Electronic Supplementary Material (ESI) for New Journal of Chemistry.

All electrochemical synthesize of Three-Dimensional mesoporous polymeric g-C3N4/PANI/CdO nanocomposites and its application as a novel sensor for simultaneous determination of epinephrine, paracetamol, mefenamic acid, and ciprofloxacin

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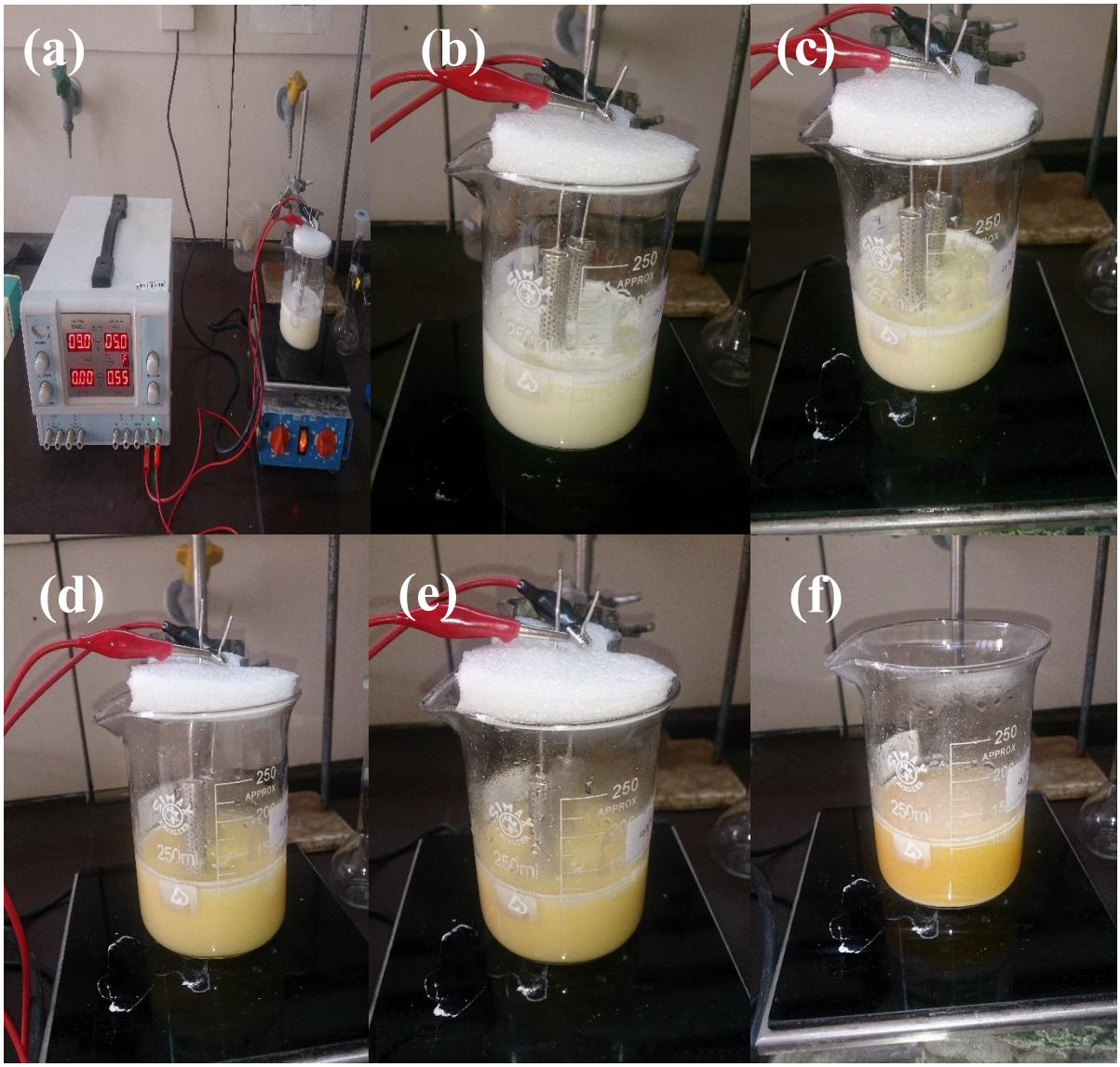


Figure S1. The synthesize g-C_3N_4 in a voltammetric cell containing 0.5 M melamine and 0.5 M NaOH at a static potential of 5 volts was applied (after: (a) start, (b) 5 min, (c) 15 min, (d) 30 min, (e) 45 min, (f) 60 min.

The morphology and structure of the g-C_3N_4 with two magnifications were studied using the FE-SEM and the results are shown in Figure S2 (a and b). As shown, the g-C3N4 nanosheets exhibited a sheet-like structure with a thickness about 20–30 nm. Fig. S2c shows the EDX spectrum of the g-C_3N_4, which contains all three elements (C, N, and O) simultaneously and confirms the accurate synthesis of g-C_3N_4.

