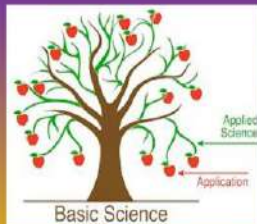


Sci-Tech Newsletter

Department of Physics, Chemistry & Mathematics



Volume 8

Issue 1

September 2024



Vision and Mission of the Institute

Vision

To be one of the premier Institutes of Engineering and Management education in the country

Mission

- To provide Engineering and Management education that meets the needs of human resources in the country
- To develop leadership qualities, team spirit and concern for environment in students

Department of Physics

Vision

To impart the concepts of Physics for Engineering students to comprehend its Applications in Engineering Solutions

Mission

- To provide knowledge of Engineering Physics needed for understanding Engineering courses
- To provide a platform to keep abreast with current happenings in Science & Technology
- To engage faculty members in research, to enrich teaching-learning process

Department of Chemistry

Vision

To impart concepts of Engineering Chemistry for students to comprehend its applications in engineering solutions

Mission

- Provide understanding of applications of Chemistry in Engineering
- Develop concern for environmental issues and responsibility for preserving green environment
- To engage faculty members in research, to enrich teaching-learning process

Department of Mathematics

Vision

To mould the students to acquire skills required for strengthening Mathematics the back bone of Engineering education

Mission

- Provide platform to acquire abilities to evaluate problems using analytical/numerical/graphical techniques
- Provide a back ground for relating mathematical techniques to solve real life problems
- To involve faculty in research which enriches teaching-learning process

Contents

- About the Department
- 2023 Nobel Prize in Physics and Chemistry
- 2023 Breakthrough Prize in Mathematics
- Article Gallery
- Achievements of Faculty & Students
- Science Department Activities
- Editor's Desk



Vidyayamruthamashrutham

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Editor's Desk

Dear Readers,

It is a matter of pride presenting this issue of Newsletter titled, 'Sci-Tech' before the readers. It is the result of meticulous efforts of the students and experienced faculty members who have a wide sweep of mind to pave a new path in the field of science. Sci-Tech brings forth creative and constructive activities conducted by BNMIT Science Forum. This Newsletter will certainly give a deep insight and will also enhance the thought process in the field of science.

We would like to appreciate all the students who contributed the articles for the issue. It is the willingness to put effort, share knowledge, concerns and special insights that have made this issue possible. I hope other students will also feel inspired and motivated to build up their writing and presenting skills. We look forward to all students reaching new heights in their respective fields and make our Institution proud.

We conclude the editor's note with a quote by Marie Curie - "Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less".

- Editorial Team

About Departments

The Department of Physics aims to train the future engineers with various aspects of fundamental Physics that makes them understand, develop and innovate. The Department has a well-established laboratory to provide hands on experience in Physics experiments to students. It also has a dedicated research laboratory where faculty members are actively engaged in research activities in the areas of Photo physics, Computational physics and Materials Science. It has full-fledged Research Centre, recognized by Visvesvaraya Technology University, Belagavi.

The Department of Chemistry aims to impart high quality education by inspiring students to compete globally. The Department has a well-equipped laboratory to provide individual attention to the students. It also has academically rich experienced and research-oriented faculties in the areas of Corrosion, Medicinal Chemistry, Nano Technology and Pharmaceuticals. It has a well-equipped Research Centre, recognized by Visvesvaraya Technology University, Belagavi.

The Department of Mathematics has experienced, academically rich and research-oriented faculties in the areas of Fluid Mechanics and Graph Theory. The Department is producing excellent results every year. Many students are scoring cent percent marks. It also has a full-fledged Research Centre, recognized by Visvesvaraya Technology University, Belagavi.

Dedication

This issue is dedicated to, “Saalumurada Thimmakka- The Mother of banyan trees.”

Saalumarada Thimmakka, also known as Aala Marada Thimmakka, is an Indian environmentalist from Karnataka. Saalumurada Thimmakka found solace in nurturing trees, and today, at the age of 113, she is celebrated as the 'Mother of Trees'. Thimmakka was born in the Hulikal village in the Magadi taluk of Bangalore Rural district. Thimmakka could not go to school due to poverty and lack of facilities. Thimmakka is noted for her work in planting and tending to 385 banyan trees along a 45-kilometre stretch of highway between Hulikal and Kudur. She has also planted nearly 8000 other trees. With the support of her husband, she found peace in planting trees.



