

The study of gelatin as an electrode substrate for biosensor system

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Electrode substrates such as silicon or glass have been commonly used in chemical and biosensor. However, these substrates have limited application used in biomedical field, especially when dealing with soft tissue in our body. Gelatin, which extensively used in the biomedical field, is biodegradable with excellent biocompatibility. The purpose of this study was to extend the application of gelatin into micro electro mechanical system (MEMS). Gelatin with electrode was produced by screen printing technique, followed by analyzing the substrate surface smoothness, swelling property and the adhesion between the ink and substrate. The results showed that the swelling ratio could be controlled by the cross-linking reagent. The scotch tape test showed that the adhesion strength of the silver inks was better than carbon ink. Moreover, the outcome of cyclic voltammetry showed that the electric transmission of silver electrode was much faster than the carbon electrode. In this study, we have successfully prepared the gelatin film with the electrode using either carbon or silver inks. The circuit pattern could be flawlessly printed on to the substrate, and silver electrode showed better adhesion on the surface of gelatin film. Gelatin may become a promising electrode substrate to be used as biosensor as well as electrical stimulation for myocardial tissue engineering.

Biography

M.W. Lee has completed his Ph.D in 2005 at National Yang Ming University, Institute of Biomedical Engineering. He is the chair of the School of Medical Laboratory and Biotechnology, Chung Shan Medical University (Taiwan). Ming-Wei Lee specializes in biomaterial and biosensor. He has published more than 15 papers in reputed journals.

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