

NIR emitted fluorescent gold nanoclusters doped in silica nanoparticles- supplementary information

Xavier Le Guével^a, Benjamin Hötzer^b, Gregor Jung^b, Marc Schneider^a

^aPharmaceutical Nanotechnology, Saarland University, Saarbrücken, Germany

^bDepartment of Biophysical Chemistry, Saarland University, Saarbrücken, Germany

Protein stabilized gold nanoclusters (Au-NCs) characterization

The gold nanoclusters sample prepared using the protein BSA as a template was characterised by microscopy (TEM), EDX, matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS), UV-visible spectrophotometer, steady-state fluorescence and dynamic light scattering (DLS).

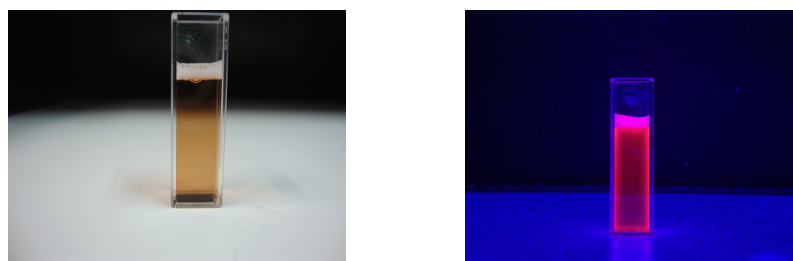


Figure S1. Au-NCs under natural light and under UV irradiation ($\lambda=366$ nm).

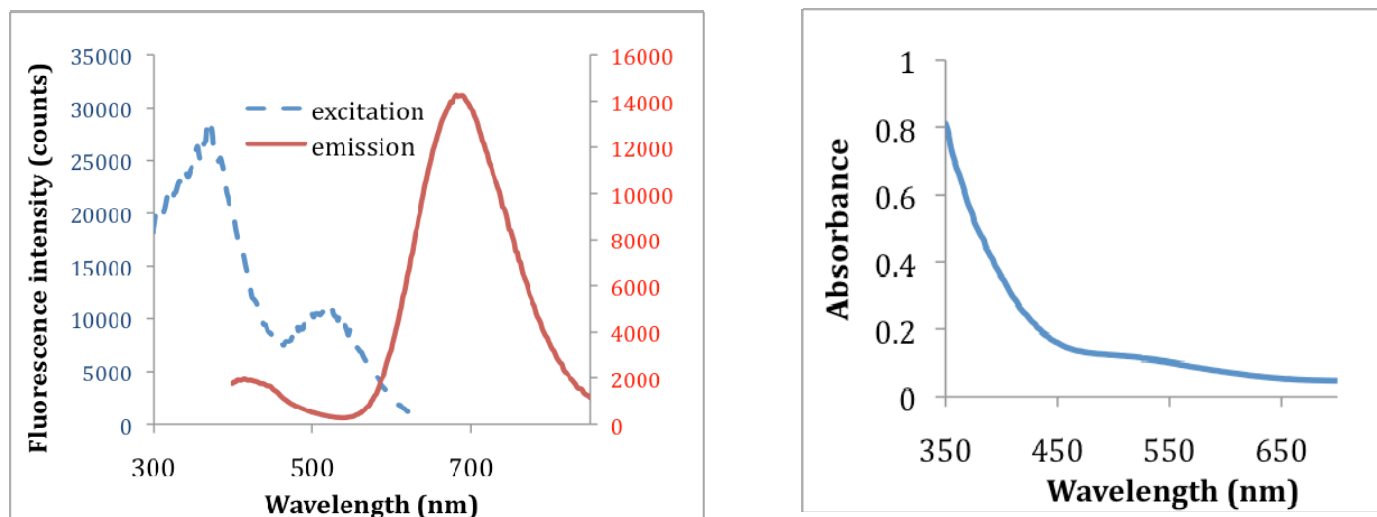


Figure S2. Excitation/emission spectra (left) and absorbance spectrum (right) of Au-NCs. The obvious differences in the excitation and absorption spectrum are most likely related to the scattering, the diffusion of the labeled protein and as main aspect, also to the intense absorbance characteristic of BSA in the wavelength region 250-400 nm. Hence, the absorption of BSA influences the absorption spectrum but does not impact on the excitation spectrum.

