Electronic Supplementary Information (ESI)

A deeper insight into the evaluation of water-in-oil microemulsions templated samarium sulfide nanospheres: explored its role in Pickering emulsion formulation for photocatalytic dye degradation and synthesis of PANI@Sm_2S_3 nanocomposites

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Supplementary Material: Tables

Table S1. Average diameter of the Sm_2S_3 nanospheres (synthesised from W/O microemulsion constituted by Tween 20 and Tween 80) obtained from DLS and TEM analysis.

Time (min)	Average diameter of nanospheres (nm) Tween 80/1-butanol/toluene/samarium sulfide	
	DLS	TEM
5	2.0	3.16
15	3.45	5.37
30	5.89	6.41
60	25.89	34.78
120	44.67	46.31

Supplementary Material: Figures

Fig. S1

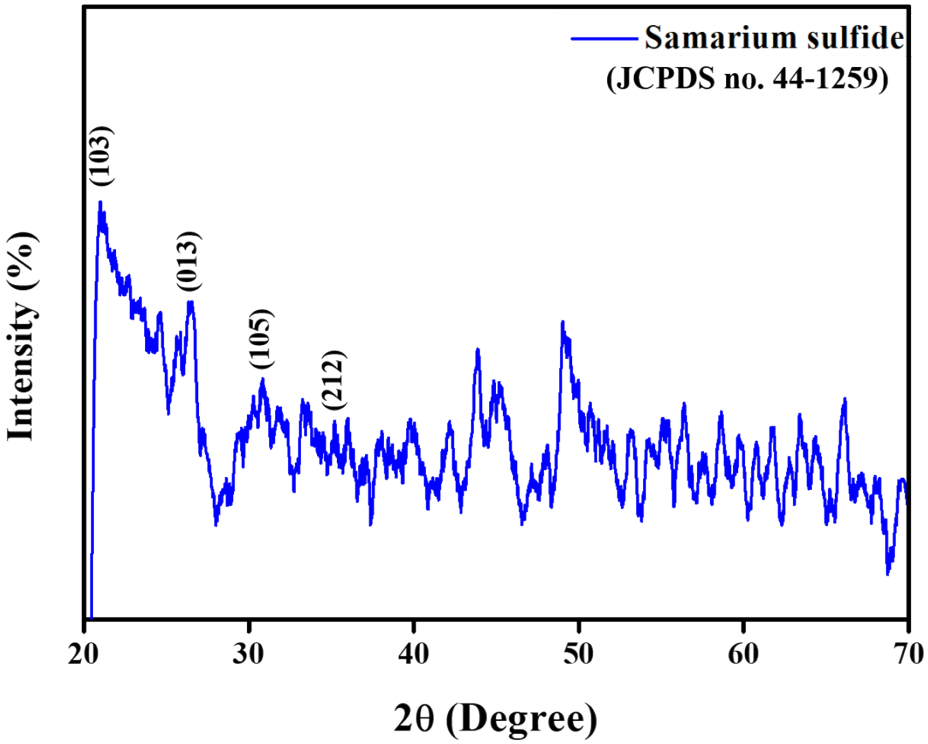

Fig. S1. PXRD spectrum of Sm_2S_3 nanospheres (synthesised from microemulsion, Tween 80/1-butanol/Toluene/ Sm_2S_3) at room temperature.

