DIRECTOR'S REPORT

Honorable Professor Jayathi Y. Murthy, President, Oregon State University, Dr. K Radhakrishnan, Honorable Chairperson, Board of Governors of the Indian Institute of Technology Kanpur, Members of the Board of Governors, Members of the Academic Senate, all graduating students and their family members, and members of faculty, alumni, staff and student community: I heartily welcome you all to the fifty-seventh convocation of the Indian Institute of Technology Kanpur. I would also like to congratulate the graduating students and their families on this joyous occasion.

ACADEMIC ACTIVITIES

After several waves of the COVID-19 pandemic and the related challenges, the academic sessions are now back to normalcy. It is my privilege to share some of our activities from this year.

I am happy to inform you that the total number of PhD degrees awarded at this Convocation is 239. In our efforts to encourage outstanding scholars, the Senate has approved the provision for an additional Master's degree to be awarded along with a PhD, subject to fulfilling a defined set of academic requirements. I am glad to inform you that 12 students are graduating in this Convocation's sixth batch of MTech and PhD Joint Degrees. Additionally, 1 student is graduating in this Convocation's first batch of MDes and PhD Joint Degree. I am also happy to convey that the second batch of 205 students of

the e-master's programme will be conferred a degree today in this 57th Convocation.

In all, 2331 degrees are being awarded at this Convocation with the following details:

GRADUATION DATA

Degree	Number of Recipients
PhD	226
MTech-PhD (Joint Degree)	12
MDes-PhD (Joint Degree)	1
MTech	456
MBA	36
MDes	17
MS (by Research)	77
PGPEX-VLFM	40
MSc (2-yr)	165
e-Masters	205
Double Major	26
Dual Degree	89
MS-PD (MS part of the Dual Degree)	14
BTech	842
BS	125
Total	2331

In keeping with the flexibility that the IIT Kanpur academic Programme is known for, 64 students are graduating with two Minors whereas 238 students are graduating with one Minor.

You will be delighted to know that 17 graduating students are graduating with three Minors, and 3 students is graduating with four Minors. In all, 429 Minors are being awarded. In addition, by spending one additional year at the Institute, 89 undergraduate students are graduating with a Master's degree and their Bachelor's while 26 of our undergraduate students are graduating with a Second Major. Thirteen of our postgraduate students are graduating with an additional Master's and PhD degree by earning extra credits. Out of 1082 students of the Bachelor's and Bachelor's-Master's dual degree programmes who are being awarded the degree today, 192 students are graduating with a Distinction (CPI of 8.5 and above). To keep pace with the evolving knowledge in science, technology, and other areas, the Senate approved 13 new undergraduate courses and 150 new postgraduate courses from June 1, 2023, to May 30, 2024.

It is a great pleasure to share that the degrees are being awarded to graduating students are at the 57th Convocation today both in the physical and digital modes. The degrees in the on-line mode are being shared through an in-house blockchain-driven technology developed at our Institute under the National Blockchain Project. The digital degrees are also being uploaded to the National Academic Depository.

ACADEMIC INITIATIVES

Several academic initiatives were undertaken this year and they are likely to greatly strengthen our educational programs and several more are in the pipeline.

Kotak School of Sustainability

The industrial revolution and anthropogenic activities have led to an unprecedented rise in greenhouse gas emissions and global warming. Global warming is a real threat to our existence and the planet and is now manifested as several untimely natural calamities, pollution of natural systems and rapid loss of biodiversity. Given the seriousness of the issue, IIT Kanpur has established a 'School of Sustainability' by cohesively integrating its expertise in different thematic areas. The school will provide the thought leadership to the country on this global challenge and conduct impactful educational and outreach programs. Considering the importance of sustainability, the Kotak-Mahindra Bank, a leading bank in India, has supported the school financially as part of their CSR initiatives. In honor of this contribution, the school has been named 'Kotak School of Sustainability'. This initiative will certainly put IIT Kanpur on the world map as the leading educational institute in India and at the global level in sustainability education, research and innovation, translation and outreach.

NEW PROGRAMMES & DEPARTMENTS

This academic year witnessed several new beginnings. Here are details in brief.

Joint Degree Program for Master of Technology

With the increase in IIT Kanpur's international visibility and the remarkable success of the Joint Degree Program at PhD level, there have been requests from universities abroad to initiate a joint Master of Technology (MTech) degree program on a similar concept. Therefore, to cater to these requests and enable

IIT Kanpur master students to get international experience, a Joint Degree Program for MTech has been approved. The students selected to the Joint Degree Program for MTech will spend the first year at their parent institution and the second year at the partner institution. The program's research component will be conducted either fully or partly at the partner institution.

Joint Degree Program in Master of Business Administration

Further strengthening IIT Kanpur's international visibility and the commendable success of the Joint Degree Program at the PhD level, the University of Wisconsin, Milwaukee (UWM) has expressed interest in launching a joint Master of Business Administration (MBA) degree program based on a similar concept. In view of this request and also to enable IITK students to get an international experience, a Joint Degree Program for MBA with University of Wisconsin, Milwaukee has been approved. This will also be extended to other universities that express a similar interest. The students selected to the joint MBA degree programme will be required to spend the first year at IIT Kanpur and the second year at University of Wisconsin, Milwaukee.

Master of Technology (MTech) program in Biomedical Engineering

In India, there is a scarcity of highly trained biomedical engineers who can serve the industry, despite the Government of India's emphasis on becoming self-reliant in healthcare technologies. To address this need, IIT Kanpur has introduced an MTech program in Biomedical Engineering. The course com-

ponent of this program is meticulously designed to provide students with a balanced curriculum, whereas the project component will expose students to product development centered around addressing practical challenges in the field of Biomedical Engineering.

Spot admission to PhD program

IIT Kanpur, as the premier engineering institute of the nation, is becoming a top choice for students from various colleges who wish to pursue postgraduate studies. In 2017, IIT Kanpur started offering direct admission to PhD for 6th and 7th semester BTech students from Centrally Funded Technical Institutes (CFTIs). Now, the institute aims to expand beyond CFTIs. According to the NIRF ranking, many non-CFTI institutes are ranked higher than several CFTIs, presenting new opportunities to attract talented PhD students. To facilitate this, IIT Kanpur has approved spot admissions for 4th-year BTech/BS students from non-CFTIs and 2nd-year MTech students from CFTIs to its PhD programs.

eMasters programme in "Applied Health Economics, Financing and Policy" by the Department of Economic Sciences

Healthcare is one of the most significant and rapidly expanding sectors and industries in the world, and it plays a pivotal role in the global economy and society. The availability and accessibility of health services are increasing, but at the cost of affordability and equality. Currently, there are only a few Masters and diploma courses on public health available in India, and most of them focus on public health and epidemiological aspects with no or limited attention to health economics, sys-

tems, policies and financing. To enable students to understand and address complex challenges in the health sector with a perfect blend of multidisciplinary knowledge from economics, finance and public health, IIT Kanpur has begun an eMasters program in 'Applied Health Economics, Financing and Policy'. This course will help students make healthcare decisions in the dynamic and constantly changing world by being aware of the economic and financial environment. This will also help them in understanding the complex interplay between economics, public policy, data and population health.

eMasters programme in "Climate Finance and Sustainability" by the Department of Economic Sciences

Climate finance is a trending and upcoming area due to climate change concerns and countries' commitment to carbon reduction and net-zero emissions. Companies have started monitoring emissions and formulating mitigation and net-zero strategies. These developments have created new platforms for alternative finance, including emission trading and carbon offset instruments. The eMasters Program in 'Climate Finance and Sustainability' has been designed to provide a comprehensive and practical understanding of climate finance and sustainable finance, which is an integral part of the carbon management ecosystem. The program offers a balanced exposure to climate finance and the workings of carbon markets, different products, their trading mechanism, carbon accounting, economic, social and governance (ESG) framework. The program is useful for budding economists, finance and investment managers, consultants and researchers.

eMasters programme in "Business Leadership in Digital Age" by the Department of Economic Sciences

With its plethora of innovations, the digital revolution is upsetting the traditional pillars of business. The developing geopolitical scenario is disrupting the global supply chain. Technology plays an essential role in handling and managing businesses. Technology requires knowledge of the relevant scientific background and understanding of how to manage and successfully develop its potential. No matter how critical technological tools are, their job is limited in nature, and the knowledge of economic, managerial, and regulatory agencies is equally, if not more critical. The eMasters Program in 'Business Leadership in Digital Age' covers the essential tools of economic and managerial principles in pricing, financing, and analytics. The emphasis is on understanding the new technologies, their governance, and the relevant regulatory environment. This course is designed to provide appropriate exposure to the changing technological landscape for businesses. This course is suitable for administrators and business executives with some experience.

eMasters programme in "Artificial Intelligence and Machine Learning" by the Department of Electrical Engineering

From self-driving cars to personalized healthcare, Artificial Intelligence is transforming the way we live and work. As such, there is a growing need for industry professionals to learn and apply these technologies to remain competitive and relevant in their fields. The eMasters program on Artificial Intelligence and Machine Learning can address this need by providing industry professionals with the latest knowledge and skills in Artificial

Intelligence and Machine Learning, empowering them to make informed decisions and solve complex problems using Machine Learning techniques. With its flexible online format and practical curriculum, this program can offer industry professionals the convenience and accessibility they need to upskill and stay ahead of the curve in today's rapidly evolving job market.

eMasters programme in "Digital Governance & Management" by the Department of Management Sciences

The Ministry of Electronics & Information Technology, Government of India, launched the 'Digital India' program with the vision to transform India into a digitally empowered society and a knowledge-based economy by ensuring digital access, digital inclusion, digital empowerment and bridging the digital divide. The aim of the eMasters program in Digital Governance & Management is to enhance capabilities for a digitally-empowered new India. This programme is specifically aimed at the officers of the Central and State Government, Central and State Public Sector Undertakings, Private Sector and NGOs who are expected to gain a sound understanding of the Vision and Mission of Digital India, appreciate the entire-governance eco-system of the Government/organizations in its holistic perspective and identify challenges in implementing digital initiatives.

eMasters programme in "Renewable Energy and e-Mobility" by the Department of Sustainable Energy Engineering

The program's vision is to offer high-quality, rigorous academic programmes at the PG levels in renewable energy and e-mobility and play a leading role in creating a technology devel-

opment ecosystem in the country. Through quality education and human resource development, the eMasters Program in Renewable Energy and e-Mobility aims to be a contributor to the national vision of energy sustainability. The program aims to train working professionals interested in making a career in this fast-growing domain to help them get the required technical knowledge and find a suitable opportunity.

RESEARCH & DEVELOPMENT

IIT Kanpur has registered steady growth in its research and development activities this year.

Research Highlights

1. 1610 externally funded projects are ongoing with a total sanctioned amount of Rs. 1527.30 crore.
2. 414 sponsored projects were sanctioned during 2023-24 worth Rs. 371.24 crore.
3. 246 consultancy projects were sanctioned during 2023-24worth Rs. 102.65 crore.
4. During 2023-24, total funds received for sponsored projects were Rs. 227.0 crore and for consultancy projects Rs. 115.2 crore.

Sponsored Research:
A Summary of 6 years

Total Number of Projects

Total Funds Received
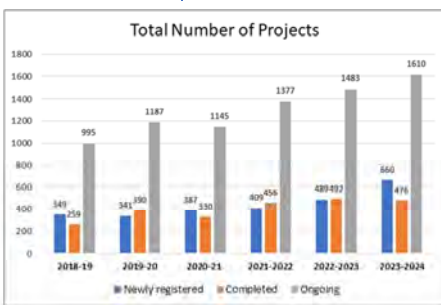
LEADING FUNDING AGENCIES

Ministry Of Electronics and Information Technology	Rs. 60.00 crore
Laurus Labs Limited	Rs. 31.86 crore
Ministry of Education	Rs. 19.96 crore
U.P. Government	Rs. 15.30 crore
Wellcome Trust - DBT Alliance	Rs. 9.98 crore

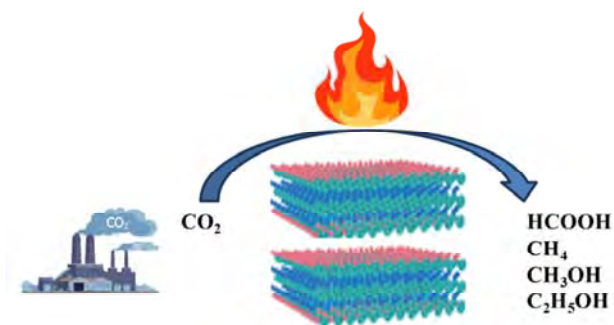*Table capturing five major funding agencies with sanctioned amount*

LEADING FUNDING INDUSTRY PARTNERS

Laurus Labs limited, Aravaali Power Corporation Private Limited, New Energy and Industrial Technology Development, Bharat Petroleum Corporation Limited, Shapoorji Pallonji Company Private Limited and Unilever Limited.

MAJOR PROJECTS SANCTIONED

Development of Indigenous Integrated Carbon Capture and Conversion (ICCC) Technology funded by Bharat Petroleum Corporation Limited

CO_2 concentrations in the atmosphere continue to rise primarily due to human activities such as burning fossil fuels and deforestation, and its adverse impacts on the environment and human society have become increasingly evident. These impacts include rising temperatures, changes in precipitation pat-

terns, sea level rise, ocean acidification, and disruptions to ecosystems and biodiversity. To mitigate these issues, CO_2 capture and conversion technologies have gained significant attention as promising strategies. One of the emerging materials, MXenes, is a strong candidate for CO_2 capture and utilization (CCU). MXenes are a class of two-dimensional inorganic compounds that consist of atomically thin layers of transition metal carbides. These materials have an inherent ability to be an efficient catalyst for CO_2 conversion into CO, MeOH, CH_4, and many other products. However, the conversion of CO_2 achieved to date for the reported MXenes is ~30% and is

workable in bit harsher conditions. Improving MXene could enhance the CO_2 adsorption and its conversion to some value-added chemicals in normal conditions. This project aims to improve the CO_2 adsorption and conversion properties of MXene, preferably in terms of workable conditions and conversion rate.

3D Printed Technical Textiles for Defence Exosuits: Custom Fabrics for Physiological Monitoring and Decontamination Applications funded by Ministry of Textiles
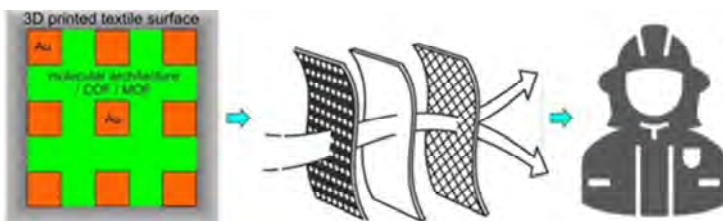

The objectives of this approved research proposal funded by National Technical Textile Mission, Government of India, concerns development of composites for custom technical textiles from the standpoint of solution processivity, 3D printing of textiles, customized textiles for defence exosuits using imprinted elements, and composite textiles for physiological monitoring with strategically embedded chemical and biological decontaminating fibers. It is anticipated that such layered custom fabric layers will have applications for personalized protective systems using innovative and lightweight protective textiles, with embedded IoT- based sensor technologies to afford rapid mitigation of chemical and biological threats at the interface of skin tissue barriers and sensitive organs, notably the eyes, skin, and lungs. In addition, this project will also afford development of textile with embedded microcapsules that could

contain active agents for detoxification of chemical and biological warfare agents, as well for delivering therapeutics, or light emitters for photodynamic action. This project has Defence Material and Stores Research and Development Establishment (DMSRDE), Kanpur, as an application partner for defence applications.

Design and Development of a Smart Electric Stubble-Harvester and Integrated Baler toward Sustainable Agro-Residue Management funded by Department of Science and Technology
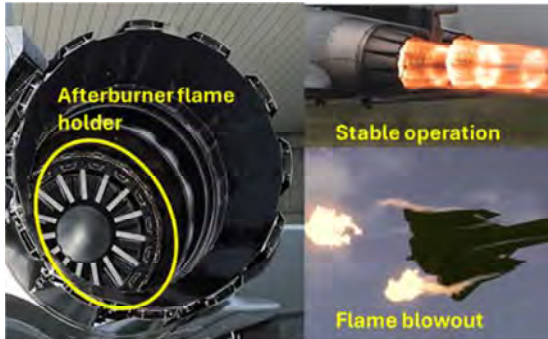
In order to prepare the fields quickly for the subsequent cultivation, farmers take recourse to stubble-burning, which causes major air pollution in Northern India. Moreover, the uncontrolled burning
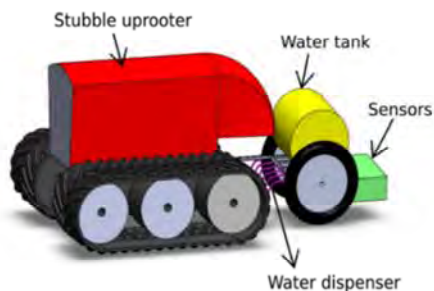
contributes to the waste heat as well as loss of valuable crop residues for bio-degradable composites, battery-cells and others. This project focuses on the development of electricity-driven integrated harvesting mechanism with smart soil moisture monitoring, and robotic uprooting system. The system will have 4 major components - the end-effector unit, Bale-chamber, Continuous Wheel-Tracks, and Control-Unit. The uprooted stubbles will be compacted in bale form and carried to the thermal powerplant for energy generation.

Experimental Characterization of Flame Stabilization in a Jet Engine Afterburner funded by Aeronautics Research and Development Board

Indigenous development of Advanced Medium Combat Aircraft (AMCA) class, all-weather, fifth-generation, twin-engine, multirole combat aircraft for the Indian Air Force and the Indian Navy relies heavily on the successful operation of the afterburner. During the project, funded by the Aeronautical Research and Development Board (ARDB), a test rig will be realized to mimic actual operating conditions of a jet engine afterburner, and high-speed laser-based optical diagnostics will be employed to unravel spray, flame, and flow features. The stability map of the afterburner and the experimental database generated during this project will be instrumental in realizing the indigenous development of the jet engine afterburners for future large aero-engine configurations.

Supporting Indigenous Development of Low-Cost Sensors funded by Clean Air Fund

Air quality sensors are already ubiquitous with increasing prevalence due to climate change and general air quality degradation in cities. However, the current mass-produced sensors take a one-size-fits-all approach and do not consider the

fact that particle counts are a strong function of the type, size and shapes. The project, therefore, aims to develop networked particle sensors which are 'locale-aware' and make a conscious particle count using AI/ML techniques.

SATHEE Initiatives (NMEICT Phase III) funded by Ministry of Education

The SATHEE (Self-Assessment Test and Help for Entrance Exams) initiative by IIT Kanpur, launched in collaboration with the Ministry of Education, is a transformative online platform designed to assist students preparing for competitive exams like JEE, NEET, CLAT, SSC, Railway, Banking and others. It provides a comprehensive suite of resources, including video lectures from IIT and IISc faculties, interactive learning modules, and AI-based assessment tools. With multilingual support and mentorship from premier institute scholars, SATHEE aims to democratize education, ensuring that every aspirant has an equal opportunity to excel, regardless of their background.

Pollutant Source Apportionment and Environment Impact Assessment Study at IGSTPP (Indira Gandhi Super Thermal Power Plant), Jhajjar, Haryana funded by Aravali Power Company Private Limited

Industrialization is on the increase and so is the environmental pollution due to emissions and waste generated from industries. It is desirable that for existing industrial areas stressed under high ambient pollution levels, scientific and systematic identification of sources and their contributions to ambient air quality are established for effective air quality management. Thermal power plants, predominantly use coal as fuel for electricity generation and emit several pollutants, PM_{10}, $PM_{2.5}$,

SO_2, CO, and NOx. The current project intends to address such environmental issues of IGSTPP. The project delves into the assessment of GIS-based emission inventory of pollutants, emission quantification, dispersion and impact of pollutants and suggests remedial measures and technology to minimize and manage the emissions from the power plant.

Establishment of Phase-II of National Centre of Excellence for Large Area Flexible Electronics (NCFlexE) funded by Ministry of Electronics and Information Technology

The National Centre for Flexible Electronics (NCFlexE) as a Centre of Excellence at IIT Kanpur was established in 2014 by the Ministry of Electronics and Information Technology (MeitY), Government of India, and IIT Kanpur to catalyse growth of domestic industry in the emerging area of flexible electronics. Support for Phase II of NCFlexE, with a total project outlay of Rs. 83.08 crore over a period of 5 years, was approved in November 2023. The objectives and outcomes include undertaking collaborative projects with industries, development of prototypes, transfer of technologies, incubating companies, and training personnel in the field of flexible electronics.

**Power sector Reform Programme – Phase II funded by UK's Foreign, Commonwealth & Development Office (FCDO)**

Centre for Energy Regulation (CER), IIT Kanpur at Department of Management Sciences was set up through seed funding by the UK's Foreign, Commonwealth & Development Office (FCDO). CER leads Regulatory Research, Capacity Building, and Knowledge Dissemination activities, fostering interactions among regulatory bodies, utilities, and other stakeholders in the Indian Power Sector to drive sustainable power sector development. "Power Sector Reforms (PSR) Programme - Phase II" is supported by the FCDO under the India - UK collaboration on climate and energy. The program focuses on supporting structural reforms, integrating renewable energy, and building regulatory capacity through technical expertise and institutional strengthening.

Next Generation AAV Vectors for Duchenne Muscular Dystrophy Gene Therapy funded by DBT-Wellcome Trust Team Science Grant

Duchenne Muscular Dystrophy (DMD), is a vere cular disorder in
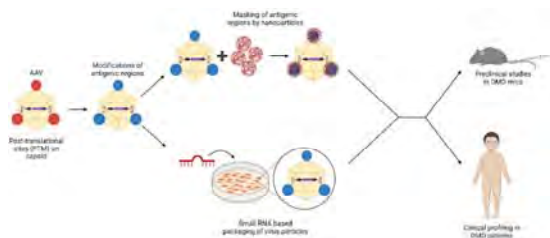
humans (1:3500 male births). DMD leads to progressive muscle wasting in affected boys, who ultimately succumb to the disease due to heart or lung failure. Gene therapy, a method to replace the altered gene (dystrophin) with a normal copy, has not been very effective for this condition. The project proposes to address this, first by designing AAV9 vectors with improved transduction and immune evasive potential. A combination of rational engineering of viral capsids strategically modified at the rate limiting post translational modification (PTM) sites, and which overlap with antigenic epitopes, combined with nanoparticle mediated epitope masking is likely to overcome these major barriers in DMD gene therapy. Further optimization such as the microRNA-based vector production, will further complement and enhance the functionality of AAV9 vectors. Finally, in preparation for a possible clinical translation, we will also profile the genetic alterations and immune status in a large number of patients with DMD to provide clinical insights on the role of recipient status in future gene therapy trials.

Fatigue Performance Models for Cement Treated Base Materials funded by Ministry of Road Transport & Highways

The current design guideline for asphaltic pavement in India (IRC:37-2018) recommends constructing long-life/perpetual pavement (for the design life of 50 years and above) for expressways and high-density corridors. Such pavement structures are essentially thicker pavement structures which are less susceptible towards bottom-up fatigue cracking, which has essentially led to the development of the concept of an "endurance limit".

Although IRC 37-2018 suggests constructing perpetual pavement, the corresponding technical recommendations are purely based on published research work from overseas research laboratories. Since India's traffic loading pattern and environmental conditions are significantly different from those of other countries, the recommendations from overseas countries may not be fully applicable. Unfortunately, no research work has been published in this area so far from Indian research laboratories. This clearly indicates the need for in-house detailed research work to make appropriate recommendations based on our own materials, prevalent Indian climatic conditions, and those in-line with our own design specifications. This proposed research work is aimed at identifying the endurance limit of typically utilized asphalt mixtures in India for perpetual pavement structure. It will further investigate the role of temperature and asphalt mixture volumetrics in changing the endurance limit of typically utilized asphalt mixtures in India for perpetual pavement structures. In the overall context, these individual outcomes will immensely contribute towards upgrading the existing recommendation on endurance limit for perpetual pavement in IRC 37:2018

Development Of Blockchain-Based TDR Portal funded by Kanpur Development Authority

The Kanpur Development Authority (KDA) spearheads the state's urban development strategies by introducing Transferable De-

velopment Rights (TDR) as a transparent and efficient mechanism to compensate property owners and enhance city infrastructure. Older, densely populated areas of Kanpur lack modern amenities. This necessitates land acquisition, which burdens KDA's finances. TDR offers a novel solution by compensating landowners with development rights that can be used on the same or different parcels of land or sold at fair market value to real estate developers, who can use them to increase building heights. KDA, in collaboration with C3I Hub, IIT Kanpur, would utilize blockchain technology to ensure tamper-proof generation, transfer, and utilization of these rights. The city would be divided into sending and receiving zones, with TDRs issued in sending zones and utilized in receiving zones, promoting equitable development. Following the pilot in Kanpur, the TDR system will be integrated with all development authorities across the state.
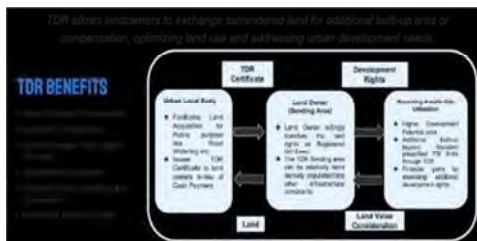
Mitigating Resource Burden of Heterologous Biomolecular Circuits in Escherichia Coil funded by DBT-Wellcome Trust

Synthetic biology, particularly in therapeutics, depend on the production of specific proteins through combinations of modified genes inserted into cells, such as bacteria. However, when these inserted genes are activated, they consume resources that would otherwise be used by the host cell for its regular activities. This competition for resources can harm the host cell, potentially causing the failure of the entire system. The aim of this project is to alleviate the strain on cells caused by the competition for resources, especially ribosomes, between natural cellular processes and synthetic genetic circuits in synthetic biological systems. To achieve this goal, four

fundamental objectives are proposed. First, develop mathematical models to quantify the stress imposed on cells by implemented genetic circuits. These models will help predict cellular capacity using control-theoretic tools, thus advancing predictive
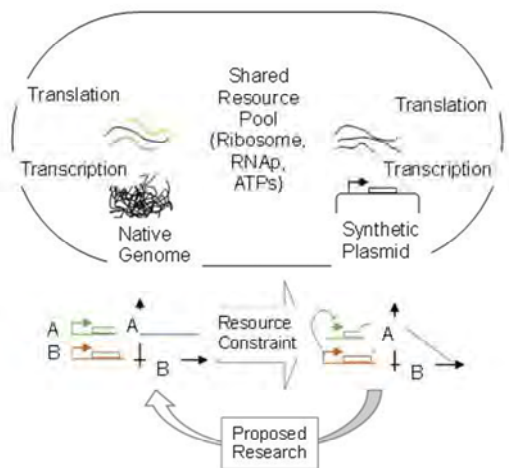
biology. Secondly, characterize functional maps that link genotypes to the resource demands of gene expression using machine learning techniques. This understanding will facilitate the design of regulatory elements from scratch. Thirdly, design biomolecular feedback controllers to maintain the balance of translational resources, ensuring that both natural and synthetic gene expression demands are met. Lastly, by studying the regulatory pathways that natural organisms have evolved to cope with various stresses such as nutrient deprivation or heat shock, the project aims to apply these principles to design synthetic biological systems that are robust against cellular burden. These multidisciplinary approach combines system theory, computational methods, and molecular biology experimentation to address these challenges. Ultimately, this research seeks to establish rational frameworks for reducing cellular burden, thereby advancing the frontier of synthetic biology and enhancing the reliability of living therapeutics.

COLLABORATIONS THROUGH MOU

IIT Kanpur signed an MoU with **Govt of Uttar Pradesh** to collaborate in the R&D efforts of UP Digital Health Stack under the National Health Stack program of The Ayushman Bharat Digital Mission.

IIT Kanpur will mentor **Indian Institute of Skills (IIS) Kanpur** and has entered into an MoU with IIS Kanpur for establishing State-of-the-art Laboratories on Advanced Manufacturing, Robotics and Automations and develop cutting-edge curriculum. The event was organised by the Ministry of Skill Development and Entrepreneurship and graced by the Hon'ble Minister Shri Dharmendra Pradhan.

IIT Kanpur signed an MoU with **Indian Navy** (IN) for strengthening the collaborative relationship between the academia and the armed forces to foster a conducive environment for innovation and knowledge exchange.

