Supporting Information

Fluorescent-tunable copper nanoclusters and their application in hexavalent chromium sensing

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1 Supplementary Figures and Tables

1.1 Supplementary Figures

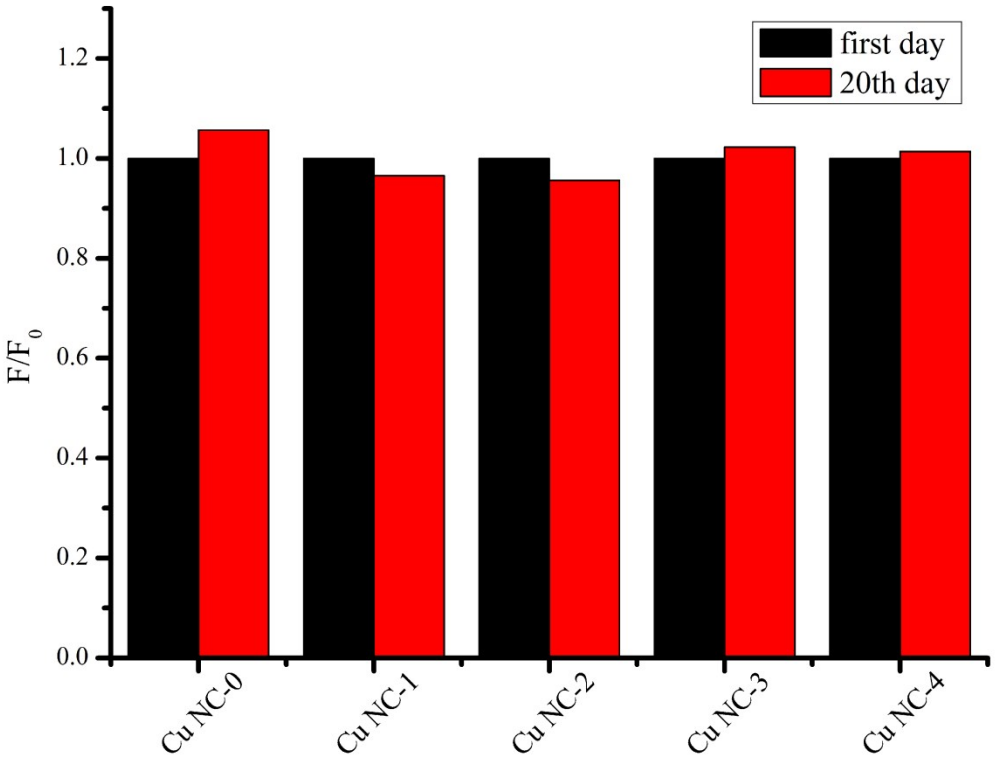

Figure S1. Stability of bi-ligand Cu NCs. Relative emission intensities (F/F_0) of as-prepared Cu NC (F_0) and stored for 20 days (F).

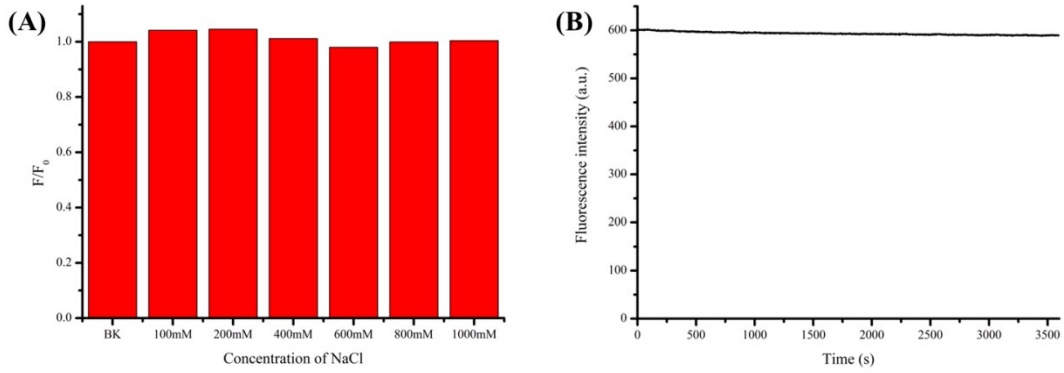

Figure S2. Salt tolerance and photostability of Cu NC-2. (A) Stability of Cu NC-2 in different concentrations of NaCl ranging from 100 mM to 1000 mM. (B) Photostability of Cu NC-2.

