



Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY

Till 30-06-2025
Rref F.No.26-56-2016-NBA
Dt: 26/08/2022



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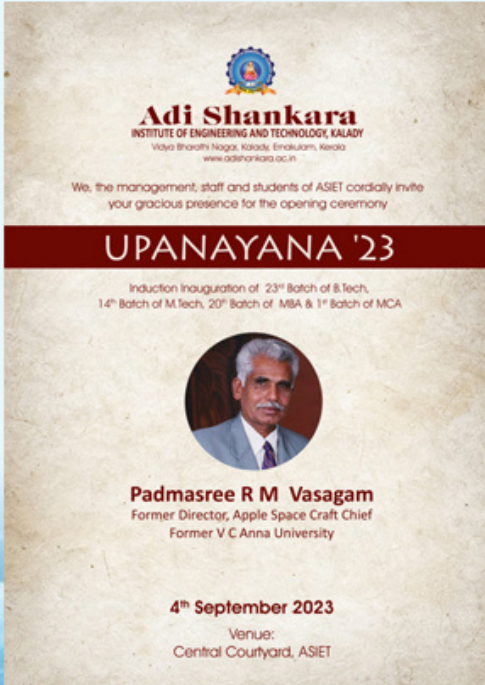
Department of
Electronics & Communication Engineering
GENESIS
IGNITING THOUGHTS

ISSUE 66

MONTHLY NEWSLETTER

SEPTEMBER 2023

HIGHLIGHTS




Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY, KALADY
Vayalatharathi Nagar, Kollam, Emukulam, Kerala
www.adishankara.ac.in

We, the management, staff and students of ASIET cordially invite your gracious presence for the opening ceremony

UPANAYANA '23

Induction Inauguration of 23rd Batch of B.Tech,
14th Batch of M.Tech, 20th Batch of MBA & 1st Batch of MCA



Padmasree R M Vasagam
Former Director, Apple Space Craft Chief
Former V C Anna University

4th September 2023
Venue:
Central Courtyard, ASIET

VISION

To be recognized at the national and international level for excellence in Education and Research in Electronics and Communication Engineering.

MISSION

- *Inculcating leadership qualities, adaptability, and ethical values.*
- *Imparting quality education in the field of electronics, communication, and related areas to meet the challenges in the industry, academia, and research.*
- *Nurture the growth of each individual by providing a dynamic and conducive learning environment.*



At a Glance

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UPANAYANA'23

A warm and hearty welcome to all the students embarking on this exciting journey at ASIET, your new home for knowledge, growth, and endless possibilities.

The induction ceremony, Upanayana'23 which took place on 4th September 2023, marked the beginning of a transformative chapter, blessed by the presence of the event's Chief guest Padma Shri R M Vasagam, Former Director, Apple Space Craft Chief and Former VC of Anna University, and other distinguished members.

ASIET is not just an institution; it's a vibrant community of passionate learners, dedicated educators, and supportive staff.

Once again, to all the new members, welcome to the ASIET fraternity. Your journey has just begun, and we cannot wait to see all the incredible accomplishments you will achieve during your time here.

Best wishes for a rewarding academic experience!



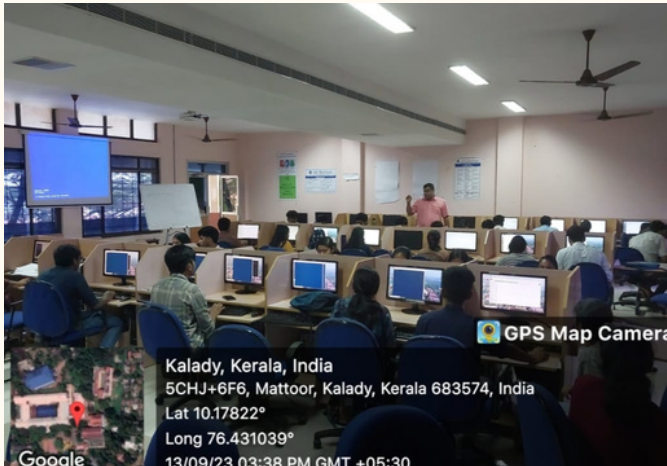
UPANAYANA '23



Departmental Activities

Value-added Course on Python

Value-added course in Python programming was conducted from 11/09/2023 to 14/09/2023 for 22 -26 batch students. The main objective of this course was to provide students with a solid foundation in Python programming and equip them with essential skills. The workshop featured presentations by two distinguished speakers, Mr. Prashob Raj and Mr. Joel Jose, who delivered both theoretical insights and practical hands-on training in Python programming. This workshop was coordinated by Associate Professor Dr.Ramu R.



