Supporting Information

Chirality of Self-assembled Metal-Semiconductor Nanostructures

EXPERIMENTAL SECTIONS

Synthesis of Nanoparticles

Gold NPs with diameter of 10±1.3nm were synthesized by the sodium citrate-tannin reduction method. First, 1 mL of $HAuCl_4$ 1% was added into 79 mL of Millipore-Q water under constant stirring; the mixture was denoted as 'solution A'. Second, 4 mL 1% sodium citrate solution, 0.1 mL 1% tannic acid, and 0.1mL 25mM K_2CO_3 were added into 15.8 mL of Millipore-Q water; the sample was mixed under stirring and named as 'solution B'. Third, solutions A and B were respectively heated to 60°C for 30 min, and then solution B was quickly added into solution A under violent stirring. The solution was kept at 60°C for 30 min, until the color turned to reddish orange and stayed constant, and was then cooled to room temperature.

In order to control the amount of DNA attached to the surface of NPs, the newly made Au NPs were modified with BPS following reported method: Au NPs were concentrated in 10-fold and with shaking overnight with BPS at a final concentration of 10 mg/mL. Then, the solution was centrifuged to obtain each NP, respectively. The supernatants were removed, and the pellets were re-suspended in water for further use.

The Ag NPs in a diameter of 10±1.7 nm was obtained according to the previous method with some modifications. Briefly, 0.6mL or 1mL 1% $NaBH_4$ and 5mL of 1% poly(vinylpyrrolidone) (PVP) was added to 20mL of ice-cold distilled water with violent stirring in a water-ice bath. Next, 5mL of 1% PVP and 5mL of 10mM $AgNO_3$ were added to the mixture simultaneously, by two constant-flow pumps at the rate of 30 mL/h. The solution was kept at 80°C for 3h to remove the excess $NaBH_4$. The prepared sample was yellow and was stored at 4°C.

Table S1. Size distribution before and after assemble

	Naked NPs	DNA-functionalized NPs	Dimer
QDs	4.75±0.8nm	5.97±1.4nm	12.72±1.5nm
Au	11.3±0.9nm	11.91±1.3nm	18.91±1.3nm
Ag	10.29±0.7nm	11.16±1.1nm	19.65±1.5nm

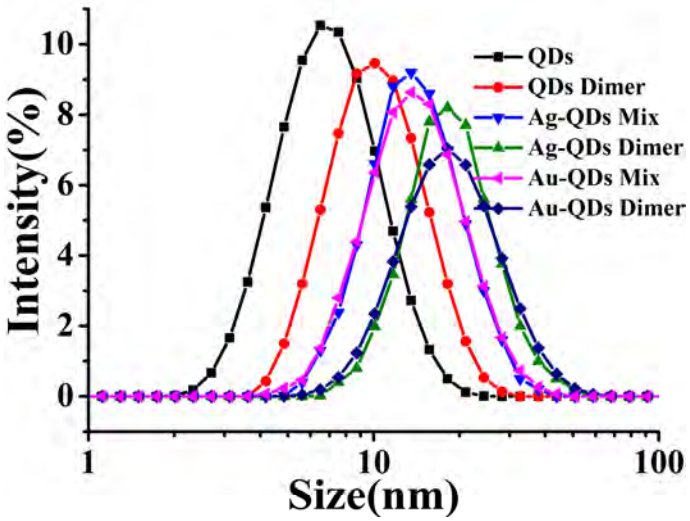

Figure S1. DLS analyses of 10nm Au-QDs dimer, 10nm Ag-QDs dimer, QDs dimer before and after assemble.

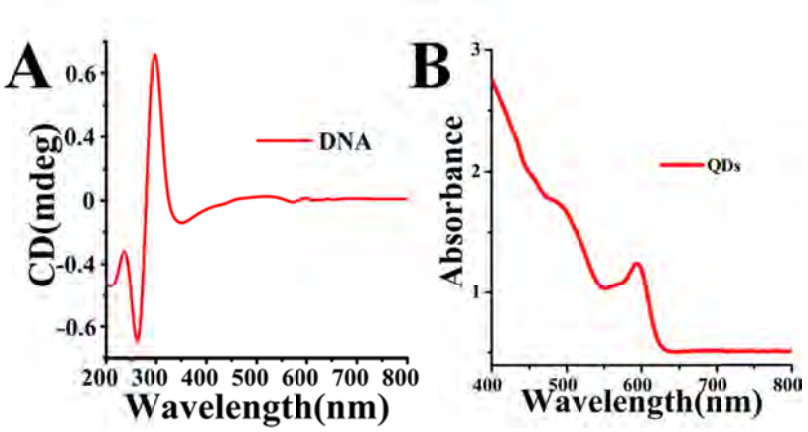

Figure S2. CD spectrum of double-stranded DNA helix (A); UV-Vis spectrum of QDs NPs (B)

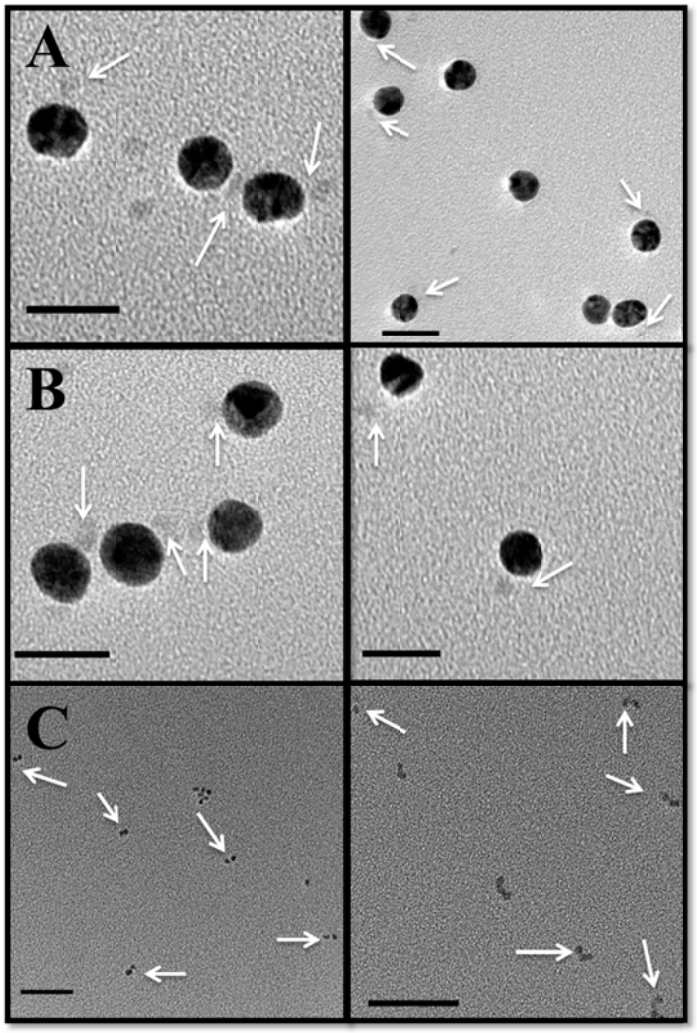

Figure S3. Typical TEM of Au-QDs dimer (A); Ag-QDs dimer (B); QDs dimer(C), scale bar 20nm.