

# Perpetration and Study of Optical Properties of (Polymer-Nickel Nitrate) Composite

Bahaa H. Rabee, Hussein Hakim, Ahmed Hashim , Saba R. Salman, Hind Ahmed

*Babylon University, College of Education, Department of Physics, Iraq*

*E-Mail: [ahmed.taay@yahoo.com](mailto:ahmed.taay@yahoo.com)*

## ABSTRACT:

*Polymer composite of polyvinyl alcohol (PVA), nickel nitrate have been prepared by solution cast method for different doping concentrations of nickel nitrate. The optical characterization has been done by analyzing the absorption spectra in the spectral region 200–800 nm. It was found that the optical energy gap decreases with increasing NiNO<sub>3</sub> content. The refractive index ( $n$ ), extinction coefficient ( $k$ ), static dielectric constant have been calculated for the investigated films. The optical constants are changing with increase the weight percentages of nickel nitrate.*

**Key words:** *composite, polymer, optical constants, nickel nitrate*

## 1. INTRODUCTION

The doped polymers may present useful applications in integrated optics or in real time holography. In order to tailor materials with improved properties within the doped polymer class, it is necessary to understand and control the electronic mechanisms involved in the optical behavior[1]. The physical properties of polymers may be affected by doping, the certain structural, optical, mechanical, 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[2]. Polyvinyl Alcohol offers a combination of excellent film forming and binder characteristics, along with insolubility in cold water and organic solvents. This combination of characteristics is useful in a variety of applications . Moreover, it contains a carbon backbone with hydroxyl groups attached to methane carbons. These hydroxyl groups can be a source of hydrogen bonding, hence the assistance in the formation of