Saalumarada Thimmakka planting a sapling during her visit to the campus

She not only planted those trees but also fenced, watered, nurtured and guarded them. Though the trees grown by her are worth several crores of rupees today, her life has no respite from poverty. Thimmakka and her husband used to carry pails of water for a long distance to water the saplings. They planted the trees during the monsoon. In this way, they could get sufficient rainwater for the saplings which would take root by the onset of the next monsoon. In spite of the financial difficulties she faced in life, she managed to put together the financial awards and help put up a badly needed maternity home next to her house at Kudur. During our secretary's visit to her house BNMIT also strengthened her hand in her noble endeavour.

Her work has been honoured with the National Citizen's Award of India. She has been recognized by the Government of India and conferred with the Padma Shri award in 2019, which is the highest civilian award in the Republic of India. There is also an U.S. environmental organisation based in Los Angeles and Oakland, California called “*Thimmakka's Resources for Environmental Education*,” is named after her. We at BNMIT had the privilege of having her visit on campus in early 2000 and plant trees in our college.

Saalumarada Thimmakka is an individual who has brought worldwide recognition to the state of Karnataka through her incredible and massive environmental services. This mission of preserving the environment is taken forward by Thimmakka's foster son, Sri Umesh B.N. Umesh has been planting and tending trees along the roads, schools, public places, and on the mountain and hilltops. He is also successfully running the PRITHVI BACHAO Movement. He has his own nursery and distributes plants to the farmers who are interested in growing plants.

Thimmakka continues her fight against afforestation and her contributions are truly remarkable. Her instincts are evidently good as she has planted trees rich in biodiversity. Today, she is invited for every tree planting initiative in the state. With her achievements, Saalumarada Thimmakka has become a role model to the entire world.

“Even one sapling each could make a better place for our children.”

Saalumarada Thimmakka

2023 NOBEL PRIZE IN PHYSICS AND CHEMISTRY

2023 Nobel Prize in Physics

The 2023 Nobel Prize in Physics was awarded for the development of experimental methods for generating attosecond laser pulses (10^{-18} seconds), flashes with a speed of around one billionth of a billionth of a second. They are useful for studying the dynamics of electrons in matter.

Three scientists - Pierre Agostini, Ferenc Krausz and Anne L'Huillier received awards to their work on Attosecond laser pulses. Laser pulses are like camera flashes that allow us to freeze and observe the movement of matter. The faster the flash, the faster the dynamics we can observe.

Previously, laser pulses able to generate in the femtosecond range (10⁻¹⁵ seconds). This is the speed at which atomic nuclei move during chemical reactions. By getting down to the attosecond scale, we are now able to observe the rearrangements of the electrons themselves, this process is extremely rapid – it was even considered instantaneous in many theoretical models!



Physicists Anne L'Huillier (left), Ferenc Krausz (middle) and Pierre Agostini (right) have won the 2023 Nobel Prize in physics for their work creating ultrashort pulses of light.

In 1987, Anne L'Huillier discovered that many different overtones of light arose when she transmitted infrared laser light through a noble gas. Each overtone is a light wave with a given number of cycles for each cycle in the laser light. They are caused by the laser light interacting with atoms in the gas; it gives some electrons extra energy that is then emitted as light. Anne L'Huillier has continued to explore this phenomenon, laying the ground for subsequent breakthroughs. In 2001, Pierre Agostini succeeded in producing and investigating a series of consecutive light pulses, in which each pulse lasted just 250 attoseconds. At the same time, Ferenc Krausz was working with another type of experiment, one that made it possible to isolate a single light pulse that lasted 650 attoseconds.

These laureates' experiments have produced pulses of light so short that they are measured in attoseconds, thus demonstrating that these pulses can be used to provide images of processes inside atoms and molecules.

Electron rearrangements take place during critical stages in the transformation of atoms, molecules and materials. Understanding these dynamics is a fundamental issue in Physics and Chemistry. Attosecond lasers have opened the way to unprecedented experimental observation of nature. These attosecond laser pulses provide extremely precise experimental measurements, which are invaluable for establishing and validating quantum mechanics approximations in describing the behaviour of matter, including electrons.

Attosecond pulses enable scientists to capture 'images' of ultrafast atomic and molecular processes. This has profound implications for fields such as materials science, electronics, and catalysis, where understanding rapid changes is crucial. This leads to the development of faster electronic devices, pushing the boundaries of computing and telecommunications technology.

