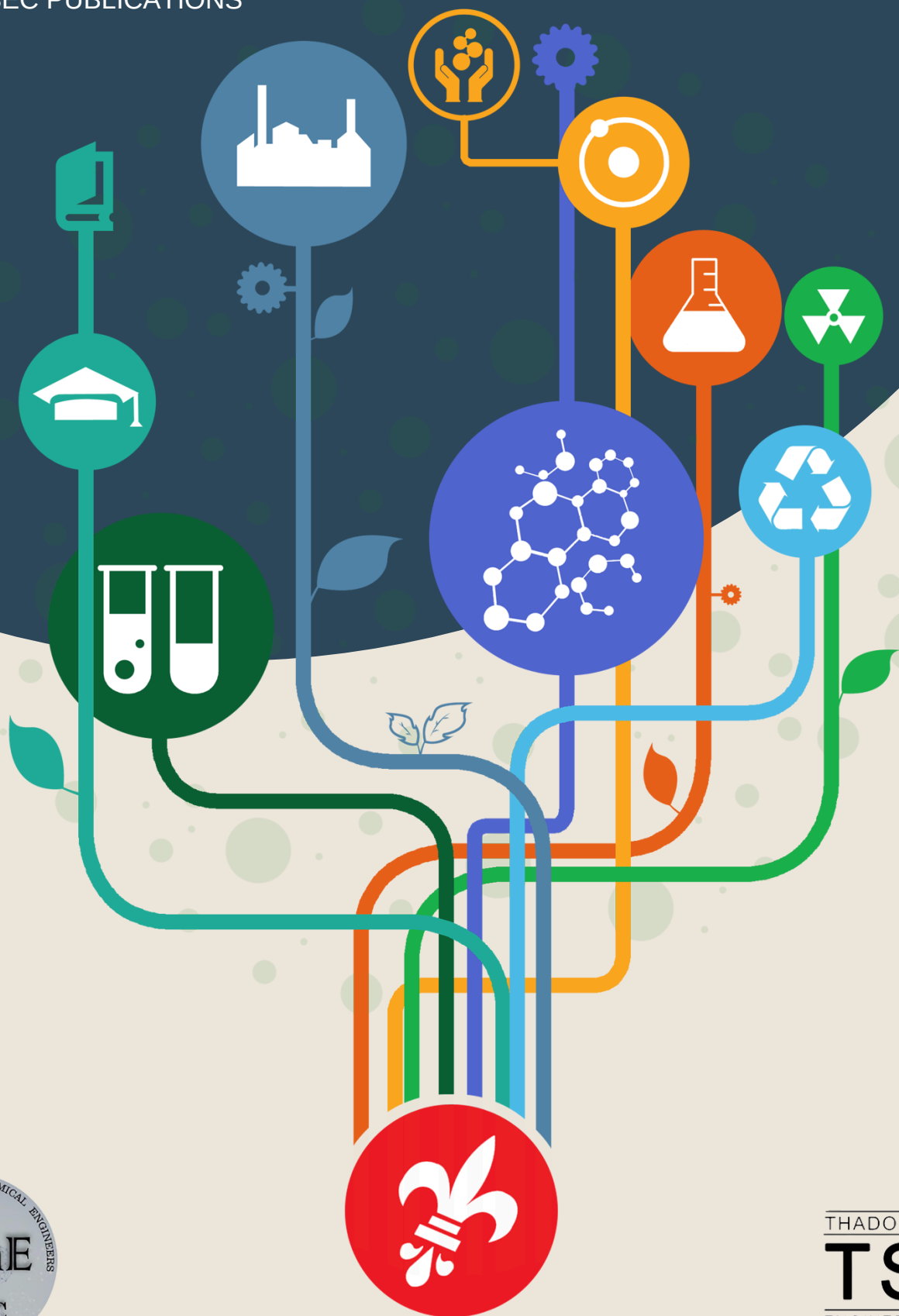


# CATALYST

IICHE - TSEC PUBLICATIONS

2024



THADOMAL SHAHANI  
**TSEC**  
ENGINEERING COLLEGE

# FROM THE PRINCIPAL'S DESK


**DR. G.T. THAMPI**

From mitigating climate change to developing life-saving technologies, our field is making a significant impact. We are designing eco-friendly processes, harnessing renewable energy, and exploring the potential of nanotechnology. These innovations are reshaping industries and improving lives.

Artificial intelligence is revolutionizing our field. By integrating AI into chemical engineering, we can enhance efficiency, accuracy, and discover new possibilities.

To our graduating students, embrace the challenges and opportunities ahead. Your education has equipped you to be leaders in this dynamic field. Congratulations on your achievements!

**Dr. G.T. Thampi**  
**Professor and Principal**  
**Thadomal Shahani Engineering College**



**T**academic excellence and innovation. As we reflect on the achievements of our faculty, staff, and students, it's evident that the field of Chemical Engineering is not just evolving, but it is flourishing with unprecedented opportunities.

In today's world, the intersection of chemical engineering with environmental science, energy technologies, and nanotechnology presents a plethora of opportunities. The challenges we face regarding environmental sustainability, energy efficiency, and advanced materials have opened up new avenues for research and development. Our department is at the forefront of addressing these challenges, and I am proud to say that our students and faculty are making significant contributions to these fields.

Chemical engineers are at the forefront of addressing global challenges.





# FROM THE HEAD OF DEPARTMENT

## DR. NITA MEHTA

Artificial Intelligence (AI) is poised to be a game-changer, and with AI and big data, we can fine-tune processes, make better predictions, and come up with new solutions faster than ever. This is an exhilarating time to be in our field, and we're all in for the ride toward even more amazing discoveries and transformations, a journey that promises to be as inspiring as it is rewarding.

In our department, we are dedicated to creating an environment of excellence, diversity, and inclusiveness in which ideas thrive, boundaries are pushed, and new frontiers are explored.

The purpose of organising Chemergence is to stimulate innovative ideas among budding chemical engineers and offer a platform for future research endeavours. This initiative aims to foster the development of new globally accepted chemical products and technologies, all with the primary goal of enhancing societal welfare.

**Dr. Nita Mehta**

**Head of Department**

**Department of Chemical Engineering**

**T**his year's theme, "Evolution of Technologies in Chemical Engineering", deeply resonates with our department's core values. From the inception of chemical engineering, we have witnessed incredible advances that have revolutionised industries, improved processes, and elevated the quality of life for millions of people across the globe.

As we confront the challenges of modern life, we must be watchful, adaptable, and forward-thinking in our approach to research, education, and practice. The challenges we confront, from environmental sustainability to global health crises, necessitate interdisciplinary solutions that leverage the full range of human talent and technical innovation.

Looking ahead, the future of chemical engineering is brimming with potential.



# FROM THE TEACHER COORDINATOR

**PROF. PRASEEDA NAMBISAN**

and support were instrumental in steering us toward success. It has been an honor to serve as the teacher coordinator for such a prestigious event, and I look forward to witnessing the continued growth and excellence of IChE & Chemergence in the years to come.

**Prof. Praseeda Nambisan**  
**Teacher Coordinator**  
**Department of Chemical Engineering**

**A**s the teacher coordinator of Chemergence-23, the annual technical event organized by the IChE committee, I want to extend my heartfelt gratitude to all who contributed to its resounding success.

