

Electronic supplementary information (ESI) for Nanoscale  
This journal is © The Royal Society of Chemistry 2012

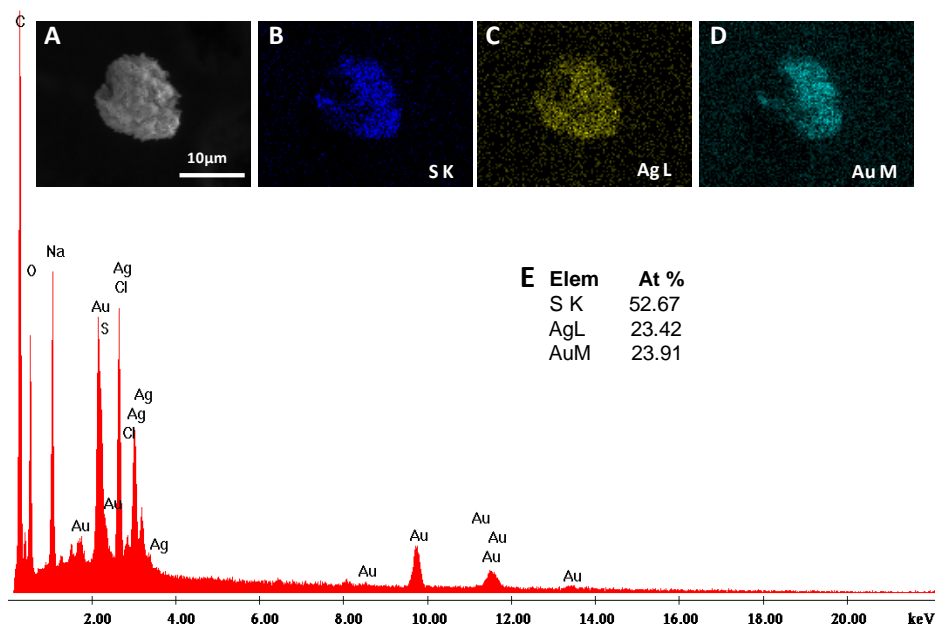
# Luminescent, Bimetallic AuAg Alloy Quantum Clusters in Protein Templates†

Jyoti Sarita Mohanty,<sup>§</sup> P. Lourdu Xavier,<sup>§</sup> Kamalesh Chaudhari,<sup>§,†</sup> M. S. Bootharaju,<sup>§</sup> N. Goswami,<sup>†</sup> S. K. Pal<sup>†</sup> and T. Pradeep<sup>§,\*</sup>

<sup>§</sup>DST Unit of Nanoscience, Department of Chemistry, Indian Institute of Technology Madras, Chennai-600036, India. \*E-mail: [pradeep@iitm.ac.in](mailto:pradeep@iitm.ac.in)

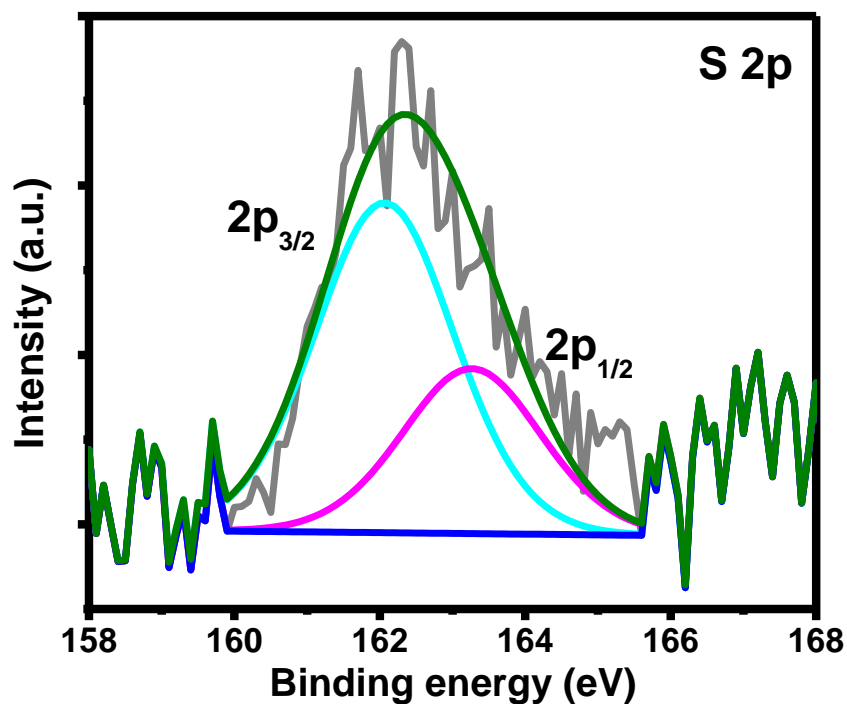
<sup>†</sup>Department of Biotechnology, Indian Institute of Technology Madras, Chennai-600036, India <sup>‡</sup>Unit for Nanoscience and Technology, Department of Chemical, Biological and Macromolecular Sciences, Satyendra Nath Bose National Centre for Basic Sciences, Block JD, Sector III, Salt Lake, Kolkata 700 098, India

