Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information for

Thioacetamide Derived Nitrogen and Sulphur Co-doped Carbon Nanoparticles Used for Label-free Detection of Copper (II) Ion and Bioimaging Application

Hari Krishna Sadhanala, Ananya Maddegalla, and Karuna Kar Nanda*

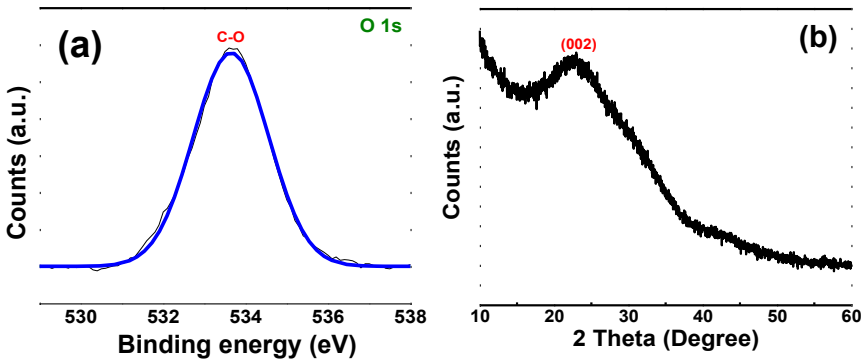

Figure S1. (a) High resolution O 1s spectrum, and (b) XRD pattern of NS-CNPs

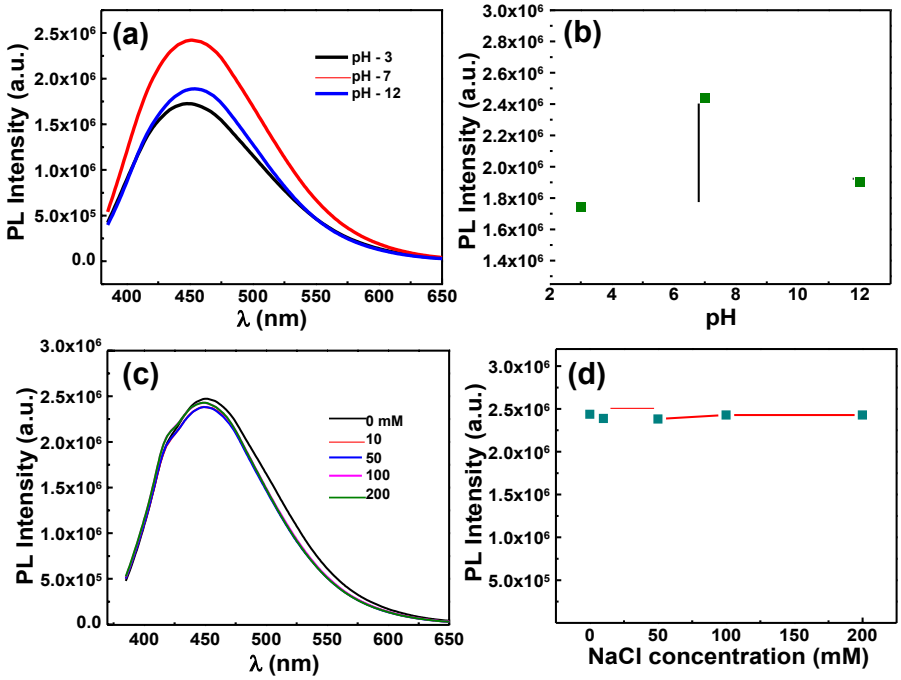

Figure S2. (a, c) PL spectra of NS-CNPs at different pH and NaCl concentrations, (b, d) PL intensity as a function of pH and NaCl concentration.

