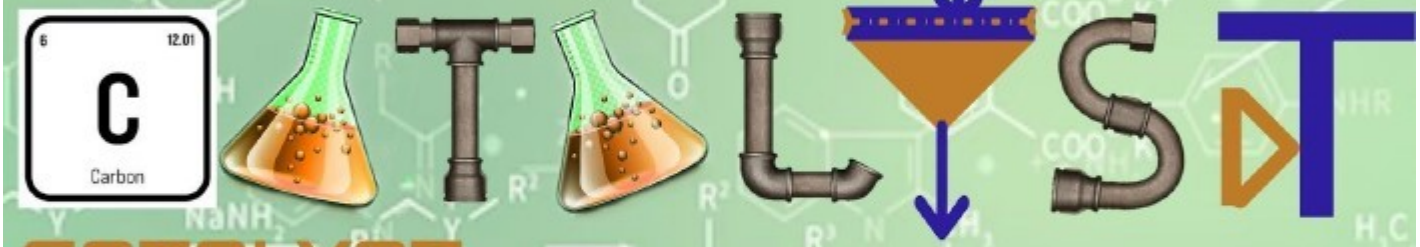
Sri Venkateswara College of Engineering

DEPARTMENT OF CHEMICAL ENGINEERING

NEWSLETTER

THE CATALYST



ACCELERATING YOUR GROWTH

Volume - 3, Issue - I, January, 2024

Sri Venkateswara College of Engineering

Newsletter

The Catalyst

(Accelerating your Growth rate)

Department of Chemical Engineering

Vision

To be a leader in Chemical Engineering Education and Research by providing balanced learning and fostering research to enable the learners to meet the challenges of process industries and societal needs.

Mission

M1: To produce graduates practicing Chemical Engineering professionally and ethically.

M2: To produce Chemical Engineering graduates contributing to the betterment of society in the competitive global environment.

M3: To focus on the development of Chemical Engineers to foster innovation through proficiency and effective communication.

Motivation: Alumni page

Ms. Bhavatharini Suresh

B.Tech Chemical Engineering (2015 - 2019), Sri Venkateswara College of Engineering
Risk Management Consultant, Det Norske Veritas (DNV), Hamburg, Germany
M.Sc. Environmental Engineering, Hamburg University of Technology, Germany.

"Excellence is a continuous process and not an accident." – Dr. A.P.J. Abdul Kalam.

This was what my parents had taught me at a very young age. Having chosen the degree I wanted to pursue, I entered SVCE with an agile & inquisitive mindset, ready to lay the foundation for my educational journey and SVCE did not disappoint me.

The 4 years of my journey at SVCE was not always a bed of roses, there were difficult times, times I made mistakes and times when I was making a decision that would change the course of my professional life after the bachelor's degree, which was overwhelming to a 20-year-old, but I always had a continuous support system with me, be it my parents, my friends or the faculty at SVCE. Despite all the challenging times, there is not a single thing that I would change today about my journey at SVCE.

After my bachelor's degree, I came to Germany with very litle idea about the language, culture and their educational system. It was difficult at first to get accustomed to their way of learning and to the total independence one has, which comes with its fair share of responsibilities as well. What pushed me forward was the interest I had in the subject and the strong foundation I had with my bachelor's degree. Learn to choose things that pique your interest and bring out the best from you.

To all the current students of Chemical Engineering at SVCE, I would like to say, DREAM BIG. No one can put a saddle on your dreams. Explore more opportunities, make use of the resources you possess & try to find meaningful internships in your pre-final and final years. These are things that you can do besides your education at SVCE to build yourself a strong foundation. The world today has become too competitive. Everyone needs a USP (Unique Selling Point) to survive in this dog-eat-dog world. It's not frightening, rather it poses an exciting opportunity for you to mold yourselves and bring out the best in you.

To all the female students, I would like to specifically address you and remind you that you are all already role models to millions of female school students around the world wishing to make their mark in the STEM fields where we are underrepresented today. Don't be afraid to fight any bias and explore more opportunities. Remember, "A successful woman is one who can build a firm foundation with the bricks others have thrown at her".

Finally, I would like to wish all the students great success in all their future endeavors. Remember to enjoy the process as much as the end result. All the best!

