

Thermodynamic Investigation of the Interaction between Ionic Liquid Functionalized Gold Nanoparticles and Human Serum Albumin for Selective Determination of Glutamine

Sushama Sahu,^a Reshma,^a Srishti Sharma,^a Indrapal Karbhal^a and Kallol K. Ghosh^{*a}

^aSchool of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur-492010 (C.G.),
India

SUPPLEMENTARY MATERIALS

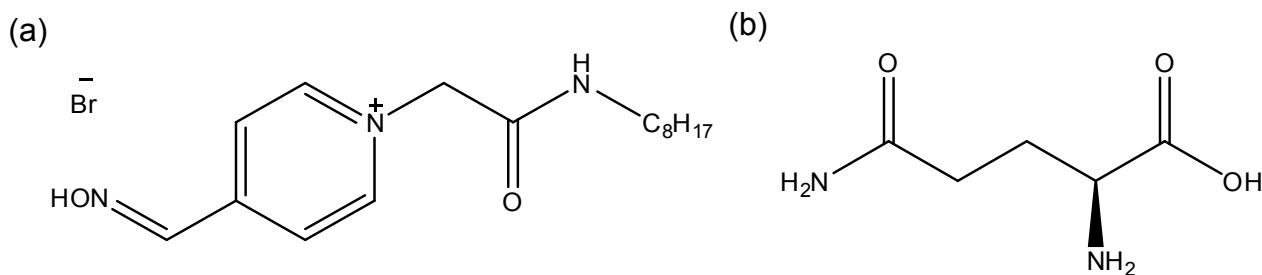
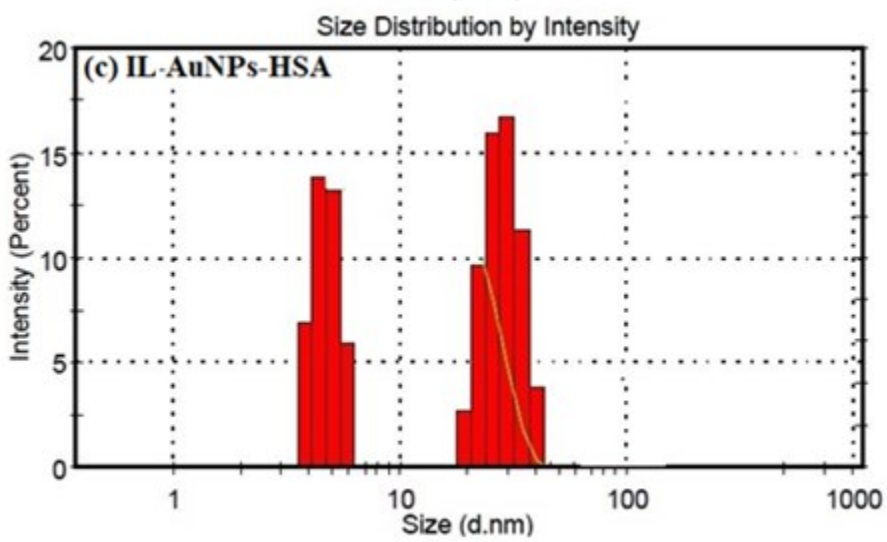
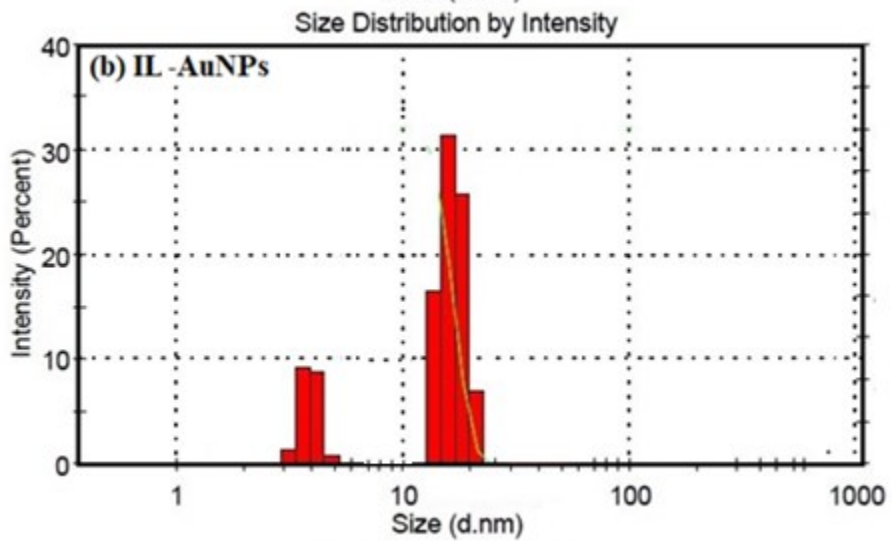
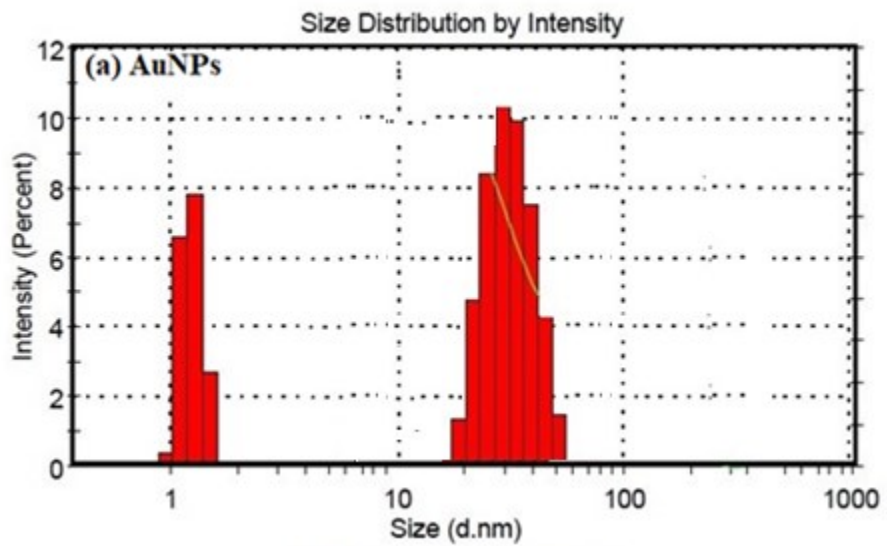


