

## ***Supplementary Material***

# One-step synthesis of green emission carbon dots for selective and sensitive detection of nitrite ions and cellular imaging application

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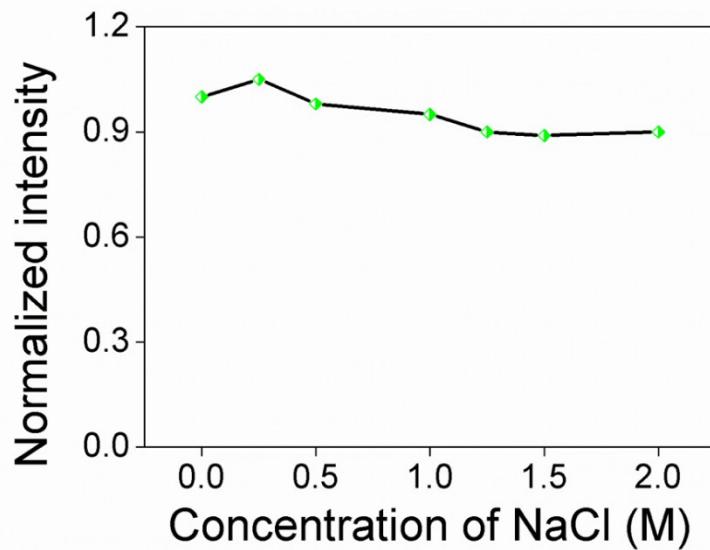
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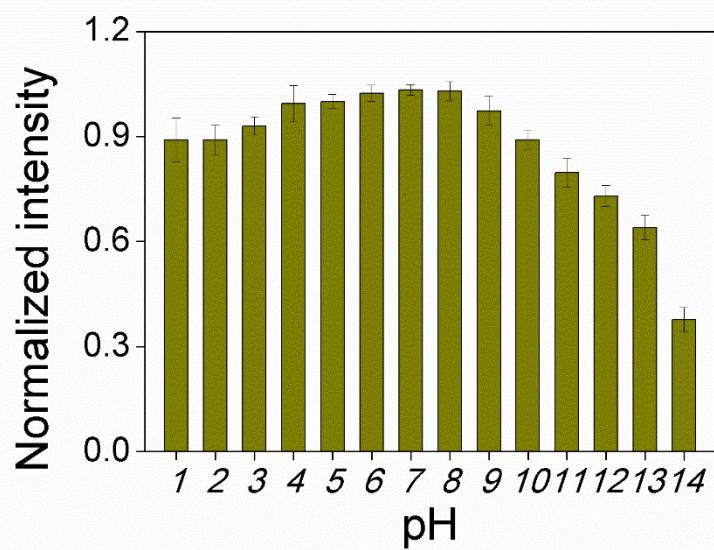
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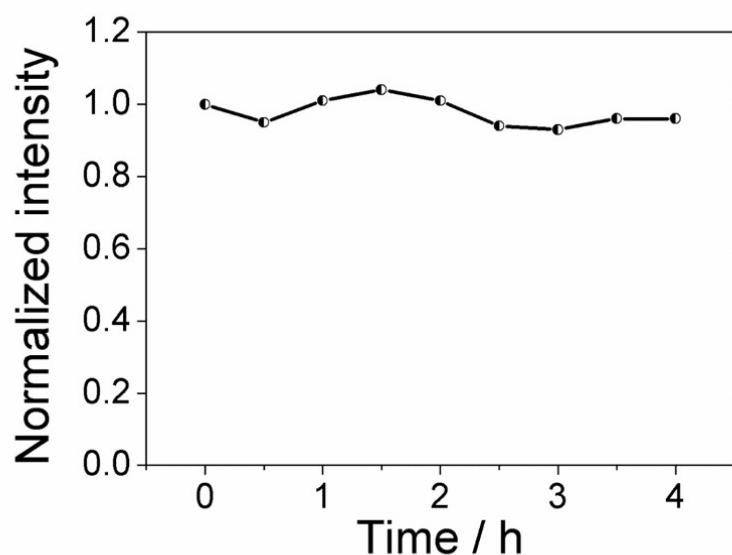
## Supplementary Figures



