

Electronic Supplementary Material (ESI) for Analyst.  
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Supporting Information

## Screen printing and laser-induced graphene composite flexible sensor for sensitive detection of uric acid in sweat

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Keywords: Laser-induced graphene; Screen-printed electrode; Sweat sensor; Uric acid

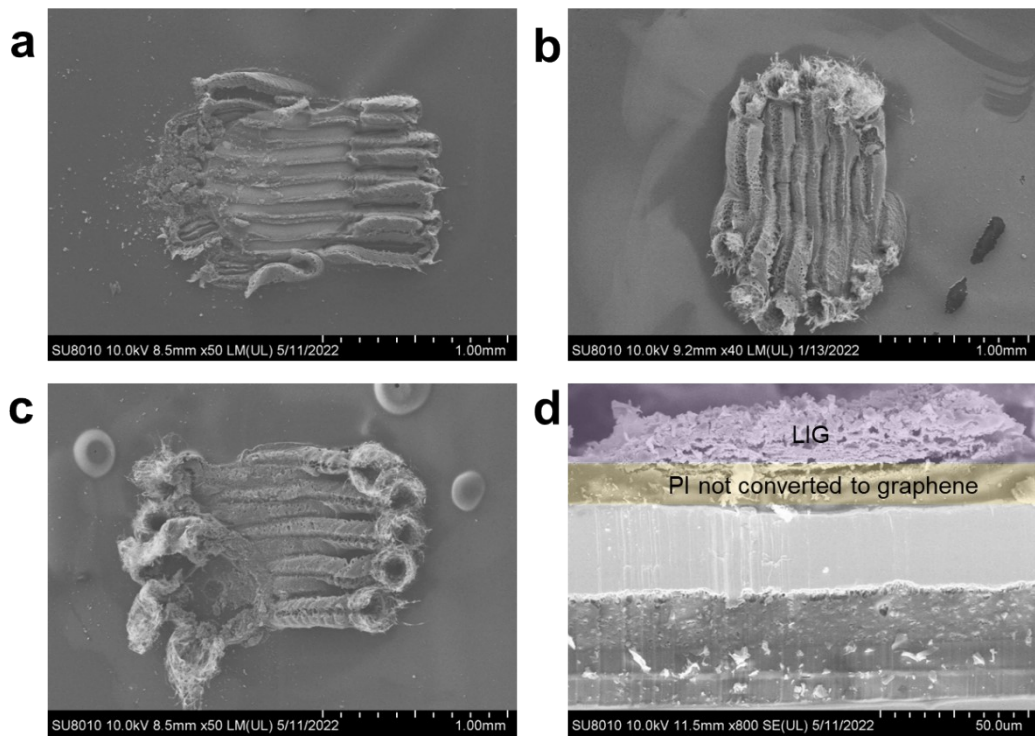


Fig. S1 SEM images of LIG electrode prepared by precursor solution with different PAA and NMP ratios. (a) SEM image of the LIG electrode prepared by precursor solution with PAA and NMP ratios of 1:2. (b) SEM image of the LIG electrode prepared by precursor solution with PAA and NMP ratios of 2:1. (c) SEM image of the LIG electrode prepared by precursor solution with undiluted PAA precursor. (d) The cross section SEM image of the LIG electrode prepared by precursor solution with undiluted PAA precursor.

