# BIOCHEMIE

## 1ST EDITION

## JANUARY – MARCH 2025

MANIPAL UNIVERSITY
JAIPUR

# NEWSLETTER

## SESSION: JANUARY - MARCH 2025


**Editorial Team**

Dr. Smriti Singh (Chief Editor)
Asmi Dhadiwal (Student)
Chinmai Sharma (Student)
Sneha Khurana (Student)
Sumedha Bhargava (Student)


## EDITORIAL

It is with great excitement and anticipation that we present to you the first edition of our department's newsletter 'BIOCHEMIE'. This publication marks a new chapter in our ongoing efforts to foster communication, collaboration, and a shared sense of purpose within our department and beyond. The first issue showcases the department's achievements, research activities, and events for 2024.

Looking ahead, we envision this newsletter as a platform for sharing ideas, celebrating milestones, and amplifying the voices that make our department unique. We invite you to contribute your insights, updates, and stories to future editions—because this newsletter belongs to all of us.

Thank you for joining us on this journey. Together, let's continue to nurture a culture of curiosity, excellence, and inclusivity.

Dr. Smriti Singh (Chief Editor)

# MESSAGE FROM THE PRESIDENT

With immense pleasure and pride, I congratulate the Department of Biotechnology and Chemical Engineering for successfully publishing the departmental newsletter BIOCHEMIE. This remarkable achievement highlights the department's vibrant academic and research initiatives and showcases the dedication, hard work, and commitment of faculty and students.

As we continue to foster a culture of excellence, collaboration, and innovation, it is inspiring to see our faculty and students' valuable efforts and achievements reflected in this newsletter. It is a powerful testament to the growth and success we have achieved together, and I am confident this is just one of many milestones to come.

I encourage all department members to continue sharing their achievements, ideas, and insights as they contribute to our shared mission of advancing knowledge, fostering creativity, and building a supportive community. I look forward to seeing even more great work from all of you.

Once again, congratulations to the department for this initiative to showcase the achievements of faculty, staff, and students. Thank you for your continued dedication to advancing our department and university.

Warm regards and best wishes.

Dr. N. N. Sharma
President
Manipal University Jaipur

# MESSAGE FROM THE PRO PRESIDENT

II am immensely pleased to know that the Department of Biotechnology and Chemical Engineering is releasing the BIOCHEMIE newsletter. The continuous progress and innovative contributions of this department are truly commendable.

The newsletter would be a repository of memories and achievements, bringing excellent visibility to the department. In today's dynamic academic and research landscape, it is inspiring to see our faculty and students leading groundbreaking innovations and developing impactful solutions for industry and society.

Your dedication to excellence in research, education, and outreach shapes the future of science and technology.

My heartiest congratulations to the editorial team for bringing out the newsletter. Wishing you all continued success in your academic and professional endeavors.

Dr. Karunakar A. Kotegar
Pro-President
Manipal University Jaipur

# MESSAGE FROM THE REGISTRAR

It is a pleasure to connect with you through this edition of the BIOCHEMIE newsletter. At Manipal University Jaipur, we continue to make strides in academic excellence, research, and student development, and I am proud of the collective efforts that drive our success.

The Department of Biotechnology and Chemical Engineering has consistently demonstrated innovation in sustainability and waste management, fostering an environment of learning and discovery. I commend the faculty for their dedication, the students for their enthusiasm, and the staff for their unwavering support in making these advancements possible.

I encourage all faculty and students to actively participate in departmental initiatives, research collaborations, and extracurricular activities. Your contributions are invaluable in shaping a vibrant academic community.

I'm excited to see additional achievements and the department's ongoing expansion. I hope all of your initiatives are successful!

Wishing you continued success in all your future endeavors. Keep up the great work!

Best regards,
Dr. Amit Soni
Registrar
Manipal University Jaipur

# MESSAGE FROM THE DEAN (FoSTA)

It is with great joy that I extend my sincere congratulations to the Department of Biotechnology and Chemical Engineering on the release of the departmental newsletter 'BIOCHEMIE'. This publication is not just a reflection of the academic and research excellence that we continually strive for, but also a testament to the hard work, dedication, and collaborative spirit that define the department.

