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UPES
UNIVERSITY OF TOMORROW

RESEARCH & DEVELOPMENT

R&D Newsletter, Dec 2025, Vol. 8

TABLE OF CONTENTS

UPES
UNIVERSITY OF TOMORROW
RESEARCH & DEVELOPMENT
Dec, 2025 Vol. 8

FROM THE LEADERS' DESK

President
Dr. Ram Sharma

At UPES, research is not a siloed pursuit—it's embedded in our identity. It powers our vision, shapes our relevance, and defines our contribution to the world. In the last few years, we've seen a surge in impactful work—solutions rooted in science and engineering, yet responsive to the social, environmental, and industrial needs of our times.

Our faculty and researchers have demonstrated what's possible when intellectual rigor meets purpose. High-impact publications, new patents, funded projects, and prototypes ready for real-world application—all speak to the strength and maturity of our R&D ecosystem. More importantly, they reflect our commitment to translating ideas into value.

We've also seen strong upward movement in national and international rankings—an outcome of strategic investment in talent, infrastructure, and interdisciplinary collaborations. Recognition from platforms like NIRF, QS, and Shanghai Rankings isn't just about numbers—it's a validation of the work our researchers do every day to push boundaries and deliver meaningful change.

As we look ahead, the challenge is clear: stay relevant, stay bold, and stay focused on impact. Let's continue to fuel a research culture that asks hard questions, builds smart solutions, and contributes to a future that is equitable, sustainable, and innovative. Thank you to each researcher, faculty member, and student driving this vision forward. Your work is the engine of UPES's progress—and its promise.

Vice-Chancellor
Dr. Sunil Rai

As we reflect on the remarkable progress made over the past few months, I'm both proud and deeply encouraged by the trajectory of research and innovation at UPES. What we're witnessing is not just academic output—it's a culture taking root. A culture where curiosity meets impact, where ideas are not just explored but applied, and where every research effort is aimed at making a real difference.

This year, our faculty, researchers, and students have pushed boundaries—developing cutting-edge solutions in clean energy, healthcare, advanced materials, AI, and more. What stands out is not just the quality of work, but the intent behind it: a commitment to solving problems that matter. Our partnerships with national and international institutions have only strengthened this effort, helping us bring global perspectives into local relevance.

What excites me most is the direction we're heading. With our expanding infrastructure, increased focus on interdisciplinary collaboration, and an ever-growing community of passionate innovators, UPES is poised to be a hub of transformative research. But let's be clear—this is just the beginning.

To everyone who contributes to this ecosystem—thank you. Your work is shaping not only the reputation of UPES but also the future we all want to build. Let's keep pushing. Let's keep questioning. And let's continue to lead with purpose.

Dean R&D
Prof. Ashwini K. Nangia

Integrating Research & Development with Innovation (RDI) at UPES

The year 2025 was quite a momentous one for R&D, and this will be obvious from the newsletter. UPES was ranked 45th in NIRF University rankings and placed 45th in the Research category. We started the year with a magnificent science festival IYRC in February 2025. We now have subscriptions to Researgence and XLScout which will connect the dots for researchers from projects to patents to filling the gaps in research projects as well as identifying new areas for collaborations. The foundation of a strong RDI ecosystem is the PhD program and we are proud to say that the number PhDs awarded at the November convocation + ODCs conducted + thesis submitted in 2025 is a whopping 133! Two new awards were started for PhD scholars – the best PhD thesis award at the convocation and spotlight award of 3 best publications in every quarter of the academic year. The spotlight award winners will present their work at the next IYRC in February 2026. A new Research Advisory Committee (RAC) was constituted in October 2025 with experts from all disciplines and domains covering the 7 Schools. The RAC members will guide in making a crisp and progressive research and translational roadmap for UPES. A major transition in 2025 was the multiple research program schemes launched by the newly constituted ANRF. Our faculty applied under several tracks and positive results have come out in a few cases already. A major challenge in securing research and infrastructure grants will be aligning faculty groups with the theme calls in a collaborative and synergistic manner. The success of R&D team as a facilitator hinge on understanding faculty needs and expectations to foster communication and collaboration among researchers. Our goal at UPES is to make an impact with our research and innovation. We look forward to your suggestions for improvement.

Dean Emeritus
Prof. D.K. Avasthi

The R&D activities of university has demonstrated remarkable momentum across every dimension of research, innovation, and societal impact in the last five years. The achievements reflected in this Newsletter stand as a testament to the collective dedication of our faculty, researchers, and students. Streak of praiseworthy contribution by faculty and students continues for publications, projects and patents (3Ps), the indicators of R&D outcome of university. The quality publications represented by Q1 and Q2 journals continue to grow. The H index of university has increased significantly to about three times in the last 5 years reaching to 131. Our research ecosystem has matured significantly, with high-impact publications, breakthrough patents, and an expanding portfolio of externally funded projects. These accomplishments reaffirm that UPES is steadily securing its place among globally recognized research institutions.

The PhD scholars and faculty presented their work in prominent international conferences and performed experiments using state of art facilities at DESY Hamburg Germany, KEK Tsukuba Japan and Elettra Italy. These engagements not only enrich our intellectual ecosystem but also ensure that our research remains globally relevant and impactful. We continue to strengthen its core foundation through a robust PhD programme, cutting-edge instrumentation facilities, and the newly established interdisciplinary research centers—C-DSAI, CSMS, CIDRI, and HILL. There have been more than one hundred PhD viva in the last one year. Currently there are forty PhD scholars funded by CSIR, DST INSPIRE, Visvesvaraya scheme, and externally supported projects.

I admire the efforts by faculty and students to contribute for research and innovation. Let us continue to innovate with purpose to push boundaries of excellence.

VISION & MISSION

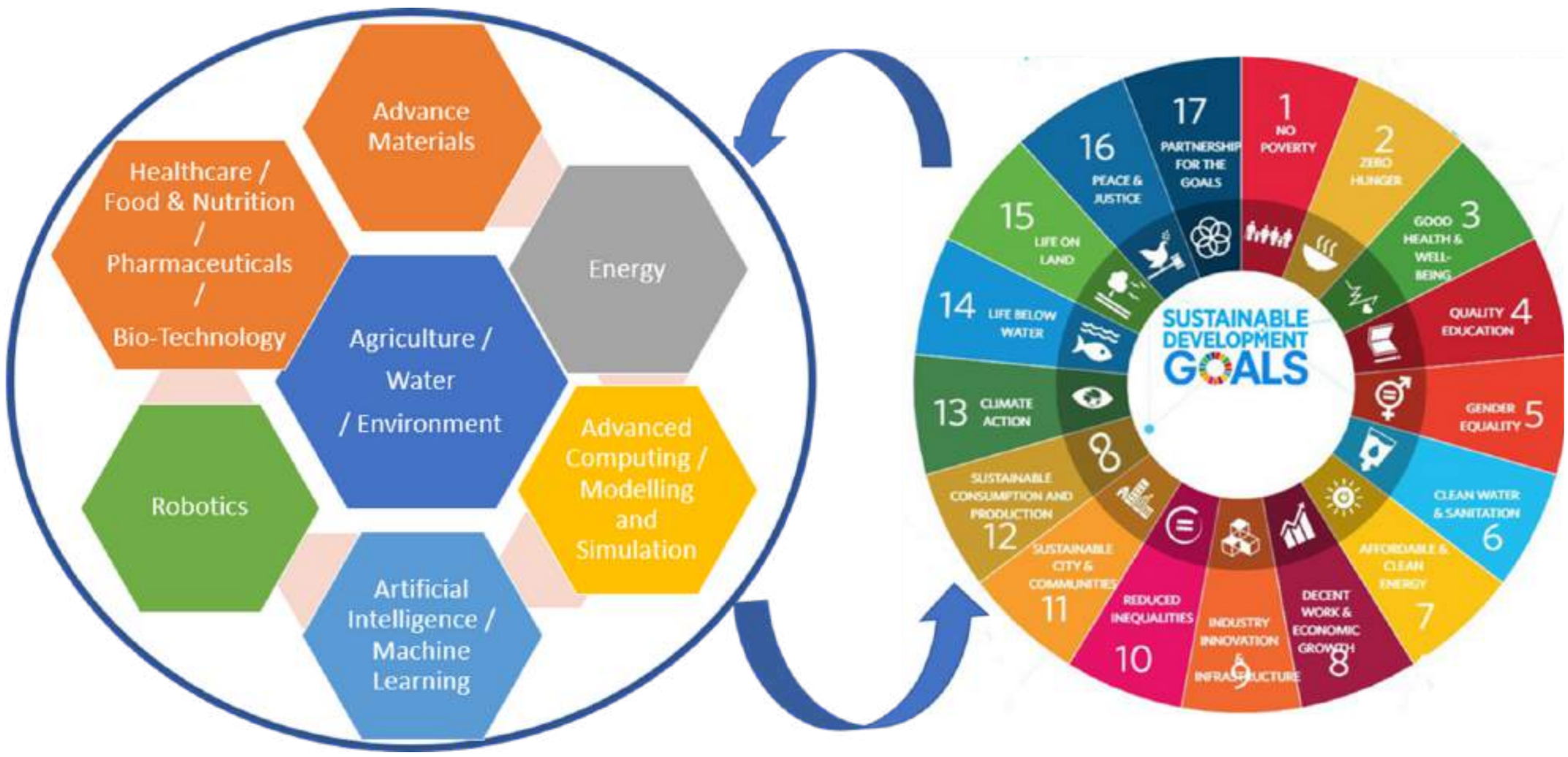
Vision

- To be an Institution of Global standing for developing professionally competent talent contributing to nation building.

Mission

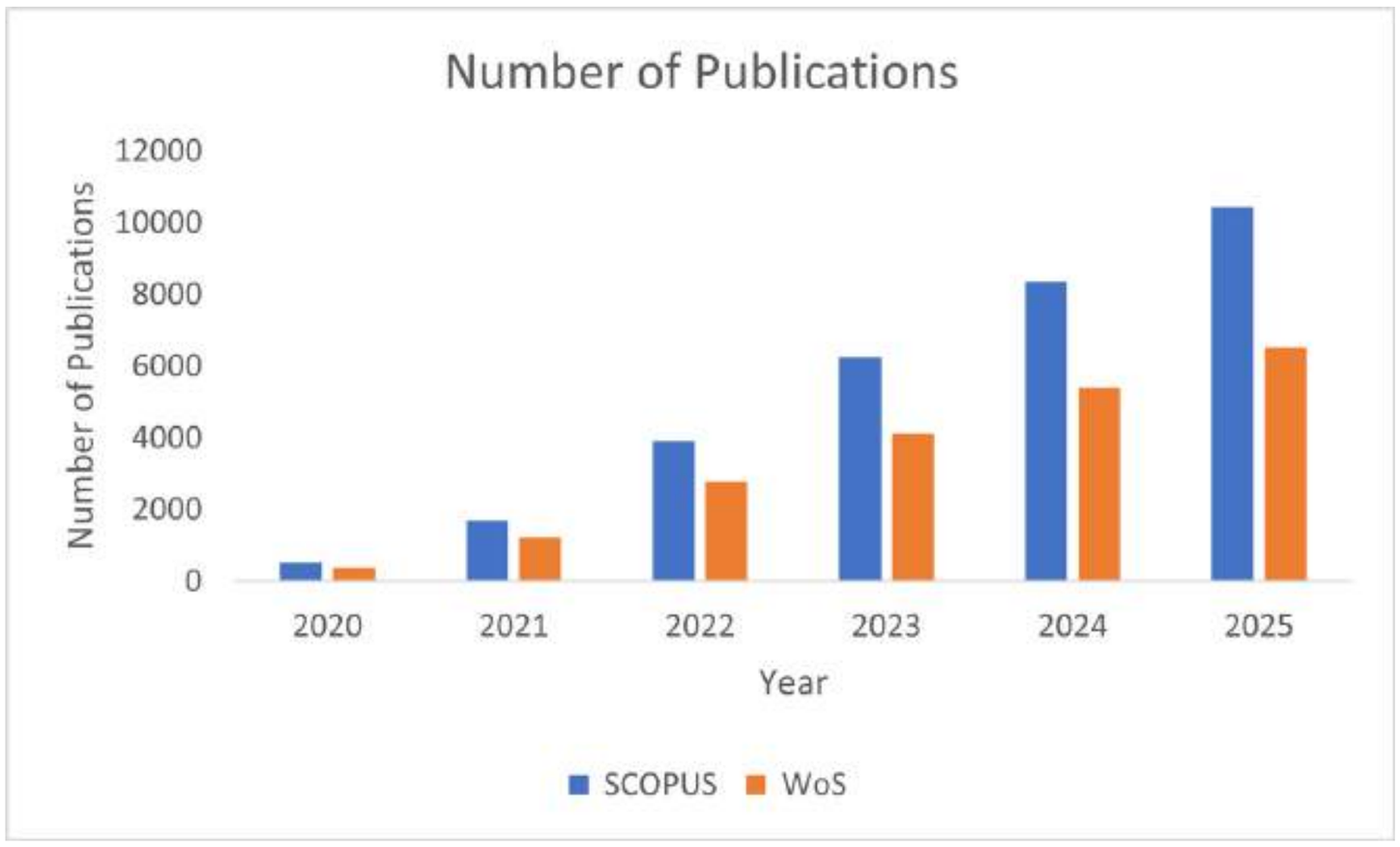
- Develop industry-focused professionals with an international outlook.
- Foster effective outcome-based education system to continually improve teaching-learning and research.
- Inculcate integrative thought process among students to instill lifelong learning.
- Create global knowledge eco-system through training, research & development and consultancy.
- Practice and promote high standards of professional ethics and develop harmonious relationship with environment and society.

