

# NEWSLETTER

## School of Chemical Engineering (SCHEME)

(5<sup>th</sup> Issue)



### Vision

To improve the quality of life through innovations in Chemical Engineering

### Mission

- To prepare the graduates for a rewarding career by providing quality education in Chemical Engineering in tune with evolving requirements of the society.
- To impart knowledge and develop technology through quality research in frontier areas of chemical and inter-disciplinary fields.
- To produce practicing engineers with professional ethics to cater the contemporary needs of the society and environment



**Dean's message:** Dear readers, Greetings from School of Chemical Engineering (SCHEME). This is the 5<sup>th</sup> issue of the school newsletter.

SCHEME houses B. Tech and PhD programmes in Chemical Engineering. Presently it has 22 faculty members. There are 124 students in the final year, 136 students in the third year, 107 students in the second year and 168 students in the first year of B. Tech (Chemical Engineering) programme. In addition, we have 18 PhD scholars in our school.

This issue provides information about publications, book chapter authored and research work of our faculty members and students. It also provides details about conferences, workshops, training undertaken by faculty and other outreach activities.

I hope you will find this newsletter interesting and engaging. While the newsletter provides a bird's eye view of the accomplishments of the school, you are welcome to contact the office of SCHEME to know further details about us.

Regards,  
Dr. L Muruganandam



# VIT<sup>®</sup>

Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

Govt. of India recognizes VIT as Institute of Eminence (IoE)

# School of Chemical Engineering

## Contents

- ❖ Students Achievements
- ❖ Events Organized by Student

### Chapters

- ❖ Events Organized by School

- ❖ Journal Publications

- ❖ Funded Projects

- ❖ Patent Filed/granted

- ❖ Book Chapters

- ❖ Conference and Workshop

### Attended

- ❖ Faculty Outreach

- ❖ Guest Lecture/Webinar

### Organized

- ❖ Online Course Attended

**301-350**



by Subject | 2021

**501-600**



by Subject | 2021



# Student Achievements

Ms. H Ashokan (19BCM0009), Jaydev C Zaveri (19BCM0087) & Harsh Vaibhav (19BCM0032) have won the “**Mrs Chinnamaul Memorial Prize**” for Best Technical Paper Presentation guided by Prof. Shankar Raman Dhanushkodi in CHEMCON 2020 on 26<sup>th</sup> December 2021.

Ms. Meenakshi Mattathil (21BCM0054) has secured 1<sup>st</sup> position in “**Chemfluence**”, organized by PDEU SPE during 11-14<sup>th</sup> November 2021.

Mr. Arinjay Bhattacharya (20BCM0051) & Ganpati S Nayak (20BCM0044) have secured 2<sup>nd</sup> position in “**Chemfluence**”, organized by PDEU SPE during 11-14<sup>th</sup> November 2021.

Ms. Shruti Pandey (19BCM0024) has secured 3<sup>rd</sup> position in “**Chemfluence**”, organized by PDEU SPE during 11-14<sup>th</sup> November 2021.

Mr. Arinjay Bhattacharya (20BCM0051), Sachin Bhaskar Rajesh (20BCM0046) & Ganpati S Nayak (20BCM0044) have secured 2<sup>nd</sup> position in “**Pitch Perfect 2.0**” organized by AIChE-VIT and SPE-VIT Student Chapter on 2<sup>nd</sup> October 2021.

Ms. Trisha Daftari (20BCM0067) of team 3 ji is the winner of “**Safe-a-Thon 2.0**” of SaFest 2.0 organized by VIT Vellore during 26-28<sup>th</sup> November 2021.

# Student Achievements

Ms. Trisha Daftari (20BCM0067) of team CHEMIZARDS is the winner of “**Chemi Space**” organized by VIT Vellore during 04-07<sup>th</sup> October 2021.

Ms. Trisha Daftari (20BCM0067) is the winner of “**Tea Den Quiz**” organized by VIT Vellore during 04-07<sup>th</sup> October 2021.

