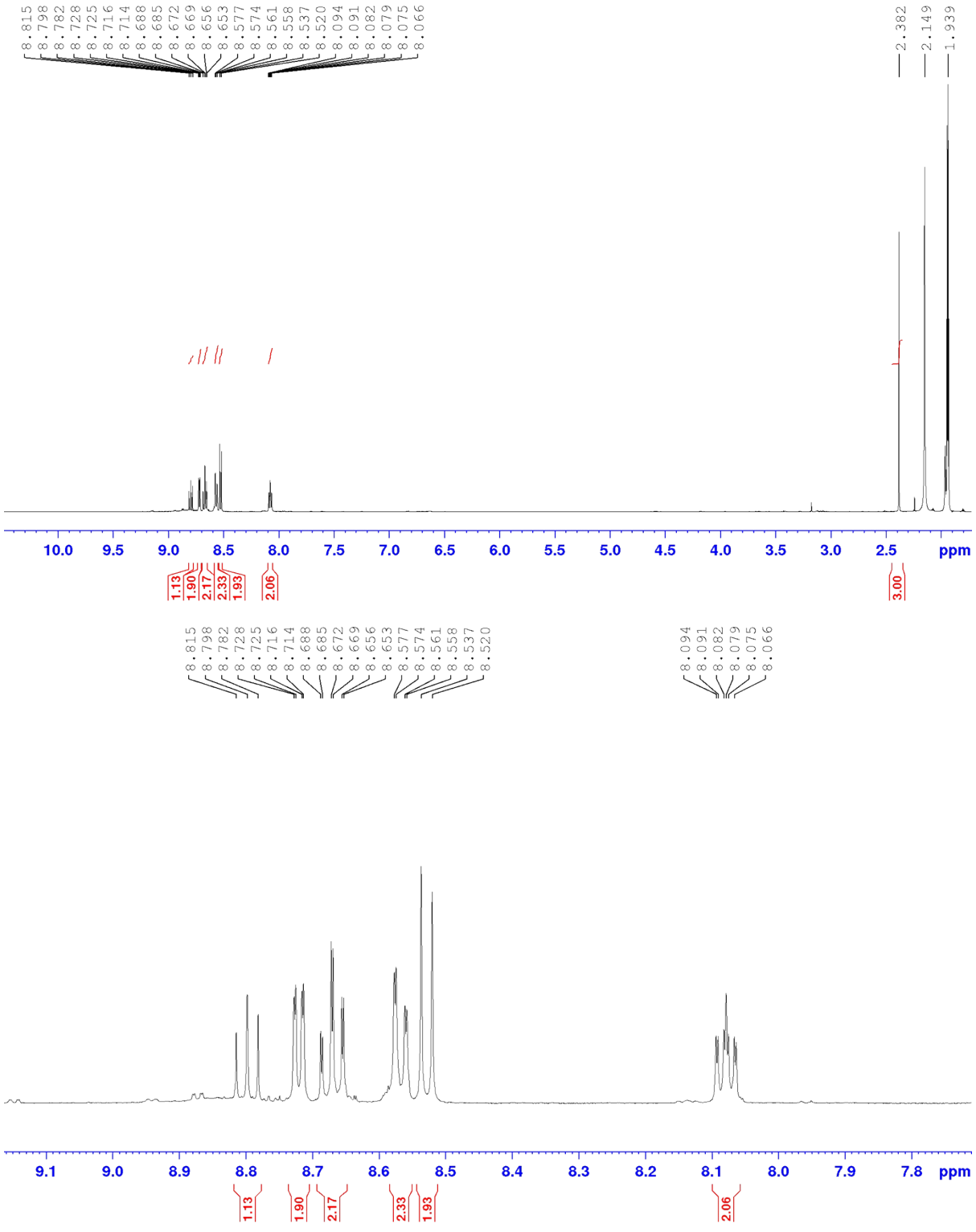
^{1}H NMR spectrum showing conversion of compound **14** to **11** upon exposure of **14** to H_2O (CD_3CN; 400 MHz)



^{1}H NMR spectrum of compound **20** ($(CD_3)_2CO$; 400 MHz)