I commend the team for their vision and effort in bringing this newsletter to life. It truly reflects the vibrant ideas, projects, and initiatives that shape the department's success.

As we move forward, I encourage all members of the department to continue fostering a culture of open discussion, engagement, and collaboration. Your contributions make a difference in shaping the future of our young students, and I look forward to seeing even more extraordinary work from all of you.

Once again, congratulations on this accomplishment, and I wish you continued success.

Warm regards and best wishes.

Dr. Kuldip Singh Sangwan
Dean, Faculty of Science, Technology and Architecture

# MESSAGE FROM THE ASSOCIATE DEAN (SoE)

Convey my heartiest congratulations to the Department of Biotechnology and Chemical Engineering, School of Engineering, for the launch of BIOCHEMIE. Engineering plays a pivotal role in shaping the future, and I am proud to see our department making remarkable strides in sustainable technologies, bioprocess engineering, and advanced materials. I believe this newsletter will play a significant role in showing the mission, vision, and achievements of the department, and will provide the stakeholders with all the information to keep them connected.

Once again, I congratulate the faculty members, and dedicated students of the department, for their collective effort and dedication to this Newsletter. Wishing you continued success in all your endeavors.

Dr. Ravi Kant Gupta
Associate Dean
School of Engineering

# MESSAGE FROM HoD

I am delighted to share our department's newsletter BIOCHEMIE, which celebrates the accomplishments, research advancements, and collaborative efforts of the faculty and students of the department. I appreciate the efforts of the editorial team for bringing this newsletter to life.

The department was established in 2014 with the goal of providing graduate and doctoral programs in Chemical Engineering. In 2023, it broadened its scope by adding two additional graduate engineering programs: Computer Science with Bioscience and Biotechnology. From groundbreaking research in material science, environmental remediation, and waste-to-value-added products to advancements in biotechnology, bioprocessing, computational biology and process modeling, our faculty, research scholars and graduate students are making significant contributions to scientific knowledge and industry applications. Our ongoing efforts in academic-industry collaborations and student-led initiatives have created an enriching learning environment that prepares our graduates for impactful careers. I am proud to share that we have secured several externally funded research grants including the prestigious DST PURSE grant. This funding significantly enhances our research infrastructure and promotes interdisciplinary collaboration. I encourage all faculty and researchers to leverage this opportunity for impactful scientific contributions.

Together, let's embark on a journey of discovery, exploration, and transformation to shape the future of Biotechnology, Bioscience and Chemical Engineering.

Best wishes!!

Dr. Manisha Sharma
Head of the Department
Department of Biotechnology and Chemical Engineering

# ABOUT THE UNIVERSITY

The Manipal Education and Medical Group is an established research and healthcare leader. In over seven decades, it has transformed the lives of more than 300,000 students from over 59 countries. The group includes five universities: Manipal Academy of Higher Education (MAHE, Karnataka), Sikkim Manipal University (Sikkim), American University of Antigua (Caribbean Islands), Manipal International University (Malaysia), and Manipal University Jaipur (Jaipur).

Manipal University Jaipur (MUJ) was launched in 2011 at the Rajasthan government's invitation as a self-financed state private university. MUJ has redefined academic excellence in the region with the Manipal way of learning, which inspires students of all disciplines to learn and innovate through hands-on practical experience.

The multidisciplinary university offers career-orientated courses at all levels, i.e., UG, PG, and doctoral, and across diverse streams, including engineering, architecture and planning, fashion design, interior design, fine arts, hospitality, humanities, journalism and mass communication, basic sciences, law, commerce, computer applications, management, etc. Some PG programmes are also available in the research mode.
MUJ boasts best-in-class infrastructure, including state-of-the-art research facilities and a modern, digital library. In line with Manipal University's legacy of providing quality education to its students, the campus uses the latest technology to impart education.

# ABOUT THE DEPARTMENT

The Department of Biotechnology and Chemical Engineering at Manipal University Jaipur (MUJ) fosters innovation and interdisciplinary learning. Established in 2014 as the Department of Chemical Engineering, it expanded in 2023 to include 2 new programs in Biotechnology and Computer Science and Biosciences, reflecting the growing demand for biotechnological and computational solutions.
The department has experienced faculty from reputed national and international institutions who are actively engaged in research. The department has several externally funded projects from government and industries, including the prestigious INR 10-crore DST PURSE grant. The funding strengthens infrastructure and promotes interdisciplinary collaboration.

