Supporting Information

for

Silver Nanoparticles Deposited Graphene Oxide for Ultrasensitive Surface-Enhanced Raman Scattering Immunoassay of Cancer Biomarker

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S1 The mechanism of the glucose oxidase assisted silver dissolution of the new Surface-Enhanced Raman Scattering immunoassay.

Control experiments indicated that AgNPs on the GO can be dissolved by H_2O_2, which displayed a significant GO SERS signal change as shown in Figure S1. No appreciable SERS signal change was obtained in the absence of GOx, glucose or H_2O_2. This indicated that AgNPs dissolved was attributed to the enzyme-mediated generation of H_2O_2.
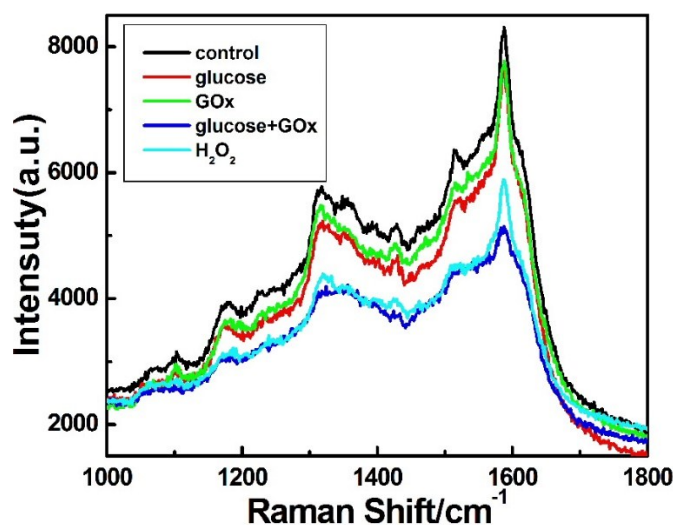

Figure S1. SERS signals change of the control experiments of the glucose oxidase assisted silver dissolution of the new Surface-Enhanced Raman Scattering immunoassay.

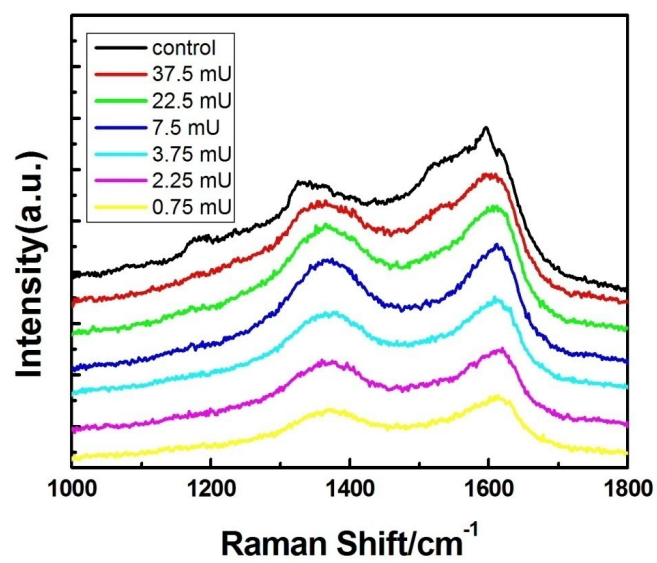S2 Dissolution of AgNPs on the GO with different concentration of GOx.

Figure S2. Raman spectra of GO in the absence and presence of different concentration of GOx.

