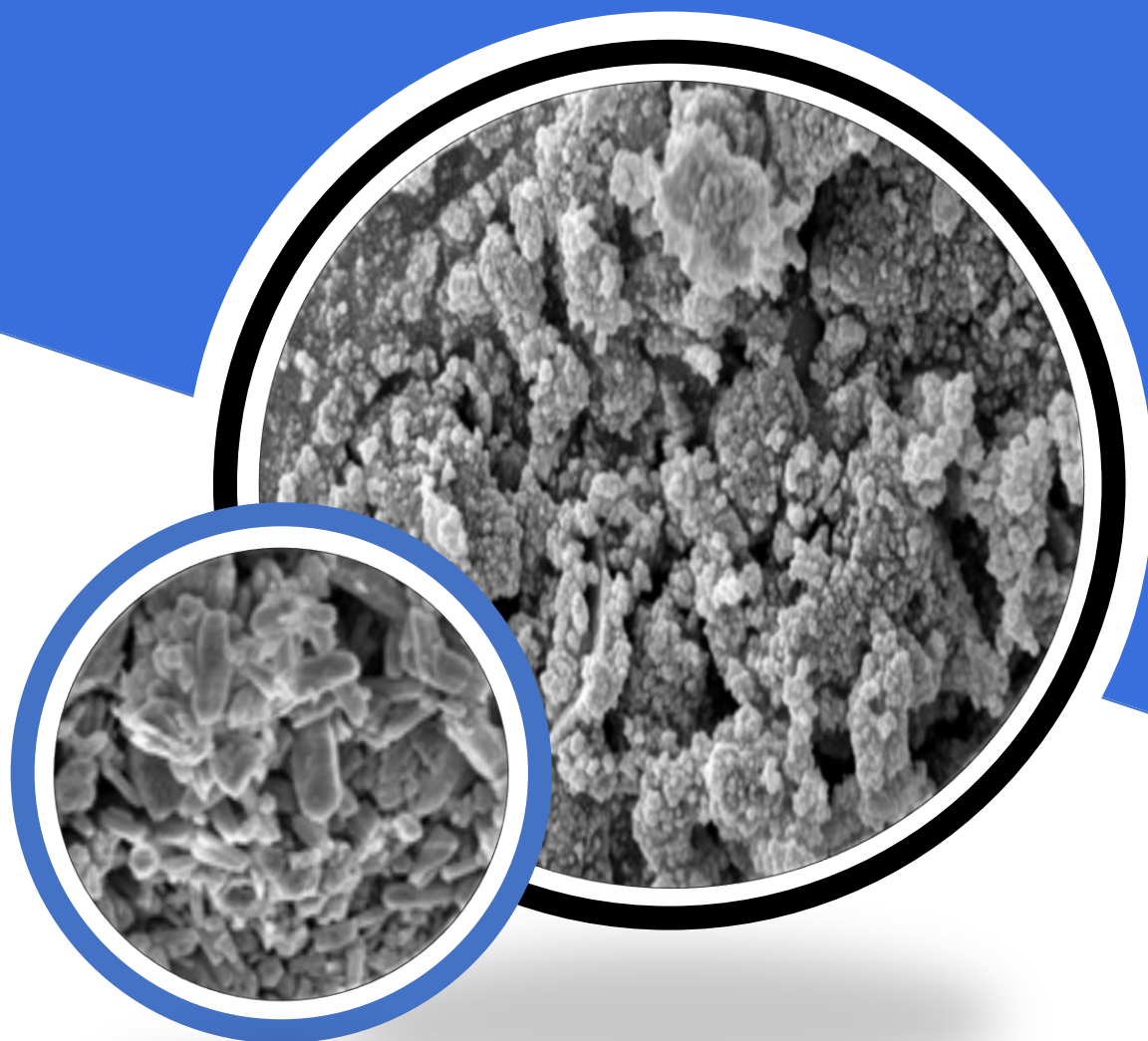




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Preface to the Journal of Scientific Enquiry (JSE), Sixth Volume, Issue 1, 2026

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Welcome to the Journal of Scientific Enquiry (JSE), a premier open-access platform dedicated to making multidisciplinary science engaging and accessible. It is my privilege to introduce the sixth volume of JSE, featuring a carefully curated selection of scholarly works from the global scientific community. For this issue, our editorial board has selected eleven peer-reviewed articles of exceptional quality and impact. Each paper has undergone rigorous evaluation to ensure it offers significant advancements, novel methodologies, and deep theoretical insights across diverse scientific disciplines. By removing barriers to knowledge, JSE continues its mission to foster dialogue and drive progress. We extend our deepest gratitude to our authors and reviewers for maintaining the highest standards of academic excellence. We trust this volume will inspire new ideas and serve as a valuable resource for your research.

A. Kumar et al. demonstrate the successful fabrication of aluminium-doped nickel ferrite ($\text{NiFe}_{2-x}\text{Al}_x\text{O}_4$, where $x = 0, 0.02$, and 0.04) nanomaterials via a citric acid-modified sol-gel method, identifying the $\text{NiFe}_{1.98}\text{Al}_{0.02}\text{O}_4$ composition as a highly responsive candidate for room-temperature acetone and ethanol gas-detection devices.

Md. Sifuzzaman et al. bridge mathematical theory and computer science by evaluating classical analytical frameworks against machine learning solvers for small linear equations. Their findings establish that ensemble-based models like Random Forest and XGBoost offer superior numerical stability and perturbation resilience over traditional methods like Cramer's Rule in noisy, resource-constrained environments.

