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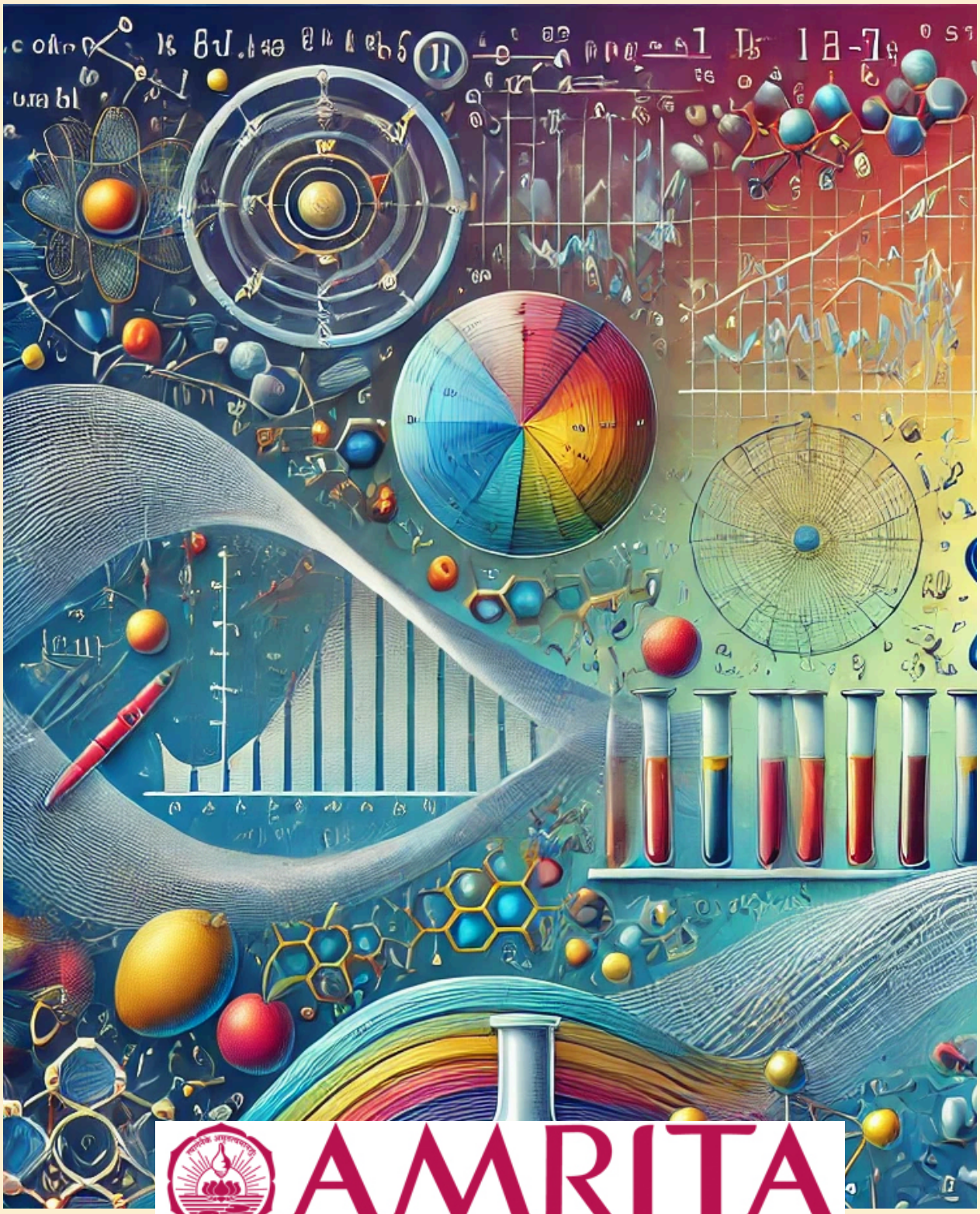
VIGNANAMRITAM

A NEWSLETTER FROM
AMRITA SCHOOL OF PHYSICAL SCIENCES



AMRITA VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY

VIGNANAMRITAM

Vol II, Issue II MAY-DEC 2024
AMRITA SCHOOL OF PHYSICAL SCIENCE
AMRITA VISHWA VIDYAPEETHAM,COIMBATORE

From the Editor's Desk

Dr. Prasanna Ramani
Professor
Amrita School of Physical Sciences,Coimbatore

The fourth edition of the Amrita School of Physical Sciences newsletter, "Vignanamritam," is proudly presented by the editorial board. It is with great enthusiasm that we share the accomplishments, research, and developments taking place within the School of Physical Sciences. This issue highlights the hard work and dedication of our faculty, students, and staff who continue to push the boundaries of knowledge in the various scientific fields we represent.
A brief overview of all the events that occurred between May to December 2024 is offered in this edition. This edition features scientific talks, seminars and workshops by eminent professors. This issue also celebrates our students' achievements, recognizing their hard work, creativity, and passion for scientific research.

I envision there will be more scientific endeavors and more activity in the upcoming months. As we embark on the trip ahead, let this edition inspire us all to start a new one and maintain our interest in finding out more about the activities, business news, and amazing facts of the School of Physical Sciences.

Thank you for your continued interest in Vignanamritam. We hope this issue serves as a valuable resource and source of inspiration.

About Amrita School of Physical Sciences

Amrita School of Physical Sciences - Coimbatore is a vibrant component of the Amrita Vishwa Vidyapeetham- has 67 faculty members belonging to the disciplines of Physics, Chemistry, Mathematics, Data Science, and Food Sciences and Nutrition. It has over a 1000 undergraduate and post graduate students. The school is very active in research with around 100+ Full-time Scholars and has funded projects from National Research agencies like DST, DBT, SERB, DRDO, etc. It runs undergraduate, Five-Year Integrated MSc Program, Two-year MSc Program, and PhD programs in the field of Physics, Chemistry, Mathematics, Data Science, Food And Nutrition, and Applied Statistics. The thrust area of the School is Materials for Energy Applications, Bio-inspired materials, Water technology, Biosensors, Cancer chemistry, Data Science, Graph theory, and Modelling - to name a few.

RESEARCH LABS

Advanced Multifunctional Materials and Analysis Laboratory (AMMAL)

Amrita Material Processing Laboratory

Amrita Medicinal Research and Industrial Technology Acquisition (AMRITA) Laboratory

Bio-Materials Chemistry Research Laboratory

Biomaterials Laboratory

Biosensor Research Lab

Ceramics Research Laboratory

Dhanvanthri Laboratory

Energy Technology Laboratory

Functional Materials Laboratory

Light and Photonics Research Laboratory

Analytical Instrumentation Laboratory

OUR SCIENCE STUDENTS AT CONFERENCES/WORKSHOPS

ORAL PRESENTATIONS

- "Flash sintering of hydrothermally synthesized nano-sized nuclei of CuCrO2" Anand Mohan P at International Conference on Advanced Ceramics for Sustainability (Cera4S-2024),at Indian Institute of Technology, Madras
- "Invitro theraputic activities of copper oxide nanoparticles impregnated biocidal film by phyto induced reduction method" Athul Ravi at 7 th International Conference on Recent Advances in Composite Materials (ICRACM 24) at Chinmaya Vishwa vidyapeeth University, Ernakulam, Kerala, 12-14 December 2024
- "Non-radial f-modes in neutron stars with hyperons and delta baryons." Jyothi Lakshmi O P at 68-th DAE Symposium on Nuclear Physics, GOI at Indian Institute of Technology Roorkee, Uttarakhand 07-11, December 2024
- "Dark Energy Stars and Gravitationally Sensitive Oscillations." Jyothi Lakshmi O P at XXVI DAE-BRNS High Energy Physics Symposium at Banarasi Hindu University, Varanasi 19-23 December 2024
- "A Modular Approach for the Synthesis of sequence -defined glycine-based oligopeptoids" Kavya C at International conference on Advanced materials and startup ecosystem ICAMSE 2024, at Trivandrum Engineering Science and Technology (TrESt) Research Park, Thiruvananthapuram, Kerala, 13-15 December 2024

