

Development of Bioelectrode Using Cobalt Hydroxide/Graphite Oxide Composites for Enzymatic Fuel Cell

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Based on the previous work, the power density was suggested to enhance by using mediator and its features to improve the contact electrode structure for enzymatic fuel cells (EFCs). In this study, reaction time was optimized for the higher the current/power density of EFC. Bioelectrode was developed using the process of depositing cobalt onto graphite oxide (GO) for increasing electron transfer between solution and bioelectrode in EFC system. The composite as [CoCl₂(GO)] was synthesized by coating of cobalt chloride hexahydrate on GO. The power density of EFC with [CoCl₂(GO)] was depended on different coating times in the process. The adsorbent performance of the composite was influenced by adsorbent's surface and dispersion sites, as well as coating time. In addition, it was identified that hydrogen molecules were adsorbed in cobalt composite. Images of scanning electron microscope (SEM) and Fourier transform infrared spectroscopy (FTIR) were employed to investigate surfaces of the modified bioelectrodes with [CoCl₂(GO)].