

Supplementary materials

Eco-Friendly Colorimetric Detection of Lead and Mercury Using L-Cysteine-Functionalized Gold Nanoparticles: A Step Towards Greening the Exposome

Sharmila Sajankila Nadumane^a, Rajib Biswas^{b*}, Nirmal
Mazumder^{a *}

a.Department of Biophysics, Manipal School of Life Sciences, Manipal
Academy of Higher Education, Manipal, Karnataka, India-576104

b.Department of Physics, Tezpur University, Tezpur, Assam, India-
784028

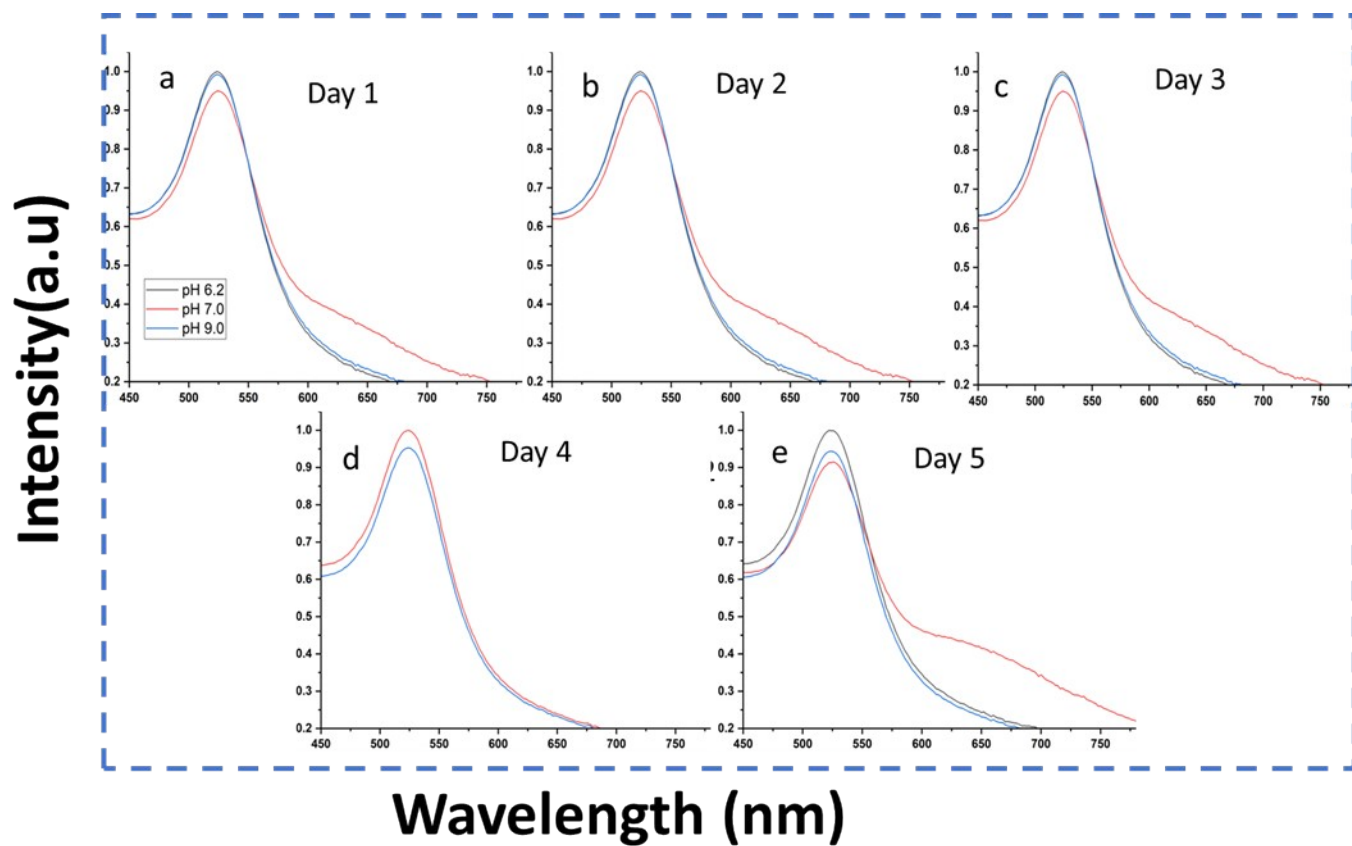
c.*Corresponding authors: rajib@tezu.ernet.in ;
nirmal.mazumder@manipal.edu

