Electronic Supplementary Information

Vapor-phase preparation of single-crystalline thin gold microplates using $HAuCl_4$ as the precursor for plasmonic applications

Xuejiao Wang[1], Yiqin Chen[1], Xupeng Zhu[1], Zhiqin Li[1], Zhengang Shang[2], Huigao Duan[1]*

[1]School of Physics and Electronics, State Key Laboratory for Chemo/Biosensing and Chemometrics, Hunan University, Changsha, Hunan 410082, P. R. China.

[2]Institute for Materials Microstructure Research, Advanced Research Center, Central South University, Changsha, Hunan 410082, P. R. China.

*Email: duanhg@hnu.edu.cn.

KEY WORDS: vapor-phase deposition, gold microplates, pyrolysis, chloroauric acid, plasmon resonance

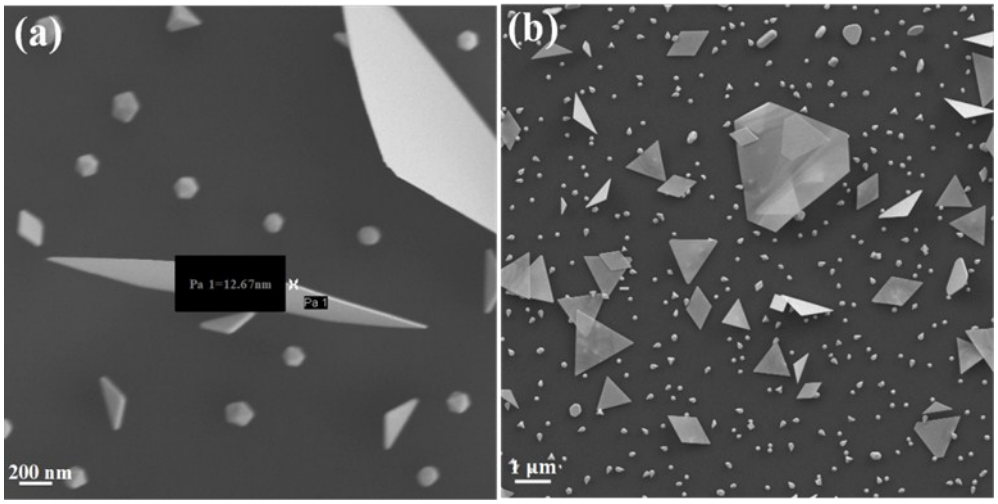

Fig. S1 (a, b) SEM images of gold microplates to demonstrate the thickness of our products are thin.

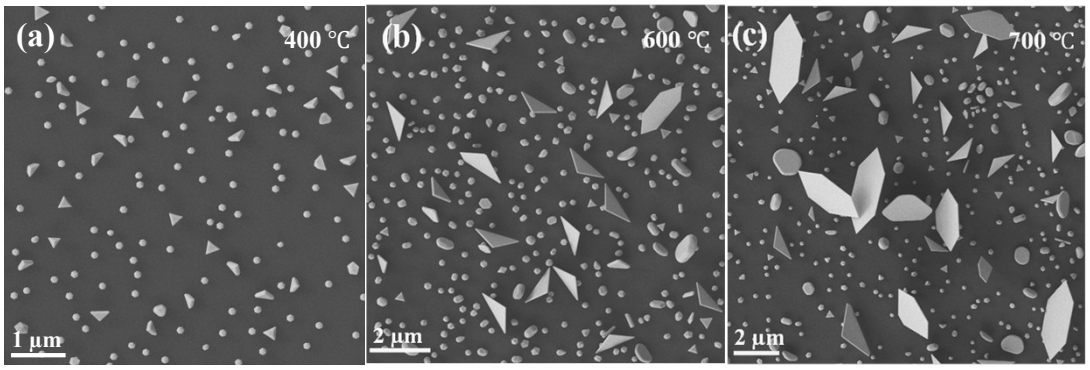

Fig. S2 The SEM images of gold microplates synthesized at different deposition temperature of 400 ℃ (a), 600 ℃ (b) and 700 ℃ (c). The in-tube pressure was kept at 850 mTorr. The source-to-substrate distance was set as 3 cm. The result at 500 ℃ was shown in figure 4.

