

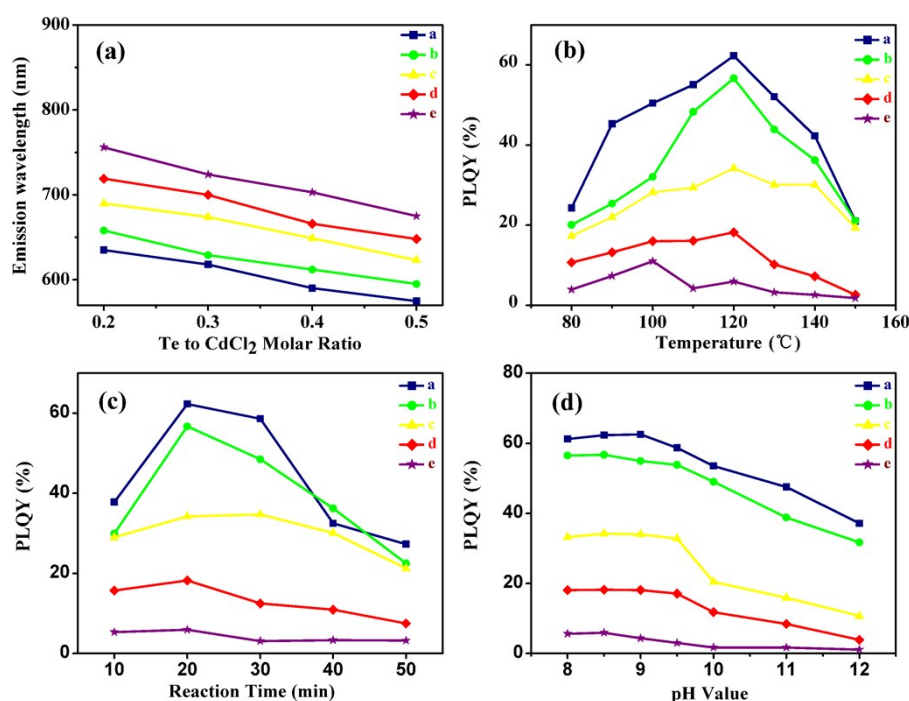
## Synthesis and characterization of near-infrared-emitting CdHgTe/CdS/ZnS quantum dots capped by *N*-acetyl-L-cysteine for in vitro and in vivo imaging

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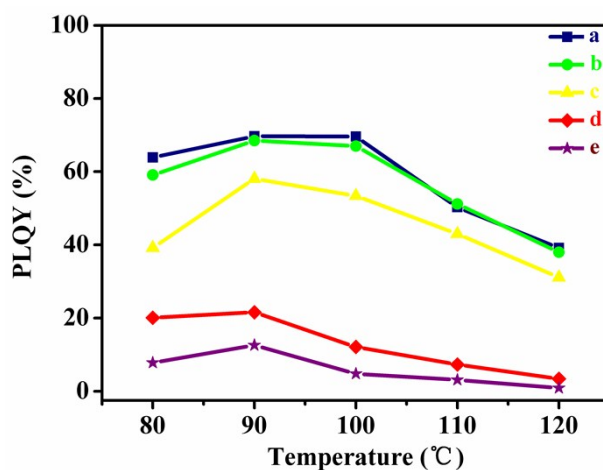
**Fig. S1** (a) Emission wavelength of CdHgTe/CdS QDs versus different molar ratios between Te and CdCl<sub>2</sub> in precursor solution. (b) PLQYs of CdHgTe/CdS QDs during their growth at different temperatures. (c) PLQYs of CdHgTe/CdS QDs versus different reaction time. (d) PLQYs of CdHgTe/CdS QDs versus different pH values of initial precursor solutions. For all samples, [NAC] / [Cd<sup>2+</sup>] = 1.9, [Cd<sup>2+</sup>] = 1.25 mM. a, b, c, d and e represent the CdHg(2%)Te/CdS QDs, CdHg(5%)Te/CdS QDs, CdHg(10%)Te/CdS QDs, CdHg(15%)Te/CdS QDs and CdHg(20%)Te/CdS QDs, respectively.