M. Mayra shifts the lens toward the human element, providing a vital psychological assessment of 200 students. Utilizing standardized metrics (SAS-SV, CFQ, Stroop), the study establishes a distinct link between high smartphone addiction and elevated rates of cognitive lapses—specifically forgetfulness, distractibility, and degraded working memory capacity.

D. Kumar et al. explore the chemical co-precipitation of chromium-doped zinc oxide $\text{Zn}_{1-x}\text{Cr}_x\text{O}$ nanoparticles, detailing how Cr-incorporation effectively narrows the optical band gap and shifts the morphology toward elongated columnar grains, optimizing it for

matrix integration.

R. Ranjan et al. utilize a sol-gel auto-combustion approach to synthesize 3% Ca-doped MnFe_2O_4 nanoparticles, highlighting how low-level calcium doping induces crystallite size reduction and band-gap narrowing to enhance photocatalytic and optoelectronic performance.

L. Sarkar et al. evaluate the impacts of seasonal fishing bans in the Hooghly estuarine and marine-coastal zones of West Bengal. Their findings show that while the ban successfully boosts the post-ban marine catch and shifts the population toward larger-sized individuals (50–59 cm), it simultaneously exposes a critical socio-economic vulnerability, leaving over 70% of local fishers facing severe livelihood hardships due to inadequate alternative employment.

A. Mondal et al. complement the ecological perspective by mapping the remarkable enzymatic plasticity of Hilsa during its anadromous migration. Their research details how transitioning from marine to freshwater environments triggers up to a 2.6-fold surge in key digestive enzymes to reactivate the digestive system after migratory fasting, while metabolic enzymes dynamically adapt across muscle types to sustain swimming.

M. Mahato et al. present a comprehensive review detailing the destructive synergy within the pyroptosis-hypoxia axis. They outline how hypoxic microenvironments accelerate pro-inflammatory programmed cell death (pyroptosis) via reactive oxygen species (ROS) and HIF-1 α activation, establishing this pathway as a major driver of tissue injury and a high-value therapeutic target for autoimmune disorders.

M. Kumar et al. advance the field of multifunctional nanotechnology by synthesizing low-level yttrium-substituted cobalt ferrite ($\text{CoY}_x\text{Fe}_{2-x}\text{O}_4$) using a sol-gel auto-combustion method. They demonstrate how micro-doping (particularly at $x = 0.06$) induces lattice expansion, refines grain porosity, and dramatically enhances saturation magnetization (Ms) to 66.82 emu g⁻¹ offering highly tuneable properties for next-generation memory and sensing devices.

P. Deb et al. deliver a comprehensive thematic literature review (2000–2025) of the Siliguri Corridor, historically labelled as India’s geopolitical bottleneck or “Chicken’s Neck.” Their work highlights a crucial paradigm shift in scholarship—moving away from a purely military and state-centric security analysis toward a multidimensional framework. They argue that future sustainable policy interventions must treat the corridor as a dynamic spatial system integrating environmental, economic, community-level, and cross-border ethnic realities.

A. Bauri et al. provide a rigorous, data-driven analysis of India’s internal migration trajectories from 1991 to 2011 utilizing Census D-02 Series data. Leveraging chord diagrams and migration matrices, the study maps massive economic corridors—such as the doubling of outflows from Uttar Pradesh and Bihar into mega-hubs like Delhi and Maharashtra. Their findings lay bare the deep-seated spatial inequalities driving domestic displacement and highlight the critical necessity for balanced regional development strategies.

We trust that the articles and reviews presented in this volume of the Journal of Scientific Enquiry (JSE) will prove both engaging and highly informative to our readers. As we navigate new opportunities and evolving challenges in the scholarly landscape, we remain deeply committed to enhancing the value and utility of JSE for the global research

community.

This publication would not be possible without the ongoing dedication of our community. We extend our sincere gratitude to our readers, authors, and reviewers, whose collective contributions are vital to the journal's continued success.

To support our mission and help JSE expand its reach, we kindly encourage you to cite relevant JSE articles in your own upcoming publications.

Furthermore, we welcome your future submissions and look forward to receiving your valuable research contributions in the near future.

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Sidho-Kanho-Birsha University took a first gently but courageous step out of its chrysalis in the November of 2010, when it started out on its academic odyssey in Purulia, an area generally thought to be a back-of-the- beyond place of the benighted Jungle Mahal. Bolstered by the Sidho-Kanho-Birsha University Act brought forth by the West Bengal Legislative Assembly, the university dreams big of disseminating the cognitive ambience, thereby wafting itself gradually to the pinnacle of academic excellence.

The objective of this university is to carry the torch of higher education into the very interiors of the far- flung district of West Bengal, thereby providing the opportunity of creating a confluence of the rich local cultural heritage of the place and the global trend of technological know-how, which could result in an awe-inspiring 'globalisation' of the crème de la crème of the education system. In doing so, the approach of the University has been to evolve policies and programmes which will make Sidho-Kanho- Birsha University a meaningful contributor to the national resources in higher education rather than a mere quantitative expansion of facilities which already exist.

In short, Sidho-Kanho-Birsha University is doing its best to make the most of the intellectual human resources in its domain, so as to live up to its motto to the hilt—‘Sa No Buddhya

... SubhayaSamyunaktu’—let the Almighty bestow on us blessed thought.

