AMRITA VISHWA VIDYAPEETHAM

VIGNANAMRITAM

A NEWSLETTER FROM AMRITA SCHOOL OF PHYSICAL SCIENCES

ISSUE 2 VOL 3 JULY - DEC 2025

"If we knew what it was we were doing, it would not be called research, would it?"
~Albert Einstein

From the Editor's Desk

We are delighted to present the half-yearly newsletter of the Amrita School of Physical Sciences. This issue reflects a productive and inspiring period marked by significant achievements from our students, research scholars, and faculty members. Their accomplishments in academics, research, publications, awards, and professional activities continue to uphold the school's commitment to excellence.

During this period, the Departments of Physics, Chemistry, Mathematics, and Food Science organized several informative and engaging talks that enriched the academic environment and encouraged interdisciplinary interactions. A special highlight of this newsletter is the successful organization of two international conferences by the Department of Mathematics, namely ICAANA 2025 and ICGT 2025, which brought together distinguished researchers and academicians, fostering meaningful scientific discussions and collaborations.

This edition is further enriched by interesting and insightful write-ups from our PhD scholars, offering readers a window into their innovative research pursuits and emerging ideas. The newsletter also includes a comprehensive list of publications during the July–December 2025 period, showcasing the strong and consistent research output of our faculty members and scholars.

We sincerely thank all contributors for their enthusiastic participation and support. We hope this newsletter serves as a valuable record of our collective achievements and inspires continued academic and research excellence in the days ahead.

Prof. Prasanna Ramani
Department of Chemistry
Amrita School of Physical Sciences
Coimbatore

AMRITA SCHOOL OF PHYSICAL SCIENCES

Amrita School of Physical Sciences, Coimbatore, is a vibrant component of Amrita Vishwa Vidyapeetham, which has 78 faculty members from the disciplines of Physics, Chemistry, Mathematics, Data Science, and Food Sciences and Nutrition. It has over 1000 undergraduate and postgraduate students. The school is very active in research, with around 100+ full-time scholars, and has funded projects from National Research agencies such as DST, DBT, SERB, and DRDO. It offers undergraduate, Five-Year Integrated MSc Programs, Two-year MSc Programs, and PhD programs in the fields of Physics, Chemistry, Mathematics, Data Science, Food and Nutrition, and Applied Statistics. The thrust areas of the School include 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

POSTER PRESENTATIONS

- "Development of Scalable K-Doped g-C_3N_4/$BiPO_4$ S-Scheme Heterojunction Photocatalytic Coatings for Self-Cleaning Fabrics", **Haripriya P** at International conference on molecular materials:the trials, perspectives, and reminiscences (MolMat:TPR 2025), BITS Pilani-Hyderabad from July 4-5, 2025.
- "A Novel 0D/1D Plasmonic Heterostructure with Ohmic Contact and Hot Electron Dynamics to enhance the visible light driven H_2O_2 Generation", **Feba Susan Thomas** at International conference on molecular materials:the trials, perspectives, and reminiscences (MolMat:TPR 2025), BITS Pilani-Hyderabad from July 4-5, 2025.
- "Development of the Keserite phase Cu_2ZnSnS_4 back contact layer to enhance the performance of CdTe photovoltaic cells" **Vishnu Narayanan** at ICAMC2025-Sathyabama Institute of Science and Technology, 11-13 August 2025.
- "A heteropolysaccharide from Hypsizygus ulmarius fruit bodies attenuates D-galactose-induced cognitive decline" **Amritha Sukumaran** at Anusandhan National Research Foundation (ANRF) Supported - 2nd International Conference on Genetics and Epigenetics of Cancer (ICGEC-2) with a focused theme on Artificial Intelligence-based Diagnostics and Treatment Approaches-JSS Mysuru, 30-31October 2025.
- "Thermal Dilepton Production in Viscous Gubser Flow" **Lakshmi J Naik** at the India-JINR Workshop on Particle, Nuclear, Neutrino Physics and Astrophysics at NISER, Bhubaneswar, 10-12 November 2025.
- "Binder and Electrolyte Engineering on MnO_2 Cathodes for Aqueous Zn-Ion Battery Applications: A Sustainable and Cost-Effective Approach" **Swapnika S** at the International Conference of Sustainable Technologies for Energy and Environment at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025.
- "Role of supporting electrolyte on Zinc Iodide Redox Flow Battery ", **Aparnasree M** at International Conference of Sustainable Technologies for Energy and Environment at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025.
- "PCl/BI composite electrospun nanofibers membrane as a separator in Aqueous zinc ion battery", **Lakshana S** at ICSTEE (2025) at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025.
- "Investigation of Zinc-Vanadium (Zn-V) redox flow battery", **Subash S** at ICSTEE (2025) at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025.

OUR SCIENCE STUDENTS AT CONFERENCES/WORKSHOPS

POSTER PRESENTATIONS

- "Enhanced hydrovoltaic energy conversion via optimised tubular MnO_2-activated carbon composites", **Ranjithkumar Annadurai** at International Conference on Sustainable Technologies for Energy and Environment (ICSTEE 2025) at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025 .
- "Thin-film hydrovoltaic device with surface charge engineering based on an activated carbon-PVDF composite", **Athulya Ravindran** at (ICSTEE 2025) at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025.
- "Analytical Junction and Dispersion-Built Nuclear Optical Potentials: A Ginocchio Approach to Threshold and Breakup Threshold Anomalies", **Raj Preethi** at 69th DAE-BRNS Symposium on Nuclear Physics (SNP-2025), NIT Jalandhar, Punjab, from December 8-12, 2025.
- "Carbonaceous Metal Oxides for the Hydrovoltaic Power Generation", **Ranjithkumar Annadurai** at 5th International Conference on Recent Advances in Material Science and Computational Techniques (RAMSACT-2025), December 18–20, 2025.
- "Surface Charge-Engineered Thin-Film Device For Hydrovoltaic Application Based on Activated Carbon-PVDF Composite", **Athulya Ravindran** at RAMSACT-2025, Manipal University Jaipur, December 18–20, 2025.
- "Design and Growth of Naphthalic-based organic single crystals for efficient self-powered photodetection", **Sugatha P S** at RAMSACT-2025, Manipal University Jaipur, scheduled from December 18–20, 2025.

OUR SCIENCE STUDENTS AT CONFERENCES/WORKSHOPS

ORAL PRESENTATIONS

- "Hyperbolic tangent Lindley distribution with applications in cancer research", **Amrutha P. T** at the International Conference on Mathematics and Statistics (ICMS 2025) organized by the Postgraduate Department of Mathematics, St. Dominic's College Kanjirapally, in association with the Kerala State Higher Education Council (KSHEC), the Kerala Mathematical Association (KMA), and the Kerala Statistical Association (KSA).
- "Bifunctional electrocatalyst for water electrolysis applications", **Mohanraj M** at International Conference on Advanced Materials and Green Technologies(ICAMGT-25) held from 24- 26 July 2025, organised by the Department of Chemical Engineering and Materials Science, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, India.
- "Zinc Iodide Redox Flow Battery", **Aparnasree M** at International Conference on Advanced Materials and Green Technologies(ICAMGT-25), organised by the Department of Chemical Engineering and Materials Science, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, 24-26 July 2025
- "Cobalt-free cathode for high-energy Li-ion battery applications", **Aparnasree M** at International Conference on Advanced Materials and Green Technologies (ICAMGT-25), organised by the Department of Chemical Engineering and Materials Science, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, 24-26 July 2025.
- "Numerical Solution of Optical Model Potentials for 6Li+58, 64Ni Scattering Using Runge-Kutta Integration", **P Raj Preeti** at International Conference on Advances and Applications of Numerical Analysis, Amrita Vishwa Vidyapeetham, Coimbatore, from July 21 – 23, 2025.
- "Flourine doped Beta- $Ni(OH)_2$ for energy conversion and storage applications", **Mohanraj M** at National Symposium on Electrochemical Science and Technology (NSEST-2025) organised by The Electrochemical Society of India, Indian Institute of Science Campus, Bengaluru, SRM Institute of Science and Technology, Kattankulathur, 28-29 August 2025.

OUR SCIENCE STUDENTS AT CONFERENCES/WORKSHOPS

ORAL PRESENTATIONS

- "Moisture-Activated Energy Generation in Interface-Tailored Lead-Free Halide Perovskites" **Darshana Sudarshan** at International conference on sustainable Technologies for Energy and Environment (ICSTEE 2025)- PSG institute of advanced studies, Coimbatore, 27-29 November 2025.
- "In-situ heterostructure formation of $NaSbS_2$ and $Na_2Sb_4S_7$ for efficient photogenerated charge separation" **Edita J** International conference on sustainable Technologies for Energy and Environment (ICSTEE 2025)- PSG institute of advanced studies, Coimbatore from 27-29 November 2025.
- "Design and Development of Naphthalic-Based Organic Single Crystals for Enhanced Self-Powered Photodetection" **Sugatha P S** at (ICSTEE 2025), PSG institute of advanced studies, Coimbatore from 27-29 November 2025.
- "Modified nickel oxide electrode for enhanced supercapacitor and OER electrocatalyst applications" **Mohanraj M** at International Conference of Sustainable Technologies for Energy and Environment at PSG Institute of Advanced Studies, Coimbatore, 27-29 November 2025.
- "Computational technique for Coupled Poisson-Schrodinger equation with mixed boundary conditions in nano-scale semiconductor devices using iterative finite difference schemes" **Anila S** at the International Conference on Nonlinear Analysis and Computational Techniques at VIT Bhopal, held on 7-8 August 2025.
- "List colouring and Chromatic Choosability - A Survey on Squares and Powers of Graphs", **Nandana K Vasudevan** at the International Conference on Graph Theory and its Applications (ICGTA 25) held at Amrita Vishwa Vidyapeetham, Coimbatore campus, during 15-17 December 2025.

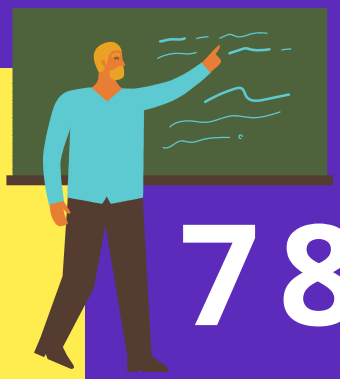
OUR FACULTIES IN CONFERENCES/ WEBINARS

- **Prof. Sudip K Batabyal** from the Department of Physics has delivered a talk on "Surface charge engineering for hydrovoltaic power generation" at ICSTEEE 2025 held at PSG Institute of Advanced Studies, Coimbatore, from 28th to 29th November, 2025.
- **Dr. K. Somasundaram,** presented paper "Social Media Content Generation: An AI-Based System for Automated Viral Short-Form Video Creation", IEEE 2nd International Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS), 30th to 31st August 2025, Vemana Institute of Technology, Bengaluru.
- **Dr. P. Prakash** from the Department of Mathematics delivered an expert talk in A Five-Day Online FDP on Mathematics in Action: Exploring the Power of Linear Algebra and Differential Equations across Disciplines held in the Department of Mathematics, Vellore Institute of Technology, Chennai.
- **Dr. Karthika. K** from the Department of Mathematics attended the "Summer School on Speech Signal Processing (S4P)" from July 5 to 9, 2025, at Dhirubhai Ambani University, Gujarat.
- **Dr. P. Prakash** from the Department of Mathematics delivered an invited talk on Careers and opportunities for students in Mathematics at the Department of Mathematics, PSG College of Arts and Science, Coimbatore, on July 30, 2025.
- **Dr. P. Prakash** from the Department of Mathematics delivered two expert talks at the two-day national workshop on recent trends in solving partial differential equations, held on September 12-13, 2025, at the Department of Mathematics, Pondicherry University, Puducherry.
- **Dr. L. Govindarao** from the Department of Mathematics has presented the paper titled "A Crop-Centric Deep Learning Approach for En-hanced Weed Detection", 7th International Conference on Innovative Product Design and Intelligent Manufacturing Systems (IPDIMS), Department of Industrial Design, NIT Rourkela, December 27, 2025, to December 28, 2025.
- **Dr. P. Prakash** from the Department of Mathematics delivered a talk on optimization and differential equations for B.Tech students at Vellore Institute of Technology, Vellore, on November 03, 2025.

