Short Communication

Electrochemical and Optical Properties of Tellurium Dioxide (TeO₂) Nanoparticles

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Herein, a facile hydrothermal method was used for the preparation of nanostructured TeO₂. Different techniques (X-ray diffraction, transmission electron microscope, and scanning electron microscope) were used for morphology, size, and crystalline structure identification of synthesized TeO₂ nanoparticles. Fourier transform infrared and ultraviolet-visible spectroscopies were used for optical properties characterization of nanoparticles. Nanostructured TeO₂ having a spherical and uniform shape and particle size ~12 nm that approved via transmission electron microscope. TeO₂/ITO glass electrode was fabricated in order to study the electrochemical properties by using cyclic voltammetry and electrochemical impedance spectroscopy. Electrochemical measurements of the fabricated TeO₂/indium tin oxide electrode showed that the electrode having excellent sensitivity. Thus, the TeO₂ nanoparticles can further used for biosensors applications.

Keywords: Tellurium oxide; Nanoparticles; Optical properties; Synthesis and characterization

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