Electronic Supplementary Information (ESI)

Hydrophobic study of increasing alkyl chain length of platinum surfactant complexes: Synthesis, characterization, micellization, thermodynamic, thermogravimetric and surface morphology

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Figure S1. Increasing alkyl chain effect on % Yield and reaction time of SMMSs.

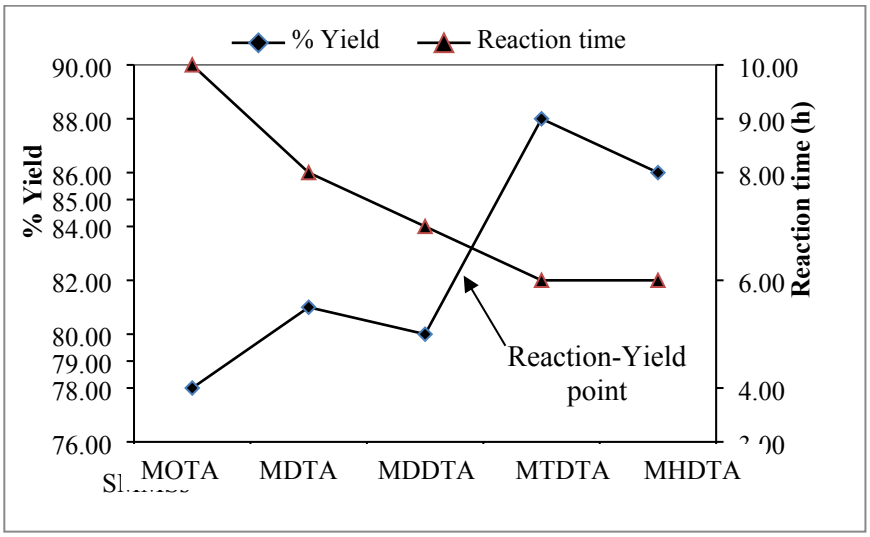


Figure S2. ^{1}H proton NMR of OTAB in DMSO-d6.

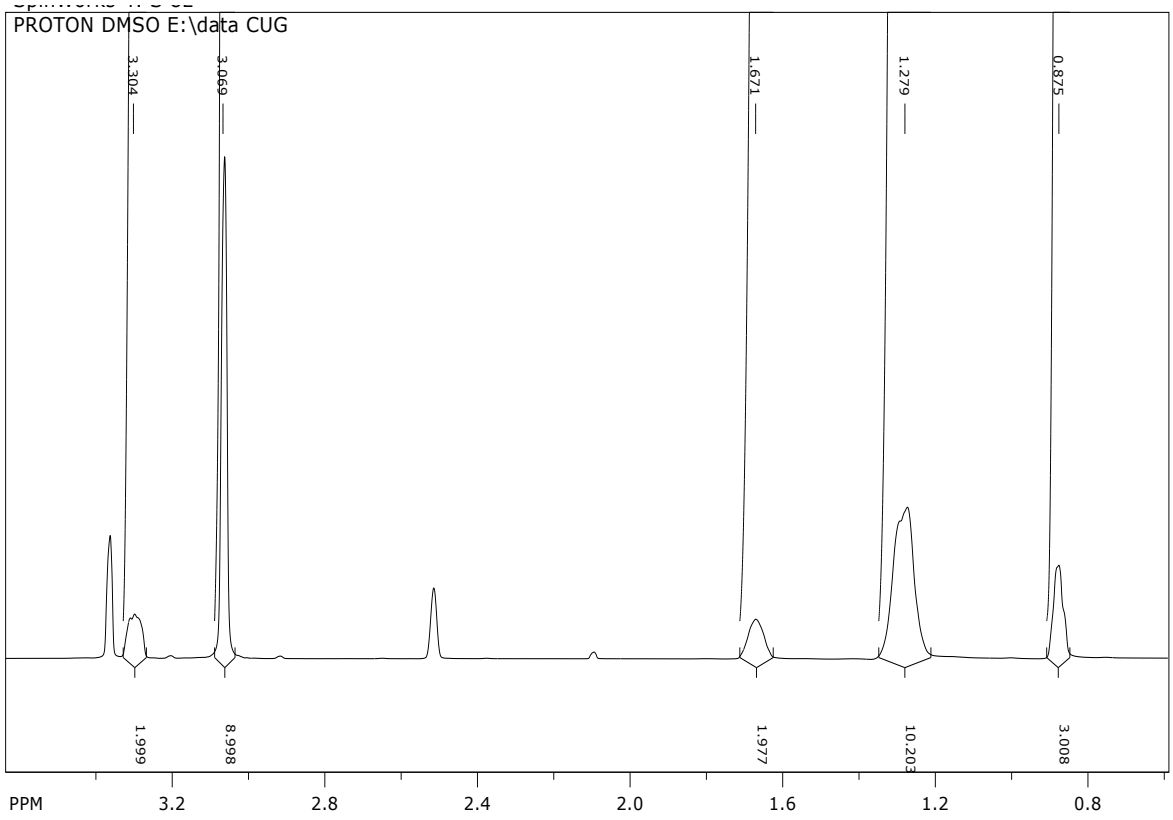


Figure S3. ^{1}H proton NMR of MOTA in D_2O.

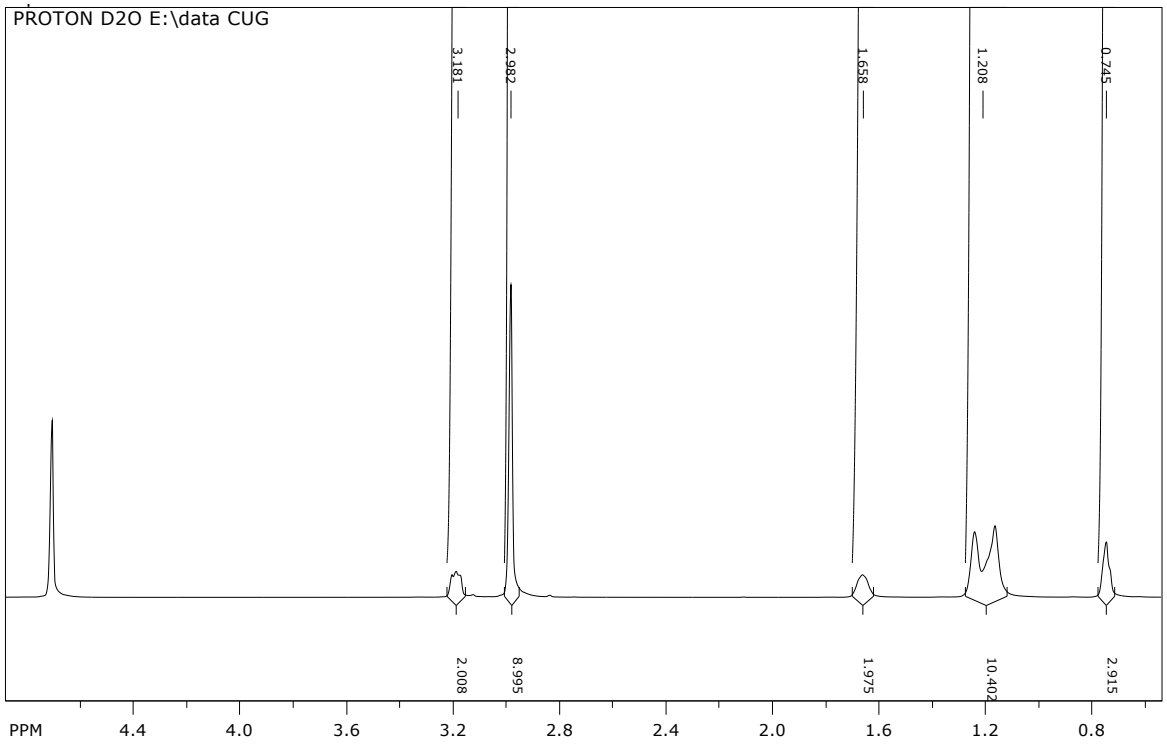


Figure S4. [1]H proton NMR of DTAB in DMSO-d6.

