Abstract

A Highly Sensitive Non-Enzymatic Glucose Biosensor Based on Regulatory Effect of Glucose on Electrochemical Behaviors of Colloidal Silver Nanoparticles on MoS$_2$ †

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Abstract: A novel and highly sensitive non-enzymatic glucose biosensor was developed by nucleating colloidal silver nanoparticles (Ag NPs) on MoS$_2$. The facile fabrication method, high reproducibility (97.5%) and stability indicates a promising capability for large-scale manufacturing. Additionally, the excellent sensitivity (9044.6 $\mu$A·mM$^{-1}$·cm$^{-2}$), low detection limit (0.03 μM), appropriate linear range of 0.1–1000 μM, and high selectivity, suggests that this biosensor has a great potential to be applied for noninvasive glucose detection in human body fluids, such as sweat and saliva.

Keywords: non-enzymatic; glucose; biosensor; colloidal silver nanoparticle; MoS$_2$