Attosecond pulses can be employed in medical diagnostics to detect specific molecules based on their fleeting signatures. The ability to manipulate attosecond pulses opens up possibilities for higher-resolution imaging and spectroscopy, with applications in fields ranging from biology to astronomy.

2023 Nobel Prize in Chemistry

The Royal Swedish Academy of Sciences awarded the Nobel Prize in Chemistry 2023 to Mounqi G Bawendi, Alexei I Ekimov and Louis E Brus for their groundbreaking discovery and synthesis of quantum dots.

Quantum dots are nanoparticles (particles of the order of 10^{-9} metres in size, or one millionth of a millimetre) of semiconductor material. When the size is reduced to the nanometre scale, it is possible to obtain significant variations in electronic properties. This is called the phenomenon of quantum confinement.



Chemist Mounqi Bawendi (left), Alexei Ekimov (middle) and chemist Louis Brus (right) have split the 2023 Nobel Prize in chemistry for “the discovery and development of quantum dots nanoparticles

It's important to understand that this property is truly incredible. Before their discovery, the only way to vary the properties of a material was to change its composition. Quantum dots are excited when exposed to light. They then return to their fundamental state by emitting a photon, an elementary particle of light. The colour of this photon depends very much on the size of the quantum dot. A process developed by Philippe Guyot-Sionnest, makes this photoluminescence process extremely efficient, with a yield close to 100%.

This research began in the early 1980s with the first experimental observations. Aleksey Yekimov observed the variation in the spectrometric properties of coloured glass as a function of the heat treatment of the material. He was the first to make the connection between the size of the small semiconductor precipitates he observed in glass and its properties. This is a marked phenomenon in glass, as it is visible to the naked eye, when heat annealed at between 250°C and 400°C, a colour gradient is observed, from yellow (small semiconductor crystals in the glass matrix) to red (large semiconductor crystals). American scientist Louis Brus made a similar discovery involving Cadmium Sulphide nanoparticles. Like Ekimov, he could create these nanoparticles with altered properties. Mounji Bawendi, a student of Louis Brus, developed an advanced synthesis method. It was proving difficult to precisely control the size distribution of glass particles, and therefore the properties of the material. Mounji Bawendi came up with the idea of manufacturing crystals in colloidal suspension, i.e. in a solvent. He mixes precursors (cadmium and selenium) in a solvent, leading to the formation of cadmium selenide crystals. By carrying out this synthesis at high temperature (250–300°C), the nucleation and growth of the crystals are very well controlled. This is the key to controlling the size and distribution of particles, and therefore their properties. His work has revolutionised the field of crystal production using colloid chemistry.

Quantum dots stand out from other materials in two respects. Firstly, it is possible to modulate their absorption and emission properties very precisely by modifying their size and chemical composition. This is a very interesting property for luminescence applications such as televisions: all you have to do is change the size of the quantum dots to control their emission colour. They can cover a very wide range of wavelengths, from 400 nanometres to a few microns (visible and infrared light).

These discoveries and developments of quantum dots that paved the road to their versatile applications in developing quantum computers, solid-state lighting, display technology, energy conversion, medical diagnostics, bioimaging, and image-guided surgery. They are now also at the frontiers of fundamental physics, especially in the study of metrology – the science of measurement – and of quantum gravity.”

Quantum dots are now widely employed, for example, in computer and television screens based on the QLED (quantum light emitting diode) technology, or in biochemistry to track cells, and medicine to identify tumour tissue within the body.

2023 Breakthrough Prize in Mathematics

The Breakthrough Prize, known as the “Oscars of Science,” has honoured the best researchers around the globe for 11 consecutive years, and every prize is worth \$3 million. The Breakthrough Prize of 2023 in Mathematics goes to Daniel A. Spielman for multiple discoveries in theoretical computer science and mathematics. Daniel A. Spielman is a Sterling Professor of Computer Science at Yale University. Spielman's research has had a profound impact on various fields, including computing, signal processing, and engineering. Notably, his resolution of the Kadison-Singer conjecture, a problem that had remained unsolved for over 50 years, has influenced areas such as statistics, pure mathematics, quantum physics, and computer science.



