# Supporting Information

## Grooved Nanoplate Assembly for Rapidly Surface Enhanced Raman Scattering Detecting

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**Contents:**

## A. Simulation results of the electric distribution of GSNA

Figure S1 presents the normalized electric field intensity distribution of the grooved silver nanoplate assemblies (GSNAs) at *y*-*z* space. It can be clearly seen that the multiscale gaps formed by nanoplates efficiently expand the distribution scope of field enhancement.

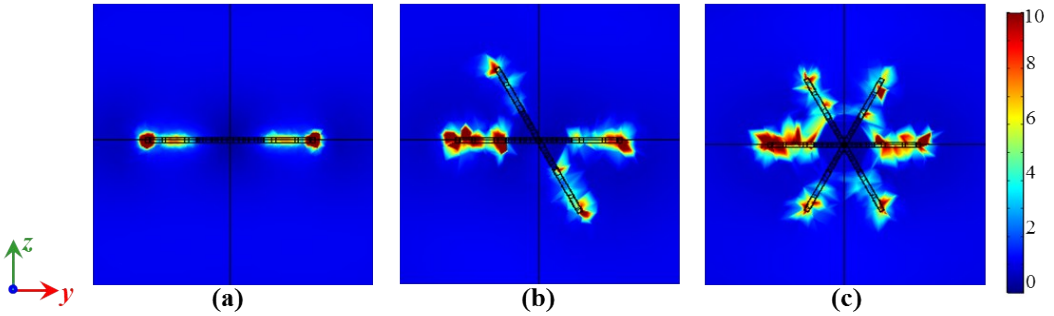
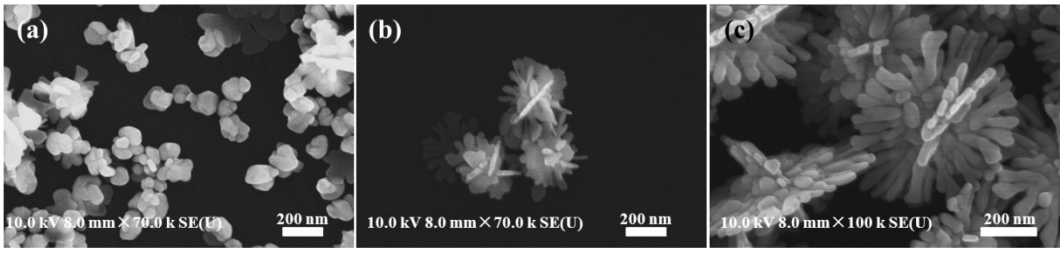



**Figure S1**. The normalized electric field intensity distribution of single grooved silver nanoplate (II), the assembly of two (III) and three (IV) grooved silver nanoplates present in Figure **1a**.

## B. SEM images of silver nanoparticles with different reaction time

For further illustrating the growth process of GSNAs, the SEM images of silver nanoparticles with different reaction time has been presented in Figure S2. Firstly, the reduced $Ag^{o}$ selectively agglomerate into nanoparticles along several orientations and form the assembly of nanoplates in 1 minute as shown in Fig. S2a. Then, the assembly further grows in the radial direction of nanoplates and the nanoplates are grooved with the assistance of CA simultaneously as shown in Fig. S2b. Lastly, the assembly of grooved silver nanoplate is gradually formed in 5 minutes as shown in Fig. S2c.




1 minute 3 minute 5 minute

**Figure S2**. The SEM images of silver nanoparticles with different reaction time.

**C. Adsorption performance of GSNA**

We mixed the GSNAs with Rhodamine 6G (R6G) solution in the concentration of $5\times10^{-6}$ M, then centrifuged the mixed solution and take out the supernatant fluid. Compared with original R6G solution ($5\times10^{-6}$M), the color of centrifuged solution apparently became shallow, intuitively presenting the great adsorption performance of the GSNA structures (Figure S3a). Moreover, the extinction spectra of R6G solution（$5\times10^{-6}$M）with and without GSNAs adsorption had been demonstrated in Figure S3b to further illustrate the perfect adsorptive property of GSNAs.