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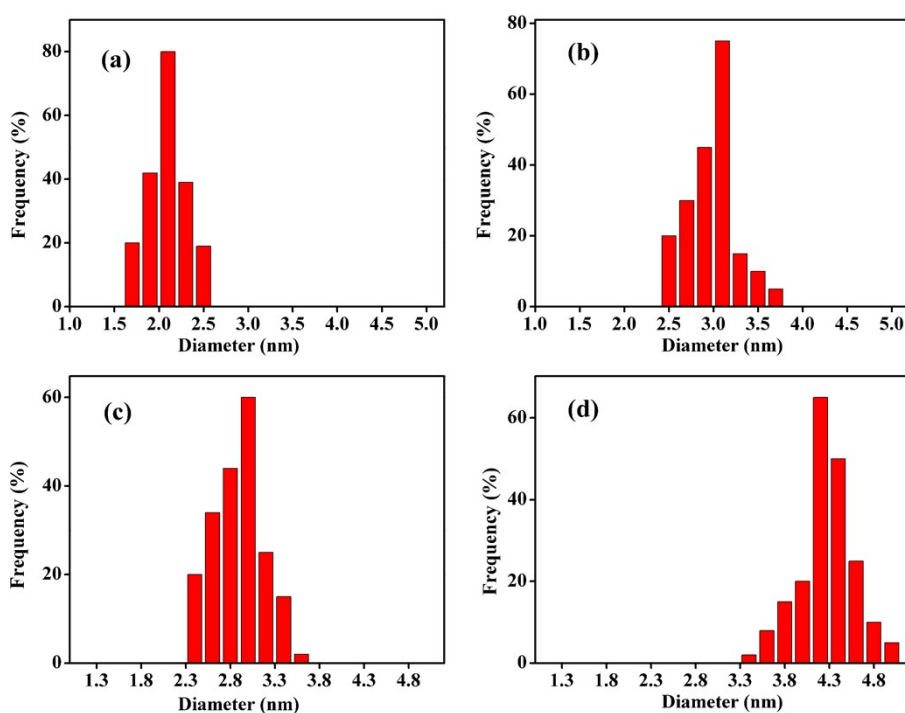
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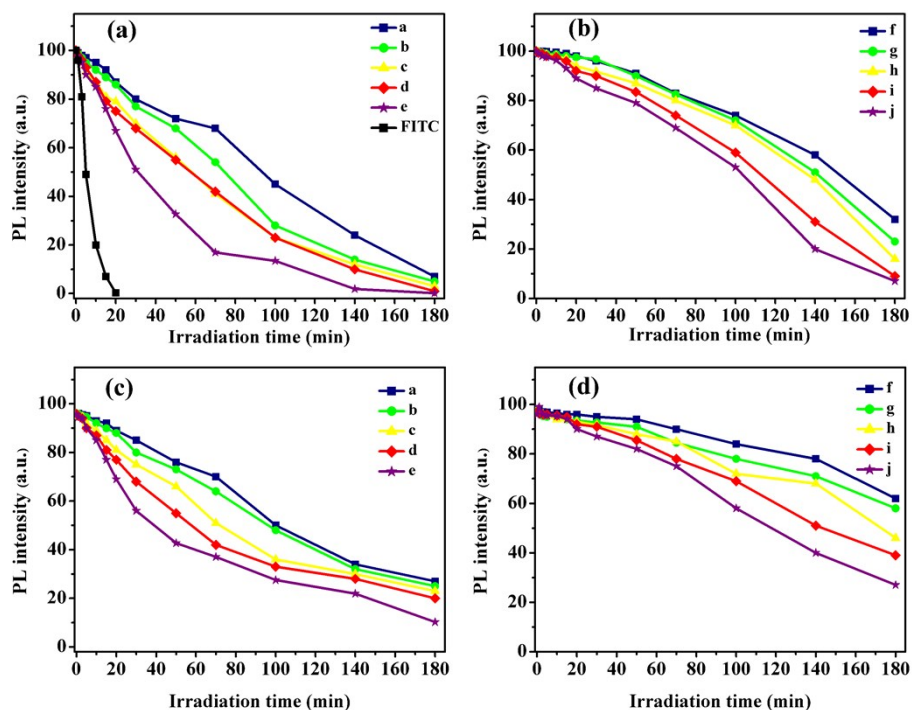
**Fig. S2** PLQYs of as-prepared CdHgTe/CdS/ZnS QDs during their growth at different temperatures. a, b, c, d and e represent the CdHg(2%)Te/CdS/ZnS QDs, CdHg(5%)Te/CdS/ZnS QDs, CdHg(10%)Te/CdS/ZnS QDs, CdHg(15%)Te/CdS/ZnS QDs and CdHg(20%)Te/CdS/ZnS QDs, respectively.



