Electronic Supplementary Material (ESI) for Analyst.

Sensitive SERS Assay for Glyphosate Based on Removal of L-cysteine Inhibition of Au-Pt Nanozyme

Jun Ma,[a] Gege Feng,[a] Ying Ying,[a] Yong Shao,[a] Yongxin She,[*a] Lufei Zheng,[*a] A. M. Abd EI-Aty[bc] and Jing Wang[*a]

[a] Institute of Quality Standard and Testing Technology for Agro-Products, Chinese Academy of Agricultural Sciences, Beijing 100081, P.R China

[b] Department of Pharmacology, Faculty of Veterinary Medicine, Cairo University, 12211-Giza, Egypt

[c] Department of Medical Pharmacology, Medical Faculty, Ataturk University, 25240-Erzurum, Turkey

LC-MS/MS conditions

LC-MS/MS analysis was carried out using a Nexera LC system with an LCMS-8050 triple quadrupole-mass spectrometer (Shimadzu, Kyoto, Japan).

Agilent ZORBAX RX-SIL column (150 × 2.1 mm, 5 μm);

The injection volume: 1.0 μL;

The mobile phase: A: 0.5% formic acid solution (90%); B: acetonitrile (10%);

The flow rate: 0.3 mL min^{-1}

ESI interface voltage: 3.0 kV;

Interface temperature: 300 °C;

Desolation line temperature: 200 °C;

Heat block temperature: 400 °C;

Collision gas: 270 kPa.

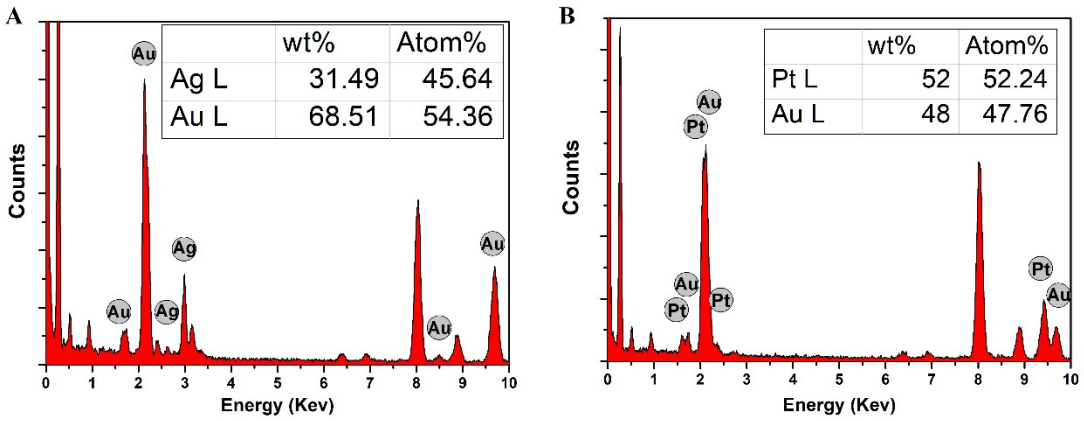

Figure S1. EDX profile of Au-Ag nanochain (A) and Au-Pt nanozyme (B).

