

Supplementary information

A Multilayer Microfluidic Paper Coupled with Electrochemical Platform Developed for Sample Separation and Detection of Dopamine

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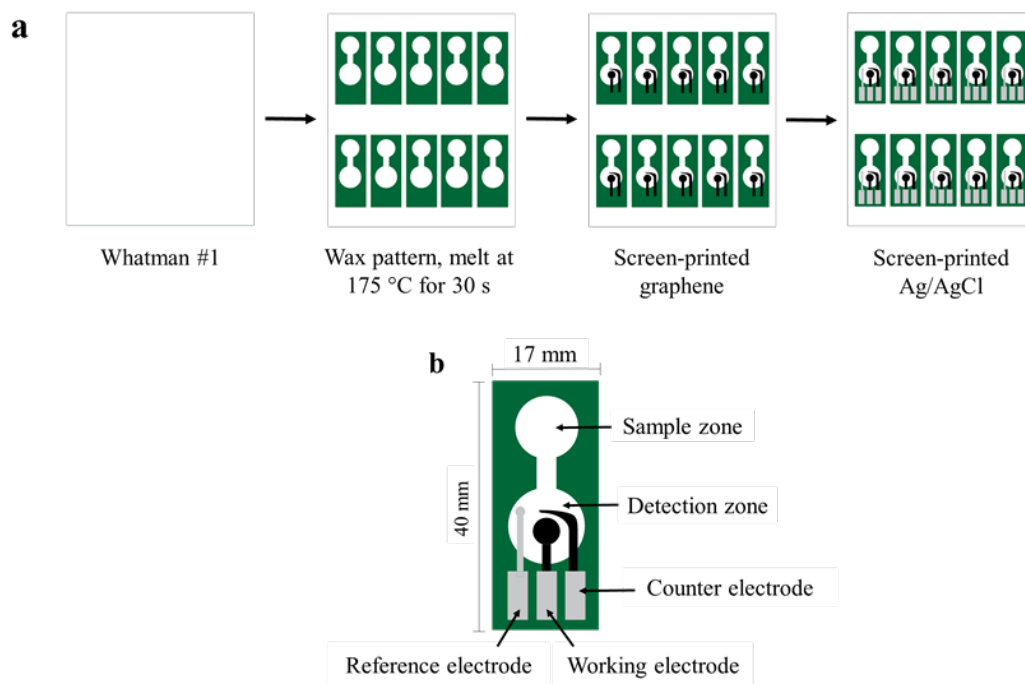


Fig. S1 (a) The preparation of wax-patterned paper (b) drawing of μ PAD coupled with electrochemical detection

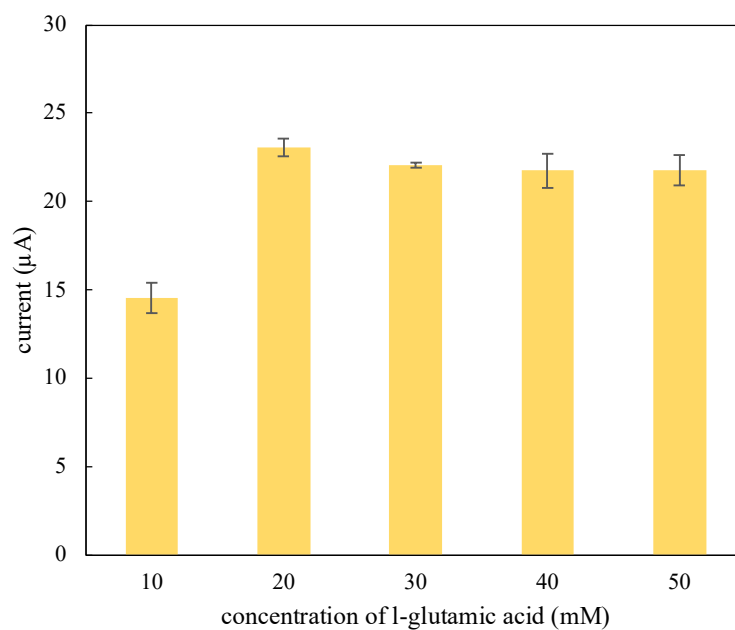


Fig. S2 The oxidation currents of 100 μM DA in PBS pH 7.4 measured by DPV using PGA/SPGE have different concentrations of l-glutamic acid