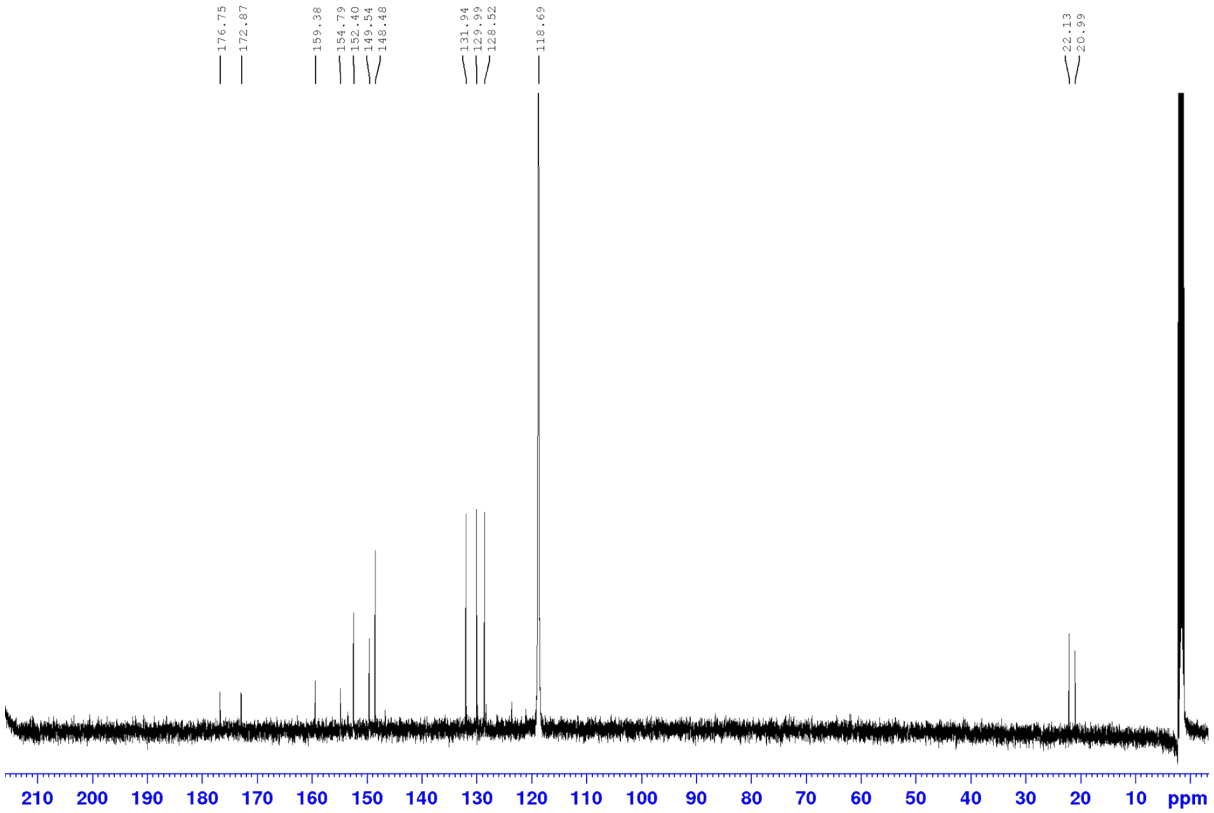


^{1}H NMR spectrum of compound **21** (CD_3CN; 500 MHz)

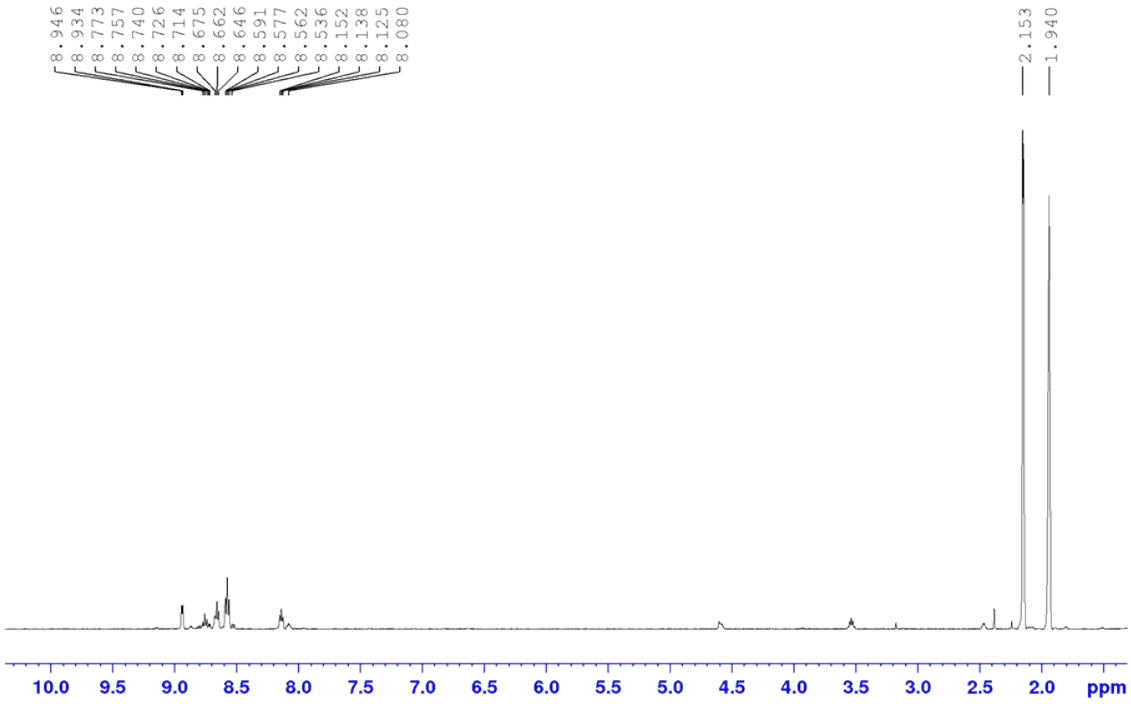


^{13}C NMR spectrum of compound **21** (CD_3CN; 125 MHz)

