

## Supporting Information:

### Gold nanoparticle superstructures with enhanced photothermal effect

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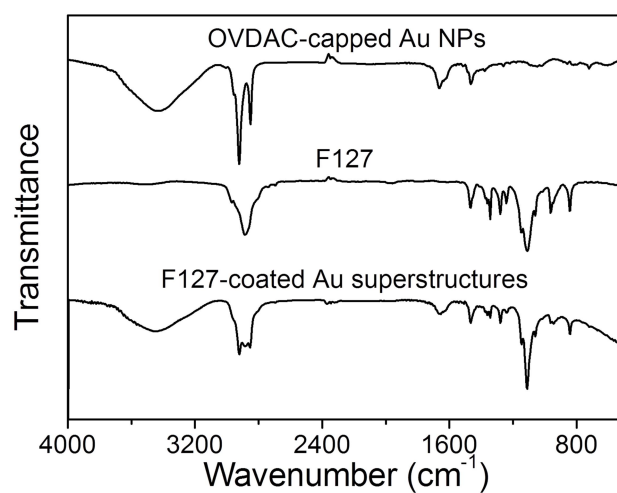
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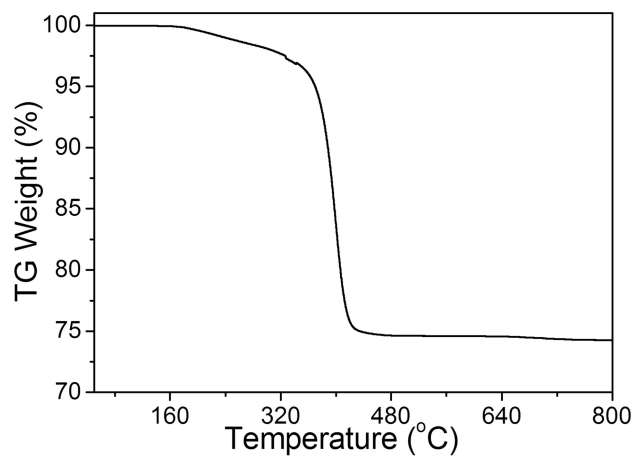
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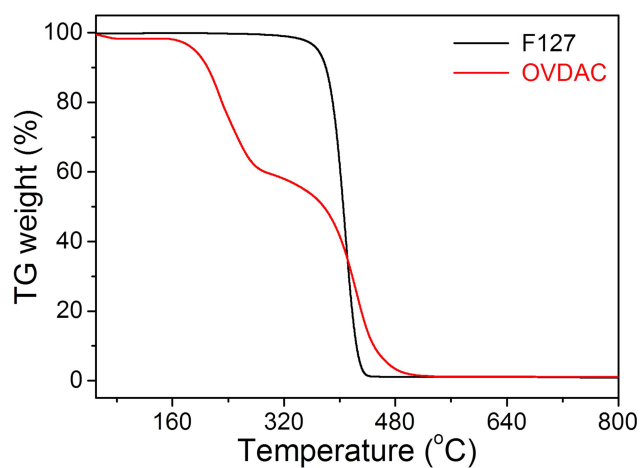
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**Figure S1.** FTIR spectra of OVDAC-capped Au NPs, pure F127, and F127-coated Au superstructures.



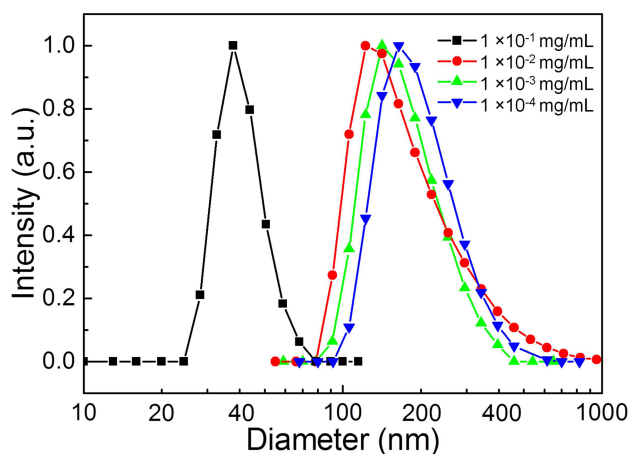
**Figure S2.** TGA curve of F127-coated Au superstructures. The superstructures are constructed with the F127 concentration of 0.001mg/mL.



