ISSN: 2320-5407

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

ISSN NO. 2320-5407

REVIEWER'S REPORT

Manuscript No.: IJAR-50516 Date: 05-03-2025

Title: AC Conductivity and Dielectric Behavior of Ethyl Cellulose/Polyvinyl Alcohol Polyblend Thin Films

Recommendation:
Accept as it is……**YES……**
Accept after minor revision……
Accept after major revision ……
Do not accept (*Reasons below*) ……

Rating	Excel.	Good	Fair	Poor
Originality	√			
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer's Name: Tahir Ahmad

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)
.

Reviewer's Comment / Report

Abstract

The abstract effectively summarizes the study's focus on the **AC conductivity and dielectric behavior of EC/PVA polyblend thin films**. The **experimental conditions, including temperature variations and frequency range**, are clearly outlined. The **key findings**, particularly the dependence of conductivity and dielectric constant on frequency and temperature, are well-articulated. The abstract is concise and provides a clear insight into the research scope and significance in electronic and dielectric applications.

Introduction

The introduction presents a **strong contextual foundation** by highlighting the **increasing interest in polymer-based thin films** due to their **electrical, dielectric, and mechanical properties**. The

ISSN: 2320-5407
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT

discussion on the roles of EC and PVA in polymer blends is well-supported by literature references. The importance of AC conductivity in charge transport is clearly mentioned, and the relevance of polymeric materials in various applications, such as electronics, aerospace, and medicine, is effectively conveyed. The inclusion of nanocomposite conductivity factors adds depth to the background. The transition from general polymer properties to the specific focus on EC/PVA blends is seamless and logically structured.

Experimental Section

The materials and preparation methods are systematically described. The use of ethyl cellulose and polyvinyl alcohol from SIGMA-ALDRICH, along with ethanol and distilled water as solvents, is clearly stated. The preparation process, including blending, stirring, doping with phosphoric acid, and film formation, is detailed. The use of the isothermal evaporation technique is appropriately mentioned. The stepwise explanation ensures clarity and reproducibility of the experimental procedure.

Results and Discussion

The study effectively presents graphical analyses of AC conductivity and dielectric constant variations with frequency and temperature. The increase in AC conductivity with frequency and temperature is well-explained in terms of charge carrier mobility and polymer chain vibrations. The dielectric constant's expected decrease with increasing frequency is correctly attributed to dielectric relaxation and orientation polarization. The theoretical explanations align well with observed trends. The structural implications of dielectric behavior are appropriately discussed, reinforcing the findings.

Conclusion

The conclusion concisely summarizes the key findings, reiterating the relationship between AC conductivity, dielectric constant, frequency, and temperature. The expected trends in dielectric behavior are reinforced with appropriate theoretical explanations. The section maintains a clear and coherent summary of the study's results.

ISSN: 2320-5407
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT

Overall Evaluation

The paper is **well-structured, scientifically rigorous, and effectively communicates the experimental findings**. The **theoretical justifications, methodological clarity, and graphical representation of results** strengthen the study's credibility. The **discussion effectively correlates experimental data with fundamental dielectric principles**, making the findings valuable for **electronic and dielectric applications**.