

Preparation of Multi-Wall Carbon Tubes-Nanogold Particles Modified Glassy Carbon Electrode and Its Electrocatalytic Oxidation toward Paracetamol

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Extended Abstract

Paracetamol (PCM, acetaminophen) is widely used in Chinese and west medicines, which is a well-known antipyretic, non-steroidal and anti-inflammatory drug[1,2]. Both multi-wall carbon nanotubes(CNTs)[3,4] and gold nanoparticles(AuNPs) exhibit the electrocatalytic activity[5-7] to the oxidation of paracetamol(PCM), hence use of CNTs in combination with AuNPs provides a novel AuNPs-CNTs modified glassy carbon electrode(GCE) (AuNPs/CNTs/GCE) for the determination of PCM. The electrocatalytic activity of this modified electrode is related to the size of gold nanoparticles and the amount of gold deposited on the CNTs/GCE surface. On the basis of cyclic voltammograms(CV). The oxidation peak potential of PCM on AuNPs/CNTs/GCE is 0.241 V lower than that at the bare GCE and 0.275 V lower than that at the bare Gold electrode, which is strong evidence for the electrocatalytic oxidation of PCM at this modified electrode. The modified electrode shows the largest electrocatalytic activity at pH 7.0 in the pH region 5.0-8.0. The AuNPs/CNTs/GCE exhibits two liner regions, one is 0.005-0.1 mM PCM with the correlation coefficient 0.998, and another one is 0.20-3.0 mM PCM with the correlation coefficient 0.999. The experimental results demonstrate that the AuNPs-CNTs modified GCE (AuNPs/CNT/GCE) shows the high detection sensitivity for PCM and good repeatability.

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