Electronic Supplementary Information

Inner Filter Effect Based Selective Detection of Picric Acid in Aqueous Solution Using Green Luminescent Copper Nanoclusters

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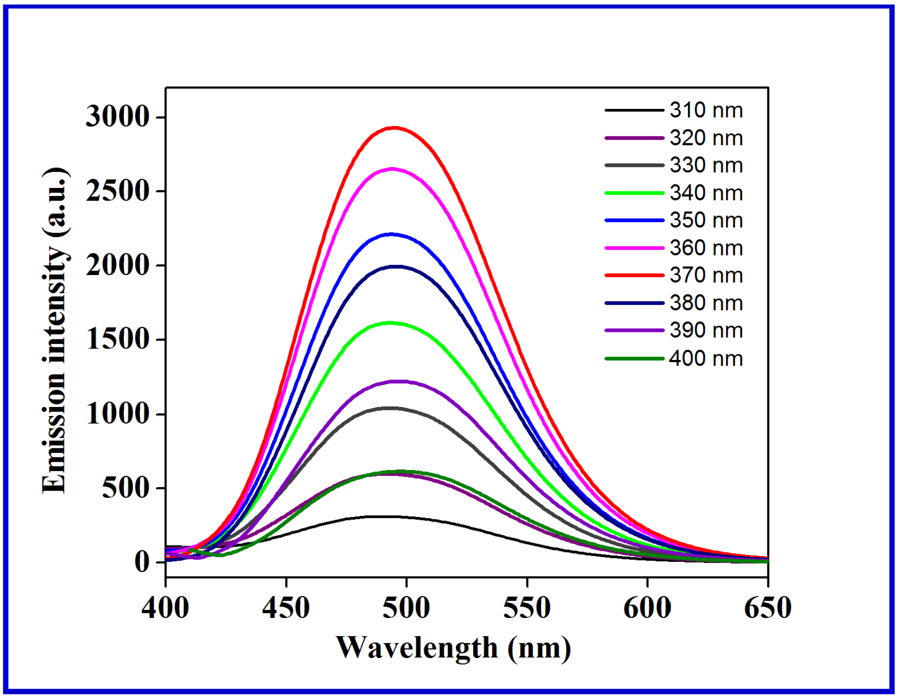

Fig. S1. Fluorescence spectra of Cys-CuNCs at different excitation wavelengths from 310 to 400 nm.

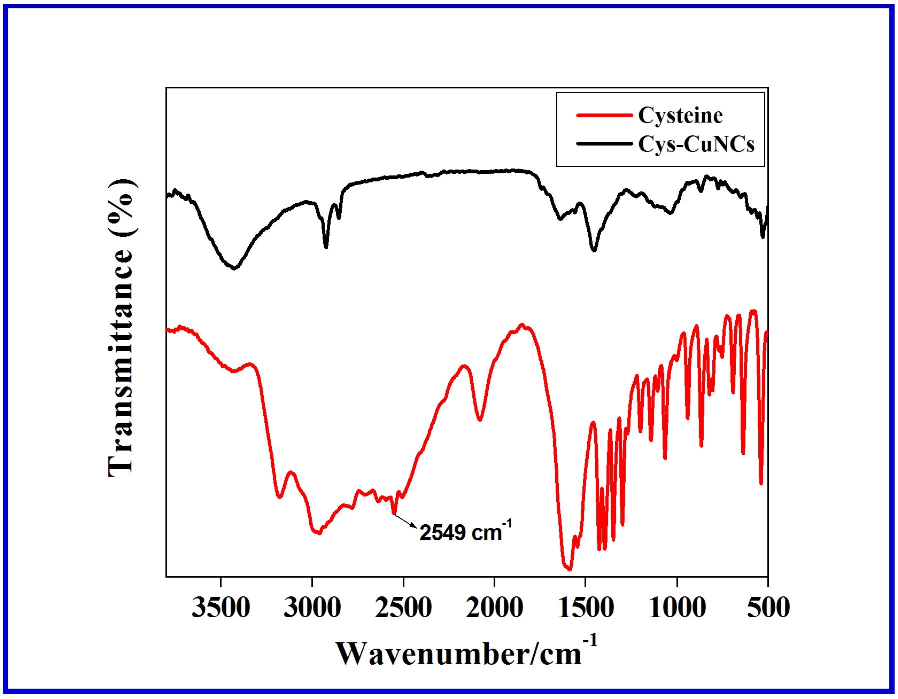

Fig. S2. FT-IR spectra spectra obtained for free Cys (a) and Cys-CuNCs (b).

