

Characteristics of Cadmium Mercury Telluride Thin Film

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Abstract: This paper reports some characterization of polycrystalline cadmium mercury telluride thin film was obtained on ultrasonically cleaned glass substrate in an alkaline medium at 80 °C by a simple solution growth technique is discussed. The various physical preparative parameters and the deposition conditions such as deposition time and temperature, concentrations of the chemical species, pH, speed of mechanical stirring, etc. were optimized to yield good quality films. The as-prepared sample is tightly adherent to the substrates support, less smooth, diffusely reflecting and was analyzed for composition. The film was polycrystalline with a predominant wurtzite structure. An average crystallite sizes were determined from the XRD patterns and scanning electron microscope (SEM) micrographs. The sample was then characterized optically to determine the absorption coefficient, mode of optical transitions, and the optical band-gap. The surface morphology of this thin film was then observed via a scanning electron microscope. $Cd_{0.9}Hg_{0.1}Te$ crystals are more or less crystalline spherical and hexagonal prismatic in shape. The film shows n-type conduction.

Keywords: Polycrystalline Thin Film Cadmium Mercury Telluride, Synthesis, Wurtzite Structure

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