Pledge Day: *Inculcation of responsible society*

On 30th January 2024, Department of Chemical Engineering taken pledge with students against untouchability, on Untouchability Abolition Day.

Open House - *appraise the dream.*

Target Audience: School students in and around Sriperumbudur.

Dr. D. Sivakumar has appraised the importance of chemical engineer in the society and how Sri Venkateswara College of Engineering, is one of the best colleges that teaches chemical engineering at undergraduate level.

Journal Publication: Faculty & *Students*.

Dr. N.P. Kavitha, Assistant Professor, coauthored a paper and published in the Journal "Digest Journal of Nanomaterials and Biostructures", (IF:0.963), Virtual Company of Physics.

Digest Journal of Nanomaterials and Biostructures Vol. 19, No. 1, January - March 2024, p. 15 - 24

Synthesis, morphology and electrical property characteristics of MXene based titanium carbide ($Ti_3C_2T_x$) coating on non-woven cotton paper

R. Jothiramalingam[a,*], T. Radhika[b], N. P. Kavitha[c], H. Al-Lohedan[a], D. M. Aldhayan, M. Karnan[d]

In the present study, $Ti_3C_2T_x$ type MXene was prepared by selective etching of Al from Ti_3AlC_2 with mesh size of 200. The powder form of raw material was used to fabricate $Ti_3C_2T_x$ by in-situ HF etching method. The MXene is further coated on non-woven paper by simply dip coating method. The detailed structural, morphology and elemental content study of as prepared $Ti_3C_2T_x$ MXene have demonstrated. The MXene (Ti_3AlC_2) powders show compact, layered morphology as expected for bulk layered ternary carbide. The detailed elemental analysis has carried out for Titanium carbide based MXene coated and uncoated woven paper. The lower conducting property obtained for paper coating due less amount of coating in the surface of paper instead of coating on glass substrate. The electrical property characterization of MXene coated non-woven paper and glass substrate have also been studied. Hence, the conductive coating of MXene-in water formulation achieved through simple dip coating methods is promising for low cost sensor, wearable shielding device fabrication towards renewable energy and healthcare applications.

(Received June 1, 2023; Accepted January 2, 2024)

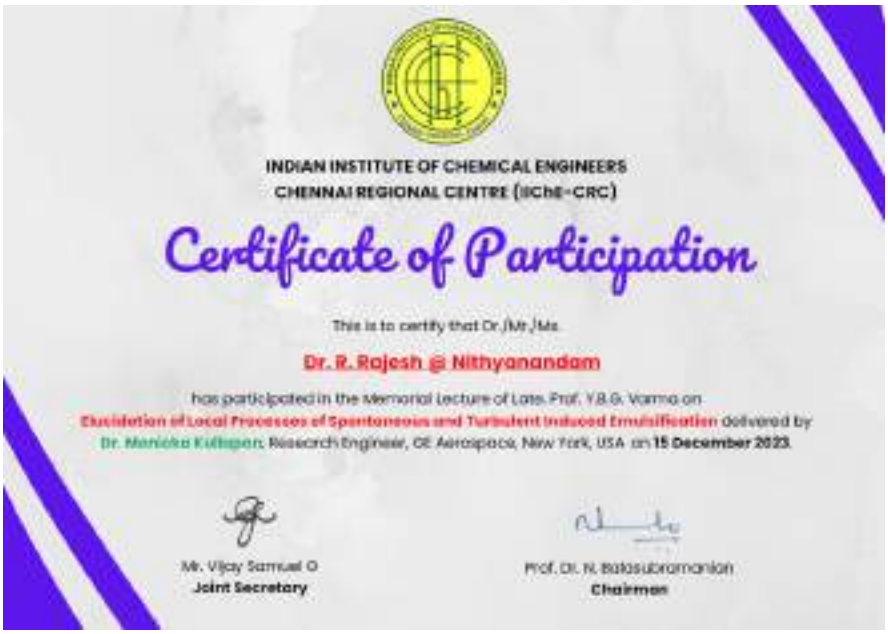
Keywords: $Ti_3C_2T_x$, MXene, Non-woven, Cotton, Dip coating, Strain sensor

Events participated by Faculty: *Train the trainer.*

Dr. R. Palani, and Dr. R. Rajesh @Nithyanandam, Associate Professor attended "One-Day Awareness Programme on ORCID and INFLIBNET Services for Scholarly Communities" on 11th January at Anna University.

