

Supplementary Material

Carboxyl-Modified Two-Dimensional MXene-Au as SERS

Substrate for Detecting Melamine

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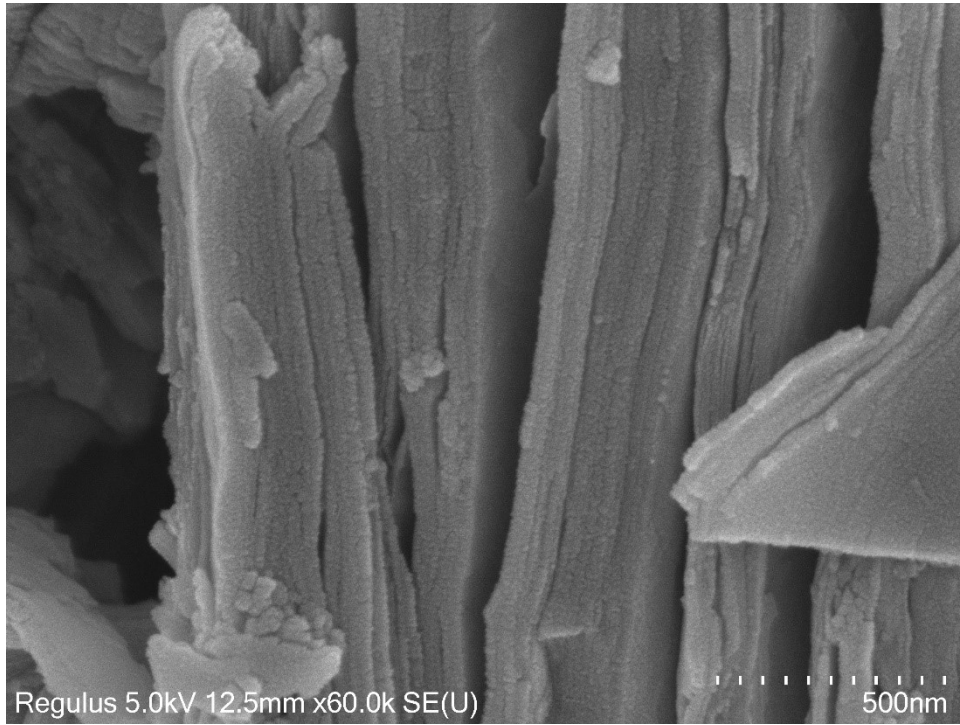