OUR FACULTIES IN CONFERENCES/ WEBINARS

- **Dr. Kavitha P** from the Department of Mathematics presented a paper in the 9th International Conference on Combinatorics, Graph Theory, and Network Topology (ICCGANT) 2025 entitled "A Hybrid Forecasting Framework Integrating Edge Computing and Time-Series Transformers for Smart Grid Load Prediction" organized by PUI-PT Combinatorics and Graph, CGANT, University of Jember on 10-11 September 2025.
- **Dr. Kavitha P** from the Department of Mathematics attended the workshop "Research Integrity and Publication Ethics - Addressing current trends and challenges through technology and policy" by Elsevier on 26 November 2025.
- **Dr. P. Prakash** from the Department of Mathematics delivered an invited talk in the International workshop on Mathematical Modelling and Differential Equations held at the Department of Mathematics, Gobi Arts and Science College.
- **Dr. P. Prakash** from the Department of Mathematics presented a paper titled "Time-fractional partial differential equations with the Hilfer derivative: Lie symmetries, invariant subspaces, and exact solutions" at the International Conference on Nonlinear Dynamics: Modelling and Computation, held at the Department of Mathematics, Bharathiar University, Coimbatore.
- **Dr. Sangeeta Kumari** from the Department of Mathematics delivered an expert lecture titled "Mathematical Ecology, e-Epidemiological Model in Biological Systems", Teaching Learning Centre of Excellence in association with School of Advanced Sciences of VIT Vellore, 18-22 August 2025.
- **Dr. V. Sreekanth** delivered invited talk on "" at international conference "India-JINR Workshop on Particle, Nuclear, Neutrino Physics and Astrophysics" at NISER, Bhubaneswar from 10-12 November 2025
- **Dr. P. Prakash** from the Department of Mathematics has presented the paper titled "Time-Fractional Delay Convection-Reaction-Diffusion Equations under the φ−Hilfer Derivativeφ−Hilfer Derivative: Separable Methods and Solutions" 13th IFAC Conference on Fractional Differentiation and its Applications, Algeria, from December 16 2025, to December 18, 2025

SPOTLIGHT



78
FACULTY

1000+
STUDENTS

4
DEPARTMENTS

180+
RESEARCH SCHOLARS

12
RESEARCH LABS

10
ACADEMIC LABS

700+
PUBLICATIONS SINCE '08

40+
PATENTS FILED
SINCE '08

2200L
RESEARCH GRANTS

WALL OF FAME

HONOURING THE DOCTORATES

Dr. Charis Charoline

Dr. Chandana

Dr. Anagha D R

Dr. Gopika

Dr. Akshai Shyam

Dr. Vignesh D

Dr. Greeshma Giri

Dr. Muthukani M

Dr. Ani R

Dr. Priyendhu K S

Dr. B. Krithika

WALL OF FAME

Dr. P. Prakash of the Department of Mathematics received the G. D. Naidu Award 2025 from Makkal Sinthanai Peravai (People's Thinking Forum), Erode, with a cash prize of ₹1 lakh, in recognition of his outstanding research on fractional order differential equations and their applications in modeling physical systems and materials exhibiting power-law behavior. The award was presented at the 21st Erode Book Festival based on the recommendation of a jury of eminent scientists.

Dr. P. Prakash received the ANRF International Travel Grant and participated in the 13th IFAC Conference on Fractional Differentiation and Its Applications, held in Algiers, Algeria (December 16–18, 2025), where he presented two research papers and served as a technical session co-chair, contributing to international scholarly discussions and enhancing the institution's global academic visibility.

Dr. B. T. S. Ramanujam, Associate Professor, Department of Physics, has been awarded the INSA Visiting Scientist Fellowship. Under this fellowship, he will visit the Indian Institute of Technology Madras for a duration of one month. The visit will facilitate academic interaction and collaborative research activities.

Welcome

New Faculties
Department of Mathematics

Dr. S. Kalaivani

Ms. S. Aiswarya

Qualified

TNSET

Mr. Hariharan S

UGC-NET

Mr. Amal Ajayan

WALL OF FAME

Vishnu Narayanan V, research Scholar from the Department of Physics, has won the Best Poster Presentation and Best Paper Award for the paper titled "Development of the Keserite phase Cu2ZnSnS4 back contact layer to enhance the performance of CdTe photovoltaic cells" at ICAMC2025 Sathyabama Institute of Science and Technology held from August 11-13, 2025.

Mohanraj M, research Scholar from the Department of Physics, has won the Best Oral Presentation Award for the paper titled "Flourine doped Beta- Ni(OH)2 for energy conversion and storage applications" at National Symposium on Electrochemical Science and Technology (NSEST-2025),organized by The Electrochemical Society of India, Indian Institute of Science Campus, Bengaluru, SRM Institute of Science and Technology, Kattankulathur, held from 28-29 August 2025.

Aparnasree , research Scholar from the Department of Physics, has won the Best Poster Presentation Award for the work titled "Role of supporting elctrolyte on Zinc Iodide Redox Flow Battery " at International Conference of Sustainable Technologies for Energy and Environment at PSG Institute of Advanced Studies, Coimbatore from 27-29 November 2025.

Sugatha P S, research Scholar from the Department of Physics, has won the Best Poster Presentation Award for the work titled "Design and Growth of Naphthalic-based organic single crystals for efficient self-powered photodetection" at (RAMSACT-2025), Manipal University Jaipur scheduled from December 18–20, 2025.

Athulya Raveendran, research Scholar from the Department of Physics, has won the Best Poster Presentation Award for the work titled "Surafce Charge-Engineered Thin-Film Device For Hydrovoltaic Application Based on Activated Carbon-PVDF Composite" at RAMSACT-2025, Manipal University Jaipur scheduled from December 18–20, 2025.

WALL OF FAME

Amrutha P T, research scholar from the Department of Mathematics, has won first prize for presenting the paper titled "Parameter estimation of Transmuted Teissier distribution using Bayesian neural network, Bayesian estimation, and Maximum likelihood estimation approaches and its applications" in the International Conference on Recent Developments in Science and Technology for Achieving Sustainable Goals Using Statistical Techniques 2025, organized by Amity School of Applied Sciences, Amity University Uttar Pradesh, Lucknow Campus, in collaboration with Science Tech Institute, Lucknow.

Darsana Sudarsan, research scholar from Department of Physics, has won Best Oral presentation award for the work titled "Moisture-Activated Energy Generation in Interface-Tailored Lead-, Free Halide Perovskites" at International conference on sustainable Technologies for Energy and Environment (ICSTEE 2025), PSG institute of advanced studies, Coimbatore from 27-29 November 2025.

Ranjithkumar Annadurai, has won Best Oral Presentation Award on the work titled "Enhanced hydrovoltaic energy conversion via optimized tubular MnO2-activated carbon composites" at International conference on sustainable Technologies for Energy and Environment (ICSTEE 2025), PSG institute of advanced studies, Coimbatore from 27-29 November 2025.

Shreya P Sarathy has been awarded the Second Place Best Poster Award for "Comparative Study on Developed Red (Kappaphycus alvarezii) and Brown (Sargassum wightii) Seaweed Salts" at International Conference on Sustainable & Resilient Futures (ICSRF 2025), Amritapuri Campus from August 29 to September 1, 2025, the conference was organized by the Amrita School for Sustainable Futures in collaboration with UNESCO.

WALL OF FAME

Amrita H V, final year student of Integrated M.Sc. Chemistry, has been selected for Taiwan educational experience program TEEP by ministry of education Taiwan under Dr Tzu pin wang, Department of medicinal and applied chemistry, Kaohsiung Medical University from November 2025-April 2026.

Aruthra

Mohanambiga

Nikhitha

Avantika

Third-year students from BSc Hons Food Science and Nutrition won the 1st Prize (Rs. 10,000) at the "Foodathon: Food for 2030," under Sustainability category organized by HNM FoodPro Academy in collaboration with IIT Kharagpur.

Vidhyaa Lakshmi Viswanathan, a third-year student of Bsc Hons Food Science and Nutrition participated in the MANAGE Agri-Eureka 2025, a National Level Agri-Innovation and Business Plan Challenge. The event was organized by the National Institute of Agricultural Extension Management (MANAGE) in Hyderabad from July 21 to 25, 2025. This achievement was formally recognized by the Director and Director General of MANAGE for her engagement in agri-innovation and business planning.

SEMINAR
AGILENT TECHNOLOGIES

One-Day Seminar on Chromatography and Mass Spectrometry Solutions by Agilent Technologies

The Department of Chemistry, Amrita Vishwa Vidyapeetham, Coimbatore campus in collaboration with Agilent Technologies, organized a one-day seminar on Chromatographic and Mass Spectrometric Techniques on 22 September 2025 at Sandeepani Hall. The program began with a lamp lighting ceremony and a prayer, after which Prof. S. Mahadevan, Principal, School of Physical Sciences, delivered the inaugural address, emphasizing the significance of modern analytical technologies in both academic and industrial research. The technical sessions began with Mr. Vinayak AK, who spoke on the basics, principles, and instrumentation of HPLC and UHPLC, highlighting their practical applications in method development and troubleshooting. Ms. Ameena A presented an engaging session on the principles, instrumentation and applications of GC and GCMS, demonstrating their role in compound identification, environmental analysis, and forensic studies. A lively quiz was conducted by Mr. Vinayak to test the participants' grasp of the sessions. Around 20 students, including several research scholars, emerged as winners and received prizes for their performance. The workshop concluded with Prof. Prasanna Ramani, Chairperson of the Department of Chemistry, expressing gratitude to the participants and experts for their enthusiastic involvement and valuable contributions to the success of the program. The day's program was highly informative and interactive, providing participants with valuable insights into chromatographic and mass spectrometric techniques and leaving them with enhanced knowledge and enthusiasm for future applications.

AMRIT SWAAD –2025

The Department of Food Science and Nutrition, in collaboration with the Nutrition Sustenance Forum, successfully organized "Amrit Swaad" on the 19th and 20th of September, a student-led food stall initiative designed as a practical extension of the Food Service Management (23FSN238) curriculum. Under the coordination of Dr. P.R. Janci Rani and Ms. Soorya Haridas, 96 students—primarily from the third-year B.Sc. (Hons) FSN program—managed a live food service operation that catered to nearly 435 beneficiaries across the Coimbatore campus. The event showcased culinary innovation by fusing nutritious options like ragi brownies and green gram dosa with popular favorites such as pasta and momos, providing students with essential hands-on experience in menu engineering, financial management, and hygiene standards. By aligning with the "Eat Right India" movement and contributing to Sustainable Development Goals (SDG 2 & 3), "Amrit Swaad" effectively bridged the gap between academic theory and real-world application, reinforcing the department's commitment to experiential learning and the promotion of healthy, sustainable eating habits.

NATIONAL NUTRITION MONTH

The Department of Food Science and Nutrition, in collaboration with the Nutrition Sustenance Forum at Amrita Vishwa Vidyapeetham, Coimbatore, successfully hosted the National Nutrition Month Celebration 2025 from September 1st to 3rd. Inaugurated by Chairperson Dr. P.R. Janci Rani, the three-day event featured a spiritual discourse on Satvik nutrition by Swami Tapasyamritananda Puri, followed by dynamic student competitions including "The Cool Chef Contest," "Flavour Frame" photography, and the high-energy "Foodie Feud" quiz. A central highlight was a vibrant campus rally, enhanced by impactful mimes and skits, which served as a public proclamation of the "Eat Right" movement and the importance of mindful food choices. The final day's proceedings were enriched by industry insights from Mr. Rajasekar Mahalingam on entrepreneurship and Mr. Shankar Kumaran on the benefits of vegetarianism, culminating in a formal valedictory function where prizes were distributed by Dr. Janci Rani and Dr. Tharani Devi. By uniting students, faculty, and staff, the celebration effectively fostered a spirit of collective participation while reinforcing the department's commitment to promoting nutrition, well-being, and sustainable eating habits.