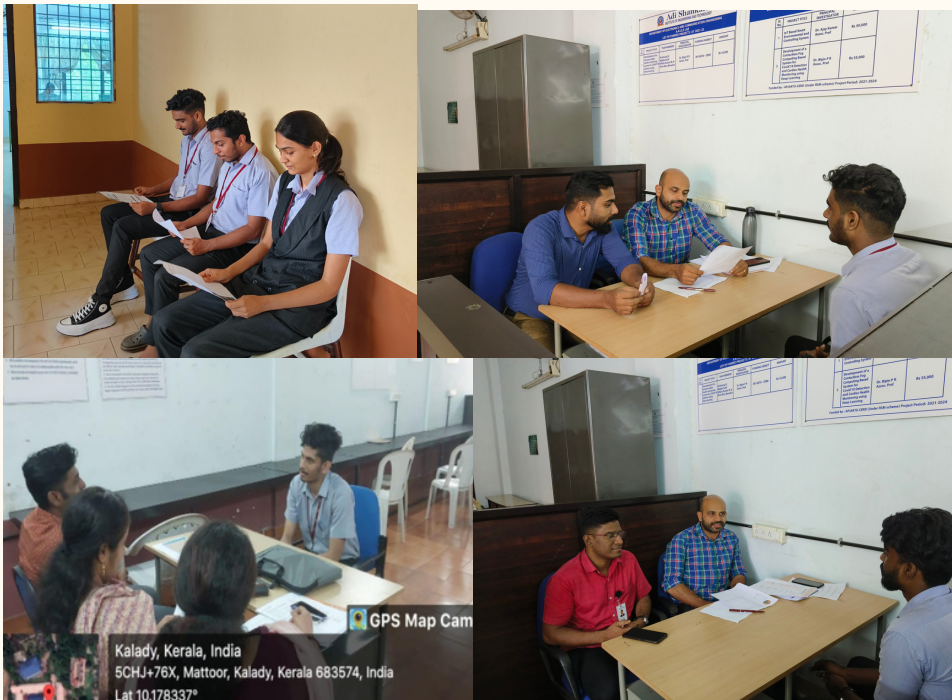
Resume Writing Workshop



The Department Placement cell organized a resume writing workshop for the S7 ECE students of the 2024 batch on September 11, 2023. The workshop, skillfully conducted by Dr. Anagha E G, Assistant Professor in the Department of ECE, provided invaluable insights and guidance on crafting effective resumes to enhance the students' job prospects and career readiness.

Departmental Activities

Technical mock interview



Mock interviews focusing on testing technical knowledge were conducted by the ECE department placement cell for the students of S7 on 12th, 13th and 14th September 2023. The simulated interview sessions aimed at preparing students for real job interviews. These practice interviews help students refine their interview skills, receive feedback, and gain confidence in a controlled and supportive environment.

Talk on Placement Preparedness

Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Electronics and Communication presents....

Talk on "Your Path to Success: A Roadmap to Placement Preparedness"

Exclusively for S5 and S7 EC students

DATE
FRIDAY 22, SEPTEMBER

TIME
7:30 PM

GOOGLE MEET
<https://meet.google.com/vfs-woes-vog-123-456-7890>

IEI SB ASIET

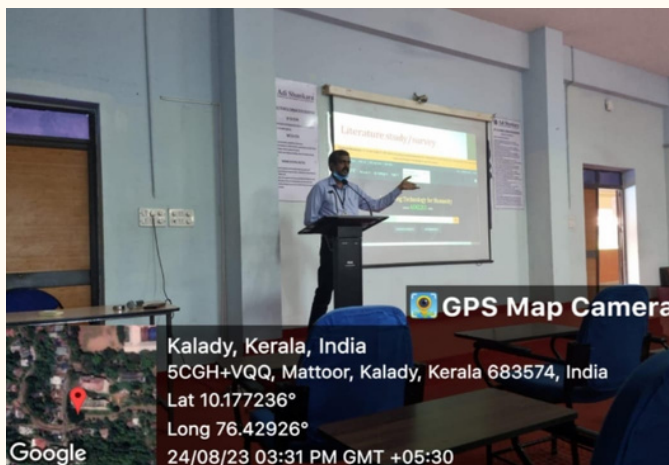
SUMAN MENON
SENIOR SYSTEM VALIDATION ENGINEER,
TATA ELXSI.

