

## Electronic Supplementary Information

### Fast synthesis of fluorescent SiO<sub>2</sub>@CdTe nanoparticles with reusability in detection of H<sub>2</sub>O<sub>2</sub>

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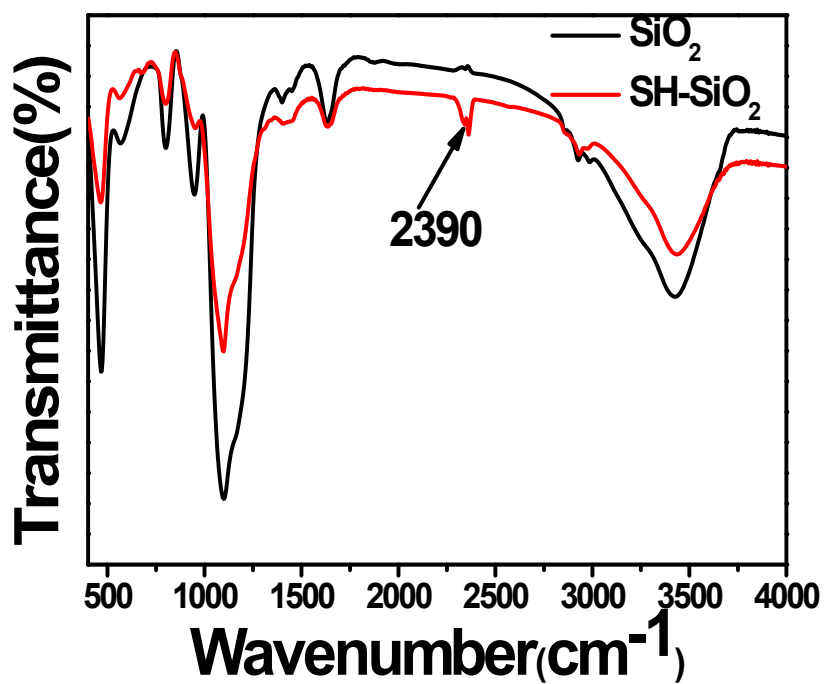


Fig. S1 FT-IR spectra of SiO<sub>2</sub> and SH-SiO<sub>2</sub>.

