Supporting Information

Metal-Ion-Induced Luminescence *Enhancement* in Protein Protected Gold Clusters

Jyoti Sarita Mohanty,[‡] Kamalesh Chaudhari,[‡] Chennu Sudhakar[‡] and Thalappil Pradeep*

[‡]DST Unit of Nanoscience (DST UNS), and Thematic Unit of Excellence (TUE),

Department of Chemistry, Indian Institute of Technology Madras, Chennai - 600 036, India

*E-mail: pradeep@iitm.ac.in

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Supporting Figure 1

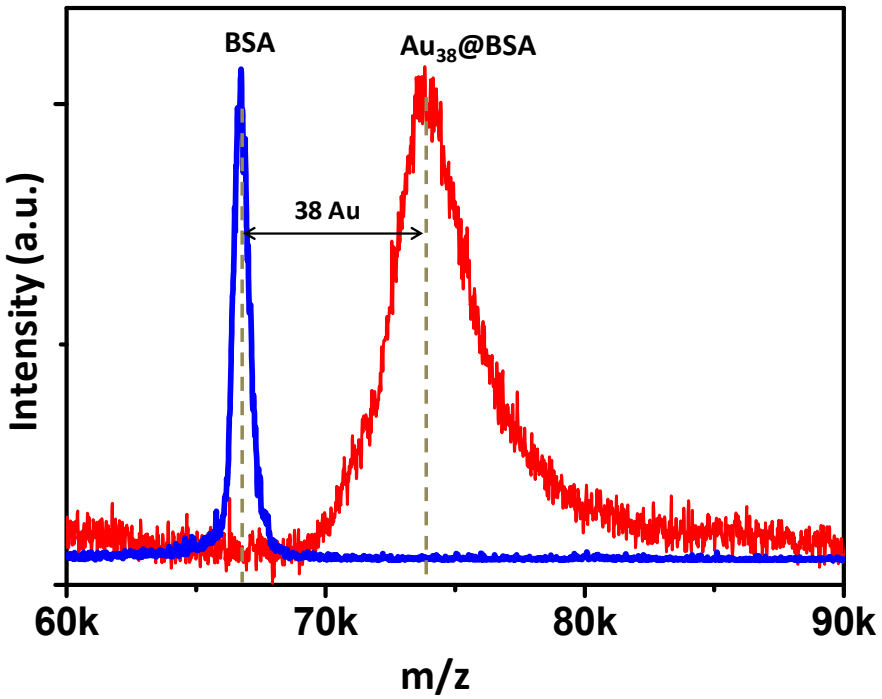

Figure S1: Comparison between MALDI MS of BSA and Au_{QC}@BSA showing mass shift of 7.5 kDa from parent protein after cluster formation. The cluster is assigned as ~Au_{38}@BSA.

Supporting Figure 2

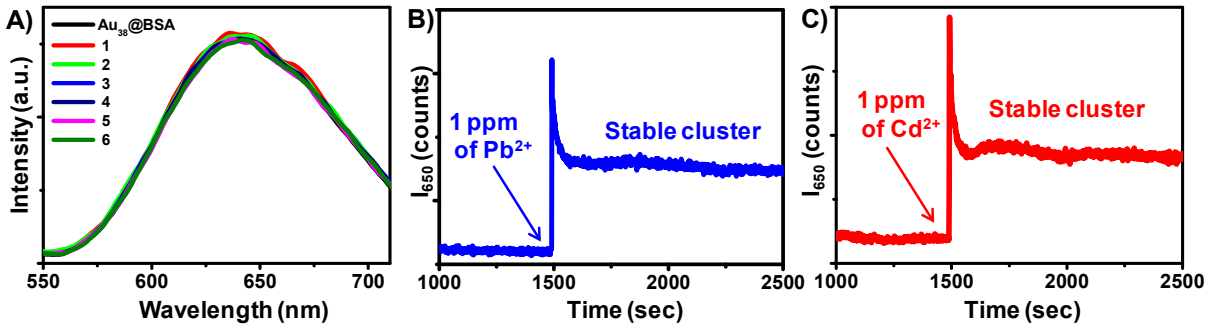

Figure S2: (A) The PL emission spectra of Au_{38}@BSA. Spectra from 1 to 6 were measured at a time interval of 2 min to check the stability of the parent cluster (all the parameters were kept same during the measurement). Excitation wavelength for Au_{38}@BSA was 365 nm. Time-dependent changes in I_{650} of Au_{38}@BSA upon addition of 1 ppm (B) Pb^{2+} and (C) Cd^{2+}.

