Electronic Supplementary Information (ESI)

One-step synthesis of robust nitrogen-doped carbon dots: acid-evoked fluorescence enhancement and their application for Fe^{3+} detection

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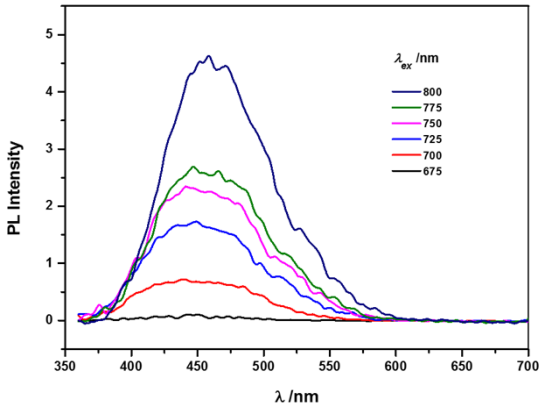

Fig. S1 Up-conversion PL emission spectra of AAeda-CDs dispersed in H_2O.

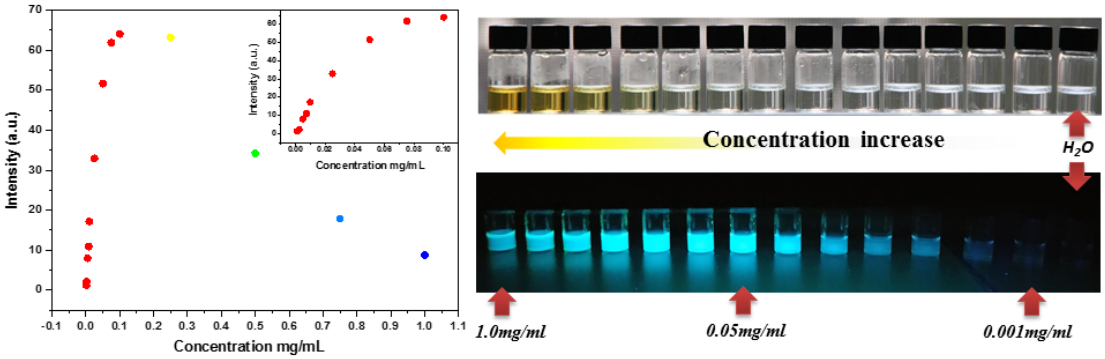

Fig. S2 PL spectra of the CDs H_2O solution under different concentrations (left). The right photographs of this CDs aqueous solution: under natural light (top) and 365 nm UV light (down) illumination.

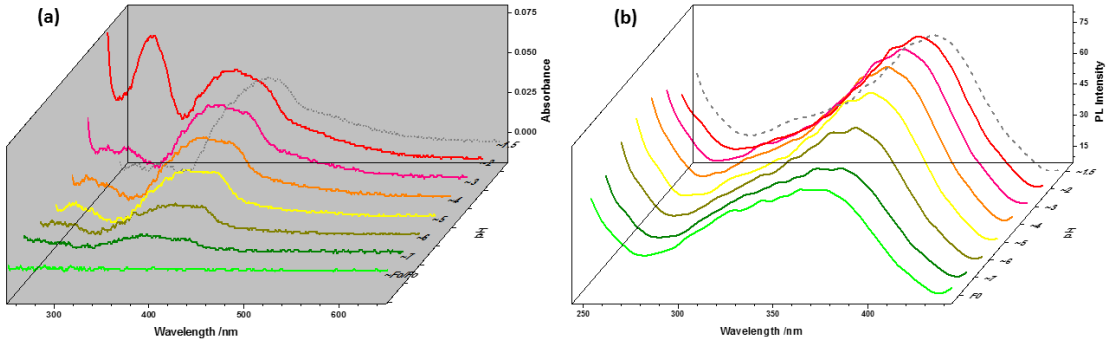

Fig. S3 spectroscopic evolution of the pH effect on fluorescence performance of AAeda-CDs: (a) UV-Vis comparison to original AAeda-CDs and (b) PLE optical behaviors.

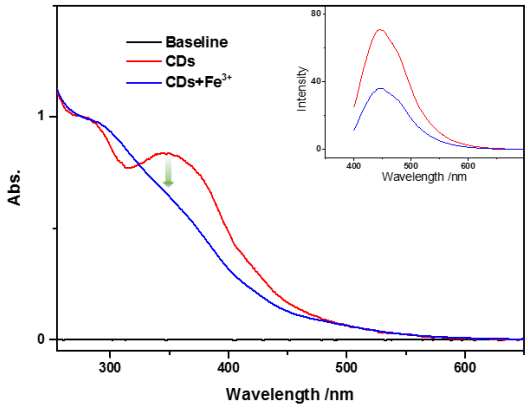

Fig. S4 UV-Vis and PL spectra changes of the CDs (0.05mg/ml) and that after adding of Fe^{3+} (2.5mM).

Table S1 Lifetime data obtained from the time-resolved decay curves of the CDs (0.05mg/ml) and CDs (0.05mg/ml)+Fe^{3+} (2.5mM) mixture ($\lambda_{ex}/\lambda_{em}$=380nm/450nm)

Sample	τ_1 (ns)	Percentage (%)	τ_2 (ns)	Percentage (%)	Average τ (ns)	χ^2
CDs	2.33	26.38	10.11	73.62	8.06	1.201
CDs+Fe^{3+}	2.24	27.33	9.96	72.67	7.85	1.166

Table S2. Measurements of Fe^{3+} using the proposed CDs nanosensor and ICP method.

	S1 (Found ± SD, mM)	*S2* (Found ± SD, mM)
This method	0.01668±0.00234	0.04153±0.00249
ICP	0.01781±0.00168 (0.99476±0.09378ppm)	0.04275±0.00026 (2.3874±0.01443ppm)

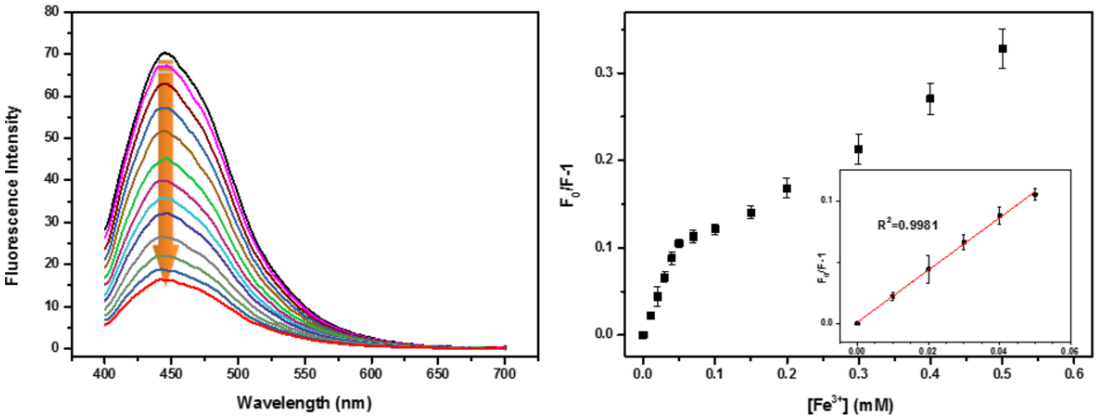

Fig. S5 Evolution of the fluorescence spectra of AAeda-CDs (0.05mg/mL) in urban river water upon the addition of various mounts of Fe^{3+} (0–5.0 mM) (pH = 4.0) (left). The relationship between F/F_0 -1 and Fe^{3+} concentrations. The inset shows the linear range of 0.0-0.05 mM (right).