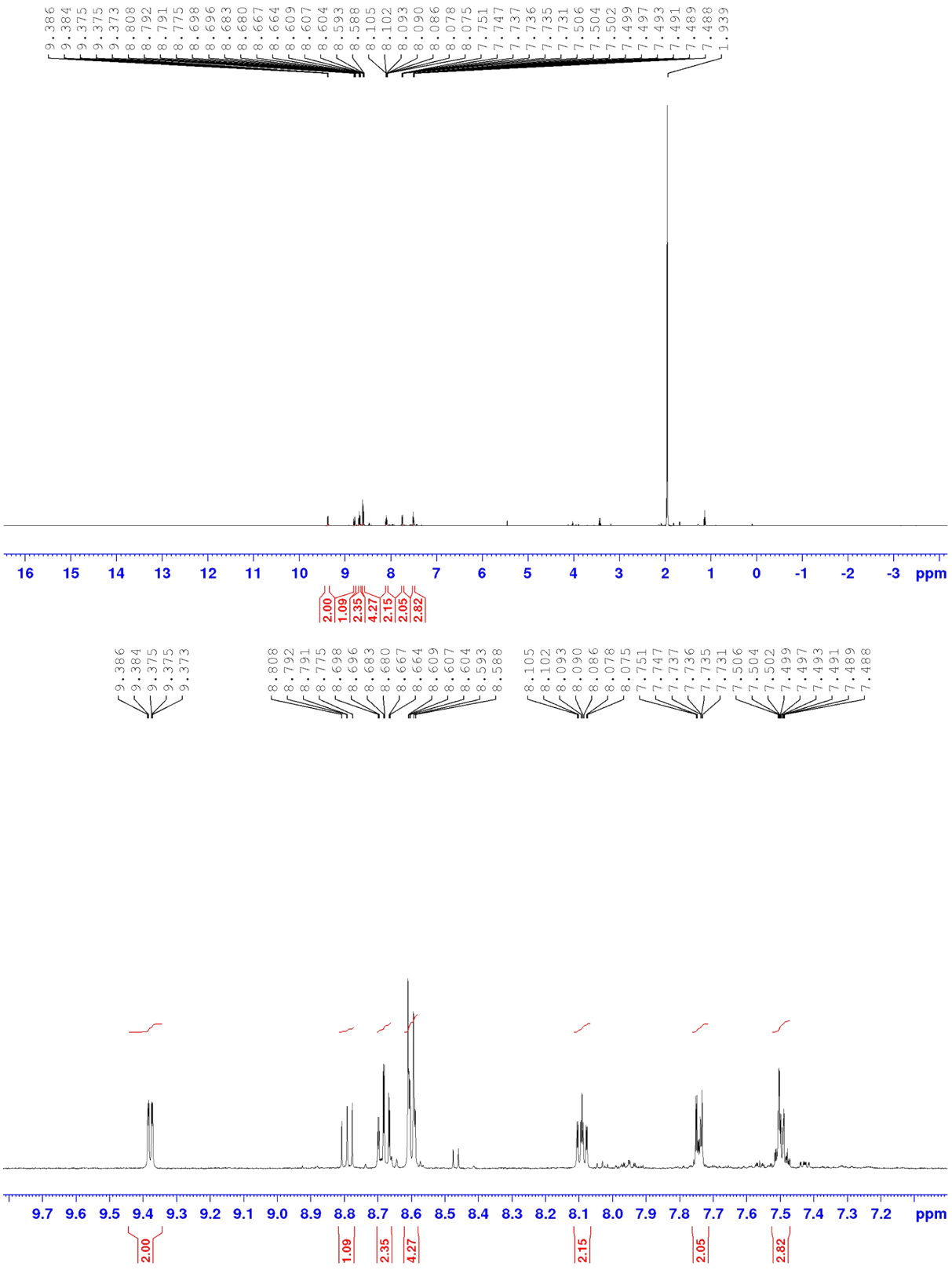
*peak at 20.99 and 172.87 are assigned to residual acetic acid remaining in the purified sample.



^{1}H NMR spectrum showing the formation of compound **17** upon exposure of compound **21** to H_2O (CD_3CN; 500 MHz)



^{1}H NMR spectrum of compound **22** (CD_3CN; 500 MHz)



^{13}C NMR spectrum of compound **22** (CD_3CN; 125 MHz)

*peak at 16.09 and 66.76 are assigned to residual Et_2O remaining in the purified sample due to workup .