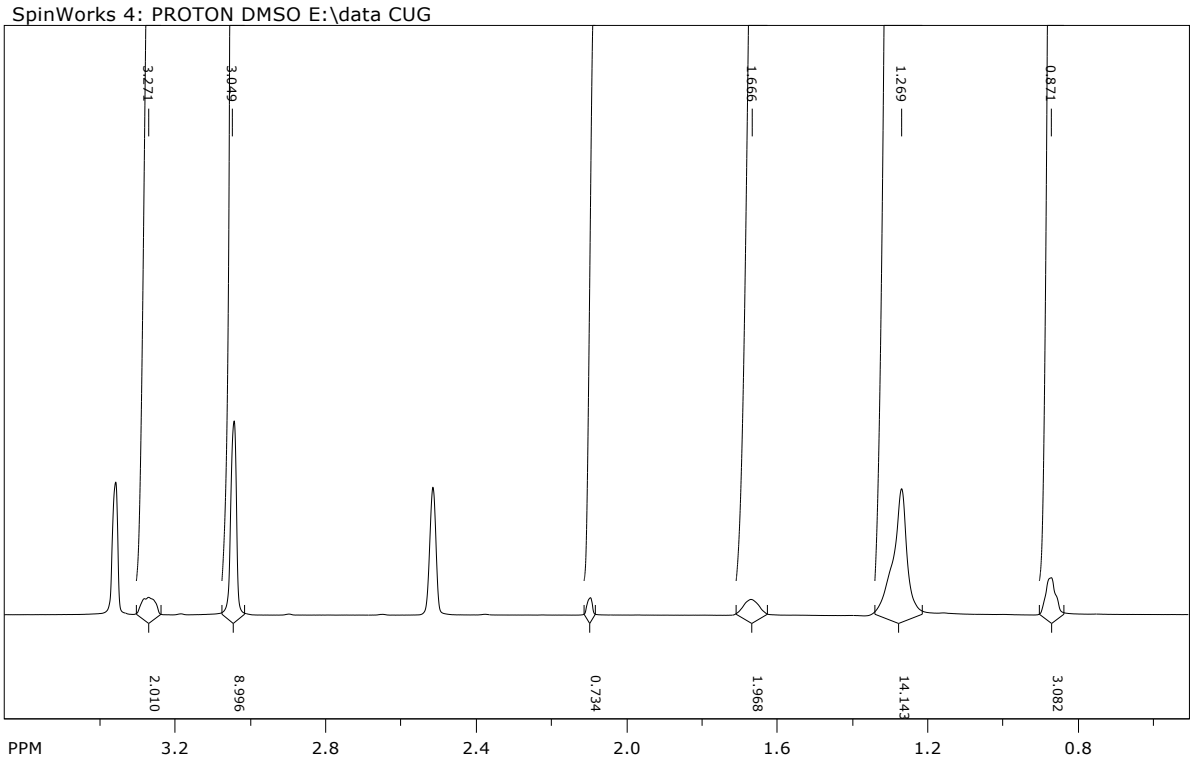


Figure S5. [1]H proton NMR of MDTA in DMSO-d6.

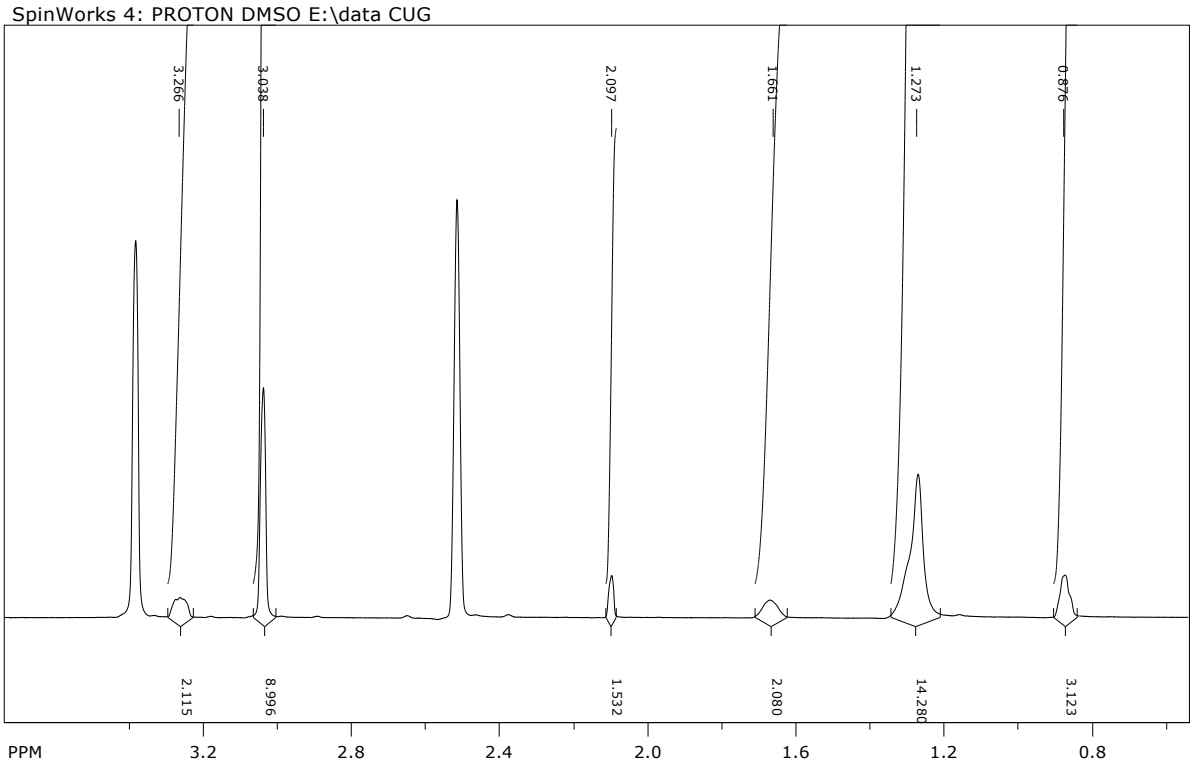


Figure S6. [1]H proton NMR of DDTAB in DMSO-d6.

