Supporting Information

Layer-by-layer aqueous synthesis, characterization and fluorescence properties of type-II CdTe/CdS core/shell quantum dots with near-infrared emission

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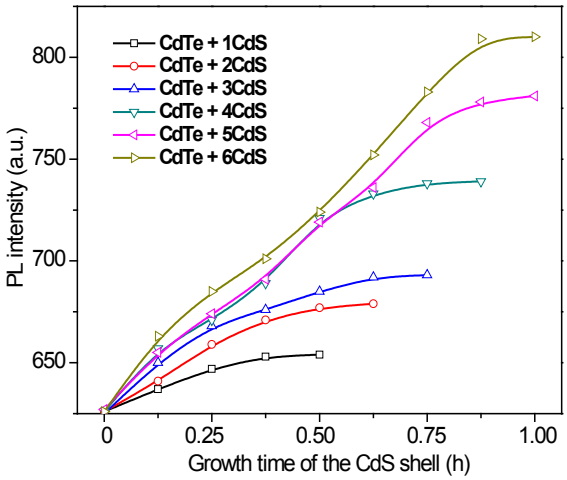
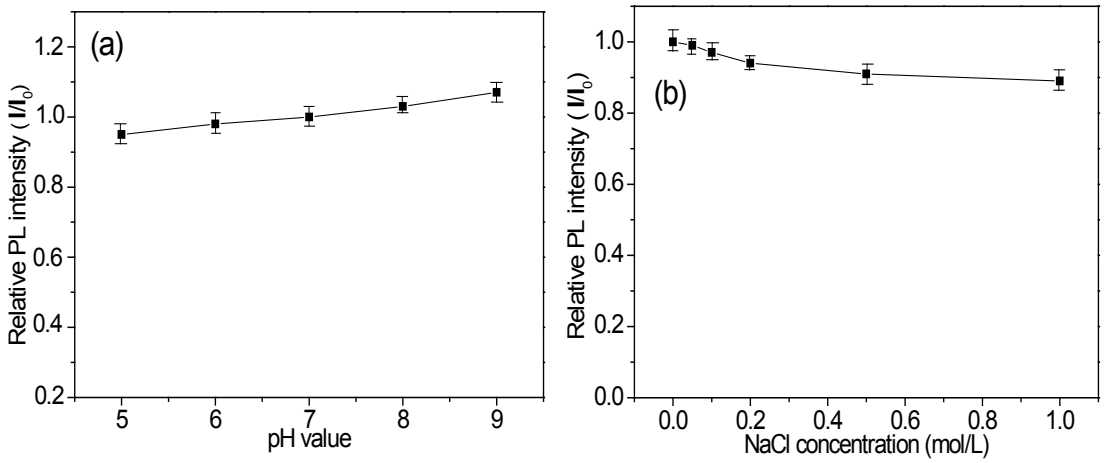


Fig. S1 Temporal evolution of PL emission spectra of CdTe/CdS QDs with 1~6 MLs CdS shell, continuously growing for different time intervals from 0 to 1 h.

Table S1 Detailed PL decay data of CdTe core QDs, and corresponding CdTe/CdS core/shell heterostructures with different MLs of CdS and ZnS shell.

Sample [a]	τ_1 (ns)	τ_2 (ns)	B_1	B_2	$R_{\tau 1}$ (%)	Y_0	x^2
CdTe	1.4	33.5	18.1	49.3	1.5	1.133	1.018
CdTe/2CdS	16.3	58.8	336.6	121.8	43.3	1.346	1.075
CdTe/4CdS	23.4	62.3	310.8	252.5	31.7	0.514	1.013
CdTe/4CdS/2ZnS	23.6	79.3	432.8	400.9	24.3	0.572	1.007

[a] PL decay curves of QDs were plotted by bi-exponential equation, that is, $Y = Y_0 + B_1 \exp(-x/\tau_1) + B_2 \exp(-x/\tau_2)$. The average PL lifetime was calculated as $\tau_a = \tau_1 \times R_{\tau 1} + \tau_2 \times (1-R_{\tau 1})$.