Freshers Day Celebration

On December 27, 2025, the second-year students of the Department of Food Science and Nutrition organized a vibrant Freshers' Day celebration at Sudhamani Hall to warmly welcome the incoming first-year batch into the academic community.

The event commenced with a prayer and the traditional lighting of the lamp by the Chairperson, Dr. P. R. Janci Rani, followed by an inspiring welcome address and the distribution of gifts to the freshers as a token of camaraderie. Captured by the Amrita Media Team, the program featured a diverse range of cultural and interactive activities, including a thematic drama on peer pressure, solo and group musical performances, energetic dances by students across all years, and a stand-up comedy set.

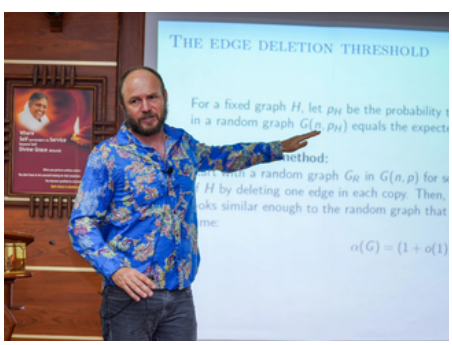
Highlights of the day included a moving gratitude video dedicated to parents, an alumni journey projection, and a food science-themed knowledge game. The celebration concluded with a poignant self-reflection session where students wrote letters to their future selves, successfully achieving its goal of fostering unity, motivation, and a positive start to the students' professional journeys.

International Conference on Advances and Applications of Numerical Analysis (ICAANA 2025)

The International Conference on Advances and Applications of Numerical Analysis (ICAANA – 2025) was organised by the **Department of Mathematics** from July 21 to 23, 2025, at the Coimbatore Campus of Amrita Vishwa Vidyapeetham. It was inaugurated by **Prof. Sasangan Ramanathan**, Dean of Academics, followed by **Prof. K. Somasundaram**, Chairperson of the Department of Mathematics, who welcomed all participants to this event. This conference created a vibrant platform for researchers, academicians, and industry professionals to share recent developments, exchange ideas, and establish collaborations among the National and International research communities. There were 3 Plenary talks and 12 Invited talks delivered on Numerical Linear Algebra, Machine Learning, Deep Learning - Soft Computing in Numerical Analysis, Big Data and Numerical Computation, Approximation Theory, Finite Element Methods (FEM), Numerical Solutions of Differential Equations, Optimization Techniques, Computational Fluid Dynamics (CFD), High-Performance Computing for Numerical Simulations and Stochastic Processes in Numerical Methods from leading research Institutes (IITs, NITs, IIST) and Universities. Our conference is supported by **ANRF** and **CSIR** with generous funding of Rs. 3,00,000 and Rs. 30,000, respectively. Further, we received 40+ research papers for presentation at this conference, of which 32 were selected for the conference proceedings and submitted to SPRINGER NATURE for inclusion in upcoming publications. We organised an exclusive session to discuss open problems in Numerical Analysis, convened by **Prof. Raju K. George (IIST)**, **Prof. V. Raghavendra (IITK)**, and **Prof. Abhinandan S. P. (IITP)**. At the end of the day, the conference organisers, **Dr A. Ramesh Babu**, **Dr E. Sekar**, and **Dr. Lolgu Govinda Rao**, would like to thank the Amrita Vishwa Vidyapeetham Math and the academic fraternity for their role in the smooth conduct of the conference.

International Conference on Graph Theory and Its Applications (ICGTA 25)

- The **Department of Mathematics** organised a three-day International Conference on Graph Theory, Graph Algorithms & Applications from 15th to 17th December 2025 at the Coimbatore campus.
- More than 110 delegates from around the world attended the conference on Graph theory, an area with wide-ranging applications in computer science, communication, linguistics, computational chemistry & physics, biology, and other fields. Some day-to-day applications of graph theory include how we use the Internet, the development of new drugs, and how a city supplies power to its residents.
- Thirty-five scholarly papers, invited talks, and research discussions were presented at the conference, featuring leading academicians and researchers from India and abroad.
- The main objective of this interdisciplinary conference was to bring top researchers in this cutting-edge area of graph theory & applications to AMRITA to foster collaboration, as well as provide an exposure to researchers and students to the scientific problems in this field.



TELESCOPE LAUNCH

ANNUAL DAY PROGRAMME

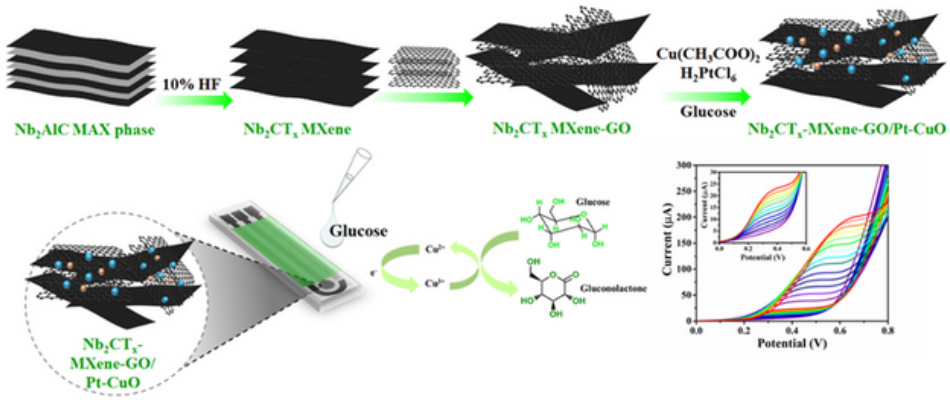
The Department of Physics celebrated its Annual Day on 30 December 2025 at the Coimbatore campus with a series of academic and student-focused activities. A major highlight of the celebrations was the successful inauguration of a Telescope Launch, symbolising the department's emphasis on experiential learning and scientific exploration. The telescope was formally launched by Dr. S. Mahadevan, Principal, Amrita School of Physical Sciences, in the presence of faculty members and students of the Department of Physics.

The programme showcased the department's continued efforts to nurture scientific curiosity and promote hands-on engagement beyond conventional classroom learning. The launch drew attention to the relevance of astronomy and observational science in understanding fundamental physical phenomena and the universe at large. Students were introduced to the practical aspects of astronomical observation, encouraging them to develop interest in space science, data interpretation, and experimental inquiry.

SCHOLAR CORNER

PLATINUM COPPER OXIDE DECORATED NIOBIUM MXENE GRAPHENE OXIDE NANOCOMPOSITE FOR NON-ENZYMATIC GLUCOSE DETECTION IN SALIVA AND URINE

CHANDANA J P

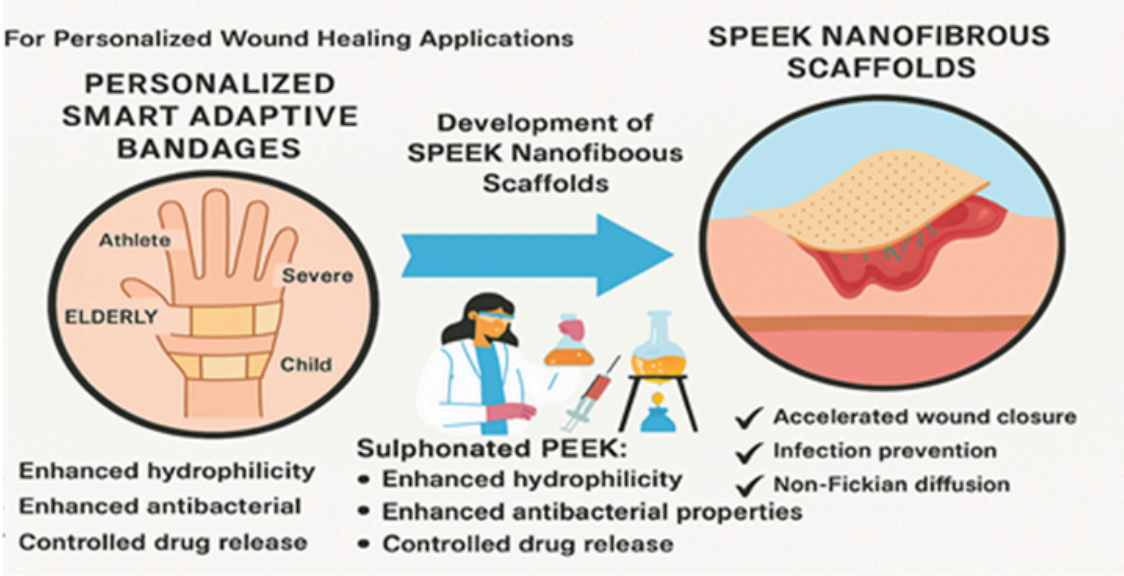


The Diabetes mellitus is a chronic condition in which the body fails to regulate blood sugar due to insufficient insulin production and use. Diabetes mellitus is regularly monitored with a glucometer, which uses a finger-prick blood sample and is based on the glucose oxidase enzyme. However, the use of enzymes has several challenges, including limited reusability and low stability. Also, the pain and inconvenience associated with finger pricking necessitate the development of a non-invasive method for detecting glucose in body fluids such as saliva and urine. A non-enzymatic glucose sensor involves the direct electrooxidation of glucose on electrode surfaces. Despite the advancements in non-enzymatic glucose sensing technologies, non-enzymatic glucometers have yet to reach the commercial market. The study aims to develop a highly sensitive and selective disposable non-enzymatic sensor for the non-invasive glucose detection from untreated saliva and urine samples. This was achieved using Nb_2CT_x MXene - graphene oxide - platinum - copper oxide nanocomposite modified screen printed carbon electrode. The MXene-GO composite was synthesised hydrothermally, and then copper oxide and platinum nanoparticles were chemically reduced and deposited on the composite. The Nb_2CT_x MXene-GO/Pt-CuO mixed with Nafion was drop-cast onto the working area of the screen-printed electrode. Two linear ranges, 0.01 to 1 mM and 1 to 15 mM, were observed with exceptional sensitivities of 725.48±0.45 μA mM^{-1} cm^{-2} and 489.17±0.31 μA mM^{-1} cm^{-2}, respectively. Excellent selectivity to glucose was observed in the presence of common biomolecules such as sugars, electrolytes, metabolites, amino acids, and proteins, evidenced by less than 5% current response compared to glucose. Reproducibility was confirmed with a relative standard deviation of 2.29% across 10 electrodes, and an excellent shelf life with a relative standard deviation of 2.14% over a month. The glucose concentrations measured using the developed sensor with untreated saliva and urine samples showed good agreement with clinical laboratory results, with a relative error of less than 3%. These findings highlight the potential of the developed sensor in non-invasive point-of-care testing setups, offering a reliable method for glucose detection for the rapid diagnosis of diabetes mellitus.

SCHOLAR CORNER

PERSONALIZED BANDAGES URGES A HUGE DEMAND IN CURRENT BIOMEDICAL WORLD: SMART PERSONALIZED WOUND DRESSINGS WITH SPEEK NANOFIBROUS SCAFFOLDS

HIMABINDU PADINJARATHIL



Wound care remains a critical challenge in modern healthcare, yet most conventional bandages follow a "one-size-fits-all" approach that fails to address patient-specific needs. Variations in wound type, healing environment, and patient physiology—such as the requirements of elderly patients versus athletes—highlight the urgent need for personalized wound dressings. This challenge is further compounded in wound management involving BCS class II/IV drugs, where poor solubility and bioavailability limit therapeutic effectiveness. Despite advances in smart biomaterials, many solutions remain confined to laboratory prototypes, lacking adaptability, affordability, and clinical relevance.

Personalized wound dressings integrating advanced biomaterials, sensors, and controlled drug-delivery systems offer a promising solution. Such smart bandages could dynamically regulate moisture, prevent infection, and release therapeutics only when required, thereby accelerating healing and reducing healthcare burden. The objective of this work was to develop adaptive, thermoplastic-based wound dressings capable of real-time responsiveness and prolonged, targeted drug delivery.

