Electronic Supplementary Material (ESI) for Nanoscale.
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Supporting Information

Three-Dimensional Hotspots in Evaporating Nanoparticle Sols for Ultrahigh Raman Scattering: Solid/Liquid Interface Effects

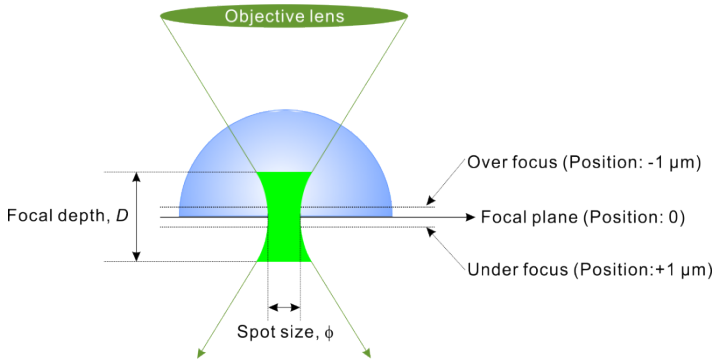

Fig. S1 Schematic section view of the focal spot.

The diameter (Φ) of the laser spot can be determined by the equation 1, assuming that the excitation volume as a cylinder:

$$\Phi = \frac{1.22\lambda_{laser}}{NA} \quad (1)$$

and the focal depth (D) can be determined by the equation 2:

$$D = \frac{K \cdot n}{M \cdot NA} \quad (2)$$

Where λ is the laser wavelength, NA is the numerical aperture (NA=0.5), the constant K is 240 μm, n is the refractive index of the medium surrounding the detected object, and M is the overall magnification. According to our experimental conditions, n=1.0 and M=50, thus the calculated focal depth is ca. 9.6 μm and the spot size is ca. 1.3 μm.

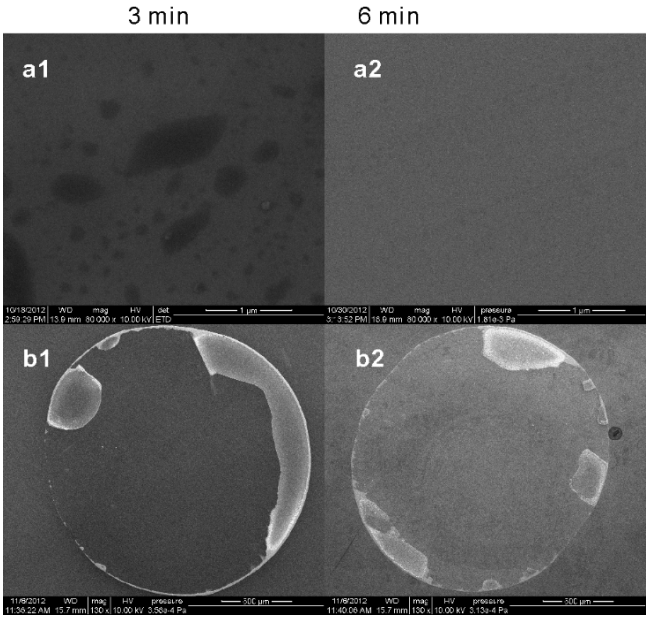

Fig. S2 SEM observations on the particle adsorption on (a) the fluorosilylated and (b) the hydroxylated surfaces at different times during the evaporation of a single droplet of Ag sols. Filter paper was used to remove the remaining droplet at every 3 mins. The results demonstrate that the hydrophobic treatment of the silicon wafer prevented the adsorption of AgNPs.