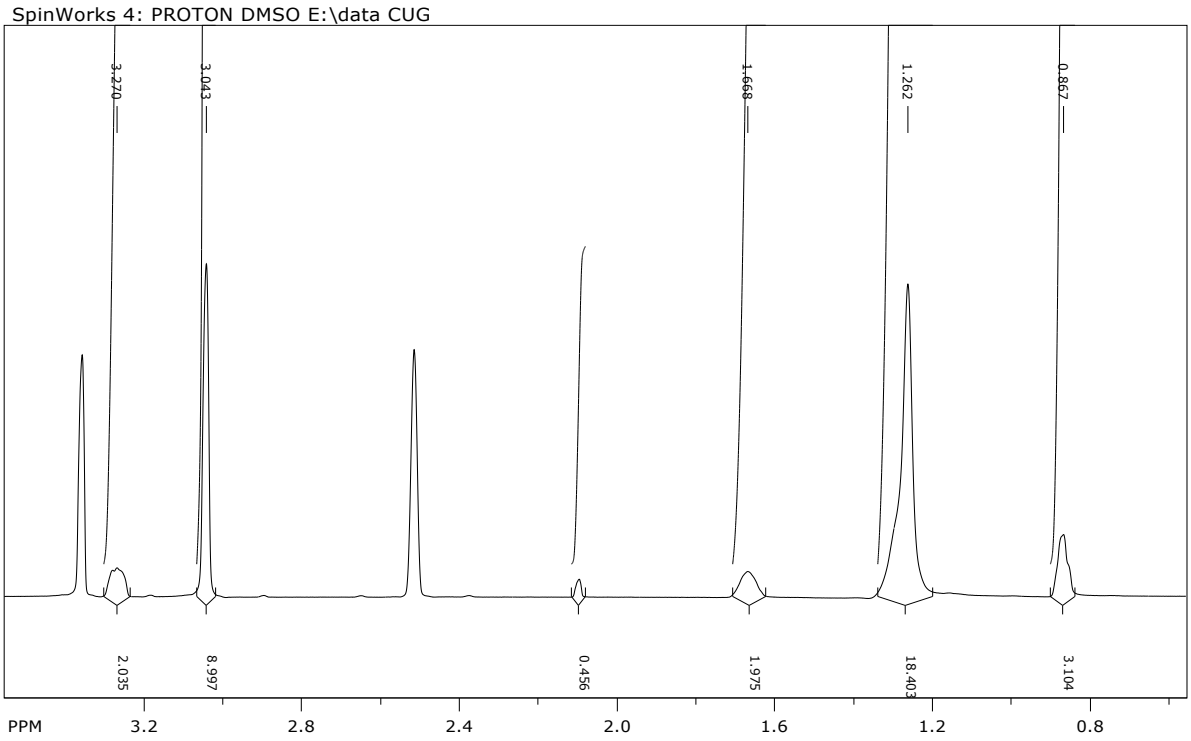


Figure S7. [1]H proton NMR of MDDTA in DMSO-d6.

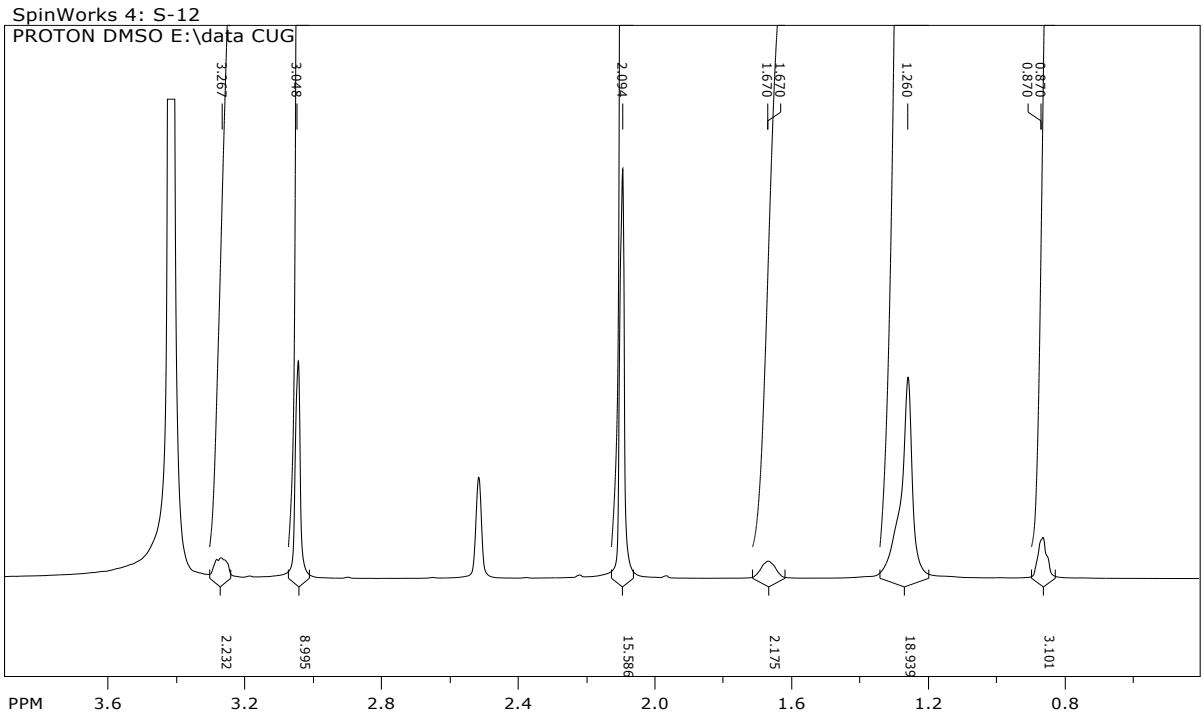


Figure S8. ^{1}H proton NMR of TDTAB in DMSO-d6.

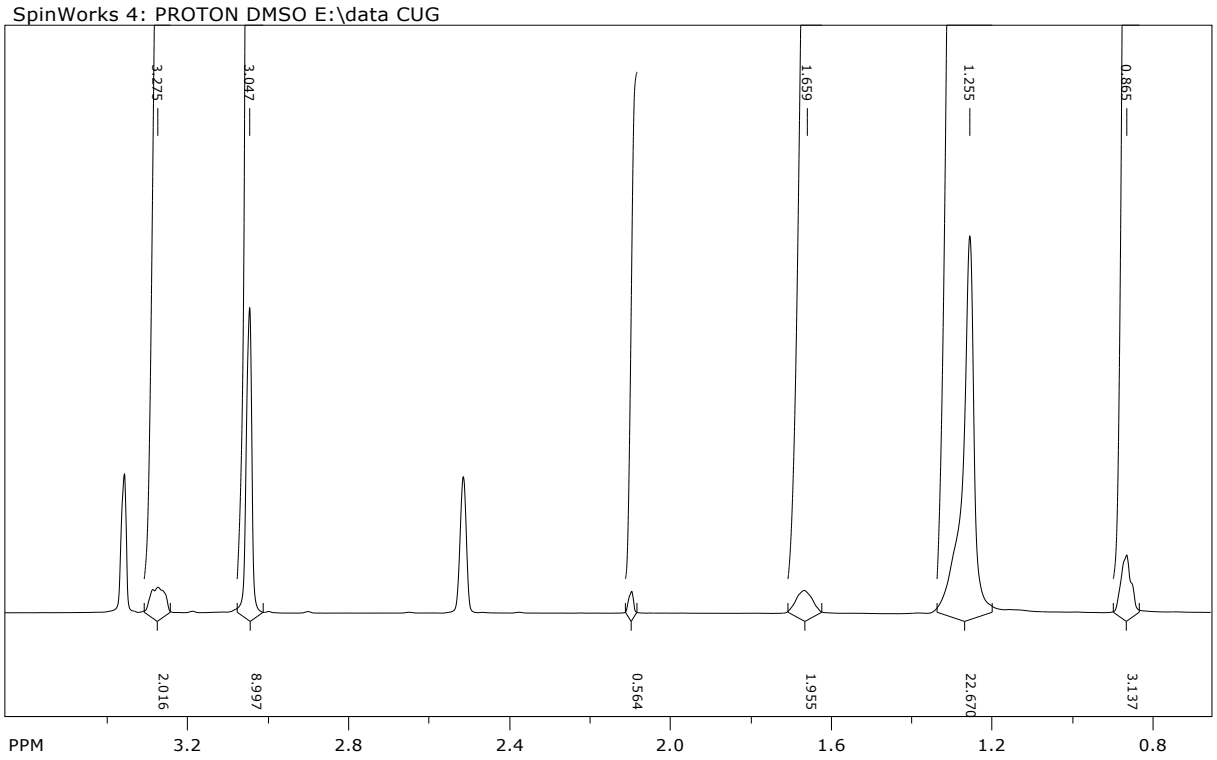


Figure S9. ^{1}H proton NMR of MTDTA in DMSO-d6.

