

# Supporting Information

## **Ultrasensitive and Selective Homogeneous Sandwich Immunoassay Detection by Surface Enhanced Raman Scattering (SERS)**

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## **SUPPORTING TABLE AND FIGURES**

**Supporting Table 1** AFM roughness values for gold surface after each step of the sandwich immunoassay.

**Supporting Table 2** Recovery values using gold-coated surface capture probe and magnetic gold nanorod capture probe for  $10^{-6}$  and  $10^{-10}$  mg/mL concentration of SEB in milk samples.

**Supporting Figure 1** TEM image of magnetic gold nanorod particles.

**Supporting Figure 2** SERS spectrum of SERS tag: After the coating the layer of SERS tag molecule DTNB.

**Supporting Figure 3** 2D and phase images of AFM topography of A) bare gold surface B) with SAM+ antibody C) with SAM, + antibody+SEB+ antibody + gold nanorods

**Supporting Figure 4** Symmetric  $\text{NO}_2$  stretching bands of DTNB at different concentration of SEB using with gold-coated surface capture probe a) blank b)  $7 \times 10^{-11}$  mg/mL c)  $2 \times 10^{-9}$  mg/mL d)  $8 \times 10^{-8}$  mg/mL e)  $3 \times 10^{-6}$  mg/mL f)  $9 \times 10^{-5}$  mg/mL g)  $3 \times 10^{-3}$  mg/mL and h)  $10^{-1}$  mg/mL.

**Supporting Figure 5** The calibration curve plotted with the changes of the peak intensities of DTNB vs. the different concentrations of SEB in milk matrix using A) magnetic gold nanorod capture probe and B) gold-coated surface capture probe.