They learned the importance of ORCID (Open Researcher and Contributor ID) and different types of ID such as Scopus ID, Researcher ID used throughout globe to identify the Researcher and their area of research.

On 15th December 2023, Dr. R. Rajesh @ Nithyanandam, Associate Professor, has reported to attend Memorial Lecture of Late Prof. Y.B.G. Varma, Organised by IIChE, Chennai Regional Centre (IIChE - CRC).



INDIAN INSTITUTE OF CHEMICAL ENGINEERS
CHENNAI REGIONAL CENTRE (IIChE-CRC)

Certificate of Participation

This is to certify that Dr./Mr./Ms.

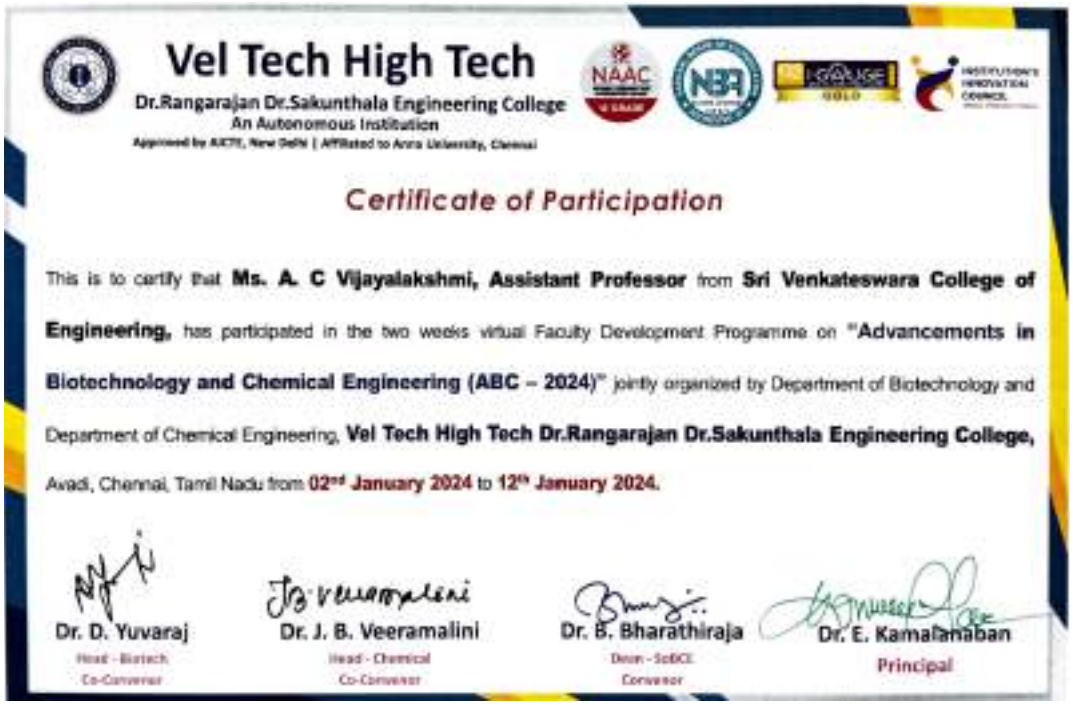
Dr. R. Rajesh @ Nithyanandam

has participated in the Memorial Lecture of Late. Prof. Y.B.G. Varma on Elucidation of Local Processes of Spontaneous and Turbulent Induced Emulsification delivered by Dr. Manioka Kuttiyan, Research Engineer, GE Aerospace, New York, USA on 15 December 2023.

Mr. Vijay Samuel O
Joint Secretary

Prof. Dr. N. Balasubramanian
Chairman

Ms. A.C. Vijayalakshmi, Dr. D. Sivakumar, and Dr. G. Manikandan, Assistant Professor has reported the training through a two weeks virtual Faculty development program on "Advancements in Biotechnology and Chemical Engineering" organised by Department of Chemical Engineering, Vel Tech High Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Chennai, between 02nd January 2024 to 12th January 2024.



