Electronic Supplementary Information

Facile Preparation of Full-color Emissive Carbon Dots and Their Applications in Imaging of the Adhesion of Erythrocytes to Endothelial Cells

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Section 1 Measurement of fluorescence quantum yields

The quantum yield of the CDs is determined by a comparative method. Quinine sulfate dissolved in 0.1M H_2SO_4 (literature quantum yield of 0.546 at 360 nm) is utilized as the standard to calculate the QY of CDs. In order to minimize reabsorption effects, absorption of CDs and Quinine sulfate are kept below 0.10 at 400 nm excitation wavelength.The absorption spectra of the samples are obtained by using UV–visible spectrophotometer. The FL emission spectras are performed using FL spectrophotometer with an excitation wavelength of 400 nm. The FL spectra are measured and the FL intensity is integrated. The data of the quantum yield of the resulting CDs is shown in Table S1. The QY of a sample can be calculated using the below equation:

$$Q = Q_R \frac{I_R}{I} \frac{A}{A_R} \frac{n^2}{n_R^2}$$

Where Q is the QY, I represents the testing sample's integrated emission intensity, n is the refractive index (1.33 for water), and A refers to the optical density. The subscript "R" is the referenced FL dyes of known QY.

Section 2 Supplementary data

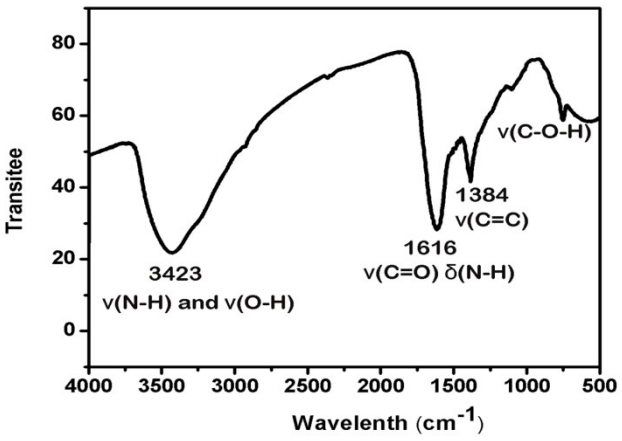

Figure S1 The Fourier transform infrared (FTIR) spectrum of the CDs

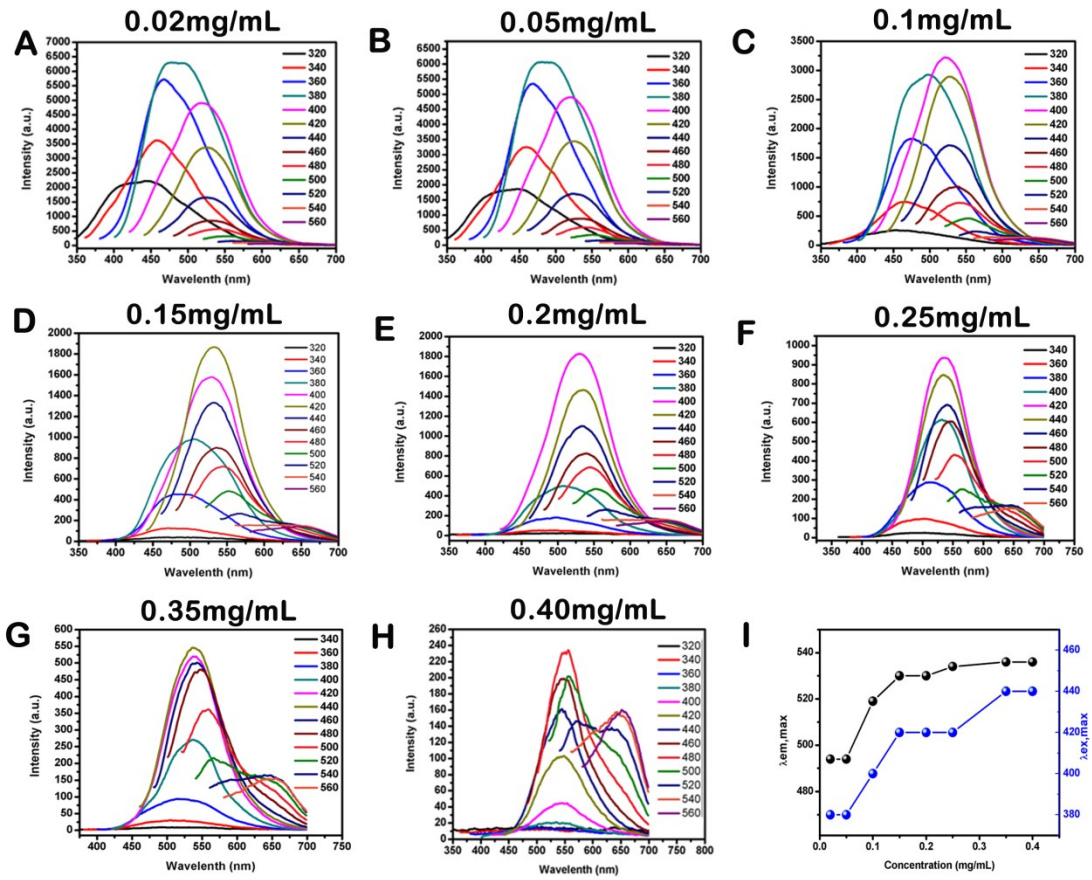

Fig. S2. (A-H) Fluorescence spectra of F-CDs with different concentrations (from 0.02 to 0.40 mg/mL) under different excitation wavelengths (I) Dependence of the maximum emission wavelengths and maximum excitation wavelengths on the concentration of the CDs