R&D FOCUS @ UPES



PUBLICATION HIGHLIGHTS

Cumulative Publication Growth @ UPES



Highest Impact Factor

9.96 #

H-Index

131

% of papers with foreign collaborators

45% #

Publication per faculty

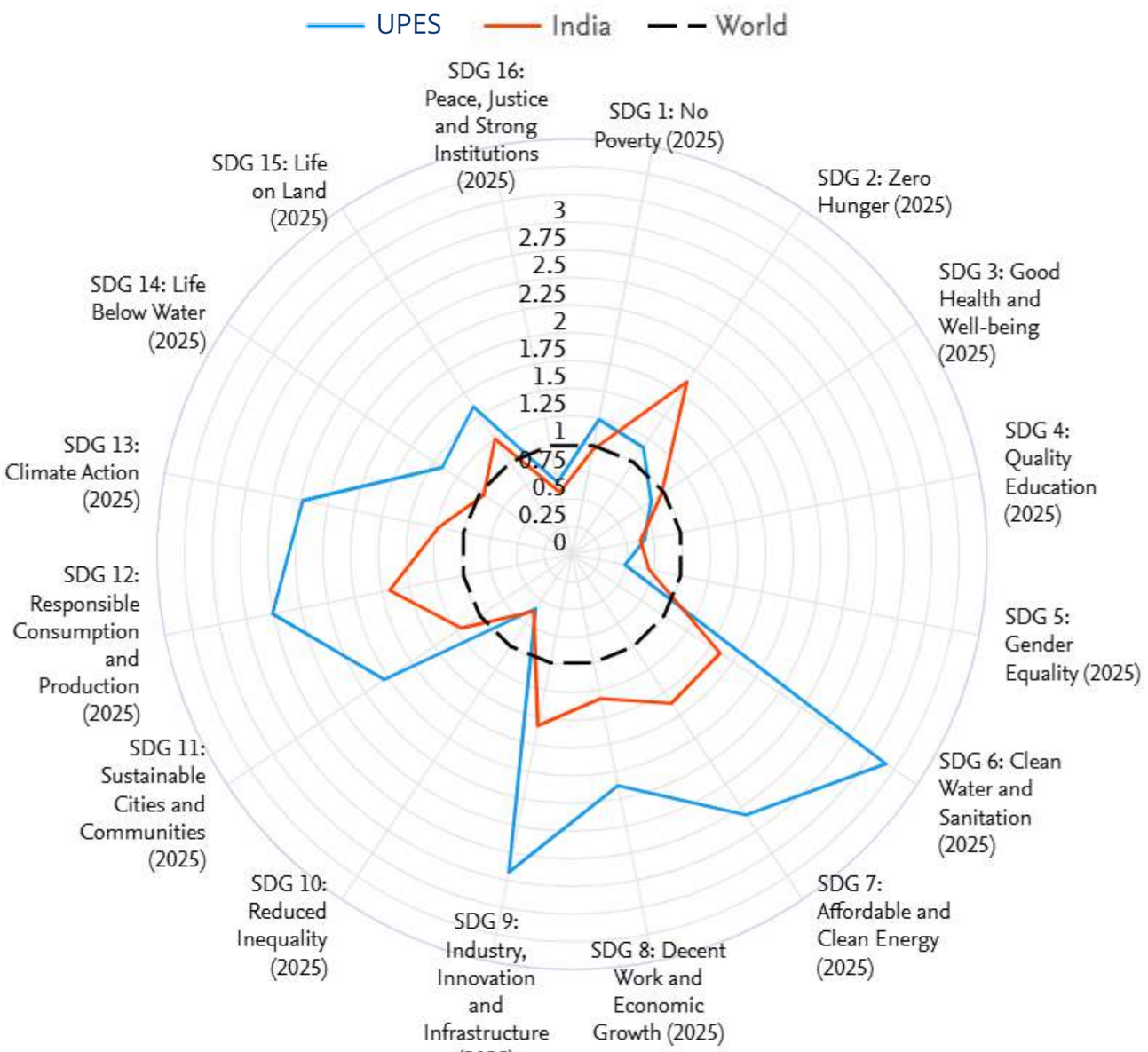
3.1

% publications in Q1 and Q2

80

#Source: SciVal

Publications by SDG - Relative Activity Index



Cumulative R&D Statistics at a Glance*

15400+	173300+	2314+	131	197+
Publications	Citations	IPRs	H-index	Funded Projects

* https://vidwan.inflibnet.ac.in

*as on 31st Dec, 2025

PUBLICATION HIGHLIGHTS

Total publications 2051

391 IF < 3	399 3< IF < 5	259 5< IF < 10	32 10< IF < 15	13 15< IF < 20	13 IF > 20

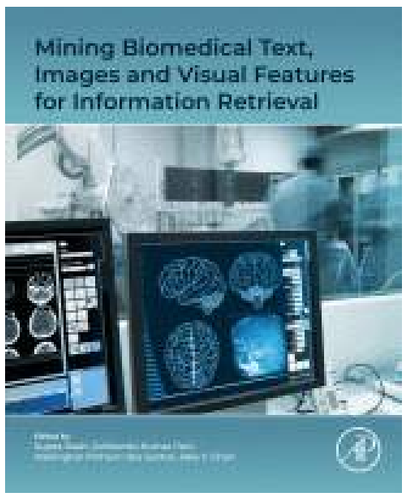
45 % publications are with international collaborators

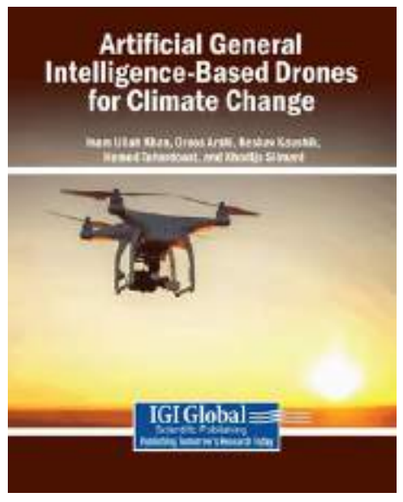
Field weighted citation impact is 1.29

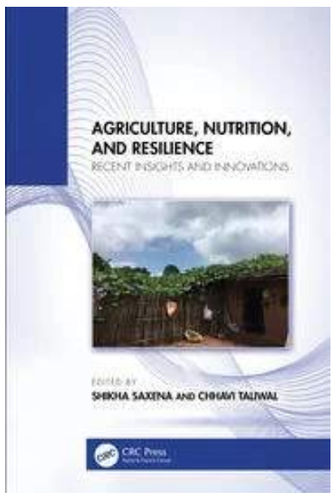
Publications in top journal percentiles - top 10% by cite score percentile 78.7