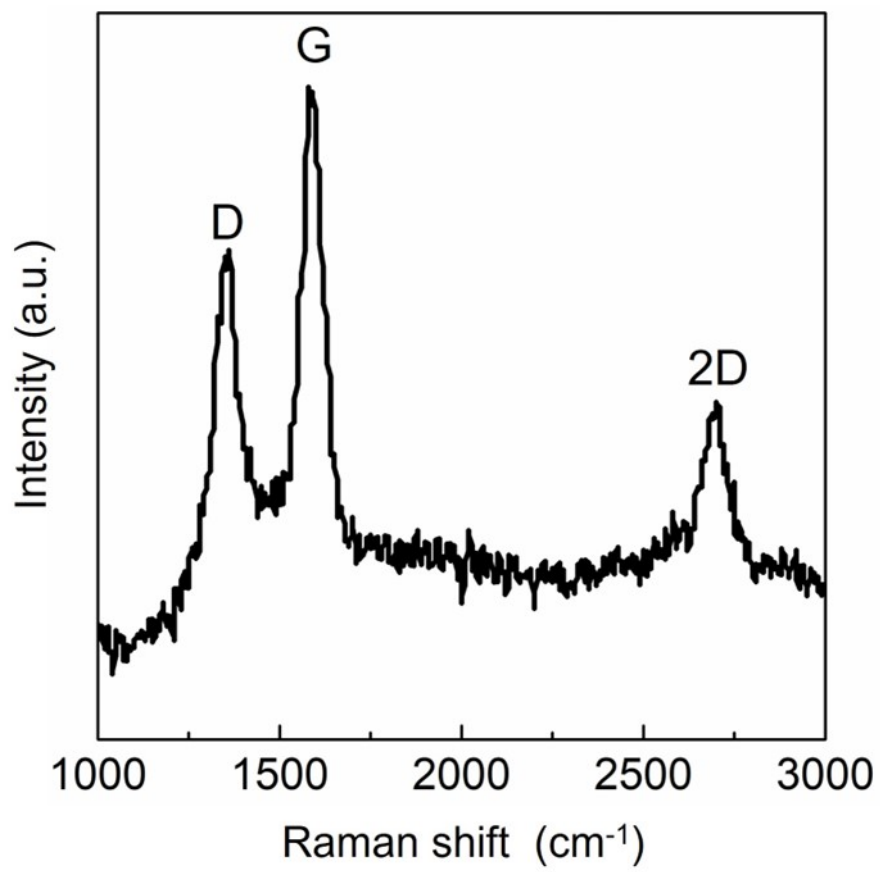


Fig. S2 Raman spectra of the LIG part.

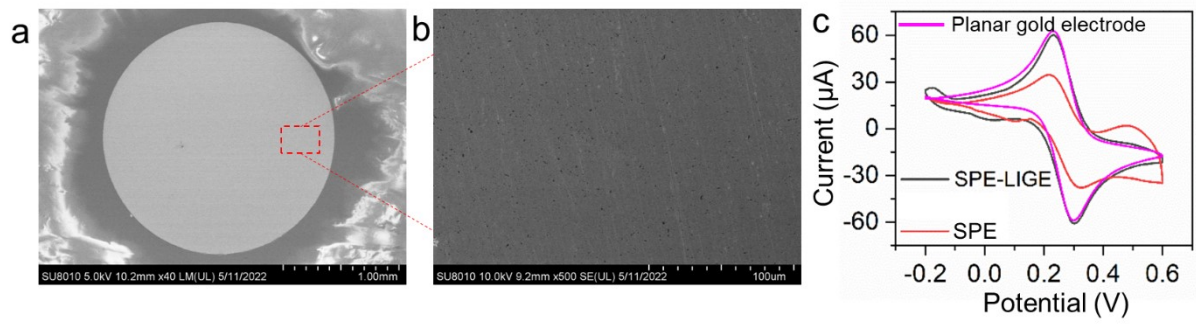


Fig. S3 (a) and (b) SEM image of commercial pure gold electrode surface. (c) Cyclic voltammograms scans of an SPE@LIG electrode, a SPE electrode and a commercial planar gold electrode (AuE) in a solution containing 10 mM  $K_3[Fe(CN)_6]$  and 1 M KCl.