An MoU with **Commander Works Engineer (CWE) Lucknow** has been signed to work in the areas of Net Zero Carbon and Solid Waste Management in Lucknow Cantonment.

IIT Kanpur signed an MoU with **NMTronics India Pvt. Ltd.** to establish Center of Excellence for Electronics Manufacturing and Skills Development at IIT Kanpur. The center aims to foster collaboration in research and development while providing advanced learning opportunities through IIT Kanpur's learning and development programs and will be equipped with cutting-edge technology, including a fully automated Surface Mount Technology (SMT) Line.

IIT Kanpur and **Samsung India Electronics Pvt. Ltd.** entered an MoA to work together on research project, hiring good resources, training and higher education during the tenure of this agreement.

IIT Kanpur signed an MoU with **Trimble Applanix** to develop pool of domestic knowledge and capacity working with Trimble Applanix UAV product portfolio within India.

Organo Technologies Pvt Ltd and IIT Kanpur entered a research collaboration MoU to work in the areas of Road construction/ Maintenance.

MoU with **Indian Institute of Craft & Design, Jaipur (IICD)** for undertaking collaborative work on development of rural handmade products with the objective of developing craft sector, preserving traditional arts and crafts was signed.

Airbus Group India Private Limited and IIT Kanpur entered an MoU to work in the areas of technology, research and training in the areas of aerospace.

An MoU to advance Hardware Security Technology was signed between **C-HERD and JISA Softech PVT LTD (JISA)**, an Indian Deep-Tech startup, in collaboration with Department of Computer Science & Engineering, IIT Kanpur.

Kalyan Singh Super Specialty Cancer Institute (KSSSCI) partnered with Karkinos Healthcare and IIT Kanpur to establish the Center for Advanced Molecular Diagnostics and Research for Cancer (CAMDRC) in Lucknow. This initiative aligns with the shift towards molecular diagnostics in cancer care, offering personalised treatments based on genetic insights and improving patient outcomes.

IIT Kanpur and **Military Engineer Services (MES)** Jhansi signed an MoU to convert Army stations into Carbon Neutral campuses. The MoU intends to establish a demonstrable model through a real-world example of achieving carbon neutrality and help to create a Carbon Neutral path for India to achieve sustainability

TMEIC and IIT Kanpur entered an MoU to work in the areas of Power Electronics research and Product development including development of new generation PV inverter and UPS systems.

National Power Training Institute (NPTI) and IIT Kanpur entered a MoA for working professionals from government & private sectors in the area of Hydro, Renewable Energy, and Smart Grid.

IIT Kanpur & **National Automotive Test Tracks (NATRAX)** announced the signing of an MoU to facilitate collaboration in the areas of Real Drive Emission and Emission Norms, as well as other areas as deemed fit in the future.

IT Kanpur and **Blockchain for Impact (BFI)** forged strategic partnership to accelerate Healthcare Innovation in India under the BFI-Biome Virtual Network Program to nurture innovations and driving advancements in healthcare in India. BFI has pledged to allocate over $150,000 USD across three years to develop programs specifically tailored to healthcare-focused startups at Startup Incubation and Innovation Centre, IIT Kanpur, aimed at developing impactful solutions that address critical gaps in India's healthcare landscape.

An MoU was signed with **Engineers India Limited (EIL)** to form the IITK-EIL Clean Energy Research Center, which will address two of the important thrust areas - green hydrogen, and carbon sequestration, along with conversion of the same to value-added products or even fuels.

MoU with **ICICI Bank** was executed to provide startups with a comprehensive support system. This collaboration offers digital banking services, regulatory assistance, fundraising support, and knowledge-sharing events. Startups will benefit from streamlined financial services and compliance guidance, as well as opportunities to connect with potential investors.

IIT Kanpur distinguished alumnus Dr. Rajeev Gautam (BT/ChE/1974) has generously contributed 250,000 USD to establish three endowed programs focused on promoting research and education in the Department of Chemical Engineering, IIT Kanpur, which will support the establishment of Om Prakash Gautam Endowed Faculty Chair, Rajeev and Joyce Gautam Faculty Fellowship and Rajeev and Joyce Gautam travel grant for students.

R&D EVENTS

IIT Kanpur's Tableau in "Maa Tujhe Pranam" event

IIT Kanpur received the 3rd prize for showcasing its technological prowess at the "Maa Tujhe Pranam" program on August 15th, 2023, organized by Amar Ujala in collaboration with the district administration.

The institute's Tableau, featured two advanced drones "Vibhram" and "Orbit" highlighting technological expertise in unmanned aerial systems, and a prototype of a Bi-Propellant Semi-Cryogenic Liquid Rocket Engine by Space-Phyllic, an incubated company of SIIC, IIT Kanpur.

PAN-IIT Global Technology Summit

The Pan- IIT Global Technology Summit held on December 8th and 9th, 2023 in Bengaluru witnessed an unprecedented gathering of around 5000 participants from diverse sectors such as industries, academia, government, startups, and various stakeholders. IIT Kanpur made a significant impact at the summit with three distinctive stalls that highlighted its prowess in innovation, research, and technology transfer.

The Startup Incubation and Innovation Centre (SIIC), the Cyber Physical Systems Innovation Hub (C3i Hub), and a comprehensive overview of research at IIT Kanpur were the focal points, serving as a testament to the institute's commitment to pushing the boundaries of knowledge and fostering industry collaborations.

IIT Kanpur's participation at inter IIT Research Fair IInven Tiv 2024

IInvenTiv-2024, 2nd edition of R&D Innovation Fair of Higher Education Institutes of India, was held at IIT Hyderabad on January 19-20, 2024. In this event, 90 institutions participated and showcased their innovations. The participants included 23 IITs, 31 NITs, 7 IISERS, 6 IIITs, IISc and top 50 NIRF engineering institutes. Honorable Shri. Dharmendra Pradhan, Minister of Education, and Minister of MSMEs, GOI was the Chief guest of this event.

IIT Kanpur showcased the following technologies:

- Svan M2: quadruped robot research platform (Domain: Defence and Space)
- Self-starting novel J shaped blade vertical axis wind turbine to harvest energy at low to high

windspeeds (Domain: Sustainable technologies)

- Strips for simultaneous electrochemical detection of total and direct bilirubin (Domain: Affordable Health care)

RESEARCH INFRASTRUCTURE

Hypervelocity Expansion Tunnel Test Facility

India's first Hypervelocity Expansion Tunnel Test Facility was successfully established and tested by IIT Kanpur. This is a major achievement that puts India amongst a handful of countries with this advanced hypersonic testing capability. The development of the facility was supported by the Fund for Improvement in S&T Infrastructure (FIST) of the Department of Science and Technology, Government of India (DST) with a sum of Rs 4.5 Crore in 2018.

The facility was developed by the Hypersonic Experimental Aerodynamics Laboratory at the Department of Aerospace Engineering, IIT Kanpur and is capable of generating flight speeds between 3-10 km/s, simulating the hypersonic condition. Named S2, it was indigenously designed and developed and is a valuable test facility for ongoing missions of ISRO - Indian Space Research Organisation and DRDO including Gaganyaan, RLV and hypersonic cruise missiles.

Centre of Excellence (CoE) for UAV/Drone

The centre of excellence for autonomous unmanned aerial vehicles is being setup with support from Government of Uttar Pradesh. It is envisaged as an interdisciplinary centre that would bring all stakeholders from across the state under one umbrella to initiate capacity building, training and design of UAV / Drone technology through statewide joint effort between the users, developers, researchers, manufacturers and service providers. The centre is envisioned to play three roles:

- Cutting edge technology development in relation to UAV systems and its commercialization to enable delivery of affordable customized solutions,
- Provide training on state-of-the-art UAV systems and tools to the stakeholders and support capacity building through workforce creation, and
- Hand holding of various startups and providing technical consultancy to established companies in the domain of UAVs.

The key focus of the centre is to carry out and support product development and manufacturing of various UAVs for application to multiple sectors.

Advanced Research Facility to develop Materials and Technologies for Energy, Environment and Healthcare

In January 2024, IIT Kanpur's Chemical Engineering department received its third Department of Science & Technology's Fund for Improvement of S&T Infrastructure (FIST) grant. Through this grant, department aims to enhance research infrastructure and facilities to support R&D in emerging areas and attract new talent. Recognizing the need to focus on crucial areas such as energy, environment and healthcare, the department seeks to align with national priorities and contribute through R&D and skilled workforce development. These fields require specialized infrastructure in nanotechnology, catalysis, drug delivery, advanced materials and more. The sanctioned equipment's, including Small Angle X-ray Scattering (SAXS), Advanced Rheometer, High Performance Liquid Chromatography (HPLC) with Gel Permeation Chromatography (GPC), Gas Chromatography Mass Spectrometry (GC-MS) and Ion Chromatography, will be invaluable in advancing research in these innovative materials and methods. With new expert faculty and a ₹7.63 Crore grant, the department is poised to advance research, train skilled professionals and support industry needs.

Centre for Excellence in Advanced Technologies for Monitoring Air quality iNdicators (CoE-ATMAN)

Centre of Excellence in Advanced Technologies for Monitoring Air-quality indicators (CoE ATMAN), https://iitk.ac.in/atman/index.php approved by PSA office, Government of India, is currently executing 5 projects. CoE ATMAN's activities focus on development of indigenous PM

Sensor development, Real-Time Source Attribution with portable sensors, use of AI/ML capabilities for establishing nationwide AQ monitoring networks, airshed delineation, AQ forecasting, Dynamic Hyper-Local Source Apportionment (DHSA) and network optimisation. Following projects are endorsed under the CoE ATMAN: a) Open Philanthropy. Rural air quality monitoring in UP and Bihar, b) Clean Air Fund (CAF). Indigenous Development of Low-Cost Sensors, c) Clean Air Fund (CAF). Atman-Centre of Excellence: Core Support Grant, d) Clean Air Fund (CAF). Dynamic Hyper-Local Source Apportionment for Real-Time Policy Action, e) Rail India Technical & Economic Services Ltd. (RITES). DHSA at Kanpur

Nmtronics Center Of Excellence for Electronics Manufacturing and Skill Development" funded by Nmtronics (India) Private Limited

IIT Kanpur will be establishing a "Center of Excellence for Electronics Manufacturing and Skills Development" through the CSR initiative of NMTronics India Pvt. Ltd. This center will house state-of-the-art equipment for Surface Mount Technology. The primary objectives of the center include skill development through a joint certification & diploma program by NMTronics and IIT Kanpur, supporting New Product Introductions for start-ups across India and providing R&D and process consultancy to the rapidly growing electronics manufacturing

industry. It will also function as a test bed for electronics related research in the institute including 5G, IoT, smart manufacturing, biomedical devices, and others. The center is expected to be ready by November 2024.

Jay Pullur Non-Invasive Brain Stimulation Laboratory

The Cognitive Science Department has established the 'Jay Pullur Non-Invasive Brain Stimulation Laboratory' to conduct cutting-edge research in Brain Mapping and Stimulation, advancing neuroscience.

Installation of 200 KW Rooftop Solar PV Plant

Solar Energy is one of the most significant cleaner and renewable forms of energy source that does not produce air pollution or greenhouse gases. Harnessing renewable energy is critical as we try to achieve IIT Kanpur's net zero

commitment aligned with our sustainable developmental goals. With the generous support from our distinguished alumnus Mr. Bhadresh Shah (BT/MME/1974), Managing Director, AIA Engineering Ltd., a 200 KW Rooftop Solar PV Plant was installed on the terrace of the New Core Lab on 23 February. 10 Invertors, each with a capacity of 20 KW are installed in this plant. It is expected to reduce carbon footprint on the campus by 233.60 tonnes of Carbon Dioxide per annum.

NEW INITIATIVES

Kotak School of Sustainability

IIT Kanpur and Kotak Mahindra Bank have come together to incubate the 'Kotak School of Sustainability' with the overall vision of providing thought leadership, developing solutions towards sustainability actions and preparing future generations to lead the cause of sustainable development.

The school will cohesively integrate cross-disciplinary professionals, ideas and entities relevant to the different facets of sustainability, enabling a transformative change in the actions towards sustainable development. It will be a conglomerate of the relevant departments, centres and other entities at IIT Kanpur, thus providing an enabling environment or synergistic research collaborations across the identified thematic areas. These interdisciplinary collaborations will enable the conduct of impactful and diverse educational and outreach programs, solution-driven innovations, the development of entrepreneurship and collaborations with external stakeholders. The school would also act as a platform for upskilling of different stake-

holders through its outreach and capacity-building programs. In particular, it will play a vital role in the sustainable development of the Indo-Gangetic region, using its location as an advantage. The emphasis will be on developing holistic and end-to-end solutions encompassing all aspects of sustainability.

INNOVATION AND INCUBATION

During the Financial Year 2023 – 24, a total of 138 IPRs were filed by the Institute including 123 Indian Patent applications, 5 US Patents, 4 Chinese patents, 3 Design registrations, 1 Trademark application and 2 Copyrights. The total number of IPRs granted was 242, and 14 technologies were licensed to Industry Partners.

In a remarkable display of innovation, IIT Kanpur has achieved a significant milestone by achieving an exceptional licensing rate of around 14%. This accomplishment solidifies the institute's commitment to groundbreaking research and marks the third consecutive year in which IIT Kanpur has secured the highest number of IPRs in its history, taking the overall achievement to 1080 IPRs till date, out of which 727 have been granted so far along with 143 technologies licensed for commercialization.

TECHNOLOGIES LICENSED (2023-24)

IIT Kanpur signed a breakthrough Memorandum of Agreement with Laurus Labs for licensing novel gene therapy assets.

In a historic milestone, our institute has entered into a Memorandum of Agreement (MOA) with Laurus Labs to introduce

groundbreaking gene therapy assets to the market. This collaboration marks a paradigm shift with regards to innovation and advancement in the field of bioengineering in India, with this unprecedented industry-first investment in a faculty research group.

IIT Kanpur has transferred several gene therapy assets developed by Professor Jayandharan G Rao, Molecular Genetics and Therapeutics Lab, BSBE Department, through in-licensing to Laurus Labs, which will provide a research grant to facilitate their progression through pre-clinical development. Laurus Labs will also fund the necessary clinical trials and spearhead the launch of these cutting-edge products not only in India but also in emerging markets. In addition, Laurus Labs will establish a state-of-the-art Good Manufacturing Practice (GMP) facility at IIT Kanpur's Techno Park, bolstering the production capabilities of gene therapy products. They will actively engage in the Contract Development and Manufacturing Organization (CDMO) business for cell and gene therapy, leveraging the capabilities of the GMP facility.

A Bilirubin detection technology transferred to Sensa Core Medical Instrumentation Pvt. Ltd.

IIT Kanpur developed technology titled "Electrochemical Sensor for Bilirubin Analysis in Human Blood/Serum" has been trans-

ferred to Sensa Core Medical Instrumentation Pvt. Ltd., a Hyderabad based pioneer in Ion-selective Based Electrolyte Analyzers, Arterial Blood Gas Electrolyte Metabolite Analyzers and Mass production of Glucose Test strips and Hemoglobin Test Strips.

The licensee has planned to add Bilirubin Test strips to its portfolio as a part of Point of Care testing and screening. The licensed technology aims to address neonatal jaundice, a health issue faced by newborns in India. Neonatal jaundice is a prevalent clinical condition, affecting roughly 60% of full-term and 80% of preterm new-borns with a mortality rate of 7.3 per 1000 live births in India.

The novel electrochemical sensing strip developed by Professor Siddhartha Panda and Dr. Nishant Verma, has three variants that can simultaneously detect the direct and total bilirubin in a single drop of blood and deliver results within a minute. All the three variants have been protected by an Indian Patent Application number. This sensor is expected to be used for bedside testing, in diagnostic laboratories, and even in health screening centres.

Transfer of a bone regeneration technology

Upholding the technology translation dynamism for commercialization from the Institute, another touchstone obtained by IIT Kanpur in the field of healthcare, a technology titled "Nano-

Hydroxyapatite based porous polymer composite scaffolds for bioactive molecule delivery in musculoskeletal regeneration" developed by Professor Ashok Kumar and his team from Department of Biological Sciences and Bioengineering at IIT Kanpur, has been licensed to a Canadian company named "Conlis Global Inc.", with an objective to overcome the problems related to bone and joint disorders, capable of biocompatible bone regeneration.

The invention has an application in acting as a carrier for bone active biomolecules, delivering them directly at the implant site. The novel material is biodegradable and has osteoinductive (bone healing process) and osteopromotive (material for new bone growth) properties for bone regeneration. They are highly biocompatible resulting in good cell material interaction with osteoblast cells (cells responsible for mineralization of bone during bone formation and bone remodelling), exhibiting a high mechanical strength and interaction between the polymer network and the solvent.
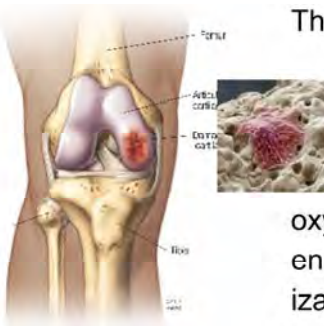
These functionalized porous composite scaffolds can be used as fillers in large size bone defects, without compromising the connectivity and structural defects, oxygen and blood circulation thereby enhancing tissue formation, mineralization, and rapid defect healing. It can also be used as a bone substitute, overcoming autograft limitations.

The primary objective of the present invention is to overcome the drawbacks of the existing remedies and other alternatives

that have been associated with infection and immune related complications, this technology provides a collagen-nano-hydroxyapatite composite macroporous gel, which is a potential approach for reconstruction of irregular bone defects and dental applications as well.

IIT Kanpur, IIT Madras and SAMEER Collaborate to License 5G RAN to Tejas Networks, a Tata Group Company

In one of the largest & pivotal technology transfer from Indian academia, a 5G Radio Access Network (RAN) technology, developed collaboratively by IIT Kanpur, IIT Madras & SAMEER, has been officially licensed to Tejas Network – a Tata Group company. This notable move took place on Dec 11, 2023, at IIT Madras, in presence of Professor V Kamakoti, Director, IITM, Dr. Kumar N Sivarajan, Professor Bhaskar Ramamurthi, IITM, Dr. P Hanumantha Rao, DG SAMEER, Professor Rohit Budhiraja, IIT Kanpur & Dr. Radhakrishna Ganti, IITM & Professor Ajit K Chaturvedi, IIT Kanpur. The technology, from a multi-institutional 5G Test Bed project supported by the Department of Telecommunications, Government of India, will enhance India's pioneering efforts in groundbreaking transformative innovation and create significant growth opportunities for the rapidly evolving telecommunications industry.

Blockchain systems for data integrity and record

IIT Kanpur has licensed multiple technologies in the field of blockchain to Trential Technologies Pvt. Ltd. developed by Professor Manindra Agrawal & Mr. Tanmay Yadav from the Department of Computer Science and Engineering of the Institute.

The technology has been translated to the industry partner for its further development into a scalable product, heading towards working with user agencies across the globe to build, deploy and maintain the solution. The technology shall be used to create a tamper-proof, immutable record of property registry, smart cards for consent management, novel wallet management for permissioned blockchains, integration to handle cases of impersonation, and others.

Technology Transfer to Ecotech Instruments

IIT Kanpur licensed a technology titled 'Selective Collection of PM10 and PM2.5 Particles from Dust Samples for Chemical Analysis,' a technical know-how, developed by Professor Mukesh Sharma from the Department of Civil Engineering, to Ecotech Instruments Pvt. Ltd on November 10, 2023. The novel technology is the PM10 and PM2.5 Profile Sampler, selectively collects PM10 and PM2.5 particles from dust samples or direct source emissions onto a chosen filter matrix.

Urban areas face significant challenges in effectively controlling air pollution, made worse by a lack of comprehensive data

on particulate matter sources. Current monitoring methods often fail to provide detailed insights into the chemical composition and origins of pollutants, hindering the development of targeted pollution control strategies. The developed technology addresses these challenges. Within the profile sampler, a dilution system incorporating the required amount of clean air has been designed to closely mimic atmospheric dilution, thus obtaining representative samples reflective of any source type according to underlying scientific principles. The sampler underwent validation for the consistency of PM2.5 and PM2.5-10 particle collection across various types of dust.

IIT Kanpur's licensed technology – The Air Sampling Device launched in the market.

IIT Kanpur is proud to announce that one of its latest licensed technologies, *Air Sampling Device*, has been launched as a product in the market.

The developed technology was licensed to an air quality monitoring company, Airshed Planning Professionals to bring appropriate, reliable and cost-effective solutions to the Indian Air Quality Management Industry. The Air Sampling Device was launched in an event held on March 11, 2024 at Pioneer Batch Continuing Education Centre (PBCEC) of the Indian Institute of Technology Kanpur.

Airshed Planning Professionals, an incubate at Startup Innovation & Incubation Centre (SIIC), IIT Kanpur, has been engaged in providing expertise in the field of air pollution, research and

practice, being a licensee to a low-cost technology for efficient air sampling, for bioaerosol & particulate matter for commercialization.

Such technologies are developed at the institute to promote micro, small and medium enterprises, for boosting the indigenous ecosystem. The device collects samples for the assessment of different parameters of air, including quality of respirable air, monitoring and sampling of ambient air and quantitative evaluations of substances present in the air along with providing quantitative estimates of different microbial colonies load in the ambient air.

Stakeholders from Institutions, the Pollution Control Board, R&D houses, infrastructure companies and industry partners discussed the milestones and potential of different products to bring revolutionary change in the cleantech domain, wherein they also opined on the milestones and potential of different tech-driven products to address shortcomings in the Indian Air Quality Monitoring ecosystem.

STARTUP INCUBATION & INNOVATION CENTRE IIT KANPUR

EVENTS AND PROGRAMS IN THE YEAR 2023-24

- SIIC conducted a 10-day Design Awareness Program under the MSME scheme. SIIC was the implementing agency for the "Design" sub-component of the MSME Innovative Scheme. The 10-day Awareness Program aimed to create awareness about this prestigious Scheme and promote

technology interventions among aspiring MSMEs, innovators, and budding entrepreneurs.

- The Health Tech Ideation & Innovation program (HII) was held at IIT Kanpur from 12th June to 30th June to encourage young innovators and entrepreneurs to innovate and commercialize indigenous medical devices.
- The Indo-Korean Knowledge Exchange Program, a joint effort involving Seoul Startup Hub, AIIDE-CoE, and Startin UP, exemplified the dedication to promoting innovation and bolstering bilateral ties. The workshop ended with a commitment from SIIC, IIT Kanpur's experts with a promise to collaborate, exchange knowledge, and build fruitful partnerships.
- SIDBI, with SIIC, IIT Kanpur, featured five innovative startups at the WBAF World Congress 2023 in Durban, South Africa, showcasing India's tech advancements and dedication to startup support and financial inclusion, highlighting India's global entrepreneurial impact.
- SIIC, IIT Kanpur, and the German Centre for Research and Innovation (DWIH) joined forces for Cohort 2 of the Innovators Connect TANDEM Program. Teams attended workshops in Bengaluru, Kanpur, and Bhubaneswar from November 20th to 30th, receiving guidance from experts.
- SIIC, IIT Kanpur has partnered with the Ministry of Housing and Urban Affairs (MoHUA), to support sustainability-focused startups through the Startup Gateway for Garbage Free Cities 2.0 program. The selected startups received a funding support of Rs 20 lakh, a one-year incubation program, and mentoring from subject-specific experts.
- The India ASEAN Start-up Summit 2023, a collaborative initiative between India and Malaysia, held on 12th and

13th December, brought together start-up founders, investors, policymakers, and incubators. The event attended by a delegation from DST India led by SIIC, IIT Kanpur, aimed to promote entrepreneurship.

- SIIC, IIT Kanpur, participated in Global BioIndia 2023 on 12th December 23, organized by BIRAC and the Department of Biotechnology, Government of India. The event featured SIIC showcasing innovative startups and success stories to dignitaries.
- SIIC, IIT Kanpur participated in the India International Science Festival 2023-24 that took place from January 17-20 at Faridabad RCB, organized collaboratively by the Ministries of Science and Technology, Earth Sciences, Space, and Atomic Energy, along with Vijnana Bharati. The festival aimed to involve diverse communities in innovative science with a Swadeshi spirit, showcasing how STEM solutions improve lives.
- SIIC, IIT Kanpur hosted a workshop to raise awareness about the Design component of the MSME Innovative Scheme, supported by the Ministry of MSME on February 7, 2024 to foster innovation and entrepreneurship in the MSME sector. The event aimed to enlighten participants about the program's significance, through dynamic presentations, outlining key aspects of the design component.
- Social Innovation Lab by CITI launched its second cohort in collaboration with IIT Kanpur on March 7, 2024 to assist early-stage startups in Agritech and Cleantech. The initiative supported 30 early-stage startups and accelerated 15 growth-stage high-impact startups.
- SIIC, IIT Kanpur hosted 'Abhivyakti 24', its annual startup festival, on March 15th and 16th. The event featured a

grand inaugural ceremony and gathered entrepreneurs, investors, mentors, and officials. SIIC incubated startups showcased their products, highlighting SIIC's commitment to innovation and entrepreneurship.

SUCCESS STORIES AT SIIC, IIT KANPUR

- **Jatayu Healthcare** - This startup was marked as the winner of the Pitchers Plot Event, which was organized by BITS Pilani Hyderabad.
- **LCB fertilizers** won the UPICON event's pitching competition.
- **DREAM Aerospace** - An SIIC startup had been honoured with the prestigious TANSEED 4.0 Grant of Rs. 10 Lakhby the Hon'ble Chief Minister of Tamil Nadu, Shri. M.K. Stalin. The startup was selected for the Chunauti 5.0 Programme Seed Fund Scheme. They received a Rs10 Lakh investment cheque at the Leap Ahead Startup Summit 2023. It also won the Eureka - Road to Enterprise Contest, which is Asia's largest Business Model Competition organized by the e-Cell of IIT Bombay, and was awarded a cash prize of 1.25 Lakh INR.
- **RF Nanocomposites Pvt. Ltd.** - This startup was invited to the prestigious IETE International Conference India (IICI-23) on 'Artificial intelligence' (AI) and 'Machine learning' (ML) Driving 5G - Advanced and 6G - Making 6G and Artificial intelligence (AI) in India for the World'. They came together with industry leaders, policymakers, and experts

in the field to explore cutting-edge advancements in AI, ML, and 5G technologies.

- **AiRTH** - AiRTH presented their innovative solutions at VivaTech 2023 in Paris, France. AiRTH introduced an Antimicrobial Air purifier, proven to deactivate the SARS-CoV-2 virus within 1 minute.

- **napID Zero-Factor Authenticator** - This year, napID had the privilege of representing India at VivaTech, held in Paris. napID's One-Touch Authenticator helps banks and enterprises to authenticate genuine users and prevent fraudulent login and payments.   napID was also the Winner of the Global Audition of the Korea Startup Challenge. napID had been a part of Korea's leading accelerator, Seoul Fintech Lab, funded by the Seoul Metropolitan Government.

- **Life and Limb Private Limited** - Life and Limb Private Limited, a leading startup in Digital Transformation, was honoured with the Prestigious CII Startup entrepreneur Awards in New Delhi, presented by Saint-Gobain. Life and Limb clinched the prestigious Gold Award for Innovation at the esteemed 2023 Medical event held in Chennai. This startup won the 'Innovation in Deeptech' category at the 14th Aegis Graham Bell Award, supported by MeitY Startup Hub and graced by the presence of the Honourable Minister of Road Transport and Highways, Shri. Nitin Gadkari.

- **AgrowSure Products and Innovations** - This startup won this year's Youth Co: Lab Program in Gender Equality Category by Atal Innovation Mission, NITI Aayog in collaboration with United Nations Development Programme (UNDP) and Citi Foundation.

- **ProMeat** - This startup won this year's Youth Co: Lab Program by UNDP India, Citi Foundation, Atal Innovation Mission, and NITI Aayog.
- **Saptkrishi** - This startup made its mark at the G-20 Agriculture Ministers Meeting held at HICC Hyderabad. Its participation in this prestigious event signifies recognition and appreciation for its innovative agricultural practices.
- Startup20 Shikhar Summit held in Gurugram - Our startups, AiRTH, ProMeat, GRIDsentry, Nadipulse, and Life and Limb, had showcased at the Summit.
- **Forensic CyberTech** - This startup had made a remarkable achievement by winning the prestigious iDEX-DIO DISC 9 challenge # 26 of the Ministry of Home Affairs (MHA), GOI – Indian Cyber Crime Coordination Centre (I4C) on the problem "Portable Mobile Forensic Suite and a cloud version."
- **Treacle Tech and Arishti Info Labs** won DoT grant for innovation. These startups won a prestigious grant under the Digital Communication Innovation Square (DCIS) Scheme by the Department of Telecommunications, Government of India.
- **VOLTWORKS** - Voltworks was awarded the best startup at the Atal Incubation Center (AIC) Sonipat Startup Summit winning a grant of INR 4 lakhs.
- **AGRONXT SERVICES** - Won the UPICON event's pitching competition. This startup took part in the G20 Agricultural Exhibition at the Indian Agricultural Research Institute, New Delhi. They collaborated with global leaders to advance agricultural technology and sustainable farming practices. This startup also emerged as the winner of the Global Fundraising Stage at the World Congress of World

Business Angels Investment Forum (WBAF), Durban, South Africa.

