

Deposition And Characterization Of The Composite Material P-Si/Poly(Pab)-Cu For Photovoltaic Applications

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Abstract:

In the goal to replace silicon and other semiconductor thin film technologies, and in order to develop a long term technology bearing in mind that this should be environmentally friendly, low cost and abundant, an increasing research interest is nowadays given to organic materials [1].

The incorporation of small metal particles in organic matrices, in particular polymers, has been the subject of a various development and study programs stimulated by their potential for optoelectronic devices [2-3].

Recent studies in relation to the incorporation by electro-chemical reduction of metal particles having catalytic properties in polymeric thin films have essentially been dedicated to Pt, Pd and Rh [4]. Few examples exist in the literature concerning the incorporation of transition metal particles in polymer thin films such as Ni, Cu or Co [5].

The objective of this study is to report on the results obtained on the deposition of the composite material p-Si/Poly(PAB)-Cu thin films for photovoltaic applications. We analyze the influence of the semiconductor substrate on the deposition of the polymer thin film. The electrochemical method used is a Voltalab potentiostat/galvanostat controlled by a computer. In the characterization, we have used cyclic voltametry (CV) and electrochemical impedance spectroscopy (EIS). Preliminary results obtained of the I-V characteristic of the p-n heterojunction showing the potential use of such a material in photovoltaic conversion are presented.

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