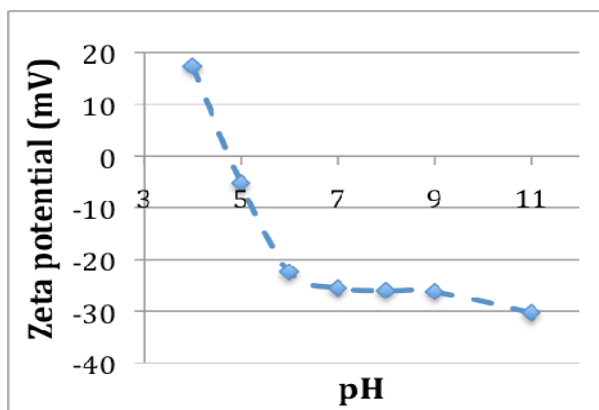


Figure S3. Zeta potential measurement of Au-NCs sample with $11 > \text{pH} > 4$.

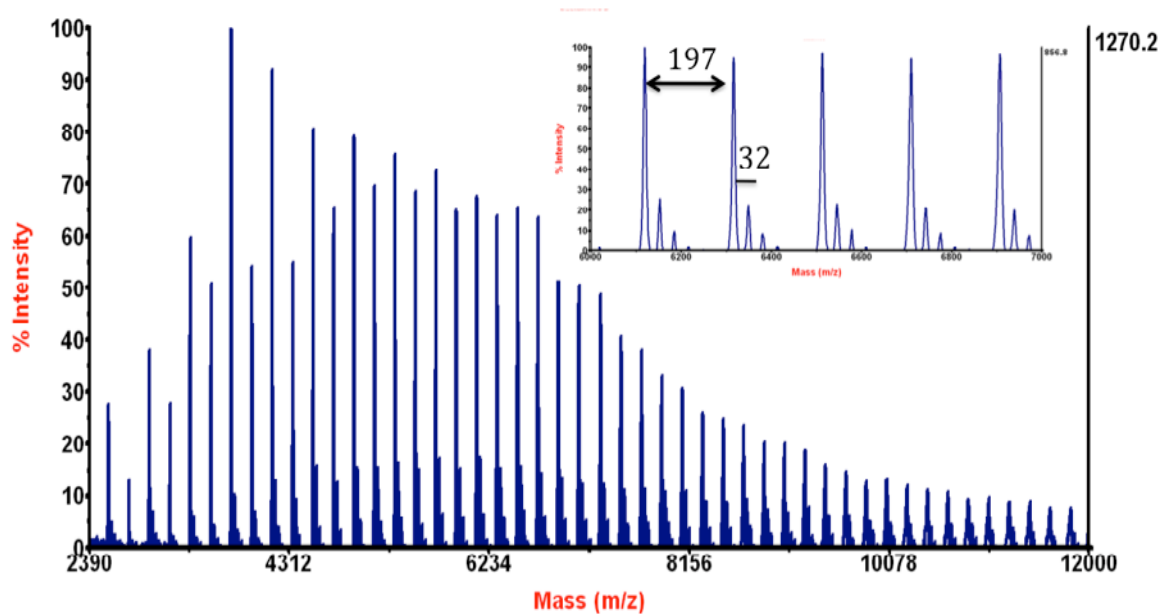


Figure S4. MALDI-TOF MS (Applied Biosystems 4800 Maldi ToF/ToF) measurement of Au-NCs using α - Cyano-4-hydroxycinnamic acid (CHCA) as a matrix. The spectrum was collected in the positive mode. shows a gaussian distribution of peaks separated by m/z 197 and 32 (expended view) corresponding to gold and sulphur.