Witnessing our alumni, now industry leaders, imparting their expertise through insightful talks was truly inspiring. The array of competitions, quizzes, and engaging games not only added a dash of excitement but also fostered a spirit of camaraderie among participants. The meticulous planning and seamless execution, orchestrated by our dedicated student team, ensured a flawless experience for all attendees.

I must also acknowledge the invaluable guidance of retired Prof. Elizabeth Joseph Madam, whose wisdom



# FROM THE CHAIR- PERSON

SHARVARI INDALKAR



It all began on 22 May 2023, a date forever etched in my memory. Initially hesitant to participate in the interview process, I eventually found the courage to engage. The results marked the start of a new era, one filled with profound lessons for both my personal and professional life. Our first event, Chem-S-Cape, holds significant sentimental value for me. It was not only the first event of our tenure but also the first one organized by our committee. I recall the initial vague draft of our concept; articulating our individual ideas into a collective vision proved challenging. However, the determination of everyone involved was remarkable. After the success of Chem-S-Cape, we felt the pressure to surpass that achievement. Planning eight events in just two weeks was daunting, but effective coordination, collaboration,

and hard work helped us overcome this challenge. The success of ChEMERGENCE'23 is a testament to our teamwork. I am grateful to our esteemed faculty members for their invaluable guidance. Dr. Elizabeth Joseph recognized the potential of our events, fostering connections between students and experts in chemical engineering. Our HoD, Dr. Nita Mehta, provided crucial support and encouragement, inspiring us to reach new heights. Additionally, our Teacher Coordinator, Prof. Praseeda Nambisan, exemplified meticulous planning and effective communication, inspiring us all.

Joining the committee transformed my acquaintances into colleagues, engaging us in pivotal decision-making. One key moment was selecting our tagline, which solidified my belief that this journey would be rewarding.

As Helen Keller said, "Alone we can do so little; together we can do so much." The enthusiasm and dedication of my fellow committee members made this achievement possible. Special thanks to Maanav Shah and Jatin Gola for their unwavering commitment to our vision.

As this tenure concludes, I reflect on this invaluable journey, which has reshaped my perspective and self-assurance. I am grateful for the opportunity and the lessons learned along the way.



**MAANAV SHAH**

## **VICE CHAIRPERSON**

Reflecting on the past year, I am reminded of the power of our tagline: Unleashing Creativity, Catalyzing Change. In chemical engineering, we see ideas transformed into reality, blending innovation with tradition in our pursuit of progress.

Serving as Vice Chairperson of IChE-TSEC has been exhilarating. Our journey began with the success of Chem-S-Cape, which united diverse minds to explore the frontiers of our field. This vibrant exchange set the stage for our next ambitious event, ChEMERGENCE'23, our annual technical symposium. The response exceeded our expectations, with participants engaging in meaningful dialogue and discovery. The event showcased the dynamism of our field and the dedication of our committee.

Being part of the IChE-TSEC committee has provided

invaluable experiences and personal growth. This role expanded my horizons, nurtured my confidence, and challenged me to think creatively and communicate effectively. The supportive environment empowered me to voice my ideas and embrace leadership roles. Overall, this transformative journey equipped me with the resilience and enthusiasm needed for future challenges.

I extend my heartfelt gratitude to our Head of Department, Prof. Elizabeth Joseph, for her unwavering support and inspiring vision, and to our teacher coordinator, Prof. Praseeda Nambisan, for her tireless efforts behind the scenes.

To my fellow committee members, I deeply appreciate your dedication and passion, which have been the driving force behind our achievements. Together, we weathered storms, celebrated victories, and forged lifelong bonds. I would also like to thank Sharvari and Jatin, who have been invaluable pillars of support and friendship throughout this tenure.

As I bid farewell to this incredible journey, I feel pride in our accomplishments, gratitude for the lessons learned, and nostalgia for the memories we created together.



## SECRETARY

As my tenure as the Secretary of IICHe - Student Chapter of TSEC comes to an end, I find myself immersed in a whirlwind of memories, lessons, and gratitude. Our journey, defined by the tagline "Unleashing Creativity, Catalysing Change," has been a testament to the power of innovation and collaboration in the world of Chemical Engineering. One of the highlights of our tenure was the inception of 'Chem-S-Cape,' a unique and thrilling chem-themed escape room event. It was designed not only to entertain but also to test and enhance the participants' chemical knowledge in a fun and interactive way. Another milestone was the grand success of 'ChEMERGENCE'23,' our Annual Technical Symposium. With eight exciting events under its umbrella, 'ChEMERGENCE'23' showcased the diverse

talents and skills of our department's students. From technical competitions to workshops and seminars, it was a celebration of academic excellence and innovation. None of these achievements would have been possible without the unwavering support and guidance of our faculty members. I extend my heartfelt gratitude to our former Head of Department, Dr. Elizabeth Joseph, and our current HoD, Dr. Nita Mehta, for their continuous encouragement and belief in our endeavors. I also want to acknowledge our teacher coordinator, Prof. Praseeda Nambisan, whose wisdom and guidance shaped our events and decisions. Her dedication to nurturing student initiatives has been instrumental in our success. A special mention goes to my partners in this journey, Sharvari and Maanav. Their constant support and shared vision have been the pillars of strength throughout our tenure. Together, we navigated challenges, celebrated victories, and forged lasting bonds. Of course, none of this would have been possible without the collective effort of our committee members and volunteers. Each one, though unnamed here, deserves recognition for their dedication and hard work, which transformed our ideas into reality and made each event a success.

From being a participant at 'ChEMERGENCE' to serving as Secretary of IICHe-TSEC, this journey has been transformative. The memories created, lessons learned, and friendships forged are treasures I will cherish forever. As I pass the baton to the upcoming members, I am confident they will continue our legacy of excellence and innovation, taking IICHe-TSEC to new heights.



**JATIN GOLA**

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# CHARTING THE FUTURE: Innovations in Chemical Engineering

-Gaurang Pitale



Innovation is vital in chemical engineering, driving progress and addressing global challenges. In the 21st century, the field is witnessing significant advancements in sustainable manufacturing, novel materials, and groundbreaking technologies. A prominent trend is the growing focus on sustainability, with chemical engineers at the

forefront of developing eco-friendly solutions that minimize waste, reduce energy consumption, and lessen the environmental impact of industrial activities. Green chemistry is gaining traction, emphasizing the design of environmentally benign chemical processes and products. Additionally, the integration of digital technologies and artificial intelligence (AI) is transforming chemical engineering. With the rise of Industry 4.0, smart manufacturing and data-driven decision-making have become essential for optimizing production processes, enhancing efficiency, and improving product quality. Real-time monitoring and predictive maintenance systems are revolutionizing operations in chemical plants, enabling proactive maintenance and minimizing downtime.

The quest for alternative energy sources is also spurring innovation in renewable energy technologies. Chemical engineers play a crucial role in developing cost-effective methods for producing biofuels, hydrogen, and other sustainable energy carriers. Advances in photovoltaics, energy storage systems, and fuel cells are helping reduce our dependence on fossil fuels and mitigate climate change.

In the realm of materials science, chemical engineers are pushing the boundaries of innovation by designing novel materials with unprecedented properties and functionalities. By leveraging innovative synthesis techniques and computational modeling, scientists are creating materials with tailored properties, such as enhanced strength, conductivity, and biocompatibility.

In conclusion, chemical engineering is experiencing a renaissance of innovation, driven by a commitment to addressing global challenges and shaping a sustainable future.

