Supplementary Information

Localized Plasmonic Reconstruction via Xenon Photoactivation for High-Sensitivity SERS Substrates

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Table S1. Comparison of current work status to prior study.

Substrate	Analyte	EF	Pre-irradiation time (second)	Pre-irradiation light source	References
AuNPs/TiO_2	Rhodamine 6G	~3	14400	UV light 254 nm	[1]
AuNPs blended TiO_2	Mercaptobenzoic acid	~13.2	10800	UV light 254 nm	[2]
AgNPs/LN/SiO_2/Si	4-Aminothiophenol	~7	9000	UV light 254 nm	[3]
AgNPs@TiO_2	Adenosine triphosphate	~3	1800	UV light 365 nm	[4]
AgNPs-TiO_2	Thiram	~27.8	1440	Mercury lamp	[5]
TiO_2-Ag nanopore arrays	Crystal violet	~8	1260	Mercury lamp	[6]
AuNPs/ZnO	Methylene blue	~5.5	600	UV light 365 nm	[7]
AgNPs/AZO/AgNPs	Rhodamine 6G	~103	600	UV light 365 nm	[8]
AgNPs/TiO_2	Rhodamine 6G	~50	480	UV light 365 nm	[9]
AgNPs/AZO/AgNPs	Rhodamine 6G	~8	6	XENON X-1100	This Work

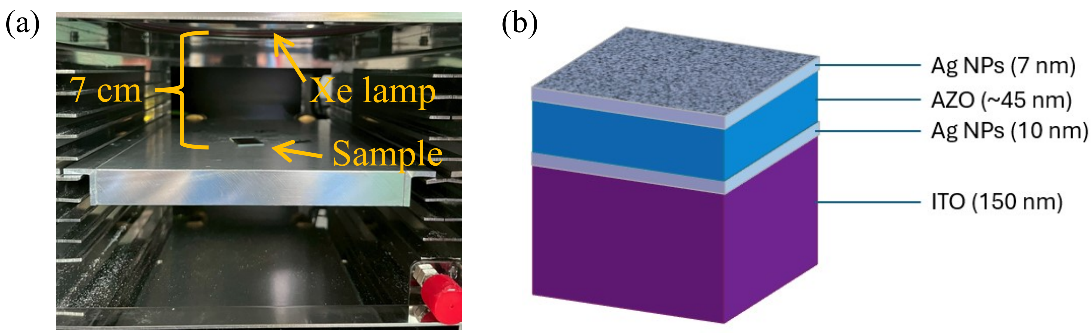

Fig. S1. (a) Xenon X-1100 sample compartment and (b) SERS substrate structure.

