Supporting Information for Publication

Protein Identity and Environmental Parameters Determine the Final Physico-Chemical Properties of Protein-Coated Metal Nanoparticles

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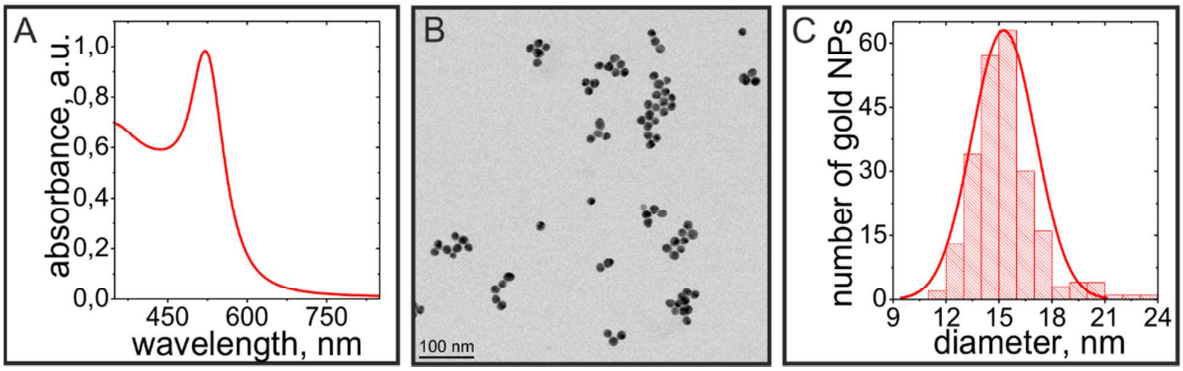

Figure S1: (A) representative UV-vis spectrum with λ_{max} = 520 nm, (B) TEM image, and the corresponding size distribution of Au@Citrate NPs (C) calculated from TEM images, which results in a mean diameter of (15 ± 2) nm.

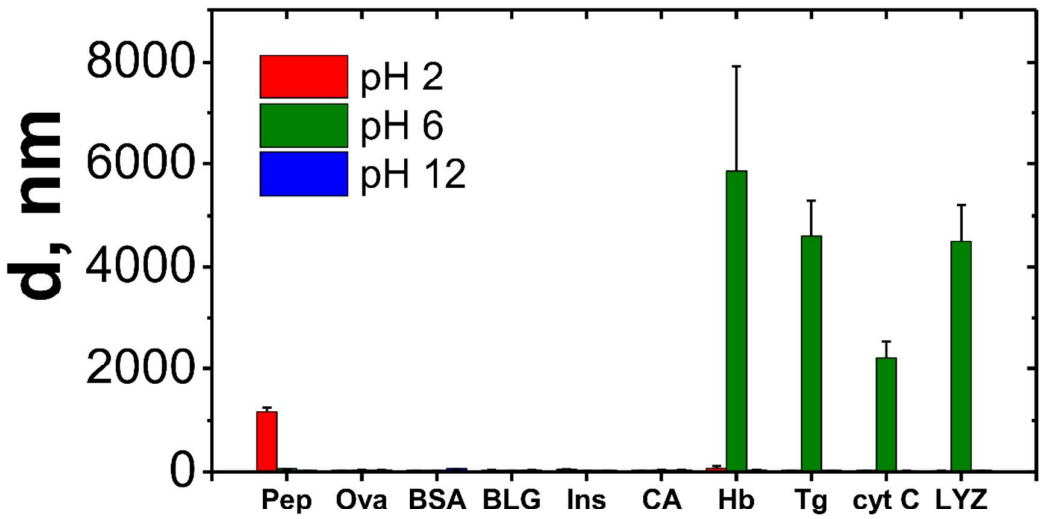

Figure S2: Overview of the hydrodynamic diameter of the functionalization of Au@Citrate by protein adsorption at different pH resulting in Au@Protein NPs of different stability. A zoom-in to the region of 0-150 nm is displayed in Figure 2E.

