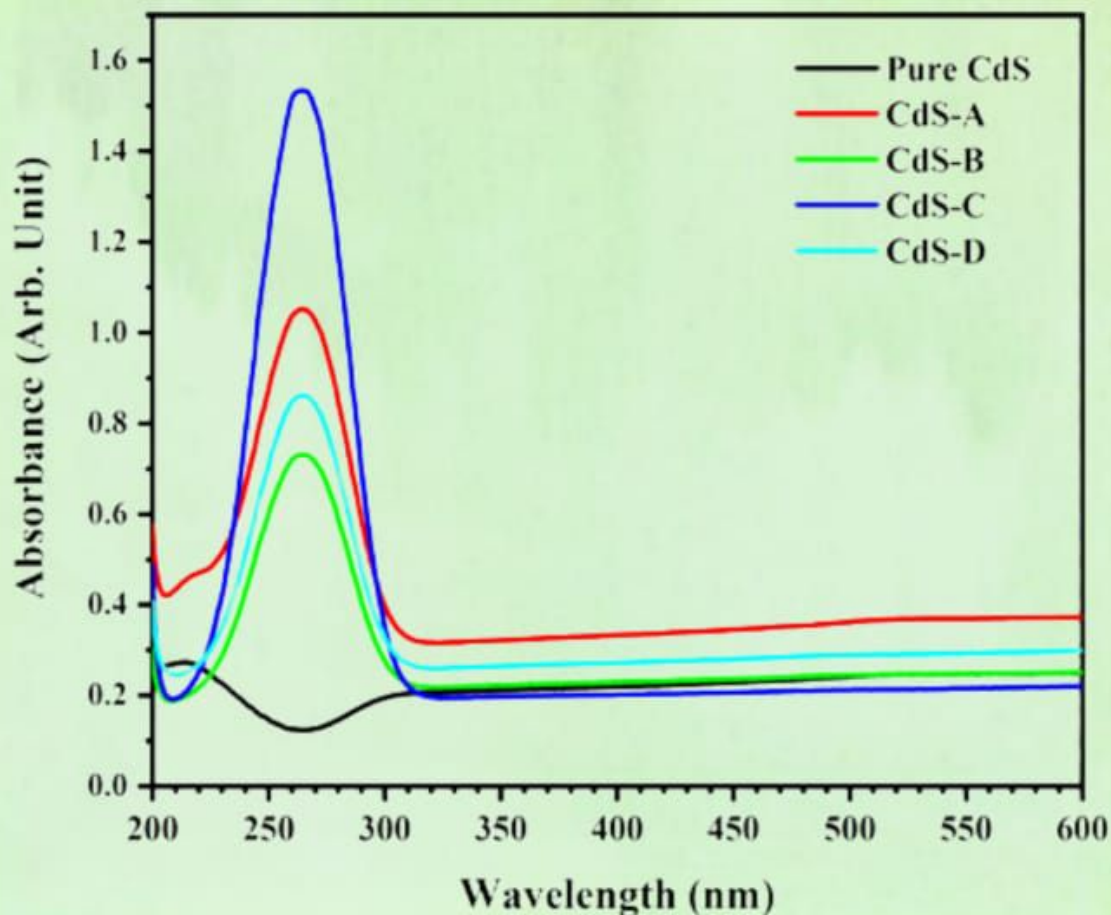


JOURNAL OF SCIENTIFIC ENQUIRY



Volume 5 Issue 1

June, 2025





JOURNAL OF SCIENTIFIC ENQUIRY

VOLUME 5
ISSUE 1
2025

Journal of Scientific Enquiry
Volume 5, Issue 1

Publication Year: 2025

ISBN: 2583-2352

Editor-in-Chief: Professor Subrata Kumar Dey

Copyright© 2025 Sidho-Kanho-Birsha University, Purulia, West Bengal 723104



Editorial

Journal of Scientific Enquiry
Vol: 5

Preface to the Journal of Scientific Enquiry (JSE), Fifth Volume, Issue 1, 2025

Subrata K. Dey

Editor-in-Chief, Journal of Scientific Enquiry (JSE)

SKBU, Purulia, WB, India

E-mail address: jse@skbu.ac.in

Welcome to the Journal of Scientific Enquiry, an Open resource in multidisciplinary science in an accessible format. It is my pleasure to introduce this fifth volume of JSE containing a few selected articles. This time JSE publishes twelve peer-reviewed high quality and impactful scientific articles of significance in all areas of Science research work.

Ghosh et al. reported that the herbal medicines have been used traditionally and are increasingly getting importance for their potential therapeutic benefits in wound healing due to their multiple active components and properties, such as anti-inflammatory, antimicrobial, and antioxidant effects. They have established that harnessing the power of nature, healing can be promoted through the use of individual or multiple herbs that aid in various stages of wound healing. **Mahato et al.** reported a comprehensive checklist of macrophytes and assessed their ecological distribution across 15 representative wetlands in Ranchi district, Jharkhand, India. They have proposed that the effective conservation should prioritize catchment management and pollution control, and the protection of both dominant and non-dominant taxa is essential to ensure long-term ecological integrity.

