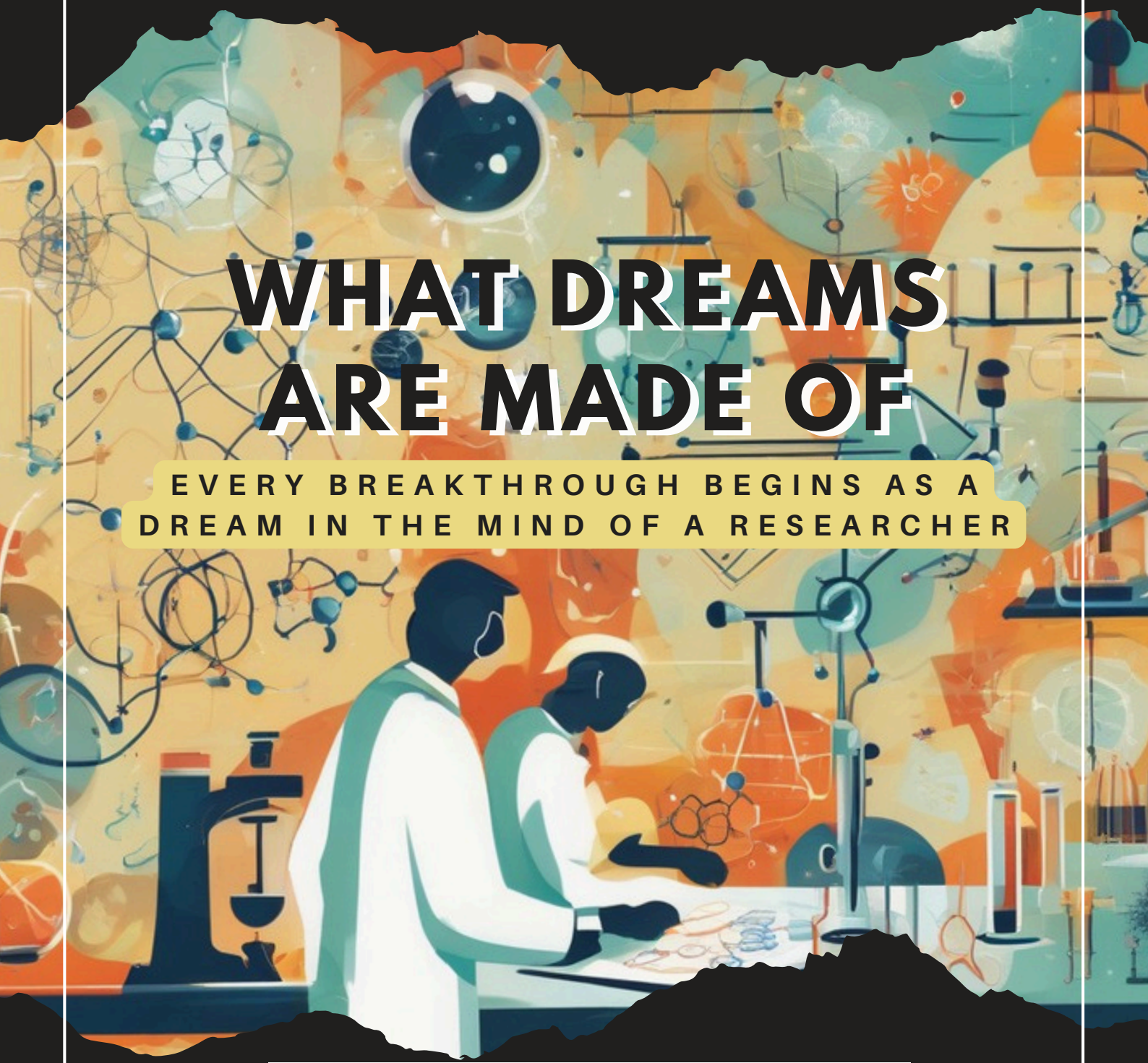
ISSUE 1 | VOL. 2 | JAN-APR 2024

VIGNANAMRITAM

A QUATERLY NEWSLETTER FROM
AMRITA SCHOOL OF PHYSICAL SCIENCES



WHAT DREAMS ARE MADE OF

EVERY BREAKTHROUGH BEGINS AS A DREAM IN THE MIND OF A RESEARCHER

AMRITA VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY

VIGNANAMRITAM

Vol II, Issue I JAN-APR 2024
AMRITA SCHOOL OF PHYSICAL SCIENCE
AMRITA VISHWA VIDYAPEETHAM,COIMBATORE

From the Editor's Desk

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

The editorial board is glad to present the third issue of "Vignanamritam," a newsletter from the Amrita School of Physical Sciences. The department's growth is greatly influenced by communication, which is the reason this newsletter will help to promote and enable enhanced awareness, interaction, and integration among all of us. "Vignanamritam" will serve as a platform for giving due recognition and acknowledgment to everyone who puts in long hours of behind-the-scenes work organizing events and achieving goals.

This edition provides a succinct overview of everything that happened from January to April 2024. It's our pleasure that 50 of the faculty members have received AIRA awards from the School of Physical Sciences. And the national workshop on Advanced Characterization Techniques (NW-ACT) been organized. I hope the future months will be more active involving more scientific endeavours.

Let this edition encourage us all to start a new and stay interested in learning more about the School of Physical Sciences' activities, business news, and fascinating information as we set out on the journey ahead.

We thank you for your unwavering support.

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

AMRITA VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY UNDER SECTION 3 OF UGC ACT, 1956

SCHOOL OF PHYSICAL SCIENCES

Congratulations

GATE SCORE WINNERS 2024

Sudev Krishnan K

GATE Score: 425

Integrated M.Sc. Physics (2019 Batch)

Aishwarya G

GATE Score: 436

Integrated M.Sc. Physics (2019 Batch)

S Aswathi

GATE Score: 352

Integrated M.Sc. Chemistry (2019 Batch)

OUR SCIENCE STUDENTS AT CONFERENCES/WORKSHOPS

ORAL PRESENTATIONS

- "Calculation of Cross – Section of Short lived Positron Emitters during Proton beam Therapy" **Tamil Selvan S**, Kiran Ramesh, Kiran Sreekumar, Tanmayee Samal, P. R. Preethi, S. K. Agarwalla, Jajati K. Nayak, P. Prema and Nrusingh C. Biswal at the 40th Annual Convention of Orissa Physical Society and National Conference on Recent Advances in Physics and Ballistics, 10 - 11 February 2024.

- Babu Dhivakaran .P, presented a paper "Bipartite Synchronization of Fractional Order Coupled Delayed Memristor Neural Networks with Quantized Pinning Control", International Conference on Mathematical Modelling, Simulation and Nonlinear Dynamcis – 2024, organized by Department of Mathematics, Bharathiar University, Coimbatore, 15th and 16th February 2024.