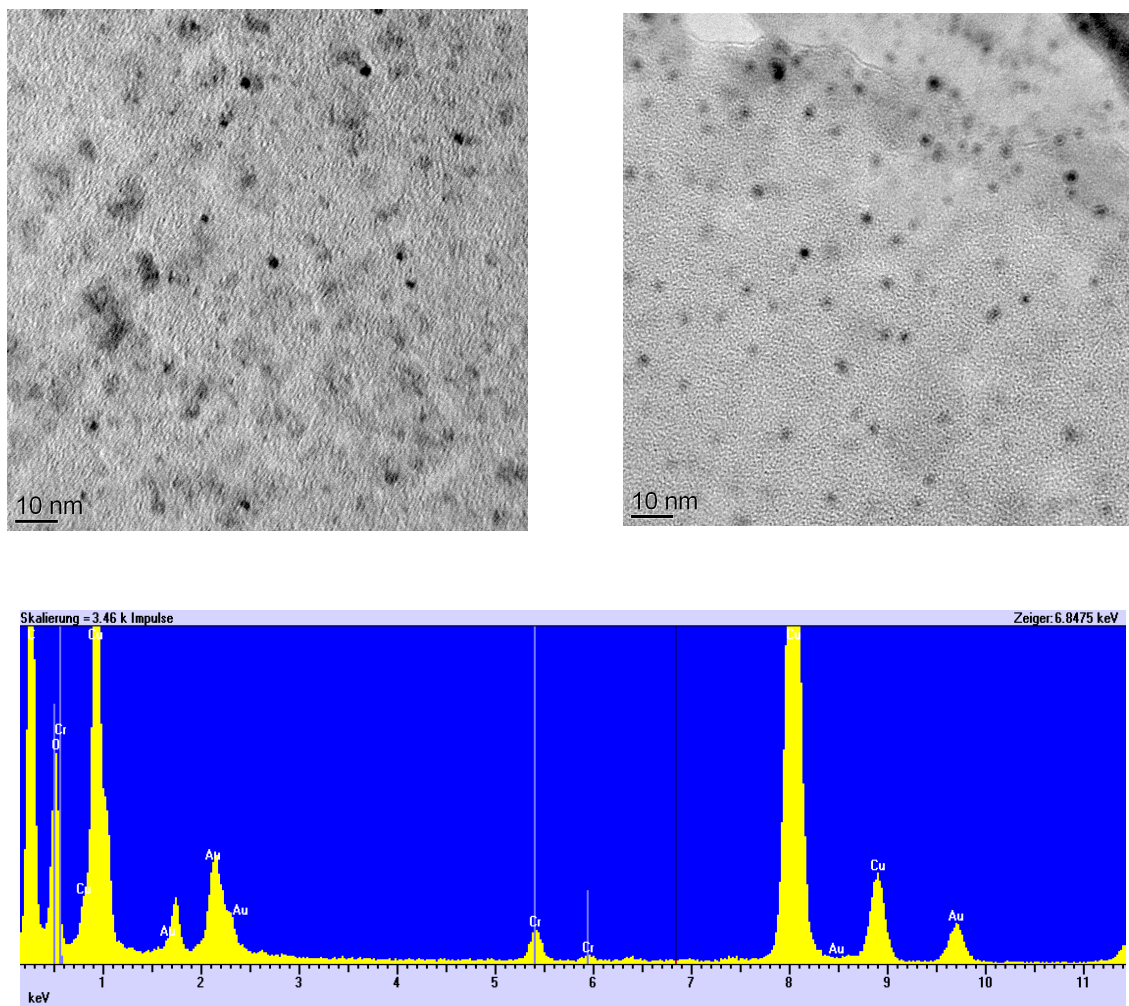
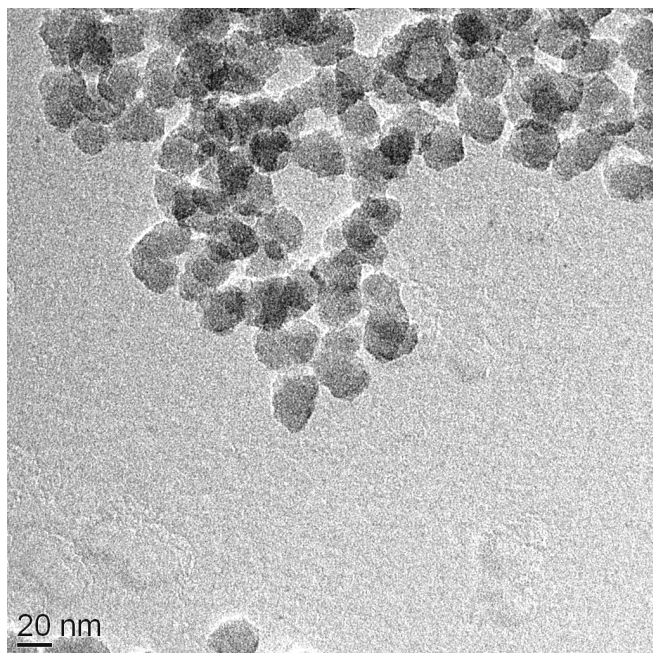
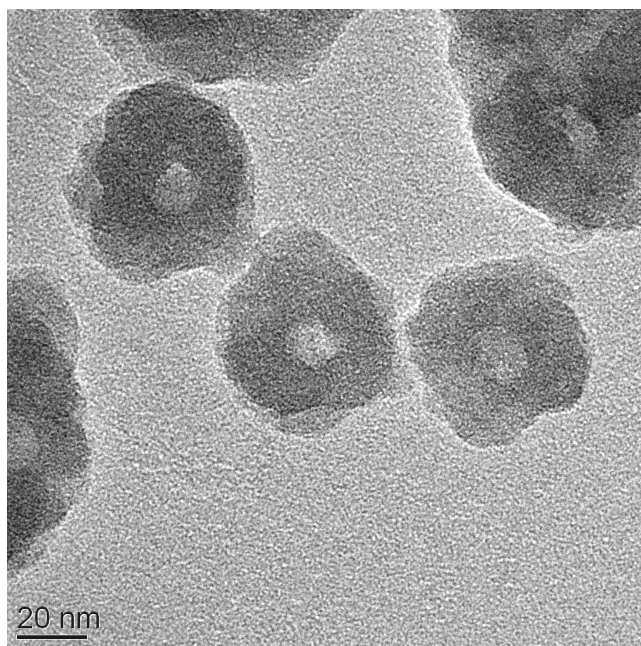


