SYNTHESIS OF $\text{FeS}_2$/ZnO CORE/SHELL NANOWIRES THROUGH ELECTROCHEMICAL METHOD ASSISTED BY AAO TEMPLATES

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One-dimensional (1D) materials are versatile nanostructures that can be implemented for energy-related applications due to their unique electrical and optical properties which are associated with their morphology. The principal interest in this kind of nanomaterials stems from their anisotropic nature, resulting from nanoscale confinement in two dimensions. The aim of this work is the synthesis of core/shell nanowires of $\text{FeS}_2$/ZnO as acceptor material for the photoactive layer in hybrid solar cells. In order to synthesize core/shell nanowires of FeS2/ZnO was implemented a two-step process using AAO templates. Firstly, it was electrodeposited ZnO nanotubes in a potential range of -1 to 1 V (vs Ag/AgCl) for 20 cycles. The bath temperature was kept at 85 °C and pH was around 6. Second-step consisted in $\text{FeS}_2$ nanowires infiltration. It was carried out by cyclic voltammetry in the potential range of -1.2 to 0.2 V (vs Ag/AgCl) at a sweep rate of 5 mVs\textsuperscript{-1} for 25 cycles. The nanosemiconductor was characterized by UV-Vis spectroscopy, PL, FE-SEM, DTA-TGA. The core/shell nanowire exhibits absorption in visible range around 400 to 800 nm, an increasing in photoluminescence properties, high electron charge due to the coupling of both nanomaterials, one-dimensional morphology and high thermal stability.

**Keywords:** core/shell, nanowires, electrosynthesis

**References:**


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