Supplementary table 1: Surface zeta potential values

| Zeta potential (mV) | | | | | | |
|----------------------------|---------------|-------------|-------------|---------------|-------------|-------------|
| Day | 25 nm | | | 31 nm | | |
| | 6.2 pH | 7 pH | 9 pH | 6.2 pH | 7 pH | 9 pH |
| 1 | -25.7 | -28.0 | -15.4 | -14.0 | -16.6 | 0.167 |
| 2 | -20.9 | -26.8 | -14.6 | 0.248 | -0.804 | -13.4 |
| 3 | -25.3 | -26.2 | -10.1 | -26.1 | -13.7 | -26.0 |
| 4 | -19.3 | -26.8 | -3.90 | -24.6 | -14.8 | -24.7 |
| 5 | -22.8 | -20.6 | -5.39 | 0.199 | -14.8 | -23.7 |

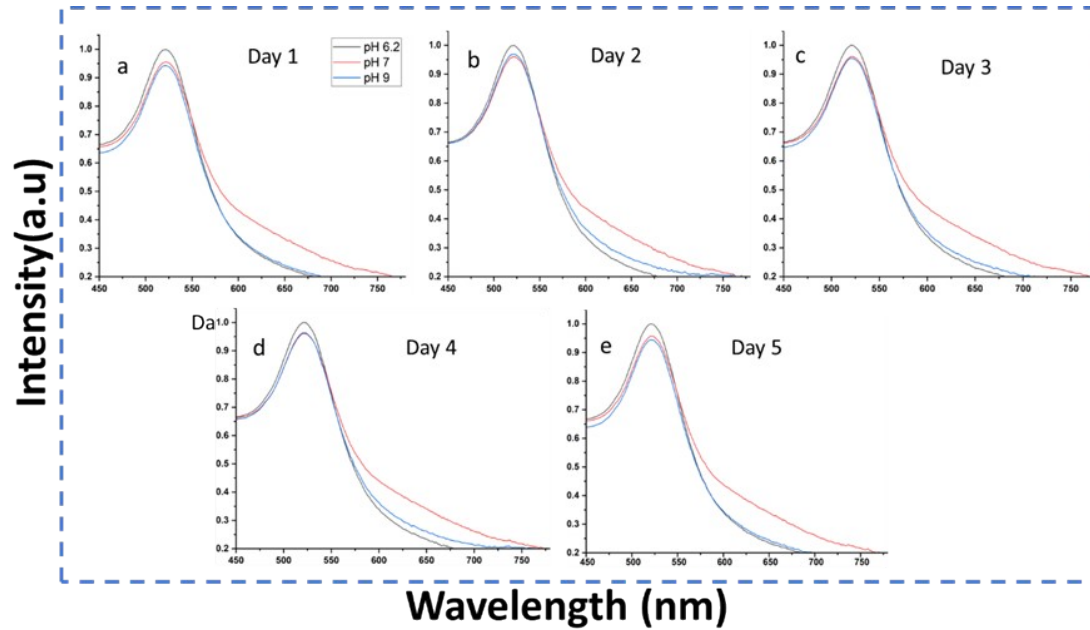
Supplementary table 1: Surface zeta potential value of AuNPs of average size 25 nm and 31 nm of pH 6.2, 7 and 9) for 5 days.

