Polythiophene/copper bismuthate nanosheet nanocomposites modified glassy carbon electrode for electrochemical detection of benzoic acid

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An *in-situ* polymerization method was developed to fabricate polythiophene/copper bismuthate nanosheet nanocomposites. The obtained nanocomposites were analyzed by X-ray diffraction (XRD) and transmission electron microscopy. The nanocomposites with the size of several hundreds of nanometers are composed of tetragonal CuBi₂O₄ phase. Amorphous polythiophene nanoparticles attach to the surface of the polycrystalline copper bismuthate nanosheets. A glassy carbon electrode (GCE) modified with the polythiophene/copper bismuthate nanosheet nanocomposites as the electro-catalyst was used to detect benzoic acid using cyclic voltammetry (CV) method. The nanocomposites modified GCE shows the limit of detection (LOD) of 0.56 μ M and linear range of 0.001-2 mM. The polythiophene/copper bismuthate nanosheet nanocomposites can be used as good electrode materials for benzoic acid detection

Keywords: Polythiophene, Copper bismuthate nanosheets, Composites, Electrochemical detection, Benzoic acid.

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