

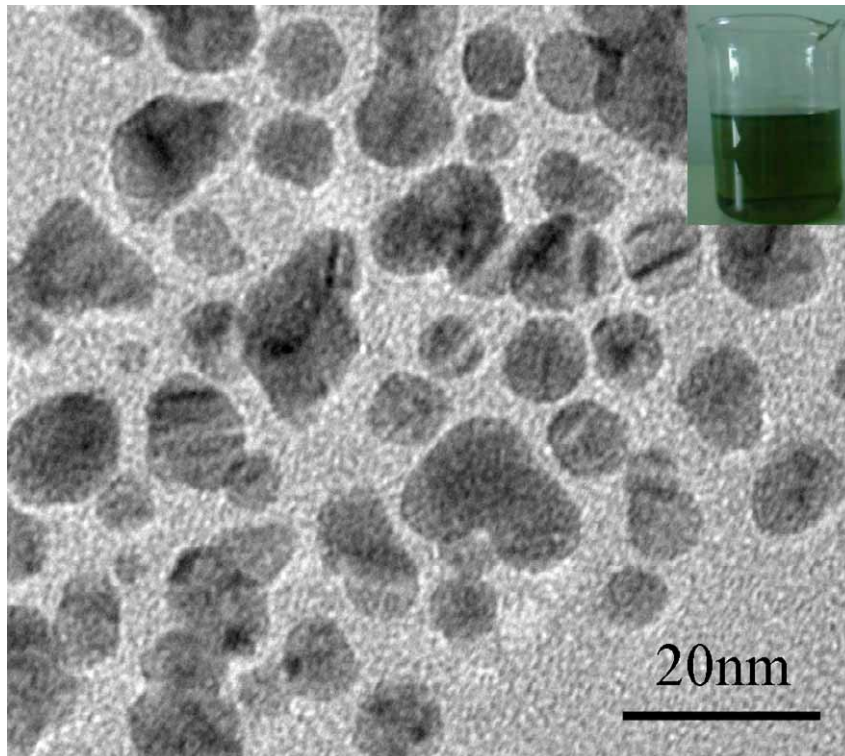
## Supporting Information

### Standing Ag Nanoplate-built Hollow Microsphere Arrays: Controllable Structural Parameters and Strong SERS Performances

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**Fig. S1 G.Q. Liu et al**



**Figure S1:** TEM image of colloidal Ag nanoparticles dispersed in electrolyte solution; the inset is the photo of the electrolyte solution in a cup after electro-deposition for 10h.