Fig. S2

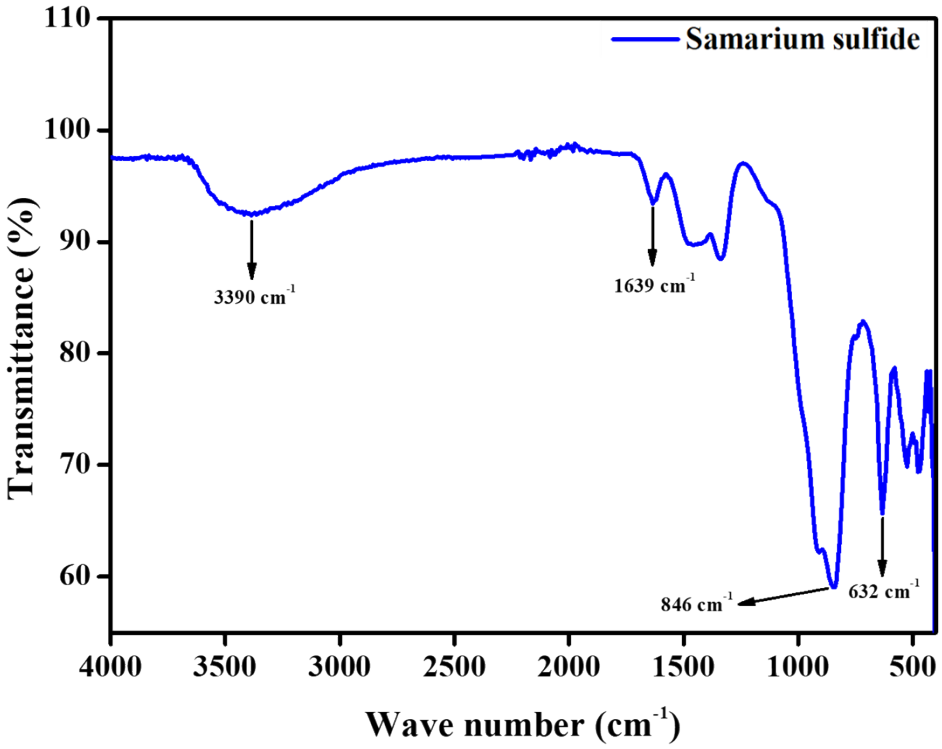

Fig. S2. FTIR spectrum of Sm_2S_3 nanospheres (synthesised from microemulsion, Tween 80/1-butanol/Toluene/ Sm_2S_3) at room temperature.

Fig. S3

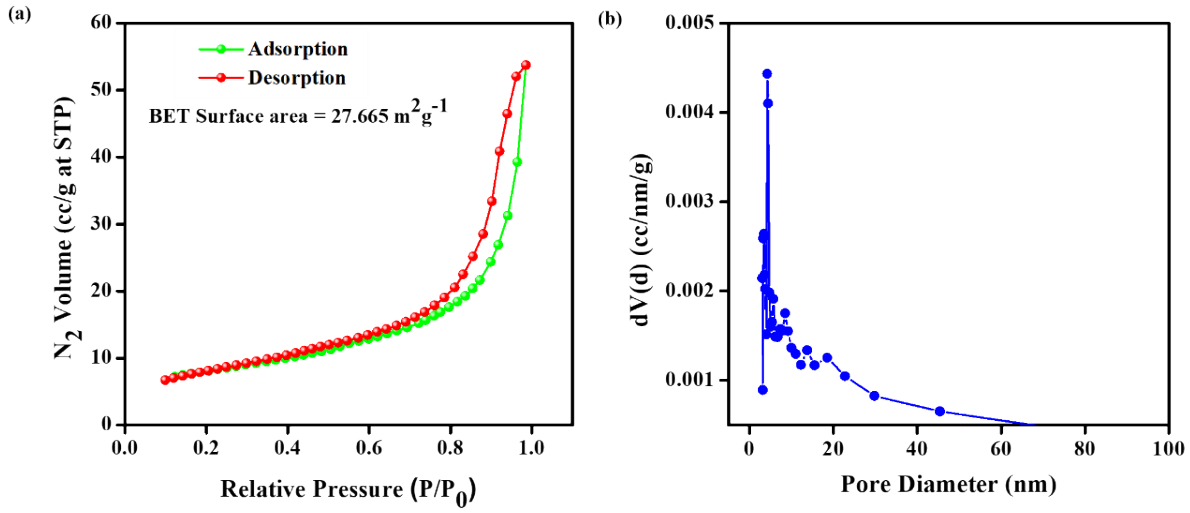

Fig. S3. (a) Nitrogen adsorption-desorption isotherm and (b) pore size distribution curve of Sm_2S_3 nanospheres.

