Supplemental Information

Nanoparticle-Protein Interactions: A Thermodynamic and Kinetic Study of The Adsorption of Bovine Serum Albumin to Gold Nanoparticle Surfaces

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1- Gold nanoparticles characterization

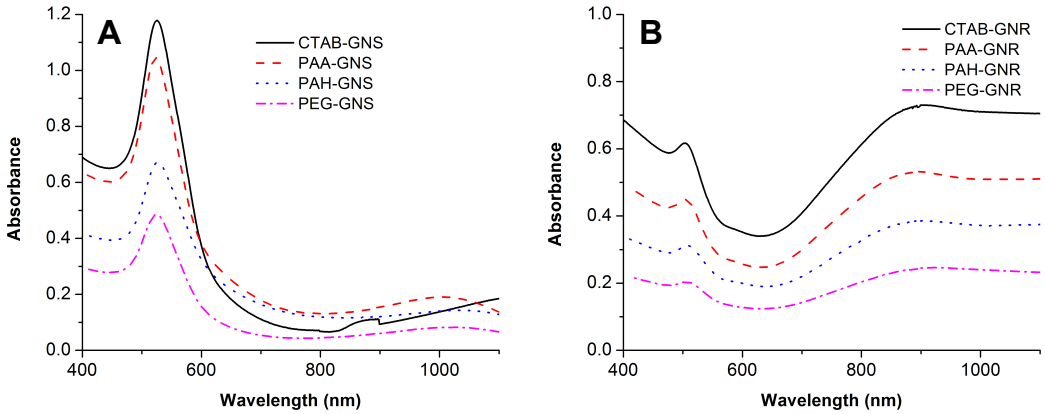

Figure S1. UV-vis absorbance spectroscopy of (A) gold nanospheres and (B) gold nanorods of aspect ratio 18 with different surface chemistries.

2- Double logarithmic plot for GNRs of A.R. 18 and gold nanospheres.

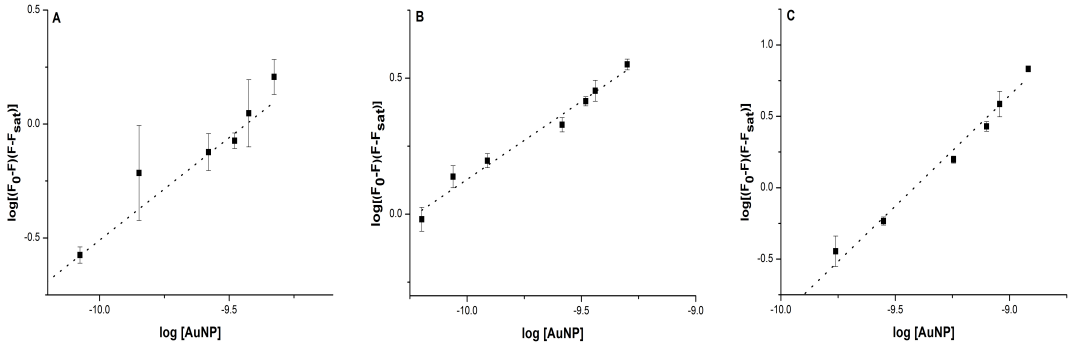

Figure S2 (A). Double logarithmic depicting the binding curve resulting from the adsorption of BSA to gold nanospheres from fluorescence quenching titrations. (A) PAA-GNS, (B) PAH-GNS, and PEG-GNS.

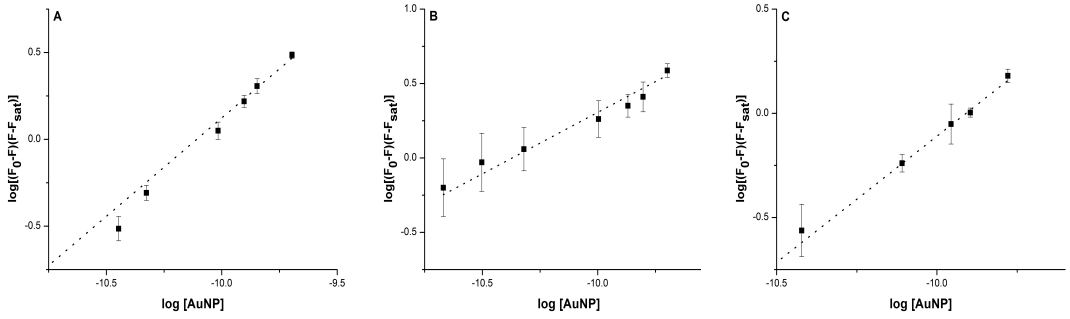

Figure S2 (B). Double logarithmic depicting the binding curve resulting from the adsorption of BSA to aspect-ratio-18 gold nanorods from fluorescence quenching titrations. (A) PAA-GNRs, (B) PAH-GNRs, and PEG-GNRs.