Fig. S1. SEM image of Ti₂N

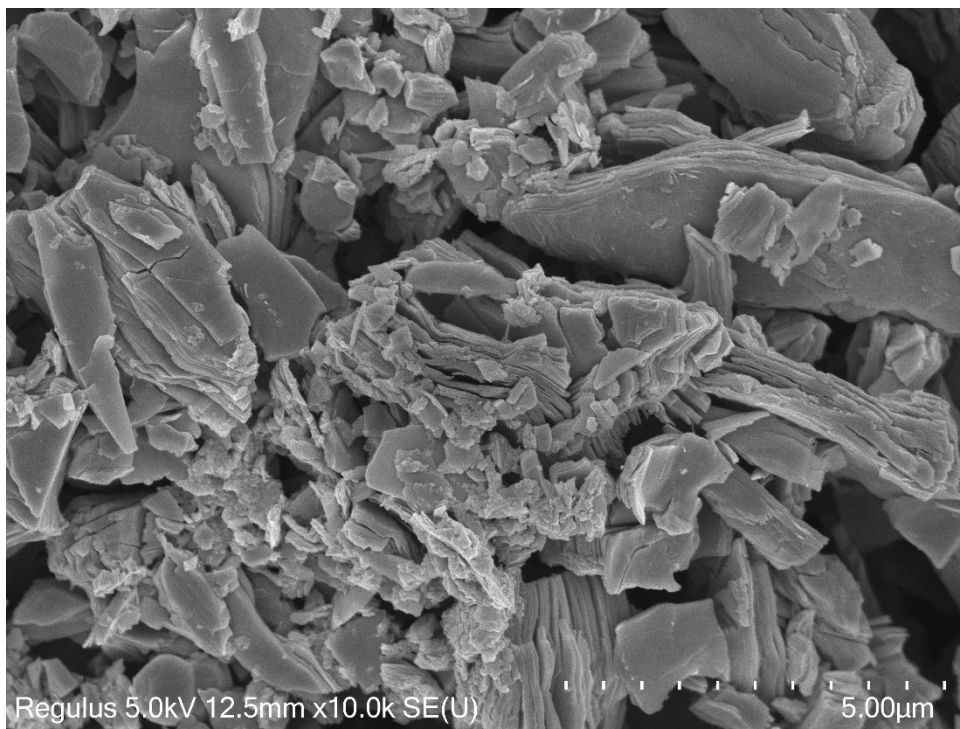


Fig. S2. SEM image of Ti₂N

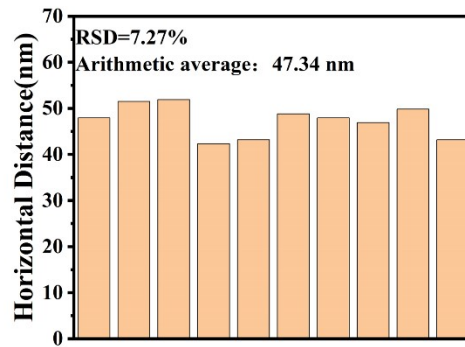
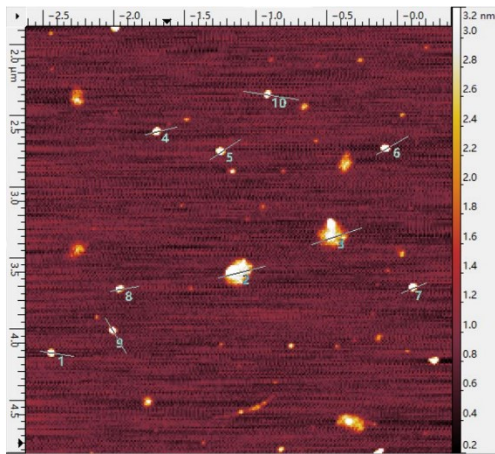


Fig. S3. AFM of Au-Ti₂N-COOH

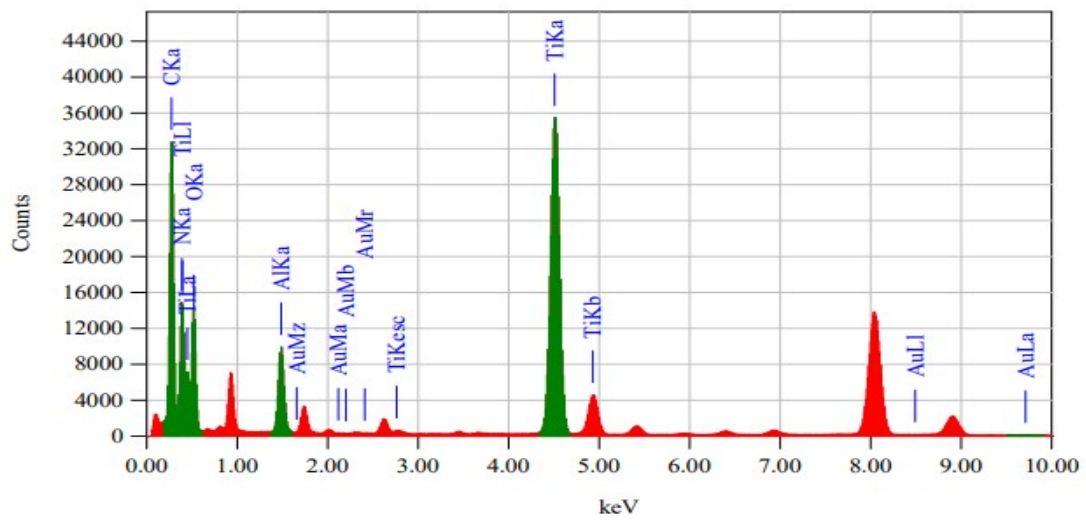


Fig. S4. Elemental content of Ti,Au,N,C,O and Al.