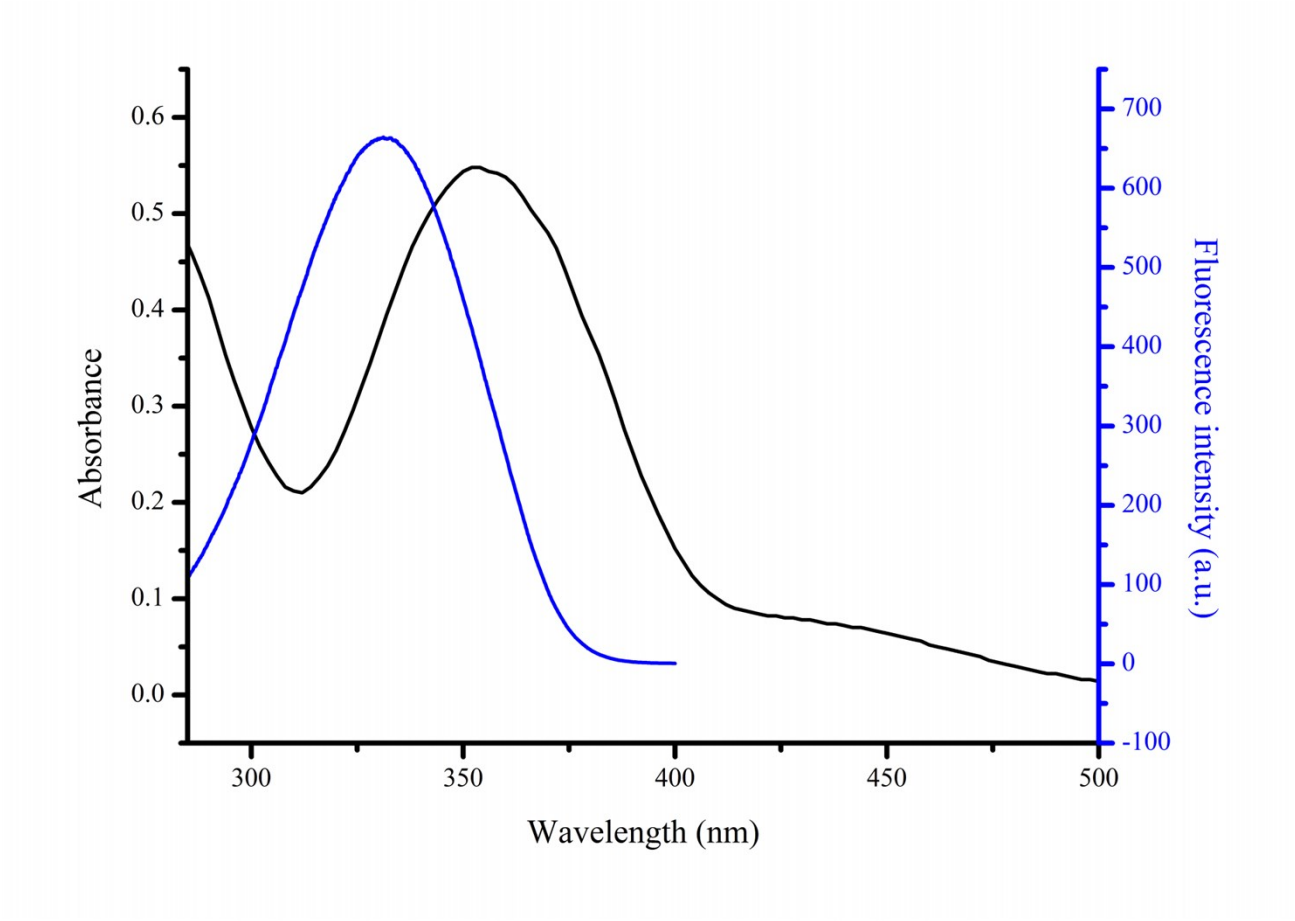

Figure S3. The correlation between Cu NC-2 and Cr(VI). The excitation spectrum of Cu NC-2 (blue line) and absorption spectrum of 0.02 M Cr(VI) (black line).

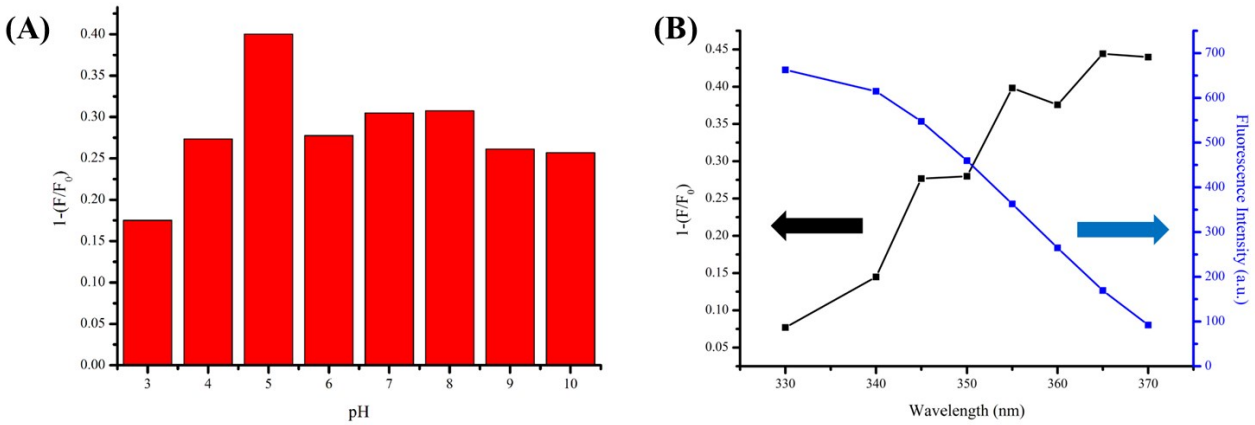

Figure S4. Optimization for Cr(VI) sensing. (A) Fluorescence intensities changes (1-F/F_0) of Cu NC-2 after adding 1 mM Cr(VI) at different pH value. (B) Fluorescence intensity and Fluorescence intensity change (1-F/F_0) of Cu NC-2 at various excitation wavelengths.