IEI SB ASIET organized a placement preparedness talk for S5 and S7 ECE students on 27 September 2023 through Google Meet. Mr. P Suman Menon, Senior System Validation Engineer, TATA ELXSI, delivered the talk. He is an alumnus of our college. The talk focused on how to prepare for placement effectively. The session aimed to enhance preparedness for placement. He shared his experiences and provided information that was helpful during the placement program.

Departmental Activities

Talk on IPR Awareness

Dr. P Jeny Paul, Head of the IPR Cell at ASIET, Kalady, delivered a talk on Intellectual Property Rights (IPR) awareness for S7 ECE students on 24th August, 2023. The event was coordinated by Dr. Anagha E G, IPR Cell representative from the department of ECE. The talk focused on guiding final-year students in selecting innovative project ideas and transforming them into patents. This session aimed to equip students with essential knowledge about IPR and its relevance in their academic and professional pursuits.



Teacher's Day Celebration @ ASIET



The National Service Scheme (NSS) APJAKTU cell, comprising units 228 and 303 at Adi Shankara Institute of Engineering and Technology, Kalady, celebrated Teacher's Day with a heartwarming gesture. In a gesture of appreciation, they presented greeting cards, flowers, and chocolates to the dedicated faculty members across all departments. This act of gratitude was a tribute to the educators who consistently spark curiosity and ignite the imagination of students, fostering an environment of inspiration and learning.

Placements

Placement Training programme

The department placement cell organized a placement training program for Fifth semester and Seventh Semester students. The placement was conducted by know-up knowledge foundation, the main aim of this placement was to equip them with essential skills in coding, aptitude and personality development.



“ DREAM IS NOT THAT WHICH YOU SEE WHILE SLEEPING. IT IS SOMETHING THAT DOES NOT LET YOU SLEEP ”

DR. A P J ABDUL KALAM

Linkedin Training

LinkedIn training is provided to the students as part of their placement process. This program equips students with essential skills to optimize their profiles, network effectively, and access job opportunities in their field. By harnessing LinkedIn's power, students can enhance their employability, connect with industry professionals, and build a strong online presence. This training not only boosts their chances of securing placements but also prepares them for successful careers in engineering, ensuring they are well-prepared to thrive in the competitive job market.



Sharing the happiness of success

Congratulations!



Congratulations to Dr. Bobby Mathews C, Professor and Dean PhD Programmes, Dept. of ECE for getting selected to the Board of Studies, Electronics and Communication Engineering of APJ Abdul Kalam Technological University.

Dr. Bobby Mathews C
Dean, Ph.D. Programmes
Dept. of ECE

Alumnus Achievement



Dr. Vaishakh Prathap

Glad to share the incredible journey of our esteemed alumnus, Vaishakh Prathap from the 2012-2014 M.Tech batch in VLSI and Embedded Systems. He has recently achieved a remarkable academic feat by successfully completing his Ph.D. at the State University of New York at Buffalo.

Dissertation Topic: 'Silicon Ion Sensitive Field Effect Transistor Circuitry Architectures for Improved On-Chip pH Sensing'
Specialization: Analog Mixed Signal IC Design.

Here's to the pursuit of knowledge and the limitless possibilities it brings!

Best Wishes

We are proud to announce that Aparna Prasad of S5 ECE A has been selected for the next round of the Republic Day Parade Selection Camp. Wishing you all the very best.

May success march with you!

