

SCIENCE AND CULTURE

JOURNAL LISTED IN THOMSON REUTERS MASTER LIST
 JOURNAL LISTED IN THE UGC - CARE LIST 'GROUP-II'
 INDEXED IN UK-BASED CAB ABSTRACTS
 INDEXED IN WEB OF SCIENCE
 SCIENCE CITATION INDEX EXPANDED CATEGORY

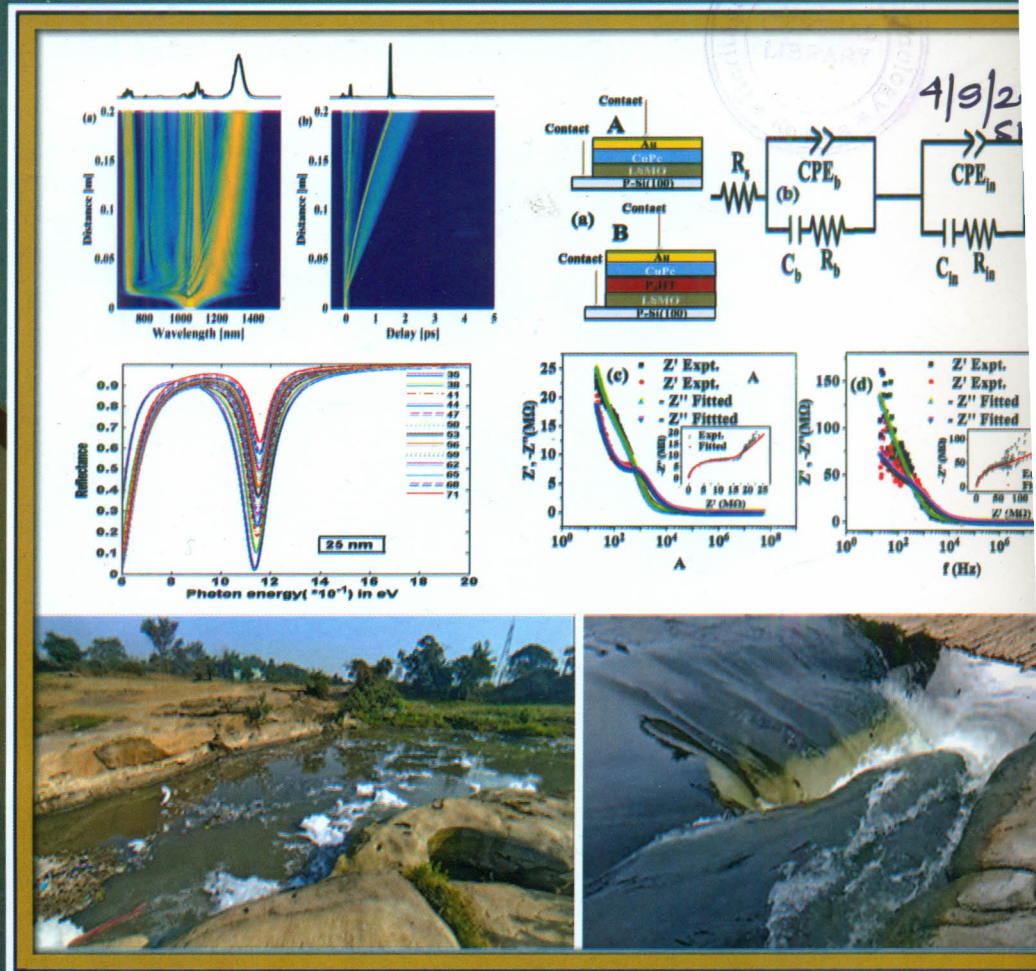
Special Issue on
 Natural Sciences and
 Engineering for
 Sustainable Development