# RECENT INNOV- ATIONS

1

**AI and Machine Learning:** AI has revolutionized chemical engineering by optimizing processes, minimizing waste, and enhancing energy efficiency. Machine learning accelerates materials discovery and improves predictive modeling for chemical reactions, while AI-driven robotics automate lab experiments, boosting research efficiency and precision.

---

2

**Renewable Energy Innovations:** Significant advancements in renewable energy focus on cost-effective production of biofuels, hydrogen, and sustainable energy carriers. Innovations in photovoltaics and energy storage systems drive the transition to clean energy solutions, reducing dependence on fossil fuels.

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3

**Green Chemistry:** Green chemistry has advanced sustainable synthesis methods and waste reduction techniques. Innovations include renewable feedstocks and eco-friendly chemical designs, highlighting a commitment to sustainability and efficiency within the chemical industry.

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4

**Nanotechnology and Advanced Materials:** Recent developments in nanotechnology have led to novel nanomaterials with tailored properties for applications in medicine and electronics. Innovations in nanofabrication enable precise synthesis and assembly, supporting advances in energy storage, environmental remediation, and targeted drug delivery.

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5

**Food Technology and Sustainable Packaging:** Innovations in food technology include advanced processing techniques that enhance safety and nutrition. There's an increasing focus on sustainable packaging materials, such as biodegradable options, addressing environmental concerns and consumer demand for eco-friendly solutions.

# IICHE MRC

## Indian Institute of Chemical Engineers Mumbai Regional Center

Indian Institute of Chemical Engineers is a confluence of streams of professionals from academia, research institute and industry. It provides them the appropriate forum for joint endeavours, hand-in-hand, to work for human being through application of chemical engineering and allied sciences. If you are interested about, attached to or involved in chemical engineering related activities - whether as a student as a seasoned professional - you shall find the programme of IICHE immensely beneficial, opening up doors of new possibilities and existing possibilities. IICHE-MRC is one of the 38 regional centres of the Indian Institute of Chemical Engineers (IICHE), the apex professional society of Chemical Engineers in India. The Mumbai Regional Centre (MRC) is the biggest of them all with nearly 13.3 % of the total all-India membership of almost 13250 engineers.

Its core goals include:

1. Professional Development: Providing opportunities for chemical engineers and related professionals to enhance their skills, knowledge, and expertise through seminars, workshops, and training programs.
2. Knowledge Sharing: Facilitating the exchange of ideas, best practices, and research findings among members to foster continuous learning and innovation in the field of chemical engineering.
3. Networking: Creating a platform for professionals to connect, collaborate, and build professional relationships within the local chemical engineering community and beyond.
4. Industry Engagement: Collaborating with industry partners to address challenges, explore emerging trends, and promote the application of chemical engineering principles in various sectors.
5. Community Outreach: Engaging with educational institutions, government agencies, and other stakeholders to raise awareness about the importance of chemical engineering and its contributions to society.

Overall, the IICHE Mumbai Regional Center strives to serve as a catalyst for the advancement of chemical engineering, supporting the professional growth and development of its members while promoting the relevance and significance of the discipline in addressing societal challenges and driving industrial innovation.

### Executive Council - IICHE - Mumbai Regional Centre

Prof. Sanjay Mahajani	Hon. Chairman
Shri Jagdish Nageshri	Hon. Vice Chairman
Shri Dhawal Saxena	Hon. Secretary
Shri Mahendra Patel	Hon. Treasurer
Dr Pradnya Ingle	Hon. Joint Secretary
Shri Rajesh Jain	Hon. Joint Treasurer
Dr. M.P. Jain	Member
Dr. Alpana Mahapatra	Member
Dr. T.L. Prasad	Member
Dr. Aparna Nitin Tamaskar	Member
Dr. Debashis Raha	Member
Shri Ankur Chaturvedi	Student Co-ordinator
Shri Akash Shinde	Co-opted Member
Prof. Sunil Potale	Co-opted Member
Dr. Parasu Veera Uppara	Co-opted Member
Dr. Rahul Nabar	



# IIChE TSEC

## IIChE Student Chapter TSEC

One of IIChE's largest student chapters, IIChE-TSEC, is located at one of its largest regional centres, IIChE-MRC, or Mumbai Regional Centre. Its uniqueness as the only student body in TSEC dedicated solely to chemical engineers stands out among its many other advantages. The chapter for students focuses on instilling the philosophy of giving pupils real-world industry exposure in accordance with the academic ideas they are taught. We encourage excellence, personal development, and the sharing of pertinent information. The association's mission is to promote industry-student, university-student, and professional society collaboration. In order to keep up with the times, IIChE-TSEC, along with the Department of Chemical Engineering-TSEC, has adopted a ground-breaking strategy to support the demands of its students. Reputable speakers from the chemical engineering fraternity have recently given seminars that provide students the chance to explore new areas. IIChE-TSEC has been a pioneer in recognising and identifying young talent, as seen by the activities it has put on and by the young people who have participated in it. An opportunity to compete with emerging talent is provided by the yearly technical symposium ChEMERGENCE. The activities offer a great way to connect academic understanding to its real-world applications in chemical engineering and related fields. We are committed to promoting public knowledge of technical challenges through ChEMERGENCE.

### Executive Council - IIChE - Student Chapter TSEC (2023-2024)

Ms. Sharvari Indalkar	Chairperson
Mr. Maanav Shah	Vice Chairperson
Mr. Jatin Gola	Secretary
Mr. Sahas Kasar and Mr. Yash Thakkar	Treasurer
Mr. Asad Ansari, Mr. Viraj Dalvi and Mr. Shivam Jadhav	Chief Technical Officer
Ms. Mrunmayee Hegiste	Event Head
Ms. Vridhi Varliani and Mr. Aliasgar Dohadwala	Industrial Envoy
Mr. Aadithya Premraj	Marketing Head
Ms. Kashish Agarwal	Head of Content
Mr. Mohammad Shamaz Ansari	Public Relation Officer
Ms. Krishita Kapadia	Editor
Mr. Atharva Jindal, Mr. Soham Joshi and Mr. Harsh Kadam	Assistant Technical Officer
Ms. Rhea Dhanuka	Creative Head
Ms. Prachi Rode	Design Head
Ms. Sia Shetty and Ms. Moha Kulkarni	Publicity Head
Ms. Arya Patil and Ms. Shreejita Dhar	Logistics Heads
Ms. Ira Sahasrabuddhe	Social Media Head
Mr. Aliasgar Dohadwala	Photography Head

# Committee Members

## IIChE Student Chapter TSEC





# Department of Chemical Engineering, TSEC

Department of Chemical Engineering, TSEC was established in 1983. It has a long and distinguished history of successfully educating leaders for a wide variety of industries. Ever since its inception in 1983, the institute has established itself as a premier institution engaged in imparting quality technological education.

Thadomal Shahani Engineering College (TSEC) is known for its strong Chemical Engineering department. The department offers a comprehensive curriculum that encompasses theoretical knowledge along with practical applications in various fields of chemical engineering.

Key highlights of the Chemical Engineering department at TSEC include:

1. Experienced Faculty: Our department is led by seasoned professionals dedicated to quality education.
2. Advanced Laboratories: Students benefit from cutting-edge labs covering key chemical engineering areas.
3. Research Focus: Opportunities abound for students to contribute to groundbreaking projects.
4. Industry Connections: Collaborations with top companies offer real-world insights and internships.
5. Holistic Development: Workshops and seminars enhance technical and soft skills alike.
6. Strong Placement Support: Our track record speaks for itself, with ample assistance for career success.