- Reshma R presented a paper "Lyapunov Conditions for the Finite-Time Stability of Fractional Order Disturbed Nonlinear Systems", in the International Conference on Mathematical Modelling, Simulation and Nonlinear Dynamics -2024 (ICMMSND-2024), organised by the Department of Mathematics, Bharathiar University, Coimbatore, 15th and 16th February 2024.

- Augus Kurian presented a paper "An Efficient Algorithm by Employing Neutrosophic Weber Hybrid Aggregation Operators in Decision-Making Analysis" International Conference on Applied Analysis and Discrete Mathematics (ICAADM-2024) organised by the Department of Mathematics, The Gandhigram Rural Institute, Dindigul, 22nd – 2024 January 2024.

POSTER PRESENTATIONS

- "State Calculation on the Generalized Wood – Saxon Potential with the help of Test Imaginary Potential" **G. Aishwarya**, P. R. Preethi, L. Priya, S. K. Agarwalla, B. K. Sharma, P. Prema at the 40th Annual Convention of Orissa Physical Society and National Conference on Recent Advances in Physics and Ballistics, 10 - 11 February 2024.

- "Bethe – Bloch Formula Corrections and Proton Beam Stopping Power: A Comprehensive study in the 50 MeV to 200 MeV Energy range" **Tanmayee Samal**, K. K. Jena, B. B. Sahu, S. K. Agarwalla, Nrusingh C. Biswal, Jajati K. Nayak, P. Prema at the 40th Annual Convention of Orissa Physical Society and National Conference on Recent Advances in Physics and Ballistics, 10 - 11 February 2024.

- "Modelling of Radiation Detectors for Measuring Ultra – High Dose Rate (FLASH - RT) Radiation During Radiotherapy" **Shree C**, Tamil Selvan S, S. K. Agarwalla, Jajati K. Nayak, P. Prema and Nrusingh C. Biswal at the 40th Annual Convention of Orissa Physical Society and National Conference on Recent Advances in Physics and Ballistics, 10 - 11 February 2024.

OUR FACULTY AT CONFERENCES

- **Dr. M. Sivakumar**, presented a paper on "" Frontiers in Biomaterials and Crystallography - National Seminar (FBCNS-2024) at School of Pure and Applied Physics (SPAP), Mahatma Gandhi University, 01-03 February , 2024

INVITED TALK BY OUR FACULTY AT CONFERENCES

- **Prof. T G Satheesh Babu** delivered an invited talk on "Affordable point-of-care diagnostic device using nanomaterials" at the International Conference on Advances in Interdisciplinary NanoScience at Government College for Women, Thiruvananthapuram conducted on 12 January 2024
- **Prof. K. Somasundaram**, chaired a session and delivered an invited talk on "Total Coloring Conjecture for Claw-free Graphs", International Conference on Graph Theory (ICGT 2024), Department of Mathematics, Christ College, Irinjalakuda, Kerala, 8th to 10th February, 2024.
- **Dr. A. Ramesh Babu**, delivered a lecture "Finite Elements: A Novel Approach to Solve Differential Equations", Department of Mathematics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, 9th February 2024.
- **Prof. K. Somasundaram**, delivered a lecture " Results on total coloring of some classes of circulant graphs", 5th Prof. P.C. Vaidya National Conference on Mathematical Science, Indian Institute of Teacher Education(IITE), Gandhinagar, 19th & 20th February, 2024.
- **Prof.Sudip K Batabyal** delivered a talk on "Hydrovoltaic Power Generation from porous carbon based materials" at the International Conference on Renewable Energy Technologies and Bio Sustainability (ICRETBS 2024), February 21-23, 2024 at Mahishadal Raj College, India.
- **Dr. M. Ulaganathan**, delivered a talk on "Indigenous technology for Viksit Bharat 2047" at Bharatiar University, National Science Day Celebration -28 February 2024 (Guest of Honour).
- **Dr. P. Prema**, delivered a talk at National Science Day celebration at SNS College of Engineering, Coimbatore on "Physics at the frontiers of medicine", 28 February 2024
- **Dr. Sangeeta Kumari** delivered a lecture "One Day Seminar (Virtual) on Women in Science", PG and Research Department of Physics, Seethalakshmi Ramaswai College, Tiruchirappalli, 08th March 2024. .
- **Dr. M. Ulaganathan**, delivered a talk on "Hands-on Training on Electrochemical Analysis and Photocatalysts for Nanomaterials"- Sathyabama University, Chennai, 18-21, March 2024. (Guest of Honor).
- **Dr. M. Ulaganathan**, delivered a talk at the sponsored National conference on "Advanced Materials for Strategic Application and Sustainable Future" (AMSAS – 2024), 21-22nd March 2024.
- **Dr. K. Somasundaram**, delivered a lecture "Research Opportunities in Mathematic (Virtual), PG Events Team, Amrita Vishwa Vidyapeetham, 27th March 2024.

National Workshop on Advanced Characterization Techniques (NW-ACT) 2024

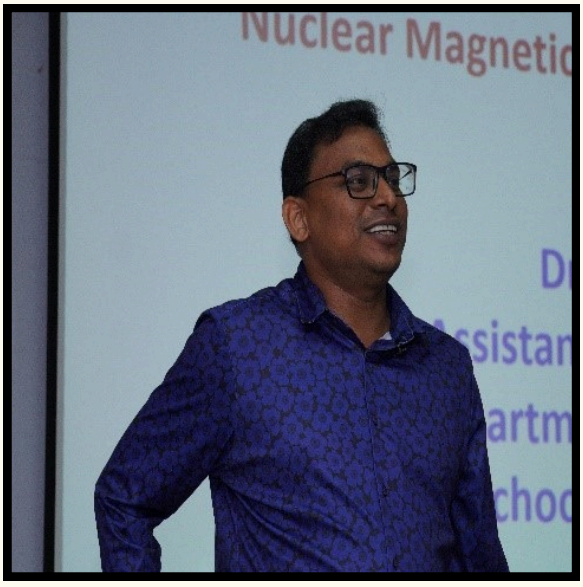
The National Workshop on Advanced Characterization Techniques (NW-ACT) 2024 took place on March 7th and 8th at Sandeepani Hall, AB – II. The event aimed to provide final year Masters and early Ph.D. scholars with fundamental knowledge of materials characterization tools. Six lectures covered Raman Spectroscopy, X-ray Photo-electron Spectroscopy (XPS), Optical Spectroscopy, Nuclear Magnetic Resonance (NMR) spectroscopy, Optical properties of some crystals, X-Ray Diffraction (XRD), and Electron Microscopy (EM).

