

Figure S1 ORTEP plot of $[\text{Mn}(\text{2OH-salpn})(\text{O}_2\text{C}(\text{CH}_2)_2\text{CH}_3)]$ (**10**) with 50% thermal ellipsoids.

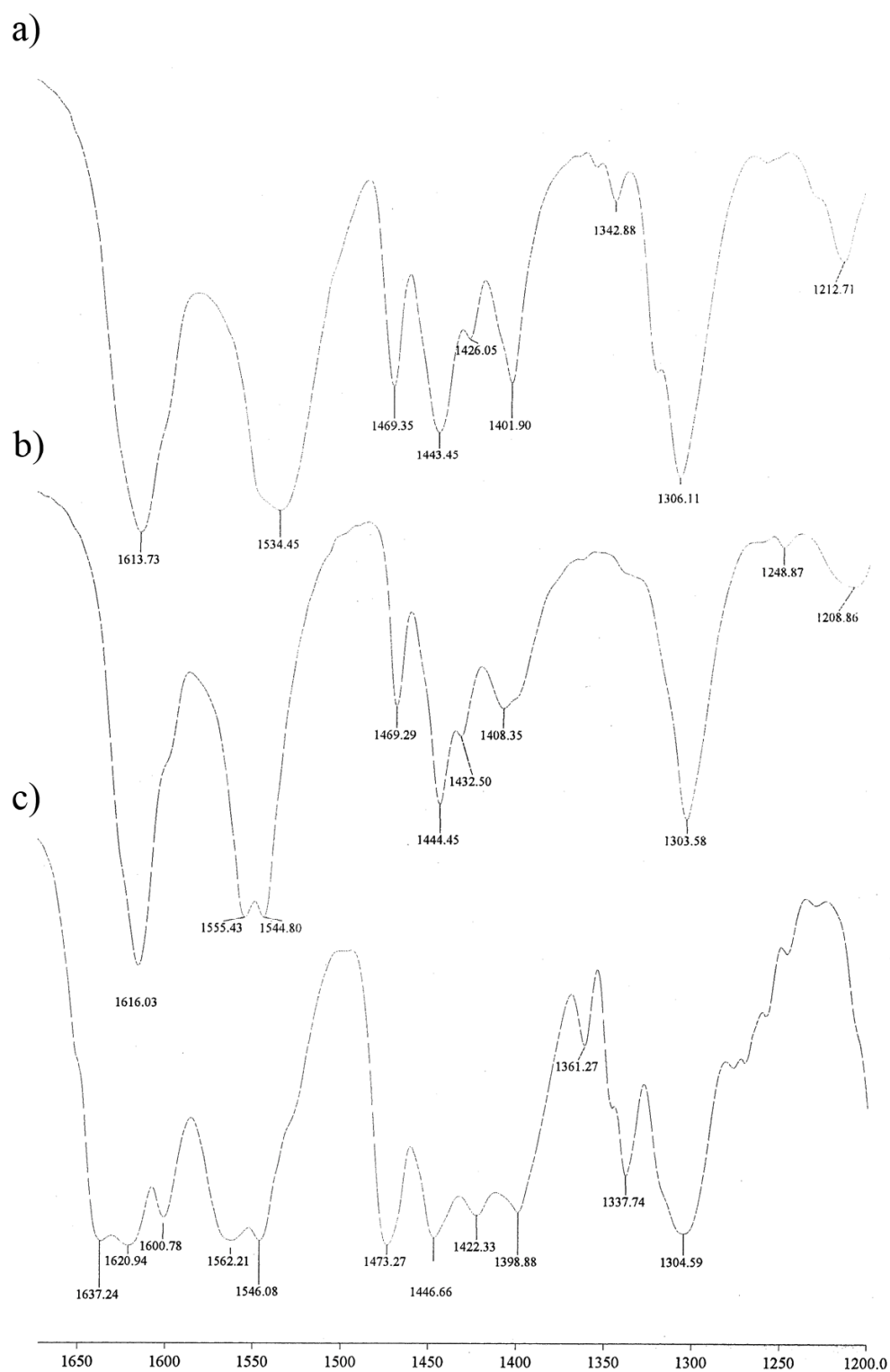


Figure S2 The infrared spectra of a) $[\text{Mn}(\text{2OH-salpn})(\text{O}_2\text{C}(\text{CH}_2)_2\text{CH}_3)]$ (**10**) b) $[\text{Mn}(\text{2OH-salpn})(\text{O}_2\text{C}(\text{CH}_2)_3\text{CH}_3)]$ (**11**) and c) $[\text{Mn}(\text{salpn})(\text{O}_2\text{C}(\text{CH}_3)_3)]^{\text{9c}}$ run as KBr discs (x-axis wavenumber cm^{-1} y axis % transmittance).

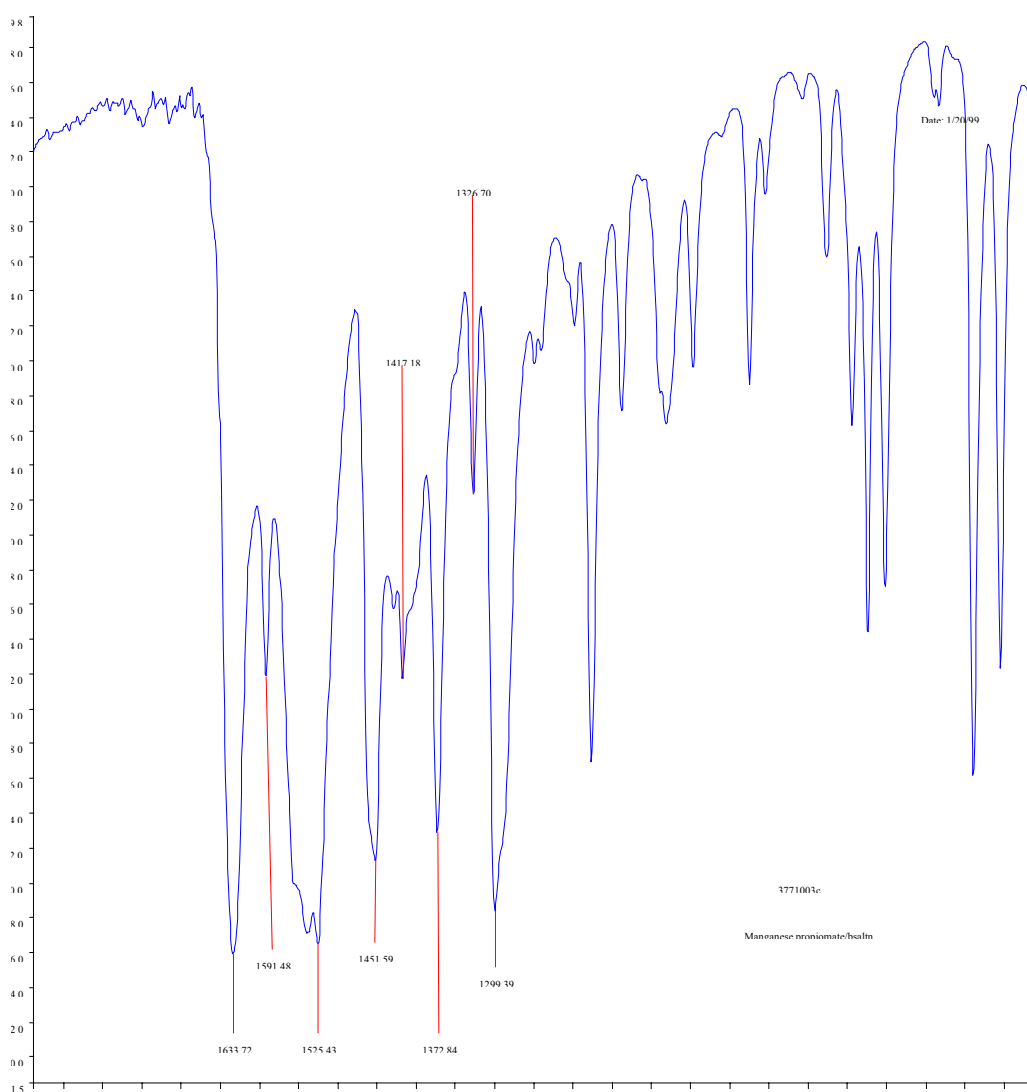


Figure S3 Infrared spectrum of $[\text{Mn}(\text{5BrSapIn})(\text{O}_2\text{CCH}_2\text{CH}_3)]_n$ (**12**) obtained from a KBr disc.