In summary, TSEC's Chemical Engineering department offers a comprehensive education, blending theory with practical experience for future success.

## Department of Chemical Engineering

Dr. Nita Mehta	Associate Professor & HOD
Dr. Anita Kumari	Professor
Dr. Ramesh Sakharan Bhande	Associate Professor
Mr. Prasad Jayavant Parulekar	Associate Professor
Mr. Ravindra R. Joshi	Assistant Professor
Mrs. Sangita Sachin Gaikwad	Assistant Professor
Dr. Trupti Dharmarao	Assistant Professor
Mrs. Mannat Khanwani	Assistant Professor
Dr. Nitin Pereira	Assistant Professor
Mrs. Praseeda Nambisan	Assistant Professor
Mrs. Bharti Deshmukh	Assistant Professor

## Department of Chemistry

Dr. Anupama Sawant	Associate Professor
Mrs. Anjali Kirkire	Associate Professor
Mrs. Vandana Kadam	Associate Professor

# IDEAS AND LESSONS

The TSEC Chemical Engineering Faculty has not only imparted knowledge but has also provided valuable insights into the evolving landscape of chemical engineering. Their expertise and forward-thinking approach have played a crucial role in preparing students for the dynamic challenges and opportunities in the field. According to our esteemed faculty, the future of chemical engineering is promising and multifaceted. Advancements in sustainable technologies are expected to drive significant changes, with an emphasis on green chemistry and reducing environmental impact. Innovations in materials science, such as the development of new polymers and nanomaterials, are likely to open up new avenues for research and industry applications.

Additionally, the integration of digital technologies, including artificial intelligence and machine learning, is anticipated to revolutionize chemical processes and improve efficiency. Our faculty also highlights the growing importance of interdisciplinary collaboration, where chemical engineers will work alongside experts in fields like biotechnology, data science, and environmental science to tackle complex global challenges. In preparing students for this evolving future, the TSEC Chemical Engineering Faculty is committed to providing a curriculum that emphasizes both theoretical knowledge and practical skills. By fostering a strong foundation in core principles while encouraging innovation and adaptability, they ensure that graduates are well-equipped to lead and excel in the chemical engineering profession.

The faculty's dedication to excellence and their insightful perspectives on the future underscore the pivotal role they play in shaping the careers of their students and advancing the field of chemical engineering.

## Prof. Vandana Kadam



**Q. How does analytical chemistry contribute to the characterization and analysis of materials such as polymers, metals, and ceramics?**

Analytical chemistry offers essential tools for material assessment.

Compositional Profiling: Techniques such as mass spectrometry and infrared spectroscopy identify elements and functional groups, aiding in material classification, composition verification, and impurity detection—critical for quality control.

Quantitative Analysis: Methods like gravimetry and atomic absorption spectroscopy ensure precise quantification of components, maintaining consistent properties in polymers and ceramics, and allowing trace element analysis in metals.

Structural Characterization: X-ray diffraction reveals atomic arrangements, helping tailor key properties like strength and conductivity.

## Prof. Anjali Kirkire

**Q. What advancements have been made in computational chemistry methods, and how do these approaches enable the accurate modeling and simulation of complex chemical systems?**

Computational chemistry uses computer simulations to solve complex chemical problems, a field pioneered by John Pople and Walter Kohn. It calculates molecular structures, interactions, and properties using theoretical methods and computer programs.

Key applications include:

1. Studying adsorption in porous solids.
2. Identifying drug binding sites on proteins.
3. Modeling synthesis reactions.
4. Exploring phenomena like superconductivity and phase changes.
5. Predicting pollutant behavior in water systems.
6. Improving catalysts for efficient reactions.



## Prof. (Dr.) Anupama Sawant



### Q. How can organic chemistry be applied to the remediation of environmental pollutants?

Organic chemistry studies carbon compounds and addresses pollutants like petroleum, hydrocarbons, and solvents from uncontrolled use and waste disposal.

Environmental Remediation:

1. Bioremediation: Microorganisms degrade pollutants.
2. Phytoremediation: Plants reduce contaminant toxicity.
3. Electrokinetic Remediation: Direct current removes soil pollutants.
4. Organic Reagents: Compounds aid in heavy metal soil cleanup.

Green Chemistry: Designs safer chemical products and processes, minimizing hazardous substances and environmental impact.

## Prof. (Dr.) Ramesh Bhande

### Q. What is interfacial engineering, and how does it impact various industrial processes?

Interfacial engineering is essentially about fine-tuning the characteristics of surfaces where different materials meet or interact. Think of it as customizing how materials interact at their boundaries. In industries, this tweaking of interfaces can have widespread effects. For instance, it can boost the efficiency of chemical reactions by adjusting how substances come into contact. It can also stabilize mixtures like emulsions or suspensions, making them last longer or perform better. Moreover, it helps in controlling surface properties like adhesion or wetting, which is crucial in fields like manufacturing and coatings. Overall, by playing with these interfaces, engineers can make processes more efficient, products higher quality, and even save energy in the production process.



## Prof. Prasad Parulekar



### Q. What are the roles of cavitation phenomena in fluid systems, and how do they impact industrial processes?

Cavitation involves the creation and collapse of vapor or gas-filled bubbles in liquids. It can be triggered by ultrasound, high-velocity machinery, lasers, and particle beams. Industrial cavitation leads to high pressure (100-5000 atm), extreme temperatures (1000-12000 K), and high-speed liquid jets (400 m/s).

In homogeneous liquids, cavitation creates reactive free radicals and shear forces that break chemical bonds. In heterogeneous systems, it enhances mass transfer and surface area for reactions.

Applications include:

- Chemical synthesis: Reduces reaction time, increases yield, and improves catalyst effectiveness.
- Wastewater treatment: Oxidizes complex chemicals.
- Biotechnology: Disrupts cells with less energy, intensifies enzymatic reactions, and enhances bioleaching.
- Polymer chemistry: Aids in depolymerization and degradation of polymers.

## Prof. (Dr.) Trupti Dharmarao

### Q. Can you discuss the integration of separation technologies with other unit operations, such as reaction engineering or purification processes, to create more efficient and integrated process flows

Integrating separation technologies with other unit operations, like reaction engineering and purification processes, enhances efficiency and sustainability.

Key Benefits:

1. Cascade Separation: Sequentially purifies products, improving purity by combining methods like distillation and membrane separation.
2. Recycle and Reuse: Recovers valuable components, reducing waste and resource consumption.
3. Energy Integration: Exchanges heat and mass with energy-intensive processes, lowering energy use and improving efficiency through techniques like pinch analysis.
4. Process Intensification: Reduces process steps and equipment size, cutting costs and improving overall economics.





## Prof. (Dr.) Nitin Pereira



**Q. How does thermodynamics and kinetics play a role in the design and optimization of chemical reactors, and what are some key thermodynamic principles that engineers must consider? What role does chemical engineer play in it?**

Designing a chemical reactor requires knowledge of thermodynamics and kinetics.

Thermodynamics assesses reaction feasibility using:

- Gibbs Free Energy ( $\Delta G$ ): Indicates spontaneity
- Equilibrium Constants (K): Shows reactant-product balance.
- Entropy ( $\Delta S$ ): Reflects disorder.
- Enthalpy ( $\Delta H$ ): Heat exchange during reactions.