Ms. Shruti Pandey (19BCM0024) has secured 1<sup>st</sup> position in “**Showcase**”, organized by PDEU SPE during 11-14<sup>th</sup> November 2021.

Mr. Jaydev Zaveri (19BCM0087) & Niranjana Sunderraj (19BCM0098) have secured 1<sup>st</sup> position in “**SPectroCode**”, organized by PDEU SPE during 11-14<sup>th</sup> November 2021.

Mr. Aritro Sinha (19BCM0007), Rishav Mehta (19BCM0067), Shaily Gupta (19BCM0132) & Aditya Tiwari (19BCM0064) have secured 2<sup>nd</sup> position in “**Chem-E-Safe**” competition organized by AIChE Student Regional Conference hosted by Ahmedabad University on 29<sup>th</sup> August 2021.

Mr. Aman Shrivastava (20BCM0101) has secured 2<sup>nd</sup> position in “**WarZone**” organized by AIChE-VIT Student Chapter on 16<sup>th</sup> November 2021.



# Student Achievements

Ms. Shruti S Panday (19BCM0024) has won the 1<sup>st</sup> position at “**Unscrambling Wellness – Crossword Puzzle**” organized by Wake With Wellness on 29<sup>th</sup> August 2021.

Mr. Arinjay Bhattacharya (20BCM0051) , Sachin Bhaskar Rajesh (20BCM0046) & Ganpati S Nayak (20BCM0044) have secured the position of Winner for “**Conventional power alternatives category**” in Power Business 3.0 , organized by SPE-VIT Student Chapter on 21<sup>st</sup> and 22<sup>nd</sup> November 2021.

## Events Organized by Student Chapters



**American Institute of Chemical Engineers, Vellore Institute of Technology, Student Chapter has organized 12 events.**

**Indian Institute of Chemical Engineers, Vellore Institute of Technology, Student Chapter has organized 40 events.**



**Society of Petroleum Engineers, Vellore Institute of Technology, Student Chapter has organized 02 events.**

# Events Organized by School

Sivagami, K. & Kiran, B. organised a three day Faculty Development Program on “**CFD Applications in Micro and Macro Multiphase systems**” from December 13-15, 2021. Resource Person: Dr. Ashraf Ali B (Assistant Professor, Department of Chemical Engineering, NIT Surathkal) & Dr. P.E. Jagadeesh Babu (Associate Professor & HOD, Department of Chemical Engineering, NIT Surathkal)

## Journal Publications

1. Chandan, M. R., Goyal, S., Rizwan, M., Imran, M., & Shaik, A. H. (2021). Removal of textile dye from synthetic wastewater using microporous polymer nanocomposite. **Bulletin of Materials Science**, 44(4), 1-11.

2. Abdullah, M. A., & Kiran, B. (2021). Modeling and experimental data validation of vapor liquid equilibria (VLE) for absorption and distillation. **Studia Universitatis Babes-Bolyai, Chemia**, 66(4).

3. Al-Hoqani, M., Zafar, M., Al Musharafi, S. K., Mahanty, B., & Behera, S. K. (2021). COD fractionation and solubility assessment of sonicated waste-activated sludge. **Environmental Quality Management**.

4. Yandrapu, V. P., & Kanidarapu, Nagamalleswara R. (2021). Process design for energy efficient, economically feasible, environmentally safe methyl chloride production process plant: Chlorination of methane route. **Process Safety and Environmental Protection**, 154, 360-371.



# Journal Publications

5. Gollangi, R., & Nagamalleswara Rao, K. (2022). Energy, exergy analysis of conceptually designed mono chloromethane production process from hydrochlorination of methanol. **Energy**, 239, 121858.

6. Czapla, A., Ganesapillai, M., & Drewnowski, J. (2021). Composite as a Material of the Future in the Era of Green Deal Implementation Strategies. **Processes**, 9(12), 2238.

7. Wang, Z., Rangaiah, G. P., & Wang, X. (2021). Preference ranking on the basis of ideal-average distance method for multi-criteria decision-making. **Industrial & Engineering Chemistry Research**, 60(30), 11216-11230.

