

Characterization of Optical Properties of Pure Zinc Oxide Prepared by Sol-gel method by UV Device

Abstract

Zinc Oxide Nano layers were prepared by sol gel method with three different thickness that's (5, 12, 36.8) nm, which deposited by spin coating device, then the UV technique was used to determine and evaluate the optical properties of the three samples. All the optical properties were plotted and special fitting method of origin 8.1 programs used to analyze the plots, and the results showed that all samples give a high absorbance for about 80% and low transmittance, and reflectance. The absorption coefficient found to be equal 3.76×10^3 in the wave length of UV range, the excitation coefficient found in a direct proportional with the thickness of the samples, besides, the rest of optical properties, such as refractive index, the real and imaginary dielectric coefficient, and optical conductivity were found to in conformity with theoretical works and literature results. Analyzes show that zinc oxide is 80% higher in absorption. Absorption coefficient = 3.76×10^3 Extinction coefficient (k) = 3.76×10^{-5} Energy gap for sample (36.8 nm) = 3.673 ev Energy gap for sample (12.0 nm) = 3.672 ev Energy gap for sample (05.0 nm) = 3.630 ev