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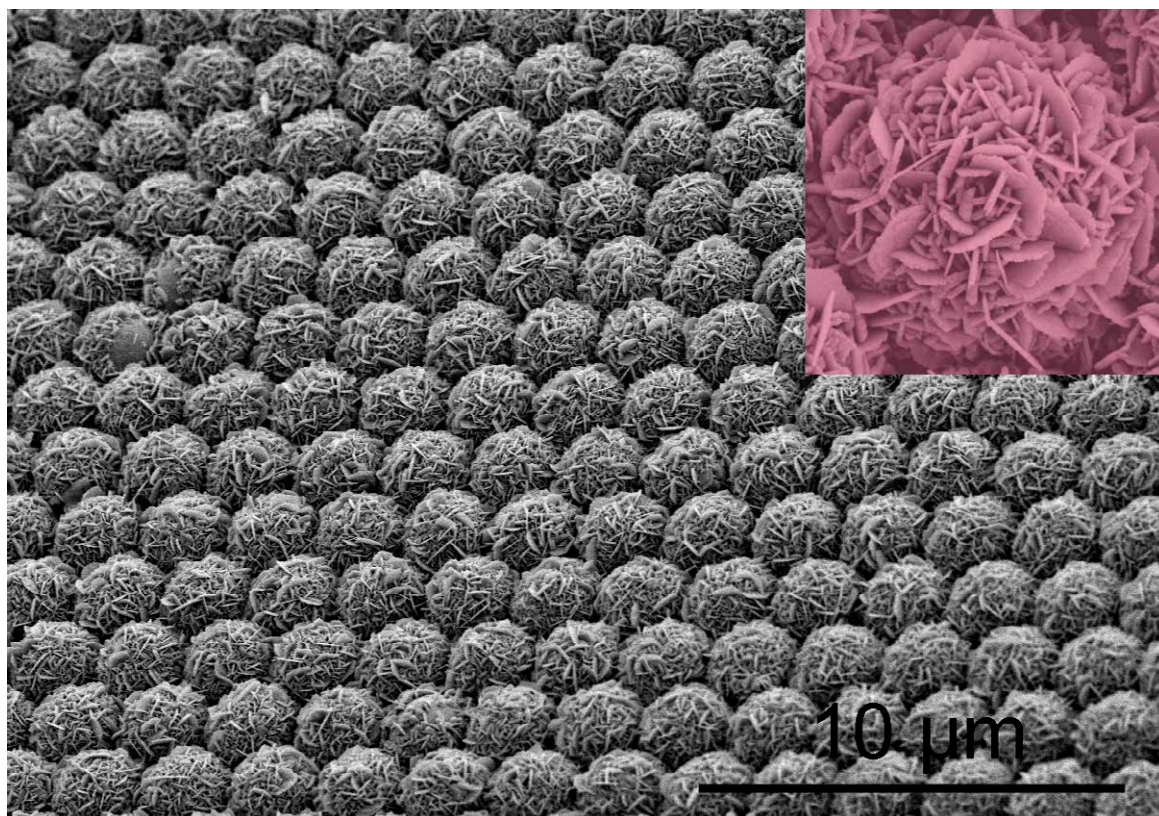
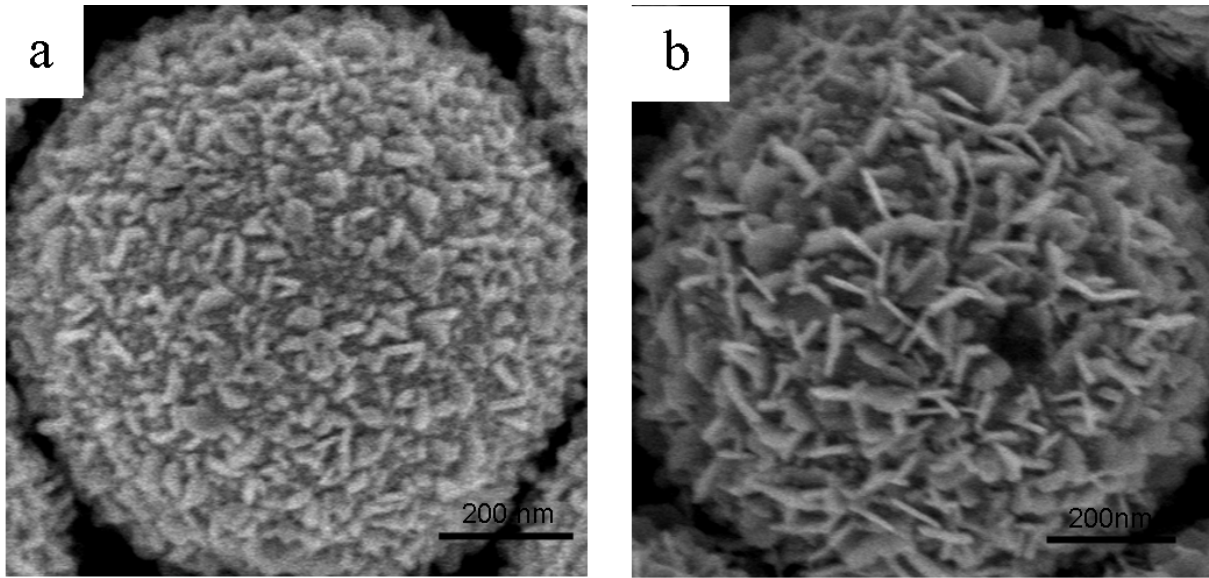