Supporting Figure 3

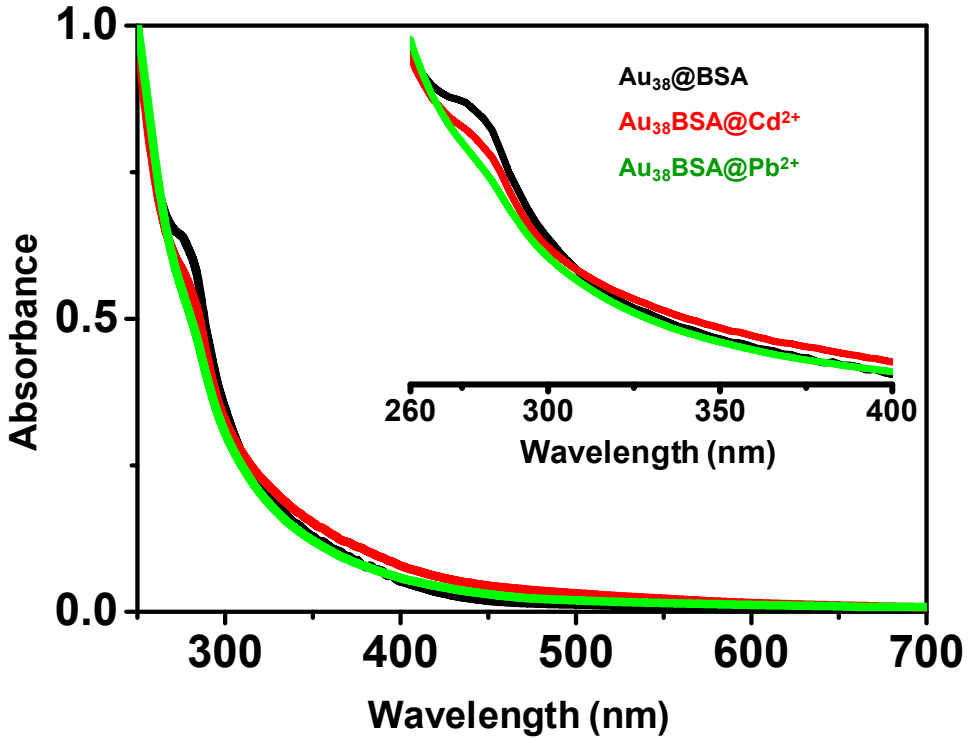

Figure S3: UV-vis absorption spectra of parent Au_{38}@BSA (black trace) and after treatment with Cd^{2+} (red trace) and Pb^{2+} (green trace). Inset shows the expanded view of the absorption feature.

