

# NEWSLETTER

## School of Chemical Engineering (SCHEME)

(4<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 4<sup>th</sup> issue of the school newsletter.

SCHEME houses B. Tech and PhD programmes in Chemical Engineering. Presently it has 21 faculty members. There are 67 students in the final year, 124 students in the third year, 136 students in the second year and 107 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.



# 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)

Regards,  
Dr. Shishir Kumar Behera

# SCHEME at a Glance

School of Chemical Engineering

301-350



by Subject | 2021

19

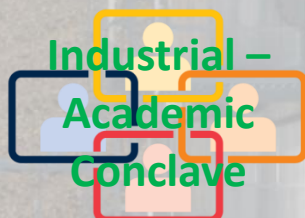


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Book Chapters

1



501-600



by Subject | 2021

20



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FACULTY  
OUTREACH

10



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# Student Achievements

Mr. Jacob (19BCM0052), Mr. Sai P Hariharan (19BCM0030) and Mr. Vishal Venkatarangan (19BCM0011) have secured 1<sup>st</sup> position in “**Ergnization**” under the banner of Crust’21, organized by UPES AAPG Student Chapter during 8-10<sup>th</sup> April 2021.

Mr. Jacob (19BCM0052), Mr. Sai P Hariharan (19BCM0030) and Mr. Vishal Venkatarangan (19BCM0011) have secured 2<sup>nd</sup> position in “**Oil Cognition**” under the banner of Crust’21, organized by UPES AAPG Student Chapter during 8-10<sup>th</sup> April 2021.

Mr. Jacob (19BCM0052), Mr. Sai P Hariharan (19BCM0030) and Mr. Vishal Venkatarangan (19BCM0011) have secured 2<sup>nd</sup> position in “**Present the Past**” under the banner of Crust’21, organized by UPES AAPG Student Chapter during 8-10<sup>th</sup> April 2021.

Ms. Aliveli Mansi (18BCM0046) has secured 1<sup>st</sup> position in “**ChemQuiz**” a competition as part of 7<sup>th</sup> National Conference on ‘Sustainable Trends in Energy and Environmental Resources’ (STEER-2021) conducted by ACE-IICHE chapter of SSN College of engineering on the 26<sup>th</sup> and 27<sup>th</sup> of March 2021.

Ms. Aliveli Mansi (18BCM0046) has secured 1<sup>st</sup> position in “**Aggrandize**” an essay writing competition on the topic “India’s approach towards a gas-based economy” during Technoaltar 5.0 conducted by FIPI chapter of Pandit Deendayal Energy University (PDEU) during 16<sup>th</sup>-18<sup>th</sup> April 2021.

Ms. Shaily Gupta (19BCM132) has secured 2<sup>nd</sup> position in “**ChemWiz**” organized by NIT Durgapur (Chemkriti) during 9-11<sup>th</sup> April 2021.

# Student Achievements

Mr. Vishal Venkatarangan (19BCM0011) has secured 1<sup>st</sup> position in **“Democratically Yours”**, organized by UPES AAPG Student Chapter during 8-10<sup>th</sup> April 2021.

Ms. Sonali Singh (18BCM0118) has won the 1<sup>st</sup> prize in the event named **“Chem-projectque”** organized by Society of Petroleum Engineers (SPE) student chapter of UPES, Dehradun on 3<sup>rd</sup> Feb 2021.

Ms. Shaily Gupta (19BCM132) has been awarded with the **“Best Pitcher”** of 36 hours Ideathon Industrial Carnival 4.0 organized by Society of Petroleum Engineers (SPE) student chapter of VIT, Vellore on 1<sup>st</sup> and 2<sup>nd</sup> May 2021.

Mr. Abhishek S Chaudhary (18BCM0077) has secured 1<sup>st</sup> Place in **“Prastutikaran”** a Technical Paper Presentation competition held by Federation of Indian Petroleum Industries (FIPI) - PDEU Student Chapter during 16-18<sup>th</sup> April 2021.