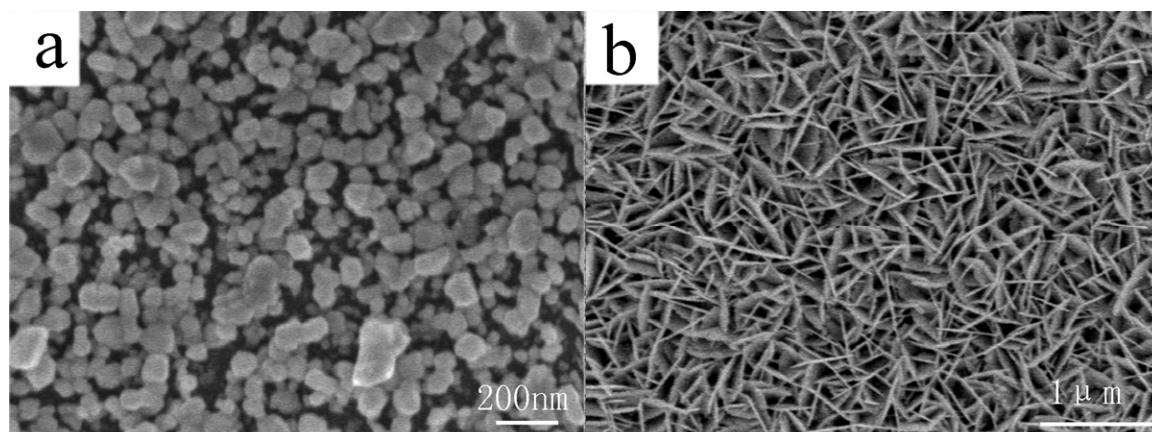
Figure S2: FESEM image of the micro/nano-structured arrays from the template with  $2\mu\text{m}$  in PS diameter [the other conditions are the same as the sample shown in Fig.1(d)]. The inset is the local magnified image.

Fig. S3 G.Q. Liu et al



**Figure S3:** FESEM images of a single micro-sphere corresponding to deposition time for (a) 3h and (b) 5h. [Note: the other conditions are the same as the sample shown in Fig.1(d)].

