Plasmonic Circular Dichroism in Side-by-Side Oligomers of Gold Nanorods:

Influence of Chiral Molecule Location and Interparticle Distance

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Fig. S1 PCD signal at 610 nm plotted against chiral molecule concentration when N-acetyl-Lcysteine (L-NAC) orL-glutathione (L-GSH) was used to twist the oligomers. The maximum PCD signal was obtained when the concentration of L-NAC or L-GSH was around 1 μ M. Note that the sign of PCD is inverted when 10 μ M L-NAC is used.



Fig. S2 Electric field profiles of a single GNR excited at 785 nm (a, b) and an SS tetramer excited at 633 nm (c, d). Polarization of the incident light is signified by the double-headed arrows. Color bars indicate the magnitude of the electric field. For the SS tetramer, the rod gap is 4 nm. A tetramer is calculated because the average number of rods per oligomer in our experiments was around 4.



Fig. S3 SERS spectra of 4-MP modified discrete GNRs (a), SS oligomers of GNRs (b), discrete silver-coated GNRs (c), and SS oligomers of silver-coated GNRs (d). Excitation wavelength is 785 nm in (a) and (c) and 633 nm in (b) and (d).



Fig. S4 TEM images of Au@Ag nanocrystals grown from GNRs modified with different amount of PEG-OMe: (a) [PEG-OMe] = 0, (b) [PEG-OMe] = 1 μ M, (c) [PEG-OMe] = 10 μ M. Scale bar: 20 nm.



Fig. S5 Extinction spectra of GNRs before (dotted) and after (solid) Ag coating.



Fig. S6 Extinction spectra of GNR solution (black), GNR modified by 10 μ M BNA (red), and SS oligomers with 10 μ M BNA (blue). The inset shows a red-shift of 7 nm after 10 μ L of BNA solution (1 mM in ethanol) was added into 1 mL of the GNR solution.



Fig. S7 Extinction spectra of discrete GNRs (black), SS oligomers (red), and SS oligomers of PEG-OMe modified GNRs (blue) coated with BSA. [BSA] = 5 mg/mL.



Fig. S8 Extinction spectra of PEG-COOH linked SS oligomers switching between pH 7 and pH 3.



Fig. S9 (a) CD spectra of the SS oligomers modified with a mixture of L-CYS and D-CYS. The total amount of CYS was 10 μ M. (b) Difference of CD intensity at 610 nm and 736 nm as a function of L-CYS percentage. The red line is the linear fit of the data (R² = 0.995). All spectra were measured 30 min after the assembly was triggered by 0.15 mM citrate.