8. Ganesapillai, M., Drewnowski, J., Ranjan, S., & Selvaraj, T. (2021). Sustainable recovery of plant essential Nitrogen and Phosphorus from human urine using industrial coal fly ash. **Environmental Technology & Innovation**, 24, 101985.

9. Aslam Abdullah (2021). Adsorption of Oil Spill from sea water using coconut shell powder. **Research Journal of Chemistry and Environment**, 25(9), 40-46.

10. Satish, G., Dhayananth, N., Ponnusamy, K., Radhakrishnan, T. K., & Karthika, S. (2021). Determination of Chlorzoxazone Crystal Growth Kinetics and Size Distribution under Controlled Supersaturation at 293.15 K. **Pharmaceutical Sciences**, 27(4), 575-584.

# Journal Publications

11. Soman, D. P., Karthika, S., & Radhakrishnan, T. (2021). Computational Fluid Dynamics Modelling and Analysis of Heat Transfer in Multichannel Dimple Plate Heat Exchanger. **Iranian Journal of Chemistry and Chemical Engineering (IJCCE)**.

12. Biswas, R. (2021). Modeling the Liquid Phase Exfoliation of Graphene in Polar and Nonpolar Solvents. **Biointerface Research in Applied Chemistry**.

13. O. Kareem, M., Edathil, A. A., Rambabu, K., Bharath, G., Banat, F., Nirmala, G. S., & Sathiyarayanan, K. (2021). Extraction, characterization and optimization of high quality bio-oil derived from waste date seeds. **Chemical Engineering Communications**, 208(6), 801-811.

14. Imran, M., Alam, M. M., Hussain, S., Abutaleb, A., Aziz, A., Chandan, M. R., & Khan, A. (2021). Colloidal Fe<sub>3</sub>O<sub>4</sub> nanoparticles-based oil blend ferro-nanofluid for heat transfer application. **The European Physical Journal Plus**, 136(7), 752.

15. Oladipupo Kareem, M., Edathil, A. A., Rambabu, K., Bharath, G., Banat, F., Nirmala, G. S., & Sathiyarayanan, K. (2021). Extraction, characterization and optimization of high quality bio-oil derived from waste date seeds. **Chemical Engineering Communications**, 208(6), 801-811.

16. Parhi, S. S., Rangaiah, G. P., & Jana, A. K. (2021). A novel vapor recompressed batch extractive distillation: Design and retrofitting. **Separation and Purification Technology**, 260, 118225.



# Journal Publications

17. Sivagami, K., Tamizhdurai, P., Mujahed, S., & Nambi, I. (2021). Process optimization for the recovery of oil from tank bottom sludge using microwave pyrolysis. **Process Safety and Environmental Protection**, 148, 392-399.

18. Priya, D. D., Nandhakumar, M., Shanavas, S., Arasu, M. V., Al-Dhabi, N. A., & Madhumitha, G. (2021). Aerva lanata-mediated bio-treated production of copper oxide nanoparticles, optimization by BBD–RSM method and its behaviour against water related mosquito. **Applied Nanoscience**, 11(1), 207-216.

19. Gopi Kiran, M., Das, R., Behera, S. K., Pakshirajan, K., & Das, G. (2021). Modelling a rotating biological contactor treating heavy metal contaminated wastewater using artificial neural network. **Water Supply**, 21(5), 1895-1912.

20. Sivagami, K., Rajasekhar, B., Mujahed, S., Nambi, I. M., & Rajan, A. K. (2021). Application of Combined Chemical Oxidation and Microwave Treatment for Hydrocarbon-Contaminated Soil from an Urban Oil Spill Site. **Journal of Hazardous, Toxic, and Radioactive Waste**, 25(2), 04020074.

21. Rajeshkumar, S., Nandhini, N. T., Manjunath, K., Sivaperumal, P., Prasad, G. K., Alotaibi, S. S., & Roopan, S. M. (2021). Environment friendly synthesis copper oxide nanoparticles and its antioxidant, antibacterial activities using Seaweed (*Sargassum longifolium*) extract. **Journal of Molecular Structure**, 130724.