Fig. S4

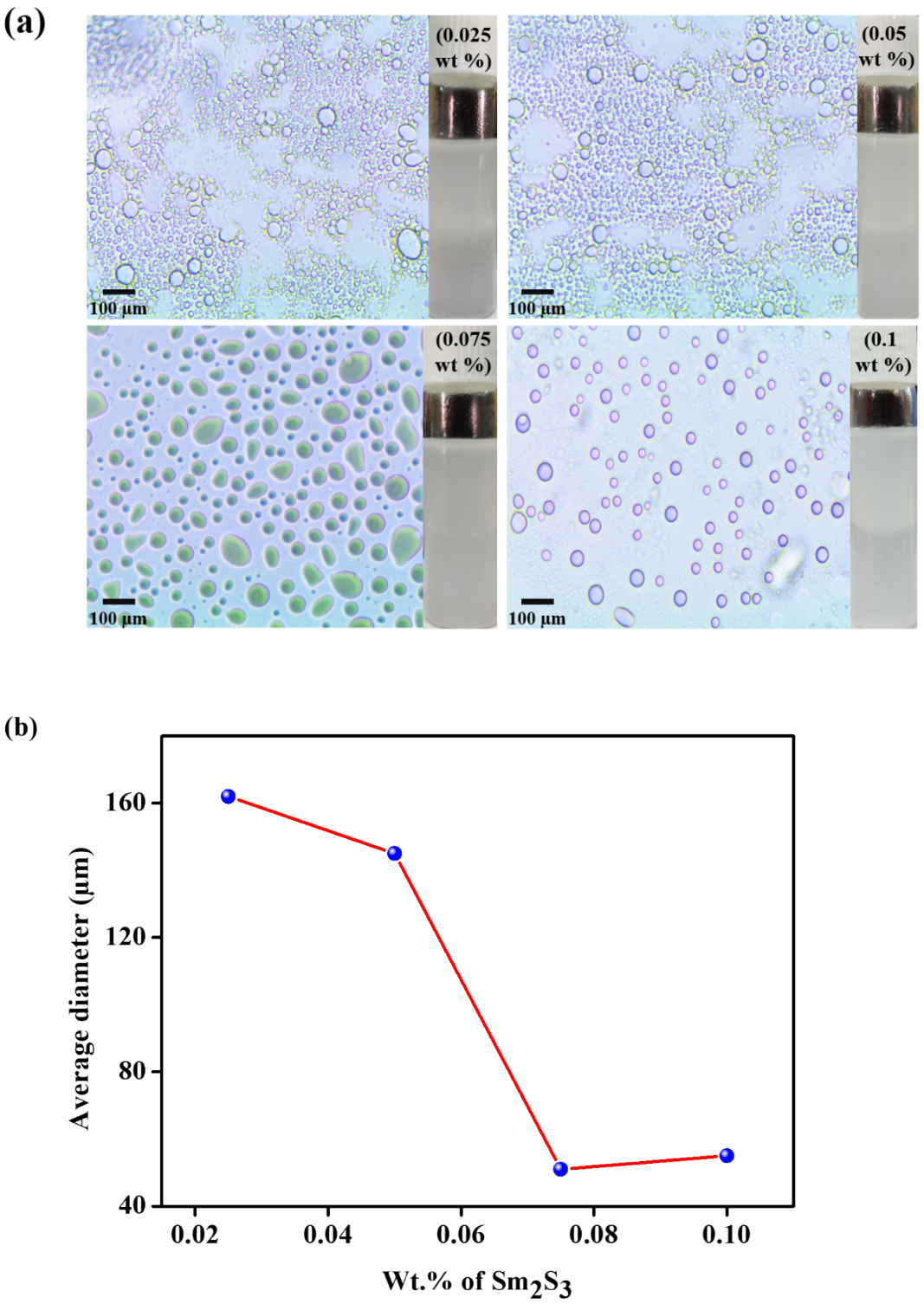

Fig. S4. (a) Optical micrographs along with digital images and (b) variation of droplet diameter of Pickering emulsion formed by different wt.% Sm_2S_3 nanoparticles, after 1 day of preparation.