Day 1 featured sessions on Raman Spectroscopy and XPS, led by Dr. Tamilarasan, Scientist at CSIR-Central Electrochemical Research Institute (CSIR-CECRI), Karaikudi, Tamil Nadu, and Dr. C Jeyabharathi, Senior Scientist at CSIR-Central Electrochemical Research Institute, Karaikudi, Tamil Nadu, respectively. Day 2 began with a session on NMR by Dr. K Elango, Assistant Professor at Dept. of Chemistry, ASPS, Coimbatore, followed by a talk on Optical Characteristics of Single Crystals by Dr. Rajesh, Senior Assistant Professor at SSN College of Engg., Kalavakkam, Kanchipuram, Tamil Nadu.

The noon session comprised talks on XRD and EM by Dr. Anuradha A Ashok, Professor and Head, Dept. of Physics, PSG Institute of Advanced Studies, Peelamedu, Coimbatore, India. Participants engaged in interactive discussions, clarifying doubts and suggesting enhancements.

All 147 registered candidates received participation certificates, and feedback was collected after each session. The event provided a valuable platform for learning and networking in the field of materials science.

National Workshop on Advanced Characterization Techniques (NW-ACT) 2024



ONE-DAY INTERNATIONAL WORKSHOP ON THEORETICAL PHYSICS, GRAVITY, COSMOLOGY & ASTROPHYSICS

The inaugural International Workshop on Theoretical Physics (IWTP-2024), hosted by the Department of Physics at Amrita School of Physical Sciences, Coimbatore, India, focused on Gravity, Cosmology & Astrophysics on April 2, 2024. The workshop, tailored for B.Sc., M.Sc., Ph.D. students, and young faculties, provided exposure to cutting-edge research in fundamental physics.

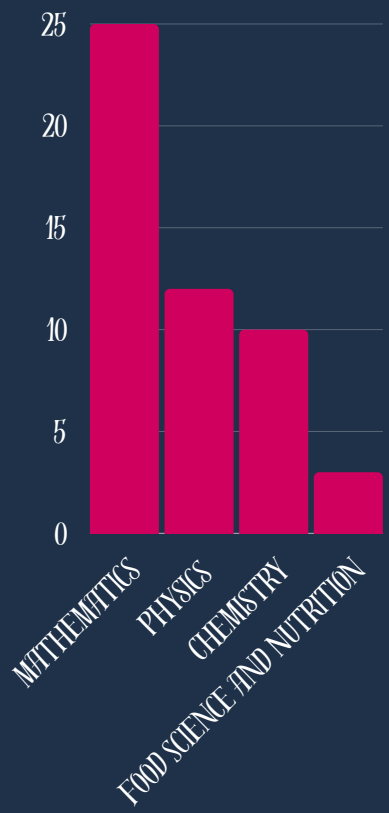
Renowned experts led the workshop, including Prof. Subhendra Mohanty, a Distinguished Professor at IIT Kanpur since 2023, who shared insights from his extensive contributions to particle physics and cosmology.

Prof. Sergei B. Popov, a Leading Researcher at Sternberg Astronomical Institute, Moscow, enriched the workshop with his expertise in astrophysics, coupled with extensive science communication efforts.

IWTP-2024 offered attendees a valuable opportunity to delve into theoretical physics, facilitated by distinguished speakers, ensuring a memorable and enriching experience for all participants.

Celebration of Academic Excellence: Amrita Innovation & Research Awards (AIRA) 2024

The Amrita Innovation & Research Awards (AIRA) honored 570 distinguished faculty members of Amrita University for their exceptional contributions. Awards included the Chancellor's Research Excellence Award, Innovation Award, and Publication Excellence Award, among others. Held during the Amrita Research & Innovation Symposium for Excellence (ARISE) 2024, the event saw over 500 faculty members from eight campuses collaborating on interdisciplinary research to address societal challenges. Amrita's Chancellor, Sri Mata Amritanandamayi Devi (Amma), presented the top research awards to 24 scientists recognized as the top 2% globally by Stanford University. Chief guests included Dr. Akhilesh Gupta of the Science and Engineering Research Board (SERB) and Venu Govinda Raju from the University at Buffalo. Dr. Gupta emphasized the importance of combining scientific knowledge with compassion and highlighted India's advancements in communication, start-ups, and publication excellence. Amma stressed the role of education in fostering inner and outer growth. Spanning two days, the ceremony awarded over 570 recognitions and seed grants exceeding 200 million INR, underscoring Amrita University's dedication to compassion-driven research, innovation, and collaboration.



SPOTLIGHT

67
FACULTY

1000+
STUDENTS

4
DEPARTMENTS

100+
RESEARCH SCHOLARS

12
RESEARCH LABS

10
ACADEMIC LABS

500+
PUBLICATIONS SINCE '08

40+
PATENTS FILED
SINCE '08

2200L
RESEARCH GRANTS

WALL OF FAME

HONOURING THE DOCTORATES

Dr. J. Prabu

Dr. Sandhiya T P

Dr. Sujith Lal K S

CONGRATULATING THE GUEST EDITORS

Prof. Sudip Kumar Batabyal
(Material Letters Journal)