Among many other results, he and his collaborators solved the Kadison-Singer problem, which arose in quantum mechanics but turned out to be equivalent to major unsolved problems across numerous mathematical fields—from linear algebra (the study of equations featuring vectors and matrices) to higher-dimensional geometry and combinatorial optimisation. His insights and algorithms have been significant not only for mathematics but also for highly practical problems in computing, signal processing, engineering, and even the design of clinical trials. In addition to the Breakthrough Prize, Spielman has received several prestigious awards, including the Gödel Prize in 2008 and 2015, the Nevanlinna Prize in 2010, and the MacArthur Fellowship in 2012.

"Just as the moon reflects the sun's light, reflect the brilliance within yourself. Illuminate the world with the knowledge you possess."

-The Indian Mathematician Aryabhata



Artificial Intelligence in Agriculture- Future of Farming..!

Agriculture is an essential sector for any economy, but unfortunately its market is volatile. Thus, the drought can easily impact future commodity prices and have serious repercussions on all food prices. Moreover, farming is an extremely challenging undertaking. Climate change, soil erosion, and biodiversity loss can cripple the business. In addition to a growing population, sustainable agriculture is also threatened by urbanization and the only way to meet the growing food demand is to keep track of crops, the environment, and the market.



AI agriculture market is on track to jump from USD 1.7 billion to a massive USD 4.8 billion by 2028. It's growing at a Compound Annual Growth Rate (CAGR) of 23.1%. This spike is a clear indicator of the revolutionary role of AI and machine learning in agriculture. AI empowers technologies that improve quality control and compliance. Advances allow for tracking crop growth and ripeness accurately and quickly. Moreover, AI helps in detecting and identifying pest insects with over 90% accuracy. This enhances crop health and management significantly. AI technology evolution includes drones, which apply pesticides precisely. They calculate the exact amounts needed, reducing waste. This not only benefits the environment, but also saves costs. Vertical farming with AI, dramatically, enhances food production while conserving resources. AI improves animal welfare, thus increasing farm produce. AI-driven irrigation adjusts watering based on weather and soil data, reducing water use. Crop management is a huge layer of pre-harvesting activities that is responsible for future yields. Increased frequency of drought, higher temperatures, unpredictable wetting, and drying cycles can influence crop resistance. Therefore, AI and machine learning development is widely leveraged to amplify this stage.

AI used in agriculture, farmers can better predict demand, improve crop yields and reduce food production costs. Consequently, farming becomes both sustainable and productive.

Nischala G.S
AIML

Innovative Smart Waste Management Technologies

Currently, over 2 billion tons of waste are produced globally every year. The majority of this waste ends up in landfills where it pollutes the local ecosystem, releases harmful emissions and creates a range of environmental and public health issues. Unfortunately, this problem is not going away any time soon as, by 2050, the amount of waste produced globally is expected to rise to a staggering 3.4 billion tons. The world's trash problem isn't going away any time soon, and traditional waste management systems aren't equipped to deal with the extra trash produced by growing populations. To help bridge the gap, communities need to adopt smart waste management technologies that increase efficiency, lower collection costs and divert more trash away from landfills



Smart waste management refers to any system that uses technology to make trash collection more efficient, cost-effective and environmentally friendly. Most of these systems are equipped with the Internet of Things (IoT), a monitoring technology that collects and tracks real-time data, to help optimize waste collection and spur future innovation.

The following technologies combine IoT data analytics with modern solutions to help identify challenges and improve as they go.

Smart Waste Bins

When left to their own devices, people don't always bother to sort their waste into the proper waste or recycling bins. To help reduce improper recycling sorting, Polish company Bin-e

designed a smart waste bin that uses artificial intelligence-based object recognition to automatically sort recyclables into separate compartments. Smart waste bins take human error out of the initial sorting process, making material processing faster and easier for recycling facilities. This can lower waste management costs by as much as 80% and drastically improve employee efficiency.

Waste Level Sensors

Homes and businesses across the country rely on routine waste collection services to dispose of their trash. Weekly services have been around for decades, but they aren't always the most efficient option. To help minimize unnecessary trips to and from landfills, companies and communities can install waste level sensors in bins. These devices collect and store data on fill levels, allowing collection services to predict how often bins need to be emptied. This also helps prevent public containers from overflowing and contaminating the surrounding area.

