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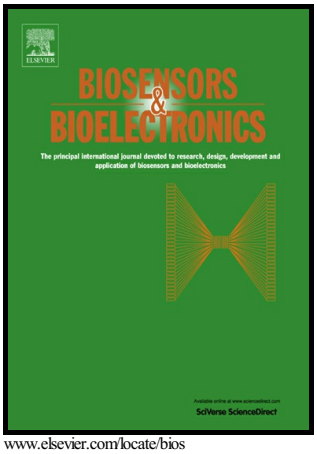

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Gangbing Zhu[a,b,d], Heng Sun[b], Bin Zou[c], Zhenjiang Liu[b], Ning Sun[a], Yinhui Yi[b], Kwok-yin Wong[a,*]

[a] Department of Applied Biology and Chemical Technology, and the State Key Laboratory of Chirosciences, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

[b] School of the Environment and Safety Engineering, Jiangsu University, Zhenjiang, 212013, P. R. China

[c] School of Food and Biological Engineering, Jiangsu University, Zhenjiang 212013, P. R. China

[d] State Key Laboratory of Chemo/Biosensing and Chemometrics, Hunan University, Changsha 410082, P.R.China

Abstract

Owing to the harmful nature of 4-nitrochlorobenzene (4-NCB, one toxic organic pollutant) and the low cost, high sensitivity and ease of operation of electrochemical method, it is highly desirable to develop effect electrochemical sensor for the detection of 4-NCB. Herein, by partially unzipping carbon nanohorns (CNHs) via a simple wet-chemistry method, CNHs and graphene oxide (GO) (CNHs/GO) nanohybrids were produced for sensing 4-NCB with synergistic properties. While the retained CNHs offer a path for rapid electron transport, the GO sheets formed by partially unzipping CNHs provide abundant active sites, further increase in surface area as well as improved dispersibility of the CNHs/GO. Our results show that the CNHs/GO modified electrode has excellent sensitivity to 4-NCB with a wide linear response range and a detection limit as low as 10 nM.

* Corresponding author.
E-mail address: kwok-yin.wong@polyu.edu.hk