

Optical Properties of Hydrogenated Amorphous Silicon Thin Film

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Abstract

The optical properties of hydrogenated amorphous silicon, (a-Si:H) have been investigated in the photon wavelength range of 560 _ 1100 nm. Swanepoel technique has been employed for the analysis of the optical spectra. The optical parameters and film thickness were determined from the extremes of the interference fringes of the transmission spectrum using the envelope method. The refractive index, $n(l)$ was determined at room temperature as was calculated from the transmittance measurements allowed the identification of oscillator parameters. The single oscillator energy (E_0), the dispersion energy (E_d), the static dielectric constant and the static refractive index were directly determined as 1.94 and 10.70 eV 6.52 and 2.56, respectively.