Fig. S1 Chemical structure of (a) amino based ionic liquid [4-((hydroxiimino)methyl)-1-(2-(octylamino)-2-oxoethyl)pyridine-1-iumbromide] and (b) glutamine.



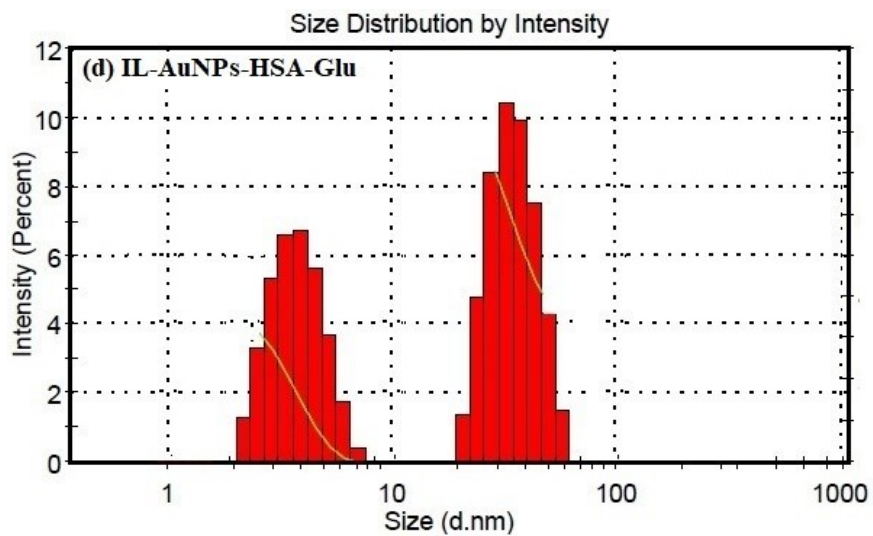


Fig. S2 DLS size distribution plots of (a) AuNPs, (b) IL-AuNPs (c) IL-AuNPs-HSA and (d) IL-AuNPs-HSA with Glu.