Vel Tech High Tech
Dr.Rangarajan Dr.Sakunthala Engineering College
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Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai

Certificate of Participation

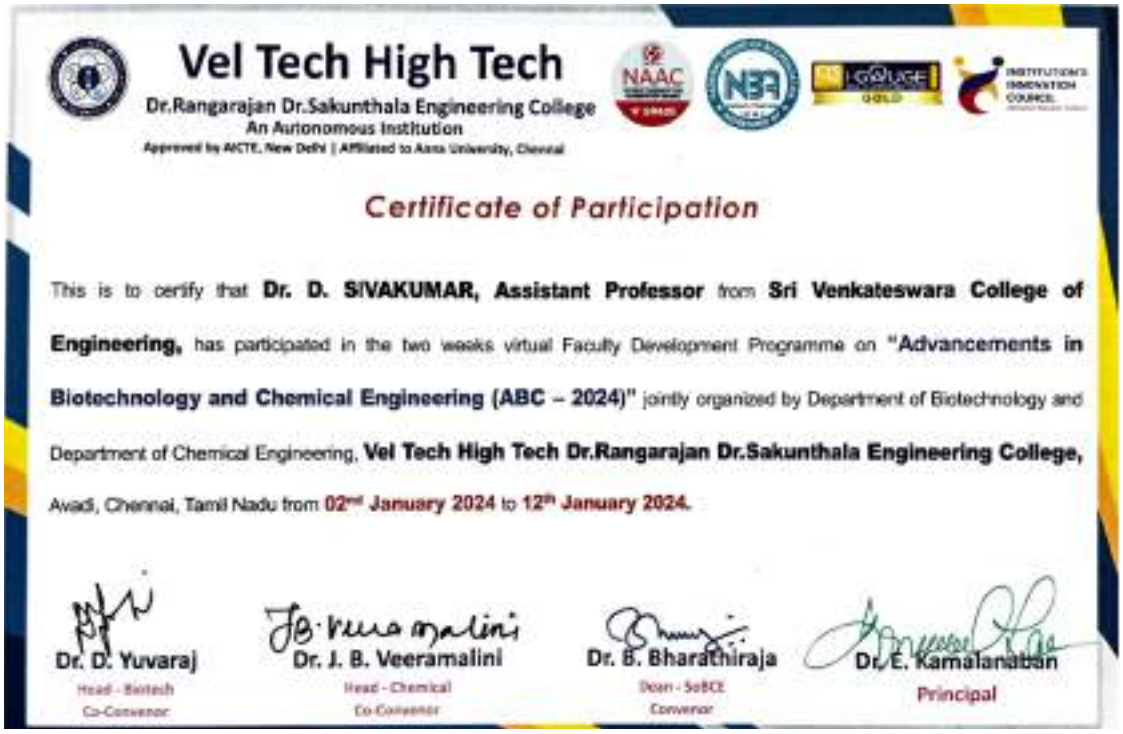
This is to certify that **Ms. A. C Vijayalakshmi, Assistant Professor** from **Sri Venkateswara College of Engineering,** has participated in the two weeks virtual Faculty Development Programme on "**Advancements in Biotechnology and Chemical Engineering (ABC – 2024)**" jointly organized by Department of Biotechnology and Department of Chemical Engineering, **Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,** Avadi, Chennai, Tamil Nadu from **02nd January 2024** to **12th January 2024.**

