Supplementary Information

Green synthesis of carbon dots by celery leaves and used as fluorenscent paper sensors for detection of nitrophenol

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Experiment:

MTT

To evaluate the cytotoxicity of the CDs, the viability of the HEPG-2 cells was assessed by measuring their ATP activity after exposure to the CDs. 100 µL of the cell suspensions in cell media at a concentration of 2×10^5 cells/mL were seeded in 96-well plates and allowed to attach overnight. After removal of the cell media, the wells were washed twice with HBSS−HEPES buffer (pH=7.4) and then 100 µL of the tested CDs at the relevant concentrations were added. After incubation, the reagent was added to each well to assess the ATP activity.

Cell Culture and Imaging

HEPG-2 cells were cultured in Dulbecco's Modified Eagle's Medium supplemented with 10% fetal bovine serum, 100 $mg.mL^{-1}$ penicillin, and 100 $\mu g\cdot mL^{-1}$ streptomycin in a 5% CO_2, water saturated incubator at 37 °C and then were seeded in

a 12-well culture plate for one night before the cell imaging experiments. For living cell imaging experiments, some of the cells were incubated with 0.019 g·mL^{-1} of probe for 30 min at 37 °C, washed three times with buffer, and then imaged.

Results and discussion:

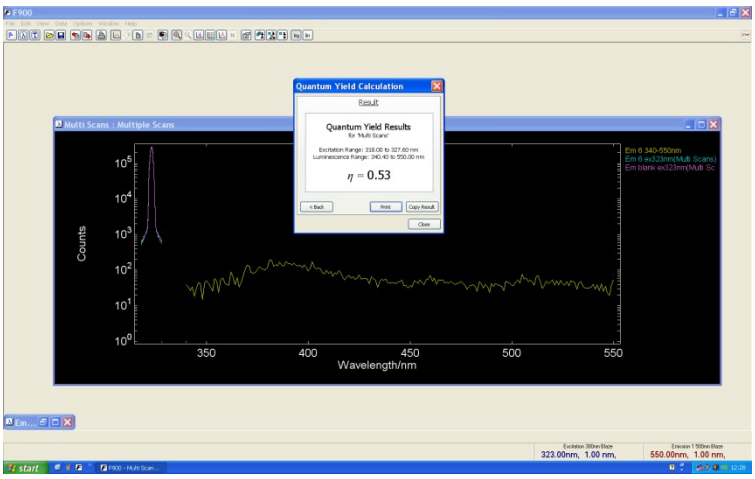

Fig. S1. Fluorescence quantum yield of CDs (Fluorolog-3)

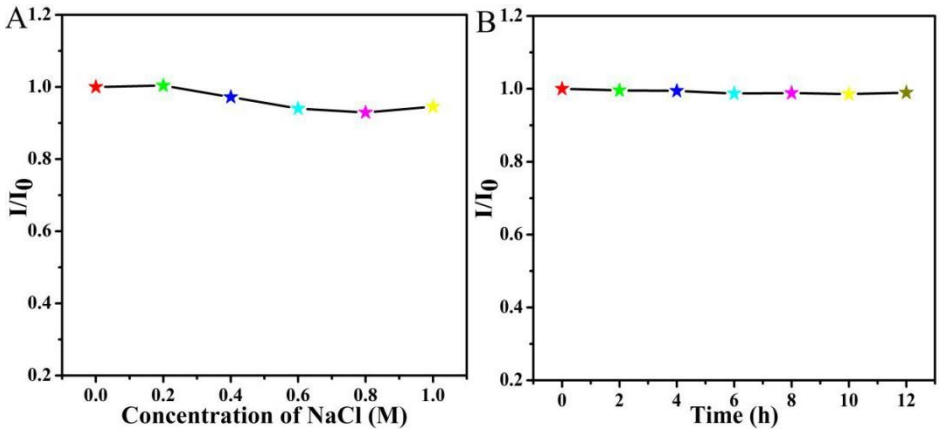

Fig. S2. (A) Dependent fluorescent intensity ratio (I/I_0) of the CDs with the different condition of high NaCl concentration and (B) storage time.

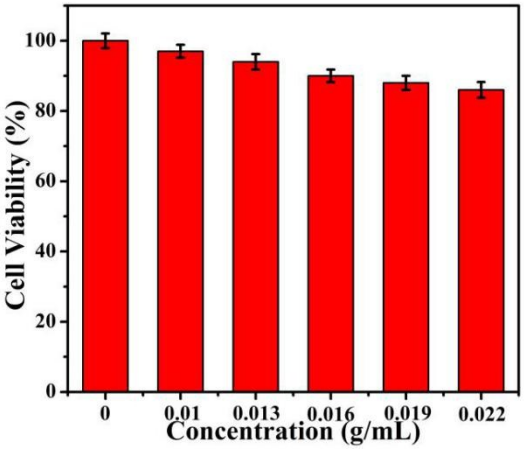

Fig. S3. Cell viability of HEPG-2 cells after incubation with CDs for 24 h by MTT assay.