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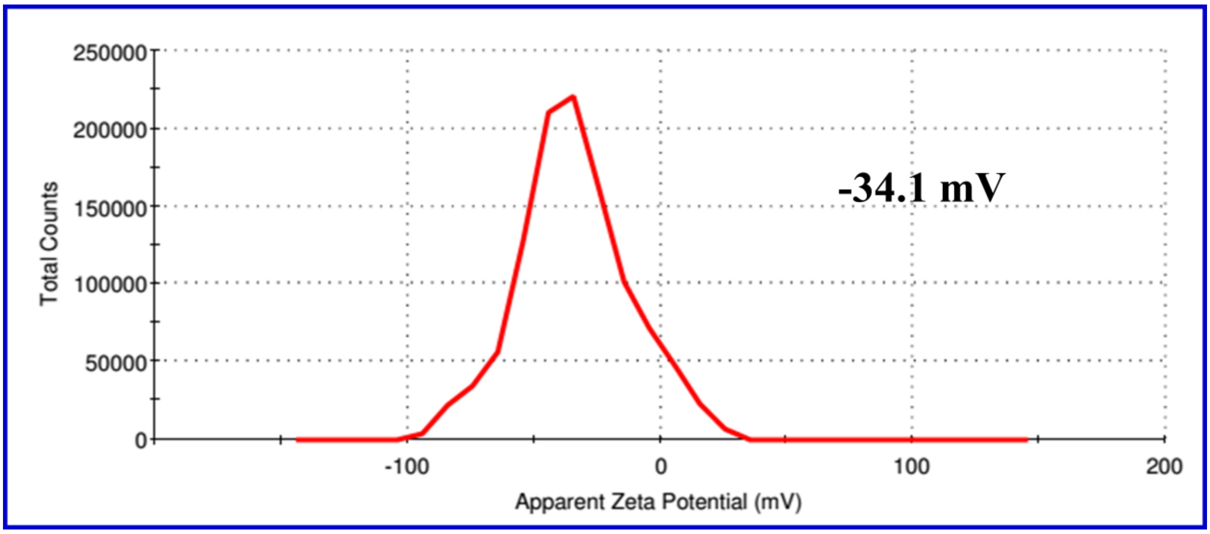

Fig. S3. Zeta potential distribution of Cys-CuNCs.

