INFORMATICS JOURNALS
The Journal of Electrochemical Society of India, Volume 74, Issue (7&8), October – December 2025; pp. 175–175
ISSN (Print) : 0013-466X
ISSN (Online) : xxxx-xxxx
DOI: 10.18311/JESCI/2025/56220

Editorial

It is our great pleasure to present this special issue dedicated to recent advances in electrochemical energy systems, surface engineering, and functional materials for next-generation technological applications. The collection of articles in this issue highlights the interdisciplinary nature of modern materials science, bringing together developments in energy storage, electrochemical interfaces, computational materials design, and advanced protective coatings. These contributions collectively demonstrate how innovative material design and electrochemical understanding can address emerging challenges in sustainable energy, durability, and device performance.

The growing global demand for clean and efficient energy technologies has intensified research efforts toward advanced electrochemical systems. In this context, the review article *"All Soluble Redox Flow Batteries beyond Vanadium: A Future Perspective"* provides a comprehensive overview of emerging redox flow battery chemistries that extend beyond conventional vanadium-based systems. Complementing this contribution, the article *"Recent Advancements and Challenges in Organic Flow Batteries"* focuses on the rapidly evolving field of organic electroactive materials for flow battery applications. Together, these two articles provide a broad and timely perspective on emerging flow battery technologies that may play an important role in future renewable energy infrastructures.

The issue further explores the fundamental aspects of electrochemical interfaces through the article *"Electron Transfer Dynamics on Phosphazene-passivated InP Surfaces: A Study with Polyoxotungstate Complexes."* Surface engineering and functional coatings constitute another major theme of this issue. The contribution entitled *"Electroless Nickel Coatings for Enhanced Wear Resistance of Ti-6Al-4V Alloy"* addresses the enhancement of tribological performance of titanium alloys through electroless nickel deposition.

Finally, the article *"Molecular Dynamics Study of Novel Sodium-lithium Electrolytes: $C6H_3Na_3O_3$, $C_6H_3Na_2LiO_3$, $C_6H_3NaLi_2O_3$, and $C_6H_9Li_3O_3$"* presents a computational investigation of promising mixed sodium-lithium electrolyte systems. The contributions not only advance scientific understanding but also provide pathways toward practical applications in energy storage, electrochemical devices, surface protection, and advanced functional materials.

We sincerely thank all the authors for their valuable contributions and the reviewers for their careful evaluation and constructive feedback, which ensured the high quality of this issue. We hope that the articles presented in this issue will stimulate further research, foster interdisciplinary collaborations, and inspire new innovations in the fields of electrochemistry, energy materials, and surface engineering.

Aruna Reddy
Editor-in-Chief