Nanomolar Level Electrochemical Detection of Glycine on a Miniaturized Modified Screen-Printed Carbon-based Electrode; A Comparison of Performance with Glassy Carbon Electrode System

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Figure S1. (A) The UV-Vis spectrum of AuCuNC@N-GQD; (Inset of (A) The digital images of the PL of the AuCuNC@N-GQD under normal and short-UV (365 nm); (B) The emission spectrum of AuCuNC@N-GQD; (C) MS-ESI-TOF mass spectra of AuCuNC@N-GQD.
Sensitivity Calculation

The sensitivity of an electrode depends on the current response (I), concentration of the analyte (C) and also the area of the electrode (A) used. They are related as,

Calculation 1

\[
\text{Sensitivity} = \frac{\text{Current response}}{\text{Concentration of analyte} \times \text{Area of electrode}}
\]

From the calibration curve,

\[
I_1 = 2.4648 \ \mu A \quad C_1 = 29.350 \ \mu M
\]

\[
I_2 = 7.3626 \ \mu A \quad C_2 = 218.111 \ \mu M
\]

\[
\Delta I = 4.8978 \ \mu A \quad \Delta C = 188.761 \ \mu M
\]

Area of the electrode = 12.56×10^{-2} \ cm^2 (r=0.2 \ cm)

\[
\text{Sensitivity} = \frac{4.8978}{(188.761 \times 12.56 \times 10^{-2})} \ \mu A \ \mu M^{-1} \ cm^2
\]

\[
= 0.2065851 \ \mu A \ \mu M^{-1} \ cm^2
\]
Sensitivity = \frac{\text{Slope of the calibration curve}}{\text{Area of the electrode}}

\text{Slope of the calibration curve} = 0.0259 \ \mu\text{A}/\mu\text{M} \text{ from LDR graph}

\text{Area of the electrode} = 12.56 \times 10^{-2} \text{ cm}^2 \ (r=0.2 \text{ cm})

\text{Sensitivity} = \frac{0.0259}{(12.56\times10^{-2})} \ \mu\text{A} \ \mu\text{M}^{-1} \ \text{cm}^{-2}

= 0.2062102 \ \mu\text{A} \ \mu\text{M}^{-1} \ \text{cm}^{-2}

Form the calculation 1 and calculation 2 the sensitivities obtained remains same that indicate that both the equations are valid for sensitivity calculations.

**LOD Calculation**

\text{LOD} = \frac{3\sigma}{\text{m}}

\sigma - \text{The standard deviation of the current responses of blank}

\text{m} - \text{Slope of Current vs Concentration graph}