Kinetics examines reaction rates influenced by:

- Arrhenius Equation: Temperature dependence of rates.
- Activation Energy: Energy barrier for reactions.

Engineers integrate these principles to:

- Select favorable reactants.
- Optimize reactor design (temperature, pressure, catalysts).
- Enhance process performance and efficiency.
- Minimize safety and environmental impacts.

## Prof. Sangita Gaikwad

**Q. What are advanced separation processes, and how do they differ from conventional separation techniques?**

Advanced separation processes use innovative methods like membrane filtration, chromatography, and supercritical fluid extraction to separate components from mixtures more efficiently and sustainably than conventional techniques.

Benefits:

1. Higher efficiency: Better separation for complex mixtures.
  2. Greater selectivity: Precise isolation of target substances.
  3. Sustainability: Lower energy use and environmental impact.
  4. Novel principles: Employ unique methods not used in traditional techniques.
  5. Sophistication: Requires advanced equipment and expertise.
- These processes improve performance, purity, and sustainability compared to traditional methods.





## Prof. Bharti Deshmukh



### **Q. How can AI algorithms be utilized to optimize chemical engineering processes?**

Artificial intelligence (AI) applications in chemical engineering have rapidly increased due to the challenges of nonlinear and complex processes. AI is valued for its ease of implementation, flexibility, and robustness.

It can be used in modeling, process control, classification, and fault detection. AI techniques, including artificial neural networks (ANN) and fuzzy logic, often combined with evolutionary algorithms, help solve complex problems.

Chemical process optimization aims to find the best solution among alternatives to minimize or maximize objectives. AI-based methods efficiently identify optimal solutions in these complex scenarios.

## Prof. Ravindra Joshi

### **Q. What are some key skills and knowledge areas that students should focus on if they want to pursue a career in food technology?**

To build a successful career in food technology, a fundamental understanding of chemistry and unit operations is essential. Food technologists often start their careers with a solid educational background, such as a UG or PG degree in food technology, which provides crucial theoretical knowledge. However, practical experience is key. On-the-job training helps them develop skills in various areas, including product formulation and development, plant operation, equipment selection, plant design, marketing, and navigating laws and regulations. Mastery in these diverse roles requires hands-on experience, making on-the-job learning vital for career advancement in this field.





## CHEMICAL CHAOS AWAITS: WILL YOU ESCAPE THE CHEMICAL CATASTROPHE?

Thadomal Shahani Engineering College, Bandra, witnessed a surge of excitement as students and enthusiasts gathered for CHEM-S-CAPE, IICHe-TSEC's inaugural event. This captivating escape room challenge pushed participants to their limits, testing their chemical knowledge, teamwork, and problem-solving skills. With a ticking clock and a maze of puzzles, the competition was intense. The event culminated in a thrilling finale as the winning team claimed the ₹16,000/- prize, showcasing their exceptional abilities.

### Winners

#### 1. Team Boron

Chetana Bhojwani , Arnav Malvia ,  
Jash Doshi

#### 2. Team Neon

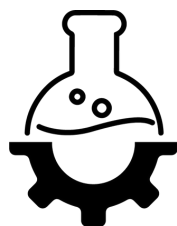
Dhruv Mehta , Tanush Bidkar,  
Tanmay More

#### 3. Team Platinum

Sushmit Sanyal ,Tanmay Sarode,  
Chinmay Tullu







# ChEMERGENCE 2023

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**Unleashing Creativity, Catalysing Change**

15th September - 16th September



# ABOUT US

**The Chemical Engineering department of TSEC, is pleased to announce its annual symposium, CHEMERGENCE'23, organized in association with the Student Chapter of IICChE in TSEC, to provide a platform to nurture and display the talents of students across the country.**

**ChEMERGENCE, since its inception in 2006 has grown leaps and bounds to become one of the biggest student run festivals in the engineering arena. We are back in this 18th edition with events covering almost every aspect of Chemical Engineering and Applied Chemistry, ChEMERGENCE grows bigger and better every year, gaining popularity exponentially and hosting participants from all corners of the nation.**



# TRACING THE EVOLUTION

In the ever-evolving landscape of science and engineering, few domains have witnessed as profound a transformation as Chemical Engineering. This discipline, born at the intersection of chemistry, physics, mathematics, and engineering, has consistently pushed the boundaries of human ingenuity to reshape industries, economies, and the very fabric of modern life. Our journey through the theme of "Evolution of Technologies in Chemical Engineering" will take us on a captivating exploration of how this field has not only adapted but thrived in the face of technological advancements.



## THE PAST: FOUNDATIONS & EARLY INNOVATIONS

Our journey begins by delving into the historical foundations of Chemical Engineering. We'll witness the birth of unit operations, which laid the groundwork for separating, mixing, and transforming raw materials into valuable products. From distillation columns to chemical reactors, the early innovations set the stage for what would become a cornerstone of modern industry.



## THE PRESENT: INTEGRATION OF ADVANCED TECHNOLOGIES

As we move forward, we'll find ourselves in the midst of the present, where cutting-edge technologies have become essential to the practice of Chemical Engineering. Computational modelling, artificial intelligence, and automation have revolutionized the way we design processes, predict outcomes, and optimize operations. We'll explore how these technologies not only increase efficiency but also enable us to tackle complex challenges with unprecedented accuracy.



## THE FUTURE: INNOVATIONS ON THE HORIZON

Peering into the future, we'll uncover the exciting frontiers that lie ahead for Chemical Engineering. Nanotechnology, biotechnology, renewable energy solutions, and sustainable manufacturing techniques are poised to redefine the landscape once again. Our journey will reveal how these innovations promise to shape a world where chemical processes are not only efficient and profitable but also environmentally conscious and socially responsible.





# CHEMIC-CON

## Chemical Connect: Crafting Solutions through Collaborative Discourse!



Chemic Con provided a dynamic platform where industrial experts convened to discuss significant issues, provide feedback, and brainstorm innovative solutions relevant to the chemical engineering industry. This year's theme, "Technical

Advancement and Innovation in Chemical Processing and Manufacturing," delivered deep insights and forward-thinking perspectives from leading intellectuals across various chemical engineering fields. Attendees were treated to a captivating exchange of ideas and expert opinions that are set to shape the future of chemical engineering

Additionally, participants engaged in a fruitful Q&A session with the experts, enriching their understanding and sparking further discussions.





# CHEM QUIZ

## Where Intelligence Meets Chemical Intuition!

With an intriguing blend of questions ranging from fundamental chemistry to intricate details of mass and heat transfer, coupled with practical and industrial aspects, the quiz pushed teams to their limits, testing their knowledge to the fullest. It saw teams from various colleges.



Participants engaged in a series of thought-provoking questions, demonstrating their deep understanding of chemistry. It was an electric atmosphere filled with passion and strategic thinking, making it a memorable and enriching experience for all involved.