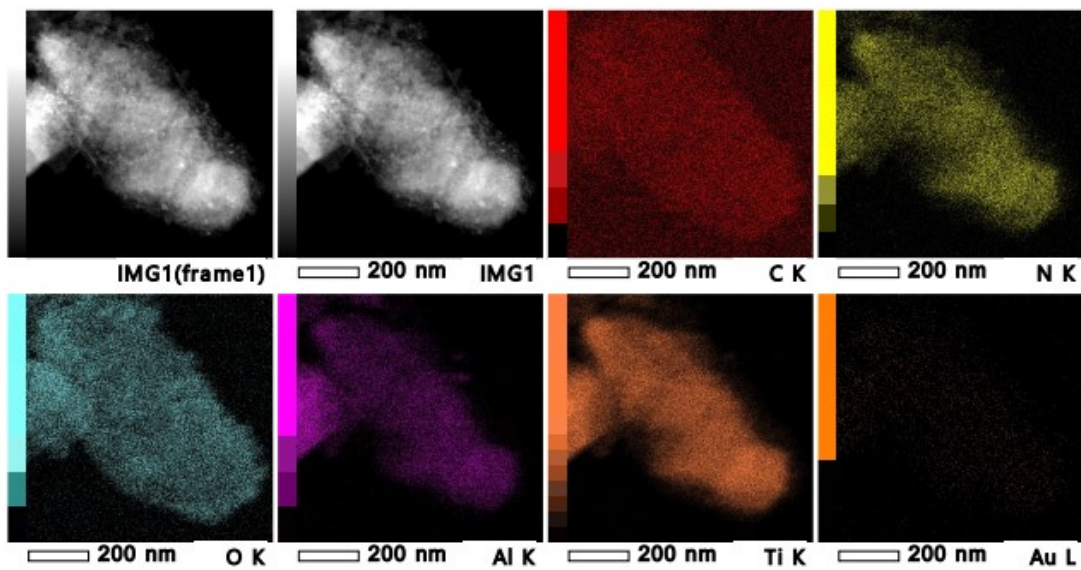


Fig. S5. Elemental mapping image of C,N,O, Ti, Au and their overlay distribution

Thin Film Standardless Standardless Quantitative Analysis
Fitting Coefficient : 0.2774

Element	(keV)	Mass%	Counts	Sigma	Atom%	Compound	Mass%	Cation	K
C K	0.277	43.09	151941.03	0.11	64.73				3.1215
N K	0.392	6.93	41566.59	0.05	8.93				1.8358
O K	0.525	8.13	67625.50	0.05	9.17				1.3230
Al K	1.486	4.83	68869.06	0.04	3.23				0.7715
Ti K (Ref.)	4.508	37.00	407173.63	0.12	13.94				1.0000
Au L*	9.712	0.02	63.77	0.01	0.00				3.7301
Total		100.00			100.00				

Table. S1. The proportion of Ti,Au,Al,O,C and N elements.