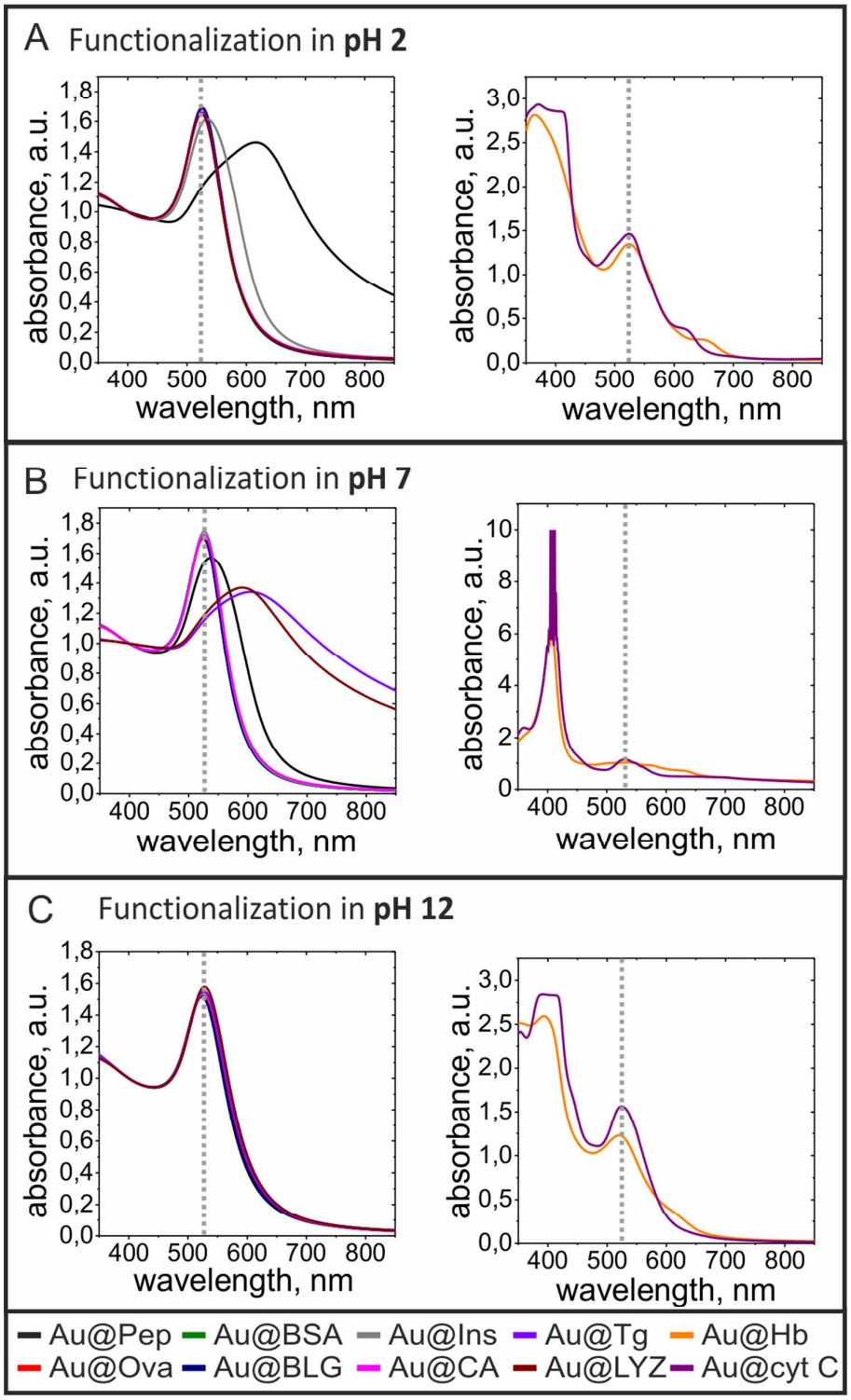

Figure S3: UV-Vis spectra of Au@Protein for pH 2 (A), 7 (B), and 12 (C), measured right after functionalization. The spectra are normalized at 400 nm, except for Au@Hb and Au@cyt C as these proteins exhibit a high absorption band in the visible region. The spectra correspond to the values and cuvettes shown in Figure 2.