### WINNERS

#### **1st Position: (TSEC)**

Swaraj Pai  
Manav Thaker  
Devraj Raikar

#### **2nd Position: (TSEC)**

Soham Karle  
Ronak Mota  
Nolan Pereira



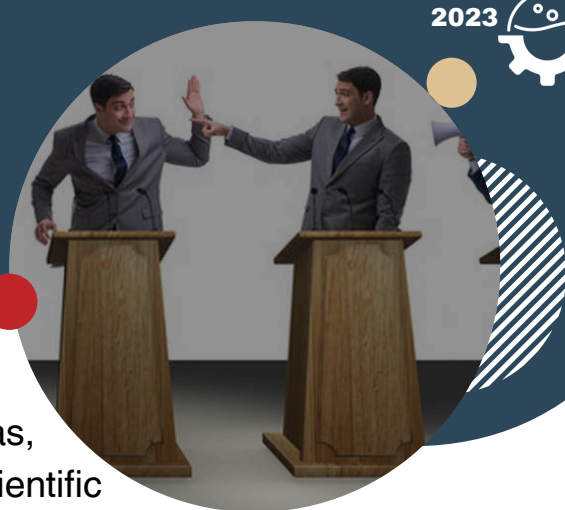




# THE BAIT

## React, Reason, Resolve!

Participants engaged in a structured contest of ideas, expressing and defending their views on current scientific and technological challenges. This enlightening journey through diverse perspectives was highly successful, with enthusiastic participation and enjoyable experiences for all involved.



### WINNERS

**1st Position:** Soham Karle, Ronak Mota, Nolan Pereira (TSEC)

**2nd Position:** Swaraj Pai, Saeel Nalawade, Mihir Patil (TSEC)





# CHEM-X



## The Chemical Engineering TEDx!

ChemX featured an engaging session with two esteemed industry experts. They delved into the critical topics of the importance and rising influence of AI and simulation in the chemical industry. Their insightful discussions highlighted how these advanced technologies are revolutionizing processes, enhancing efficiency, and driving innovation in the field. The event was very well-received, with a great Q&A session by the audience, ensuring lively interaction and in-depth discussions. Everyone thoroughly enjoyed the experience, making it a resounding success.



### About the Expert:

Mr. Swapnil Paingankar works at Ingenero Technologies Pvt Ltd since past 16 years and is currently at the post of Assistant Manager. He has pursued his Master's Degree from Institute of Chemical Technology and is an alumni of TSEC. Chemical Engineering Professional with

multifaceted skills, enriched by a diverse experience filled with numerous challenges, learnings and success stories. A multifaceted professional with a rare combination of exuberance, adaptability and dependability. Catalyzing the qualitative improvements in existing business verticals while persistently exploring and building on new business avenues in the field of technical and business consulting.

Artificial intelligence (AI) is a powerful tool that chemical engineers are widely embracing, both in research and in practice, for a variety of applications. AI can solve complex problems, accelerate time-consuming research steps, and make possible computations that may have been previously impossible.





# CHEMICAL FEUD

## Chemical Showdown: Battle of the Minds!

An exciting highlight of ChEMERGENCE'23, featured for the second time, was a recreation of the famous game show, 'Family Feud'. This engaging event challenged participants with questions that connected principles and processes in chemistry and chemical engineering to everyday life.



The event drew a large number of enthusiastic participants and was a resounding success, adding a fun and educational twist to the conference.

### WINNERS

#### **1st Position: (ICT)**

Akhilesh Page  
Anandkrishnan H  
Dev Kotadia

#### **2nd Position: (TSEC)**

Heramb Vengurlekar  
Pratham Bhandari  
Vaishnavi More

#### **3rd Position: (TSEC)**

Aditya Nair  
Sudeep Samarth  
Aditya Parab







# POSTER PRESENTATION

## Mixing Science and Industry: Chemical Engineering Poster Odyssey!

It showcased innovative spirit and dedication to sustainability in the field of chemical engineering. Teams from various colleges came together to showcase their outstanding ideas aimed at making the industry greener and more

environmentally friendly. Each poster displayed a unique perspective on sustainability. The event was a resounding success, drawing enthusiastic participation and fostering insightful discussions about



the future of our industry. It highlighted the commitment of our department to embrace environmentally conscious practices and drive positive change.

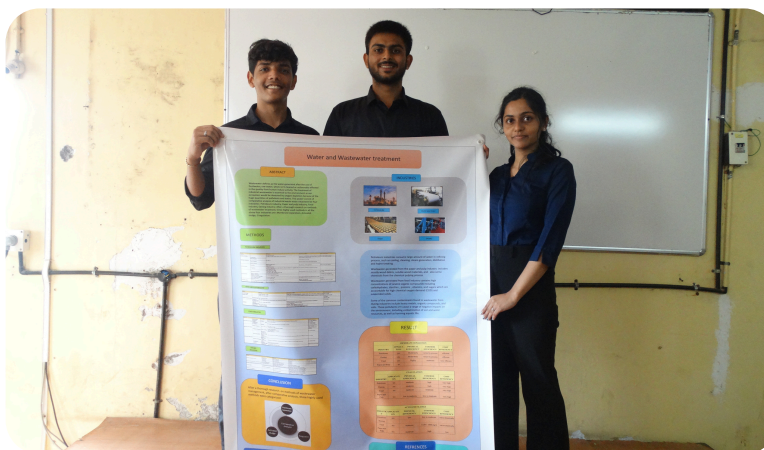
### WINNERS

#### **1st Position: (BVCE)**

Lakshya Vashishtha

Ballal Thakur

Manisha Bagal





# JEOPARDY

## Think Fast, Play Smart: Chemical Jeopardy!

Jeopardy! a beloved television quiz show, was a captivating addition to ChEMERGENCE'23. It provided contestants with an exciting platform to showcase their knowledge, quick thinking, and problem-solving abilities. Contestants engaged in friendly competition, strategically selecting questions of

varying difficulty levels to maximize their scores. The event was a thrilling display of excitement and intellectual challenge, adding an element of intrigue and competitiveness to the event.



### WINNERS

#### **1st Position:**

Swaraj Pai  
Ronit Tejani  
Harsh Mayne

#### **2nd Position:** Soham Karle

Ronak Mota  
Nolan Pereira

#### **3rd Position:** Dev Kotadia

Akhilesh Page  
Anandakrishnan H







# REACTANT QUEST

## Connecting elements, Creating possibilities

Reactant Quest was a new and exciting technical event where teams competed against each other by showcasing their technical knowledge and speed.



The First Round was an elimination round where all the teams were given a limited amount of time to balance chemical reactions. Only eight teams were selected to proceed to the final round.

In the final round, the eight teams were given unsolved

chemical reactions and had to find the missing reactant by going to designated tables and answering random technical questions. They were rewarded with their missing reactants for each correct answer.

### WINNERS

#### **1st Position: (TSEC)**

Malap Kothar  
Sahil Boricha  
Hrudaansh Shah

#### **2nd Position: (TSEC)**

Archit Pavale  
Salus Mendes  
Jivan Pukale

#### **3rd Position: (TSEC)**

Soham Karle  
Ronak Mota  
Nolan Pereira





# The 2024 Distinguished Alumni



As John F. Kennedy has said ‘ The future of our world depends on the education of our alumni ‘, tells the modern society the significance of being graduate of a institution. The TSEC alumni have always exceeded expectations and showed the best of the outcomes. Here are some of the thoughts of our most finest alumni whose dedication and motivation towards their respective field is still unmatched.

## Swapnil Chonkar

BE'06 Chemical Engineering  
Manager at Ingenero



### **What are the current market trends in the chemical industry, and how are they influencing business decisions?**

High fuel costs, scarcity of fuel, and strict emissions norms are driving the current scenario. The industry is adapting to newer technologies that are greener and produce lower emissions. The trend is to optimize energy to a possible extent and to reduce carbon. We are in an era where we now are talking more about green fuel sources, sustainability along profits.