- A fellow of the **School of International Biodesign-Synergising Healthcare Innovation and Entrepreneurship (SIB SHInE) program**, achieved third place at the 2023 TiE Women Global Pitch Competition in Lucknow.

- **Arishti Info Labs Pvt. Ltd.** - Arishti Labs won the prestigious IDEX DIO DISC 9 challenge # 07 of the Indian Air Force on the problem "Development of a multi-engine AV (Anti-Virus) solution".

- **Climec Labs** - This startup was honoured with the prestigious NASSCOM Spotlight Award in the "Ideation to Engineering Leadership" category. Their groundbreaking creation, 'Aerem', signifies a significant milestone and showcases its profound impact on startups.

- **SocioDent Pvt. Ltd.** - SocioDent was honoured at the 14th NCPEDP-Mphasis Universal Design Awards 2023. This recognition underscores the company's dedication to advancing universal design and fostering an inclusive future.

- **Ksham Innovation** - This startup was selected for the ATF Awards 2023, as the Best Assistive Technology Startup People Choice Award. Its unique technology was specifically designed to empower people with disabilities, enabling them to communicate, learn, and perform daily tasks with greater ease and independence.

- **EndureAir Systems** - An SIIC, IIT Kanpur, startup, it played a pivotal role in the rescue mission at the Silkyara tunnel in Uttarakhand. The deployment of their drone, named Alakh, proved instrumental in saving the lives of 41 trapped workers.

- **Uneako** - A participant in the 'Startup Gateway for Garbage Free Cities' (SGGFC), earned recognition as one of the top 8 single-use plastic alternatives. This contribution aligned with the plastic-free initiative at Ram Mandir, Ayodhya, inaugurated by Chief Minister Shri. Yogi Adityanath.
- **Treacle Technologies Pvt. Ltd.** -This startup won the prestigious AWS x Campus Fund Grand Challenge 2023. Specializing in defensive security, this startup ensured that businesses stay secure amid the dynamic digital landscape.
- **Samak Technologies** - It secured the second position in the esteemed 4th Edition of the START-O-VATION National Startup Summit. This event was conducted by the Indian Chamber of Commerce in partnership with Invest India.
- **Rcube Recycling** - This startup was an awardee under the Startup Gateway for Garbage-Free Cities program funded by MoHUA, and had been shortlisted in the top 20 MSMEs for the prestigious 16th Bangladesh Int'l Plastics, Printing & Packaging Industry Fair.
- **Weather Risk Management Services (WRMS) Global** - This startup formerly incubated with SIIC, IIT Kanpur secured €2.1 million (INR 17 crore) from the InsuResilience Solutions Fund.

C3I HUB

C3iHub (Cybersecurity and Cybersecurity for Cyber-Physical Systems Innovation Hub) is a Technology Innovation Hub established at IIT Kanpur in 2020, funded by Department of Science and Technology, Government of India, under the National Mission of Interdisciplinary Cyber-Physical Systems. As the name implies, C3iHub addresses cybersecurity issues of cyber-physical systems in its entirety. From analysing security vulnerabilities and developing tools to address them at various levels of critical cyber-physical system architectures, nucleating start-ups developing such tools at scale, partnering with industries for co-development and technology transfer, to training the next generation of cybersecurity researchers, C3iHub works on every level that facilitates country's adoption and advancement of cyber-physical systems. Current employee size of C3iHub as a Section 8 company is more than 120 and is expected to reach 200 by end of 2024.

Past year was a significant year for C3iHub in terms of technology readiness to deployment, patents granted, new Govt./industry collaborations established, and increase in supported R&D projects and start-up numbers.

C3iHub's researchers have developed a unique blockchain-based (TRL 8) Transferable Development Rights (TDR) system that allows secure, transparent, and tamper-proof storage and management of Development Rights Certificates (DRCs). A secure wallet linked to Aadhaar is issued to owners to store the DRCs. The TDR portal is integrated with online building plan approval system allowing authorities to monitor the real-time usage of DRCs. C3iHub's developed portal has success-

fully undergone user acceptance testing and has gained approval from the Kanpur Development Authority (KDA) for rollout in Kanpur. Successful deployment in Kanpur will pave the way for its broader deployment across Uttar Pradesh. Deployment of this technology will enable transparent trading of land holdings in cities that have been acquired by city administration, and reduce litigations, frauds, scams and other such issues.

TDR Portal Dashboard

C3iHub researchers have designed and developed a novel technology, 'ADAPT' (TRL 4), adaptive camouflage-based orchestration of behavioral honeypots, tailored specifically to capture Advanced Persistent Threat (APT) attacks. APT attackers are sophisticated attackers, often backed by nations, who remain undetected in user networks and computer systems for a prolonged period with goal of stealing critical and sensitive data as well as gaining command and control of user- and user-associated systems, causing catastrophic consequences. Their usual targets are crucial national entities like government, critical infrastructure, and defense. Traditional honeypots fail to engage APT attackers through the entire attack life cycle. C3iHub researchers strategically positioned the

attack paths aligning with the Tactics, Techniques and Procedures (TTPs) of three popular APT groups in the honeypot network. They also deployed a novel camouflaged chatterbox application within the honeypot network offering regular chat interface while periodically tracking attacker activity by enabling periodic log transfers. The orchestrated honeypots, deployed for 100 days, recorded 13,906,945 hits from 4,238 unique IP addresses across the globe. The honeypots successfully identified attacks from Hong Kong with similarities to known Chinese threat groups (doi.org/10.1145/3651991).

A National Patent has been granted to C3iHub researchers on "System and Method for Kernel-level Active Darknet Monitoring in a Communication Network" (Patent Number 506825). Commercial threat intelligence fails to detect & analyse organization-specific threats, while darknet monitoring works for organization-specific threats by engaging with attacker in near real-time & detecting source IP address of attack attempts. C3iHub's deployed darknet sensors successfully gather organization-specific threat intelligence.
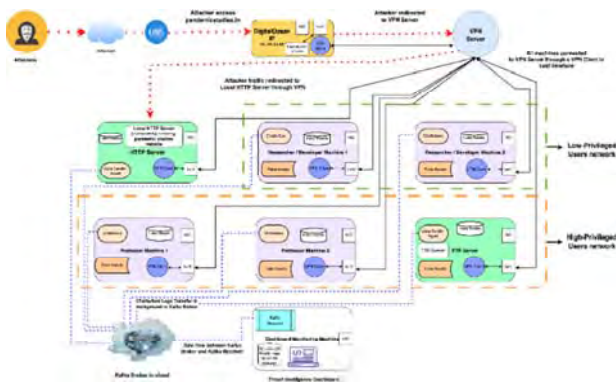
Design of Honeypot Network

C3i Hub is also developing Cyber Security Capability Maturity Model (CSCMM) and assessment and analytics tool/framework for critical sectors of the country (banking, power and energy, government, health, telecom, transport and others.) with NCIIPC (National Critical Information Infrastructure Protection Centre), and has initiated piloting with organizations of critical sectors, which will help organizations to improve their cybersecurity readiness.

C3iHub hosted two National level workshops in the last year: (i) 3rd National Workshop on Technology Innovation in Cyber-Physical Systems – TIPS 3.0, organized by the Department of Science and Technology on 5th – 6th October 2023, and (ii) 1st Workshop on Cybersecurity Capability Maturity Model (CSCMM) Development, in collaboration with the National Critical Information Infrastructure Protection Centre NCIIPC on November 3rd – 4th 2023. Also, C3iHub successfully celebrated Grand Launch of 19 incubated Start-ups from Cohorts III, IV and V on March 29, 2024 at New Delhi.

C3iHub's Govt. and Industry partnerships have significantly expanded over the last year, with MoUs signed with Tata Advanced Systems Limited (TASL), Bhilai Steel Plant (SAIL), Mumbai Port Trust, Government of Rajasthan, and International Financial Services Centers Authority (IFSCA).

Dr. Yuvraj Agarwal, Associate Professor from Carnegie Mellon University (CMU), Pennsylvania, delivered a distinguished talk at C3ihub on building and deploying trustworthy IoT systems. Dr. Charles Clancy, MITRE CTO and SVP MITRE Labs, delivered a distinguished talk at C3iHub emphasizing the im-

portance of post-quantum cryptography for a quantum-safe internet.

Professor Yuvraj Agarwal, CMU, Pennsylvania,
Dr. Charles Clancy, MITRE

C3iHub has funded 17 new R&D projects in reputed institutions across the country as well as 10 new start-ups in the last year, bringing the total number of supported R&D projects and start-ups each to fifty. More than half of C3iHub start-ups have commercialized their products. Through cyber-security skill development programs, C3iHub has trained more than 10,000 individuals in the past year.

IIT KANPUR RESEARCH AND TECHNOLOGY PARK FOUNDATION

IIT Kanpur Research and Technology Park Foundation, with the brand name Technopark@iitk, officially started its operations on 1st March 2019 with the primary intent of promoting industry, IIT Kanpur and government collaborations to create indigenous cutting-edge and cost-effective technologies.
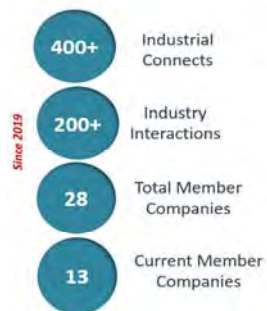
Since its inception, Technopark@iitk has been engaging with industry, big, medium, and small enterprises, and prominent industry associations. In tandem, it is actively reaching out to its other stakeholders that include faculty, students, research scholars and R&D organizations. These interactions have helped companies define their vision and key objectives. In the past five years, having reached out to close to 400 companies and having interactions with 200+, Technopark@iitk is continuously evolving and making steady progress towards its now-clearly-defined objectives.

HIGHLIGHTS (2023-24)

Inauguration of the new State-of-the-Art Technopark@iitk Phase I Building.

The Inauguration ceremony was marked by the presence of Professor Abhay Karandikar, Secretary, Department of Science and Technology, Government of India, who served as the Chief Guest and Shri Awanish Awasthi, Advisor to the Chief Minister of Uttar Pradesh, as the Guest of Honor. Professor Karandikar, who had previously laid the foundation stone of this building during his tenure as the Director of IIT Kanpur, delivered an address envisioning Technopark as a pivotal hub for industry-academia collaborations to develop cutting-edge technologies. Shri Awanish Awasthi discussed several upcoming government initiatives, particularly in the pharmaceutical sector, aimed at bolstering IIT Kanpur's role as a vibrant industrial hub. The ceremony was presided by Professor S. Ganesh, the Former Officiating Director of IIT Kanpur

and Professor Amarendra Singh, Professor-in-Charge, Technopark@iitk.

Concurrent with the inauguration, a workshop on "Industry-Academia Collaborations: Challenges and Opportunities" was held. The workshop concluded with a comprehensive panel discussion on the "Role of Technoparks in furthering Industry-Academia collaboration".

The Phase I building is a state-of-the-art architecture spread over 2.5 lakh sq. ft. with over 1.5 lakh sq. ft. of usable space. It is equipped with the latest amenities such as auditorium, conference room, meeting and training rooms, cafeteria, recreational facility, co-working spaces and a multipurpose room.

For IIT Kanpur and Technopark@iitk, the Phase 1 building launch is an exciting chapter in times to come to bridge industry-academia for nurturing technologies and innovation. It reinforces our commitment to provide a world-class state-of-the-art infrastructure for industries to thrive and shape the future of technology.

Mission Mode Project Undertaken

Under the Defence Testing Infrastructure Scheme (DTIS) of the Ministry of Defence, Government of India, world-class Defence testing facilities are being set up in the two Defence Corridors of India, TIDCO and UPDIC. Of the three domains to be set up in the Uttar Pradesh Defence Industry Corridor (UPDIC), two verticals Communications and Unmanned Aerial Systems (UAS) are earmarked for the Kanpur node.

Technopark@iitk in collaboration with the DPSUs will host both Communications & UAS test facilities within its new building spread over an area of 18000 sq. ft. The lead industry partners for Communications and UAS verticals are Bharat Electronics Limited (BEL) and Hindustan Aeronautics Limited (HAL), respectively. The facilities will be available for use for startups, industry and academia at fixed user charges.

Technopark@iitk has also signed an MoU with the UP Expressways Industrial Development Authority (nodal agency for UP Defence Corridor) to offer R&D support to the companies participating in the corridor activities.

R&D Impact Generated

Technopark@iitk measures its success by assessing the impact generated on the IIT Kanpur R&D ecosystem through various modes of collaboration between its member companies and the IIT Kanpur ecosystem.

INDUSTRY R&D CENTERS SET UP IN TECHNOPARK	Laurus Labs (27000 sq. ft.) Establishing cGMP vector manufacturing facility
	IHUB NTIHAC FOUNDATION (27000 sq. ft.) Cybersecurity Technology Innovation Hub
	TVM Signalling & Transportation Systems (1600 sq. ft.) Establishing R&D facility to develop new technologies for Railways
	Merai Newage (3500 sq.ft.) Establishing AI/ML facility
	Q-Line Biotech (4700 sq. ft) Establishing R&D facility to develop Medtech products
	GCRS, Medetronix, SkyAI, Cingularity TEC (2500 sq.ft.)

Projects Sanctioned	MoUs/NDAs Signed
JK Cement (3)	Aditya Birla Science and
JK Fenner (1)	AVPL International
Meril Diagnostics (1)	Absolute
Technithon International	JK Fenner
Toka Technologies (1)	Jindal Stainless Limited
Four (4) in discussion stages	

Miscellaneous

- Three Student Awards (under CSR) by JK Fenner.
- Full-time hirings by TISA Aerospace (2), Meril Diagnostics (11), Q-Line Biotech (1), Maraal Aerospace (1).
- Sponsorship for Chemineers Society event (2023) by Medetronix.
- Discussions underway for Licensing and commercialization of a patented technology (Bhu Parikshak).
- Showcased the IITK ecosystem at different industry forums and platforms
- Created Job Opportunities.

Current Member Company Portfolio

Laurus Labs is a leading research-driven Indian multinational pharmaceutical and biotechnology company headquartered in Hyderabad. Founded in 2005, the company is heavily R&D driven and invests in cutting-edge research to develop new cures for challenging diseases. The focus areas include Generics API, Generics FDF and Synthesis. (*Member since September 2023*)

Q-line Biotech is a leading provider of in-vitro diagnostic (IVD) products and instrumentation since 2013. It offers a diverse range of diagnostic solutions including clinical chemistry analyzers, reagents and rapid tests catering to various medical specialities. The company has two ISO 13485:2016 and GMP certified manufacturing units in Delhi and Lucknow with complete assembly and packaging lines and quality check labs. (*Member since May 2023*)

Merai Newage is an Indian medical device company that manufactures clinically researched in-vitro diagnostic kits and surgical needs like vascular intervention devices, orthopaedic implants, robotics, endo-surgery, and ENT products. (*Member since March 2024*)

Medetronix is a medical device manufacturing company specializing in portable medical diagnostic & biosensing devices with an aim to advance electrochemical sensing technologies capable of facilitating multiple real-life health sensing and diagnostics. The company has its presence in Bengaluru as well. (*Member since May 2019*)

TVM Signalling and Transportation Systems are system integrators and solution providers in the Transportation sector, focusing on Railway Signalling, Smart City domains. As a group company of 106+ year old Kyosan Electric Manufacturing, Japan, it has performed 1,000+ turnkey commissioning for the railways of India, Bangladesh, and Malaysia, and provided Signalling Design Engineering Services for the railways of UK, South Africa, and Australia. (*Member since March 2024*)

Injectoplast is a leading system supplier to the Automotive industry in India and worldwide, providing solutions for modules and systems made of engineering plastics components and assemblies. The company has three manufacturing facilities at Kanpur, Pune and Chennai serving the major automotive car making hubs in India. (*Member since June 2019*)

TISA Aerospace is a Hyderabad-based OEM for Unmanned Aerial Vehicles (UAVs) specialized in design and development of Fixed wing UAVs and Hybrid Drones. The company is a subsidiary of Raghu Vamsi Machine Tools and extends its services to all leading Aerospace and Defence organizations. (*Member since 2022*)

Maraal Aerospace is a deep tech IIT Kanpur incubated startup company involved in design, development, and manufacturing of Ultra Long Endurance Fixed Wing Solar UAVs & subsequently High-Altitude Long Endurance Solar powered Unmanned Aerial Vehicles (HAPS). (*Member since 2024*)

Cingularity TEC is a leading industrial and military-grade engineering and manufacturing company specializing in the production of propulsion systems, aircraft structure components

and avionics for drone flights. (*Member since September 2022*)

IHUB NTIHAC Foundation is a Section-8 not-for-profit company set up under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS). With the intent of developing a robust cyber-security ecosystem, the company focuses on active research and development in cybersecurity of cyber physical systems across the country.

SkyAI Technologies is an AI based product development company that specializes in artificial intelligence, computer vision, machine learning, IOT solutions, customized software and enterprise SaaS products. Some of their products include Personalized Recommendation System, Anti-Drones System, Vision-based Precision Landing, On-board Module for Drones, Face Mask Detection, Face Recognition and VIP customer alert and Object Detection in Aerial Images. (*Member since August 2023*)

Geo Climate Risk Solutions is a solution provider, consultancy and advisory services firm that focuses on environment and sustainability challenges, climate and natural hazard risk analytics, groundwater impact assessment, GHG emission and environment social governance, geospatial tech integrations, and water and land risk sustainability. (*Member since August 2020*)

HRMAC Technologies is an ISO certified MSME enterprise for product designing, fabrication, processing, characterization, modelling, and simulation of advance materials for applications in different industrial sectors. (*Member since 2022*)

Technithon International is a Singapore based leading provider of sustainable green technologies for surfactants and specialties, oleochemicals and environmental systems for abatement of emissions. (*Member since May 2021*)

JK Cement is one of India's leading manufacturers of Grey Cement and one of the leading White Cement manufacturers in the World. (*Member since November 2021*)

DRDO-INDUSTRY- ACADEMIA CENTRE OF EXCELLENCE AT IIT KANPUR (DIA COE IITK)

Technology life cycle is getting shorter and shorter with the advancement in science, thereby, affecting the entire humanity. For our Armed Forces, threat scenario is ever changing, and the need of the hour is that we equip them with systems that have superior operational capabilities to combat. It means exploration of newer technologies all around. At the same time, self-reliance in critical technologies is also required to escape from the clutches of exploitation and dependency. Therefore, one must focus on developing state-of-the-art systems from multiple angles and engage in interdisciplinary research by leveraging internal expertise available within the country.

IIT Kanpur and Defence Research & Development Organisation (DRDO) have collaborated to establish a DIA CoE at IIT Kanpur for interdisciplinary research in next generation defence technologies. Shri Sanjay Tandon, Professor of Practice, Dept of Management Sciences is the Director of the Centre.

The aim of the Centre is to build an ecosystem to facilitate technology development in the academic environment through experienced faculty and bright scholars. It is expected to harness and synergize the strengths of academia, student community, research scholars, niche technology industries, and DRDO scientists to provide impetus to research and innovations in identified technology domains.

This centre is mandated to spearhead focused research in identified research and development verticals, including Printing on Flexible Substrates to build devices and systems based on thin films for strategic applications; Advanced Nanomaterials to provide fundamental contribution to material selection and design; Accelerated Material Design and Development to reduce the number of actual trial experiments while reaching optimal solution via high throughput experiments; High Energy Materials to focus on the modelling of high-performance explosives and performance prediction of metalized explosives; and Bio-Engineering to develop technologies for applications ranging from sensing hazardous agents to wound healing. Professor S Sundar Kumar Iyer (EE), Professor Kantesh Balani (MSE), Professor Amarendra Kumar Singh (MSE), Professor Jayant Kumar Singh (CHE), and Professor Vivek Verma (MSE) respectively have been nominated as Research Coordinators (RCs) for these research verticals (RVs).

In the last one year, several steps, such as, interactions with DRDO scientists in the form of meetings, visits, and workshops to understand DRDO's needs and to identify potential areas of collaboration; recruitment of manpower; and allocation of space, have been taken for setting up of DIA CoE IITK. As a result of these efforts, a total of 75 project proposals,

worth more than Rs. 465.27 crore, have been submitted on a diverse range of topics for the consideration of DRDO.

Research Vertical (RV)	Proposals Submitted	Cost (in crores)	Proposals under consideration for Funding	Cost (in crores)
Printing on Flexible Substrate	11	77.31	6	64.77
Advanced Nanomaterials	19	111.73	4	38.07
Accelerated Material Design & Development	13	126.68	6	87.33
High Energy Materials	9	54.48	8	46.71
Bioengineering	16	67.19	10	14.70
Outside the RVs of DIA CoE IITK	7	27.88	5	24.51
Total	75	465.27	39	276.10

Research Vertical wise compilation of project proposals submitted and under consideration with DRDO

Projects in Printing on Flexible Substrates include Flexible antenna for software-defined radios (SDR); Miniaturized multi-band antenna; Flexible printable electronics for stealth applications; Flexible encapsulation for photovoltaic (PV) devices operating under harsh environment; Flexible solid-electrolyte alternative chemistry batteries.

Projects in Advanced Nanomaterials include Multispectral stealth solutions with coatings and meta-surfaces; Third generation super-hydrophobic foul-release marine coatings; Smart metamaterials for radio frequency (RF) stealth solution; Metamaterials for antenna.

Projects in Accelerated Material Design and Development include Accelerated development of next generation naval steel; Ti-based superalloys; Measurement of properties and defect detection in multilayer composites.

Projects in High Energy Materials include High pressure route to nitrogen rich HEDM; Insensitive high energy density material (HEDM) Developing catalytic Strategies for enzymatic degradation of nitrocellulose (NC) and other nitro-aromatics; Shock attenuation in layered targets; Particle morphology characterization tools and software; Analysing shock effects through reactive molecular dynamics simulations.

Projects in Bioengineering include Simulation model for forced air multi-fuel space heater; Measuring trust in human robot interaction in emergency situation.

Besides the above, Centre has also received project proposals which were beyond the research verticals identified for our Centre like Dynamic suspension-based space robotics platform for experimental validation of spacecraft close-proximity operations; and Development of formally verified micro-kernel for SDR. These proposals have been forwarded to other DIA CoEs whose RV areas are aligned with that of the submitted proposal areas, for their consideration.

GANGWAL SCHOOL OF MEDICAL SCIENCES AND TECHNOLOGY AT IIT KANPUR

On September 25th 2023, the Bhoomi Pujan of the Gangwal School of Medical Sciences and Technology was carried out to initiate the construction of Medical School, Super speciality hospital, academic block, and others. The event was held in the presence of Director, IIT Kanpur; Deputy Director, IIT Kanpur; Board members of IIT Kanpur, associated deans, faculty, staff, Shri. Ajay Saraogi from JK Cements, several donors, team members of Tata Consulting Engineers Limited (Project Management Consultants), and Larsen and Toubro (L&T) (Contractor).

INFRASTRUCTURE

Following the floating of tender in the CPP Portal on March 3rd, 2023 for executing the construction activity, which includes super-speciality hospital (G+5), academic block (G+5), utility block, roads, culverts, underground services, other services like main gate, compound wall, street lighting, landscaping, and others., several processes were carried out to award the contract to L&T in September.

L&T shared the timeline of 24 months for completing the construction and commissioning of the project. Construction work has started on-site and a recent picture is shown here:
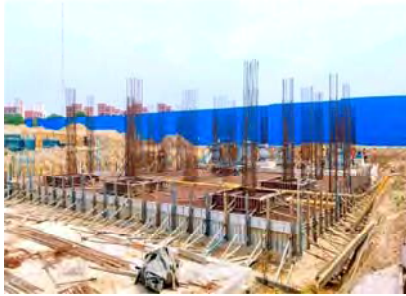
The tender for the construction of studio apartments for resident doctors and development of the school complex with funding support from REC Foundation and IBM India Pvt Ltd has been initiated in the allocated site for Gangwal School on IIT Kanpur Campus. Campus development including boundary walls, road development, landscaping, and others are going on. At present, the casting of slab up to G+9 is completed for the residential block at the site.

RESEARCH & DEVELOPMENT

As a part of futuristic medical technology, eleven R&D centers of excellence (CoE) have been planned. Some CoEs have been recognized by donors for funding. These CoEs will be executed phase-wise and are expected to deliver to the society and country.

Blood Pump Assembly

The Hridyantra (LVAD) project has advanced to the next level wherein the following steps are being focussed:

- Full maglev technology and associat-

ed electronics and control

- Endurance tests of an extracorporeal device with fresh human blood
- Planning and conducting large animal trials with the device in explanted and in vivo implanted conditions
- Planning clinical trials in a major centre of cardiovascular surgery

Further, 11 Centers of Excellence proposals were submitted to be considered as "Flagship Projects" for funding from the Institute. Clinical and Technical experts reviewed the presentations. Four proposals are identified for "Flagship Projects" and two proposals are recommended as "Proof-of-concept" technology demonstrators.

Flagship projects

- Self-navigating smart wheelchair: Bishakh Bhattacharya and team
- Percutaneous mechanical circulatory support systems: Pranav Joshi and team
- Single optical fiber-based endoscope: Harsha Wanare and team
- 3D printed interbody spacer with nanoparticles for spinal deformity: Ashok Kumar and team

Proof-of-concept technology demonstrators

- Rapidly deployable cardiac digital twin: Ketan Rajawat and team
- Technology platform for eradication of bacteria by plasmonic heating: Nagma Parveen and team

Several activities including symposiums, seminars, team visits, and workshops are being conducted by the R&D team to actively engage in the MedTech domain. Some activities are described below:

Shri Awanish Awasthi and Dr. GN Singh, Advisors to Hon'ble Chief Minister of UP visited Gangwal School. They discussed plans for medical education, R&D and innovation in biomedical technology and reimagining medical education and ushering in novel health technologies in Uttar Pradesh.

Dr Akhilesh Sharma, President of Alkem Laboratories visited IIT Kanpur in July 2023 and discussed mutually interesting areas of drug discovery, APIs, disease biology, and other avenues with faculty members associated with Gangwal School.

Engagement with Uttar Pradesh Government (ICICI Bank Foundation): Shri Ranjan Kumar, Secy Health, GoUP, Shri PS Sen Sharma, PS, Health, GoUP, and their team members visited IIT Kanpur on September 14, 2023. MoU between DHFW, **GoUP** & IIT Kanpur was signed for UP Digital Health Stack.

IIT Kanpur has signed an MoU with Swansea University, United Kingdom on August 14, 2023.

Gangwal School of IIT Kanpur and the University of Glasgow, Scotland signed an MoU on November 9, 2023 for various initiatives on Research and Development.

An MoU between the Gangwal School of Medical Sciences and Technology, IIT Kanpur, and Faculty of Medicine, Dentistry, and Health Sciences, University of Melbourne, was signed by the former officiating Director, IIT Kanpur, on 30th November 2023.

As an advancement in fortifying the collaborative research and training between the IIT Kanpur and Armed Forces Medical Services (AFMS), Professor S. Ganesh, and Professor Sandeep Verma, Professor-in-Charge, GSMST & Air Marshal Sadhna S Nair, VSM, DGHS(AF) discussed areas of mutual interest.

Professor S Ganesh, the former officiating Director, IIT Kanpur and Professor Gianluca Vago, President of Fondazione CNAO signed an MoU with Fondazione CNAO - Centro Nazionale

di Adroterapia Oncologica in Pavia, Italy, to establish joint research programme.