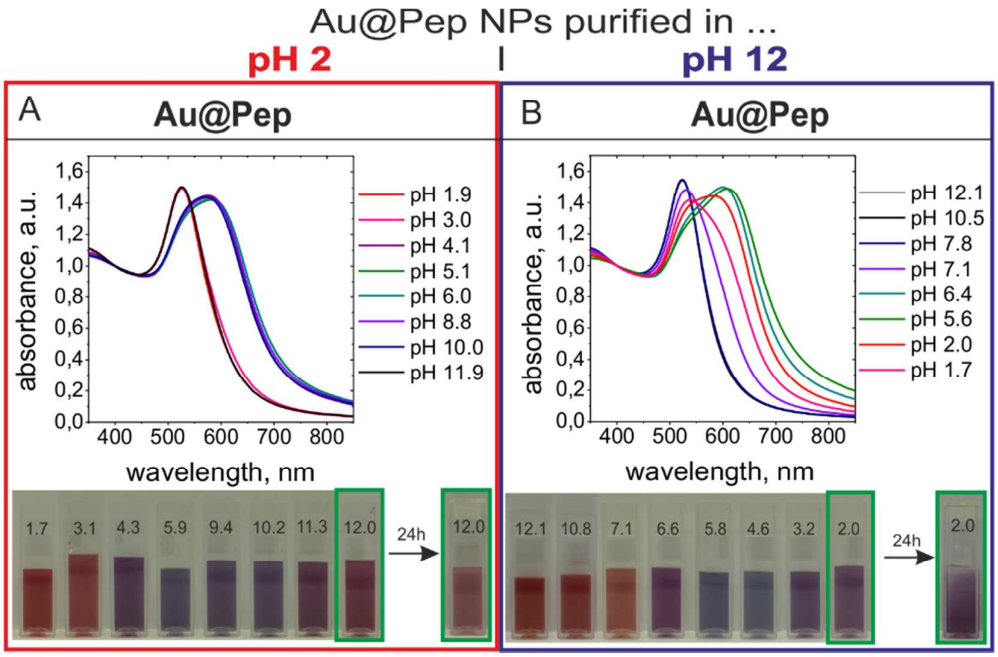

Figure S4: UV-Vis spectra and dispersions colors of Au@Pep at different pH values, after purification in (A) pH 2 and (B) in pH 12. Also the dispersion color at the final pH values (pH 12, and pH 2) after 24 h incubation are shown. The spectra are normalized at 400 nm. The spectra and cuvettes correspond to the values shown in Figure 4.

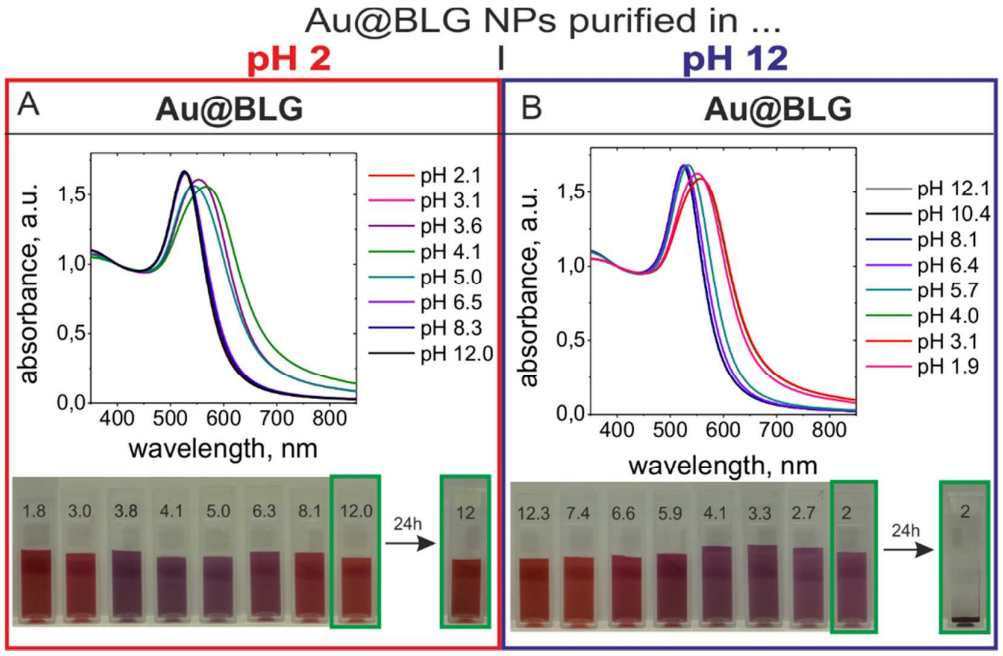

Figure S5: UV-Vis spectra and dispersions colors of Au@BLG at different pH values, after purification in (A) pH 2 and (B) in pH 12. Also the dispersion color at the final pH values (pH 12, and pH 2) after 24 h incubation are shown. The spectra are normalized at 400 nm. The spectra and cuvettes correspond to the values shown in Figure 4.