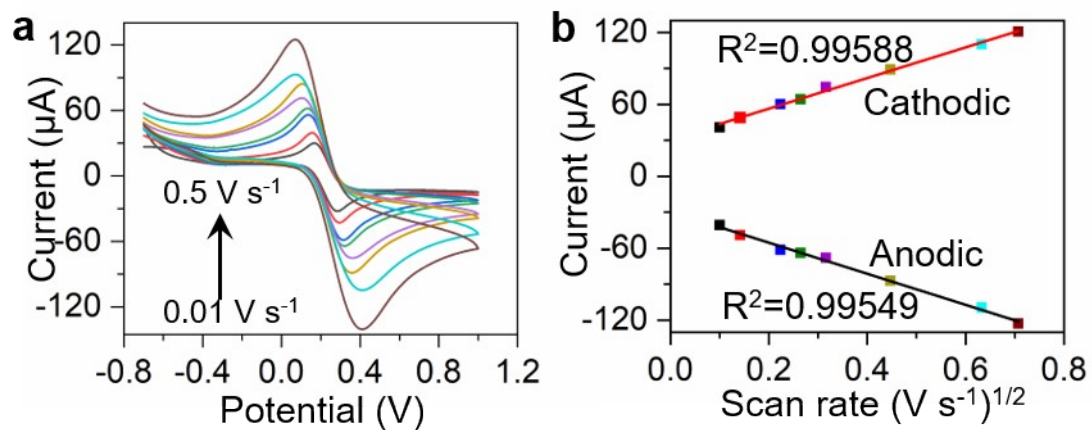


Fig. S4 (a) The rate-dependent CV curves as well as (b) the corresponding relationship between cathodic/anodic peak current and square-root potential scan rate tested in the solution containing 1 M KCl, 10 mM  $\text{K}_3[\text{Fe}(\text{CN})_6]$  and 10 mM  $\text{K}_4[\text{Fe}(\text{CN})_6]$ .

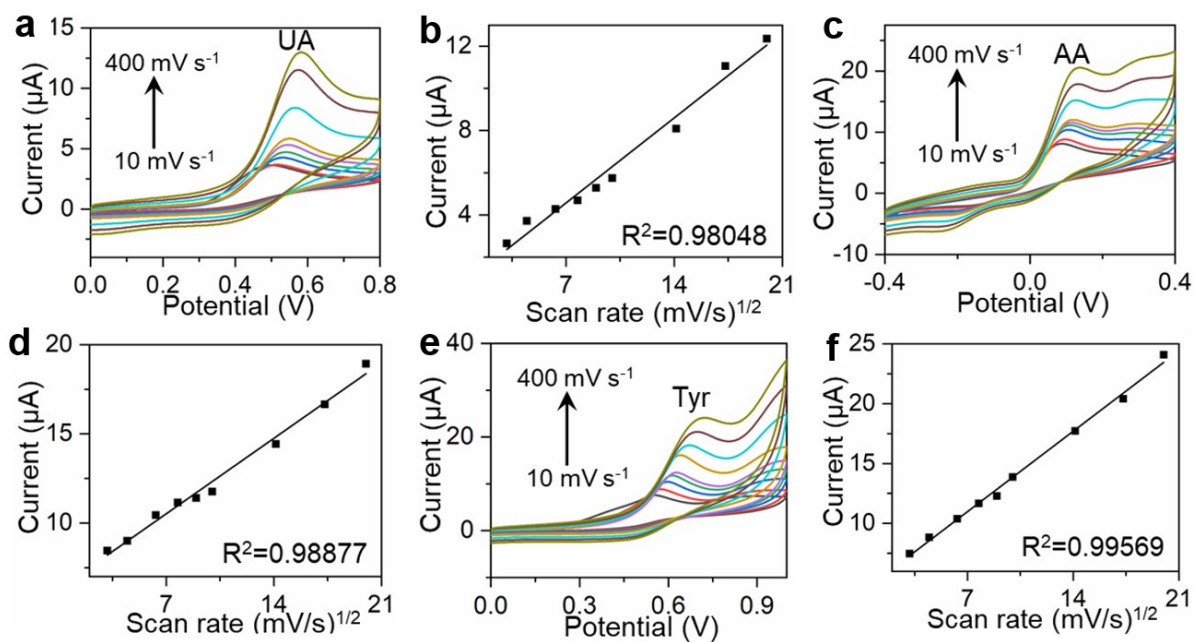


Fig. S5 The scan rate-dependent CV results of SPE@LIG electrode in artificial sweat with (a) 0.5 mM UA, (c) 0.5 mM AA, and (e) 0.5 mM Tyr, respectively; (b), (d) and (f) are the corresponding calibration plots, respectively.