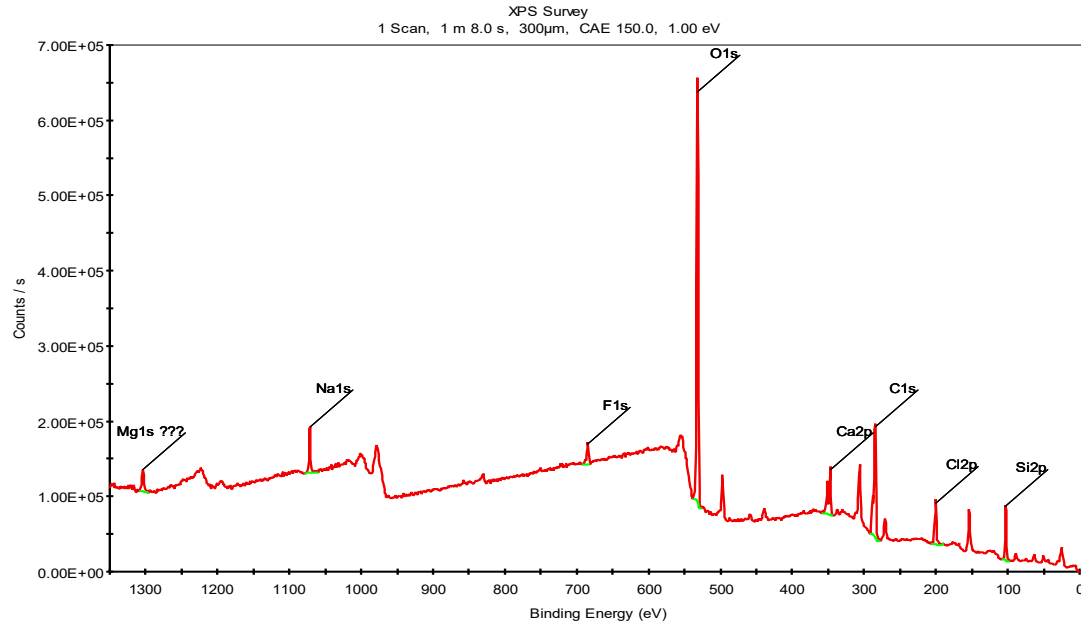


Fig. S6. XPS survey spectrum of Au-Ti₂N-COOH.

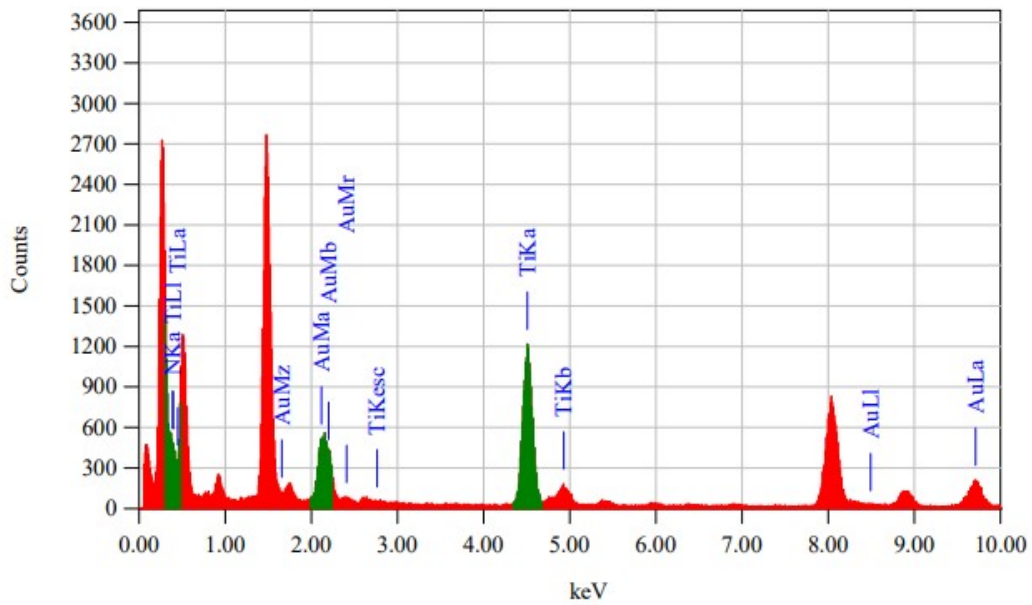


Fig. S7. Elemental content of Ti,Au,N.

XRF

Thin Film Standardless Standardless Quantitative Analysis
Fitting Coefficient : 0.6884

Element	(keV)	Mass%	Counts	Sigma	Atom%	Compound	Mass%	Cation	K
N	K	0.392	5.17	692.20	0.30				1.8358
Ti	K (Ref.)	4.508	49.27	12105.64	0.96				1.0000
Au	M	2.120	45.55	4065.96	1.39				2.7525
Total			100.00						100.00

Table. S2. The proportion of Ti,Au and N elements.

