



# Women's Christian College

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**ACADEMIC ACTIVITIES 2023-2024**

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DEPARTMENT OF PHYSICS



## Academic activities

2023-2024

### Design Thinking Workshop

The world of education has drastically changed with an emphasis on multidisciplinary approach and creative thinking. Today, students need extraordinary skill sets that would make them capable of smooth transitioning into the future of work. In order to inculcate one such skill, the Department of Physics, Women's Christian College organized a workshop on 'Design Thinking' on 7<sup>th</sup> September 2023 from 9.00 am to 2 pm.

The workshop commenced with the invocation song rendered by the department choir invoking God's blessings. Dr. A. Christina Nancy, Head, Department of Physics welcomed the gathering and Dr. Hannah Ruben shared the objective of the workshop. It was emphasized that the purpose of the workshop was to train students to identify problems in their study place (and subsequently at their work place), and reframe them as actionable opportunities. Dr. Juanita Saroj introduced the resource person Ms. Anubmathi, a versatile instructional designer and interpersonal trainer. Subsequently, the session was taken over by Ms. Anbumathi and her learner centric style of training enabled the participants to realize their inner potential. 60 students and 8 faculty members participated in the workshop from Women's Christian College and other colleges in city.



Ms. Anbumathi began with the main aspect of Design Thinking which is to empathize, define, ideate, prototype and test. The workshop progressively delved into each of these aspects where the participants were taught and encouraged to use these techniques to create any kind of product that would be resourceful. Later participants were asked to conduct empathy-led interview through which the root of the problem was addressed. Having identified the problem, the solution to it was ideated through group discussions, and the developed ideas were depicted through creating low fidelity paper prototype. At the end, oral and written feedbacks were obtained from the participants who found the workshop very effective in which they shared ideas with each other and created innovative solutions. The workshop on Design Thinking was highly beneficial to all participants. It taught them a suitable, progressive method to carry out their future projects, and design a product that is human-centred and appealing to their core audience.

### **Plasma Exhibition**

On 4<sup>th</sup> July 2023, the students of Class III from the Department of Physics along with Dr.T.S.Renuga Devi and Dr.J.Sharmi Kumar visited the Plasma Exhibition organized by Institute for Plasma Research, Gujarat, Tamilnadu Science and Technology, Chennai in collaboration with Indira Gandhi Centre for Atomic Research, Kalpakkam. The student volunteers and presenters of the exhibit had displayed different models on the application of Plasma like safe disposal of biomedical waste using Plasma Pyrolysis, Plasma Nitriding and Plasma Jet. Plasma Pyrolysis is a non-incineration thermal process that uses extremely high temperature produced by plasma in an oxygen starved environment to completely dissociate wastes into their elemental constituents. Non-thermal, atmospheric pressure plasma jets are used for treatment for fungal infections on skin, hand sterilizer, faster oestro-integration and acceleration of coagulation of blood. The working model of Plasma nitriding showed the concept of hardening the surface of iron and steel components using plasma in order to decrease wear and tear of the component. The intriguing fact is that nitriding increases the surface hardness of steel or iron by 300%. Many other models like Jacob's ladder, Tesla coil and gas discharge tubes were also placed as exhibits. Jacob's ladder is a high voltage travelling arc which is produced when a high voltage of 15000V is applied to the gap

between two rods. As the air between the wire gets ionized, it carries the conducting current with it. Tesla was used to demonstrate Corona discharge, transmission of power through electromagnetic waves, plasma discharge of different gases in low pressure tubes. The most interesting working model was that of the Principle of Magnetic Levitation by Meissner effect in Superconductors. Superconductors are conductors that are cooled using liquid nitrogen to produce zero resistance. It was demonstrated using a model train and magnetic track.



The model describing the working of Eddy Currents were also exhibited. When a strong magnet is dropped down the tubes of copper, aluminum and perspex tubes, the magnet slows down while falling through the Al or Cu tubes. This phenomenon was explained to be known as the Lenz's Law. The magnetic field induced in the metal due to Eddy Current attracts the falling magnet, thereby creating resistance. This resistance slowed down the falling of the magnet. The magnet falls faster through the Al tube. The resistance of aluminum is greater than that of copper, so the eddy currents from the magnet are falling weaker in the Al tube than in the Cu tube at the same velocity. In the second model, a large magnet is made to fall towards a block of copper. It was observed that the magnet stops abruptly in front of the block and does not make any contact with it. This is due to the repelling magnetic field due to the induced eddy current in the copper. The students also viewed a Plasma Globe – which was described as one of the ways to demonstrate plasma streamers and electromagnetic radiation. The students were allowed to touch the plasma globe to observe how the plasma inside it reacts. Because the glass acts as an insulator

between the fingers and the plasma, there was a change in the electric field pattern in such a way that the plasma discharge seemed to follow the fingers. Another one of the interesting exhibits was that of the Terrella or ‘‘Little Earth’’. It is a small magnetized ball representing the earth and its magnetic field. This model demonstrated how earth’s magnetic field protects us from the harmful, highly charged particles from the sun that constantly bombards the Earth. It was also used to demonstrate Earth’s magnetic, electrostatic and electromagnetic phenomena. The study of formation of Aurora Borealis is also done using Terrella. The Plasma Exhibition was truly an educational and resourceful visit where the students learned about the different applications and working of Plasma in different settings.

### **Industrial Visit to Vikram Solar Limited, Oragadam, Chennai**

On 11<sup>th</sup> July 2023, a group of 38 students of II B. Sc. Physics had the privilege of visiting Vikram Solar Private Limited located in Oragadam, Chennai. This industrial visit was facilitated by Dr. J. Juanita Saroj and Dr. I. Monica Chandramalar to provide students with real-world exposure to the solar energy industry and its technological advancements.

