

Supplementary information

Fluorine-Nitrogen-Codoped Carbon Dots as Fluorescent Switch Probes for Selective Fe(III) and Ascorbic Acid Sensing in Living Cells

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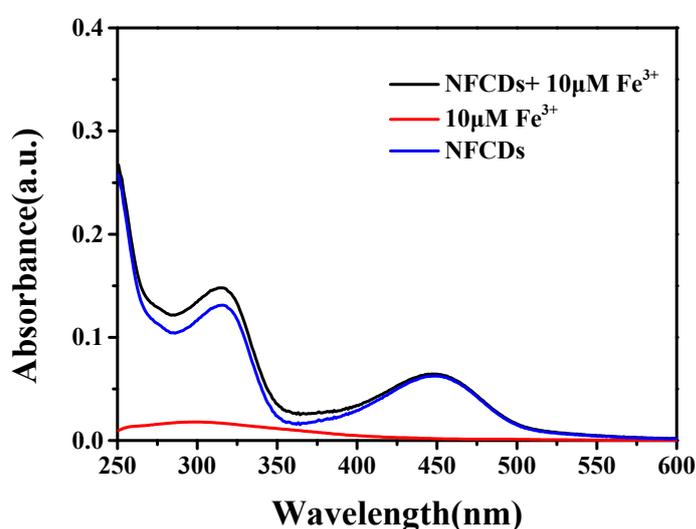


Figure S1. Absorption spectra of NFCDs (blue line), Fe^{3+} (red line), and NFCDs quenched by Fe^{3+} (black line).

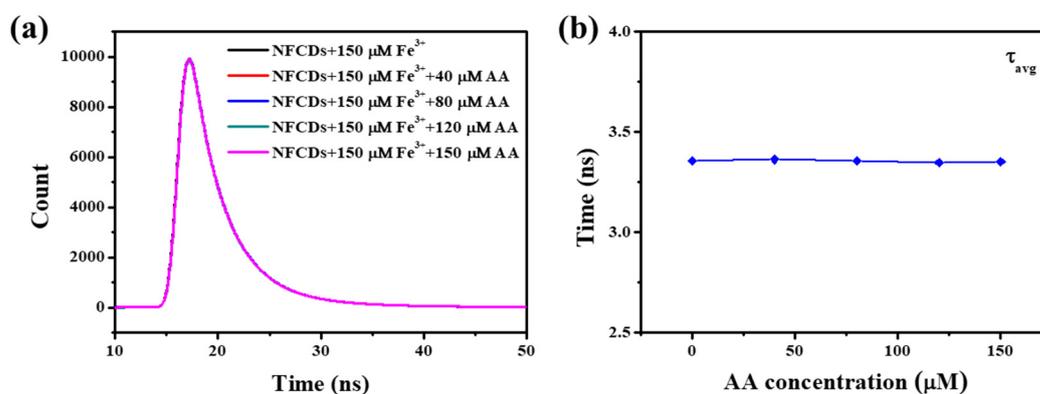


Figure S2. (a,b) Fluorescence decay of NFCDs with different concentrations of AA added to the NFCDs (0.1 mg mL^{-1}) and Fe^{3+} solution ($150\mu\text{M}$).

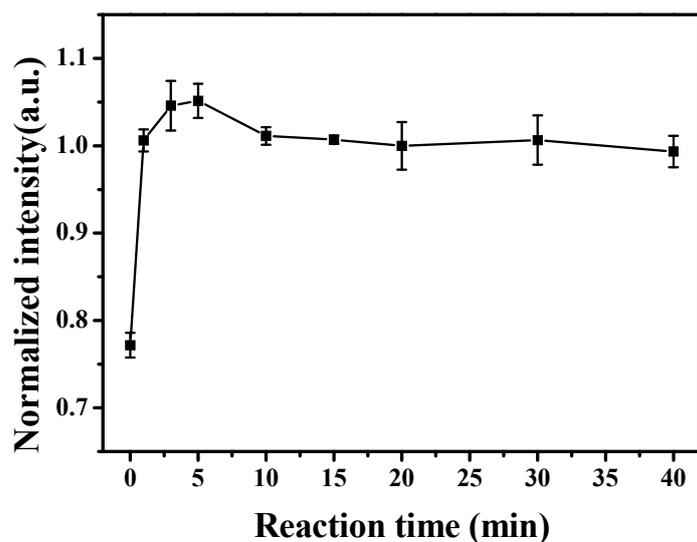


Figure S3. After putting NFCDs into the reaction system of Fe^{3+} (1 mM) and AA (1 mM), the change of its fluorescence intensity over time.

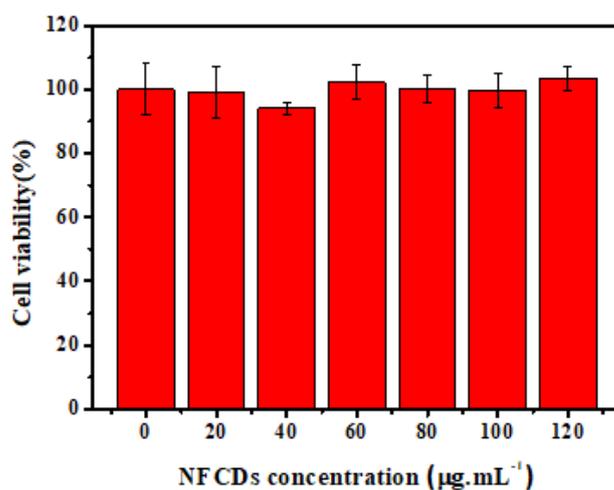


Figure S4. Cell viability in different NFCDs concentration ($\mu\text{g}\cdot\text{mL}^{-1}$).

Table S1. Double exponential fitting fluorescence lifetime of NFCDs at different Fe^{3+} concentrations.

Component Concentration (μM)	τ_1 (ns)	Amplitude of τ_1	τ_2 (ns)	Amplitude of τ_2	τ_{Avg1} (ns)
0	2.94	4.52	6.77	0.51	3.33
50	3.16	4.76	5.45	0.52	3.38
100	2.98	4.24	5.88	0.57	3.328
150	3.12	4.37	5.12	0.65	3.37

Note: τ_1 and τ_2 : fluorescent lifetimes from component 1 and 2, τ_{Avg1} : average fluorescence lifetime; Amplitude of τ_1 : rate constant of component 1, Amplitude of τ_2 : rate constant of component 2.

Table S2. Double exponential fitting fluorescence lifetime of Fe³⁺/NFCs at different AA concentrations

Component Concentration(μ M)	τ_3 (ns)	Amplitude of τ_3	τ_4 (ns)	Amplitude of τ_4	τ_{Avg2} (ns)
0	2.97	4.72	6.11	0.61	3.33
40	2.89	4.1	5.49	0.72	3.28
80	2.92	4.18	5.9	0.57	3.28
120	2.79	4.04	5.8	0.75	3.26

Note: τ_3 and τ_4 : fluorescent lifetimes from component 1 and 2, τ_{Avg2} : average fluorescence lifetime; Amplitude of τ_3 : rate constant of component 1, Amplitude of τ_4 : rate constant of component 2.