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Supplementary Materials

Green Preparation of Fluorescent Nitrogen-Doped Carbon Quantum Dots for Sensitive Detection of Oxytetracycline in Environmental Samples

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Selectivity

We verified the good selectivity of the two fluorescent probes with three similar structural tetracycline antibiotics (tetracycline, doxycycline, and oxytetracycline) [1,2]. Fluorescence quenching reaction between N-CQDs and metal ions and organics in several environments was observed. Figure S6a showed that the fluorescence intensity of ON-CQDs was not greatly affected, while Figure S6b showed that the fluorescence quenching of WN-CQDs occurred. In contrast, oxytetracycline (OTC) addition resulted in a significant quenching of the original fluorescence intensity. Tetracycline and doxycycline showed small changes compared with OTC. This indicates that among these metal ions and antibiotics, N-CQDS has a strong absorbance spectral response to OTC [2].

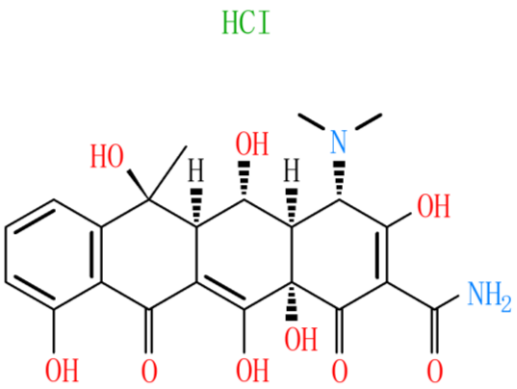

Figure S1. The chemical structure of OTC.

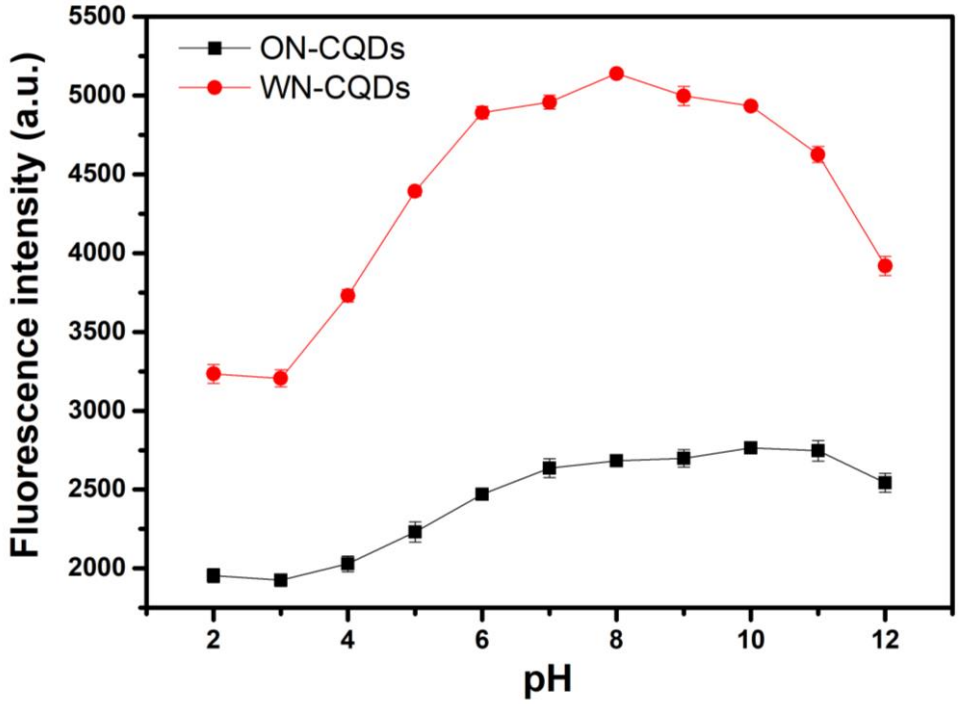

Figure S2. Fluorescence performance of ON-CQDs (black) and WN-CQDs (red) at various pH values.