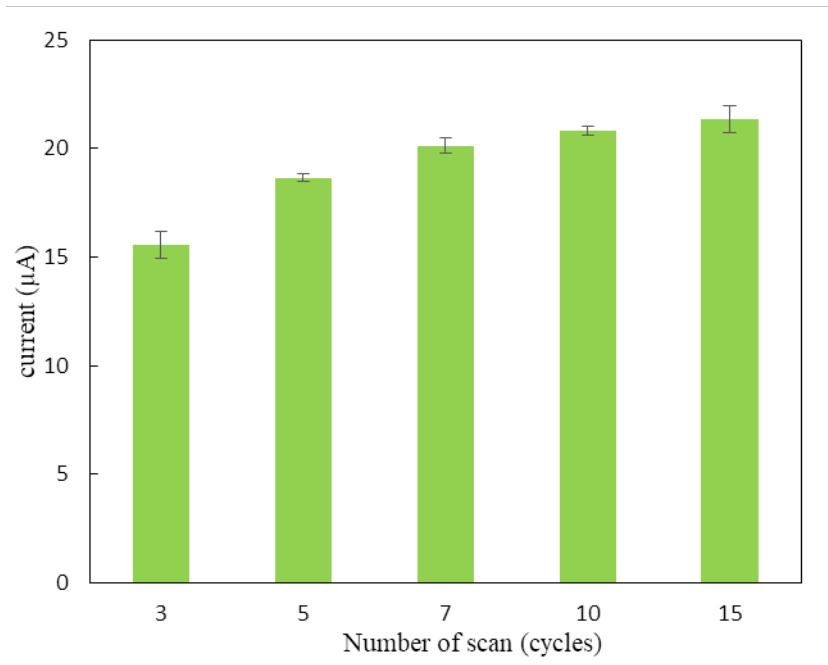


Fig. S3 The oxidation currents of 100 μM DA in PBS pH 7.4 measured by DPV using PGA/SPGE have different scan numbers at optimal concentration of l-glutamic acid

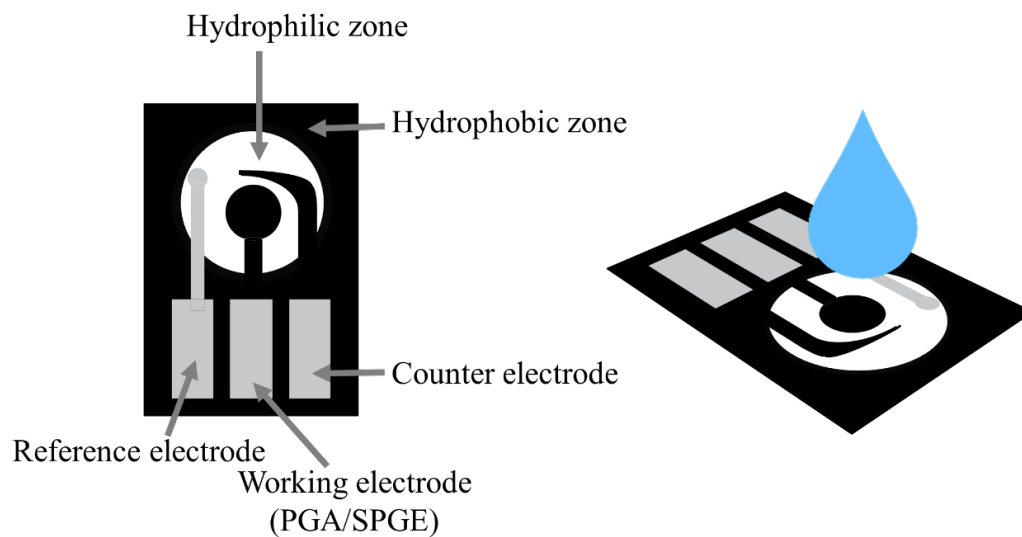


Fig. S4 The illustration of paper-based screen-printed electrodes for electrochemical stagnant analysis