3- Affinity Capillary Electrophoresis (ACE)

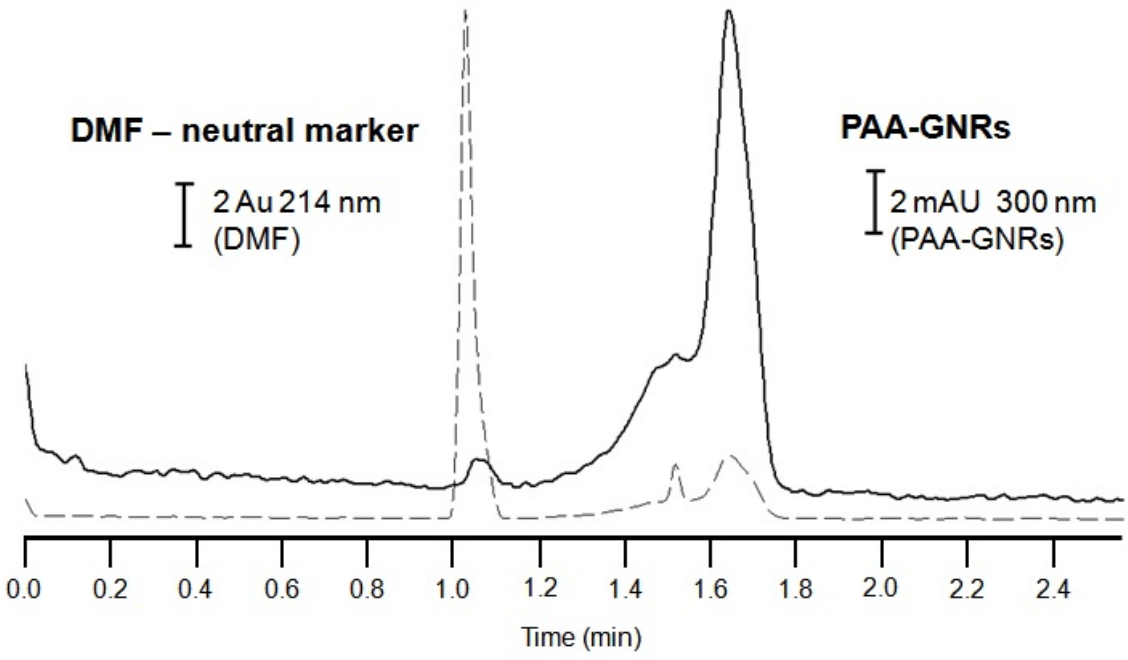

Figure S3. Overlay Electrophoregrams of DMF measured at 214 nm and free PAA-GNRs at 300 nm.

