

Graphene-based electrode utilized with Fusion Protein for Detection of Organophosphate Pesticides

양민호, 최봉길, 박태정, 홍원희, 이상엽*
한국과학기술원
(leesy@kaist.ac.kr*)

Herein, we demonstrated an immobilization strategy for high biological activities and high performed biosensors without conformational changes by using bioconjugates consisted of fusion proteins and reduced graphene oxide-gold nanoparticle hybrid materials (RGO-Au). The GBP-OPH/RGO-Au nanobio-conjugates were expected that hybrid systems enable to improve enzyme stability, and biocatalytic activity, and electron transfer over the enzymatic reaction, which attributed to favorable morphology of immobilized GBP-OPH. The particle size and distribution of Au on RGO were characterized by TEM and AFM images. The electrochemical properties of GBP-OHP/Au-RGO hybrids were analyzed by cyclic voltametry and impedance analysis. The amperometric measurements were performed for detection of OP compounds by flow injection method. [This work was supported by the Converging Research Center Program (2009-0082332) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea (NRF). Further support by the World Class University Program (R32-2009-000-10142-0) of the MEST is appreciated].