

Electronic supplementary information of

Electrochemical amination of graphene using nanosized PAMAM dendrimers for sensing applications

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Electrochemical surface area of GCE and graphene modified GCE

Randles-Sevcik equation was used to calculate electrochemical surface area of GCE and graphene modified GCE

$$i_p = 2.69 \times 10^5 AC D^{1/2} \nu^{1/2} n^{3/2} \dots\dots\dots (S1)$$

Where i_p =oxidation peak current of $K_4[Fe(CN)_6]$ in ampere obtained from cyclic voltammogram of 5 mM $K_4[Fe(CN)_6]$ in 0.5 M KCl at the scan rate of 50 mVs^{-1} , A=electrochemical surface area of electrode in cm^2 , C= Concentration of analyte (5 mM $K_4[Fe(CN)_6]$ in 0.5 M KCl) in mol cm^{-3} , D- Diffusion coefficient of $K_4[Fe(CN)_6]$ known as $6.5 \times 10^{-6} \text{ cm}^2 \text{ s}^{-1}$, ν scan rate in V s^{-1} and n- number of electron transferred in the redox reaction (usually 1).

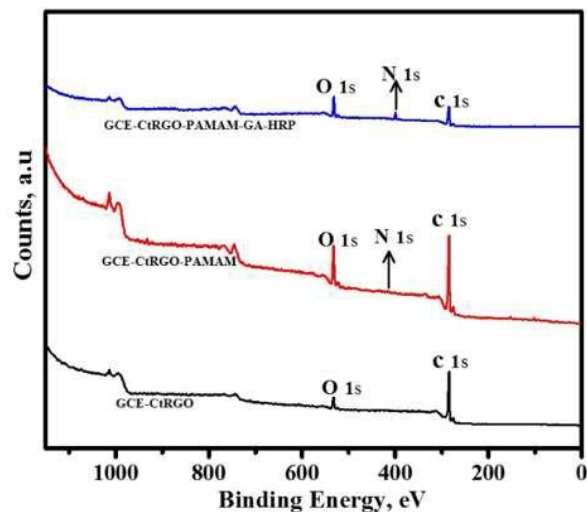


Figure S1. The wide scan of X-ray photoelectron spectra of graphene, aminated graphene and HRP immobilized aminated graphene surface.

Table s1. The XPS data analysis of C1s, O1s and N1s of electrode surfaces

Electrode Surface	C1s, BE (eV)	O1s, BE (eV)	N1s, BE (eV)
GCE-CtRGO	284.9, (C-C) 285.9, (C-O) 289.4, (C(O)OH)	531.3, (R-(C=O)-R) 532.7, (C-OH, C-O-C) 533.6, (O=C-OH, O=C-OR)	No peak
GCE-CtRGO-PAMAM	284.9, (C-C) 285.9, (C-O/C-N) 289.4, (C(O)OH)	531.7, (R-(C=O)-R) 532.6, (C-OH, C-O-C) 533.7, (O=C-OH, O=C-OR)	399.07, (N-C, sp ³) 400.3, (N-C, sp ²) 401.2, (protonated amine)
GCE-CtRGO-PAMAM-HRP	284.9, (C-C) 286.2, (C-O/C-N) 287.9, (C(O)OH)	531.48, (R-(C=O)-R) 532.47, (C-OH, C-O-C) 533.6, (O=C-OH, O=C-OR)	399.7, (N-C, sp ³) 400.4, (N-C, sp ²) 401.7, (protonated amine)

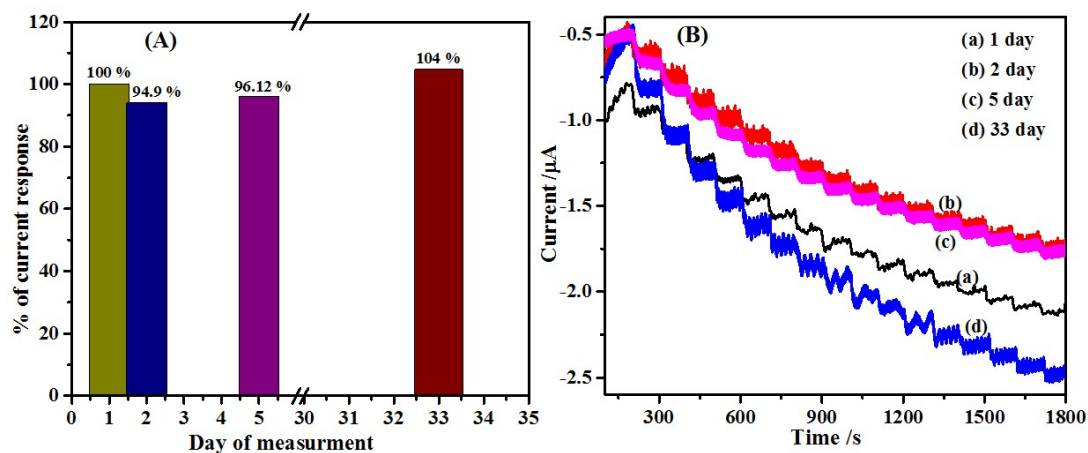


Figure S2. The current response of GCE-CtRGO-PAMAM-GA-HRP for 100 μM H_2O_2 from chronoamperograms at different time intervals (A) and the corresponding chronoamperograms (B).

Table S2. Determination of H_2O_2 in Human Serum

Sample	Added (μM)	Found (μM)	Recovery %
Serum	-	-	-
H_2O_2 spiked Serum Sample	50	46	91
	50	49.5	99
	50	45.2	90.4
Standard H_2O_2 sample	50	52.3	104.6
	50	50.2	100.4

Mean recovery 96.28 %