Supporting Information

# Construction of Regulable Chiral Recognition Platform Based on the Photothermal Effect of Popcorn-like Gold Nanoparticles/Bovine Serum Albumin

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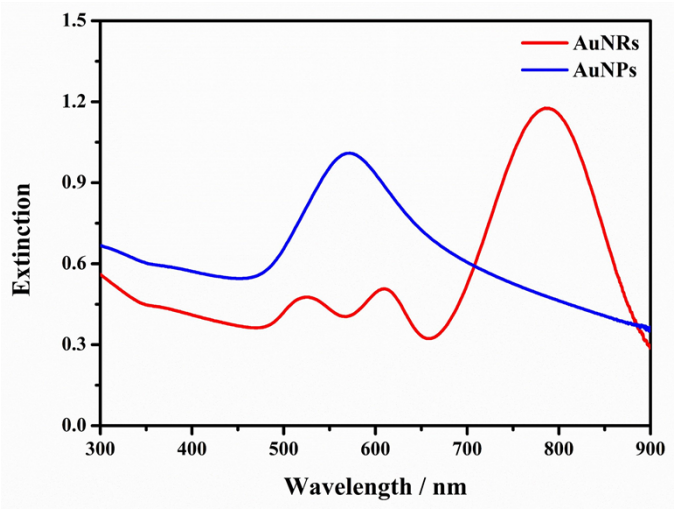


**Fig. S1** Extinction spectra of AuNRs and AuNPs.

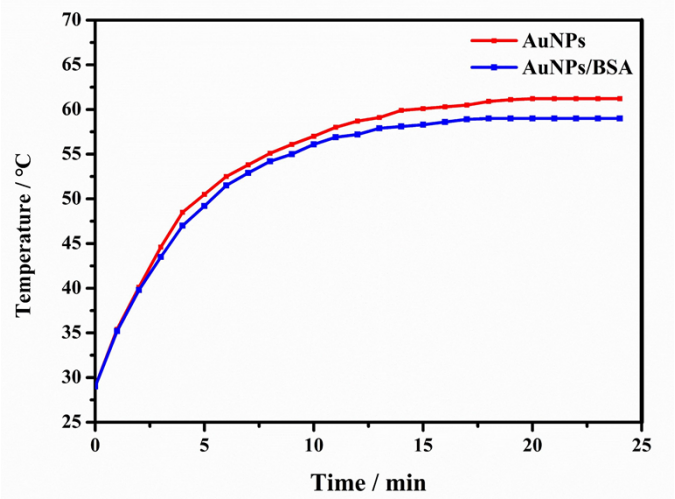


**Fig. S2** Temperature-time curves of AuNPs and AuNPs/BSA under the irradiation of NIR.

**Calculation of Thermal Conversion Efficiency of AuNPs**

The thermal conversion efficiency (η) of AuNPs can be calculated according to the previous literature,[S1] and the formula is listed as follows:

$$\eta = \frac{hS(T_{max} - T_{amb}) - Q_{dis}}{I(1 - 10^{-A_{808}})}$$

Where h is the thermal conversion constant, S is the container surface area, $T_{max}$ is the maximum temperature at equilibrium (61.2 °C), $T_{amb}$ is the ambient temperature (29.0 °C), $Q_{dis}$ is the energy loss generated by laser irradiation (~0.014 W), I is the power density of the NIR (3.33 W $cm^{-2}$) and $A_{808}$ is the absorbance of AuNPs at the wavelength of 808 nm (~0.454).

Therefore, hS can be calculated from the following formula:

$$hS = \frac{\sum mC_p}{\tau_s}$$

where m is the mass of the solution (~1.5 g), $C_p$ is the specific heat capacity of the solution (4.2 J $g^{-1}$ $°C^{-1}$), $\tau_s$ represents the time constant, which can be calculated from the following two formulas:

$$\tau_s = -\frac{t}{\ln(\theta)}$$

$$\theta = \frac{T_{amb} - T}{T_{amb} - T_{max}}$$

where t and θ represent the time in the cooling process and the driving temperature force, respectively.