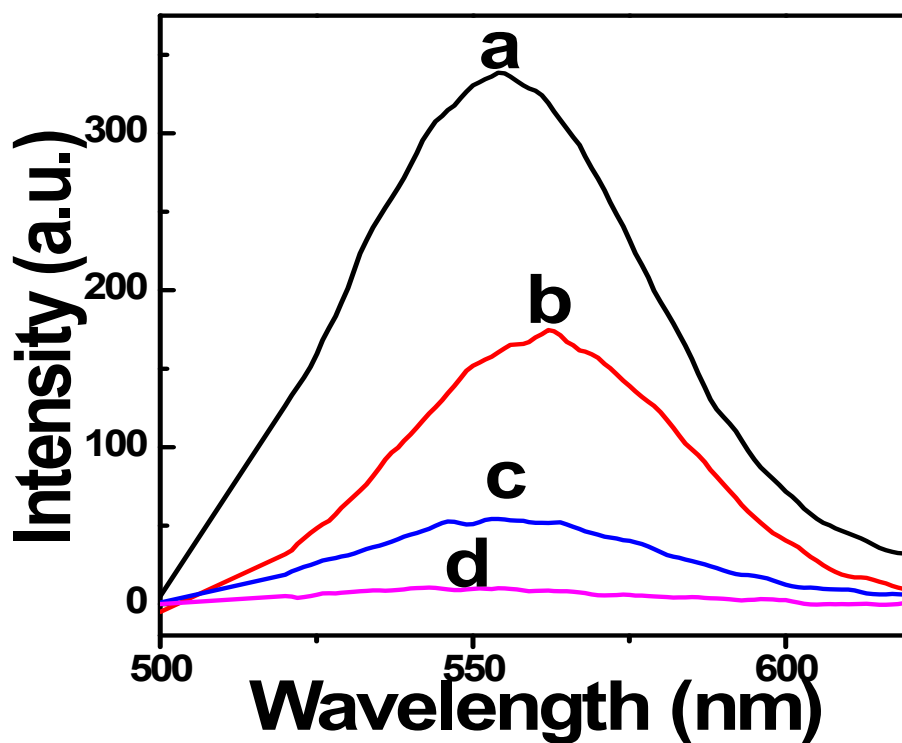
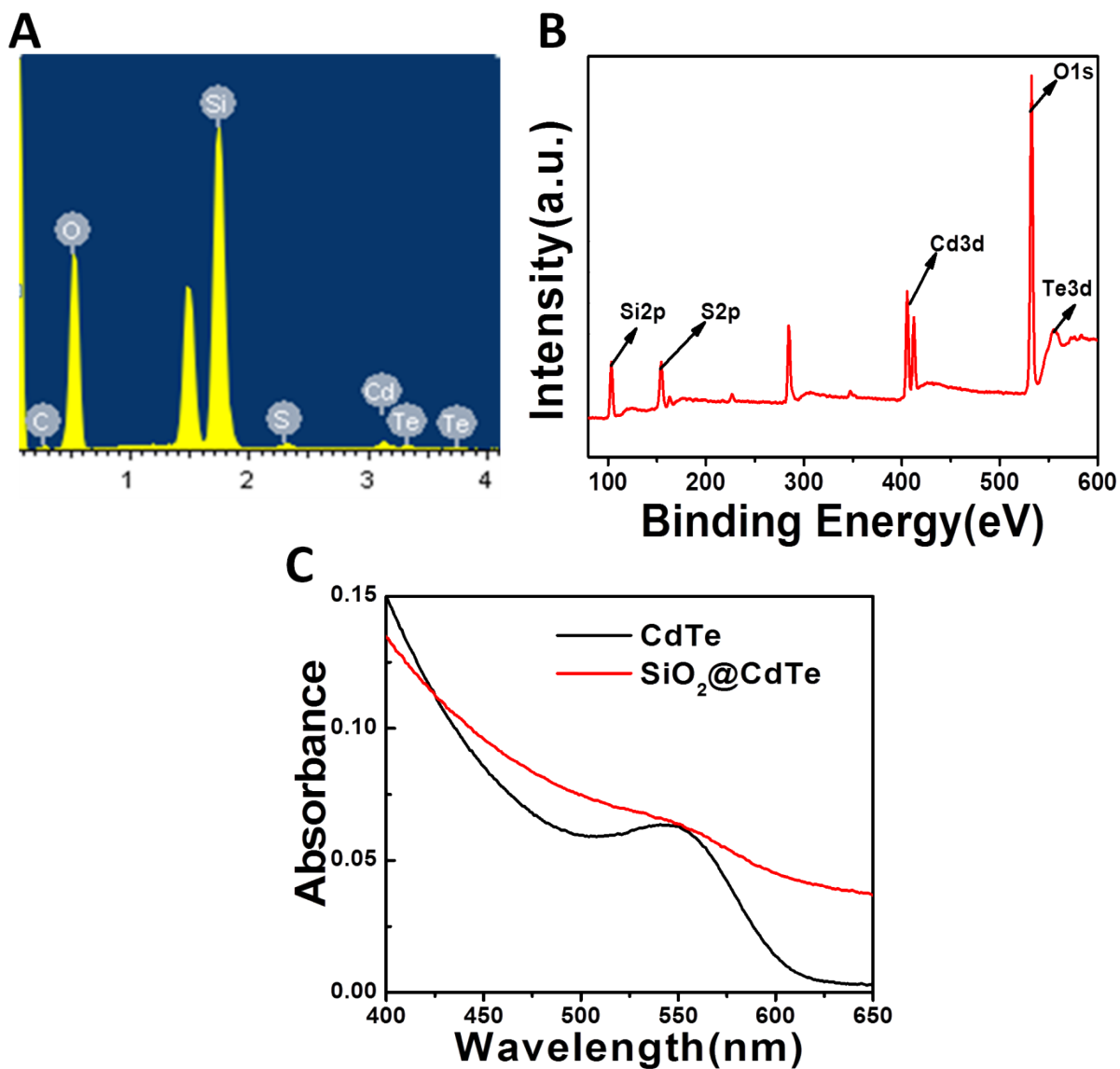


Fig. S2 (a) The fluorescent spectrum of the pure SiO<sub>2</sub>@CdTe NPs and (b-d) the fluorescent spectra of the first, second, third washing supernatant.