POSTER PRESENTATIONS

- "Fabrication of Manganese Doped Polyaniline Electrodes As High Performance Supercapacitors With Superior Energy Density and Prolonged Shelf Life", Swapnika Suresh at 13th edition of Bengaluru INDIA NANO 2024, organized by the Department of Science and Technology, Karanataka Science and Technology promotion society (KSTePS), and Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), 1-3 August 2024.
- "Exploring the Complexation of β-cyclodextrin with Triazolium-based Ionic Liquid and Nile Blue: A Fluorescence Spectroscopic Approach." Saranya CT at 17th International Conference on Optics Within Life Sciences at Indian Institute of Technology, Bombay 18-21 November 2024
- "Synthesis and study of a ceramic compound LiCrO2 as an Electrode for energy storage devices": Mariya George At International conference on Advanced Ceramics for Sustainability(Cera4S-2024) at Indian Institute of Technology, Madras, TamilNadu, 28th to 30th November 2024
- "Synthesis of Sequence- defined Dendrimers" :Shancy P presented at International conference on Advanced materials and startup ecosystem ICAMSE 2024 at Trivandrum Engineering Science and Technology (TrESt) Research Park, Thiruvananthapuram, Kerala, 13-15 December 2024
- " Structural, Optical, and Morphological Investigations of BiCu(1-x)Ag(x)OS for Photoconversion Applications" Akshai Shyam at International Symposium on Innovative Materials for Energy and Environment (IMEE-2024) at Cochin University of Science and Technology , Kerala , 11 -13 December 2024
- "Photocatalytic Potential of Vibhūti and Silica-Copper Composite." Archana P at International Conference on Recent Advances in Composite Materials (ICRACM-2024) at Chinmaya Vishwa Vidyapeeth, Kochi, Kerala, 12-14 December 2024
- “Photo-assisted Capacitive Performance Of Vanadium Based Supercapacitor.” Hridya C Prakash at International Conference on Materials for Energy, Environment, And Healthcare 2024 (MEEHCON 24) at National Institute of Technology, Calicut 20-21 December 2024
- Fluorine-incorporated graphene oxide for hydrovoltaic power generation; improving proton migration and storage capacity Neethu M at International Conference on Materials for Energy, Environment, And Healthcare 2024 (MEEHCON 24) at National Institute of Technology, Calicut 20-21 December 2024
- “Single-walled Carbon Nanotube intercalation in Low Dimensional Metal Halide Perovskite for Boosting the Performance in Self-Powered Photodetector” Darshana Sudrashan at International symposium on innovative materials for energy and environment (IMEE-2024) at Cochin University of Science and Technology , Kerala , 11 -13 December 2024

OUR FACULTY AT CONFERENCES/ WORKSHOPS

- **Dr. M Ulaganathan** chaired a session at International Conference on Nano Structural Materials and Nanocomposites (ICN-2024), 10-12 , May-2024, MG University, Kottayam, Kerala, India.
- **Dr. Kirubavathi G**, was a reviewer in the International Conference on "Intelligent System for Cybersecurity", Department of Computer Science & Engineering, The NorthCap University, Gurugram, May 3-4, 2024.
- **Dr. Mahalakshmi J**, has participated in the workshop cum FDP on "Amplifying AI: Advanced Optimization Strategies for Enhanced Performance" Department of Computational Science and Humanities, Indian Institute of Information Technology (IIIT) Kottayam, May 27th – 31st, 2024.
- **Dr. Sumathi IR**, has participated in the workshop cum FDP on "Amplifying AI: Advanced Optimization Strategies for Enhanced Performance" Department of Computational Science and Humanities, Indian Institute of Information Technology (IIIT) Kottayam, May 27th – 31st, 2024.
- **Prof.T.G.Satheesh Babu** has participated in the workshop on "Futuristic R&D Endeavours on Soldier Support Technologies"organized by DRDO Industry Academia Centre of Excellence, Bharathiar University during 9-10

INVITED TALK BY OUR FACULTY AT CONFERENCES

- **Dr. M Ulaganathan** delivered a talk at International Conference on Nano Structural Materials and Nanocomposites (ICN-2024), 10-12 , May-2024, MG University, Kottayam, Kerala, India.
- **Dr. V Sreekanth** delivered a talk at National Workshop on "Indian Knowledge System - Mathematics - Kerala Contribution and Integrated Teacher Education Program" organised by Central Sanskrit University, New Delhi at Guruvayoor Campus. 5-7 May 2024
- **Prof.T.G.Satheesh Babu** delivered a talk at National Conference on Recent Trends in Science and Technology (NCRTS 24) organised by the Department of Chemistry, St Thomas College Palai, Kottayam, Kerala, 30 November-1 December 2024.
- **Prof.Sudip K Batabyal** delivered a talk at ICST 2024, First International Conference on Sustainable technologies, NIT Durgapur. December12- 15th December

SPOTLIGHT

67
FACULTY

1000+
STUDENTS

4
DEPARTMENTS

100+
RESEARCH SCHOLARS

12
RESEARCH LABS

10
ACADEMIC LABS

600+
PUBLICATIONS SINCE '08

40+
PATENTS FILED
SINCE '08

2200L
RESEARCH GRANTS

WALL OF FAME

HONOURING THE DOCTORATES

Dr. Anjitha S

Dr. Arun Vishwan

Dr. Aparna M P

Dr.Prajnanaswaroopa S

Dr.Bharathi H G

CSIR-UGC NET LECTURESHIP

Shree C

PLACEMENTS

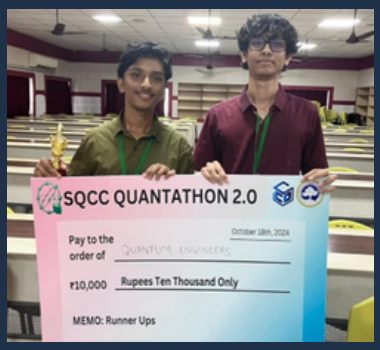
A Harikrishnan

Rohith Babu

WALL OF FAME

Dr. Sudip Kumar Batabyal

Recognized as a Top 2% scientist globally by Stanford University in 2023



Manav Nambiar and Sai Sudarshan, 3rd year-integrated MSc students secured second position in Quantum Computing Hackathon 2024, conducted by SRM University, Chennai.

WALL OF FAME

WELCOME

Dr.L. Banupriya

Dr. Indumathi M

NEW FACULTIES

DEPT OF FOOD SCIENCES

CONGRATULATIONS

Ms. Artha Renjith placed at Gourmet Foods LLC Ajman, Jurf, United Arab Emirates

Mr. Tharani Krishnan was awarded first prize for the group presentation on "Tackling Triple Burden of Malnutrition and Double Burden of Malnutrition in India" during the Nutrition Research Course: Translating Research into Practice from St. Johns National Academy of Health Sciences from 19th to 30th August 2024.

SEMINAR
INDUSTRY EXPERT

On August 20th, 2024, Borosil Scientific Ltd., India, conducted an insightful seminar at Amrita Vishwa Vidyapeetham, Coimbatore. The seminar focused on recent advancements in laboratory glassware and the integration of safety practices in the laboratory. The event aimed to educate participants on the latest innovations and the importance of sustainability in modern manufacturing processes.

The keynote presentation by Mr. R Sasikumar, Regional Sales Manager at Borosil Scientific, Coimbatore covered the latest innovations in laboratory glassware, including new materials and designs that enhance durability, precision, and safety in scientific research

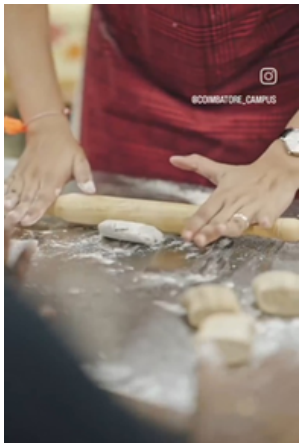
He also provided an overview of the company's journey, its mission to deliver high-quality glass products, and its commitment to sustainability. A live demonstration of Acid Dispenser, Borosil's product, was conducted. The seminar concluded with closing remarks by Mr. Arun Kumar, Sales Executive summarizing the key takeaways, emphasizing the proximate analysis parameters and the advanced proximate analysis equipments of Borosil Scientific Ltd., India. An engaging Q&A session followed, where students asked questions about the durability of the new glassware and its potential applications in research fields.

Smrti Bhakshana

The Department of Food Science and Nutrition at Amrita Vishwa Vidyapeetham organized the National Nutrition Month celebration from September 23-26, 2024, with the theme "Smrti Bhaksana" (Mindful Eating). The event included a food expo with 34 topics, competitions, and a valedictory function attended by Dr. K. Kadirvelu, Scientist F at DRDO.

Navarang Nosh

The Navarang Nosh food stall, organized by third-year Nutrition students at Amrita Vishwa Vidyapeetham on October 8-9, 2024, showcased a variety of dishes across four categories: Snacks, Dinner, Beverages, and Combo Thali. The stall was a huge success, with visitors enjoying the high-quality, flavorful food prepared with passion and enthusiasm by the students



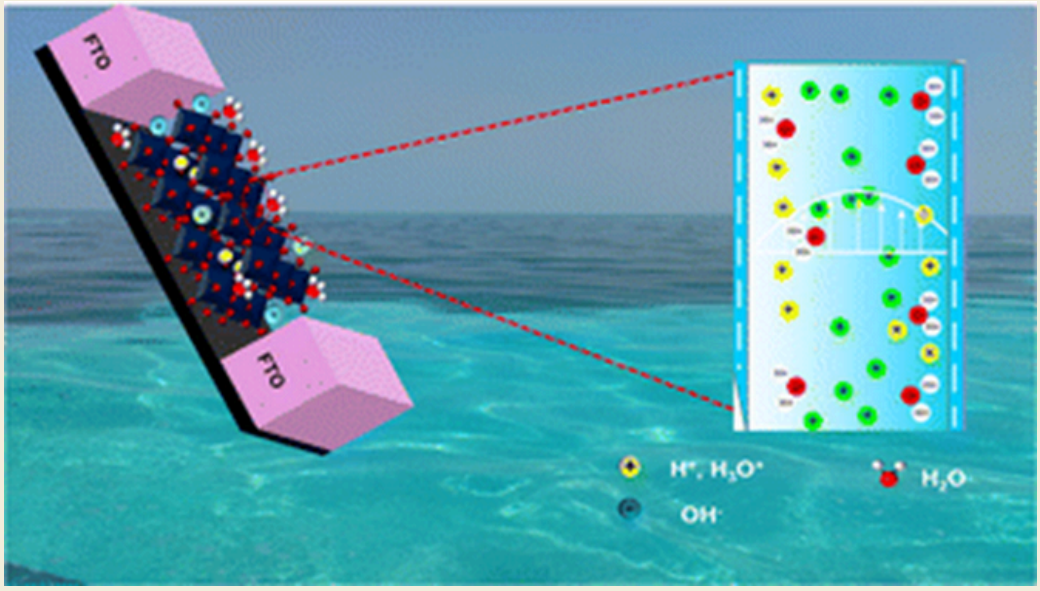
Invited Talks

SCIENCES

As part of National Nutrition Month celebrations, Dr. K. Kadirvelu, Scientist F and Additional Director at DRDO's Centre of Excellence, delivered an invited talk on "Advanced Nutritional Solutions and Food Technologies in Armed Forces: Performance and Endurance in Extreme Conditions." He shared insights on food production, packaging, and research at DFRL Mysore, focusing on ready-to-eat meals with extended shelf life and their suitability for extreme environments.