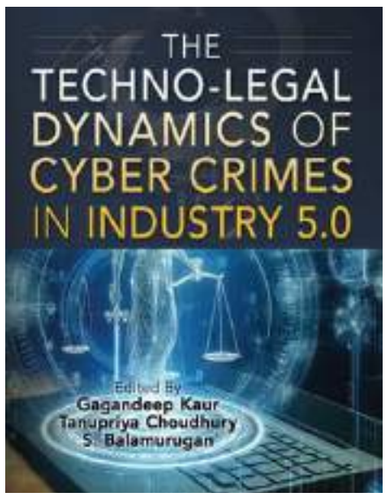
*from 1st July - 31st Dec, 2025

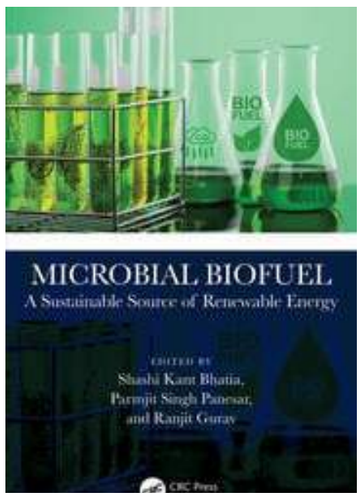
BOOKS

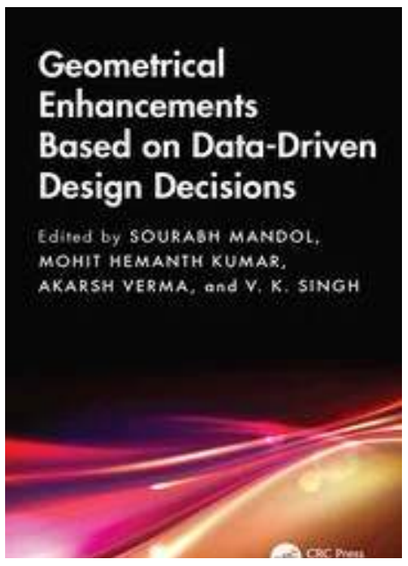


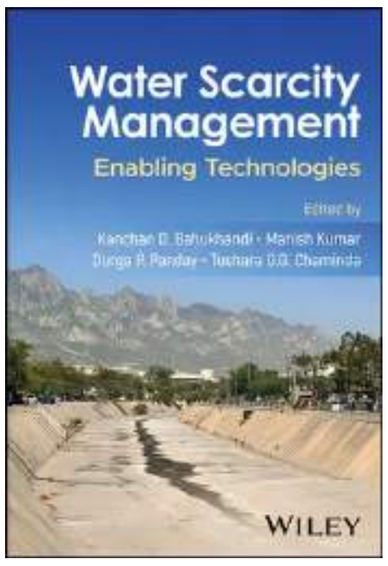


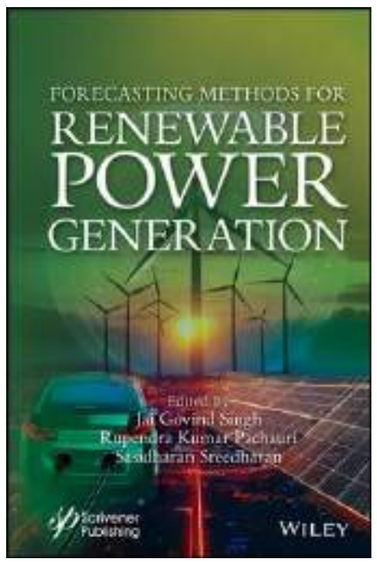


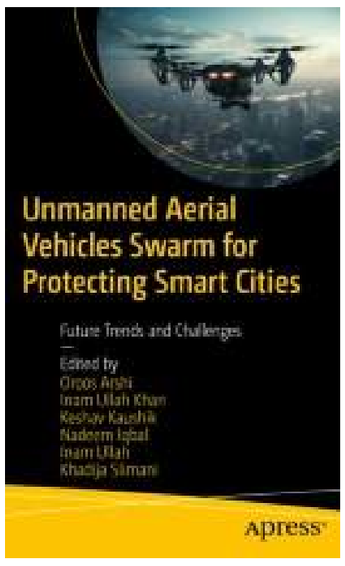


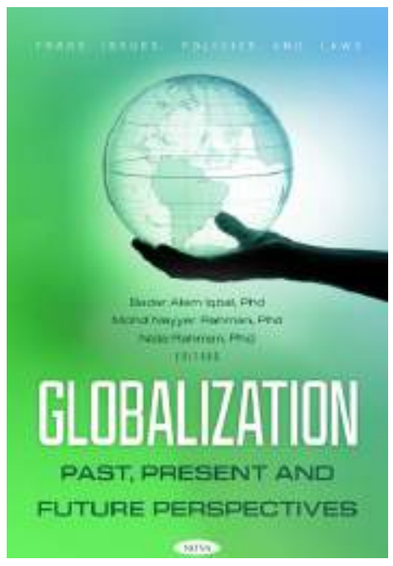




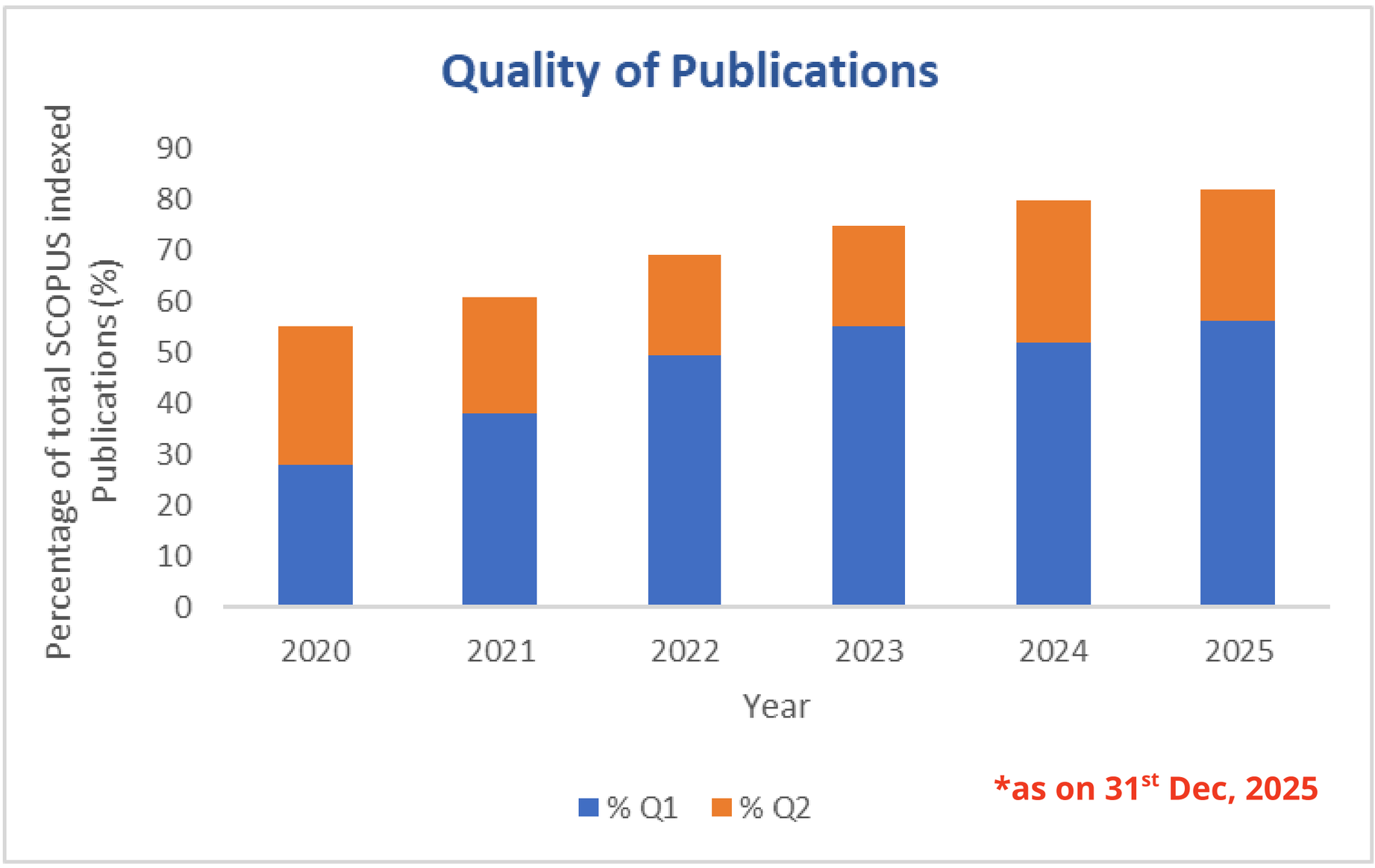




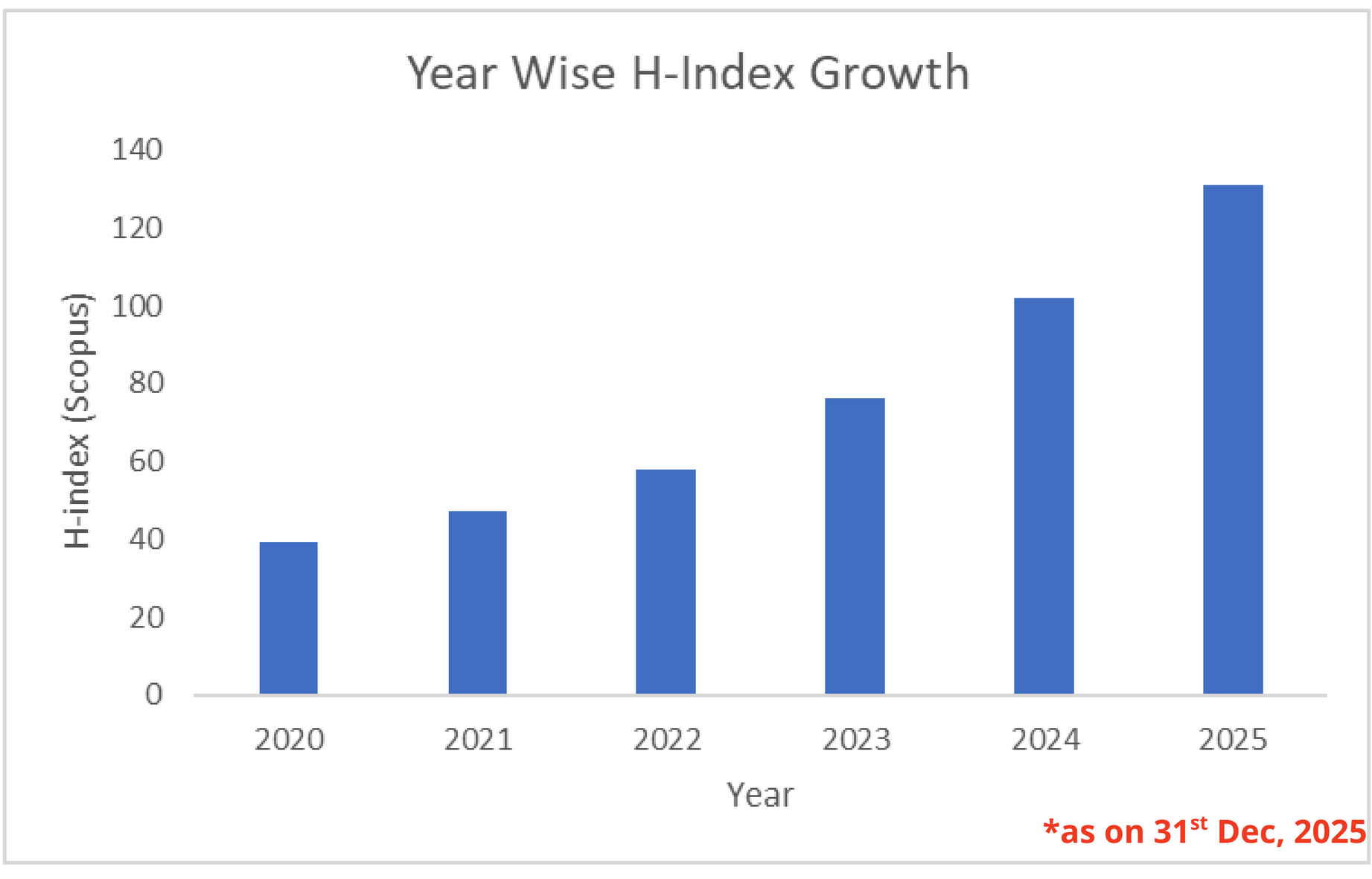




PUBLICATION HIGHLIGHTS



*as on 31st Dec, 2025



*as on 31st Dec, 2025

Grown 4X in the last 5 years, with 10,000 publications added between 2021–2025

Stands among the world's leading institutions in citations per publication*, alongside MIT, Stanford, Imperial College London, Oxford & Harvard*

UPES delivers nearly 2X higher citations per publication than the Top 5 QS-ranked institutions in India

***(Excluding self-citations, 2024 | Source: SCIVAL)**

MEGA PROJECTS

Dr. Devender K. Saini
Professor
School of Advanced Engineering
(Electrical Cluster)

Dr. Monika Yadav
Assistant Professor
School of Advanced Engineering
(Electrical Cluster)

Dr. Yogesh C. Gupta
Industry Fellow
School of Advanced Engineering
(Electrical Cluster)

Dr. Harshit Mohan
Assistant Professor
School of Advanced Engineering
(Electrical Cluster)

Topic: Optimized Thermal Management of BESS with BMS and Design, Development of Smart inverter for defence microgrid application.

Project cost: 5,15,00,000 INR

Funding Agency: Defence Research and Development Organisation

Abstract: **In a landmark development for defence research in India, the Defence Research and Development Organisation (DRDO) has awarded a multi-institutional research project to UPES in collaboration with IIT Roorkee and NIT Rourkela. This is the first instance of DRDO entrusting such a strategic project to a private university, marking a significant milestone in academia-driven defence innovation.**

The project aims to advance Battery Energy Storage Systems (BESS) for extreme condition microgrid applications in high-altitude regions such as Siachen and Ladakh. In these environments, temperatures can fall below –30°C at night and rise sharply during the day, severely impacting battery performance, safety, and reliability. Reliable energy storage is critical in these remote outposts to support communication, surveillance, medical, and security infrastructure for deployed personnel.

To address these challenges, the project will develop advanced thermal management solutions for sub-zero operation, an indigenous and resilient Battery Management System (BMS), and a smart inverter capable of maximizing energy utilization during limited solar charging windows. Adaptive charging and discharging strategies will further ensure efficient integration with variable solar generation and fluctuating microgrid loads.

During evaluation, DRDO also highlighted the potential to extend these innovations to combat vehicles operating under extreme climatic and dynamic conditions. Through this collaboration, UPES, IIT Roorkee, and NIT Rourkela aim to deliver next-generation indigenous energy solutions that enhance defence readiness and contribute to national energy self-reliance.

MEGA PROJECTS

PI: Dr. Siddharth Jain
Sr. Associate Professor
School of Advanced Engineering
(Mechanical Cluster)

Topic: Integrated Gasification of Municipal Solid Waste with Syngas Conditioning and Methanol Synthesis: Advancing TRL through Reactor Enhancement and Process Integration

Project cost: 97,44,480 INR

Co-PI: Dr Amit Kumar (UPES)
Co-PI: Dr Madhumita Patel (IIT ISM Dhanbad)

Funding Agency:
Advanced Research Grant(ARG), ANRF

Abstract: **India generates 62 million tonnes of municipal solid waste (MSW) annually, presenting both environmental challenges and energy opportunities. This project advances integrated MSW gasification-to-methanol technology from Technology Readiness Level (TRL) 3 to TRL 6 through systematic pilot-scale demonstration. The innovative approach combines torrefaction pretreatment to homogenize heterogeneous unsegregated MSW, optimized fluidized bed gasification (50-100 kg/h), advanced syngas conditioning using novel biochar-derived metal-organic frameworks (MOFs) for simultaneous CO_2 capture and purification, and catalytic methanol synthesis.**

Key objectives include achieving >95% contaminant removal efficiency, optimizing H_2/CO ratio to 2-3:1 for methanol synthesis, and demonstrating >80% carbon conversion efficiency. The integrated system targets net negative emissions (2.5-3.0 tonnes CO_2 avoided per tonne MSW) while producing methanol at competitive costs (₹25-30/liter). This technology enables decentralized waste-to-fuel conversion, supporting India's Swachh Bharat Mission and National Methanol Policy. The project establishes comprehensive techno-economic analysis, life cycle assessment, and pilot-scale validation, positioning India as a global leader in sustainable waste management and circular economy implementation while contributing to the 2070 net-zero commitment

MEGA PROJECTS

PI: Dr. Subhankar Das
Assistant Professor
School of Advanced Engineering
(Mechanical Cluster)

Topic: Empowering Self-Repairability and EMI Shielding in Frontal Polymerized CFRPs Using Covalent Adaptive Network-Grafted MXene for Next-Generation Aircraft

Project cost: 70,00,000 INR

Co-PI: Dr. S. Halder (NIT, Silchar)

Funding Agency:
Advanced Research Grant(ARG), ANRF

Abstract: **The project will introduced a novel strategy to graft disulfide-based covalent adaptive networks (CANs) onto MXene (MCAN), followed by their incorporation into frontal polymerized (FP) cured CFRPs to impart self-healing, EMI shielding, and recyclability. Unlike previous approaches, where the mechanical strength and toughness of epoxy composites and CFRPs were compromised to achieve self-healing properties using vitrimer systems, this proposed work will retain the structural integrity of the CFRPs through the integration of MCAN into the epoxy system for the first time. Furthermore, the integration of FP with MCAN will address the limitations of non-recyclable thermoset FP systems and hence will promote the sustainable manufacturing of next-generation CFRPs. Grafting CANs onto MXene also improves its oxidation resistance and compatibility with epoxy networks, thereby enhancing long-term durability. This integrated strategy sets a new benchmark for multifunctional aerospace composites by bridging critical national and international research gaps. In summary, this proposal aims to develop a multifunctional CFRP through an energy-efficient route and impart inherent self-healing, EMI shielding properties with 3R capabilities. By integrating dynamic bond-grafted nanofillers like MXene, the CFRP composite will target lightweight, energy-efficient, and recyclable structures ideal for advanced aerospace platforms like India's AMCA and UAVs.**

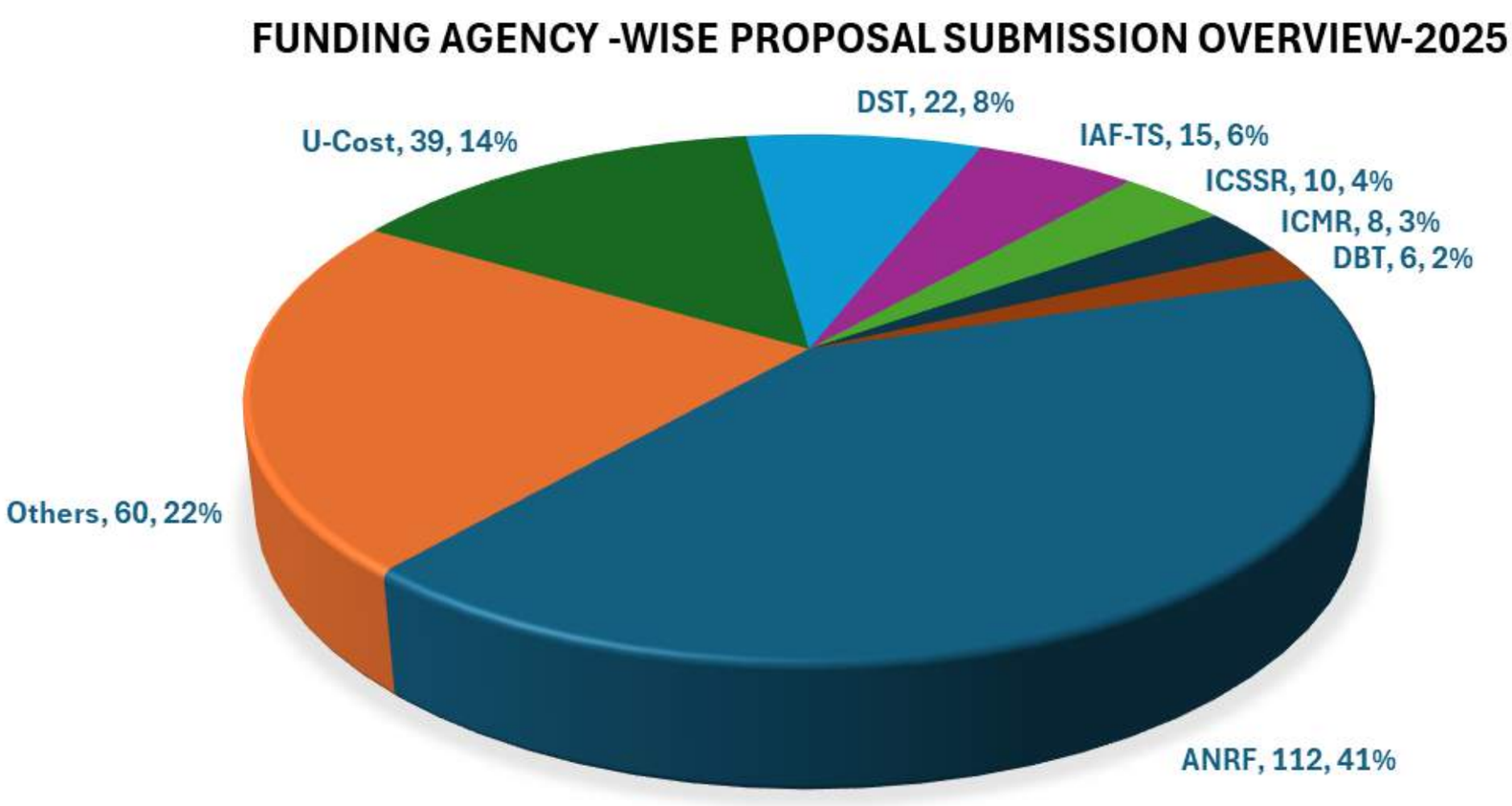
PROJECTS-2025

63 ONGOING EXTERNAL

56 SEED

107 SHODH

*as on 31st Dec, 2025



UPES has successfully secured numerous prestigious projects with substantial funding from external sources across a diverse range of sectors, encompassing energy, water, environment, and food. Notably, since July 2025, the university has been awarded a total of 15 research and development projects worth INR 211.36 lakh. Additionally, 56 SEED and 107 SHODH projects, with a combined budget of approximately INR 208.65 lakh, were funded by UPES. These projects underscore UPES's ability to attract significant research funding and its commitment to addressing critical challenges across diverse domains.