AI Recycling Robots

Recycling centers play a crucial role in reducing the amount of trash that ends up in landfills and waterways each year. However, a reduced workforce during the COVID-19 pandemic has left many centers struggling to keep up with demand. Fortunately, recycling robots powered by artificial intelligence (AI) can help pick up some of the slack. AI robots are designed to accurately identify and sort recyclable materials, increasing efficiency and reducing the need for human workers. This not only saves recycling centers money over time, but also helps divert materials that would otherwise end up in landfills.

These robots perform a series of tasks, including sorting out contaminants, recovering recyclable materials missed by traditional sorters and sorting black plastics that optical sorters can't identify into mixed-plastic bales. This not only ensures that more of materials are properly recycled, but also increases the quality and saleability of plastic bales.

Pneumatic Waste Pipes

As populations grow in urban areas, so does the need for waste management solutions that can accommodate increasing amounts of trash. Some cities are taking on this challenge by installing pneumatic waste disposal bins that connect to a series of underground pipes. Trash travels through the pipes to a waste collection plant where it can be sorted or hauled away. This system eliminates the need for traditional waste collection, reduces energy costs and increases overall

This system has two main benefits. The first is that it can dramatically reduce the number of garbage trucks on the roads. This can help to cut harmful emissions and minimize the number of vehicles clogging up our cities. Secondly, sending waste direct from dumpsters to waste management centers can help to avoid full containers overflowing. As well as being unsightly, overflowing dumpsters can cause an environmental health hazard and contribute to the pollution of the local area.

Songdo, South Korea was one of the first cities to implement a truck-free waste management system. It achieved this by installing bins connected to a series of underground pneumatic waste pipes that transport trash to a waste processing facility, where waste is automatically sorted and either recycled, buried or burned for energy. Songdo's system was the first to eliminate the need for collection trucks by connecting every building in the city to the underground pipe system. This not only cut down on carbon emissions but also saved the city money.

These innovative processes help to streamline collections, monitor waste levels and make it easier for individuals and businesses to up their rates of recycling and help the environment. The smart waste collection market is expected to reach a revenue of \$4.5 billion by 2027

In the future, tech advancements are likely to have an even greater impact on recycling rates and efficiency, leading to a greener, healthier planet for all of us.

**Harshitha D
ISE**

Awards & Achievements of Faculty

Department of Chemistry

Awards

Dr. Prathibha B S has been awarded with:

1. "India's inspiring Teachers' Award -2024 by Bharat Good Times 24/7 News Network.
2. Women Icon Award-2024 by Women's World Record and Awards of International.
3. Women Excellence award-2024 by Indian women's History Museum (IWHM).
4. Academic Excellence Award-2024 by BNMIT
5. BNMIT Research excellence award-2024
6. Featured as Notable personalities of India by Business Talkz Magazine, 3rd Edition, 2024
7. Vishwa Intellectual Property Right Research Excellence Award 2023(November)

Patent details

1. IP India Design 402706-001 “Artificial intelligence based portable transportable mini cool device for vegetable storage” Dr.Prathibha B S, Harshitha N, D R Neha (Granted).
2. UK Design No. 6357339, “Advanced glovebox” Dr. Prathibha B S (15 April 2024 Granted)
3. IP India Design No. 411106-001 “Soil organic carbon detector” Dr. Prathibha B S, Filed 20/3/2024
4. IP India Patent 202431027881 “Method for Bioconversion of Municipal Waste” Dr. Prathibha B S, filed 5/4/2024 (Published 19/4/2024)
5. IP India Design 416983-001 “IoT Based Sustainable Solar Assisted Glass Box Water Purification Device" Dr. Prathibha B S filed on 15/5/2024
6. IP India Design 414489-001 “IoT Based Carbon dioxide removal machine” Dr. Prathibha B S, filed 23/4/2024, Granted on 8/7/2024).
7. IP India Patent No.201941029985 "Biodegradable Superabsorbent and Absorbent Article thereof." Hemanth Kumar C., Jayanna B. K.,(Granted).
8. IP India patent 202441052961 “IoT-Based soil nutrient detection device” Dr. Prathibha B S, Harshitha N, D R Neha, Shamitha Gaddam, Srihith Reddy, Filed on 5/7/2024, Published 19/7/2024
9. IP India patent 202441052962 “IoT Based Sustainable solar Assisted Glass box water purification device” Dr. Prathibha B S, Harshitha N, D R Neha, Shamitha Gaddam, Srihith Reddy, Filed on 5/7/2024, published 19/7/2024
10. IP India patent 202441052963 “IoT Based pesticide analyzer for fruits and vegetables” Dr. Prathibha B S, Dr. Srividhya, Nimith Bhaskar, Brindha D ,Filed on 5/7/2024, Published 19/07/2024
11. IP India patent 202441052964 “Smart sensor based Refrigerator inventory and notification system" Dr. Prathibha B S, Harshitha N, D R Neha, Shamitha Gaddam, Srihith Reddy, filed on 5/7/2024, Published 19/07/2024
12. IP India Design 436579-001 “Portable water tank cleaning machine” Dr. Prathibha B S, Harshitha N, D R Neha, Filed on 6/11/2024
13. IP India Design 385588-001 “Automobile exhaust purification device” Dr. Prathibha B S, Shwethashree, Ruthvik Ramesh, Adesh mohan, Devika, Dhavalith chandra, Dr. Vijayashree Laxman (Filed 4/5/2023 Granted 10/1/2024)
14. IP India Design 382768-001 “Humidity dependent water Extractor” Dr. Prathibha B S (Granted 3/4/2024)
15. IP India Patent 202341001641” Preparation Method of Water Filter Cartridge using Corncob Active Carbon and Water Filter Cartridge” Dr. Prathibha B S, Dr. Bindu S, 13/1/2023 [Granted on 5 /1/2024]

