

# **Fabrication of a glucose oxidase/multiporous tin-oxide nanofiber film on Prussian blue–modified gold electrode for biosensing**

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## **ABSTRACT**

Herein, we propose a new approach to fabricate an enzyme electrode based on immobilization of glucose oxidase (GOD) with multiporous nanofibers (MPNFs) of SnO<sub>2</sub> on Prussian blue (PB) modified gold (Au) electrode with chitosan. MPNFs of SnO<sub>2</sub> were synthesized by electrospinning method from the tin. Prussian blue was electrochemically deposited onto an Au electrode. GOD was then co-immobilized with the nanofibers on the surface of the PB modified gold electrode by using chitosan. The immobilized GOD/MPNFs onto the PB-Au presented faster, more stable and sensitive amperometric response to detecting glucose. Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) produced via Glucose oxidation and glucose reaction was detected by Prussian blue. The linear response dependence on glucose concentration was observed in a range of 0.5–5 mM and a detection limit of 0.05 mM at 3 signal/noise ratio. Because of unique structural characteristics at the nanoscale level, multiporous nanofibers (MPNFs) of SnO<sub>2</sub> is an ideal candidate for matrices in biosensing.

## **KEYWORDS**

Multiporous SnO<sub>2</sub> nanofiber; Prussian blue; Glucose oxidase; Glucose biosensor

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