Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Tuning plasmonic and chemical enhancement for SERS detection on graphene-based Au hybrids

Xiu Liang,[a] BenLiang Liang,[a] Zhenghui Pan,[b] Xiufeng Lang,[c] Yuegang Zhang,[b] Guangsheng Wang,*[,a] Penggang Yin*[,a] and Lin Guo[a]

Content

1.

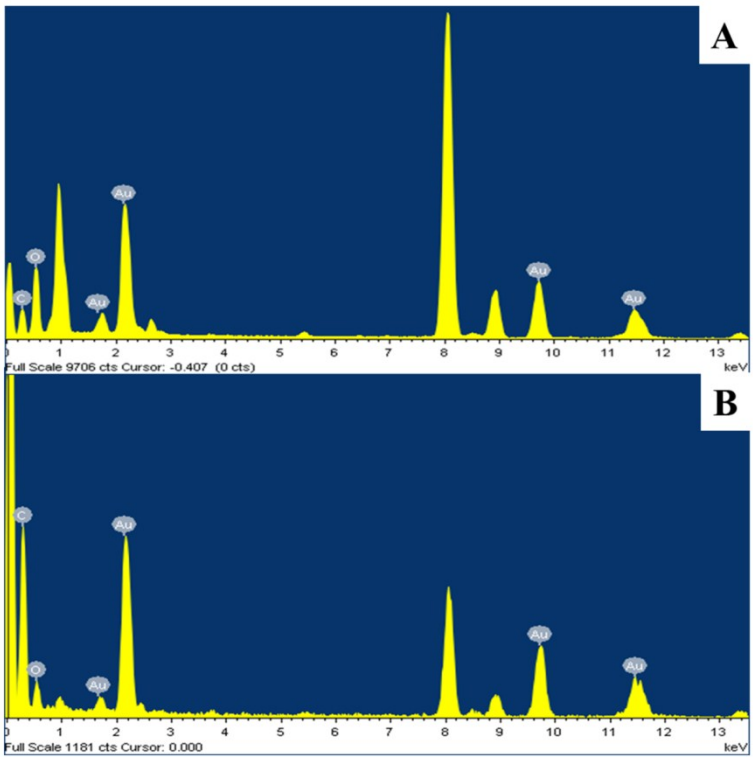

Fig. S1 EDX spectrum of GO/Au (A) and rGO/Au (B) in TEM image of Fig.2.

2.

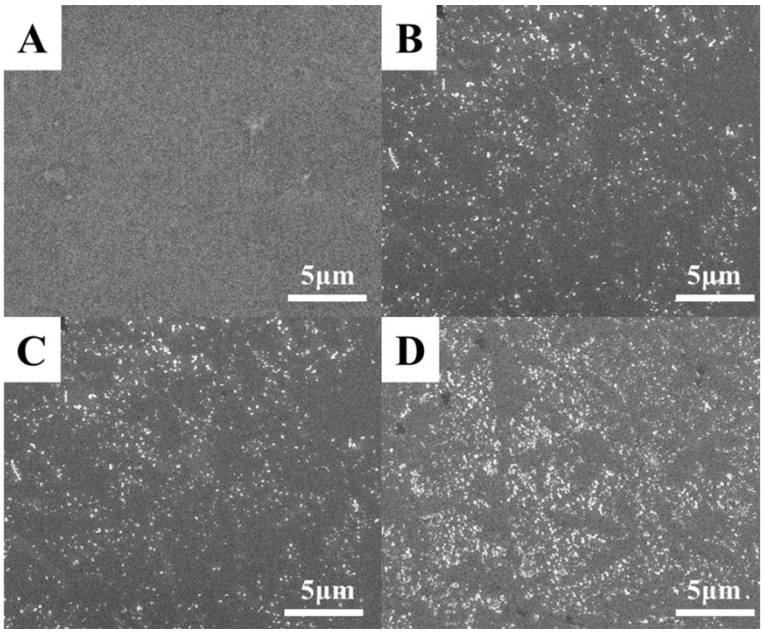

Fig. S2. SEM images of CVD-G nanosheets (A) and CVD-G/Au nanosheets on SiO_2/Si with different Au deposition times: 10s (B) 20s (C) and 30s (D).

3.