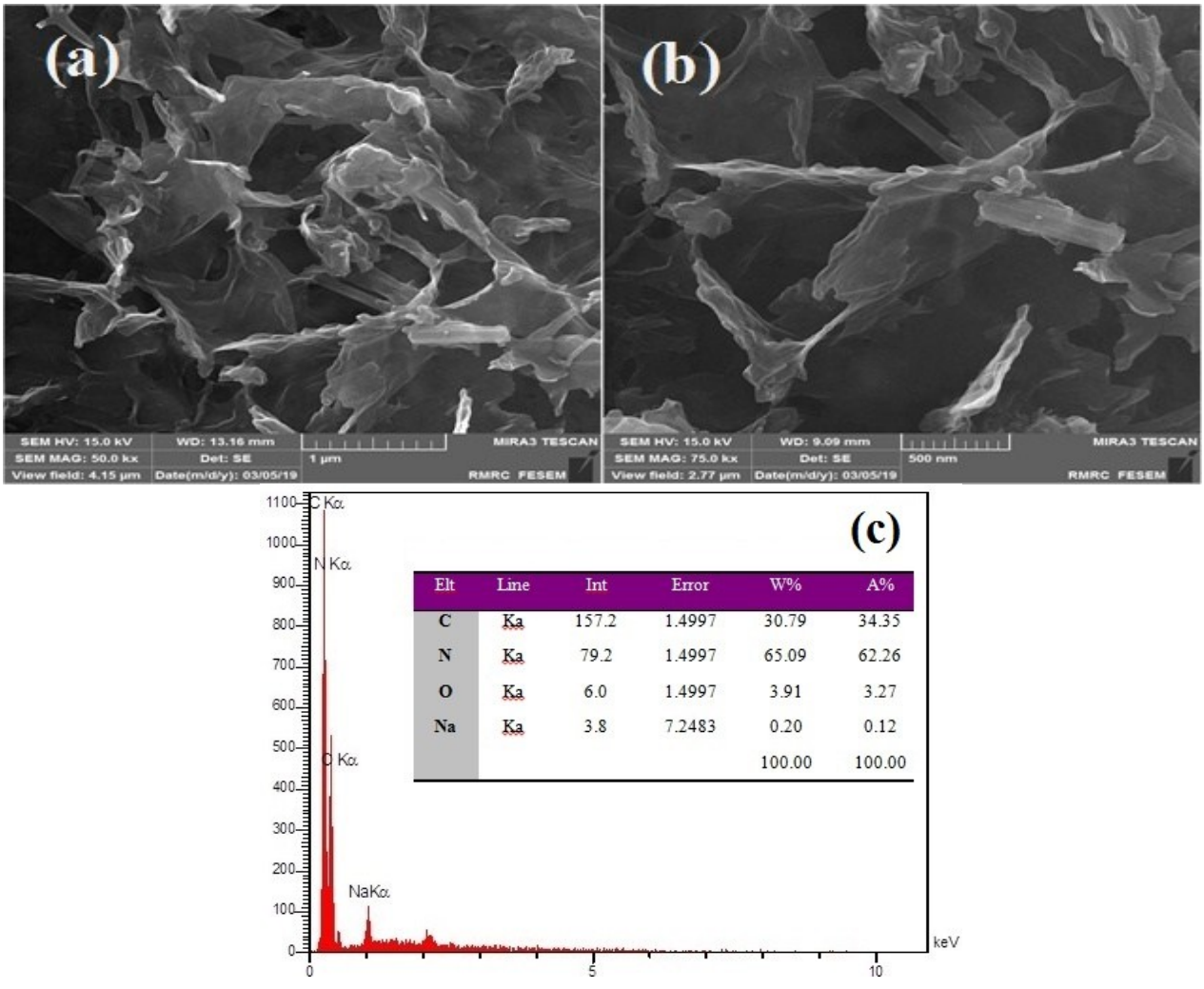


Figure S2. FE-SEM pictures of (a and b) g-C_3N_4, (c) Energy dispersive X-ray analysis exploring the elemental composition in g-C_3N_4**.**