8. Best India Research Award-2023 by WEgrow Pvt. Ltd.
9. Inspiration award-2023 by HER story Times.
10. "My photo was featured as the cover page for the prestigious 'Top Icon of India' edition: 23 in Business Talk magazine."

Publications details

1. **Prathibha B S**, "Smart water purifier using bioadsorbent impregnated with silver nanoparticles". International journal of research and analytical review (IJRAR), vol 11, Issue 2, pp:2349-5138, 2024.
2. **Prathibha B S**, "Green synthesis of silver nanoparticles using *Ocimum tenuiflorum* and *Azadirachta indica* leaf extract and their antibacterial activity", Journal of Physics: Conference Series, 2748, 2024.
3. **B K Jayanna**, "Raphanus sativus mediated Gd doped Copper Oxide for the sensitive detection of K₃FeCN₆ and degradation of azo dye, Inorganic Chemistry Communications", 161, 112118, 2024.
4. **B K Jayanna**, "Evolution of SnO₂ nanoparticles for the electrochemical sensing of dopamine including photocatalytic toxic dyes degradation, MS Anantha, Sensors International", 5, 100278, 2024.
5. **B K Jayanna**, "Regioselective benzylation of imidazo [1, 5-a] pyridines and indoles via iodine catalyzed reaction using alcohols-An approach to crystal structure prediction, DFT studies and Hirshfeld surface analysis", Journal of Molecular Structure 1295, 136591, 2024.
6. **M K Prashanth**, "Novel cobalt-incorporated two-dimensional covalent organic frameworks for supercapacitor applications", FlatChem., 45, 100645, 2024.
7. **M K Prashanth**, "Facile synthesis of limeonia acidissima shell derived carbon-vanadium pentoxide nanocomposite for sensitive detection of carbofuran", Results in Chemistry, 7, 101401, 2024.
8. **M K Prashanth**, "Designing of cobalt doped pyridine based covalent organic frameworks for efficient visible light driven CO₂ reduction", Microporous and Mesoporous Materials, 364, 112876, 2024.
9. **M K Prashanth**, "Microwave assisted cobalt incorporated covalent organic frameworks as cathode material for asymmetric supercapacitor device", Journal of Alloys and Compounds, 970, 172634, 2024.
10. **H A Swarup**, "A novel approach toward the multigram synthesis of a novel Bcl2-specific inhibitor, and evaluation of its biological activity." European Journal of Medicinal Chemistry Reports, 11, 100157, 2024.

11. **H A Swarup**, “Regioselective benzylation of imidazo[1,5-a]pyridines and indoles via iodine catalyzed reaction using alcohols – An approach to crystal structure prediction, DFT studies and Hirshfeld surface analysis”, Journal of Molecular Structure, 1295, 136591, 2024.
12. **A M Anusuya**, “Synthesis, biological evaluation and molecular docking studies of new pyrimidine derivatives as potent dual EGFR/HDAC inhibitors,” Journal Of Molecular Structure, 1309, 5, 138223, 2024.

