Supporting Information

Surface Modified Laser-Induced Graphene based Flexible Biosensor for Multiplexed Sweat Analysis

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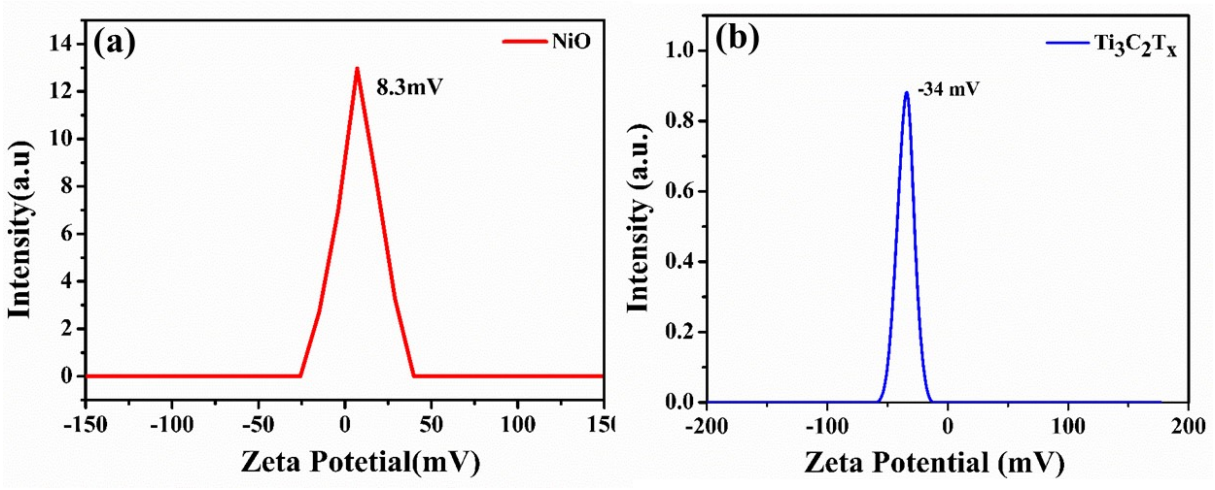
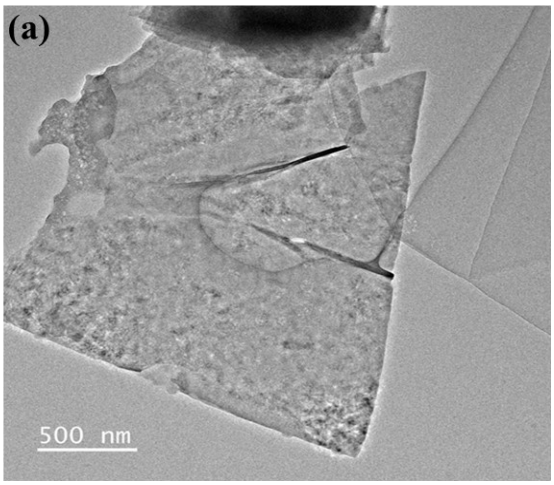
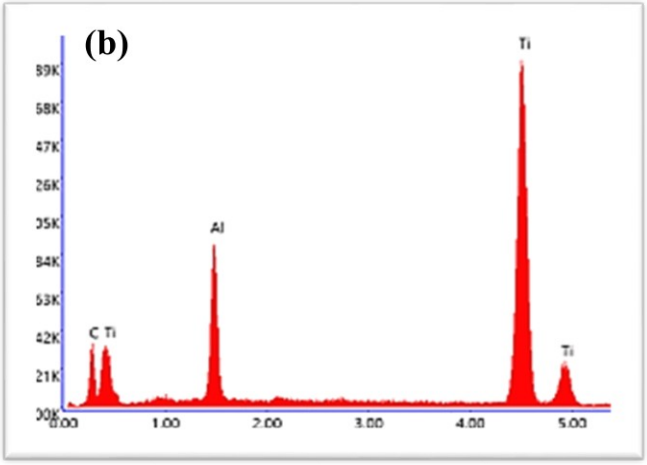


Figure S1. The zeta potential graph of (a) NiO nanoparticles (b) $Ti_3C_2T_x$ MXene nanosheets.