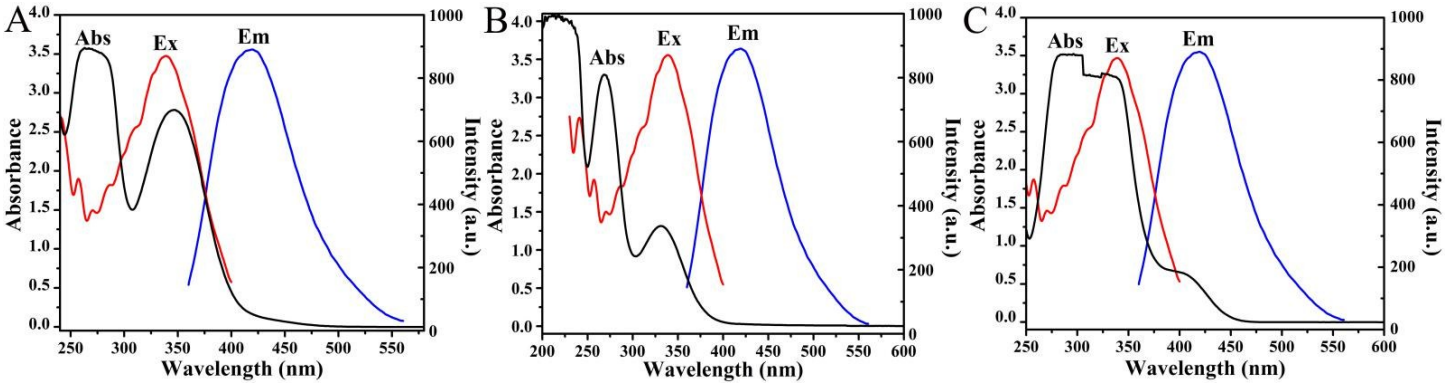

Fig. S4. The absorption spectra of (A) 2-NP, (B) 3-NP and (C) 4-NP and fluorescence emission spectrum of CDs.

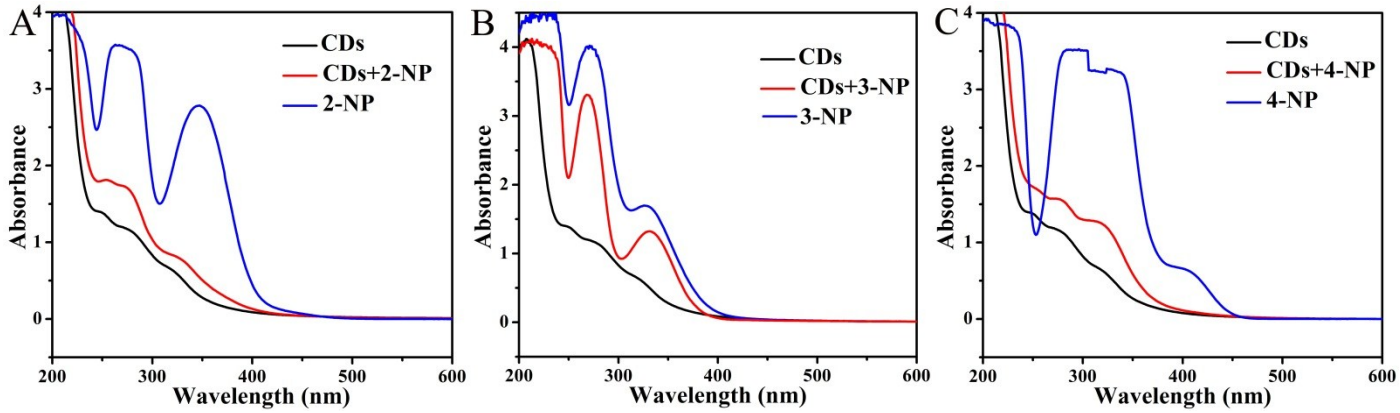

Fig. S5. (A) UV-vis absorption spectra of CDs, CDs+2-NP, 2-NP. (B) UV-vis absorption spectra of CDs, CDs+3-NP, 3-NP. (C) UV-vis absorption spectra of CDs, CDs+4-NP, 4-NP.

Table S1. Comparison values between proposed sensor and published papers for the detection of 2-NP, 3-NP and 4-NP.

Systems	Detection Limit			Detection Method	Reference
	2-NP	3-NP	4-NP		
Polymer carbon dots			0.26 μM	Fluorescence	[1]
Carbon dots	1.06 μM		0.5 μM	Fluorescence/colorimetric	[2]
(tmaePcCo/CNT)n films			0.2 μM	Electrochemical sensor	[3]
Pt-decorated CNT nanocomposites	2.19 mM			Chemical sensor	[4]
Graphene-chitosan composite film	200 nM		80 nM	Voltammetric	[5]
A glassy carbon electrode modified with reduced graphene oxide			42 μM	Electrochemistry	[6]
CDs	39 nM	43nM	26 nM	Fluorescence	This Work

References

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