Dr. M Ulaganathan

ADSORPTIVE REMEDIATION OF ORGANIC POLLUTANTS AND ARSENIC (V) IONS FROM WATER USING Fe_3O_4 - MnO_2 NANOCOMPOSITE

ARUN VISWAN K K

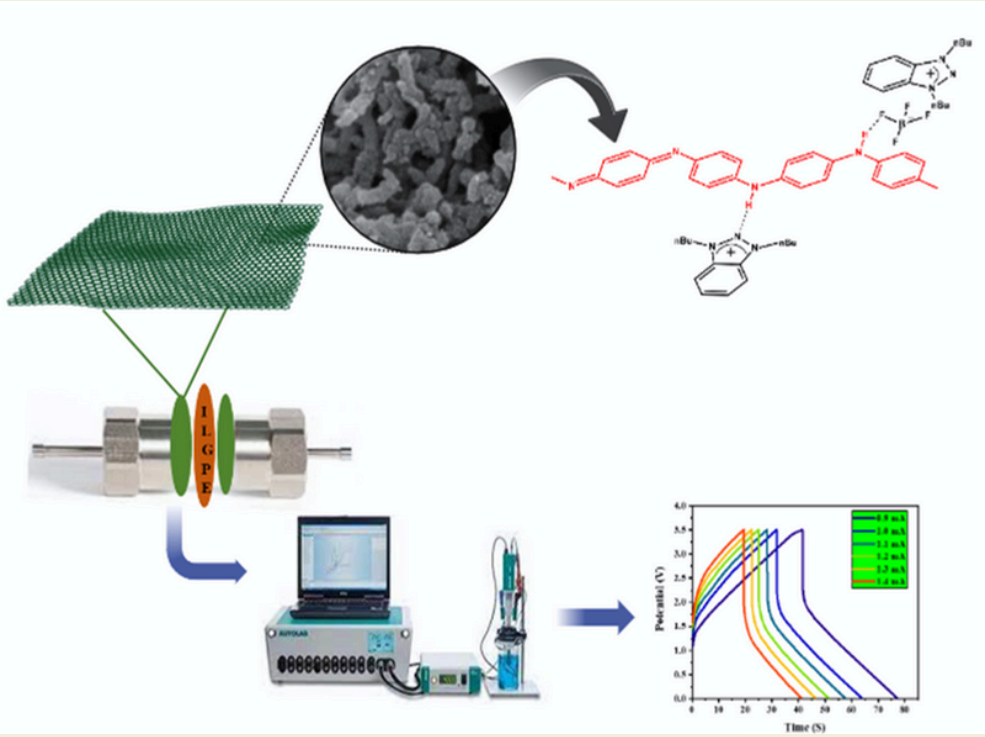
Environmental pollution has made access to clean water increasingly difficult in recent years, making it one of the most critical problems for the sustainability of life. In response to these circumstances, a CuO@C nanocomposite was prepared using the Sorghum bicolor stem part for the adsorptive removal of organic dyes [Malachite Green (MG) and Methylene Blue (MB)] and for testing its antibacterial properties. The modification of carbon with CuO nanoparticles resulted in the material's antibacterial properties.

Preparation of the nanocomposite

The stem part Sorghum bicolor was taken and the inner white soft portion of the stem was separated and treated with copper acetate. it was then heated to produce CuO@C nanocomposite.

Batch adsorption studies and antibacterial activity

Optimisation experiments for adsorption-based pollutant removal were carried out with MG and MB solutions as model organic pollutants. Physisorption is recognised as the adsorption process using thermodynamic analysis (exothermic) and kinetic research (pseudo-first-order kinetics). Adsorption isotherm investigations revealed that the Langmuir adsorption isotherm was best suited to MG and MB. The nanocomposite exhibited greater adsorption capacity towards hazardous contaminants. The CuO@C nanocomposite had significant antibacterial activity against the gram-positive and gram-negative bacteria tested.



DIBUTYL BENZOTRIAZOLIUM TETRAFLUOROBORATE DOPED PANI AS AN ELECTRODE MATERIAL FOR ENERGY STORAGE

ANJITHA SATHEESH

This work is on the reporting of the synthesis of 1,3-dibutyl-1,2,3-benzotriazolium tetrafluoroborate-doped polyaniline through interfacial polymerization and its material characterizations through FT-IR, XRD, EDS, FESEM, XPS, BET, and TGA and electrochemical property evaluation through CV, EIS, and GCD. The electrode was tested in an ionic liquid electrolyte solution with a 3-electrode setup, which gave an effective potential window from -1.5 to 1.0 V. PANI-DIBUTBTBF4 electrodes were tested on benzotriazolium tetrafluoroborate gel polymer electrolyte using poly(vinylidenefluoride-co-hexa-fluoropropylene) as host polymer for supercapacitor application through evaluating the electrochemical properties of the fabricated prototype with CV, EIS, and GCD. The SC prototype showed an efficient electrochemical window of 3.5 V. And at 0-3.5 V, it shows a high specific capacitance of 1417.88 F g-1 at a scan rate of 2 mV s-1, and from the galvanostatic charge discharge cycle at a current density of 0.32 A g-1, an energy density of 7.11 mW h g-1 and a power density of 555.06 mW g-1 were observed. PANI, as such, lacks cycle-life stability in the conventional aqueous acid electrolyte. Here, our fabricated prototype with a PANI-DIBUTBTBF4 electrode in ILGPE retains a capacitance of 89% even after 3000 cycles, which is really good when we look into the reported dopant effects on PANI. Doping with ionic liquid increased the wettability and, hence, the electrochemical conductivity. A single swagelok cell charged at 2 V for 20 minutes was able to light a red (1.6 V, 20 mA) LED brightly for 5 minutes, which demonstrated its practical applicability.

RECENT PUBLICATIONS-PHYSICS

An efficient upcycling of graphite anode and separator for Na-ion Batteries via solvent-co-intercalation process
Krishnan Subramanyan, Shaji Jyothilakshmi, **Mani Ulaganathan**, *Yun-Sung Lee, Vanchiappan Aravindan*
Carbon Q1 IF: 10.9

Sustainable power generation from live freshwater photosynthetic filamentous macroalgae Pithophora
Anamika Chatterjee, *A Kathirvel, TG Manivasagam, SK Batabyal*
Journal of Science: Advanced Materials and Devices
Q1 IF: 8

Hydrovoltaic Electricity Generation from Potato Carbon Cake: Using an Interconnected Porous Solar Steam Generator
Sujith Lal, *Vidya Mohan, and Sudip K. Batabyal*
Advanced Sustainable Systems
Q1 IF: 7.1

Solar driven interfacial evaporator using waste tissue papers charred with sulfuric acid for water production
Sujith Lal, *K Sundhar, SK Batabyal*
Solar Energy Q1 IF: 6.7

β-Ni (OH)2/WC for High-Energy Aqueous Hybrid Supercapacitor
KM Mohanraj, *SP Shaji, KS Rajni, M Ulaganathan*

Electrochimica Acta Q1 IF:6.6

Polyaniline with Manganese Based Mixed Chalcogenides (MnSSe-HT-PANI) Heterostructure for The Development of High-Performance Flexible Supercapacitor
KY Yasoda, M Afshan, **SC Caroline,** *EM Harini, K Ghosh, SK Batabyal*
Electrochimica Acta Q1 IF:6.6

RECENT PUBLICATIONS-PHYSICS

Turning Thermocol Waste into a Highly Efficient Carbon Composite as an Interfacial Solar Thermal Evaporator
Govind Pisharody, *Sujith Lal, Sudip K Batabyal*
Journal of Polymers and the Environment Q1 IF: 5.3

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: 5.8

Emission colour tuning in KLnF4: Yb3+, Er3+/Ho3+ phosphor
K Janani, *E Gayathri, V Vijayatha, S Ramasubramanian, P Thiyagarajan*
Journal of Rare Earths Q1 IF: 4.9

Non-radial oscillations in anisotropic dark energy stars.
Jyothilakshmi, O.P., *Naik, L.J. & Sreekanth, V*
European Physical Journal C Q1 IF: 4.1

Ni doping induced property enhancement in laser ablated BaSnO3 films suitable for optoelectronic applications
Jibi John, S Suresh, **M Sivakumar**, *KG Gopchandran,* **VP Mahadevan Pillai**
Heliyon Q1 IF: 4.0