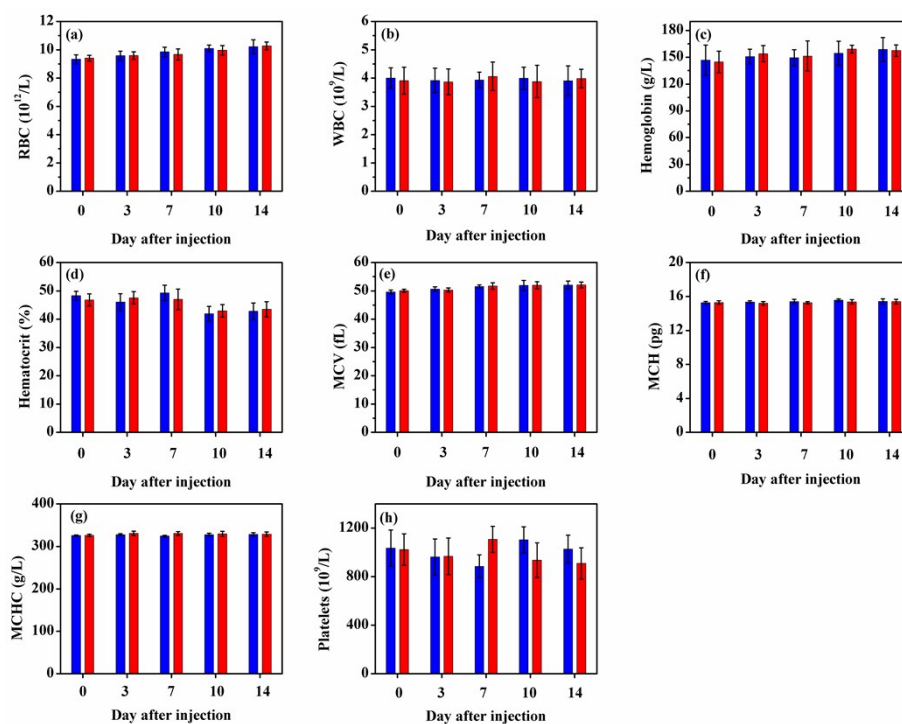
**Fig. S3** Histograms of the size distribution of CdHg(2%)Te/CdS QDs (a), CdHg(2%)Te/CdS/ZnS QDs (b), CdHg(20%)Te/CdS QDs (c), and CdHg(20%)Te/CdS/ZnS QDs (d), respectively.