### **How do you manage work-life balance, especially in a demanding industry?**

There is huge pressure on an individual to perform on the job, keep up lifestyle with peers, and meet family demands. It's tough to balance them all. One has to keep seeking his/her slots to find time for family. I prefer to know my near future project milestones in advance. I plan my family calendar accordingly. Always try to find that slot for your family.

Manage your daily chores in such a fashion that you never compromise on "me time". Its your smaller slot which will soothe you till you get longer breaks!

### **What is your approach to solving complex technical problems within the chemical industry?**

Read more books, It's very easy nowadays to find quick references on search engines. As searches have matured, problems have evolved, and they are more complex! Some solutions are not documented, I prefer to connect people who have worked on the issues I face. First, try your best and know your issues precisely. Then go ask for help!

### **What lessons or insights have you gained that you think could be valuable for the students?**

Keep upgrading your skills constantly, no matter how long it takes. It doesn't matter how fast you get there, it matters to keep going.

### **If you could offer advice to other young individuals navigating their paths, what would it be?**

Explore current affairs in the industry to find where you can get better opportunities. Find what type of work suits you. Try to get into the type of work you like and excel there rather than changing jobs to get more money.

### **In what ways do you foresee the adoption of artificial intelligence (AI) and machine learning impacting the chemical industry?**

Its happening now. Most market leaders are investing in AI-ML solutions. Process Industry always used historians. They had huge data. But there were very few tools which could use this data efficiently.

Today many on-the-shelf solutions can help Asset Health prediction and monitoring. We get good forecast models, which can help forecast emissions. Another solution coming up in these fields is Value Engineering, which helps to determine economic considerations in operations. It also helps to make major decisions such as planning of turnarounds/shutdowns.

Buyers are still cautious about the tool's usability and correctness. Eventually, these tools will mature and more high-fidelity tools will be available soon.

### **How do you balance the need for innovation with the inherent risks associated with introducing new technologies or processes?**

There could be different answers to this question. My view is very simple. Your goal should be clear.

One should have absolute clarity about what sort of results the organization wishes to achieve by deploying new technologies/processes and to what extent one can go (Invest) behind innovating it.

## Simit Doshi

BE'03 Chemical Engineering  
Process Engineering Manager at BPIPL



**You completed your bachelor's from Thadomal Shahani Engineering College. Could you please tell us in brief about your college life?**

College life at TSEC was exciting! I have fond memories of running between classes, practicals and library in our daily routine. We enjoyed the college festivals and intercollege contests. I also remember all the hard work we did when preparing for the semester and the excitement of looking up the results on the college notice board.

**How can students prepare for their college campus placement interviews to crack one successfully?**

believe that a good academic standing is a must to even get a "foot-in-the-door" for campus placement interviews. Another most important thing is your Resume. Make sure it is structured right and to the very least does not have spelling and grammatical mistakes. Before the interview, research about the company's products / services through its website or networking with seniors working there and be prepared with answers to typical interview questions. Any internships or professional course work done outside of the curriculum also helps build credibility in one's profile. Last but not the least, when hiring from campus, companies do not expect your resume to have the same content as someone with 5-10 years of experience. So be genuine in your Resume.

**To what extent do internships contribute to a student's career development?**

Internships can be very helpful as they are one's first interaction with the real world. It helps a student understand the interpersonal dynamics, problems and expectations of the industry. To an extent, it may influence your choice of area in which you want to pursue your career after graduation as Chemical Engineering is a vast field with diverse career options. Additionally, a good recommendation from the company where you have interned may give you an edge over your peers when appearing for interviews after graduation. Hence, ask for a recommendation letter from your supervisor once your internship is over.

**Many students are confused about whether to go for their master's degree right after their graduation or get some work experience in the meantime and then pursue their further education. How did you tackle this issue?**

In my opinion, there is no right or wrong approach to this question. It depends on the options one wants to explore after his/her graduation. In my case, I chose to get some work experience in the chemical industry before pursuing my Masters. I wanted to weigh out my options between a Technical career and a Management career track. Working as a project engineer during this phase, sparked my interest in a technical role as I got several opportunities to apply the chemical engineering principles in real world which excited me. Hence I chose to pursue my Masters in Chemical Engineering and start my career track in a Technical role. Some of

my friends were clear about their future career tracks and they chose to pursue their MBA or MS right after graduation. While a short experience (1 to 2 years) certainly helps shape your perspectives and career choices, please note that it may not give you a significant edge over your peers after completing your post-graduation. I hope this helps students make an informed choice.

**Students easily get distracted during their college years and tend to focus on other things rather than building their careers. What advice will you give to avoid such mistakes from happening in a student's life?**

Getting reasonably good academics and developing strong engineering fundamentals is essential if you choose to pursue any technical role in your career. Any industry will expect these from you in future. However, in today's world, it's equally important to find out some things that you are passionate about even if that's outside of your studies. If you love music, sports, etc. do follow your passion while ensuring a reasonable balance in academics. A focus on internships and projects while pursuing your graduation will certainly help. So always look out for such opportunities.

**The chemical industry, in general, is considered to be a risk-prone industry. Have you seen any such incidents during your working years till today?**

Chemical Industry is a very mature industry and as such the "risks" associated with it are mostly known. Hence, to a great extent, these risks are mitigated during the design stage itself. Additionally, there are design codes and government regulations that are updated regularly based on lessons learned from any accident. However, in most mishaps, we "humans" are the weak links. The choices we make and warnings we ignore have been at the root cause of most of the accident that have happened in the industry. Hence, a culture of respect towards safety is of paramount importance. I have been fortunate to have worked for companies that have a very pro-active safety culture and as such have not experienced an unfortunate safety incident first hand.

**What skills or experiences have you learned in your college life that have proven valuable to you and your role today in the industry?**

I've learned several valuable skills during the course of my college life. Networking with peers, faculty and seniors during college life has helped me learn to collaborate with people at all levels. Self-learning, decision making based on limited data and ability to persevere until things get done are some key skills that have been helpful in all my roles. There may be some good and some not-so-good experiences that one may have to go through in this journey. But overall, it makes you independent and confident in your ability to take on newer challenges as you progress in your career and personal life.



## Kunal Sikchi

BE'08 Chemical Engineering  
Director at Matrix Global Speciality Pvt Ltd



### **Can you share a specific project or research endeavor from your graduate studies that you found particularly rewarding or impactful?**

One of the most rewarding projects during my graduate studies was focused on developing advanced methodologies for synthesizing pseudoboehmite alumina. This project was particularly impactful as it addressed the challenge of creating high-purity pseudoboehmite alumina via a straightforward acid-base route. This research was not only technically challenging but also allowed me to work closely with a multidisciplinary team of researchers, engineers, and industry professionals. We explored innovative approaches to enhance the purity and performance characteristics of pseudoboehmite alumina, which has critical applications in industries such as catalysis and ceramics. The success of this project significantly contributed to our understanding of material synthesis and provided a more efficient and sustainable process for industrial-scale production. Witnessing our work's tangible impact on improving material properties and production efficiency reaffirmed my passion for alumina manufacturing and its transformative potential in various industrial applications.

### **How did you navigate networking opportunities and build connections within your field during your graduate studies? Did these connections play a role in your post-graduate endeavors?**

Networking during graduate studies was essential for building connections within my field. I actively participated in conferences, seminars, and networking events, where I engaged with professionals and researchers who shared similar interests. These connections not only provided valuable insights and mentorship but also opened doors to collaborative opportunities and job prospects in my post-graduate endeavors.