Unravelling the role of poly(methyl methacrylate) (PMMA) molecular weight in poly(vinylidene fluoride) (PVDF)/PMMA/expanded graphite (ExGr) blend nanocomposites: Insights into morphology, thermal behavior, electrical conductivity, and wetting property
Nikhita Augustin *Muraliharan P, Sabu A, Koothanatham Senthilkumar K, Annamalai PK, Brahmadesam Thoopul Srinivasa Raghava R.*
Journal of Thermoplastic Composite Materials Q2 IF:3.3

RECENT PUBLICATIONS-PHYSICS

Influence of the symmetry energy and σ-cut potential on the properties of pure nucleonic and hyperon-rich neutron star matter
Prashant Thakur, **B. K. Sharma, A. Ashika, S. Srivishnu**, *and T. K. Jha*
Phys. Rev. C Q1 IF: 3.1

Construction of Cu-doped α-MoO3 nanostructures and their application as counter electrode in dye-sensitized solar cells
J Soundharaya, A Raksha, *KS Rajni, N Senthilkumar, N Eswaramoorthy, T. Raguram*
Materials Letters Q2 IF: 3

SILAR deposited Cu2MnSnS4 thin films for sustainable energy applications
VV Narayanan, *BS Jagannathan, KS Rajni*
Materials Letters Q2 IF: 3

Mn-doping induced property enhancement in laser ablated perovskite BaSnO3 films suitable for optoelectronic applications
Jibi John, S Suresh, **M Sivakumar, VP Mahadevan Pillai**
Materials Letters Q2 IF: 3

Numerical investigation on nonautonomous optical rogue waves and Modulation Instability analysis for a nonautonomous system
S Saravana Veni, *MS Mani Rajan, Conrad Bertrand Tabi, Timoléon Crépin Kofané*
Physica Scripta Q2 IF: 2.9

2D Layered (CH3NH3)3Sb2ClxI9-x Lead-Free Perovskite for Weak Light Detection
AK Pathak, *S Mukherjee, SK Batabyal*
Electronic Materials Letters Q3 IF: 2.4

RECENT PUBLICATIONS-PHYSICS

Chromo-turbulent fields and lepton pair production from collisional hot QCD medium
LJ Naik, *V Sreekanth, M Kurian, V Chandra*
Proceedings of the Indian National Science Academy
Q3 IF: 0.9

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: 0.866

RECENT PUBLICATION FOOD SCIENCE AND NUTRITION

Modern and conventional processing technologies and their impact on the quality of different millets
Athira Mundassery, *Jancirani Ramaswamy., Tharanidevi Natarajan, Soorya Haridas & Prema Nedungadi*
Food Science and Biotechnology Q2 IF: 2.9

RECENT PUBLICATIONS-CHEMISTRY

Dibutyl benzotriazolium tetrafluoroborate doped PANI as an electrode material for energy storage
Anjitha Satheesh, *Elango Kandasamy*
Journal of Energy Storage, Q1 IF:9.4

High surface area cobalt aluminium layered double hydroxide printed electrodes for flexible supercapacitor and on-chip electrochemical bacterial lysing
Navaneeth Punnakkal, *Subasini Jayakanthan, Megha S Kumar, Arun Kumar P, Aarathi Pradeep ,T G Satheesh Babu*, Punathil Vasu Suneesh**
Electrochimica Acta Q1 IF: 6.6

Development of dicationic 1,2,4-triazolium salts and their application as solid-state electrolyte for energy storage
Sushmita Sushil, *Harigovind Vijayakumar, Anjitha Satheesh, Elango Kandasamy*
Electrochimica Acta, Q1 IF: 6.6

The relative performance of gelatin hydrogels doped with nanostructured transition-metal ferrites for chromium (VI) removal: Packed bed column studies and insights into reduction mechanisms
M. Priyadarshini, *E. Rekha, Asha Sathish, K. Nithya*
Journal of Industrial and Engineering Chemistry
Q1 IF: 6.1

Wound healing applications of β-cyclodextrin capped zinc sulphide nanoparticles impregnated electrospun polymeric nanofibrous scaffold
S. Niveditha , *Vyshnavi T. Veetil , Anakha D. Rajeeve , Silpa Cheriyan , Ramasamy Yamuna , Mani Karthega*
Journal of Drug Delivery Science and Technology,
Q1 IF: 5

Dual heteroatoms doped nanocarbons: electrocatalysts for hydrogen peroxide synthesis
K. Sudhakara Prasad, M. H. Naveen, H. Manisha, A. B. Suriani, **T. G. Satheesh Babu** *& Yoon-Bo Shim*
Carbon Letters, Q1 IF: 4.5

RECENT PUBLICATIONS-CHEMISTRY

A sustainable synthesis of a CuO@C nanocomposite for the remediation of organic dyes in water and its antibacterial properties

Arun Viswan K K, *Dhara Dixit c, Sourish Bhattacharya, Sudipto Adhikary, Gangadharan D*

Nano-Structures & Nano-Objects, Q1

Psidium guajava-mediated green synthesis of Fe-doped ZnO and Co-doped ZnO nanoparticles: a comprehensive study on characterization and biological applications

Thalakulam Shanmugam Boopathi, *Suebpong Suksom, Jagadeesh Suriyaprakash, Abdurahman Hajinur Hirad, Abdullah A. Alarfaj & Indumathi Thangavelu*

Bioprocess and Biosystems Engineering, Q2 IF: 3.8

Biosurfactant-capped CuO nanoparticles coated cotton/polypropylene fabrics toward antimicrobial textile applications

P Haripriya, *M P Revathy, Megha S Kumar, P Navaneeth, P V Suneesh, Satheesh Babu T G and Venkata Ravi Kumar Darbha*

Nanotechnology, Q2 IF: 3.5

An alkali-extracted polysaccharide from Pleurotuseous and exploration of its antioxidant and immunomodulatory activities

Amal Janardhanan, Sudha Govindan, Aswini Moorthy, Keelara Veerappa Harish Prashanth, M. R. Savitha Prashanth & **Prasanna Ramani**

Journal of Food Measurement and Characterization, Q2 IF:3.4

Response surface methodology optimization extraction of polysaccharide from Tricholoma lobayense and its biological activities

Aswini Moorthy, Sudha Govindan, Amal Janardhanan, Sachindev Srinivasan, Himabindu Padinjarathil & **Prasanna Ramani**

Journal of Food Measurement and Characterization, Q2 IF:3.4

Prussian blue nanoparticles decorated reduced graphene oxide for printed supercapacitor applications

Neena P K, *N. Anjitha, P. Navaneeth, Aarathi Pradeep, Punathil Vasu Suneesh, T.G. Satheesh Babu*