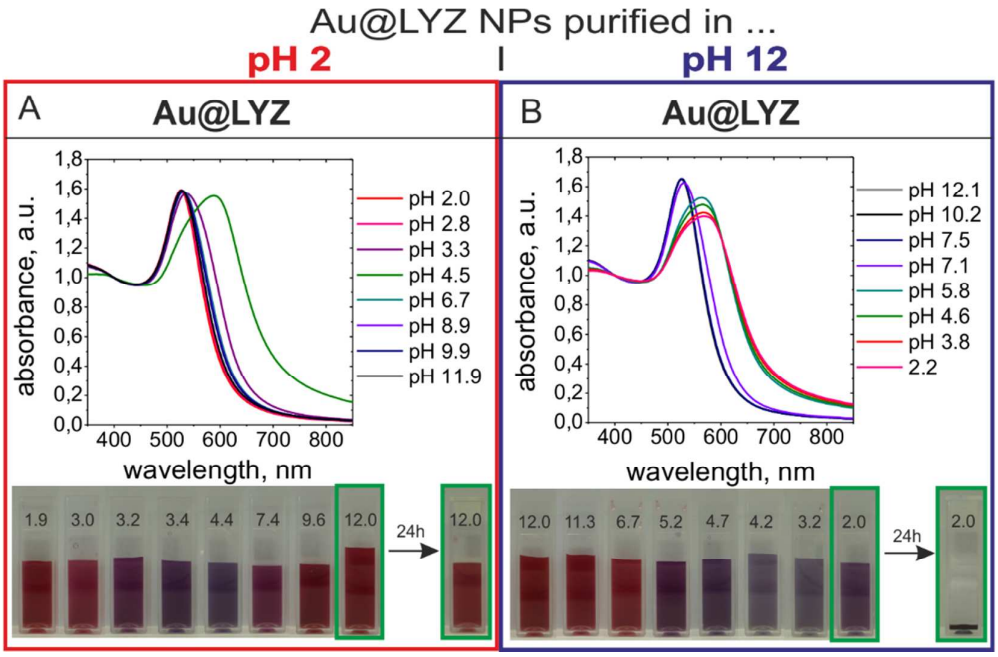

Figure S6: UV-Vis spectra and dispersions colors of Au@LYZ at different pH values, after purification in (A) pH 2 and (B) in pH 12. Also the dispersion at the final pH values (pH 12, and pH 2) after 24 h incubation are shown. The spectra are normalized at 400 nm. The spectra and cuvettes correspond to the values shown in Figure 4.