### Stability of CdHgTe/CdS and CdHgTe/CdS/ZnS QDs

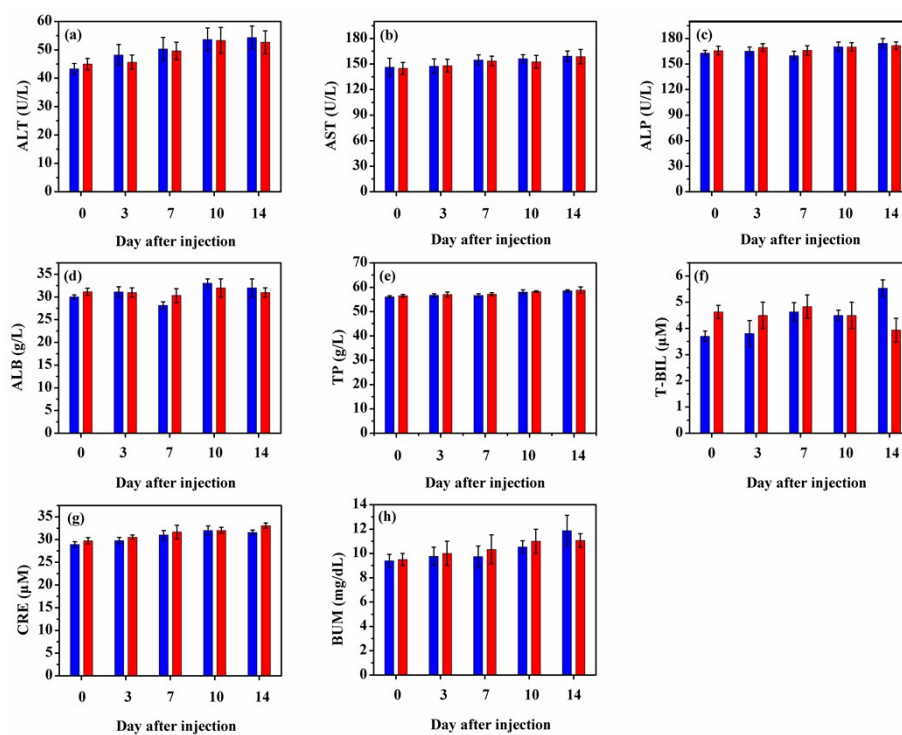
The photostability of aqueous dispersions of FITC, CdHgTe/CdS QDs and CdHgTe/CdS/ZnS QDs was studied by irradiating the samples with a 200 W xenon lamp at 365nm under open air condition at room temperature (Fig S4a and Fig S4b). Before measurement, the samples were washed with ultrapure water three times to remove any residual reagent and the achieved precipitates were re-dissolved ( $A=0.1$ ) in Milli-Q water. The distance between the sample solutions and lamp was fixed to 5 cm. Aliquots of the sample solution were taken at regular intervals for PL measurements. Fig. S4c and d show photostability of CS QDs and CSS QDs in 1% BSA solution under similar conditions. The PLQYs slightly decreased after conjugated with BSA. The fluorescence intensity of CSS QDs virtually remained the same as the original value when irradiation time was extended to 60 min, suggesting the excellent stability of CSS QDs in biological environments.



**Fig. S4** Evolution of the FL intensity upon irradiated by a xenon lamp (365 nm, 200 W) in aqueous solution (a) and (b), BSA solution (c) and (d). a, b, c, d, e, f, g, h, i and j stand for CdHg(2%)Te/CdS, CdHg(5%)Te/CdS, CdHg(10%)Te/CdS, CdHg(15%)Te/CdS, CdHg(20%)Te/CdS, CdHg(2%)Te/CdS/ZnS, CdHg(5%)Te/CdS/ZnS, CdHg(10%)Te/CdS/ZnS, CdHg(15%)Te/CdS/ZnS and CdHg(20%)Te/CdS/ZnS, respectively.



**Fig. S5** Hematology results from animals treated with QDs collected after 14 days of treatment (red) or a vehicle control (blue). a–h) These results show mean and standard deviation of red blood cells, RBC (a), white blood cells, WBC (b), hemoglobin (c), hematocrit (d), mean corpuscular volume, MCV (e), mean corpuscular hemoglobin, MCH (f), mean corpuscular hemoglobin concentration, MCHC (g), platelets (h).



**Fig. S6** Biochemistry results from animals treated with QDs collected after 14 days of treatment (red) or a vehicle control (blue). a–h) These results show mean and standard deviation of alanine aminotransferase, ALT (a), aspartate aminotransferase, AST (b), alkaline phosphatase, ALP (c), albumin, ALB (d), total bilirubin, T-BIL (e), total protein, TP (f), creatinine, CRE (g), blood urine nitrogen, BUN (h).