#### *Purpose of the Visit:*

The primary objective of the visit was to acquaint the students with the operations, technologies, and facilities at Vikram Solar Private Limited. This firsthand experience aimed to enhance their understanding of solar energy production, renewable energy technologies, and industrial processes.

#### *Benefits for Students:*

Vikram Solar Limited is one of India’s largest module manufacturers, in terms of operational capacity, producing solar photo-voltaic (“PV”) modules. During the visit, students were introduced to the latest advancements in solar technology. They had the opportunity to witness the entire process of solar module manufacturing, from the selection of raw materials to the assembly of modules. This exposure fostered a deeper understanding of the intricacies involved in converting solar energy into usable electricity. Students gained insights into the industrial processes that ensure efficient solar module production. They observed how quality control measures are implemented at every stage of manufacturing to ensure the reliability and performance of the modules. This firsthand exposure helped students connect theoretical knowledge with practical applications. The visit emphasized the significance of renewable

energy sources, particularly solar energy, in the current global energy landscape. Interaction with professionals at Vikram Solar provided students with insights into potential career opportunities in the renewable energy sector. They learned about various roles in research, development, manufacturing, quality assurance, and project management, sparking their interest in pursuing careers related to sustainable technologies. The visit included interactive sessions and discussions with experts in the field. Students had the chance to ask questions, clarify doubts, and engage in meaningful conversations about solar energy technologies, market trends, and prospects. The visit not only complemented their academic learning but also ignited their enthusiasm to explore careers in the renewable energy sector. This industrial exposure will undoubtedly have a lasting impact on their educational journey and future endeavours.





## **Educational Visit to Farm Guru**

On 12th August 2023 an educational field trip to Farm Guru, a local agricultural establishment situated in Attur Village, Karnodai, Sholavaram, was organized by the Department of Physics, Women's Christian College, Chennai. The tour comprised of B.Sc. Physics students accompanied by faculty members, Dr. A. Christina Nancy, Dr. Hannah Ruben, Dr. Monica Chandramalar, Dr. Hannah Priya. The purpose of this visit was to provide students with firsthand exposure to agricultural practices, enhance their understanding of sustainable farming, and equip them with practical knowledge of modern farming techniques.

The students arrived at the farm at 9.30 am. They were warmly welcomed by the farm owner, Mr. Sesha M Sai, who gave an introductory presentation on the farm's history, goals, and practices. He also provided a detailed explanation of the different crops, the importance of sustainable farming and its role in ensuring food security and environmental conservation emphasizing the use of organic and sustainable farming techniques. The highlight of the visit was the hands-on training session, where students actively participated in various farming activities such as crop planting, ploughing the land and the rides on tractors and bullock carts.

The visit to Farm Guru was a resounding success, providing college students with a valuable opportunity to bridge the gap between theory and practice in agriculture. The hands-on training allowed them to apply their classroom knowledge in a real-world setting, enhancing their understanding of sustainable farming practices. This experience will undoubtedly contribute to the holistic education to the students and inspire future generations

of



environmentally-conscious farmers.





### **Food Photography Competition**

The Department of Physics, WCC in collaboration with Nestle, India, organized the Food Photography Competition on August 19th, 2023, to commemorate World Photography Day. The event was conducted for both Shift 1 and Shift 2 students of Women's Christian

College, Chennai.

The day commenced with a prayer by our Vice-Principal, Dr. Lizzie Angelina, who then inaugurated the event. Dr. A. Christina Nancy, Associate Professor and Head, extended a warm welcome to all participants and to the judge cum chief guest of the day, Mr. Sumanth Kumar, a renowned celebrity photographer known for breathing life into food, nature, interiors and fashion through his lens.

Following this, the Nestle team held an engaging quiz about our country's food culture and rewarded those with correct answers with exciting prizes. The Nestle team offered a demonstration of the preparation method for milkmaid payasam, a delightful treat for all participants. This culinary presentation was not just about taste but also imparted valuable insights into the importance of nutritious cooking.

Twelve talented participants participated enthusiastically in the competition, showcasing their talents in the art of food photography. Their creative expressions added depth to the event. Mr. Sumanth Kumar served as the judge for the competition, and offered valuable insights and shared his expertise with the participants, nurturing their ability to craft captivating visuals.

The winners of the food photography competition were rewarded with exciting prizes. The Food Photography Competition was a resounding success which integrated the art of photography with culinary mastery.





### **A Visit to Gemini Scans**

The III B. Sc. Physics students who were enrolled in the course, Medical and Radiation Physics, visited the Gemini Scans, at Aminjikarai, Chennai on 30<sup>th</sup> of August 2023. The primary objective of the visit was to gain valuable insights on the diverse array of clinical instruments and diagnostic procedures employed in the field of medicine and radiation for detection and evaluation of various health conditions within the human body. The visit was guided by the course teachers, Dr. T. S. Renuga Devi and Dr. I. Monica Chandramalar, Assistant Professors of the Department of Physics, Women's Christian College.

The array of instruments and diagnostic tests observed encompassed a range of medical technologies, including Electrocardiogram (ECG), Electroencephalogram (EEG), Magnetic Resonance Imaging (MRI), Computed Tomography (CT), Digital X-Ray, Mammography, Ultrasound and Tread Mill Test (TMT).

The technicians and support staff diligently explained the intricacies of each test and its instrumentation. Concurrently, as patients underwent their prescribed routine tests, the students had the invaluable opportunity to acquire practical insights by witnessing these tests, comprehending their instrumentation and operational principles.