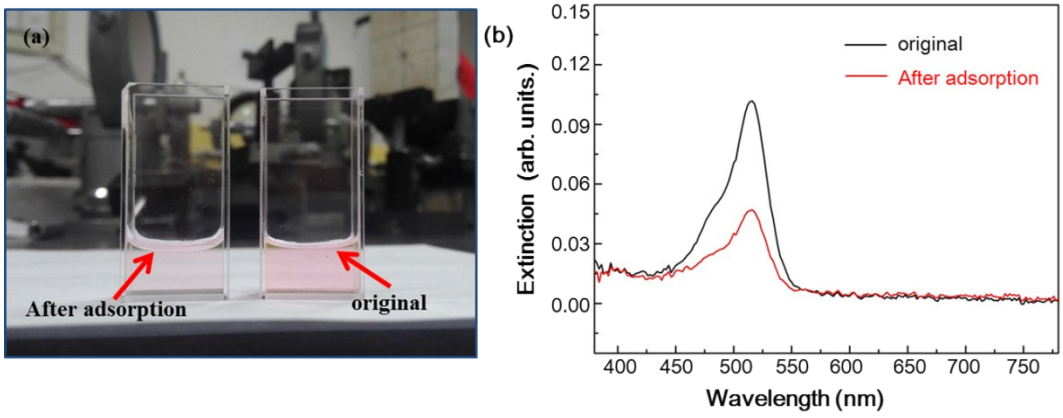



**Figure S3**. (**a**) The optical pictures and (**b**) the measured extinction spectra of R6G solution with (in red) and without (in black) GSNAs adsorption.

**D. Relative standard deviation at different Raman signals**

The Raman signal intensity at 612 $cm^{-1}$, 775 $cm^{-1}$, 1509 $cm^{-1}$ and 1651 $cm^{-1}$ are recorded and the corresponding RSD values are calculated based on the date of Figure 5c in the main text, demonstrating the good stability of the GSNAs based surface enhancing Raman scattering platform.

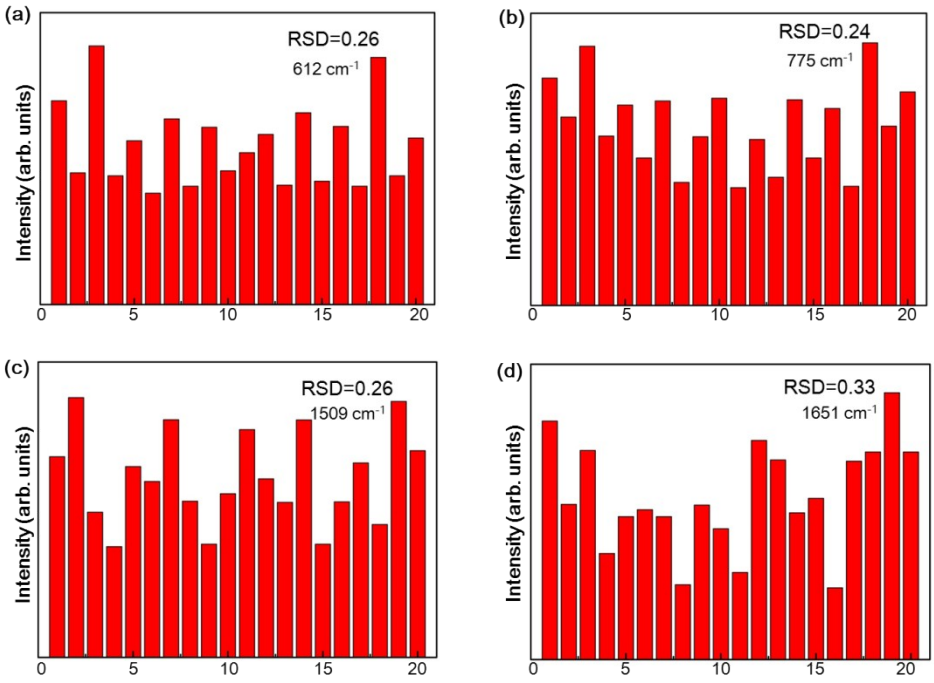



**Figure S4**. The RSD values of the Raman signal intensity at 612 $cm^{-1}$, 775 $cm^{-1}$, 1509 $cm^{-1}$ and 1651 $cm^{-1}$ is calculated based on the date of Figure **5c** in the main text.