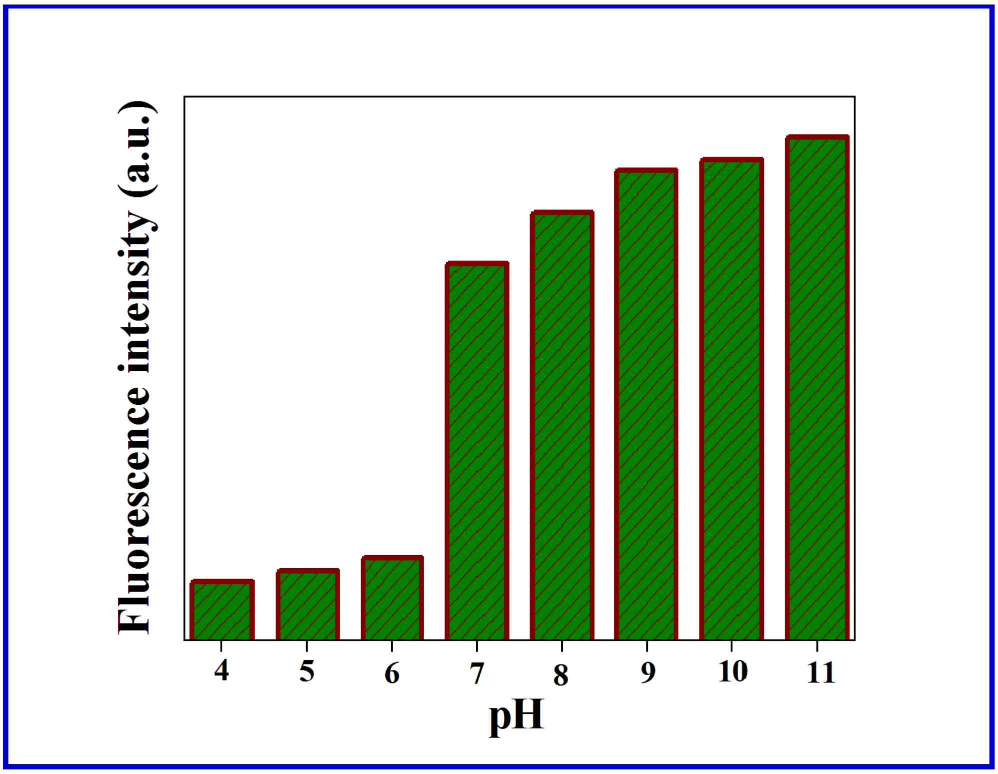

Fig.S4. Fluorescence intensity of Cys-CuNCs at different pH values.

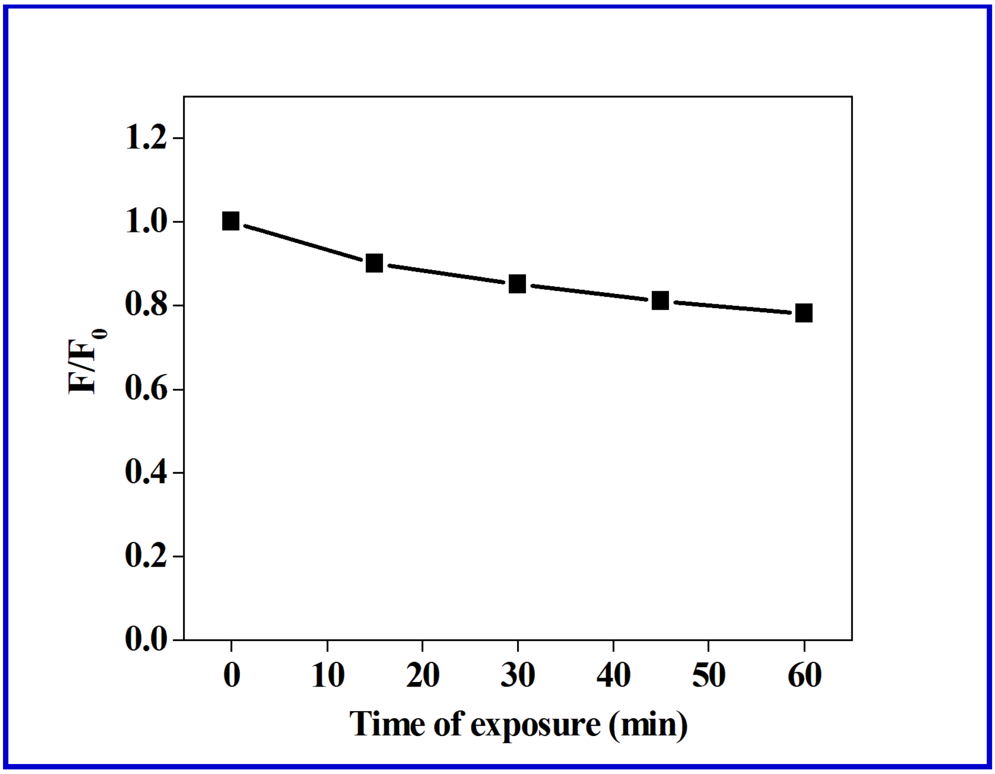

Fig. S5. Photostability of Cys-CuNCs under continuous irradiation with UV light for 60 mins. F_0 and F denote the fluorescence intensity of Cys-CuNCs before and after UV irradiation, respectively.