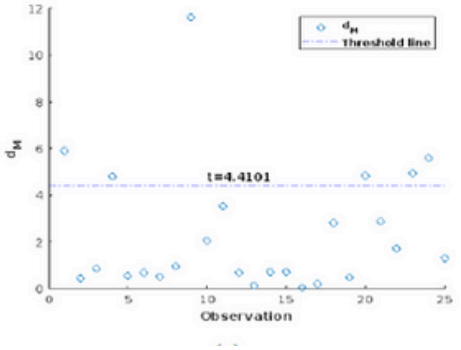
Sulphonation of thermoplastic polymers PEEK and PEK produced hydrophilic membrane scaffolds with controlled drug release and antibacterial properties. Drug release followed diffusion-controlled, near-zero-order kinetics with minimal erosion. While SPEK membranes showed moderate cytotoxicity, SPEEK scaffolds exhibited superior cytocompatibility, hemocompatibility, mechanical stability, and cell adhesion. Electrospun SPEEK nanofibrous mats loaded with ciprofloxacin achieved sustained release for up to three weeks, releasing ~90% of the drug via non-Fickian diffusion. In vitro and in vivo studies confirmed enhanced cell migration, accelerated wound closure, and effective infection control, establishing SPEEK nanofibrous scaffolds as a highly promising platform for personalized wound care and controlled drug delivery.

SCHOLAR CORNER

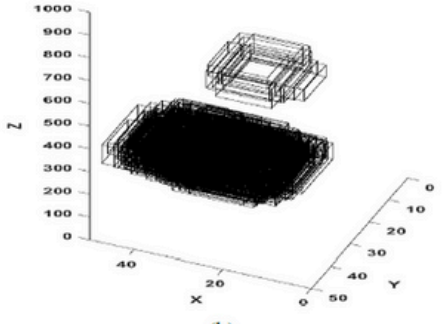
MAKING SENSE OF UNCERTAIN DATA: A ROBUST WAY TO SEE THE TRUTH

A NEW APPROACH TO ROBUST REGRESSION ANALYSIS FOR VARIOUS TYPES OF DATASETS

GREESHMA GIRI



Scatter plot of a real valued data with observations(X), residual to median distance,dM(Y) with outliers falling above the proposed threshold line



Hypercubic plot of the interval dataset having outliers in mid observations with first regressor intervals(X), second regressor intervals(Y) and response intervals(Z)

In today's world, data drives decisions across a wide range of fields, including scientific research, healthcare, economics, and technology. Yet, real data is rarely perfect. Measurements may be imprecise, ranges may replace exact values, and unusual observations (commonly called outliers) can distort conclusions. Traditional statistical methods often struggle in such situations, producing results that are misleading or unreliable. This research addresses a simple but important question: How can we extract trustworthy information from data that is uncertain or contaminated by outliers?

Is your data real-valued? A new hybrid robust regression technique is developed by intelligently combining ideas from two well-known approaches. Instead of relying solely on error size, the method also considers how far each observation deviates from the typical pattern of the data. Observations that deviate from the norm are gradually downweighted, and extreme outliers are effectively ignored. This "hard re-descending" behaviour ensures that misleading data points do not influence the final conclusions, while keeping the method computationally simple and efficient.

Is your data interval valued? Each interval observation is represented using two meaningful components: the centre, which captures the typical value, and the spread, which reflects uncertainty. Separate regression models are constructed for the centre and the spread. The centre is estimated using a robust weighting strategy inspired by the earlier hybrid approach, ensuring protection against abnormal observations. For the spread, a new method based on **quadratic programming** is introduced. This ensures that uncertainty measures remain meaningful (non-negative) while remaining robust against outliers.

By blending robust statistical thinking with modern optimisation tools, it helps ensure that meaningful patterns are revealed, even when data is noisy, uncertain, or incomplete.


SCIENTIFIC
BREAKTHROUGHS
SCIENCE

NOBEL PRIZE 2025 IN PHYSICS

MACROSCOPIC QUANTUM PHENOMENA IN SUPERCONDUCTING CIRCUITS: THE 2025 NOBEL PRIZE IN PHYSICS

The 2025 Nobel Prize in Physics was awarded jointly to John Clarke, Michel H. Devoret, and John M. Martinis by the Royal Swedish Academy of Sciences on 7 October 2025 “for the discovery of macroscopic quantum mechanical tunnelling and energy quantisation in an electric circuit.” Their pioneering work revealed that quantum mechanical phenomena—once thought confined to the microscopic scale of atoms and particles—can be engineered and observed in larger, macroscopic electrical systems. The laureates conducted a series of groundbreaking experiments using superconducting circuits containing Josephson junctions that exhibited quantum tunnelling and discrete energy levels at scales visible with standard laboratory equipment. This research provided a concrete demonstration that quantum principles such as energy quantisation and tunnelling can govern the dynamics of engineered circuits, effectively bringing quantum mechanics into the realm of practical hardware.

Their discoveries laid the scientific foundation for the development of quantum technologies, including superconducting qubits—the key building blocks of many quantum computers—and advanced quantum sensors. By bridging abstract quantum theory and tangible electronic systems, Clarke, Devoret, and Martinis have significantly accelerated progress toward reliable quantum computing and other next-generation technologies that promise transformative impacts across materials science, cryptography, and computational science

NOBEL PRIZE 2025 IN CHEMISTRY

OPENING NEW ROOMS IN CHEMISTRY: THE NOBEL-WINNING DISCOVERY OF METAL-ORGANIC FRAMEWORKS

Metal–Organic Frameworks (MOFs) are widely regarded as a Nobel Prize–level breakthrough in materials chemistry because they introduced a completely new way of designing matter with atomic precision.

MOFs were first conceptualised in the 1990s through the pioneering work of Richard Robson, who demonstrated that metal ions and organic linkers could self-assemble into extended porous networks.

The field advanced rapidly with Susumu Kitagawa, who showed that these frameworks could be stable, flexible, and reversible in gas adsorption.

A major leap was made by Omar M. Yaghi, who established clear design principles and introduced reticular chemistry, enabling the creation of predictable and tunable MOF structures.

The importance of MOFs lies in their exceptionally high surface area, permanent porosity, and structural tunability.

These properties allow MOFs to selectively capture, store, and separate molecules with unmatched efficiency.

Today, MOFs are being explored for carbon dioxide capture, clean energy storage (hydrogen and methane), water harvesting from air, catalysis, and drug delivery.

Their discovery transformed porous materials from passive solids into programmable molecular architectures.

This work has not only reshaped materials science but also opened powerful pathways to address global challenges in energy, environment, and health.

RESEARCH PUBLICATIONS 2025

An Overview of Scientific Progress

RECENT PUBLICATIONS-PHYSICS

Biomimetic hierarchical FeS-functionalized 3D cotton architectures inspired by floral morphology for enhanced solar-driven desalination and wastewater remediation
Sujith Lal, R Sreehari, Byungil Hwang, Sudip K Batabyal
Chemical Engineering Journal Q1 IF:13.2

Growth of Succulent Shaped Fluorine Incorporated Ni–Co LDH (F-NiCo(OH)$_2$): Elevating Supercapacitor Efficiency
S Charis Caroline, Athulya Ravindran, Kaushik Ghosh, Sudip K Batabyal
Small Q1 IF: 12.1

Layered V_2O_5-$VOPO_4$ heterostructure photo-sensitive electrodes for light-enhanced, flexible, and ultra-stable supercapacitor with 1.7 lakh cycle life
Hridya C Prakash, Dhamodaran Santhanagopalan, Sudip K Batabyal
Journal of Energy Storage Q1 IF:9.8

NiFe bimetallic@3D graphite felt as efficient electrode catalyst: An approach for cultivating high energy neutral Zn-I_2 redox flow battery
Puthanpurayil Jayarajan Anjana, Madeshwaran Mohanraj, Moothedath Aparnasree, Mani Ulaganathan
Journal of Power Sources Q1 IF:7.9

MoO_3 modified graphite felt electrode for Zn-Fe redox flow cell applications
Thekkumbadan Veedu Arya, Moothedath Aparnasree, Mani Ulaganathan
Journal of Power Sources Q1 IF:7.9

RECENT PUBLICATIONS-PHYSICS

In Vitro Assessment of Boswellia serrata Incorporated N95 Mask Layers -Specific Efficacy Comparison
Aiswarya K Raj, Raichal B George, Geetha B Kumar, Jayalekshmi Haripriyan, Kamalam S Rajni
Global Challenges Q1 IF:6.4

On the serendipitous observation of a fractal microstructure in laser ablated amorphous Al_2O_3 films and a study of their dielectric response
AK Nanda Kumar, B Subramanian
Ceramics International Q1 IF:5.6

An experimental investigation of impact of Ni, Fe codoping on room temperature dielectric, ac conductivity, and magnetic behaviour of Mn_3O_4 nanostructures
A Athira, A Chithra Mohan, Bindu P Nair, Thinkal Sumathan, RK Aswathi Prem, Athira S Prasad, G Sivasubramanian, KM Sreekanth, Beena Saraswathyamma, J Anudev, KM Sreedhar
Ceramics International Q1 IF:5.6

Propagation dynamics and modulation instability control in inhomogeneous nonlinear Schrödinger equation with two-photon absorption
S Saravana Veni, MS Mani Rajan, Conrad Bertrand Tabi, Timoléon Crépin Kofané
Chaos, Solitons & Fractals Q1 IF:5.6

Vortex droplets and lattice patterns in two-dimensional traps: A photonic spin–orbit-coupling perspective
S Sanjay, S Saravana Veni, Boris A Malomed
Chaos, Solitons & Fractals Q1 IF:5.6

Synergistic Effects of Spin-Orbit Coupling and Intercomponent Interactions in Two-Component (2+ 1) D Photonic Fields
Suri Deekshita, S Sanjay, S Saravana Veni, Conrad B Tabi, Timoleon C Kofane
Chaos, Solitons & Fractals Q1 IF:5.6

RECENT PUBLICATIONS-PHYSICS

Hybrid Carbon Quantum Dot/$NaBiF_4:Eu^{3+}$ Nanophosphors for White Light-Emitting Diode
Krishnendu Remadevi, Varsha Vijayan, Akshai Shyam, Janani Krishnamoorthy, Sudip K Batabyal, Ramasubramanian Swaminathan
ACS Applied Nano Materials Q1 IF:5.5

Polymeric nanofiber systems for the encapsulation and delivery of biological entities in food, pharmaceutical, and biomedical fields
Rajkumar Patel, Pratheep Kumar Annamalai, Ramanujam Brahmadesam Thoopul Srinivasa Raghava, Madhumita Patel
Reactive and Functional Polymers Q1 IF:5.1

Functional MWCNT supported nickel Sulfoselenide based ternary composite for highly sensitive detection of nitrite
Balamurugan Devadas, S Charis Caroline, V Manikanda Prabhu, Arun Prakash Periasamy, Sudip K Batabyal
Microchemical Journal Q1 IF:5.1

Morphology-driven multifunctionality: tailoring ZnO for enhanced EMI shielding and energy harvesting in PVDF/MWCNT nanocomposites
Aleena Sabu, U Pooja, Meera B Nair, Dinesh K Shukla, Rajkumar Patel, Pratheep Kumar Annamalai, Amit Malakar, Suryasarathi Bose, Ramanujam Brahmadesam Thoopul Srinivasa Raghava
Nanoscale Journal Q1 IF:5.1

In vitro studies on bioactive senna auriculata flower extract incorporated PCL-Cellulose acetate electrospun nanofiber for wound dressing application
M Karthega
Journal of Drug Delivery Science and Technology Q1 IF:4.9

RECENT PUBLICATIONS-PHYSICS

Temperature Dependent Thermoelectric Properties of CuI Nanostructures/microplates and their rGO Supported Composites
Aryalakshmi Santhosh Kumar, Priyanka Goel, Ramesh Raju, Ilkka Tittonen, Darbha V Ravi Kumar, Ramasubramanian Swaminathan
Journal of Physics and Chemistry of Solids Q1 IF:4.9

Universal Relations of Anisotropic Dark Energy Stars and Gravitational-Wave Constraints
OP Jyothilakshmi, V Sreekanth
The European Physical Journal C Q1 IF:4.8