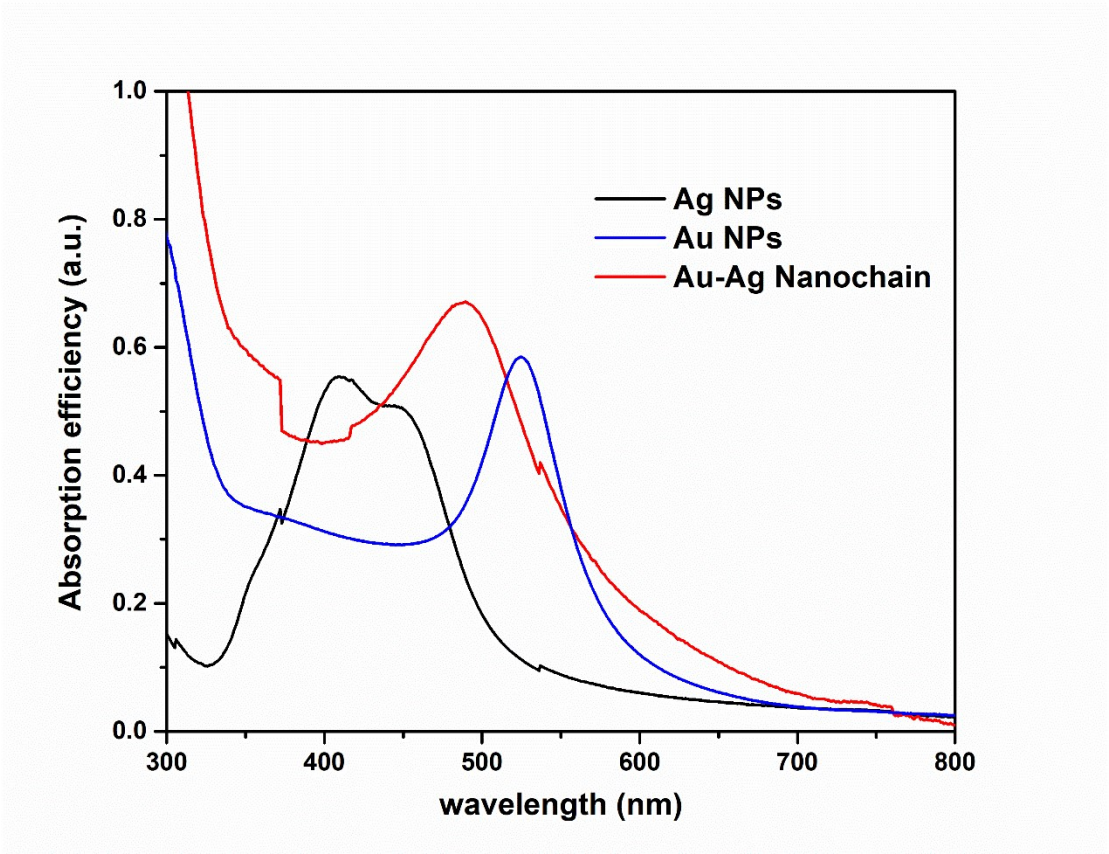

Figure S2. UV-vis spectra of Ag NPs, Au NPs, and Au-Ag nanochain

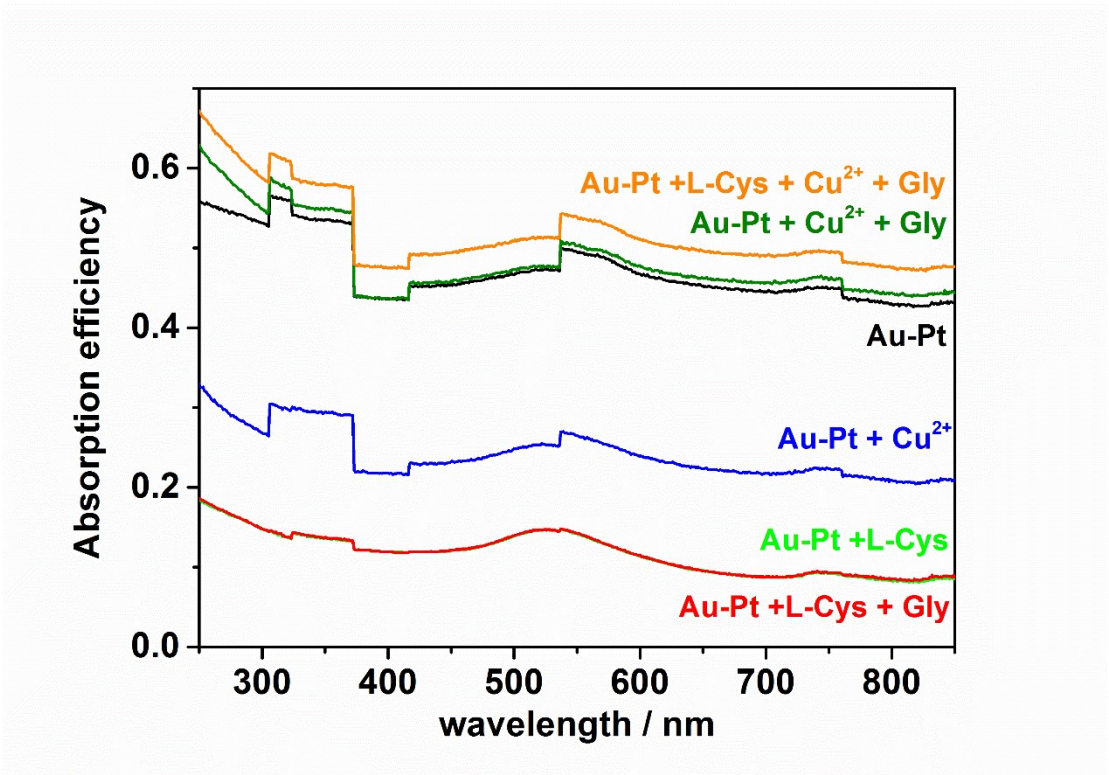

Figure S3. UV-vis spectra of a combination of different components.