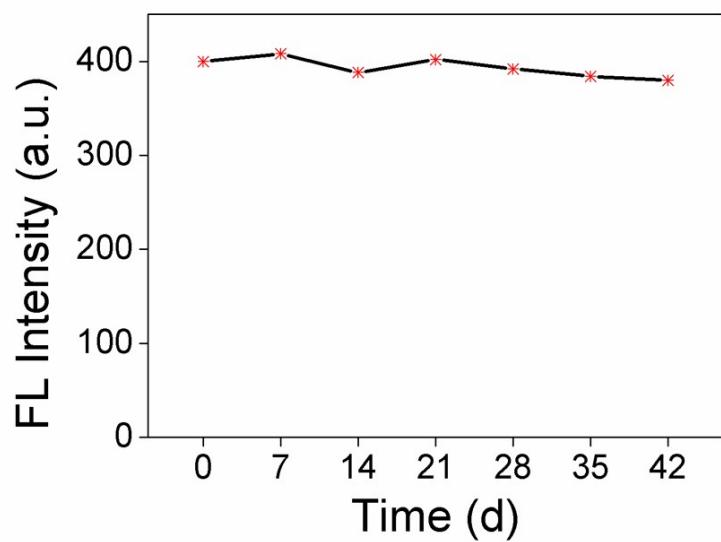
**Figure S1.** Effect of ionic strengths on the fluorescence intensity of the carbon dots.



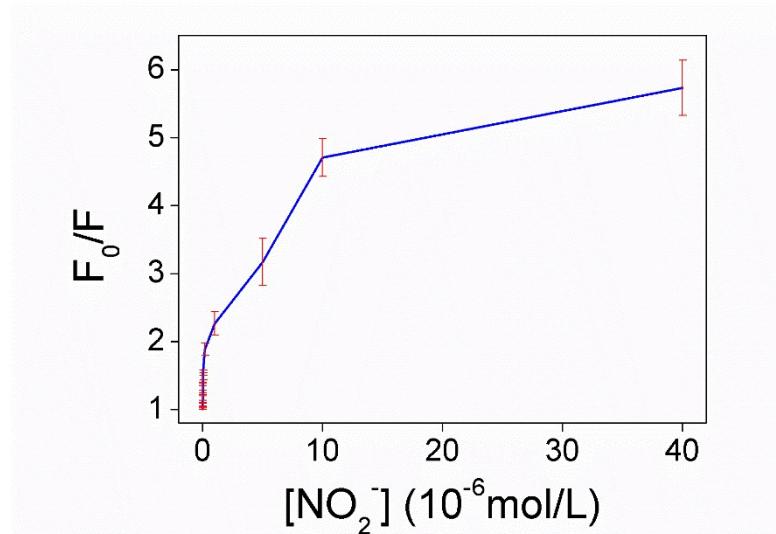
**Figure S2.** Effect of different pH values on the fluorescence intensity of the CDs.



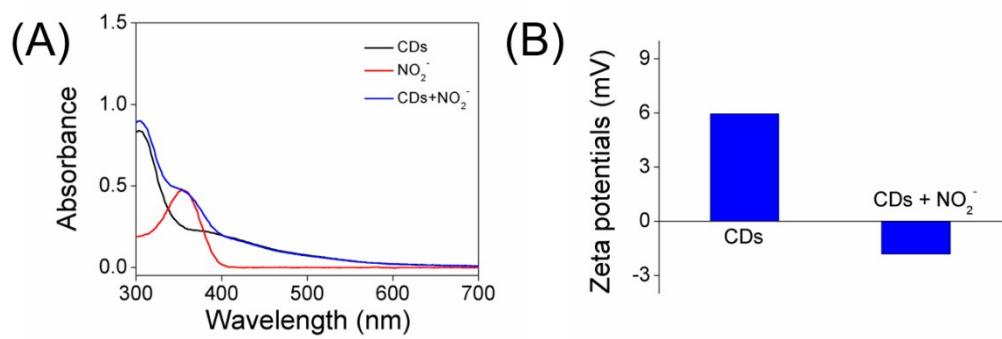
**Figure S3.** Variation of fluorescence intensity of the CDs under irradiation of 365 nm UV light.



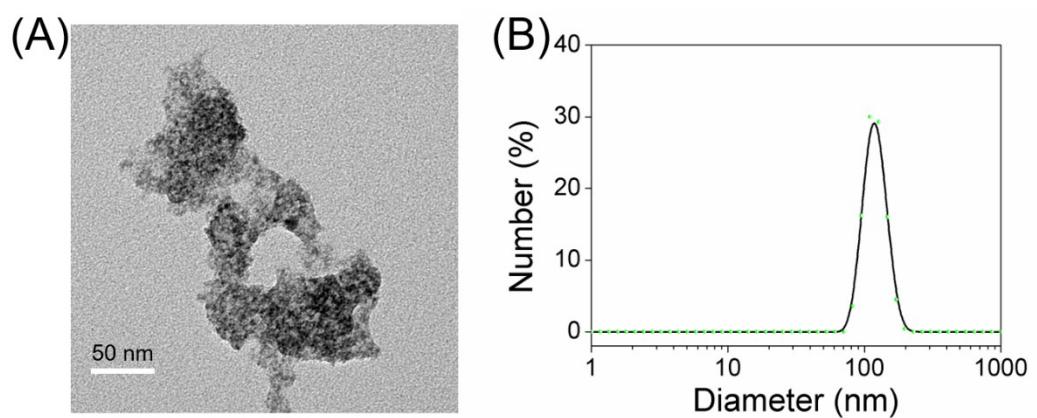
**Figure S4.** Stability of the carbon dots as a function of the storage time (6 weeks).



