

Study of Optical Properties of (PVA-BaSO₄.5H₂O) Composites

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Abstract

Composites consisting of an polyvinyl alcohol matrix and BaSO₄.5H₂O as a filler are designed. The optical properties were measured in the wavelength range from (190-850) nm. The experimental results showed that the absorption coefficient, extinction coefficient, refractive index and real and imaginary parts of dielectric constants are increasing with increase the addition of BaSO₄.5H₂O content.

Keywords: *Polyvinyl alcohol, Optical constants, Composites.*

Introduction

The physical properties of polymers may be affected by doping, the certain structural, mechanical, optical, electrical and magnetic properties of the selected polymer can be controllably modified owing to the type of the doping, concentration, and the way in which it penetrates and interacts with the chains of the polymer. Detailed studies of doped polymer with different dopant concentrations allow the possibility of choice of the desired properties[1]. Polyvinyl alcohol (PVA) is a polymer with several interesting physical properties, which are very useful in technical applications. PVA, as semi crystalline material, exhibits certain physical properties resulting from the crystal-amorphous interfacial effect[2]. Ahmed Hashim *et al*, 2011, studied the optical properties of the PVA- Al₂O₃ composites. Results show that the absorption coefficient, extinction coefficient, refractive index and real and imaginary parts of dielectric constants are increasing with increase Al₂O₃ concentrations [3]. This paper deals with results of the effect of BaSO₄.5H₂O on the optical properties of poly vinyl alcohol.