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Note: The F-CDs exhibit concentration-dependent fluorescence behaviors. Taking 0.15mg/mL of CDs as an example, the highest fluorescence intensity is found under an excitation of 420 nm(Fig. S2F) with the absolute fluorescence quantum yield(QY) of 0.36 (see table S1). Between the concentration of 0.4 mg/mL and 0.1 mg/mL, the highest emission is green, and when the concentration of the F-CDs under 0.1 mg/mL, the highest emission tend to turn blue (Fig. S2).

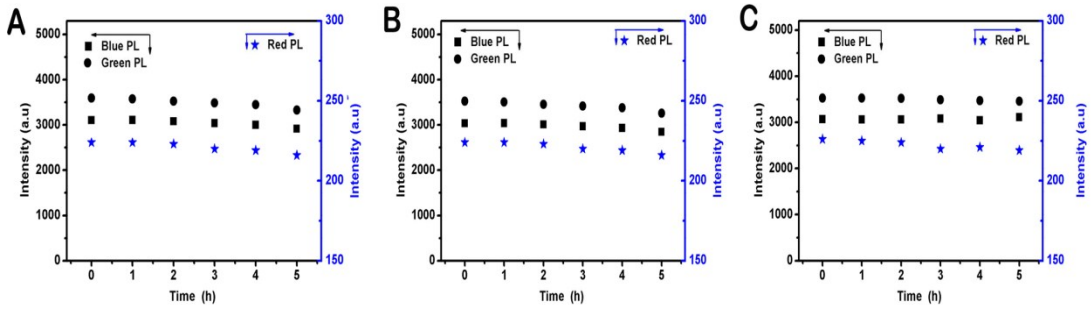

Fig. S3. Effects of laser (A) 405 nm (B) 488 nm (C) 555 nm irradiation time on the fluorescence intensity of CDs; The concentration of CDs are 0.1 mg/mL， excitation wavelength of blue, green, red fluorescence is 380, 400, 560 nm， respectively.

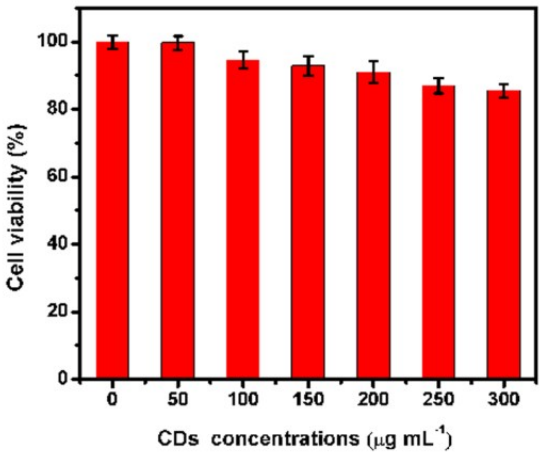

Fig. S4. In vitro biocompatibility of F-CDs

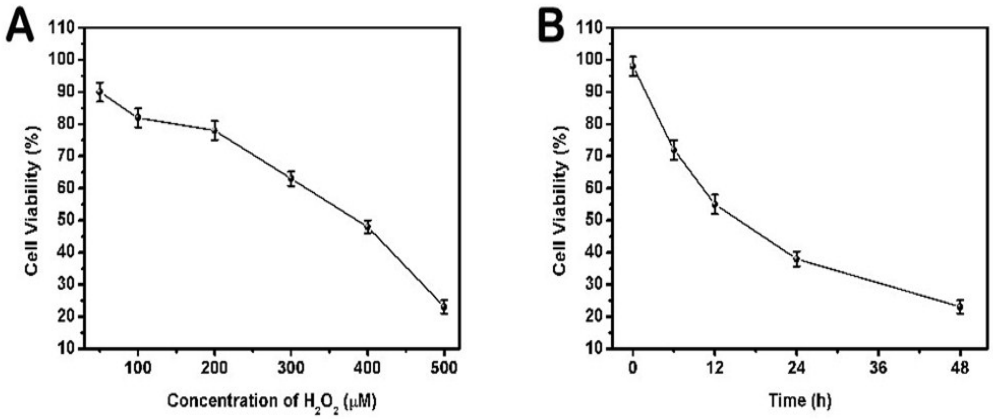

Fig. S5. Detection of survival rate of HUVECs treated with H_2O_2 by MTT

Table S1. Quinolone sulfate (referenced dye) as a function of optical absorbance at 400 nm and relevant data

sample	Intergrated emission intensity(I)	Abs. At 400 nm (A)	Refractive index of solvent	Quantum yield at 400 nm (QY)
Quinine sulfate	510558.1	0.033	1.33	0.54
CDs	394761.82	0.038	1.33	0.36