Electronic Supplementary Material

Ultra-Stable Oligonucleotide–Gold and –Silver Nanoparticle Conjugates Prepared by a Facile Silica Reinforcement Method

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Supporting information to DOI 10.1007/s12274-012-0244-z

Figure S-1  Plots showing the amounts of oligonucleotide desorbed from the oligo–AuNP and silica-modified oligo–AuNP conjugates as a function of incubation time in 10 mmol/L DTT

Figure S-2  TEM images of (left) the oligo–AuNP conjugate and (right) the silica-modified oligo–AuNP conjugate

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Figure S-3 UV–vis spectra of (a) the NaOH-treated silica-modified oligo–AuNP conjugate, (b) the PEG-modified oligo–AuNP conjugate, and (c) the NaOH-treated oligo–AuNP conjugate in 2 mmol/L NaCN. Insets are photographs showing the colors of the samples at different times. Arrows indicate the decrease in absorbance at the SPR peak with time. (c) is the control to ensure that the presence of NaOH does not affect the gold oxidative dissolution by NaCN as in Fig. 2(a).
Figure S-4  UV–vis spectra of (a) the NaOH-treated silica-modified oligo–AuNP conjugate, (b) the PEG-modified oligo–AuNP conjugate, and (c) the NaOH-treated oligo–AuNP conjugate in 10 mmol/L DTT. Insets are photographs showing the colors of the samples at different times. Arrows in (a) and (b) indicate the decrease in absorbance at the SPR peak with time, while arrow in (c) indicates the increase in absorbance at 600 nm with time. (c) is the control to ensure that the presence of NaOH does not affect the ligand exchange reaction by DTT as in Fig. 1(a)
Figure S-5  (a) Schematic illustration of the hybridization-induced aggregation tests for the silica-modified oligo–AuNP conjugates. (b)–(d) UV–vis spectra of the silica-modified oligo–AuNP conjugate (1) after incubation in 10 mmol/L DTT for 3 h (before hybridization/adding control); (2) after adding (b) the complementary target, (c) blank (water), or (d) the non-complementary sequence for 10 min; and (3) after denaturation/heating at 94 °C for 1 min. Note that 0.5 mol/L NaCl was added in step (2). (e) Same as (b) except 0.5 mol/L NaCl and 5 mmol/L MgCl₂ was added in step (2). Insets are photographs of the samples (1), (2), and (3)

Figure S-6  UV–vis spectra of the silica-modified oligo–AgNP conjugate (1) before hybridization; (2) after hybridization with the complementary target in the presence of 10 μmol/L DTT for 10 min; and (3) after denaturation/dehybridization at 94 °C for 1 min. Insets are photographs of the samples (1), (2), and (3)