Development of 2D Structured CuS-Incorporated rGO Back Contact Layer for CdTe Solar Cells
Meghna Pavithran, Vishnu Narayanan, Aiswarya CP, Rajni KS, UP Singh
ACS Applied Electronic Materials Q1 IF:4.7

Progress in Zinc Oxide-Based Polymer Nanocomposites for Advancing Piezoelectric Energy Harvesting and Self-Powered Devices
Daphne Mary John, Pratheep Kumar Annamalai, Alireza Hosseinmardi, Sreekanth Kaduvallil Mahadeva, Kothandaraman Ramanujam, Raghuram Chetty, Rajkumar Patel, Ramanujam Brahmadesam Thoopul Srinivasa Raghava, Ashok Kumar Nanjundan
Macromolecular Materials and Engineering Q1 IF:4.6

Engineered Poly (vinylidene fluoride)(PVDF)-Based Nanocomposites with Metal Ion (Al, Ag, Mg)-Doped Zinc Oxide (ZnO) Nanoparticles for Efficient Oil Sorption Application
Daphne Mary John, Sreekanth Kaduvallil Mahadeva, Sivasubramanian Ganarajan, Pratheep Kumar Annamalai, Ramanujam Brahmadesam Thoopul Srinivasa Raghava
ACS Omega Q1 IF:4.3

Unveiling the Role of Doping in CuI Thin Films for Efficient UV Detection
Akshai Shyam, Ramasubramanian Swaminathan
Optical Materials Q1 IF:4.2

RECENT PUBLICATIONS-PHYSICS

Ternary atomized Hollow carbon spheres for high-performance symmetric supercapacitors
Sai Prem Shaji, Mohanraj Madeshwaran, Ulaganathan Mani
Scientific Reports Q1 IF:3.9

Unraveling the Role of Molecular Weight of Poly(ethylene Oxide) (PEO) on the Ionic Conductivity of Poly(vinylidene Fluoride) (PVDF)-PEO Blend-Based Sodium-Ion Conducting Solid Polymer Electrolyte
Kanya Koothanatham Senthilkumar, Rajagopalan Thiruvengadathan, Ramanujam Brahmadesam Thoopul Srinivasa Raghava
Energy Technology Q2 IF:3.6

Mo-Driven Photo-Fenton Catalysis: Synergistic Role of Cu and Fe in Ternary Oxide Nanoparticles for Wastewater Remediation
E Manjima, T Raguram, Aparna Sumesh, Vishnu Narayanan, KS Rajni, Muthukumar Rajamanickam
Journal of Cluster Science Q2 IF:3.6

One-Spot Synthesis of Fluorine-Doped Carbon for High-Energy Symmetric Supercapacitor
Sai Prem Shaji, Mani Ulaganathan
Energy Technology Q2 IF:3.6

Effect of Fluorine on β-Ni $(OH)_2$ for High-Performance Aqueous Hybrid Supercapacitor Electrodes
Sai Prem Shaji, Madeshwaran Mohanraj, Mani Ulaganathan
ACS Applied Engineering Materials Q1 IF:3.5

Influence of a σ-cut potential on antikaon condensation in pure nucleonic neutron star matter
Tamanna Iqbal, Yashmitha Kumaran, A Bhagwat, BK Sharma
Physical Review C Q1 IF:3.4

RECENT PUBLICATIONS-PHYSICS

Preparation, characterisation, and physical properties of Zn, Ni codoped MgO
A Chithra Mohan, A Athira, Bindu P Nair, D Kiruthiga Devi, Thinkal Sumathan, G Sivasubramanian, KM Sreekanth, Gopinathan Anoop, KM Sreedhar
Journal of the Indian Chemical Society Q2 IF:3.4

Lead-free halide double perovskite $Cs_4CuSb_2Cl_{12}$ for self-powered humidity sensing devices
Udith Unnikrishnan P, Ashna K Pramod, Sudip K Batabyal
Applied Physics A Q2 IF:2.8

All optical logic switching devices via a combined Hirota and Lakshmanan–Porsezian–Daniel equation under the competing inhomogeneities in an optical fiber
S Saravana Veni, MS Mani Rajan, Sasi Florence, Hala Siddiq
International Journal of Modern Physics B Q3 IF:2.8

Antimicrobial and Antidiabetic Activities of Green Synthesized Triphala Mediated AgCl Nanoparticles: An Experimental Study
Aiswarya K Raj, Vishnu Narayanan, Rajni KS, Rathika Nath G, Rajesh K
ChemistrySelect Q3 IF:2

Cow dung valorization via dual-stream separation: An integrated LCA and techno-economic framework for agricultural and algal use
P Archana, VP Mahadevan Pillai, KM Sreedhar, KM Sreekanth, G Sivasubramanian
Waste Management Bulletin Q2

BOOK CHAPTER-PHYSICS

Unraveling Cellulase Complexes: Innovations and Applications
Anamika Chatterjee, Samayita Chakroborty, Anil Kumar Patel, Reeta Rani Singhania
Enzymes Applied in Biofuels Production: New Technologies and Innovation, Springer Nature Switzerland, 43-73.

RECENT PUBLICATIONS-CHEMISTRY

Plant-based protein: A multi-nutritional sustainable alternative to animal foods and their structure, functions, and relationship: A review
Shreya P. Sarathy, Haripriya Ravikumar, Pandurangan Nanjan, Nithya Alagesan, Bee Lin Chua
International Journal of Biological Macromolecules, Q1, IF: 8.5

From contamination to remediation: Understanding the toxicity, risk assessment, and degradation pathways of triphenyl phosphate and related organophosphate flame retardants in water and soil
A. Vasinthiya Tej, M. Pranika, S. Adhithya, K. Nithya, Asha Sathish, Vinod Kumar
Science of The Total Environment, Q1, IF: 8

Fluorescent Carbon Quantum Dot–Based µPAD for the Sensitive and Selective Detection of Magnesium Ions in Human Serum
Nikhil T Madhu, Alageswari, Anjusha P Menon, Abhishek Pathak, Aarathi Pradeep, Bipin G Nair, PV Suneesh, TG Satheesh Babu
Sensors and Actuators, Reports, Q1, IF: 7.6

Disposable ZrO_2/copper doped carbon dot nanomaterial modified screen printed electrode for the electrochemical detection of Rifampicin
Karutha Pandian Divya, Rajmohan Swetha, Lakshmi Devi A, T.G. Satheesh Babu
Journal of Alloys and Compounds, Q1, IF: 6.3

Zn-Al layered double hydroxide/graphene oxide/gelatin ternary composite hydrogels: Evaluation of Cr(VI) adsorption and regeneration characteristics
Gopika G, Asha Sathish, K Nithya
Journal of Industrial and Engineering Chemistry, Q1, IF: 6.0

Fabrication of CuO-βCD/Co-Al LDH nanocomposite for supercapacitor applications
D. R. Anakha, K. Nithyadas, T. V. Vyshnavi, M. Ananthkumar, Pavithra R. Menon & R. Yamuna
Carbon Letters, Q1, IF: 5.8

RECENT PUBLICATIONS-CHEMISTRY

Dipteracanthus prostatus Nees: a study of it's anti-cancer, anti-inflammatory, anti-metastasis and immunomodulatory potential

Sukanya Sasi, Himabindu Padinjarathil, Nandana Raghunath, Amritha Sukumaran, Prasanna Ramani

Phytomedicine plus, Q1, IF: 5.7

Platinum copper oxide decorated niobium MXene graphene oxide nanocomposite for non-enzymatic glucose detection in saliva and urine

Chandhana J P, Suneesh Punathil Vasu, Aarathi Pradeep, Satheesh Babu T. G

Electrochimica Acta, Q1, IF: 5.6

An experimental investigation of impact of Ni, Fe codoping on room temperature dielectric, ac conductivity, and magnetic behaviour of Mn_3O_4 nanostructures

A. Athira, A. Chithra Mohan, Bindu P. Nair, Thinkal Sumathan, R.K. Aswathi Prem, Athira S. Prasad, G. Sivasubramanian, K.M. Sreekanth, Beena Saraswathyamma, Anudev J, K.M. Sreedhar

Ceramics International, Q1, IF: 5.6

$NiFe_2O_3$ and carboxymethyl cellulose modified $NiFe_2O_3$ nanoparticles: synthesis, antibacterial activity, and zebrafish embryo bio-evaluation

Indumathi Thangavelu, Srinivas Tadepalli, Thalakulam Shanmugam Boopathi

Inorganic Chemistry Communications, Q1, IF: 5.4

Curcumin-coated Sr/Co-doped TiO_2 nanoparticles: Synthesis, characterization, and evaluation of antimicrobial, antioxidant, and anticancer activities against liver cancer cells

Shivangi Gupta, R. Roopashree, Vivek Saraswat, Shivangi Giri, Jagmeet Sohal, Thalakulam Shanmugam Boopathi, Fatimah S. Al-Khattaf, Ashraf Atef Hatamleh, Tingting Qiao

Inorganic Chemistry Communications, Q1, IF: 5.4

Eco-friendly corrosion protection of steel in simulated concrete environments using cassia fistula leaf extract: Electrochemical and surface characterisation study, South African

M. Ananthkumar, K. M. Mini, P. Thilagavathy

Journal of Chemical Engineering, Q1, IF: 5.1

RECENT PUBLICATIONS-CHEMISTRY

Eco-friendly corrosion protection of steel in simulated concrete environments using cassia fistula leaf extract: Electrochemical and surface characterization study, South African

M. Ananthkumar, K. M. Mini, P Thilagavathy

Journal of Chemical Engineering, Q1, IF: 5.1

BCS II/IV antibiotics blended with SPEEK nanofibrous mat as an alternative for recurrent wound care: An in vitro and in vivo assessment

Himabindu Padinjarathil, Carmelo Drago, Kaarthick Raaja Venkatachalam, Sandro Dattilo, Libera Vitiello, Thirugnasambandam G. Manivasagam, Prasanna Ramani

Current Research in Pharmacology and Drug Discovery, Q1

Temperature dependent thermoelectric properties of CuI nanostructures/microplates and their rGO supported composites

Aryalakshmi Santhosh Kumar, Priyanka Goel, Ramesh Raju, Ilkka Tittonen, Darbha V. Ravi Kumar, Ramasubramanian Swaminathan

Journal of Physics and Chemistry of Solids, Q1, IF: 4.9

Tunable Bioactive Glycine-based peptoids: Support-free scalable synthesis of sequence-defined oligomers/dendrimers and their SAR studies

Kavya Chellamuthu, Shilpa Ravi, Nimisha Mahesh, Yohaeswari Jegadeesan, Amritha Sukumaran, Jayalekshmi Haripriyan, Bipin G. Nair, Prasanna Ramani, Sankarasekaran Shanmugaraju, Pandurangan Nanjan

ACS Applied Biomaterials, Q1, IF: 4.7

Synthesis and effective in vitro anticancer activity of cucurbit[6]uril stabilized zinc sulfide nanoparticles against human breast cancer MCF-7 cell line

Vyshnavi T. Veetil, R. Yamuna, Arivazhagan Rajendran

Journal of Molecular Structure, Q1, IF: 4.7

RECENT PUBLICATIONS-CHEMISTRY

Fluorescent Probes for Endogenous Hydrogen Sulfide: Advances and Challenges
Bharathi Hassan Ganesh, Albin Brejeon, Amritha Sukumaran, Prasanna Ramani, Kondapa Naidu Bobba
ACS Omega, Q1, IF: 4.4

Engineered basil seed hydrogel for eco-conscious adsorption of anionic contaminants in ground water
Arun Viswan K K , Jyothis S. Nair, Niharika M, Aparna C. Warrier,Prathibha Das, Dhara Dixit, Gangadharan D
Journal of Contaminant Hydrology, Q1, IF: 4.4

Sustainable biocompatible packaging for foods: exploring material properties, advantages, and practical applications
Muniyandi Sundareswari, Munisamy Prathaban, Palanisamy Thilagavathy
Polymer Bulletin, Q1, IF: 4.0

