Supporting information

Anisotropic optical and conductive properties of oriented 1D-nanoparticle thin films made by spray-assisted self-assembly

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S-I/ Quartz Crystal Microbalance Study of AuNRs adsorption

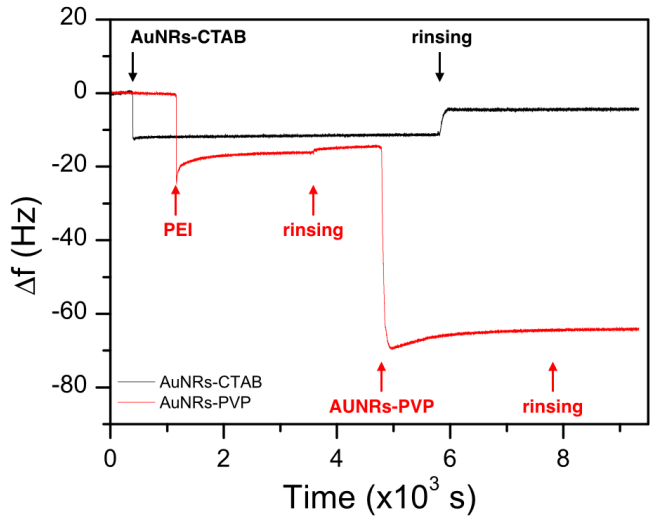

Fig. S1: frequency variation of the 5th overtone measured by Quartz Crystal Microbalance on AuNRs before (black) and after (red) coating with PVP.

Figure S1 shows the adsorption isotherm of native CTAB and PVP coated LAuNRs (AR ~ 16) on a gold-coated sensor. The injection of the cationic CTAB-bilayer stabilized gold nanorods (AuNRs-CTAB) on a plasma activated sensor is associated with a decrease in the resonance frequency (black curve), which indicates the adsorption of CTAB coated AuNRs. The increasing frequency while rinsing with water suggests the removal of adsorbed moieties. For AuNRs-PVP adsorption, a monolayer of cationic PEI was first deposited on the plasma-activated crystal followed by rinsing with water. A rapid frequency shift evidences the fast adsorption kinetics of AuNRs-PVP on PEI. In contrast to AuNRs-CTAB, rinsing with water showed only the removal of loosely bound rods with a negligible shift, suggesting the strong adsorption of PVP-coated rods on the PEI-modified substrate.

S-II/ TEM of AuNRs-PVP

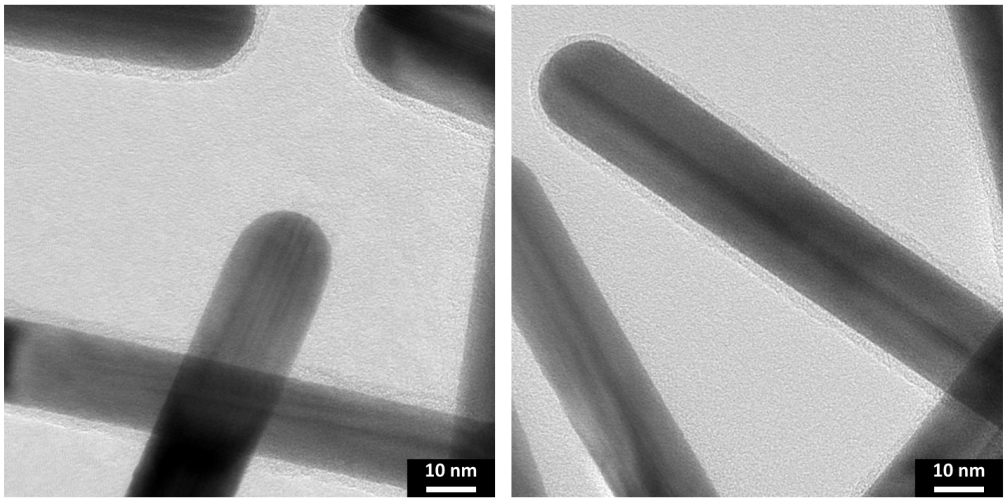

Fig. S2: TEM pictures of PVP-coated LAuNRs.