*as on 31st Dec, 2025

SEED projects: SEED is in-house financial support, available for consumables, mini equipment, travel grant, fees for characterization, software purchase and other operational expenses.

SHODH projects: This scheme aims to enable the students to innovate through investigations and validations under the guidance of expert faculty members. The scheme introduces the students to the research eco-system at UPES to promote product development and entrepreneurship.

IPR @ UPES

Total 2314*+ IPR

(*Cumulative till Dec 2025)

813 Patents

943 Designs

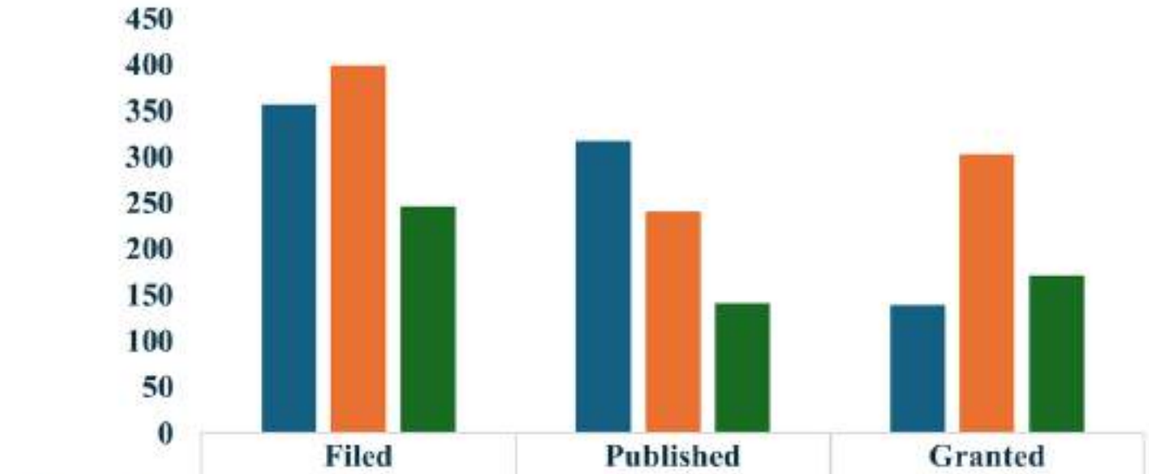
139 Granted

558 Copyrights

*as on 31st Dec, 2025

UPES sets itself apart from other Indian universities by having made significant progress in recognizing, advancing, and defending intellectual property rights (IPR). UPES has acknowledged that in a time of rapid technological innovation and advancement, intellectual property rights (IPR) are extremely important. The academic atmosphere at the university has undergone a significant transition because of its proactive attitude to IPR. Several notable accomplishments have highlighted UPES's path to IPR excellence.

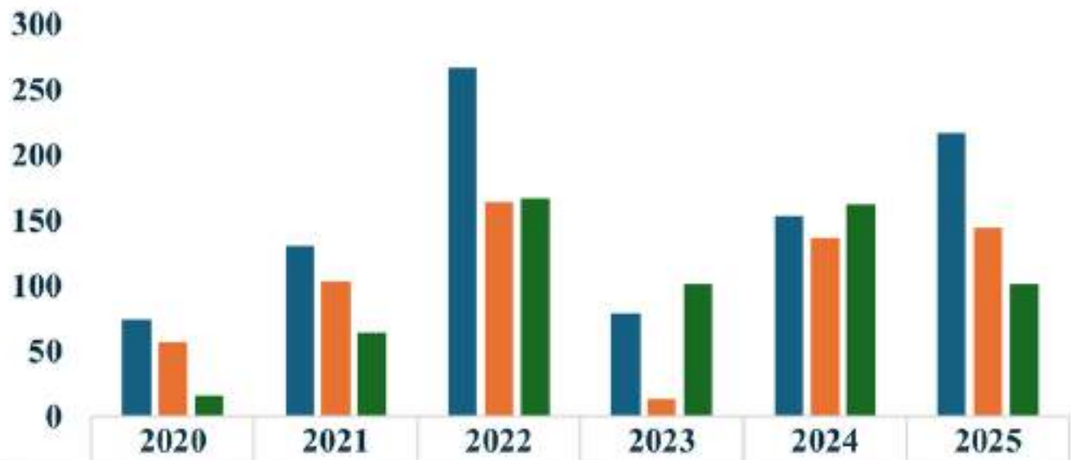
IPR's Filing Status



	Filed	Published	Granted
Patent	357	317	139
Design	399	241	303
Copyright	246	141	171

Patent Design Copyright

IPR's 2020 Onwards



	2020	2021	2022	2023	2024	2025
Filed	74	131	267	79	153	217
Published	57	103	164	14	137	144
Granted	16	64	167	102	162	102

Filed Published Granted

UPES is rapidly establishing itself as a prominent university in India's IPR environment. Its dedication to IPR, innovation, and research, together with its collaborative and educational culture, are having a long-lasting positive effect on the nation's larger academic and innovation ecosystem. The university's path serves as an encouraging example for other educational establishments in the country as it grows and contributes to the expansion of intellectual property in India.

UPES is a recognised Technology & Innovation Support Centre (TISC) of Uttarakhand since 2023

Unique features of PhD @ UPES

1. 100 full time PhD students shall be awarded fellowship upto ₹ 34,000/- per month.
2. NET-JRF qualified candidates, INSPIRE fellows (student) are exempted from RET written exam and can apply anytime for walk-in interview
3. Such candidates will be given an annual cash award worth ₹ 2,00,000/- which can be used for scholastic purpose including carrying out research related work such as participation in national/international conferences/seminars, buying consumables, carrying out field research etc.
3. Applications are also invited for Part Time PhD students
4. UPES has state of art infrastructure at central instrumentation center and internationally acclaimed faculty to mentor the PhD scholars.
5. We have 42 faculty members appearing in the list of top 2% researchers of the world, as per the report by Stanford University

School	Degree Name	Program Domain
School of Engineering	PhD (Physics)	–
	PhD (Chemistry)	–
	PhD (Mathematics)	–
	PhD (Geosciences)	–
School of Engineering	PhD (Engineering)	Aerospace, Chemical, Civil, Safety, Electrical, Electronics, Mechanical, Petroleum, Renewable Energy, and many more
School of Computer Science	PhD (Computer Science and Engineering)	For M.Tech students
		For M.Sc / MCA students, AI-ML, Cyber Security, Data Science
School of Business	PhD (Economics)	–
	PhD (Management)	Energy, General, Transportation
School of Law	PhD (Law)	Law
School of Design	PhD (Design)	Industrial, Transportation, Fashion
School of Health Sciences	PhD (Pharmaceutical Sciences)	–
	PhD (Food & Nutrition Sciences)	–
	PhD (Microbiology)	–
	PhD (Biotechnology)	–
School of Liberal Studies	PhD (Economics)	–
	PhD (Political Science)	–
	PhD (Literature)	–
	PhD (Psychology)	–
	PhD (Applied Mathematics)	–
	PhD (Applied Statistics)	–
School of Modern Media	PhD (Communication)	–
CIDRI	PhD	-
HILL	PhD	-

- Admission of PhD students from the Direct Undergraduate category started from the 2026 intake

Number of PhD Scholars #

Full time: 338
Part time: 203

Abstract submitted/ pre-PhD seminars*

81

PhD viva completed*

51

#Cumulative
***From July - Dec 2025**
***Full-time + part-time**

New Centers for PhD Intake

- **Center for Data-Science and Artificial Intelligence (C-DSAI): It is established to contribute towards the growing significance of the role of Data Science, AI, and AI-enabled technologies in various application domains.**

- **Center for Stochastic Modelling and Simulation (CSMS): The center aims to focus on the development of application-driven theories and methodologies for understanding uncertainty and its management.**

- **Center for Inter-Disciplinary Research and Innovation (CIDRI): CIDRI at UPES provides a platform for interaction across the boundaries of various disciplines – such as science, engineering, health environment, computer science, design, management, humanities, law, etc. – and address the key technical, organizational and logistical challenges that currently hinder truly transdisciplinary research.**

- **Himalayan Institute for Leadership & Learning (HILL): The aim of HILL is to achieve sustainable solutions for the challenges faced in the Himalayan region by fostering collaboration between academia, R&D institutions, and industries.**

Externally funded research scholars

Fourty full time PhD scholars are getting financial support from external funding agencies e.g. SERB, NMHS, UCOST,DAE-BRNS, ICSSR and DST.

INSPIRE/CSIR-SRF/CSIR-JRF Qualified PhD scholars

INSPIRE	Project Funded Scholars	Visvesvaraya PhD Scheme	CSIR JRF	CSIR SRF
8	16	3	2	11

PhD Best Thesis AWARD

Thesis title: Fabrication of Printable Flexible Thermoelectric Material and Devices

Supervisor: Dr. Ranjeet Kumar Brajpuriya

Dr. Vaishali Rathi
School of Advanced Engineering (Chemistry)

Thesis title: Effectiveness of Immersive Media and Game-Based Learning in Building Empathy Among Nursing Professionals in India

Supervisor: Dr. Naveen Kumar

Dr. Manisha Mohan
School of Design

PhD SPOTLIGHT AWARD Best Publication

Paper title: Barriers to Greening the Indian MSMEs Sector a Path Towards Sustainable Industrial Transformation

S. Nautiyal, S.K. Rai, S. Joshi, Barriers to Greening the Indian MSMEs Sector: A Path Toward Sustainable Industrial Transformation, Sustainable Development, (2025).

Supervisor: Dr. Sushil Kumar Rai

Mr. Shivansh Nautiyal
School of Business

Paper title: Impact of interface engineering on domain wall motion in Ta/CoFeB/MgO multilayers with perpendicular magnetic anisotropy

A. Sharma, R. Raj, K. Rawat, V.R. Reddy, M. Gupta, A. Gloskovskii, R. Rawat, A. Gupta, R.K. Brajpuriya, V. Kaushik, Impact of interface engineering on domain wall motion in Ta/CoFeB/MgO multilayers with perpendicular magnetic anisotropy, Applied Surface Science, (2025) 163469.

Supervisor: Dr Sachin Pathak

Mr. Anmol Sharma
School of Advanced Engineering (Physics)

Paper title: Ultrasensitive electroanalytical sensing platform using aptamer-conjugated V2CTx MXene for the detection of the HER-2 biomarker

R. Rawat, S. Singh, S. Roy, S. Dubey, T. Goswami, A. Mathur, J. McLaughlin, Ultrasensitive electroanalytical sensing platform using aptamer-conjugated V 2 CT x MXene for the detection of the HER-2 biomarker, Nanoscale, 17 (2025) 10761-10770.

Supervisor: Dr. Ashish Mathur

Ms. Reema Rawat
School of Health Sciences and Technology

The Interdependence of Intellectual Property (IP) and Research & Development (R&D)

Dr. Mukesh Kumar
Former Head
Division of International Health & Human Resource Development (IH & HRD)
Indian Council of Medical Research (ICMR), Hqrs., New Delhi and
Former Director
IFCPAR/ CEFIPRA, a Bi-National Centre of Govts. of India and France
Adjunct Professor SoHST, UPES, Dehradun
Mobile: +91 9810684901
Email: mukeshk1902@gmail.com

India is rapidly advancing in Science 2.0, Education 3.0, and Industry 4.0 with smart technologies such as the Internet of Things (IoT), Artificial Intelligence and Machine Learning (AI/ML), and Cyber-Physical Systems(CPS).

This is of vital importance, highlighting the immediate need for a structured system that offers consistent training and orientation to aspiring researchers for Intellectual Property and Patents. Patents are the major means of protecting new knowledge and inventions, and any invention is the most celebrated output of research.

India expects high-tech inputs from R&D institutions to upgrade existing technologies as well as to create new high-tech ventures. Several private universities like University of Petroleum and Energy Sciences (UPES) in Dehradun and some others are paying enough attention to it. Our researchers may have many ideas and discoveries to their credit; they might have completed everything at the laboratory stage with proven results and an established proof of concept. However, if they have not made any technological advancements, the simple reason is that they either do not have the capital to do so, lack the knowledge of how to proceed further, or do not know how to take their technologies to the marketplace. They may have developed technologies that are still awaiting commercialization. Hence, the Government of India (GoI) has introduced several schemes and programs over the past ten years for scientifically sound and promising researchers to utilize.

There are many mechanisms through which, when an idea emerges and is perfected and proven in the laboratory, someone promptly steps in to take it forward by investing the necessary funds. This support enables the idea to be transformed into a tool or device that serves the nation. All parties concerned are benefited and make money, and the country becomes self-reliant due to the ultra-low-cost product. This is how we fight the war against current tariff turmoil. This is the key enabler that works for the Startups and Micro, Small and Medium Enterprises (MSME) ecosystem. Therefore, all aspects of Intellectual Property (IP), Technology Transfer, Licensing, and raising funds are very important.

If one recalls, there was a joint initiative of the Confederation of Indian Industry (CII) and the Department of Science and Technology (DST) called "Steer the Big Ideas," which aimed to promote inventions and innovations among students and youth for showcasing at national and international forums.

Many universities are inspiring innovation and creating opportunities for researchers, innovators, and students. The IP rights of all researchers and universities, whether public or private, should in all cases be recognized and preserved. The current programs of GoI use a similar yardstick for all and do not differentiate between government or non-government entities, and the purpose is to bring innovators, investors, scientists/researchers, and decision-makers onto the same page of the country's developmental agenda. The latest example are Anusandhan National Research Foundation (ANRF) and Research, Development, and Innovation (RDI) fund. Innovation needs both the public and private sectors to optimize their capacity and work together. We need high technology for high-class science; even when we assemble wealth from waste, it does not matter. In this regard, India provides a role model for emerging nations in Africa and Asia. For many of them, we are the source of inspiration.