FOOD SERVICE EMPLOYEE TRAINING ON FOOD AND ITS NUTRITIONAL SIGNIFICANCE, FOOD SAFETY AND PERSONAL HYGIENE

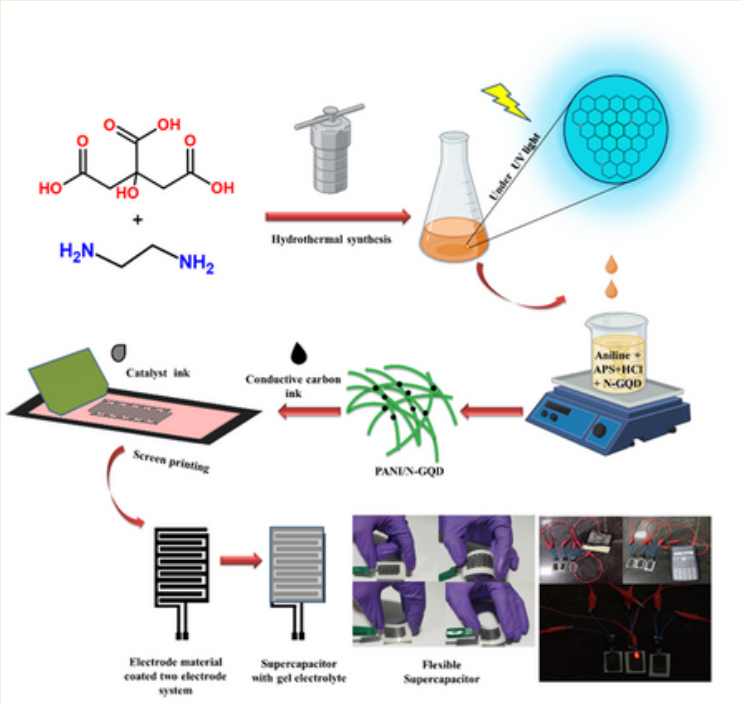
The Department of Food Science and Nutrition conducted a three-day training program on “Nutritional Significance in Food, Food Safety, and Personal Hygiene” from November 29 to December 2, 2024, for 165 canteen staff members across various facilities. The program included sessions on food preparation, value-added and millet-based foods, cooking methods, food safety, and hygiene, resulting in improved knowledge and practices among the participants.



MOISTURE INDUCED IONOVOLTAIC ELECTRICITY GENERATION USING LEAD-FREE PEROVSKITE MATERIAL

ASHNA K P

Moisture-induced ionovoltaic electricity generation (IEG) represents a groundbreaking approach to energy conversion that effectively harnesses the interplay between water motion and ion dynamics to produce electrical energy. This innovative technology, which generates clean and sustainable energy from humid environments, has garnered significant attention and research efforts in recent years as a promising solution to the ongoing energy crisis. Unlike traditional hydroelectric power generation, which relies on the potential and kinetic energies of flowing water to create electricity, IEG technology operates on a fundamentally different principle. It leverages the surface adsorption of water molecules to trigger the dissociation of free ions, allowing these ions to migrate directionally and generate an electric current. This mechanism is particularly advantageous because it enables energy generation in environments with high humidity, where conventional methods may not be feasible. The two primary driving forces behind power generation in IEG devices are the diffusion of water molecules from the surrounding moisture and the diffusion of dissociated free ions down their concentration gradient. As water molecules adsorb onto the surface of the IEG materials, they create an electrochemical environment that facilitates ion dissociation. Subsequently, the free ions, influenced by concentration gradients, migrate towards the electrodes, thereby generating electricity. Overall, IEG technology holds immense potential for providing sustainable energy solutions in diverse applications, particularly in regions where traditional energy sources are limited. Continued research and development in this field can pave the way for more efficient and scalable ionovoltaic systems, contributing significantly to global efforts in addressing energy sustainability and reducing reliance on fossil fuels. A promising solution to tackle this issue is through the IEG effect observed in two-dimensional (2D) lead-free halide perovskite structures equipped with lateral electrodes. These devices with millimeter-spaced lateral electrodes generate electricity through moisture absorption. As moisture is absorbed, it creates an uneven distribution of ions, establishing a gradient that prompts ion migration. This migration generates a voltage difference across the electrodes, which in turn propels electrons through an external circuit, producing electrical power. Furthermore, humidity plays a crucial role in enhancing power generation by aiding in ion formation.



NITROGEN-DOPED GRAPHENE QUANTUM DOT EMBEDDED POLYANILINE FOR THE FABRICATION OF HIGH-PERFORMANCE FLEXIBLE SUPERCAPACITOR WITH ENHANCED CYCLING STABILITY

NAVNEETH P

An enormous boom in the development of wearable electronic devices demands small and lightweight energy storage devices. Even though the recent progress in supercapacitors was highly promising, the total volume and sandwich design of conventional supercapacitors makes them difficult to incorporate with on-chip electronic devices. Micro-supercapacitors of millimeter to centimeter dimensions are emerging as a dependable power source that can directly integrate with on-chip electronic devices. Polyaniline/nitrogen-doped graphene quantum dots (PANI/N-GQD) were successfully synthesized using in situ polymerization and used as electrode material for the fabrication of a flexible printed symmetric supercapacitor.

Significance of the study

Unlike the polyaniline-based supercapacitors with very less cycling stability, PANI/N-GQD based supercapacitors showed exceptional capacitance retention even after 5000 charge-discharge cycles, establishing the stability of the composite material. Furthermore, the developed supercapacitor displayed exceptional retention of capacitance even when exposed to varying bending angles and 4000 bending cycles. These findings emphasize the potential use of PANI/N-GQD in wearable devices, where flexibility and mechanical robustness are crucial.

RECENT PUBLICATIONS-PHYSICS

Fabrication of Isotope-Enriched Nanostructures using Ultrafast Laser Pulses under Ambient Conditions for Biomolecular Sensing

Srilakshmi Premachandran, Sivakumar Manickam, Bo Tan, Krishnan Venkatakrishnan

Advanced Materials Q1 IF: 29.4

Cs3Bi2Cl3Br6:g-C3N4 Nanostructure-Based Thin Film Photocatalysts for Hydrogen Production under Daylight and Simulated Light

Dattatray Namdev Sutar, Ashna K Pramod, Hafijul Islam, Annadanam V Sesha Sainath, Ujjwal Pal, Sudip K Batabyal

ACS Applied Nano Materials, Q1 IF: 15.8

Strength in Unity: Designing of hybrid heterostructure (NiSe2/rGO/PANI) electrode towards high Performance, Flexible, asymmetric supercapacitor device for renewable energy storage

Harini E.M, Daya Rani , Mohd Afshan , Mansi Pahuja , Nikita Chaudhary , Seema Rani , Shumile Ahmed Siddiqui , Subhabrata Das , Jyoti , Soumyadip Sharangi , Rishita Ghosh , Sudip Kumar Batabyal , Kaushik Ghosh

Chemical Engineering Journal Q1 IF: 13.3

Sustainable Fabrication of Graphene Oxide Cathodes from Graphite of Failed Commercial Li-Ion Batteries for High-Performance Aqueous Zn-Ion Batteries

S Suresh, DS Baji, D Santhanagopalan, SK Batabyal

Small 2024 IF: 13.0.