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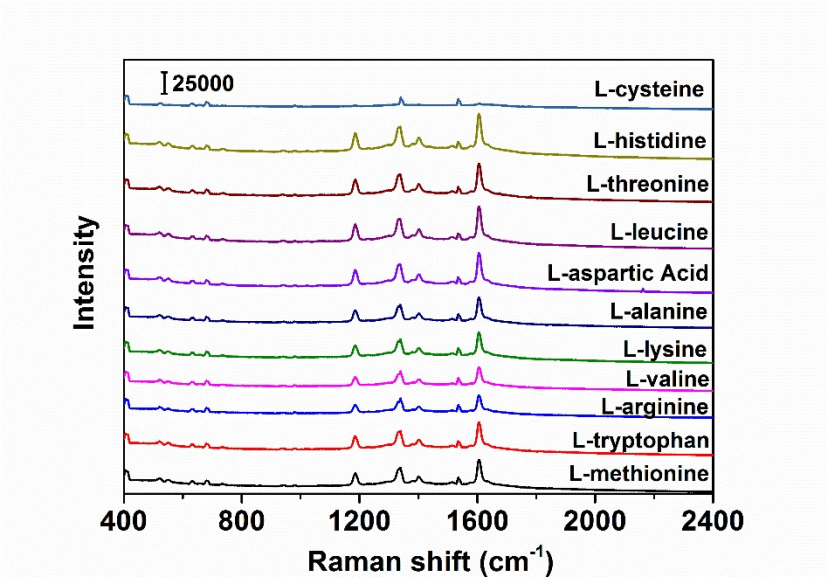

Figure S4. Selectivity of the proposed method for Gly against other amino acids

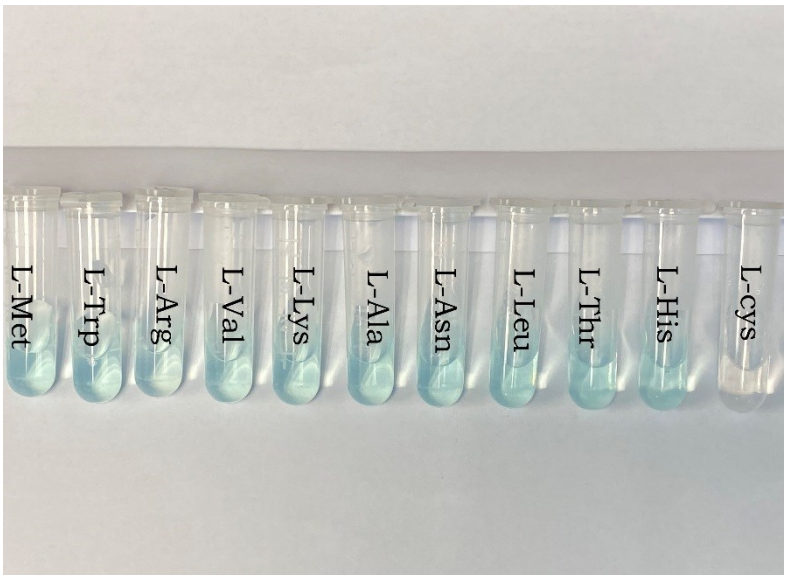

Figure S5. Corresponding photographs of the color change for Figure S4.