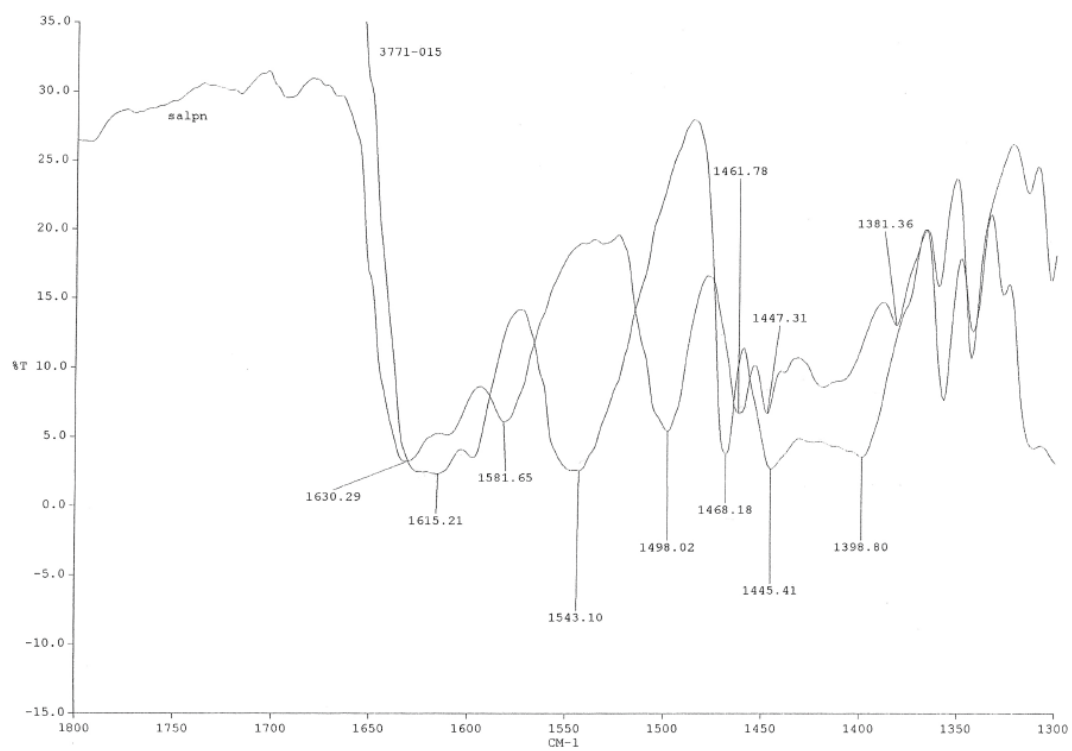


Figure S4 Infrared spectrum of $[\text{Mn}(\text{salpn})(\text{O}_2\text{C}(\text{CH}_2)_3\text{CH}_3)]$ overlaid with the spectrum of ligand **2** (both spectra obtained from KBr discs).

