

Supporting Information for

Immobilization of stable catechol form on the SPCE surface to enhance hydrophilicity, reusability, and application for acetaminophen analysis

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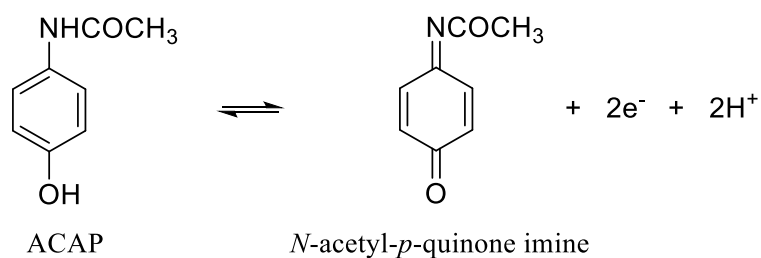
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Table 1S. Chemicals were used in this work

Modifier	Molecular weight, g/mol	Supplier
carboxylic acid functionalized multi-walled carbon nanotubes (MWCNT-COOH)		DROPSENS
catechol (CA) C ₆ H ₆ O ₂	110.10	ACROS
potassium hydroxide, KOH	56.10	ACROS
potassium chloride, KCl	74.55	ACROS
citrate acid, C ₆ H ₈ O ₇	192.12	ACROS
potassium dihydrogen phosphate, KH ₂ PO ₄	136.00	ACROS
boric acid, H ₃ BO ₃	61.83	ACROS
sodium carbonate, Na ₂ CO ₃	105.99	ACROS
acetaminophen (ACAP)	151.16	ACROS



Scheme 1S. The electrochemical oxidation process of ACAP

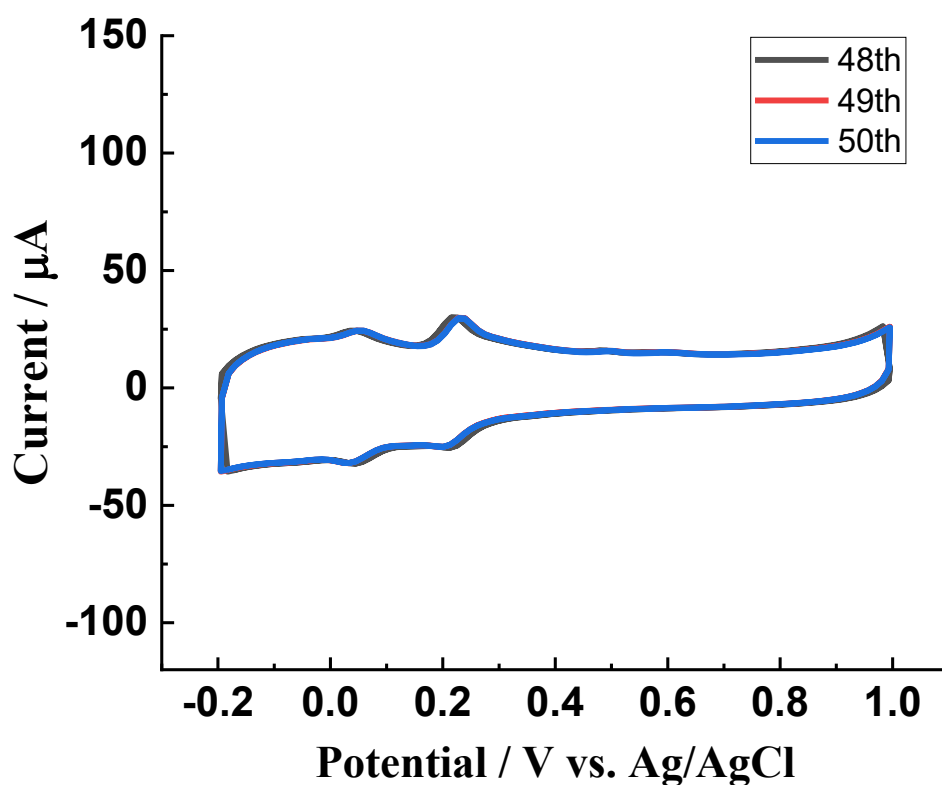


Figure 1S. (A) Stabilization of SPCE/MWCNT-COOH/CA electrode in PBS pH 7.0 solution (final 3 cycles within a sequence of 50 continuous CV scans)