According to the linear fitting diagram between time (t) and the negative logarithm of θ (−lnθ) (Fig. S3B), the values of time constant ($\tau_S$) and thermal conversion efficiency (η) are calculated to be 293.3 s and 31.3%, respectively.

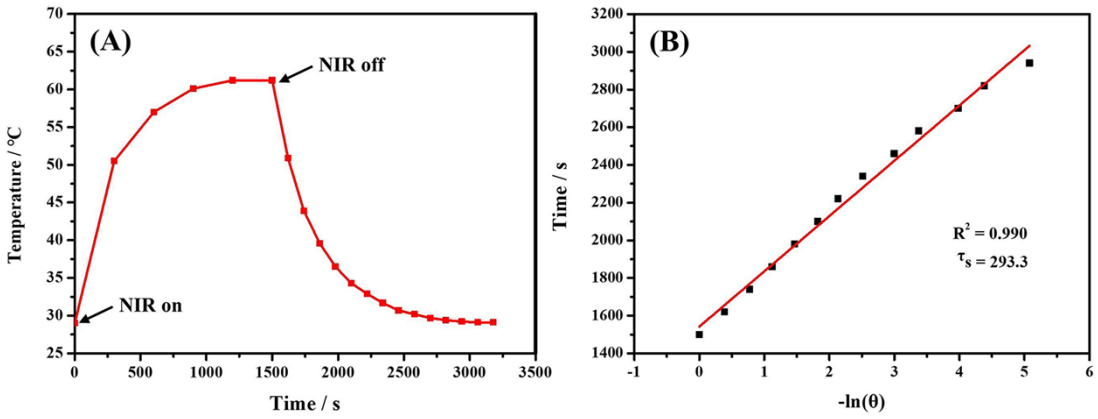


**Fig. S3** (A) Temperature-time (T-t) curve of AuNPs during the process of heating and cooling. (B) Linear fitting diagram of time with the negative logarithm of driving temperature force (−lnθ) during the cooling process.