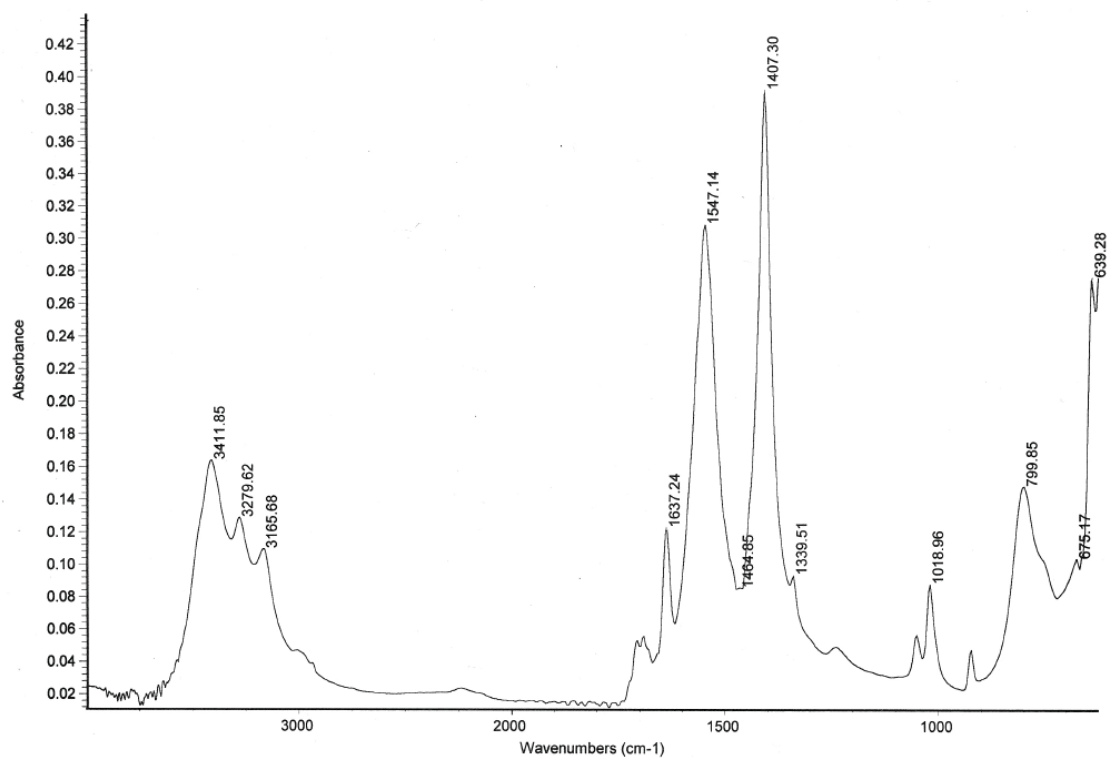


Figure S5 IR spectrum of commercial NaOAc obtained by transmission microscope infrared spectroscopy