### **Hi-Phy'23 Physics Association Inauguration Ceremony**

On 25<sup>th</sup> July 2023, the inauguration ceremony of the HI-PHY Physics Association 2023-24 took place marking the commencement of a momentous year ahead. The air was

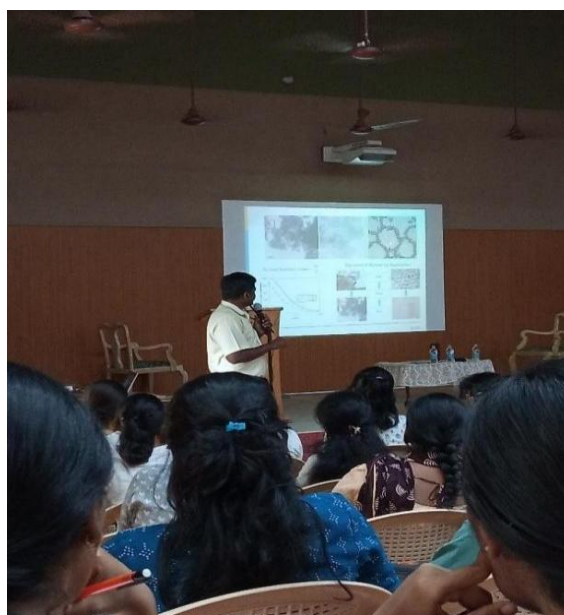
filled with a palpable sense of excitement and anticipation as the audience gathered to witness this significant occasion.



The ceremony began at 12:30 pm with a prayer song as invocation which was led by the Physics department choir. Later, Dr. Christina Nancy, the Head of the Department of Physics, welcomed the gathering with a short address highlighting the need for introducing and implementing the HI-PHY club to the students, which is to inculcate the interest of students in the field of physics and help them broaden their horizon in the subject. The Guest Speaker was later introduced by the president of the HI-PHY club, Ms. Carolina Salomi of III Physics. Dr. Christina Nancy felicitated the Guest Speaker, Dr. T. Prakash with a memento, after which the installation of the Office Bearers of the HI-PHY Association 2023-24 began. Dr. Christina Nancy, the Head of the Department of Physics did the honour of giving away the badges to the Office Bearers for their respective posts.



The session was then taken over by the Invited Speaker, Dr. T. Prakash who is an Assistant Professor at the National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy. He presented a talk on the topic of Direct Conversion X-Ray Sensors. He discussed the attenuation powers of different materials and the factors that affect them. The study made with different lanthanide combinations was also discussed along with the density and heat map, which eventually would help in undergoing a lower radiation dosage during an X-Ray procedure.



The session was also open for questions from the audience during which clarifications were made between the speaker and the audience.

This was followed by the Vote of Thanks which was proposed by Dr. T. S. Renuga Devi, the HI-PHY Staff Coordinator. The inauguration ceremony came to an end at 1:30 pm after the Alma Mater led by the department choir.

## Remembering Amal Kumar Raychaudhuri (AKR): the celebration of the centenary year, IMSc, Chennai

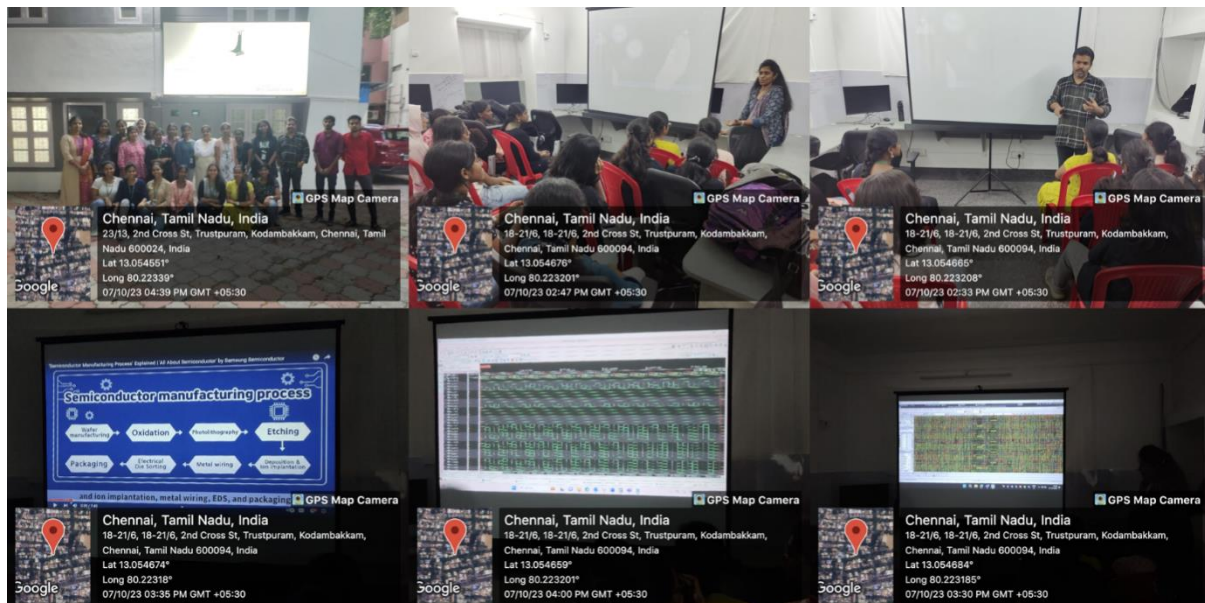
The AKR Centenary Program is a mini conference held during October 5-7, 2023. The last day of the program was student oriented and final BSc students were permitted to attend the program. 8 final year students were accompanied by faculty member Dr. Hannah Priya G. The talk predominantly focussed on Mr. AKR's accomplishments in general relativity and cosmology. Mr. Palash Baran Pal, Mr. Pankaj Joshi and Mr. Parthasarathi Majumdar gave lectures on Spacetime singularities, Frontier developments in Black holes, Final fate of massive stars and explained the basis of Raychaudhuri equation. Overall, the series of lectures given by various professors enhanced the knowledge of students and helped them to delve more into the field of astronomy.