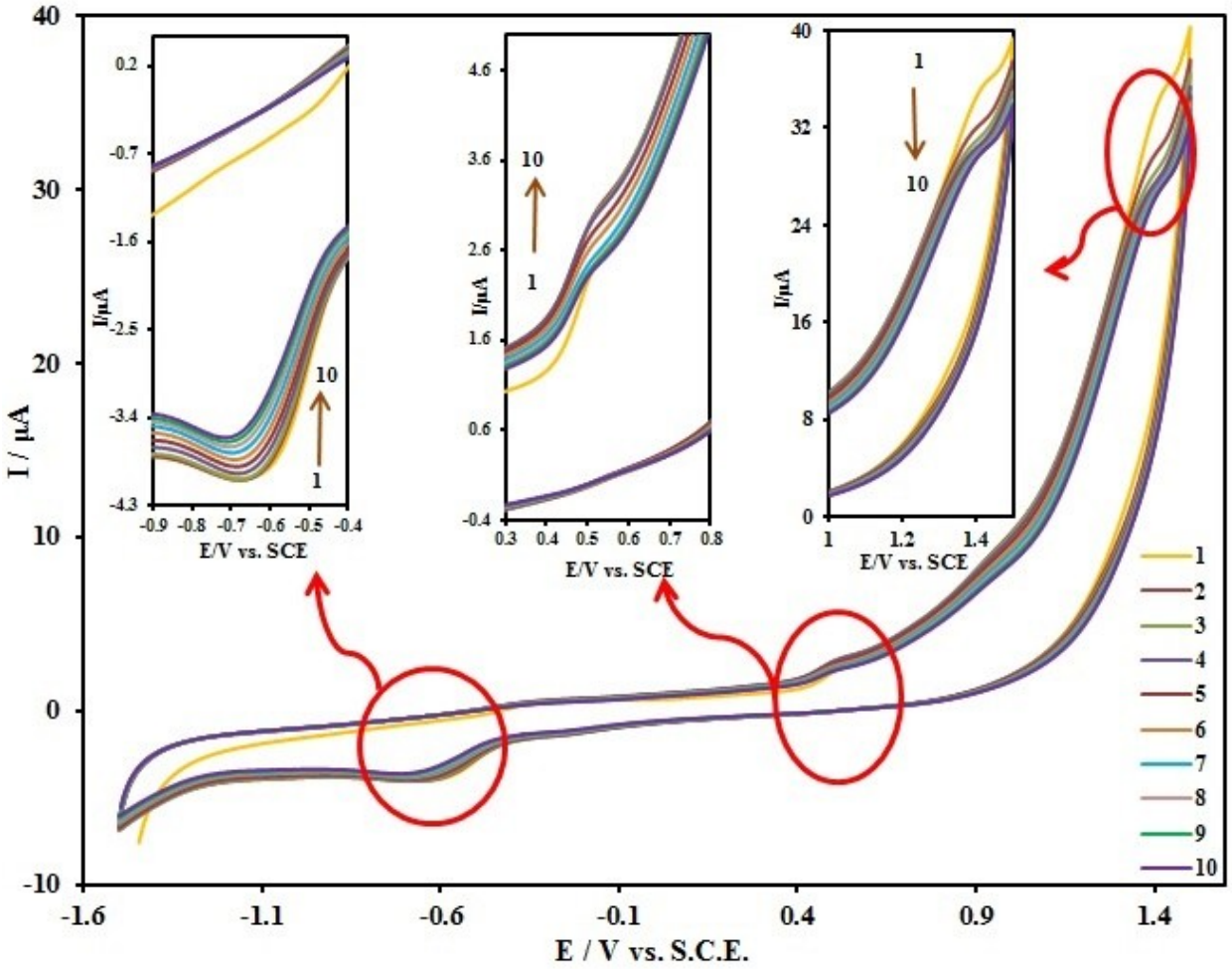
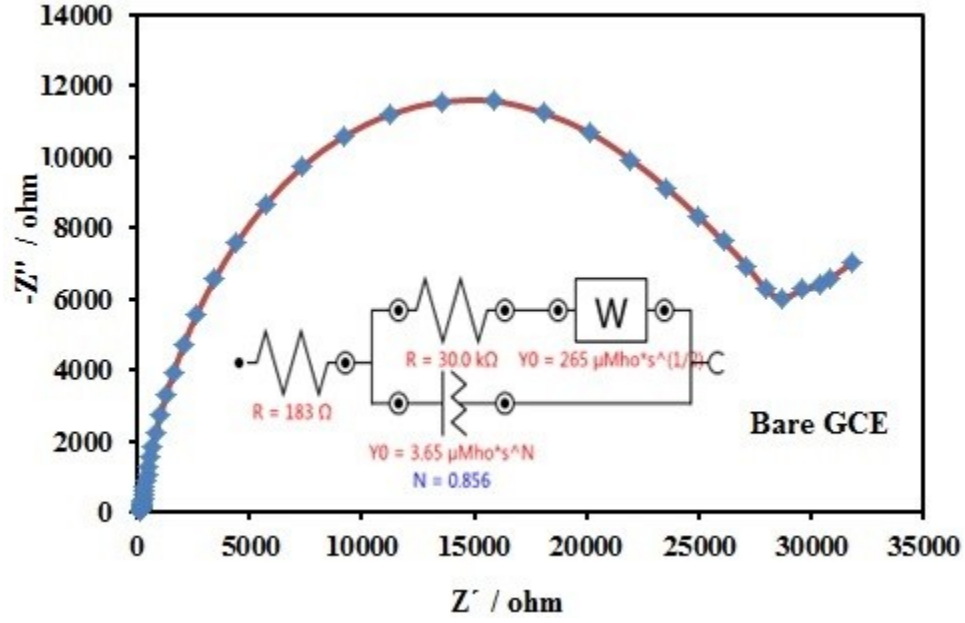
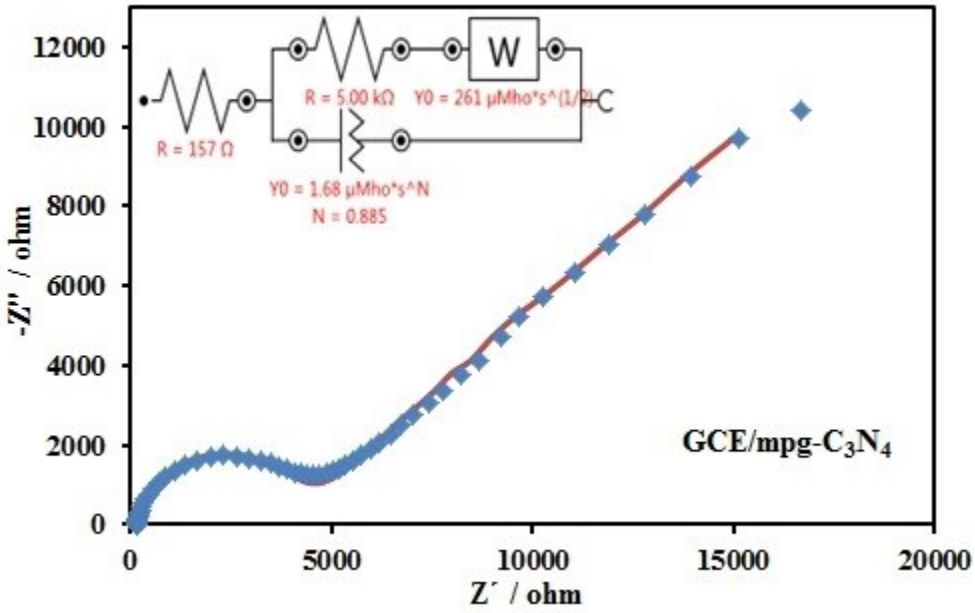


Figure S3. Cyclic voltammograms of the electrodeposition of mpg-C_3N_4 on the GCE surface for 10 cycles at a scan rate of 50 mV/s.