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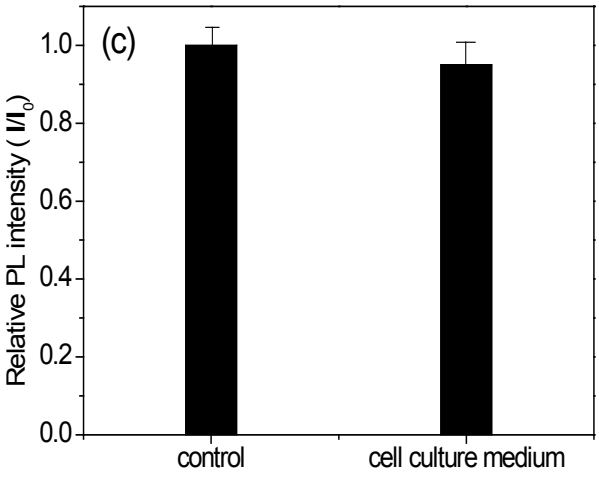

Fig. S2 Photostability analysis of CdTe/4CdS core/shell QDs. Relative PL intensity of QDs in the presence of different substances, including (a) pHs (5~9, in 0.1 M of PBS), (b) salt solutions (NaCl, 0~1 mol/L) and (c) cell culture medium (DMEM with 10 wt% of calf serum, 100 units/mL of penicillin and 5 vol% of CO_2 at 37 ^oC), each measured after 2 h continuous irradiation.

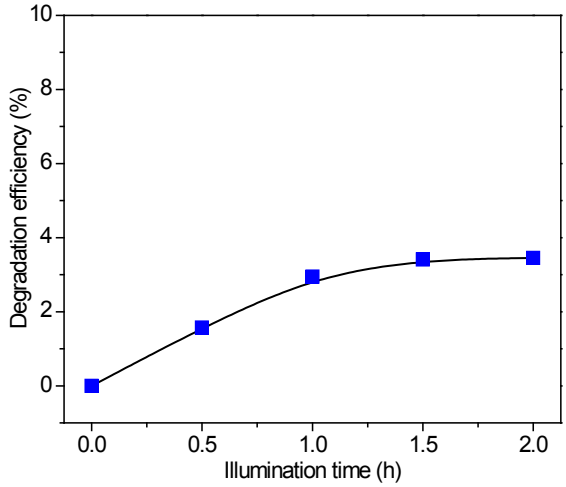

Fig. S3 The degradation efficiency (E_d) of Cy5.5 in the absence of the QDs as photocatalyzer dependent on different illumination time from 0 to 2 h, in a blank experiment.

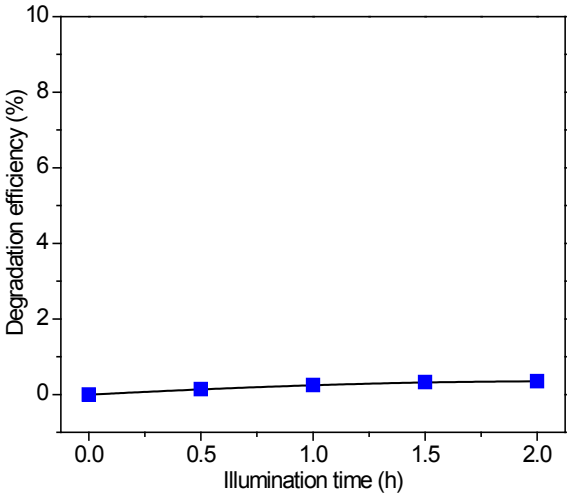

Fig. S4 The degradation efficiency (E_d) of Cy5.5 in the presence of GSH ligand dependent on different illumination time from 0 to 2 h, in a controlled experiment.