## Industrial visit to Struent Semiconductors Pvt Ltd

VLSI (Very Large-Scale Integration) technology plays a crucial role in today's devices and systems, ranging from consumer electronics to industrial applications. It has revolutionized the field of electronics and has opened new possibilities for innovation and advancement. So in this context, an industrial visit was made to Struent Semiconductors Pvt. Ltd., Kodambakkam was made by 18 students of III. B.Sc. Physics who opted Microprocessor and Microcontroller 8051 as their core elective paper accompanied by the course teacher Dr. Hannah Ruben on 7<sup>th</sup> October 2023.

The students were exposed to importance of chip design process and the various stages involved in semiconductor manufacturing process. Students were given a detailed explanation about wafer manufacturing, oxidation, photolithography, etching, deposition and ion implantation, metal wiring, electrical die sorting and packaging through visual aid. Later, students were briefed about the various stages involved in VLSI design process. The first stage of the VLSI design process is the specification stage where the requirements and functionality of the chip are defined. Once the specifications are defined, the chip is designed using specialized electronic design automation (EDA) tools.



The design process involves creating a high-level architectural design, followed by the detailed design of each component and circuitry. The design is typically done using hardware description languages (HDLs) such as Verilog or VHDL. After the design stage, the next stage is the implementation using semiconductor manufacturing processes. This involves translating the design into a physical layout, which includes the placement and routing of the various components and interconnections. Once the chip is physically implemented, the next



stage is the verification stage. In this stage, the functionality and performance of the chip are tested and verified. This involves simulating the chip's behavior using specialized EDA tools, as well as performing physical tests on fabricated prototypes. The verification stage is crucial for ensuring that the chip meets the specified requirements and performs as expected. The entire session was facilitated by Mr Hiram Prasanna and Mrs Anitha, the Chief Executive Officer and Chief Operating Officer of Struent semiconductors Pvt. Ltd. The interactive session came to an end with facilitators catering to the various question put forth by the students. Thus, the industrial visit gave students awareness and made them gain lot of knowledge on perspective of VLSI industry.

### **Industrial visit to FLORANIX Private Limited**

In today's world digital transformation has become an undeniable force, revolutionizing every facet of our lives. The impact of embedded systems has permeated every corner of our society, from the sophisticated computer systems that govern safety features in modern automobiles to the day to-day applications. These core embedded technologies form the backbone of our increasingly digital, connected, and automated world. So, to have an awareness and better understanding about this field, a field visit was organised on 14<sup>th</sup> October 2023 with an aim to improvise the critical thinking in cutting edge technologies of embedded systems that have real time applications in industry and research. In this regard, eighteen students of III. B.Sc. Physics who opted Microprocessor and Microcontroller 8051 as their core elective paper accompanied by the course teacher Dr. Hannah Ruben visited Floranix Private Limited, Adyar, Chennai. The Managing Director of Floranix, Dr. G. Kumar Sathian, lectured the students on Embedded Microcontroller using ATMega 328. The students were exposed to various projects developed using Fludino, the embedded microcontroller. The students were made to understand the software programs which were written to interface Fludino with Microcontroller 8051. The mutual interaction between students and the resource persons improved the hard skills and bench skills of the students. Thus, the industrial visit was very fruitful and beneficial to the students.



## Hi - Phy Intercollegiate Fest-2024

The HI-PHY'24 Intercollegiate Physics Fest, organized by the Department of Physics, unfolded on the 22<sup>nd</sup> of January 2024 at Bamford Hall. The day commenced with an inaugural ceremony at 8:30 am, hosted by Ms. Sreelekshmi of III Physics. The department choir set a contemplative tone with a prayer song, leading into the welcome address by Dr. Lillian I Jasper, the Principal of Women's Christian College. The esteemed speaker, Mr. M.E. Rajamanikam, was felicitated, and the Quarks Magazine for the year 2023-24 was unveiled, with the first copy received by the Principal. Ms. Keerthana, the Vice-President of the HI-PHY club introduced Mr. Rajamanikam, and the annual report for HI-PHY 2023-24 was presented by the Secretary of the club, Ms. Pheba Jobin. The vote of thanks was delivered by Ms. Carolina Salomi, the president of the HI-PHY club. After 11:30 am, the scheduled events unfolded at various venues within the Science Block and Bamford Hall. The Paper Presentation, presided over by Dr. Christina Nancy A, the Head of the Department of Physics, covered intriguing topics of Physics behind Famous Architectures, and the Role of Artificial Intelligence in Space Exploration.

The subsequent event, Potpourri judged by Dr. Monica Chandramalar, featured prelims in the form of a quiz, leading to the Mains round that included engaging activities like Pictionary and Connexions. The Poster Making event, overseen by Dr. Juanita Saroj,

explored the 'Future of Physics in Medicine'. The event showcased the artistic viewpoint of the participants where the intricacies of physics in medicine and healthcare technologies were displayed. The Shipwreck event presided by Dr. Renuga Devi featured the clash of minds with different fields of physics. The enthusiastic participants presented and defended their cases on why their assigned field of physics is important. The Adzap event helmed by Dr. Hannah Priya and Dr. Monica Chandramalar, challenged participants to use physics concepts in parody to persuade judges of the superiority of their assigned products with elements like creativity and sense of humour.