The industry-oriented curriculum emphasizes biotechnology, computational biology, bioinformatics, chemical engineering, sustainable materials, renewable energy, environmental engineering, and process design. The labs are well-equipped to provide hands-on training and encourage research among students. Our graduates pursue careers as technical consultants, production and process engineers, research scientists, and quality analysts. Committed to professional and ethical education, the department aims to address industrial and societal challenges while contributing to a more sustainable and healthy future.

# MEET OUR NEW FACULTY MEMBERS

## Dr. Prathap Somu

Associate Professor

Specialization: Cancer therapeutics, energy materials, and drug delivery.

Dr. Prathap completed his PDF from Taiwan and earned his Ph.D. in Biotechnology from NIT Rourkela (2020), following his M.Tech. and B.Tech. from Visvesvaraya Technological University. His research focuses on semiconductor-based sensors, electrocatalysis, and sustainable energy solutions.

## Dr. Nadana Raja Vadivu G

Assistant Professor

Specialization: Bioprocess engineering, plant biotechnology, and nanobiotechnology.

Dr. Nadana holds a Ph.D. from Kalasalingam Academy of Research and Education (2021), an M.Tech. from Anna University, Tiruchirappalli (2009), and a B.Tech. from Anna University, Chennai (2007). A member of the Indian Science Congress Association and the Indian Association of Applied Microbiologists, she has contributed extensively to research on plant growth, defense mechanisms, and microbial interactions.

# MEET OUR NEW FACULTY MEMBERS

**Dr. Diksha Srivastava**
Assistant Professor
Specialization: AI applications in healthcare, stem cell technology, and energy management in agriculture.

Dr. Diksha earned her Ph.D. from Pacific Academy of Higher Education and Research University, Udaipur, in 2018, and her M.Tech. and B.Tech. from Padmashree Dr. D.Y. Patil University. Recognized for her contributions to biotechnology, she has received prestigious awards such as the Young Scientist Award (2022) and the Young Biotechnologist Award (2019). She actively engages in research, with publications focusing on AI-driven smart irrigation, forest monitoring, and bioinformatics applications in gene therapy.

**Dr. Smriti Singh**
Assistant Professor
Specialization: Aptamer technology in health care, Nanomaterials for diagnostics, Point-of-care diagnostics, Biosensors.

Dr. Smriti earned her Ph.D. in Biotechnology from MNNIT Allahabad (2024), Prayagraj. She holds an M.Tech. in Biotechnology from MITS Gwalior (affiliated with RGPV Bhopal) and a B.E. in Biotechnology from the same institution. Her expertise lies in healthcare diagnostics, aptamer technologies, electrochemical biosensors, and nanomaterial applications.

# MEET OUR NEW FACULTY MEMBERS

**Dr. Satya Prakash**
Assistant Professor
Specialisation: Parasitology, cholesterol regulation, efferocytosis, and medical biotechnology.

Dr. Satya completed his PDF from the Department of Liver Division, Icahn School of Medicine at Mount Sinai, New York, USA. He earned his Ph.D. in biotechnology from MNNIT Allahabad (2022) after completing his M.Tech. in biomedical engineering from Delhi Technological University and B.Tech. from LPU Jalandhar. His research focuses on the interplay between retinoic acid and cholesterol pathways in parasitic infections, contributing significantly to advancements in therapeutic strategies.

**Dr. Abhay Dinker**
Assistant Professor
Specialisation: Energy Storage, Downstream processes, Separation Technology, Simulation and modelling using COMSOL and Multiphysics.

Dr Abhay holds a Ph.D. and M.Tech in Chemical Engineering from MNIT Jaipur. His expertise includes energy storage, downstream processes, and separation technology, with a focus on simulation using COMSOL Multiphysics. A life member of IIChE and InDA, he has published extensively on thermal energy storage, microbial fuel cells, and fermentation-based vitamin production.