Ninetieth Year of Publication

IN THIS ISSUE

Editorial: Natural Sciences and Engineering for Sustainable Development

- Numerical Simulation of Super Continuum
- AC Impedance Spectroscopy Analysis
- Tuning of I-V Characteristics of Hybrid
- An Investigation on Neutron Skin Thickness
- Theoretical Design of Hypersecant Soliton
- Optical and Magnetic Tuning
- Surface Plasmon Resonance in Titanium Nitride
- Theoretical Analysis of Chiral Mach-Zehnder
- CO₂/CH₄ Separation Performance
- Magnetically Retrievable Cu Containing
- Relaxation Process of Fe-doped V₂O₅·MoO₃·CdO·ZnO
- Prediction of Diabetes Using Machine Learning
- High Angle Conveyor and its Applicability
- Changing Pattern of Rural Female Work
- Socio Economic Challenges of the Tribes
- Insights into the Phenomenon of Foam Formation
- Impact of Using α-Fe₂O₃ Nanoparticles
- Phytoconstituent Analysis of Petroleum
- Opinion: Albert Einstein

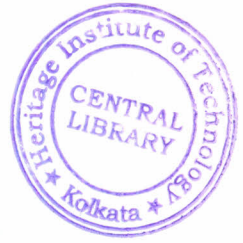


Guest Editors:
 Prof. (Dr.) Jitendra Nath Roy
 Dr. Puja Dey



Indian Science News Association
 ESTABLISHED 1935
 Regd. No. R/N 5093/57

SCIENCE AND CULTURE



JULY-AUGUST 2024/VOLUME 90/NO. 7-8

A JOURNAL OF NATURAL AND CULTURAL SCIENCES

PUBLISHED BY THE
**INDIAN SCIENCE
NEWS ASSOCIATION**

EDITORIAL BOARD

Editor-in-Chief

Professor Sudhendu Mandal

Editors

**Dr. Satyabrata Chakrabarti
Professor Arnab Rai Choudhuri**

Members

**Professor Avijit Banerji
Professor Syamal Chakrabarti
Professor Manas Chakrabarty
Dr. Sabyasachi Chattopadhyay
Dr. Amit Krishna De
Professor Prabir Kumar Saha
Dr. T.V. Venkateswaran**

COLLABORATORS

Amiya Kumar Bagchi (Kolkata)	Deepak Kumar (New Delhi)
Kelvin Brown (Australia)	Abhijit Lahiri (New Delhi)
D. P. Chattopadhyaya (Kolkata)	Monoj K. Patariya (New Delhi)
A. D. Choudhuri (Kolkata)	B.K. Pattnaik (Kanpur)
Mrinal K. Dewanjee (USA)	V. Ravichandran (Kolkata)
R. Gadagkar (Bangaluru)	Amit Roy (Kolkata)
Ajoy Ghatak (New Delhi)	Satyesh Chandra Roy (Kolkata)
Irfan Habib (New Delhi)	Nimai Chandra Saha (Burdwan)
Amiya K. Hati (Kolkata)	Rajinder Singh (Germany)
Mridul Hazarika (Guwahati)	Srinivasan Srikanthan (Chennai)
S. Kailas (Mumbai)	
Punam Kakkar (Lucknow)	

EDITORIAL

Natural Sciences and Engineering for Sustainable Development (NSES 2024)
— *J. N. Roy and Puja Dey* ... 243

LETTER TO THE EDITOR ... 245

ARTICLE

Numerical Simulation of Super Continuum Generation in Tapered Optical
— *Kamal Hussain* ... 246

AC Impedance Spectroscopy Analysis of P-Si/La_{0.7}Sr_{0.3}MnO₃(LSMO)/CuPc/Au(A) and P-Si/La_{0.7}Sr_{0.3}MnO₃(LSMO)/P₃HT/CuPc/Au(B) Hybrid Inorganic-Organic Heterostructure under Ambient Conditions
— *Md. Minhaj Ali and P. Dey* ... 249

Tuning of I-V Characteristics of Hybrid Inorganic-Organic p-Si/La_{0.7}Sr_{0.3}MnO₃/CuPc/Au Heterostructure Under External Perturbations of Light and Magnetic Field
— *Satabdi Roy, Md. Minhaj Ali and P. Dey* ... 253

An Investigation on Neutron Skin Thickness of Finite Nuclei by Studying Dipole Polarizability using Finite Range Effective Interaction
— *B. Sahoo, S. Chakraborty, M. Pal and S. Sahoo* ... 257

Theoretical Design of Hypersecant Soliton Based Demux
— *Chinmoy Mukherjee and Abhijit Sinha* ... 261

Optical and Magnetic Tuning of Electrical Transport Across the Interfaces of Zn_{0.3}Ni_{0.7}Fe₂O₄ CuPc Heterostructure
— *Mrinal Kanti Mondal and P. Dey* ... 264

Surface Plasmon Resonance in Titanium Nitride in Visible Frequency Range
— *Sukla Rajak* ... 267

Theoretical Analysis of Chiral Mach-Zehnder Interferometer Based all-optical Logic Gate
— *Arindam Changder, Kousik Mukherjee and Jitendra Nath Roy* ... 270

CO₂/CH₄ Separation Performance of Mixed-Matrix Membranes Based on MOF 808/ Polyamide
— *Barun Kumar Mondal* ... 273

Contd. next page.