Dr. D. Yuvaraj
Head - Biotech
Co-Convenor

Dr. J. B. Veeramalini
Head - Chemical
Co-Convenor

Dr. B. Bharathiraja
Dean - SoBCE
Convenor

Dr. E. Kamalanaban
Principal



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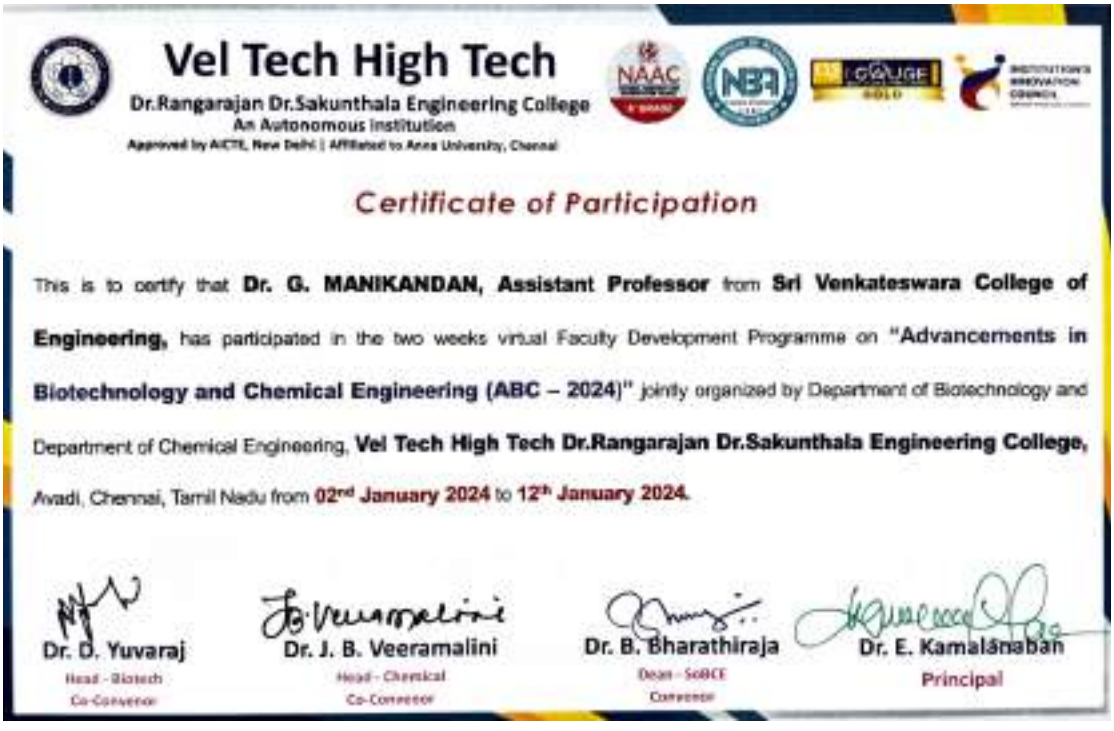
Certificate of Participation

This is to certify that **Dr. D. SIVAKUMAR, Assistant Professor** from **Sri Venkateswara College of Engineering,** has participated in the two weeks virtual Faculty Development Programme on **"Advancements in Biotechnology and Chemical Engineering (ABC – 2024)"** jointly organized by Department of Biotechnology and Department of Chemical Engineering, **Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,** Avadi, Chennai, Tamil Nadu from **02nd January 2024** to **12th January 2024.**

Dr. D. Yuvaraj	Dr. J. B. Veeramalini	Dr. B. Bharathiraja	Dr. E. Kamalanaban
Head - Biotech	Head - Chemical	Dean - SoBCE	Principal
Co-Convenor	Co-Convenor	Convenor	



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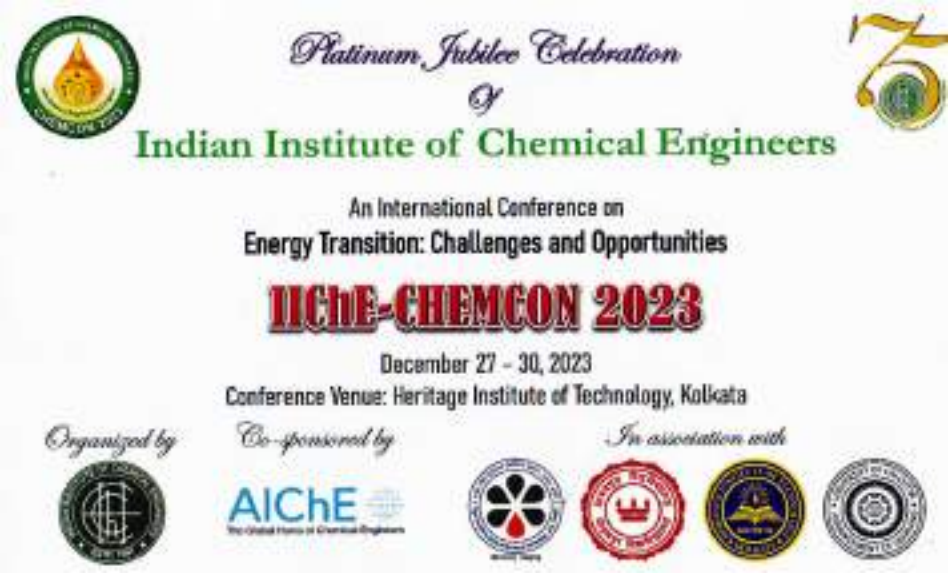
Certificate of Participation