Ms. Khushie S Murthy (19BCM0084), Niranjan Sundarraj (19BCM0098) and Alavya Tiwari (19BCM0036) have secured 1<sup>st</sup> position in the **“Renewable Energy Problem Statement”** in the 36 hr Ideathon, Industrial Carnival 4.0 organised by SPE-VIT, School of Chemical Engineering on 1<sup>st</sup> and 2<sup>nd</sup> May, 2021.

Ms. Vagisha Rastogi (18BCM0069) has secured 2<sup>nd</sup> position in **“The Caterpillar IDP Challenge”** organized by Shaastra 2021, IIT Madras on 26<sup>th</sup> March 2021.

# Student Achievements

Mr. Gollapalli N V Srikar Murthy (19BCM0055) has won the 2<sup>nd</sup> prize in the **“Poetry competition for undergraduates”** in the English Literary Fest 2021, conducted by the School of Social Sciences and Languages (SSL), VIT Vellore on 5<sup>th</sup> June 2021.

Mr. Nallanthighal Harsh Vaibhav (19BCM0032), Mr. Jaydev Chetan Zaveri (19BCM0087) and Dr. Shankarraman Dhanushkodi stood 1<sup>st</sup> for presenting their paper titled **“Assessing failure pathways in distillation columns using the concepts of resilience engineering”** in Affiche organized by Azeotropy, 2021 Chemical Engineering Association, IIT Bombay on 22<sup>nd</sup> March 2021.

Ms. Amisha Mukerjee (18BCM0032) has secured 2<sup>nd</sup> position in **“AGGRNDIZE”** - An essay writing competition at TECHNOALTAR, organized by Federation of Indian Petroleum Industries (FIPI) - PDEU Student Chapter during 16-18<sup>th</sup> April 2021.

Ms. Khushie S Murthy (19BCM0084), Dr. Shankarraman Dhanushkodi and Mr. Karan S Nair (19BCM0065) have been awarded with the **“Best Research Paper Presentation”** in the International Conference on Arts, Education, and Business (ICAEB-21) held on 9<sup>th</sup> May, 2021 in Bangalore, India.

Ms. Shruti Pandey (19BCM0024) has secured 1<sup>st</sup> position in **“Chembola”** Khrusos'21 (Annual department Fest) conducted by KMC, Delhi on 14<sup>th</sup> April 2021.

# Student Achievements

Ms. Likitha Sanjana Joseph (19BCM0018) and Ms. Shruti Pandey (19BCM0024) have secured 2<sup>nd</sup> place in “**Mangata**” hackathon, conducted by SEDs, VIT Vellore in March 2021.

Ms. Apoorva Mittal (20BCM0068) has secured 3<sup>rd</sup> position in the event “**Forensic Chemystery**” in ChemFest REACT, conducted by department of chemistry, Ramnarain Ruia Autonomous College and Rashtriya Uchcharat Shiksha Abhiyan (RUSA) on 26<sup>th</sup> and 27<sup>th</sup> Feb 2021.

## Events Organized by Student Chapters



**American Institute of Chemical Engineers, Vellore Institute of Technology, Student Chapter has organized 21 events.**

**Indian Institute of Chemical Engineers, Vellore Institute of Technology, Student Chapter has organized 65 events.**



**Society of Petroleum Engineers, Vellore Institute of Technology, Student Chapter has organized 26 events.**

# Events Organized by School

Industry – Academia Conclave 2021 was organized by the School of Chemical Engineering along with Society of Petroleum Engineering (SPE), VIT Chapter on 28<sup>th</sup> January 2021. Coordinators: Prof. Aruna Singh, Prof. Mahesh Ganesapillai, Prof. Nirmala, G. S. and Prof. Aslam Abdullah.