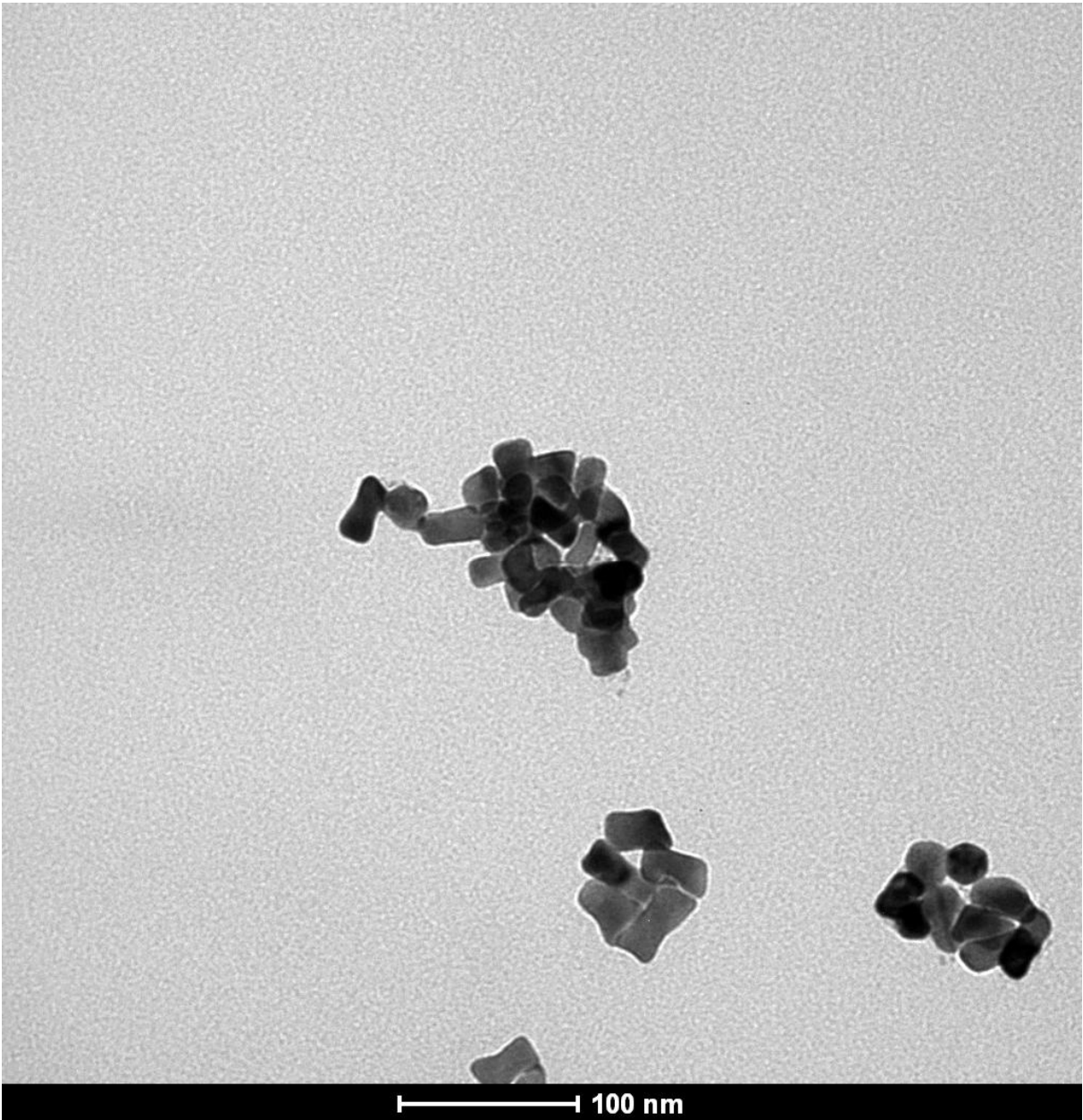
**SUPPORTING TABLE 1**

	<b>Gold surface</b>	<b>Antibody</b>	<b>Gold Nanorod</b>
<b>R<sub>a</sub> (nm)</b>	0.94	1.07	2.53
<b>R<sub>q</sub>(nm)</b>	1.20	1.56	3.55

