

ROLE OF MANGANESE BASED SURFACTANT TOWARDS SOLUBILIZATION AND PHOTO-PHYSICAL PROPERTIES OF FLUORESCEIN

Gurpreet Kaur*, Preeti Garg and Ganga Ram Chaudhary*

Department of Chemistry and Centre of Advanced studies in Chemistry, Panjab University,
Chandigarh

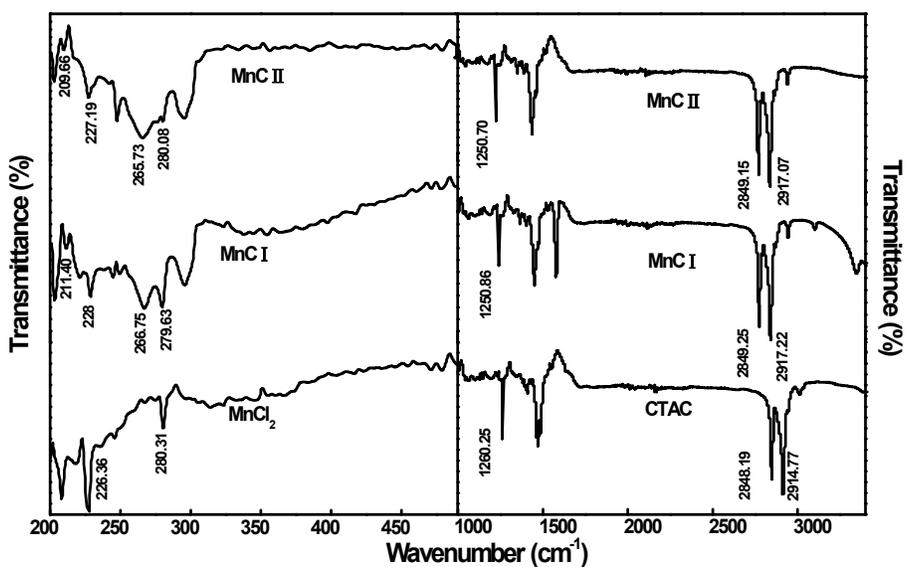


Figure ES1. FTIR spectra of CTAC, MnCl₂, MnC I and MnC II.