Under the responsive education system, we are strengthening our technology development as the fountainhead of industrial development. Therefore, current initiatives by the Government of India, whether they are for semiconductor manufacturing or Goods and Services Tax (GST) reduction, will all be driving forces for technology development, IP generation, and commercialization. The Hon'ble Prime Minister spoke in Ahmedabad in the last week of August 2025 that our "Make in India" initiative is also transforming into "Make for the World" under mission manufacturing for the global supply chain. His appeal for displaying the "swadeshi board" outside shops and for buying "swadeshi" will also have some impact. India leaves the door open for dialogues with any country without any personal wealth creation. Indian industry has started and should continue to look upon R&D leading to technology development as equity on a case-by-case basis. The Technology Vision 2020 document prepared by the then Technology Information, Forecasting and Assessment Council (TIFAC) gave us insight into the current scenario in many sectors identified in the document.

There is a need to undertake intensive research of an interdisciplinary nature by all R&D institutions. Multi-alignment partnerships have been a guiding principle for New Delhi. With our vast resources, it is possible to harness and develop commercially competitive technologies for different sectors through collaborative efforts. India is becoming less dependent on imported Active Pharmaceutical Ingredients (APIs), turning global trade challenges into opportunities and making healthcare affordable.

We should make India a generator and exporter of technologies, and many government agencies are ready to play their part in the process and welcome the role of business houses, educational institutions and industries. The GoI has already set up the Technology Development Board (TDB) under the Ministry of Science and Technology, in place since September 1996, to stimulate such efforts. The GoI has also provided tax incentives for promoting R&D industries.

India's horizon extends beyond any single country. From R&D to wealth creation, the country has talent in research and educational organizations, including both public and private universities, accelerators such as Startups, Technology Business Incubators (TBIs), and Entrepreneurs. We have catalysts such as IPR, incubators, a licensing framework, and capital sources such as university initiatives, early success role models, government programs, venture capital, etc. We have a huge domestic market with proximity and access to the global market through partnerships. Our local market provides critical mass and holds the key to success in view of sweeping tariffs. This is a gain for the "Make in India" initiative as long-term rewards. Only those startups engaged in earning money through gaming and attempting to destabilize the Indian economy are not encouraged. The GoI has asked the Indian start-up community to shift their focus from grocery delivery and ice cream or chips making to high-tech sectors like semiconductors, AI/ML, robotics, the health sector, etc.

The National Technology Readiness Assessment Framework (NTRAF), was launched and published by the Office of the Principal Scientific Adviser (PSA) to the Government of India in late 2025, to standardize technology maturity assessment from TRL 1-9 (Proof of Concept to Market Readiness) for R&D funding, bridging the gap between research and commercialization using objective, evidence-based metrics for better resource allocation.

The adoption of proposed framework aims to standardize how technology maturity is measured across India's publicly funded research ecosystem. It provides a robust methodology to assess projects from "Proof of Concept" (TRL 1-3) through "Prototype Development" (TRL 4-6) to "Market/Operational Readiness" (TRL 7-9).

It is a step forward to boost R&D while commercialization of a technology is very much part of the arsenal, it faces specific hurdles at present in reaching to the market. The real challenge faced by inventors will find a favourable perception in view of past experience.

More importantly, the new framework will encourage research or any invention to make smooth entry in the marketplace. The new dimension will go a long way in this pursuit. This framework is relevant to current situation and is need of the hour to develop deeper insights in R&D and will take output of research to the consumers.

There are schemes to enable labs and institutes to raise funds from industry for R&D, while matching grants are provided by the Government of India. One may have developed a technology awaiting commercialization, and now it is time to harness S&T to promote economic returns, which can be achieved through the cooperation of all stakeholders. It is now for industry to take vigorous steps to promote in-house or collaborative research and technology development under the post-tariff scenario after 27th August 2025. The marketplace exists in a substantial manner, and all of us need to take appropriate steps to make a mark, and the rest will follow suit. The current tariff scenario requires that India should set up a manufacturing hub for the whole world with state-of-the-art technologies as well as R&D.

In this regard, if we can remember the GoI-sponsored program called "Mapping the Neighbourhood" in the late 1990s in Hawal Bagh block of Almora district of Uttarakhand. It reminds us to let our technologies reach the masses. The solution to many problems lies in technologies. Since then we have come a long way and made phenomenal progress; science is in the service of the nation.

There is a need to set up a simple mechanism through which Indian tools and devices are made available for the specific needs of the people of poor countries. The multinational companies manufacturing these devices should transfer the technology to countries in the developing world. This has been advocated earlier as well. Under Article 66.2 of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement on technology transfer, it has been suggested that technologies be transferred from the North to the South.

Our scientists and researchers, even in classical disciplines where gaps in knowledge and applications are well known, should be sensitized about the need to identify an innovation that leads to a technology at a very early stage and the importance of prompt IP protection. We need to encourage greater interaction among university faculty, students, business houses, and think tanks. The universities are trying to invest more money in R&D. India witnessed the success and superb management achieved by providing un-interrupted funds from the Government during 2020 to 2022, at the time of public health emergency due to COVID-19. Whether it is health or any other sector, this approach should apply to all. Our leadership played a major role and recognised the emergency quickly, leading the situation from the front. Responsible public and private sectors invested time and energy in a long-term plan with enhanced capacity and fulfilled the nation's demand.

This has defined the emergence of a new India ! The country is on the move... and so as several R&D institutions and universities. The views expressed are personal.

EVENTS ORGANISED

P03- A flexible X-ray scattering beamline of PETRA III for studying nanostructure dynamics under Insitu/In operando conditions

By

Dr. Sarathlal Koyiloth Vayalil

Scientist in charge, P03 Micro- Nano focus X ray Scattering Beamline , PETRA III , DESY Hamburg, Germany

Date: 5th August, 2025

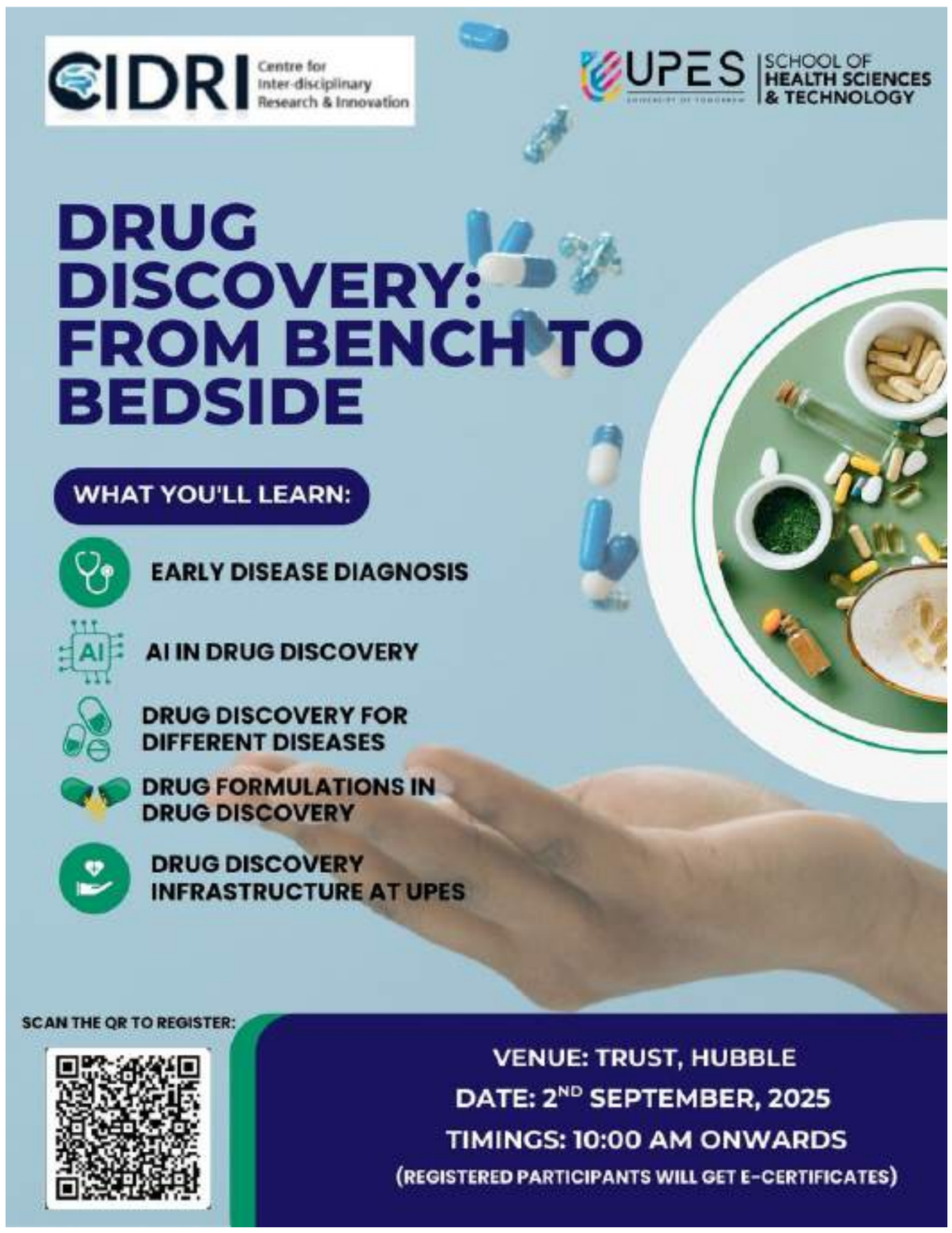
Venue: Trust, Hubble Boardroom

Time: 11:30 am

On Tuesday, August 5th, 2025, Centre of Inter-disciplinary Research & Innovation (CIDRI) at UPES organized an expert talk by Dr. Sarathlal Koyiloth Vayalil, Team Leader of the Micro- and Nanofocus X-ray Scattering Beamline (P03) at PETRA III, DESY Hamburg, Germany. The lecture, titled "P03 – A Flexible X-ray Scattering Beamline of PETRA III for Studying Nanostructure Dynamics under In-situ/In-operando Conditions," provided an in-depth overview of synchrotron-based X-ray scattering techniques and their role in the real-time investigation of nanostructures across a variety of scientific domains.

The session offered a rare glimpse into the infrastructure and research ecosystem at DESY-one of the world's leading synchrotron radiation facilities—and highlighted India's collaborative opportunities in this space. The talk was well-attended by faculty members, researchers, and postgraduate students from multiple disciplines, who engaged actively in the discussion.

EVENTS ORGANISED



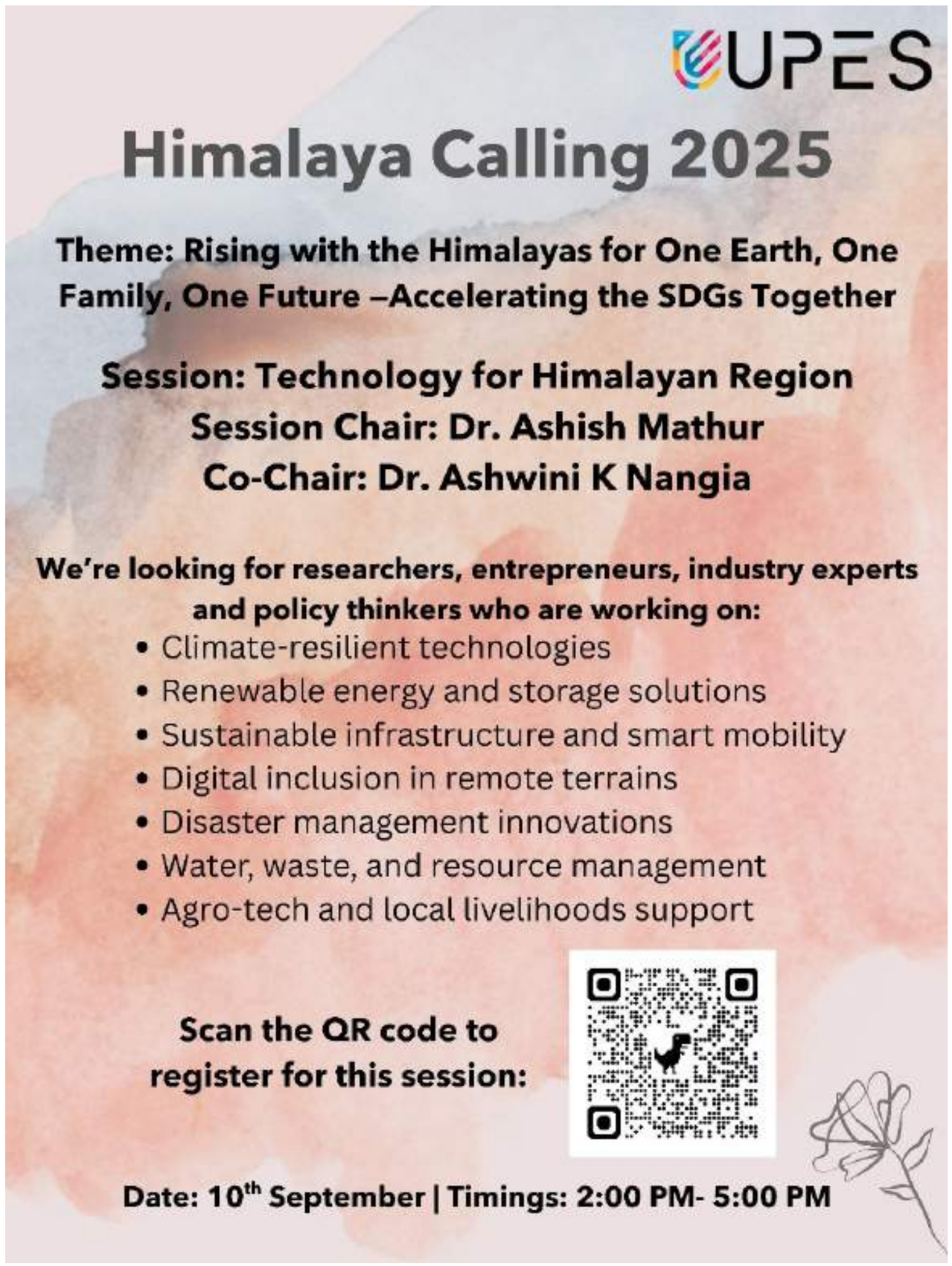
On Tuesday, September 2nd, 2025, the Centre of Inter-disciplinary Research & Innovation (CIDRI), UPES organized a workshop on "Drug Discovery: From Bench to Bedside" at the Trust Hubble Boardroom. The keynote address was delivered by Dr. Ram Vishwakarma, CSIR Distinguished Scientist, New Delhi, and former Director of CSIR–Indian Institute of Integrative Medicine, Jammu. With nearly three decades of experience spanning premier scientific institutions and the pharmaceutical industry, Dr. Vishwakarma provided valuable insights into the translational journey of drug discovery. His talk highlighted advances across drug discovery, medicinal chemistry, natural-products chemistry, chemical biology, and glycobiology, while also reflecting on challenges and opportunities for India in developing innovative therapeutics. The workshop also featured a series of expert sessions by UPES faculty, covering a broad spectrum of emerging research themes. Topics included early disease diagnosis, cancer-focused drug discovery, applications of artificial intelligence in drug development, and other cutting-edge areas. Collectively, these discussions offered participants a holistic view of the drug discovery pipeline—from molecular design and pre-clinical evaluation to translational and regulatory considerations.