Aparna Prasad
S5 ECE A



Staff and student achievements

Staff Achievements

1. **Mrs. Neetha K** was successfully selected as the TPC member and reviewer at Soft Computing Research Society from 29th to 30th July 2023
2. **Dr. Bobby Mathews C** was successfully selected to the Board of Studies (Electronics and Communication) of APJ A Kerala Technological University
3. **Mrs. Aswathy N** was chosen as the Reviewer of First International IEEE Conference organized by Kalpataru Institute of Technology, Triptur in association with IEEE Bangalore Section from 28th to 29th July 2023. Also successfully completed Faculty Development Program(FDP) on "VLSI to System Design:Silicon to End Application Approach" organized by AICTE , Arm Education and STMICROELECTRONICS from July 31st to August 4th 2023
4. **Mrs. Archana Aniyan** successfully completed Faculty Development Program(FDP) on "VLSI to System Design:Silicon to End Application Approach" organized by AICTE, Arm Education and STMICROELECTRONICS from July 31st to August 4th 2023
5. **Mrs. Neetha K, Mrs. Jaimy James, and Dr. Rahul Krishnan**, Assistant Professors of Dept. of ECE were shortlisted for the CERD RSM Funding Presentation.
6. **Dr. Bipin P R** published a paper titled " Automated biomedical image classification using multi-scale dense dilated semi-supervised u net with CNN architecture" in Journal: Multimedia Tools and Applications, Springer, United States, a Q1 Journal.
7. **Dr. Bipin P R** served as the resource person for the Add-on Course on Machine Learning and Data Science using Python, specifically designed for students in the Biomedical Engineering program at Sahradaya College of Engineering and Technology.

Student Achievements

1. **Ms. PRAVEENA P SREEKUMAR**
 - Attended a course on "Coding for Beginners: An Easy Introduction" conducted by IBM on 31st August 2023
2. **Ms. ANIT SUNIL**
 - Participated in Quiz Competition organised by NSS on 6th August 2023
3. **Mr. RITHWIK VALLABHAN TV**
 - Attended a workshop on "PCB Design" organised by IEEE CASS Kerala Chapter on 10th June 2023
4. **Mr. ALVIN ANTONY (S1 ECE)**
 - Winner of Digital Poster Making Competition organised by EEE Department Association ENLYTUS

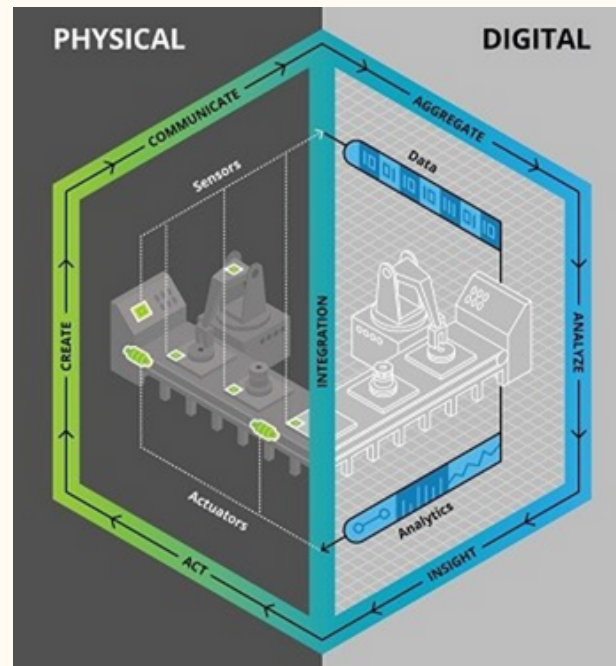
Tech Talks

DIGITAL TWINS

In the dynamic realm of technology, a groundbreaking concept emerges: Digital Twins. These virtual replicas of physical entities are reshaping industries, revolutionizing decision-making, and paving the path to a more sustainable and efficient future. A digital twin is a dynamic and interactive model mirroring the behavior of its real-world counterpart in real time. This transformative technology expands our understanding by providing dynamic, real-time replicas of physical entities.



