

Supporting Information

Photonic Interaction between Quantum Dots and Gold Nanoparticles in Discrete Nanostructures through DNA Directed Self-assembly

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In detail, 130 μL of 0.5 μM 5 nm Au-90mer single conjugates were annealed together with 6.7 μL of 20 μM restriction helper in 150 μL of a solution containing 25 mM Tris-HCl, 2.5 mM MgCl₂ and 20 mM NaCl at pH 7.5 from 90 °C to room temperature over 45 min. 2 μL of restriction enzyme PstI (100 U μL^{-1} , New England Biolabs) was then added to the pre-annealed mixture. The restriction digestion was carried out at 37 °C for 3 h and terminated by heating to 65 °C for 10 min. To digest DNA on 10 nm Au, a similar protocol was adopted, using a 2-fold excess of restriction helper. After digestion, the sequences remaining on the Au NP surface are: 5'-thiol-C6-AGA CGA TTT AGT AGC ACT CAT AGT CAA GAC CTT GTT GAG ATA CTT ACT GCA and 5'-thiol-C6-AGA CGA TTA TAC TTA CTG CA

DNA on Au NP surface:

114 mer: 5'-thiol-C6-TTT TTG GTA TTA AGA ACA AGA AAA ATA ATT AAA GCC AAC GCT CAA AAT AAG AAT AAA CAC CGT GAA TTT TTT.

90 mer for 51 mer spacer between Au and QD: 5'-thiol-C6-AGA CGA TTT AGT AGC ACT CAT AGT CAA GAC CTT GTT GAG ATA CTT ACT GCA GGA CAT ACG GAT TCC CGT CGC AAT AGC CCT TTT CAC GTA. The helper strand for this digestion is: 5'-TAC GTG AAA AGG GCT ATT GCG ACG GGA ATC CGT ATG TCC TGC AGT AAG TAT.

90 mer for 20 mer spacer between Au and QD: 5'-thiol-C6-AGA CGA TTA TAC TTA CTG CAG GAC ATA CTA GTA GCA CTC ATA GTC AAG ACC TTG TTG AGG GAT TCC CGT CGC AAT AGC CCT TTT CAC GTA. The helper strand for this digestion is: 5'-GTA TGT CCT GCA GTA AGT AT.

DNA on QD surface:

114 mer: 5'-thiol-C6- AAA TTC ACG GTG TTT ATT CTT ATT TTG AGC GTT GGC TTT AAT TAT TTT TCT TGT TCT TAA TAC CAA AAA;

51 mer: 5'-thiol-C6- TGC AGT AAG TAT CTC AAC AAG GTC TTG ACT ATG AGT
GCT ACT AAA TCG TCT;

20 mer: 5'-thiol-C6- TGC AGT AAG TAT AAT CGT CT.