**Fig. S3** (A) EDS and (B) XPS of the as-prepared SiO<sub>2</sub>@CdTe NPs; (C) Absorption spectrum of CdTe QDs and SiO<sub>2</sub>@CdTe NPs.

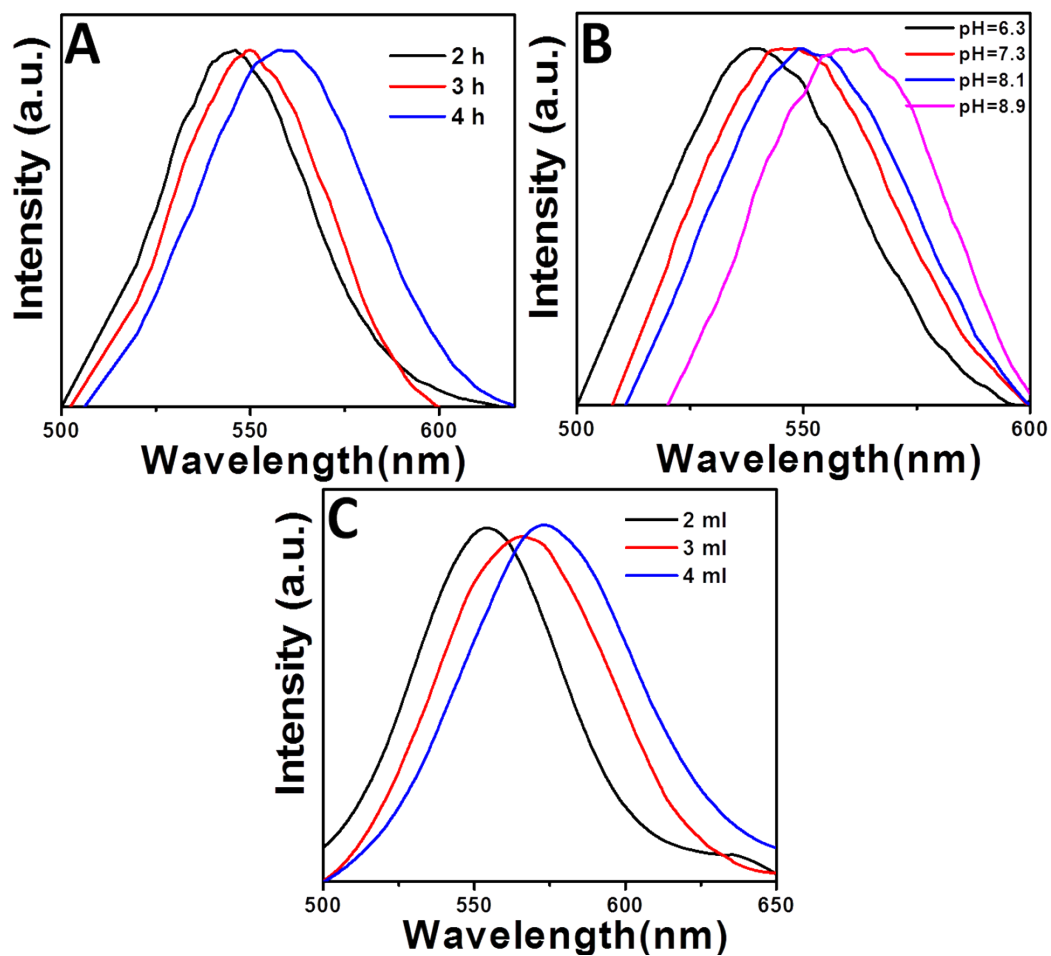
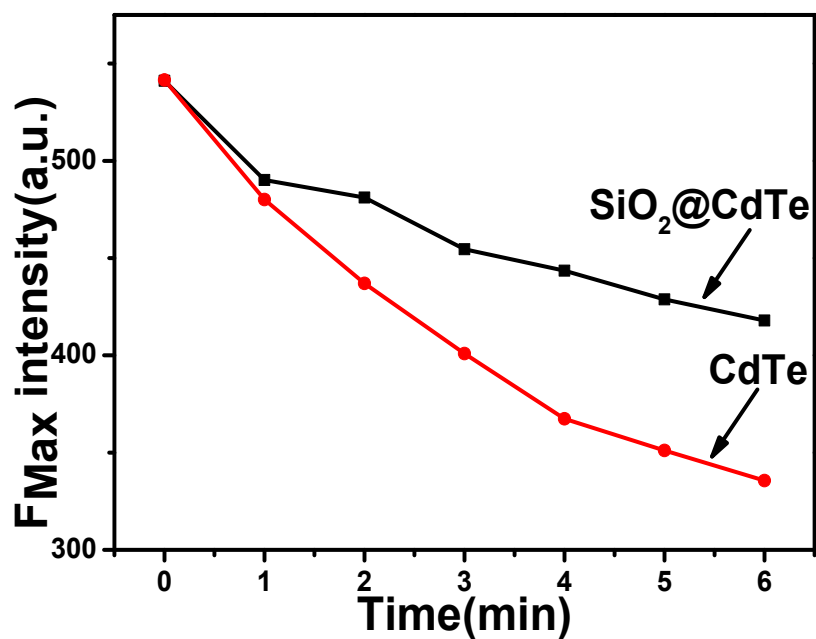
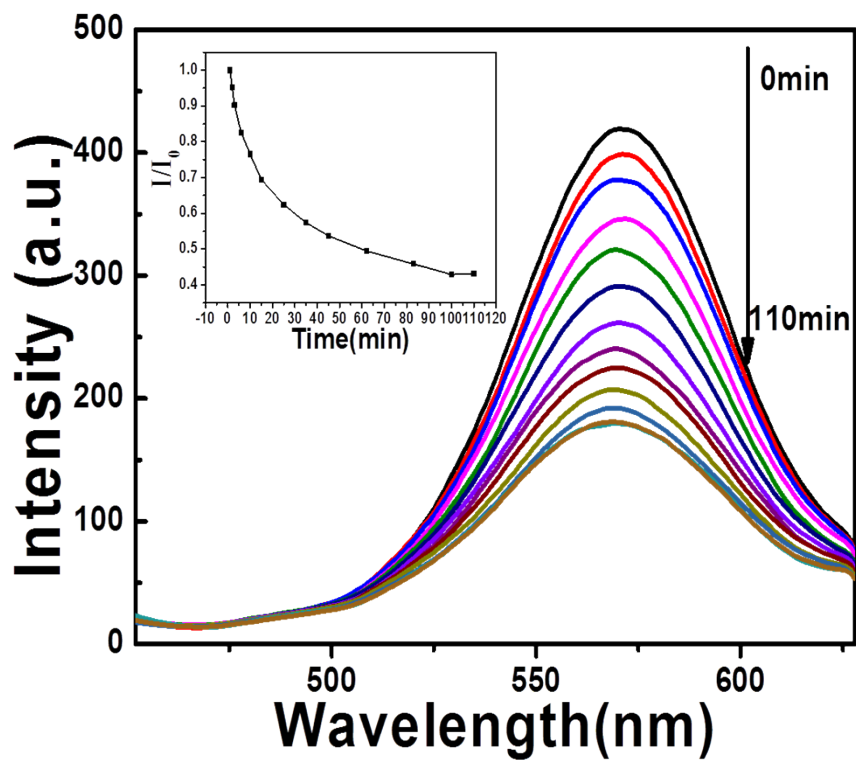


