

عنوان مقاله:

Preparation of Nanocrystalline CdS Thin Films by a New Chemical-Solution Deposition Route for Application in Solar Cells as Antireflection Coatings

محل انتشار:

سومین کنگره بین المللی رنگ و پوشش (سال: 1388)

تعداد صفحات اصل مقاله: 7

نویسندگان:

R Sahraei - *Department of Chemistry, University of Ilam*

H Kavian - *Department of Chemistry, University of Ilam*

G Nabiyouni - *Department of Physics, University of Arak, Arak, Iran*

N Shokri - *Department of Chemistry, Payame Nour University, Urmia, Iran*

خلاصه مقاله:

Nanocrystalline cadmium sulfide thin films as antireflection materials for solar cells have been prepared by a new chemical solution deposition route in an aqueous medium at 50 °C. As deposited thin films were studied using X-ray diffraction (XRD), scanning electron microscopy (SEM), and optical absorption spectra. X-ray diffraction data indicate the formation of hexagonal nanocrystalline CdS thin films as the predominant phase, but the SEM studies show that their textures are widely dependent on the condition employed. High values of the rate of film deposition, film uniformity and refractive index along with a low percentage of average reflection are achieved with proper optimization of CdS chemical bath. The as-deposited CdS films had more than 85% transmittance in the visible region. The direct band gap energy (E_g) of as-deposited films ranged from 3.75 to 3.94 eV depending upon their thickness. This increase in E_g of deposited thin films can be assigned to the quantum size effect as expected from the nanocrystalline nature of the CdS thin films.

کلمات کلیدی:

CdS, Thin Film, Chemical solution deposition, Solar cell, Antireflection Coating

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/71377>