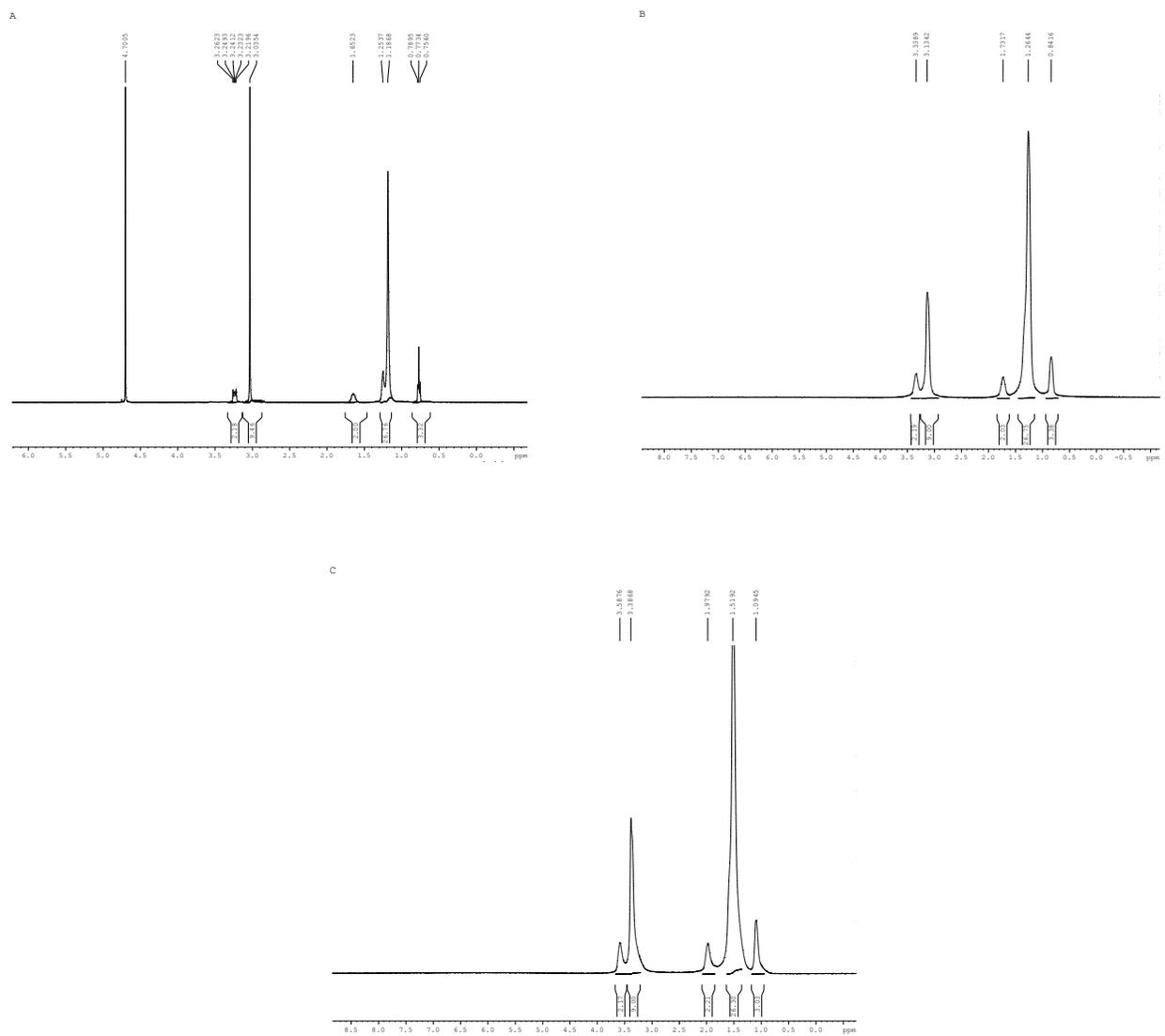


Figure ES2. NMR spectra of (A) CTAC, (B) MnC I and (C) MnC II.