## Electronic Supplementary Information 1



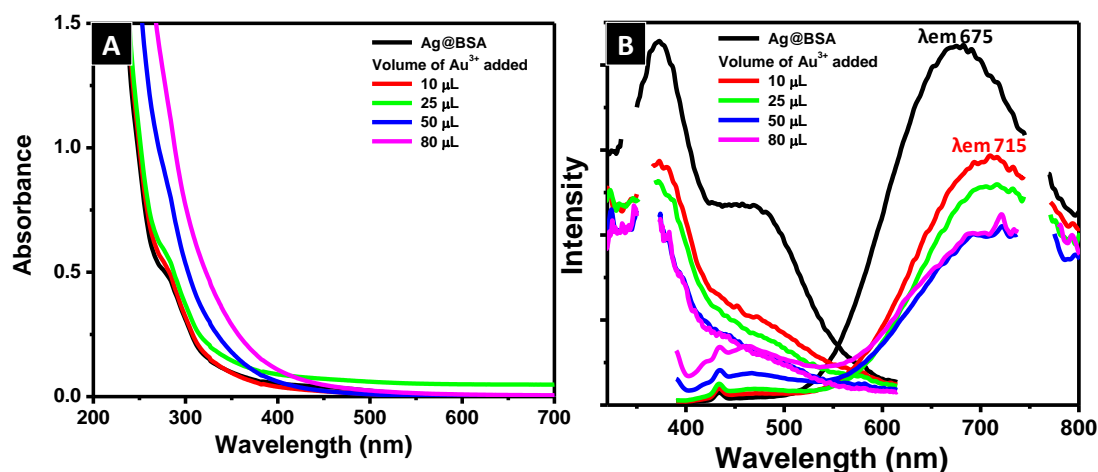
**Fig. S1.** SEM EDAX spectrum of the AuAg<sub>QC</sub>@BSA sample. Au and Ag are in 1:1 atomic weight ratio. (B-D) EDAX images of the sample corresponding to the (A) SEM image. Quantification data (E) shows that Au:Ag ratio is matching with the expected calculated ratio.

### Electronic Supplementary Information 2



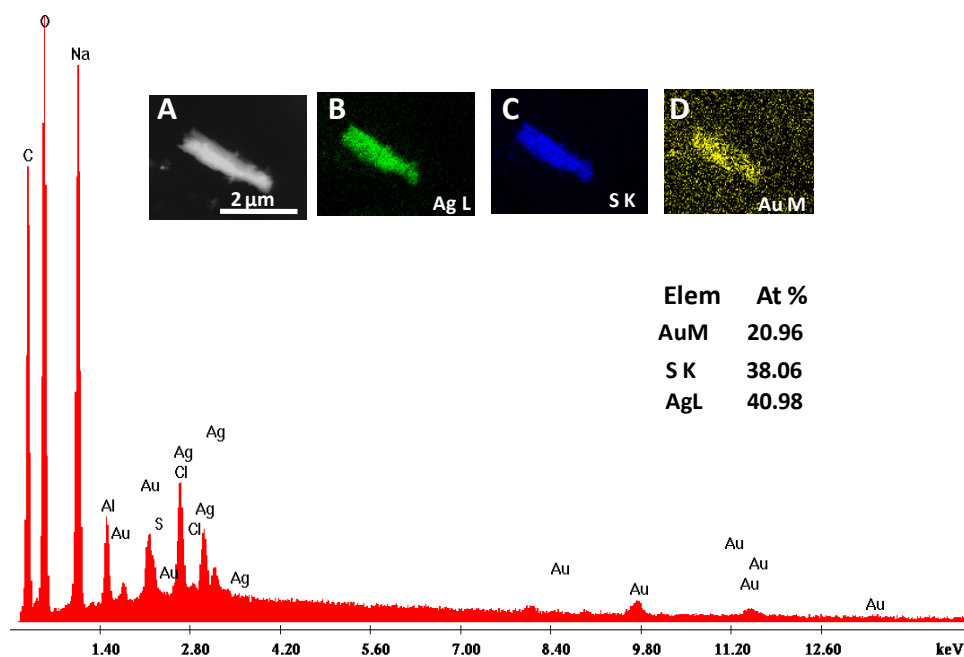
**Fig. S2.** XPS spectra showing the S 2p region with S 2p<sub>3/2</sub> at 161.2 eV and S 2p<sub>1/2</sub> at 163.3 eV.

