

## Supporting Information

### **Nitrogen-Doping Enhanced Fluorescent Carbon Dots: Green Synthesis and Their Applications for Bioimaging and Label-Free Detection of Au<sup>3+</sup> Ions**

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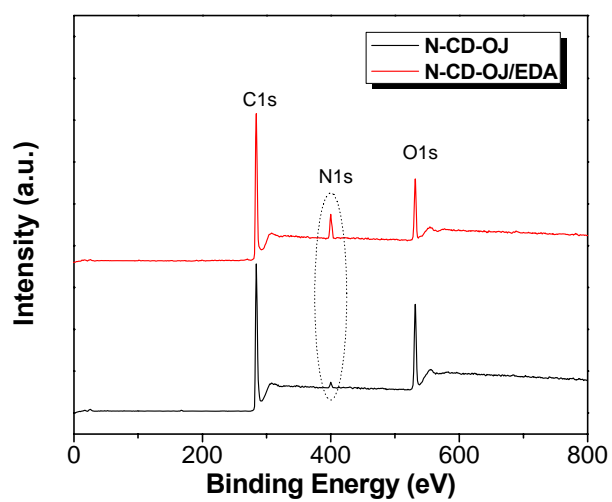
**Table S1**

**Table S1.** Weight and atomic percentages of N-CDs based on the elemental analysis and XPS results.

Sample	Elemental analysis <sup>a</sup>				XPS <sup>b</sup>		
	C	N	H	O (Calculated)	C	N	O
N-CDs	47.6	14.1	9.7	28.6	55.6	12.6	31.8

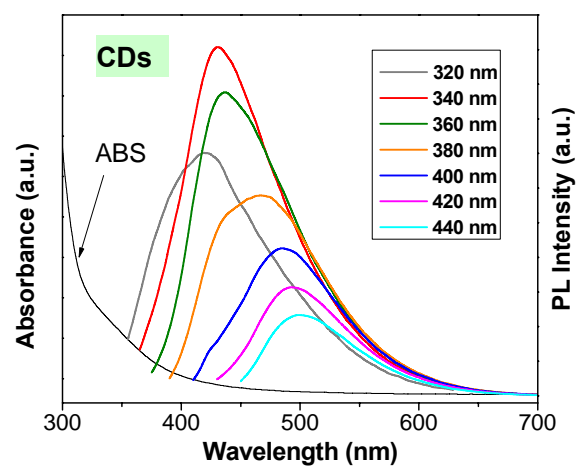
<sup>a</sup> Weight percentage. <sup>b</sup> Atom percentage.

**Figure S1**



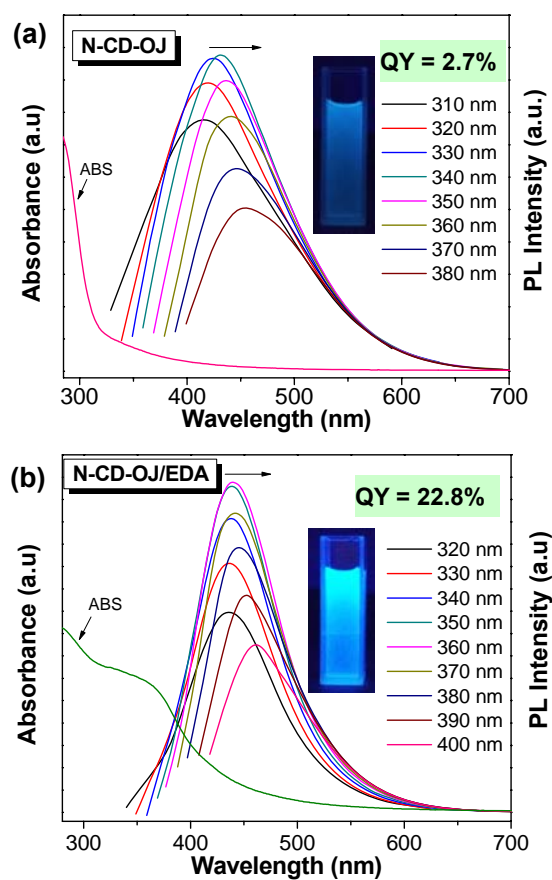
**Figure S1.** XPS survey spectra of N-CD-OJ and N-CD-OJ/EDA samples. The content of N element for N-CD-OJ and N-CD-OJ/EDA are 2.4 % and 10.7 %, respectively.