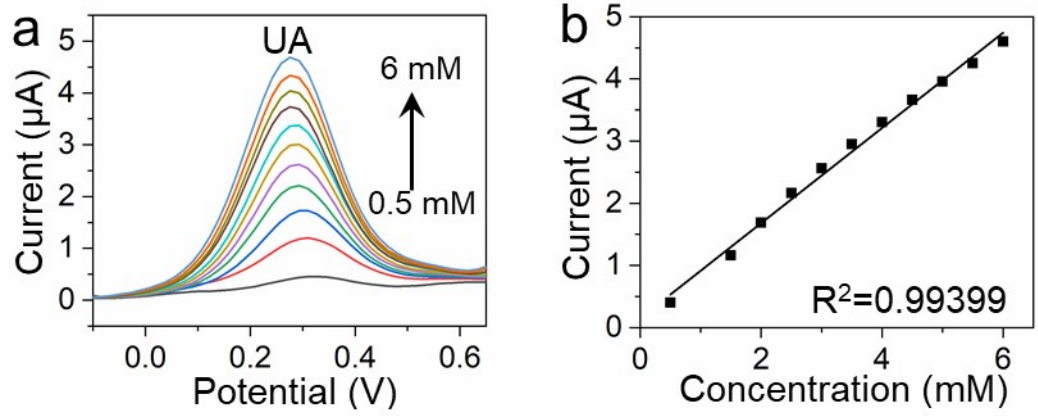


Fig. S6 (a) DPV recorded in artificial sweat containing different concentrations of UA using a SPE electrode. (b) The corresponding calibration plots.

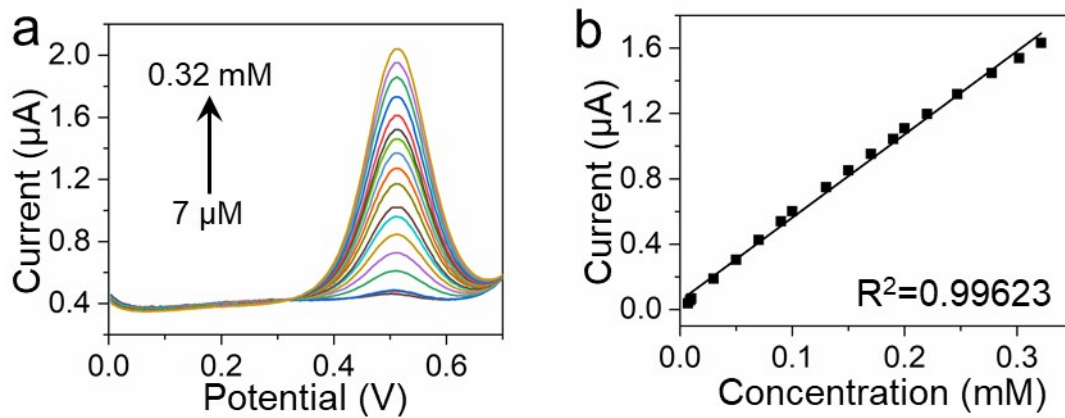


Fig. S7 (a) DPV recorded in artificial sweat containing different concentrations of UA using a planar gold electrode. (b) The corresponding calibration plots.