Fig. S5

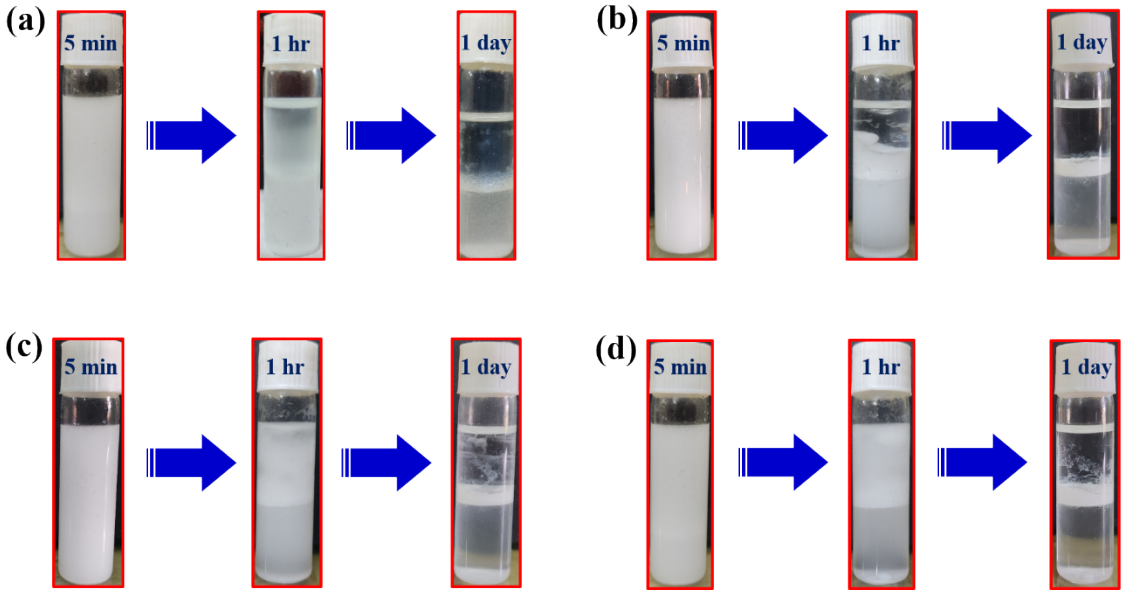

Fig. S5. Digital images of Pickering emulsion formed by 0.1 wt.% Sm_2S_3 nanoparticles with (a) 0.6 mM, (b) 1.3 mM, (c) 2.0 mM and (d) 2.7 mM CTAB at different time intervals.

Fig. S6

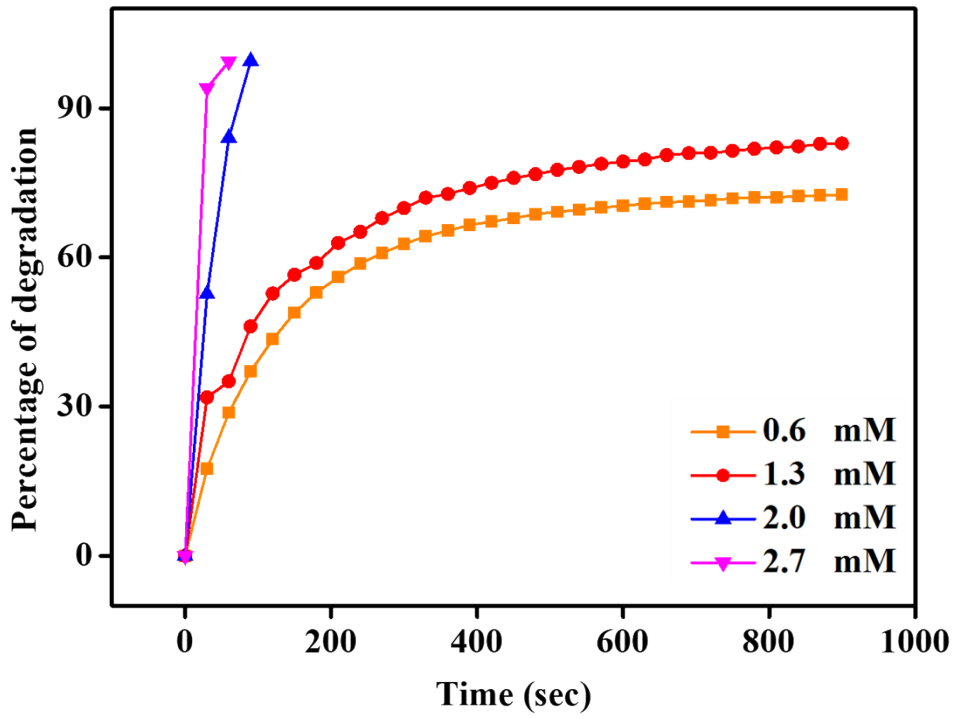

Fig. S6. Photocatalytic degradation of CV dye (having fixed concentration of 10×10^{-5} (M)) after certain time intervals at different CTAB concentration.