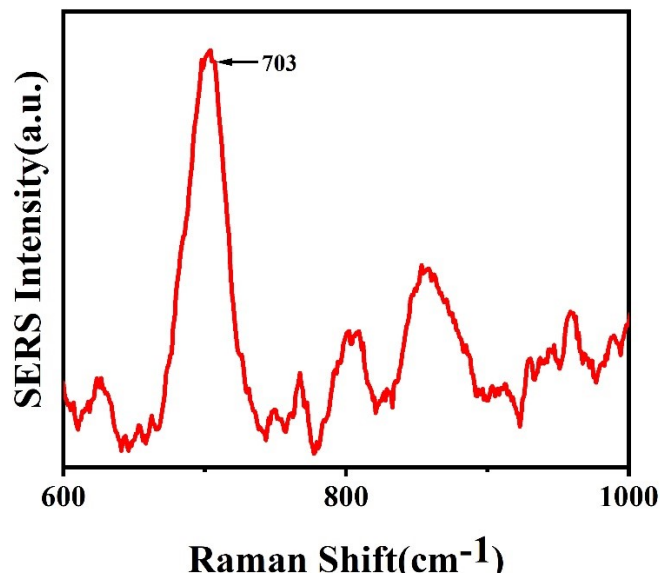


Fig. S8. SERS signal plots for Melamine

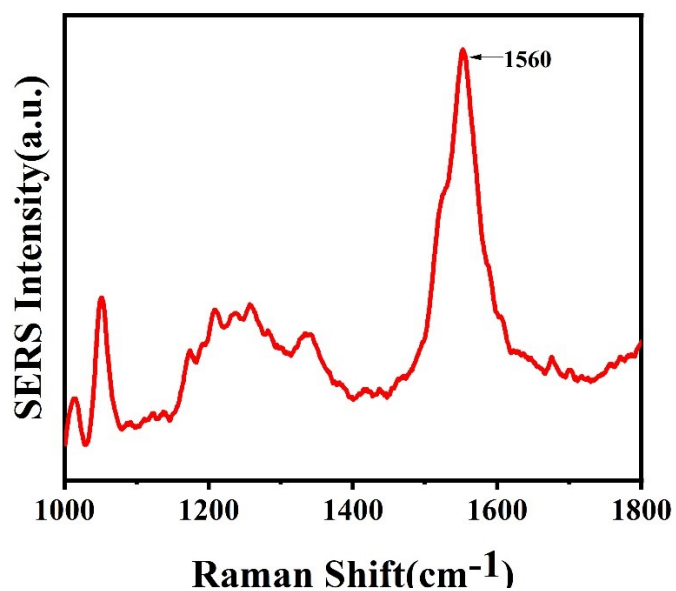


Fig. S9. SERS signal plots for 4-MBA

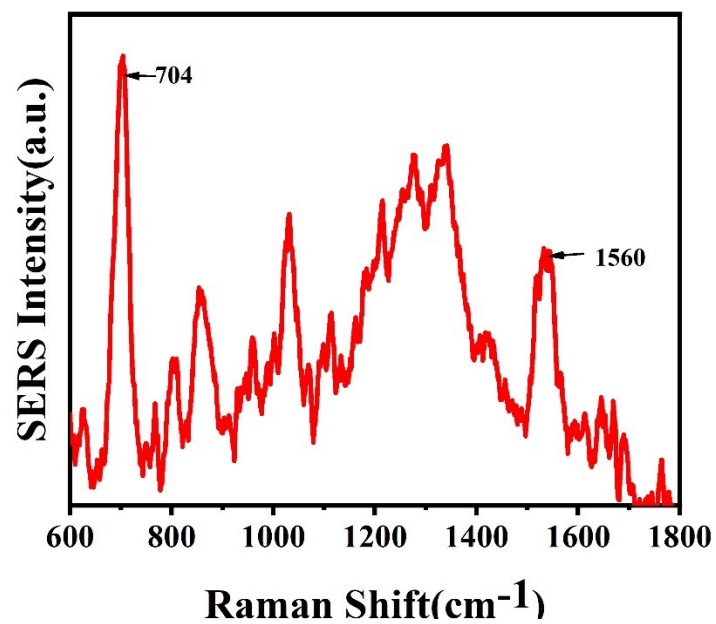


Fig. S10. SERS signal plots for Melamine and 4-MBA