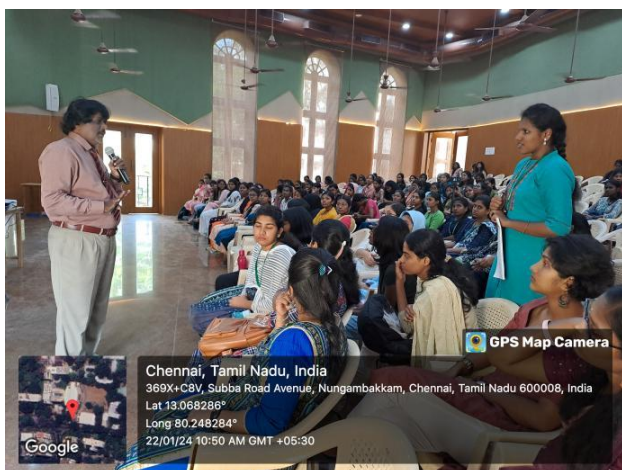


The day culminated in the Valedictory event, where the winners from each category was announced, and prizes and certificates were distributed by the respective event judges. Madras Christian College emerged as the overall winner of the intercollegiate event, showcasing outstanding performance across various competitions. A total of 6 colleges participated, with 47 enthusiastic student participants. The Physics Fest not only provided a platform to display academic prowess but also fostered a spirit of camaraderie and intellectual exchange among physics enthusiasts from different institutions.

## Workshop on “Smart sensing solutions”

The workshop on “Smart sensing solutions” was conducted by the Department of Physics, on 22 January 2024. Students from the department of Physics participated in the workshop along with 7 faculty members. This workshop on smart sensing solutions, led by Mr. M.E Rajamanikam, began at 9:00 am. This practical session provided participants with valuable insights into the applications and working mechanisms of smart sensing technologies like sensors, RFIDs, MagLev Trains, different transformations of energies and such. This workshop proved to be a resounding success, providing attendees with valuable knowledge, practical skills, and networking opportunities. By fostering collaboration and innovation, this workshop has laid the foundation for continued exploration and development in the field of smart sensing technologies.





**TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY, GOVT. OF TAMIL  
NADU, CHENNAI  
TECHNOLOGY INFORMATION, FORECASTING AND ASSESSMENT COUNCIL,  
DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA  
&  
WOMEN'S CHRISTIAN COLLEGE, INSTITUTION'S INNOVATION COUNCIL &  
DEPARTMENT OF PHYSICS  
jointly organizes**

**Five-Day Faculty Development Program on Intellectual Property Rights**

**29.01.2024 to 02.02.2024**

### **1. Introduction:**

The Faculty Development Workshop on Intellectual Property Rights (IPR) was organized to enhance the awareness and understanding of IPR among faculty members. The workshop aimed to equip participants with knowledge on various aspects of intellectual property, including patents, copyrights, trademarks, and Geographical Indicators. This workshop was intended to help the participants to get a thorough understanding of IPR, patenting processes and the significance of geographical indications in product development.

### **2. Objectives:**

The workshop had the following objectives:

- a. To provide an overview of intellectual property and its significance in academic and research environments.
- b. To familiarize participants with the legal frameworks and regulations related to intellectual property rights.
- c. To enhance understanding of the participants in the process of patenting, copyrighting, and trademark registration.
- d. To discuss the role of intellectual property in technology transfer and commercialization.
- e. To facilitate discussions on ethical considerations and conduct research related to intellectual property.

### **3. Organizing Committee:**

The workshop was jointly organized by Institutional Innovation Council, Women's Christian College, Chennai and Department of Physics, Women's Christian College, Chennai.

Dr. Renuga Devi T.S., Convenor of IIC and Dr. Christina Nancy, Head, Department of Physics were the Convenors. Dr. Jancy Merlin R, Coordinator – IPR cell, Women's Christian College was the Organizing Secretary. The organizing committee included members from Institutional Innovation Council and Department of Physics.

### **4. Resource Persons:**

Eminent experts and professionals in the field of intellectual property were invited to facilitate sessions during the workshop. Resource persons included legal experts, patent examiners, and experienced researchers with a strong background in intellectual property.

### **5. Workshop Structure:**

The five-day workshop was divided into thematic sessions, covering the following topics:

#### **Day 1:**

Session 1: Importance of IPR filing and Best Practices

Session 2: Patent and Design

#### **Day 2:**

Session 3: Technology transfer and Commercialization Strategies

Session 4: Copyrights and Plagiarism

#### **Day 3:**

Session 5: Significance of Geographical Indication (GI) registration

Session 6: Tools for Patent Search

**Day 4:**

Field Visit to Sri Sai Ram Engineering College, Chennai

**Day 5:**

Session 7: Role of Government in IP promotion and facilitation

Session 8: Case Studies – Discussion of sample patent applications

**6. Reports of Sessions 1 – 8 and Field Visit:**

**Day 1:**

**Session 1: Importance of IPR filing and Best Practices**

The importance of Intellectual Property Rights (IPR) filing and best practices provided attendees with a deep understanding of the pivotal role intellectual property. The speaker, Mr. Thangapandian, shared insights into the significance of protecting innovations through proper filing strategies and adhering to best practices.

The Key Points discussed were on the basic understanding of intellectual property rights, importance of IPR filing, different types of IP's, protection against infringement and unauthorized use. Best Practices in IPR Filing- highlighting the need for timely filing of patent, trademark, and copyright applications to secure priority rights. Real-world examples illustrating how innovations are made in commonly used products in order to solve a particular problem that exists, were discussed. The interactive nature of the session, including Q&A segment allowed for a deeper exploration of specific concerns and practical applications, making it a highly beneficial event for all participants.

**Session 2: Patent and Design**

On the patent and design system in India was delivered by Mr. S. Udayashankar, an expert in Indian patent and design law. He shared insights into the legal frameworks, application processes and recent developments shaping innovation protection in India.

Key Points discussed were on the Indian Patent System, the legal foundations for patent

protection, patentable subject matter, explaining the criteria for patentability, including novelty, inventive step, and industrial applicability. He instated on the Patent application process providing a step-by-step explanation of the patent application process in India, importance of drafting a clear and comprehensive patent specification, patent examination and grant, emphasizing the role of the patent office in examining patent applications. He also gave examples about how descriptions and claims have to be written to obtain patents for products. The scope of protection for registered designs were also discussed. The Q&A session allowed for further clarification on specific aspects, making the event a valuable resource for the participants.

