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Ultra-sensitive electrochemical sensor for the detection of acetaminophen in the presence of etilefrine using bimetallic Pd-Ag/reduced graphene oxide nanocomposites

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ESI 1

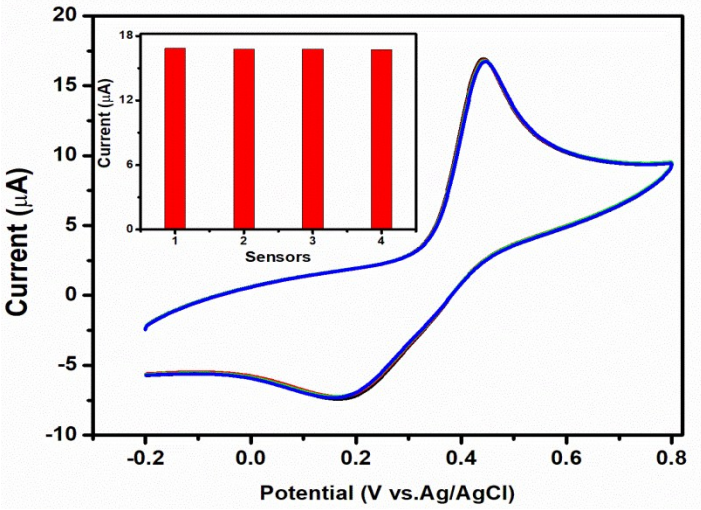

Figure S1 CV responses of four Pd-Ag/rGO/GCE electrodes prepared in the same conditions for detection of 0.025 M APAP in PBS solution (pH 7.0). Inset: calibrated histograms of reproducibility test.

ESI 2

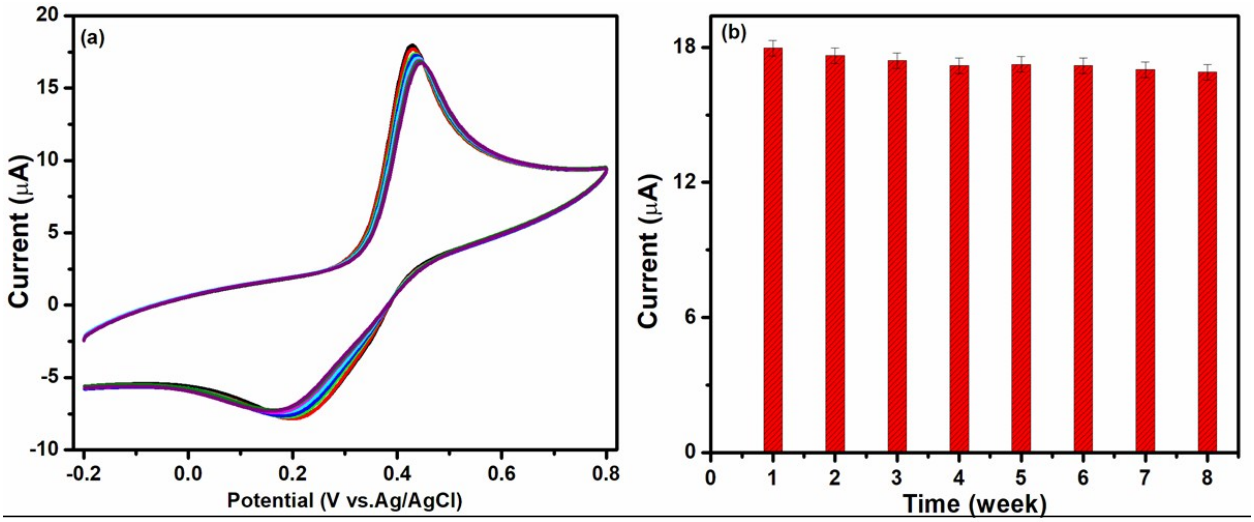

Figure S2(a) CV response of four Pd-Ag/rGO/GCE electrodes for detection of 0.025 M APAP in PBS solution (pH 7.0) for eight weeks, (b) Inset: calibrated histograms of stability test.