14000
12000
10000
8000
6000
4000
2000
0
-Z'' / ohm
0
5000
10000
15000
20000
25000
30000
35000
Z´ / ohm
W
R = 30.0 kΩ
Y0 = 265 µMho*s^(1/2)
R = 183 Ω
Y0 = 3.65 µMho*s^N
N = 0.856
Bare GCE


12000
10000
8000
6000
4000
2000
0
-Z'' / ohm
0
5000
10000
15000
20000
Z´ / ohm
W
R = 5.00 kΩ
Y0 = 261 µMho*s^(1/2)
R = 157 Ω
Y0 = 1.68 µMho*s^N
N = 0.885
GCE/mpg-C3N4

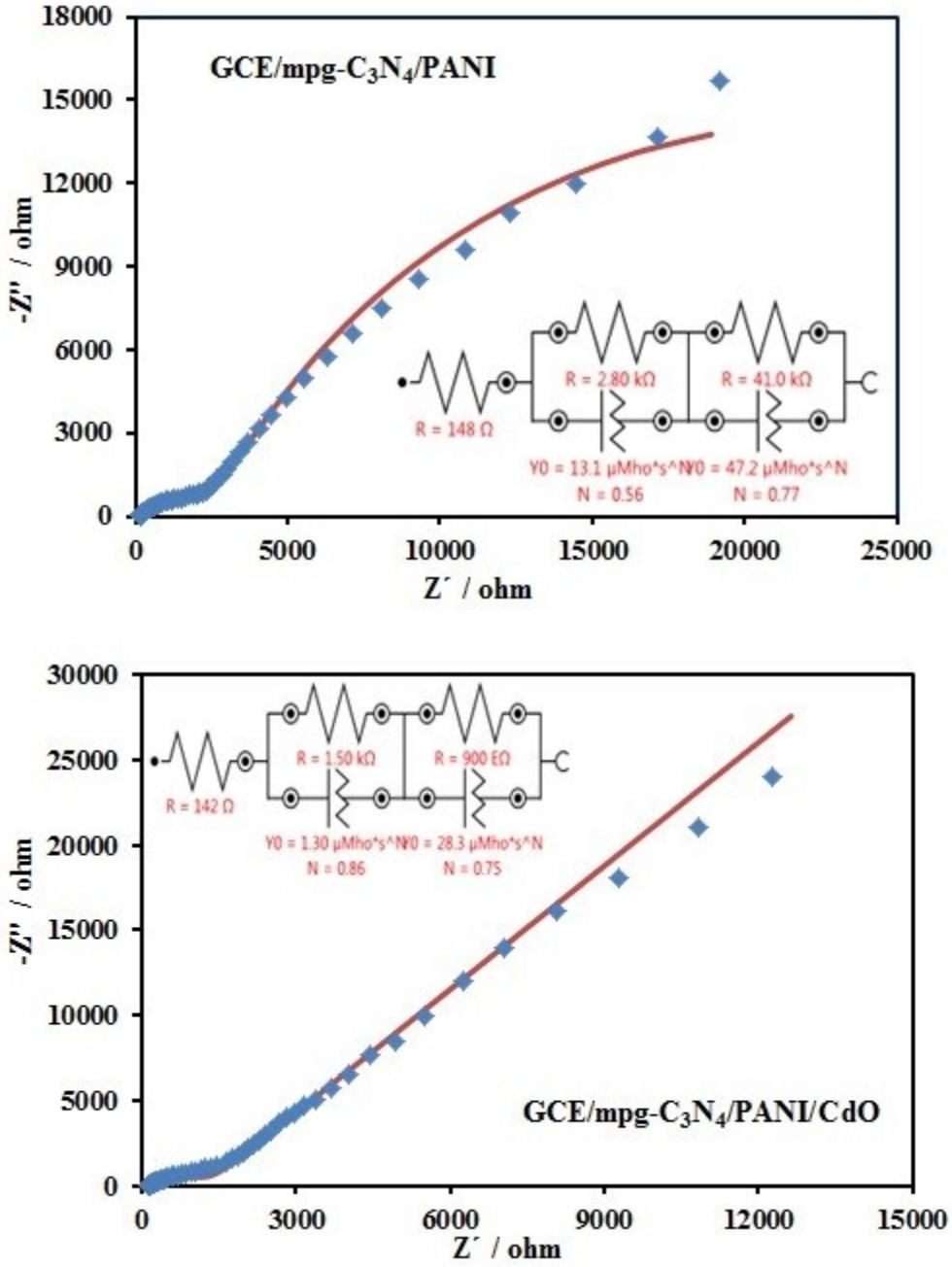


Figure S4. Electrochemical fit and simulation of Bare GCE, GCE/mpg-C_3N_4, GCE/mpg-C_3N_4/PANI, and GCE/mpg-C_3N_4/PANI/CdO. Inset: their equivalent circuits.