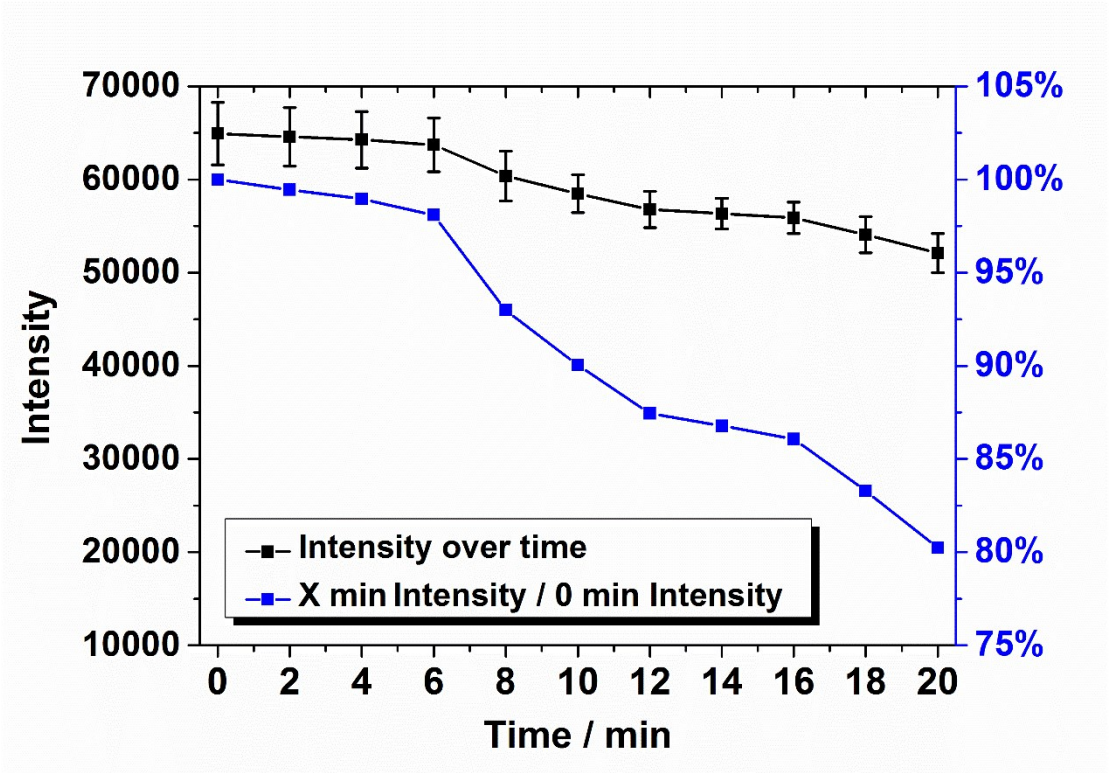

Figure S6. Time response experiment of SERS measurement.

Table S1 Main SERS Band Assignments of oxTMB

Tentative assignments of SERS bands for oxTMB complex with 785 nm laser excitation.	
Raman Shift (cm^{-1})	**Band assignment**
1191	**CH_3 bending mode**
1336	**Inter-ring C–C stretching mode**
1605	**Ring stretching and C–H bending modes**

Table S2. Comparative analysis among SERS detection methods of Gly

SERS substrate	Linear range ($mg \cdot L^{-1}$)	LOD ($mg \cdot L^{-1}$)	Application	Reference
Ag Nanoparticles	0.0168 - 16.8	0.0023	Natural water	[25]
Cysteamine-modified gold nanoparticles	0.001 - 1000	0.001	Plant leaves	[23]
Silver dendrites on Cu-grid bar	0.845 - 169	0.845	————	[22]
^{10Os}CO-Au NPs	0.0001 - 0.1	0.0001	Beer	[24]
Citrate-stabilized silver nanoparticles	————	1.3	Water	[27]
Au-Ag nanochain	0.01 -1000	0.005	Tap water	This work

Table S3. *m/z* ratio and the ion collision energy of glyphosate

No.	Compound	Parent ion (*m/z*)	Product ion (*m/z*)	CE (V)
1	**Glyphosate**	**167.8**	**63.00**	**33.0**
			81.00	**20.3**
			124.00	**17.0**
			150.00	**12.5**