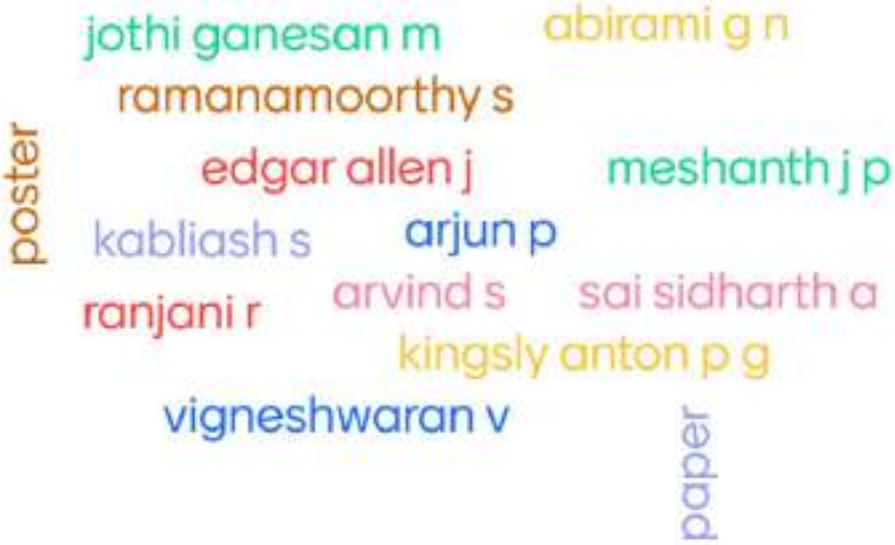
This is to certify that **Dr. G. MANIKANDAN, Assistant Professor** from **Sri Venkateswara College of Engineering,** has participated in the two weeks virtual Faculty Development Programme on **"Advancements in Biotechnology and Chemical Engineering (ABC – 2024)"** jointly organized by Department of Biotechnology and Department of Chemical Engineering, **Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,** Avadi, Chennai, Tamil Nadu from **02nd January 2024** to **12th January 2024.**

Dr. D. Yuvaraj	Dr. J. B. Veeramalini	Dr. B. Bharathiraja	Dr. E. Kamalanaban
Head - Biotech	Head - Chemical	Dean - SoBCE	Principal
Co-Convenor	Co-Convenor	Convenor	

Events participated by Students: *Challenges.*

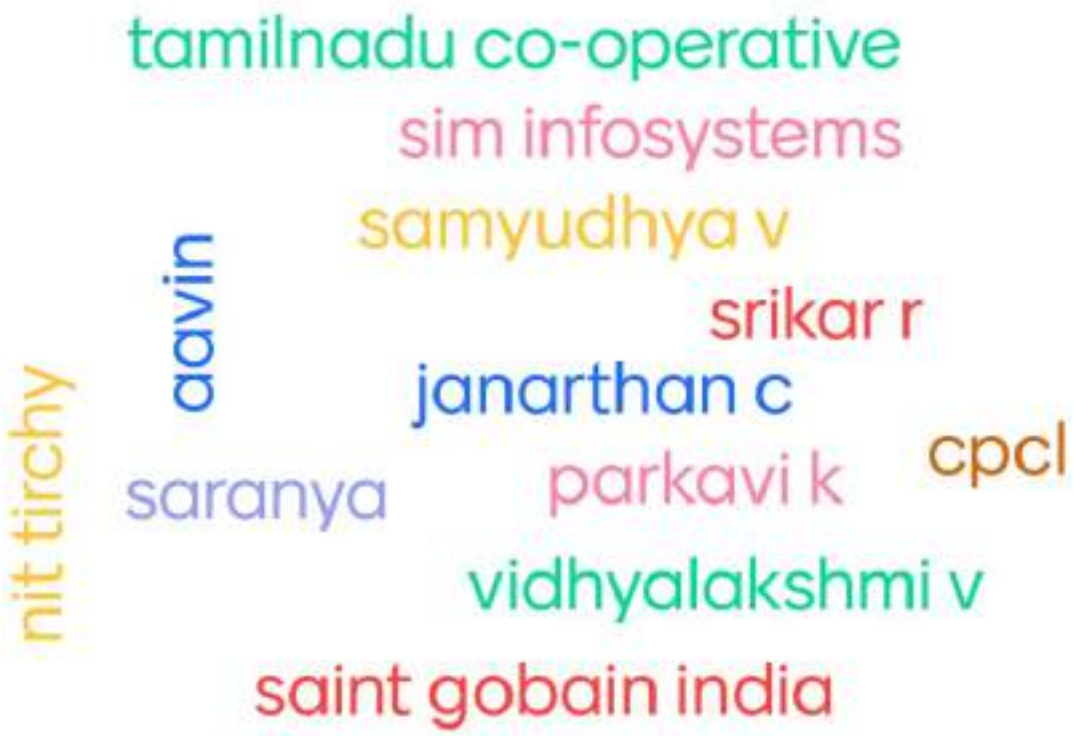
The decorated "Wall of Names" of team comprising third and final year students of B.Tech Chemical Engineering have reported their participation in the International Conference on Energy Transition: Challenges and Opportunites; IIChE - CHEMCON 2023, during 27-30th December 2023.