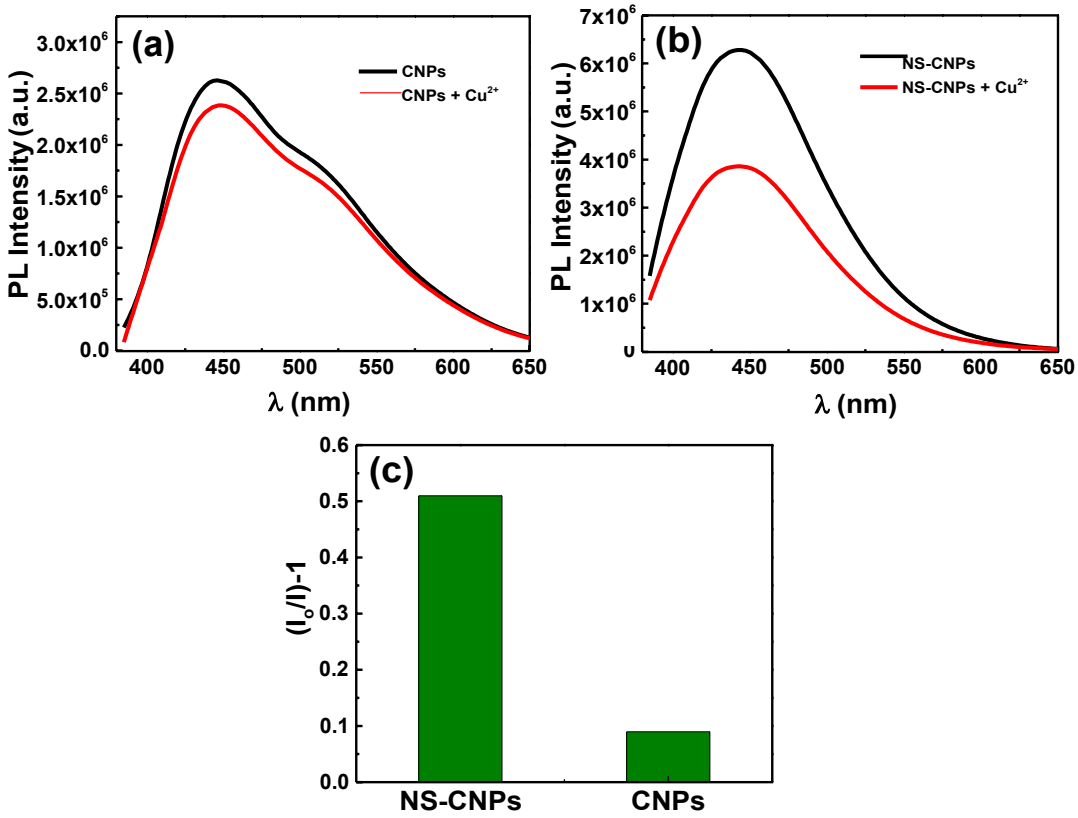

Figure S3. (a, b) PL spectra of CNPs and NS-CNPs in the presence of Cu^{2+} ion (200 µM), and (c) Selectivity of CNPs and NS-CNPs towards Cu^{2+} ion (200 µM) with 365 nm excitation.

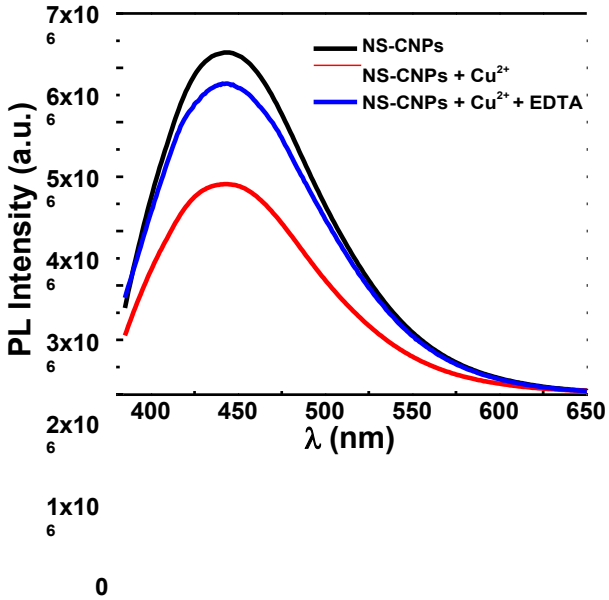

Figure S4. Reusability of NS-CNPs in the presence of Cu^{2+} ion (200 µM) with 365 nm excitation.

Table S1

Ref No.	Materials	LOD
1	ZnS QDs	7.1 μM
2	Carbon dots	4.8 μM
3	DTDC- CdSe/CdS QDs	4.7 μM
4	Cys-CdS QDs	1.5 μM
5	Fe3O4@OCMC@CDs	0.6 μM
6	GQDs	0.226 μM
7	PFR-CdTe Composite	0.160 μM
8	BPEI-CQDs	0.115 μM
9	CDs/Si NPs	35.2 nM
10 (In this work)	NS-CNPs	14 nM

References

1. M. Koneswaran, R. Narayanaswamy, *Sensors and Actuators B*, 2009, **139**, 104–109.
2. X. Ma, Y. Dong, H. Sun, N. Chen, *Materials Today Chemistry*, 2017, **5**, 1-10.
3. J. Wang, X. Zhou, H. Ma, G. Tao, *Spectrochimica Acta Part A*, 2011, **81**, 178–183.
4. C. Boonmee, T. Noipa, T. Tuntulani, W. Ngeontae, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 2016, **169**, 161–168.
5. Amit Kumar, A. R. Chowdhuri, D. Laha, S. Chandra, P. Karmakar, and S. K. Sahu, *RSC Adv.*, 2016, **6**, 58979–58987.
6. F. Wang, Z. Gu, W. Lei, W. Wang, X. Xia, Q. Hao, *Sensors and Actuators B*, 2014, **190**, 516– 522.

7. P. Yang, Y. Zhao, Y. Lu, Q-Z. Xu, X-W. Xu, L. Dong, and S-H. Yu, *ACS Nano*, 2011, **5**, 2147–2154.
8. Y. Liu, Y. Zhao, Y. Zhang, *Sensors and Actuators B*, 2014, **196**, 647–652.
9. X. Liu, N. Zhang, T. Bing, and D. Shangguan, *Anal. Chem.*, 2014, **86**, 2289–2296.