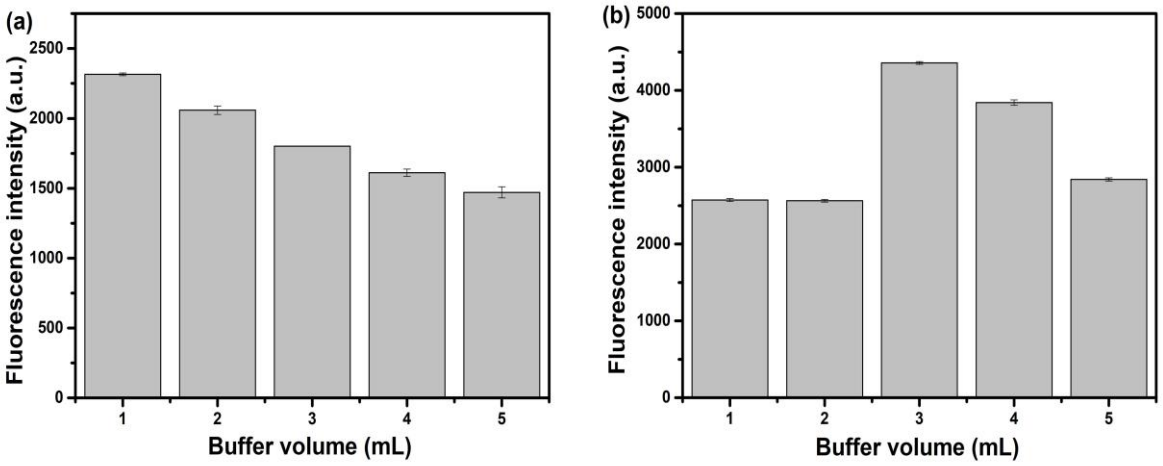

Figure S3. Effect of buffer solution volume on fluorescence intensity of N-CQDs: (**a**) ON-CQDs; (**b**) WN-CQDs.

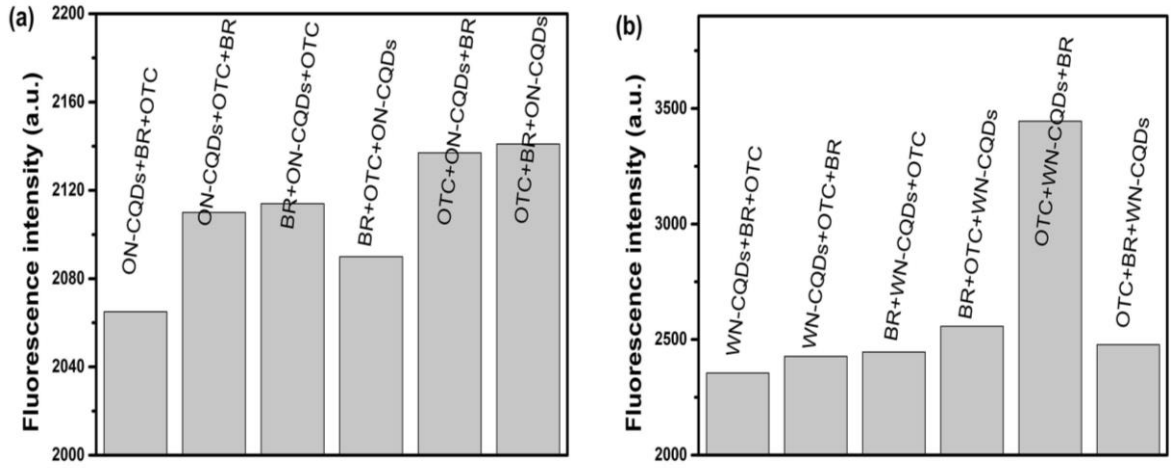

Figure S4. Effect of reagent adding sequence on fluorescence intensity of N-CQDs: (**a**) ON-CQDs; (**b**) WN-CQDs.