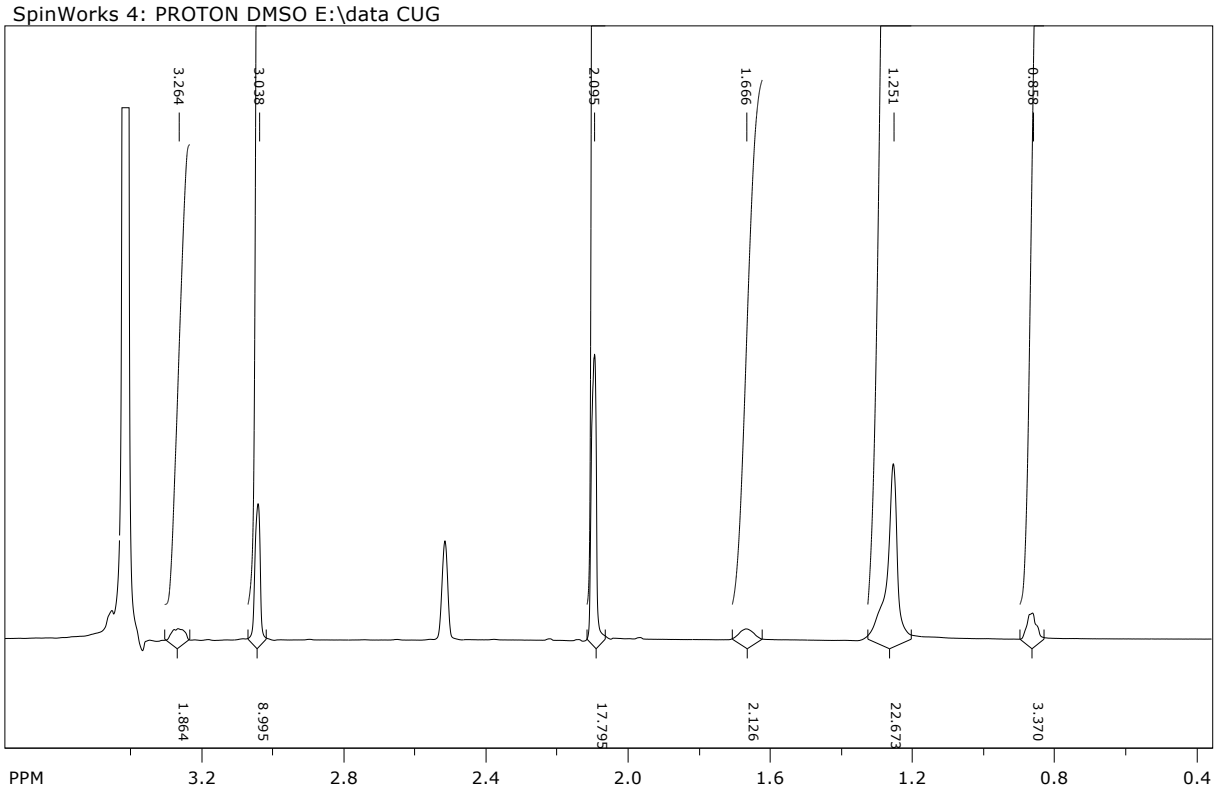


Figure S10. [1]H proton NMR of HDTAB in DMSO-d6.

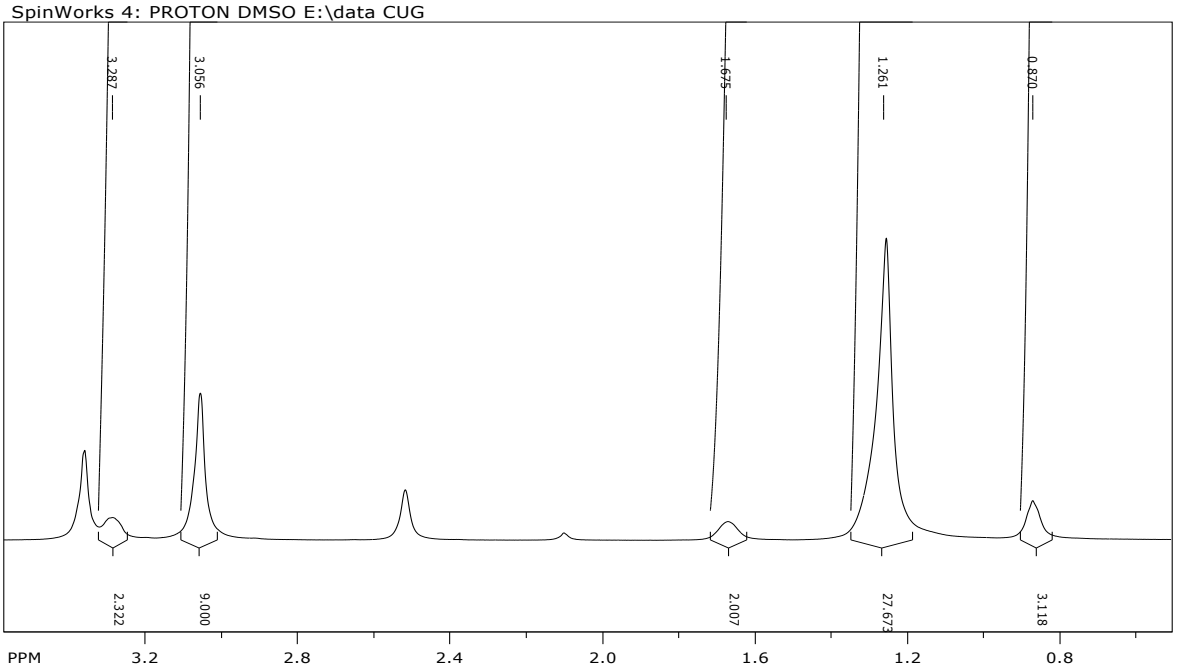


Figure S11. [1]H proton NMR of MHDTA in DMSO-d6.

