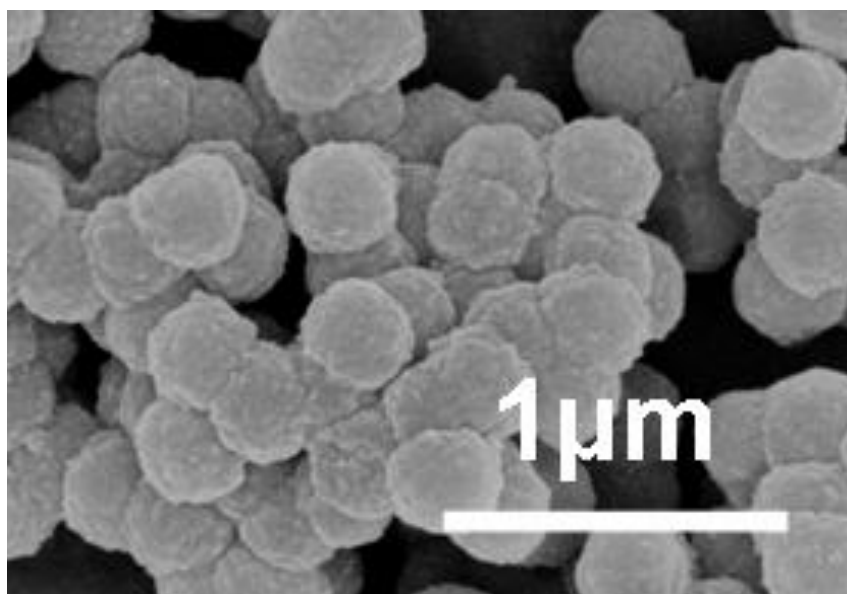


## Supporting information

# Mesoporous Silica Nanospheres Decorated with CdS Nanocrystals for Enhanced Photocatalytic and Excellent Antibacterial Activities

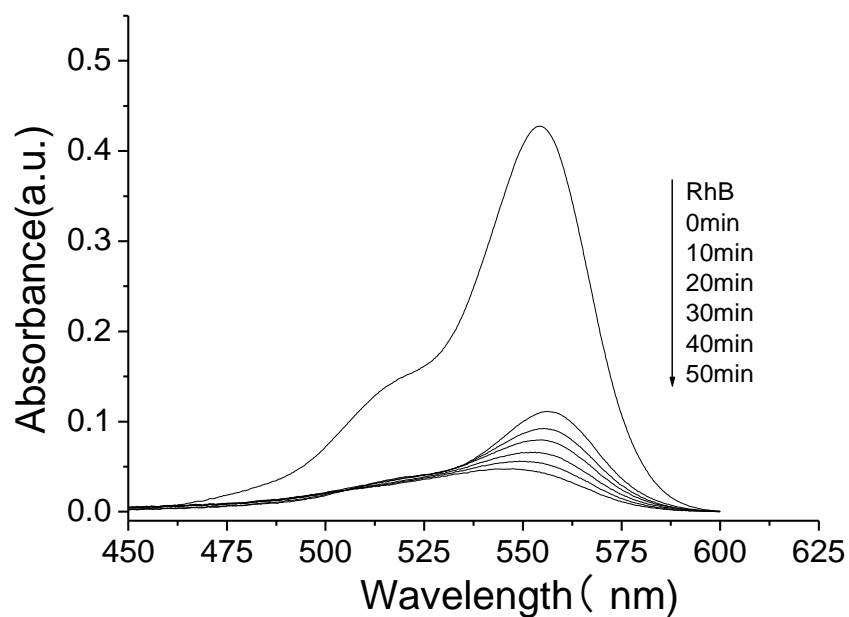
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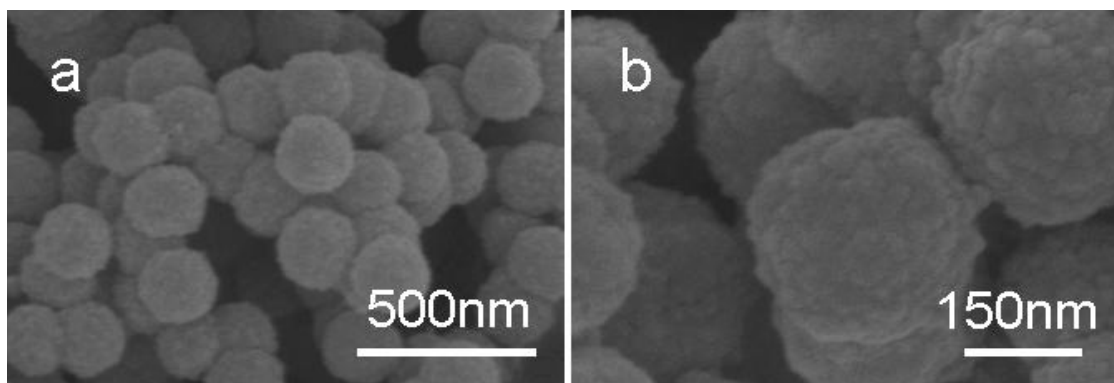
**Fig. S1** SEM image of silica composite nanospheres obtained from 1000 μL tetraethyl orthosilicate (TEOS) and 400 μL octadecyltrimethoxysilane (C18TMS) at room temperature for 24 hours.