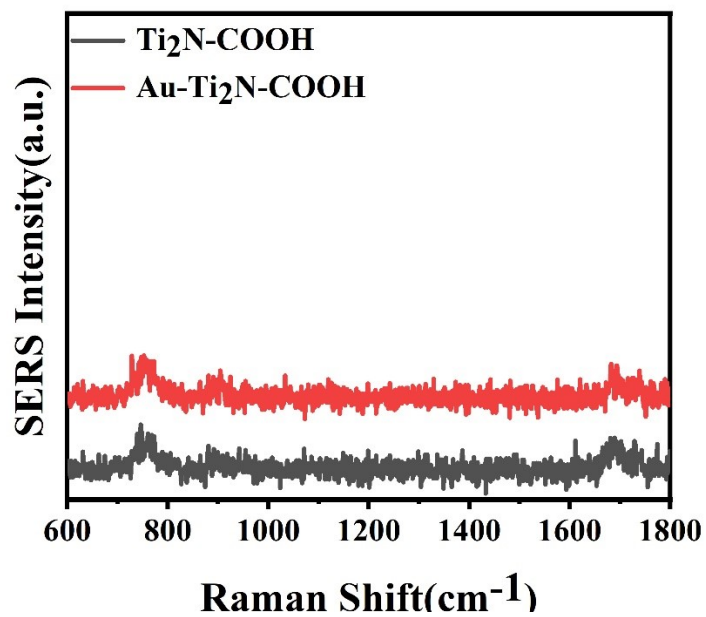


Fig. S11. SERS signal plots for Ti₂N-COOH and Au-Ti₂N-COOH

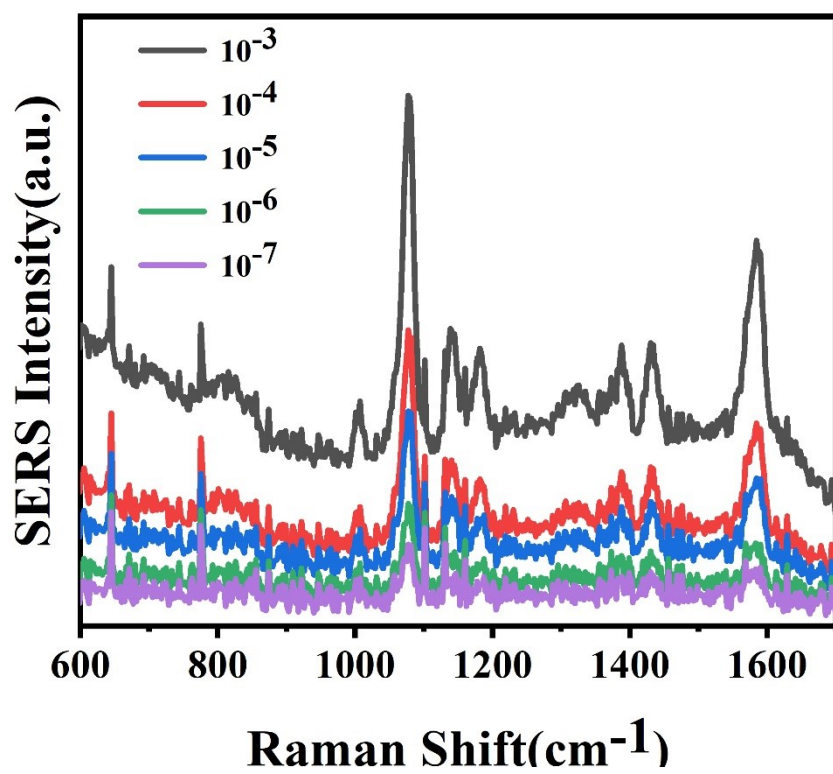


Fig. S12. Ti₂N-COOH material detection 4-MBA SERS signal diagram.