# MEET OUR NEW FACULTY MEMBERS

**Dr. Chandrabhan Seniya**

Assistant Professor

Specialization: Bioinformatics & Computational, Drug Discovery from natural resources, and Biomedical Imaging

Dr. Chandrabhan secures his PDF and Ph.D. from the University of Warwick, UK. He completed his M.Tech. Biotechnology at Anna University, Chennai, 2008, and his B.Engg. Biotechnology Madhav Institute of Technology and Science, Gwalior 2006

His expertise spans various domains within biotechnology and chemical engineering, contributing to academic excellence and research advancements in the field.

**Dr. Nikhil Kumar**

Assistant Professor

Specialization: biosensor development, conductive polymers, wearable biosensors, flexible electronics, and microfluidics for integrated biosensing systems.

Dr. Nikhil holds a Ph.D. in Biotechnology from NIT Raipur (2017), an M.Tech. from NIT Rourkela (2010), and a B.Tech. from SVBP University of Agriculture and Technology, Meerut (2007). His research focuses on biosensor development, enzyme immobilization, and nanomaterial synthesis.

# ONGOING PROJECTS AND GRANTS

| Title of Sanctioned Research Projects/Consultancy | Name of Funding Agency | Name of the Faculty |
|---|---|---|
| Development and utilization of high value products from waste resources: circular solution for agricultural and non-agricultural applications | DST (INR 10 Cr) | Dr. Abhishek Sharma |
| Commercial utilization of end of life of tyres to produce value added chemicals and fuel using integrated technology | DST (INR 1.7 Cr) | Dr. Abhishek Sharma and Dr. Anees Y. Khan |
| Sequential adsorption of mixture of dyes in a multibed adsorption system using a low-cost adsorbent | SERB-POWER (INR 27.5 Lakhs) | Dr. Manisha Sharma and Dr. Anees Y. Khan |
| Development of Microbila Based Polymeric Composite Adsorbents for Efficient Removal of arsenic from Drinking Water | MRB (INR 5.4 Lacs) | Dr. Anees Y. Khan and Dr. Monika Sogani |
| Harnessing photocatalytic and adsorptive techniques for treatment for paraben and textiles dyes in laden waste water | MRB (INR 3.0 Lacs) | Dr. Anand Gupta Chakinala and Dr. S Nethaji |
| Vermiponics- a tool for growth enhancement of leguminous plants | MUJ (INR 1.0 Lacs) | Dr. Nadana RVG |

# RESEARCH PUBLICATIONS

- **Yashasvi Trivedi, Manisha Sharma**, and Arun Krishna Vuppaladadiyam et al., 2025. Biochar potential for pollutant removal during wastewater treatment: A comprehensive review of separation mechanisms, technological integration, and process analysis. Desalination.

- Jyoti A. Dhanke, **Diksha Srivastava**, and P. Mani, et al., 2025. Climate-Based AI-Powered Precision Irrigation: Sustainably Smart Agriculture Frameworks for Maximum Crop Yields. Remote Sensing in Earth Systems Sciences.

- G. Bhupal Raj, **Diksha Srivastava**, and Dhiraj Kapila, et al., 2024. Use of Artificial Intelligence in Smart Farming for Selecting the Composition of Smart Manure. Lecture Notes in Electrical Engineering.

- V. Malathy, **Diksha Srivastava**, and Purnendu Bikash Acharjee, et al., 2024. Revolutionizing Tumor Diagnosis: How Clinical Application of Artificial Intelligence and Machine Learning Enhances Accuracy and Efficiency. Smart Innovation, Systems and Technologies.

- Fanglin Ma, **Satya Prakash**, and Bishuang Cai, et al., 2025. EHBP1 suppresses liver fibrosis in metabolic dysfunction-associated steatohepatitis. Cell Metabolism.

- Chumki Praharaj, **Smriti Singh**, and Seema Nara, 2025. Investigating gold nanorod-mediated hydrolysis of acetylthiocholine: a way for electrochemical detection of organophosphate pesticides. Environmental Sciences: Nano.

- **Smriti Singh**, Ravi Kant Agrawal, and Seema Nara, 2024. Electrochemical aptasensor for sensitive detection of staphylococcal enterotoxin type A in milk and fruit juice. Mikrochimica Acta.