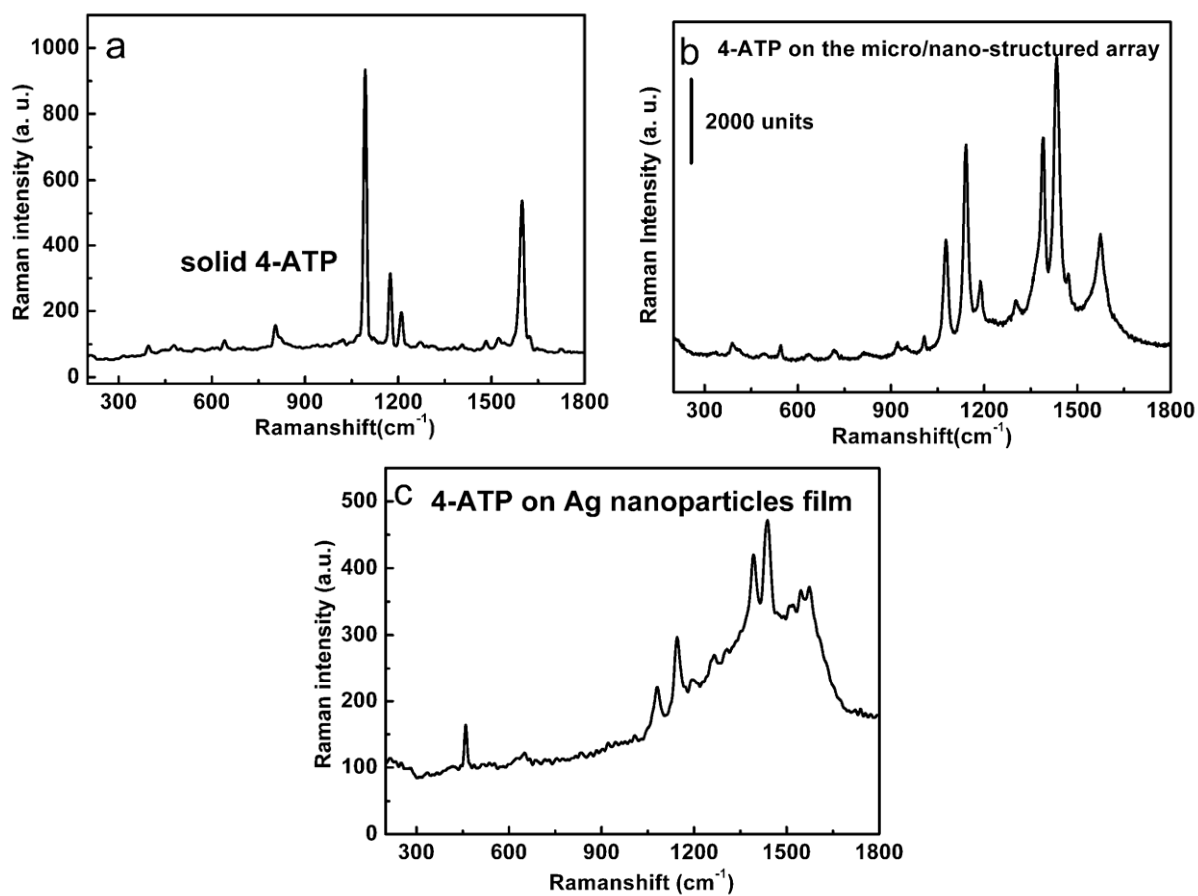
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**Figure S4 (a):** FESEM image of the Ag nanoparticle film obtained by usual silver mirror reaction; (b): FESEM image of the cross-linked Ag nanoplates vertically standing on silicon substrate.

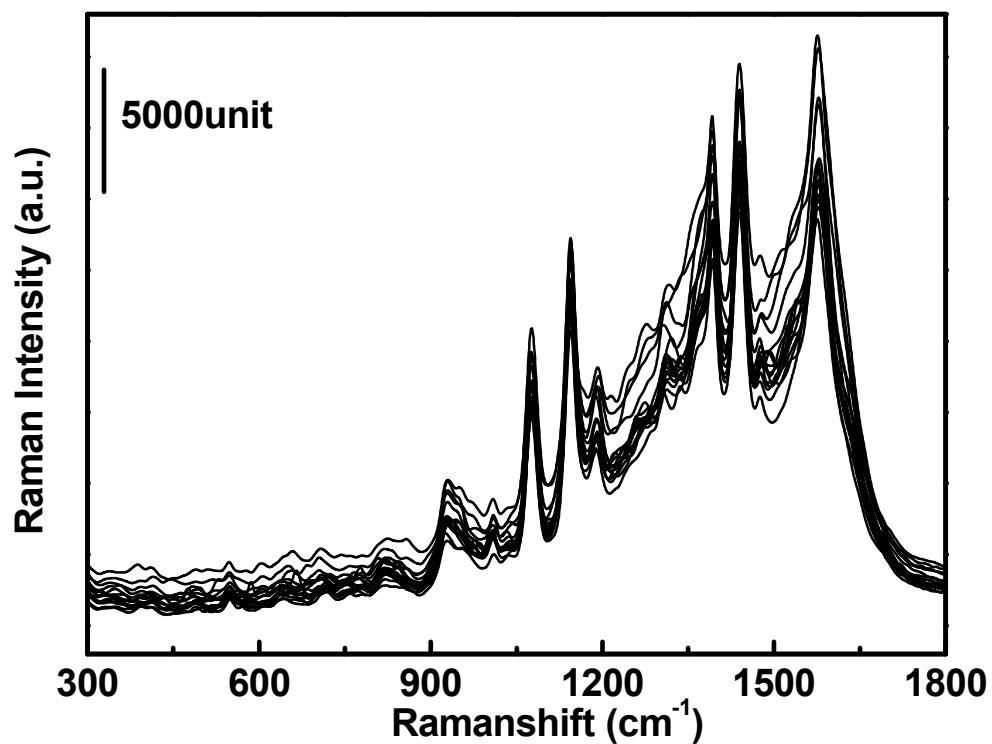
**The preparation details of the sample shown in (a)** are as follows. One gram of solid  $\text{AgNO}_3$  was first dissolved in 5 ml of deionized water in a 150ml beaker, and triethanolamine was added slowly with stirring until the brownish solution became clear. Then deionized water was added to make a total volume of 80 ml. A cleaned glass slide substrate was vertically placed into the beaker and kept at 45-50 °C in a water bath for one hour. Finally, the substrate was taken out, washed with deionized water and dried in air. Ag nanoparticle film on the substrate is thus obtained.

