Supplementary Information for

The Preparation of High-Quality Water-soluble Silicon Quantum Dots and Their Application in Detection of Formaldehyde

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QY Calculations
The QYs of SiQDs were calculated by comparing the integrated PL intensities and absorbance values of the samples (exited at 320 nm), using quinine sulfate dissolved in 0.1 mol/L H$_2$SO$_4$ aqueous solution (refractive index ($\eta$) of 1.33) as the standard (QY = 58%). All samples dissolved in water ($\eta$ = 1.33) had absorbance less than 0.1 at 320 nm. The relative QY can be calculated using the below equation:

$$\Phi_X = \Phi_{ST} \left( \frac{\text{Grad}_X}{\text{Grad}_{ST}} \right) \left( \frac{\eta_X^2}{\eta_{ST}^2} \right)$$

Where $\Phi$ is the QY, Grad is the gradient from the plot of integrated fluorescence intensity versus absorbance, and $\eta$ is the refractive index of the solvent; ST denotes the standard and X denotes the sample.

Fig.S1 PL spectra of Si QDs grown at different heating temperature.
Fig. S2 Cell viability of L-929 cells treated with SiQDs of serial concentrations.

Fig. S3 UV-visible absorption spectra of APTMS, APTES and UPTES.

Fig. S4 The quenching degree of Si QDs at different pH values.