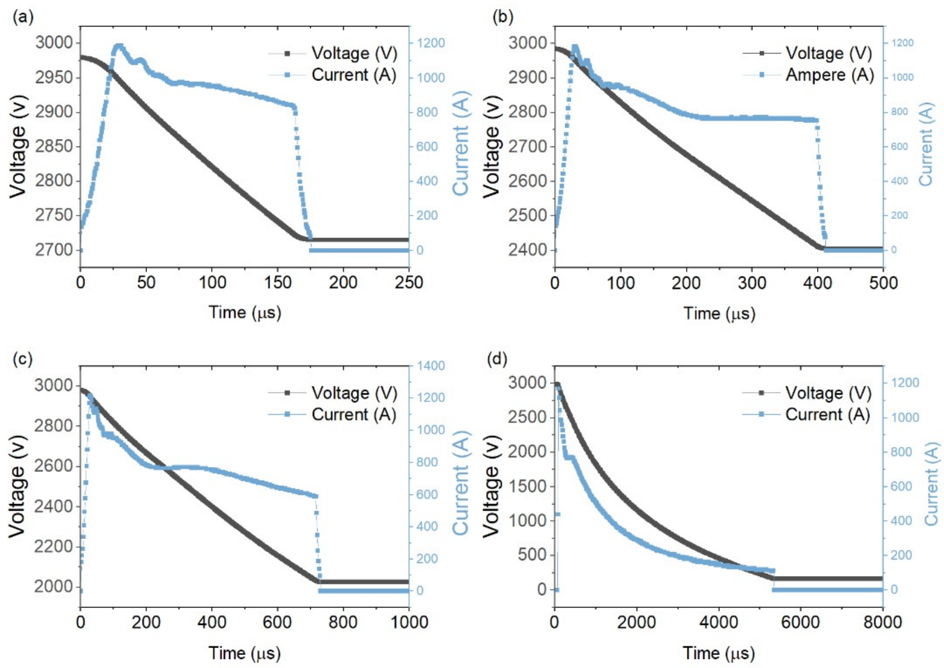

Fig. S2. Pulsed electrical discharge profile. (a) 500 J, (b) 1000 J, (c) 1500 J, and (d) 2500 J.

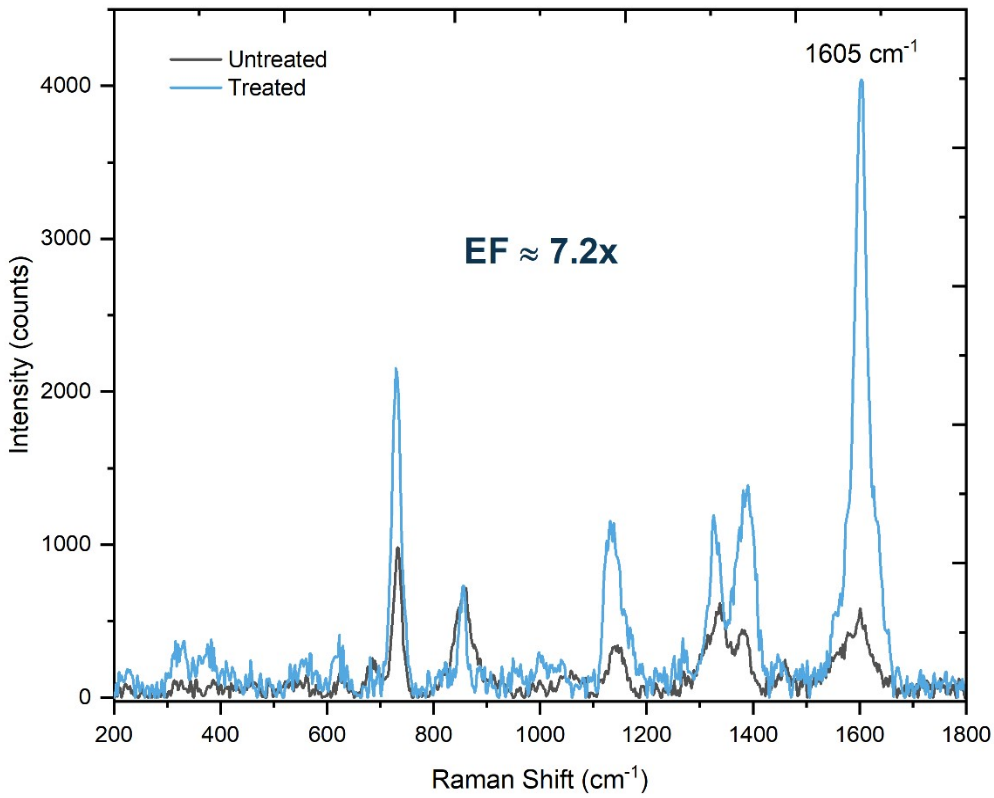

Fig. S3. Enhancement factor (EF) of adenine evaluated at the characteristic Raman peak at 1605 cm^{-1}.

