Supporting Information

Fabrication of DNA functionalized gold nanorods for enhanced SPR imaging biosensing applications

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Gold nanorods prepared by the seed-mediated method[4], stabilized by the surfactant hexadecyltrimethyl-ammonium bromide (CTAB) were imaged by TEM to verify size and morphology. Figure S1 shows a TEM micrograph where the specimen was prepared by evaporating one drop of nanorod solution onto holy carbon coated copper grid.

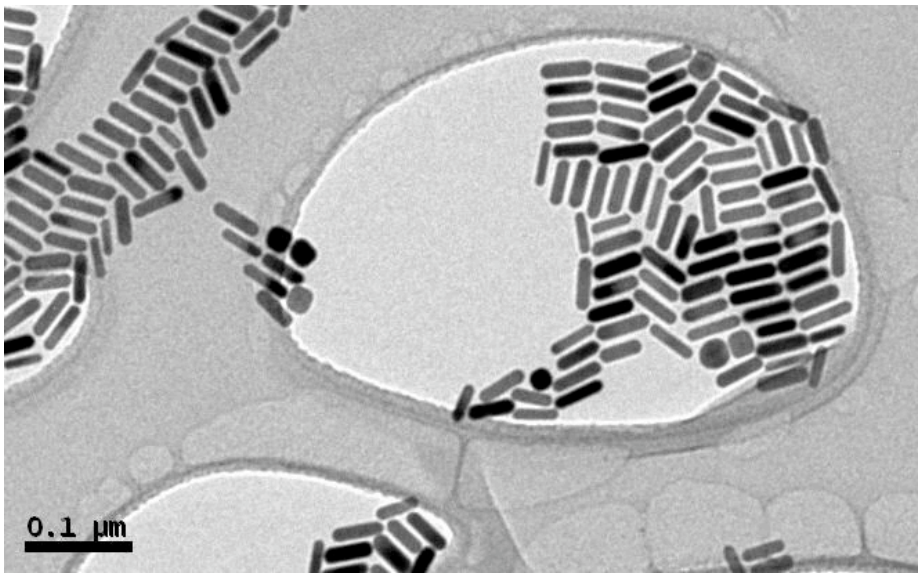

Figure S1.

TEM micrograph of CTAB stabilized gold nanorods on holy carbon coated copper grid.

A series of UV-visible measurements of two DNA functionalized silica coated gold nanorod samples of complementary DNA sequences were used to confirm the presence and bioavailability of the ssDNA monolayer on the nanorods surface. When mixing solutions of equimolar complementary nanorod solutions, aggregations of the rods occurred within minutes. Figure S2 shows the evolution of the UV-visible spectra of two solutions of DNA modified rods that were mixed and reacted in the UV cell for 60 min. The series of the UV spectra at different time intervals were recorded at room temperature. The formation of the rod assemblies upon DNA hybridization is confirmed by the fast decrease of the transversal and longitudinal surface resonance band intensities. Further evidence of the aggregates formation and thus hybridization reaction was given by transmission electron microscopy imaging. The inset in Figure S2 shows a TEM image indicating nanorod aggregates formation when the complementary ssDNA coated rods are mixed in solution.

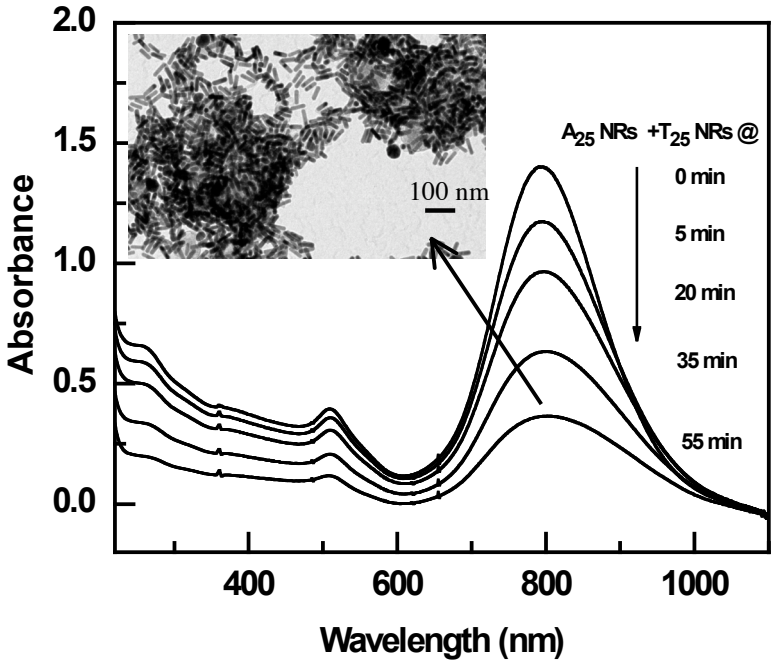

Figure S2.

UV-visible spectra of two equimolar complementary gold nanorod DNA functionalized solutions. A decrease in the surface plasmon resonance absorbance at 517 nm and 780 nm is observed within minutes from the mixture of the colloids. The inset is a TEM image of the self-assembled gold nanorods by complementary DNA hybridization.