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Synthesis and utilisation of graphene for fabrication of electrochemical sensors

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Abstract

This review summarises the most recent contributions in the fabrication of graphene based electrochemical biosensors in recent years. It discusses the synthesis and application of graphene to the fabrication of graphene-based electrochemical sensors, its analytical performance and future prospects. An increasing number of reviews and publications involving graphene sensors have been reported ever since the first design of graphene electrochemical biosensor. The large surface area and good electrical conductivity of graphene allow it to act as an “electron wire” between the redox centers of an enzyme or protein and an electrode's surface, which make it a very excellent material for the design of electrochemical biosensors. Graphene promotes the different rapid electron transfers that facilitate accurate and selective detection of cytochrome-c, β -nicotinamide adenine dinucleotide, haemoglobin, biomolecules such as glucose, cholesterol, ascorbic acid, uric acid, dopamine and hydrogen peroxide.

Keywords Enzymes; DNA biosensor; Immunosensor; Enzyme biosensor; Graphene electrode; Glucose; Ascorbic acid.

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