- Pooja Saini, **Anand Gupta Chakinala**, and Praveen K Surolia, 2025. Bismuth doped g-C3N4 composites for enhanced photocatalytic degradation of ciprofloxacin. Journal of Molecular Structure.

# RESEARCH PUBLICATIONS

- Ranjita Singh, **Nandana Chakinala**, Kaustubha Mohanty, and **Anand G Chakinala**, et al., 2025. Catalytic vapor phase upgrading of sawdust pyrolysis using metal oxide catalysts: The support effect. Journal of Analytical and Applied Pyrolysis.

- Saurav Mishra, **Nandana Chakinala, Anand G Chakinala**, and Praveen K Surolia, et al., 2025. TiO2 photocatalysis for water remediation. AIP Conference proceedings.

- Devandar Chauhan, Prashant Kumar Nagar, Kamakshi Pandey, **Harsh Pandey**, 2025. Bioinspired anti-fouling membranes featuring novel tilted sharkskin patterns. Journal of Membrane Science.

- **Sowkhya Naidu, Harsh Pandey**, Alberto Passalacqua, Samreen Hameed, Jyeshtharaj Joshi, **Abhishek Sharma**, et al., 2025. Advancements in modeling and simulation of biomass pyrolysis: A comprehensive review. Journal of Analytical and Applied Pyrolysis.

# EVENTS ORGANISED

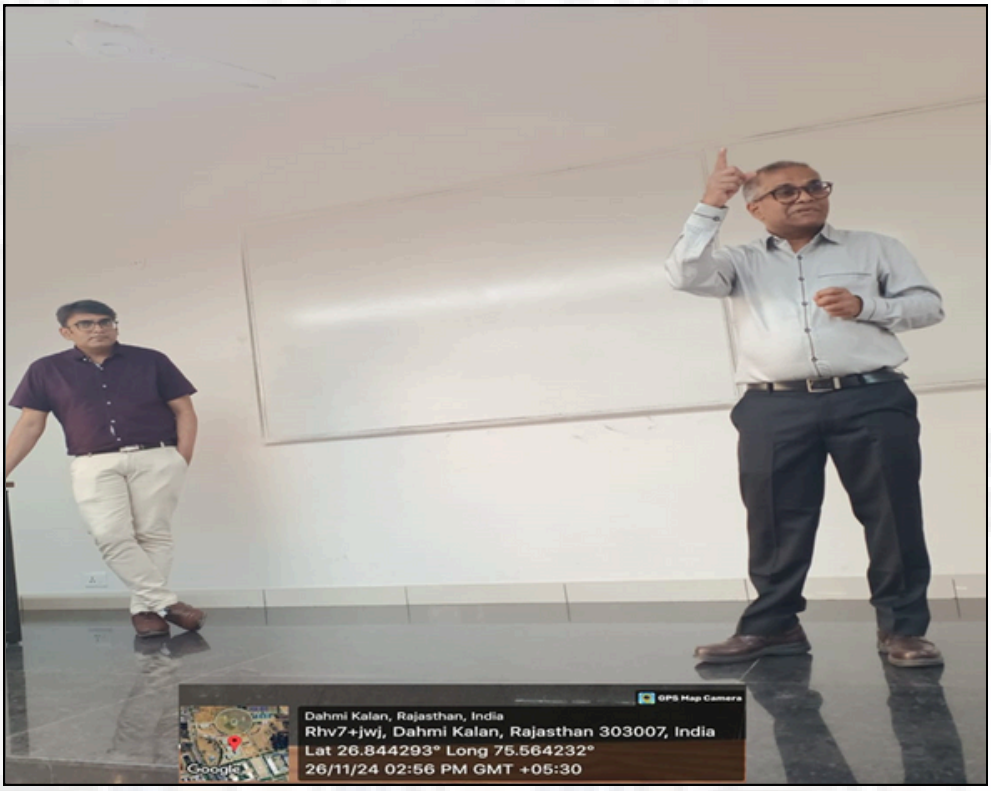
**Experts who visited the Department**

Prof. Naveen Dubey, International Project Manager, Victory Biotechnology Co., Ltd., Taiwan delivered an expert talk on 'Understanding Adipose-derived Stem Cells Therapy in Diabetes-induced Knee Osteoarthritis'. This lecture was scheduled from 4.00 P.M. to 5.00 P.M. on 19th September 2024 (Thursday) in Room No. 113, AB3. He explained the relationship between diabetes and knee osteoarthritis, other musculoskeletal disorders, and regenerative therapy. His scientific pursuit pertains to resolving the intricate mechanism of diabetic knee osteoarthritis. Besides, he is serving as an investigator in clinical trials of some regenerative biomaterials for fractures.