(c)

Element	Weight (%)	Atomic (%)
C	2.97	10.22
Al	8.96	13.74
Ti	88.07	76.04

Figure S2. (a) TEM image of $Ti_3C_2T_x$ MXene nanosheets (b) EDS elemental spectra of Ti_3AlC_2 (c) Table showing the atomic and weight percentage of the elements of Ti_3AlC_2

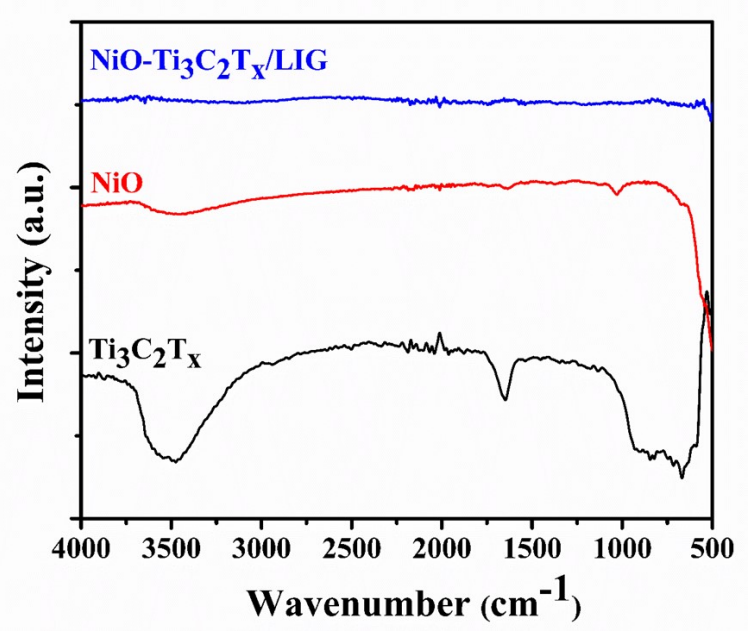


Figure S3. FTIR analysis of NiO, $Ti_3C_2T_x$ MXene and NiO-$Ti_3C_2T_x$/LIG composite electrode

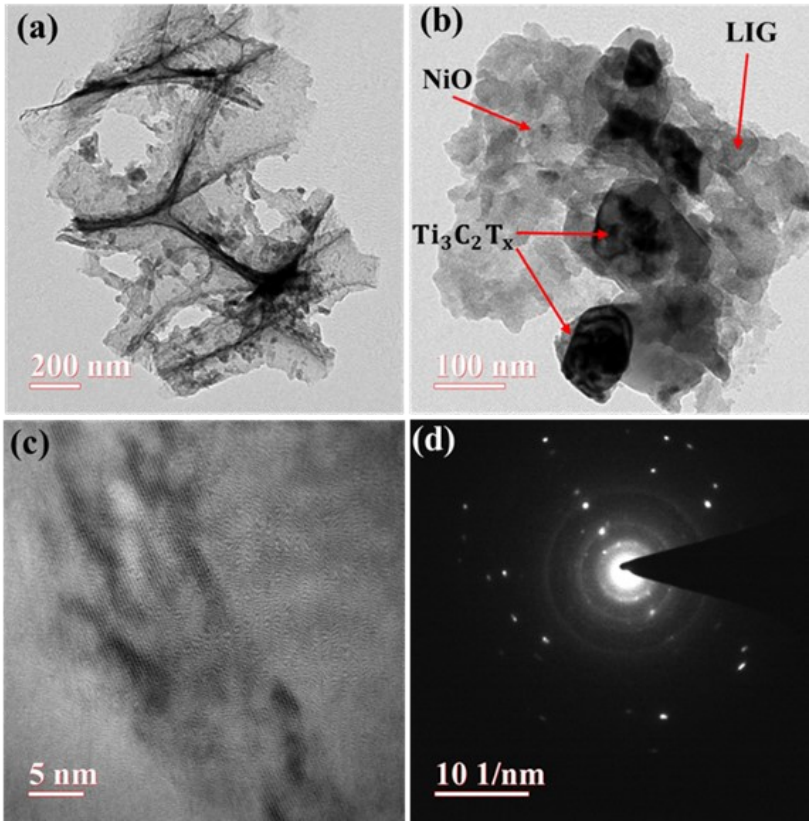


Figure S4. (a,b) TEM image of NiO-$Ti_3C_2T_x$/LIG sample (c) high-resolution TEM image of NiO-$Ti_3C_2T_x$/LIG (d) SAED pattern of the NiO-$Ti_3C_2T_x$/LIG sample.