**INDUSTRY – ACADEMIA CONCLAVE 2021**

**DETAILS**  
DATE: 28<sup>th</sup> JANUARY 2021  
TIME: 09:00 AM  
PROGRAMME: 12:00 PM - 12:30 PM

**ORGANIZED BY**  
SCHOOL OF CHEMICAL ENGINEERING,  
VELLORE, INSTITUTE OF TECHNOLOGY VELLORE,  
INDIA  
SOCIETY OF PETROLEUM ENGINEERING - VIT CHAPTER

**COORDINATORS**  
DR. ARUNA SINGH, ASSOCIATE PROFESSOR  
OF MASS TRANSPORTATION, VIT VELLORE  
DR. MAHESH GANESAPILLAI, PROFESSOR  
OF CHEMICAL ENGINEERING, VIT VELLORE  
DR. NIRMALA G. S., ASSISTANT PROFESSOR  
OF CHEMICAL ENGINEERING, VIT VELLORE

**ORGANIZING CHAIR**  
DR. SHRISH KUMAR BEHERA, DEAN,  
SCHOOL OF CHEMICAL ENGINEERING,  
VIT VELLORE

**JOINT 2021 MEETING**  
SPE 2021 MEETING  
SPE 2021 MEETING  
SPE 2021 MEETING

**TOPICS**  
INDUSTRIAL DIGITAL TRANSFORMATION  
FUTURE OF CHEMICAL INDUSTRIES POST COVID AND HOW IT CAN BE A SUCCESSFUL CHEMICAL ENGINEER  
OPERATIONAL DISRUPTION IN PROCESS/SAFETY MANAGEMENT - PROCESS INDUSTRY

**Speakers:**  
NAGA CHOKKALINGAM, Sr. Project Director and Global Intellectual Property Mgr., Technology, USA  
CAREER IN SALES & MARKETING FOR A CHEMICAL ENGINEER  
BASMAHIDE, Regional Sales Director, ICAANT, Jakarta, Indonesia  
NEW PARADIGM FOR CHEMICAL INDUSTRY JOBS  
R. N. SHARMA, Executive Director, Bharat Petroleum Corporation Limited, Chennai, India  
FREE CHEMICALS BUSINESS - A CHEMICAL ENGINEERING PERSPECTIVE  
MAMAMAM, V, COO, PWS Industries, Chennai, India  
SUNIL KUMAR, Sr. Mfg. Executive, PWS, India  
SUNIL KUMAR, Sr. Mfg. Executive, PWS, India  
SUNIL KUMAR, Sr. Mfg. Executive, PWS, India



# Journal Publications

1. Lhamo, P., Behera, S. K., & Mahanty, B. (2021). Process optimization, metabolic engineering interventions and commercialization of microbial polyhydroxyalkanoates production—A State of the art review. *Biotechnology Journal*, 2100136. (Accepted Manuscript)

2. Tang, V. T., Rene, E. R., Hu, L., Behera, S. K., Phong, N. T., & Thi Da, C. (2021). Vertical green walls for noise and temperature reduction—An experimental investigation. *Science and Technology for the Built Environment*, 27(6), 1-20.

# Journal Publications

3. Rajakumar, G., Mao, L., Bao, T., Wen, W., Wang, S., Gomathi, T., Nirmala G., & Zhang, X. (2021). Yttrium oxide nanoparticle synthesis: An overview of methods of preparation and biomedical applications. *Applied Sciences*, 11(5), 2172.

4. Joaquin, A. A., Nirmala, G., & Kanakasabai, P. (2021). Response Surface Analysis for Sewage Wastewater Treatment Using Natural Coagulants. *Polish Journal of Environmental Studies*, 30(2), 1215-1225.

5. John, P., Johari, K., Gnanasundaram, N., Appusamy, A., & Thanabalan, M. (2021). Enhanced photocatalytic performance of visible light driven  $\text{TiO}_2/\text{g-C}_3\text{N}_4$  for degradation of diclofenac in aqueous solution. *Environmental Technology & Innovation*, 22, 101412.