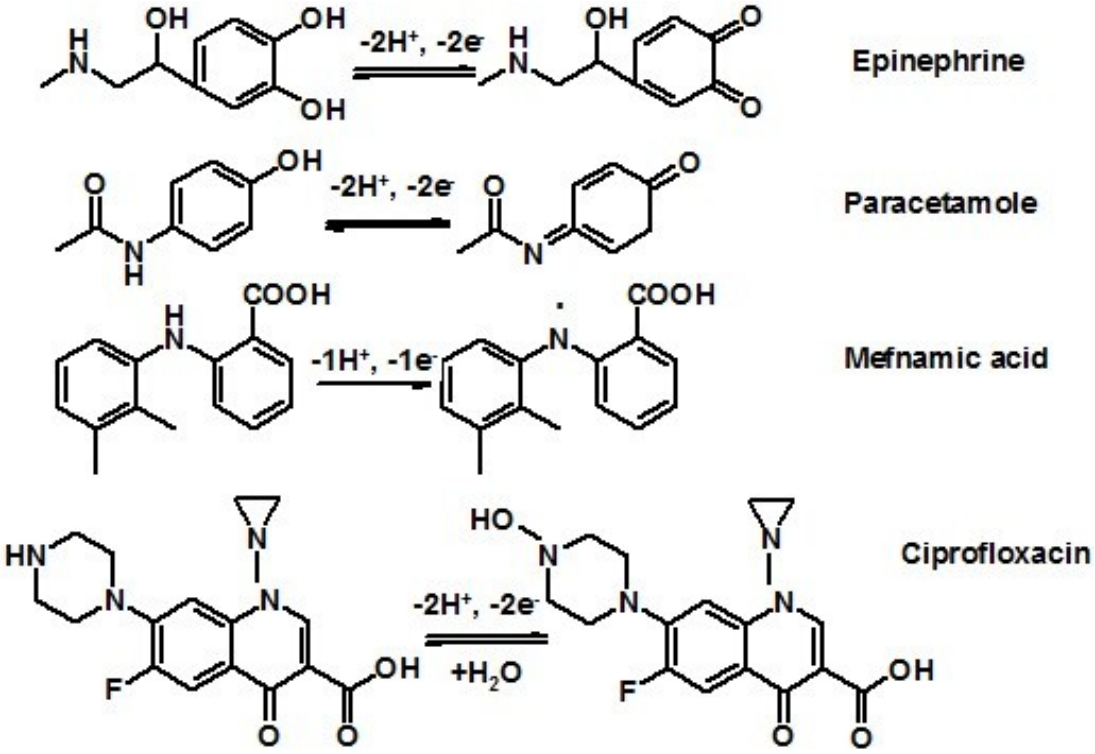
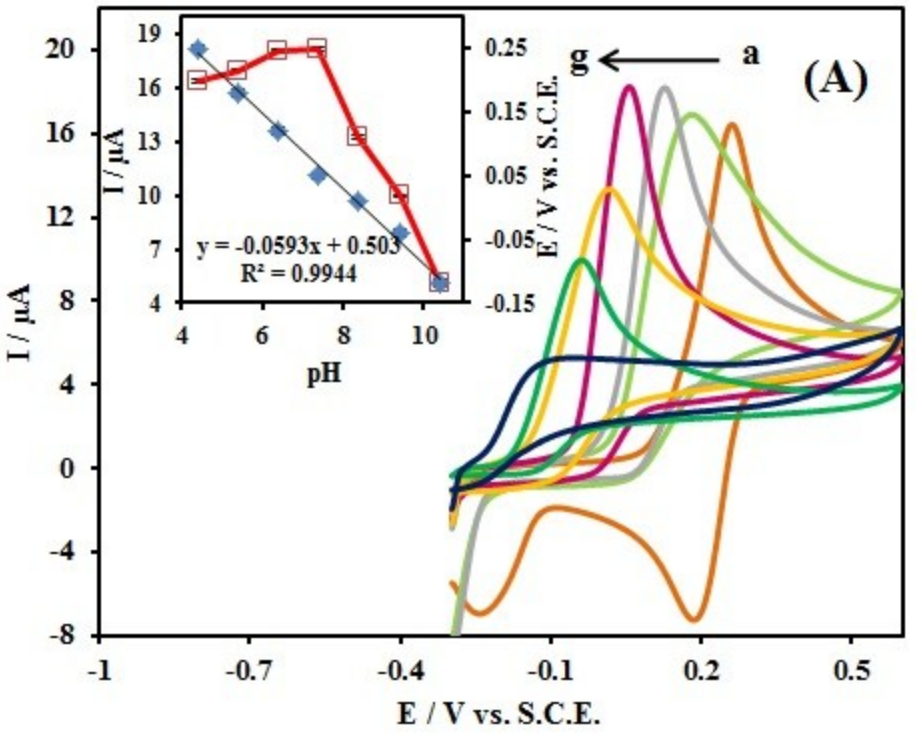
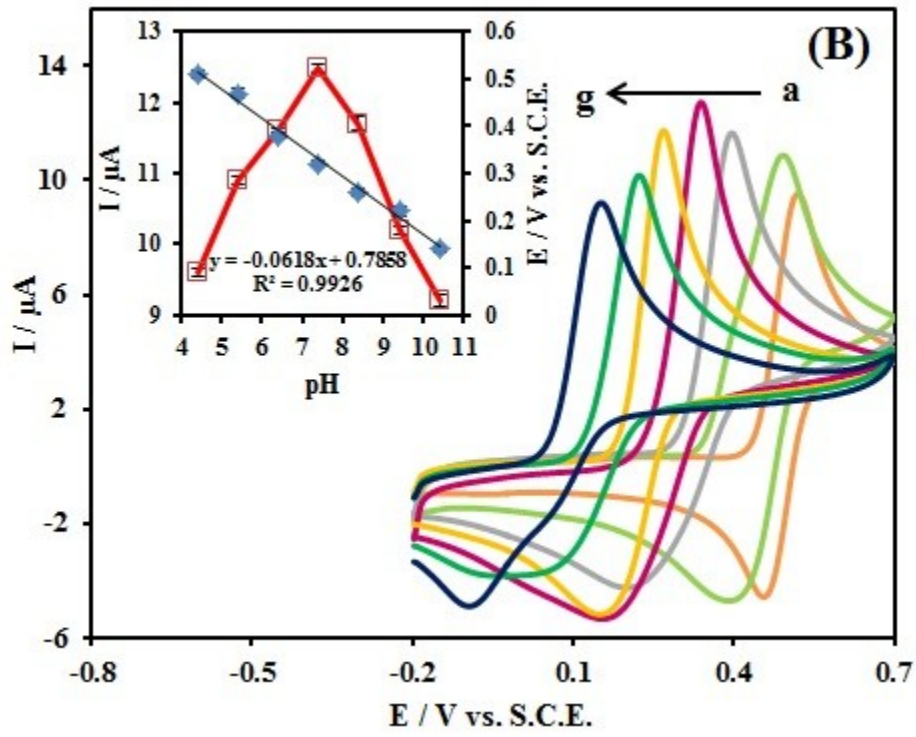


