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Dear Readers,

Greetings from Mapana Journal of Sciences

In a world driven by constant transformation and evolution, science positions itself as the most powerful compass, shaping possibilities and guiding us through the unknown. The pursuit of knowledge is a perpetual journey weaving together innovation and ideas. The Mapana Journal of Sciences (MJS) takes pride in curating research, adhering to work across a spectrum of scientific disciplines from the deeply theoretical to the practically applied. We strongly believe that the present issue aligns with the mission to promulgate noteworthy research and review articles that contribute to the broader scientific community.

This issue begins with a remarkable research article in the field of Life Science investigating the effects of palmitic acid, a saturated fatty acid known to promote cancer progression, on cellular stress responses and fate decisions in colon cancer cells (HCT15). In this study, Soumya et al., have examined how palmitic acid-induced metabolic stress influences endoplasmic reticulum (ER) stress with a specific focus on PERK Signalling, further determining the lethal doses, analysing the gene expression at survival doses, and the novel therapeutic strategy for overcoming senescence-induced treatment resistance in colon cancer. From the domain of Material Science, Manjula et al., have presented detailed research on the photocatalytic and antibacterial properties of carbonaceous materials coupled with NiO nanocomposites. Srinath et al., have reported a study that explores the fluorescence quenching behaviour of the physiologically active fluorescent probe 6-Methoxy-4-(4-nitro-phenoxymethyl)-chromene-2-one (6MNPM coumarin) using aniline as a quencher in a range of solvents with varying dielectric constants and refractive indices.

Janifer et al., have presented their studies on the effect of Synthetic and Natural Chelating Agent on Yttrium Iron Garnet (YIG) Nanocrystalline Powder via Sol-Gel Method. The study encompasses the dielectric studies, using lemon extract as a natural chelating agent, and YIG's applications in microwave shielding due

to its magnetic and electric properties. Further, Deepak Sharma has given a detailed study on the Nonlinearities and Dielectric constant of Ge-Se Chalcogenide Glasses owing to their high transmission and nearly non-existent normal dispersion. Further emphasis on the prepared glass is penned, revealing a direct bandgap material, which can be used directly in fibre laser materials. Nehal et al., provide a theoretical study of Coumarin Derivatives: Exploring DSSC, NLO Properties and Pharmacokinetics through the examination of geometrical parameters, frontier molecular orbitals (FMO), molecular electrostatic potential (MEP) maps, and natural bonding orbitals (NBO).

Akhil et al. presented an interesting work in the field of Mathematics, where they present a new matrix for a given graph—the Degree Eccentricity (DE) Matrix—and discuss its properties, such as irreducibility and primitivity. The paper explores the spectrum and energy of the DE matrix along with developing an algorithm to construct a new class of a graphs with DE energy equal to 1.

In this issue, we have three review articles in the fields of Life Science and Astrophysics. A fascinating review by Bhoir et al., highlights the global emergence and clinical significance of *Candida auris*, a multidrug-resistant fungal pathogen associated with high mortality and persistent nosocomial outbreaks. It examines current understanding of its epidemiology, antifungal resistance mechanisms, treatment challenges, and investigational therapies. The article emphasizes the urgent need for improved diagnostics, novel antifungal strategies, and strengthened infection control measures to address this growing public health concern. Uday el at., have provided a detailed Review of Microplastic Accumulation and Its Impacts on Marine Commercial Invertebrates. This review effectively highlights the extent of microplastic pollution in different marine environments and the biological consequences for invertebrate species and addresses the trophic transfer of microplastics within food webs, the interaction with co-contaminants, and the potential for long-term ecological consequences. The review by Singh et al., introduces Luminous Blue Variables (LBVs), a rare and highly luminous class of massive stars known for their dramatic variability and extreme mass loss. The

article discusses their spectral characteristics, evolutionary significance, and the ongoing debate surrounding their role as a transitional phase between O-type and Wolf-Rayet stars.

As we present this issue of our journal, we extend our heartfelt appreciation to all the authors, reviewers, editorial board members, and assistant editors whose contributions have made this publication possible. We invite you to connect with this issue, to delve into these articles, question, reflect, and perhaps, to be inspired. At its core, this is not just a platform for publication, but rather, an open venue for agglomeration of knowledge, consistency, and shared minds.

Dr Manoj Balachandran

Editor-in-Chief