# Journal Publications

22. Arumugham, T., Ouda, M., Krishnamoorthy, R., Hai, A., Gnanasundaram, N., Hasan, S. W., & Banat, F. (2022). Surface-engineered polyethersulfone membranes with inherent Fe–Mn bimetallic oxides for improved permeability and antifouling capability. **Environmental Research**, 204, 112390.

22. Selvaraj, T., Yadav, A., Bahuguna, H., Drewnowski, J., & Ganesapillai, M. (2021). Ancient settlements-atavistic solutions for present water supply and drainage problems engendered by urbanism. *Environment, **Development and Sustainability***, 23(5), 8076-8088.

23. Bal, D. K., & Bhasarkar, J. B. (2021). Adsorptive degradation of hexavalent chromium from aqueous solution using coconut shell as a green adsorbent. **Environmental Progress & Sustainable Energy**, e13594.

24. Wang, Z., Rangaiah, G. P., & Wang, X. (2021). Preference ranking on the basis of ideal-average distance method for multi-criteria decision-making. **Industrial & Engineering Chemistry Research**, 60(30), 11216-11230.

25. Jacqueline, P. J., Muthuraman, V. S., Karthick, C., Alaswad, A., Velvizhi, G., & Nanthagopal, K. (2021). Catalytic microwave preheated co-pyrolysis of lignocellulosic biomasses: A study on biofuel production and its characterization. **Bioresource Technology**, 126382.



# Journal Publications

26. Sanjay, V., Muruganandham, L., & Sabina, E. P. (2021). Identifying the potential activity of *Azolla pinnata* through in vitro assay and sem. **Songklanakarin Journal of Science & Technology**, 43(5).

27. Mohana Roopan, S., & Khan, M. A. (2021). MoS<sub>2</sub> based ternary composites: review on heterogeneous materials as catalyst for photocatalytic degradation. **Catalysis Reviews**, 1-74.

28. Sivagami, K., Divyapriya, G., Selvaraj, R., Madhiyazhagan, P., Sriram, N., & Nambi, I. (2021). Catalytic pyrolysis of polyolefin and multilayer packaging based waste plastics: A pilot scale study. **Process Safety and Environmental Protection**, 149, 497-506.

29. Pema Lhamo, Shishir Kumar Behera, Biswanath Mahanty (2021). Process optimization, metabolic engineering interventions and commercialization of microbial polyhydroxyalkanoates production – A state-of-the art review. **Biotechnology Journal**, 16(9), 2100136.

# Funded Project

Title: **A Novel and Cost-effective Biogas Purification Technology using Polyacrylamide Gel to Power Bio-methane in Automobiles**, Dr. Bibhuti Bhusan Sahoo (Principal Investigator, SMEC), Dr. Dharmendra Kumar Bal (Co-Principal Investigator), Science & Engineering Research Board (SERB), 2021, 33.44 Lakhs

## Funded Project

Dr. Karthika (PI) has been granted 4 lakhs by VIT, Vellore for the project entitled ‘**Enhancing the bioavailability of Celecoxib - an active pharmaceutical ingredient (API) using Sonocrystallization**’ for a period of two years.

Dr. K. Sivagami (PI) has been granted 4.5 lakhs by VIT, Vellore for the project entitled ‘**Studies on catalytic pyrolysis of non-recyclable plastic wastes to value added products from Vellore**’ for a period of two years.