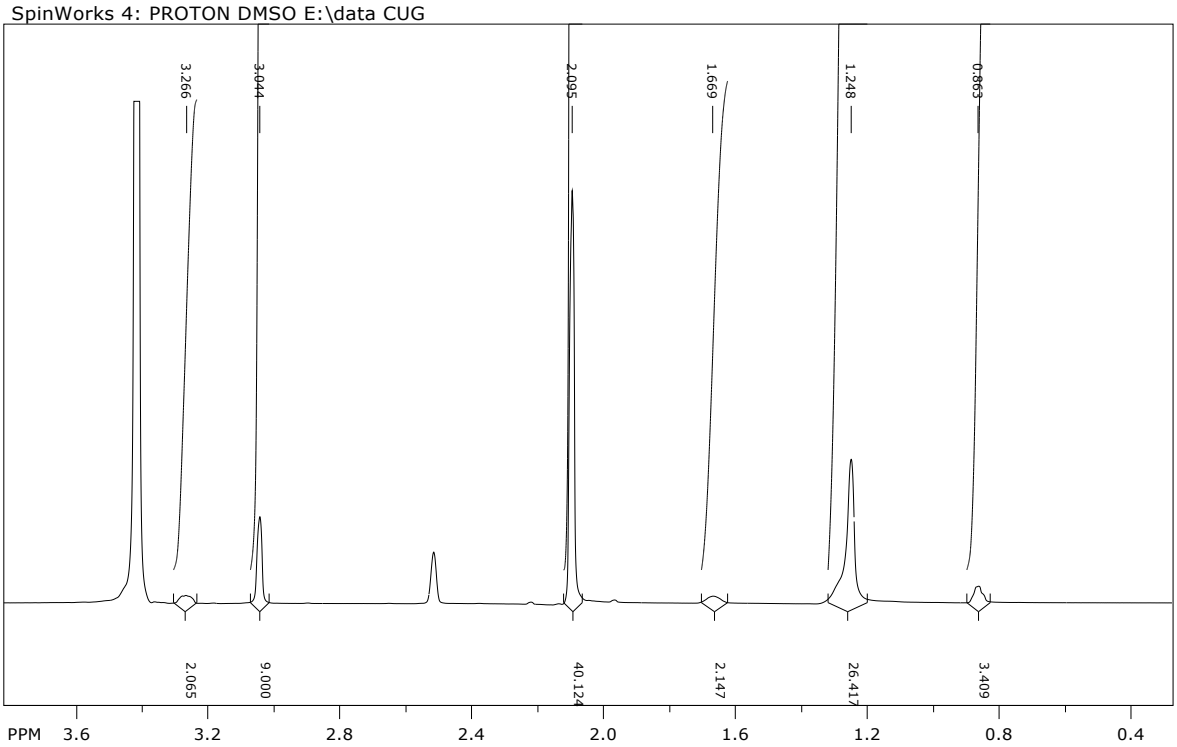


Figure S12. Variation of CMC of SMMSs in 0.2 volume fraction of DMSO in DMSO- water mixed solvent media at 308.15 K.

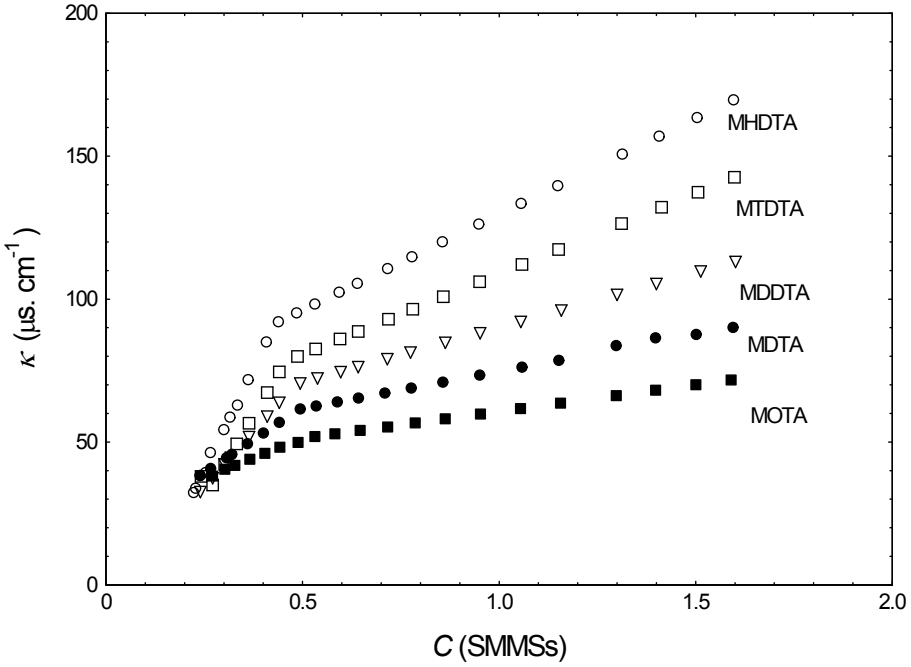


Figure S13. Variation of CMC of SMMSs in 0.2 volume fraction of DMSO in DMSO- water mixed solvent media at 318.15 K.

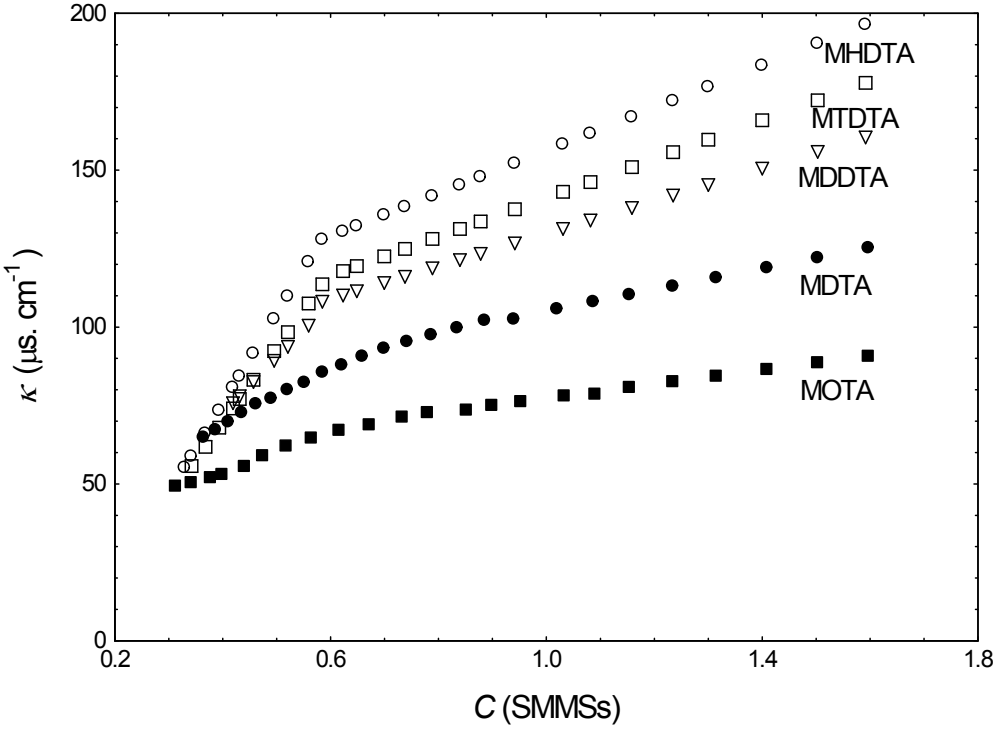
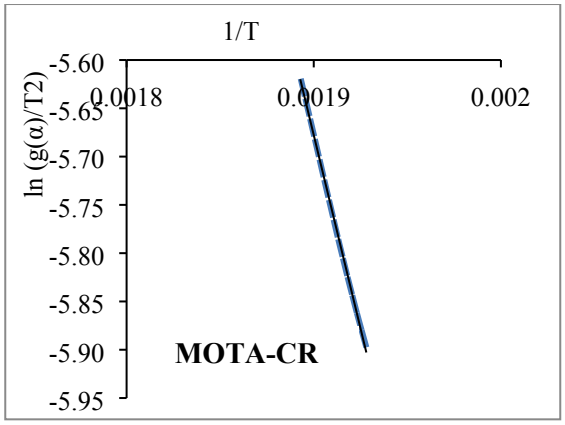
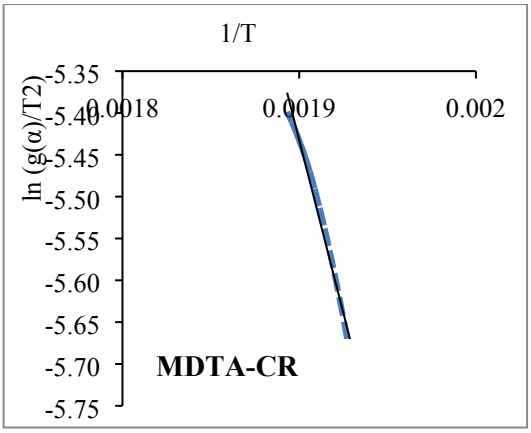
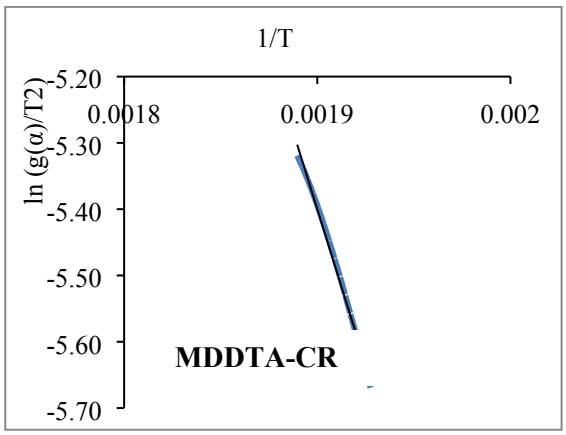
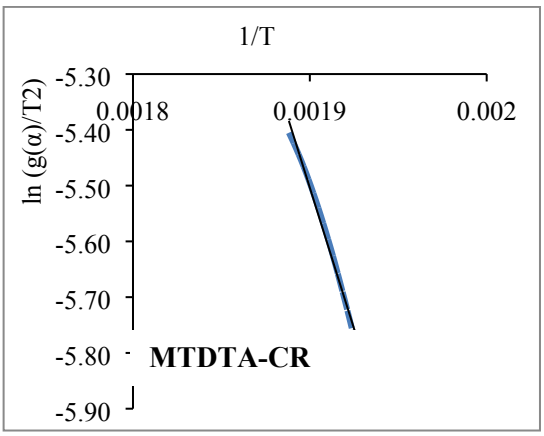