Indian Science News Association

MEMBERS OF THE COUNCIL

President

Dr. K. Muraleedharan

Vice-Presidents

Professor S. K. Talapatra
Professor (Mrs.) Julie Banerji
Professor Bikas K. Chakrabarti
Professor Dhruvajyoti Chattopadhyay
Professor Basab Chaudhuri
Dr. Anil K. Rajvanshi

Honorary Secretaries

Professor Manas Chakrabarty
Dr. Amit Krishna De

Honorary Treasurer

Professor Prabir Kumar Saha

Editors, Science and Culture

Professor Sudhendu Mandal, Editor-in-Chief
Dr. Satyabrata Chakrabarti
Professor Arnab Rai Choudhuri

Members

Professor Avijit Banerji
Shri Prasanta K Bose
Dr. Manoj Kumar Chakrabarti
Professor Syamal Chakrabarti
Dr. Sabyasachi Chattopadhyay
Dr. (Mrs.) Sumitra Chaudhuri
Dr. Manas Pratim Das
Dr. D. P. Duari
Dr. S. P. Gon Chaudhuri
Shri Pathik Guha
Dr. Balam Majumder
Professor Partha P. Majumder
Shri Sitendu Mandal
Professor Shankarashis Mukherjee
Professor Devaprasanna Sinha
Dr. D. K. Srivastava
Professor (Mrs.) Bani Talapatra
Dr. T.V. Venkateswaran

Magnetically Retrievable Cu Containing Nanoparticles for Multicomponent Organic Synthesis — Mousumi Kundu	... 277
Relaxation Process of Fe-doped $V_2O_5 \cdot MOO_3$ CDO•ZNO Glassy Nanocomposites — Ajit Mondal, Arpita Dey, Prolay Halder, Anil Chamuah, Sanjib Bhattacharya, Debasish Roy and Amit Mallik	... 280
Prediction of Diabetes Using Machine Learning Models — Sushmita Mondal and J. Paul Choudhury	... 283
High Angle Conveyor and its Applicability in Large Opencast Coal Mines in India — Subhash Chandra Shil	... 285
Changing Pattern of Rural Female Work Participation: A Study of Bankura District in West Bengal — Kuntal Kanti Chatteraj and Rajesh Mondal	... 288
Socio Economic Challenges of the Tribes; A Comprehensive Study on Tribal Population of Purulia District, West Bengal, India — Dipankar Oraw	... 294
Insights into the Phenomenon of Foam Formation in River Nunia at Ghagarburi — Sagarika Mukherjee, Sudip Paramanik and Manas Paramanik	... 298
Impact of Using α - Fe_2O_3 Nanoparticles as Dietary Supplements on the Growth of a Critically Endangered Minor Carp <i>Puntius sarana</i> (Hamilton, 1822) — Sampa Mondal, Nilanjana Chatterjee and Baibaswata Bhattacharjee	... 302
Phytoconstituent Analysis of Petroleum Ether Leaf Extract of <i>Olex scandens</i> and Study of its Mosquito Larvicidal Potency — Sudip Paramanik, Sagarika Mukherjee and Manas Paramanik	... 306
OPINION	
Albert Einstein — S. N. Bose	... 310
RESEARCH COMMUNICATION	
A Review on the Pharmacological Activities of <i>Thuja orientalis</i> L. — Sonali Ray	... 314
Challenges of Swayam Moocs in Higher Education: Students' Perspective — Kartik Mondal, Ramendra Kumar Parhi	... 321
NOTES AND NEWS	
i) Release of Special issue of <i>Science and Culture</i>	... 329
ii) Celebration of World Health Day	... 330

Cover : Please see pages 247, 250, 268, 300