Department of Physics

Awards

1. **Dr. K.N.N. Prasad** is awarded with Academic Excellence Award-2024 by BNMIT.
2. **S. Chandrasekhar** is awarded with Academic Excellence Award-2024 by BNMIT.

Patent details

1. **Dr. S. Balasaraswathy** “IoT based smoke & Heat detector”, IP India Design 408341-001, (Granted).

Publications details

1. **K N N Prasad**, “Exploring the Solvatochromism in Hydroxyquinoline Derivative: An Experimental and Simulated DFT Study”, BP International, pp 155-174, 2024.
2. **K N N Prasad**, “Solvatochromic and theoretical study of 1, 3-benzodioxole derivative”, Journal of Physics: Conference Series, 2748, 1, 2024.
3. **K N N Prasad**, “Enhanced Nonlinear Optical and Optical Liming Properties of Holmium Containing Borate Glasses Embedded with Silver Nanoparticles”, Journal of Materials Science: Materials in Electronics, 35, 519, pp:1-14, 2024.
4. **S. Chandrasekhar**, “Exploring the Solvatochromism in Hydroxyquinoline Derivative: An Experimental and Simulated DFT Study”, BP International, pp 155-174, 2024.
5. **S. Chandrasekhar**, “Solvatochromic and theoretical study of 1, 3-benzodioxole derivative”, Journal of Physics: Conference Series, 2748, 1, 2024.
6. **S. Chandrasekhar**, “Regioselective benzylation of imidazo[1,5-a]pyridines and indoles via iodine catalyzed reaction using alcohols – An approach to crystal structure prediction, DFT studies and Hirshfeld surface analysis”, Journal of Molecular Structure, 1295, 136591, 2024.

Department of Mathematics

Awards

1. **Dr. A. Pranesha Setty**, is awarded with Academic Excellence Award-2024 by BNMIT.
2. **Dr. Roopa G**, is awarded with Academic Excellence Award-2024 by BNMIT.

Achievements of Students

- **Athreya G Upadhyaya** of II Semester ECE, secured a gold medal in 'Folk Orchestra' and a silver medal in 'Indian Group Song' in the State Level VTU Youth Festival held for all colleges under VTU at S. J. C. Institute of Technology, Chikkaballapura, from 27th to 30th March 2024.
- **T V Vaidyanarayana Pandit** of II Semester AIML, secured a gold medal in 'Folk Orchestra' a silver medal in 'Indian Group Song' in the State Level VTU Youth Festival held for all colleges under VTU at S. J. C. Institute of Technology, Chikkaballapura, from 27th to 30th March 2024.
- **Athreya G Upadhyaya** of II Semester ECE, secured a silver medal in 'Western group Song' in the State Level VTU Youth Festival held for all colleges under VTU at S. J. C. Institute of Technology, Chikkaballapura, from 27th to 30th March 2024.
- **Nihar N** of II Semester AIML, **Abhishek Girish Hegde** of II Semester AIML and **Hamsini Hiraganahalli Shreenath** of II Semester ME secured a silver medal in 'Skit' in the State Level VTU Youth Festival held for all colleges under VTU at S. J. C. Institute of Technology, Chikkaballapura, from 27th to 30th March 2024.



BNMIT secured runner up in the State Level VTU Youth Festival held for all colleges under VTU at S. J. C. Institute of Technology, Chikkaballapura, from 27th to 30th March 2024.

International Conference on Advanced Materials and Fluid Mechanics



The International Conference on Advanced Materials and Fluid Mechanics held on 23rd & 24th November 2023.