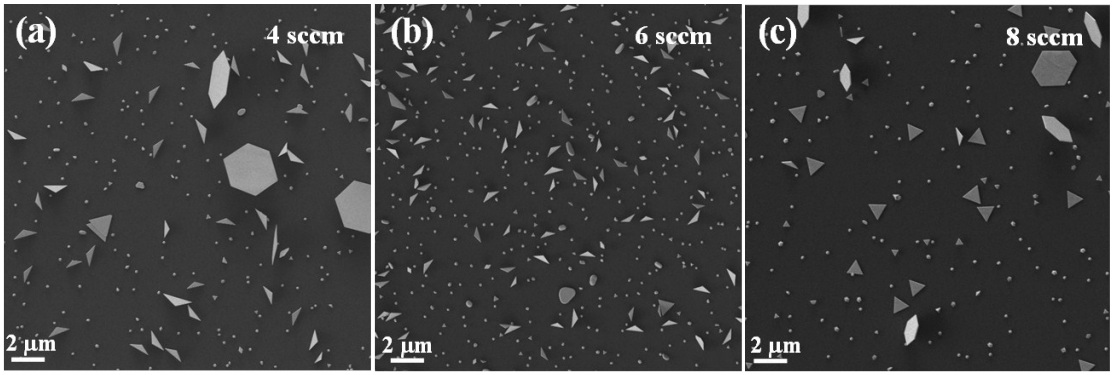

Fig. S3 The SEM images of gold microplates synthesized at different flow rate of N_2 of 4 sccm (a), 6 sccm (b) and 8 sccm (c). The deposition temperature was 500 ℃. The source-to-substrate

distance was set as 3 cm. The result of 2 sccm was shown in figure 4.

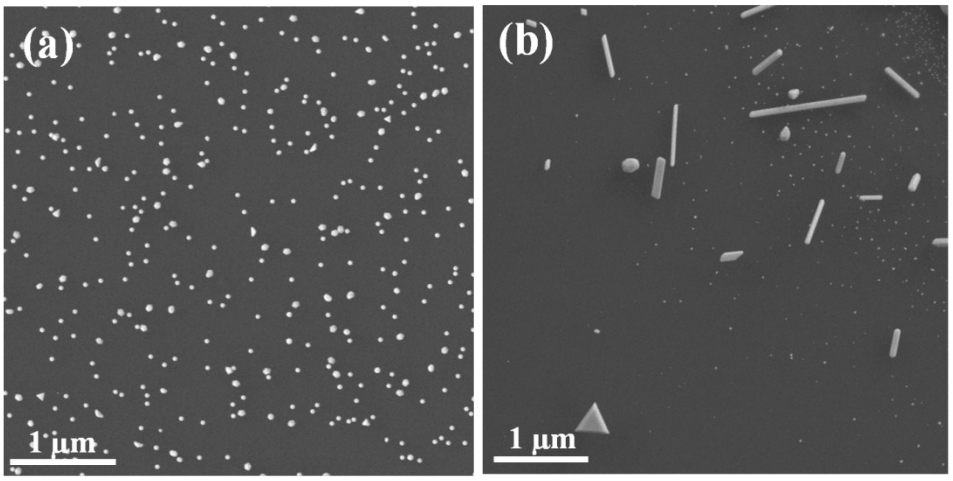

Fig. S4 The SEM images of gold nanocrystal with different shapes. (a) nanparticles. (b) nanorods.