Figure S14. Linearization curves of SMMSs obtained by Coats–Redfern (CR) method.









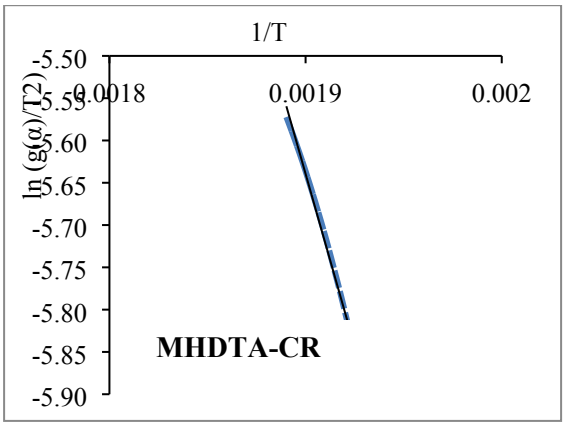
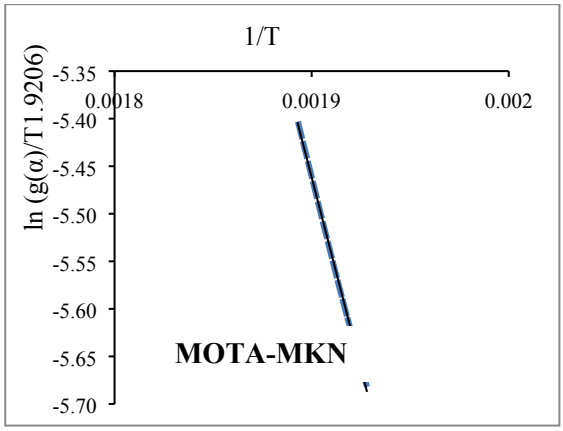
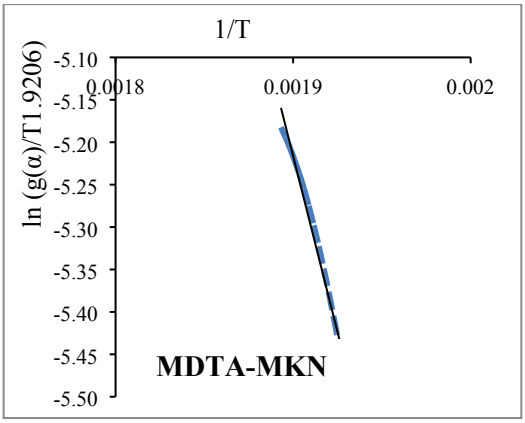
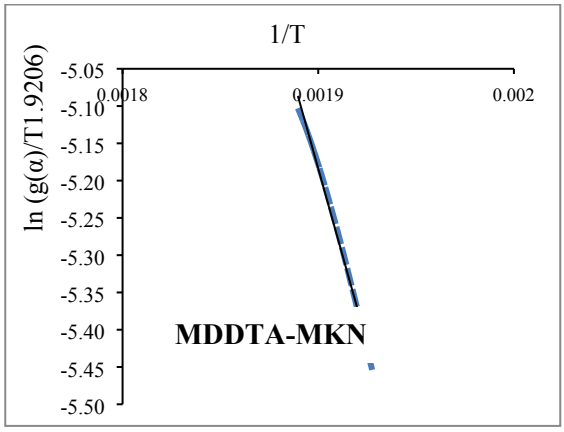
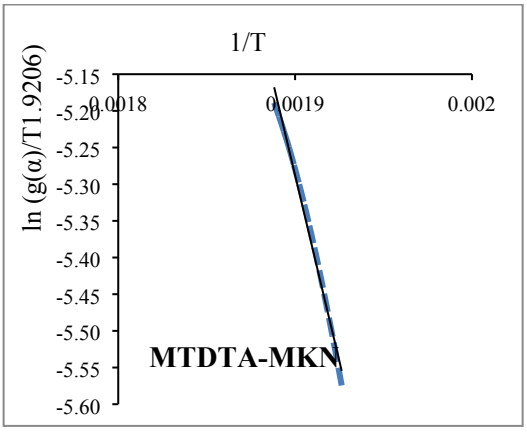


Figure S15. Linearization curves of SMMSs obtained by Madhusudanan–Krishnan–Ninan (MKN) method.