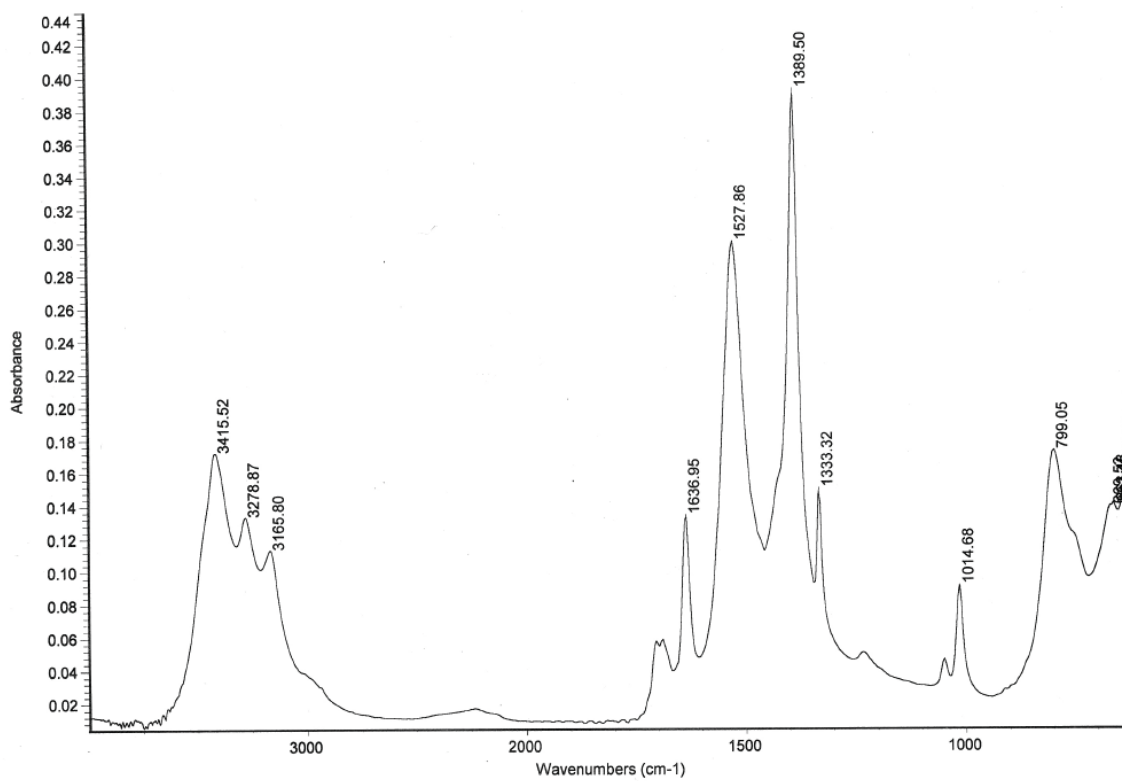


Figure S6 IR spectrum of Na¹⁸OAc obtained by transmission microscope infrared spectroscopy

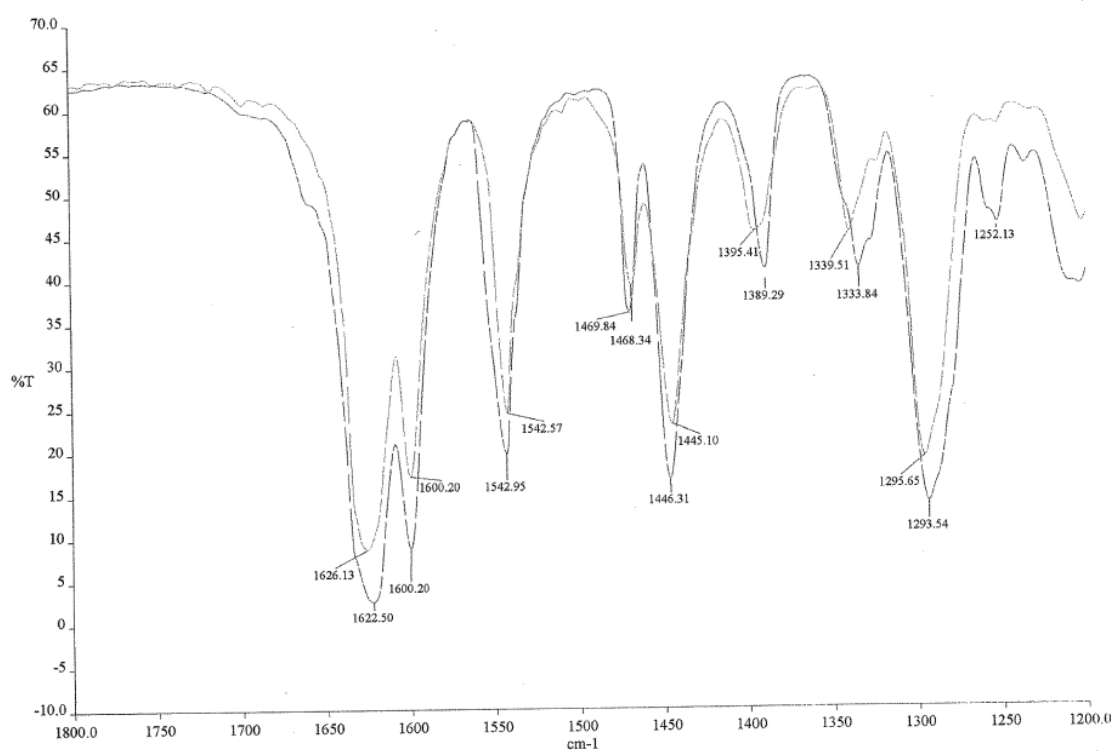


Figure S7 Overlaid infrared spectra of the non-labelled complex $[\text{Mn}(\text{salen})(\text{O}_2\text{CCH}_3)]$ and the doubly ^{18}O labelled analogue obtained from KBr discs.