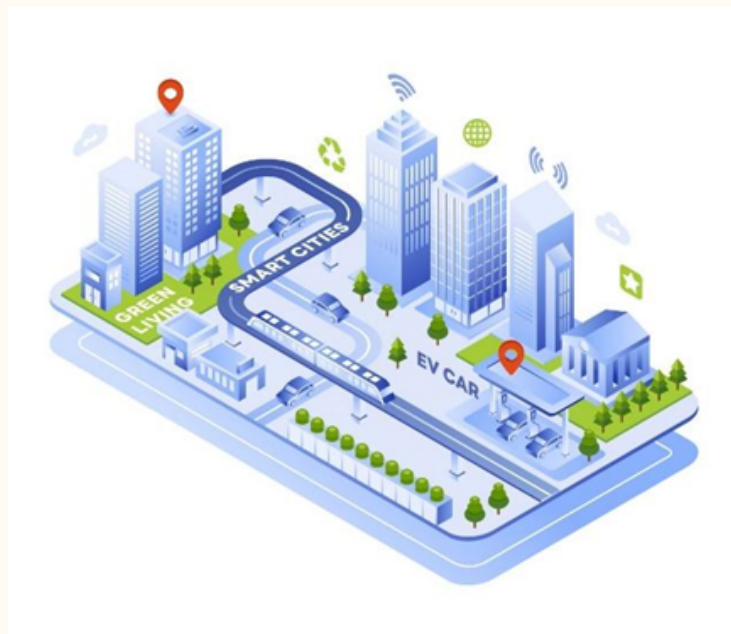
Dr. Resmi N. C.
Associate Professor



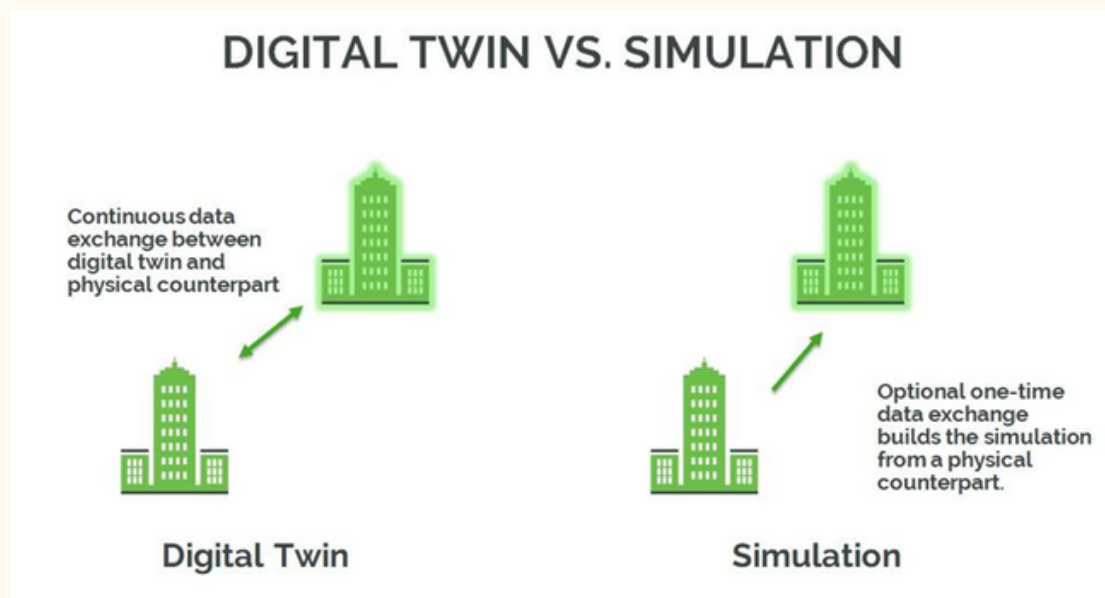
Digital Twin Technology: Digital twin technology blends state-of-the-art tools and methodologies to create virtual replicas of physical entities or processes. It leverages IoT sensors for real-time data collection, harnesses the computational power of cloud and edge computing, employs AI and big data analytics for data analysis, and employs 3D modeling and physics-based simulations to construct digital twins. Specialized platforms and software facilitate development, and cybersecurity ensures data security. Visualization through VR and AR enhances interaction, and user-friendly interfaces make data accessible.



Applications: Digital twins have far-reaching applications. In manufacturing, they optimize operations, reduce downtime, and enhance productivity by monitoring production lines, machinery, and supply chains in real time. In healthcare, patient-specific digital twins optimize treatment plans and predict disease progression, reducing healthcare costs. They also shape smart, sustainable cities by modeling urban infrastructure and traffic flows, improving resource allocation and residents' quality of life. In aerospace, digital twins revolutionize aircraft design, testing, and maintenance, ensuring safer and more efficient aircraft.