Figure S5. Transmission Electron Microscopy (TEM) pictures and EDX measurement of Au-NCs capped in BSA show the presence of monodisperse gold clusters smaller than 3 nm.

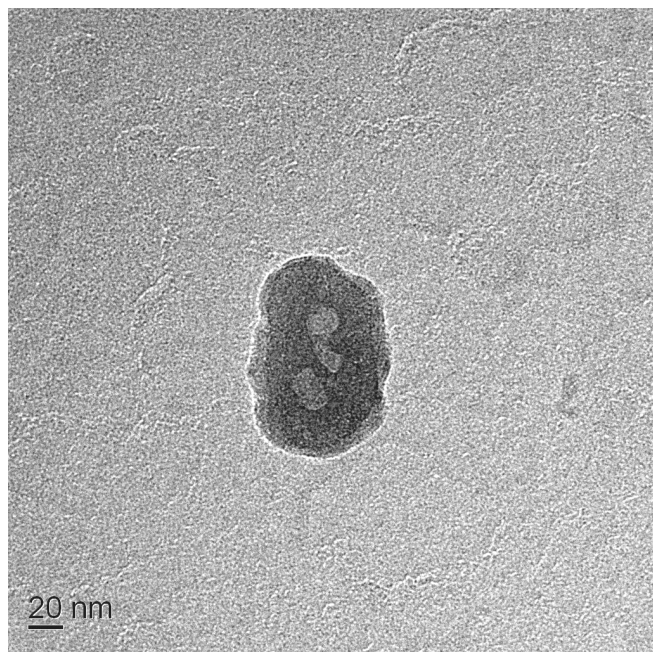
Au-NCs doped Si NPs characterisation



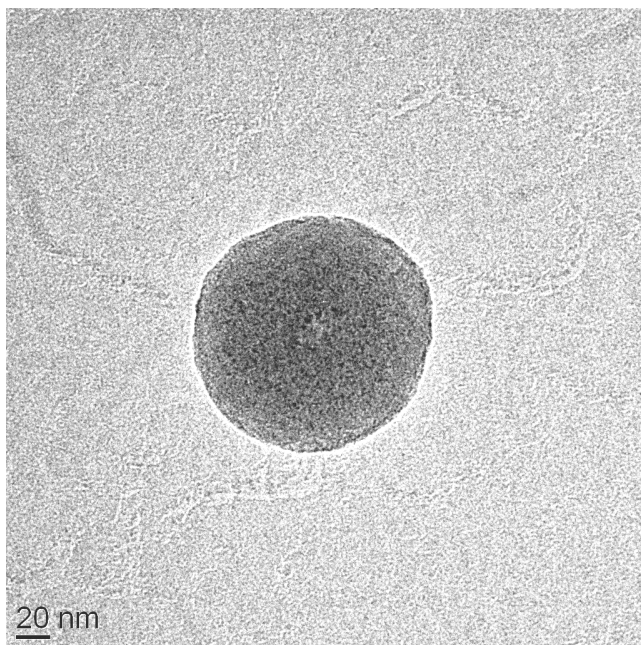
0 %(w/w) Au-NCs doped Si NPs



1 %(w/w) Au-NCs doped Si NPs



2 %(w/w) Au-NCs doped Si NPs



3 %(w/w) Au-NCs doped Si NPs

Figure S6. TEM images of Au-NCs doped Si NPs with 0, 1, 2 and 3 %(w/w) of NCs per Si particles.