ACADEMIC RELATIONS & PARTNERSHIPS

At present, the following faculty have been appointed for the Gangwal School:

- Dr. Vikram Mathews, Professor & Director, Christian Medical College & Hospital, Vellore, appointed as Distinguished Visiting Professor.
- Mr. Yashdeep Kumar, Global Director, Stryker Technology Center at Stryker Corporations, USA, appointed as Adjunct Professor.
- Dr. Saurav K. Bhunia, Principal R&D Engineer, Cardiovascular Systems, Inc, USA, appointed as Adjunct Professor.
- Professor Saroj Kanta Mishra, Former Professor, Department of Endocrine Surgery, SGPIMS, Lucknow appointed as a Distinguished Visiting Professor.
- Dr. Nazneen Aziz, Former President and CEO, Variant Genomics, Inc, USA appointed as a Visiting Professor.
- Professor Krishnan Ganapathy, Director, Apollo Telemedicine Networking Foundation & Apollo Tele Health Services, Chennai appointed as a Distinguished Visiting Professor.
- Professor Gaurav Agarwal, Head, Department of Endocrine & Breast Surgery, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow appointed as a Distinguished Visiting Professor.
- Professor Aditya Kapoor, Head, Cardiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow appointed as Distinguished Visiting Professor.

- Dr. Sridhar Sivasubbu, Senior Consultant, Vishwanath Cancer Care Foundation appointed as an Adjunct Professor.
- Dr. Prashant Kumar, Chief Scientific Officer, Karkinos Healthcare Private Limited appointed as an Adjunct Professor.
- Dr Venkataramanan Ramachandran BSc, MBA, LLB, EngD, Karkinos Healthcare Private Limited appointed as an Adjunct Professor.
- Professor Pratap S. Khanwilkar, Founder /CEO, Ignition Key LLC- Advancing Healthcare appointed as a Professor of Practice.
- Dr. Martin J. Lohse, Institut fur Pharmakologie und Toxikologie, Germany appointed as a Distinguished Visiting Professor.
- Professor Richard Anthony Strugnell, Dept. Microbiology and Immunology, The University of Melbourne appointed as a Distinguished Visiting Professor.
- Professor Jaideep Srivastava, Dept. of Computer Science & Engineering, University of Minnesota, USA, appointed as a Distinguished Visiting Professor.
- Professor Costanza Emanueli, Faculty of Medicine, National Heart & Lung Institute, Chair in Cardiovascular Science, Imperial College, London appointed as a Distinguished Visiting Professor.

FUNDRAISING

	DONATION TOWARDS ESTABLISHMENT OF SCHOOL
	US$ 0.75 MILLION
	MOU SIGNED BETWEEN IIT KANPUR AND MR. DEEPAK NARULA
HDFC BANK	DONATION TOWARDS ESTABLISHMENT OF EMERGENCY & TRAUMA CARE CENTER
	₹ 20 CRORES
	MOU SIGNED BETWEEN IIT KANPUR AND HDFC BANK LTD.
	DONATION TOWARDS ESTABLISHMENT OF A BAY IN GENERAL WARD FOR WEAKER SECTION OF PATIENTS
	₹ 41 LAKHS
	MOU SIGNED BETWEEN IIT KANPUR AND SIKHWALA & FAMILY

DONOR VISITS

Mr. Hemant Jalan, MD, Indigo Paints, founder-donor of the Gangwal School of Medical Sciences and Technology visited IIT Kanpur on 4th September 2023. He shared his ideas and proposed ideas to develop the World's best Med Tech technology.

Dr Dev Joneja, Chief Risk Officer at Exodus Point Capital Management, founder donor of the Gangwal School of Medical Sciences and Technology visited IIT Kanpur on 28th December 2023. After a brief discussion with Professor Ganesh, the officiating Director, IIT Kanpur and the GSMST team, he visited the Hridyantra project facility and the medical school construction site.

Alumni Visit

Mr. Arun Seth (BT/EE/1973) visited campus and discussed the ongoing activities of the Medical School and the grand vision for the future. He has been an Advisory Board Member and Task Force member of the Medical School at IIT Kanpur since the nascent stages of the project and is also a board member of the Section 8 company IIT Kanpur Foundation for Medical Research and Technology.

Mr. Gautam Khanna (BT/ME/1988) presently CEO of PD Hinduja Hospital & Medical Research Centre and Head of Hinduja College of Nursing, Mumbai also visited campus and discussed the ongoing activities of the Medical School. He's been an active member of the Task Force of the Medical School at IIT Kanpur since the very beginning stages of the project and has been contributing his valuable suggestions and facilitating various collaborative activities. During his visit he also visited the construction site and R&D labs.

MEHTA FAMILY CENTRE FOR ENGINEERING IN MEDICINE

Major highlights of the centre for the year 2023-2024 are listed below:

Inauguration and Research Symposium Mehta Family Centre for Engineering in Medicine

The inauguration of the Mehta Family Centre for Engineering in Medicine, IIT Kanpur was held on November 6th 2023, marked by a two-day inaugural research symposium.

The inauguration was graced by presence of Shri Rahul Mehta and Smt Jyoti Mehta of the Mehta Family Foundation, Dr. Shankar Subramaniam, UCSD, Dr Gang Bao, Rice University, invited heads from other Mehta Family Centres, students and faculty of IIT Kanpur.

Dr. K. Radhakrishnan, Chairman BOG, IIT Kanpur and Professor S. Ganesh the Former Officiating Director IIT Kanpur, presided over the inaugural function. Professor. Abhay Karandikar, Secretary, Department of Science & Technology (and the former Director of IIT Kanpur) was the honourable Chief Guest for the occasion.

The two-day research symposium was organized in three modules covering the three focus areas of MFCEM, namely Digital medicine, Molecular Medicine and Regenerative medicine. Keynote addresses by stalwarts in respective fields, invited talks, students' presentations and poster sessions provided an exhilarating platform for vibrant interaction and discussion.

Summary

▪ Awards / Honors / Recognitions	8
▪ Fellow of Academy	1
▪ Elected President/Chair/Board member	11
▪ Fellowships and Grants	6
▪ Patents (Filed/Granted)	22
▪ Peer reviewed Publications	53

MFCEM Events

- ▪ (MFCEM Dialogues/Workshop)   6
- ▪ Student Achievements   14

MFCEM inauguration and ribbon cutting ceremony

Awards / Honors / Recognitions

- Professor Dhirendra S. Katti was awarded the Tata Innovation Fellowship
- Professor Ashok Kumar was awarded the Dr. Nandagudi Suryanarayana Rao Academic Award, by the National Academy of Medical Sciences (NAMS) for the year 2023.
- Professor Ashok Kumar was conferred the Distinguished Biomaterials Scientist Award, by the Society of Biomaterials and Artificial Organs, India (SBAOI)—for his seminal contribution in the areas of functional cryogel biomaterials and bone substitutes in regeneration.
- Professor Nitin Gupta was awarded the S. Ramachandran National Bioscience Award for Career Development.
- Professor Ramasubbu Sankararamakrishnan was awarded the Distinguished Teacher Award, 2023.
- Professor Sandeep Verma was conferred the INAE-SERB Abdul Kalam Technology Innovation National Fellowship.
- Professor Arun Kumar Shukla was awarded the Infosys prize, 2023 in Life Sciences for his pathbreaking contributions to the field of G-protein coupled receptor (GPCR) biology.
- Professor Bushra Ateeq was awarded the Rajib Goyal Prize (2021-2022) for Young Scientists conferred by Kurukshetra University (2024) in the Life Sciences category.

Fellow of Academy

- Professor Bushra Ateeq was elected Fellow of Indian National Science Academy.

- Prof. Ashoke De was elected as Associate Fellow of the American Institute of Aeronautics and Astronautics.

Elected President/Chair/Board member

- Professor Ashok Kumar has been elected as the President of the prestigious Society for Biomaterials and Artificial Organs India.
- Professor Dhirendra S. Katti has been elected as Presidents of the prestigious Biomaterials and Tissue Engineering Societies of India.
- Professor Bushra Ateeq, was elected External Member Senate of the NIPER-Raebareli (Sept 2023 – Sep 2026).
- Professor Bushra Ateeq was inducted as member, Academic & Research Programme Advisory Committee 2023 of Satyendra Nath Bose National Centre for Basic Sciences, Salt Lake, Kolkata
- Professor Jayandharan Rao was elected member Board of Studies, School of Health Science and Technology, VIT, Vellore.
- Professor Jayandharan Rao was inducted into Selected Expert Committee (SEC) on Biomanufacturing for the sub-sector - Precision Biotherapeutics: Cell and Gene Therapy. 2023
- Professor Jayandharan Rao was Selected Expert Member (SEC), Program Advisory Committee (PAC), CRG, SERB, India. 2023
- Professor Jayandharan Rao was inducted in Faculty Selection committee, Pandit Deendayal Energy University, Gandhinagar 2023
- Professor Jayandharan G. Rao was accorded the Chair 2023, Global outreach Committee 2023, American Society of Gene and Cell Therapy, Washington DC, USA.

- Professor Jayandharan G. Rao was accorded the Chair 2023, Training sub-committee, Education and outreach Committee, International Society of Thrombosis and Hemostasis, USA.
- Professor Ashok Kumar has been appointed as the Director of the IIT Kanpur-La Trobe University Research Academy.

Fellowships and Grants

- Professor Sandeep Verma received Abdul Kalam Technology Innovation National Fellowship by the Indian National Academy of Engineering for "Chemically Engineered Thermostable Human Insulin for Diabetic Patients"
- Professor Sandeep Verma received fellowship from the Ministry of Education, STARS Scheme, for "Development of nitric oxide releasing multifaceted biomaterial based-approach for infected diabetic wounds",
- Professor Jayandharan Rao, received the Wellcome Trust DBT Team Science Grant (Rs. 998 Lakhs) for "Next generation AAV vectors for Duchenne Muscular Dystrophy gene therapy".
- Professor Jayandharan Rao initiated the Laurus lab-IITK consultancy for Development of cGMP facility at IIT Kanpur.
- Professor Bushra Ateeq, received the Transformational and Advanced Research in Sciences (STARS); Ministry of Education; Indian Institute of Science, Bangalore, for "Targeting oncogenic transcription factor ERG in prostate cancer by employing HBS-α-helicomimics technology".

- Professor Rakesh Kumar Majhi, received the DST-Technology Development Program, for Therapeutic Anti-microbial Chemicals and Antimicrobial Peptides (TACAP). Role: Co-PI.

MFCEM Dialogues

The MFCEM Dialogues is an interactive event that includes a short presentation by the global leader in the field of "Engineering in Medicine".

- The first MFCEM Dialogues talk had Professor Mriganka Sur, Newton Professor of Neuroscience, Massachusetts Institute of Technology, on February 24, 2024.
- For the second MFCEM Dialogues session, Dr. Deepak Vashishth, the Director of Rensselaer Polytechnic Institute Center, for Biotechnology and Interdisciplinary Studies (CBIS), gave a talk on "Loss and Modulation of Bone and Brain Health in Diabetes and Alzheimer's", on March 18, 2024.

MFCEM Workshops

Three workshops were organized and the intent of the workshops was to invite young bioentrepreneurs to interact with the student community and share their experience of running bio-inspired startups.

- Ms. Rashie Jain is an entrepreneur, co-founder and CEO of Onco.com, a healthcare technology company focused on providing end-to-end care management to cancer patients. Rashie Jain did her BTech from BSBE, IIT Kanpur.

- Dr. Aridni Shah is the Co-Founder and CEO of immunitoAI, accompany that develops novel antibody therapeutics with pre-defined drug properties using AI-based bottom-up approach.
- Professor Sandhya Kaushika, Tata Institute of Fundamental Research (TIFR), Mumbai, conducted a vibrant session on "Fun & frustration: navigating career paths in science".

Student Achievements

- Sakshi Goel, PhD student of Professor Bushra Ateeq, was awarded the INSA Medal for Young Scientists 2022.
- Deepak M. Khushalani PhD student of Professor Nitin Mohan, has won the Best Poster Presentation Award at the Annual PMRF (Prime Minister's Research Fellowship) Symposium organized at IIT Madras, February 2023.
- Ankita Das a PhD student of Professor Ashok Kumar, was awarded the best oral presentation for "Elastomeric antioxidant cardioprotective patches: A paradigm bioengineered intervention" at the ACMR 2023.
- Tanay Biswas, A PhD student of Professor Bushra Ateeq, has been selected for the Mehta Rice Engineering Scholars Program, an initiative of The Bhupat & Jyoti Mehta Family Foundation & Rice University.
- Triya Saha, A PhD student of Professor Ashok Kumar received the Bajpai-SAHA Student Award for the Best Oral presentation during the 33rd National Conference of the Society for Biomaterials and Artificial Organs, India (SBA-OI) and the International Conference on Biomedical Materials and Technology" BioTEx 2023 Nov 29 to Dec 1, 2023 at the Indian Institute of Technology Delhi, India.

- Ekta Srivastava, A PhD student of Professor Ashok Kumar has received the Best Oral Presentation Award at ICCM 2023.
- Zahra Sifat Zaidi, A PhD student of Professor D Katti, has received SBAOI Best Poster (Third prize) Presentation Award in the International Conference on Biomedical Materials and Technology BioTEx 2023, organized by SBAOI held from Nov 29- Dec 1, 2023, at the Indian Institute of Technology Delhi, Delhi, India.
- Saptomee Chakraborty, A PhD student of Professor Dhirendra Katti received ACS Best Poster Presentation Award International Conference on Biomedical Materials and Technology BioTEx 2023, organized by SBAOI held from Nov 29- Dec 1, 2023, at the Indian Institute of Technology Delhi.
- Ubaid Tariq, A PhD student of Professor Ashok Kumar was recipient of Best Poster Presentation at the International Conference on Biomedical Materials and Technology" Bio-TEx 2023; Nov 29 to Dec 1, 2023 at the Indian Institute of Technology Delhi, India.
- Mohan Kumar BS, A PhD student of Professor Jayandharan G Rao, has been selected as Prime Minister's Research Fellow (PMRF) 2023. He has also been selected to receive a 2023 ASH Abstract Achievement Award (2023) in the 65th ASH Annual Meeting & Exposition, San Diego, California during 9-12, Dec 2023.
- Pratiksha Sarangi, A PhD student of Professor Jayandharan Rao has been selected for a poster presentation for her work titled "AAV based lncRNA and factor 8 gene therapy is therapeutic in a murine model of hemo-

philic arthropathy" the ESGCT 30th Annual Congress, Brussels on 24-27, Oct 2023.

- Deepak Khushalani A PhD student of Professor Nitin Mohan, was conferred with the Best Poster Award at the All-India Cell Biology Conference 2024, held at ACTREC, Tata Memorial Centre Mumbai
- Umar Khalid, A PhD student of Professor Bushra Ateeq, was awarded the "Mangala Bamne Young Scientist Award for Oral Presentation" at the 43rd Annual Indian Association for Cancer Research (IACR) Conference 2024.
- Ayush Goel, A PhD student of Professor Bushra Ateeq, has been selected for the highly competitive Overseas Visiting Doctoral Fellowship (OVDF) under the Purdue University- Science and Engineering Research Board (SERB), India partnership program.

CHANDRAKANTA KESAVAN CENTRE FOR ENERGY POLICY AND CLIMATE SOLUTIONS

The Chandrakanta Kesavan Centre conducts Lecture Series, workshops, in IIT Kanpur to foster sustainability and innovation. From climate modelling to decarbonization, these initiatives aim to achieve a zero-landfill campus, engage academia, and train military engineers, while inspiring young minds on renewable energy and environmental stewardship.

HIGHLIGHTS OF 2023-2024

Chandrakanta Kesavan Lecture Series

This series featured eight lectures by eminent personalities from academia and industries. The lectures covered topics such as climate modelling, sustainable technologies, path to Net-zero, wastewater treatment, environmental governance and India's energy transition, enriching knowledge in these fields.

Zero landfill IIT Kanpur campus

An audit was completed for all the waste generated @ IIT Kanpur. The audit is the first step in creating the plan for a zero landfill IIT Kanpur campus.

Conferences/Workshops/Symposiums

 An "India-UK Symposium on Decarbonization and Sustainability: Engaging Academia and Industries for Net-Zero [Sustain-NZ]: Held on 26-27 February 2024, the symposium addressed the environment friendly energy technologies, such as next generation solar, batteries or hydrogen technologies, that are made using cheap, abundant, and sustainable materials with the aim to mitigate the climate crisis. Scholars, researchers from India and UK, and industry experts attended, with a focus on the future energy transition.

Partnerships

MOU signed with Military Engineer Services (MES) Jhansi and Lucknow to help them become carbon neutral; various tasks carried out so far are:

- Two hands-on training sessions on carbon-neutral campuses and their certification were conducted.

- Plan to do a land availability audit to help them set up a solar power system.
- Discussions are underway to help them create a net-zero energy, net-zero water and waste building at MES Jhansi

Fostering young minds

To make them aware of sustainability & renewable energy sources and the related experiments, a visit was planned for school kids (40 students of KV IIT Kanpur) on October 12, 2023.

SAMTEL CENTRE FOR DISPLAY TECHNOLOGIES AND NATIONAL CENTRE FOR FLEXIBLE ELECTRONICS

VISION AND OBJECTIVES

Samtel Centre for Display Technologies

The Samtel Centre for Display Technologies, known more popularly as Samtel Centre or SCDT, is a multi-disciplinary research and development centre working on prototype building and eventual productization of technology related to Flexible Electronics. The area of focus broadly includes large area electronics which are typically printable and are likely to be built on an organic electronics base. The ideas explored at the centre are necessarily linked to a real-world application with some practical value. The prototype building and productization are carried out primarily at its industry outreach arm - which is the National Centre for Flexible Electronics (FlexE Centre) - typically with active involvement and participation of

industry partners right from the early stages of development and product conception.

National Centre for Flexible Electronics

The National Centre for Flexible Electronics (NCFlexE, also known as the FlexE Centre) was set up as a Centre of Excellence at IIT Kanpur in 2014 with financial support from the Ministry of Electronics and Information Technology (MeitY), Government of India, and IIT Kanpur. The vision of this Centre is to catalyse the development of domestic industry in the field of large area flexible electronics, and this vision is being executed with the Centre serving as a bridge between the academic ecosystem and the industrial ecosystem. The second phase of NCFlexE has been sanctioned for the tenure of five years starting from November 2023.

Sl No.	Particular	No.
1.	Patents filed	17
2.	Publications	09
3.	NDA with Industries	07
4.	Ongoing Projects	2

Table summarising the activity parameters for the Centres for the last financial year

Technology Transfer

The technology for simultaneous detection of direct and total bilirubin, developed at the National Centre for Flexible Electronics (NCFlexE), IIT-Kanpur, has been licensed to Sensa

Core Medical Instrumentation Pvt. Ltd., a Hyderabad based company which is a leading manufacturer of Ion-selective Based Electrolyte Analyzers, Arterial Blood Gas Electrolyte Metabolite Analyzers, Glucose Test strips and Haemoglobin Test Strips. The bilirubin sensor incorporates a unique five-electrode configuration that allows simultaneous detection of direct and total bilirubin on a single strip, and comprises a novel trimetallic nanocomposite-based catalyst, which can detect bilirubin effectively despite the presence of other components in the sample. Bilirubin is a pigment in our blood, detecting the level of which can help diagnose certain health conditions, such as jaundice. This sensor is expected to be used for bedside testing, in diagnostic laboratories, and even in health screening centers.

Outreach Activities

Participation and exhibition on the following events were held:

- 4th Electronics Supply Chain Summit in, Radisson Hotel, Noida from 8th May, 2023 to 9th May, 2023.
- Semicon India 2023', a premier showcase of India's semi-conductor capabilities and chip design innovation, Exhibition in Gandhinagar from 25th July 2023 to 30th July 2023.
- PAMEX-2024 (An International Exhibition on Printing and Allied Machinery Industries), organized by All India Federation of Master Printers (AIFMP) at Bombay Exhibition Center, Goregaon, Mumbai, Maharashtra, India, 6-9 February 2024.
- 50th Dairy Industry Conference & Exhibition 2024, hosted by Indian Dairy Association (IDA), at HITEX Exhibition

Center, Hyderabad, India, 4th March, 2023 to 6th March 2024.

SCDT-FlexE Centre Webinar Series (launched in 2021 and is on-going since)

SCDT and FlexE Centre Webinar Series brings together every month scientists, engineers, researchers, students, entrepreneur and industry players involved in different aspects of flexible electronics from around the country (and sometimes outside India as well) on a common platform. Speakers in these monthly one-hour webinars are accomplished individuals in any field associated with flexible electronics. All details can be found at https://www.iitk.ac.in/scdt/webinars.html

Awards and Honors

- IIT Kanpur was honored with the prestigious **AssisTech Foundation (ATF) Awards 2023** for engaging in assistive technology activities with the "Best AT Initiative by Educational Institutes" under the enablers category of ATF Awards. The award was based on activities including the technologies developed at the National Centre for Flexible Electronics - "Haptic smartwatch for blind and visually impaired" and "Single refreshable braille cell based braille learning device with a touch sensitive array". The award ceremony took place in Bengaluru during the Bengaluru Tech Summit (BTS) on 1st December, 2023. ATF Awards is India's first and foremost dedicated flagship awareness initiative for the Assistive Technology ecosystem. These awards aim to recognize the unsung heroes who are signif-

icantly impacting the lives of people with disabilities world-wide through the power of Assistive Technology (AT).

- IIT Kanpur was bestowed with a prestigious **STEM Impact Award 2024** for engaging in impactful technology transfer activities, during the annual STEM Summit - 2024, held in Bengaluru on February 1, 2024, in recognition of the socio-economic impact created with the technology transfer of the invention of a 'Haptic Smart Watch for Blind & Visually Impaired', developed at the National Centre for Flexible Electronics. STEM (Society for Technology Management) is a non-profit organization providing a facilitative environment for Technology Transfer Processes and professional development of technology management professionals in Life Sciences, Material Sciences, IT, Engineering, Law, and others.

NATIONAL AEROSOL FACILITY

The National Aerosol Facility (NAF) at IIT Kanpur in collaboration with Bhabha Atomic Research Centre (BARC) under Department of Atomic Energy (DAE) is a state-of-the-art, multi-purpose research center dedicated to study aerosol behaviour under conditions simulating severe nuclear reactor accidents. During such accidents, fission products are typically released from the reactor core as aerosol particles and gases. Their release, transport, and retention within the reactor and containment systems directly impact the potential spread of radioactivity to the environment, posing significant risks to human health. Given the hazardous nature of these aerosols, NAF plays a vital role in understanding the behaviour of aerosols and improving safety measures and mitigation strategies. The

major objectives of NAF include generating an extensive database on aerosol retention factors in representative PHT (Primary Heat Transport) piping systems for various thermal-hydraulic conditions during typical post-severe accident scenarios, both dry and wet conditions. This database is used for the validation and development of nuclear accident codes.

In April 2022, NAF completed its setup and commissioning activities for nuclear reactor safety research on Indian PHWRs. Key milestones include the characterization of aerosol generators and the initiation of experiments, which enhance safety measures for Indian PHWRs. Currently, a Research Establishment Officer and a senior project scientist are working at NAF. The future research agenda at NAF encompasses several key initiatives. Experiments will be conducted to measure temperature profiles across various sections of the test area, alongside refining sampling methodologies to analyze aerosol number and mass characteristics. Recent developments have seen the initiation of a new project in collaboration with Reactor Safety Division (RSD) of BARC, titled "Aerosol Transport Behaviour Experiments at National Aerosol Facility in Context of Nuclear Reactor Accidents," with a funding of Rs. 48 Lakh awarded in April 2023. The NAF is supporting numerous initiatives, ensuring the facility's self-sufficiency. Presently, projects totalling about 55.5 crore are in progress. This influx of funding

from ongoing and previous projects underscores the robust economic sustainability of the facility.

Following are the wide array of projects and initiatives registered under NAF. The funding agencies and title of the projects are mentioned below.

Swiss Agency for Development and Cooperation (2020-2024). Contribution to Research for Clean Air Project in India.

Central Pollution Control Board (2022-2025). Creation of Secretarial Support at IIT Kanpur.

Klenviron Technologies Pvt. Ltd (2024-2027). Testing the Efficacy of Air Purifier Modules under Outdoor and room Conditions.

Center of Excellence in Artificial Intelligence (2024) for Sustainable Cities in PoC stage. Forecasting and modelling for Urban sustainability under 4 tracks viz. Air Quality, Energy, Mobility and Governance.

Ministry of Earth Sciences (MoES) (2023-2027). Ice Nucleating Particle and Cloud Condensation Nuclei Properties in The North-Western Himalayas (Ice-Crunch).

CENTRE OF EXCELLENCE IN ADVANCED TECHNOLOGIES FOR MONITORING AIR-QUALITY INDICATORS (COE ATMAN)

Centre of Excellence in Advanced Technologies for Monitoring Air-quality indicators (CoE ATMAN),

(https://iitk.ac.in/atman/index.php) approved by PSA office, Government of India, is currently executing 5 projects. CoE ATMAN's activities focus on development of indigenous PM Sensor development, Real-Time Source Attribution with portable sensors, use of AI/ML capabilities for establishing nationwide AQ monitoring networks, airshed delineation, AQ forecasting, Dynamic Hyper-Local Source Apportionment (DHSA) and network optimization.

Following projects are endorsed under the CoE ATMAN

- Open Philanthropy. Rural air quality monitoring in UP and Bihar.
- Clean Air Fund (CAF). Indigenous Development of Low-Cost Sensors.
- Clean Air Fund (CAF). Atman-Centre of Excellence: Core Support Grant.
- Clean Air Fund (CAF). Dynamic Hyper-Local Source Apportionment for Real-Time Policy Action.
- Rail India Technical & Economic Services Ltd. (RITES). DHSA at Kanpur.

Ambient air quality Monitoring of Rural Areas using Indigenous Technology (AMRIT) project

A dense network with 1400 nodes of Sensor Ambient Air Quality Monitor (SAAQM) covering 534 and 826 block development offices respectively across the states of Bihar and Uttar Pradesh, was established. Partnership has been established with state government departments in Bihar (BSPCB and rural development department) and Uttar Pradesh (Department of Ministry of Environment, Forest and Climate Change, UP Pol-

lution Control Board and department of rural development) for monitoring and mitigation. Unprecedented hyper-local air quality data has been collected starting April 2023 across the 2 states. Towards this endeavour, IIT Kanpur has also established first-of-its kind 3 colocation-calibration facilities to simultaneously evaluate 280-300 SAAQM.

Dynamic Hyper-Local Source Apportionment for Real-Time Policy Action

The project seeks to establish a novel technique called Dynamic Hyper-local Source Apportionment (DHSA) for real-time and low-cost Source Apportionment (SA). Mo-

bile AQM laboratory housing sophisticated instruments (like Aerosol Mass Spectrometer (AMS), Xact, Scanning Mobility Particle Analyzer (SMPS), Aethalometers, E-Bam, Optical Particle Sizer (OPS), along with the portable sensor units) was developed for testing the technique across Lucknow and Kanpur. The mobile laboratory has completed 2 seasons of sampling across different category sites in Lucknow.

NATIONAL CENTRE FOR GEODESY

The National Centre for Geodesy (NCG) at IIT Kanpur was set up on July 1, 2019, with the support of the Department of Science and Technology (DST), Govt. of India. NCG is the first of its kind centre in India to support educational and research activities in the field of Geodesy. The centre is established as a solution to the limited national-level education opportunities in the country on Geodesy and other aligned areas and aims to act as a hub of excellence in teaching and research at the national and international levels. NCG plans to conduct various research and academic activities to promote Geodesy education. This particularly involves offering postgraduate (PG) programs to students and professionals working in relevant fields, organizing short term training programs, conferences, workshops, and schools for imparting necessary education on Geodesy, preparing online courses and teaching materials, taking research projects in the field of Geodesy, setting up highly precise geodetic facilities, signing memorandums of understanding (MoU) with various national and international organizations working in Geodesy and relevant areas, and others.

The primary objective of the NCG is to nucleate and strengthen the activities in the field of geodesy education, capacity building, and academic research and development. During the last year, NCG took up various tasks in line with its objectives.

Major achievements of the centre in the last year

- NCG organized three short-term courses/workshops/training in the field of geodesy and allied areas, which were attended by participants from a diverse

range of stakeholders, including Academia, Industry, Military, and Government.