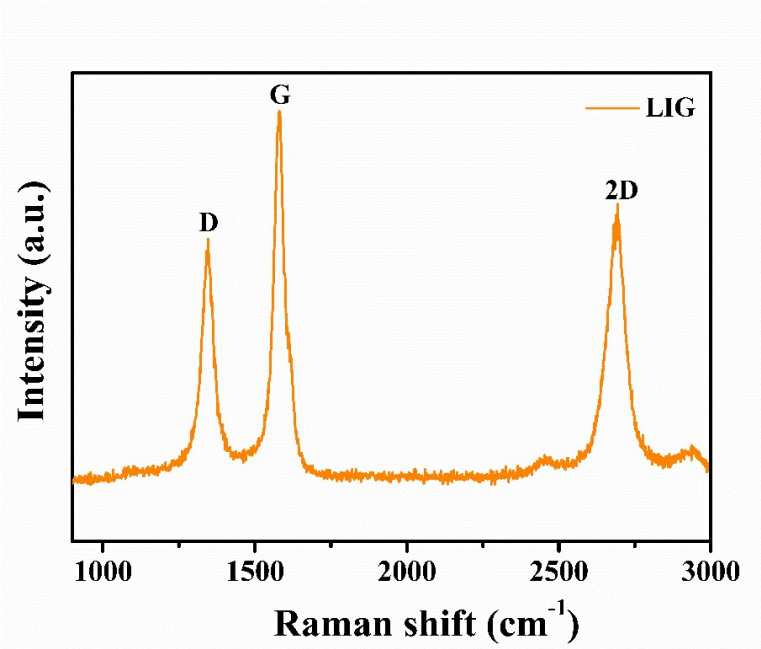


Figure S5. Raman spectra of bare LIG electrode.

Optimization of experimental parameters:

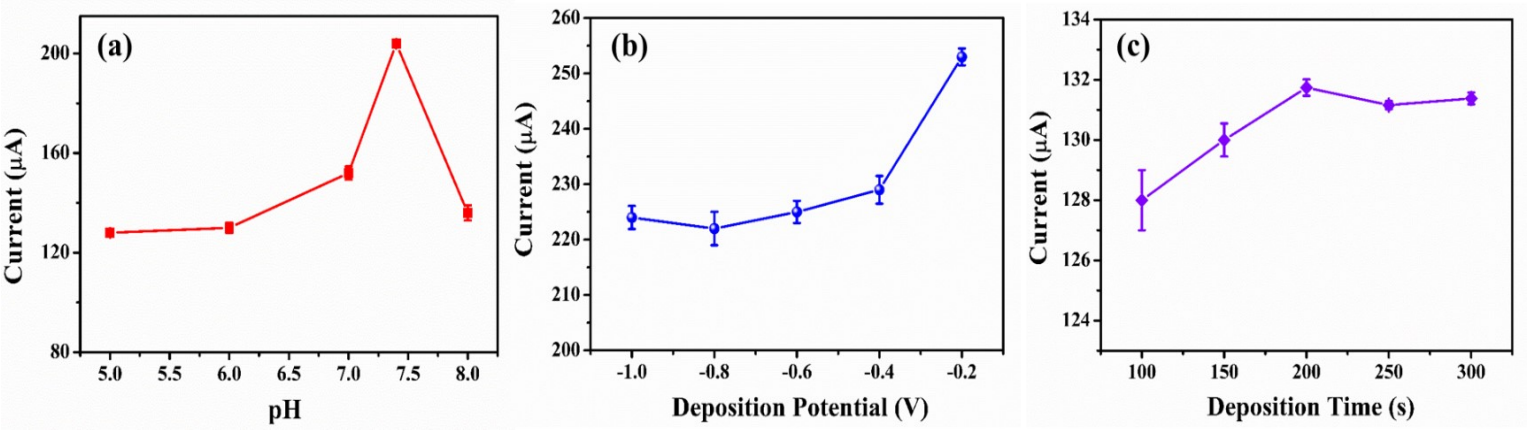


Figure S6. Experimental parameters optimization (a) pH of the electrolyte (b) deposition potential (c) deposition time of NiO-$Ti_3C_2T_x$ modified LIG electrode. DPV data were obtained with solution containing 2 mM AA, 1 mM DA and 1 mM UA at 0.1 M potassium phosphate buffer solution. (DPV parameters used: step potential = 4 mV; modulation amplitude = 25 mV; modulation time = 0.20 s, and interval time = 0.5 s, frequency = 25 Hz).

Table S1. The calculated values of EIS parameters through fitting of experimental impedance spectra based upon the proposed equivalent circuit in Figure S6.

Sample	R_s (Ω)	R_{ct} (Ω)
LIG	93.2	5.4
$Ti_3C_2T_x$-LIG	91	3.8
NiO-$Ti_3C_2T_x$/LIG	71	2.5

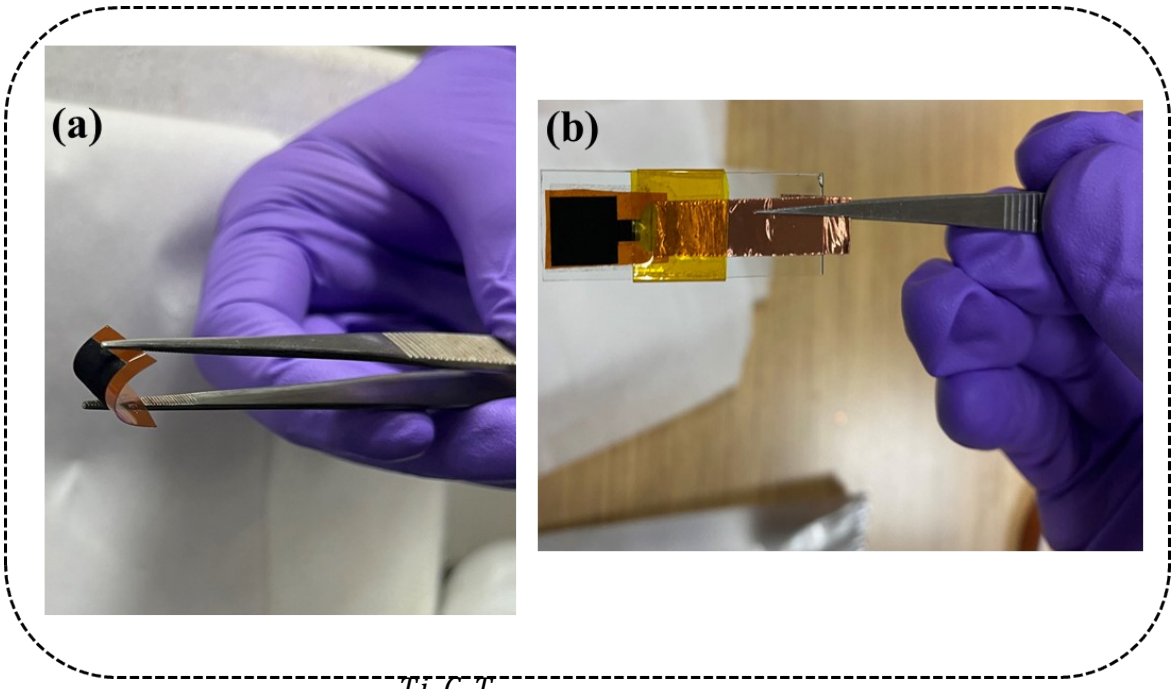


Figure S7. (a) The image of NiO-$Ti_3C_2T_x$/LIG electrode showing flexibility (b) the fabricated biosensor for detection of AA, DA and UA.