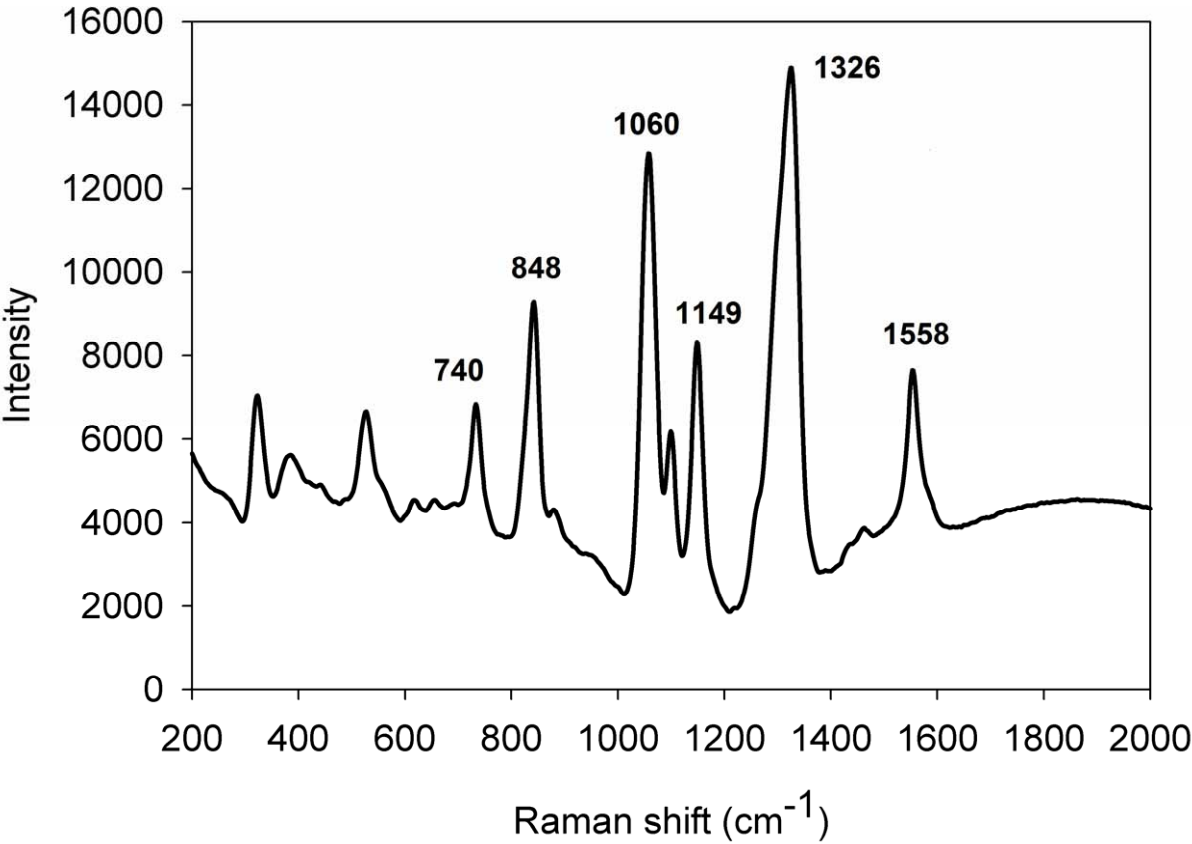
**SUPPORTING TABLE 2**

Magnetic gold nanorod capture probe		Gold-coated surface capture probe	
<b>Added (mg/mL)</b>	<b>Found (mg/mL)</b>	<b>Added (mg/mL)</b>	<b>Found (mg/mL)</b>
$1 \times 10^{-6}$	$1.18 \times 10^{-6}$	$1 \times 10^{-6}$	$0.74 \times 10^{-6}$
$1 \times 10^{-10}$	$0.9 \times 10^{-10}$	$1 \times 10^{-10}$	$0.22 \times 10^{-10}$

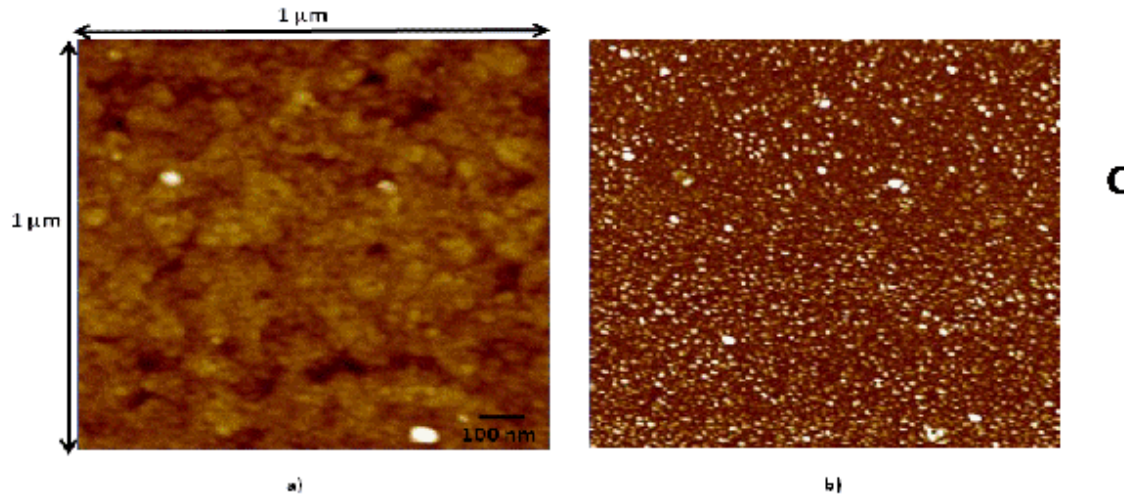
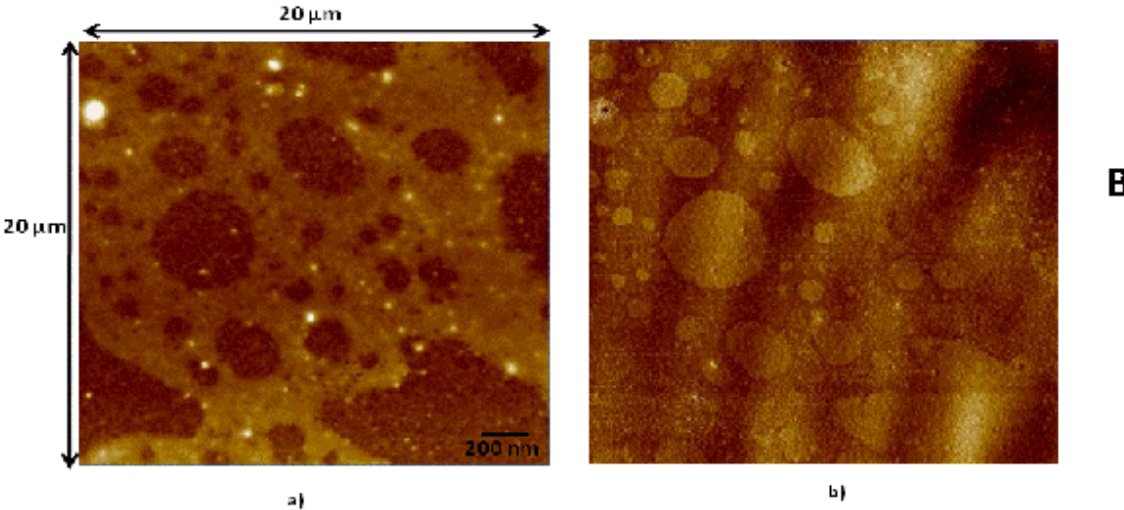
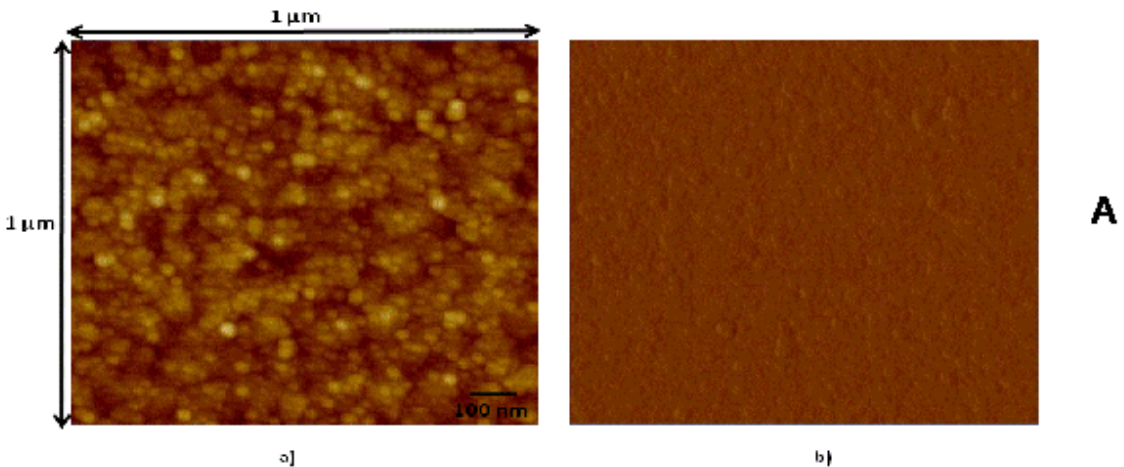
SUPPORTING FIGURE 1