Supporting Figure 4

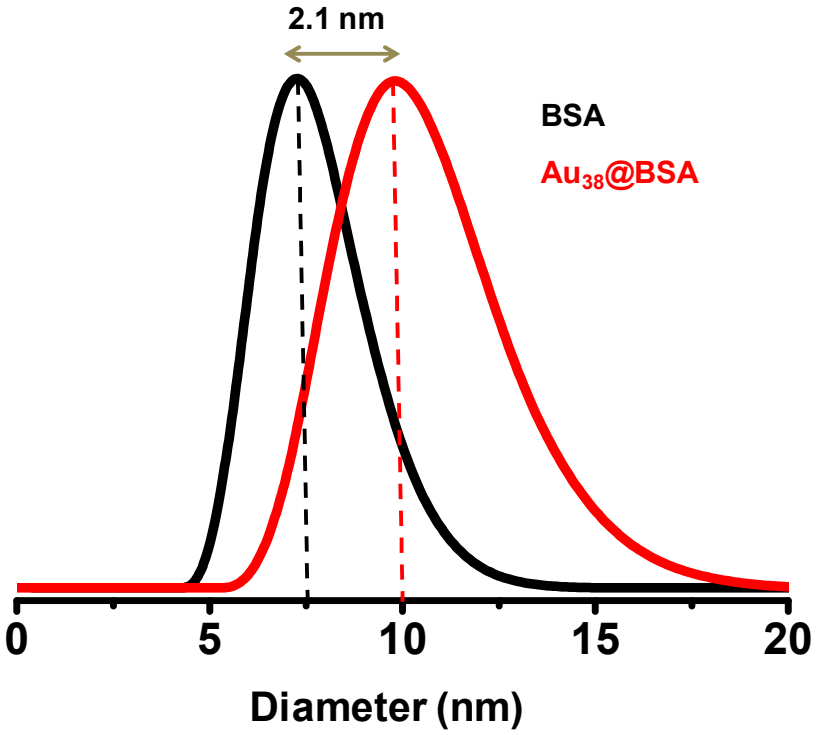

Figure S4: DLS data of BSA and Au_{38}@BSA showing the presence of ~2.1 nm cluster core.

Supporting Figure 5

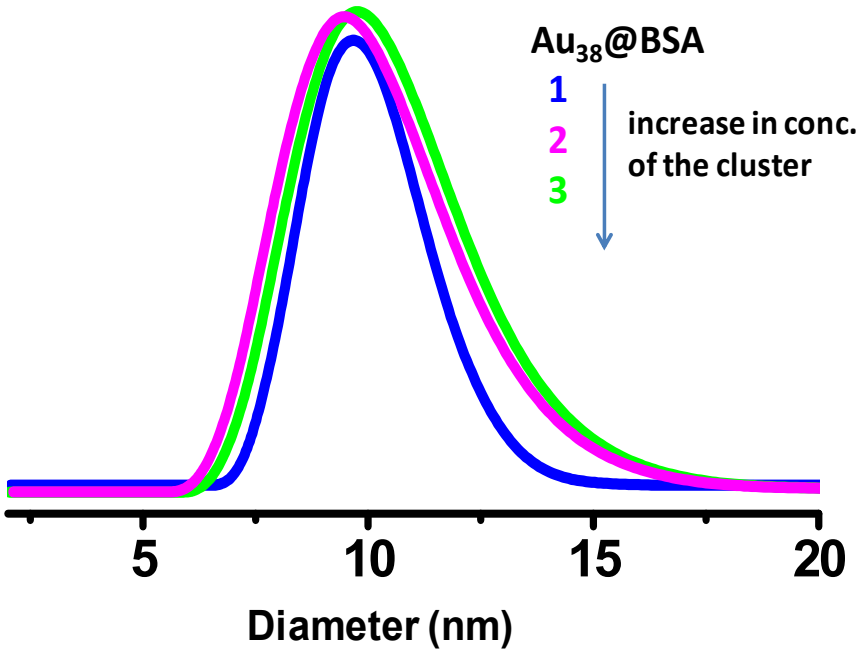

Figure S5: Volume fraction-dependent DLS spectra of Au_{38}@BSA showing the size of the cluster remained same with increase in concentration of the cluster. Concentrations 1, 2, and 3 correspond to 5, 20 and 50 µL of cluster solution in 2 mL of DI H_2O, respectively. Therefore, the last two correspond to 4 and 10 times enhanced concentration than the first.

Supporting Figure 6

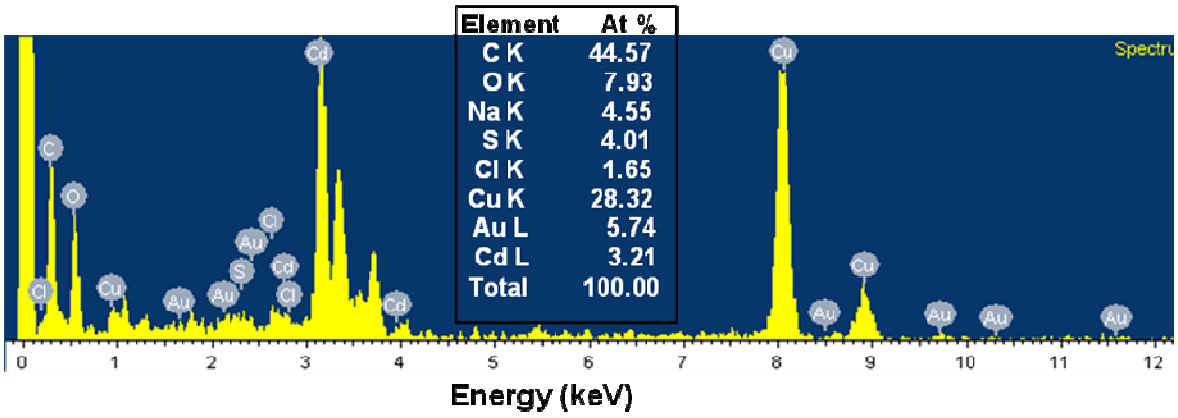

Figure S6: HRTEM EDS spectrum with quantification data showing the presence of Cd^{2+} and other expected elements in Au_{38}@BSA.