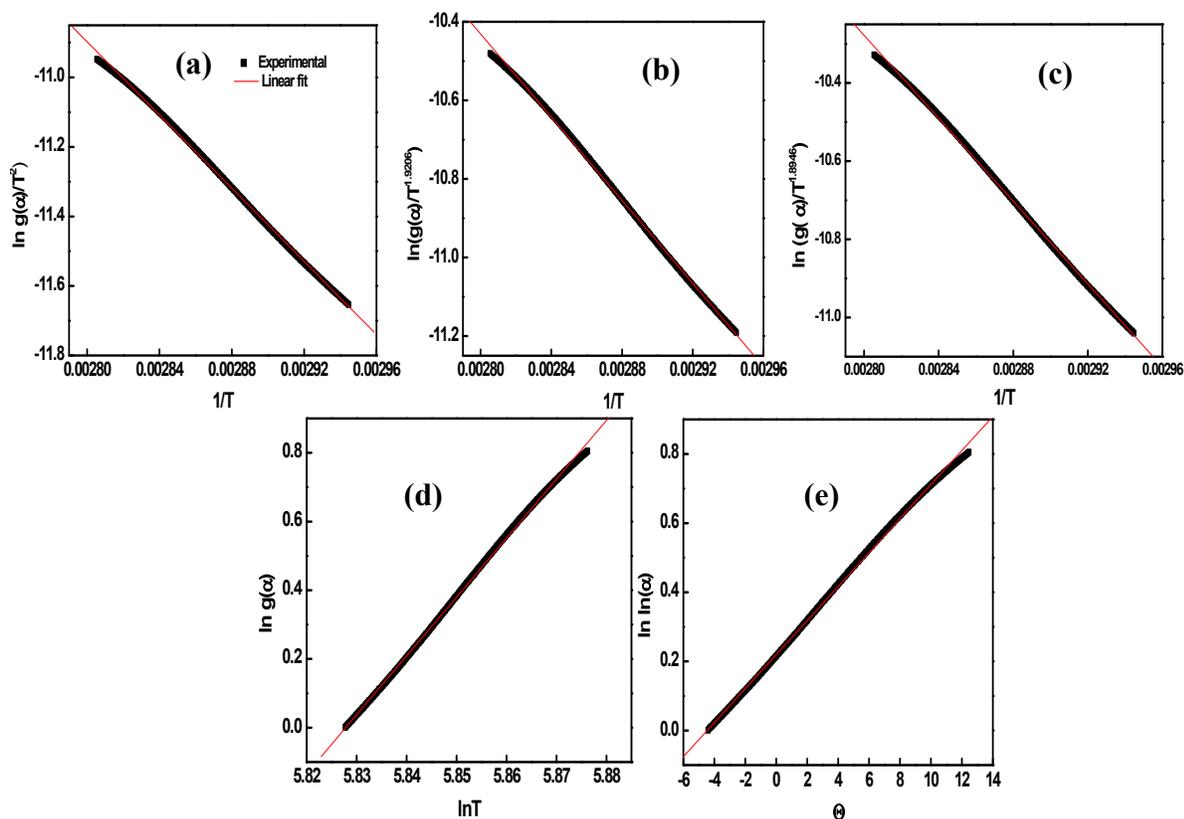


Figure ES3. Linearization curves obtained by (a) Coats–Redfern (CR), (b) Madhusudanan–Krishnan–Ninan (MKN), (c) Wanjun–Yuwen–Hen–Cunxin (WYHC), (d) van Krevelen (vK) methods and (e) Horowitz–Metzger (HM) methods for MnC I.

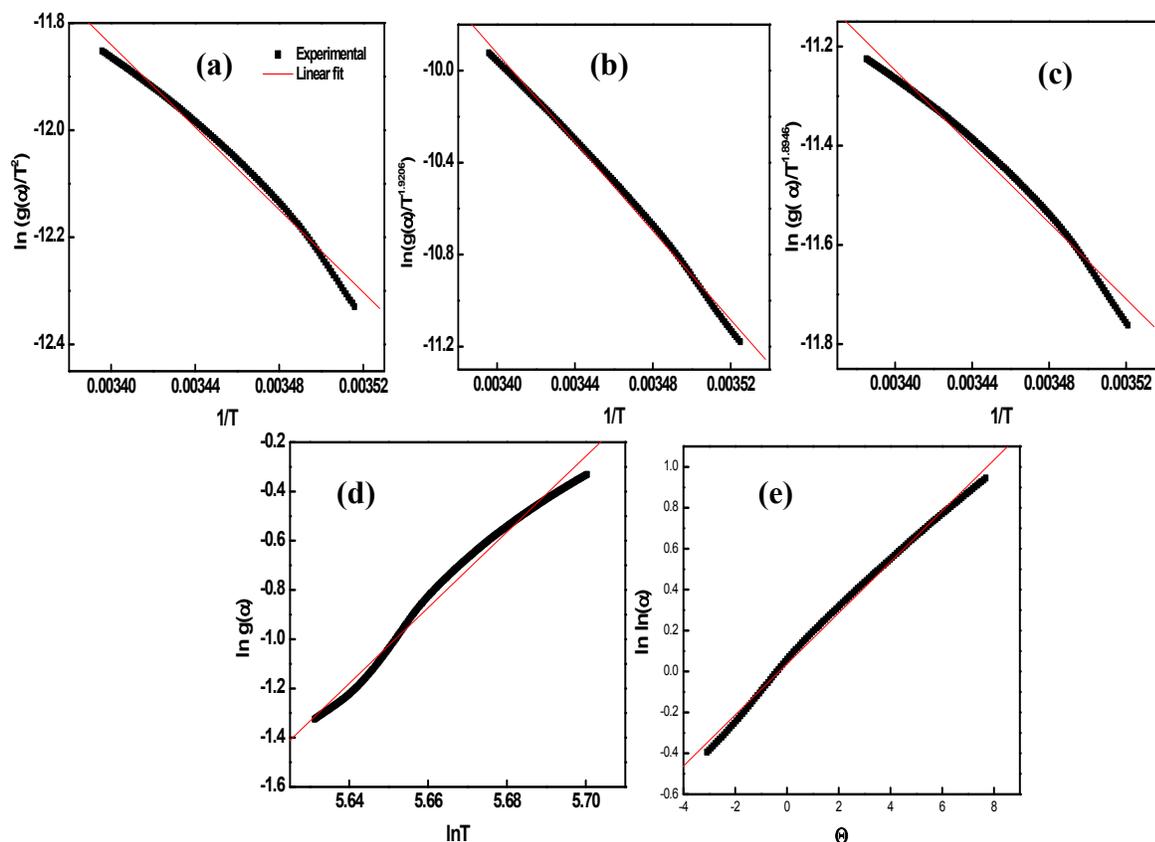


Figure ES4. Linearization curves obtained by (a) Coats–Redfern (CR), (b) Madhusudanan–Krishnan–Ninan (MKN), (c) Wanjun–Yuwen–Hen–Cunxin (WYHC), (d) van Krevelen (vK) methods and (e) Horowitz–Metzger (HM) methods for MnC II.