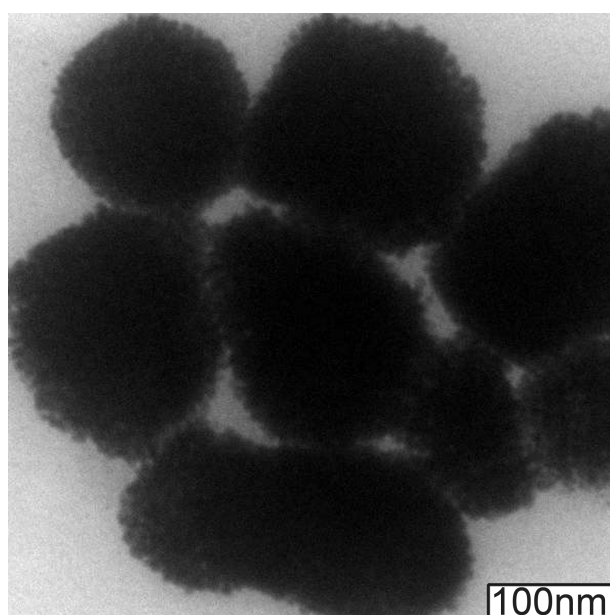
**Figure S3.** TGA curves of pure OVDAC and F127.

**Table S1.** Comparison of the zeta potentials of Au superstructures which are constructed with and without removing the excessive OVDAC in OVDAC-capped Au NP chloroform solution. Four F127 concentrations of 0.1, 0.01, 0.001, and 0.0001 mg/mL are studied.

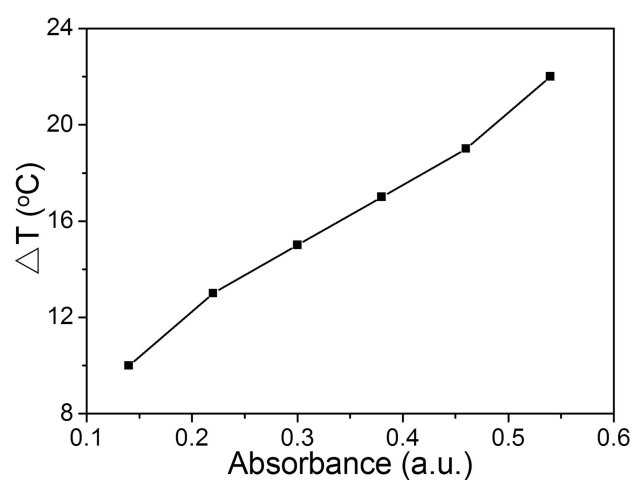
F127 concentration (mg/mL)	$1 \times 10^{-1}$	$1 \times 10^{-2}$	$1 \times 10^{-3}$	$1 \times 10^{-4}$
with OVDAC (mV)	35.36	27.92	30.96	37.78
without OVDAC (mV)	-16.31	-9.50	-7.90	-5.38



**Figure S4.** DLS size distribution of F127-coated Au NP superstructures which are constructed with the F127 concentration of 0.1 (a), 0.01 (b), 0.001 (c), and 0.0001 (d) mg/mL. Before construction, the OVDAC-capped Au NPs are purified to remove excessive OVDAC. The corresponding TEM images are shown in Figure 5.



**Figure S5.** TEM image of F127-coated Au superstructures from DT-capped Au NPs which are constructed with the assistance of 0.12 mg/mL OVDAC. The F127 concentration is 0.001mg/mL.



**Figure S6.** Concentration effect on the temperature increment of F127-coated Au superstructures. The superstructures are constructed with the F127 concentration of 0.001mg/mL. The samples are irradiated with a 650 nm laser for 8 min. The output power is 1 W/cm<sup>2</sup>. The initial temperature is 20 °C. Before laser irradiation, the absorbance of the plasmon peaks of Au superstructures is adjusted to 0.14, 0.22, 0.30, 0.38, 0.46 and 0.54, respectively, by diluting the suspensions.