Novel methyl urea-based deep eutectic solvent for high-performance zin-ion batteries with polyaniline/graphene nanofiber composite cathode

MS Kumar, HH Shen, SK Batabyal, JY Lin, TW Lin

Journal of Energy Storage 88 Q1 IF: 8.9

Recycled graphite/metal oxide composite: From dead Li-ion cell to live Zn-ion storage

Gayathri Krishna NR, Sai Prem Shaji, Madeshwaran Mohanraj, Mani Ulaganathan

Journal of Energy Storage 89, Q1 IF: 8.9

RECENT PUBLICATIONS-PHYSICS

Streaming-Induced Hydrovoltaic Power Generation by Fluorinated Mg–Al Hydrotalcite Nanoclay
Neethu Manikandan, SK Batabyal
ACS Sustainable Chemistry & Engineering Q1 IF: 7.1

Exploring structural and optical properties of iodine-doped TiO2 nanoparticles in Rhodamine-B dye degradation: Experimental and theoretical investigation.
T Raguram, KS Rajni, D Kanchana, Solar-Encinas José, Kevin Granados-Tavera, Gloria Cárdenas-Jirón, M Shobana, SR Meher
Chemosphere Q1 IF 8.1

Integrating atmospheric water harvester with hydrovoltaics: Simultaneous freshwater production and power generation
S Lal, T Gowthaman, S Ghosh, SK Batabyal
Separation and Purification Technology 357 Q1 IF: 8.1

Recent developments on MXene-based Zn-ion flexible supercapacitors
S Shruti, M Mohanraj, ST Senthilkumar, M Ulaganathan
Current Opinion in Electrochemistry 47, Q1 IF: 7.9

Streaming-Induced Hydrovoltaic Power Generation by Fluorinated Mg–Al Hydrotalcite Nanoclay
N Manikandan, SK Batabyal
ACS Sustainable Chemistry & Engineering Q1 IF: 7.1

Sustainable power generation from live freshwater photosynthetic filamentous macroalgae Pithophora
A Chatterjee, A Kathirvel, TG Manivasagam, SK Batabyal
Journal of Science: Advanced Materials and Devices Q1 IF: 6.7

RECENT PUBLICATIONS-PHYSICS

Lead-free Cs3Bi2I9 perovskite hexagonal microplates: A promising material solution-processed for ultraviolet self-powered photodetectors
Ashna K. Pramod , Sunil Singh Kushvaha , Sudip K. Batabyal
Journal of Alloys and Compounds Q1 IF: 6.24

Surfactant assisted tuning of electrical conductivity, electromagnetic interference shielding effectiveness, wetting properties of poly(lactic acid)-expanded graphite-magnetite nanocube hybrid bio-nanocomposites
Keerthana P Balakrishnan , Kanya Koothanatham Senthilkumar Rajendra Kumar Ramasamy Thangavelu , Gokila N , Pratheep Kumar Annamalai Ramanujam Brahmadesam Thoopul Srinivasa Raghava
European Polymer Journal Q1 IF: 5.8

On some distinct characteristics of reactive and normal flash sintering: A case study using low-temperature synthesized p-type cuprous delafossite, CuCrO2
Anand Mohan P, Akshai Shyam, Ramasubramanian Swaminathan,A K Nanadakumar
Journal of the European Ceramic Society Q1 IF: 5.8.

Lead-free Cs3Bi2I9 perovskite hexagonal microplates: A promising material solution-processed for ultraviolet self-powered photodetectors
Ashna K. Pramod, Sunil Singh Kushvaha, Sudip K. Batabyal
Journal of Alloys and Compounds Q1 IF: 5.8

Tailoring electromagnetic interference shielding, electrical and thermal properties of poly(vinylidene fluoride) based hybrid nanocomposites with carbon nanofiber and magnetite nanoparticles
Aleena Sabu, Sabarish Narayanan, Pratheep Kumar Annamalai, Ramanujam Brahmadesam Thoopul Srinivasa Raghava
Journal of Materials Chemistry Q1 IF: 5.7

Biopolymer pectin with calcium ion crosslinker as biocompatiable electrolyte for energy storage applications
ME Harikumar, SK Batabyal
Electrochimica Acta, 2024 Q1 IF: 5.5

RECENT PUBLICATIONS-PHYSICS

Ionic conductivity and dielectric characteristics of a Li incorporated PVA electrolyte membrane and a study of a fully solid-state electrochromic device based on it

Saurav Vijayaraghavan , Niranjana Raj , Mathan Kumar M , Anand Mohan P , Nanda Kumar AK

Electrochimica Acta Q1 IF: 5.5

Enhanced photocatalytic activity of V3O7/V2O5 reduced graphene oxide nanocomposite towards methylene blue dye degradation

Kathirvel Aruchamy, Darsana Sudarsan, Manujith Ajith, Arya Arayannamangalath Mana Sreekumar, Uma Maheswari Ayyasamy, Sivakumar Manickam

Environmental Science and Pollution Research Q1 IF: 5.4

Novel interferometry-based method to study the anisotropy and kinetics of liquid to solid transition in polymer

A Keerthana R Nair, Hridya Ashok, Ram Naresh R Prabhu, Amrutha Das, N Yuvan Shankar, Elngo Kandasamy, K Murugadass

Journal of Molecular Liquids Q1 IF: 5.3

Exploring the Photocatalytic and Photodetection Potential of Undoped and Nickel-Doped Molybdenum Trioxide Nanoplates: Synthesis and Characterization

Lakshmi Mohan, Keerthana Madhusoodanan, P Kathirvel, S Saravanakumar, Avinash Chithran

Ceramics International Q1 IF: 5.1

Moisture-induced ionovoltaic electricity generation using lead free 2-dimensional Cs 3 SbBiBr 9 perovskite

AK Pramod, SK Batabyal

Sustainable Energy & Fuels Q1 IF: 5.0

Visible-light induced fenton reaction by Mooihoekite (Cu9Fe9S16) nanoparticles for rhodamine B dye degradation

B Sidharth, S Sayed Aslam, V Vishnu Narayanan, KS Rajni

Emergent Materials Q1 IF: 4.8

RECENT PUBLICATIONS-PHYSICS

Turning Thermocol Waste into a Highly Efficient Carbon Composite as an Interfacial Solar Thermal Evaporator
G Pisharody, S Lal, SK Batabyal
Journal of Polymers and the Environment Q1
IF: 4.7.

A novel interferometry-based optical sensor to study the coagulation of human plasma
Ram naresh R Prabhu , Amrutha Das , Keerthana Nair , Hridya Ashok , T. Subeesh , P.K. Krishnan Namboori , Karthikeyan S, K.P. Soman , K. Murugadass,
Optics & Laser Technology Q1 IF: 4.6

Wound healing applications of β-cyclodextrin capped zinc sulphide nanoparticles impregnated electrospun polymeric nanofibrous scaffold
S Niveditha, VT Veetil, AD Rajeeve, S Cheriyan, R Yamuna, M Karthega
Journal of Drug Delivery Science and Technology Q1 IF: 4.5.

Sensing and Ionovoltaic Power Generation of Two-Dimensional Cs3Sb2X9 (X = Cl/Br/I) Perovskite Microcrystals
Ashna K Pramod, Palanichamy Gayathri, Mohan Raj Subramaniam, Saurabh Ghosh, Dong Jin Yoo, Sudip K Batabyal
ACS Applied Electronic Materials QI IF: 4.4

Aspects of rotating anisotropic dark energy stars
O. P. Jyothilakshmi, Lakshmi J. Naik, V Sreekanth
European Physical Journal C Q1 IF : 4.2

Bio-polymer pectin as morphological modifier for polyaniline: Stability enhancement for energy storage applications
ME Hari Kumar, M Sathish Kumar, Jeng-Yu Lin, Sudip K Batabyal
Materials Science in Semiconductor Processing IF: 4.2

RECENT PUBLICATIONS-PHYSICS

Synthesis and characterization of Co3O4 nanosphere and its charge storage characteristics in aqueous Zn-ion batteries

UK Chaithanya, SP Shaji, M Mohanraj, R Senthilkumar, M Ulaganathan

Journal of Materials Science Q1 IF **4.0**

Cnoidal Waves and Solitons to Three-Coupled Nonlinear SCHRODINGER S Equation with Spatially-Dependent Coefficients

T Mathanaranjan, M Rajan, SS Veni, Y Yildirim

Ukrainian Journal of Physical Optics Q1 IF **3.9**

Structural and optoelectronic studies of BiCuOS semiconductor: A potential photoconverter

JM Meenu, A Shyam, AG Aswin, Ramasubramaniam Swaminathan

Materials Science and Engineering: B Q1 IF: 3.9

Green synthesized and electro spun flexible carbon current collector for supercapacitor applications

PU, Sreeranjini, Vishnu Narayanan V, Rajni KS, Antony Joseph, and V. Sajith

Journal of Polymer Science Q1 IF:3.9

Effect of Polyvinylpyrrolidone on the Structure Development, Electrical, Thermal, and Wetting Properties of Polyvinylidene Fluoride-Expanded Graphite Nanocomposites

Haridass, Reshma,Sabu, Aleena,Augustin, Nikhitha,Annamalai, Pratheep Kumar,Augustin, Nikhitha

ACS Omega Q2 IF 3.7

Ferromagnetic ZnO nanostructures from an organo zinc complex formulated via Piper Longum L-assisted green synthesis: Multifaceted prospects in photocatalysis, antimicrobial activity, and cell viability studies

Daphne Mary John, Nilesh S Pillai, Akshay Sivan, P Lasya, P Archana, KM Sreekanth, G Sivasubramanian, KM Sreedhar

Heliyon Q1 IF 3.4.