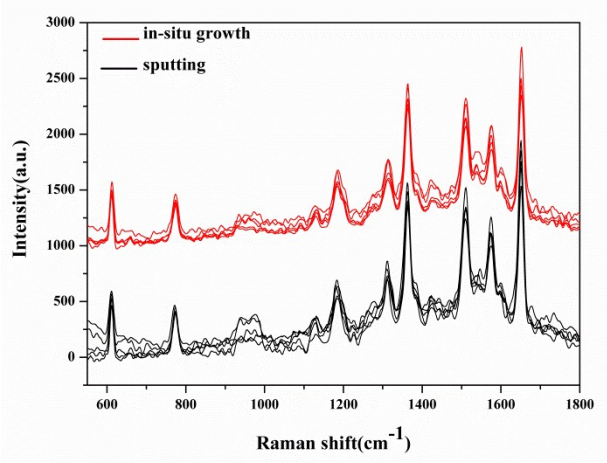

Fig. S3. SERS spectrum of 10^{-6} M R6G adsorbed on GO/Au by in-situ growth method (red lines) and sputting method (with 30s Au depositing time) (black lines) on Si/SiO_2.The laser power was 3mW and the acquisition time was 2s.

4.

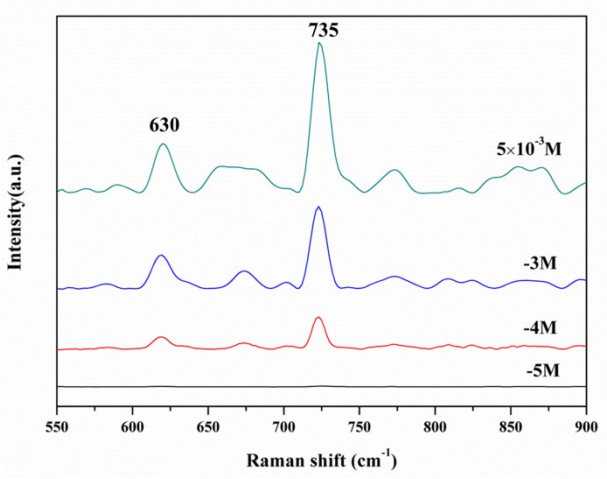

Fig. S4. SERS spectrum of adenine with various concentrations on CVD-G/Au nanocomposites. The laser power was 15mW and the acquisition time was 30s.

5.

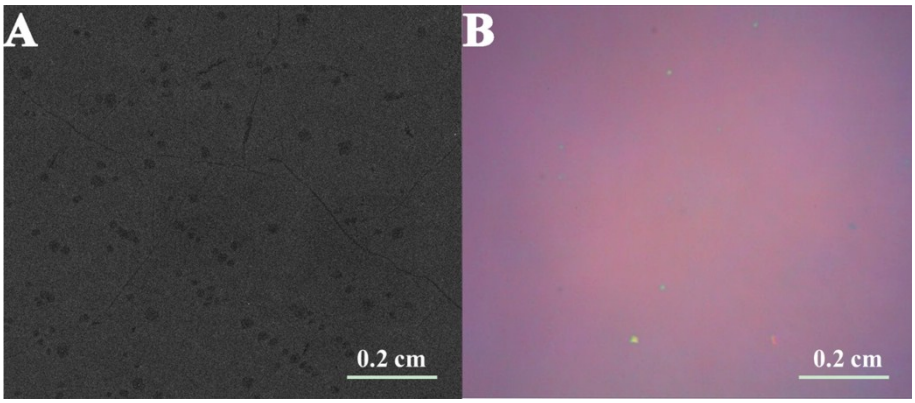

Fig. S5. SEM (A) and optical (B) images of CVD-G nanosheet on 1×1 cm SiO_2/Si substrate in a large scale. SEM image shows the whole coverage of almost plat graphene film with thin layer on the surface. By the color contrast in the OM (B), we can distinguish most part is monolayer (pink) with some folds of few-layer (purple) on around, which is suitable enough for SERS detection in view of repeatability. The results coincided with the dates of Raman and AFM in this article. By the color contrast in the Figure S5(B),[1, 2] we can distinguish most part is monolayer (pink) with some folds of few-layer (purple) on around, which is suitable enough for SERS detection in view of repeatability and effectiveness.

Reference:

1. X. Ling, L. Xie, Y. Fang, H. Xu, H. Zhang, J. Kong, M. Ssselhaus, J. Zhang and Z. Liu, *Nano Letters*, 2010, **10**, 553-561.
2. G. Libo, R. Wencai, L. Bilu, S. Riichiro, W. Zhong-Shuai, L. Shisheng, J. Chuanbin, L. Feng and C. Hui-Ming, *Acs Nano*, 2009, **3**, 933-939.