Are Digital Twins the same as Simulations? Digital twins and simulations are related but distinct concepts. Digital twins are real-time digital replicas of physical objects or systems, closely connected to their real-world counterparts, and used for monitoring and optimization. They rely on real-time data from sensors. Simulations, on the other hand, are computer-based models often used for experimentation, prediction, or analysis. They may not operate in real-time, can explore hypothetical scenarios, and use pre-defined models.



Future of Digital Twins: Digital twins are poised to reshape industries and expand into new sectors. Beyond their traditional domains in manufacturing and aerospace, they will penetrate transportation, retail, energy, and more. Digital twins will democratize access through a Digital Twins as a Service (DTaaS) model, delivered via cloud-based solutions. This shift will make the technology accessible and scalable, eliminating the need for extensive infrastructure investments. Integration with extended reality (XR), including virtual reality (VR) and augmented reality (AR), will create immersive and interactive experiences for users. These interfaces will enhance understanding, collaboration, and decision-making. In addition, digital twins will increasingly leverage edge computing for real-time analytics and prioritize ethical considerations and data privacy. The deployment of 5G networks will revolutionize their capabilities, and sustainability efforts will benefit from their optimization and simulation capabilities.

Conclusion: Digital twins are not merely a technological trend; they are a visionary leap into the future. As a researcher, I foresee digital twins transforming industries, elevating decision-making, and driving global sustainability efforts. With limitless possibilities and ongoing technological evolution, we stand on the cusp of a new era where the physical and digital worlds harmonize as never before, guided by digital twins.

Tech Talks



Parvathy V

S5 ECB

ORGANIC ELECTRONICS FOR A BETTER TOMORROW

INTRODUCTION

We live in an increasingly electronic world, with computers occupying a central part of our lives. While silicon electronics has solved many of the challenges associated with our increased use of electronics, there are limits to what silicon can do.

Chemists are synthesizing a wealth of new organic materials for use in electronic devices that create novel properties impossible to replicate with silicon. These materials hold tremendous promise to expand our electronic landscape in ways that will radically change the way society interacts with technology.

ORGANIC MATERIALS FOR ELECTRONICS

Polymer electronic materials are one of the most active areas of organic electronic research, so much so that polymer-based organic electronic devices (and device prototypes) have significantly improved in performance over the past decade. This increased performance is being driven by newly developed polymers with improved solar light absorption properties and superior mobilities. For organic transistor devices, charge-carrier mobilities have increased from less than 0.01 centimeter squared per Volt-second (cm^2/Vs) in 2000 to greater than 1.0-3.0 cm^2/Vs in 2010. Some high-performance polymers exhibit as great as 5.0-10.0 cm^2/Vs mobility. Increasing charge-carrier mobility and thereby improving device performance even further poses one of the greatest challenges to the field of polymer electronics. Materials include small molecules and polymers; fullerenes, nanotubes, graphene, and other carbon-based molecular structures; ensembles of molecules and molecular structures; and hybrid materials. By using above materials, build electronic structures and then integrate those structures into electronic devices. Many of these devices are early-stage prototypes, with major scientific and engineering challenges still to be surmounted before the prototypes can become real-world products. But others are already commercial realities, some being used on a widespread basis. For example, both small molecules and polymers are being used in the manufacture of OLED displays (e.g., TV and cell phone displays), solar cells, and transistors. Carbon-based materials are being researched and developed mostly to create bendable, or rollable, electronic displays, solar cells, and other flexible devices. Multi-walled carbon nanotubes are being produced on a large scale and being used as electrically conductive plastic parts in ATM machines and other devices. But single-walled carbon nanotube production has yet to be scaled up to an industrial level.