## Patent Filed/Granted

Dr. Mohammed Rehaan Chandan has filed a patent titled “**A composition of antibacterial and biodegradable auxetic foams for medical cushions**” along with D. S. Mohan Varma (CBCMT & SMEC) and V. Chaitanya (SMEC) on 30<sup>th</sup> November 2021. (Application No.: 202141055400)

## Book Chapters

1. Venkata R. Myneni, Nagamalleswara Rao K., K. Senthil Kumar, Shaik Feroz (2021). **Sulphate Radical-Based Advanced Oxidation Process for Treatment of Organic Contaminants from Industrial Saline Wastewater**. *In: Removal pollutants from sea water*, Shaik Feroz & D. W. Bahnemann (Eds.), CRC Press, Florida, USA. (ISBN No.: 9781003185437)



## Book Chapters

2. M.N. Aditya, S. Aishwarya, Mrigank Sharma, Sivagami K, Karthika S, Samarshi Chakraborty, (2021). **Water pollution hazards of single-use face mask in Indian riverine and marine system.** *In: Impact of Covid 19 on Emerging contaminants*, M. Kumar & S. Mohapatra(Eds.), Springer Nature Press, Singapore. (Accepted)

3. Aishwarya S, Sruthi G, Aditya M N, Sivagami K, Samarshi Chakraborty, (2021). **Biomass Energy Conversion using Thermochemical and Biochemical Technologies.** *In: Sustainable and Clean Energy Production Technologies*, D. B. Pal & J. Jha (Eds.), Springer Nature Press, Singapore. (Accepted)

## Conference and Workshop Attended

Dr. G. S. Nirmala has participated in “**CHEMCON–2021**” and presented a paper titled “Energy Saving investigation of Pressure Swing and Entrainer enhanced reactive distillation configurations for ethyl acetate production” organized by IChE & CSIR-IMMT Bhubaneswar during 26<sup>th</sup> – 30<sup>th</sup> December 2021.

Dr. L. Muruganandam has participated in “**CHEMCON–2021**” and presented a paper titled “Chemical Kinetics and Reaction Mechanism of L-Histidine reaction with Blood ( $\text{Fe}^{3+}$ ) in Aqueous Alkaline Solution” organized by IChE & CSIR-IMMT Bhubaneswar during 26<sup>th</sup> – 30<sup>th</sup> December 2021.

# Conference and Workshop Attended

Dr. Mahesh Ganesapillai has participated in "**Smart Waste Management – 2021**" organized by SRM Institute of Science and Technology, Chennai during 11<sup>th</sup> – 12<sup>th</sup> October 2021.

Dr. Mahesh Ganesapillai has participated in "**The Japan-India YNU Symposium 2021 on Sustainable Transformation (SX)**" organized by YNU, Japan on 27<sup>th</sup> December 2021.

Dr. Aslam Abdullah has attended Virtual Online Workshop on "**Circular Economy based Environmentally Green Technology for sustainable development**" held between 2<sup>nd</sup> Aug to 12<sup>th</sup> Aug, 2021 organized by National Tsing Hua University, Taiwan

Dr. Mahesh Ganesapillai has participated in "**AQUA 360**" organized by Centre for Water Systems, University of Exeter, UK during 31<sup>th</sup> August to 02<sup>nd</sup> September 2021.

# Faculty Outreach

Dr. Mahesh Ganesapillai was invited as a resource person to deliver a guest lecture on "**Novel approaches in Food Processing and Waste Valorization(NAFPWV)**", held on 6<sup>th</sup> August, 2021 at Kongu Engineering College , Perundurai, India

Dr. Nirmala GS was nominated to serve as a **Regional Safety Coordinator for the AIChE Chem-E-Car Competition®** in the AIChE India Regional Conference. The Regional Conference was held virtually on August 27th-29<sup>th</sup>, 2021 at Ahmedabad University



# Faculty Outreach

Dr. Muruganandam L was invited as a resource person for a Webinar on **“Expert guidance on defining your career path”**, held on 3<sup>rd</sup> September, 2021 organized by The Path Global Public School, India

Dr. Babu Ponnusami was invited as a resource person to deliver a guest lecture on **“Advanced Oxidation Processes for water and Waste Water Treatment”**, held on 23<sup>rd</sup> September, 2021 at Sathyabama Institute of Science and Technology, Chennai, India

Dr. Shishir Kumar Behera was invited as a resource person for the two-days workshop on **“Publishing Quality Manuscripts and Outcome-based Teaching and Learning and Question Paper Setting”**, held between 22-23 October 2021 at Department of Computer Science and Engineering, GITAM University, Visakhapatnam, India.