Figure S5 G. Q. Liu et al



**Figure S5** Raman spectra of 4-ATP on different substrates (Integral time: 10s). (a): solid 4-ATP. (b): the micro/nano-structured array, shown in Fig. 1(d), after dropping a 100 $\mu$ l 10<sup>-8</sup>M on it with the projective area 1 cm<sup>2</sup> and dispersing uniformly; (c): the Ag nanoparticles film after immersion into 10<sup>-3</sup> M 4-ATP solution.

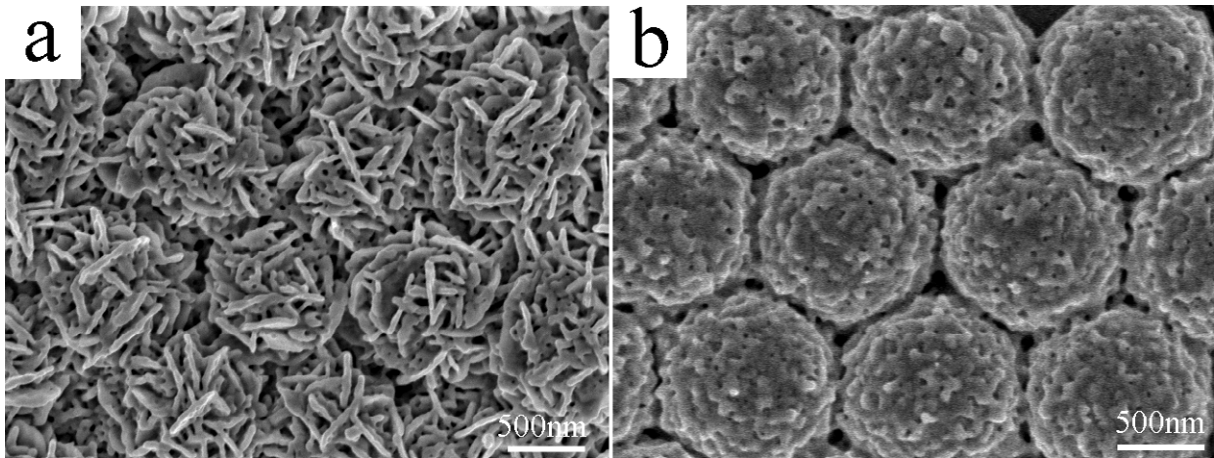
Figure S6 G. Q. Liu et al



**Figure S6** Raman spectra of 4-ATP from sixteen different spots on the sample shown in Fig.

1(d). **Note:** the concentration of 4-ATP is  $10^{-6}$  M, the laser power is 0.5 mW, and integral time is 1s. The background of amorphous carbon is visible in the spectra due to the lower exciting power used. [The exciting power is 1 mW for the other samples]

**Figure S7** G. Q. Liu et al



**Figure S7** FESEM images of the sample, shown in Fig.6(c), corresponding to the plasma-cleaning for three (a) and seven times (cycles) (b).