Glimpses of International Conference on Advanced Materials and Fluid Mechanics

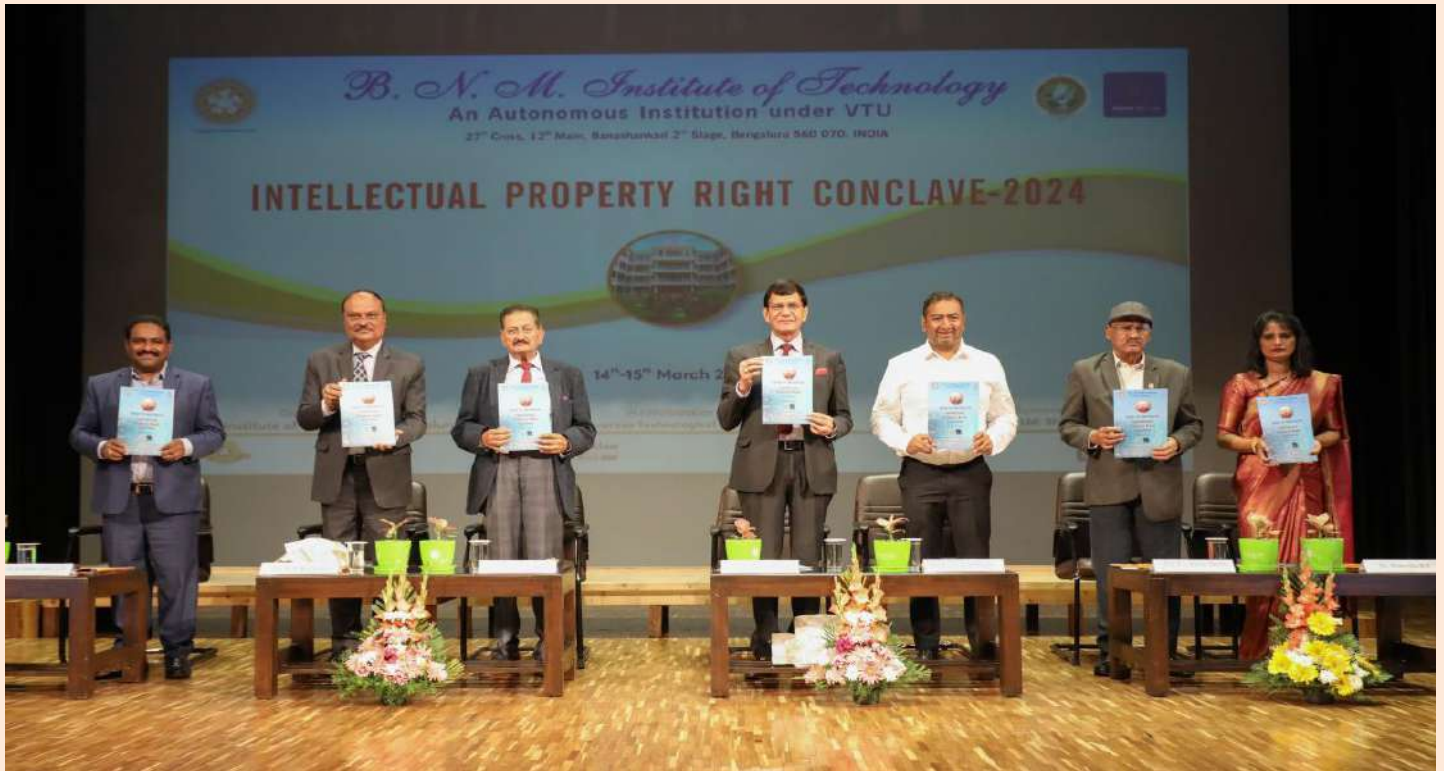


The conference was inaugurated by lighting the lamp by Dr. B E Rangaswamy, Registrar, VTU, Belagavi & dignitaries

Participants presenting their research paper during the conference



Intellectual Property Right Conclave



Release of Intellectual Property Right Conclave proceedings by Chief guest Dr. Raj Singh, and dignitaries held on 14th and 15th March 2024 at the BNM Institute of Technology, Bengaluru. Organized in collaboration with Visvesvaraya Technological University (VTU) and generously sponsored by Wegrow Pvt. Ltd. of Bhubaneswar, Odisha.

Glimpses of Intellectual Property Right Conclave



Dr. Prathibha B.S & Dr. Bindu S receiving BNMIT Research Excellence Award during Intellectual Property Right Conclave

IPR conclave proceeded with keynote lecture delivered by Dr. Ananya Bibave Assistant Professor, Modern Law College Pune



Induction Program 2024



Student Induction Programme was conducted by BNM Institute of Technology from 21.09.2023 to 06.10.2023 for the students admitted to Bachelor of Engineering (B.E).

Glimpses of Induction Programme-2024



Familiarisation of labs visit during Induction Programme

Prodathon Activities during Induction Programme-2024



Prodathon was organised for B E first year students on 20 October 2024. The purpose of the prodathon was to assist the students in improving their technical abilities through a variety of training and development phases. Prodathon helped the students to learn innovations like creating applications, websites, blogs, Product designing and so on. This Prodathon made the students to involve in team building activities, team work, analytic skills, design skills and problem solving skills.

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