

Fabrication of paper-based SERS substrate using a simple vacuum filtration system for pesticides detection

Supplementary Material

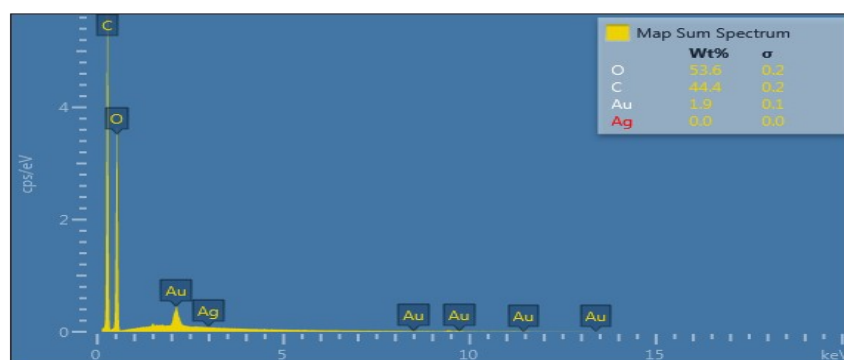


Fig. S1 EDX mapping analysis of the plasmonic paper prepared by 0.01 mg/mL PDADMAC/AuNS coated filter paper

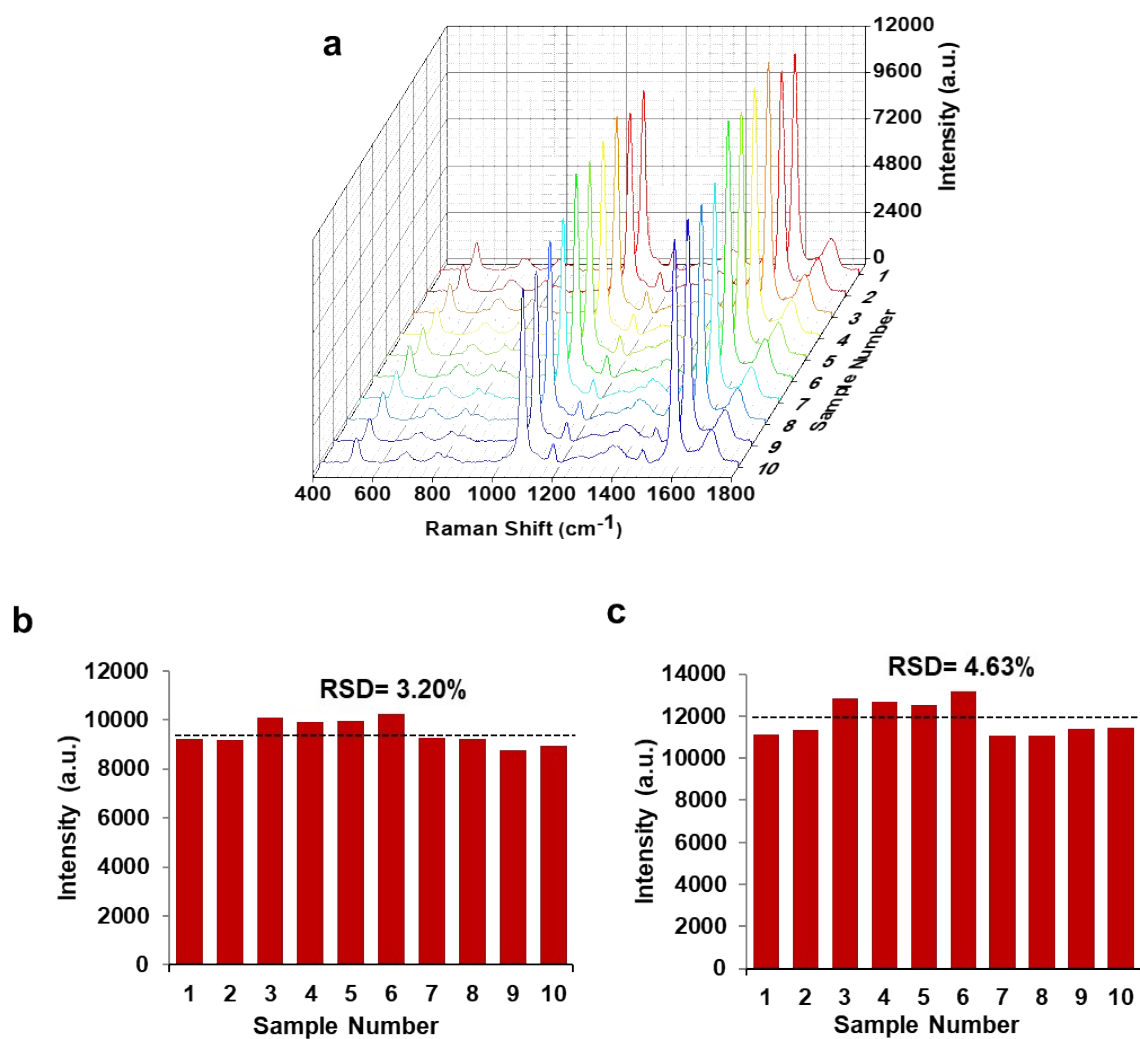


Fig. S2 (a) SERS spectra of 1 mM 4-MBA collected from 10 different 0.01 mg/mL PDADMAC/AuNS papers. The SERS intensities of 4-MBA and the RSDs of specific Raman peaks at (b) 1080 cm^{-1} and (c) 1588 cm^{-1} .

Table S1 Characteristic Raman shifts of diquat, paraquat, thiram, and parathion with their corresponded vibrational modes

Pesticide	Raman shift (cm ⁻¹)	Vibrational mode
Diquat	1079	Ring C-H bending and stretching
	1328	Symmetric ring stretching
	1579	Symmetric ring stretching
Paraquat	1191	C=N bending
	1293	C-C deformation
	1540	C=N stretching
	1648	C=N stretching
Thiram	1379	CH ₃ deformation and CN stretching
Parathion	1115	C–N stretching
	1343	C–H bending
	1585	Phenyl stretching

Table S2 Comparison among several methods for the determination of pesticides

Pesticides	Technique	System	LOD (ppm)	Ref
Paraquat	Liquid-chromatography	UHPLC-ESIMS/MS	0.0015	1
Paraquat	Electrochemistry	PPY-NGE/GCE	0.0105	2
Paraquat	Fluorescence	CuNCs	0.0126	3
Paraquat	Colorimetric	CN-DTC-AgNPs	1.8	4
Paraquat	SERS	AuNS- PDADMAC-paper	0.13	This work
Thiram	Liquid-chromatography	SPE/HPLC-UV	0.088	5
Thiram	Electrochemistry	Au microdisk electrode	0.103	6
Thiram	Chemiluminescence	ceric sulfate/quinine	0.005	7
Thiram	Colorimetric	Amine-AgNPs	0.0085	8
Thiram	SERS	AuNS- PDADMAC-paper	0.09	This work

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