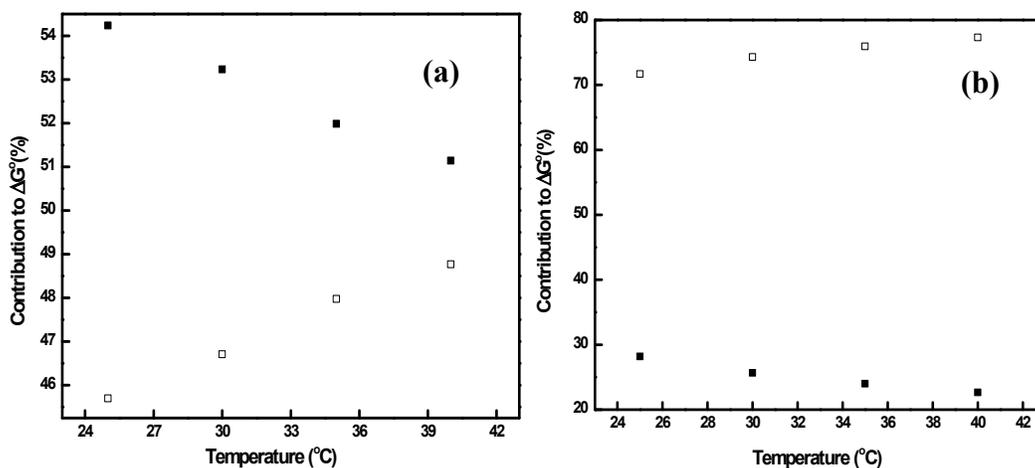


Figure ES5. Enthalpic (□) and Entropic (■) contributions to ΔG^0 for (a) MnC I (b) MnC II.

Table ES1. Vibrational peaks of MnCl₂, CTAC, MnC I and MnC II

Modes of Vibration	Peak position (cm ⁻¹)			
	MnCl ₂	CTAC	MnC I	MnC II
CH ₂ asymmetric stretching	-----	2914.77	2917.22	2917.07
CH ₃ symmetric stretching	-----	2848.19	2849.25	2849.15
-C-N stretching	-----	1260.25	1250.86	1250.70
M-Cl stretching (terminal)	226.35, 280.31	-----	228, 279.63	227.19, 280.08
M-Cl stretching (Bridging)	-----	-----	211, 266.75	209.66, 265.73

Table ES2. Thermodynamic decomposition parameters for the Manganese complexes using TGA.

Complex	A/min ⁻¹	ΔG /kJmol ⁻¹	ΔH /kJmol ⁻¹	ΔS /JK ⁻¹ mol ⁻¹
MnC I	1.033×10 ¹⁰	43.833	40.901	-8.52
MnC II	1.47×10 ⁷	33.081	29.650	-14.52

Table ES3. Values of T_c, σ and ΔC_p° for Manganese surfactant complexes using conductivity measurement.

	T _c (K)	σ	(-) ΔC_p° (KJmol ⁻¹ K ⁻¹)
Mn:CTAC (1:1)	281.69	0.03855	0.1414
Mn:CTAC (1:2)	149.47	0.12307	0.1781

Table ES4. ¹H NMR chemical shifts (ppm) of fluorescein (FL) in D₂O solution without and with Manganese complexes. The numbers refer to FL atom numbering, symbols in parentheses indicate signal multiplicity.

Sample	1(d)	2(t)	3(t)	5/10(d)	4(d)	7/8(s)	6/9(d)
FL	7.80	7.60	7.50	7.26	6.69	6.7	6.65
FL in MnC I	8.11	7.38	7.30	7.0	6.79	6.45	6.38
FL in MnC II	8.04	7.37	7.28	6.98	6.79	6.61	6.45