

Salt-Mediated Kinetics of the Self-Assembly of Gold Nanorods End-Tethered with Polymer Ligands

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Supporting information

Following depletion-induced fractionation of the mixture of nanorods (NRs) and spherical nanoparticles (NPs), no aggregation of NRs occurred in the system. After the removal of the supernatant containing the spherical NPs and short NRs, the precipitation of NRs was redispersed in deionized water. Figure S1 illustrates the absorbance spectra of NRs before and after their fractionation by depletion-induced precipitation. After purification, the transverse surface plasmon resonance (SPR) peak was blue shifted to 505 nm with much less intensity compared to that of as-synthesized NRs, due to the removal of spherical NPs which exhibit a characteristic absorbance peak centered at 530 nm. The longitudinal SPR peak became narrower and slightly red-shifted.

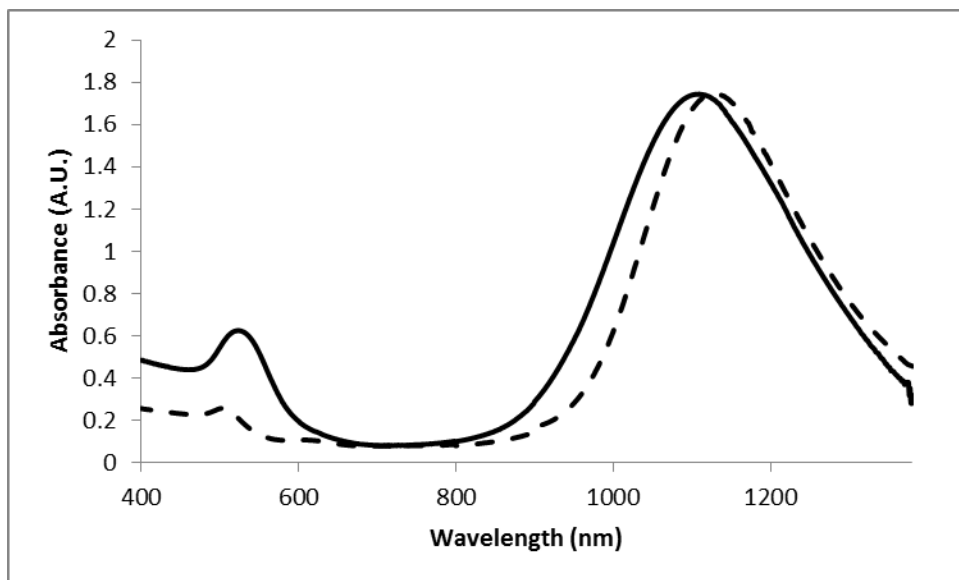


Figure S1. Absorbance spectra of the solution of as-prepared gold nanorods (solid line) and after purification by depletion (dashed line).

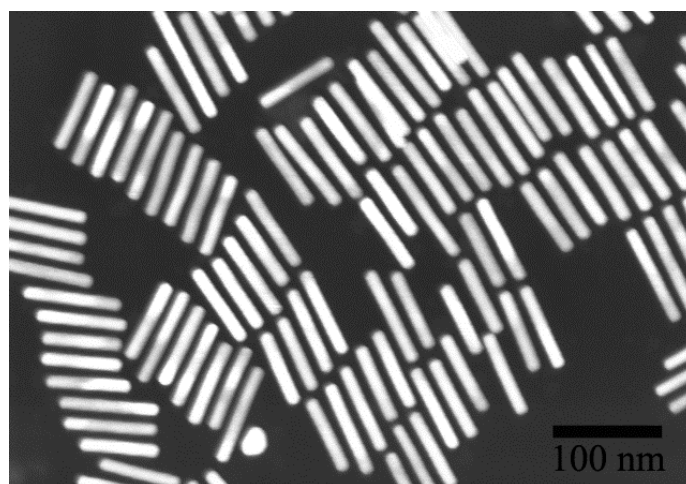


Figure S2. Dark field transmission electronic microscopy image of Au NRs after depletion.

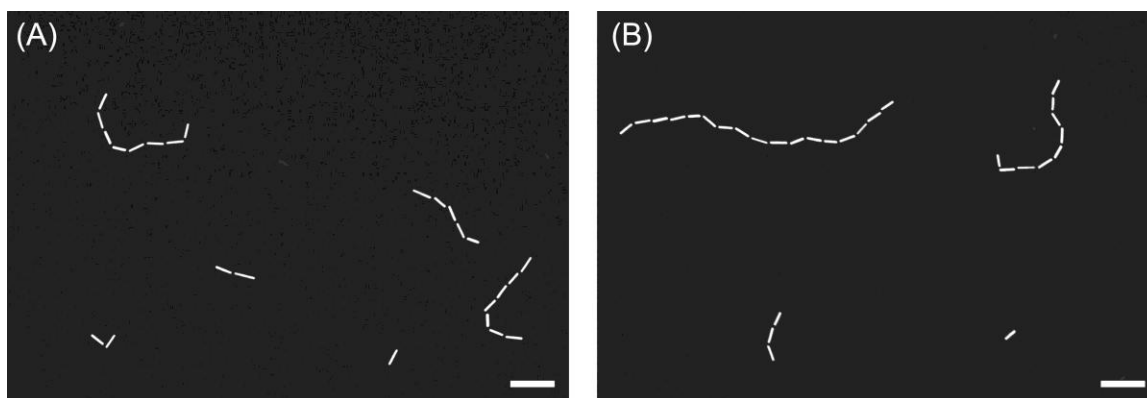


Figure S3. Dark field TEM images of the representative chains of the NRs formed after 4 h self-assembly at (A) $[\text{NaCl}] = 100 \mu\text{M}$ and (B) $[\text{NaCl}] = 300 \mu\text{M}$. The scale bars are 200 nm.