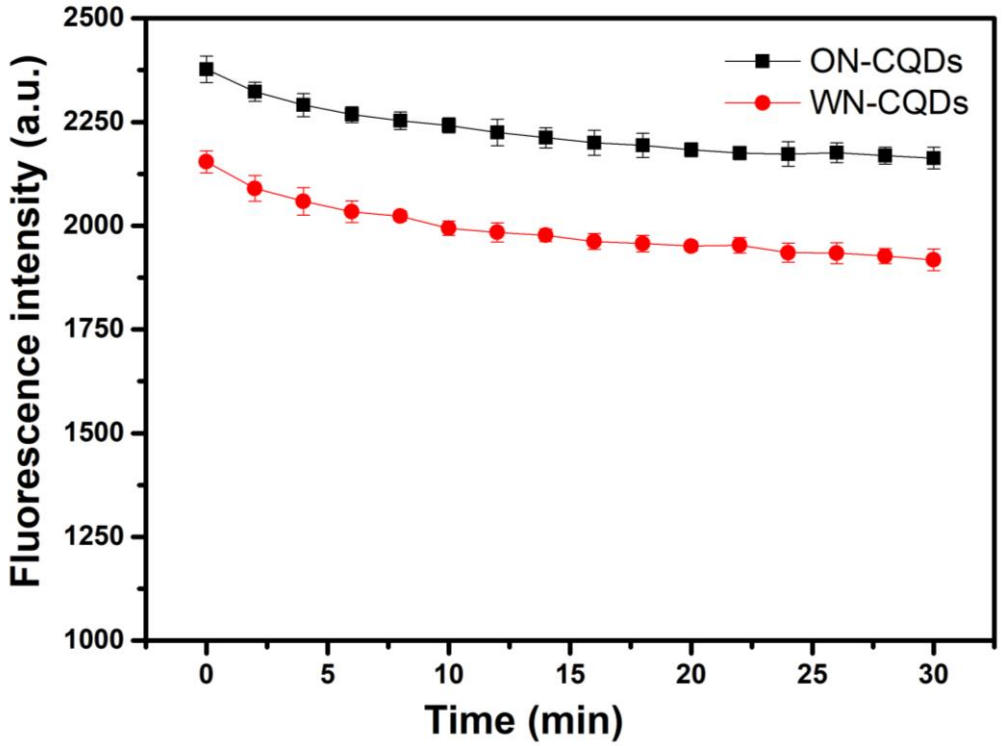

Figure S5. Fluorescence performance of ON-CQDs (black) and WN-CQDs (red) at different reaction times.

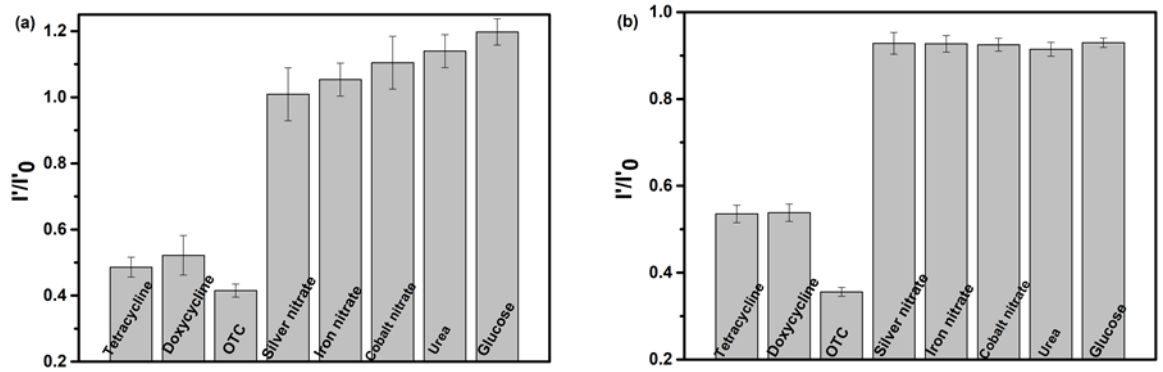

Figure S6. Selectivity of N-CQDs: (**a**) ON-CQDs; (**b**): WN-CQDs. Concentrations of various substances: (**a**), (**b**) correspond to 40 μmol L^{-1} and 80 μmol L^{-1} respectively. (I′ and I'_0 represent the fluorescence intensity of N-CQDs in the presence and absence of various substances, respectively.).

Table 1. Compare OTC recovery rates in various samples.

Samples	Spiked	Recovery Rate (%)	RSD (%, n = 5)	Citations
River water	5 μmol L^{-1}	98.73	1.26 %	[1]
	15 μmol L^{-1}	104.28	1.22%	
	25 μmol L^{-1}	103.42	1.32%	
Milk	1 μmol L^{-1}	104	0.11%	[3]
	5 μmol L^{-1}	101	0.21%	
	10 μmol L^{-1}	99	0.24%	
Honey	10 μmol L^{-1}	107.9	1.49%	[4]
	20 μmol L^{-1}	107.2	1.46%	
	30 μmol L^{-1}	101.9	0.75%	
Pork	10 μmol L^{-1}	109.5	1.74%	[4]
	20 μmol L^{-1}	98.3	1.19%	
	30μmol L^{-1}	104.9	1.09%	
Tap Water	10 μmol L^{-1}	97.5	0.94%	This work
Soil	12.240μmol Kg^{-1}	103.2	0.82%	
Lake Water	40 μmol L^{-1}	100.9	0.62%	

References

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