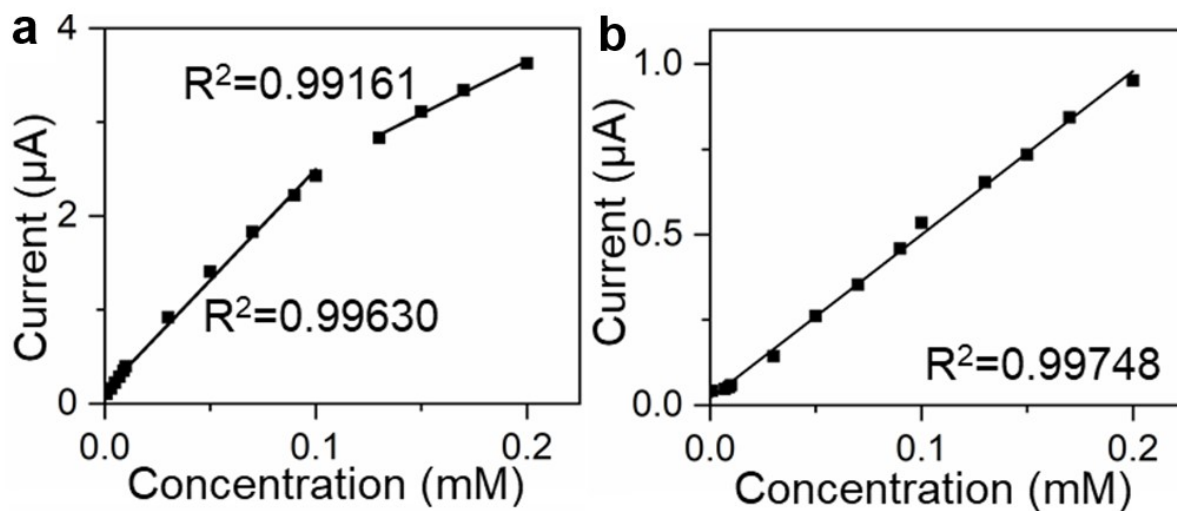


Fig. S8 The corresponding calibration plots of the DPV results shown in Figure 3a (a) and Figure 3b (b).

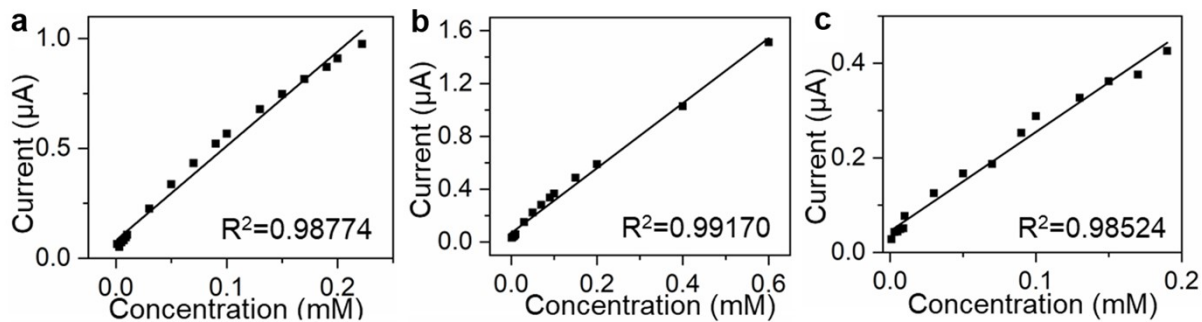


Fig. S9 The corresponding calibration plots of the DPV results shown in Figure 3c (a), Figure 3d (b), and Figure 3e (c).

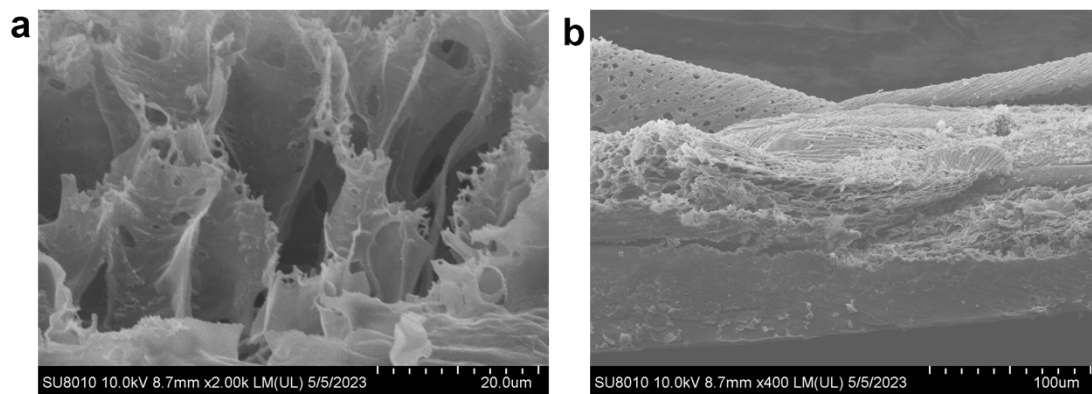


Fig. S10 The SEM images of the SPE@LIG electrode after 20000 bends.