Fig. S5. Scheme of the EPI, PAR, MFA, and CIP oxidation reactions


(A)
g ← a
I / µA
E / V vs. S.C.E.
y = -0.0593x + 0.503
R² = 0.9944
pH


(B)
g ← a
I / µA
E / V vs. S.C.E.
y = -0.0618x + 0.7858
R² = 0.9926
pH

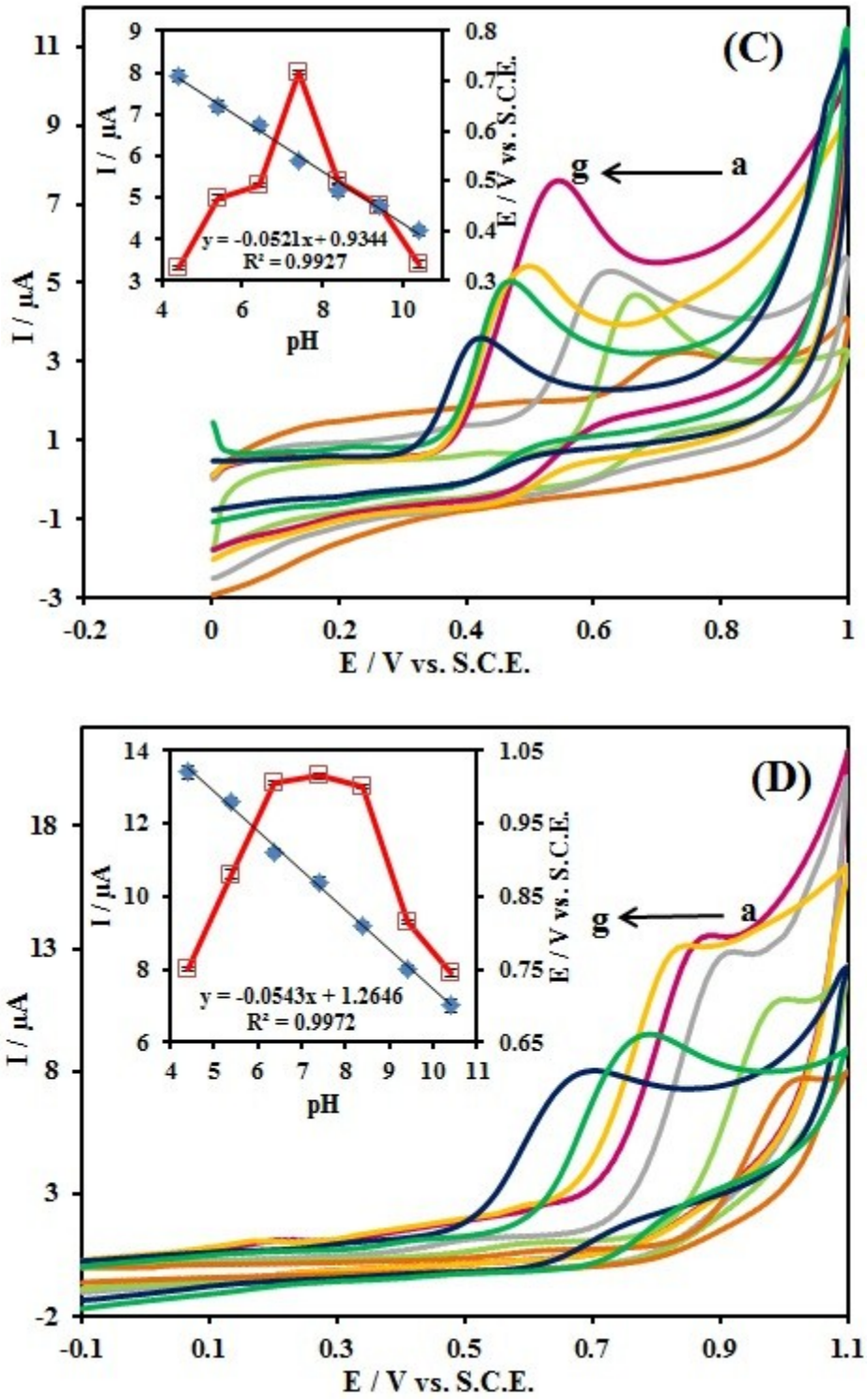
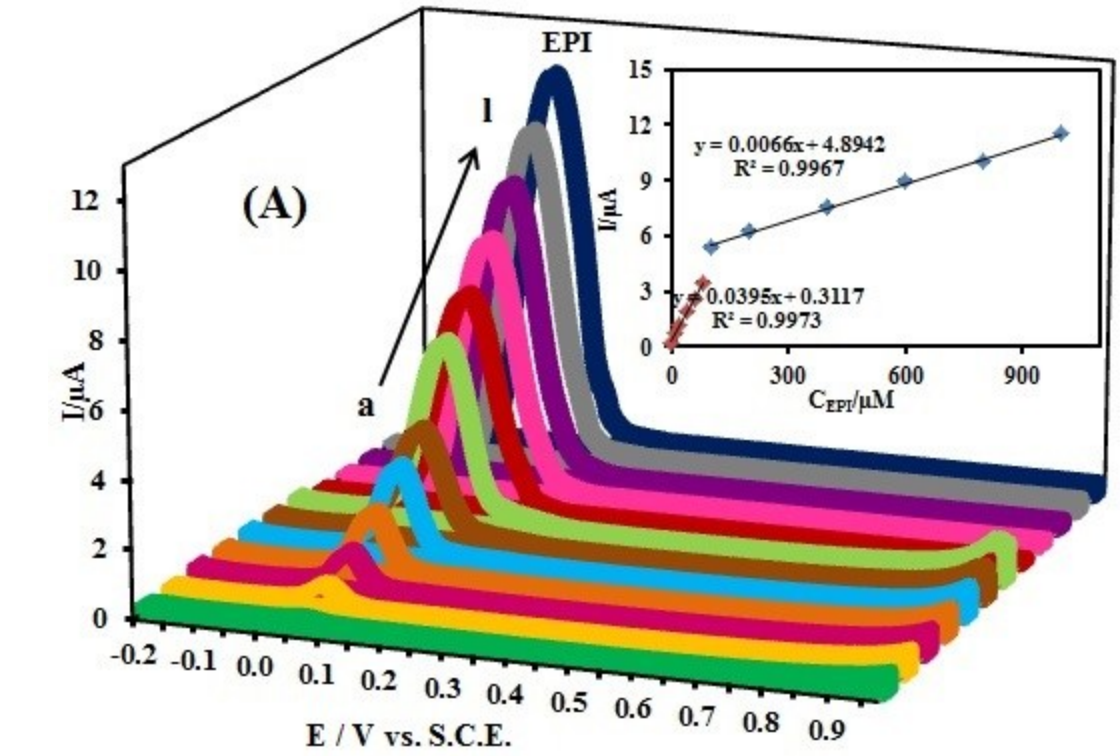
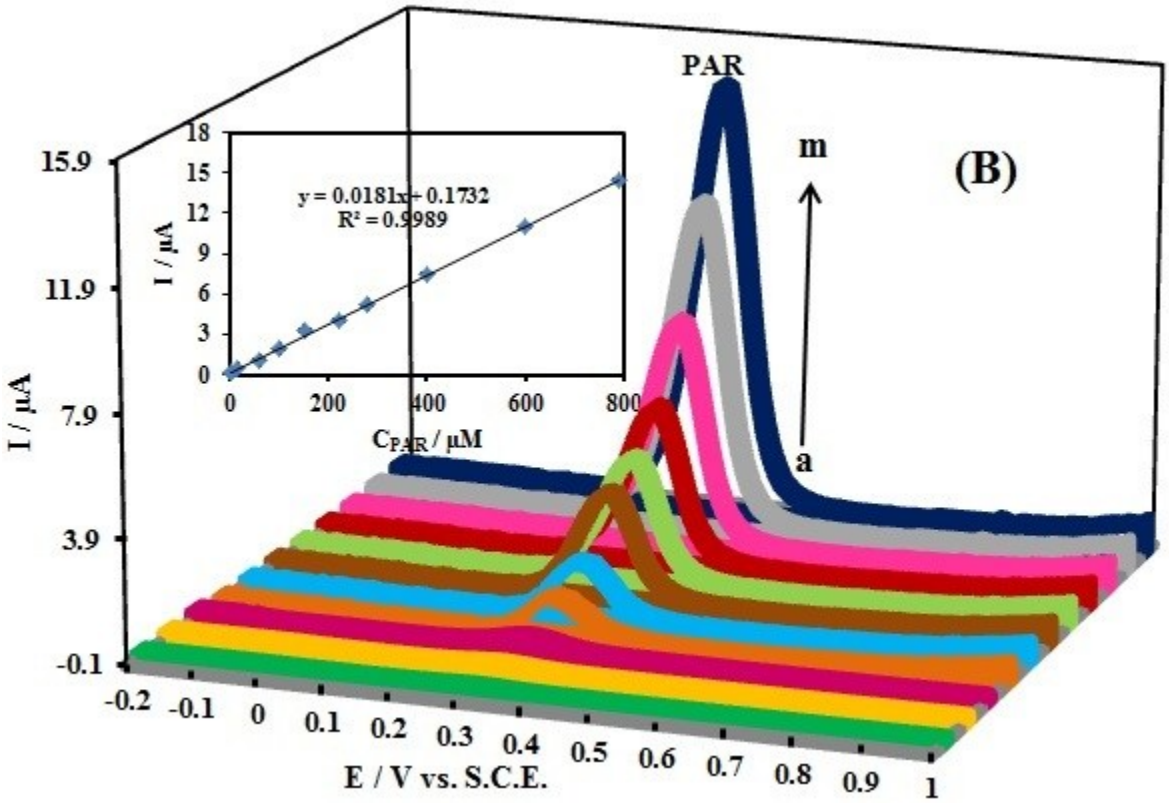
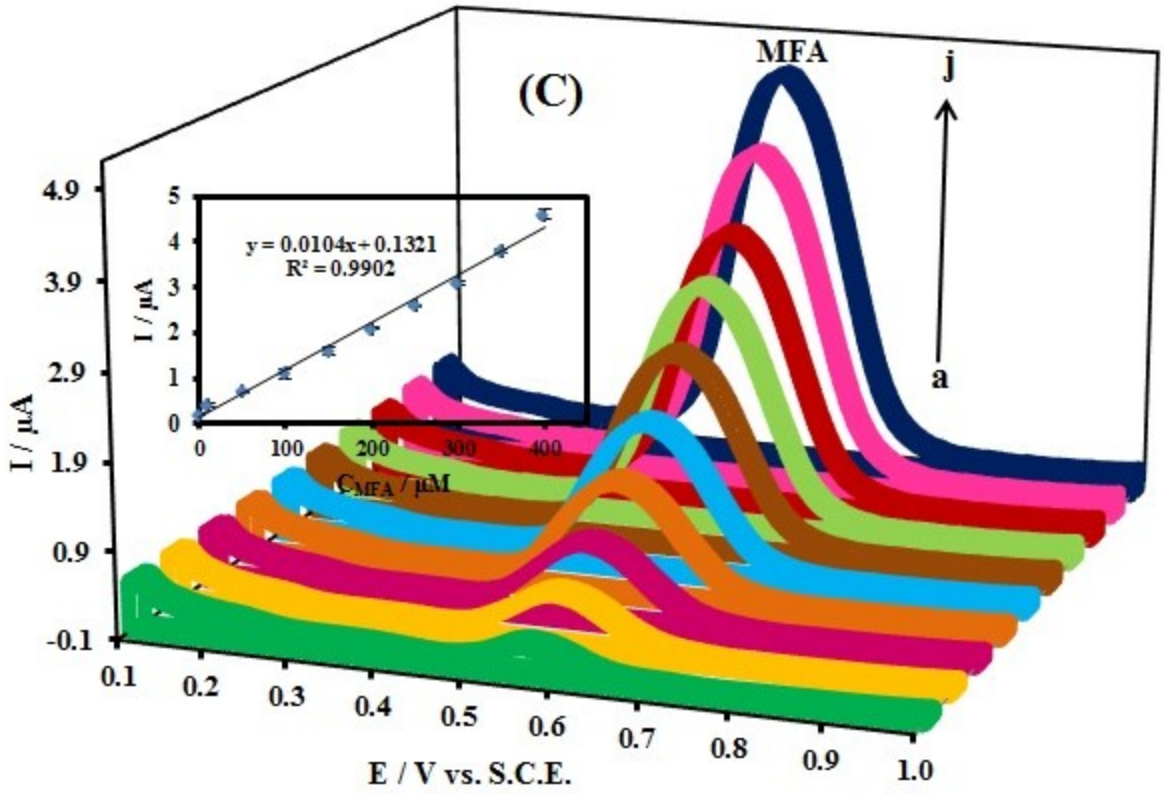


