Electronic Supplementary Material (ESI) for RSC Advances.


# Supporting Information

## Symmetric and asymmetric overgrowth of Ag shell onto gold nanorods assisted by Pt pre-deposition

*Qi Zhang†, Tian-Song Deng†,*, Ming-Zhang Wei†, Xi Chen†, Zhiqun Cheng†, Shiqi Li†, and Yi-Jie Gu†*

†School of Electronics and Information Engineering, Hangzhou Dianzi University, Hangzhou 310018, P. R. China.

* *Corresponding author. E-mail: dengts@pku.edu.cn*

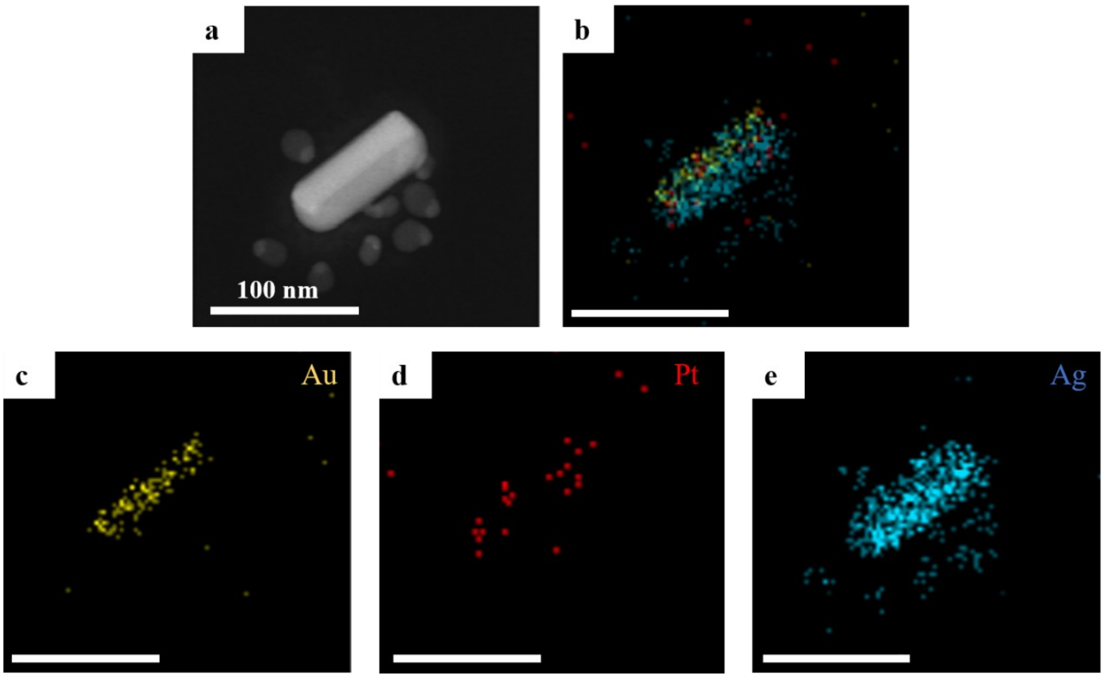


**Figure S1.** The EDS mapping of a single (AuNR-Pt)-Ag nanostructure. (a) Dark-field TEM image of a (AuNR-Pt)-Ag. Asymmetric nanostructure can be observed. (b) the mapping of the (AuNR-Pt)-Ag. It can be observed that Ag tends to grow mainly on one side of the (AuNR-Pt) seed. (c) The distribution of Au in EDS map, which is in yellow. (d) The distribution of Pt (red) in EDS map. Pt mainly deposited in the two ends of the AuNR. (e) The distribution of Ag (blue) in EDS map. It can also be proved that Ag does grow asymmetrically. From the Figure S1, we can see the asymmetric nanostructure clearly.