### Electronic Supplementary Information 3



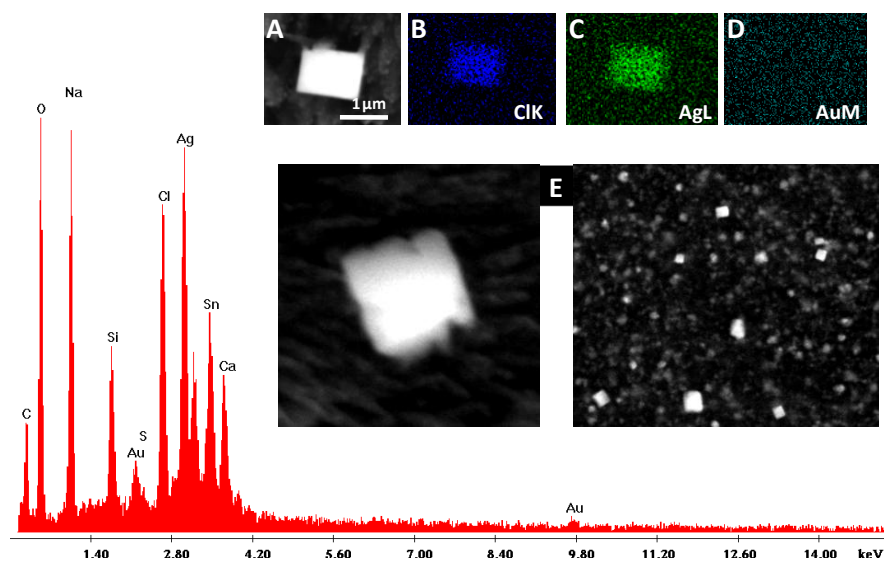
**Fig. S3.** (A) UV-Vis absorption spectra of Ag<sub>QC</sub>@BSA and the reaction products formed after the addition of different volumes of H<sub>2</sub>AuCl<sub>4</sub>. (B) Photoluminescence spectra of Ag<sub>QC</sub>@BSA (black trace) upon adding different volumes of Au<sup>3+</sup>. Emission spectrum got shifted to 715 nm suggesting the formation of an alloy.

#### Electronic Supplementary Information 4



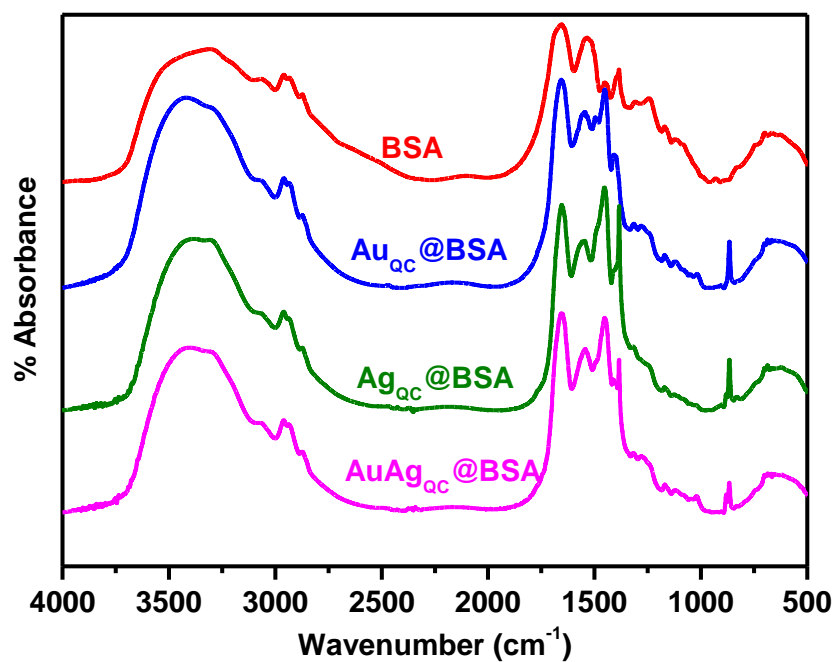
**Fig. S4.** SEM EDAX spectrum of AgQC@BSA after adding Au<sup>3+</sup> ions along with the quantification data. (B-D) are EDAX images corresponding to the SEM image (A).

#### Electronic Supplementary Information 5



**Fig. S5.** SEM EDAX analysis indicating the formation of AgCl crystals due to galvanic exchange. The peaks of Si and Sn are due to the substrate (ITO) used for sample preparation.

## Electronic Supplementary Information 6



**Fig. S6.** Full range FTIR spectra of BSA (red), Au<sub>qc</sub>@BSA (blue), Ag<sub>qc</sub>@BSA (olive) and AuAg<sub>qc</sub>@BSA (magenta).