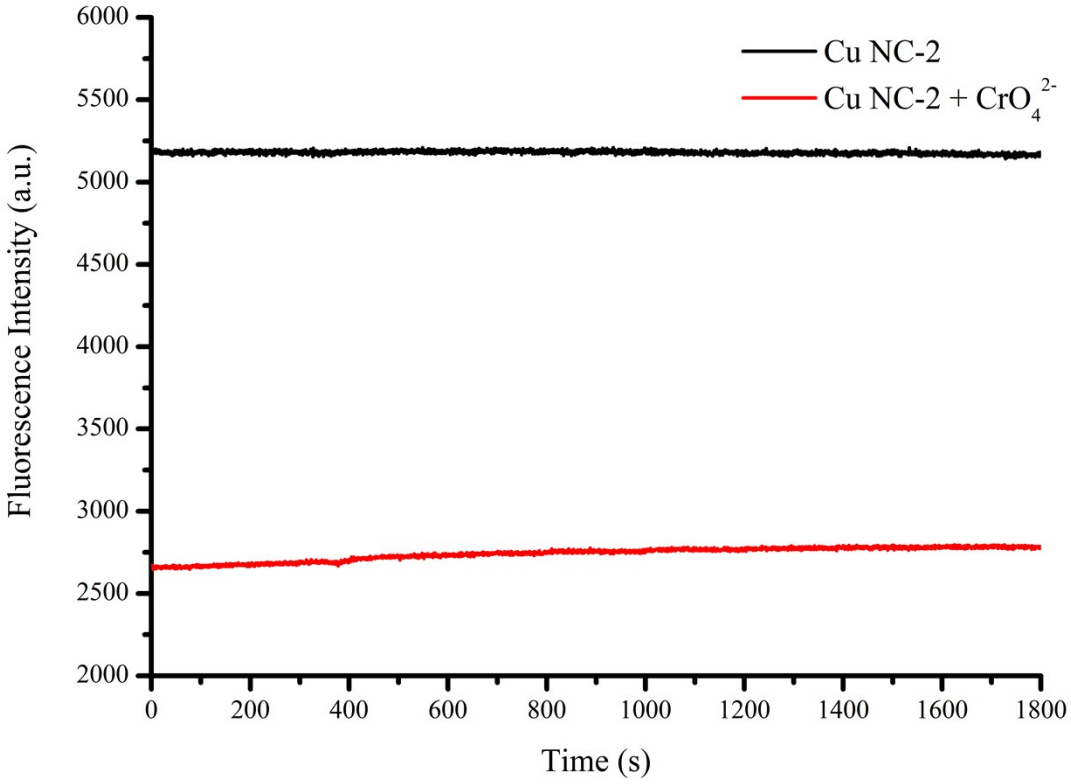

Figure S5. Photostability of Cu NC-2 with and without Cr(VI). Fluorescence time scan of Cu NC-2 (black line) and Cu NC-2 containing 0.1 mM of Cr(VI) (red line) at pH 5. The excitation wavelength was set at 355 nm.

1.2 Supplementary Tables

Table S1. Determination of Cr(VI) in mineral water using the present method. Each concentration of Cr(VI) in mineral water was tested for three times then the R.S.D. and recoveries have been calculated.

Mineral water	Spiked Cr(VI) [μM]	Detected [μM]	R.S.D. [%]	Recovery [%]
1#	10	9.83	2.06	98.3
	14	13.83	2.51	98.7
	20	21.01	4.54	105.0

Table S2. Comparison of the performance of the presented method with the some published analytical techniques for Cr(VI) detection.

Method	Sensor	Linear range /μM	Detection limit /μM	Ref.
Colorimetry	GNRs	0.1−20	0.088	1
Colorimetry	AA-AgNPs	0.08−1.84	0.05	2
Colorimetry	DMSA-AuNPs	0.01−0.5	0.01	3
Colorimetry	BSA-Au NPs and HBr	0.5−50	0.28	4
Fluorimetry	CdTE@SiO_2 and RhB	0.02−0.3	0.0062	5
Fluorimetry	SRBH	0.01−0.3	0.0015	6
Fluorimetry	BHHABN	2.5−90	0.36	7
Fluorimetry	N-GQDs	0.12−140	0.04	8
Fluorimetry	Cys-Cu NCs	0.05−60	0.043	9
Fluorimetry	G-C_3N_4 nanosheets	0.6−300	0.15	10
Fluorimetry	BSA-Au NCs and HBr	0.001−2.5	0.0006	11
Fluorimetry	bi-ligand Cu NC	0.1−1000	0.033	This work

2 References

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