- NCG supported eight PhD students and NCG staff members for training abroad and presenting research work at prestigious conferences, in Australia, Germany, Switzerland, Singapore, South Africa and USA.
- NCG organized an open house on 4th November 2023 to communicate the importance of Geospatial Science and Technology for Nation Building to over 800 students from nearby schools and colleges.
- NCG team showcased different instruments over the three days of the national event organized at DPS Azad Nagar, Kanpur in which more than 40 DPS schools participated. Dr. Somalin Nath and Dr. Sushant represented NCG as judges for this national-level competition.
- To promote industrial collaboration, the NCG team participated in the India Geospatial Leadership Summit (IGLS) 2024, organized by the Association of Geospatial Industries (AGI) on February 20, 2024. NCG collaborated as the Educational Partner for the summit organized by AGI, showcasing its leadership and expertise in the geospatial domain.
- NCG has been selected as the host institute for the next DORIS station, which is also the first DORIS station in India. The selection was made after competing with seven other international proposals submitted under Call for Proposal by International DORIS Service. The station will be operational by the end of 2024.
- NCG, with the support of DST, has been able to establish six Regional Centres for Geodesy, which are working in

tandem with NCG to spread geodesy education in the country. An academic NCG-RCG CORS network has also been established.

- PhD students with support of NCG are collaborating with various international institutes, such as University of Tasmania Australia, ETH Zurich, TU Wien, GFZ Germany, Geodetic Observatory of Pecny Czech Republic, TU Munich Germany, University of Melbourne Australia, and University of Bern Switzerland.
- Dr. Ropesh Goyal, REO at NCG has been awarded the Indian Society of Geomatics's Professor K. N. Rao Endowment Young Achiever Award 2023 for his contributions in geometrical and physical geodesy.
- NCG staff participates actively in the International Association of Geodesy (IAG). Dr. Ropesh Goyal, REO at NCG has also been invited to participate as the member of the Governing IAG's Global Geodetic Observing System and Advisory Board of International Gravity Field Service. Further, he also chairs an international joint study group on geoid modelling with 15 geodesists from 10 countries.
- NCG has been active in contributing to the implementation of the National Geospatial Policy 2022. NCG team has started a publication series on the general articles in the Current Science journal disseminating the basics and importance of the geodetic data in the country. Further, Professor Onkar Dikshit and Dr. Ropesh Goyal are participating in the national working groups on 'Standards' for Land Administration Domain Model and Geodetic Reference Frame, respectively.

- NCG is committed to act as the national resource centre, i.e., making its resources available to other Indian institutions for education and training purposes.
- NCG is exploring the pathway to establish a new vertical on 'Geodesy' under the Indian Society of Geomatics.
- NCG has signed academic and collaborative MoUs with 14 national and international organisations/institutes, four others are near finalisation. These are in addition to the institute level MoUs with international institutes for joint degree and training programs.
- Acknowledging the progress of NCG and the importance of its continuance, the DST has approved two years extension of the NCG.

A few important new R&D initiatives of NCG include: Map generalisation; Geoid using airborne gravimtery; DORIS for vertical total electron content; Ionospheric Coupling Processes due to Earthquakes & Space weather effects; Calibration of NISAR Data with GNSS-IR Derived Soil Moisture for Precision Soil Moisture Retrieval; Impact of geoid on hydrodynamic and landslide studies.

OFFICE OF INTERNATIONAL RELATIONS (OIR)

NEW PARTNERSHIPS

In academic year 2023-24, IIT Kanpur signed five new partnership agreements with universities in Australia, Europe and North America. These new partnerships include:

1. Europe - University of Luxembourg in Luxembourg for cooperation in the areas of faculty and student exchange, joint research activities and exchange of academic material and publications.

2. North America – (i) New York University (NYU), USA for setting up a collaborative research centre, NYU Tandon-IITK Advanced Research Centre; (ii) the University of Rhode Island, USA for cooperation in the areas of faculty and student exchange, short term academic programs, joint research activities and exchange of academic material and publications; and (iii) the University of Wisconsin-Milwaukee, USA for a joint MBA degree program.

3. Australia - Western Sydney University, Australia for cooperation in the areas of faculty and student exchange, joint activities such as conferences, seminar and lectures, joint research activities and exchange of academic material and publications.

Establishment of New Collaborative Research Centre With New York University

In September 2023, IIT Kanpur signed an agreement with NYU. This agreement is in continuation to the MoU that was signed be- tween the two institutes in September 2020 for Dual Doctoral Degree Program. The aim is to

Delegation from IIT Kanpur visits NYU for the signing of the agreement

set up the NYU Tandon-IITK Advanced Research Centre. The focus of this Centre will be collaborative research in the specif- ic areas of critical and emerging technologies including AI and machine learning, cybersecurity, wireless communications, robotics, transportation and semiconductor technology.

Establishment of Joint Research Grant Awards with New York University

In an effort to further facilitate research collaboration between faculty at IIT Kanpur and NYU, the first call for NYU Tandon- IITK Joint Research Funding was announced in January 2024. After receiving grant proposals submitted jointly by faculty from NYU and IIT Kanpur, seven proposals were awarded the seed grant. The IIT Kanpur awardees of this grant will receive seed funding of up to ₹ 15,00,000 to primarily facilitate travel of the PIs and their graduate students for collaborative research.

NYU Tandon-IITK Joint Research Seed Grant Awardees: Pro- fessor Angshuman Karmakar (CSE), Professor Urbi Chatterjee

(CSE), Professor Shakti Gupta (ME), Professor Raghvendra Chaudhary (EE), Professor R Sankararamakrishnan (BSBE), Professor Suvendu Samanta (EE), Professor Gururaj Vishwanath (EE) and Professor Pranamesh Chakraborty (CE).

IITK-Rice University Joint Research Symposium

The IITK-Rice University Joint Research Symposium was held on May 06, 2024 at Rice University, USA. The symposium was a culmination of the joint research conducted by the awardees of the Rice-IITK Strategic Collaboration Awards (SCA) 2023. With the grant period coming to an end, the eight awardees (along with their co-PIs at Rice University) presented their research findings either in person or in virtual mode.

JOINT DEGREE PROGRAM (JDP)

In March 2024, IIT Kanpur signed its first Joint MBA Program with the Lubar College of Business, University of Wisconsin-Milwaukee (UWM), USA. This program provides MBA students at IIT Kanpur an opportunity to expand their horizons and earn a joint MBA degree from UWM and IIT Kanpur.

IIT Kanpur now has Joint Doctoral Degree Partnerships with 13 universities in addition to the Joint MBA Degree partnership with UWM. A total of 60+ students from IIT Kanpur have so far participated in these joint degree programs.

VISITS OF FOREIGN DELEGATIONS TO IIT KANPUR

Several foreign university delegations visited IIT Kanpur in 2023-24 to discuss possibilities for academic and research col-

laborations. Many of these visits have led to fruitful relationships between IIT Kanpur and the partner universities abroad.

From Australia, a delegation from the University of Melbourne (UoM) visited IIT Kanpur. As an outcome of this visit:

- A new joint centre between IIT Kanpur and UoM has been proposed.
- UoM faculty who visited IIT Kanpur identified and met potential faculty collaborators.

From the USA, delegations from New York University and University of California Santa Cruz visited IIT Kanpur. Both of these delegation visits were primarily aimed at strengthening an existing relationship with IIT Kanpur.

From Nepal, Mid-West University delegation visited IIT Kanpur to review previous collaborations and to discuss ways to further expand the partnership.

From Japan, a delegation from the University of Aizu visited IIT Kanpur. They signed a promising MOU, setting the stage for enriching academic experiences and fostering global partnerships.

IIT KANPUR VISITS OVERSEAS

USA - To strengthen ongoing relationships and explore new collaboration opportunities a delegation from IIT Kanpur visited leading universities in the USA in August 2023. The delegation included Professor Abhay Karandikar (then Director), Professor Dhirendra S Katti, (then DoIR), Professor Ashish Garg (Head SEE), Professor Sandeep Verma (Head Gangwal School of Medical Sciences & Technology) and Mr. Kapil Kaul (CEO IITKDF). The delegation toured and met the officials at the Embassy of India, Washington D C; the Association of American Universities in Washington D C; Rice University; the State University of New York (SUNY) Buffalo; and Drexel University. During these visits, various programs such as internships, symposiums, semester exchange and others were discussed to strengthen the existing partnership.

Canada: A distinguished delegation from IIT Kanpur including Professor Dhirendra S Katti (then DoIR), Professor Ashish Garg (Head SEE), Professor Raju Kumar Gupta (CHE), Professor Lalit Pant (SEE) and Professor Raghavendra Ragipani (CHE), visited the University of Alberta (UoA) in March 2024. The delegation participated in a joint IITK-UoA Energy Transition Research Workshop, highlighting the importance of collaborative research. Possibility of establishment of a joint re-

search centre by IIT Kanpur and the University of Alberta was also discussed during this visit.

Australia: A delegation from IIT Kanpur that included Professor Subramaniam Ganesh (then Acting-Director), Professor Kantesh Balani (DoRA), Professor Sandeep Verma (Head Gangwal School of Medical Sciences and Technology) and other senior faculty members, visited the University of Melbourne (UoM) in November 2023. The purpose of the meeting was to discuss the ongoing Joint Degree Program with UoM as well as other collaborative research programs. Gangwal School of Medical Sciences and Technology (GSMST) and the Faculty of Medicine, Dentistry, and Health Sciences (FMDHS) at the University of Melbourne also formalized a pivotal collaboration through the signing of a Memorandum of Understanding during this visit. IIT Kanpur's delegation, headed by the then Officiating Director, Professor. S. Ganesh; joined by Professor. Sandeep Verma; Professor. S C Srivastava, Director of IITK-LaTrobe academy; and other senior faculty members associated with IIT Kanpur-La Trobe University Research Academy visited La Trobe University, Australia.

TRAVEL SUPPORT FOR STUDENTS IN JOINT DEGREE PROGRAMS

To encourage more doctoral students from IIT Kanpur to join one of our 13 Joint Degree Programs, the Institute approved a one-time travel support of up to ₹ 1.5 lakh. This travel support will cover return economy airfare, airport transfers and visa processing fees of the JDP students.

IIT KANPUR STUDENT MOBILITY OVERSEAS

20+ students from IIT Kanpur were nominated for semester exchange at partner universities in 2023-24.

Over 40 IIT Kanpur students were accepted for internships at foreign universities.

FOREIGN STUDENTS AT IIT KANPUR

IIT Kanpur hosted 45 foreign students in academic year 2023-2024 with 34 of them pursuing a post-graduate degree at IIT Kanpur, 01 came for semester exchange and 10 for internships.

The 34 students pursuing a post-graduate degree are from countries such as Bangladesh, Jordan, Indonesia, Bhutan, Syria, Ethiopia, Sudan, Iran, Nepal and Myanmar. The details are as follows:

- 15 are pursuing a Ph.D. degree and
- 19 are enrolled in a Master's program

In addition to this, IIT Kanpur has also hosted 10 internship students from Bhutan, Australia, Bangladesh, Zambia, Switzerland and Nepal.

Also, in 2023-24 one postgraduate student from Ecole Nationale Supérieure d'Arts et Métiers (ENSAM), France visited IIT Kanpur for two semesters under an exchange program between IIT Kanpur and ENSAM.

SHORT-TERM COURSES FOR FOR-EIGN WORKING PROFESSIONALS

In 2023-2024 IIT Kanpur organized three courses under the Indian Technical and Economic Cooperation Programme (ITEC), the leading capacity building platform by the Ministry of External Affairs, Government of India.

IIT Kanpur offers various courses under ITEC every year and the list of courses for 2024 is as follows:

- Strategic HRM for Organizational Excellence (January 2024) – Course taught by Professor Amit Shukla (DoMS)
- Industrial Economics & Engineering Management (February 2024) – Course taught by Professor Deep Mukherjee (ECO) and Professor Faiz Hamid (DoMS)
- Application of Artificial Intelligence and Machine Learning in Business Finance (February 2024) – Course taught by Professor Abhinav Tripathi (DoMS)

HAPPY HOUR FOR INTERNATIONAL STUDENTS

The first happy hour for international students was organized in March 2024 which was very well received. In May 2024 as part of the happy hour, the OIR organized a wall climbing session in which many foreign students participated enthusiastically.

The aim of these monthly sessions is to bring together international students and give them a chance to share their problems/issues with the OIR staff.

FESTIVAL CELEBRATIONS

In 2023-24, the OIR celebrated Holi, Diwali and Eid with diya-lighting and rangoli-making and festive food. The purpose of these celebrations was to acquaint international students with the culture and practices of India.

These celebrations were very well received by the students who attended in large numbers.

DEAN OF RESOURCES & ALUMNI

Out of the total amount of ₹ 362.00 crore pledged by donors in FY 2023-24, a sum of ₹ 156.90 crore has already been received, as compared to ₹ 182.79 crore received in the FY 2022-23, and the balance is expected to be received based on the milestones achieved as set by the donors in the next 2-3 years.

MAJOR INITIATIVES IN FY 2023-24

	Amount in ₹ (Crore)
Gangwal School of Medical Sciences and Technology	103.29
Social Innovation Lab	11.50
Scientific Research	8.94
The Mehta Family Centre for Engineering in Medicine	6.66
Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions	4.20
Kotak School of Sustainability	3.00
Smt. Lata and Shri K G Karandikar Faculty Chair	1.66
Karandikar Student Scholarship	
Karandikar Best Ph.D. Thesis Award	
The Pawan Tewari Goldman Sachs Sustainability Faculty Chair	1.58
Pawan Tewari Goldman Sachs Endowment Towards AI for Social Good	
The Pawan Tewari Goldman Sachs Scholarships	

Donations received by the Gangwal School of Medical Sciences & Technology till 31st March 2024

S.No	Name of the Donor	Pledged Amount in		Realised amount in ₹ (Crore)
		Million USD	₹ (Crore)	
1	Mr. Muktesh Pant (BT/CHE/1976)	2.50	19.00	19.19
2	Dr. Dev Joneja (BT/ME/1984)	2.50	19.00	20.05
3	Mr. Anil Bansal (BT/ME/1977)	2.50	19.00	9.75
4	Mr. Rakesh Gangwal (BT/ME/1975)	13.50	100.00	108.27
5	Dr. Deepak Mohan Narula (BT/EE/1985)	0.60	5.00	3.85
6	Mr. Hemant Jalan (BT/CHE/1977)		18.00	15.00
7	IBM		47.00	31.50
8	JK Cements		60.00	30.00
9	REC Foundation		14.40	10.64
10	HDFC Bank		20.00	16.97
11	Sutwala Family		0.41	0.41
12	Vikram Tannan		0.50	0.50
	Total	21.60	322.31	266.13

Major Donations received towards various fund-raising campaigns in FY 2023-24

S.No	Name of the Campaign	Goal Amount ₹ (Crore)	Amount Received ₹ (Crore)
1	Lalit Beniwal Memorial Fund	1.00	1.33
2	P T Narasimhan Fund for Performing Arts	1.50	0.71
3	V Srinivasan Memorial Fund	0.25	0.12
4	Professor N Sathyamurthy Endowment Lecture Series	0.25	0.04
5	Professor G D Agarwal Chair	1.25	0.0052
6	Sahyog: A Student Financial Aid Initiative	2.50	0.0088

Major Donations received towards Endowment Activities in FY 2023-24

S.No	Faculty Chairs	Amount in ₹ (Crore)
1	Smt. Lata and Shri K G Karandikar Faculty Chair	1.27
	Fellowships	
1	Rajeev and Joyce Gautam Faculty Fellowship	0.50
	Scholarships	
1	Karandikar Student Scholarship	0.26
2	Shri Mohan Shetye Excellence Scholarship	0.26
3	Dilip Nigam Memorial Scholarship	0.24

	Awards	
1	Karandikar Best Ph.D. Thesis Award	0.12
	Distinguished Lecture Series	
1	Late Professor Amit Dutta Memorial Distinguished Lecture Series	0.125
	Departmental Fund	
1	Rakesh Bhargava-Class of 1973 Annual Travel Grant	0.25

Class Fund in FY 2023-24

Class	Pledged Amount in ₹ (Crore)	Realized Amount in ₹ (Crore)	Initiatives Supported
1998	8.25	1.81	Yet to be Decided by the Class
1974	10.11	4.00	Scholarships, Faculty, CHE Development Fund, Solar Power Project
1994	NA	0.20	Institute Counselling Service
1973	NA	0.55	Scholarship

TOP DONORS IN FY 2023-24

S. No	Name of the Donor	Amount in ₹ (Crore)	Purpose
1	Mr. Rakesh Gangwal (BT/ME/1975)	33.20	Gangwal School of Medical Sciences and Technology
2	Dr. Dev Joneja (BT/ME/1984)	7.08	Annual Gift Programme
			Gangwal School of Medical Sciences and Technology
3	Mehta Family Foundation	6.65	The Mehta Family Centre for Engineering in Medicine
4	Mr. Hemant Jalan (BT/CHE/1977)	6.00	Gangwal School of Medical Sciences and Technology
5	Mr. Anil Bansal (BT/ME/1977)	5.42	Annual Gift Programme
			Gangwal School of Medical Sciences and Technology
			Lalit Beniwal Memorial Fund
6	Mr. Sudhakar Kesavan (BT/CHE/1976)	4.20	Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions
7	Mr. Muktesh Pant (BT/CHE/1976)	4.15	Gangwal School of Medical Sciences and Technology

8	Mr. Ashish Karandikar (BT/EE/1995)	1.66	Karandikar Best Ph.D. Thesis Award
			Karandikar Student Scholarship
			Smt. Lata and Shri K G Karandikar Faculty Chair
9	Mr. Pawan Tewari (BT/EE/1988)	1.58	Pawan Tewari Goldman Sachs Endowment Towards AI for Social Good
			The Pawan Tewari Goldman Sachs Scholarships
			The Pawan Tewari Goldman Sachs Sustainability Faculty Chair
10	Dr. Deepak Mohan Narula (BT/EE/1985)	1.45	Gangwal School of Medical Sciences and Technology
11	Dr. Vikram Narasimhan (MS2/CHM/1984)	0.71	Professor P T Narasimhan Memorial Fund
			Professor N Sathyamurthy Endowment Lecture Series
12	Shraman Foundation	0.62	Sudhir Singhal Scholarship
13	Dr. Rajeev Gautam (BT/CHE/1974)	0.58	Rajeev and Joyce Gautam Student Travel Grant
			Rajeev and Joyce Gautam Young Faculty Fellowship in CHE

14	Mr. Vikram Tannan	0.50	Gangwal School of Medical Sciences and Technology
15	Mr. Gaurav Deepak (BT/ME/1996)	0.50	Class 1996 Legacy project
16	Professor Jayadev Misra (BT/EE/1969)	0.50	IITK Girls' Hostel
17	Mr. Gopal Sutwala (BT/CHE/1973) & Family	0.41	Gangwal School of Medical Sciences and Technology
18	Dr. Tara Shetye Behrend	0.26	Shri Mohan Shetye Excellence Scholarship
19	Yuva Unstoppable	0.35	Yuva Unstoppable Scholarship
20	Mr. Rakesh Bhargava (BT/CHE/1973)	0.26	1973 Class Fund
			Rakesh Bhargava- Class of 1973 Annual Travel Grant
21	Mr. Jagjeet S Bindra (BT/CHE/1969)	0.26	Jeet Singh Bindra Scholarship for Female Students
			Post Graduate Research Lab in CHE
22	Mr. Vikram Chalana (BT/EE/1991)	0.25	Class 1991 legacy project
			Lalit Beniwal Memorial Fund
23	Ms. Seema Srivastav (BT/EE/1976)	0.25	Dilip Nigam Memorial Scholarship

ALL TIME DONORS

Leadership Donors

Mr. Rakesh Gangwal
(BT/ME/1975)

Mr. Narayana Murthy
(MT/EE/1969)

Dr. Dev Joneja
(BT/ME/1984)

Mr. Muktesh Pant
(BT/CHE/1976)

Mr. Anil Bansal
(BT/ME/1977)

Mr. Sudhakar
Kesavan
(BT/CHE/1976)

Mr. Hemant Jalan
(BT/CHE/1977)

Late Dr. Ranjit Singh
(BT/MME/1965)

Mr. Rahul Mehta
(non-alumni)

Principal Donors

Professor Chandralekha
Singh
(Non-Alumni)

Mr. Jeremy Levy
(Non-Alumni)

Mr. Jagjeet S
Bindra
(BT/CHE/1969)

Mr. Lokvir Kapoor
(BT/ME/1987)

Ms. Asha Jadeja
Motwani
(non-alumni)

Dr. Prabhu Goel
(BT/EE/1970)

Ms. Nirmala Govindan
Wife of late Mr. Jay Pullur
(MT/CSE/1987)

Major Donors

Mr. Pawan Tewari
(BT/EE/1988)

Mr. Ranodeb Roy
(BT/CSE/1990)

Dr. Deepak M Narula
(BT/EE/1985)

Mr. Rajiv Batra
(BT/EE/1982)

Mr. Ajay Dubey
(BT/CHE/1980)

Dr. Devendra Shukla
(BT/CE/1967)

Mr. Ashish Karandikar
(BT/EE/1995)

Mr. Kal Shastri
(MSC2/PHY/1976)

Mr. Kushal C Sacheti
(MT/CHE/1971)

Mr. Sudhir M Mittal
(BT/CHE/1970)

Mr. Alok Agarwal
(BT/EE/1979)

Dr. B V R Mohan Reddy
(MT/ME/1974)

Philanthropic donations in FY 2023-24

Name	Amount in ₹ (Crore)	Purpose
Mehta Family Foundation	6.65	The Mehta Family Centre for Engineering in Medicine
Shraman Foundation	0.62	Sudhir Singhal Scholarship
Yuva Unstoppable	0.35	Yuva Unstoppable Scholarship
Radha Kishan Kanodia Dharmarth Trust	0.04	Radha Kishan Kanodia Dharmarth Scholarship
Rastogi Family Fund	0.02	Gangwal School of Medical Sciences and Technology
Mahaluxmi Charitable Society	0.01	Class of 1974 Legacy Fund

Corporate Partners in FY 2023-24

Name	Amount in ₹ (Crore)	Purpose
HDFC Bank	16.98	Gangwal School of Medical Sciences and Technology
J K Cement Mr. Yadupati Singhania (BT/CE/1977)	15.00	Gangwal School of Medical Sciences and Technology
Citibank	11.50	Social Innovation Lab
IBM India	9.00	Gangwal School of Medical Sciences and Technology
REC Foundation	4.00	Gangwal School of Medical Sciences and Technology
Kotak Mahindra Bank	3.00	Kotak School of Sustainability
Tower Research Capital Markets India	1.51	Scientific Research

Tower Research Capital India		
Portescap India	1.01	Scientific Research
Suraj Logistix	0.63	Scientific Research
Power Finance Corporation	0.62	Scientific Research
TCS Fellowship	0.53	Scientific Research
Nmtronics (India)	0.51	Scientific Research
Faiveley Transport Rail Technologies India	0.48	Scientific Research
Cookson India	0.40	Scientific Research
PFC Consulting	0.40	Scientific Research
IvyCap Ventures Advisors	0.39	Endowment to Support Entrepreneurship
Vacmet Foundation	0.35	Scientific Research
LIC Housing Finance	0.33	Scientific Research
Solar Energy Corporation of India	0.30	Scientific Research
SLR Infrastructure	0.23	Scientific Research
EcoEnergy Insights	0.21	Scientific Research
Kewal Engineering Mr. Rajiv Chawla (BT/ME/1977)	0.21	Scientific Research
Ericsson India	0.20	Scientific Research
Khanna and Khanna	0.16	Scientific Research
J K Fenner (India)	0.14	Scientific Research
Sahasra Electronics Mr. Ajit Chakravarti (BT/EE/1972)	0.14	1972 Golden Jubilee Legacy Project
PNC Infratech	0.12	Scientific Research
Brisk Electronics	0.10	Student With Disability Project
Pradeep Metals	0.10	Class 1978 Legacy Project
P N International	0.09	Scientific Research
AIA Engineering Mr. Bhadresh Shah	0.08	Scientific Research

(BT/MME/1974)		
ANSYS Software	0.08	Scientific Research
Bright 4 Wheel Sales	0.08	Scientific Research
Rahman Industries	0.07	Scientific Research
CSI Engineering Software	0.07	National Information Centre of Earthquake Engineering (NICEE)
Intelligent Optimization Group Mr. Ravi Jaisinghani (BT/EE/1972)	0.06	Class of 1974 Legacy Fund
Automech India	0.05	Batch of 1965 Scholarship
Apollo Heat Exchangers	0.05	Class of 1974 Legacy Fund
Bharat Forge	0.05	Scientific Research
Trimble Information Technologies India	0.05	Scientific Research
Prachi Leathers Mr. Anil Gupta (BT/ME/1978)	0.05	Class 1978 legacy project
Lohum Cleantech	0.05	Scientific Research
Power System Operation Corporation	0.04	Scientific Research
National Buildings Construction Corporation, India	0.04	NICEE
AlphaGrep Securities	0.03	Scientific Research
Option Pros LLC	0.02	Lalit Beniwal Memorial Fund
Printed Electronics	0.01	1973 Class Fund
Farm Operation	0.01	Annual Gift Programme
Quality Kiosk Technologies	0.01	V Srinivasan Memorial Fund
Total	69.53	

ALUMNI IMPACT

Some of the major awards and honors received by our alumni in 2023-24 are listed below.

S. No	Award/ Honor	Name/ IITK degree of Alumni	Award Endowed by
1	White House National Medal	Professor Ashok Gadgil (MSC2/PHY/1973)	US National Science Foundation
2	ACM-IEEE CS Ken Kennedy Award	Professor Keshav Pingali (BT/EE/1978)	The Association for Computing Machinery and the IEEE Computer Society
3	Shanti Swarup Bhatnagar Prize for Science & Technology	Professor Dipti Ranjan Sahoo (MT/PHD/CE/2004/2008)	The Council of Scientific and Industrial Research (CSIR)
4	Shanti Swarup Bhatnagar Prize for Science & Technology	Professor Neeraj Kayal (BT/PHD/CSE/2002/2007)	The Council of Scientific and Industrial Research (CSIR)
5	Fellows of Indian National Science Academy (INSA)	Professor Nitin Saxena (BT/PHD/CSE/2002/2006)	Indian National Science Academy
6	Associate Fellow of the Indian National Science Academy (INSA)	Professor Rahul Mangal (BT/MT/CHE/2010)	Indian National Science Academy

7	J C Bose Fellowship	Professor Nitin Saxena (BT/PHD/CSE/2002/2006)	Anusandhan National Research Foundation
8	IIT Bombay International Award	Professor Nitin Saxena (BT/PHD/CSE/2002/2006)	IIT Bombay
9	S Ramachandran National Bioscience Award	Professor Nitin Gupta (BT/CSE/2004)	Ministry of Science & Technology, Govt. of India
10	1989 Batch Faculty Award on Teachers' Day 2023	Dr. Purushottam Kar (BT/PHD/CSE/2008/2014)	IIT Kanpur
11	Uttar Pradesh Gaurav Samman	Mr. Naveen Tewari (BT/ME/2001)	Govt. of Uttar Pradesh
12	INAE-SERB Abdul Kalam Technology Innovation National Fellowship -2023 for a period of three years	Professor Jayant K Singh (BT/CHE/1997)	Indian National Academy of Engineering

The table below lists some Notable Professional Achievements by our Alumni in 2023-24.

S.No	Name/ IITK degree of Alumni	Position
1	Shri Amit Agrawal (BT/EE/1991)	CEO of Unique Identification Authority of India (UIDAI)
2	Shri Upender Singh Rawat (MSC5/PHY/1995)	High Commissioner to Uganda
3	Professor Rohit Verma (BT/MME/1990)	Dean of Darla Moore School of Business, University of South Carolina
4	Mr. Srikant Sastri (BT/CHE/1983)	Chairperson of the Geospatial Data Promotion & Development Committee
5	Professor Pradip Swarnakar (PHD/HSS/2008)	Senior Associate (Non-Resident) at Center for Strategic and International Studies (CSIS) under the Energy Security and Climate Change Program
6	Professor Raj N Singh (BT/MME/1967)	Member of the National Academy of Engineering (NAE)
7	Ms. Vartika Shukla (BT/CHE/1988)	Featured in "The She List" of Top 100 Women of India in the Special Issue of India Today
8	Professor Debabrata Goswami (MSC2/CHM/1988)	Joined the Editorial Advisory Board of The Journal of Physical Chemistry (JPC) Letters, published by the American

		Chemical Society (ACS) for a period of 3 years
6	Mr. Chirag Jain (MSR/AE/2020)	Listed in Forbes India 30 under 30 for year 2024
7	Mr. Rama Krishna Mendu (BT/MT/AE/2018/2019)	Listed in Forbes India 30 under 30 for year 2024
8	Professor Manindra Agrawal (BT/PHD/CSE/1986/1991)	Director of IIT Kanpur
9	Professor Abhay Karandikar (MT/PHD/EE/1988/1994)	Secretary, Department of Science and Technology
10	Professor Mukesh Sharma (MT/CE/1982)	Reappointed (for two years) as an honorary member of the World Health Organization Global Air Pollution and Health - Technical Advisory Group (GAPH-TAG)
11	Mr. Sanjiv Puri (BT/ME/1985)	President of Confederation of Indian Industry (CII)
12	Professor Senthil Todadri (MSC/PHY/1992)	Elected to National Science Academy, USA
13	Professor Ashvin Vishwanath (MSC5/PHY/1996)	Elected to National Science Academy, USA

Some notable entrepreneurial endeavours by alumni of IIT Kanpur in 2023-24 are listed in the following table.