**Table S1** Element composition of the as-prepared SiO<sub>2</sub>/CdS mesoporous nanospheres from EDX analyses.

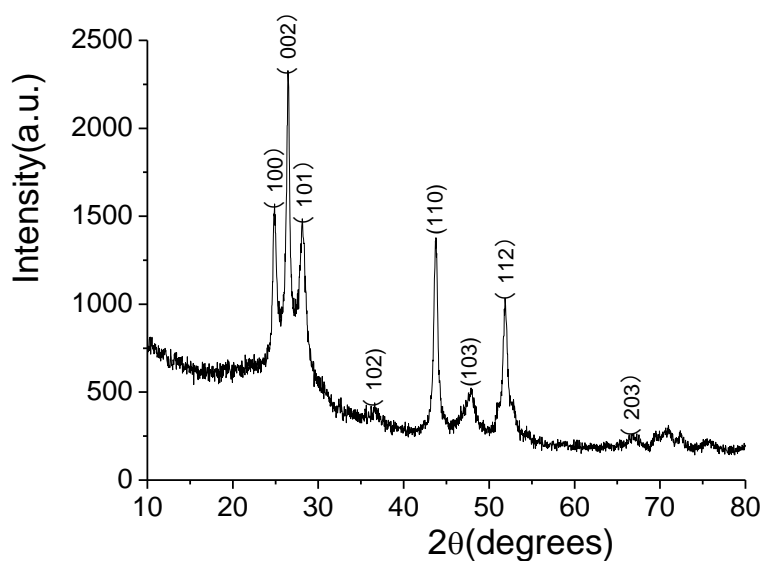
Element	Weight%	Atomic%
O	27.40	51.90
Si	23.50	25.40
S	0.090	0.090
Cd	05.60	01.50
Cu	42.50	20.30
Totals 100.00		



**Fig. S2** UV-vis spectra showing photodecomposition of RhB dye in solution (3.0 mg/L) over the SiO<sub>2</sub>@CdS mesoporous nanospheres (40 mg) obtained from 0.2 mmol cadmium acetate ( Cd(Ac)<sub>2</sub>·2H<sub>2</sub>O ) and 0.4 mmol thiourea via the process represented in Fig. 1 under visible light irradiation.



**Fig. S3** FESEM images of the mesoporous SiO<sub>2</sub>@CdS nanospheres obtained from 0.6 mmol cadmium acetate (Cd(Ac)<sub>2</sub>·2H<sub>2</sub>O) and 1.2 mmol thiourea via the process represented in Fig. 1 (a) A general view of the mesoporous SiO<sub>2</sub>@CdS nanospheres; (b) A magnified SEM image of the nanospheres.



**Fig. S4** XRD pattern of the as-prepared sample obtained from the reaction of 0.6 mmol cadmium acetate and 1.2 mmol thiourea according to the same protocol.