Materials Letters Q2 IF: 3

RECENT PUBLICATIONS-CHEMISTRY

Wet chemical synthesis of type-II red phosphorus and evaluation of its photocatalytic activity using a non-dye degradation method

R. Architha, *M. Roshith , P.S. Athira, A.K. Nanda Kumar, Darbha V. Ravi Kumar*

Materials Letters, Q2 IF: 3

Development of dialkyl-triazolium ionogels for printed supercapacitor

Anjitha Satheesh, *Sushmita Sushil, Anjali Bharathan, Punnakkal Navaneeth, Punathil Vasu Suneesh, Elango Kandasamy*

Materials Letters, Q2 IF: 3

Effect of alkali metal cation doping in graphitic carbon nitride towards photocatalytic generation of hydrogen peroxide under direct sunlight

P. Haripriya, *T. Anjana, K. Sreelakshmi, Nikhil T. Madhu, M. Anjana, P.V. Suneesh , Darbha V. Ravi Kumar*

Catalysis Communications, Q2

RECENT PUBLICATIONS-MATHEMATICS

Cloud vendor selection using choice models based on interactive criteria and varying attitudes of experts
Manish Aggarwal, Raghunathan Krishankumar, **K S Ravichandran,** *Madasu Hanmandlu*
Expert Systems with Applications Q1 IF:8.5

Selection of a viable blockchain service provider for data management within the internet of medical things: An MCDM approach to Indian healthcare
Raghunathan Krishankumar, Sundararajan Dhruva, **Kattur S Ravichandran,** *and Samarjit Kar*
Information Sciences Q1 IF : 8.1

Numerical analysis for second order differential equation of reaction-diffusion problems in viscoelasticity
Sekar Elango, *L Govindarao, J Mohapatra, R Vadivel, Nien-Tsu Hu*
Alexandria Engineering Journal Q1 IF :6.8

Ranking barriers impeding sustainability adoption in clean energy supply chains: A hybrid framework with Fermatean fuzzy data
Krishankumar, R., Ramanujam, N., Zavadskas, E.K., **Ravichandran, K.S.** *and Gandomi, A.H*
IEEE Transactions on Engineering Management
Q1 IF : 5.8

Regime shift in Rosenzweig--Macarthur predator--prey model in presence of strong Allee effect in prey
Biswambhar Rakshit *and Thirumalai Vaasan Raghunathan*
Nonlinear Dynamics Q1 IF: 5.6

A new unit distribution: properties, estimation, and regression analysis
Kadir Karakaya, **C. S. Rajitha**, *Şule Sağlam, Yusra A. Tashkandy, M. E. Bakr, Abdisalam Hassan Muse, Anoop Kumar Eslam Hussam & Ahmed M. Gemeay*
Scientific Reports Q1 IF : 4.6.

RECENT PUBLICATIONS-MATHEMATICS

DDCNN-F: Double Decker Convolutional Neural Network 'F' Feature Fusion as a Medical Image Classification Framework
Nirmala Veeramani, Premaladha Jayaraman, Raghunathan Krishankumar, **Kattur Soundarapandian Ravichandran**, *& Amir H.Gandomi*
Scientific Reports Q1 IF :4.6

Bipartite Synchronization of Fractional Order Multiple Memristor Coupled Delayed Neural Networks with Event Triggered Pinning Control
Babu Dhivakaran .*P, Vinodkumar A and M. Gowrisankar*
Neural Processing Letters Q2 IF : 3.1.

An analysis of causative factors for road accidents using partition around medoids and hierarchical clustering techniques
Pendyala Manasa,Pragya Ananth, Priyadarshini Natarajan, **K. Somasundaram,** *E. R. Rajkumar,* **Kattur Soundarapandian Ravichandran,** *Venkatesh Balasubramanian, Amir H. Gandomi*
Engineering Reports Q2 IF: 2.72.

Numerical scheme for singularly perturbed Fredholm integro-differential equations with non-local boundary conditions
L Govindarao, *H Ramos, E. Sekar,*
Computational and Applied Mathematics Q2 IF :2.6

The odd Weibull Lindley distribution for modeling wind energy data
Rajitha.C.S *and Anisha K*
International Journal of Data Science and Analytics
Q2 IF : 2.1.

A combined algorithm for selection of optimal bidder(s)
Ravichandran .J *and B. Vanishree*
Journal of Revenue and Pricing Management Q3 IF:1.6

RECENT PUBLICATIONS-MATHEMATICS

Transformation Invariant Features Of Space Curves And Its Application In Classification Problem
Palanisamy T. *and Vignesh D*
Journal of Applied Science and Engineering
IF: 1.3

Some estimation procedures for Covid-19 suspected persons in a locality using randomized response model
G. N. Singh, Diya Bhattacharyya, *A. Bandyopadhyay*
Brazilian Journal of Probability and Statistics
Q3 IF : 0.55

Total Chromatic Number for Certain Classes of Lexicographic Product Graphs
Sandhiya T P, *J. Geetha, Somasundaram K*
Communications in Combinatorics and Optimization Q2

Non-randomized scrambling models for sensitive quantitative attribute using innocuous characteristics
G. N. Singh, **D. Bhattacharyya**, *A. Bandyopadhyay*
Journal of Statistical Computation and Simulation Q2

Application of Six Sigma methodology in the analysis of variance: process shift versus inflation coefficient
Ravichandran. J *and Varghese Reesa*
International Journal of Quality and Reliability Management Q2

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

MATHEMATICS

ENGAGING IN CURRENT RESEARCH TRENDS

Opportunities after Gate Exam

Dr. Venkatesh Rajendran, Department of Mathematics, IISC, Bangalore, delivered a talk on Opportunities after the GATE Exam and on Number Theory for III-V Integrated M.Sc., Mathematics students, Integrated M.Sc., Data Science students and Research Scholars on 7th February, Sandeepani Hall, Amrita Vishwa Vidyapeetham.

He highlighted various career paths available to students post-GATE, emphasizing roles in academia, research, and industry. Dr. Rajendran also delved into the fascinating realm of number theory, discussing its fundamental concepts and applications. His talk aimed to inspire and guide students, providing them with a clear roadmap for leveraging their GATE scores to achieve academic and professional success while fostering a deeper appreciation for mathematical research.