RECENT PUBLICATIONS-PHYSICS

Sulphanilamide degradation by undoped and copper doped ZnO, and ferromagnetic properties of fresh, aged, and heat-treated aged ZnO

Daphne Mary John , Sreerag Kaaliveetil , Yadhu J. Nair , S. Sruthy , P. Lasya, Ramanujam Brahmadesam Thoopul Srinivasa Raghava, G. Sivasubramanian, K.M. Sreedhar , K.M. Sreekanth

Heliyon Q1 IF 3.4

Zinc-Iron (Zn-Fe) Redox Flow Battery Single to Stack Cells: A Futuristics Solution for High Energy Storage Off-Grid Applications

Mani Ulaganathan

Energy Advances Q2 IF 3.2

Influence of crystallinity and copper dopant concentration in Cu: NiO on their heterojunction characteristics with Al: ZnO

A Uma Maheswari, C Amrithavarsha, PV Keerthana

Journal of Materials Science: Materials in Electronics Q2 IF 2.8

Investigations on the microwave-assisted growth of ZnO nanorods and the performance of nanostructured heterojunction UV photodetector

AJ Nair, A Shyam, J Krishnamoorthy, R Swaminathan

Physica B: Condensed Matter Q2 IF: 2.8

Dynamic interplay: unveiling inelastic breather collisions and modulation instability enhancement in a periodically gained inhomogeneous fiber optic communication system across temporal frequencies

S Saravana Veni, M S Manirajan, Anjan Biswas and Asim Asiri

Physica Scripta Q2 IF: 2.6

Exploring the dynamic interplay of intermodal and higher order dispersion in nonlinear negative index metamaterials

S Saravana Veni, M S Mani Rajan, Anjan Biswas and Ali Saleh Alshomrani

Physica Scripta Q2 IF: 2.6

RECENT PUBLICATIONS-PHYSICS

Bose-Einstein condensate stars in combined Rastall-Rainbow gravity

O. P. Jyothilakshmi, Lakshmi J. Naik, V Sreekanth

General Relativity and Gravitation,56, 141 , , (Q1)IF 2.3.

Optical bullets with cross spatio dispersion and multiplicative white noise

Mohammad Mirzazadeh, Anjan Biswas, Yakup Yildirim, S. Saravana Veni

Journal of Optics Q2 IF: 2.0

Designing sodium alloys for dendrite-free sodium-metal batteries

Kaitong Yao, Shitan Xu, Yang Yang, Yun Zheng, Karma **Zuraqi, Dan Yang, Jue Liu, Ulaganathan Mani, Xianhong Rui**

Information & Functional Materials

Ionovoltaic power generation based on lead-free layered Cs3Bi2Br9 perovskites nanosheets

Ashna K. Pramod , Stevin S. Pramana , Sudip K. Batabyal

Next Materials

Improved electro-kinetics of new electrolyte composition for realizing high-performance zinc-bromine redox flow battery

Yogapriya Vetriselvam, Gnana Sangeetha Ramachandran, Raghupandiyan Naresh, Karuppusamy Mariyappan, Ragupathy Pitchai, Mani Ulaganathan

Next Energy

Manganese doped zinc oxide nanoparticles as an efficient photocatalyst in pharmaceutical degradation.

Daphne Mary John , N.K. Sreerang , Sreerag Kaaliveetil , G. Sivasubramanian , K. M. Sreedhar , K.M. Sreekanth

Materials Today: Proceedings Q3

RECENT PUBLICATIONS-PHYSICS

A Dual Approach Involving Empirical Characterization and DFT Calculation to Elucidate the Impact of Mn Doping on ZnO Nanoparticles
Adithya S. Kamath, Kaustubh Banerjee, Kathirvel P, Lakshmi Mohan
Proceedings of the Asian Research Association

DC conductivity studies of CuO Nano petals incorporated PMMA Thin Films
Kathirvel P, Lakshmi Mohan, Saravanakumar S
Proceedings of the Asian Research Association

Effect of Two Different Deposition Temperatures on the Physical and Electrical Properties of the ZTO Thin Films For Solar Collector Applications
G. Kiruthiga , K.S. Rajni , C.R. Deepika , Nandhakumar Eswaramoorthy ,Vishnu Narayanan , Chandini Ragumoorthy
Proceedings of the Asian Research Association

Influence of Metal Ions (Cu, Ni, Zn) Substituted Cobalt Ferrite Nanoparticles Synthesized by Sol-Gel Auto Combustion Method for Magnetic Application
R. Anjana, V. Vishnu Narayanan, T. Raguram, K.S. Rajni
Proceedings of the Asian Research Association

PATENTS

Activated carbon-cement composite coated polyurethane foam as a cost-efficient solar steam generator
Sudip K Batabayal, Sujith Lal
Patent No. 202241061033

RECENT PUBLICATIONS-CHEMISTRY

·Nitrogen-doped graphene quantum dot embedded polyaniline for the fabrication of high-performance flexible supercapacitor with enhanced cycling stability
Navaneeth Punnakkal, S Naneena, Shyam Lal C P, Aarathi Pradeep, Satheesh Babu T G, Punathil Vasu Suneesh
Journal of Energy Storage Q1 IF: 8.9

MnO2 nanowires modified reduced graphene oxide thick film cathode for aqueous zinc-ion prismatic battery
Inigo Antony M, Punnakkal Navaneeth, Vyshnav Vinod M, Krishnendu S D, Satheesh Babu T G, Suneesh P V
Journal of Energy Storage Q1 IF : 8.9

Design of biocompatible gelatin hydrogels reinforced with magnetite nanoparticles: Effective removal of chromium from water environment
P.S. Anulekshmi, K. Nithya, P. Senthil Kumar, Asha Sathish, Priyadarshini M, E. Rekha, Aswathy S. Cheruvally, Gayathri Rangasamy
Environmental Research Q1 IF: 7.7

Cover Feature: Zn(II)-Curcumin Complexes-Based Anticancer Agents
Rajdeep Mondal, Muthukumar Keerthana, Nanjan Pandurangan, Sankarasekaran Shanmugaraju
ChemMedChem Q1 IF: 3.4

A Preliminary Investigation of Thermally Stable Schiff Base Metal Complexes for Hyperthermia: Synthesis and Biological Evaluation
Vigneswari ,Sankara Narayanan,Soven Dhawa, Amritha Sukumaran,Bharathi Hassan Ganesh, Jeya Rajendran,Kondapa Naidu Bobba and Prasanna Ramani
Antioxidants Q1 IF:**6.0**

Paper Analytical Device for the Colourimetric Detection of Alkaline Phosphatase in Serum and Saliva
Alageswari, D., Lakshmi Devi, A., Resmi, P.E, P.V. Suneesh, Arathi Pradeep, T.G. Satheesh Babu
Journal of Analysis and Testing Q1 IF: 5.5

RECENT PUBLICATIONS-CHEMISTRY

Photophysical study on synthesized triazolium ionic liquids and their stabilizing effect on native state of serum albumin

Susithra Selvam, Saranya Cheriyathennatt, Poornima Ratheesh, Ashfana Ashraf, Anjitha Satheesh, Elango Kandasamy

Journal of Molecular Liquids Q1 **IF: 5.3**

Cucurbit[6]uril-stabilized copper oxide nanoparticles: Synthesis, potent antimicrobial and in vitro anticancer activity

Anakha D. Rajeeve, Vyshnavi T. Veetil, P.K. Krishnan Namboori, R. Yamuna*, Arivazhagan Rajendran

Journal of Molecular Liquids Q1 IF : 5.3

Development of a µPAD for the point-of-care testing of serum glutamic oxaloacetic transaminase (SGOT)

P. E. Resmi1,2 · Pradeep Aarathi1,2 · P. V. Suneesh · T. Ramachandran, · G. Nair Bipin, · Babu T. G. Satheesh*

Microchim Acta Q1 IF : 5.3

Synthesis of electrospun PVA/chitosan nanofibrous scaffold impregnated with CuO nanoparticles for wound healing.

S. Sandra, D. R. Anakha, Cheriyan Silpa, T. V. Vyshnavi, M. Bhagiyalakshmi, R. Yamuna & M. Karthega

Cellulose Q1 IF: 4.**9**

A User-Configurable Smartwatch as a Point-of-Care Testing Device for Electrochemical Biosensors

S. Vineeth Raj, A. Pradeep, R. Jeethu, B. G. Nair, T. G. Satheesh Babu and P. V. Suneesh

IEEE Sensors Journal Q1 IF: 4.325

High aspect ratio copper nanowires modified screen-printed carbon electrode for interference-free non-enzymatic detection of serum creatinine in neutral medium

Chandhana J.P., Roshith M., Suneesh Punathil Vasu, Darbha V. Ravi Kumar, Satheesh Babu T.G

Journal of Electroanalytical Chemistry Q1 IF: 4.1

RECENT PUBLICATIONS-CHEMISTRY

Design, development and validation of a handheld colourimeter for the quantification of colourimetric assays on paper analytical devices

Arunraj S, Resmi P E, Vineeth Raj S, Alageswari D, Suneesh Punathil Vasu, Aarathi Pradeep, John Stanley, Nader Pourmand, Bipin G. Nair, T.G. Satheesh Babu

Sensors and Actuators A: Physical Q1 IF: 4.1

Highly sensitive disposable test strips for sweat chloride detection using silver nanoparticles decorated reduced graphene oxide

P. Arun Kumar, Aarathi Pradeep, Bipin Kumar G. Nair, T.G. Satheesh Babu, Punathil Vasu Suneesh

Journal of Electroanalytical Chemistry Q1 IF: 4.1

Biogenic silver nanoparticles incorporated hydrogel beads for anticancer and antibacterial activities

Vyshnavi T. Veetil, Vidhu Jayakrishnan, Vaisakh Aravindan, Anakha D. Rajeeve, Sreekanth Koolath & Ramasamy Yamuna

Scientific Reports Q1 IF:3.8

Efficient one-pot green synthesis of carboxymethyl cellulose/folic acid embedded ultrafine CeO2 nanocomposite and its superior multi-drug-resistant antibacterial activity and anticancer activity.

