Supporting Information

for

Identification of Iodine-Induced Morphological Transformation of Gold Nanorods

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1. The synthesis of Au NRs

Au-NRs were prepared according to reference.[1] Firstly, a 10 mL solution of gold seeds were prepared by the reduction of $HAuCl_4 \cdot 4H_2O$ (2.5×10^{-4} M) by ice-cold $NaBH_4$ (9.0×10^{-4} M) in the presence of CTAB (7.5×10^{-2} M). The $NaBH_4$ solution was added at a time to the mixed solution and followed by mixing vigorously for about 30s. The mixture rapidly developed into a light-brown color and then was kept for between 2 h and 24 h at 25 ^{o}C before synthesis of NRs. The solution was shaken after the addition of every component.

Then, the growth solution, which contained 5.0 mL 0.002 M $HAuCl_4 \cdot 4H_2O$ and 7.7 mL H_2O, was stirred, then 11.9 mL 0.2 M CTAB was added, the color of the mixed solution quickly changed from light yellow to orange, and then 0.15 mL 0.01 M $AgNO_3$ was placed into the growth solution, mixed and followed by adding 0.16 mL 0.1 M L-AA and mixing for about 2 min, the color of solution changed into colorless immediately. Finally, 0.11 mL 2-h aged Au seed solution was added into the growth solution and blended vigorously for 20 s, and the color became red gradually. At last, the mixed solution was left undisturbed for 24 h in the incubator to prevent CTAB from crystal and the growth solution was kept in water bath throughout the procedure.

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2. Tables and Figures

Table S1 X-ray diffractograms of AuI*

2θ	Int-f	h	k	l
12.885	999	0	0	2
24.202	568	0	0	4
29.741	768	1	1	1

*Ref: Jagodzinski, H.; Z. Kristallogr.; Kristallgeom.; Kristallphys.; Kristallchem, 1959, 112, 80

Calculated from ICSD using POWD-12++[1997]

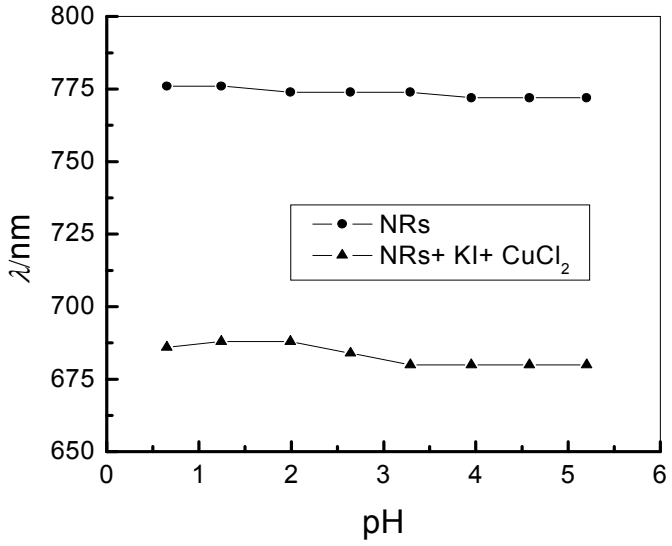

Figure S2. The effect of pH on the fusion process of Au-NRs.

$c_{\text{Au-NRs}}$, 8.0×10^{-5} M; c_{NaCl}, 0.10 M; c_{KI}, 1.0×10^{-3} M; c_{CuCl2}, 5.0×10^{-4} M.

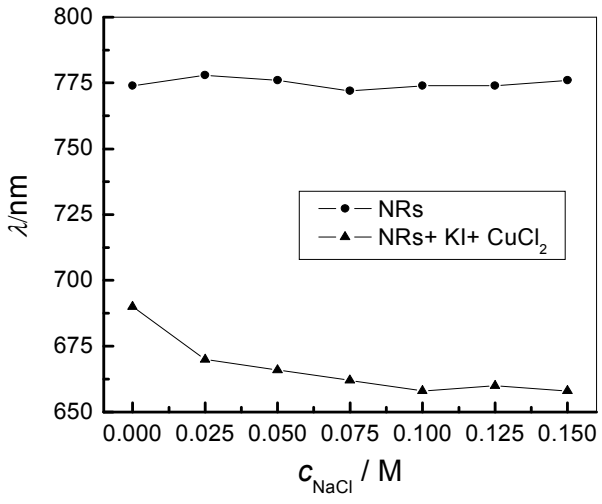

Figure S2. The effect of ion strength on the fusion process of Au-NRs.

$c_{\text{Au-NRs}}$, 8.0×10^{-5} M; c_{KI}, 1.0×10^{-3} M; c_{CuCl2}, 5.0×10^{-4} M; pH 3.29.

3. Reference:

(1) Jiang, X. C.; Brioude, A.; Pileni, M. P. *Colloid. Surface. A* **2006**, *277*, 201.