Synthesis and Characterization of $\text{Cu}_2\text{CdSnS}_4$ Quaternary Alloy Nanostructures

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doi: 10.20964/2018.07.45

Received: 16 January 2018 / Accepted: 28 February 2018 / Published: 5 June 2018

$\text{Cu}_2\text{CdSnS}_4$ (CCTS) quaternary alloy nanostructure is an important material of enhancing the sensors effectiveness. CCTS nanostructures have been synthesized using ultrasonic and deposited on SiO_2/Si substrate using sol-gel method and under annealing temperature; 400 °C. Structural optical, topographical and morphological properties of CCTS were explored using Ultraviolet–visible spectroscopy, X-ray diffraction (XRD), atomic force microscopy (AFM) and scanning electron microscopy (SEM), respectively. Interdigitated electrodes (IDEs) have been manufactured via deposited silver on CCTS/ SiO_2/Si substrate via a physical vapor deposition and hard mask. Electrical properties of fabricated IDEs are further evaluated as a function of voltage and frequency. The proposed IDEs can be used in subsequent studies to develop a biological sensor capable of detecting the DNA for many types of diseases in order to facilitate the combating and eradicating. The resulted values are in agreement with others.

Keywords: $\text{Cu}_2\text{CdSnS}_4$; Nanostructures; Optical; Structural; Electrical.

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