

Metal Oxide Photocatalysts for Photoelectrochemical Energy Production

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Abstract

Photoelectrochemical cells (PEC) are on the forefront of the research concerning the production of electrical and chemical energy from renewable resources [1]. The most significant characteristic of an effective photoanode is its energy bands levels, its electric conductivity and enhanced stability against corrosion. This work concerns mainly the synthesis and characterization of novel, such as WO_3 , BiVO_4 and Fe_2O_3 [2] and their combination with graphitic carbon nitride ($\text{g-C}_3\text{N}_4$), a typical layered metal-free semiconductor with a suitable energy gap for absorption of the visible part of the solar radiation. [3, 4]. The physicochemical and electrochemical properties of the developed photocatalysts were thoroughly investigated. They were successfully incorporated as photoanodes in PEC cells, where their photoelectrochemical performance was evaluated and optimized.

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