## Day 2:

### Session 3: Technology transfer and Commercialization Strategies



The session on technology transfer and commercialization strategies provided attendees with valuable insights into the critical intersection of innovation, patents and bringing technologies to the market. The speaker, Dr. Puthilibai, an esteemed expert in technology transfer and patent strategy, shared in-depth knowledge on how businesses and researchers can effectively leverage patents to commercialize their inventions.



Key Points Discussed were on the role in converting research and innovation into practical applications, importance of collaborative efforts between academia and industry in technology



transfer. She also mentioned about licensing and purchasing from the inventor and also about royalty. Types of claims and types of forms that need to be filled in to complete the procedure were also addressed. The interactive Q&A session further enriched the discussion and was a motivation for all participants.

#### **Session 4: Copyrights and Plagiarism**

The session on copyrights and plagiarism offered a comprehensive exploration of the legal frameworks surrounding creative works, emphasizing the importance of protecting intellectual property. The speaker, Ms. Hema shared valuable insights on securing copyrights and strategies for preventing plagiarism.

Key Points Discussed were on protecting original works of authorship, Categories of creative works eligible for copyright protection, including literary, artistic, and musical creations, Copyright Registration Process, cases of infringement, the exclusive rights granted to copyright holders, including reproduction, distribution, and public performance, Fair Use and Exceptions where she gave insights about the balance between protecting creators' rights and allowing for the free use of copyrighted material in certain contexts. Effective strategies to prevent plagiarism were also discussed. Enforcement and Legal Remedies were informed to the attendees. The session was followed by a Q & A session.

#### **Day 3:**

#### **Session 5: Significance of Geographical Indication (GI) registration**

Significance of Geographical Indications (GIs) focused on empowering Micro, Small, and Medium Enterprises (MSMEs) by providing insights into the identification, filing, and commercialization of GIs. The speaker, Ms. Gomati Padma Thilaga, an expert in intellectual property law, shed light on the strategic advantages that GIs offer to MSMEs in terms of market access, branding, and economic sustainability.

Key Points Discussed were on identification and recognition of GIs, Criteria for identifying products eligible for GI protection. The role of uniqueness, distinctive qualities, reputation to a specific geographical origin in the identification process. She discussed the Importance of collaboration among local stakeholders and MSMEs and the

government in the filing process. Benefits of GI Protection for MSMEs, like market differentiation and enhanced value for products associated with a specific region were discussed. Case Studies were shared and Overview of government schemes and incentives for MSMEs seeking GI protection were also discussed.

The talk successfully conveyed provided attendees with a roadmap for identification, filing, and commercialization. The insights shared by the speaker, combined with real-world case studies, offered a good understanding on GIs. Interactive Q&A session allowed for further exploration on unlocking the full potential of geographical indications.

### **Session 6: Tools for Patent Search**

Session on tools for Patent Search was focused on the need for patent search and significance of it. The Resource Person was Ms. Gomati Padma Thilaga provided insights in patent search based on three areas: Research, Invention and Commercialisation. Out of the three, the emphasis was more on commercialization. The search could be further narrowed down to compositions, geographical locations, components etc. This search is necessary to check the validity and to claim copyright. Moreover, the purpose of patent search is to avoid duplication, infringement and exploiting technology from non-granted or invalid patents, along with determining the patentability of the inventions.



### **Day 4:**

#### **Field Visit to Sri Sai Ram Engineering College, Chennai**

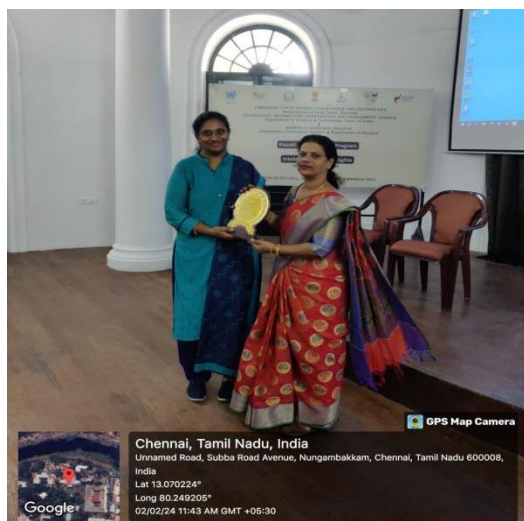
The fourth day of the FDP was a field trip to Sri Sai Ram Engineering College, Chennai. The field trip introduced the participants to the best practices of the college in terms of innovation. The first session was led by Dr. Rene Robin (Professor of CSE and Dean of Innovation, Sri Sai Ram Engineering College, Chennai). He spoke about the possible areas where attention is needed while discussing innovation in higher education. He emphasised on the significance of innovation. According to him, innovation is “invention

multiplied by commercialisation”. Furthermore, he spoke about the requirements for innovation which included: collaboration, ideation, implementation and value creation. Out of these four, more emphasis was laid on ‘collaboration’ and ‘value creation’. He also discussed how all these four requirements are interlinked as one leads to another. For instance, collaboration through interaction leads to ideation which leads to implementation and finally there is value creation. The key takeaway of the trip, apart from the designs that the participants got to witness was the Innovation Eco-System which is a step by step process that encourages students to do research and be innovators. Within this initiative there are several steps (Immersion, Project Development, Live-in Lab and Mini-Project) that help the students get acquainted gradually with the process of research and innovation, as each step is dealt separately within individual semesters. During the end of the trip, Dr. Swagatha (Head, Department of Artificial Intelligence and in charge of Incubation Cell) spoke about the ways in which we can nurture start-ups and entrepreneurship. The trip came to an end with a tour of their innovation centre as well as their designs.