6. Singh, A., & Abdullah, A. (2021). Ohmic Heating: A Review, *GIS Journal*, 8(3), 791-802.

7. Nirmala, G., Murugesan, T., Rambabu, K., Sathiyarayanan, K., & Show, P. L. (2021). Adsorptive removal of phenol using banyan root activated carbon. *Chemical Engineering Communications*, 208(6), 831-842.

8. Barton, M. A., Simha, P., Magri, M. E., Dutta, S., Kabir, H., Selvakumar, A., Ganesapillai, M., & Vinnerås, B. (2021). Attitudes of food consumers at universities towards recycling human urine as crop fertiliser: A multinational survey dataset. *Data in Brief*, 35, 106794.



# Journal Publications

9. Kugarajah, V., Ojha, A. K., Ranjan, S., Dasgupta, N., Ganesapillai, M., Dharmalingam, S., & Mishra, B. N. (2021). Future Applications of Electrospun Nanofibers in Pressure Driven Water Treatment: A Brief Review and Update. *Journal of Environmental Chemical Engineering*, 9(2), 105107.

10. Biswas, R. (2021). Molecular dynamics studies on the exfoliation of graphene in room temperature ionic liquids. *Journal of Molecular Liquids*, 337, 116592.

11. Dutta, S., Kallangodan, M. K., & Gurumoorthy, A. V. (2021). Development of a Hybrid First Principles-ANN Model for the Steam Hydrator in a Calcium Looping Process. *Recent Innovations in Chemical Engineering*, 14(2), 176-190.

12. Shaik, A. H., Banerjee, S., Rahaman, A., Agashe, S., Khan, A., & Chandan, M. R. (2021). One-step synthesis and characteristics of LiOH-castor oil based stable polyurethane foam. *Journal of Polymer Research*, 28(6), 1-9.

13. Vinay, V. C., Mohan Varma, D. S., Chandan, M. R., Sivabalan, P., Jaiswal, A. K., Swetha, S., & Kaczmarek, B. (2021). Study of Castor oil-based Auxetic Polyurethane Foams for Cushioning Applications. *Polymer International*. (Accepted Manuscript)

14. Vinay, V. C., Varma, D. M., Chandan, M. R., Sivabalan, P., Jaiswal, A. K., Swetha, S., & Sionkowska, A. (2021). Study of silver nanoparticle-loaded auxetic polyurethane foams for medical cushioning applications. *Polymer Bulletin*, 1-18. (Accepted Manuscript)

# Journal Publications

15. Imran, M., Zouli, N., Ahamad, T., Alshehri, S. M., Chandan, M. R., Hussain, S., & Khan, A. (2021). Carbon-coated Fe<sub>3</sub>O<sub>4</sub> core-shell superparamagnetic nanoparticle-based ferrofluid for heat transfer applications. *Nanoscale Advances*, 3(7), 1962-1975.

16. Imran, M., Bandyopadhyay, A. K., Gandhi, T. K. S., Rahaman, A., & Chandan, M. R. (2021). Mechanical property enhancement of flexible polyurethane foam using alumina particles. *Materials Today: Proceedings*, 45, 4040-4044.

17. Mondal, B., Parhi, S. S., Rangaiah, G. P., & Jana, A. K. (2021). Nanocatalytic heterogeneous reactive distillation for algal biodiesel production: Multi-objective optimization and heat integration. *Energy Conversion and Management*, 241, 114298.

18. Safdar, R., Gnanasundaram, N., Appusamy, A., & Thanabalan, M. (2021). Synthesis, physiochemical properties, colloidal stability evaluation and potential of ionic liquid modified CS-TPP MPs in controlling the release rate of insulin. *Journal of Drug Delivery Science and Technology*, 64, 102575.

19. Said, Z., Sundar, L. S., Rezk, H., Nassef, A. M., Chakraborty, S., & Li, C. (2021). Thermophysical properties using ND/water nanofluids: An experimental study, ANFIS-based model and optimization. *Journal of Molecular Liquids*, 330, 115659.