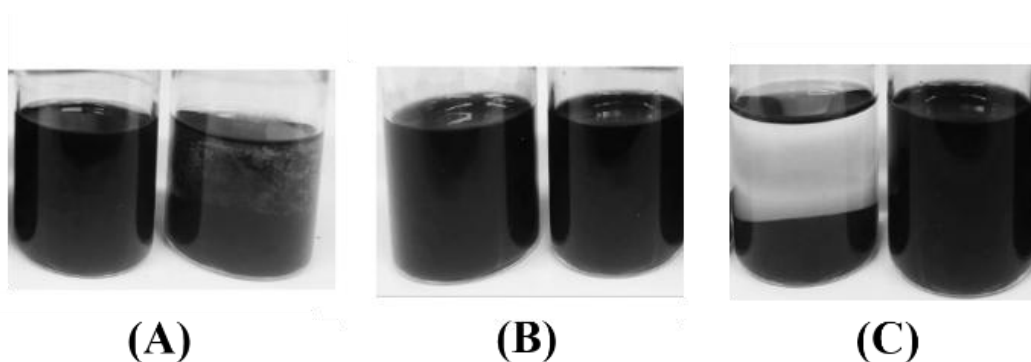
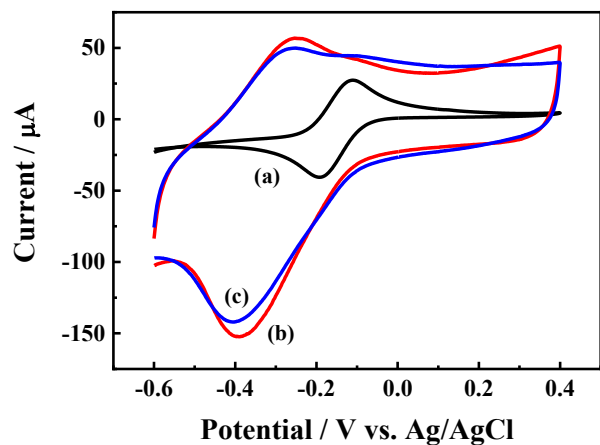


Figure 2S. The dispersion state in water of (A) MWCNT-COOH, (B) MWCNT-COOH/CA in the first day and the seventh day. (C) The dispersion state of MWCNT-COOH and MWCNT-COOH/CA after 10 days.

(A)



(B)

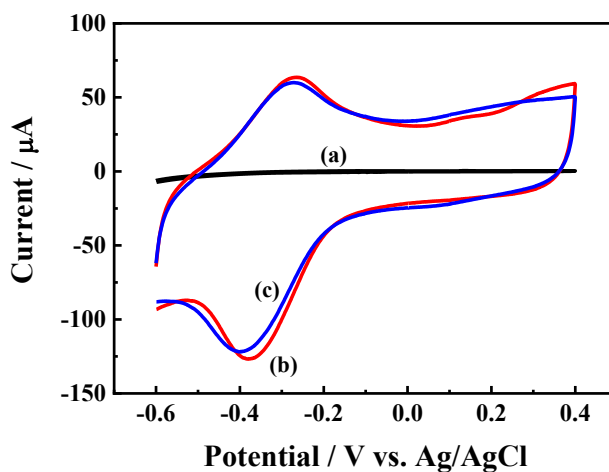
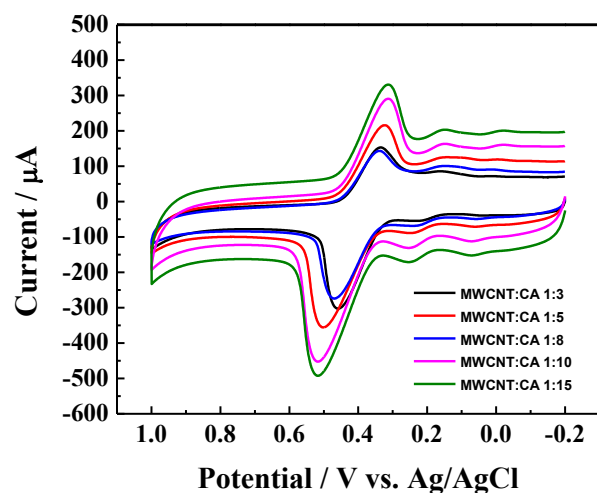


Figure 3S. (A) Cyclic voltammograms (CV) of (a) bare SPCE, (b) SPCE/MWCNT-COOH and (c) SPCE/MWCNT-COOH/CA-U in 0.1 M KCl electrolyte solution containing 1.0 mM $\text{Ru}(\text{NH}_3)_6\text{Cl}_3$. (B) CV of corresponding electrodes in 0.1 M KCl electrolyte solution

(A)



(B)

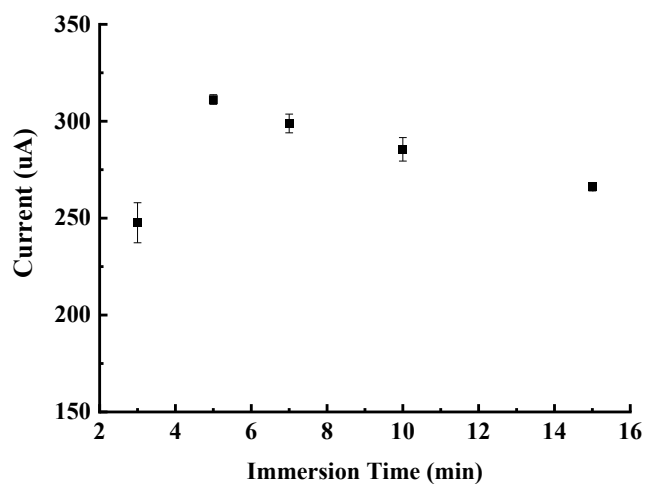


Figure 4S. (A) Cyclic voltammograms of SPCE/MWCNT-COOH/CA-U in 1.0 mM ACAP in 0.1 M PBS pH 7.0 in different ratio of MWCNT-COOH and CA solutions; (B) Plot of anodic peak current vs. immersion time in 1.0 mM ACAP solution