Thalakulam Shanmugam Boopathi, Asha Rajiv, T.S. Geetika Madan Patel, Lakshay Bareja, Saleh H. Salmen, Hossam M. Aljawdah, Palanisamy Arulselvan, Jagadeesh Suriyaprakash & Indumathi Thangavelu

Bioprocess and Biosystems Engineering Q1 IF:3.5

Carboplatin-loaded zeolitic imidazolate framework-Induction of antiproliferative activity and apoptosis in breast cancer

Saravanan Ganapathy, Muruganantham Bharathi, Abdurahman Hajinur Hirad, Abdullah A. Alarfaj, Indumathi Thangavelu, Palanisamy Arulselvan, Ravindran Jaganathan, Rajeswari Ravindran, Jagadeesh Suriyaprakash, Thalakulam Shanmugam Boopathi

Biotechnology and Applied Biochemistry Q1 IF : 3.1

RECENT PUBLICATIONS-CHEMISTRY

Non-Enzymatic Electrochemical Detection of Urine Creatinine Using Cobalt-Gold Bimetallic Nanoparticles
Meera R, Neena P. K, Aarathi Pradeep, Bipin G. Nair, Suneesh Punathil Vasu and T. G. Satheesh Babu
The Electrochemical Society Q1 IF: 3.1

Competitive Adsorption Studies of MgFe2O4-Biochar Nanocomposites for the Removal of Chromium and Nickel Ions in Single and Binary Metal Ion System
Gautham Kurup, Neeraj Krishnan, Vaishnav M. R., Roopak A. R., K. Nithya, Asha Sathish, Selvaraju Sivamani & Aswathy S. Cheruvally
Adsorption Q1 IF: 3.0

A mini-review on Ru(II)-curcumin metal complexes based anticancer agents
Rajdeep Mondal, Mannanthara Kunhumon Noushija, Sajeetha Parveen Banu, Nanjan Pandurangan, Sankarasekaran Shanmugaraju
Inorganica Chimica Acta Q2 IF: 2.7

Recyclable g-C3N4 and K-doped g-C3N4 pellets for the photocatalytic production of H2O2 under direct sunlight
Manisha S. Kumar, P. Haripriya & Darbha V. Ravi Kumar*
Chemical Papers, Volume 78 Q2 IF : 2.1

Colorimetric detection of alkaline phosphatase on paper microfluidic test strip based on the in-situ formation of gold nanoparticles
Haritha H Variar, Nayana Thara, D. Alageswari, P.E. Resmi, Aarathi Pradeep, T.G. Satheesh Babu, P.V. Suneesh
Materials Letters Q2 IF: 2.7

RECENT PUBLICATIONS-CHEMISTRY

Biogenic silica-zinc catalyst from cow dung: Comprehensive analysis, toxicological and photocatalytic efficacy
P. Archana, P. Lasya, Saranya Rajendran, K.M. Sreedhar, K.M. Sreekanth, G. Sivasubramanian
Materials Today: Proceedings Q3

PATENTS

Lab-on-a-chip glucose sensory array device with integrated non-enzymatic sensors
Satheesh Babu T G, Aarathi Pradeep, Jeethu Raveendran, Vineeth S Raj, John Stanley, Bipin Nair
Patent No. 545906

Tetra-substituted imidazole bearing substituted trigonelline units and method of synthesis thereof
Prasanna Ramani, Baladhandapani Aruchamy
Patent No. 546607

Methods for detecting antibiotic-resistant bacteria using bacteriophages
Ajith Madhavan, Sanjay Pal, Pradeesh Babu, Amrita Salim, John Stanley, Satheesh Babu T G, Bipin Nair
Patent No. 556290

BOOK CHAPTERS

Advances in antioxidant activity analysis for food application
Prasanna Ramani, Gayathri Rajendran, Archana Rajendran
Natural Antioxidants to Enhance the Shelf-life of food, Chapter 1

RECENT PUBLICATIONS-MATHEMATICS

Behavioral based detection of android ransomware using machine learning techniques
Kirubavathi. G and Regis W Anne
International Journal of System Assurance Engineering and Management IF: 23.9

Dynamical robustness of network of oscillators
Biswambhar Rakshit, Soumen Majhi, Amit Sharma, Jürgen Kurths, Dibakar Ghosh
Physics Reports Q1 IF: 23.6

Retraction Note: An integrated fuzzy decision model for prioritization of barriers affecting sustainability adoption within supply chains under unknown weight context
K.S.Ravichandran Krishankumar R, Amritha P.P
Operations Management Research Q1 IF: 6.9

A novel technique for identification and classification of HIV/AIDS related social media data using LD-KMEANS and DBN-LSTM
V. Mageshwari and I. Laurence Aroquiaraj
Multimedia Tools and Applications Q1 IF: 3.6

Existence of Solutions for Caputo Sequential Fractional Differential Inclusions with Nonlocal Generalized Riemann–Liouville Boundary Conditions
Sekar Elango, Murugesan Manigandan, Saravanan Shanmugam, Mohamed Rhaima
Fractal and Fractional Q1 IF: 3.6

RECENT PUBLICATIONS-MATHEMATICS

Bound for the k-Fault-Tolerant Power-Domination Number
K. Somasundaram and Girish Lakshmi
Symmetry Q2 IF: 2.7

On the solutions of coupled nonlinear time-fractional diffusion–reaction system with time delays
K S Priyendhu, P Prakash & M Lakshmanan
The European Physical Journal Special Topics Q2 IF: 2.6

Exploring tumor-induced immunosuppression dynamics by myeloid-derived suppressor cells: insights via a fractional-order mathematical model
Krithika B & Tamilalagan P
European Physical Journal: Special Topics Q2 IF: 2.6

Generalized separation of variablemethods with their comparison: exact solutions of time-fractional nonlinear PDEs in higher dimensions"
K.S. Priyendhu, P. Prakash, & R. Sahadevan
Fractional Calculus and Applied Analysis Q1 IF: 2.5

Computational methods for singularly perturbed differential equations with advanced argument of convection-diffusion type
Sekar Elango, NT Hu, CS Chen, M Manigandan
AIMS Mathematics Q2 IF: 2.2

Behavioral based detection of android ransomware using machine learning techniques
Kirubavathi. G and Regis W Anne
International Journal of System Assurance Engineering and Management Q2 IF: 1.6

RECENT PUBLICATIONS-MATHEMATICS

Common best proximity point theorems in Hausdorff topological spaces
A. Sreelakshmi Unni & V. Pragadeeswarar
Journal of Inequalities and Applications Q1 IF: 1.5

A subgradient supported ellipsoid method for convex multiobjective optimization problems
Muthukani. M & Paramanathan .P
OPSEARCH Q3 IF: 1.4

Lih Wang's and Dittert's conjectures on permanents
Udayan Divya K & Somasundaram K
Special Matrices Q2 IF: 0.8

Minimal codewords: An application of relative four-weight codes
Ramesh Babu A and Rega B
Discrete Mathematics, Algorithms and Applications Q3 IF: 0.6

Chromatic choosability for some classes of perfect graphs
Vasudevan Nandana K, Somasundaram K, & Geetha J
Discrete Mathematics, Algorithms and Applications Q4 IF: 0.6

Total colorings of some classes of four regular circulant graphs
Navaneeth R, *Jayabalan Geetha, Somasundaram K, Hung-Lin Fu*
AKCE International Journal of Graphs and Combinatorics Q3

RECENT PUBLICATIONS-MATHEMATICS

Early Glaucoma Detection through ANSAN-Infused Retinal Vessel Segmentation
Somasundaram K., Keerthivasan .E, Senthil Kumar Thangavel, Madhusudana Rao Nalluri, Sathyan Parthasaradhi, Meenakshi Y Dhar, Avadhani Bindu
ICICT 2024, 24-26 April 2024, Conference proceedings

Stacking Framework for Detecting Braktooth Attack on IoT Health Care Systems
Aarsha Nair K.S and Kirubavathi. G
ISCS 2024, 3rd to 4th May 2024

Hybrid Deep Learning framework-based intrusion detection system for the Internet of Things
Aparna R Nair and Kirubavathi. G
ISCS 2024, 3rd to 4th May 2024, Conference Proceedings