20. Satish, G., Dhayananth, N., Kalaichelvi, P., Radhakrishnan, T. K., & Karthika, S. (2021). Determination of Chlorzoxazone Crystal Growth Kinetics and Size Distribution under Controlled Supersaturation at 293.15 K. *Pharmaceutical Sciences* (Accepted Manuscript).

# Book Chapters

1. Jaykumar B. Bhasarkar and Dharmendra K. Bal (2021). **Nanomaterial-based advanced oxidation processes for degradation of waste pollutants.** *In: Handbook of Nanomaterials for Wastewater Treatment*, B. A. Bhanvase, S. H. Sonawane, V. B. Pawade, A. B. Pandit (Eds.), Elsevier, Cambridge, USA. (ISBN No.: 9780128214961)

2. G. Sruthi, S. Aishwarya, S. Karthika, S. Chakraborty, G. Divyapriya, and K. Sivagami, (2021). **Fate and transport of micro and nano plastics in grey water, fresh and marine water systems.** *In: Legacy, Pathogenic and Emerging Contaminants in the Environment*, M. Kumar, M. Vithanage, S. Mohapatra, K. Acharya (Eds.), CRC Press, USA. (ISBN No.: 9780367743635)

# Conference and Workshop Attended

Dr. Rima Biswas has participated in "**Atomistic Modelling Workshop on Amsterdam Modelling Suite**" workshop held between 7<sup>th</sup> Jun to 11<sup>th</sup> Jun, 2021 at Nyro Research India, Kochi and SCM, Netherlands

Dr. Chitra D has participated in the three-day online workshop on "**Future of Chemical Engineering**" organized by the Department of Chemical Engineering, IIT (ISM) Dhanbad and IChE, Dhanbad Regional Center during 19<sup>th</sup> – 21<sup>st</sup> March 2021.

Dr. Monash P has participated in the three-day online workshop on "**Future of Chemical Engineering**" organized by the Department of Chemical Engineering, IIT (ISM) Dhanbad and IChE, Dhanbad Regional Center during 19<sup>th</sup> – 21<sup>st</sup> March 2021.

# Conference and Workshop Attended

Dr. S. R. Dhanushkodi has participated in **IEEE International Conference on Intelligent Technologies (CONIT 2021)**, 25<sup>th</sup> – 27<sup>th</sup> June, 2021, Hubballi, Karnataka, India.

Dr. Sivagami.K has participated in "**World Nano congress on Advanced Science and Technology**" organised by Centre for Nanotechnology Research (CNR) between 8-13<sup>th</sup> March 2021.

Dr. Mohammed R Chandan has participated in the three-day online workshop on "**Future of Chemical Engineering**" organized by the Department of Chemical Engineering, IIT (ISM) Dhanbad and IChE, Dhanbad Regional Center during 19<sup>th</sup> – 21<sup>st</sup> March 2021.

Dr. Rima Biswas has participated in the three-day online workshop on "**Future of Chemical Engineering**" organized by the Department of Chemical Engineering, IIT (ISM) Dhanbad and IChE, Dhanbad Regional Center during 19<sup>th</sup> – 21<sup>st</sup> March 2021.

Prof. Mahesh Ganesapillai has participated in "**International conference on Recent Developments on Materials, Reliability, Safety and Environmental Issues (IMRSE-2021)**", 25-27<sup>th</sup> June 2021 organized by Dr. B. R. Ambedkar National Institute of Technology Jalandhar, India.

# Faculty Outreach

Dr. Mahesh Ganesapillai was invited as a Keynote speaker in FDP on **"International Virtual Workshop on Separation Technology 2021 (IWST 2021)"** held on 24<sup>th</sup> and 25<sup>th</sup> May 2021 by Debre Tabor University, Ethiopia on Zoom platform.

Dr. Aruna Singh was invited as keynote speaker in FDP on **"International Virtual Workshop on Separation Technology 2021 (IWST 2021)"** held on 24<sup>th</sup> and 25<sup>th</sup> May 2021 by Debre Tabor University, Ethiopia on Zoom platform.