S. No	Start-up Name	Name of Alumnus	Startup Description
1	Shitashii Innovations	Dr. Sunita Mehta (PHD/MSE/2017)	The startup is developing a soft, flexible and communicative device for patients with laryngectomy.
2	Swasvayu Cleantech	Dr. Kaniska Biswas (MT/PHD/DES/2013/2020) Dr. Esha Ray (PHD/ES/2023)	It works in Air pollution control. It focuses on designing & developing water-scrubbing based innovative outdoor air purifiers for different applications.
3	Eleqzee Energy Solutions	Mr. Syed Azhar Hasan (BT-MT Dual/ME/2012) Mr. Saumitra Rajendra Kumar Singh (BT/ME/2011)	At Eleqzee, the innovators are designing, engineering, and assembling retrofitted electric vehicles which are safe, certified, and tested by agencies like ICAT/ARAI and others.
4	Aerobos Environment	Mr. Akshansh Yadav (MT/ME/2023)	The startup is developing a vehicle

	Solutions (AESPL) AESPL Extrawatts Renewables		rooftop innovative product for renewable energy generation and atmospheric air purification.
5	Aarush Eco Tech Private Limited	Dr. Amit Singh Chauhan (MT/PHD/CE/2009/2016)	The startup's Smart Bin System uses AI and IoT to monitor, manage, and optimally collect waste. It predicts the fill-level of bins and coordinates with the waste management team to ensure timely and efficient collection.

OUTREACH ACTIVITIES

Our alumni network is a powerful asset. Their unique experiences and deep connections with our institution make them invaluable partners in achieving excellence. To foster this partnership, we prioritize dialogue and exchange of ideas with our alumni, as their insights are instrumental in the Institute's continued growth.

US IITKarvaan

IITKarvaan delegation visited United States in August 2023 and held US roadshow networking events in three major cities namely, New York, Houston, and San Francisco. The event was attended by 400+ participants. In addition to alumni networking events, IITKarvaan also visited, New York University, Rice University and World Bank.

Australia IITKarvaan

To foster and strengthen alumni-institute relationship, the Australia IITKarvaan delegation held alumni networking dinner in Melbourne and Sydney in March 2024. The events were attended by more than 100 alumni, and it gave them an opportunity to network and be part of the future roadmap of IIT Kanpur.

IIT Kanpur's alumni engagement programs in 2023-24 were a great success as they brought alumni together, created valuable networking opportunities, and strengthened the institute's reputation. These initiatives significantly improved the bond between IIT Kanpur and its alumni, leading to more alumni support, engagement, and philanthropic contributions.

Reunions: November 2023 - February 2024

Reunions are the most awaited alumni engagement activity of the institute. IIT Kanpur hosted 9 reunions during the current academic year. The youngest class included was the Class of 2013. They celebrated their 10th reunion, whereas the Classes of 1973 and 1974 celebrated their 50th reunion.

These gatherings served as a powerful platform for graduates to reconnect, reminisce, and strengthen their lifelong bonds with the institute. Milestone reunions – 10th, 20th, 25th, and so on – provide natural opportunities for classmates to catch up, share memories, and celebrate their achievements.

The impact, nevertheless, goes beyond individual connections. Reunions offered a valuable two-way exchange. IIT Kanpur showcased its achievements, advancements, and future plans to its alumni, fostering a sense of pride and continued engagement. At the same time, reunions provided a platform for

alumni to get involved in the institute's growth through fund-raising campaigns, mentorship programs, and other initiatives.

To further strengthen these connections, IIT Kanpur hosted engaging events during the reunions like gala dinners, net-working sessions, panel discussions, and campus tours. By fostering stronger alumni relations, these gatherings create opportunities for collaboration, knowledge sharing, and active alumni participation in fundraising and institute campaigns – all key ingredients for continued growth and success of the insti-tute.

INSTITUTE FACULTY

RECRUITMENT

In the current academic year 2023-24, the institute offered faculty position to 22 out of 889 applicants through a rigorous selection procedure and 32 new faculty members joined the institute. The joining number also includes the applicants who were offered a faculty position in the previous academic year but opted to join in the current academic year. The department wise distribution of the new faculty members for 2023-24 is presented below.

Department	Number of new faculty
Aerospace Engineering	-
Biological Sciences and Bioengineering	01
Chemical Engineering	-
Chemistry	01

Civil Engineering	03
Cognitive Science	01
Computer Science and Engineering	01
Earth Sciences	01
Economic Sciences	03
Electrical Engineering	07
Humanities and Social Sciences	01
Management Sciences	03
Materials Science and Engineering	01
Mathematics & Statistics	-
Mechanical Engineering	01
Physics	03
Space, Planetary & Astronomical Sciences & Engineering	03
Sustainable Energy Engineering	02
Total	32

During the same period the institute also offered Postdoctoral fellowships to 79, Visiting Professor position to 21, Adjunct Faculty position to 09, and Visiting Professor of Practice position to 07 candidates.

AWARDS AND HONOURS

Our faculty has played a significant role in pushing the frontiers of knowledge. This has been duly recognized in the form of various awards and honours, including fellowship of professional societies and editorship of international journals.

I am extremely happy to share with you the wonderful news that Professor Bushra Ateeq (BSBE) has been awarded the Tata Innovation Fellowship 2023-24 by the Department of Biotechnology, Government of India. She has also been honoured with the prestigious Fellowship of the Indian National Science Academy (INSA). Professor Shalabh (MTH&S) has received the Professor K Srinivasa Rao Best Researcher Award 2023 by the Indian Society of Probability and Statistics.

Professor Jayant K Singh (CHE) and Professor Sandeep Verma (CHM) have been selected for the prestigious INAE-SERB Abdul Kalam Technology Innovation National Fellowship 2023 for a period of three years. The latter was also selected for the Professor D P Chakraborty 60th Birth Anniversary Commemoration Award by the Indian Chemical Society. Professor Nitin Saxena (CSE), Professor Yogesh M Joshi (CHE) and Professor Mahendra Verma (PHY) were awarded the prestigious J C Bose Fellowship by SERB. Professor Nitin Saxena (CSE) has also been honoured with the prestigious Fellowship of INSA.

Professor S N Tripathi (CE) and Professor Arun K Shukla (BSBE) have been awarded the Infosys Prize 2023. Professor J N Moorthy (CHM) has been presented with the Asian and Oceanian Photochemistry Association (APA) Award 2023. Professor Nisanth N Nair (CHM) has received the Dr. A P J

Abdul Kalam HPC Award 2023 under the category, Researcher – R&D in HPC Applications. He was also selected for the Chemical Research Society of India (CRSI) Bronze Medal for the year 2024. Professor Nitin Gupta (BSBE) has been awarded the S Ramachandran National Bioscience Award by the Department of Biotechnology. Professor Ashok Kumar (BSBE) was conferred the Distinguished Biomaterials Scientist Award by the Society of Biomaterials and Artificial Organs, India (SBAOI). He was also elected as a Fellow of Biomaterials Science and Engineering by the International Union of Societies for Biomaterials Science and Engineering.

Professor Krishanu Biswas (MSE) has been elected as a Fellow of the Institute of Materials, Minerals and Mining (IoM3), U.K. Professor Avinash Kumar Agarwal (ME) was elected as a Fellow of The World Academy of Sciences (TWAS). Professor S C Srivastava (EE) was awarded the Life Fellowship of IEEE USA. Professor Braj Bhushan (HSS) has been elected as a Fellow of the esteemed British Psychological Society (BPS). Professor M Jaleel Akhtar (EE) was elected to the Fellowship of the Indian National Academy of Engineering (INAE).

STUDENT AWARDS

The prestigious scholarships and awards received by our students have been a matter of pride and pleasure for us. To name a few, Aritra Ambudh Dutta, Jaskaran Singh and Sanjna S received the prestigious Aditya Birla Scholarship; Abdul Ahad Zareef, Gauri, Alok Kumar Mishra, Aayush Singh and Pratyush Amrit received the O P Jems scholarship; Soumen Giri and Teki Sai Veerabhdra Nikhil received the ACC Fellowship; and 149 students received the Inspire Scholarship.

The complete list of student awards is given at the end of the report along with the faculty awards.

INSTITUTE COUNSELLING SERVICE

Overview and Team Strength

The Institute Counselling Service (ICS) primarily provides psychological, academic, or financial assistance to students. The ICS aims to bring a human touch into a highly competitive academic environment and lends a helping hand to the students in need, thereby trying to create a home away from home. ICS consists of a Head, a team of professional counsellors, psychiatrists and a group of student volunteers dedicated to the welfare of student community and staff members. Currently, there are 7 professional counsellors and 3 psychiatrists who conduct consultations at regular intervals. The student team comprises an undergraduate (UG) wing and a postgraduate (PG) wing. The UG wing has 5 coordinators, 12 core team members (Operations), 11 core team members (Academics), 223 student guides and 191 academic mentors. Whereas the PG wing has 13 core team members, 45 academic mentors, 35 student guides, and 100 orientation team members. For the next academic session PG core team size has been increased from 13 to 20.

Counsellor and Psychiatrists Sessions

Students typically meet the counsellors in two modes - they either approach the counsellors on their own volition, or are referred to the ICS by their friends, faculty members, psychiatrists, or the doctors at the health centre. Students facing academic difficulties are also encouraged to meet the counsellors to develop strategies to cope with distress. In case of emer-

gency, where a student needs urgent psychiatric help, the Counselling Service coordinates with a psychiatrist clinic to ensure the student receives timely and appropriate care. Also, a Psychiatry and De-addiction clinic runs every fortnightly at the Health Center, IIT Kanpur by a renowned psychiatrist of the city. A counsellor of ICS assists the psychiatrist in this clinic. In the academic year 2023-24, the ICS had a total number of 2913 psychotherapeutic sessions.

ACTIVITIES

The team organized various events throughout the year like:

Open Mic & Mini games
On World Suicide Prevention Day an open mic was organized at the Café Coffee Day. People sang, recited, opened-up on their Stories of Hope & comebacks. Open canvasses were installed for people to come and paint their thoughts.

Movie Screening
The event above was followed by the screening of movie, Zindagi Na Milegi Dobara at OAT.

Panel Discussion
On World Suicide Prevention Day, Mr. Satyarup Siddhanta (mountaineer), Dr. Alok Bajpai (psychiatrist), and Mr. Surya Mohan Kulshreshtha (movie director) discussed suicide and reasons for the same. They also discussed how one can stop negativity from entering his/her mind.

Talk-It-Out
The significance of talking things out was presented in a poetic way by Ms. Helly Shah.

Workshop on Substance and Behavioural Addiction

An interactive workshop was conducted by the Institute Counsellors to spread awareness about substance and behavioural addiction.

Various inspiring events were organized on the **World Mental Health Day** to bring attention to the Mental health wellness.

- **Talk on Mindfulness of Wellbeing:** Dr. Sanjay Mahendru (psychiatrist) talked about the importance and significance of mindfulness for well-being in the academic as well as the non-academic routine.
- **Movie Screening:** The talk above was followed by the screening of movie, Chhichhore at OAT.
- **Origami Workshop:** Origami was taught at multipurpose room, OAT, signifying productiveness, and peacefulness.
- **T-Shirt Painting:** Painting is therapeutic in its own way. People showed up in large numbers and let out their thoughts on plain white T-shirts.
- An event named **Hakuna Matata** was organized on Diwali.
- Game Night: To feel the festive vibe the Pre-Diwali Night was celebrated with all sorts of board games, card games and tambola.
- **Token of Happiness:** The security officers were given sweets from ICS to respect and encourage their 24X7 support across the year.
- **Diya Lighting and Sky Lantern Festival:** Whole of OAT along with Hockey and Football were lighted with diyas and people came to light up and fly the sky lanterns.
- A two-day **Gatekeeper training program** in association with QPR Institute, Bangalore was facilitated for IIT Kanpur students, staff, and faculty members. Participants were

trained to identify the signs and symptoms related to suicide, methods to approach and provide initial aid along with referral to mental health professionals for early intervention and support.

- Several Blogs to raise awareness about mental health issues and suicide prevention were uploaded on social media platforms. A two-part medium blog series on suicidal thoughts was appreciated by many students.
- Social media posts such as Motivation videos for placements and Internship Comic Series were shared with the student community.

STUDENTS' ACTIVITIES

MEDIA & CULTURAL COUNCIL

Cultural Extravaganza - Various events like Dance Extravaganza, Musical Extravaganza, Dramatics Eve and others were organized over the weekend from 13-17 April 2023 by different clubs of the Council.

Cultural Nexus - The Fresher's weekend was organized from 26-28 July 2023. It started with a touch of serenity and relaxation with a movie night and ended with a music-filled DJ Night.

Treasure Hunt'23 - The Council organized a Treasure Hunt for the Y23 batch on 23rd September. The event had two stages: The Scavenger Hunt and The Treasure Hunt. The event witnessed participation from 1000+ students. For the first time council secured sponsorship deals worth ₹ 1 Lakh from brands including Coca-Cola, PokerSaints and Zing Pizza.

Participation Visits

- Inter IIT CULT MEET 6.0 was held at IIT Kharagpur and 230+ member contingent from IIT Kanpur participated with the utmost enthusiasm and secured overall 4th position.
- The student community also participated in Rendezvous, the annual cultural festival of IIT Delhi.

Chef it up 2.0 - It attracted a huge participation and helped us prepare for Inter IIT Cult Meet 6.0.

THC House party - This is a one-of-a-kind cultural event aimed at bringing the best of hip-hop to the campus, inviting performances from reputed hip-hop artists all over the country.

Galaxy - The 39th edition of Galaxy, the annual Inter-pool Media and Cultural Competition, was organized successfully from 29th January to February 12, 2024. The event brought together students from various pools, who displayed their talents and competed in various events, fostering an atmosphere of enthusiasm and camaraderie.

SCIENCE AND TECHNOLOGY COUNCIL

SnT Summer Camp 2023 - The Council successfully conducted the SnT Summer Camp 2023 during May - August. A total of 2033 students applied for the SnT Summer Projects, out of which 943 students were finally selected across a total of 52 projects spanning across 12 entities in the Council.

Snt Hackathon 2023 - The Council successfully organized the SnT hackathon in the first week of August. More than 900 students registered for the competition. The hackathon consisted of multiple problem statements covering different domains, such as, Generative AI for impact, Solve for IITK, AlgoStrategy Development, Car Simulation and King's Den.

SnT PAVILLION - The Council organized the SnT Pavillion where freshers were acquainted with the activities of all the entities of the SnT Council. The event was organized in a completely offline mode for the UG Y23 batch in the first week of August 2023.

TAKNEEK - Takneek was organized by the Council in full of-fline mode starting from the last week of August 2023 and continuing till the first week of September 2023 spanning over a period of 10 days. The event focussed on different types of problem statements having varying durations and point structures.

Performance In Inter IIT Tech Meet 12.0 - IIT Kanpur secured the overall 5th position in the 11th Inter IIT Tech Meet. This year the Tech Meet was hosted by IIT Madras in a complete offline mode. IIT Kanpur bagged 4 medals.

 1 Gold in the problem statement JLR.

 1 Silver in the problem statement Mphasis

 2 Bronze in the problem statements IGDC and MathBowl.

GAMES AND SPORTS COUNCIL

Workshops
- An archery Workshop was conducted for the benefit of archery enthusiasts.
- A workshop for women was conducted on International Women's Day.
- A 3-day workshop by Mr. Deepak Katiyar was organized for the Chess players.
- A two-week workshop by the Kabaddi Society was conducted from September 17, 2023.

Intra IIT Kanpur Sports Events

- Institute Phatta League (IPL) was a thrilling event organized by the Council from 5-13 August 2023.
- The first edition of the Athletics Triad Tournament was organized between 13-14 August 2023, which obtained immense participation from the campus community.
- Aquabuddies was held at the Institute Swimming Pool.
- Racquethalon, an eagerly anticipated institute league encompassing four exhilarating sports - Badminton, Table tennis, Tawn tennis, and Squash - unfolded from 26th January.
- The Intra-IIT Wall Climbing Competition was conducted between 16th August and 19th August at the climbing wall in New Sac, catering to beginner, intermediate, and advanced climbers.
- ICC 2.0, conducted around the campus, was an exhilarating cricket tournament played with a leather ball and served as a platform for aspiring cricketers to showcase their skills for a coveted spot in the Institute Cricket Team.

Felicitation - Annual Sports Felicitation Ceremony was organized by the Council on 2nd July 2023 to acknowledge the contribution of the senior contingent members towards IIT Kanpur Sports.

UDGHOSH 2023 - This year IIT Kanpur celebrated the 19th edition of Udghosh, attracting immense participation nationwide. Our institute's contingent of 300+ athletes competed fiercely over three days turning all sports grounds and courts into battlefronts. The athletes fought determinedly to secure victories for their teams while the crowd's constant cheering added to the exhilaration of the event.

Inter IIT Aquatics Meet - The 37th Aquatics meet was held from 4-8 October at IIT Gandhinagar. The IIT Kanpur team performed creditably and managed to secure multiple medals in variety of events, hence bringing up the tally to close at 3rd position for the Women's Swimming team and 5th position for Men's Swimming team.

Inter IIT Sports Meet 2023 - The IITK contingent continued their stellar record in sports such as volleyball (women) gold, badminton (men) gold, table tennis (men) silver, table tennis (women) silver, athletics (men) silver, aquatics (women) bronze, cricket (men) bronze, squash (women) bronze and weightlifting (men) bronze by grabbing medals and presenting an excellent show of sportsmanship.

INFERNO 2023 - Inferno, organized from 2-10 March showcased various sports catering to both men and women athletes. The event was meticulously planned to accommodate 19 sports competitions for men and 11 for women ensuring a wide representation of athletic disciplines.

Freshers' INFERNO 2023 - Organized from 3-10 September 2023 exclusively for the Y23 students of IIT Kanpur is the annual flagship event for freshers. The event accommodated 16 different competitions.

ACADEMICS AND CAREER COUNCIL (UG)

Product Management Interest Group

Summer Projects - Four product management summer projects, namely: Product Research and Innovation, User-Centric Product Design, Building a Research Publication Website, and

Foundation of Successful Product Management, each lasting 5-6 weeks, were offered.

Competition 1 - The Product PowerPlay - This competition aimed to challenge the problem-solving, critical thinking, and strategic decision-making abilities of a student.

ProdCamp 1.0 (A Product Management Bootcamp) - Captivating and informative sessions led by industry experts, hands-on workshops, and regular quizzes were organized as part of the Bootcamp.

Competition 2 - PROD-A-THON - It was a product case study competition in collaboration with the company Merlin by Foyer for all batches (UG and PG).

Product Management Playlist - IIT Kanpur launched its first comprehensive, end-to-end Product Management guide—a playlist carefully crafted with the help of industry experts to assist students in exploring and learning this field.

Career Development Wing

Internship Preparation Sessions - In May Y20 batch students held sessions to help Y21 batch students prepare for internships. They shared preparation resources and addressed attendees' questions. The six major profiles covered were Quant, Software, Consulting, Analytics, Core, and Techno-Managerial.

DSA boot camp and test series for internships - In July, a collaboration with Programming Pathshala offered a subsidized DSA bootcamp for the Y21 batch students. Approximately 180-200 courses were sold to campus students.

Internship Mentorship Program'23 - In June and July third-year mentors were assigned to second-year students to assist with their internship preparation. Each Y20 mentor overseeing 5-6 mentees based on preferred profiles, provided guidance, resolved doubts, and offered motivation during challenging phases.

Resume-making session and Mock GDs - In July and August resume-making and mock Group Discussions (GDs) sessions were conducted for Y21 batch students.

Sessions on Guesstimates and Soft Skills - In November a session on Guesstimates was conducted by an IIT Kharagpur alumnus, focusing on interview techniques for Guesstimates. Additionally, two interactive soft skills sessions were held in collaboration with Alternative Leadership: one on Emotional Intelligence and the other on Workplace Communication.

Career Connect - Career Connect was organised from 5-7 April. This event aimed to inspire and empower both under-graduate and postgraduate students by providing them with the necessary tools and information to make well-informed decisions in their professional, social, and personal lives. The event featured a wide range of sessions, hackathons, and workshops.

Sessions

- **Debugging the Software Role** - Speakers: Mr. Ayush Nagal (Microsoft), Mr. Satyam Sahu (Google)
- **Consulting Compass** - Speakers: Mr. Anuj Kukreja (Bain & Company), Mr. Akshay Mahajan (Boston Consulting Group), Mr. Tizil Saini (McKinsey & Company)

- **Exploring the Quantverse** - Speakers: Mr. Nilay Tiwari (Quadeye Securities), Mr. Gaurav Saraf (Goldman Sachs)
- **Product Paradigm** - Speakers: Mr. Anurag Meher (CRED), Ms. Eva Rajak (EXL), Mr. Kunal Kotak (Mastercard)
- **Analytics Profile Unveiled** - Speakers: Mr. Sanket Katore (Mastercard), Ms. Divya Chowdary (EXL), Mr. Vishwas Jain (Mastercard)
- **Deep Dive into Core -** Speakers: Ms. Vaidehi Bhoyar (SkyRoot Aerospace), Mr. Suyash Singh (ITC Limited), Mr. Shubham Sharma (NVIDIA), Mr. Sanghamitra Banerjee (Dr. Reddy's Laboratories)

Workshops

- MATLAB Workshop
- Analytics Workshop
- Case Study & Guesstimates Solving Workshop
- Research Paper Writing Workshop

Competitions

- Stock Trading Competition
- Ideation Insomnia

UG Academics Wing

Academic Orientation 2.0 - It is the second flagship event of the wing. The target audience was Y22 batch. The orientation aimed at smoothening the transition from the first year to the second year.

ADM and CDM Recruitment - Department mentors were allocated to supervise communication with students via WhatsApp Groups throughout the year.

AnC booklet - It is an 8–10-page booklet for Y23 students containing relevant information from the UG Manual, an introduction to CCG kits, and essential academic pointers.

Deep Dive into Departments - A series of department sessions were conducted for each UG department especially targeting the sophomores.

Blog Posts on SURGE and Winter Projects - A series of blogs were posted to guide students on the application process for winter projects and SURGE.

ACADEMICS AND CAREER COUNCIL (PG)

The PG-Academics Wing

State of the Art Seminars (SOTA) Workshops - These workshops trained Ph.D. students on delivering effective presentations, communication skills, structuring content, and mastering technical jargon.

Academic Orientation for Freshers - The orientation provided new students with information essential to begin their academic journey at IIT Kanpur.

DPGC Student Interviews - The interviews ensured fair and inclusive representation.

Constructing Effective Appeals Session - The sessions guided students facing academic warnings or terminations by

crafting strong appeals and advocating for their academic standing.

The PG-Research Wing

PMRF Guidance Session -The session provided information and guidance on the Prime Minister's Research Fellowship program, including eligibility, application process, and tips for a strong application.

Journal Paper Publishing Session - The wing offered workshops on publishing research findings effectively, including selecting journals, formatting manuscripts, and navigating peer review.

Understanding the Distinction (Experimental vs. Computational Research) - Interactive session was held to explain the differences between experimental and computational research methodologies, including real-world examples and decision-making factors.

A Driving Progress Autonomous Vehicle Research workshop was also conducted by the Wing.

The PG-Career Development Wing

Core Placement Sessions - These sessions prepared students for core engineering placements through exam strategies, interview techniques, and understanding company expectations.

Non-Core Placement Sessions - The Wing offered workshops for various non-core sectors like data science, consulting, finance, product management, and others.

Consulting - The Wing provided guidance on industry insights, case studies, behavioural interviews, and consulting tools.

Finance and Banking - The sessions covered financial modelling, investment analysis, risk management, and banking operations through case studies and mock interviews.

Product Management -The session covered topics like, product lifecycle, market research, product design, project management, and user experience design.

The PG-International Relations Wing

Studying Abroad - The Wing organised information sessions on applying to PhD and Postdoctoral programs abroad, choosing institutions, writing applications, and securing funding.

Student Exchange Programs - The Wing organized workshops to inform PG students about student exchange programs including benefits, application procedures, and success stories.

Institute Research Symposium (IRS) - It is an annual event organized for researchers to present their work, exchange ideas, and foster collaboration across disciplines.

PRESIDENT STUDENTS' GYMKHANA OFFICE

56th Convocation and Farewell Fantasia - A farewell party for the graduating batch was successfully organized by the Students' Gymkhana. The band "Groovy Guys" performed in a musical extravaganza, which was then followed by a Prom

Night in the yoga room. The graduating batch showed up in large numbers and enjoyed the evening.

Diwali with Faculty - The faculty members were wished by the students with personalized handwritten cards and a box of sweets.

Sanitary Pad Machine - To improve accessibility and convenience for female students on campus, the President's Office has recently acquired a sanitary pad vending machine. Currently the vending machine awaits final placement approval from the administration.

Faculty Advisor Programme - To foster closer ties between faculty and students a proposal has been submitted to establish a mentorship program. The Students' Gymkhana would assign dedicated faculty advisors to a group of approximately 20 freshers, encompassing both undergraduate and postgraduate students, either within or outside their academic departments.

Riwayat - Riwayat 24 is the much-anticipated inter-pool cultural extravaganza which took place from February 27 to March 3, 2024. This year's event witnessed enthusiastic participation from all the pools (Peshwas, Shauryas, Aryans, Nawabs, Kshatriyas) across all the participating clubs and cells.

HC Hackathon - A hackathon focused on developing a prototype health center portal was held from 1-17 February 2024. The event garnered interest from the community with 16 teams registering to participate. Over the course of the hackathon 8 teams persevered and submitted documentation outlining their ideas for the portal. 3 teams presented fully functional final

drafts. After careful evaluation one team emerged victorious and was awarded for their exceptional work.

ENTREPRENEURSHIP CELL

Flagship Event:

- **Esummit** comprised of a startup Expo, a Networking Dinner, and several workshops, talk sessions, and competitions. This year's theme was INQUISITION TO INFINITY.

- **Upstart** drew startups from Bangalore, Delhi, Hyderabad, and Mumbai. Our alumni startups were directly given entry into finals after mentorships.

For Campus

- Entrepreneurship Cell in collaboration with Shark Tank India organized a session where campus startups get the opportunity to pitch in front of the Shark Tank India Team, based on which startups were shortlisted for the Student Special Episodes.
- Startup Internship Program (SIP): During Winter 25+ companies registered to the program offering 100+ opportunities. It is currently an ongoing process.
- Startup Sprint: This was an exhilarating overnight hackathon, a perfect Kickstarter for aspiring startup founders and innovators in campus. 25+ teams participated in this event.
- Bid for the Best: This event was exclusively planned to provide basic knowledge of entrepreneurship to Y'23s in a fun way. More than 350 freshers participated in this event.
- A Startup Clinic was organized for campus startups to connect them with mentors/ alumni.

- A 12-week Entrepreneurial Bootcamp was also organized to help campus startups just out of the Ideation stages to gain traction. 18 startups participated in this event.
- The HII program was undertaken under the SUEP policy. 15 teams from the campus enrolled for this program.

PUBLIC POLICY & OPINION CELL

Policy Conclave'24 - It is the flagship event of the Cell. The Theme for the event was, The Fortuitous Decannium. This theme encouraged people to draw inspiration from the fortuitous events of the past, acknowledging that major advancements often emerge unexpectedly. The event was inaugurated by Mr. Armstrong Pame.

BRAHMASTRA - It was a case study competition, which focused on addressing a problem based on key future issues of the nation. For the very first time in the country, participants from various prestigious institutes, IIT Kanpur, IIM Calcutta, IIM Udaipur, BITS Pilani, and IIFT Kolkata, came together to bring an amazing opportunity for everyone.

OUTREACH CELL

Core talks: The main idea behind Core Talks was to enhance the campus community's exposure to the core sector and guide students on how to pursue their career aspirations.