Detection and Characterization of Darknet Traffic Using Attention LSTM with XA
IAmithesh Y and Kirubavathi. G
ISCS 2024, 3rd to 4th May 2024, Conference Proceedings

Dynamic Ensemble Learning Framework Enhanced with XAI To Detect Android Malware
Nithish S and Kirubavathi. G
ISCS 2024, 3rd to 4th May 2024, Conference Proceedings

Deep Learning Framework for Sign Language Recognition using Inception V3 with Transfer Learning
GuruAckshaya.C, and Kirubavathi. G
ICDCECE 2024, 26th to 27th April 2024, Conference Proceedings

RECENT PUBLICATIONS-MATHEMATICS

Separable solutions of the Black-Scholes equation with three different time fractional-order derivatives
K S Priyendhu& P Prakash
ICFDA 2024, 9th to 12th July 2024, Conference Proceedings

BOOK CHAPTERS

Cloud technology and fuzzy-based decision support systems driving sustainable development
K.S. Ravichandran, Raghunathan Krishankumar, Sundararajan Dhruva, Arunodaya Raj Mishra
Decision Support Systems for Sustainable Computing,Chapter 2

A Note on the Existence of Fixed Points for Rational Type Contraction Map on Orthogonal Metric Spaces
R Sri Bharathi, Poonguzali G. and Stojan Radenovic
Industrial and Applied Mathematics,Recent Developments in Fixed-Point Theory: Theoretical Foundations and Real-World Applications

RECENT PUBLICATIONS-FOOD SCIENCE

An interoperable ontology for CPS-enabled Polyhouse Solar Dryer: A case study of the AgroESP
Gowtham Ramesh, P. Dheepan Kanna, C. Shunmuga Velayutham, Jancirani Ramaswamy
Journal of Industrial Information Integration Q1 IF:10.3

Rural livelihoods sustainability in South Asia and Africa: a systematic review with bibliometric analysis
Emmanuel Der Tambile,Vilayannur Subramanian Ramachandran, Selvaraj Rajendrakumar, Moochikkal Remesh, Jancirani Ramaswamy & Maneesha Vinodini Ramesh
Discover Sustainability Q2 IF: 2.4

Modern and conventional processing technologies and their impact on the quality of different millets
Mundassery, Athira, Jancirani Ramaswamy, Tharanidevi Natarajan, Soorya Haridas, and Prema Nedungadi
Food Science and Biotechnology Q2 IF: 2.3

MATHEMATICS

ENGAGING IN CURRENT RESEARCH TRENDS

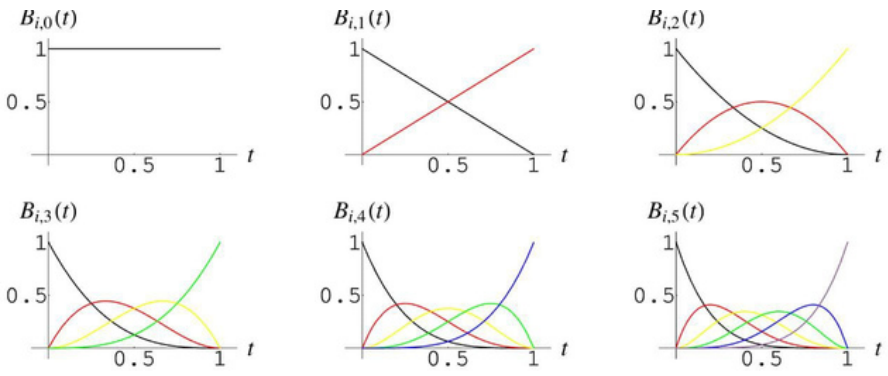
Bernstein Polynomials

Prof. P. Shunmugaraj, a distinguished mathematician from the Department of Mathematics, IIT Kanpur, delivered an engaging and enlightening talk on "Bernstein Polynomials" at Sandeepani Hall, Amrita Vishwa Vidyapeetham, on May 2, 2024. The session was attended by faculty, students, and researchers keen to explore advanced topics in mathematics.

Prof. Shunmugaraj began by introducing Bernstein Polynomials, a fundamental tool in approximation theory, and explained their mathematical formulation and properties. He elaborated on their role in constructing smooth approximations to functions and their connection to the Weierstrass approximation theorem. The talk also highlighted the use of Bernstein Polynomials in computational mathematics, particularly in computer graphics, numerical analysis, and curve fitting.

The speaker presented real-world applications of Bernstein Polynomials, demonstrating their versatility and relevance in solving practical problems. Prof. Shunmugaraj emphasized their importance in modern mathematics, providing examples of their application in engineering, science, and technology.

The session concluded with an interactive discussion, where attendees asked thought-provoking questions, further enriching the learning experience. Prof. Shunmugaraj's clarity, depth of knowledge, and engaging presentation style inspired the audience to explore Bernstein Polynomials and their broader implications. The talk was a valuable contribution to the academic discourse at Amrita Vishwa Vidyapeetham.



SCIENCES

MULTIDISCIPLINARY TALKS!

Writing Research Papers for High Impact Factor Journals

Prof. Ramesh L. Gardas, a renowned chemist from the Department of Chemistry at IIT Madras, graced Sandeepani Hall, Amrita Vishwa Vidyapeetham, with his expertise on May 4, 2024. He delivered a captivating talk on the art and science of writing impactful research papers for esteemed journals. The event provided valuable insights for researchers, guiding them on effectively communicating their scientific findings to a broader audience and enhancing their chances of publication in top-tier scientific journals. Prof. Gardas emphasized the importance of clarity, structure, and originality in research writing, equipping attendees with practical tips to improve their writing skills and achieve greater success in their academic endeavors.

Supercapattery: A Boon of High Specific Energy Capacitor

Dr. S. N. Karthick from the Electrochemical and Material Science Lab at Bharathiar University delivered a talk titled "Supercapattery: A Boon of High Specific Energy Supercapacitor" at Saraswathi Hall, Amrita Viswa Vidyapeetham, on August 5, 2024. The presentation focused on the innovative concept of supercapatteries, which combine the advantages of supercapacitors and batteries to achieve high specific energy and power density. Dr. Karthick discussed recent advancements in materials science that enhance the performance of supercapatteries, including novel electrode materials and electrolytes. The talk sparked engaging discussions among attendees about the future of energy storage technologies and their potential applications.

Deciphering the Colors of the Outer Solar System

Dr. Swaroop Chandra, a Post Doctoral Research Associate in Planetary Science at the California Institute of Technology, delivered an engaging talk titled “Deciphering the Colors of the Outer Solar System” at Sandeepani Hall, Amrita Viswa Vidyapeetham, on September 24, 2024. The presentation focused on the significance of color in understanding the composition and processes of celestial bodies in the outer solar system. Dr. Chandra discussed various techniques used to analyze the colors of these distant objects and their implications for planetary science. The talk captivated attendees, fostering discussions about the mysteries of the outer solar system and ongoing research in the field.

Invited Talks

SCIENCES

Advanced Nutritional Solutions and Food Technologies in Armed Forces

Dr. K. Kadirvelu, Scientist and Additional Director, Centre of Excellence, DRDO, delivered an engaging keynote address on "Advanced Nutritional Solutions and Food Technologies in Armed Forces: Performance and Endurance in Extreme Conditions." He highlighted food production and packaging innovations at DFRL Mysore, focusing on ready-to-eat and ready-to-mix foods with extended shelf lives (up to 3 years) tailored for extreme environmental conditions.

Dr. Kadirvelu discussed key factors influencing the nutritional and packaging properties developed for military personnel, emphasizing solutions suitable for both cold and hot climates. He also shared insights into advanced food technologies designed to enhance the performance and endurance of armed forces. His talk bridged academia and defense innovations, encouraging future contributions to this critical field.

Introduction to Density Functional Theory

Prof. N. Sukumar, Adjunct Professor at the Center for Computational Engineering & Networking (CEN), Amrita Vishwa Vidyapeetham, Coimbatore, delivered an insightful presentation on "Introduction to Density Functional Theory" on December 6, 2024, at Sandeepani Hall.

The talk provided an overview of Density Functional Theory (DFT), a widely used computational method in quantum mechanics for studying the electronic structure of atoms, molecules, and solids. Prof. Sukumar explained the fundamental principles of DFT, its mathematical framework, and its applications in material science, chemistry, and physics.

Students and researchers gained valuable insights into the practical aspects of DFT and its relevance in solving complex problems in computational sciences. The session concluded with an engaging discussion, inspiring participants to explore this powerful technique for their academic and research pursuits.

Block Copolymer-Based Nanostructure: Fundamentals to Applications

The Department of Physics organized a research talk on "Block Copolymer-Based Nanostructure: Fundamentals to Applications" on May 3, 2024. The session was delivered by Prof. E. Bhoj Gowd, Senior Principal Scientist and Professor at CSIR-NIIST, Thiruvananthapuram.

Prof. Gowd provided a comprehensive overview of block copolymers, discussing their fundamental properties, self-assembly behavior, and the resulting nanostructures. He highlighted their versatile applications in fields such as nanotechnology, material science, and biomedical engineering.

