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Supporting Information

Ruthenium oxide nanoparticles immobilized over citrus limetta waste derived carbon material for electrochemical detection of hexestrol

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Instruments

CHNS analyzer (Elementar Analysensysteme Germany, Model- Vario Micro Cube), Fourier-transform infrared (FT-IR) spectroscopy (Thermo fisher FTIR spectrometer Model-NICOLET iS50Field), Field Emission Scanning Electron Microscope (ZEISS Gemini SEM-500) equipped with EDX, Transmission Electron Microscopy (TECNAI 200 kV) and N_2 adsorption/desorption analyzer (Quantachrome Autosorb, Model- ASI-CI-11) were used to characterize composition, morphology, and microstructure of the nanomaterials. X-ray diffraction (Model No. D8 DISCOVER), X-ray photoelectron spectroscopy (Model- PHI 5000 VersaProbe III) and Raman (Renishaw InVia Reflex Micro-Raman spectrometer) was used to study crystallographic information and chemical composition of the synthesized nanomaterials. Electrochemical sensing tests were carried out using CHI-760D electrochemical workstation with a three-electrode cell in which RuO_2@PBC@ITO as working electrode, Pt sheet as an auxiliary and a saturated calomel electrode (SCE) was used as a reference electrode. All the measurements were carried out at room temperature.

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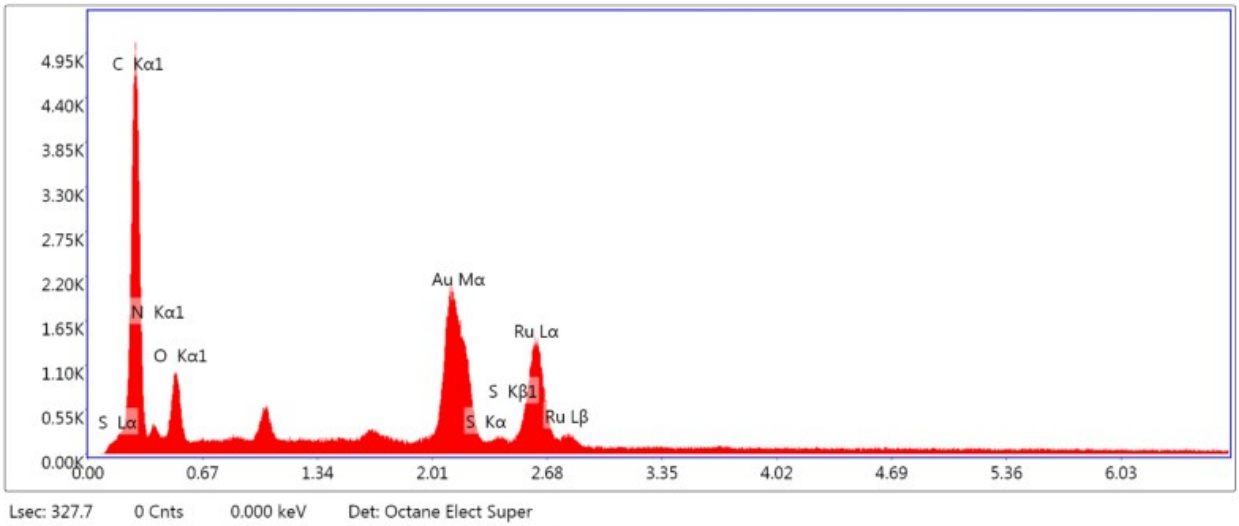

eZAF Smart Quant Results

Element	Weight %	Atomic %	Net Int.	Error %	Kratio	Z	A	F
C K	31.91	72.76	180.50	6.60	0.2482	1.3737	0.5663	1.0000
N K	2.29	4.48	5.30	21.27	0.0064	1.3379	0.2080	1.0000
O K	7.02	12.02	32.00	11.28	0.0275	1.3067	0.2993	1.0000
AuM	39.34	5.47	110.20	4.74	0.3104	0.6982	1.1273	1.0021
S K	0.00	0.00	0.00	99.99	0.0000	1.1521	0.8657	0.9981
RuL	19.44	5.27	56.30	4.75	0.1536	0.8412	0.9390	1.0002

Fig. S1 EDX analysis indicating the elemental composition of RuO_2@PCB.