Supporting Figure 7

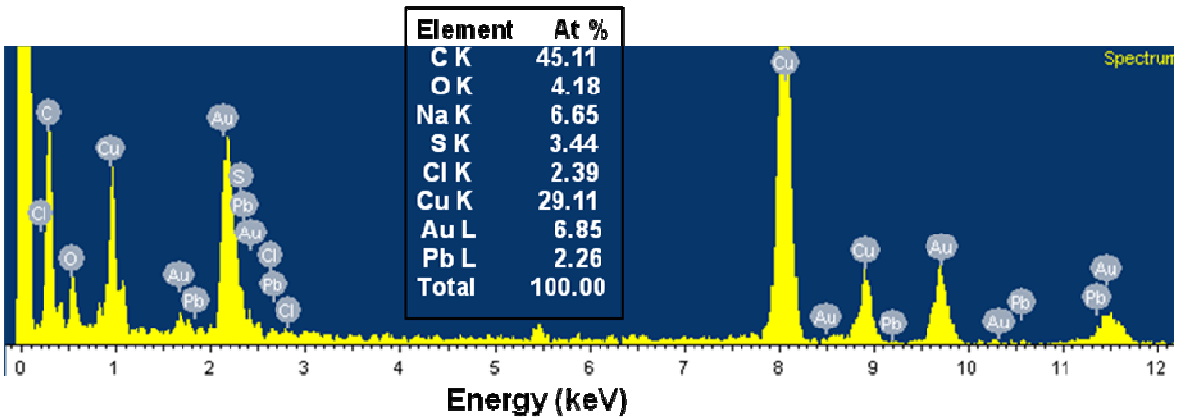

Figure S7: HRTEM EDS spectrum with quantification data showing the presence of Pb^{2+} and other expected elements in Au_{38}@BSA.

Supporting Figure 8

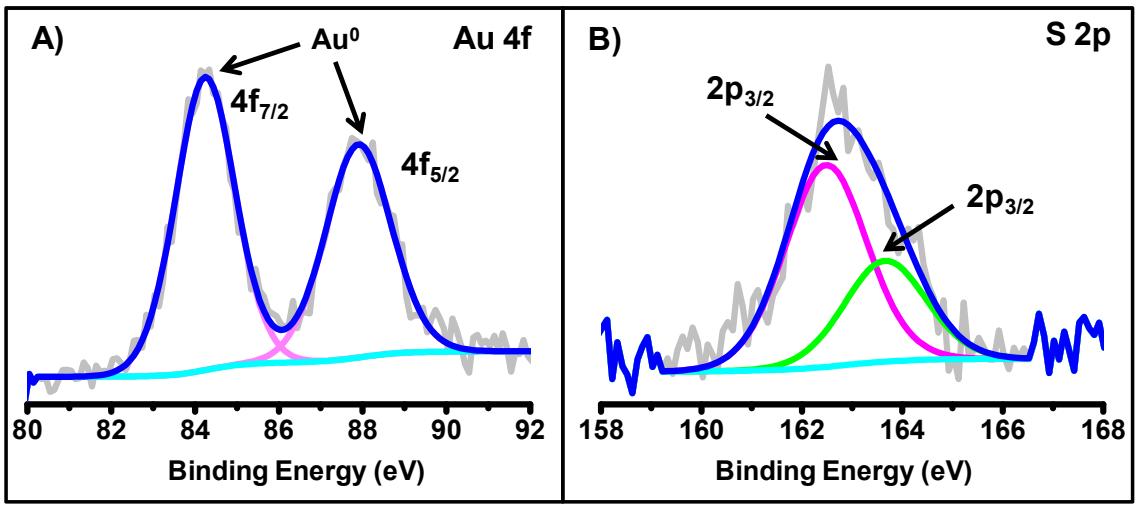

Figure S8: XPS spectra of Au_{38}@BSA showing the metallic (A) Au 4f and thiolate (B) S 2p regions.