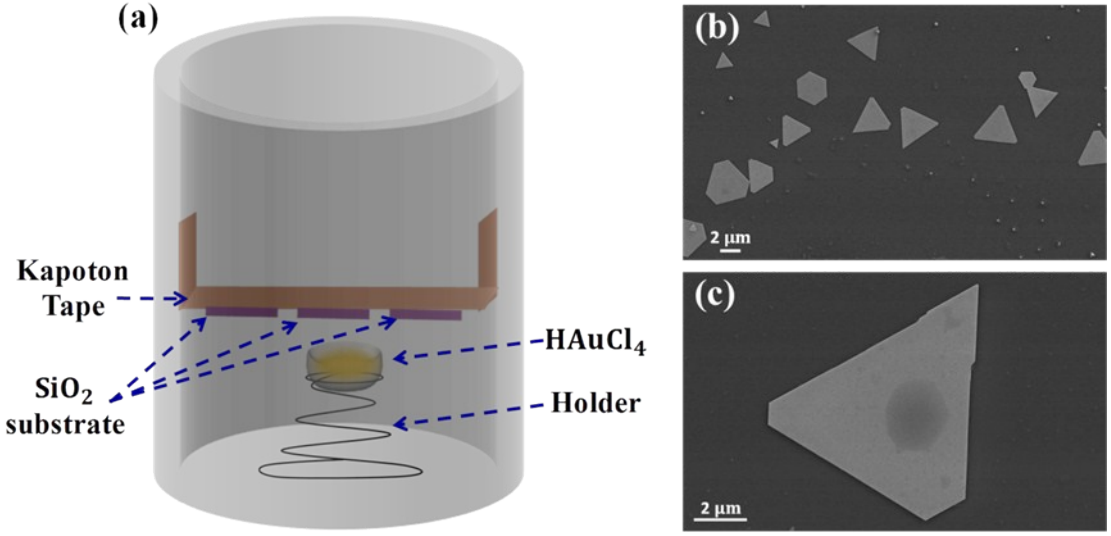

Fig. S5 (a) The schematic of a home-made reaction kettle equipment. (b, c) the obtained gold microplates.

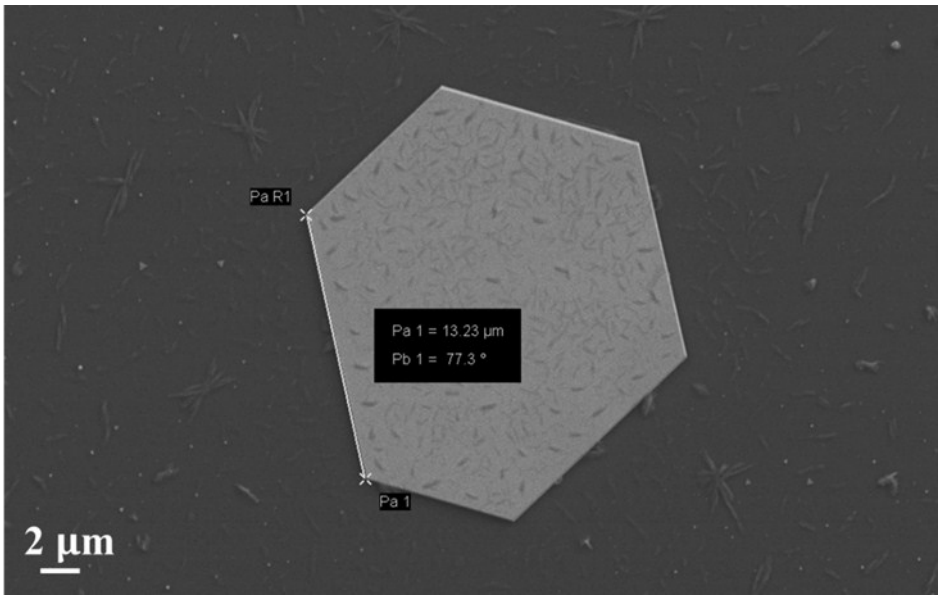

Fig. S6 The SEM image of a large gold microplate obtained using the home-made reaction kettle equipment.