

Supplementary material

Figure S1 The graph that the energy of the excitation light as a function of the emission.

The calculation of quantum yield

The quantum yield (QY) of FCNPs was measured according to the method described in the references. Briefly, quinine sulfate (0.1M H_2SO_4 as solvent) was chosen as a reference standard (QY = 54%), the FCNPs was dissolved in distilled water, the absorbance for the standard and the FCNPs samples at the excitation wavelengths and the fluorescence spectra of the solutions were measured respectively. The integrated fluorescence intensity (that is, the area of the fluorescence spectrum) from the fully corrected fluorescence spectrum was calculated. The areas of the integrated fluorescence intensity vs. absorbance were plotted. The plot obtained should be a straight line with a gradient M, which was used to calculate the quantum yield according to the following equation:

$$\phi_x = \phi_s \left(\frac{M_x}{M_s}\right) \left(\frac{\eta_x}{\eta_y}\right)^2$$

Where the subscripts s and x denote standard (such as quinine sulfate) and test samples respectively, Φ is QY, and η is the refractive index of the solvent. It should be noted that the excitation wavelength for measurements of QY was set at the excitonic absorption peak of the FCNPs samples in our experiments.