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_2SO_4 aqueous solution (refractive index (η) of 1.33) as the standard (QY = 58%). All samples dissolved in water (η = 1.33) had absorbance less than 0.1 at 320 nm. The relative QY can be calculated using the below equation:

$$\Phi_X = \Phi_{ST} (Grad_X/ Grad_{ST}) (\eta_X^2/ \eta_{ST}^2)$$

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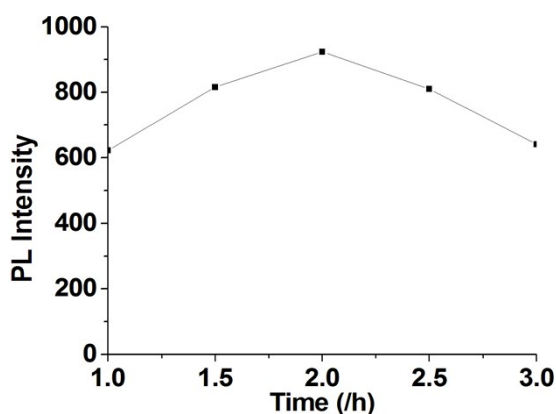

Fig.S1 PL spectra of Si QDs grown at different heating temperature.
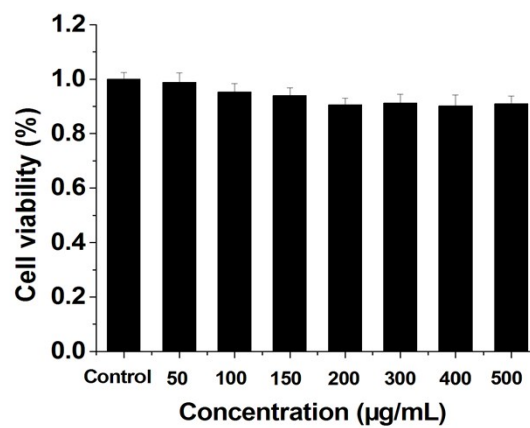
Fig.S2 Cell viability of L-929 cells treated with SiQDs of serial concentrations.
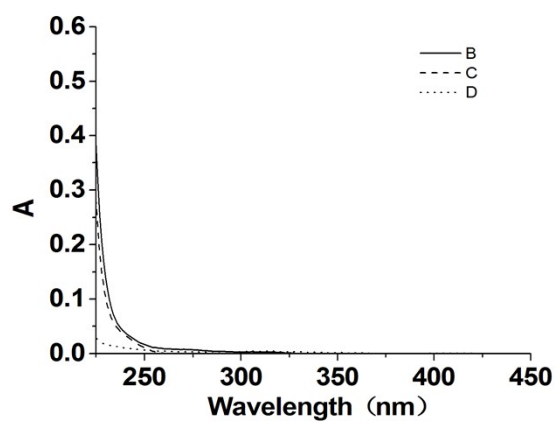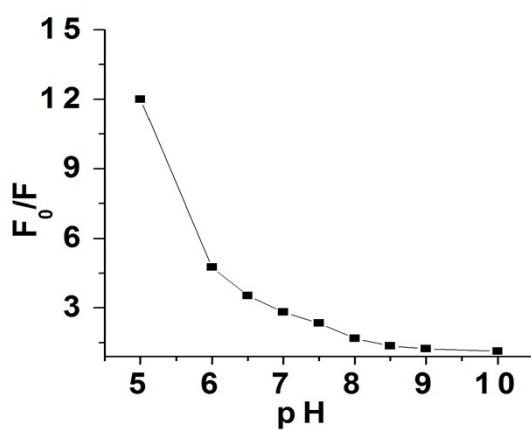

Fig.S3 UV-visible absorption spectra of APTMS, APTES and UPTES.

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