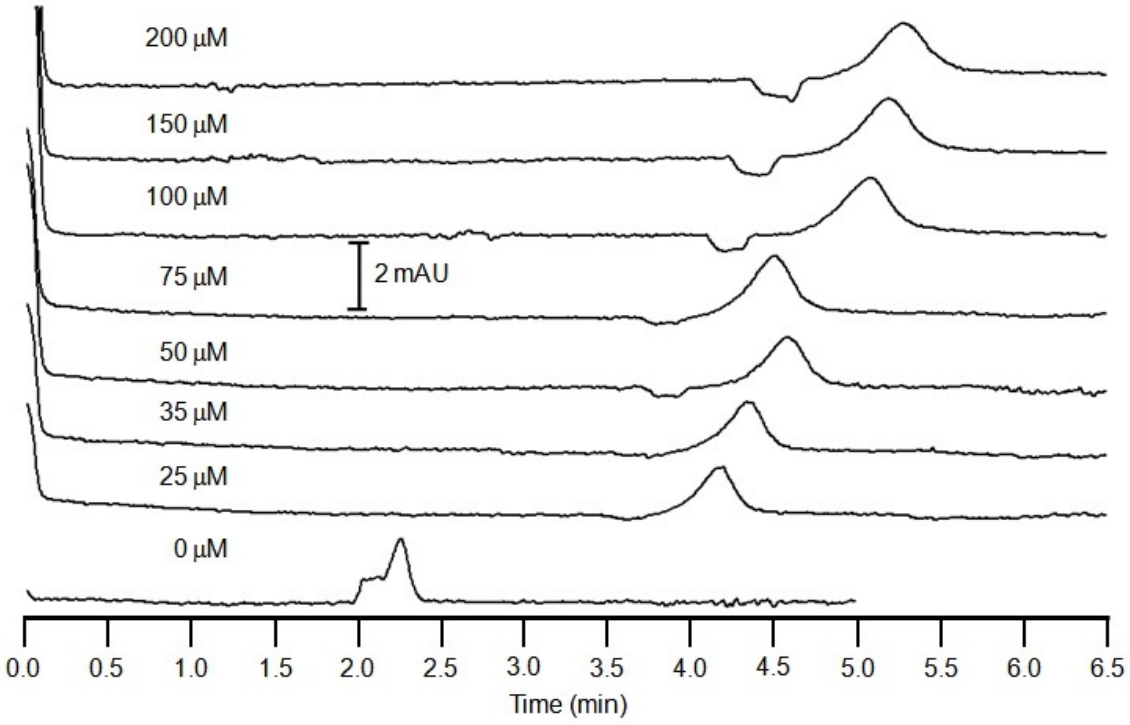

Figure S4. Electropherogram of PEG-GNRs (6.2 nM) detected at 325 nm with BSA in 5 mM MOPS buffer. Concentrations of BSA in the background electrolyte increase from 0 µM (lower trace) to 200 µM (upper trace). At different concentration of BSA in the running buffer (0, 10, 15, 25, 35, 50, 75, 100, 150, 200 µM), a shift in the apparent mobility of the GNRs is observed. The wavelength 325 nm was selected to minimize interference from a negative peak that occurs around 4.2 minutes from the absence of BSA in the running buffer.

