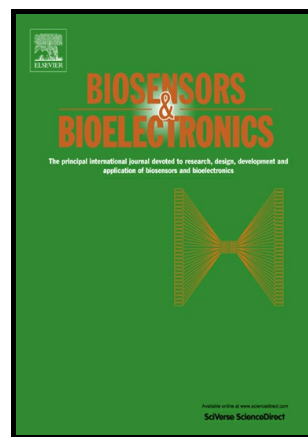


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Zonghua Wang^{*}, Jianbo Yu, Rijun Gui^{*}, Hui Jin, Yanzhi Xia

Shandong Sino-Japanese Center for Collaborative Research of Carbon Nanomaterials, Collaborative Innovation Center for Marine Biomass Fiber Materials and Textiles, College of Chemical Science and Engineering, Laboratory of Fiber Materials and Modern Textile, The Growing Base for State Key Laboratory, Qingdao University, Shandong 266071, PR China

^{*} Corresponding author. Fax/Tel. +86 532 85950873.

E-mail addresses: wangzonghua@qdu.edu.cn (Z. Wang), guirijun@qdu.edu.cn (R. Gui).

ABSTRACT

Carbon nanomaterials (CNMs) have attracted increasing attention due to their unique electrical, optical, thermal, mechanical and chemical properties. CNMs are extensively applied in electronic, optoelectronic, photovoltaic and sensing devices fields, especially in bioassay technology. These excellent properties significantly depend on not only the functional atomic structures of CNMs, but also the interactions with other materials, such as gold nanoparticles, SiO₂, chitosan, etc. This review systematically summarizes applications of CNMs in electrochemical aptasensors (ECASs). Firstly, definition and development of ECASs are introduced. Secondly, different ways of ECASs about working principles, classification and construction of CNMs are illustrated. Thirdly, the applications of different CNMs used in ECASs are discussed. In this review, different types of CNMs are involved such as carbon nanotubes, graphene, graphene oxide, etc. Besides, the newly emerging CNMs and CNMs-based composites are also discoursed. Finally, we demonstrate the future prospects of CNMs-based ECASs, and some suggestions about the near future development of CNMs-based ECASs are highlighted.

Keywords: carbon nanomaterials; electrochemical aptasensors; graphene; carbon nanotubes; quantum dots

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