EVENTS ORGANISED

On September 3rd 2025, UPES successfully conducted the workshop "Fostering Innovation and Growth in MSMEs & Startups through IPR" at the SoB Auditorium, Kandoli Campus, Dehradun, with support from Startup Uttarakhand and UCOST Dehradun.

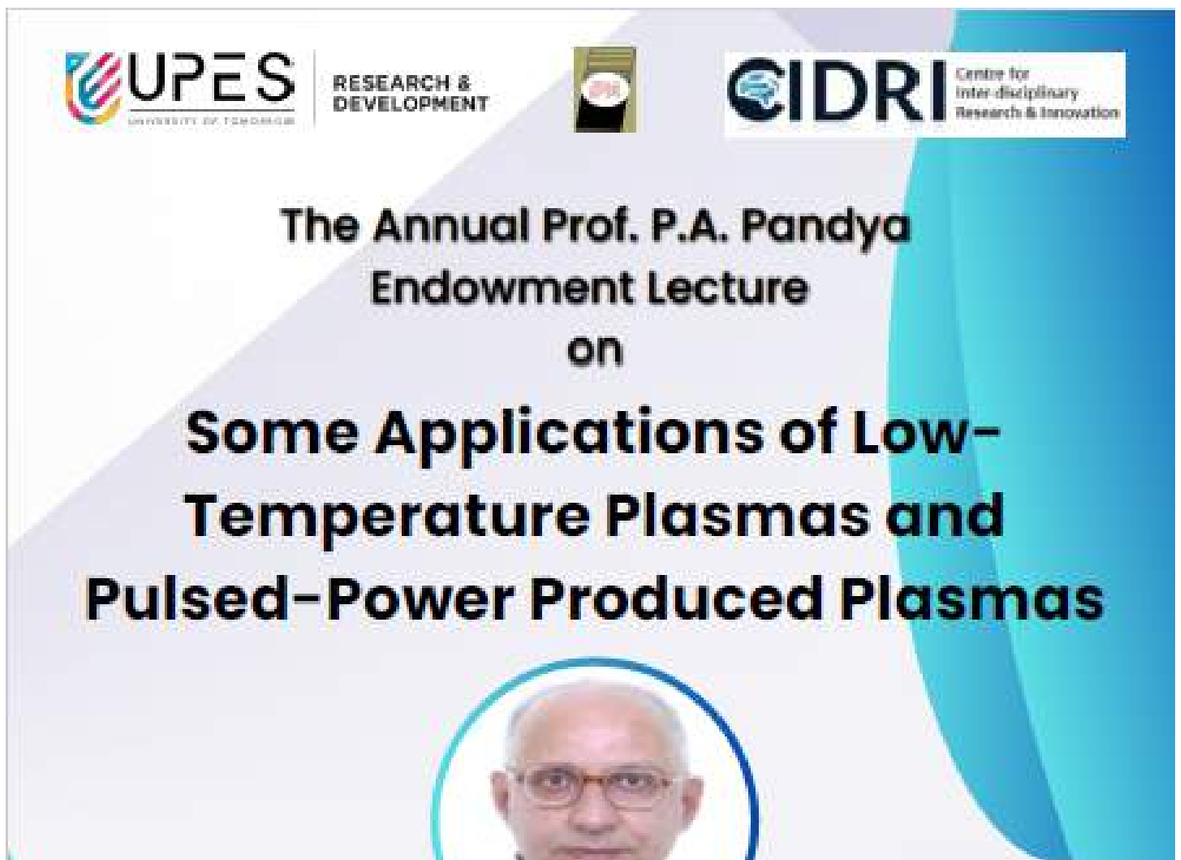
The workshop brought together policymakers, industry leaders, startups, MSMEs, and academicians to deliberate on the strategic role of Intellectual Property Rights in protecting innovations, enhancing competitiveness, and enabling access to funding. Discussions highlighted the importance of building strong IP strategies to translate ideas into sustainable business value.

EVENTS ORGANISED



On September 10th 2025, UPES hosted an insightful session titled "Technology for Himalayan Region" as part of the Himalaya Calling 2025 event. The event, themed "Rising with the Himalayas for One Earth, One Family, One Future – Accelerating the SDGs Together," brought together a distinguished panel of researchers, entrepreneurs, industry experts, and policy thinkers focused on leveraging technology for the sustainable development of the Himalayan region. The session covered a range of critical topics aimed at addressing the unique challenges faced by the region, including climate-resilient technologies, renewable energy solutions, sustainable infrastructure, smart mobility, disaster management innovations, and agro-tech for local livelihoods. Additionally, discussions explored the importance of digital inclusion in remote areas and advanced water, waste, and resource management practices. The event provided a platform for the exchange of ideas and collaborative approaches to accelerating the Sustainable Development Goals (SDGs) while ensuring a prosperous future for the Himalayan region. Faculty, researchers, and students from diverse disciplines actively engaged in the discussions, making it a significant occasion for knowledge-sharing and innovation.

EVENTS ORGANISED



On Friday, October 10th, 2025, the Research and Development Department at UPES, in collaboration with the Indian Physics Association (IPA), organized the Prof. P. A. Pandya Endowment Lecture by Prof. Shashank Chaturvedi, Former Director, Institute for Plasma Research (IPR), Gandhinagar. The lecture, titled "Some Applications of Low-Temperature Plasmas and Pulsed-Power Produced Plasmas," offered an engaging exploration of the fundamental principles of plasma physics and its diverse range of industrial, societal, and technological applications.

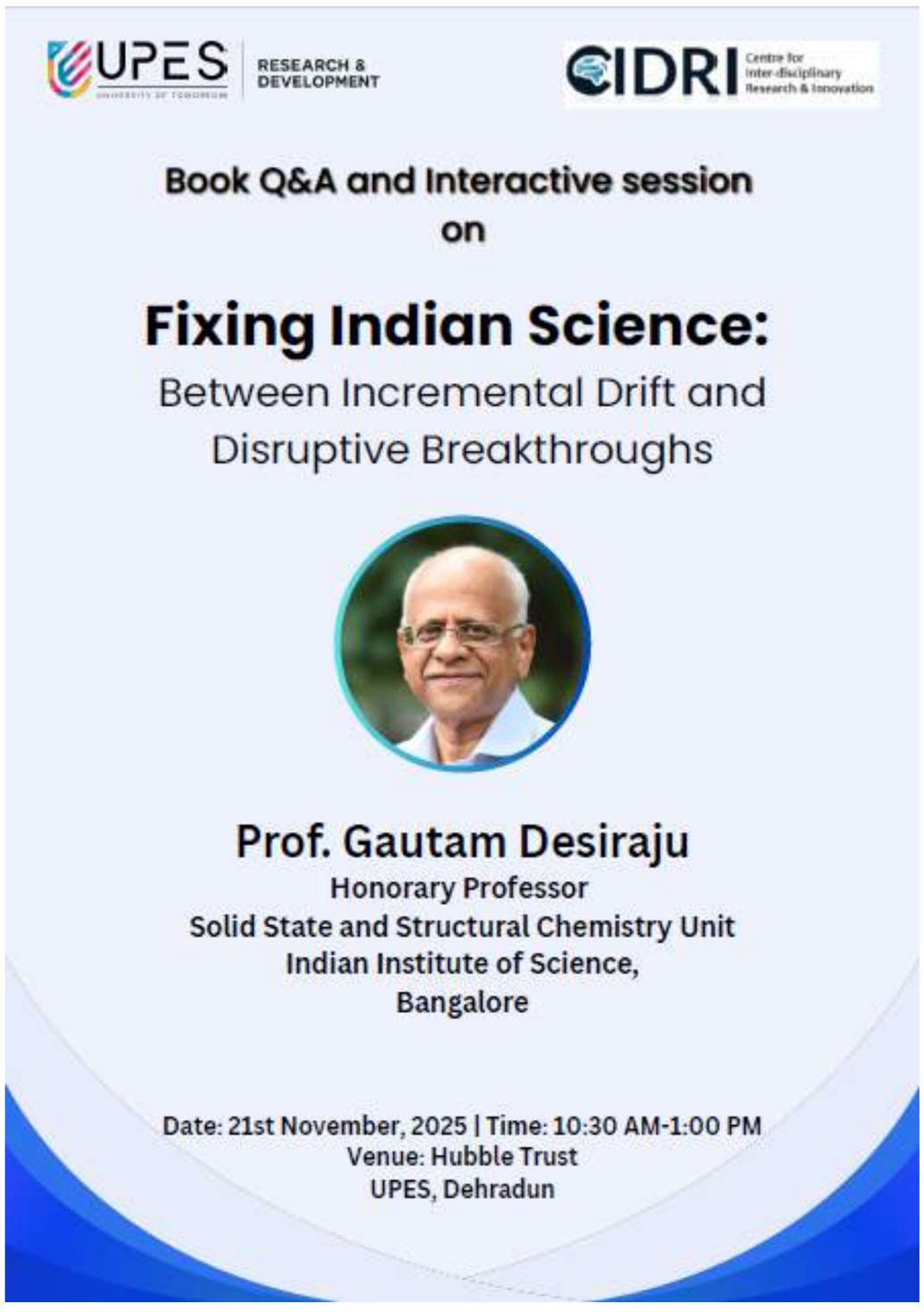
EVENTS ORGANISED

On Wednesday, November 19th 2025, the R&D Department, in collaboration with the Applied Science Cluster, organized the International Workshop on Accelerators: Science and Application at Buzz-2. The workshop aimed to bring together researchers and experts to explore cutting-edge developments in accelerator, ion-source, and storage ring technologies and their applications in Atomic and Molecular Physics, Materials Science, Nuclear Physics, Accelerator Mass Spectrometry, and High-Energy Physics.

The technical sessions featured expert lectures on accelerator-based sciences, molecular dynamics, spectroscopy, ion-beam facilities, neutron generators, synchrotron X-ray techniques, and research at national and international accelerator facilities. Distinguished speakers from IUAC Delhi, IPR Gandhinagar, IIT Kanpur, Mumbai University, RIKEN Japan, GANIL France, University of Surrey (UK), and Suranaree University of Technology (Thailand) shared insights alongside UPES faculty members.

The workshop concluded with enthusiastic participation of around 70 attendees, including B.Sc.–M.Sc. students, PhD scholars, and faculty members. The workshop was highly appreciated for its academic depth and exposure to frontier research in accelerator science.

EVENTS ORGANISED



On Friday, November 21st, 2025, a Book Q&A and Interactive Session was organized with Prof. Gautam R. Desiraju, Honorary Professor, Solid State and Structural Chemistry Unit, Indian Institute of Science (IISc), Bengaluru. The session was centred on his book "Fixing Science in India: Between Incremental Drift and Disruptive Breakthroughs" and sought to encourage critical reflection on the evolution, challenges, and future trajectory of science in India.

Drawing on insights from his book, Prof. Desiraju delivered a candid and analytical address on India's scientific ecosystem, highlighting the role of education, research culture, institutional governance, and policy frameworks in shaping scientific excellence. He emphasized the responsibility of educators to nurture future scientists and underscored the need for a strong and inclusive scientific base rather than isolated pockets of excellence.

UPES IPR FELICITATION CEREMONY: CELEBRATING RESEARCH EXCELLENCE

UPES hosted the IPR Felicitation Ceremony to recognise faculty members whose inventions are strengthening the University's research culture and contributing to India's innovation ecosystem.

The event highlighted a growing shift in mindset across campus—from focusing solely on publications to developing ideas into protected, impactful solutions. IPR at UPES represents more than a ranking parameter; it reflects the University's ability to translate research from the lab to real-world applications.

The University congratulates all the faculty innovators for their dedication, creativity, and commitment to advancing meaningful research. Their achievements continue to inspire the UPES community as the institution strengthens its role in driving innovation—one invention at a time

UPCOMING R&D EVENT : IYRC 2026

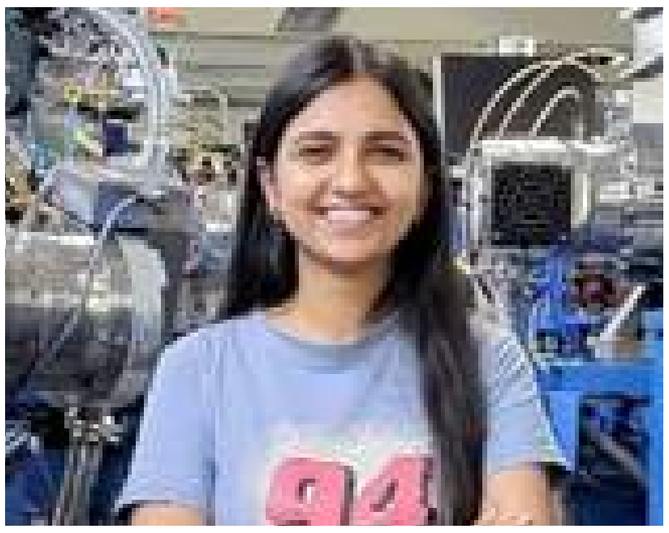
IYRC is an exhibition of the ongoing research activities of educational institutions. It provides a platform for exchange of thoughts between distinguished guests and participants from different cultural and scientific backgrounds, facilitating industry and academia interaction with an emphasis on the technological requirements. IYRC aims to inspire and encourage undergraduate, postgraduate and Ph.D. student community to pursue a career in research. It is a forum to harness young minds by taking innovations made in research to their actual implementation in the industries. IYRC aims to be a catalyst to build holistic, transformable and innovative ideas. We invite young researchers to register and participate in IYRC 2026.