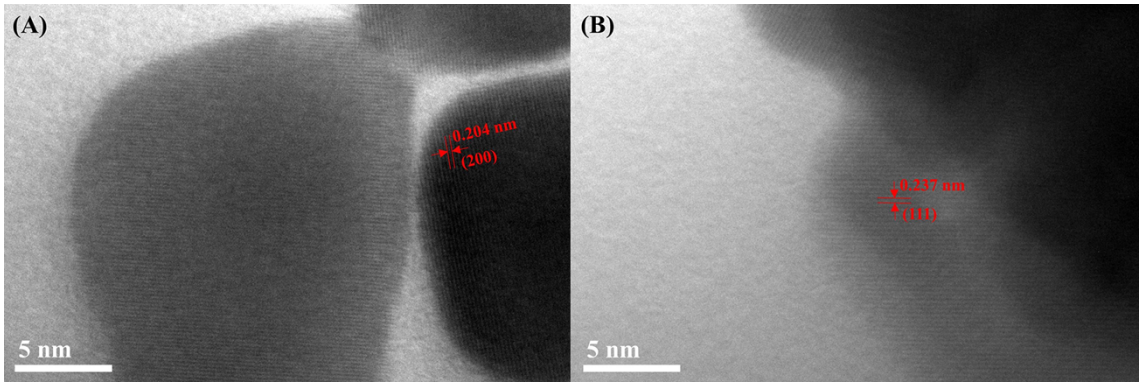


**Fig. S4** HRTEM of (A) AuNRs and (B) AuNPs.

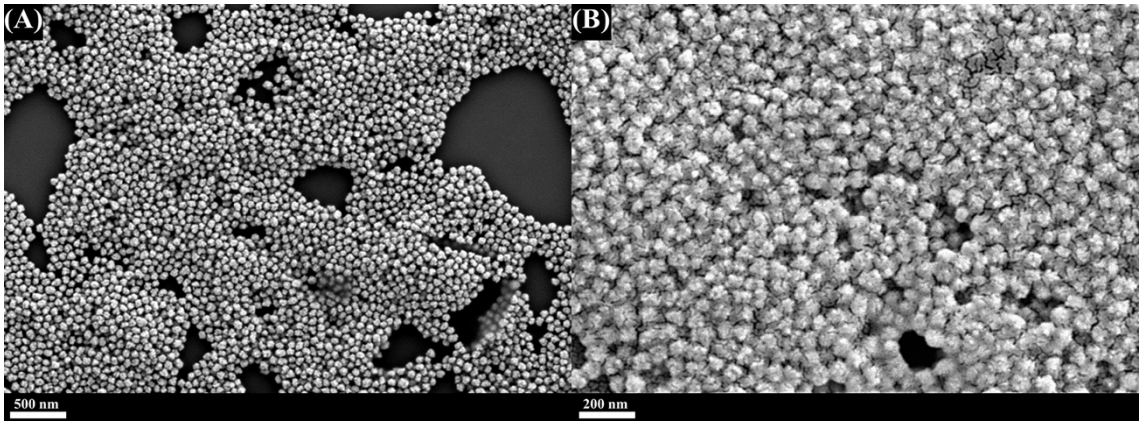


**Fig. S5** SEM images of AuNPs at different magnifications.

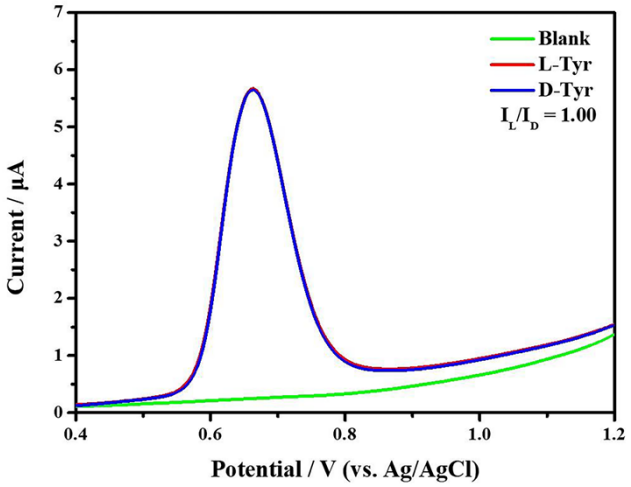


**Fig. S6** DPVs of bare GCE after incubation in 0.1 M PBS of pH 7.0 without Tyr (blank), with 1.0 mM L-Tyr, and with 1.0 mM D-Tyr, respectively.

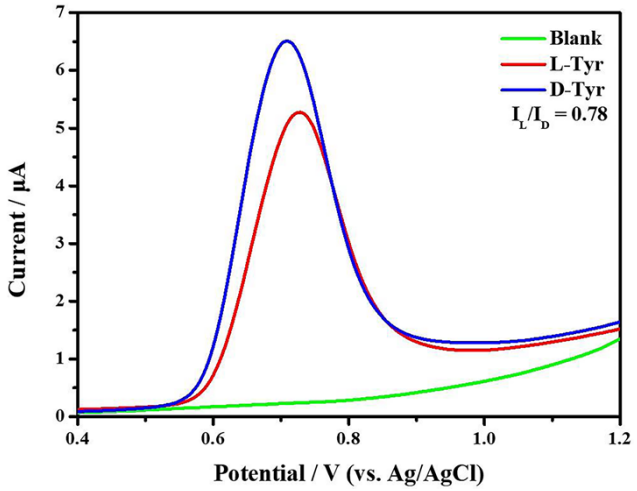


**Fig. S7** DPVs of AuNPs/NIR/GCE after incubation in 0.1 M PBS of pH 7.0 without Tyr (blank), with 1.0 mM L-Tyr, and with 1.0 mM D-Tyr, respectively.

## Reference

S1. D. K. Roper, W. Ahn and M. Hoepfner, *J. Phys. Chem. C* 2007, **111**, 3636–3641.