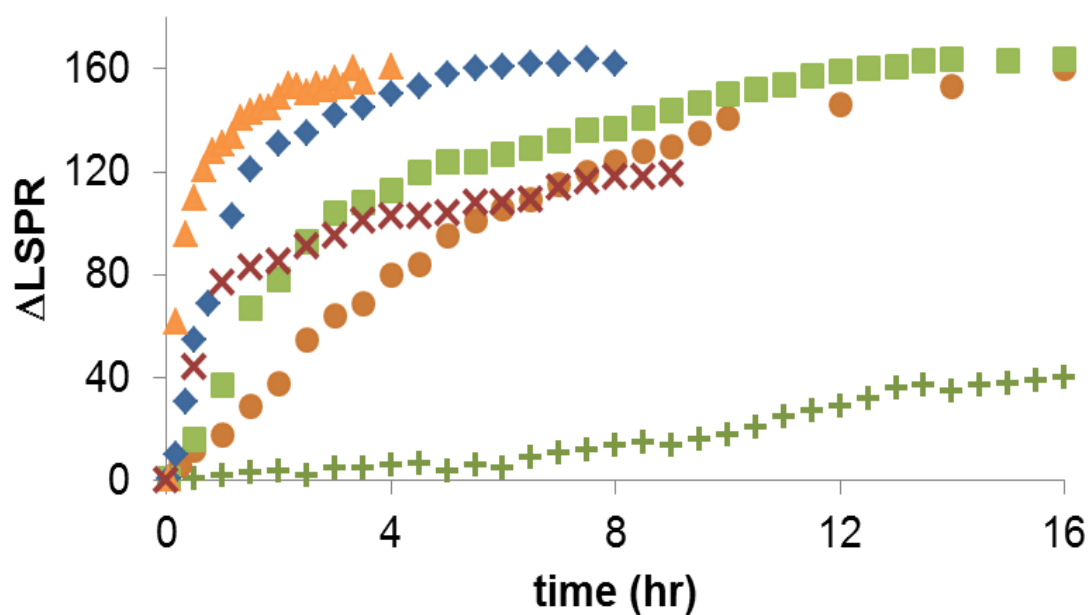


Figure S4. Temporal change up to 16 hours in $\Delta\lambda_{\text{LSPR}}$ for the NRs organized in chains in the DMF/water mixture at $[\text{NaCl}]$ of $50 \mu\text{M}$ (+), $100 \mu\text{M}$ (●), $150 \mu\text{M}$ (■), $200 \mu\text{M}$ (◆), and $300 \mu\text{M}$ (▲), and $[\text{CaCl}_2]$ of $50 \mu\text{M}$ (×).

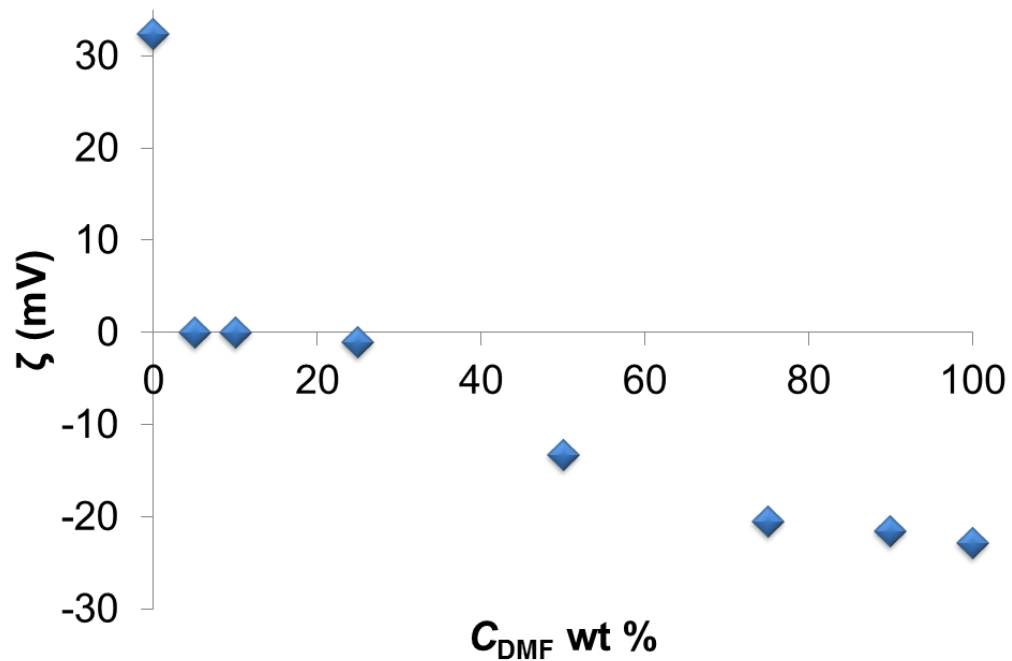


Figure S5. Variation in ζ -potential of gold NRs covered with CTAB in the mixtures of DMF/water at different concentrations of DMF, C_{DMF} .