Electronic Supplementary Material (ESI) for Analytical Methods.

Simple fluorescence "turn-off" assay for Congo red using commercial 2-aminophthalic acid

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Figure S1. The fluorescence intensity ratio of NH_2-BDC solution at 425 nm under continuous irradiation of 365 nm ultraviolet light (Condition: 40 mM pH 8.0 phosphate buffer; the concentration of NH_2-BDC is 3 mg/L; I_0 is the fluorescence intensity at 425 nm before irradiation, I is the fluorescence intensity at 425 nm after irradiation of 365 nm ultraviolet light at different time; λ_{ex}=330 nm; λ_{em}=425 nm.).

Figure S2. The fluorescence intensity ratio of NH_2-BDC solution at 425 nm under continuous scanning (Condition: 40 mM pH 8.0 phosphate buffer; the concentration of NH_2-BDC is 3 mg/L; I_0 is the fluorescence intensity at 425 nm before irradiation, I is the fluorescence intensity at 425 nm after irradiation of 365 nm ultraviolet light at different time; λ_{ex}=330 nm; λ_{em}=425 nm.).

Figure S3. Quantum yield calculation of NH_2-BDC by using quinine sulfate as the reference. (Conditions: 40 mM pH 8.0 phosphate buffer; the concentration of NH2-BDC is 3 mg/L; λ_{ex}=330 nm.).

Figure S4. The change fluorescence intensity ratio of NH_2-BDC at 425 nm after adding 100 μM CR at different time (Conditions: 40 mM pH 8.0 phosphate buffer; the concentration of NH_2-BDC is 3 mg/L; I_0 is the fluorescence intensity of NH_2-BDC at 425 nm in the absence of CR, I is the fluorescence intensityof NH_2-BDC at 425 nm in the presence of CR; λ_{ex}=330 nm; λ_{em}=425 nm).

Table S1. Comparison of the sensing performance between NH_2-BDC and other fluorescent methods for CR analysis.

Probes	Linear range	Limit of detection	Reference
Ca, N, S-carbon quantum dots	0.2-1.2 μM	58 nM	[1]
Yellow-green carbon quantum dots	0.5-50 μg/mL (0.72-71.7 μM), 50-170 μg/mL (71.7-244 μM）	0.04 μg/mL (0.057 μM), 0.03 μg/mL (0.043 μM)	[2]
Rambutan seed waste-derived nitrogen-doped carbon quantum dots	0.5-10 μM	0.035 μM	[3]
Calix[4]arene derivative	0.040-8.0 μg/mL (0.057-114.8 μM)	8.9 ng/mL (1.28 nM)	[4]
NH_2-BDC	0.05-50 μM	1.72 μM	This work

Figure S5. Fluorescence decay curves of NH_2-DBC in the absence and presence of 100 μM CR at different time (Conditions: 40 mM pH 8.0 phosphate buffer; the concentration of NH_2-BDC is 3 mg/L;λ_{ex}=341.1 nm; λ_{em}=425 nm).

Table S2. Detection results of NH_2-BDC for CR in real water samples.

Samples	Added/μM	Found/μM	Recovery(%)	RSD(%)
Tap water	25.00	27.00	108.0%	5.98%
	40.00	40.26	100.7%	1.08%
Lake water	25.00	28.31	113.2%	7.16%
	40.00	36.65	91.6%	3.15%

References:

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