SCHOLARS' ACHIEVEMENTS

VISITS ABROAD FOR INTERNATIONAL CONFERENCES

Mr. Harsh Sharma participated in ICMAT 2025, as oral presentaion held from 30th June – 4th July 2025 at Suntec Singapore Convention & Exhibition Centre, Singapore. His participation was supported by UPES.

Mr. Satyasadhan Dowarah participated in ICMAT 2025, Singapore (30 June–4 July 2025), presenting an oral paper, and E-MRS Fall (15-18 september) 2025, Poland, presenting a poster; both were supported by UPES.



Ms. Disha Yadav participated in ICMAT 2025, as oral presentaion Singapore (30th June – 4th July 2025). Her participation was supported by UPES and (ANRF).

Mr. Kamal Kumar participated in Electrochem 2025, England (31 August–2 September 2025), and the 2nd International Conference on Advanced Nanomaterials and Nanotechnology, Paris, France (6–7 October 2025), presenting oral papers at both conferences with support from UPES.

Ms. Shraddha Shukla participated in META 2025, Spain (22–25 July 2025), where she presented a poster and received an International Travel Grant from DST-SERB (ITS).

Mr. RajKamal participated in the International Conference and Workshop Power to X for a Sustainable Future 2025, Bangkok, Thailand (14–16 September 2025), with his participation supported by UPES.

SCHOLARS' ACHIEVEMENTS

Ms. Priyanka Bhardwaj participated in the International Union of Pure and Applied Chemistry Conference, Kuala Lumpur, Malaysia (14–19 July 2025), where she presented a poster with support from UPES and ANRF.

Ms. Pooja Sachdeva participated in the 26th Biennial Evergreen International Phage Meeting, Tennessee, Knoxville, USA (3–8 August 2025), and delivered an oral presentation,partially supported by UPES.

Ms. Archana participated in Nanomaterials: Applications & Properties, Bratislava, Slovakia (7–12 September 2025), where she presented a poster, with participation supported by UPES.

Ms. Aayushi Tandon participated in the Asia Oceania Geosciences Society 2025, Singapore (27 July–1 August 2025), where she presented a poster, with participation supported by UPES.

Ms. Shipra Kunwar participated in ICBHE 2025, Malaysia (9 July–10 August 2025), where she presented a poster,partially supported by UPES.

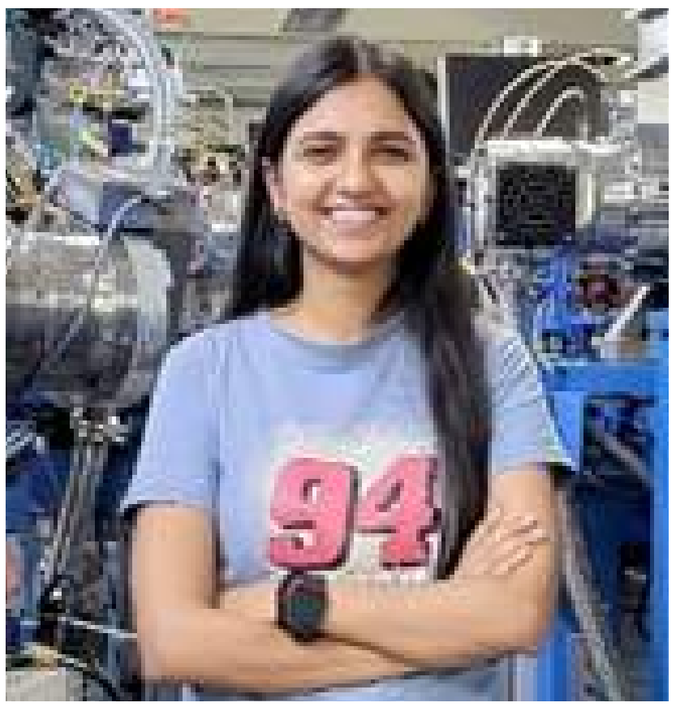
Ms. Aanchal Kumari participated in WET 2025, Japan (5–6 July 2025), where she presented a poster, with participation supported by UPES.

VISIT TO INTERNATIONAL LABORATORIES

Ms. Neha Sharma visited the Elettra Synchrotron, Trieste, Italy, in July 2025 to conduct X-ray fluorescence experiments, with the visit supported by UPES.

Mr. Anmol Sharma, visited KEK, Japan, for synchrotron X-ray experiments (29 October–1 November), sponsored by DST, Government of India, and coordinated by JNCASR, Bengaluru.

Mr. Niladri Mohan Das Visited KEK, Japan for Beamtime Experiments (29th October – 1st November). Sponsored by DST, GOI, coordinated by JNCASR Bengaluru.



Ms. Disha Yadav visited the Singapore Synchrotron Light Source (SSLS) and the Centre for Ion Beam Applications (CIBA), National University of Singapore, on 4 July 2025 for experimental work.

Ms. Sakshi Bagwari visited KEK, Japan, for beamtime experiments (29 October–3 November), sponsored by DST, Government of India, and coordinated by JNCASR, Bengaluru.

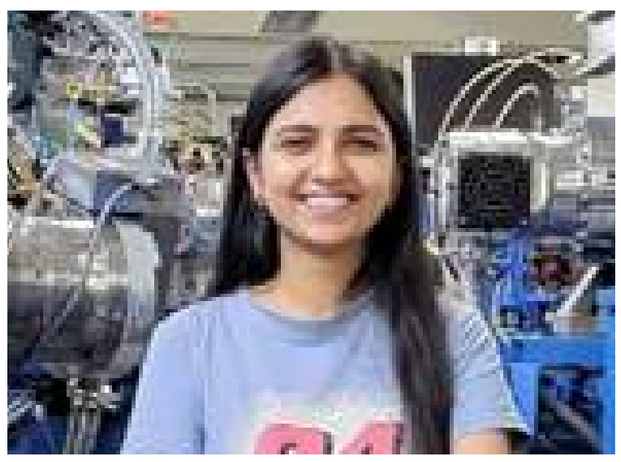
Ms. Avantika Chauhan Visited ICTP Workshop at Prestige Italia, Italy (27th June– 5th July). Supported by ICTP and UNESCO

SCHOLARS' ACHIEVEMENTS

Ms. Viranchika Bijalwan visited DESY Synchrotron, Hamburg, Germany, for X-ray scattering studies and experiments (11–14 November), with support from UPES.

NATIONAL & INTERNATIONAL CONFERENCE IN INDIA

Ms. Priyanka Uniyal received the Best Oral Presentation award at the International Conference on Nanomaterials & Green Technology for Viksit Bharat: Mission 2047 (ICNMGT-2025), Uttaranchal University, Dehradun (28–29 November 2025). She was also honored with the Young Women Scientist Excellence Award – 2025 at the 20th Uttarakhand State Science and Technology Congress held at Graphic Era Deemed University, Dehradun (28 November 2025).



Ms. Disha Yadav participated in ICACNM 2025 at Punjab University, Chandigarh (28–30 October 2025), where she gave oral presentation and won the First Prize, with participation supported by UPES.

Mr. Kamal Kumar participated in PEMFT 2025 at CCS University, Meerut (13–15 November 2025), where he delivered an oral presentation and won the Best Oral Presentation Award, with participation supported by UPES.

Ms. Pooja Sachdeva participated in ICBRAR 2025 at Banaras Hindu University (9–13 November 2025), where she presented a poster and was awarded Runner-Up,partially supported by UPES.

Ms. Srishti Sinha Ray participated in IFAWET-5, Dehradun (6–8 August 2025), where she presented a poster and won the Best Poster Award, with participation supported by UPES.

Ms. Alimpika Gogoi participated in the Geodynamic Evolution of Himalaya Conference at Kumaun University (6–10 October 2025), where she presented a poster and received an award, with participation supported by UPES.

Ms. Jyoti Kumari participated in Geodynamic Evolution of Himalaya Conference at Kumaun University (6–10 October 2025), where she presented a poster and received an award, with participation supported by UPES.

Ms. Aayushi Tandon participated in DREAMS 2025 at DBS Global University, Dehradun (22–23 August 2025), where she delivered an oral presentation, with participation supported by UPES.

Ms. Shivangi Jaryal participated in the National Seminar on Climate Change & SDGs at Uttranchal University (13–14 November 2025), where she presented a poster, with participation supported by UPES.

Mr. Shivam Kumar participated in ICMLDE 2025 in Dehradun on 7 November 2025, where he presented a poster showcasing his research work, partially supported by UPES.

Ms. Shimali participated in International Conference on Sustainable Agriculture, Environment & Health, Nainital, on 20 November 2025, where she presented a poster; her participation was supported by UPES.

Mr. Ajit Singh Rathore participated in ICCCNT 2025 at IIT Indore (6–11 July 2025), where he presented a poster, with participation supported by UPES.

Mr. S. Rahul Raj participated in ICRABR 2025 at Kapurthala, Punjab (6–9 October 2025), with his participation supported by UPES.

Mr. Vinay Singh Chufal participated in 5th International Conference on Recent Advances in Bio-Energy Research (ICRABR-2025) at Kapurthala, Punjab (6–9 October 2025), where he presented a poster with support from UPES.

Ms. Deepa Thakur participated in the 4th International Conference on Advances in Nanomaterials and Devices for Energy and Environment (CANDEE-2025) at ABV-IIITM, Gwalior (16–18 November 2025), with support from UPES.

Ms. Sonali Priyadarshini participated in 5th International Biotech Conference on Harnessing Biotechnology for a Sustainable Bio-E3 Future at the Uttarakhand Council for Biotechnology, Patwadangar, Nainital (19–21 November 2025) ,partially supported by UPES.

Ms. Anjali Bharti participated in RAABASED 2025 at Maya Devi University, Dehradun (25–27 July 2025), where she presented a poster, with participation supported by UPES.

Ms. Prachi Kapoor participated in CISES-2025 at GL Bajaj Institute of Technology and Management, Noida, on 12 August 2025, where she delivered an oral presentation, partially supported by UPES.

NATIONAL LABORATORY VISITS

- **Mr. Kushal Tapeshwar Singh**, School of Advanced Engineering, conducted wind tunnel testing at IIT Kanpur from 17 to 22 October 2025. This visit was sponsored by UPES and provided valuable experimental insights for his research.

- **Ms. Shilpa Chauhan**, School of Advanced Engineering, visited IUAC New Delhi from 28 to 30 July 2025 under UPES sponsorship, gaining hands-on experience with advanced instrumentation.

- **Ms. Mahek Gusain**, School of Advanced Engineering, carried out SEM and VSM research work at CSIR-NEERI Nagpur between 21 June and 5 July 2025. The visit, supported by UPES, played a crucial role in her ongoing research.

- **Mr. Rahul Kumar Singh**, School of Advanced Engineering, undertook sample testing visits sponsored by UPES at two renowned institutions. He visited the Central Instrumental Facility at BITS Mesra, Ranchi, from 4 to 14 September 2025, followed by the International Research Center of Nanotechnology for Himalayan Sustainability (IRCNHS) at Shoolini University, Solan, Himachal Pradesh, from 16 to 18 September 2025. These visits significantly advanced his research work.

- **Mr. Rahul Kumar Singh**, School of Advanced Engineering, attended the Workshop on Carbon Capture and Storage (CCS): From Concept to Field Implementation at IISER Bhopal (13–16 September 2025). His Visit was supported by UPES.

NATIONAL VISIT FOR WORKSHOP AND TRAINING

- **Mr. Vaibhav Saini**, School of Advanced Engineering, participated in the Workshop on the Role of Citizen Science in Forest and Wildlife Conservation at CASFOS-FRI (24–26 September 2025)
- **Ms. Mansi Mehta**, School of Advanced Engineering, attended the Workshop on Numerical & Machine Learning Techniques for Solving Real-World Differential Equations at Thapar Institute, Patiala (22–26 September 2025), supported by UPES sponsorship.
- **Ms. Manisha Rawat**, School of Advanced Engineering, completed training on Flood Modeling & Risk Assessment at NWRC Jodhpur (22–26 September 2025), sponsored by UPES.
- **Mr. Aakash Kumar**, School of Advanced Engineering, participated in training on the Role of Citizen Science in Forest & Wildlife Conservation at CASFOS (24–26 September 2025), supported by UPES.
- **Ms. Sarita Bisht**, School of Advanced Engineering, attended an Online Workshop on Multi-Source Remote Sensing Data at SAS (13–17 July 2025), sponsored by UPES.
- **Ms. Akanksha Dobriyal**, School of Advanced Engineering, took part in the Silver Jubilee Workshop on the Formation of Uttarakhand at FRI Dehradun (9 November 2025), supported by UPES.
- **Mr. Milan Singh**, School of Advanced Engineering, attended the IUAC School of Nuclear Reaction Workshop 2025 in New Delhi (16–21 September 2025), sponsored by UPES.

INTERACTION WITH PHD SCHOLARS

Regular interaction with PhD scholars involves continuous guidance, review of research progress, and academic mentoring. These interactions help identify challenges at an early stage, ensure timely completion of milestones, and support scholars in improving the quality and direction of their research work.

AWARDS & HONOURS

Dr Shikha Wadhwa
Senior Associate Professor
Applied Science Cluster
School of Advanced Engineering, UPES

Dr. Shikha Wadhwa has been bestowed upon with the Scientific High Level Visiting Fellowships (SSHN-2025) by the French Institute in India (IFI), Embassy of France in India. Through the SSHN programme, IFI aims to nurture and strengthen Franco-Indian research networks by funding research trips involving faculty and researchers from eminent Indian and French Higher Education and Research Institutions (HERI).
Under this fellowship, Dr Wadhwa visited CEntre de Recherche sur les MAcromolécules Végétales (CERMAV), University Grenoble Alpes, France, one of CNRS labs, from 14th – 28th November, 2025, to execute collaborative research work on the development of flexible hydrogen sensors.

Dr Bhawna Gupta
Associate Professor
Applied Science Cluster
School of Advanced Engineering, UPES

Dr. Bhavana Gupta, Associate Professor, UPES, has been awarded the prestigious Alexander von Humboldt Fellowship for Experienced Researchers, one of the world's most distinguished research fellowships, recognised by more than 50 Nobel Laureates.
Under this fellowship, Dr. Gupta will pursue advanced research at Heidelberg University, Germany, focusing on high-performance functional materials for next-generation batteries, fuel cells, supercapacitors, and electrocatalytic systems. Her work aims to enhance energy conversion and storage through solutions that prioritise performance, scalability, stability, and sustainability.

