

EDITORIAL

Introducing SciEngg Advances: Advancing Science and Engineering

Dear Esteemed Authors and Readers,

In the dynamic landscape of scientific research and technological advancement, there exists an ever-growing need for platforms that facilitate the dissemination of groundbreaking discoveries and innovative solutions. It is with great pleasure that we introduce SciEngg Advances, a peer-reviewed, open-access journal dedicated to the publication of high-quality research in the fields of science and engineering.

The necessity for such a journal arises from the increasing complexity of challenges faced by humanity, ranging from environmental degradation and energy shortages to healthcare disparities and technological innovation. In response to these challenges, researchers across the globe are relentlessly pursuing new knowledge and developing novel technologies to address societal needs and propel progress.

SciEngg Advances aims to serve as a catalyst for scientific advancement by providing a platform for researchers to share their findings, exchange ideas, and collaborate on interdisciplinary projects. Our journal welcomes contributions from diverse fields within science and engineering, including but not limited to chemistry, physics, biology, environmental science, materials science, mechanical engineering, electrical engineering, electronics and communication engineering, and computer science.

One of the primary objectives of SciEngg Advances is to bridge the gap between fundamental research and real-world applications. We believe that scientific discoveries hold the potential to drive innovation and foster positive change in society. Therefore, we encourage researchers to not only elucidate the underlying principles of natural phenomena but also explore practical implications and develop tangible solutions that address pressing societal needs.

In today's fast-evolving research landscape, a journal that can provide rapid publication while maintaining rigorous peer review standards is invaluable. SciEngg Advances aims to fulfil this role by offering researchers a venue to publish their findings swiftly, thereby accelerating the pace of innovation and collaboration in the scientific community.

The inaugural issue of SciEngg Advances features several pioneering research articles that showcase the ingenuity and creativity of scientists and engineers worldwide. This issue

features research articles on diverse topics. These studies underscore the multidisciplinary nature of research in science and engineering and highlight the potential of emerging technologies to address global challenges.

Since sharing the success of this initiative with the global scientific community, we have been met with an abundance of positive feedback. This has inspired us to push forward with even greater enthusiasm and publish our inaugural issue, featuring contributions from some of the foremost scientists in science and engineering.

In this first issue, we are honored to introduce a collection of high-caliber articles. These works illustrate the extensive scope and depth of research excellence in science and engineering, spanning various topics and methodologies. Each article marks a notable advancement in our understanding of these fields, opening up new avenues for innovation and discovery.

We are delighted to highlight five exceptional articles that demonstrate innovation and excellence in science and engineering. These original research papers provide unique insights and advancements in their respective areas, showcasing the groundbreaking work being done in the field. In the first article for the inaugural issue, Shivam et al. developed a new Graphitic carbon nitride-based cadmium (GCN@Cd) nanocomposite photocatalyst, which showcases impressive efficiency in converting nitroarene to azo compounds using solar light, achieving a high yield (~95.15%). This innovative material, synthesized via thermal polymerization, offers superior light-triggered capabilities, operating at ambient temperature and pressure. Characterized by advanced techniques, the GCN@Cd catalyst stands out for its excellent performance, environmental friendliness, cost-effectiveness, and stability, making it highly valuable for applications in organic synthesis and environmental remediation.

In another article, Jyotiprakash et al. investigated the impact of ambient air ageing on the optical, mechanical, and waveguide properties of polyaniline (PANI) thin films. Synthesized via oxidation polymerization, PANI films were deposited on glass substrates using vacuum evaporation. The vapour chopping technique significantly reduced optical transmission loss and intrinsic stress while increasing

adhesion. After 30 days of ageing, vapour-chopped films exhibited less degradation in refractive index and optical loss compared to as-deposited films, highlighting the method's effectiveness in producing durable, high-quality optical waveguides.

A twin-core photonic crystal fiber (TC-PCF) sensor designed for detecting human blood biomolecules was presented by Vikas et al. Utilizing a rectangular analyte channel and rectangular air-holes in the cladding, the sensor operates in the 2-3 μm wavelength range. Simulations show high sensitivity, with 1641.2 nm/RIU for white blood cells and 2732.638 nm/RIU for red blood cells. The TC-PCF sensor offers a cost-effective, easily fabricated solution, making it a promising tool for blood component detection and addressing limitations of traditional sensors.

Salman et al. studied the effects of Sr-Eu co-doping on the properties of $\text{La}_2\text{NiMnO}_6$ (LNMO) using Density Functional Theory (DFT). The findings show significant improvements in optical, magnetic, mechanical, and spintronic characteristics. Doping enhances dielectric properties, optical conductivity, and light absorption, making the material suitable for optoelectronic devices. Additionally, improved magnetic properties are beneficial for spintronic applications, and enhanced mechanical stability ensures longevity and reliability. These advancements suggest that Sr-Eu co-doped LNMO has strong potential in energy storage, optoelectronics, and spintronics.

Lastly, Irfan et al. investigated the dissipative dynamics of an infinite-range Heisenberg model with collective damping, coupled to a non-Markovian bath. Using the Schwinger-Keldysh technique, the research highlights how the system's non-equilibrium behavior is influenced by the interplay between Hamiltonian and Lindblad dynamics. Key findings include the emergence of effective temperature due to dissipation and the violation of Z_2 symmetry at the transition point. The work provides insights into the impact of dissipation on quantum systems, with implications for understanding non-equilibrium phenomena.

We encourage researchers and academics globally to help shape the future of science and engineering by submitting their innovative research to SciEngg Advances. We welcome contributions across all scientific and engineering fields, including new methodologies, transformative discoveries, and comprehensive reviews.

The successful launch of SciEngg Advances is a testament to the dedication of our entire editorial team. I extend heartfelt thanks to all Editors and Editorial Board Members for their unwavering support and enthusiasm. We eagerly anticipate your valuable contributions and look forward to fostering a vibrant and collaborative community of scholars and researchers.

Prof. D. K. Dwivedi
Editor-in-Chief

ABOUT EDITOR-IN-CHIEF



Prof. D.K. Dwivedi is a distinguished academician and researcher serving as the Professor and Head of the Department of Physics and Material Science at Madan Mohan Malaviya University of Technology, Gorakhpur. He began his career as a Scientific Officer at the Bhabha Atomic Research Centre, Mumbai, in 2001. Following this, he spent nearly eight years as a Lecturer in Physics at D.D.U. Gorakhpur University before joining Madan Mohan Malaviya University of Technology as a Reader in 2009. He achieved the rank of Full Professor in 2015.

Prof. Dwivedi has an impressive academic record with 254 peer-reviewed articles published in international journals and 187 conference papers. He has authored four books, with another in press, and has supervised 12 doctoral theses, with six more currently underway. His research has been supported by three major research projects, and he holds three Indian patents. An active contributor to the scientific community, Prof. Dwivedi serves as an editor for 10 reputable journals

and is a reviewer for over 58 SCI-indexed journals. He is a Life Fellow of the Optical Society of India and a member of IEEE. Additionally, he has organized four national, and one International-level conferences, reflecting his commitment to advancing scientific knowledge and fostering scholarly exchange. The research of Prof. Dwivedi focuses on the development and characterization of amorphous semiconductors, nanostructured materials, solar cell devices, energy storage devices, and photonic crystal fiber sensors, marking significant contributions to these fields.