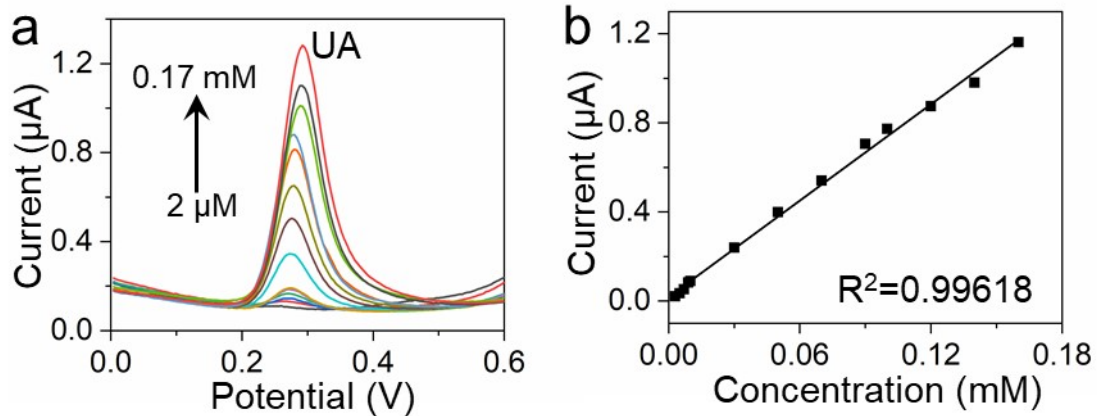


Fig. S11 (a) DPV recorded in artificial sweat containing different concentrations of UA using SPE@LIG sensor by adding artificial sweat droplets containing UA to the back of the hand for detection. (b) The corresponding calibration plots.

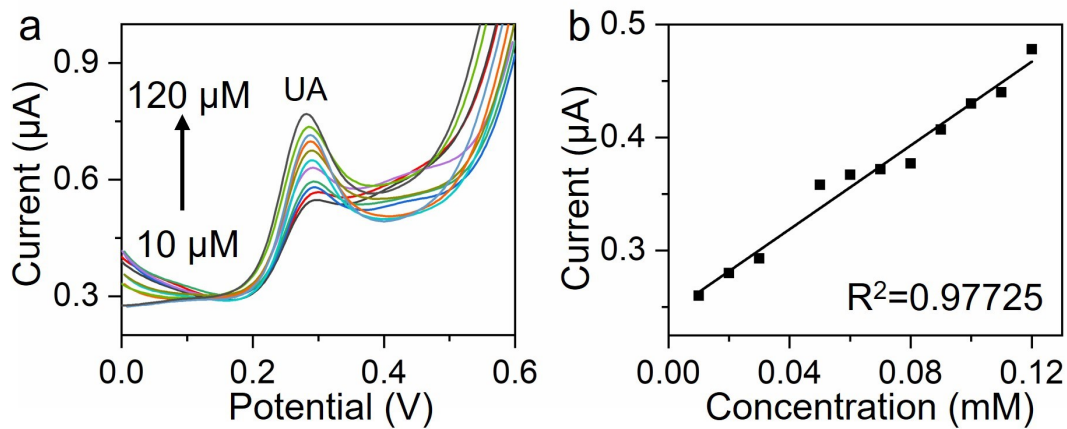


Fig. S12 (a) DPV recorded in bovine whole blood containing different concentrations of UA using SPE@LIG sensor. (b) The corresponding calibration plots.

## Supplementary Table

**Table S1.** Polyacrylic acid heat treatment process.

Temperature (°C)	Time (min)	Remark
80	15	Preheat treatment
120	25	Preheat treatment
180	25	Desolvent treatment, which requires to be handled slowly, can effectively avoid bubbling
200	10	—
250	25	Cyclization stage, which can increase the mechanical properties of the product