A flexible micropatterned capacitive pressure sensor for wearable applications
Haritha H. Variar, M. Vyshnav Vinod, P. V. Suneesh, T. G. Satheesh Babu & Aarathi Pradeep
Journal of Materials Science, Q1, IF: 3.9

Beta cyclodextrin stabilized cupric oxide nanoparticles assisted thermal therapy for lung tumor and its effective in vitro anticancer activity
Anakha D. Rajeeve, Vyshnavi T. Veetil, Sabarinathan Palaniyappan, Ramasamy Yamuna & Vishal Bhalla
Scientific reports, Q1, IF: 3.9

Effect of hydroquinone as organoelectroactive additive with 1,2,4 triazolium ionic liquid in supercapacitor application
Kirubanantham Govindaraj, Midhun Asok, Swathi Muraleedharan, Sushmita Kottukkal Sushil & Elango Kandasamy
Scientific Reports, Q1, IF: 3.9

RECENT PUBLICATIONS-CHEMISTRY

Benchmarking long-read assembly tools and preprocessing strategies for bacterial genomes: A case study on E. coli DH5α

Megha S. Kumar, Manoj Bhat Krishna, K.P. Soman, John Stanley, Nader Pourmand, Prashanth Suravajhala, T.G.Satheesh Babu

Biotechnology Reports, Q1

Multifunctional behaviour of PLA biomacromolecules by GNP/TiO_2 hybrid nanofiller integration: Amplifying strength, solvent sorption resistance and antimicrobial properties

Snaha Leena, Sai Gopal Krishna Bhagavatula, Rasana Nanoth, KPR Mohan Ram, AW Jerfin, S Phani Abhinay, CS Tharun Venkat, Jayanarayanan Karingamanna, Krishna Prasad Rajan, Rajesh Theravalappil, Megha S Kumar, and Punathil Vasu Suneesh

Journal of Thermoplastic Composite Materials, Q1 , IF: 3.4

Preparation, characterisation, and physical properties of Zn, Ni codoped MgO, Journal of

A. Chithra Mohan, A. Athira, Bindu P. Nair, D. Kiruthiga Devi, Thinkal Sumathan, G. Sivasubramanian, K.M. Sreekanth, Gopinathan Anoop, K.M. Sreedhar

Indian Chemical Society, Q2, IF: 3.4

Synergistic Study of Novel Dicationic Triazolium Electrolyte and Activated Carbon Electrode with Nickel Foam and Stainless Steel as Current Collector

Sushmita Sushil, Elango Kandasamy

Journal of The Electrochemical Society, Q1, IF: 3.3

Enhancement of electrolytic performance of 1,4-dipropyl-1,2,4-triazolium salts with hydroquinone as an additive for symmetrical supercapacitors

Vickram Balaji T, Alexander Joseph Thomas, Sushmita Sushil, Swathi Muraleedharan, Anjitha Satheesh and Elango Kandasamy

Journal of Physics D: Applied Physics, Q1, IF: 3.2

RECENT PUBLICATIONS-CHEMISTRY

Antioxidant Efficacy and Sun Protection Factor Evaluation of Extracts From the Leaf, Stem and Root of Dipteracanthus prostrates

Nandana Ragunath, Sukanya Sasi, Himabindu Padinjarathil, P Nanjan, Prasanna Ramani

Chemistry & Biodiversity, Q2, IF: 2.5

A heteropolysaccharide from Hypsizygus ulmarius fruit bodies attenuates D-galactose-induced cognitive decline by enhancing mitochondrial function and improving antioxidant activity in mice

Sudha Govindan,Jayasakthi Shanmugam,Devaki Unni, Amritha Sukumaran,Prasanna Ramani

Fitoterapia, Q2, IF:2

Crafting Brilliance: The Artistry and Legacy of Adakkaputhur Intermetallic γ-Bronze Mirrors ($Cu_{41}Sn_{11}$)

V. K. Mahesh, M. P. Krishnakumar, K. M. Sreedhar, K. M. Sreekanth, G. Sivasubramanian

Archaeometry, Q1, IF: 1.5

RECENT PUBLICATIONS-MATHEMATICS

Solutions of (1+1) and (m+1)-dimensional time-fractional delay PDEs with the Hilfer derivative: Separable and invariant subspace methods
K.S. Priyendhu and P. Prakash
Chaos, Solitons and Fractals, Q1 IF:5.6

Chimera-like states in networks of oscillators with mixed repulsive coupling
Dharmendra Sharma, Umesh Kumar Verma, Biswambhar Rakshit, and Amit Sharma
Chaos, Solitons and Fractals, Q1 IF:5.6

AI-driven graphene oxide composite sensors for multi-pollutant detection and classification
Prakash A. Balasubramani M, Gnanaprakasam C, Varma, M. Krishna Satya, Beevi, S. Zulaikha, S. Subburaj
Microchemical Journal, Q1 IF:5.1

Grading barriers in IoT adoption for sustainable supply chains: a double hierarchy fuzzy-based Cronbach-WISP model
Raghunathan Krishankumar, Sundararajan Dhruva, Edmundas Kazimieras Zavadskas, and K. S. Ravichandran
Annals of Operations Research, Q1 IF:4.5

Machine learning-based prediction of wear behaviour of AZ31 hybrid composites reinforced with NbC and ZrC
T. Satish Kumar, S. Shalini, Jana Petrů, Kirubavathi G, & Kanak Kalita
Scientific Reports, Q1 IF:3.9

Deep learning for text summarization using NLP for automated news digest
Rani Krishna K.M., Somasundaram K., Arulmozhivarman P. Immanuel, Sarah A., Rajkumar E.R
Scientific Reports, Q1 IF:3.9

RECENT PUBLICATIONS-MATHEMATICS

Selection of waste treatment methods for food sources: an integrated decision model using q-rung fuzzy data, LOPCOW, and COPRAS techniques
Dhruva Sundararajan, Krishankumar Raghunathan, Ravichandran KS, Kaklauskas Arturas, Zavadskas Edmundas Kazimieras, Gupta, Pankaj
Clean Technologies and Environmental Policy, Q1 IF:3.9

Generalization of the Lindley distribution with application to COVID-19 data
Rajitha CS and Akhilnath A
International Journal of Data Science and Analytics, Q1 IF:2.8

Enhancing IoT Resilience at the Edge: A Resource-Efficient Framework for Real-Time Anomaly Detection in Streaming Data
Kirubavathi G, Pulliyasseri Arjun, Rajesh Aswathi, Ajayan Amal, Alfarhood Sultan,Safran Mejdl, Alfarhood Meshal,and Shin Jungpil
Computer Modeling in Engineering and Sciences, Q2 IF:2.5

Parameter estimation of extended XLindley distribution based on ranked set sampling with applications to real data
Ohud A. Alqasem, Sid Ahmed Benchiha, Rajitha C.S., Mohammed Amine Meraou, Amirah Saeed Alharthi, Hassan M. ljohani, Ahmed M. Gemeay
Journal of Radiation Research and Applied Sciences, IF:2.5

ViTCXRResNet: Harnessing Explainable Artificial Intelligence in Medical Imaging-Chest X-Ray-Based Patients Demographic Prediction
Ranganathan Sugirdha, Srinivasan Kirubhasini, Sriramakrishnan P., and Thiruvenkadam Kalaiselvi
International Journal of Imaging Systems and Technology, Q1 IF:2.5

RECENT PUBLICATIONS-MATHEMATICS

On the solutions of coupled nonlinear time-fractional diffusion–reaction system with time delays
K. S. Priyendhu, P. Prakash, and M. Lakshmanan
European Physical Journal: Special Topics, Q1 IF:2.3

Bivariate Bernstein fractal interpolation and numerical integration on triangular domains
Aparna MP, and Paramanathan .P
European Physical Journal: Special Topics, Q1 IF:2.3

An Efficient Numerical Method for the Fractional Bagley–Torvik Equation of Variable Coefficients with Robin Boundary Conditions
Joe Christin Mary S, Sekar E, Awadalla Muath and Alzahrani Rabab
Mathematics, Q1 IF:2.2

Stable and Convergent High-Order Numerical Schemes for Parabolic Integro-Differential Equations with Small Coefficients
L Govindarao, Al-Ghafri, Khalil S., J. Mohapatra, Nhan, Thải Anh
Symmetry, Q1 IF:2.2

Some Common Best Proximity Point Results in Neutrosophic Complete Metric Spaces
Qiming Zhao, A.Sreelakshmi Unni, V. Pragadeeswarar, and Yongqiao Wang
Mathematics, Q1 IF:2.2

Padmakar-Ivan index of power graphs with applications in silicon structures
Manju S. C, Sakander Hayat, Somasundaram K, and Rashad Ismail
AIMS Mathematics, Q1 IF:1.8

A subgradient supported ellipsoid method for convex multiobjective optimization problems
Muthukani M, and Paramanathan P
OPSEARCH, Q2 IF:1.8

RECENT PUBLICATIONS-MATHEMATICS

Richardson Extrapolation for Singularly Perturbed Fredholm Integro Differential Equations
Antony Prince P., Govindarao Lolugu, and Sekar Elango
International Journal of Mathematical, Engineering and Management Sciences, Q1 IF:1.5

Existence and uniqueness of fractals in fuzzy metric space via best proximity point
Sree lakshmi Unni, and Pragadeeswarar, V.
Rendiconti del Circolo Matematico di Palermo, Q2 IF:0.9

An efficient algorithm by employing neutrosophic Weber hybrid aggregation operators in decision-making analysis
Sumathi IR, Kurian Augus, Tharsini V Deva, & Al-Shanqiti, Omaima
Journal of Interdisciplinary Mathematics, Q2 IF:0.8

A new method for computing the vertex PI index with applications to special classes of graphs
Manju SC, Somasundaram K, and Shang, Yilun
AKCE International Journal of Graphs and Combinatorics, Q2 IF:0.7

A Study on Geometrical Consistency of Surfaces Using Partition-Based PCA and Wavelet Transform in Classification
Devaraj Vignesh, Palanisamy .T, and Somasundaram .K
AppliedMath, Q3 IF:0.7

Temporal dynamics of immunity: modeling susceptibility delay in antibody-shielded populations
B. Krithika and P Tamilalagan
Mathematical Modelling and Numerical Simulation with Applications, Q1

Bayesian estimation, Bayesian neural network and maximum likelihood estimation for a novel transmuted tangent family of distributions with applications in healthcare data
Amrutha. P, and Rajitha. C. S.
Statistics Optimization and Information Computing, Q2

RECENT PUBLICATIONS-MATHEMATICS

Construction of Proximal Fuzzy Iterated Function Systems
A. Sreelakshmi Unni, V. Pragadeeswarar, and Manuel De la Sen
International Journal of Analysis and Applications, Q2

Common Fixed Point Theorems in Orthogonal Sets
V. Pragadeeswarar, Vishnu K.S.V and Manuel De la Sen
International Journal of Analysis and Applications, Q2

Expression of constant Proportional Caputo Derivative in terms of the Block pulse Operational Matrix
R. Prabha, and Kiruthika S
IAENG International Journal of Applied Mathematics, Q3

Non-standard finite difference scheme for system of singularly perturbed Fredholm integro-differential equations
Antony Prince P., Lolugu Govindarao, Sekar Elango
Journal of Mathematical Modeling, Q3

An Efficient and Extreme Learning Machine for Automated Diagnosis of Brain Tumor
Sayeedakhanum Pathan, Nikhil Teja Gurram, P. Kavitha, S V Neelima
Journal of Theoretical and Applied Information Technology, Q3

Optimal Preprocessing for Enhancing Object Detection in Underwater Sonar Images
Divyabarathi G, Thampy, Baazil P., Judy M.V.,Kar, Samarjith and Ravichandran K.S
International Research Journal of Multidisciplinary Scope, Q4

Approximation of Chaotic Signals Using Quadratic and Cubic Fractal Interpolation Functions
Aparna, M.P., P. Paramanathan, and Tunç, C
Springer Proceedings in Physics, Q4