Internship/Inplant Training: *Process Industries/ Societal needs*

The decorated "Wall of Names" of third and second year students of B.Tech Chemical Engineering have reported for undertaking internships during their winter break, in the following institutions/organizations and some of the learnings are reported below.



This internship report documents a fulfilling and educational experience at Aavin, the Tamil Nadu Cooperative Milk Producers' Federation Limited. The primary objective of the internship was to gain practical insights into the operations of Aavin. The report begins with an introduction to Aavin, providing a concise overview of the organization's history, structure, and the range of products and services it offers and overview of the series of tests performed to ensure the quality of the end products. The report also highlights various engineering services provided and also about the wastewater treatment employed in the plant. In conclusion, the Aavin internship provided a comprehensive and enriching learning experience, contributing to the professional and personal development.

Programmes run by the Department of Chemical Engineering are,

- **B.Tech Chemical Engineering**
- **M.Tech Chemical Engineering**
- **Ph.D**

B.Tech CHEMICAL Engineering

***Programme* Educational Objectives**

PEO1: Equip students with the necessary skills and knowledge to prosper in their career in Chemical Engineering and related domains.

PEO2: Encourage students to Pursue advanced learning and engage in research with internationally acclaimed institutions and foster professional growth.

PEO3:Empower students with leadership qualities to succeed in diversified fields with ethical administrative acumen and adapt to the rapid technological advancements and innovations.

Programme Outcomes

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs

with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

P10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

P11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOME's

PSO1: Apply the knowledge of science and mathematics in the field of various transport processes to accomplish the contemporary needs of chemical and allied industries.

PSO2: Execute the chemical engineering principles and modern engineering tools to conduct experiments or design a system for developing quality chemical processes by considering the cost, safety and environmental aspects.

M.Tech CHEMICAL Engineering

***Programme* Educational Objectives**

PEO1: Function effectively to solve complex industrial problems using Chemical engineering concepts and also in expanding areas of Energy and Environmental industries

PEO2: Pursue their careers in Research and Development towards an advanced degree in Chemical engineering and allied technical discipline.

PEO3: To become Professional Leaders in the complex work environment.

Programme Outcomes

PO1: Independently carry out research /investigation and development work to solve practical problems.

PO2: Write and present a substantial technical report/document.

PO3: Demonstrate a degree of proficiency over the area as per the specialization of the program. The proficiency should be at a level higher than the requirements in the appropriate bachelor program

PO4: Potential to analyze solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety.

PO5: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO6: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PROGRAMME SPECIFIC OUTCOME's

PSO1: Apply the knowledge of science and mathematics in the field of various transport processes to accomplish the contemporary needs of chemical and allied industries.

PSO2: Usage of modern engineering tools to design and conduct experiments to develop quality chemical processes by considering the cost, safety and environmental aspects.

Editorial Team: Dr. N. Meyyappan, HOD/CHE & Mr. S. Jai Ganesh, AP/CHE.