

## عنوان مقاله:

Substrate Effects on the Structural Properties of Thin Films of Lead Sulfide

## محل انتشار:

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## خلاصه مقاله:

Nanocrystalline PbS thin films are deposited on glass and alumina substrates through the chemical bath deposition technique by creating similar conditions, in order to investigate the effects of the substrate. The structural and optical properties of PbS films are investigated by X-ray diffraction, scanning electron microscope, and UV-Vis. The structural analyses of the films indicate that they are of polycrystalline configurations and have a face-centered-cubic (fcc) rock-salt structure on different substrates. The X-ray diffraction shows that the structure peaks occur at slightly higher angles in the deposited (grown) films on glass substrate than the ones deposited on alumina substrate. Crystal parameters are exceptionally affected by the type of substrate as well. SEM images reveal that the surface morphology of the PbS thin films is quite dependent upon the nature of the substrate. The optical band gaps of the samples are found to be 1.521 eV for glass and 1.678 eV for alumina substrates, which are higher in comparison to the bulk value (0.41 eV). According to the obtained results, PbS thin film on alumina substrate has narrower particle size distribution, better transmission and lower stress than PbS thin film on glass substrate.

## کلمات کلیدی:

Chemical bath deposition, Optical Properties, Pbs Thin Film, Structural Properties, Substrate

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