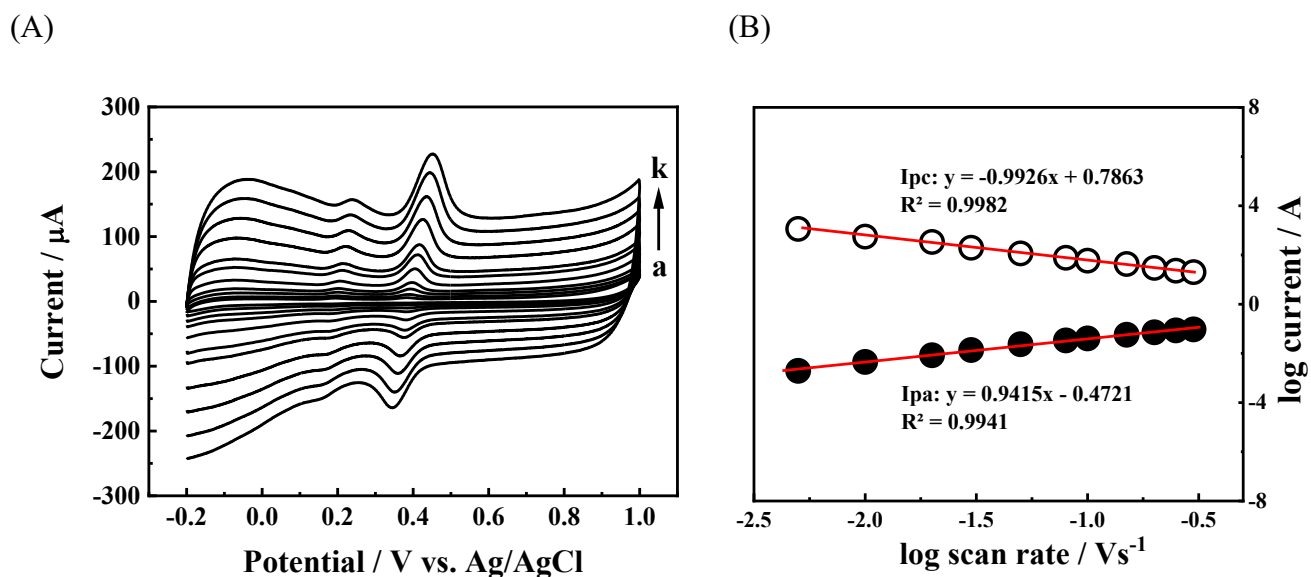


Figure 5S. (A) Cyclic voltammograms of 10 μM ACAP in pH 7.0 phosphate buffer solution at SPCE/MWCNT-COOH/CA-U electrodes at scan rates of (a) 5, (b) 10, (c) 20, (d) 30, (e) 50, (f) 80, (g) 100, (h) 150, (i) 200, (j) 250, and (k) 300 mV s^{-1} . (B) The double logarithmic plots of peak currents vs scan rate

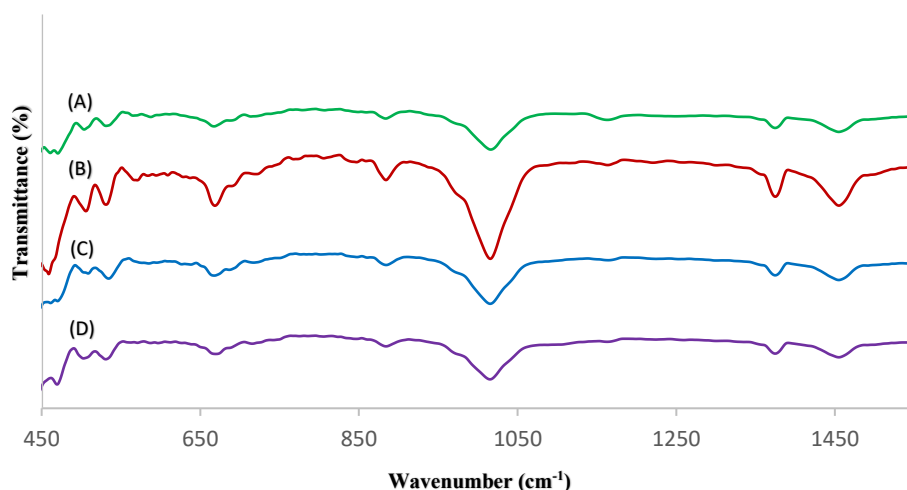


Figure 6S. FTIR/ATR spectra of (a) Bare SPCE, (b) SPCE/MWCNT-COOH/CA-E and (c) SPCE/MWCNT-COOH/CA-U and (d) SPCE/MWCNT-COOH electrodes