INFORMATICS JOURNALS
The Journal of Electrochemical Society of India, Volume 74, Issue (1&2), January – March 2025, pp. 1-2
ISSN (Print) : 0013-466X
ISSN (Online) : xxxx-xxxx
DOI: 10.18311/JESCI/2025/51178

Note from Guest Editors – Special Issue on "Recent Advances in Corrosion Science and Technology"

It is our great pleasure to present this special issue of the *Journal of Electrochemical Society of India* (JECSI), dedicated to "Recent Advances in Corrosion Science and Technology." Corrosion continues to pose significant challenges across diverse sectors—ranging from infrastructure and transportation to marine and energy systems—impacting safety, performance, and sustainability. The impact of corrosion on the economy of a country cannot be underestimated. Presently, it is estimated that corrosion costs in India is approximately 4.2% of its GDP. In this backdrop, it is indeed a need of the hour to seriously work on strategies to mitigate corrosion.

As materials science rapidly evolves, it is vital to share new research and innovations that address both technical and environmental imperatives. This special issue brings together five high-quality contributions from researchers working at the forefront of corrosion protection, advanced coatings, and green inhibitor technologies.

The opening review by Athira Suresh and Biji Pullithadathil provides a comprehensive overview of *Recent Advances in Superhydrophobic Anti-Corrosive Coatings*, covering material design, fabrication strategies, and performance evaluation, while also identifying opportunities for improving durability and scalability.

In the second contribution, Rania Afia Nuamah, Saleema Noormohammed, Dilip Kumar Sarkar, and Alexander Blackburn present *A Feasibility Study on the Corrosion Resistance of Wire Arc Sprayed Aluminum and Zinc Coatings on Steel*. Their comparative evaluation reveals aluminum's superior long-term corrosion resistance, underscoring its potential for industrial applications.

Hepziba Magie Jessima S J and Muthamma P T explore the sustainable pathway of *Marine Biopolymers as Green Corrosion Inhibitors: A Roadmap to Sustainability and Circular Blue Bioeconomy*, highlighting bio-derived materials from marine sources as eco-friendly, high-performance alternatives to synthetic inhibitors.

The fourth paper by Revathy Sreekumar and Sreejakumari S.S. reports on the *Development of Robust Superhydrophobic Corrosion Resistant Ni–WS_2 Composite Coating by Electrodeposition*. The work demonstrates a scalable single-step process achieving a high-water contact angle of 159° and remarkable corrosion resistance.

Finally, M Priyanka, Sukanta Badaik, Priyaranjan Mohapatra, Suryakanta Nayak, and Tapan Kumar Rout present *Electrochemical Evaluation of Metal-Coated Steel Sheets in 3.5% NaCl Solution*, offering comparative insights into the protective performance of different metallic coatings, supported by detailed microstructural and electrochemical analyses.

We sincerely thank all authors for their valuable contributions, the reviewers for their timely and constructive feedback, and the editorial board for their guidance. Our special appreciation goes to Dr. Kamachi Mudali (Chief Editor, JECSI) and Dr. S.T. Aruna (Managing Editor, JECSI & President, ECSI) and for entrusting us with the opportunity to serve as Guest Editors for this special issue.

We hope that this collection will inspire further research and innovation among scientists, engineers, and industry professionals, and will serve as a resource for advancing corrosion science and technology in both academic and industrial contexts.

Guest Editors

R. Subasri
Associate Director
ARCI, Hyderabad, India

Dilip Sarkar
Professor, University of Quebec at
Chicoutimi (UQAC), Quebec, Canada

ABOUT GUEST EDITORS

Dr. R. Subasri



Dr. Subasri is a chemist by training with an M.Sc. in Chemistry from IIT Madras (1993) and a Ph.D. from the University of Madras (1999), with research carried out at IGCAR, Kalpakkam. She pursued postdoctoral research at the Max Planck Institut für Metallforschung, Stuttgart, and the National Institute for Materials Science, Tsukuba. Since 2005, she has been leading the Centre for Sol-Gel Coatings at ARCI, Hyderabad, where she established a state-of-the-art facility for sol-gel nanocomposite coating technologies. Her team has successfully transferred four know-hows to industries, promoting commercialization in India and abroad. She has published over 100 peer-reviewed papers, contributed 13 book chapters, and holds 16 Indian, 4 US, and 4 European patents. Recognized among the world's top 2% scientists in Materials Science (Stanford University, 2020), she has delivered 50+ invited talks worldwide. She is a Max-Planck-India Fellow and recipient of the MRSI Medal (2015) and AICTE Distinguished Professional Award (2024). Actively engaged in professional societies, she serves on the governing council of ECSI, is a life member of MRSI, IIM, and IWSA, and contributes to national selection committees like INSPIRE. Her research interests span sol-gel nanocomposite coatings for corrosion protection, antibacterial, anti-biofilm, anti-reflection, and self-cleaning applications.

Prof. Dilip Sarkar



Prof. Dilip K. Sarkar is a Professor at the Université du Québec à Chicoutimi (UQAC), Canada, and a member of the Aluminum Research Centre (CURAL). He earned his Ph.D. at the Indira Gandhi Centre for Atomic Research (IGCAR), Tamil Nadu, in collaboration with the University of Kalyani, India. He completed postdoctoral research at Chemnitz University of Technology (Germany), INRS–EMT (Quebec), and UQAC, where he joined the faculty in 2008. He has also been a visiting researcher at the University of Cambridge, UK (2017), and IIT-BHU, India (2023). His research focuses on nanostructured superhydrophobic surfaces for corrosion protection, drag reduction, ice adhesion mitigation, and energy storage, integrating fundamental surface science with engineering applications for aluminum, copper, and steel. One of his papers in *Materials Letters* was recognized by Elsevier as a Top Cited Article (2007–2011). Prof. Sarkar's work is supported by NSERC (Canada) and FRQNT (Quebec). He is a member of the American Chemical Society, the Canadian Association of Physicists, and Quebec's aluminum research network (REGAL). His output includes 1 U.S. patent, 5 edited books, 5 book chapters, over 100 journal papers, 66+ conference contributions, 15 keynote talks, and 18 industrial reports.