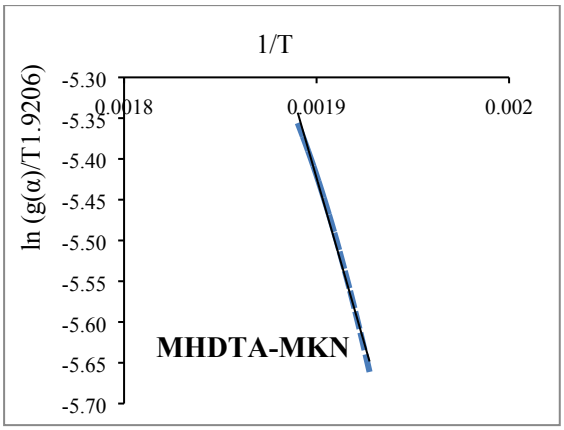
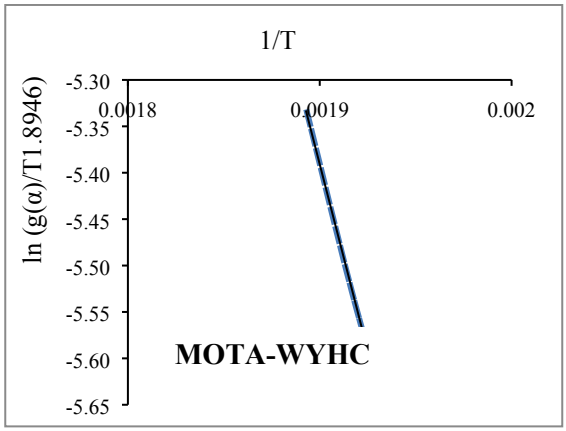
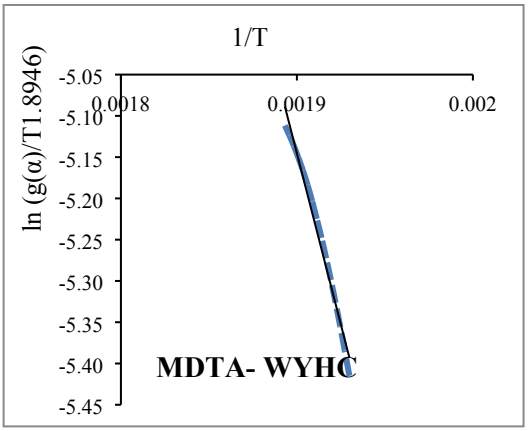
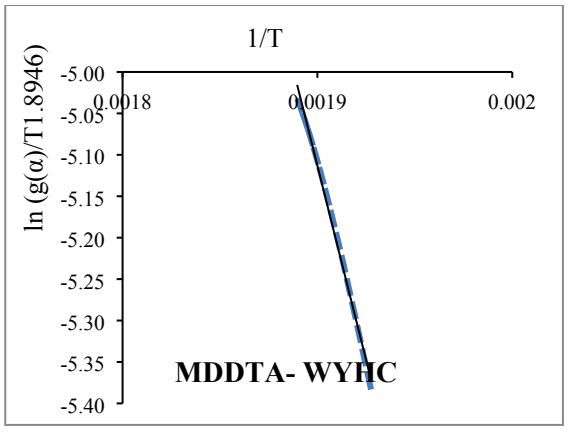
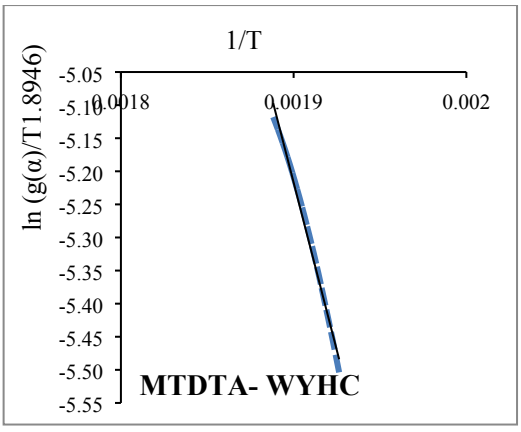


Figure S16. Linearization curves of SMMSs obtained by Wanjun–Yuwen–Hen–Cunxin (WYHC) method.









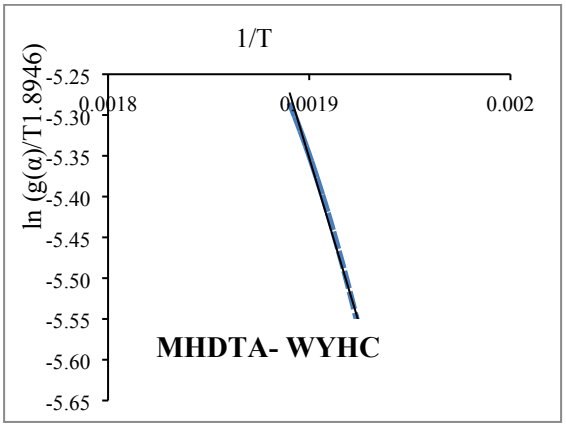
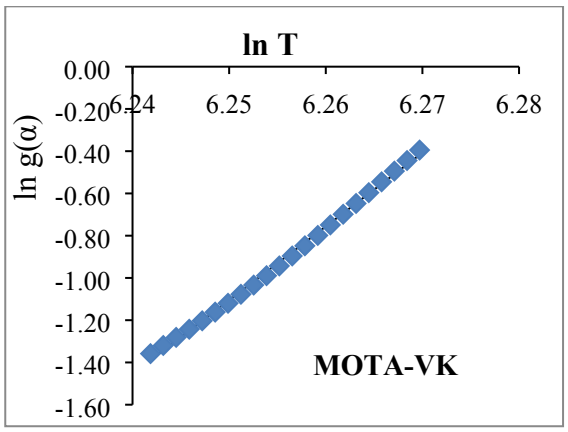
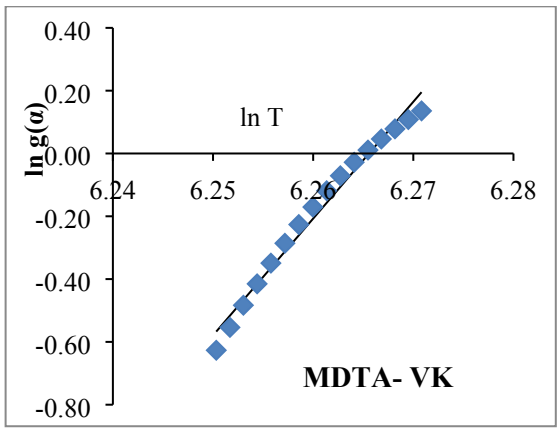
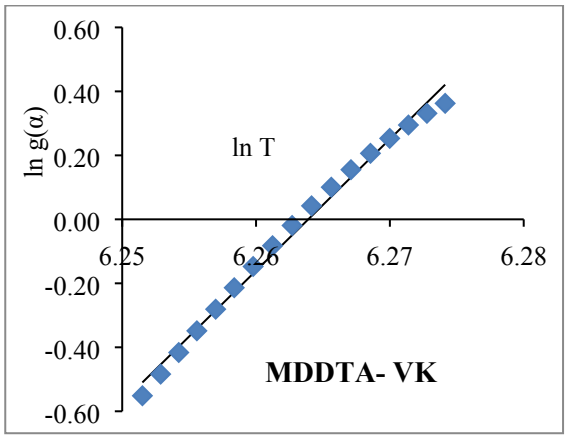
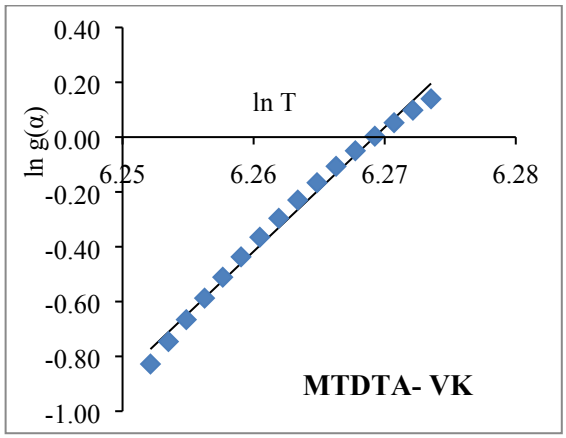


Figure S17. Linearization curves of SMMSs obtained by Van Krevelen (VK) method.









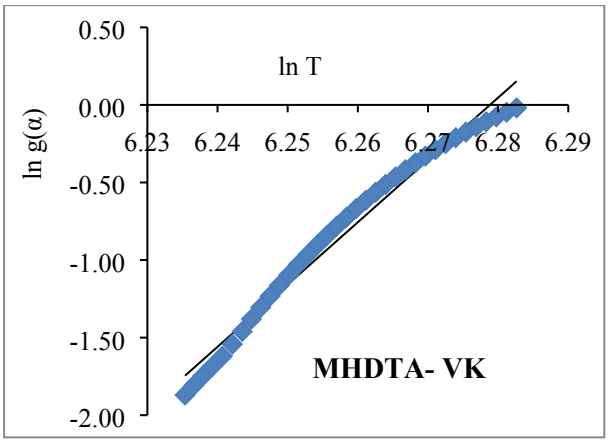


Figure S18. Linearization curves of SMMSs obtained by Horowitz–Metzger (HM) method.