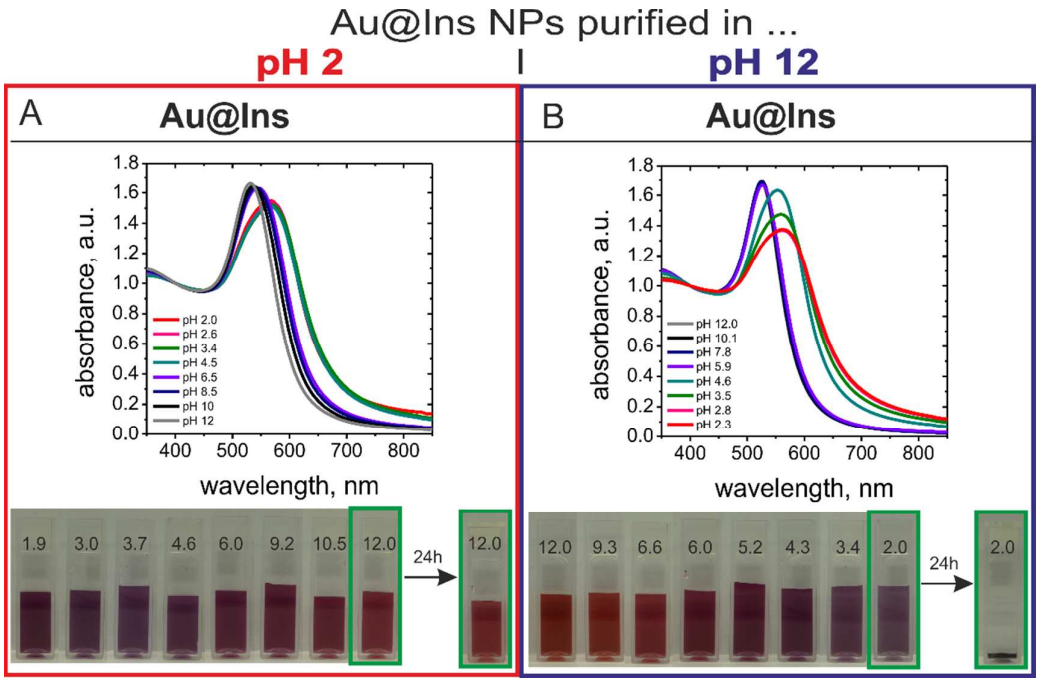

Figure S7: UV-Vis spectra and dispersions colors of Au@Ins at different pH values, after purification in (A) pH 2 and (B) in pH 12. Also the dispersion at the final pH values (pH 12, and pH 2) after 24 h incubation are shown. The spectra are normalized at 400 nm. The spectra and cuvettes correspond to the values shown in Figure 4.

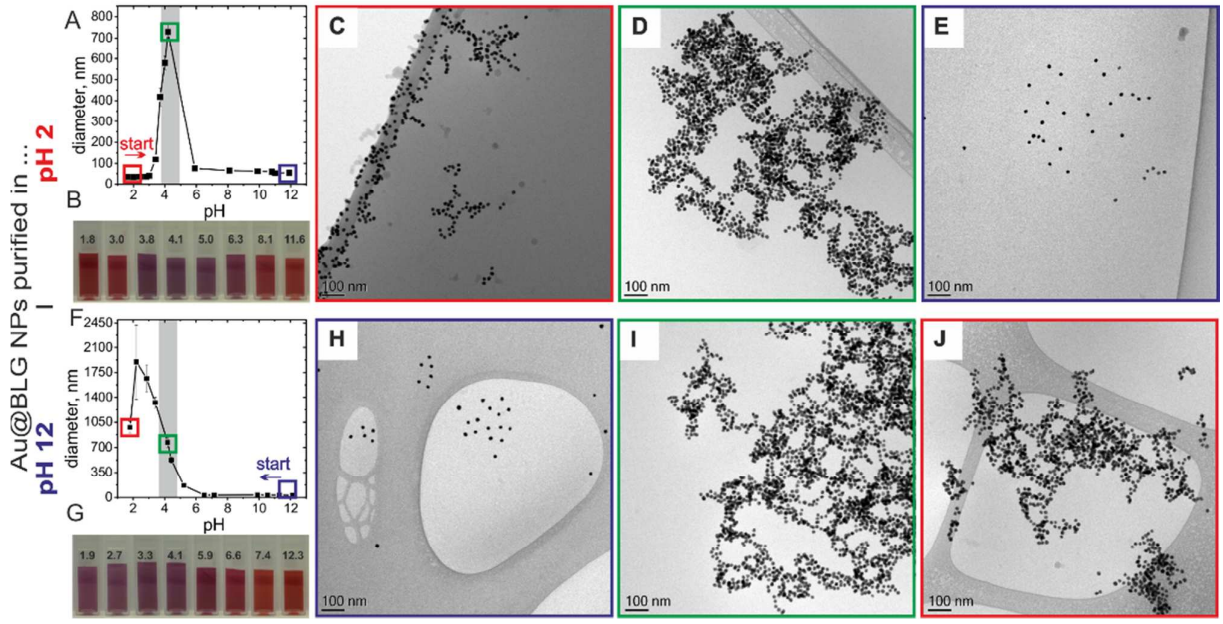

Figure S8: pH-dependent aggregation behavior of colloidally stable Au@BLG NPs purified in pH 2 (A-E) and pH 12 (F-H) measured with dynamic light scattering (A, F) and Cryo-TEM (C-E and H-J). Starting at pH 2, the Au@BLG NPs are red in color and individually dispersed with small hydrodynamic sizes (A red box), confirmed with Cryo-TEM (C). By increasing the pH, the NPs aggregate at the pI of Au@BLG (A green box, and D) and redisperse at pH 12 (A blue box, and E). Starting at pH 12, the Au@BLG NPs are red in color and individually dispersed with small hydrodynamic sizes (F blue box), confirmed with Cryo-TEM (H). By decreasing the pH, the NPs aggregate at the pI of Au@LYZ (F green box, and G) and but cannot redispersed competely at pH 2 (F red box, and F).