Shunting Inhibitory Cellular Neural Networks

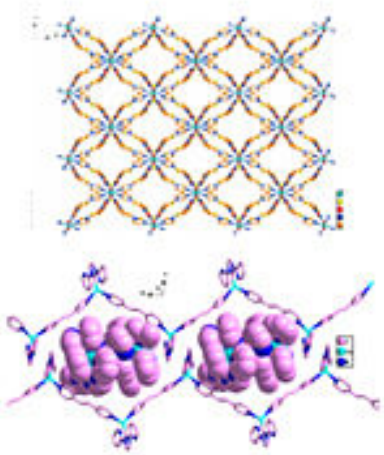
Dr. Ardak Kashkynbayev, Associate Professor from the Department of Mathematics at Nazarbayev University, Kazakhstan, delivered an insightful talk on “Improved Results on Finite-Time Synchronization of Shunting Inhibitory Cellular Neural Networks with Time-Varying Delays via Hybrid Impulsive Pinning Control.” The lecture was held on February 16, 2024, at Sandeepani Hall, Amrita Vishwa Vidyapeetham, Coimbatore. The session provided valuable knowledge on advanced mathematical techniques in neural network synchronization. He spoke on the novel hybrid impulsive pinning control method, emphasizing its effectiveness in handling time-varying delays, which can enhance the performance and stability of these networks.

Innovative Insights in Mathematics: Fractal Spline Solutions

Dr. A.K.B. Chand, a Professor from the Department of Mathematics at IIT Madras, presented a lecture on "Fractal Spline Solutions to Differential and Integral Equations" at Sandeepani Hall, Amrita Vishwa Vidyapeetham, on April 24, 2024. His insightful discussion on the application of fractal spline methods in solving complex mathematical equations was well-received by the attendees, enriching their understanding of advanced mathematical techniques.The talk highlighted the innovative use of fractals in mathematical problem-solving. Participants praised Dr. Chand for his clear and engaging presentation.The event concluded with a lively Q&A session, reflecting the audience's keen interest in the topic.

SCIENCES

MULTIDISCIPLINARY TALKS!



Unlocking MOFs: Prof. Anantharaman's Innovations in Water, Sensing, and Catalysis

Prof. G. Anantharaman from the Department of Chemistry at IIT Kanpur delivered an enlightening talk on "Multifunctional MOFs for Water Harvesting, Sensing, and Catalysis" on January 12, 2024. Prof. Anantharaman's research focuses on the development and application of Metal-Organic Frameworks (MOFs), which are versatile materials with a wide range of functionalities. His work aims to harness these materials for efficient water harvesting, advanced sensing technologies, and catalytic processes that are crucial for environmental sustainability and industrial applications. The lecture highlighted the potential of MOFs to address pressing global challenges through innovative chemical solutions. Attendees were particularly impressed by the practical applications of MOFs.

Method in Madness: Bioimaging with Random Lasers

Prof. Vijayan (Former Professor at IIT Madras) was invited to offer guest lectures for faculties, research researchers, graduates, and postgraduate students of Physics as a part of the research activities of Department of Physics, School of Physical Sciences, Coimbatore.

Prof. Vijayan delivered a gust lecture titled "Method in Madness: Bioimaging with Random Lasers" on March 11, 2024, in Acharya Hall, Academic Block -I, for physics faculty and research scholars. Prof. Vijayan covered a wide range of random laser topics throughout his discussion, including the concepts and origins of random lasers, random laser generation, how random lasers vary from conventional lasers, and their applications in diverse domains such as bio imaging, cancer cell identification and imaging,etc.

The Joy of Physics!

On 12.03.2024, Prof. Vijayan delivered a talk to graduate and undergraduate students titled "The Joy of Physics". . Understanding the joy of physics opens doors to exploring the fundamental workings of the universe, from the smallest particles to the vast cosmos. It empowers students to unravel mysteries, solve complex problems, and innovate new technologies that shape our world. Through physics, students develop critical thinking skills, discover the beauty of natural laws, and gain insights into how everything around us functions. Embracing the joy of physics fosters a lifelong curiosity and passion for learning, paving the way for future scientific breakthroughs.The address was primarily intended to motivate the students to understand physics.

SCIENCES

MULTIDISCIPLINARY TALKS!

Precision Pathways: CD46 Radiotheranostics in Prostate Cancer

Dr. Kondapa Naidu Bobba, an Assistant Professional Researcher in the Flavell Lab, Department of Radiology and Biomedical Imaging at the University of California, San Francisco, USA, presented a compelling lecture on "CD46 Targeted Radiotheranostics for Prostate Cancer Imaging and Therapy" on March 27, 2024. Dr. Bobba's work focuses on developing advanced radiotheranostic agents that target CD46, a protein overexpressed in prostate cancer cells. His research aims to improve the precision of cancer imaging and enhance the effectiveness of targeted radiotherapy, offering new hope for prostate cancer patients. The talk provided valuable insights into the potential of CD46-targeted approaches to revolutionize cancer treatment, sparking significant interest and discussion among attendees.

Exploring Polymer Nanocomposites for EMI Shielding Applications

On March 28, 2024, the Department of Physics at Amrita Vishwa Vidyapeetham hosted a research talk on polymer nanocomposites for EMI shielding. Renowned researcher Prof. Suryasarathi Bose from the Indian Institute of Science, Bangalore, delivered the lecture . Over 100 participants from diverse departments attended the session. Prof. Bose elucidated the fundamentals of electromagnetic interference (EMI) and emphasized the importance of developing materials to address these challenges. He discussed the role of polymer nanocomposites in EMI shielding, particularly at microwave frequencies. The talk concluded with insights into the practical applications of polymer-based EMI shielding materials in aerospace engineering and naval research, showcasing their potential impact across industries.

March 6, 2024

CELEBRATING National Science Day

E N I G M A

The day kicked off at Sandeepani Hall with an enlightening talk by Mr. Bhaskaran Venkatraman, General Technical Manager, Amrita Vishwa Vidyapeetham, who shared insights into Certification Programs aimed at preparing students for the industry This was followed by a dynamic showcase of research prowess through 46 poster presentations by Amrita's research scholars.Categories ranged from Functional Materials to Food Sciences, with 15 posters earning the coveted Best Poster Presentation Award. Simultaneously, experimental stalls buzzed with activity, featuring captivating demonstrations like the Rubens tube and Tesla coil. Exhibits such as the Redox Flow Battery and Hologram added to the scientific allure, offering hands-on learning experiences for attendees. The event brimmed with excitement as students engaged in science-themed games across classrooms. From the Science Quiz to Treasure Hunt, participants showcased their knowledge and creativity. The day concluded with prize distributions for the top performers, celebrating their enthusiasm and dedication.

March 6, 2024

CELEBRATING

National Science Day

ENIGMA

The afternoon session of our Science Day celebration commenced with a keynote address by Dr. Dinesh Jagadeesan from IIT Palakkad, highlighting the critical role of catalysts in scientific advancements. This was followed by an engaging talk by Prof. Kelath Murali Manoj, a distinguished professor at Amrita Vishwa Vidyapeetham, who delved into the transformative Murburn concept in life sciences.

