Supplementary Information

Fabrication of Amphiphilic Quantum Dots towards High-Colour-Quality Light-Emitting Devices

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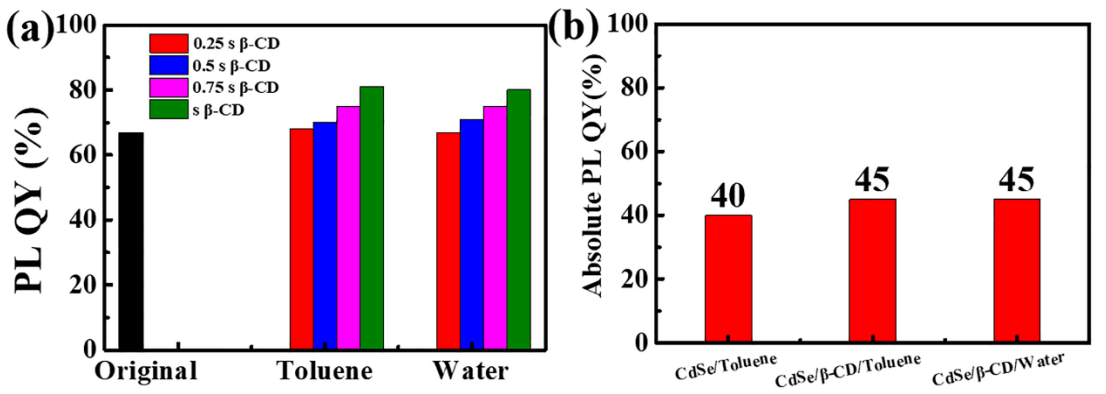

Fig. S1 (a) Absolute PL QY of CdSe/ZnS/β-CD QDs by using different concentration of aqueous solutions of β-CD: s β-CD, 0.75 s β-CD, 0.5 s β-CD, 0.25 s β-CD. (b) Absolute PL QY of orange emissive CdSe QDs dispersed in toluene and CdSe/β-CD QDs dispersed in toluene and water.

We carried out a series of experiments under different conditions to synthesize amphiphilic CdSe/ZnS/β-CD QDs, including different β-CD/QD ratios and QD types. To investigate the influence of PL QY on β-CD/QD ratio, we used the different concentration of β-CD solutions to repeat the experiment as presented in Experimental section (The saturated aqueous solution of β-CD, referred to as s β-CD, was diluted to 4/3 times, 2 times and 4 times, respectively, to obtain different concentration of β-CD solutions, referred to as 0.75 s β-CD, 0.5 s β-CD and 0.25 s β-CD, respectively). The results are shown in Fig. S1a. As the concentration of β-CD decreases, the enhancement of PL QY get weaken. Beside CdSe/ZnS QDs, CdSe QDs were also used in the experiment; the as-prepared β-CD-modified QDs were abbreviated to CdSe/β-CD. As shown in Fig. S1b, the improvement of PL QY is not significant, which might be ascribed to the intrinsic low stability of CdSe QDs.

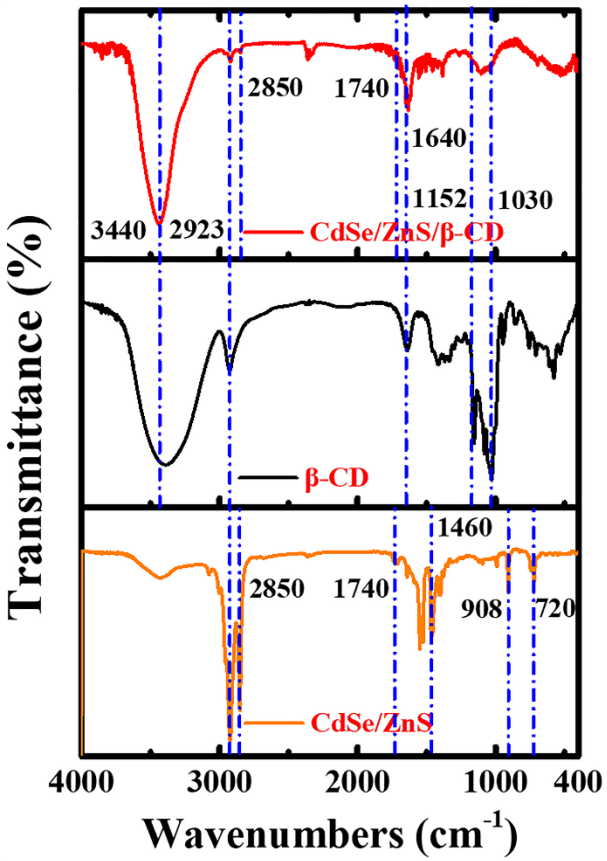

Fig. S2 IR spectra of CdSe/ZnS QDs, β-CD and CdSe/ZnS/β-CD QDs.

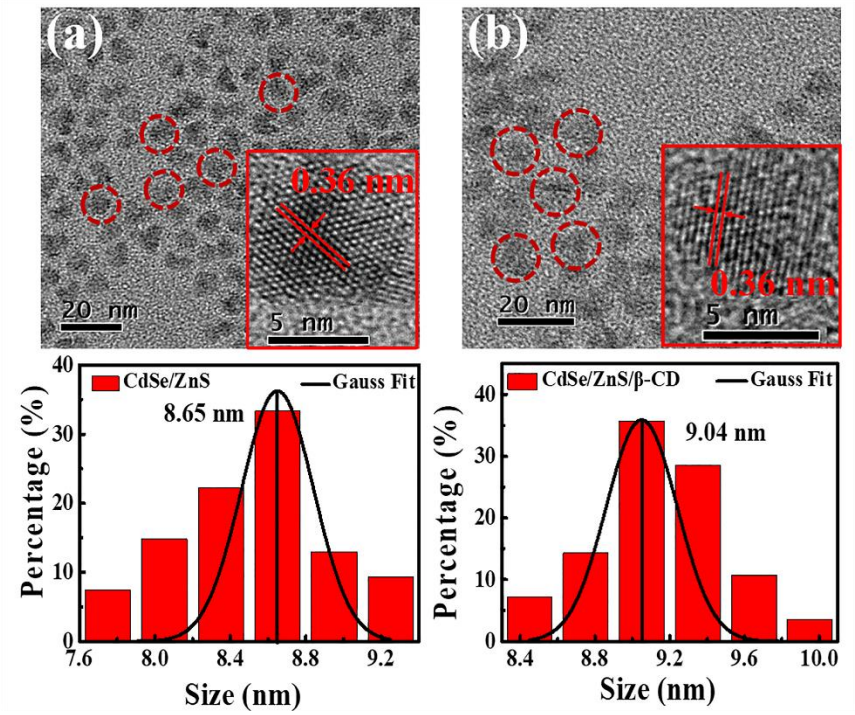

Fig. S3 TEM images and the corresponding size distributions of green emissive CdSe/ZnS QDs (a), yellow emissive CdSe/ZnS/β-CD QDs (b). Inset: HRTEM images of the corresponding QDs.