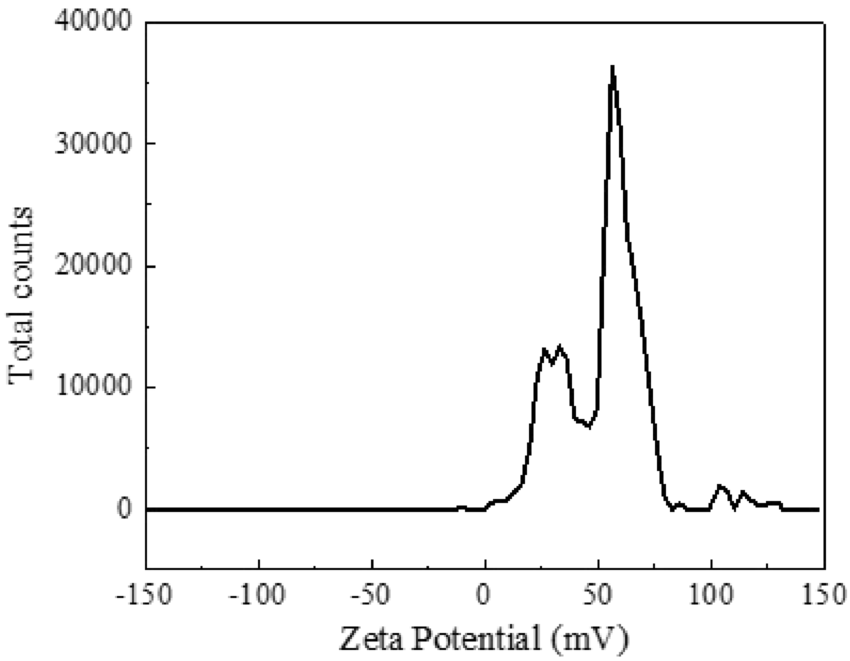


**Figure S2.** The DLS image of the tri-metallic (AuNR-Pt)-Ag nanostructure in 1.0 mL $AgNO_3$. the zeta-potential image of asymmetric (AuNR-Pt)-Ag nanostructure. The potential is greater than +30 mV, so this nanosystem is very stable.

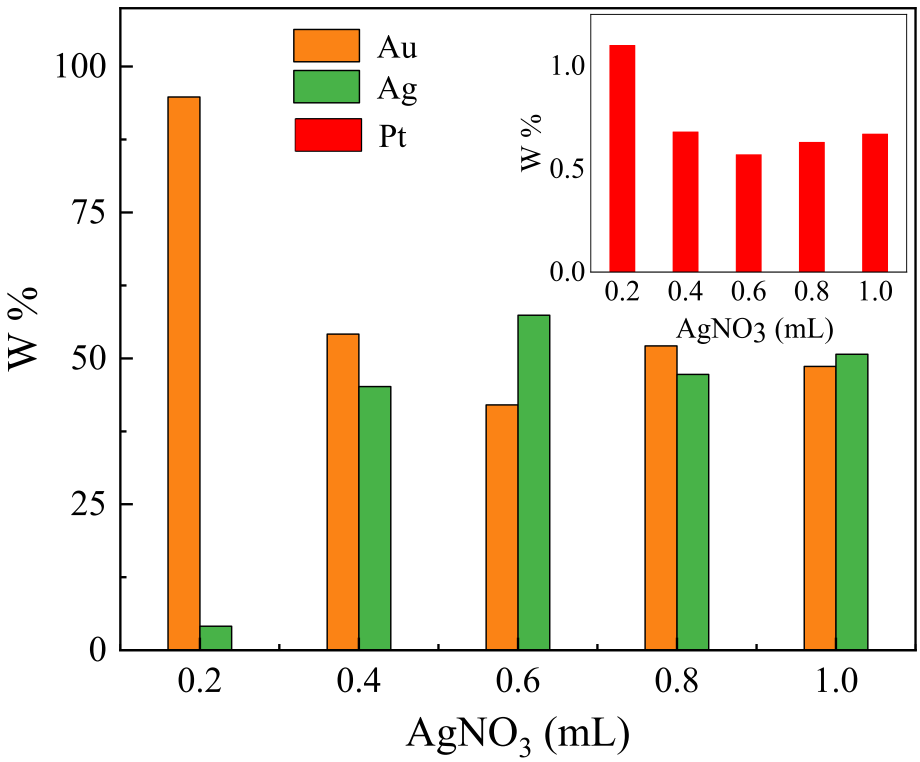


**Figure S3.** The ICP-MS image of different samples in different amounts of $AgNO_3$. We have drawn images of proportions of the three elements in the tri-metallic nanostructure. Pt is presented as an internal illustration due to its quite small content. In the figure, orange represents the proportion of Au, green represents the proportion of Ag and red represents the proportion of Pt. we can find that Au and Ag are closest to each other when asymmetric structures yield the most. Meanwhile, the content of Pt in these five samples is basically the same (<1%).