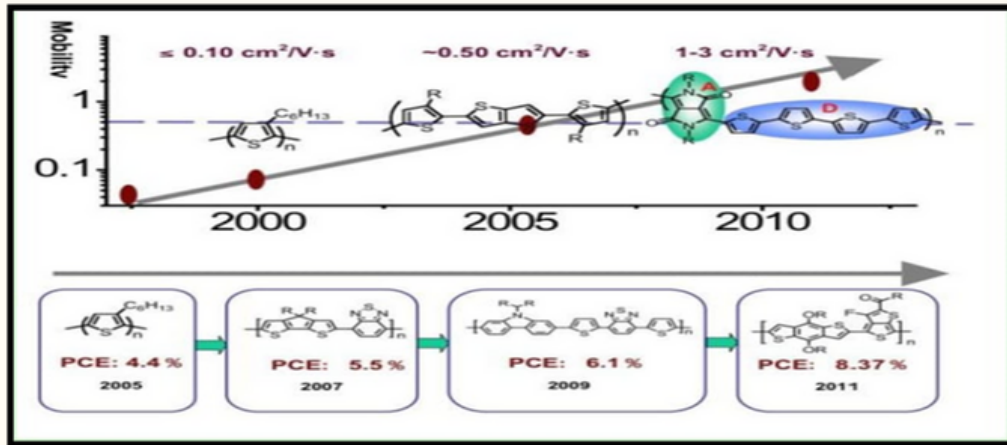


Fig: - Electronic performance in devices with organic polymer

ORGANIC ELECTRONICS TODAY

Organic electronics is not a new field. Electronic devices made with organic materials already have multiple applications and have been widely commercialized, mostly in display (e.g., smart phone displays), photovoltaic, and transistor technologies.

ORGANIC DISPLAY TECHNOLOGY

Organic light-emitting diodes (OLEDs) are built from one or more layers of organic and hybrid material (either small molecules or polymers) sandwiched between two electrodes (e.g., indium tin oxide), all on a plastic or other substrate. Unlike other display technologies, which require a backlight in order for the display to show, OLEDs generate their own light via electroluminescence and therefore they do not require backlights. They require less power and are more energy-efficient than backlight-dependent display technology.

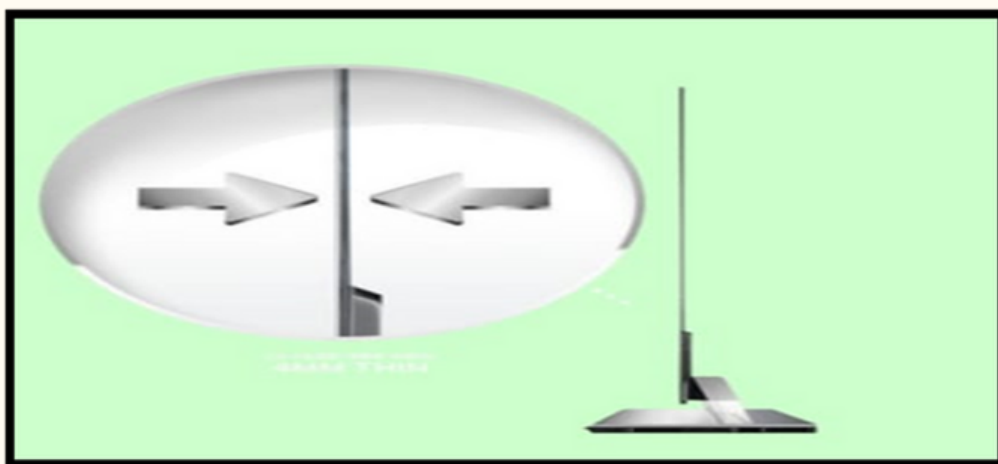


Fig: - Better OLED Display

ORGANIC PHOTOVOLTAICS (OPVS)

Organic photovoltaics (OPVs), or organic solar cells, are generally viewed as one of the most exciting near-future applications of organic electronics, not necessarily as a replacement for silicon-based PVs, but rather because of unique ways that OPVs can be used due to their flexibility, large-area coverage, and low cost. However, a key challenge to expanding solar cell production is industry-scale reproducibility more efficiently than today's devices do. While current OPV technology boasts conversion efficiencies that exceed 10 percent, reaching even 12 percent, some researchers predict organic solar cells will reach 15–20 percent efficiency.

