



## Editorial

Dear Readers,

In this fast-evolving world, research is meaningful only when it can cross the boundaries of a laboratory and extend its impact on the lives of common people. The pivotal innovations of previous centuries, around which revolve the lives and livelihoods of humankind today, including electricity, engines, and distance communication techniques, originated in laboratories. Compared to past decades, technology can spread faster in the community, and the time lapse between invention and commercialization has significantly reduced owing to rapid information transfer and advancement in scientific know-how.

Mapana Journal of Sciences (MJS) always actively advocates for innovative research arising from fruitful scientific temper, focusing on a greener environment and a sustainable future. Adhering to our commitment in fostering research and innovation, in the vast domain of science, Mapana Journal of Sciences publishes pioneering research and review articles, in each issue. It gives immense pleasure to the editorial team of Mapana Journal of Sciences to present you with the second issue for the year 2024. We believe that the present issue would add to our commitment of sustaining the tradition of publishing noteworthy articles covering the wide arena of disciplines in Science.

The issue begins with a report by Gandhi et al., investigating the acute toxicity of gaseous sulfur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>) on sea bass (*Centropristis striata*) in a synthetic marine water environment. Findings of the study provide crucial comprehension on the toxic effects of gaseous pollutants on marine ecosystem, emphasizing the importance of considering combined impacts in environmental risk assessments. The observed changes serve as indicators of environmental pollution, highlighting the need for effective mitigation strategies to protect aquatic ecosystems. From the field of Physics, Joydip et al., have reported their detailed analysis of equilibrium positions and stability of two artificial satellites connected by light, flexible, and elastic long tethers under

the combined effect of several classical perturbative forces in an elliptical orbit. To determine the stability of the satellites, they used Lyapunov method and dynamical behaviours are represented by differential equations. Niyti has reported a study on the break-up of excited Hassium-270 through hot alpha emission using a Dynamical Cluster-Decay Model approach.  $\alpha$ -decay half-life was calculated using the DCM ( $\ell = 0$  case), which considers the compound nucleus hot due to its recoil energy after neutron emission, providing a more accurate description than other models.

From Computer Science, Jamunadevi et al., have presented an approach to real-time epileptic seizure prediction utilizing a unique kind of neural network known as Bidirectional Long Short-Term Memory (Bi-LSTM). The proposed model can make precise predictions quickly, offering hope for improving the lives of patients with epilepsy. In the domain of Life Sciences and Forensics, Kiruthiga et al., examined variations in spectral absorption and emission intensity of latent fingerprints over time, employing UV-Visible spectroscopy and photoluminescence spectroscopy. A total of 1600 samples from various categories were analysed to validate this hypothesis. The emission intensity observed under photoluminescence spectroscopy varied over time, showing greater intensities in controlled female and male samples compared to the uncontrolled samples that were exposed to environmental conditions. Sumesh et al., have attempted to assess the diversity of meiobenthos of "*Aamayizhanchan Thodu*", a freshwater first-order canal flowing through Thiruvananthapuram, the capital city of Kerala state, in India. A total of seven meiobenthic groups were identified, of which nematodes and foraminifera were registered from all stations with more abundance towards the downstream reach. Despite the heavy effluent and municipal waste discharge into the canal, the meiobenthic diversity showed a significant relationship with water quality and canal water flow. Another article by Kiruthiga et al., discusses about quantifying the effect of seasonal variations on the latent fingerprint residues through photoluminescence spectroscopy.

From the field of Mathematics, Josna et al., discuss effective edge domination in iterated jump graph of intuitionistic fuzzy graph. They systematically constructed sequences of jump graphs for InFGs

through iterative processes and investigated the structural characteristics of these sequences. Moreover, they introduced the concept of an effective edge dominating set for jump graphs of InFGs and rigorously determined the effective edge domination number for certain classes of graphs. These contributions enhance the theoretical foundation of InFGs and extend the applicability to solving real-world problems characterized by uncertainty and complexity.

We also showcase a review on Plasma technologies, carried out by Liza et al., describing the benefits of plasma technology to humankind in various fields, including medicine and engineering disciplines like mechanical, chemical, and electrical. The technological applications include materials processing like semiconductor manufacturing, surface treatment, lighting, cutting by plasma, and plasma etching. Also, the various environmental applications of plasma as a roadmap to environmental sustainability are discussed.

As we open the present issue of MJS to the readers, we wholeheartedly appreciate our authors, reviewers, editorial board members, and section editors whose contributions have made this publication possible. Mapana takes pride in upholding its commitment and tradition, spreading light to significant endeavours that foster scientific culture and research. We expect this issue to open a wide arena of latest findings covering diverse topics and disciplines, emphasising the interdisciplinary nature of contemporary scientific research.

Dr Manoj Balachandran

Editor