RECENT PUBLICATIONS-MATHEMATICS

CONFERENCE PROCEEDINGS

Coupled Fixed Point Theorems in Orthogonal Sets
Unni, A. Sreelakshmi, and Pragadeeswarar .V
International Symposium on Mathematical Analysis of Fractals and Dynamical Systems, ISMAFDS, Vellore

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A Novel Technique on MCDM Using Non-linear Hexagonal Neutrosophic Numbers
Kurian, A., Sumathi, I.R., Edalatpanah, S.A
Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy

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Deep Learning-Based Classification of Crops and Weeds: A Comparative Study of ResNet-50 and EfficientnetB0
Eldo, Julia Maria, Subburaj S., Thilaga M.
International Conference on Computational Robotics, Testing and Engineering Evaluation, ICCRTEE 2025

A Comparative Analysis of Models for Malicious Attack Detection on an IoT Environment
Prakash, Haritha, Subburaj S., and Kirubavathi G
International Conference on Computational Robotics, Testing and Engineering Evaluation, ICCRTEE 2025

Graph-Based Generation and Validation of Use Case Diagrams
Nair, Reshma P., Thushara M.G, and Somasundaram K
6th International Conference on Futuristic Trends in Networks and Computing Technologies

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MResNet50-SVM: Brain Tumour Classification from Magnetic Resonance Images Using Modified ResNet50 with Support Vector Machine
Syedsafi S, and Sriramakrishnan P
6th International Conference on Communication and Intelligent Systems

RECENT PUBLICATIONS-MATHEMATICS

CONFERENCE PROCEEDINGS

Comparative Analysis of Traditional and Deep Learning Based Customer Segmentation Models in Online Retail
Hari Govind A.M, and Subburaj S
International Conference on Computational Robotics, Testing and Engineering Evaluation, ICCRTEE 2025

Composition and Adaptation of Ensemble Learning for Android Malware Detection
Kirubavathi G and Varun Vijay R.N.
2nd International Conference on Recent Developments in Cyber Security

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An Empirical Analysis of Machine Learning and Deep Learning for Stock Market Forecasting
N. J. Jesan, R. Rahul Ganesh & T. Gireesh Kumar, and Praveen I
5th International Conference on Computer Vision and Robotics

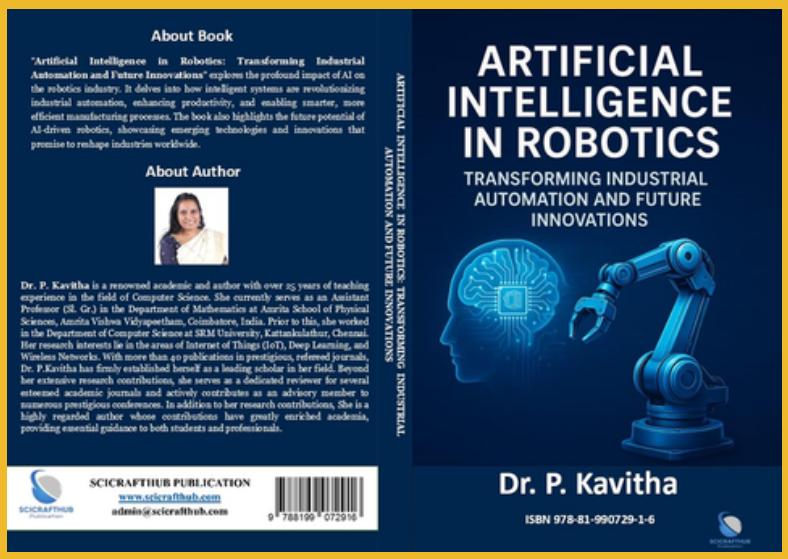
A Comprehensive Analysis of Computer-Aided Techniques: The Future of Gastric Cancer Diagnosis
S.P. Aarthi, and K.S. Ravichandran
27th International Conference on Internet and Modern Society

Diagnosis of Alzheimer's Disease Using Machine Learning and Deep Learning: A Study
B. Reshma, and K.S. Ravichandran
27th International Conference on Internet and Modern Society

Stroke Lesion Segmentation from T1-Weighted MRI Data Using Residual UNet Architecture
Shobha Jose and Somasundaram .K
10th International Conference on Biomedical Signal and Image Processing (ICBIP)

RECENT PUBLICATIONS-MATHEMATICS

Dr. P. Kavitha from the Department of Mathematics has recently published a book titled "**Artificial Intelligence in Robotics: Transforming Industrial Automation and Future Innovations**" published by Scicrafthub Publication.



Dr. K. Gayathri from the Department of Mathematics has recently published the book "**Foundations of Transform Techniques: Fourier and Z-Transforms**". This book was co-authored with Dr. Rathi K., Dr. Kalaiselvi S., and Dr. Jayalakshmi P., and published by ESN Publications.

RECENT PUBLICATIONS-FOOD SCIENCE

Unlocking the nutraceutical promise of edible flowers: An AI-driven approach to comprehensive chemical profiling

Likhitha Yadav Prakruthi , Hari Krishnan, L. Banupriya , Baojun Xu, Yogesh Kumar Ramachandran Vinayagam Chagam Koteswara Reddy

Trends in Food Science & Technology Q1 IF: 34.2

Comparative evaluation of spray dried fungal pigments Monascorubrin and Rubropunctatin for application as natural food colorants in dairy products

Indumathi Mullaiselvan , Vijayarani Kanagaraj , Haripriya Ravikumar , Vignesh Duraisamy, Nivetha Elangovan, Prathaban Munisamy

Food Chemistry Q1 IF: 9.2

Plant-based protein: A multi-nutritional sustainable alternative to animal foods and their structure, functions, and relationship: A review

Shreya P. Sarathy, Haripriya Ravikumar, Pandurangan Nanjan, Nithya Alagesan, Bee Lin Chua

International Journal of Biological Macromolecules Q1IF: 8.5

Drivers and barriers towards achieving SDG 6 on clean water and sanitation for all - an Indian perspective

Selvaraj Rajendrakumar N. Tharanidevi, D. Mavhaire , V.S. Ramachandran, S. Shimly, Dil Bahadur Rahut , Raja Rajendra Timilsina

World Development Sustainability Q1 IF: 6.14

RECENT PUBLICATIONS-FOOD SCIENCE

Assessing Dietary Patterns, Lifestyle Practices, and Forest Foods with Bioactive Potential to Address Micronutrient Deficiencies and Noncommunicable Diseases in Northeast India
Devaprasanna Patrick Jancirani Ramaswamy Thangavel Palanisamy Raghu Raman and Prema Nedungadi
Nutrients Q1 IF: 6.0

Sustainable biocompatible packaging for foods: exploring material properties, advantages, and practical applications
M Sundareswari, P Thilagavathy, Munisamy Prathaban
Polymer Bulletin Q2 IF: 4.0

Unlocking One Health Harmony: Exploring the Potential of Moringa oleifera Seed and Its Derivatives Toward Sustainable Approaches and Community Engagement
S Keertana, Jancirani Ramaswamy, S Rajendrakumar
Journal of Food Science Q1 IF: 3.4

A Self-Designed Real-Time Monitoring Smart SolarPolyhouse for Valorizing Agrifoods (Solanum lycopersicum)
Athira Mundassery Jancirani Ramaswamy Gowtham Ramesh Shibi S. Kumar
Journal of Food Process Engineering Q2 IF: 2.9

Eco-profile approach in watershed and river basin management for addressing water rights and conflicts at micro scale.
Mavhaire Damasco Rajendrakumar S Tharanidevi N Shimly S Dil Bahadur Rahut Raja Rajendra Timilsina
Frontiers In Water Q2 IF: 2.8

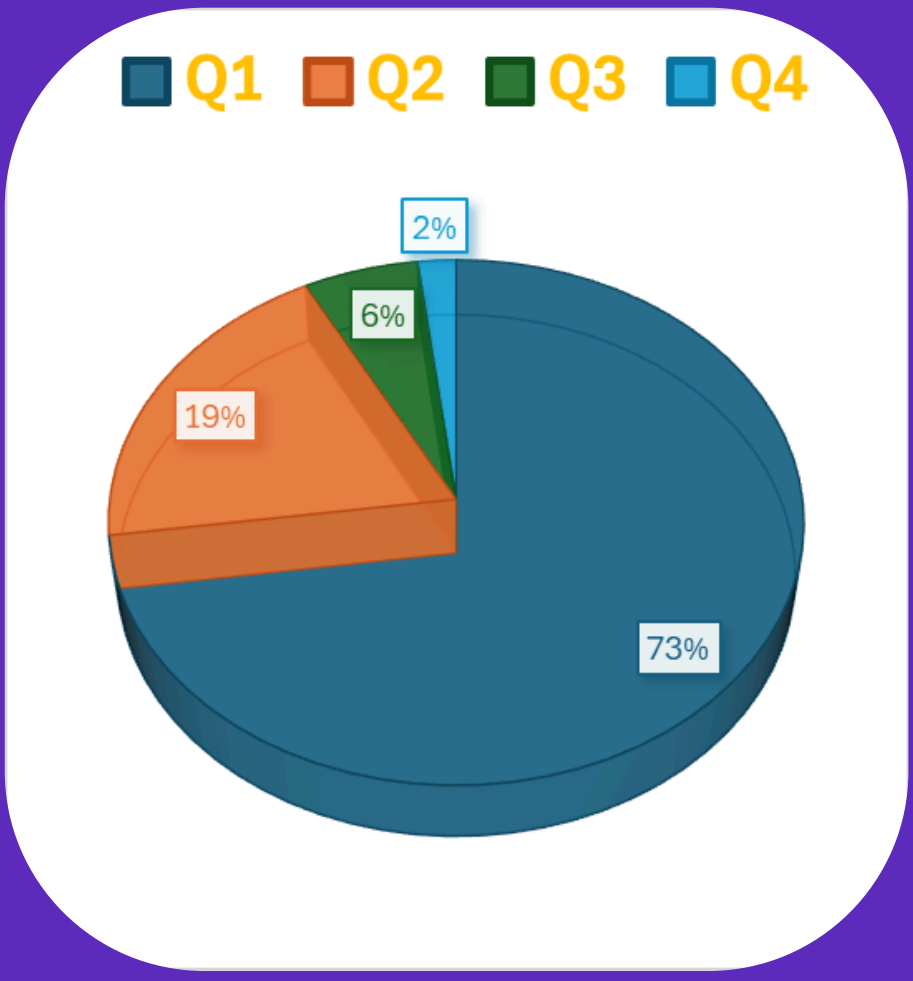
RECENT PUBLICATIONS-FOOD SCIENCE

BOOK CHAPTER

Valorisation of food waste into bioactive compounds

Haripriya Ravikumar, Lee Hong Tee, Yin Hui Chow, Soorya Haridas, Athira Mundassery, Janci Rani Ramaswamy

From Q1 to Q4: Quartile Distribution of Publications (Amrita School of Physical Sciences)



PATENTS

2025

PATENTS-2025

DEPARTMENT OF PHYSICS

- FUNCTIONALISED METAL OXIDE HYDROVOLTAIC ELECTRICITY GENERATION SYSTEM AND METHOD THEREOF, Sreejith P. Madhusudanan, Sudip K. Batabyal, 202541058805 (FILED)
- TUBULAR HYDRO-VOLTAIC DEVICE, Sudip Kumar Batabyal, Sujith Lal K. K, US12308764B2 (GRANTED)
- SODIUM ANTIMONY SULFIDE-BASED MATERIAL FOR SELF-POWERED PHOTODETECTOR AND METHOD OF PREPARATION THEREOF, Edita Joseph, Sudip K. Batabyal, 202541082245 (FILED)
- ALGAE-BASED POWER GENERATION AND PHOTODETECTOR DEVICE AND METHOD THEREOF, Anamika Chatterjee, Sudip K. Batabyal, Kathirvel A, Tirugnanasambandam Manivasagam G, 202541006359 (FILED)
- A SYSTEM FOR REAL-TIME MONITORING AND QUANTITATIVE ASSESSMENT OF COAGULATION KINETICS AND METHOD THEREOF, K. Murugadass, 202541069667 (PUBLISHED)
- DEVELOPMENT OF INDIGENOUS REMOTE EMBEDDED OPERATING PLATFORM FOR TELE-DIAGNOSIS OF OPHTHALMOLOGICAL DISORDERS, Dr. K. Murugadass, Mr. SAKTHIVELUSAMY Thamaraikannan, 202341078916 (PUBLISHED)
- AN ELECTROCHEMICAL ENERGY STORAGE DEVICE COMPRISING BIOMASS DERIVED CARBON AND A METHOD OF PREPARING THEREOF, V Aravindan, J Shaji, S P Shaji, P Krishna, M Ulaganathan, 202541003701 (FILED).
- NICKEL COBALT SULFOSELENIDE BITRANSITION MIXED CHALCOGENIDE FOR USE AS SUPERCAPACITOR, Charis S Caroline, Sudip K Batabyal, US20250372315A1(FILED)