Monsoon Milan was organized to help the campus community network with our alumni base.

COMMUNITY WELFARE CELL (CWC)

Environmental Initiatives through Prakriti

Focus on Environmental Issues - The Prakriti club under the auspices of the CWC has been actively involved in addressing environmental concerns on the campus. This includes both raising awareness and implementing practical solutions to improve environmental sustainability at IIT Kanpur.

Engagement Activities - Throughout the year Prakriti has organized various events, campaigns, and workshops aimed at educating and involving the student community in environmental conservation efforts. These initiatives have fostered a campus-wide commitment to eco-friendly practices.

Promotion of Cultural Understanding and Values through Vivekananda Samiti - The Samiti organized lectures, interactive sessions, and community service events, which have helped enhance student life by providing deeper cultural insights and fostering inclusivity.

Broad Community Engagement

Inclusive Events and Programs - The CWC has been instrumental in organizing various activities that cater to the broader student body and the community around the campus. These programs are designed to improve welfare, stimulate intellectual growth, and promote social responsibility among students.

Collaboration and Partnerships - To maximize the impact within IIT Kanpur, the CWC regularly collaborates with other organizations and departments within IIT Kanpur. These partnerships have enabled the cell to offer a wider range of services and reach a larger audience.

STUDENTS' PLACEMENT OFFICE

"*One student one job*" (single offer acceptance) policy, ensuring equal opportunity for all students registered with Students' Placement Office (SPO), was continued this year as well. The campus recruitment drive for the academic year 2023-24 was conducted in hybrid mode across two phases. Phase-1 officially began on December 01, 2023 and continued until 15th December 2023, with initial preparations and related activities starting in July 2023. Phase-2 of the campus recruitment commenced in mid-January 2024.

A total of 481 organizations registered for campus placements across both phases. As on May 31, 2024 out of 1448 registered students, 1096 were placed through the SPO during the academic year 2023-24, encompassing both undergraduate and postgraduate levels. This year, more than 66 companies extended 220 Pre-Placement Offers (PPOs), marking an approximate 6% increase compared to the last year. So far, IIT Kanpur students have received 22 international offers. The overall placement rate stood at 76%, reflecting the dedicated efforts of the entire SPO team, including students, staff, and faculty coordinators. In undergraduate programs, 687 out of 849 registered students, approximately 81% secured placements. In postgraduate programs, 409 out of 599 registered students, approximately 68% were placed. A significant number of graduating students chose to pursue higher studies or entrepreneurship over placements.
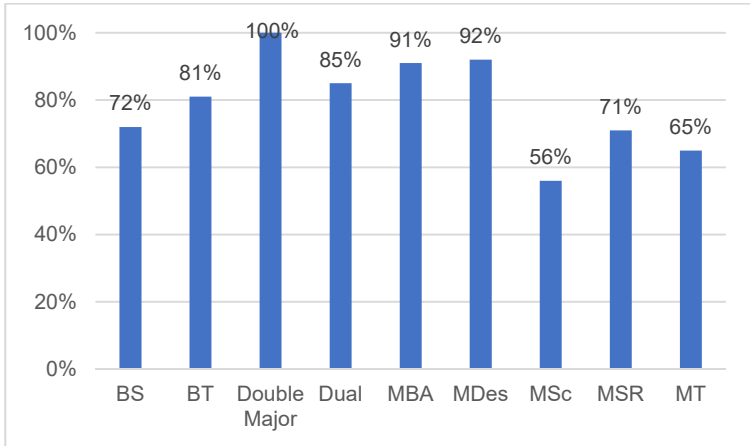
Placement statistics of various degree programs at IIT Kanpur during placement season 2023-24
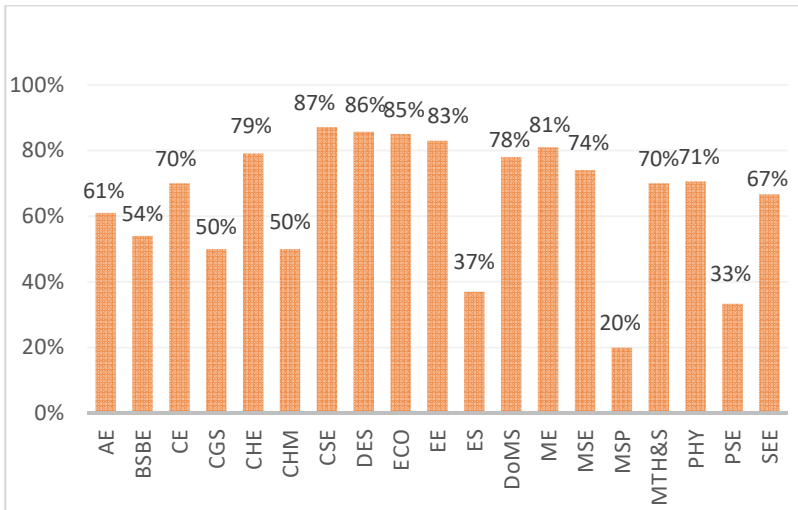
Branch wise placement statistics of IIT Kanpur for placement season 2023-24

Note: The above placement details are as on May 31, 2024, and are subject to change following the final compilation of the 2023-24 placement drive.

Some of the prominent recruiters who participated in the Campus Recruitment Drive 2023-24 include Goldman Sachs, Deutsche India, EXL, Google, Futures First, Microsoft India, Oracle India, Tata Projects, BPCL, Navi, Qualcomm, Jaguar Land Rover India, Reliance Industries, Prutor, and Texas Instruments.

SPO INITIATIVES

In addition to the regular campus placement drive, SPO also successfully organized Shodhspandan 2024. In this first-ever exclusive PhD recruitment event, our exceptional PhD scholars demonstrated their expertise across disciplines ranging from engineering to humanities to over 25 participating industries and academic institutions. 20 of our PhD students secured job through this exclusive recruitment drive.

EPILOGUE

Dear Graduating Students of the 57th Convocation,

I congratulate you all on this momentous occasion in your life! This day brings back the nostalgia of my own graduation 34 years ago.

I also take this opportunity to extend my heartiest congratulations to all the proud parents who have played a central role in their children's achievements throughout.

Graduating from college is a significant milestone in a student's life, one which is one of the most bittersweet moments. It is hugely rewarding as you have accomplished the goal you have been working towards for a long time; and at the same time, you are about to bid farewell to the place where you spent many years learning, making friends, and creating memories!

Dear Graduates, you all belong to a fortunate group of young people who have had an opportunity to obtain education from one of the preeminent institutions in the country. While you step into a new journey, some of you will choose to work in the industry, some will choose to go in for higher studies, and some may opt to serve the country as civil servants. Whichever profession you choose, I am confident that the spirit of IITK you have imbibed will act as your conscience and guiding light in navigating any complex situation.

Recently, there is a huge demand for technically skilled youth in our country to solve India's various problems and grow the nation's economy. The emphasis is on transforming our country into a nation of job-creators rather than job-seekers by building an indigenous, innovative, and strong ecosystem by promoting entrepreneurship. The Govt of India has launched

several initiatives such as 'Vocal for Locals', 'Atmanirbhar Bharat', 'Make in India', 'Startup India', etc., that provide tremendous opportunities for the youth of our country to be more self-reliant. By leveraging your technical knowledge and applying it for innovation and entrepreneurship, you can not only identify and solve societal challenges but also foster economic growth through job creation. You have the opportunity to shape the nation's trajectory by contributing to economic growth and, thereby, a brighter future for our country. I urge you to make the best of this opportunity.

Although you are graduating today, always remember learning is a continuous process in life. The ability to learn and adapt swiftly, even in unprecedented circumstances, helps us take the future in our stride.

Dear Graduates, you will join the IIT Kanpur Alumni League starting today. Going forward, I am sure your relationship with your alma mater will remain as vibrant as ever, and you will cherish it as a lifelong treasure. I also want to assure you that wherever you go and whatever you do, IIT Kanpur will always be there for you. If you need guidance, please feel free to reach out.

I wish you all the best in your future endeavors. May you find success, joy, and prosperity in life! I am confident that you will only enhance the glory of your alma mater wherever you go! Stay in touch!

With Best Wishes for a new beginning!

Jai Hind!

 - Manindra Agrawal

BOOKS PUBLISHED

1. An Introduction to Astronomy and Astrophysics, Second Edition by Pankaj Jain (SPASE), CRC Press (2024) ISBN 9780367257583

2. Design and Analysis of Thermal Systems by Malay K Das (ME), P K Panigrahi (ME), CRC Press (2023) ISBN 9780367502546

3. ChE Triad: Lecture Notes Chemical Engineering by Nishit Verma (CHE), Ane Books (2024) ISBN 9788119662920

4. Insights in Consciousness Research 2021 by A Raffone, N Srinivasan (CGS), L Simione, X Arsiwalla, J Kleiner, Frontiers Media SA (2023) ISBN 9782832524435

5. Rising stars in Consciousness Research 2021 by A Raffone, N Srinivasan (CGS), L Simione, X Arsiwalla, J Kleiner, Frontiers Media SA (2023) ISBN 9782832538517

6. Renewable Energy Generation by A Study of Green Energy and its Sustainable use in India by Rajeev Jindal (SEE) Ashish Garg (SEE), National Book Trust, India (2023) ISBN 9789357430838

7. Human Factors and Ergonomics: Syllabus for Indian Universities by Vivek Kant (DES), Prathamesh Bachche, Rammohan Maikala, Notion Press (2024) ISBN 9798893222159

8. Negative Capacitance Field Effect Transistors: Physics, Design, Modeling and Applications edited by Song Young Suh, Shubham Tayal, Shiromani Balmukund Rahi (EE), Abhishek Kumar Upadhyay, CRC Press (2023) ISBN 9781003373391

9. Decarbonization of Maritime Transport edited by Burak Zincir, Pravesh Chandra Shukla, Avinash Kumar Agarwal (ME), Springer Nature (2023) ISBN 9789819916764

10. Handbook of Nanocomposite Supercapacitor Materials IV: Next-generation supercapacitor edited by Kamal K Kar (ME), Springer International Publishing (2023) ISBN 9783031237003

11. MEMS Applications in Electronics and Engineering edited by Aviru Kumar Basu, Adreeja Basu, Sagnik Ghosh, Shantanu Bhattacharya (ME), AIP Publishing LLC (2023) ISBN 9780735424364

12. Applied Cognitive Science and Technology - Implications of Interactions between Human Cognition and Technology edited by

Sumitava Mukherjee, Varun Dutt, Narayanan Srinivasan (CGS), Springer (2023) ISBN 9789819939657

13. Neurophysiology of Silence Part A: Empirical Studies edited by Tal Dotan Ben-Soussan, Joseph Glicksohn, Narayanan Srinivasan (CGS), Elsevier (2023) ISBN 9780323995511

14. Neurophysiology of Silence Part B: Theory & Review edited by Tal Dotan Ben-Soussan, Joseph Glicksohn, Narayanan Srinivasan (CGS), Elsevier (2023) ISBN 9780443236136

15. Applied Econometric Analysis Using Cross Section and Panel Data edited by Deep Mukherjee (ECO), Springer Nature (2024) ISBN 9789819949014

FELLOWSHIPS

1. Professor Bushra Ateeq (BSBE) has been selected for the Tata Innovation Fellowship 2023-24 by the Department of Biotechnology, Government of India.

2. Professor Jayant K Singh (CHE) has been awarded the INAE-SERB Abdul Kalam Technology Innovation National Fellowship 2023 for a period of three years.

3. Professor Nitin Saxena (CSE) was awarded the prestigious J C Bose Fellowship by SERB for a period of 5 years.

4. Professor Yogesh M Joshi (CHE) was awarded the prestigious J C Bose Fellowship by SERB for a period of 5 years.

5. Professor Mahendra Verma (PHY) was awarded the prestigious J C Bose Fellowship by SERB for a period of 5 years.

6. Professor Sandeep Verma (CHM) has been conferred with INAE-SERB Abdul Kalam Technology Innovation National Fellowship 2023 for a period of three years.

AWARDS AND HONORS

1. Professor Ashok Kumar (BSBE) was conferred with the honorary doctorate in the field of technology D.Sc.(tech) by Aalto University, Finland.

2. Professor Bushra Ateeq (BSBE) has been awarded the Rajib Goyal prize for young scientists in Life Sciences 2024.

3. Professor Ramasubbu Sankararamakrishnan (BSBE) was awarded the IIT Kanpur Distinguished Teacher Award 2023.
4. Late Professor Amit Dutta (PHY) was conferred with the IIT Kanpur Distinguished Teacher Award 2023.
5. Professor Rakesh Kumar (AE) was awarded the IIT Kanpur Distinguished Teacher Award 2023.
6. Professor Shalabh (MTH&S) has received the Professor K Srinivasa Rao Best Researcher Award 2023 by the Indian Society of Probability and Statistics.
7. Professor Sandeep Verma (CHM) has been selected for Professor D P Chakraborty 60th Birth Anniversary Commemoration Award by the Indian Chemical Society.
8. Professor S N Tripathi (CE) has been awarded the Infosys Prize 2023.
9. Professor Arun K Shukla (BSBE) has been awarded the Infosys Prize 2023.
10. Professor J N Moorthy (CHM) has been selected to receive the Asian and Oceanian Photochemistry Association (APA) Award 2023.
11. Professor Nisanth N Nair (CHM) has received the Dr. A P J Abdul Kalam HPC Award 2023 under the category, Researcher – R&D in HPC Applications.
12. Professor Nitin Saxena (CSE) received the IIT Bombay International Award for Excellence in Research in Engineering and Technology for 2023.
13. Professor Purushottam Kar (CSE) received the esteemed 1989 Batch Faculty Award, instituted by the IIT Kanpur alumni.
14. Professor Nitin Gupta (BSBE) has been awarded the S Ramachandran National Bioscience Award by the Department of Biotechnology, Government of India.
15. Professor Nisanth N Nair (CHM) has been selected to receive the Chemical Research Society of India (CRSI) Bronze Medal for the year 2024.
16. Professor Ashok Kumar (BSBE) was conferred the Distinguished Biomaterials Scientist Award, by the Society of Biomaterials and Artificial Organs, India (SBAOI).

17. Professor Amit Shekhar Kuber (MTH&S) was awarded the Gopal Das Bhandari Memorial Distinguished Teacher Award instituted by an IIT Kanpur Alumnus for the year 2023.

APPOINTMENTS

1. Professor Vinod K Singh (CHM) has been appointed Chairperson, Recruitment & Assessment Board, CSIR.

2. Professor Mukesh Sharma (CE) was reappointed (for two years) as an honorary member of the World Health Organization Global Air Pollution and Health - Technical Advisory Group (GAPH-TAG).

3. Professor Manindra Agrawal (CSE) is appointed as the Director at the Indian Institute of Technology Kanpur.

4. Professor Avinash Kumar Agarwal (ME) is appointed as the Director of the Indian Institute of Technology Jodhpur.

5. Professor Dhirendra Sushilendra Katti (BSBE) is appointed as the Director of the Indian Institute of Technology Goa.

6. Professor Shantanu Bhattacharya (ME) has been appointed as the Director CSIR-Central Scientific Instruments Organisation (CSIO), Chandigarh.

EDITORSHIPS / MEMBERSHIP

1. Professor Dattatraya Dethe (CHM) has joined the Editorial Board of two journals, Tetrahedron & Tetrahedron Letters.

2. Professor Debabrata Goswami (CHM) has been invited to join the Editorial Advisory Board of The Journal of Physical Chemistry Letters for a term of two years.

3. Professor Krishanu Biswas (MSE) has been elected as a Fellow of the Institute of Materials, Minerals and Mining (IoM3), U.K.

4. Professor Ashok Kumar (BSBE) was elected as a Fellow of Biomaterials Science and Engineering by the International Union of Societies for Biomaterials Science and Engineering.

5. Professor Anantharaj Sengeni (CHM) has recently been selected as an Associate of the Indian Academy of Sciences for a period three years.

6. Professor Avinash Kumar Agarwal (ME) was elected as a Fellow of The World Academy of Sciences (TWAS).
7. Professor S C Srivastava (EE and Director IIT Kanpur-La Trobe University Research Academy) was awarded the Life Fellowship of IEEE USA.
8. Professor Pradip Swarnakar (HSS) was appointed as Senior Associate (Non-Resident) at Center for Strategic and International Studies (CSIS) under Energy Security and Climate Change Program.
9. Professor Raju Kumar Gupta (CHE) has been appointed as a Founding Editor of Elsevier journal, Sustainable Chemistry One World.
10. Professor Bushra Ateeq (BSBE) has been honoured with the prestigious Fellowship of the Indian National Science Academy (INSA).
11. Professor Nitin Saxena (CSE) has been honoured with the prestigious Fellowship of the Indian National Science Academy (INSA).
12. Professor Rahul Mangal (CHE) was elected as an Associate Fellow of the Indian National Science Academy (INSA) for the year 2023.
13. Professor Braj Bhushan (HSS) has been elected as a Fellow of the esteemed British Psychological Society (BPS).
14. Professor M Jaleel Akhtar (EE) has been elected as a Fellow of the Indian National Academy of Engineering (INAE).
15. Professor Shubham Sahay (EE) has been selected as an Indian National Academy of Engineering (INAE) Young Associate 2023.
16. Professor Arun Shukla (BSBE) has been appointed to the Editorial Advisory Board of the journal, Molecular Cell.

STUDENTS AWARDS

1. Ms. Sephora Jose (18100273, PhD/HSS) has been awarded the Bluestone Rising Scholar Award 2023 by the editorial board of Caste: A Global Journal on Social Exclusion which is affiliated with Brandeis University.

2. Mr. Bheemsehan Gurjar (19109270, PhD/PHY) has been awarded the Gary McCartor Award by the International Light Cone Advisory Committee (ILCAC).

3. Mr. Mishal K T (19223261, PhD/ES) has been awarded the Stephen E Dwornik Planetary Geoscience Graduate Poster Presentation Award at 54th Lunar and Planetary Science Conference (LPSC) held in Houston, USA in March 2023.

4. Mr. Mishal K T (19223261, PhD/ES) has been awarded the Best Oral Presentation Award at the Indian Planetary Science Conference (IPSC) held at Ahmedabad in March 2023.

5. Mr. Kingshuk Chatterjee (18104279, PhD/EE) has received the Best Paper Award in the National Symposium on High Voltage - Energy Storage Capacitors and Applications organized at the Department of Atomic Energy, BARC, Mumbai in June 2023.

6. Ms. Moon Moon Bordeori (17104275, PhD/EE) has received the Best Paper Award in the National Symposium on High Voltage - Energy Storage Capacitors and Applications organized at the Department of Atomic Energy, BARC, Mumbai in June 2023.

7. Mr. Abhijit Manna (19107262, PhD/CHM) has received the Best Poster Presentation Award at the International Conference on Organic and Medicinal Chemistry (ICOMC) held at NIT Warangal in June 2023.

8. Ms. Mamta Gill (19107280, PhD/CHM) has received the Best Oral Presentation Award at ICOMC held at NIT Warangal in June 2023.

9. Mr. Deepak Kumar (17107268, PhD/CHM) has received the Best Poster Award at Photonics 2023 held at IISc Bangalore in July.

10. Mr. Prabhakar K Pandey (18507265, PhD/CHM) has received the Best Poster Award at the 31st CRSI National Symposium in Chemistry held at NIT Rourkela in July 2023.

11. Ms. Moumita Patra (19107282, PhD/CHM) has received the Best Poster Award at the 31st CRSI National Symposium in Chemistry held at NIT Rourkela in July 2023.

12. Ms. Swati Mahato (20106295, PhD/MSE) was the winner of Microscopy Contest at the Summer School of Characterisation organised by the National Facility of Atom Probe Tomography (NFAPT) & Center of Correlative Microscopy at IIT Madras.

13. Mr. Anindya Ganguly (21111261, PhD/CSE) was a winner of the prestigious TCS scholarship.

14. Ms. Deepika Behmani (17109265, PhD/PHY) has received a Best Poster Prize in the Plasma Scholars Colloquium (PSC) held at IIT Kanpur in July 2023.

15. Ms. Jayashree Majumdar (16209262, PhD/PHY) has received the Best Poster Prize in the 35th International Conference on Phenomena in Ionized Gases (ICPIG) held in Netherlands during July 2023.

16. Mr. Shubham Srivastava (19104279, PhD/EE) participated in the IEEE International Symposium on Information Theory (ISIT), DeepVerse 6G Machine Learning Challenge and his team won the competition.

17. Mr. Usama Ghayas Syed (17200269, PhD/HSS) has been selected for the National Council of Applied Economic Research - National Data Innovation Centre (NCAER-NDIC) Fellowship 2023.

18. Ms. Shraddha Tripathi (18104292, PhD/EE) has received the TCS Research Fellowship 2023.

19. Mr. Ashish Gupta (15204265, PhD/EE) has received the Best Poster Award at the National Youth Conference on Indian Knowledge Systems held at the IIT Roorkee in August 2023.

20. Mr. Ashish Shukla (20119261, PhD/DES) has received the Best Conference Paper Award at the 6th IEEE International Conference on Knowledge, Innovation, and Invention 2023.

21. Ms. Ramsha Javed (17207268, PhD/CHM) has been awarded the Poster Prize in the conference, Theory and Applications of Computational Chemistry (TACC), which was held at Sapporo, Japan in September 2023.

22. Mr. Pratyush Arya (22128407, MS/CGS) has won the Best Student Paper Award at the 16th International Conference on Social Computing, Behavioural-Cultural Modeling & Prediction and Behaviour Representation (SBP-BRIMS) held during September 2023 in Pittsburgh, USA.

23. Ms. Mani Dixit (20200264, PhD/HSS) has received the Best Paper Award at the INMS Conference on Memory, Ecology, and Sustainability held during September 2023, jointly organized by the Center for Memory Studies, IIT Madras and Springer Nature.

24. Ms. Abhisha Garg (20104261, PhD/EE) has received the 2023 IEEE SPS Scholarship from the IEEE Signal Processing Society (SPS).

25. Mr. Joel Parayil Jacob (20102270, PhD/CHE) has won a Poster Presentation Award at the International Conference on Membrane Based Separations: Past, Present & Future held at Vadodara in October 2023.

26. Ms. Ambica Singh (20101264, PhD/AE) has won the Best Paper Award in the student competition held at the 15th International Symposium on Experimental and Computational Aerothermodynamics on Internal Flows (ISAIF15), IIT Madras during October 2023.

27. Mr. Sushil Kumar (20105278, PhD/ME) has received Best Oral Presentation Award at the 29th International Conference on Processing and Fabrication of Advanced Materials which was held at IIT Tirupati in September 2023.

28. Mr. Rajkumar (20105291, PhD/ME) has received Best Oral Presentation Award at the 29th International Conference on Processing and Fabrication of Advanced Materials which was held at IIT Tirupati in September 2023.

29. Mr. Moonis Ali (20203266, PhD/CE) has been awarded the first consolation prize in Oral Paper Presentation at the 43rd Indian National Cartographic Association (INCA) international conference held in November 2023.

30. Ms. Ananya P Mukherjee (19123262, PhD/ES) has been awarded the second position for the ONGC-IGU Best Poster Presentation Award at the 60th Annual Convention of Indian Geophysical Union (IGU) which was held at CUSAT, Kochi during November 2023.

31. Mr. Kumar Rajnish (190446, BT/EE) has been awarded the Best Paper Award at the International Conference on Computer Vision and Image Processing 2023.

32. Ms. Aamna Sarfaraz (17103261, PhD/CE) has received the Outstanding Poster Award at the Global Cleaner Production Conference (GCPC) held in November 2023. The conference was organized by Elsevier and Fudan University in Shanghai, China.

33. Mr. Pankaj Mishra (18103270, PhD/CE) has received the Outstanding Poster Award at GCPC 2023.

34. Ms. Ayesha Nanda (18109263, PhD/PHY) has received a Poster Prize in the 7th Annual Conference of the Division of Plasma Physics of the Association of Asia Pacific Physics Society (AAPPS-DPP) held in November 2023 at Port Messe Nagoya, Japan.

35. Ms. Triya Saha (19118282, PhD/BSBE) has received the Bajpai-SAHA Student Award for the best oral presentation during the 33rd National Conference of the Society for Biomaterials and Artificial Organs, India (SBAOI).

36. Mr. Ubaid Tariq (20118282, PhD/BSBE) was recipient of the Best Poster Presentation Award at the International Conference on Biomedical Materials and Technology (BioTEx 2023) held at IIT Delhi.

37. Ms. Ekta Srivastava (18118263, PhD/BSBE) has received the Best Oral Presentation Award at the Indian Conference on Carbon Materials (ICCM) held at DAE convention centre, Mumbai in November 2023.

38. Ms. Zahra Sifat Zaidi (19118285, PhD/BSBE) has received SBAOI Best Poster (Third prize) Presentation Award.

39. Ms. Saptomee Chakraborty (19118277, PhD/BSBE) has received ACS Best Poster Presentation Award at BioTEx 2023.

40. Mr. Krishna Chaitan Marthi (19105281, PhD/ME) has received the first prize in the Student Poster Competition at the ASME Gas Turbine India Conference which took place at Infosys, Bangalore in December 2023.

41. Ms. Garima Joshi (231160603, PhD/PSE) has received the IEEE Women in Engineering Best paper Award in the 6th IEEE-WRAP

(Workshop in recent advances in Photonics) held during December 2023 at IIIT Allahabad.

42. Mr. Mohd. Saqib (18103268, PhD/CE) received the Indian Geotechnical Conference (IGS) Chennai Chapter Young Geotechnical Engineer Award.

43. Mr. Subhra Sourav Jana (18106277, PhD/MSE) has been conferred the G C Jain Memorial Prize for best PhD thesis in material science for the year 2023, given by the Material Research Society of India (MRSI).

44. Mr. Manish Kumar (15215262, PhD/NET) has received the Best Poster Award (2nd rank) at the Indian Aerosol Science and Technology Association (IASTA) National Conference held in Mumbai during December 2023.

45. Ms. Amruta Adbe (20214262, PhD/DoMS) has won the Young Researcher Award (2nd position) at the jointly held conferences ACED 2023, HWWE 2023, and BRICS plus HFE 2023 at the Indian Institute of Management Mumbai.

46. Mr. Sounavo Ghosh (19104280, PhD/EE) has received the Best Paper Award in the recently held National Power Electronics Conference (NPEC) at IIT Guwahati in December 2023.

47. Mr. Subhra Sourav Jana (18106277, PhD/MSE) has been conferred the DAE-SSPS Best PhD Thesis Award for the year 2023 given by the Department of Atomic Energy and BARC at the 67th DAE Solid State Physics Symposium held at GITAM University.

48. Mr. Arghya Sen (18507261, PhD/CHM) has received ACS Energy Letters Best Poster Award in International Conference on Hybrid Halide Perovskite (HyPe-2023) organized jointly by IACS Kolkata, SNBNCBS and IISER Kolkata in December 2023.

49. Mr. Viral Rawat (19107313, PhD/CHM) has secured the first prize in a Poster Presentation at the International Conclave on AMR and Future Antibiotics (ICAFA) held at the Department of Biological Sciences, SRM University during November 2023.

50. Ms. Farha Naaz (19107276, PhD/CHM) has received Best Poster Award in Theoretical Chemistry Symposium (TCS) held at IIT Madras in December 2023.

51. Mr. Parag Tamuly (16207277, PhD/CHM) has received Best Poster Award at International Winter School on Frontiers in Ma-

terials Science and International Conference on Recent Advances in Materials (RAM-90) held at JNCASR, Bangalore in December 2023.

52. Dr. Nila Pal (PDF313, IPDF/CHM) has received the Best Poster Award at the 34th Materials Science and Technology Conference (MRSI) held at IIT BHU in December 2023.

53. Ms. Ankita Kumari (18204263, PhD/EE) has received the Best Paper Award (3rd position) in the academia category at the IEEE Microwave Antennas and Propagation Conference held during December 2023 in Ahmedabad.

54. Mr. Pranjal Dutta (EXY18018, PhD/CSE) has won the ACM India 2023 Doctoral Dissertation Award from the Association of Computing Machinery.

55. Mr. Gaurav Kumar (18112261, PhD/MSP) has received the Best Poster Presentation Prize at SPSI-MACRO Conference held at IIT Guwahati in December 2023.

56. Ms. Nimisha Agarwal (15511267, PhD/CSE) has been awarded the Best Paper Award at the 2nd ACM Global Computing Education Conference (CompEd) held during December 2023. She also received the ACM India scholarship offered at CompEd 2023.