ESI 3

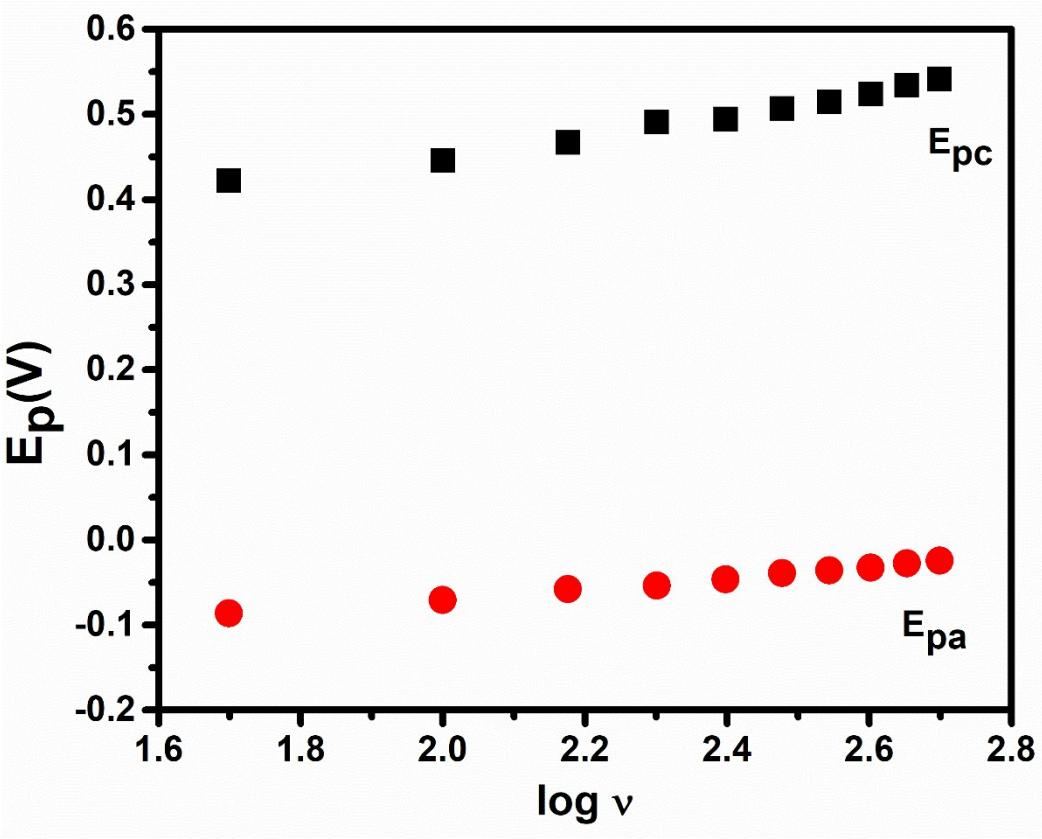

Figure S3. Plot of peak potential (E_p) vs log ν

Table ESI **1. Comparison of APAP sensing at different modified electrodes.**

Electrochemical sensor	Method	LOD [µM]	LDR [µM]	Ref.
TiO-GR/GCE[a]	CV	0.21	1–100	[52]
PMR-TiO_2–GR/GCE[b]	CV, DPV	0.025	0.25–50	[53]
Pd-GO/GCE[c]	EIS, CV, DPV	0.0022	0.005–80	[54]
Ni_2O_3–NiO-GR/GCE[d]	CV, DPV	0.02	0.04–100	[55]
$CoFe_2O_4$-GO/CPE[e]	SWV	0.025	0.03–12	[56]
$NiFe_2O_4$– GR/CPE[f]	SWV	0.003	0.01–9	[57]
Fe_3O_4-PDDA-GO/GCE[g]	DPV	0.037	0.1–100	[58]
GR-CS/GCE[h]	CV, DPV, CC	0.3	1–100	[59]
GR-PANI/GCE[i]	CV	-	10–100	[60]
PEDOT-GO/GCE[j]	CV	0.57	-	[61]
4-ABA-ERGO/GCEs[k]	DPV	0.01	0.1–65	[62]
SWCNT/CCE[l]	DPV	0.05	0.08–200	[63]
MWCNT-PDDA-PSS/GE[m]	CA	0.5	25–400	[64]
N-DHPB/MWCNT/CPE[n]	DPV	10	15–270	[65]
PtNP-MWCNT/CPE[o]	DPV	0.17	0.4–60	[66]
EF-NiO/MWCNT/CPE[p]	SWV	0.5	0.8–600	[67]
MWCNTs-GNS/GCE[q]	DPV	0.1	0.8–110	[68]
MWCNT/BPPGE[r]	AdsSV	0.01	0.01–2/2–20	[69]
Chitosan/MWCNT/GCE[s]	DPV	0.17	1–145/4–200	[70]
Au/NPs-Au[t]	DPV	0.018	0.0001 mM to 2 mM	[16]

[a]TiO-GR/GCE=TiO_2 nanoparticles with graphene modified GCE. [b]PMR/TiO_2-GR/GCE = TiO_2-graphene/poly(methyl red) modified GCE. [c]Pd-GO/GCE = Pd nanoparticles-graphene modified GCE. [d]Ni_2O_3–NiO GR/GCE = electrochemically reduced graphene loaded with Ni oxides nanoparticles modified GCE. [e]$CoFe_2O_4$-GO/CPE = graphene and $CoFe_2O_4$ nanoparticles modified carbon paste

electrode, [f]$NiFe_2O_4$-GR/CPE = $NiFe_2O_4$ nanoparticles and graphene modified carbon paste electrode.[g]Fe_3O_4-PDDA-GO/GCE = Fe_3O_4nanoparticles-poly(diallyldimethylammonium chloride)-graphene oxide nanocomposite modified GCE.[h]GR-CS/GCE = nanocomposites of graphene-chitosan modified GCE. [i]GR-PANI/GCE = graphene-polyaniline nanocomposite modified GCE. [j]PEDOT-GO/GCE = poly(3,4-ethylenedioxythiophene)/graphene oxide composite modified GCE. [k]4-ABA-ERGO/GCEs = poly(4-aminobenzoic acid)/electrochemically reduced graphene oxide modified GCE. [l]SWCNT/CCE = Single-wall carbon nanotubes modified carbon ceramic electrode. [m]MWCNT-PDDA-PSS/GE = MWCNT on poly(diallyldimetheylammonium chloride)/poly styrene sulfonate modified graphite electrode. [n]N-DHPB/MWCNT/CPE = N-(3,4-dihydroxyphenethyl)-3,5-dinitrobenzamide-MWCNT modified carbon paste electrode. [o]PtNP-MWCNT/CPE = Pt nanoparticles – MWCNT modified CPE. [p]EF-NiO/MWCNT/CPE = ethynylferrocene and NiO – MWCNT modified CPE. [q]MWCNTs-GNS/GCE = MWCNT-graphene nanosheets nanocomposite modified GCE. [r]MWCNT/BPPGE = MWCNT/basal plane pyrolytic graphite electrode. [s]Chitosan/MWCNT/GCE = Chitosan and MWCNT modified GCE. [t]Au/NPs-Au = Au with SAM layers composed with functionalized S-containing compounds and gold nanoprticles.