The talks culminated in a validation ceremony honoring winners and participants, followed by a vote of thanks. The day concluded with refreshing tea sessions, fostering networking and informal discussions.

Our Science Day festivities welcomed participants from colleges and universities in Coimbatore and Palakkad, enriching the event with diverse perspectives. From stimulating talks to interactive experiments and thought-provoking games, the event showcased the spirit of inquiry and collaboration at Amrita Vishwa Vidyapeetham.

This vibrant celebration not only highlighted academic excellence but also encouraged innovation and camaraderie among budding scientists and scholars.

FIRST INTERNATIONAL SYMPOSIUM

NUTRITION RESEARCH COLLABORATION IN COLLABORATION WITH IAAND

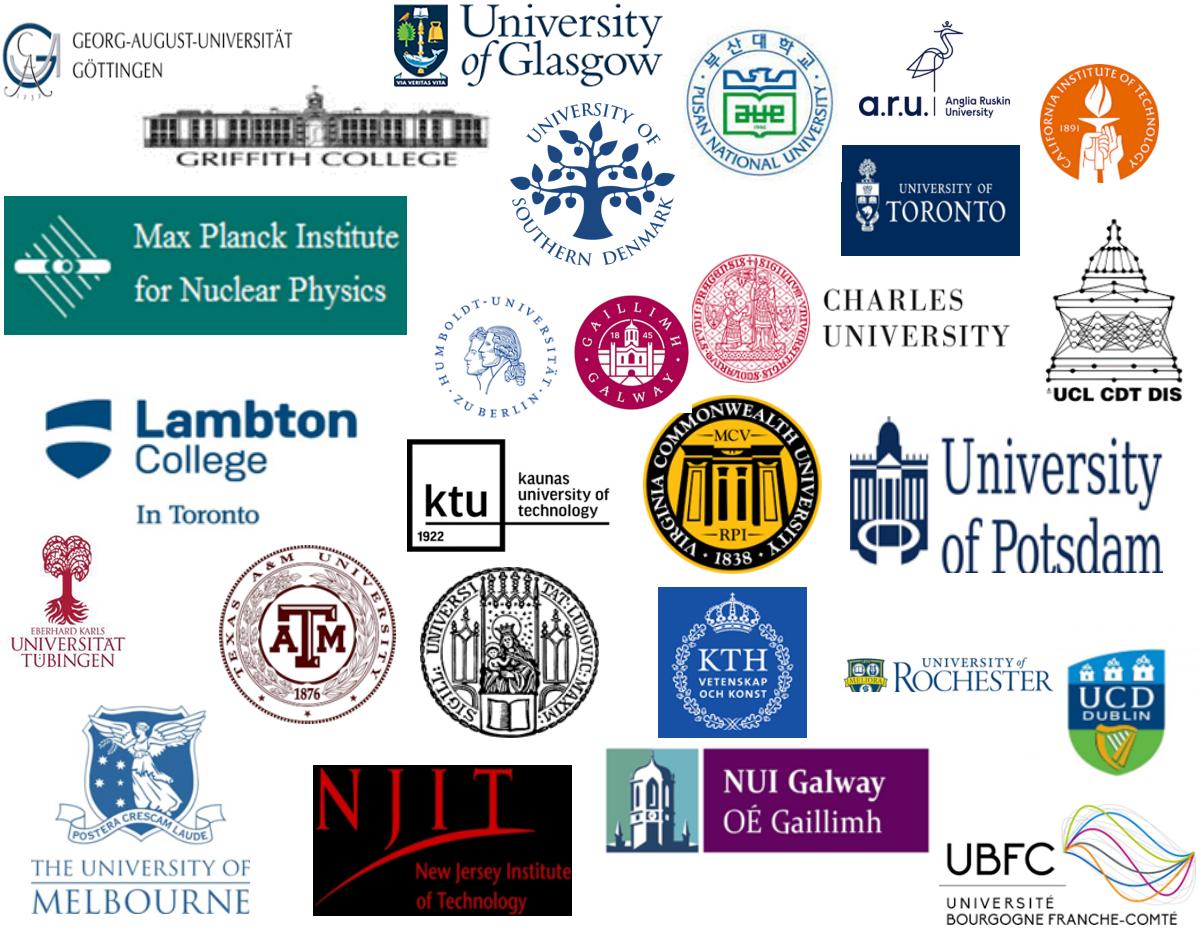
A nutrition research symposium was held at the Amrita Institute of Medical Sciences in Kochi, India, on 09.02.2024 and 10.02.2024 The symposium, attended by renowned faculty from around the world, focused on nutrition research collaboration with International Association of Dietitians and Nutrition (IAAND) International Affiliate of the Academy of Nutrition and Dietetics. The symposium included around 170 participants, including dietitians, doctors, researchers, PhD scholars, and students. The symposium discussed the functioning of IAAND and Global Rise, a non-profit group that targets impoverished communities. Key highlights included an interactive session by Dr. Esther Myers, which highlighted the importance of dieticians in hospital scenarios and the importance of communication skills and work ethics. The symposium also highlighted the role of dieticians in the health department and the importance of accessing international platforms for nutrition and dietetics. Key objectives included learning critical thinking, collaborative practices, cultural competence, renal dietetics, nutripreneurship, sustainable food consumption, maternal dietetics, and implementing the Nutrition Care Process (NCP) with physicians. The 16 of our students from B.Sc Hons. Food Science and Nutrition participated in the International symposium and benefitted through exposure.

INDUSTRIAL VISIT TO MILKY MIST

FOOD SCIENCE AND NUTRITION

The Industrial visit to Milky Mist, Perundurai was organized on 9th March 2024.The team comprised 55 members, both second and final-year students of BSc Food Science and Nutrition, along with the faculty in charge, Ph.D. scholars, and technical staff. The visit started with the dispensing of milkshakes as a gesture of affection. We began the visit from parlour, where various products of Milky Mist like paneer, cheese, milkshakes, ice cream, flavoured yogurt, curd, butter, lassi, buttermilk, and ghee were sold. The plant visit started with dividing students into two teams guided by quality assurance officers of Milky Mist. The procedures of preparing butter, ghee, paneer, and cheese (mozzarella, cheddar) along with a lecture on the types of adulterants present in the raw milk, amount of various products manufactured per day, waste management, Liquid Milk Processing unit (LMP), Sensory testing area, and importance of quality assurance unit were taught. Also, the guides gave insights on internships available and placement opportunities in Milky Mist. The industrial plant is vast and sincerely follows hygiene.

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

- 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

UPCOMING EVENTS

- Students can submit their design entries on "Recent Trends in Science" for the back cover of VIGNANAMRITAM May-Aug 2024 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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