

Biosensor composed of metalloprotein-DNA on NPGF electrode to enhance electrochemical signal

조진희, 윤진호, 이택, 최정우†

서강대학교

(jwchoi@sogang.ac.kr†)

In this study, the biosensor composed of hemoglobin (Hb)-DNA on the nanoporous gold thin film (NPGF) electrode is fabricated to enhance redox signal. For fabrication of well-orientated protein chip, Hb and DNA is conjugated and introduced on the electrode by specific DNA binding. Furthermore, the NPGF electrode is introduced to prepare the biosensor for increment of the surface area. To verify the conjugation of Hb-DNA, sodium dodecyl sulfate polyacrylamide gel electrophoresis is used. Formation of NPGF is verified by scanning electron microscope. Atomic force microscopy is utilized to confirm Hb-DNA immobilization on the electrode. Electrochemical property of is investigated by cyclic voltammetry. Proposed biosensing system composed of Hb-DNA on the NPGF electrode can be applied to develop biosensor with electrochemical signal enhancement and well-orientated biomaterial layer formation. Acknowledgments: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2016R1A6A1A03012845).

Reference

[1] Choi et al., Adv. Func. Mater., 24, 1781 (2014).