Table S1. CHNS elemental analysis of PCB

Sample	**N (%)**	**C (%)**	**H (%)**	**S (%)**	**C/N Ratio**	**C/H Ratio**
PCB	3.45	50.36	3.956	0.042	14.6081	12.7316

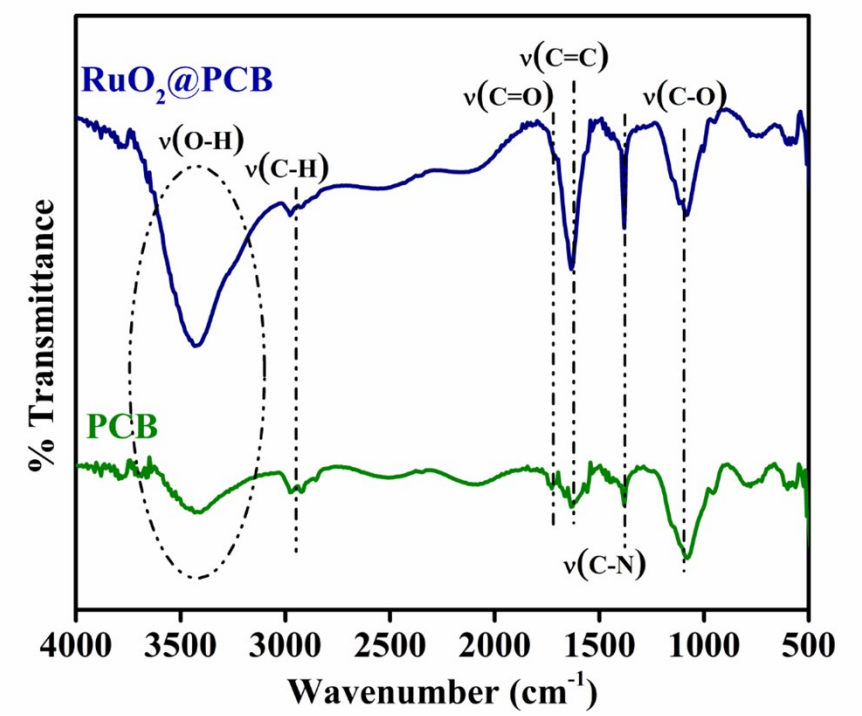

Fig. S2 FT-IR spectrum of PCB and RuO_2@PCB.

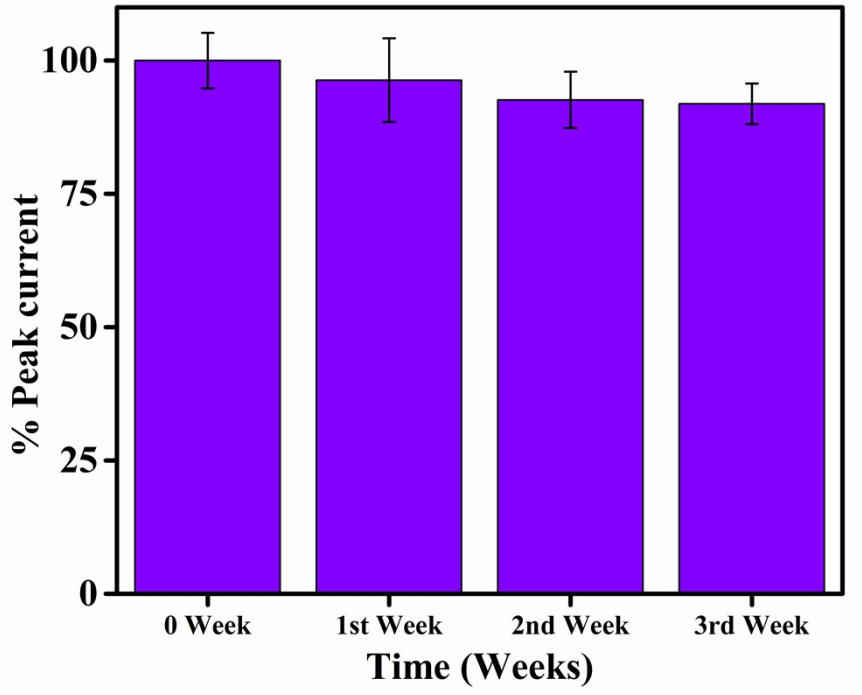

Fig. S3 Graph for percentage peak current (anodic) of RuO_2@PCB/ITO from CV with time.