### **Can you share the story behind the founding of Matrix Life Science? What inspired you to start this venture?**

The founding of Matrix Life Science was inspired by a vision to innovate in the field of natural antioxidants. We recognized the growing demand for high-quality, natural ingredients in various industries, and saw an opportunity to leverage our expertise in biotechnology. Our company specializes in manufacturing natural tocopherol from vegetable sources, as well as developing natural antioxidants derived from tocopherol and rosemary extract. This venture was driven by our commitment to providing sustainable and effective solutions that promote health and well-being, while also meeting the needs of environmentally conscious consumers.

### **What challenges did you face in building and growing Matrix Life Science, and how did you overcome them?**

Building and growing Matrix Life Science came with several challenges, especially in the production of natural tocopherol and rosemary extract. One major hurdle was ensuring a consistent and sustainable supply of high-quality raw materials. For tocopherol, we overcame this by sourcing raw materials from global edible oil refineries in over 40 countries, ensuring a reliable and high-quality

input. For rosemary extract, we tackled the challenge by cultivating our own rosemary, giving us full control over the quality and sustainability of our supply. Additionally, we invested in advanced extraction technologies to maintain the integrity and efficacy of our products. Navigating the stringent regulatory requirements for natural health products was another significant challenge. We addressed this by assembling a dedicated regulatory team to ensure compliance and by adopting rigorous quality control measures. These steps not only helped us overcome initial obstacles but also set a solid foundation for our growth and reputation in the industry.

### **Have there been instances where your college education provided you with a unique perspective or solution to a professional problem or challenge?**

There have been several instances where my chemical engineering education provided me with a unique perspective or solution to professional problems. For example, during the development of a new extraction process for natural tocopherol, I applied principles from my chemical engineering coursework, such as mass transfer and thermodynamics, to optimize the efficiency and yield of the process. My background in process design also helped in scaling up the production from the lab to an industrial scale while maintaining product quality and consistency. Additionally, my knowledge of reaction kinetics was crucial in troubleshooting and improving the stability of our formulations. These experiences underscore how the skills and insights gained during my chemical engineering education have been invaluable in addressing complex challenges and driving innovation at Matrix Life Science.

### **Can you identify any transferable skills or qualities you developed during college that have been particularly valuable in your current role?**

Several transferable skills and qualities developed during college have been particularly valuable in my current role at Matrix Life Science. These include critical thinking, analytical reasoning, effective communication, leadership, and teamwork. Moreover, my ability to adapt to diverse environments, think creatively, and solve complex problems has been instrumental in navigating the dynamic and multifaceted landscape of the life sciences industry.

### **A message to the Youth.**

Embrace curiosity, embrace failure, and embrace growth. The journey of self-discovery and personal development is filled with challenges and setbacks, but it's also rich with opportunities for learning and growth. Believe in your potential, pursue your passions relentlessly, and never underestimate the power of resilience and perseverance. The future belongs to those who dare to dream, dare to defy conventions, and dare to make a difference in the world.

# GUEST LECTURES



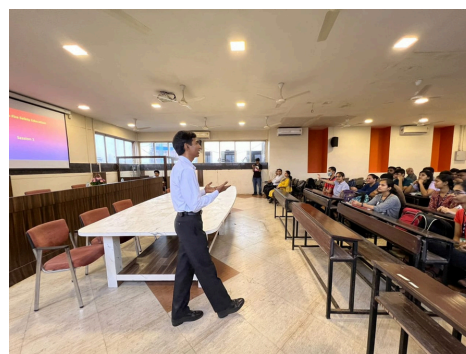
## TSEC ALUMNI WEBINAR SERIES

- “Management Masters Programs and Admission” by **Mr. Divesh Chelani**
- “Statistics in Chemical Engineering” by **Mr. Kapil Nichani**
- “Sustainability and Climate Change: Navigating the way for Chemical Engineers” by **Mr. Abhishek Shukla**



## EXPERT'S SERIES

- “How to write a research article” was conducted by **Dr. R. Sugumar**
- “Job prospects in Process Engineering” was conducted by **Mr. Sanjay Dalvi**



# DEPARTMENTAL PUBLICATIONS

- Mehta, Nita, V.G.Gaikar,” Revisiting reaction Network Modelling of Thermal Cracking of Hydrocarbons.” In Industrial and Engineering Chemistry Research, Vol. 62, issue 45, p.18973–18988.
- S. Joshi, A. Kumari, “Ozonation and Its Application in Wastewater Treatment.” International Journal for Multidisciplinary Research, Vol 5, Issue 6, p. 1-17, November - December, 2023.
- Maanav Shah, Jyoti Sangle, “Carbon Capture and Storage” Volume 9, Issue 1, January - June, 2024
- Maanav Shah, A. Kumari, “Carbon Emission from Various Sectors and Ways to Reduce Those Emissions.” Vol 9, Issue 1, p. 1-5, January - June, 2024.
- Prof. Prasad J. Parulekar\*, Mr. Smit Patel, Mr. Yash Sawant, Mr. Krishna Rathod, “Heat Exchanger Network Design – A Review”, Industrial Engineering Journal, Volume: 53, Issue 2, No.5, February : 2024
- Prasad J. Parulekar, Mrunmayee Hegiste, Ira Sahasrabudhe, Surin Gupte, “Review of Advanced Oxidation Processes for Wastewater Treatment”, International Journal of Engineering Research & Technology, Volume: 30, Issue 2, February : 2024



# STUDENT ACHIEVEMENTS

- The Dance Team of the Chemical Department secured the first position in Groove'24, conducted by the Students' Council, Tsec in March 2024.
- Dharmik Gohil(TE) was awarded Best Ambassador Award in Azeotropy conducted by Indian Institute of Technology Bombay in March 2024.
- Harsh Sunil Jalgaonkar(SE) secured second position in BGMI (Mobile Game) conducted by Sheth N.K.T.T. College in January 2024.
- Harsh Sunil Jalgaonkar(SE) secured first position and a gold medal in BGMI (Mobile Game) conducted by Ramniranjan Jhunjhunwala College in January 2024.
- Maanav Shah(TE) secured second position in Shazam Table Tennis held by TSEC Students' Council in October 2023.
- Swaraj Pai(TE) was the winner of Chem Quiz, The Bait and Jeopardy in Chemergence'23 organized by IICHe TSEC in September 2023
- Harsh Sunil Jalgaonkar(SE) secured first position in BGMI (Mobile Game) conducted by RJ Somaiya College in July 2023.
- Harsh Sunil Jalgaonkar(SE) secured first position in BGMI (Mobile Game) conducted by Thakur Institute of Management Studies in April 2023.

# THANKING THE TEAM

## TEAM ChEMERGENCE'23

IICHe TSEC



# THE NON-TEACHING STAFF

## LAB ASSISTANT



Mr. H. Jethani



Mrs. Deepti Pol



Mr. Rahul Singh



Ms. Vaishali Sangle

## LAB ATTENDANT



Mr. R. Dubey



Mr. A. Shukla



Mr. C. Tiwari



Mr. C. Chaubey

## APPLIED CHEMISTRY DEPARTMENT

## PEON



Mr. Pritam Raut  
LAB ASSISTANT



Mr. Uday Yadav  
LAB ATTENDANT



Mr. A. Verma



# OUR ASSOCIATIONS



## CHEMICAL INDUSTRY DIGEST