Research & Reviews

Journal of Material Sciences

ISSN: 2321-6212

2020

Vol.08 No.4

Fabrication of SnO2 multiporous-Au nanoparticle-modified electrode for an amperometric biosensor

A.K.M. Kafi

Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, Kuantan 26300, Malaysia

Abstract

A novel amperometric H2O2 biosensor based on immobilization of Hemoglobin with MPNFs of SnO2 and Au nanoparticle (Au NP) onto glassy carbon electrode with chitosan have been proposed in this work. Multiporous nanofibers of SnO2 were synthesized by electrospinning method from the tin precursor by controlling the concentration. Hb was then co-immobilized with the SnO2 and Au NP nanofibers on the surface of glassy carbon electrode by using chitosan. The MPNFs of SnO2 play a significant role in facilitating the electron exchange between the electroactive center of catalase and the electrode surface. Cyclic Voltammetry and amperometry were used to study and optimize the performance of the fabricated H2O2 biosensor. The AuNP/SnO2-MPNFs/Hb/Ch/GCE biosensor displayed a linear amperometric response towards the H2O2 concentration range from 1 to 120 □M with a detection limit of 0.05 □M (based on S/N=3). Furthermore, the biosensor reported in this work exhibited acceptable stability, reproducibility, and repeatability.

Biography:

A.K.M.Kafi has completed his PhD at the age of 29 years from Dong-A University and postdoctoral studies from The University of Tokyo and the university of Sydney. He has published more than 40 papers in reputed journals.

26th International Conference on Advanced Materials, Nanotechnology and Engineering June 22-23, 2020

Abstract Citation:

A.K.M.Kafi, Fabrication of SnO2 multiporous-Au nanoparticle-modified electrode for an amperometric biosensor 2020, 26th International Conference on Advanced Materials, Nanotechnology and Engineering
June 22-23, 2020
https://advancedmaterials.conferenceseries.com/speaker/2020/mr-a-k-m-kafi-a-k-m-kafi-has-completed-his-phd-at-the-age-of-29-years-from-dong-a-university-and-postdoctoral-studies-from-the-university-of-tokyo-and-the-university-of-sydney