Dr. Aslam Abdullah was invited as a Keynote speaker in FDP on **"International Virtual Workshop on Separation Technology 2021 (IWST 2021)"** held on 24<sup>th</sup> and 25<sup>th</sup> May 2021 by Debre Tabor University, Ethiopia on Zoom platform.

Dr. Karthika S. has delivered an expert lecture titled **"Crystallization of Active Pharmaceutical Ingredient using Green Solvents"** during online FDP on Green Technology for Sustainable Development organized by Chemical Engineering Department, V. V. P. Engineering College, Rajkot during 22<sup>nd</sup> - 27<sup>th</sup> February 2021.

# Guest Lectures/Webinar Organized

Dr. Aslam Abdullah has organized a Guest lecture on “**Recycling of Waste Water from Refinery**”, delivered by Mrs. Derkana Lina Ahmaid, Manager, Huntsman Corporation, USA on 17<sup>th</sup> March 2021.

Dr. Mohammed R Chandan has organized a Guest lecture on “**Water Quality Monitoring and Control by Texas Commission on Environmental Quality**”, delivered by Dr. Karishma Piler, Engineer, TCEQ, Water Supply Division, Texas, USA on 9<sup>th</sup> April 2021.

Dr. Mahesh Ganesapillai and Dr. Aruna Singh have organized a Guest lecture on “**Role of SPE in Shaping Careers of Petroleum Engineers**”, delivered by Mr. Utkarsh Sinha on 10<sup>th</sup> April 2021.

Dr. Aabid Hussain Shaik and Dr. Chitra D. have organized a Guest lecture on “**Gas Turbine Heat Transfer and Aero Heat Exchanger Activities**”, delivered by Dr. Giridhara Babu Y, Principal Scientist, Propulsion Division, National Aerospace Laboratories (CSIR Lab), Bangalore on 10<sup>th</sup> April 2021.

Dr. Babu Ponnusami A. and Dr. K. Sivagami have organized a Guest lecture on “**Zero Liquid Discharge - Overview of Methodologies and Application in Industry**”, delivered by Mr. Bharat Thyagarajan, Manager Sales, Environment Division, Ion Exchange India Limited, Chennai on 28<sup>th</sup> April 2021.

# Guest Lectures/Webinar Organized

Dr. Nirmala G. S. and Dr. Mohammed R Chandan have organized a Guest lecture on “**Pressure Swing Adsorption**”, delivered by Dr. Rajan Rathinasapapathy, Senior Process Control Engineer, Philips 66, Los Angeles, USA on 2<sup>nd</sup> June 2021.

Dr. Chitra D. has organized a Guest lecture on “**Contemporary Issues of Fertilizers on Agroecosystems**”, delivered by Dr. L. Aruna, Associate Professor, Soil Science and Agricultural Chemistry, Pandit Jawaharlal Nehru College of Agriculture and Research Institute (PAJANCOA & RI), Karaikal on 4<sup>th</sup> June 2021.

Dr. K. Sivagami and Dr. Mahesh Ganesapillai have organized a Guest lecture on “**Mass And Energy Balance**”, delivered by Mr. Shankar Naik, Manager, Product Engineering, Bharat Heavy Electricals Limited, Trichy, India on 7<sup>th</sup> June 2021.

Dr. Chitra D. has organized a Guest lecture on “**An Insight Into The Production of Ammonia**”, delivered by Mr. Nirmal Kumar Gunasekaran, Senior Principal Engineer, Saipem India Projects Ltd. on 9<sup>th</sup> June 2021.

Dr. Nirmala G. S. and Dr. Mohammed R Chandan have organized a Guest lecture on “**Troubleshooting of Distillation Operation in Process Industries**”, delivered by Dr. Rajan Rathinasapapathy, Senior Process Control Engineer, Philips 66, Los Angeles, USA on 15<sup>th</sup> June 2021.

# School of Chemical Engineering (SCHEME)



## Editorial Committee

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

## Contact Us

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