S3 The influence parameters for the glucose oxidase assisted silver dissolution of the new Surface-Enhanced Raman Scattering immunoassay.
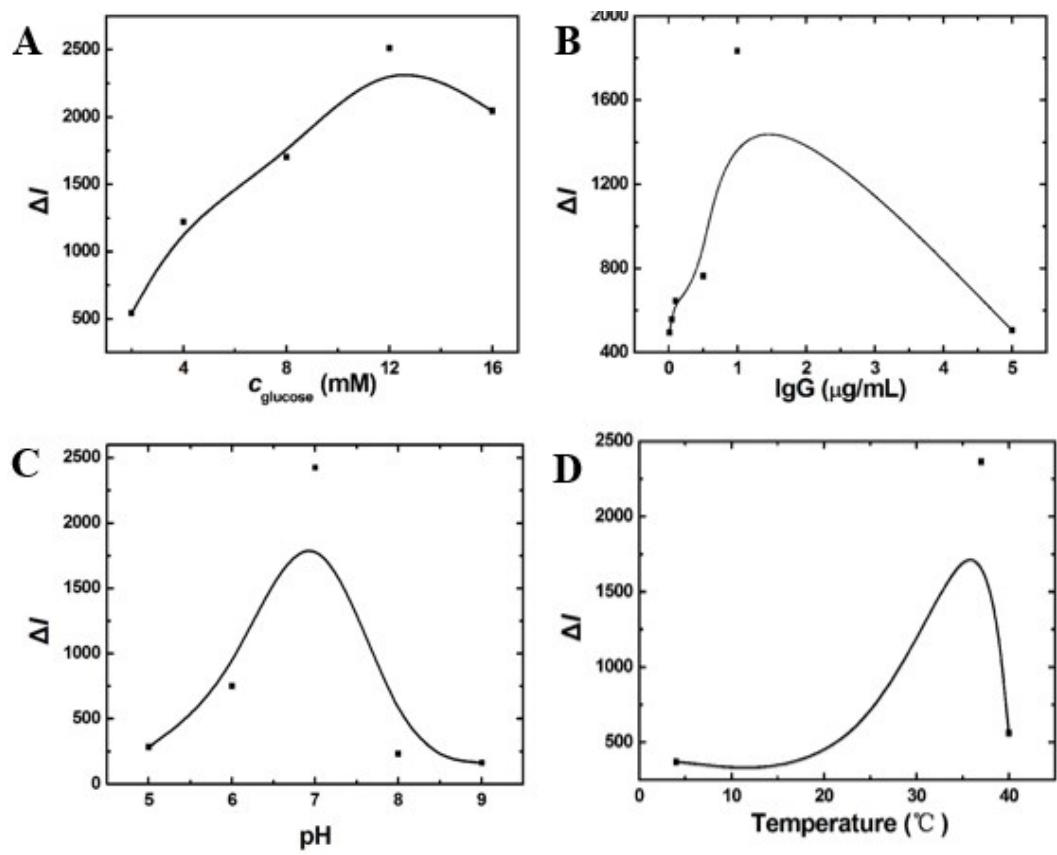

Figure S3. The effects of (A) glucose concentration, (B) IgG concentration, (C) pH, (D) reaction temperature.

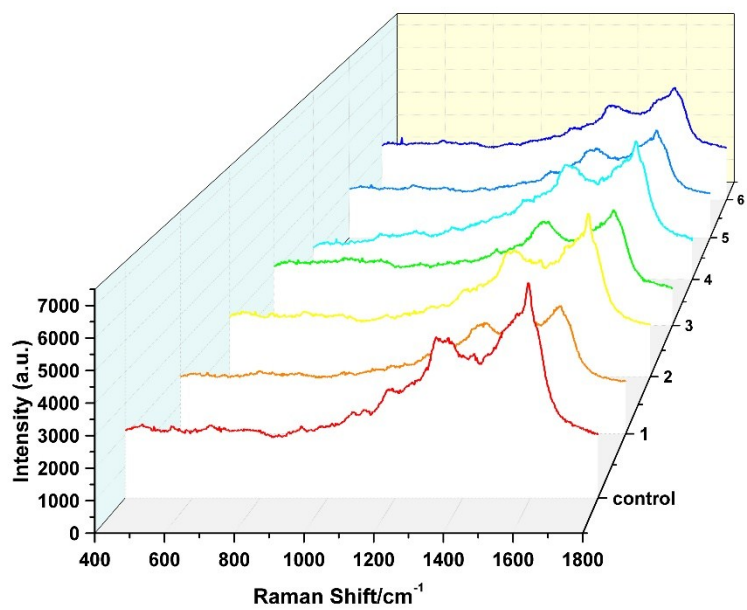S4 The original SERS spectra of the serum samples.

Figure S4. The original SERS spectra of the serum samples.

Comparison with other immunoassay proposed in literatures.

Table S1. Comparison of the Developed Immunoassay with Others in the Detection of PSA

Immunoassay method	Detection range (ng/mL)	Detection limit (ng/mL)	Reference
SERS assay	0.05-200	0.05	1
Colorimetric assay	0.05-20	0.03	2
Colorimetric assay	0-10	4	3
Fluoroimmunoassay	0-128	0.33	4
light scattering assay	0.05-10	0.02	5
light scattering assay	1-20	1	6
Electrochemiluminescence	1.4-70	3.5	7
Electrochemical assay	0.14-1400	0.14	8
Electrochemical assay	0.01-10	0.006	9
SERS immunoassay	5×10^{-4} -0.5	2.3×10^{-4}	this work

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