57. Mr. Utkarsh Kumar (18227261, PhD/ECO) has won the Best Paper Award at the Management Doctoral and Researcher's Colloquium (MDRC) 2023 held at IIFT Kolkata.

58. Mr. Bharat Singh (17207263, PhD/CHM) has received the Best Paper in Poster Session Award in the 60th Annual Convention of Chemists (ACC) held at IIT Delhi during December 2023.

59. Mr. Rishi Mishra (19204275, PhD/EE) has been awarded the Second prize in the Student Category Papers Award at the IEEE Microwaves, Antennas, and Propagation Conference (MAPCON) held during December 2023 in Ahmedabad.

60. Mr. Rishi Mishra (19204275, PhD/EE) has been awarded the First prize in the Student Category Papers Award at MAPCON 2023.

61. Mr. Satish Srivastava (19104277, PhD/EE) has been awarded the First prize in the Student Category Papers Award at MAPCON 2023.

62. Ms. Baisakhi Bandyopadhyay (20204264, PhD/EE) has been awarded the Second prize in the Student Category Papers Award at MAPCON 2023.

63. Mr. Depanshu Sahu (210316, BT/CSE) has been awarded the Best Poster Paper at the Student Research Symposium in the 30th IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC) held in Goa in December 2023.

64. Mr. Akshay Kumar Sharma (21211401, MSR/CSE) has been awarded the Best Poster Paper at the Student Research Symposium in the 30th IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC) held in Goa in December 2023.

65. Mr. Waquar Raza (17205270, PhD/ME) has been given the Best Presentation Award at the Asian Symposium on Computational Heat Transfer Conference held at King Abdullah University of Science and Technology during December 2023.

66. Ms. Jyoti Gupta (16105272, PhD/ME) has been awarded the Best Paper Award in the area of Experimental Fluid Mechanics and Fluid Power in the FMFP 2023 conference held at IIT Jodhpur.

67. Mr. Deepak M Khusalani (20218264, PhD/BSBE) has won the Best Poster Award at the All India Cell Biology Conference organized by the Indian Society of Cell Biology (ISCB) held at AC-TREC Tata Memorial Centre Mumbai in January 2024.

68. Ms. Garvita Dhanawat (20107279, PhD/CHM) has received the Best Poster Award at the 93rd Annual Session of the National Academy of Sciences India (NASI) held during December 2023 at Bhabha Atomic Research Centre (BARC) Mumbai.

69. Mr. Shantanu Sen (18107281, PhD/CHM) has been selected for the Second Prize in Saransh: Thesis Presentation Competition 2023 organized by The Indian National Young Academy of Science (INYAS), New Delhi.

70. Ms. Saloni Kumari (20107298, PhD/CHM) has received the Best Poster Award in Modern Trends in Inorganic Chemistry (MTIC XX) conference held recently at IISc, Bengaluru during December 2023.

71. Ms. Jyoti Yadav (18112262, PhD/MSP) received the Best Paper Award in All India Manufacturing Technology, Design and Research (AIMTDR). The international conference was organized during December 2023 at IIT BHU.

72. Mr. Umar Khalid Khan (20118283, PhD/BSBE) has received the Mangala Bamne Young Scientist Award for Oral Presentation at the 43rd Annual Indian Association for Cancer Research (IACR) conference scheduled in January 2024 at IISER Pune.

73. Mr. Arko Biswas (19105264, PhD/ME) has been awarded the Best Poster Award in the ICFM 2024 conference held during January 2024 at IIT Kharagpur.

74. Mr. Abhishek Kumar Yadav (20107261, PhD/CHM) has received the Best Oral Presentation Award at High Energy Material Conference and Exhibits (HEMCE) organized by the Indian Space Research Organization (ISRO) in February 2024.

75. Mr. Parasar Kumar (20207268, PhD/CHM) has received the Best Poster Presentation Award at HEMCE 2024.

76. Mr. Manojkumar J (22107274, PhD/CHM) has received the Best Poster Presentation Award at HEMCE 2024.

77. Ms. Pragati (19227264, PhD/ECO) has received the Best Poster Award at the Australian Gender Economics Workshop organised in February 2024 at the University of Technology Sydney.

78. Mr. Aman Khosla (221262, MSC/PHY) has been awarded the Chanakya PG Fellowship from the I-HUB Quantum Technology Foundation, IISER Pune.

79. Mr. Mohd. Shaik Sabir (208170594, MSc/PHY) has been awarded the Chanakya PG Fellowship from the I-HUB Quantum Technology Foundation, IISER Pune.

80. Dr. Grace Kaul (PDF329, IPDF/CHM) has received the Best Oral Presentation Award at the 4th Student Indian Peptide Society Symposium held from in February 2024 at Gujarat Biotechnology University.

81. Mr. Saurav Bhattacharjee (15103274, PhD/CE) has received the Best Paper Award at the International Conference on Machine Intelligence and Smart Innovation (ICMISI) 2024 organized at VIT Bhimavaram.

82. Mr. Arbaz N Pathan (22123264, PhD/ES) has received the Best Poster Award at the 5th Workshop on Luminescence Dating and its Applications held at Physical Research Laboratory, Ahmedabad during February 2024.

83. Mr. Prakash Ranjan Jena (22123270, PhD/ES) has received the Best Poster Award at the 5th Workshop on Luminescence Dating and Its Applications held at Physical Research Laboratory, Ahmedabad during February 2024.

84. Ms. Sarika Yadav (17112262, PhD/MSP) has been awarded the MRSI Prize for the Best Poster at the 5th Indian Materials Conclave and 34th AGM of MRSI held at School of Materials Science and Technology, IIT BHU during December 2023.

85. Mr. Prasenjit Sharma (19205270, PhD/ME) has received the Best Paper Award at the International Conference on Advanced Mechanical Engineering and Industrial Management (ICAMEIM) hosted by the Department of Mechanical Engineering, Swami Vivekananda Institute of Science & Technology, Kolkata in March 2024.

86. Mr. Kalya Ankeet Rao (19218261, PhD/BSBE) has received the Best Poster Award at the 6th National Conference on Contemporary Developments at Biotech-Bioinformatics Interface held at the Department of Biosciences, Veer Narmad South Gujarat University, Surat during March 2024.

87. Mr. Kingshuk Chatterjee (18104279, PhD/EE) has received a Best Presentation Award at the 8th International Conference on Materials Engineering and Nano Sciences (ICMENS) held in Kwansei Gakuin University, Japan during March 2024.

88. Mr. Ayush Goel (20118264, PhD/BSBE) has been selected for the Overseas Visiting Doctoral Fellowship 2024, which is a DST supported exchange programme for Indian students at Purdue University, USA.

89. Ms. Swati Mahato (20106295, PhD/MSE) has received the Second Prize in Poster Presentation at an international conference, Industrial Insights and Academia Perspectives on High Entropy Alloys (IIAP-HEA) organized jointly by IIT Jodhpur, IIT Bhubaneswar and IIT BHU Varanasi in April 2024 at IIT Jodhpur.

90. Mr. Ritik Rajput (22204264, PhD/EE) has received the Best Paper Award in the 4th International Conference on Power Engi-

neering Applications (ICPEA) in Penang, Malaysia held in March 2024.

91. Ms. Namita Kumari (21104266, PhD/EE) has received the Best Paper Award in the 4th ICPEA.

92. Ms. Shiwangi Maurya (17107285, PhD/CHM) has received the Best Oral Presentation Award at the 11th International Conference on Chemical and Biological Sciences (ICCBS) held during April 2024 at Tokyo Institute of Technology.

93. Mr. Apratim Shukla (21108262, PhD/STA) has received the Best Poster Award at the conference, Theory and Foundations of Statistics in the Era of Big Data held at Florida State University during April 2024.

94. Mr. Arka Banerjee (20108265, PhD/STA) has received the highly prestigious 2024-2025 Fulbright-Nehru Doctoral Research Fellowship.

95. Mr. Niranjan Chatterjee (19118272, PhD/BSBE) has received the Young Scientist Award for best oral presentation at the conference BIOTECH NEXUS held at SGVU, Jaipur during April 2024.

96. Mr. Niranjan Chatterjee (19118272, PhD/BSBE) has received the First prize in Oral Presentation at the Emerging Technologies and Materials in Medicine (ETMM) conference organized by the Centre of Excellence for Materials in Medicine, Gangwal School of Medical Sciences and Technology, IIT Kanpur during May 2024.

97. Ms. Pragya Dixit (18206266, PhD/MSE) has received the Best Poster Award at Innovations in Materials Science (IMAT) conference held at IIT Roorkee during April 2024.

98. Ms. Pragya Dixit (18206266, PhD/MSE) has received the Best Poster Award at Innovations in Materials Science (IMAT) conference held at IIT Roorkee during April 2024.

99. Mr. Vikas Tiwari (20106296, PhD/MSE) has received the Best Poster Presentation Award at the International Conference on Electron Microscope and XLll Annual Meeting of the Electron Microscope Society of India (EMSI-2024) held in May 2024 at IIT-Bombay.

100. Mr. Saurav Bhattacharjee (15103274, PhD/CE) has received the Best Presentation Award at the International Conference on

Pavement Engineering and Technology-XVIII (ICPET) in the online conference organized by IRC, Montreal through WASET platform during May 2024.

101. Ms. Preeti Sati (19112262, PhD/MSP) has received an Oral Presentation Prize in Young Researcher Award category at the European Materials Research Society Spring Meeting 2024 held in Strasbourg, France in May 2024.

LIST OF MAJOR PROJECTS SANCTIONED

1. Establishment Of Phase-II Of "National Centre of Excellence for Large Area Flexible Electronics (NCFlexE)" At IIT Kanpur (MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY)

2. Establishment Of Centre of Excellence (CoE) Of UAV/Drone (UP GOVERNMENT)

3. Experimental Characterization of Flame Stabilization in A Jet Engine Afterburner (AERONAUTICS R&D BOARD)

4. Next Generation AAV Vectors for Duchenne Muscular Dystrophy Gene Therapy, (WELLCOME TRUST DBT)

5. Fist Engineering Sciences Level B C Or D – Project (DEPARTMENT OF SC.& TECHNOLOGY)

6. 3d Printed Technical Textiles for Defence Exosuits: Custom Fabrics for Physiological Monitoring and Decontamination Applications (MINISTRY OF TEXTILES)

7. Establishment Of Moes Experimental High-Pressure-Temperature Rock Deformation Centre for Research into Geodynamic Processes (MINISTRY OF EARTH SCIENCES)

8. Condition Assessment & Management Plan (CAMP) For Six River Basins, (MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION)

9. Laurus Centre For Gene Therapy (LAURUS LABS LIMITED)

10. SATHEE Initiatives (NMEICT Phase III) (MINISTRY OF EDUCATION)

11. Supporting Indigenous Development of Low-Cost Sensors (CLEAN AIR FUND)
12. Atman-Centre of Excellence: Core Support Grant (CLEAN AIR FUND)
13. DTH and SATHEE (MINISTRY OF EDUCATION)
14. Wind Tunnel Testing of Gaganyan Model Against Mou - VSSC/Aero/IITK/20.03.2019 (VSSC)
15. Pollutant Source Apportionment and Environment Impact Assessment Study for The Thermal Power Plants at Jhajjar, Haryana (ARAVALI POWER COMPANY PRIVATE LIMITED)
16. Consultancy For Laurus Lab-IITK Technopark Facility, Funded BY LAURUS LABS LIMITED, Rs. 17700000
17. Comparative Life Cycle Assessment (LCA) And Total Cost of Ownership (TCO) Assessment for Compressed Natural Gas (CNG), Compressed Biogas (CBG) And Gasoline Fuelled (ICEV) Vis-A-Vis (Bev), (NEDO)
18. Establishment Of An Aircraft Simulation Facility At The Flight Laboratory, Department Of Aerospace Engineering, IIT Kanpur As National Facility, (AERONAUTICS R&D BOARD)
19. Development of a Super Cavitating Model Torpedo, (DEFENCE R & D ORGANISATION)
20. Development of Indigenous High-Performance Ultra High Molecular Weight Polyethylene (UHMWPE) Fibers/Shields for Bulletproof Applications in Defence and Civil Domains (MINISTRY OF TEXTILES)
21. ISRO-IITK-STC, (SPACE TECHNOLOGY CELL)
22. Design And Development of A Smart Electric Stubble-Harvester And Integrated Baler Toward Sustainable Agro-Residue Management (DEPARTMENT OF SC.& TECHNOLOGY)
23. Rf Transceiver SOC with DSP For 27MHZ - 1.05GHZ (MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY)
24. Fatigue Performance Models for Cement Treated Base Materials (MINISTRY OF ROAD TRANSPORT & HIGHWAYS)
25. Design And Development of A Model Cargo-Hyperloop Using Pipe Following Robot (CENTRAL MINE PLANNING & DESIGN INSTITUTE LIMITED)

26. Centre Of Excellence in Artificial Intelligence for Sustainable Cities (AICPMU IIT JAMMU)

27. Design, Manufacture and Low Speed Wind Tunnel Testing of Three Multi-Element Airfoils (2d Sections) With and Without Flap Deflections 2. Design Of Scaled Model of Rta and Low Speed Wind Tunnel Test (NATIONAL AERONAUTICS LTD)

28. Mitigating Resource Burden of Heterologous Biomolecular Circuits In Escherichia Coli (WELLCOME TRUST-DBT INDIA ALLIANCE)

29. Design, Development, Testing, & Deployment Of 35-40kg Fixed-Wing Hybrid VTOL UAV (RCOEM NAGPUR)

30. Developing Next Generation Precision Nanomedicine: From Fundamental Understanding to Translational Nano Therapeutics (ICMR)

31. Developing Specific Small Molecule-Based and Systemically Deliverable Antisense Oligonucleotide (Aso)-Based Therapy for Spinal Muscular Atrophy (SMA), (ICMR)

32. Design Component of MSME Innovative Scheme, (MICRO, SMALL & MEDIUM ENTERPRISES)

33. Fatigue Based Endurance Limit for Perpetual Pavement (MINISTRY OF ROAD TRANSPORT & HIGHWAYS)

34. Unify (Solutions for Clean Energy Integration In Power Grids With Improved Flexibility (DEPARTMENT OF SC.& TECHNOLOGY)

35. Development Of Prototype Melt-Spinning Machine of Manufacturing Tri-Lobal Cross-Section Bi-Component Fibers, (MINISTRY OF TEXTILES)

36. Development of HDFT Based Biomarker for Diagnosing of TBI And Diffuse Axonal Injury, (MIN. OF HUMAN RESOURCE DEVELOP)

37. Technology Demonstration, CFD Simulation, And Machine Learning Studies of CH_4 Recovery, (MINISTRY OF EARTH SCIENCES)

38. Development Of Nitric Oxide Releasing Multifaceted Biomaterial Based-Approach for Infected Diabetic Wounds (MINISTRY OF EDUCATION)

39. Design Component of MSME Innovative Scheme (MICRO, SMALL & MEDIUM ENTERPRISES)

40. Artificial Intelligence-Based Cost Optimization in Indian Railways Minimizing Overall Carbon Emission (RAIL INDIA TECHNICAL & ECONOMIC SERVICES LTD)

41. Biofuel Production from Carbon Dioxide (CO_2) And Utilization in Transport Sector for Reducing Greenhouse Gas (GHG) Emissions (MIN. OF HUMAN RESOURCE DEVELOP)

42. Characterization Of Natural Killer Cell in Prostate Cancer and Therapeutic Interventions Utilizing 3d-Tumoroid Mode (ICMR)

43. Experimental Determination of Afterburner Liner Impedance, (AERONAUTICS R&D BOARD)

44. Targeting Oncogenic Transcription Factor ERG in Prostate Cancer by Employing HBS-A- Helico-mimics Technology (MIN. OF HUMAN RESOURCE DEVELOP)

45. Modelling Simulation and Characterization of Hybrid Nano Composites for Propulsion Technology (DMSRDE, KANPUR)

46. Neuropeptide Y1 Receptor as A Potential Drug Target for Metabolic-Associated Steatohepatitis and Liver Fibrosis (ICMR)

47. Toolkit For Vulnerability Analysis and Penetration Testing, (DEFENCE R & D ORGANISATION)

48. Targeting Microphage GI Signalling as Potential Therapeutic Targets for Treatment of Obesity and Type 2 Diabetes, (DEPARTMENT OF BIOTECHNOLOGY) Exploring the Immunosuppressive Role of DLX1 And Its Contribution in Impeding Prostate Cancer Response to Immunotherapy (DEPARTMENT OF BIOTECHNOLOGY)

49. Understanding The Role of Autophagy in Lung Cancer Progression and Chemoresistance (DEPARTMENT OF BIOTECHNOLOGY)

50. Structural Visualization of Distinct Binding Modalities Selected GPCR-β-Arrestin Complexes (SCIENCE AND ENGINEERING RESEARCH BOARD)

LAB/FACILITIES DEVELOPED IN THE DEPARTMENT

1. Coherent Anti-stokes Raman Spectroscopy (CARS) facility to measure non-intrusive Insitu temperature and species concentration in a flow (AE)
2. Avionics and instrumentation laboratory (AE)
3. Design, simulation, testing and fabrication laboratory (AE)
4. Flight testing and instrumentation laboratory (AE)
5. Combustion and propulsion laboratory (AE)
6. Soot formation and oxidation laboratory (AE)
7. Detonation tube facility (AE)
8. Fire science and research facility (AE)
9. Secure embedded and smart things laboratory (settlor) (CSE)
10. Cdis related data is available on https://iitk.ac.in/cdis/ (CSE)
11. IoT vision lab, IoT-based water leakage detection test-bed (CSE)
12. Human-computer interaction lab (CSE)
13. Cyber-physical systems laboratory (CSE)
14. High resolution drone videos and computational simulation facility (DOMS)
15. Neural interfaces and motor rehabilitation laboratory (EE)
16. Dynamics and control laboratory (EE)
17. Wafer device reliability characterization lad (EE)
18. Measure and characterize power amplifiers, front-end modules, and transmit-receive modules operating at high frequencies (up to 40 Ghz) and high-power levels (up to 25 W) (EE)
19. Very large-Scale Integration (VLSI) lab (EE)
20. 3.3kw wireless EV charging test facility (EE)
21. Experimental setup for gripper testing (ME)
22. Experimental setup for intelligent thermal management system testing (ME)
23. Experimental setup to estimate the force exerted on stick while performing sit-to stand motion (ME)
24. Omnidirectional mobile platform for crop diseases detection (ME)

25. Experimental setup to estimate the force exerted by SMA wires in bipened arrangement (ME)
26. Inspection robot platform (ME)
27. Interface mode setup for estimation of bandgap in meta structures (ME)
28. Instrumentation laboratory (MSE)
29. Cold ions & atoms quantum technology lab (PHY)
30. Cryogen free Variable Temperature Insert (VTI) System (PHY)
31. DC and RF Magnetron Sputtering System (PHY)

SOFTWARE DEVELOPED

1. UAV tracking software and framework (Professor Abhishek, AE)
2. ZND code for detonations and explosions (Professor Ajay Vikram Singh, AE)
3. Image processing code and software for laminar and turbulent flames (Professor Ajay Vikram Singh, AE)
4. Reaction sensitivity analysis code (Professor Ajay Vikram Singh, AE)
5. Rate of production (ROP) analysis code (Professor Ajay Vikram Singh, AE)
6. Non-equilibrium flow solver (NFS) (Professor Rakesh Kumar Mathpal, AE)
7. Charring ablator thermal-response solver (CATS) (Professor Rakesh Kumar Mathpal, AE)
8. Coupled flow-thermal solver (Professor Rakesh Kumal Mathpal, AE)
9. Dusty-gas flow solver for planetary landing (Professor Rakesh Kumar Mathpal, AE)
10. Sangrahaka for annotating entities and relationships for knowledge graph creation, querying and browsing; Antarlekhaka for annotating for various NLP tasks; (Professor Arnab Bhattacharya, CSE)

11. Understanding and visualizing the impact of model uncertainty and sensitivity in deep learning-based view synthesizing tasks (Professor Soumya Dutta, CSE)

12. Compressive multivariate and flow data representations using implicit neural networks for scientific data exploration. (Professor Soumya Dutta, CSE)

13. Evaluating the impact of model uncertainty in deep learning-based large-scale volumetric data visualization techniques (Professor Soumya Dutta, CSE)

14. "Caterpillard" - open-source software (Professor Deepu Philip, DOMS)

15. Serially concatenated turbo code (Professor K. Vasudevan, EE)

16. Correlated channel (Professor K. Vasudevan, EE)

17. Correlated channel with precoding and dummy data (Professor K. Vasudevan, EE)

18. Matlab codes to determine the elastic properties of lattice structures (Professor Bishakh Bhattacharya, ME)

TECHNOLOGIES DEVELOPED

1. New class of in house made temperature sensitive paint (TSP) for aerodynamic applications (Professor Sathesh Mariappan, AE)

2. Logistic UAVS for high altitude operations (Professor Abhishek, AE)

3. High-speed propulsion technology using detonations as a mode of combustion (Professor Ajay Vikram Singh, AE)

4. A biomimicry scout camera system for monitoring activities of objects. Patent no. In 480305, (Professor. Debopam Das, AE).

5. Modular design of a Mechanism for neutralizing flying objects. (Professor Debopam Das, AE)

6. Modular design of a Mechanism for ejection of a neutralizer (Professor Debopam Das, AE)

7. Innovative blade design with flapper for efficient, self-starting turbines with a low cut-in speed (Professor Debopam Das, AE)

8. Fully passive flexible foil energy harvesting device, (Professor Debopam Das, AE)

9. Acoustic side channel analysis tool for instruction set disassembly (Professor Urbi Chatterjee, CSE)

10. Acoustic side channel attack tool to retrieve dialled numbers in cell phones (Professor Urbi Chatterjee, CSE)

11. Group authentication and key exchange protocol for swarm of drones and face recognition from the live feed of drones over a secure channel (Professor Urbi Chatterjee, CSE)

12. Reverse engineering tool to recover MPSoC layout in system-on-chip using timing side channel attacks (Professor Urbi Chatterjee CSE)

13. Vig-WaR: a ransomware trapping tool using iNode watcher (Professor Urbi Chatterjee CSE)

14. Tool for generating RTL code for modular multipliers with pseudo-Mersenne primes for modern FPGAS (Professor Debapriya Basu Roy, CSE)

15. Hardware implementation of low overhead unified number theoretic transform (NTT) multiplier with for NIST finalist and post-quantum secure algorithms crystal-kyber and dilithium. (Professor Debapriya Basu Roy, CSE)

16. Hardware implementation of low latency and high-radix implementation of NTT multiplier for crystal-Kyber, Dilithium, Falcon, and NTRU (Professor Debapriya Basu Roy, CSE)

17. On chip side channel leakage detection and correlation power attack on cryptographic algorithms. The side channel analysis is carried out without using any oscilloscope or any external Measurement device (Professor Debapriya Basu Roy, CSE).

18. Hardware implementation of low-overhead and flexible fast flourier transform (FFT) module for falcon (Professor Debapriya Basu Roy, CSE)

19. Montgomery and RNS multipliers for encrypted ML architecture supporting levelled homomorphic encryption (Professor Debapriya Basu Roy, CSE)

20. A smartphone app to locate leakages in water pipelines (Professor Priyanka Bagade, CSE)

21. Computer vision-based techniques to distinguish between C

22. Rohn's disease and intestine tuberculosis (Professor Priyanka Bagade, CSE)

23. IoT sensors and deep learning-based methods to detect corrosions in pipeline (Professor Priyanka Bagade, CSE)

24. Network forensics techniques for IoT systems to generate evidence against malicious activities during data communication over protocols such as Wifi, MQTT and LORA (Professor Priyanka Bagade, CSE)

25. Digital twin to monitor electric vehicles to predict the charging, discharging, and remaining useful life of batteries (Professor Priyanka Bagade, CSE)

26. Memory forensics techniques for medical devices when attacked by malware and ransomware (in collaboration with GE healthcare) (Professor Priyanka Bagade, CSE)

27. Deep learning based cyber-attack forecasting for IoT systems (Professor Priyanka Bagade, CSE)

28. Person re identification and continuous Physiological signal monitoring for elderly people using IoT sensors (Professor Priyanka Bagade, CSE)

29. Simulation of routing patients based on their Physiological conditions during prehospital management systems (Professor Priyanka Bagade, CSE)

30. Fxdebug: a tracing-based functional programming debugger for non-expert programmers to learn and debug programs (Professor Sruti Srinivasa Ragavan, CSE)

31. An educational platform to teach computational thinking using traditional games (Professor Sruti Srinivasa Ragavan, CSE)

32. A framework for end-to-end deployment of a heterogeneous multi-robot system in a dynamic environment (Professor Indranil Saha, CSE)

33. Algorithms for static and mobile charging station deployment for mobile robot applications (Professor Indranil Saha, CSE)

34. Optimal goal assignment and path planning algorithms for a large-scale multi-agent system (Professor Indranil Saha, CSE)

35. Collision-free path planning for a large-scale multi-robot system for covering complex unknown workspaces (Professor Indranil Saha, CSE)

36. Model-free reinforcement learning algorithms for continuous control of complex dynamical systems Professor Indranil Saha, CSE)

37. CER and EAL mobile apps have been updated (Professor Anoop Singh, DOMS)

38. EAL and CER web portals (Professor Anoop Singh, DOMS)

39. CER's regulatory tracker (Professor Anoop Singh, DOMS)

40. Development of regulatory webtool (a cloud-based database access portal), under a project supported by the forum of regulators (for) (Professor Anoop Singh, DOMS)

41. Commercial extraction plant for catechin from leaves of old tea plants (Professor Deepu Philip, DOMS)

42. Fixed-wing vertical take-off and landing unmanned aerial vehicle (Professor Deepu Philip, DOMS)

43. Design and indigenous development of a half-scale searcher fixed-wing unmanned Aerial vehicle (UAV) for Indian air force (IAF) pilot training (Professor Deepu Philip, DOMS)

44. Magnetic manipulation system (Professor Abhilash Patel, EE)

45. A sacrificial zinc anode and method for preparing the same from zinc dross. (Investigator from IIT Kanpur, Professor B.S. Chahar, Professor V. Singh and Professor K. Mondal & investigator from TATA steel, M.K. Bhadu, A.N. Bhagat, S.A. Bhatia, A.K. Dey, and S. Hadas, ME).

46. A shape memory alloy-based adaptive thermal fin for thermal management. (Professor Bishakh Bhattacharya and Shree Ram Pandey, ME)

47. A robot system for automatically managing agricultural activities (Professor Bishakh Bhattacharya, Mahendra Kumar Gohil, Anirudha Bhattacharjee, and Samir Kumar Biswas, ME)

48. A system for origami based reconfigurable antenna with steering Mechanism, (Professor Bishakh Bhattacharya. Shlok Sharma, Vaibhav Raj Sing, Varun Garg, Divya Jyoti Pandey, and Sahil Kalra, ME)

49. Speed control system for pipe health monitoring robot, (Professor Bishakh Bhattacharya, Kanhaiya Lal Chaurasiya, S. Barathy and Sanjeev Kumar, ME)

50. A sensing-based guidance device for endotracheal intubation and a method for operating the same, (Professor Bishakh Bhattacharya, Aman Garg, Anil Agarwal, and Sujeet Gautum, ME)

51. A wireless pressure sensor node for an inflatable structure, (Professor Bishakh Bhattacharya, Aman Garg, Chinthulal V S, a and Devendra Gupta, ME)

52. Smart stick, (Professor Bishakh Bhattacharya, Shubham Kumar, Dhrupal R Shah and Harshit Kumar Sankhla, ME)

53. A packing case for one or more large-caliber ammunition shells (Professor Bishakh Bhattacharya, Professor Nachiketa Tiwari, Professor Ramkumar Janakarajan, Girijesh Mathur, Shivyansh Tandon and Chetan Lodhi, ME)

54. Home automation system utilizing digital waste, (Professor Bishakh Bhattacharya, Himanshu Panday and Vaishnavi Bhope, ME)

55. Bicycle mounted solar energy harvesting unit, (Professor Bishakh Bhattacharya, Professor Sameer Khandekar, Abhishek Srivastava, Rishav Garg, Utkarsh Sinha and Shashank Kumar, ME)

56. System and method for a hall sensor - superconductor based limiter of fault current (Professor Satyajit Banerjee, PHY)

57. A tunnel diode-based device for real-time monitoring of steel quality and method (Professor Satyajit Banerjee, PHY)