# EVENTS ORGANISED

**Experts who visited the Department**

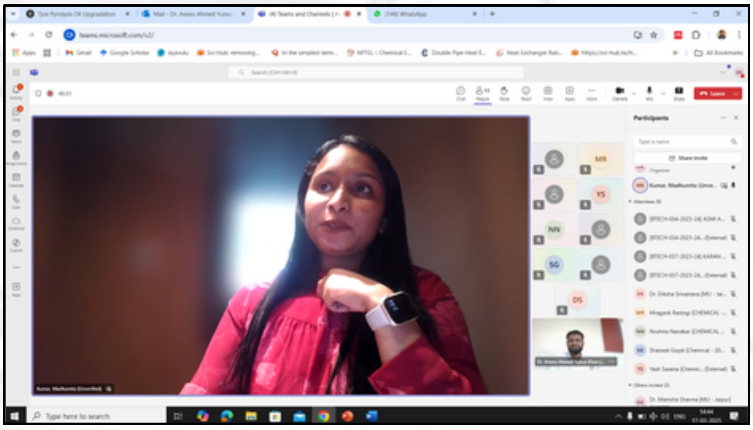
On 26th November 2024, the Department of Biotechnology and Chemical Engineering at Manipal University Jaipur organized an invited lecture titled “Role of Science and Engineering in Solving Societal Problems,” featuring distinguished speakers Prof. Kalpit Shah and Dr. Aravind Surapaneni from RMIT University, Australia. The session explored the integration of scientific and engineering principles to tackle global challenges in sustainability, energy, healthcare, food security, and environmental protection. Emphasizing interdisciplinary innovation, real-world applications, and collaborative efforts between academia and industry, the lecture inspired undergraduate students and faculty to contribute towards ethical, practical, and sustainable solutions for societal advancement.



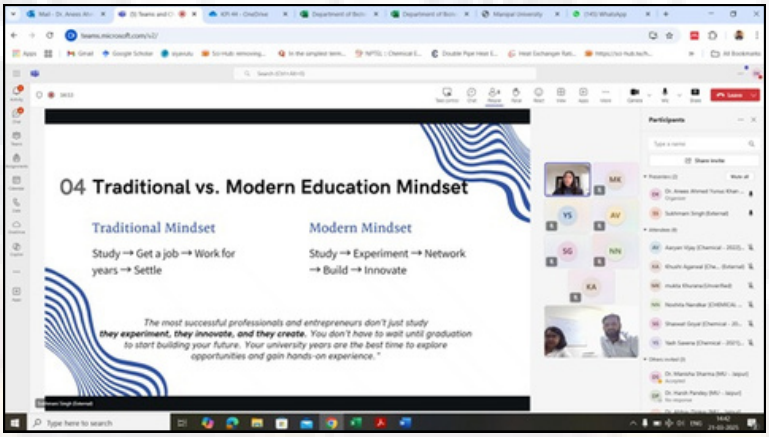
# EVENTS ORGANISED

## Alumni Interactions

The session was conducted on 17th March 2025, on MS Teams. **Ms. Madhumita Kumar** (Batch 2021) shared her experiences in professional settings, emphasizing risk-taking and opportunity-seizing strategies. She discussed key industry trends, personal skill development, and networking strategies essential for career growth. Students actively participated by asking questions and seeking advice on internships, job applications, and career decisions.