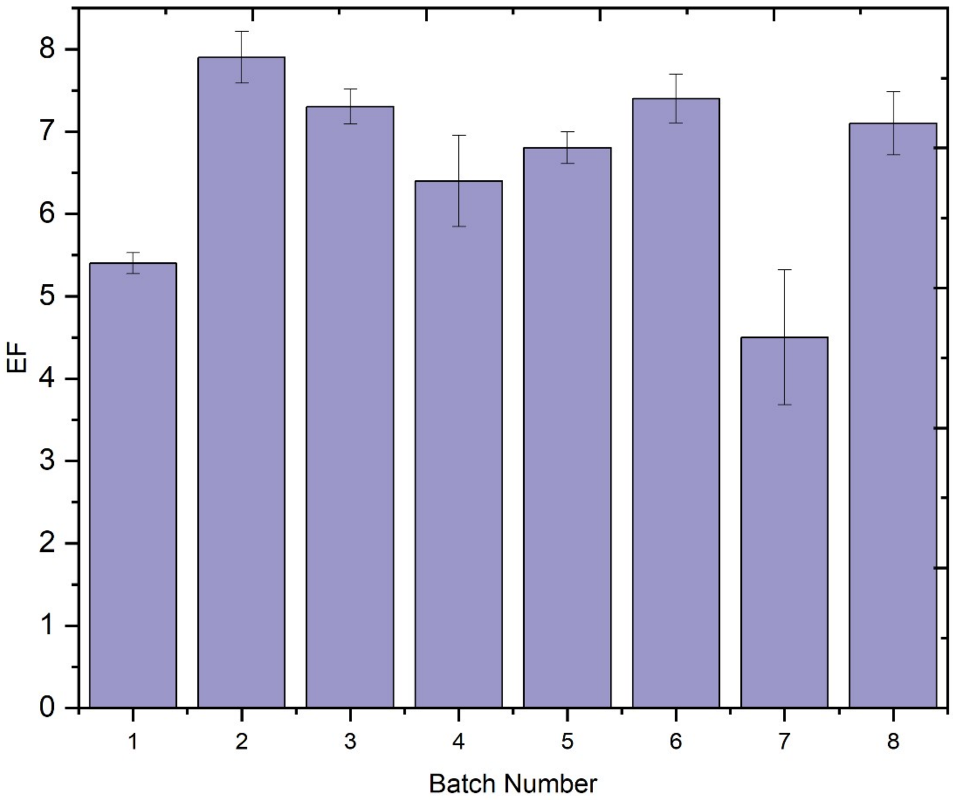

Fig. S4. Batch-to-batch reproducibility of the SERS performance of the AZO-2Ag substrates evaluated across 8 independent fabrication batches.

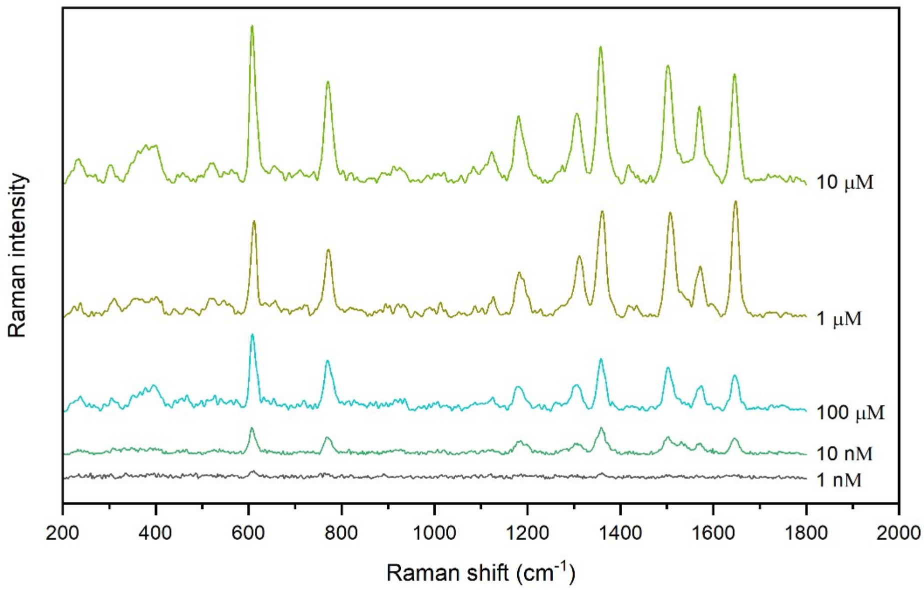

Fig. S5. Limit of detection (LOD) of the untreated sample.

Supplementary References

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