## Day 5:

### Session 7: Role of Government in IP promotion and facilitation

Ms. Sincy Mary from Patent Information Centre was the Resource Person for the Session. She emphasized the significance of IP protection in encouraging innovation, creativity, and economic growth. She highlighted how patents, trademarks, copyrights, and trade secrets contribute to fostering a competitive marketplace and incentivizing investment in research and development. The speaker elucidated various ways in which the government can promote IP awareness and utilization among businesses and individuals.



Ms. Mary discussed the role of government agencies, such as patent offices and trademark registries, in facilitating the registration process for intellectual property rights. She emphasized the importance of streamlining procedures and providing support services to simplify the registration process for inventors, creators, and entrepreneurs. Additionally, the talk touched upon the need for robust enforcement mechanisms to deter infringement and protect the rights of IP holders. She discussed how governments can collaborate with international organizations, such as the World Intellectual Property Organization (WIPO), to harmonize IP laws, promote cross-border trade, and address global challenges, such as counterfeiting and piracy.

### Session 8: Case Studies – Discussion of sample patent applications

Mr. Srinivasan, Director, and Patent Attorney, delivered a talk on "Case Studies – Discussion of Sample Patent Applications." The session aimed to provide attendees with practical insights into the patent application process by analyzing real-world examples. The speaker began by providing a comprehensive overview of patent applications, emphasizing the importance of thorough research, documentation, and legal compliance. He explained the various components of a patent application, including the specification, claims, drawings, and abstract, and discussed their significance in securing patent protection.



Mr. Srinivasan highlighted the importance of addressing both legal and technical aspects in patent applications. He discussed how patent attorneys collaborate with inventors and technical experts to accurately describe the invention, define the scope of protection, and anticipate potential objections or challenges during the examination process.

The workshop included a mix of lectures, interactive sessions and case studies. Participants were encouraged to share their experiences and challenges related to intellectual property, fostering a collaborative learning environment.

### **7. Participants' Feedback:**

Participants provided positive feedback on the workshop, citing increased awareness and understanding of intellectual property. They appreciated the practical insights provided by the resource persons and found the group discussions beneficial for sharing diverse perspectives.

### **8. Conclusion:**

The five-day Faculty Development Workshop on Intellectual Property Rights successfully achieved its objectives of enhancing awareness and understanding among faculty members. The participants left with valuable insights into intellectual property laws, ethical considerations, and the practical aspects of protecting intellectual creations.

The workshop's success indicates the importance of continued efforts to educate and empower faculty members in the field of intellectual property, fostering a culture of innovation and responsible research within academic institutions.

### **Physics Stall at the 48<sup>th</sup> Indian Tourism and Industrial Fair 2024 in Chennai**

The Government of Tamil Nadu inaugurated the 48<sup>th</sup> Indian Tourism and Industrial Fair 2024 at the Island Grounds on 12<sup>th</sup> January. The directorate of collegiate education encouraged colleges to participate and take part in the science exhibition. On February 24<sup>th</sup>, six second year students from the Department of Physics along with Dr. Sharmi Kumar showcased the posters and models on the topics, Black Holes, Northern Lights, White Dwarf, Nanoscience and Nanotechnology, Physics in Art and Conversion of Energy. Each student explained their work and answered queries of the public and students from schools and colleges. It was an enriching experience for the participants, providing a platform for deep learning and interaction.



## Seminar on “Promoting Wellness: Women’s Health Advocacy”

The seminar on “Promoting Wellness: Women’s Health Advocacy” was conducted by the Department of Physics, on 12<sup>th</sup> March 2024. 100 Students from the department of Physics participated in the workshop along with 5 faculty members. This seminar led by Dr. Meera. V. V. RAGAVAN MD, MNAMS, MRCOG, FRCOG, Dip BSLM, CIMP Dip Urogynae (Kiel Unil), Consultant Urogynecologist and Robotic surgeon, Apollo Hospital, Chennai and Dr. T. K. SHAANTHY GUNASINGH MD.,DGO.,FICOG, Consultant in O&G, Mangalam Health care, Chennai began at 12.20 p.m. The seminar aimed to address the critical aspects of women's health advocacy and promote wellness among women of all ages. The esteemed doctors shared their expertise and insights on various topics related to women's health. They addressed key topics on menopause, mental health, self-care, cervical cancer and preventive healthcare. They discussed the importance of early detection for diseases such as breast cancer, cervical cancer and emphasized the role of lifestyle modifications in reducing the risk of chronic illnesses. The participants engaged in interactive sessions, sharing insights and asking questions. Practical tips were provided for promoting mental well-being and disease

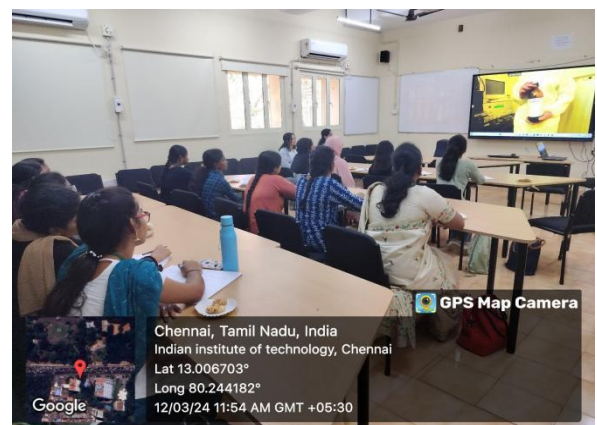
prevention. Key take away included the need for informed decision-making and early detection.