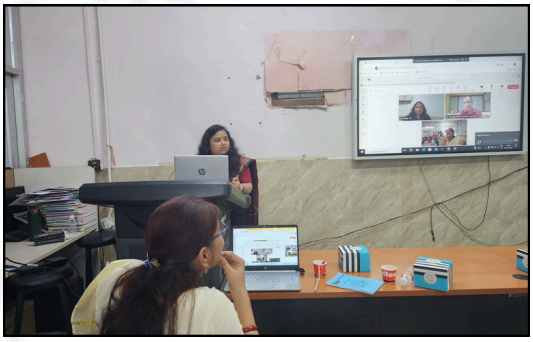


We were thrilled to welcome **Ms. Sukhmani Singh**, a proud alumna of the BTech Chemical Engineering Batch of 2021. She shared her enriching journey, personal experiences, and practical advice on navigating education and career choices with purpose. The session, "Education as a Launchpad: How to Use Higher Learning to Build, Not Just Study", focused on going beyond academics to embrace skill development, innovation, and real-world applications.



# AWARDS AND RECOGNITIONS

**Dr. Smriti Singh**
Awarded Ph.D. from MNNIT Allahabad in 2024 for her contributions to healthcare diagnostics specifically in food toxin detection.



**Dr. Nandana Chakinala**
Awareded Ph.D. from ICT Mumbai in 2025, following a PDF from the University of Leeds in 2024.

**Dr. Harsh Pandey**
Invited to State Roundtable on Lead Poisoning, Jaipur, June 2025.
FDP Resource Person on "AI and Virtual Labs Integration", Jan 2025.


**Ms Khushi Chaudhary,** Ph.D. scholar, received the DST Inspire Fellowship in Jan 2024.

# WORKSHOP/CONFERENCE/STC

4th International Conference on Recent Advances in Material Science and Computational Techniques (RAMSACT-2024) (April 04-06, 2024) at Manipal University Jaipur, organized by School of Basic Sciences and Department of Biotechnology and Chemical Engineering, Manipal University Jaipur, India

# BEYOND BOUNDARIES: CELEBRATING STUDENT SUCCESS STORIES

**Academic Excellence: The Dean's List Honorees**
Maanvi Agrawal, Harshita Singh, Asmi Dhadiwal, Sneha Khurana, Sumedha Bhargava, and Khushali Manchanda.

**Academic Scholarships**
Chinmai Sharma, Sneha Khurana, Maanvi Agrawal, and Harshita Singh.

**Budding Authors: Celebrating Our Published Poets**
Pihu Malhotra published a poetry book titled 'Mind in the Mountains', and Prajakta Nanda published 'River of Healing'.








# BEYOND BOUNDARIES: CELEBRATING STUDENT SUCCESS STORIES

**Academic Engagement: Showcasing Research at Conferences**

Ekaansh Saxena, Aryan Arya, and Shivansh Ranawat attended the Advancements in Diagnostics Technology, Global Healthcare Monitoring – ADT Conference at MNNIT, Allahabad in 2024.

Harsh Gupta participated and presented a research poster at ICNB 2025, organised by University of Rajasthan.

**Internships completed by Students**

Ekaansh Saxena completed an internship on ‘Molecular Techniques ' at Dr. B Lal Labs, Jaipur.

Sneha Khurana completed an internship on ‘Cell culture and molecular techniques’ from DRCC Lab, School of Biotechnology, JNU, Delhi.

Himanshi Sharma participated in the Alpha Space Sony Workshop.

# OTHER ACHIEVEMENTS

**Prof. Abhishek Sharma** was appointed Adjunct Faculty at RMIT University, Australia. He delivered a lecture at the Indo-Japan Workshop FAAPEE-2024 (Feb 26–27, 2024), focusing on Integrated Pyrolysis Studies for sustainable bio-oil production from agricultural residues. His insights highlighted innovative approaches to energy and environmental sustainability, fostering collaboration between Indo-Japanese experts and advancing the field of pyrolysis for eco-friendly energy solutions.

# INDUSTRIAL VISIT

1. **DCM Shriram, Kota, Rajasthan**

Students of the second and third year of the Chemical Engineering Department visited DCM Shriram Industry on 15th April, 2024. Dr. Anees was the faculty coordinator of this industrial visit.


Best of luck to our final-year students for their placements and future endeavors. Wishing you great success ahead!