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REVIEWER'S REPORT

Manuscript No.: IJAR- 56335

Title: Crystal growth and enhancement of Optical, and Electrochemical properties in L-asparagine monohydrate admixtured with oxalic acid dihydrate (1:1 ratio) for optoelectronic and photonic applications

Recommendation:
Accept

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

Reviewer Name: Dr. Ashish Yadav

Detailed Reviewer's Report

Reviewer's Comment for Publication.
Acceptance Comment are mentioned below suitable for the paper titled "Crystal growth and enhancement of Optical, and Electrochemical properties in L-asparagine monohydrate admixtured with oxalic acid dihydrate (1:1 ratio) for optoelectronic and photonic applications"

Reviewer Comments: Accept

Reviewer Comments –

1. Introduction
The manuscript presents a clear and relevant introduction focusing on the importance of organic single crystals in optoelectronic and photonic applications. The study successfully highlights the need for materials with superior optical transparency, electrochemical stability, and improved electronic characteristics. The research objective of synthesizing L-asparagine monohydrate mixed with oxalic acid dihydrate and evaluating its optical and electrochemical properties is well defined and justified. The introduction effectively establishes the significance of the work within the broader context of advanced functional materials.

2. Literature Review
The study provides an adequate background on organic nonlinear optical materials and their applications in photonics and optoelectronics. The discussion reflects an understanding of prior research related to amino acid-based crystals and their optical and electrochemical behavior. However, the literature review could be strengthened by including more recent studies on similar organic crystal systems and comparative analysis with other optoelectronic materials. Nevertheless, the review sufficiently supports the research motivation and experimental design.

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3. Solution Approach / Methodology

The experimental methodology is well structured and scientifically sound. The synthesis of single crystals using the slow solvent evaporation technique is appropriate for obtaining high-quality crystals. The use of UV–Diffuse Reflectance Spectroscopy (UV-DRS) for optical characterization and electrochemical techniques such as cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) for performance evaluation is suitable. The approach ensures systematic investigation of optical parameters, electronic structure, and electrochemical behavior. The methodology demonstrates clarity, reproducibility, and appropriate experimental rigor.

4. Results and Discussion

The results are clearly presented and logically interpreted. Optical analysis reveals high transparency in the visible region with minimal optical loss, indicating suitability for optoelectronic applications. The evaluation of optical parameters such as refractive index, extinction coefficient, reflectance, and optical conductivity provides detailed insight into light–matter interaction and electronic properties.

Electrochemical studies demonstrate stable behavior with no significant redox peaks, confirming the material's electrochemical stability and purity. The EIS analysis showing a depressed semicircular arc and non-Debye relaxation behavior effectively explains the bulk response and insulating nature of the crystal. The high impedance values and reduced defect density support the material's suitability for photonic applications. The discussion effectively connects experimental findings with potential technological applications.

5. Conclusion

The conclusion clearly summarizes the major findings of the study and confirms that the synthesized crystal exhibits excellent optical transparency, electrochemical stability, and insulating characteristics. The work successfully demonstrates the potential of L-asparagine monohydrate admixed with oxalic acid dihydrate for optoelectronic and photonic applications. The conclusions are consistent with the experimental results and highlight the scientific contribution of the research.