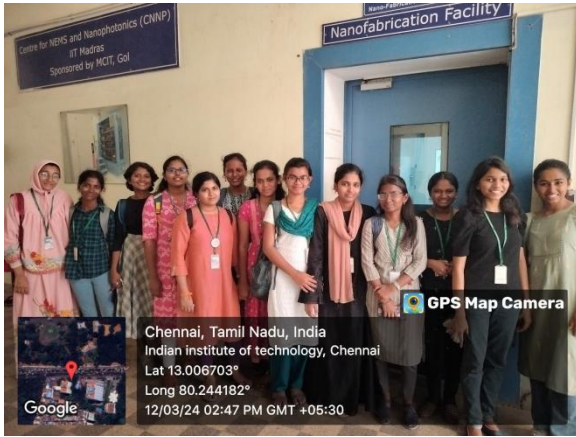
### **Educational visit to IIT Madras**

The Department of Physics organized a visit to the Indian Institute of Technology, Madras on March 12, 2024. The visit was catered to the students of III B.Sc Physics as a part of their core elective course on Nanoscience and Nanotechnology. The students were guided by 2 course teachers, Dr. J. Juanita Saroj and Dr. Hannah Priya. The students visited the department of electrical engineering, CNNP (Centre for NEMS and Nanophotonics), IITM. The visit commenced with a familiarization session led by Dr. Shanti Bhattacharya, who provided an insightful overview of the department's research areas and ongoing projects. The focus was primarily on the Design and Fabrication of sensors, particularly NEMS (Nano ElectroMechanical Systems) and MEMS (Micro ElectroMechanical Systems), Semiconductors lasers, Integrated circuits, and related fields.

Key processes such as Micromachining, Deep Reactive Ion Etching (DRIE), Wafer Bonding and ICP-CVD were elucidated, emphasizing the intricate steps involved in fabricating nanoscale devices. Characterization techniques including Probe stations, SEM (Scanning Electron Microscopy), and Surface Profiling were highlighted, showcasing the meticulous analysis integral to nanoscience research. A visit to the clean room facilities provided the students, with a firsthand glimpse into the stringent protocols and controlled environments essential for nanofabrication. The classification of clean rooms based on particle size and their applications in lithography and thin film fabrication were explicated, enriching the understanding of clean room operations. Class 100 and Class 1000 clean rooms were visited in the department of electrical engineering. Dr. Deleep R. Nair's session on microfabrication processes delved into the foundational aspects of semiconductor fabrication, elucidating the IC Fab processes. From product design to patterning, insights were gained into the sequential steps involved in producing semiconductor devices. The next session included showcasing videos that demonstrated the fabrication processes, coupled with a tour of clean room facilities and equipment. This provided a holistic perspective on nanofabrication. The tour included all the physical vapor deposition methods that included types of equipment of pulsed laser deposition, and ion plating. The clean rooms were only to be entered after wearing bunny suits, masks, and other preventive clothing to eliminate the risks of contamination. All the types of equipment were seen from the grey area around the clean rooms. The different patterns on the wafer, mask alignment and stacking equipment, different chemical vapor deposition methods, sputtering units, and organic patterning methods equipment were shown. Witnessing Physical Vapor Deposition methods, Chemical Vapor Deposition techniques, and microscopy tools like Atomic Force Microscopes and Scanning Electron Microscopes further enriched the learning experience. The visit to IIT Madras's Electrical Engineering department catalysed the student's academic growth, offering invaluable insights into nanofabrication techniques and research endeavours. In conclusion, the visit proved instrumental in bridging the gap between theoretical knowledge and practical applications, equipping the students with the requisite skills and inspiration to excel in the field of nanotechnology.







## International Seminar on ‘Career opportunities for Physics Students’



**Dr. Presanna Robinson**  
Founder and Principal  
KIDS Learning Centre



**Ms. Sathya Kumaran**  
Partner at Kaleidoscope,  
Technical animation firm



**Dr. K.R.S. Preethi Meher**  
Assistant Professor  
Central University of  
Tamil Nadu



**Ms. Christina Nisha**  
Global Head of Protective  
INTEREOS



**Ms. Anita Esther Israel**  
VP HR  
BNY Mellon



**Ms. Deepa Mehalingam**  
Consultant  
Telus Communications  
Canada



**Ms. A. Enid Ruth**  
Assistant Professor  
St. Christopher 's College  
of Education



**Dr. Anna Varghese**  
Lecturer in Imaging Physics  
CMC, Vellore



**Ms. Smruti Manjunath**  
Senior consultant  
Deloitte



**Ms. Reshma Devi**  
Ph.D. Scholar  
IISc, Bangalore

The department of Physics hosted an international seminar on ‘Career opportunities for Physics Students’ (COPS) on March 18, 2024. The seminar witnessed an impressive turnout, with both students and their parents in attendance. The seminar aimed to provide insight into the diverse career paths available to physics students and to equip them with the necessary knowledge and skills to excel in their chosen fields. The seminar commenced with a soulful rendition by the department choir, setting a serene and harmonious atmosphere for the event. Dr. Lilian I Jasper, Principal, extended a warm welcome to all the participants and resource speakers, by expressing her gratitude for their participation. Dr. A. Christina Nancy,

Associate Professor and Head of the Department of Physics, took the stage to elaborate on the dynamics of the seminar. Dr. Lilian I Jasper, in recognition of their expertise and contribution to the seminar, felicitated the esteemed resource speakers. The seminar featured a lineup of 10 distinguished speakers, the proud alumnae of the department around the globe from academia, industry, and research sectors, who shared their experiences and expertise with the students. The sessions covered various topics ranging from traditional career paths in academia to emerging opportunities in fields such as technology, medicine, entrepreneurship

etc. Their diverse perspectives and experiences showcased the multitude of career paths available to physics graduates, inspiring students to pursue their passions and make meaningful contributions to society. The active participation of parents underscored the importance of parental support in nurturing students' academic and professional growth. Dr. J. Juanita Saroj, Assistant Professor in the Department of Physics, extended a vote of thanks to all students, parents, speakers and the organizing committee for their collective efforts in making the seminar a success. The department of Physics remains committed to supporting students in their professional development and endeavours to organize similar events in the future.