**Figure S2**



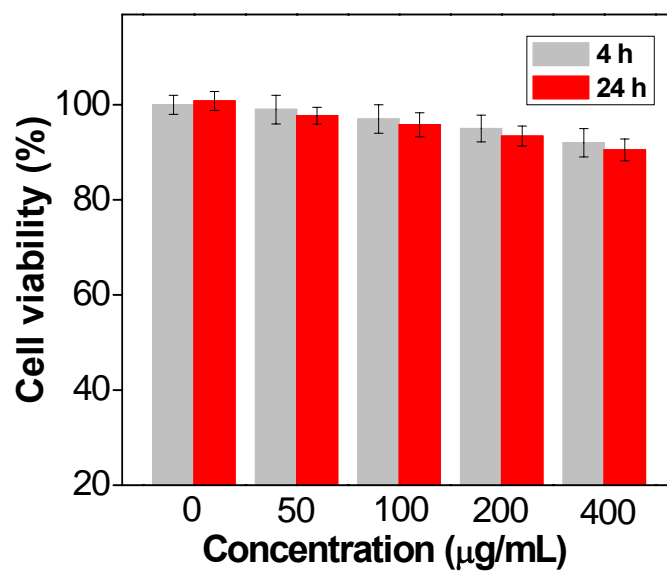
**Figure S2.** UV-vis absorption spectrum (ABS) and fluorescent emission spectra of undoped PGP-derived CDs upon excitation at diverse wavelengths.

**Figure S3**



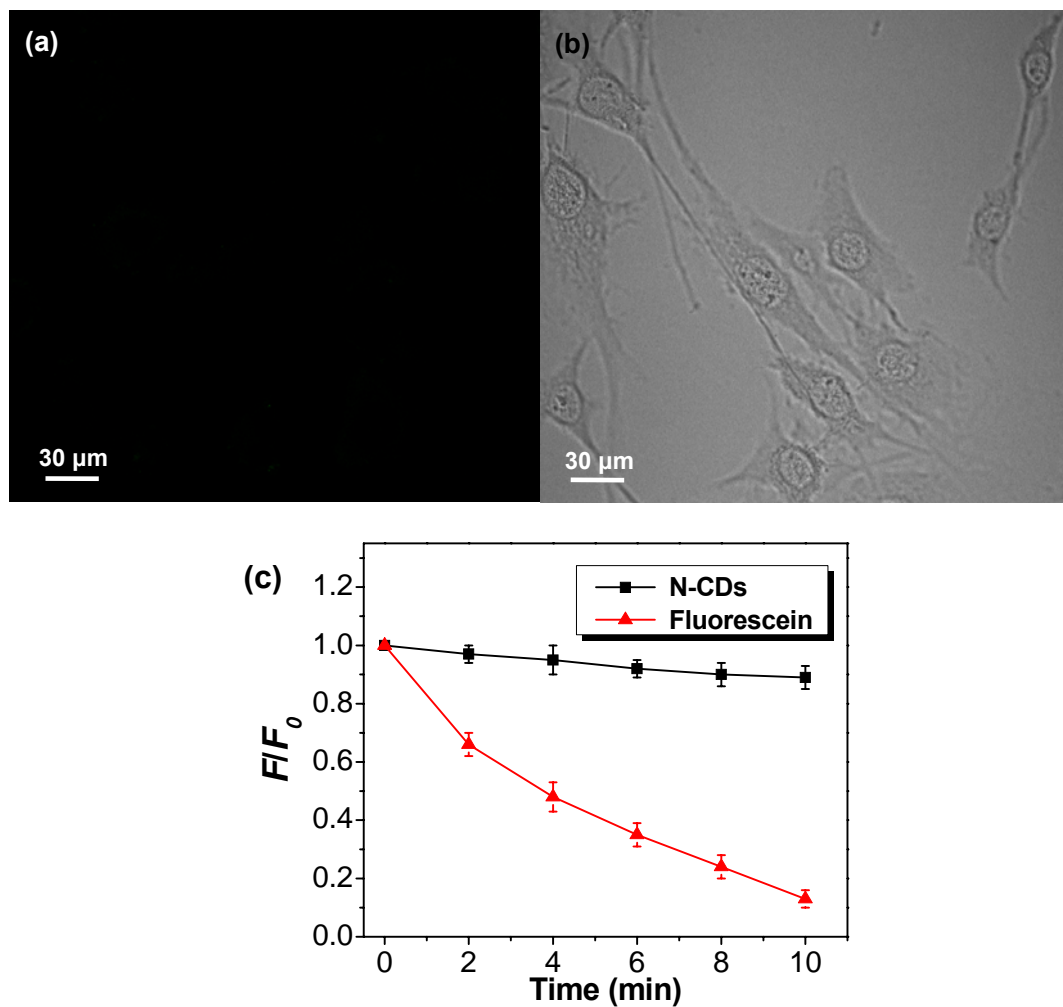
**Figure S3.** (a) UV-vis absorption spectrum (ABS) and fluorescent emission spectra of N-CD-OJ aqueous solution upon excitation at diverse wavelengths. Inset: photograph of N-CD-OJ aqueous solution under 365 nm UV light. (b) UV-vis absorption spectrum (ABS) and fluorescent emission spectra of N-CD-OJ/EDA aqueous solution upon excitation at diverse wavelengths. Inset: photograph of N-CD-OJ/EDA aqueous solution under 365 nm UV light.