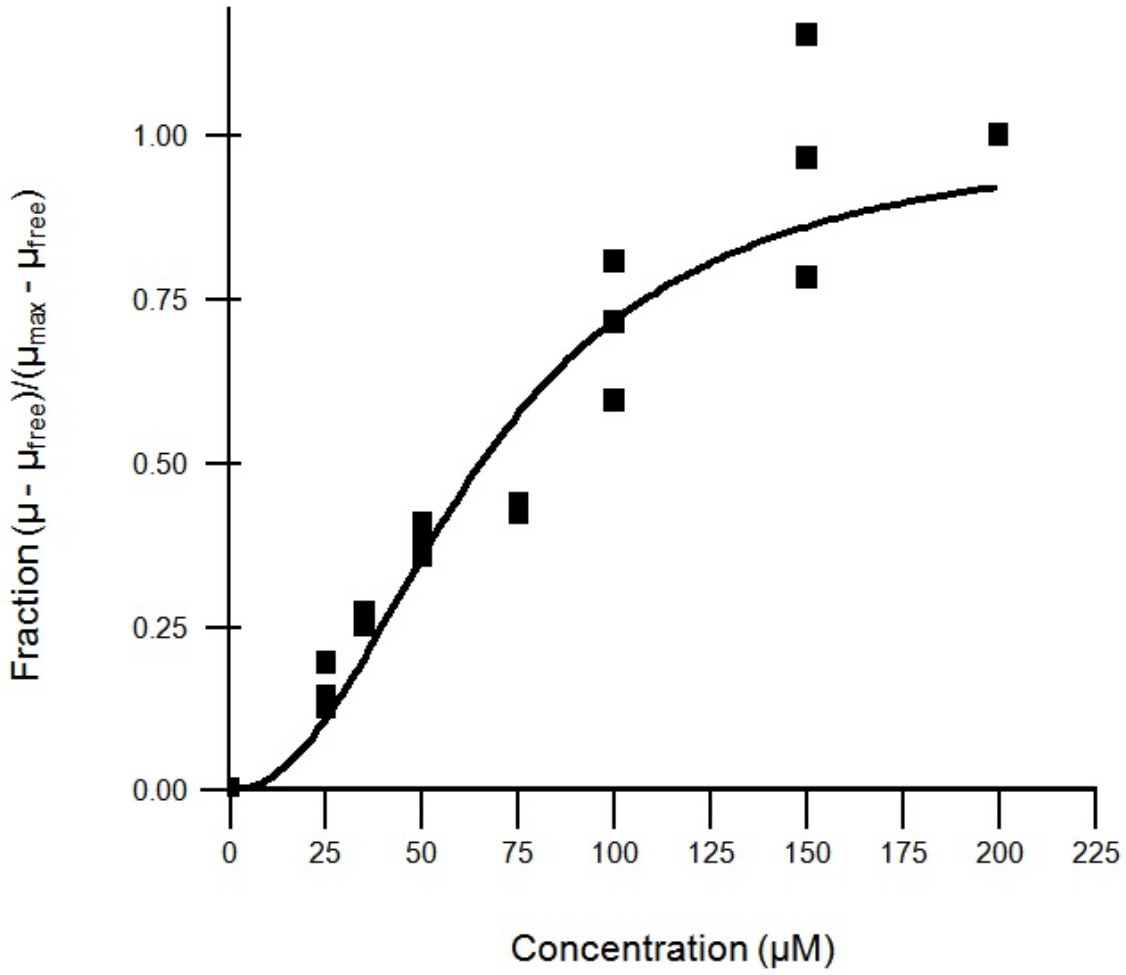

Figure S5. The dissociation constant is derived from the curve fit using pooled data from PEG-GNRs (6.2 nM) detected at 325 nm with increasing concentration of BSA in 5 mM MOPS buffer. The pooled data is combination of all points from three replicate curves.

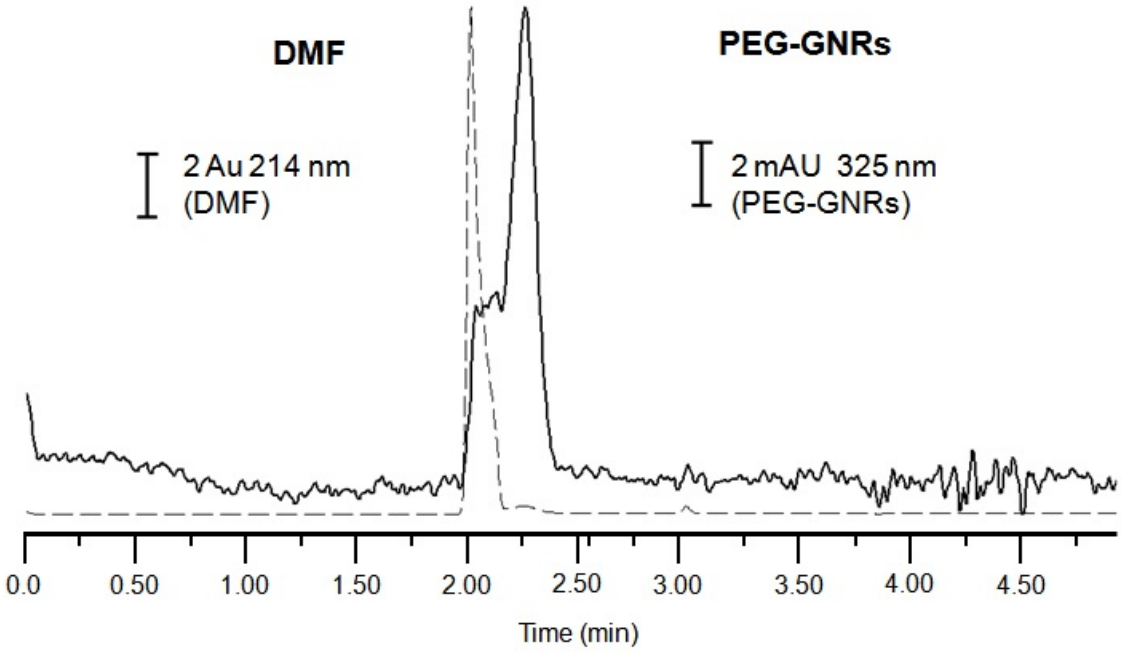

Figure S6. Overlay Electrophoregrams of DMF measured at 214 nm and free PEG-GNRs at 325 nm.