Aqueous synthesis of Ag$^+$ doped CdS quantum dots and its application in H$_2$O$_2$ sensing

Lin Lin$^a$, Yaqiong Wen$^a$, Yanxia Liang$^a$, Na Zhang$^b$, Dan Xiao$^{a,b}$

**Fig. S1.** The response behavior of H$_2$O$_2$ sensing system, CdS-$\text{Ag}_2\text{S}$ QDs prepared at different pH (a) 5.6, (b) 7.2, (c) 10.2, (d) 11.2, plot of the luminescence ratio $(I_{F0} - I_F)/I_{F0}$ versus lgC of different CdS-$\text{Ag}_2\text{S}$ QDs.
Fig. S2. (A) Fluorescence spectra of CdS-Ag$_2$S QDs prepared at different ratio of [Cd$^{2+}$] / [S$^2$-], (a) 0.5:1, (b) 1:1, (c) 1.5:1, (d) 2:1, (e) 2.5:1, (f) 3:1. (B) Fluorescence spectra of CdS-Ag$_2$S QDs prepared at different concentration of reactants, (a) 3×10$^{-3}$, (b) 3×10$^{-4}$, (c) 3×10$^{-5}$, (d) 3×10$^{-6}$. (C) Fluorescence spectra of CdS-Ag$_2$S QDs containing various molar ratios of Ag to CdS (a) 1%, (b) 3%, (c) 5%, (d) 10%, (e) 15%, (f) 25%. (D) Fluorescence spectra of CdS-Ag$_2$S QDs prepared at different reaction time, (a) 20 min, (b) 40 min, (c) 60 min, (d) 90 min, (e) 120 min, (f) 180 min.
Fig. S3. Fluorescence decay curve of CdS-Ag₂S QDs after interaction with H₂O₂.
**Fig. S4.** The TEM images (a, b) and the HRTEM (c) image of CdS-Ag$_2$S QDs after interaction with H$_2$O$_2$. 
**Fig. S5.** The pH value of PBS on the relative fluorescence quenching intensity, plot of the luminescence ratio $(I_{F0} - I_F)/I_{F0}$ versus $lgC$ at different pH values.