**Figure S4**



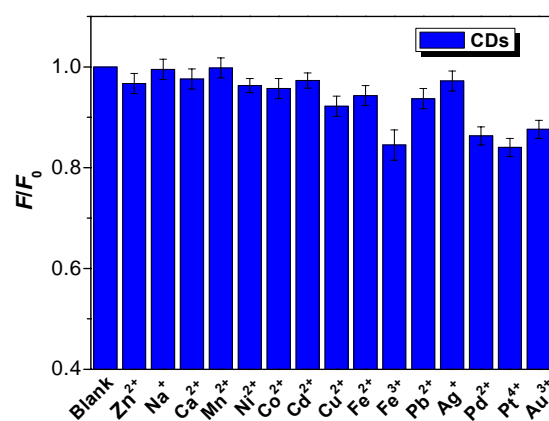
**Figure S4.** Cell viability of NIH-3T3 cells after incubation with N-CDs at varying concentrations for 4 and 24 h, respectively.

**Figure S5**



**Figure S5.** CLSM image (a) and bright-field image (b) of MCF-7 cells without incubation of N-CDs. (c) Illumination time-dependent fluorescence intensity ratio ( $F/F_0$ ) of N-CDs and fluorescein.  $F_0$  and  $F$  are the emission intensities of N-CDs and fluorescein without and with illumination for different time, respectively.

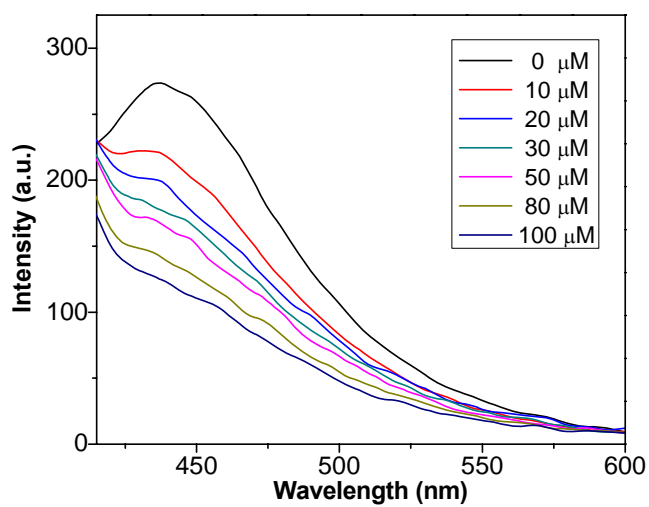
**Figure S6**



**Figure S6.**  $F/F_0$  value of undoped PGP-derived CDs aqueous solutions containing diverse metal ions at 50  $\mu$ M each.

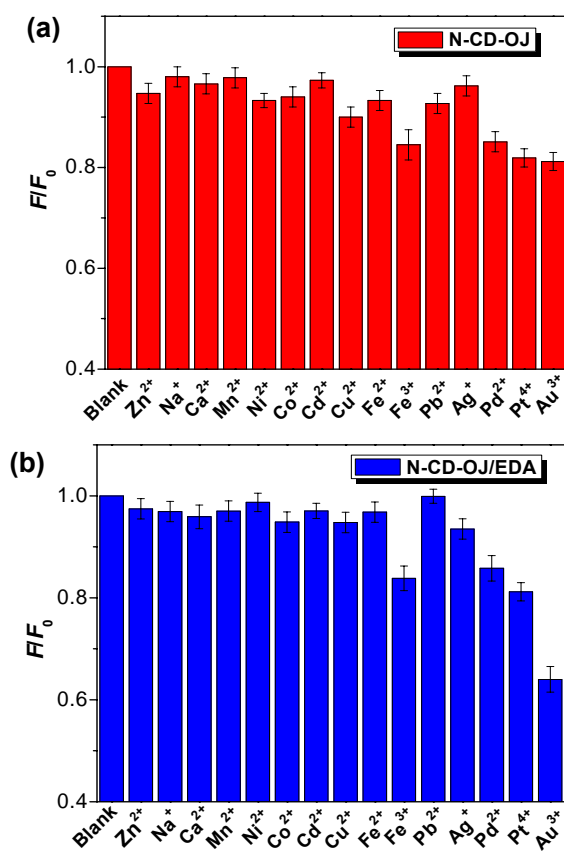


**Figure S7**



**Figure S7.** Fluorescent emission spectra of N-CD-OJ/EDA aqueous solution upon addition of various concentrations of Au<sup>3+</sup> ions ( $\lambda_{\text{ex}} = 360$  nm).

**Figure S8**



**Figure S8.**  $F/F_0$  value of N-CD-OJ (a) and N-CD-OJ/EDA (b) aqueous solutions containing diverse metal ions at 50  $\mu$ M each.