DEPARTMENT OF CHEMISTRY

- METHODS OF SYNTHESIZING CORTICIOLIC ACID, N. Pandurangan, Deevi Sunil Kumar, Prasanna Ramani,USA 19/233,872 (FILED)
- NOVEL N-HETEROCYCLIC LIPOPHILIC CHALCONES, Dr. Prasanna Ramani, Gayathri Rajendran, 202541049602 (PUBLISHED)
- METHODS OF SYNTHESIZING CARDOL AND CARDANOL, N. Pandurangan, Deevi Sunil Kumar, Prasanna Ramani, 202443104914 (PUBLISHED)
- METHOD OF SYNTHESIZING ANACARDIC ACID, N. Pandurangan, Deevi Sunil Kumar, Prasanna Ramani, 202443104981 (PUBLISHED)
- HANDHELD COLOURIMETER FOR THE QUANTIFICATION OF COLOURIMETRIC ASSAYS ON PAPER ANALYTICAL DEVICES, ArunRaj Sukumaran, Satheesh Babu T. G, 202441037636 (FILED)

PATENTS-2025

- BIOCOMPATIBLE PLATINUM-SILVER NANOPARTICLES DECORATED GRAPHENE COMPOSITE SUPERCAPACITOR, Navaneeth Punnakkal, Satheesh Babu T. G., Suneesh P V, 202541094427 (FILED)
- SYSTEM AND APPARATUS FOR SPRAYING FLUID IN AGRICULTURAL ENVIRONMENTS, SHYAMLAL C P, SUDHEESH. M. V, Satheesh Babu T. G., Peeyush K P, 202541061925 (PUBLISHED)

DEPARTMENT OF MATHEMATICS

- AUTOMATED GRADING SYSTEM WITH MULTIPLE GRADE CONFIGURATION MODES, J. Ravichandran, T.Palanisamy, 202541078388 (PUBLISHED)

DEPARTMENT OF FOOD SCIENCE

- IRON FORTIFIED RICE BATTER AND METHOD OF PREPARATION THEREOF, Soorya Haridas, Dr.Janci Rani.P.R, 202441067829 (PUBLISHED)
- SYSTEM AND METHOD FOR OPTIMISING POLYHOUSE SOLAR DRYING USING A UNIFIED ONTOLOGY-BASED CYBER-PHYSICAL SYSTEM, Gowtham Ramesh, Vidhya Balasubramanian, Shunmuga Velayutham C, P.R.Janci Rani Ramaswamy, R. Karthi, Mr. Dheepan Kanna P, Mr. Shibi S. Kumar, 202541061630 (PUBLISHED)
- DEVELOPMENT OF EDIBLE GLITTERS FROM FRUIT PEEL WASTE, Krishnendhu Vinoy, Haripriya Ravikumar, Aarabhi Ajith, Deepthi Ravi, Dhanusri Vasanth, 202541067288 (PUBLISHED)
- FLAXSEED MUCILAGE-BASED JELLY AND METHOD OF PREPARATION THEREOF, Dr.Banupriya, Dr.N Tharani Devi, Devika K, 202541111341 (PUBLISHED)
- EDIBLE CANDLE COMPRISING PLANT-BASED LIPIDS AND EDIBLE WICK AND METHOD THEREOF, Arundhadhi B, Dr. M Indumathi, Devathara Sanjeev, 202541071071 (PUBLISHED)
- AI BASED MEDICAL DEVICE FOR DETECTION OF SKIN DISEASE, Mrs.K.C.Theepika, Dr.S.Raja Rajeswari, Dr.K.Karthika, Ms.S.B.V.Agalya, 442250-001 (GRANTED)
- BIODEGRADEABLE PRODUCT AND METHOD OF PREPARATION THEREOF (Moringa Waste), Preetham Srikanth, HaripriyaRavikumar, Preethika.R, AryaPrabukumar Nair, Devalakshmi Anirudhan, 202541061630 (PUBLISHED)

Invited Talks

PHYSICS

Seminar on Astrophysics and Gravity!

Prof. Manjari Bagchi from **The Institute of Mathematical Sciences**, Chennai, delivered an insightful seminar on "Using Radio Pulsars as Natural Laboratories to Test Theories of Gravity" on July 10, 2025. She explained how pulsar timing enables precise tests of relativistic gravity and strong-field physics. The session offered valuable perspectives to students and researchers interested in astrophysics and fundamental physics

Talk on Piezoelectric Energy Harvesting!

Prof. Binay Kumar presented a talk titled "Piezoelectric Crystal and Nanostructure for Green Energy Harvesting" on July 18, 2025. He highlighted the principles of piezoelectricity and the role of nanostructuring in enhancing energy conversion efficiency. The talk inspired participants to explore sustainable energy harvesting technologies.

Seminar on Sustainable Polymers and Nanogenerators !

Dr Arun Kumar Chandrasekhar from **Vellore Institute of Technology**, Vellore, delivered a talk on "Innovating Sustainability: Recycled Polymer Materials & Nanogenerators for Energy and Self-Powered Sensors" on August 12, 2025. He discussed converting recycled polymers into functional energy materials and self-powered sensing devices. The session emphasised sustainable materials research and innovation.

Invited Talks

MATHEMATICS

Solving PDE-constrained Optimal Control Problems using ANNs

Prof. P. Balasubramaniam
Department of Mathematics
Gandhigram Rural Institute (Deemed to be University), Gandhigram

Prof. P. Balasubramaniam delivered a focused lecture on employing artificial neural networks to solve PDE-constrained optimal control problems. The talk emphasized neural network based approximations for high-dimensional control systems, convergence and stability aspects, and the integration of learning frameworks with classical optimal control theory.

The Impact of Artificial Intelligence on the Software Industry: Opportunities and Challenges

Mr. Sridhar. S, *Technical Manager, Rakuten Payment, Inc., Tokyo, Japan*

Mr. Sridhar S., Technical Manager, Rakuten Payment, Inc., Tokyo, Japan, delivered an invited talk on "The Impact of Artificial Intelligence on the Software Industry: Opportunities and Challenges." The session highlighted the evolving role of artificial intelligence in modern software development, focusing on automation, scalability, and intelligent decision-making. The talk also addressed key challenges such as ethical considerations, workforce transformation, and system reliability, offering students valuable industry perspectives on the future of AI-driven software systems.

Invited Talks

MATHEMATICS

Two Physics Problems on Mathematics and the Young Theorem of Vito Volterra (Aspects of Mathematical Analysis)

Prof. G. P. Youvaraj
Former Director and Head Ramanujan Institute for Advanced Study in Mathematics
University of Madras

Prof. G. P. Youvaraj, Former Director and Head of the Ramanujan Institute for Advanced Study in Mathematics, University of Madras, Chepauk, delivered an invited talk on "Two Physics Problems on Mathematics and the Young Theorem of Vito Volterra (Aspects of Mathematical Analysis)." The lecture highlighted the mathematical structure underlying selected physical problems, with particular emphasis on the Young theorem of Vito Volterra and its analytical significance. The talk underscored the interplay between physics and mathematical analysis, illustrating how classical analytical results provide rigorous foundations for modeling and interpretation in physical sciences.

INDUSTRY–ACADEMIA INTERACTION

As part of the Industry–Academia Interaction initiative, professionals from leading industries interacted with fourth-year Integrated M.Sc. Data Science students on 30 July 2025 at Sandeepani Hall, AB-III. The invited talks provided insights into industry expectations, career pathways, and real-world applications of data science across healthcare, software, and analytics domains, thereby strengthening students' practical and professional understanding.

- **Mr Vijai Shanker Raja. KN, CEO, Helyxon, Chennai, delivered a lecture on "Data Science for the Healthcare Industry."**
- **Ms Pragya Ananth, Data Scientist, Bosch Global Software Technologies, Bangalore, spoke on "Scope in Industries for Science."**
- **Ms Uthara Koliyot, Data Analyst, DAZN India, Hyderabad, delivered a session titled "Life at AMRTA – A Recall."**

The programme provided students with industry perspectives, career insights, and exposure to real-world applications of data science.

Workshops and Symposia

PHYSICS

One-Day Workshop on Micro Raman Spectroscopy

A One-Day Workshop on Micro Raman Spectroscopy was organized by the Department of Physics on September 12, 2025. Dr. P. Tamilarasan (CSIR–CECRI, Karaikudi) delivered expert lectures on advanced Raman techniques and conducted hands-on training sessions. The workshop enhanced participants' understanding of material characterization techniques.

Workshop on S.A.M.P.L.E – Stratospheric Research

The ASTRA Club organized a One-Day Workshop on S.A.M.P.L.E (Stratospheric Altitude Microbiology Probe for Life Existence) on September 16, 2025, conducted by Dr. Margarita Safonova, Indian Institute of Astrophysics. The program covered high-altitude balloon-based stratospheric sampling and comet data analysis. It provided interdisciplinary exposure to astrophysics and microbiological research.

Two-Day Educational Visit for School Students

Amrita Vishwa Vidyapeetham hosted a two-day educational visit for around 180 Class XI and XII students on October 14–15, 2025. The students explored advanced laboratories in Energy, Physics, Chemistry, and Biosensors. The visit successfully encouraged scientific curiosity and interest in research careers.

International Symposium on Redox Flow Batteries (IS-RFB-2025)

The International Symposium on Redox Flow Batteries (IS-RFB-2025) was held on November 26, 2025, at Amrita Vishwa Vidyapeetham, Coimbatore. Experts from India, Korea, and France discussed advances in RFB chemistry, membrane stability, and electrode optimization. The symposium strengthened international collaboration and engaged students, researchers, and industry professionals.

DISTINGUISHED ALUMNI

PLACEMENTS

COLLABORATIONS

·University of Quebec, Montreal
·Russian Academy of Sciences
·Hebrew University of Jerusalem
·Nanyang Technological University
·Norway University of Applied Sciences
·National University of Singapore
·Hanoi University of Science
·CNR, Catania, Italy
·University of Milan, Italy
·Kyungpook National University, South Korea
·Ryerson University, Canada
·University of New South Wales, Sydney
·University of Queensland, Australia
·University of Barcelona, Spain
·Tokyo Medical and Dental University
·University of Toledo, USA
·Newcastle University, UK
·King Saud University
·The University of Aizu
·King Khalid University
·University of Northumbria
·Edith Cowan University

·Vidcare Innovations, Pune
·Abbott Healthcare and Innovosense
·High Energy Batteries(India)Limited
·Wipro Technologies, Bangalore
·Larson and Tubro Bangalore
·IIT, Hyderabad
·PRL, Ahmedabad
·TIFR, Mumbai
·IACS, Kolkata
·NIPER, Hyderabad
·Hyderabad University
·ICT-Indian Oil, Odisha
·INST, Mohali
·CSIR-CECRI, Karaikudi
·CMET , Pune
·MIT-Pune
·CSIR-NIO, Goa
·BITS Pilani, Goa
·CEBS, Mumbai
·PSG IAS, Coimbatore
·NISER, Bhubaneswar
·IIT, Gandhinagar
·IISc, Bangalore
·AIMS, New Delhi
·VIT, Vellore
·VNIT, Nagpur

VIGNANAMRITAM

A NEWSLETTER FROM AMRITA SCHOOL OF PHYSICAL SCIENCES

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EDITORIAL BOARD INFORMATION