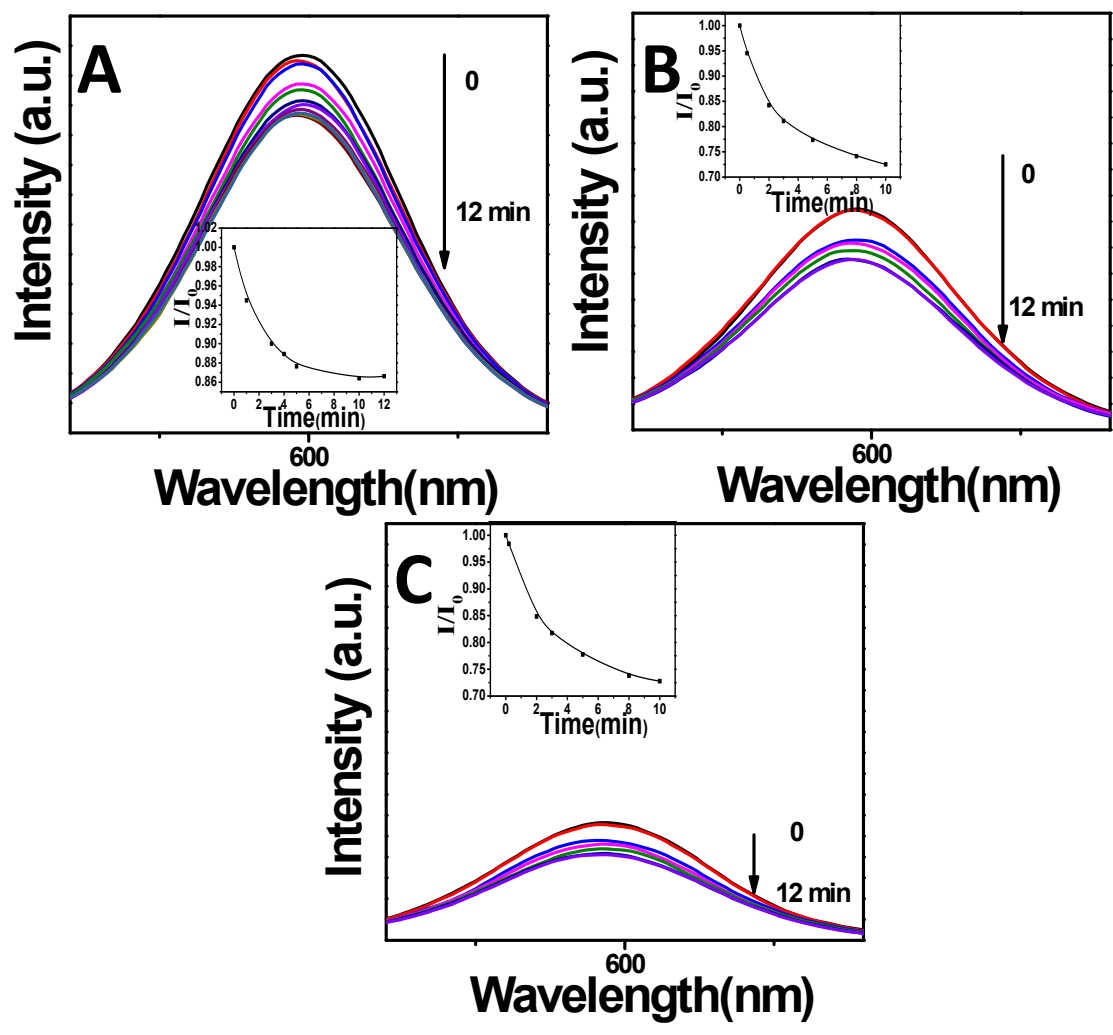
Fig. S4: (A) The hydrothermal time, (B) pH value and (C) the amount of SH-SiO<sub>2</sub> was respectively adjusted under other constant conditions.



**Fig. S5** The trend of the fluorescent intensity of CdTe QDs and SiO<sub>2</sub>@CdTe NPs response to 0.1 mM H<sub>2</sub>O<sub>2</sub> at the same conditions over time.



**Fig. S6** The fluorescence spectra of the NPs changed with 0.075 mM H<sub>2</sub>O<sub>2</sub> over time.



**Fig. S7** The SiO<sub>2</sub>@CdTe NPs could be reused to detect H<sub>2</sub>O<sub>2</sub> eight-times. Relatively, (A) the fluorescent spectra were the first time to detect H<sub>2</sub>O<sub>2</sub> (0.0125 mM); (B) the fifth to detect H<sub>2</sub>O<sub>2</sub> (0.015 mM); (C) the eighth to detect H<sub>2</sub>O<sub>2</sub> (0.02 mM).