Supplementary Fig 1: Stability of AuNP (31 nm)-L Cys



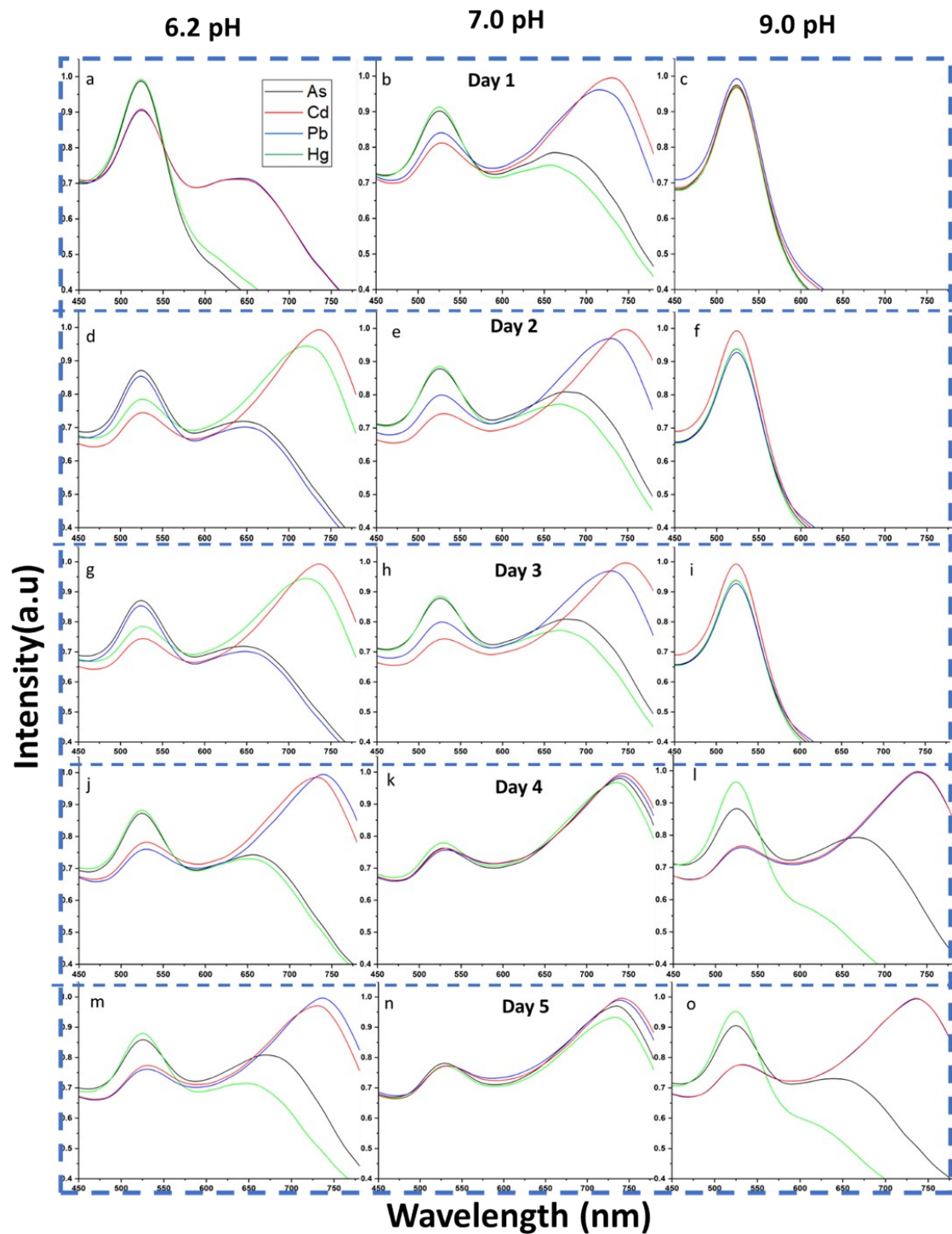
Supplementary Fig 1: Wavelength vs. intensity graph of AuNPs of average size 31 nm functionalized with L-cysteine with three different pH's 6.2, 7.0 and 9.0. for 5 days.