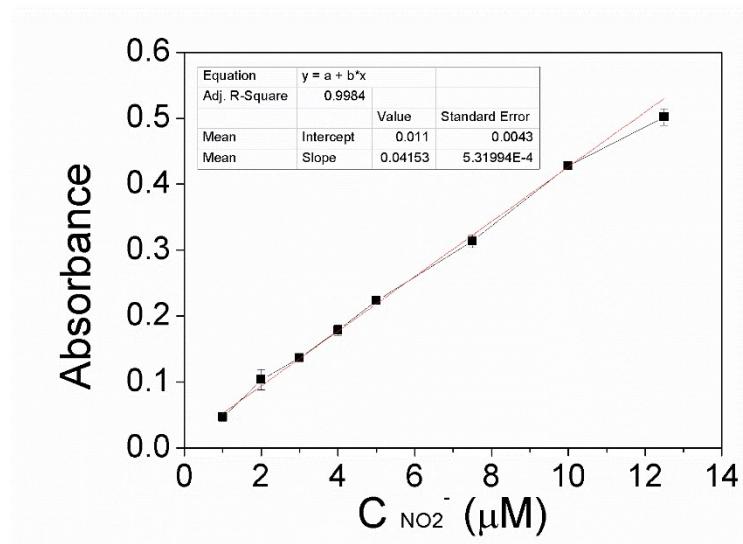
**Figure S5.** The relationship between  $F_0/F$  and  $NO_2^-$  ions concentration in the range of  $0 - 40 \mu\text{M}$ .



**Figure S6.** (A) UV-vis absorption spectra of CDs,  $\text{NO}_2^-$ , CDs+ $\text{NO}_2^-$ ; (B) Zeta potentials of CDs in the absence and presence of nitrite ions.



**Figure S7.** (A) TEM image and (B) DLS of CDs after the addition of  $\text{NO}_2^-$  (40 nM).



**Figure S8.** Establishment of standard curve using Griess-saltzman method.

**Table S1:** Comparison between reported probes for  $\text{NO}_2^-$  detection.

Materials	Detection method	Linear range	LOD	Ref
<b>N-CNDs</b>	Fluorescent	0-2000 $\mu\text{M}$	1 $\mu\text{M}$	1 <sup>1</sup>
<b>CDs/silica nanoparticles</b>	Fluorescent	10-160 ng/mL	1.0 ng/mL	2 <sup>2</sup>
<b>CDs-<math>\text{NaNO}_2</math>-<math>\text{H}_2\text{O}_2</math></b>	Chemiluminescent	0.1-10 $\mu\text{M}$	53 nM	3 <sup>3</sup>
<b><math>\mu\text{PAD}</math></b>	Colorimetric	10-150 $\mu\text{M}$	1 $\mu\text{M}$	4 <sup>4</sup>
<b>Ag/C NC</b>	Electrochemical	0.004-2 mM	0.48 $\mu\text{M}$	5 <sup>5</sup>
<b>RYDE CDs</b>	Fluorescent	0.1-100 $\mu\text{M}$	31.61 nM	6 <sup>6</sup>
<b>N-CDs</b>	Fluorescent	8-100 $\mu\text{M}$	0.65 $\mu\text{M}$	7 <sup>7</sup>
<b>PCDs</b>	Fluorescent	2-100 $\mu\text{M}$	0.55 $\mu\text{M}$	8 <sup>8</sup>
<b>CDs</b>	Fluorescent	0.005-0.04 $\mu\text{M}$	2.8 nM	This work

**Table S2.** The recovery rate of nitrites in real samples using Griess-saltzman method.

Samples	Added ( $\mu\text{M}$ )	Measured ( $\mu\text{M}$ )	Recovery (%)	RSD (%), n=5
Tap water	5	5.06	101.2	1.8
Taihu water	5	5.11	102.2	2.3
Human urine	5	4.93	98.6	2.6
Serum	5	5.13	102.6	2.4

Note: The pretreatment procedure of samples and the establishment of the standard curve referenced to GB (5009.33-2016) of National food safety standard.

## References

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