## Guest Lectures/Webinar Organized

Dr. Mahesh Ganeshapillai and Dr. Arunai Nambiraj N have organized a Guest lecture on **“Green Technologies for Recovery of Bioenergy from Municipal Solid Wastes”** delivered by Mr. Jishnu Nair held on 23<sup>rd</sup> August, 2021.

Dr. Aabid Hussain Shaik and Dr. Anand Veerabadra Prasad Gurumoorthy have organized a Guest lecture on **“Flow Chemistry and Flow Reactions”** delivered by Dr. Makarand Pimplapure held on 25<sup>th</sup> September, 2021.

# Guest Lectures/Webinar Organized

Dr. Bandaru Kiran and Dr. Rima Biswas have organized a Guest lecture on **“Troubleshooting Of The Oil & Gas Upstream Production Operations By Using The Process Engineering Principles”** delivered by Mr. Shivam Sharma held on 29<sup>th</sup> September, 2021.

Dr. K. Sivagami has organized a Guest lecture on **“New Product Development - An Overview”**, delivered by Dr. Hiranmayee Vedam held on 29<sup>th</sup> September, 2021.

Dr. K. Sivagami has organized a Guest lecture on **“New Product Development - An Overview”**, delivered by Mr. Keshav V Kumar held on 6<sup>th</sup> October, 2021.

Dr. Mohammed Rehaan Chandan and Dr. Aabid Hussain Shaik have organized a Guest lecture on **“Amazons Supply Chain and Operations”** delivered by Mr. Alankrita Nigam held on 8<sup>th</sup> October, 2021.

Dr. Muruganandam L has organized a Guest lecture on **“Dynamic Simulation, Control and Safety of Chemical Processes”** delivered by Mr. Dipesh Shikchand Patle held on 26<sup>th</sup> November, 2021.

Dr. Babu Ponnusami A has organized a Guest lecture on **“Project Management in Chemical Process Industries”** delivered by Mr. K Mariadass held on 4<sup>th</sup> December, 2021.

Dr. K Sivagami has organized a Guest lecture on **“Green Technologies for Recovery of Bioenergy from Municipal Solid Wastes”** delivered by Dr. S.V. Srinivasan held on 8<sup>th</sup> December, 2021.



# Guest Lectures/Webinar Organized

Dr. Shishir Kumar Behera and Dr. Karthika S Shanmugam have organized a Guest lecture on “**Utilities In Petroleum Refineries**” delivered by Dr. Amarvir Goverdhan Chilka held on 8<sup>th</sup> December, 2021.

## Online Course Attended

Dr. Monash P. completed self-paced training course on “**Image Processing Onramp**” through Matlab Academy platform on 16<sup>th</sup> October 2021.

Dr. Monash P. completed self-paced training course on “**Deep Learning with MATLAB**” through Matlab Academy platform on 6<sup>th</sup> October 2021.

Dr. Bandaru Kiran has completed training course on “**Combine AI and First Principles to Improve Model Performance**” organized by Aspen Technology, Inc. platform on 26<sup>th</sup> October 2021.

Dr. Monash P. completed self-paced training course on “**Machine Learning Onramp**” through Matlab Academy platform on 4<sup>th</sup> September 2021

Dr. Monash P. completed self-paced training course on “**Deep Learning Onramp**” through Matlab Academy platform on 6<sup>th</sup> September 2021.

# School of Chemical Engineering (SCHEME)



## Editorial Committee

**Dr. Mohammed R Chandan**  
**Dr. Samarshi Chakraborty**  
Assistant Professor (Sr.)  
SCHEME, VIT Vellore

## Contact Us

**Dr. L. Muruganandam**  
Professor & Dean  
SCHEME, VIT Vellore  
Email: [dean.scheme@vit.ac.in](mailto:dean.scheme@vit.ac.in)