

Carbon quantum dots decorated microfabricated gold electrodes for sensitive glucose detection

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Carbon quantum dots (CQDs) are a new class of carbon based nanomaterials. Up to now their photoluminescence properties have been extensively studied. However the use of CQDs in the field of bio-sensing has rarely been reported. Herein, we attached CQDs on the gold nanoparticles to develop a new nanohybrid material. The developed hybrid was attached on the microfabricated gold electrode [1] surface and finally glucose oxidase (GOx) enzyme immobilized via covalent bonding [2]. CQDs based GOx biosensor exhibited a highly stable amperometric response to glucose and reached the steady state current rapidly (Fig.1). The developed biosensor exhibited a high sensitivity of $62.38 \mu\text{A mM}^{-1} \text{cm}^{-2}$ and a detection limit of $17 \mu\text{M}$ (S/N=3).



Figure1: schematic representation of the overall biosensor and chronoamperometric response of the developed biosensor to the serial additions of glucose under stirring conditions, applied potential: -0.6V.

REFERENCES:

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