Dr. Panda investigated twelve distinct m-bisallyl diradicals which are produced when chlorine atoms successively substitute the replaceable hydrogens of the benzene framework. He has calculated the HOMO-LUMO gap, related magnetic exchange coupling constant values, and corresponding ab-initio total energies of all chosen molecules in their ground-state. He established that the chains in the poset are analogous to the connections seen within columns of Mendeleev's table, including the relationships between elements in one column and those

in the corresponding other column one row below. **Dr. Midya** demonstrated the aggregation behaviour of cationic triphenyl tetradecyl phosphonium bromide (TTPB) in presence of β -cyclodextrin (β -CD). He calculated the diffusion co-efficient of Ferrocene probe from cyclic voltammetry study. He has measured the CMC values by tensiometrically and conductometrically. **Dr. Senapati** highlighted a comprehensive overview of the development of various oxidizing agents used for alcohol oxidation along with the preparation, advantages, and limitations of these reagents highlighting their applicability in modern synthetic chemistry. He has demonstrated that IBX shows the best overall performance, combining high efficiency, selectivity, environmental compatibility, catalytic reusability, and operational simplicity.

Dr. Kar determined that during the study of comparing the order (lower order), type between a meromorphic function and its derivative or a differential monomial generated by the function. He has considered derivative of the function as well as differential monomial, but one step ahead, and concluded that any researcher may go for comparison with differential polynomial and the outcome may be surprising. **Dr. Ruz** has focused on SEIR model of infectious diseases. Disease modelling incorporates many hurdles. He noted that depending upon demography, climate, economic conditions some alteration in a base model is necessary when he has changed the region of study. He has discussed mathematical details of an infectious disease modelling, as well as, how to simulate an infectious disease following SEIR model. **Dr. Das** focused his recent research on microteaching for mathematics teachers in higher education published between 2021 and July 2025, following an earlier literature review for teachers in higher education across different disciplines. He has suggested that microteaching allows for the development of core teaching skills in a controlled environment with immediate feedback, promoting effective professional development in higher education.

Tudu et. al. focused on the role of bio-elements in controlling the size, morphology, and stability of the nanoparticles. They have explored a sustainable and environmentally friendly approach to synthesize cadmium sulfide nanoparticles utilizing a biogenic source such as Arjuna Bark as a capping reagent through a green synthesis process. They have estimated the band gap energies by deploying the Tauc plot and established the semiconducting nature of the synthesized samples. **Dey et al.** demonstrated a four channel WDM-PON architecture to transmit 40 Gbps RZ/NRZ data over 100 km SMF and 100 m FSO. They have theoretically investigated the Fiber-FSO link with FBG as a dispersion compensation module and proposed that their system is very much suitable to transmit high data rates over long-haul transmission system.

Dr. S. Kar attempted to focus on three aspects of family and parenting behavior, viz, family hardiness, parental sense of competency and parenting styles among adoptive parents

and biological parents. The study suggested that the differences between adoptive mothers and biological mothers with respect to family hardiness, parenting sense of competence, authoritarian parenting style and permissive parenting style and differences between adoptive fathers and biological fathers with respect to authoritarian parenting style and permissive parenting style.

Dr. Ganguly documented shorthorn grasshopper fauna in the campus of Achhruram Memorial College, Jhalda, WB, India. He showed that the majority of the species belonged to the family Acrididae, with Oedipodinae being the most dominant subfamily and highlighted that the rich diversity of grasshopper community within the college premises indicated a relatively healthy ecosystem despite a growing anthropogenic pressure in its vicinity.

I hope that our readers will find articles/reviews presented in this volume of JSE interesting and informative. With new opportunities and challenges, we will continue to strive to make JSE more useful to the research community. I would like to acknowledge the support of readers, authors and referees contributing to the success and make the publication of this journal possible.

Please help us grow by citing the relevant articles that you read in JSE.

We look forward to receiving your contributions in the near future.

JOURNAL OF SCIENTIFIC ENQUIRY

VOLUME 5 · ISSUE 1 · 2025

Herbal Extracts in Wound Healing: Performance, Delivery Systems, and Future Directions	Sujit Ghosh, Mahmuda Parveen and Jitendra Mahato	1-24
Checklist, Taxonomic Diversity, and Ecological Documentation of Wetland Macrophytes in Ranchi District, Jharkhand, India	Jitendra Mahato and Sujit Ghosh	25-40
A short note on the magnetic properties of a family of substituted m-bisallyl chlorobenzene diradicals viewed as partially ordered set	Anirban Panda	41-53
Physicochemical studies of the effect of β -Cyclodextrin on aggregation behaviors of triphenyl tetradecyl phosphonium bromide	Jayanta Kumar Midya	54-62
Oxidation of Alcohols - A Mini Review	Kalyan Senapati	63-89
A Note on (p,q) - φ order and (p,q) - φ type of a Meromorphic function (TTPB) in aqueous solution	Sourav Kar	90-96
Review on SEIR Model of Infectious Diseases	Soumendra Nath Ruz	97-107
Microteaching for mathematics teachers in higher education: a review of recent development	Debasis Das	108-118
Tuning of structural, optical properties of CdS nanoparticles with incorporation of Arjuna bark extract as capping reagent	Parimal Tudu, Moinur Rahaman, Shiv-sankar Dey, Rittwick Mondal, Soumyajoyti Kabi, Ardhendu Sekhar Patra and Sonjoy Mondal	119-121
40 Gbps NRZ/RZ Data Transmission over 100 km SMF and 100 m FSO in Four Channel WDM-PON System	Rajesh Dey, Binoy Das and Ardhendu Sekhar Patra	132-138
Comparison of Family Hardiness, Parenting Sense of Competency and Parenting Styles between Adoptive Parents and Biological Parents	Sreeparna Kar	139-148
Documentation of shorthorn grasshopper (Orthoptera: Acrididae and Pyrgomorphidae) fauna in the campus of Achhruram Memorial College, Jhalda: An approach towards 'Green Audit'	Arijit Ganguly	149-154