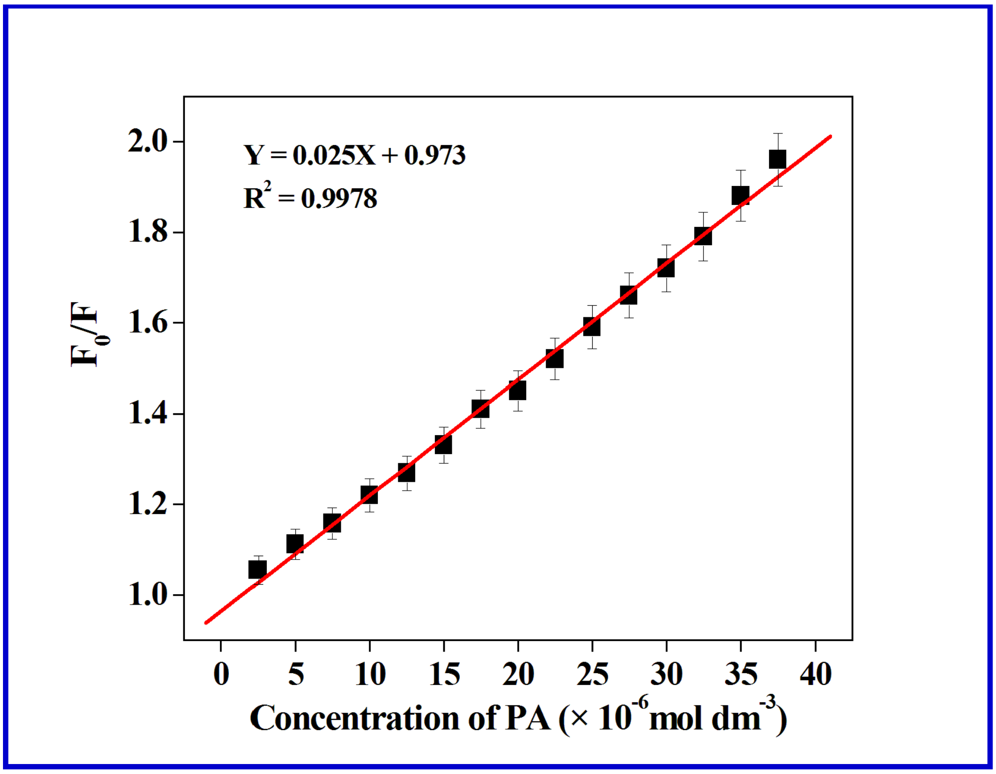

Fig.S6. Stern-Volmer plot for the fluorescence quenching of Cys-CuNCs by PA

Table S1. Time resolved fluorescence decay of Cys-CuNCs in the absence and presence of PA.

System	**τ_1 (ns)**	**τ_2 (ns)**	**τ_3 (ns)**	**a_1**	**a_2**	**a_3**	**τ_{avg} (ns)**
Cys-CuNCs	5.18	15.98	0.67	0.47	0.40	0.13	8.91
Cys-CuNCs+PA	4.50	14.17	0.76	0.39	0.49	0.12	8.80

$\tau_{avg} = \tau_1 a_1 + \tau_2 a_2 + \tau_3 a_3$

Table S2. Comparison of proposed method with other reported methods for the sensing of PA.

Probe	Linear range (µM)	LOD	Mechanism	Sample matrix	References
N-GQDs	1-60	0.30 µM	Electron transfer	Lake water	1
P-doped carbon dots	0.2-17	16.9 nM	FRET	River, Pool	2
GQDs	0.1-15	0.09 µM	FRET	Lake water	3
N-GQDs	0-16	0.92 µM	FRET	Tap and lake water	4
Nano-flake MOF thin films	0-70	0.67 µM	Electron transfer, inner filter effect and hydrogen-bond interactions	River water	5
Amine-capped carbon dots	N/A	1 µM	Electrostatic interaction	N/A	6
Ionic liquid	N/A	0.81 µM	Resonance energy transfer	N/A	7
Carbon nanodots	N/A	0.36 µM	Electrostatic interaction	N/A	8
Carbon dots	0.1-26.5	51 nM	Electron transfer and inner filter effect	Tap water	9
Silver nanoclusters/ DNA hybrids	N/A	5.2 pM	Electron transfer	N/A	10
Bovine serum albumin capped copper nanoclusters	0.8-100	120 nm	FRET	Tap and industrial water	11
Silver nanoclusters	1 nM–20 µM	0.1 nM	Energy transfer and electron transfer	N/A	12
Reduced Graphene Oxide	N/A	0.537 µM	FRET	N/A	13
Molybdenum disulfide	0.099- 36.5	95 nm	RET and electronic energy transfer	Lake water	14
Silicon nanoparticles	0.02 to 120 µg/mL	6.7 ng/mL	Inner filter effect	River and tap water	15
Cys-CuNCs	2.5-25	0.19 µM	Inner filter effect and static quenching effect	Lake and tap water	Present method

References

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