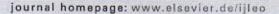


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Original research article

Photovoltaic properties enhancement of solar cell based on porous silicon



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ABSTRACT

Photoelectrochemical and electrochemical etching of conventional silicon solar cells of various thicknesses was conducted to the synthesis nanostructured solar cell of higher conversion efficiency. It is found that the conversion efficiency of the solar cell synthesized with the help of laser beam is higher that those etched electrochemically. The Atomic Force Microscope & Scanning Electron Microscope images imply that the pore diameter decreases from 40 μ musing 530 nm laser wavelength to 15 μ m when 405 nmwavelength was employed. The best hydrofluoric acid concentration to produce higher efficiency was 20%. Image analysis has been carried out to characterize the microstructured surface using computer software.

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1. Introduction

the main challenge concerns producing high efficiency photovoltaic exceed 12% [1,2]. Surface reconstruction of the main challenge concerns producing high efficiency photovoltaic exceed 12% [1,2]. Surface reconstruction of the main challenge concerns producing high efficiency photovoltaic exceed 12% [1,2]. Surface reconstruction of the silicon solar cell could drastically modify the optical, electrical and consequently the conversion efficiency of the The enhancement of te conversion efficiency is attributed to the large surface area of the porous layer whoi helps the parapping [3].

It is solar cells represent the first generation of conventional solar cells. This type of solar cells suffered from some with the first generation of conventional solar cells. This type of solar cells suffered from some with the first generation of high manufacturing cost. However, such limitations can be overcome with the first generation of the area [4]. Nanostructured solar cells based on the ordinary p-n junction could provide in the first generation of the maintenance represented by enhancement the conversion efficiency and reduction of the maintenance represents, as well [5]. Inexpensive solar cells, which would utilize nanotechnology are considered as a renewable energy sold preserve the environment due to the pollution reduction [6].

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