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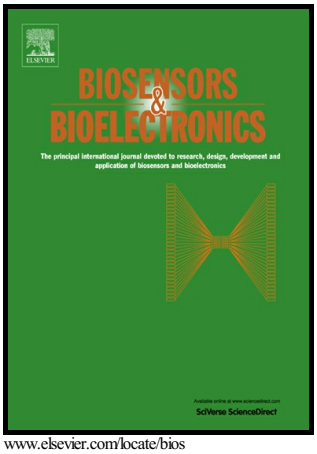

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Recent advances in graphene-based nanomaterials for fabricating electrochemical hydrogen peroxide sensors

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Abstract:

Due to the large specific surface area, extraordinary mechanical flexibility, chemical stability, and superior electrical and thermal conductivities, graphene (G)-based materials have recently opened up an exciting field in the science and technology of two-dimensional (2D) nanomaterials with continuously growing academic and technological impetus. In the past several years, graphene-based materials have been well designed, synthesized, and investigated for sensing applications. In this review, we discuss the synthesis and application of graphene-based 2D nanomaterials for the fabrication of hydrogen peroxide (H_2O_2) electrochemical sensors. In particular, graphene-based nanomaterials as immobilization matrix of heme proteins for the fabrication of enzymatic H_2O_2 electrochemical biosensors is first summarized. Then, the application of graphene-based electrocatalysts (metal-free, noble-metals and non-noble metals) in constructing non-enzymatic H_2O_2 electrochemical sensors is discussed in detail. We hope that this review is helpful to push forward the advancement of this academic issue (189 references).