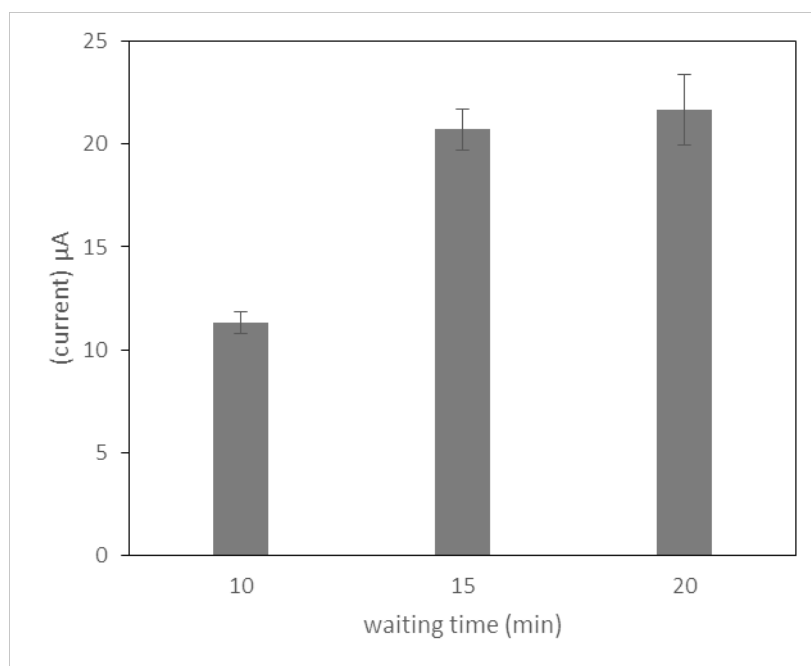


Fig. S5 The oxidation currents of 100 μM DA in PBS pH 7.4 measured by DPV using a multilayer ePAD at different waiting times

Table S1 Analytical performance of previous reports compared with the proposed multilayer μ PAD based on electrochemical detection of DA

Electrode	Technique	LOD (μ M)	Linear range (μ M)	Ref.
Poly(SDB)/CPE	DPV	0.8	5.0–10, 20–80 and 90–1000	1
AgNPs/rGO/GCE	LSV	5.4	10–800	2
PI _{mox} -GO/GCE	DPV	0.63	12–278	3
HNP-PtTi/ GCE	DPV	3.2	4.0–500	4
G-DHE	DPV	0.2	5.0– 2000	5
PtNi@MoS ₂ /GCE	DPV	0.1	0.5–150	6
multilayer μ PAD (PGA/SPGE)	DPV	0.41	1.0–200	This work

Abbreviaion

Poly(SDB)- poly(solochrome dark blue), CPE- carbon paste electrode, AgNPs- silver nanoparticles, rGO- reduced graphene oxide, LSV- linear sweep voltammetry, PI_{mox}- overoxidized polyimidazole, GO- graphene oxide, HNP- hierarchical nanoporous, G-DHE- graphene–diamond hybrid electrode and PtNi@MoS₂- PtNi bimetallic naoparticles loaded MoS₂ nanosheets.

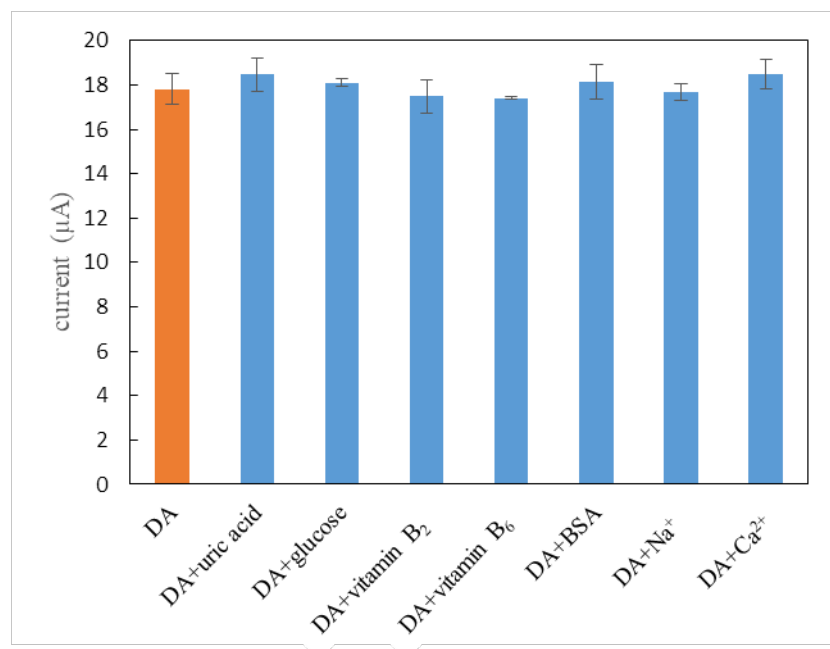


Fig. S6 The interferences effect of 100 μM Uric acid, 1 mM glucose, 100 μM vitamin (B_2 and B_6), 1000 $\mu\text{g/L}$ BSA, 1 mM Na^+ and 1 mM Ca^{2+} on the detection of 100 μM DA in PBS pH 7.4.

References

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