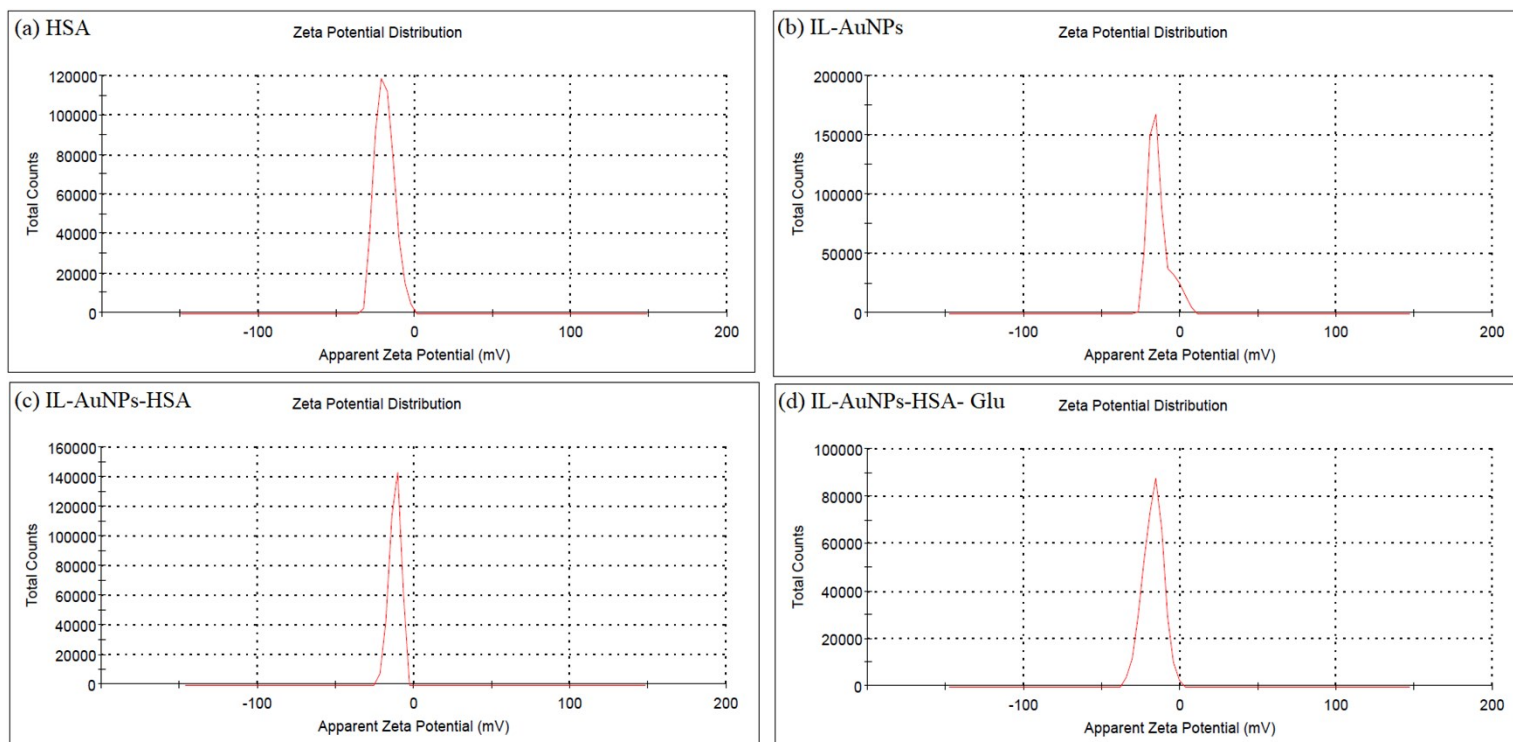


Fig. S3 Zeta potential measurements of (a) HSA, (b) IL-AuNPs (c) IL-AuNPs-HSA and (d) IL-AuNPs-HSA with Glu.