Supplementary Fig 2: Stability of AuNP (25 nm)-L Cys



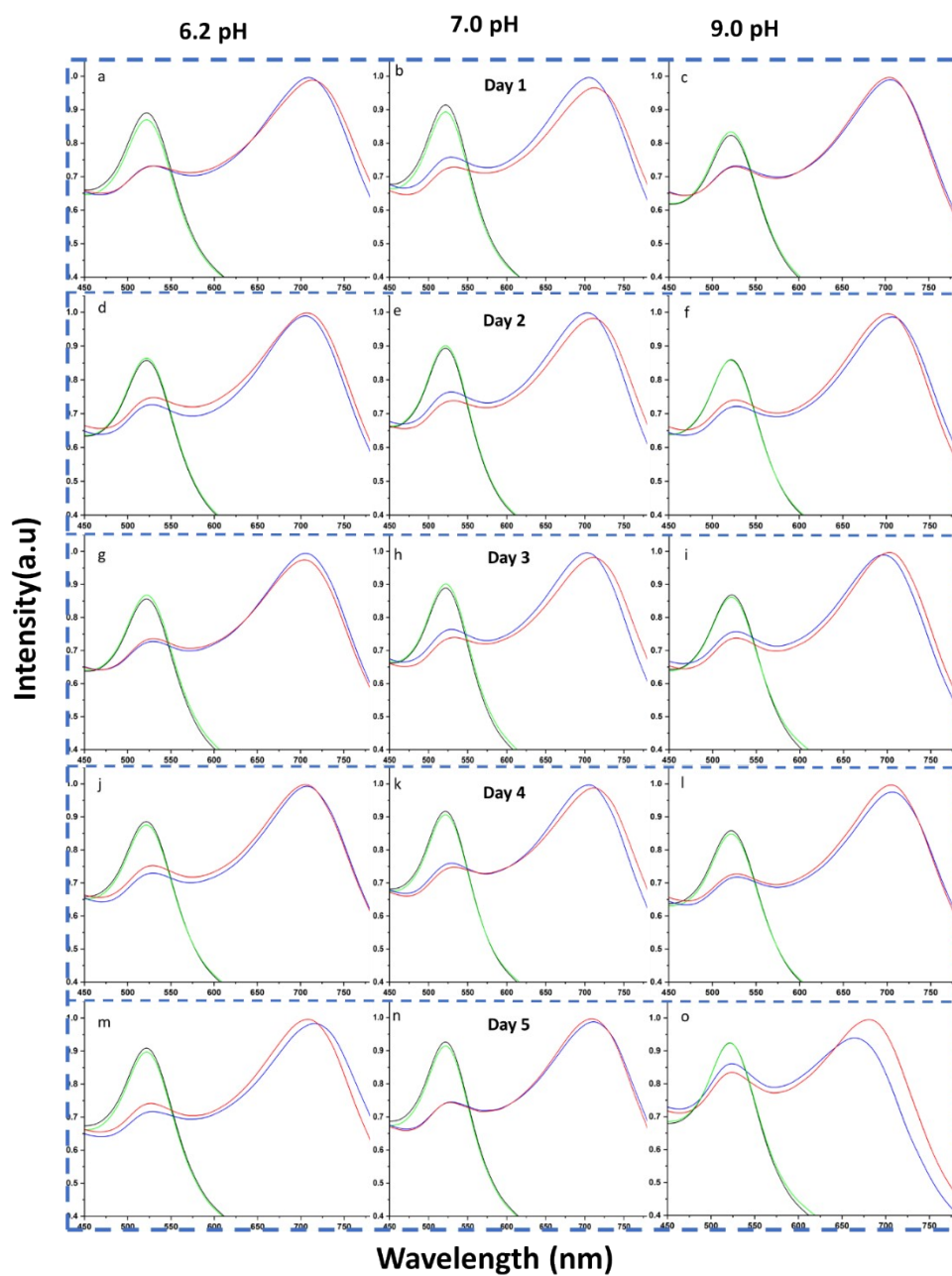
Supplementary Fig 2: Wavelength vs. intensity graph of AuNPs of average size 25 nm functionalized with L-cysteine with three different pH's 6.2, 7.0 and 9.0. for 5 days.

Supplementary Fig 3: Absorbance graph of AuNP (31nm)-L Cys and heavy metals



Supplementary Fig 3: Wavelength vs. intensity graph of gold nanoparticles of 31nm (AuNPs) functionalized with L-cysteine with three different pH's 6.2, 7.0 and 9.0 for 5 days. (First row, middle row and third row respectively) with heavy metals.

Supplementary Fig 4: Absorbance graph of AuNP (25 nm)-L Cys and heavy metals



Supplementary Fig 4: Wavelength vs. intensity graph of gold nanoparticles (AuNPs) with 25nm functionalized with L-cysteine with three different pH's 6.2, 7.0 and 9.0 for 5 days. (First row, middle row and third row respectively) with heavy metal.