TRANSISTOR TECHNOLOGY

Transistors are considered a fundamental “building block” of modern electronic devices, either amplifying signals or operating as on-off switches. There are many different types of transistors. Most organic transistors are organic field-effect transistors (OFETs). OFETs have several unique properties not shared by silicon transistors, most notably their flexibility. Because OFETs can be manufactured at or near room temperature, they enable the manufacture of integrated circuits on plastic or other flexible substrates that would otherwise not withstand the high-temperature conditions of silicon-based device manufacture. OFETs are also highly sensitive to specific biological and chemical agents, making them excellent candidates for biomedical sensors and other devices that interface with biological systems. Recently scientists have demonstrated the fabrication of thermally stable flexible OFETs. High thermal stability is a prerequisite to integrating OFETs into biomedical devices; otherwise, they won't survive high-heat sterilization.

ORGANIC ELECTRONICS FOR TOMORROW

Ø Organic electronic devices will do things that silicon-based electronics cannot do, expanding the functionality and accessibility of electronics. Organic materials give electronic devices unique properties impossible to achieve with silicon-based electronic structures, enabling a broad range of innovative “out-of-the-box” applications. These properties include sensing, biocompatibility, and flexibility. Because of the unique structural and functional variation of organic materials, arguably one of the greatest areas for innovation in the field of organic electronics is in sensing -- that is, the use of electronic devices to sense chemical or biological substances in the environment, in or on the human body, in food and water, or elsewhere. Biosensors are among the most exciting near-future applications of organic electronics.

Ø Organic electronic devices will be more energy-efficient and otherwise “eco-friendly” than today's electronics, contributing to a more sustainable electronic world. As chemical scientists and engineers continue to improve the synthesis and characterization of organic materials for use in electronics, their hope is that the use of such materials will lead to more energy-efficient electronic displays and lights, solar cells, transistors, and other electronic devices. In addition to increasing energy efficiency, as chemists continue to study and improve their understanding of the electronic behavior of organic materials, engineers will be able to build devices that last longer and that are recyclable or perhaps even biodegradable.

Tech news

Bharat Drone Shakti Exhibition 2023

In an exciting and forward-looking initiative, Defence Minister Rajnath Singh recently inaugurated the the first ever drone exhibition and display "Bharat Drone Shakti 2023" at the Hindon airbase. This monumental event, a collaborative endeavor between the Indian Air Force and the Drone Federation of India.



India's First Green Hydrogen Fuel Cell Bus

In a groundbreaking move towards sustainable transportation, India is set to inaugurate its first Green Hydrogen Fuel Cell Bus, marking a significant step in the country's efforts to embrace eco-friendly and low-carbon mobility solutions. The launch, scheduled for September 25, 2023, holds great promise for India's transition to cleaner and more self-reliant economic development.



India to host first edition of Global IndiaAI 2023

The Ministry of Electronics and Information Technology is set to host the Global IndiaAI 2023 conference in October. The event aims to bring together prominent players in the field of Artificial Intelligence (AI), including researchers, startups, and investors from India.



Circular Electronics Model: \$20B Potential by 2035

Circular Electronics Bussines Model could create a \$20 billion market by 2035-A joint report by the Indian Cellular and Electronics Association (ICEA) and Accenture circular electronics business model, encompassing product design to recycling, emphasizing the 4 R's (Reuse, Repair, Recover and Re-manufacture) could create a total addressable market of up to USD 20 billion by 2035.

Moment of the Month!



We are delighted to share the news that Fathima Muhsina, an outstanding student from S7 ECE A, has been honored with a laptop generously provided by the Kerala State Government through the Adi Shankara Institute of Engineering and Technology. This valuable support will undoubtedly empower her to excel in her final year project work. Congratulations, Fathima!

Editorial Board



Dr. AJAY KUMAR
HEAD OF DEPARTMENT(HOD).



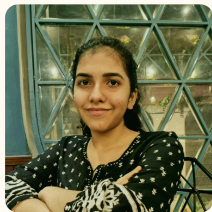
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Mr. MANESH V M
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S7 ECA



Ms Titya Ramchandran
S7 ECB



Ms Sreen Sabu
S7 ECB



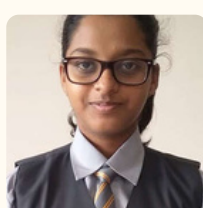
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