Figure S6. Cyclic voltammograms of the 500 µM (A) EPI, (B) PAR, (C) MFA, and (D) CIP at the GCE/mpg-C_3N_4/PANI/CdO at different pH values, a to g (4.4 to 10.4), respectively at a scan rate of 100 mV s^{-1}. Inset: Dependence of peak current and peak potential on pH.


(A)
EPI
l
a
I/μA
E / V vs. S.C.E.
y = 0.0066x + 4.8942
R² = 0.9967
y = 0.0395x + 0.3117
R² = 0.9973
I/μA
C_EPI/μM


(B)
PAR
m
a
I / μA
E / V vs. S.C.E.
y = 0.0181x + 0.1732
R² = 0.9989
I / μA
C_PAR / μM


(C)
MFA
j
a
y = 0.0104x + 0.1321
R² = 0.9902
I / µA
C_MFA / µM
E / V vs. S.C.E.

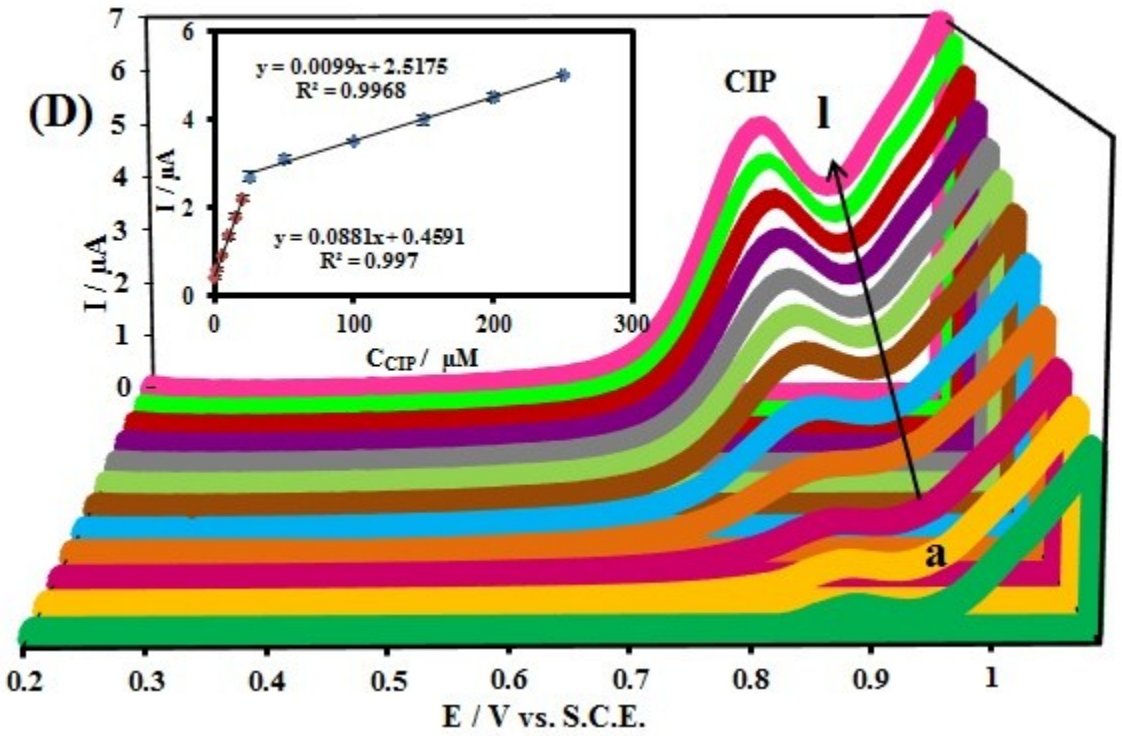

(D)
CIP
l
a
y = 0.0099x + 2.5175
R² = 0.9968
y = 0.0881x + 0.4591
R² = 0.997
I / µA
C_CIP / µM
E / V vs. S.C.E.

Fig. S7. DPVs of (A) different concentrations of EPI (0.05–80.0 μM) and (100.0-1000.0 μM); (B) different concentrations of PAR (0.1–790.0 μM); (C) different concentrations of MFA (0.2-400 μM); (D) different concentrations of CPI (0.01–20.0 μM) and (25.0-250.0 μM). DPV experimental conditions: pulse amplitude of 50 mV, pulse time of 100 ms, sweep rate of 50 mV s^{-1}; in 0.1 M PBS solution (pH 7.4). Error bars indicate the standard deviations of three repeated measurements.