Dr Nilar Lwin
Researh Fellow, UPES
(6/6/2025 - 6/12/25)

Dr. Nilar Lwin, Research Fellow from Myanmar, has joined the UPES under the India Science and Research Fellowship (ISRF) Programme, a prestigious initiative aimed at promoting international research collaboration and capacity building.
Under this fellowship, Dr. Lwin is undertaking her research at UPES under the mentorship of Prof. Ashish Mathur, Associate Dean – IPR. Her research focuses on the development of novel electrochemical sensors using 2D MXene/ferrite magnetic nanocomposites for environmental applications. The six-month research programme, commencing on 9 June 2025, aims to advance sensitive and efficient sensing platforms for environmental monitoring and related applications.

R&D OUTREACH

MoU for Academia–Industry Collaboration

Neanic Solutions Pvt Ltd has signed a Memorandum of Understanding with S.S. Jain Subodh PG College, Jaipur, marking a meaningful step toward strengthening academia–industry engagement.

This collaboration is focused on joint research, student internships, hands-on training, and translational projects aligned with real societal and industrial needs. By bringing together academic depth and startup-driven innovation, the MoU aims to create practical learning opportunities, promote applied research, and support the journey from lab concepts to deployable solutions.

What this really means is simple: students gain exposure to real problems, researchers get pathways for translation, and innovation moves a little faster from ideas to impact.

Dr. Ashish Mathur served as an evaluator at the Zonal Round of AI VidyaSetu 1.0, hosted at PM SHRI Kendriya Vidyalaya IMA, Dehradun. AI VidyaSetu is a national-level initiative by the IHFC (Technology Innovation Hub of IIT Delhi), aimed at introducing students of Kendriya Vidyalayas (Grades 8–12) to emerging technologies such as Artificial Intelligence, Machine Learning, and App Development.

During the event, Dr. Mathur witnessed exceptional student-led projects that demonstrated not only strong technical understanding but also clarity of thought, confidence, and a problem-solving approach rooted in real-world applications of AI. The quality of presentations reflected the growing impact of early exposure to advanced technologies and innovation-driven learning.

R&D OUTREACH

The Asian Polymer Association (APA) successfully organized ICPAT-2025 in the picturesque city of Udaipur, bringing together leading scientists, researchers, and academicians from across the globe to discuss cutting-edge advances in polymer science and technology.

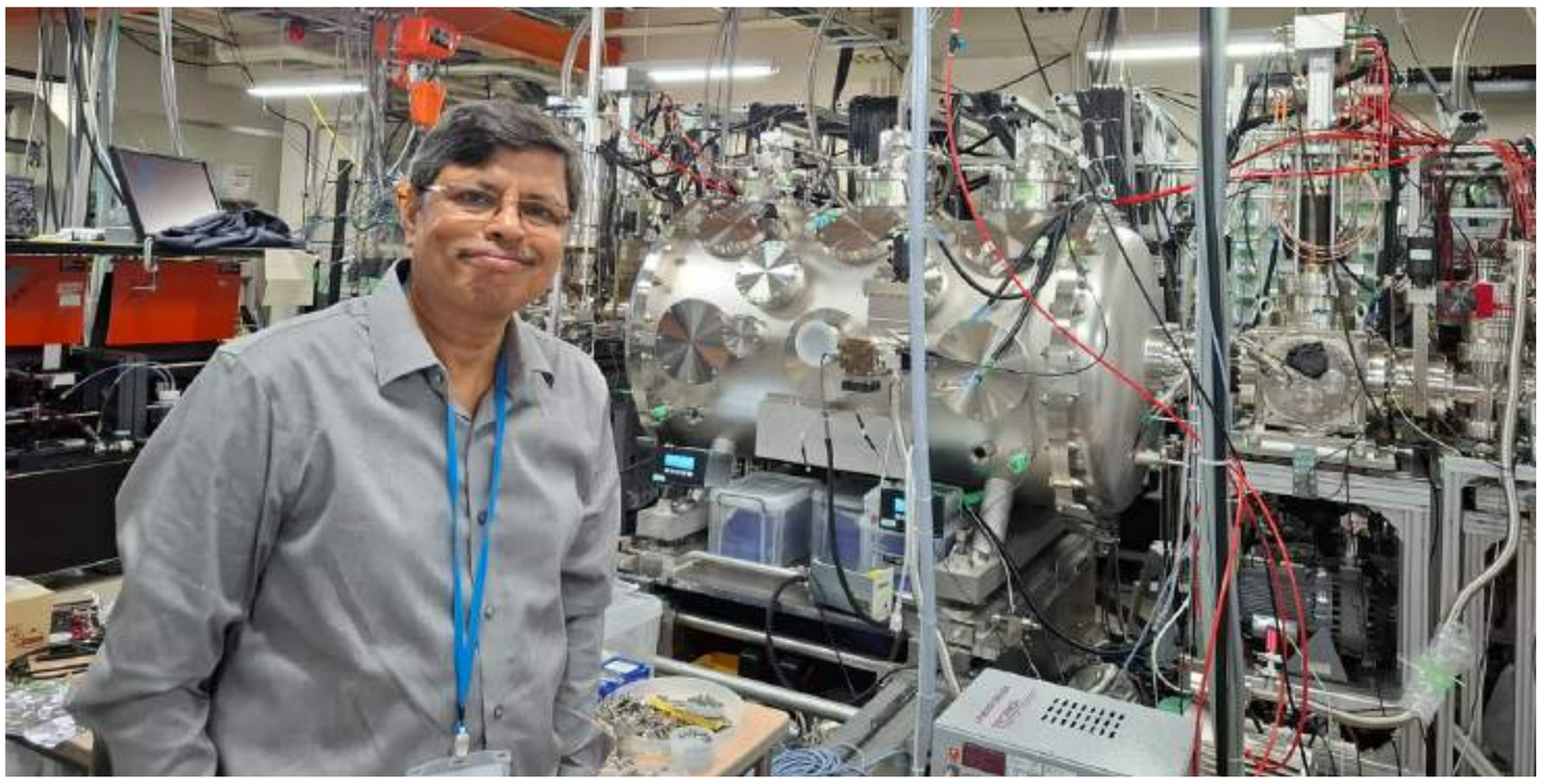
The conference was organized by Dr. Bhuvnesh Gupta and was graced by Dr. Ram Sharma, PhD, Vice Chancellor, UPES, as the Chief Guest, who delivered an inspiring address highlighting the importance of sustainability, interdisciplinary collaboration, and societal impact in scientific research.

The event was attended by Dr. Ashwini Nangia, Dean – R&D, Dr. D.K. Avasthi, Dean Emeritus, Associate Deans Dr. Tauseef and Dr. Pankaj, Dr. Ashish, along with several other faculty members from UPES, reflecting the University's strong engagement with international research platforms and knowledge exchange.

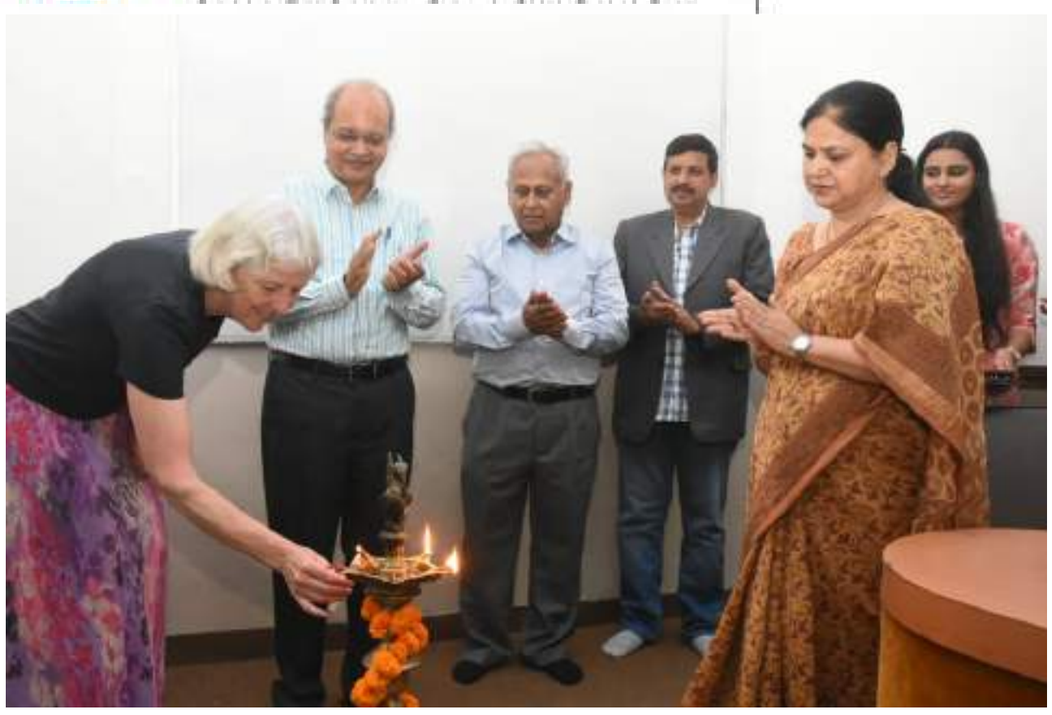
Dr. Ashish Mathur participated as an Invited Speaker at the International Conference on Frontiers of Engineering for Healthcare (FEH-2025, December 10th – 12th), jointly organised by IIT Gandhinagar and Gujarat Technological University. The conference brought together a diverse and interdisciplinary group of experts, including engineers, clinicians, neuroscientists, innovators, and policy thinkers, fostering meaningful dialogue around contemporary healthcare challenges. The discussions spanned critical areas such as advanced diagnostics, AI-driven healthcare solutions, biomedical devices, nanotechnology, and translational research, offering valuable insights into how engineering innovations can be effectively translated into healthcare impact.

Dr. Tauseef, Asso. Dean R&D, UPES, conducted expert sessions on Quantitative Risk Assessment (QRA) and Hazard and Operability (HAZOP) Studies during a specialised MKHO-HSE training programme held at IMCL, Mumbai, from 18th – 20th September 2025. The sessions focused on practical risk identification, analysis methodologies, and mitigation strategies aligned with regulatory and ERDMP requirements. The programme benefited 25 officers from LPG, AFS and Cryogenic-Nashik units, strengthening their understanding of risk and hazard assessment tools.

Prof. D. K. Avasthi delivered an Invited Talk at the 8th International Conference on Nanostructuring by Ion Beams (ICNIB) held at Rajkot University in October 2025, a sequel to the ICNIB hosted at UPES in 2023. He also visited the KEK Photon Factory, Japan, to participate in experiments at the SAXS synchrotron beamline along with a PhD student, supported by DST, and interacted with Dr. Kazuyuki Hyodo, strengthening international research collaboration.



Prof Lokesh C Tribedi was member of the Executive committee of ICPEAC (International conference of photonic, electronic and atomic collisions, Sapporo Japan, July 2025). Typically four members are selected worldwide. He was also member of the International advisory committee of conferences: COPIAMC- Tokyo, ISIAC-Kyoto and GSI-Germany based international collaboration board SPARC, from India. Chaired a session in two International conferences ICPEAC July 2025, COPIAMC August 2025, Tokyo. He was visiting scientist in RIKEN international lab, Wako, Japan (August 2025).



Dr. D. K. Avasthi delivered a lecture at the Characterization School, Panjab University, Chandigarh, on 27 October 2025, and presented an Invited Talk at the 2nd International Conference on Advances in Condensed and Nano Materials (ICACNM-2025) held at Panjab University on 29 October 2025, where the inaugural address was delivered by Prof. Christina Trautmann, Adjunct Professor, UPES. . Additionally, Prof. Christina Trautmann conducted seminars and research discussions with scholars at UPES on 22–23 October 2025, strengthening academic exchange.

Dr. Ashish Mathur, Asso. Dean R&D, UPES, delivered a Keynote Address at the International Forum on Asian Water Environment Technology (IFAWET-2025), jointly hosted by the University of Tokyo, UPES, IIT Roorkee, NIH, and Tecnológico de Monterrey. His talk, "Innovative Sensing Technologies for Water Quality Monitoring: From Lab to Field Impact," highlighted nanotechnology-enabled and paper-based microfluidic solutions for affordable and portable water quality monitoring, with applications in detecting heavy metals, water adulteration, and microbial contamination.

Dr. D.K. Avasthi served as Guest of Honour and Invited Speaker at the National Conference on Materials Science & Technology (NCMST) held at Subodh Jain PG College, Jaipur (NAAC A+ accredited) on 14 November 2025

Dr. Lokesh was selected as the chair of the National committee formed by the DAE to review the ANURIB accelerator facility of VECC- Kolkata. Has been a member of the ANRF PAC, International PAC of GANIL/CIRIL accelerator, France. Given three plenary lectures and five invited talks and national and international conferences/institutes. He is adjunct professor in IISER Bhopal, Editorial Board member of International Journals:(Nature) 'Scientific Reports' and guest editor J of Physics B: IoP, UK, Chief guest in a national conference, NEHU, Shillong (Nov 2025).

Dr. Ashish Mathur participated in the 20th meeting of the BIS Sectional Committee PGD 18 on Industrial Automation Systems and Robotics. He contributed expert insights on standards related to EV charging robots and autonomous mobile robots. He also offered UPES's support in generating empirical data for future standards and proposed academic collaboration for exoskeleton robot standardization. Dr. Ashish also delivered invided talk at S.S. Jain Subodh PG College focusing on the journey from academic research to real-world impact. The session explored how curiosity-driven research can evolve into deployable technologies through translational thinking, industry collaboration, and an innovation-first mindset.

Students Engagement

A trekking expedition was organized for PhD scholars with the objective of promoting physical fitness, mental well-being, and a deeper connection with nature. The early-morning trek was led by Dr. Ashwini K. Nangia, Dean (R&D), Dr. Devesh Kumar Awasthi, Dean Emeritus, and Dr. Pankaj Kumar, Associate Dean (R&D). The activity focused on building endurance, fostering mindfulness, and enhancing environmental awareness amidst serene natural surroundings. The expedition provided scholars with a refreshing break from academic routines, encouraging teamwork, resilience, and self-care. Participants expressed heightened motivation, improved mental clarity, and renewed enthusiasm, reinforcing the importance of outdoor activities in maintaining overall well-being.

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