

Characterization of a Carbon Composite Electrode for an Electrochemical Immunosensor

장병옥¹, 조은찬^{1,2}, 구기갑^{1,2,*}

¹서강대학교; ²서강대학교 바이오융합기술 협동과정

(koo@sogang.ac.kr*)

A label-free electrochemical immunosensor for rapid detection of *Escherichia coli*O157:H7 was developed by using a sol-gel method with graphite powder (about 34 μm). Here anti-*E.coli* antibodies were physisorbed onto a porous carbon composite electrode.

Direct measurements by cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) in presence of $[\text{Fe}(\text{CN})_6]^{3-/4-}$ as a redox probe showed that the immobilization of antibodies onto the carbon composite electrode surface and the binding of *E.coli* cells with antibodies increases the electron-transfer resistance systematically. Surface morphology of a carbon composite electrode was also investigated using scanning tunneling microscopy (STM).