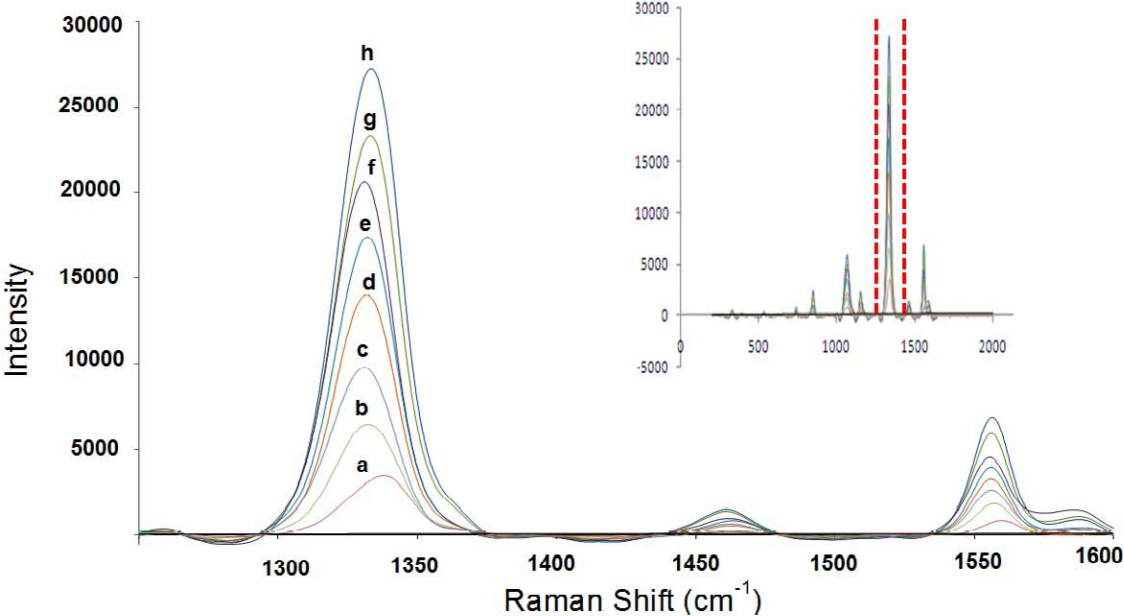
**SUPPORTING FIGURE 2**



SUPPORTING FIGURE 3



**SUPPORTING FIGURE 4**



SUPPORTING FIGURE 5