The talk offered valuable insights into the synthesis, characterization, and functionalization of block copolymers, inspiring students and researchers to explore their potential in advanced materials and technologies. The session concluded with a discussion, fostering interest in nanostructure-based research.

Invited Talks

SCIENCES

Dr. K. Kadirvelu, Scientist F and Additional Director at the Centre of Excellence, DRDO (Defence Research and Development Organisation) - DIA COE, delivered a keynote address on "Advanced Nutritional Solutions and Food Technologies in Armed Forces: Performance and Endurance in Extreme Conditions." He provided valuable insights into food production and packaging techniques developed at DFRL Mysore, emphasizing their significance for research on ready-to-eat and ready-to-mix meals. These meals have an impressive shelf life of three years and are designed to withstand both cold and hot environmental conditions. Dr. Kadirvelu discussed various factors that influence the nutritional and packaging properties tailored for military personnel, equipping students and researchers with essential knowledge in the field of food technology and nutrition for defense applications.

Dr. Parthasarathi Bera, a Principal Scientist from the Surface Engineering Division at CSIR-National Aerospace Laboratories,Bangalore, delivered an insightful talk titled "Coating for Renewable and Sustainable Energy Applications" at Sandeepani Hall, Amrita Vishwa Vidyapeetham, on December 14, 2024. The presentation focused on the critical role of advanced coatings in enhancing the efficiency and durability of renewable energy technologies. Dr. Bera discussed various coating materials and techniques that contribute to sustainable energy solutions, including their applications in solar panels and wind turbines. The talk engaged attendees, fostering discussions on innovative approaches to improve energy systems and promote sustainability in engineering practices.

Mr. Prabhu Desikan, Regional Manager at IOP Publishing, delivered an enlightening talk on "The Benefits of Open Access Publishing and the Transformative Impact of Open Science on the Publishing Landscape" on September 12, 2024, at 10:30 AM at Amrita Vishwa Vidyapeetham. The session explored the advantages of open access publishing, emphasizing its role in increasing the visibility and accessibility of research. Mr. Desikan discussed how open science is gradually reshaping the global publishing ecosystem, fostering collaboration and innovation among researchers. The talk provided valuable insights into the future of academic publishing, encouraging attendees to embrace open access as a means to enhance scientific communication.

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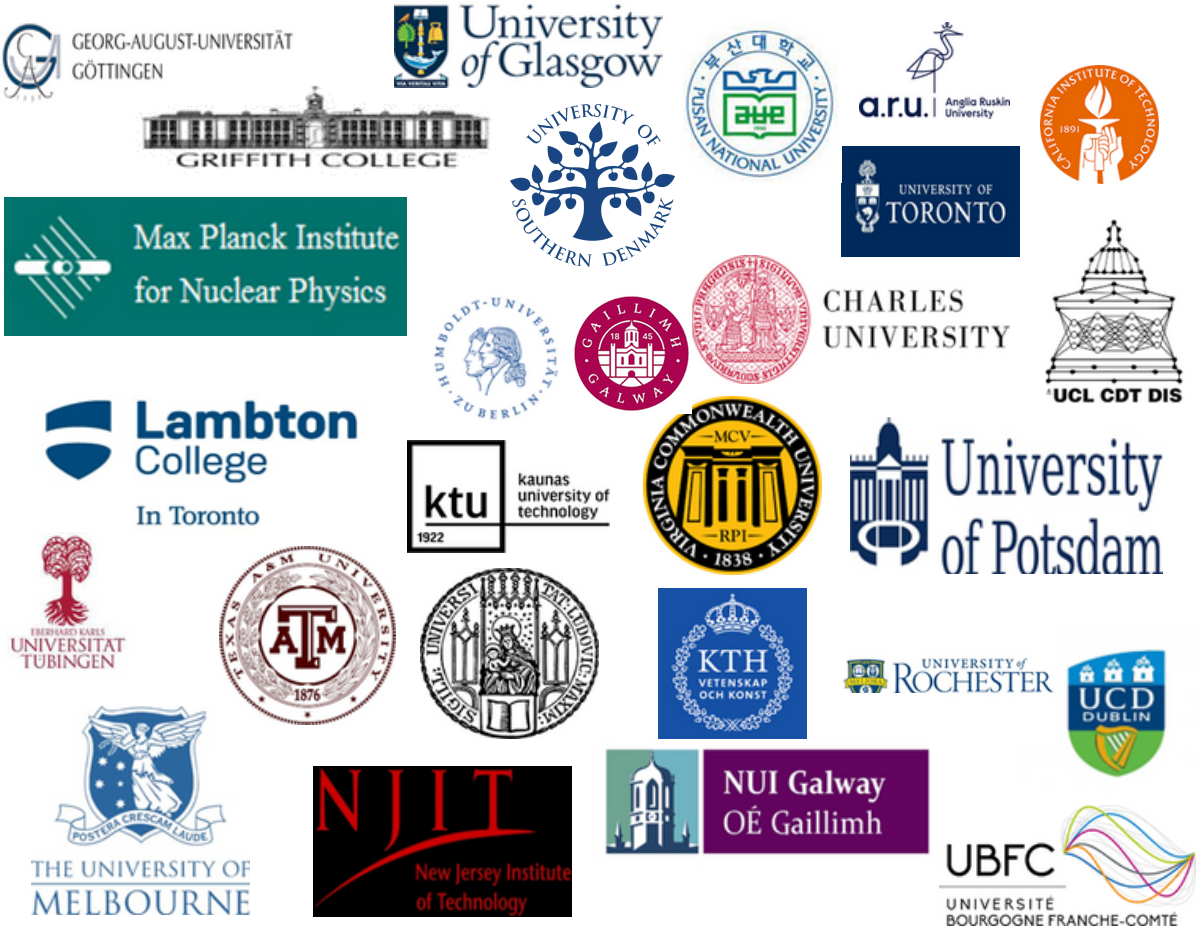

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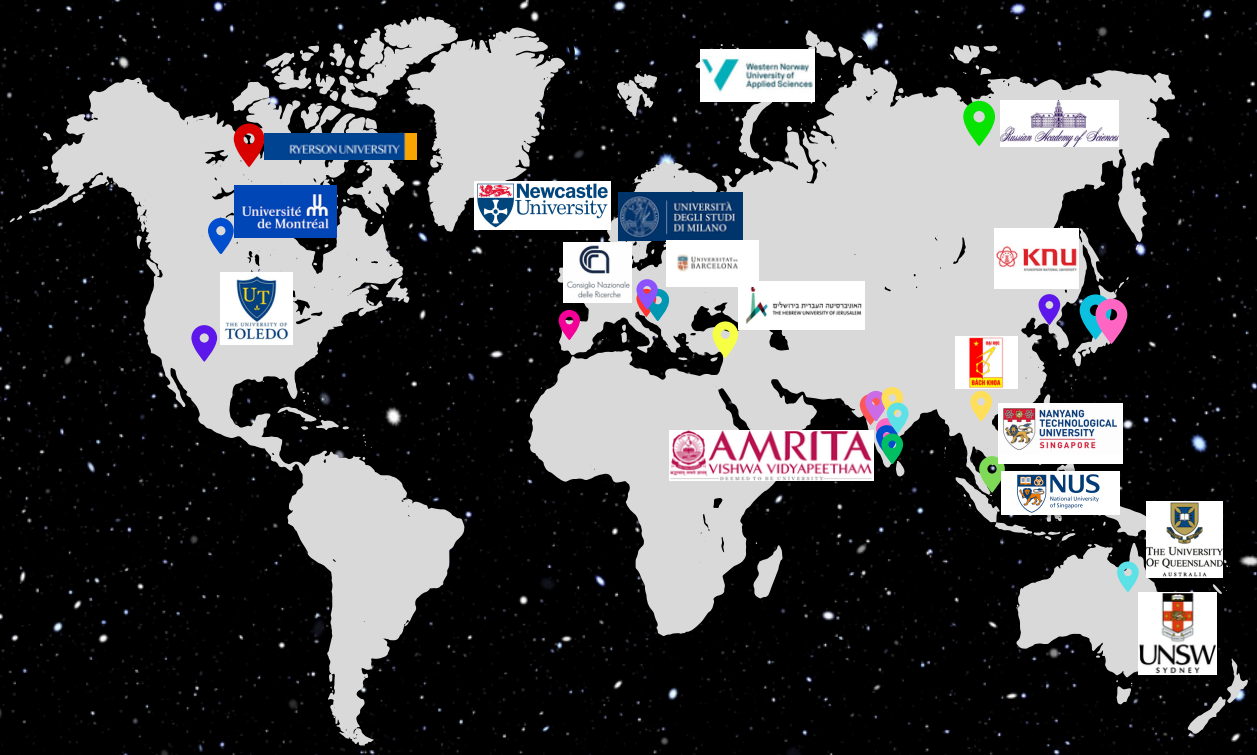

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- V1T, Vellore
- VNIT, Nagpur

UPCOMING EVENTS

- Students can submit their design entries on “Recent Trends in Science” for the back cover of VIGNANAMRITAM Jan-June 2025 Issue. The best design will get featured and prizes will be awarded.
- Research Scholars are welcome to submit their articles for the upcoming issue.
- Entries to be sent to vignanamritam@cb.amrita.edu

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