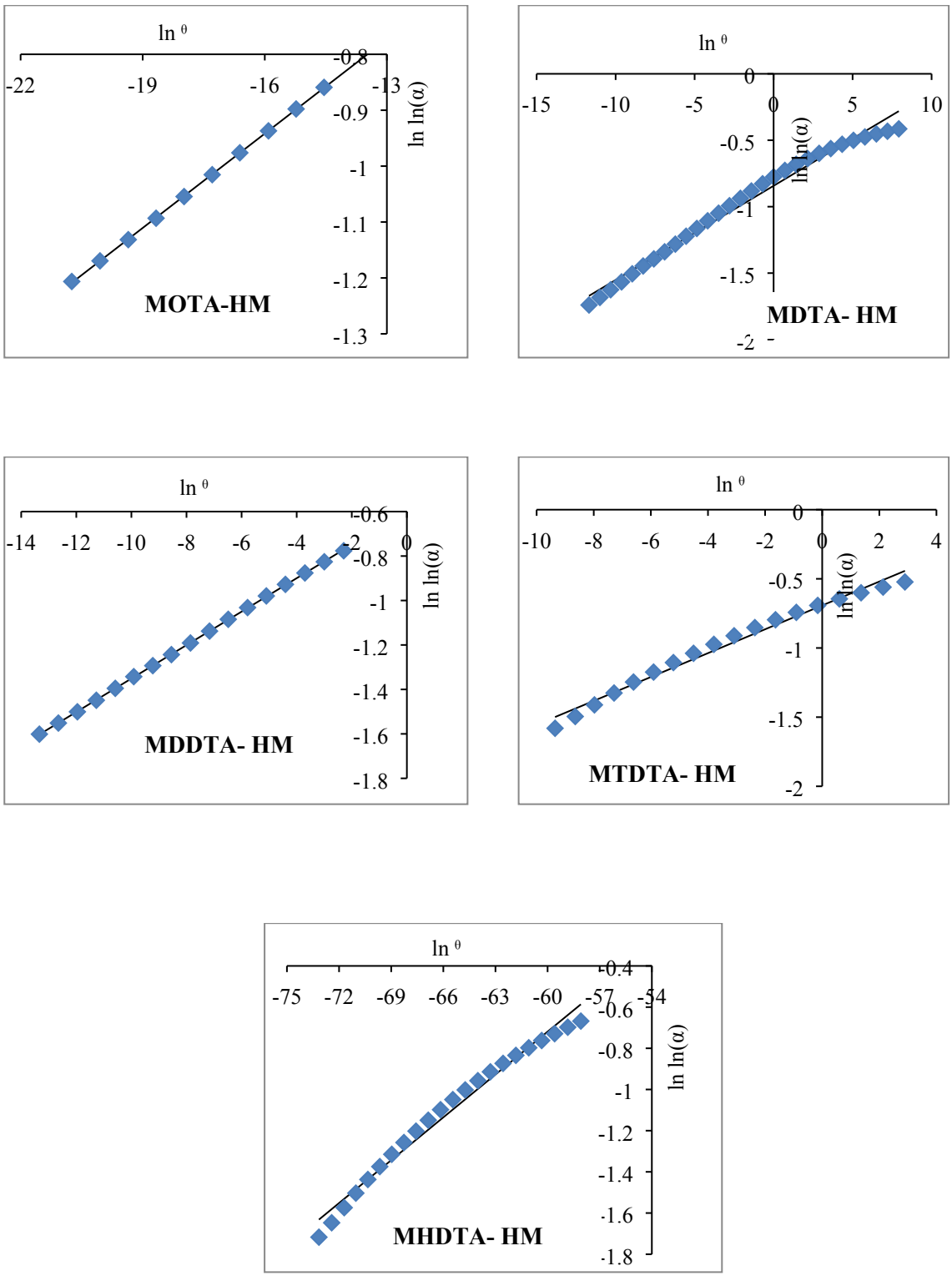
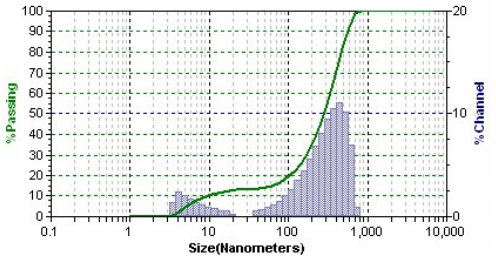
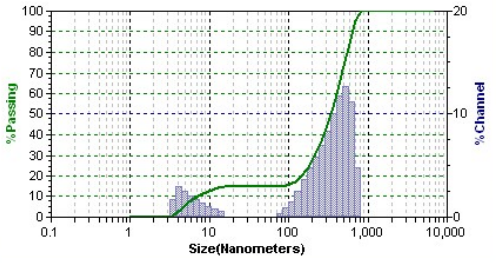


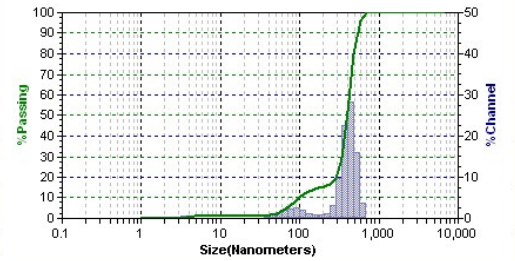
Table S1. Details of chemicals used in this work.

S. No.	Product name	Country	Provenance	Mass fraction purity[a]	Purification method	Molecular weight (Kg/mole)	Molecular Formula
1	Potassium tetrachloroplatinate (II)	USA	Sigma Aldrich	0.99	None	0.41509	K_2PtCl_4
2	Octyltrimethylammonium Bromide (OTAB)	England	Alfa Ascer	0.97	None	0.25224	$CH_3(CH_2)_6CH_2N(CH_3)_3Br$
3	Decyltrimethylammonium Bromide(DTAB)	United states	Alfa Ascer	0.98	None	0.2803	$CH_3(CH_2)_{10}CH_2N(CH_3)_3Br$
4	Dodecyltrimethylammonium Bromide(DDTAB)	United states	Sigma Aldrich	0.99	None	0.30834	$CH_3(CH_2)_{12}CH_2N(CH_3)_3Br$
5	Tetradecyltrimethylammonium bromide (TDTAB)	England	Alfa Ascer	0.98	None	0.3364	$CH_3(CH_2)_{14}CH_2N(CH_3)_3Br$
6	Hexadecyltrimethylammonium bromide (HDTAB)	England	Alfa Ascer	0.98	None	0.36446	$CH_3(CH_2)_{16}CH_2N(CH_3)_3Br$
7	Dimethyl Sulfoxide (DMSO)	India	Rankem	99.8	None	0.07813	$(CH_3)_2SO$
8	Distilled water (18.2 MΩ.cm at *25*°C)	India	Merck MilliQ, USA	Ultrapure	Ultrapurified	18.00	H_2O

[a]Mass fraction Purity as mentioned by supplier

Table S2. DLS data of MDTA, MDDTA, MTDTA and MHDTA

SMMSs	Size (nm)	PDI	% Passing and % Channel *vs* Particle size
MDTA	322	0.697	
MDDTA	395	0.674	

MTDTA	422	1.004	
MHDTA	38.7	1.268