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Abstract
A study was conducted to use the cyclic voltammery (CV) method to deposit platinum nanoparticles on the Indium Tin Oxide (ITO) at different concentrations of H2PtCl6/BR solution,
scanning cycles, and scanning rates. The sizes and morphologies
of the platinum particles were observed by the Scanning Electron Microscopy (SEM), the Atomic Force Microscopy
(AFM) and the Electrochemical Impedance Spectroscopy (EIS). The results show that when the depositing potential was fixed at -0.4 V ; the concentrations of electrolyte were lower ; the scanning segments were fewer and the scanning rates were higher, the nano size platinum particles were deposited. When the electrolyte was pure H2PtCl6 solution or which including Pb(CH3COO)2 in H2PtCl6 solution, the sizes of the particles were approximately 39 ~ 78 nm.

Then the H2O2 was detected by the Bare Disk Glassy Carbon Electrode (GC), the GC/Pt electrode and the GC/Pt(Pb) electrode. The experimental results showed that the GC/Pt(Pb) electrode had the best current response. In 4 mL 0.05 M pH=7.4 phosphate buffer solution (PBS) at 30℃ on the O2 atmosphere, the Nyquist graph of EIS showed that when the dynamic control at high frequency , the smaller the deposited particles were, the larger the hemicycle of Nyquist graph became.

Then we deposited platinum nanoparticles on GC at the optimum experimental conditions to fabricate a GC/Pt(Pb)/GOD+GA electrode and the electropolymerization was performed to make the o-phenylenediamine (o-PD) on the GC/ Pt(Pb)/GOD+GA electrode and to form a GC/Pt(Pb)/GOD+GA/ PPD working electrode of a biosensor and we fabricated coiled platinum wire as the counter electrode and Ag/AgCl as reference electrode. When the glucose was detected, we found that at the range of concentration 0.00125 ~ 0.16 mM, the relative coefficient was 0.996 and the detection limit was 0.00125 mM in 4 mL 0.05 M pH=7.4 PBS at 30℃ on the O2 atmosphere. If the GC/Pt(Pb)/GOD+GA/ PPD electrode was applied to the biosensor for detecting the glucose and interferant, in 4 mL 0.05 M pH=7.4 PBS at 30℃ on the O2 atmosphere and +0.5 V, it could avoid the interference of the interferant such as L(+)-Ascorbic acid, Uric acid, and Acetaminophen.

Making the electrode in this research's method not only it's response time was 2 ~ 6 seconds but also it's life time maintain for more than 17 days at least. Therefore it can be applied to the current glucose biosensor effectively in the future.
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