Fig. S7

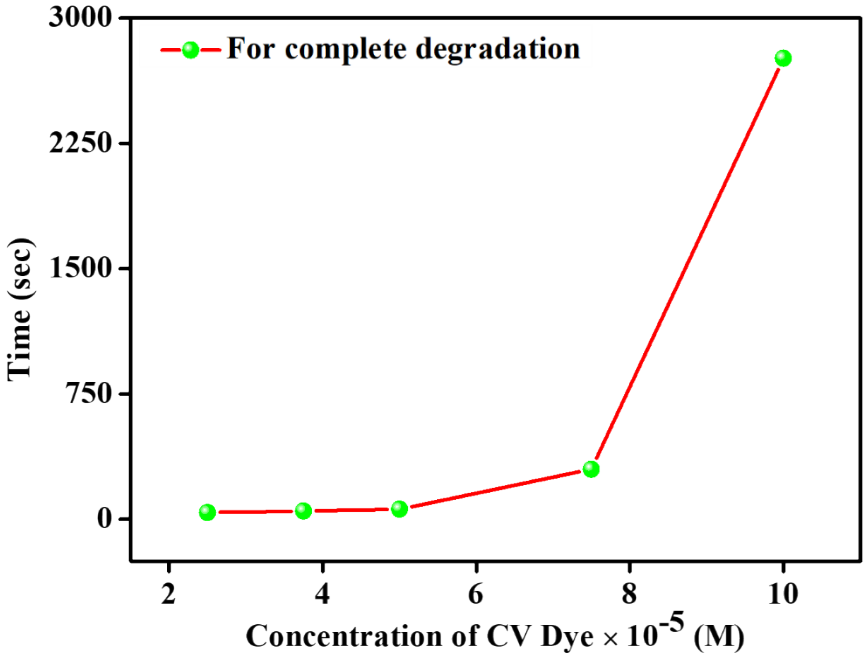

Fig. S7. Time required for complete photocatalytic degradation of CV dye at CTAB concentration of 2.7 mM with Sm_2S_3 of 0.1 wt.%.

Fig. S8

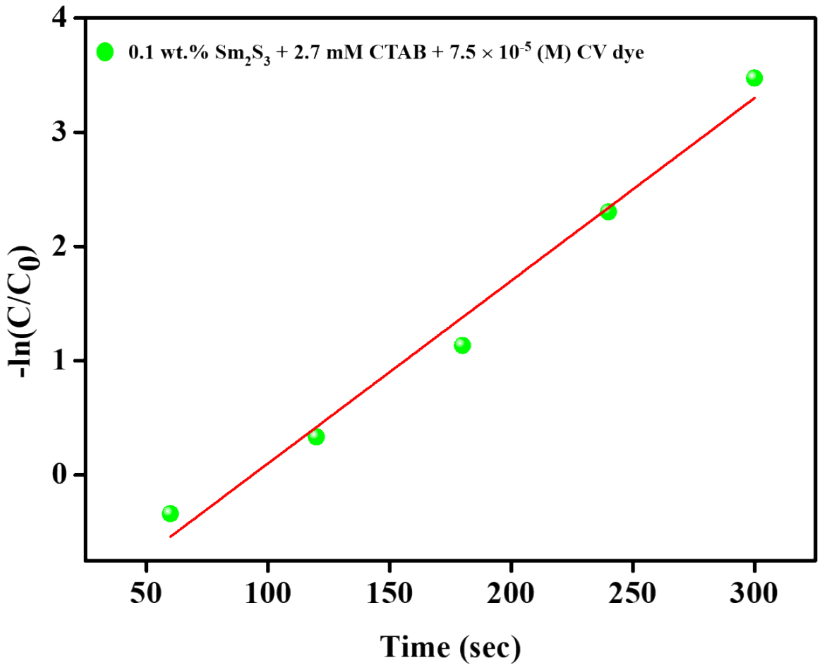

Fig. S8. Langmuir-Hinshelwood plot for photocatalytic CV dye degradation in Pickering emulsion prepared by Sm_2S_3, *in situ* hydrophobized with CTAB, followed linear kinetic relationship.