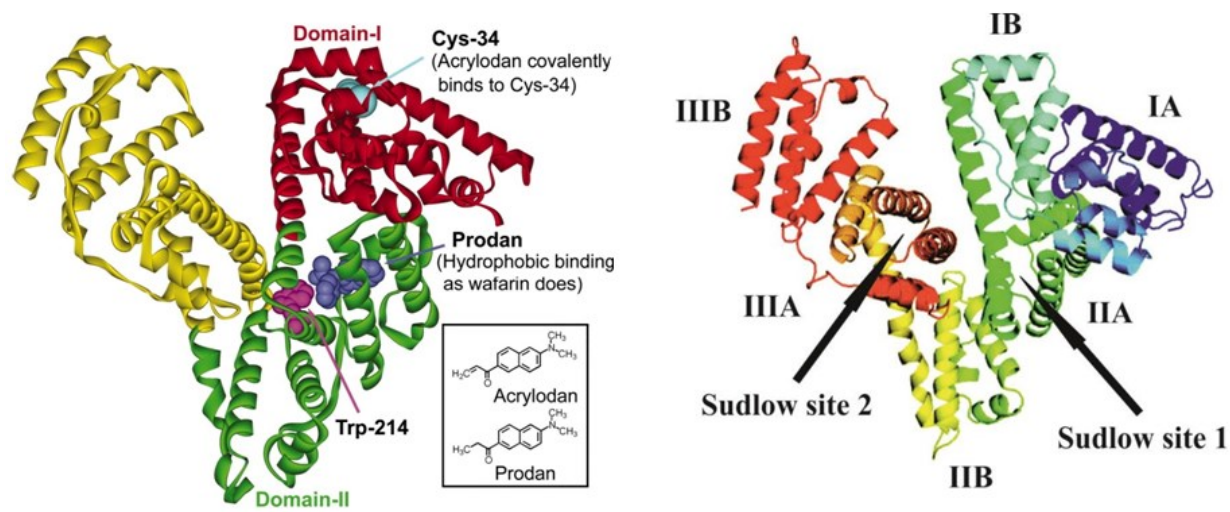


Fig. S4 Structure of HSA showing three different domains.

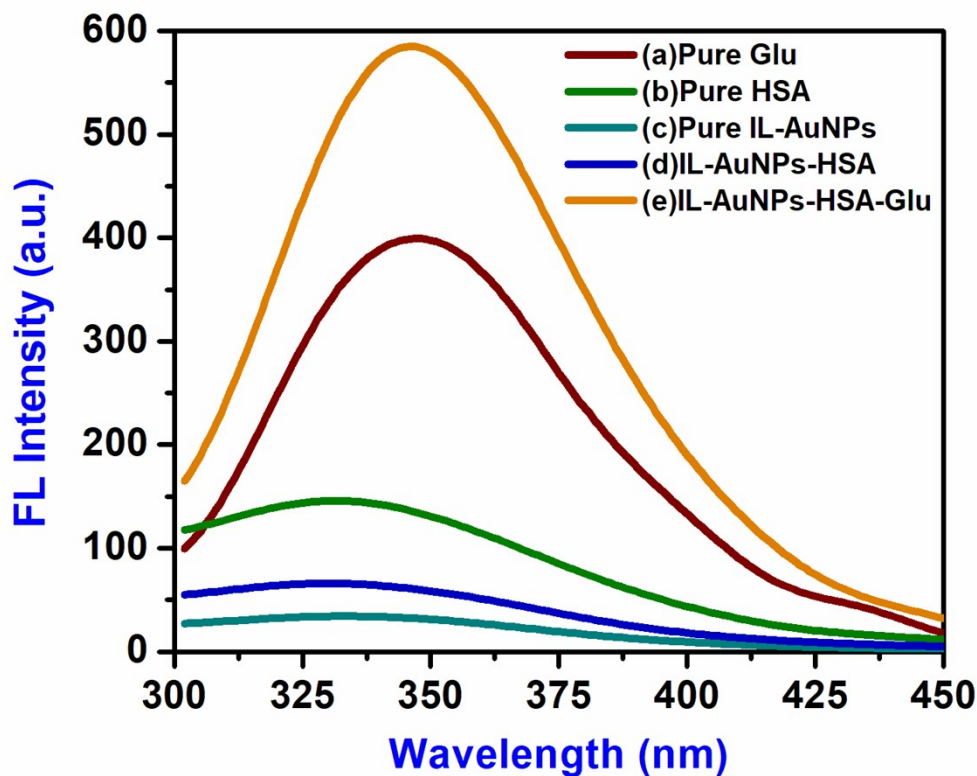


Fig. S5 Fluorescence spectra for (a) pure Glu, (b) pure HSA, (c) pure IL-AuNPs, (d) IL-AuNPs-HSA and (e) IL-AuNPs-HSA with Glu.

Table S1. Comparison of sensitivities of detection techniques with the proposed methodology

| Method | Analyte | Concentration | Correlation Coefficient | Limit of Detection | Ref |
|---------------------------|--------------------|---------------------|-------------------------|--------------------|-----|
| Colorimetry | Lysozyme | 100-1000 nM | 0.9890 | 50 nM | 52 |
| Colorimetry | Lysozyme | 20 nM to 2 μ M | 0.99 | 20 nM | 53 |
| Impedimetric | MWCNT-SPEs-aptamer | 0-28.6 μ M | 0.9984 | 862 nM | 54 |
| Capillary Electrophoresis | Lysozyme | 0.005-0.3 μ M | 0.9930 | 8 nM | 55 |
| Fluorescence | FITC-BSA | 0.0-0.10 μ g/ml | 0.94 | | 56 |

| | | | | | |
|-------------|-----------|-----------|---------|------|-------------------|
| Colorimetry | Glutamine | 10-100 nM | 0.99627 | 0.67 | Present Method |
|-------------|-----------|-----------|---------|------|-------------------|
