



Supplementary Information for

## Facile and scalable preparation of fluorescent carbon dots for multifunctional applications

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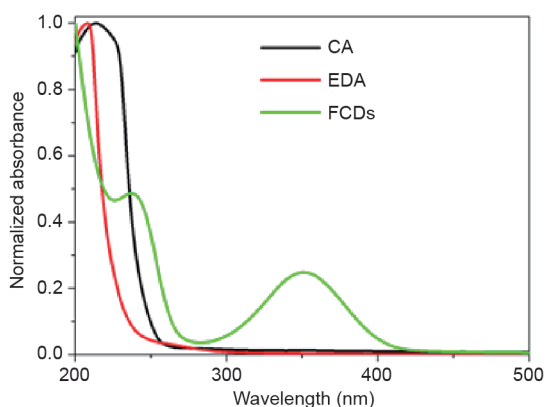
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### Fluorescence quantum yield measurement

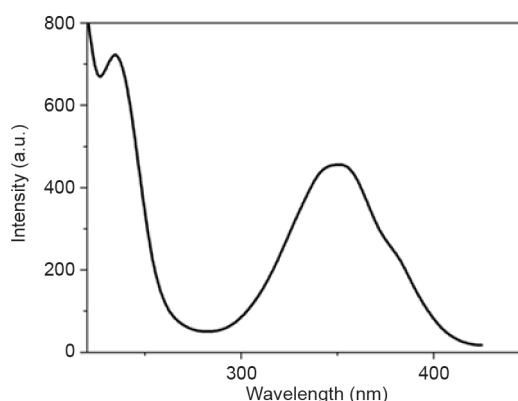
The relative fluorescence quantum yield (FQY) of the fluorescent carbon dots (FCDs) was determined following a conventional protocol by choosing quinine sulfate (0.1 mol·L<sup>-1</sup> H<sub>2</sub>SO<sub>4</sub> solvent; quantum yield = 0.54) as the standard. The FQY of the sample is related to that of the standard dye using the following equation:

$$\Phi_{F(x)} = \Phi_{F(s)} (F_x/F_s) (A_s/A_x) (n_x^2/n_s^2)$$



**Fig. S1.** Absorbance spectra of citric acid (CA), ethylenediamine (EDA), and FCDs in the range of 200–500 nm.

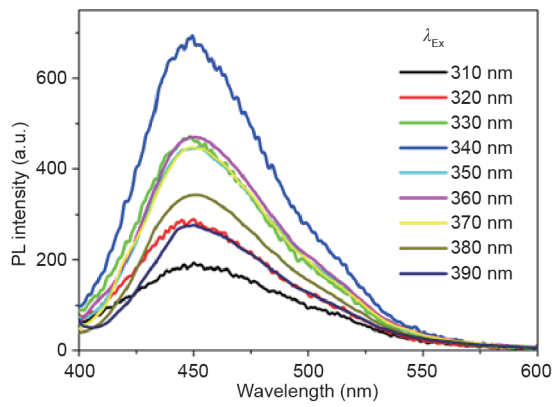
where  $\Phi_f$  is the fluorescence quantum yield;  $F$  stands for integrated fluorescence intensity;  $A$  is the absorbance at the excitation wavelength; and  $n$  is the refractive index of the solvents used. Subscripts  $s$  and  $x$  refer to the standard dye and to the samples measured, respectively. In our experiments,  $\Phi_{F(s)}$ ,  $n_x$ , and  $n_s$  were known as 54%, 1, and 1, respectively.  $F_x$ ,  $F_s$ ,  $A_x$ , and  $A_s$  were measured in the same experimental condition. The FQY of the FCDs was calculated to be about 42.7%.



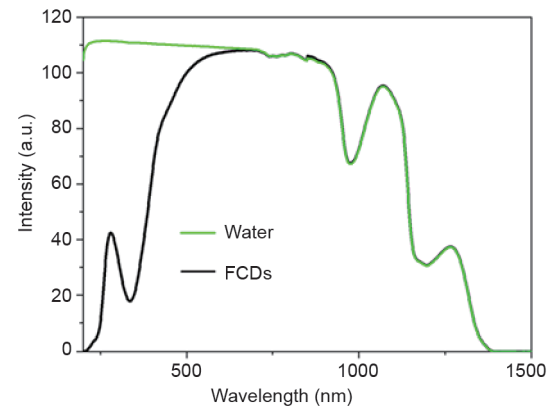
**Fig. S2.** Excitation spectrum of an aqueous dispersion of FCDs. The emission wavelength was 450 nm.

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**Fig. S3.** Fluorescence emission spectra of the FCDs with different excitation wavelengths. PL: photoluminescence.



**Fig. S4.** Linear transmission spectra of a 1-cm-thick layer of water and aqueous dispersion of FCDs.



**Fig. S5.** Fluorescence photographs of FCD patterns after continuous irradiation under the UV lamp (365 nm) for 1 h; scale bar = 1 cm.