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SPARK

QUARTERLY MAGAZINE OF THE DEPARTMENT OF CHEMICAL ENGINEERING

SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING

ISSUE 37, OCTOBER 2022

FROM HOD'S DESK

I am glad to present the newest edition of the department newsletter SPARK, issue 37.

With important events such as the inaugural of the association of chemical engineers IICHE – SSN student chapter and several industrial visits by the third years, there is no scarcity in write-ups for the magazine with informative descriptions about the events. Along with this, an interesting article about the application of AI in chemical engineering would be an amazing read.

I thank the everlasting support of our alumni in providing useful insights to our final and third year students. I wholeheartedly congratulate all the students who have been placed in core and non-core companies.

With a plethora of talents among the students, a few have been handpicked and presented under the student achievements section. I thank the editorial team for compiling and designing such a wonderful edition and I wish you all a gleeful read.

-Dr K. Sathish Kumar
Professor and Head of Department

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FACULTY ACHIEVEMENTS

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FACULTY ACHIEVEMENTS

EXTERNAL RECOGNITION

- Dr. P. Senthil Kumar, Professor/Chemical Engineering has been appointed as a Review Editor in Advanced Clean Fuel Technologies, Frontiers, IF: 3.858

- Dr. P. Senthil Kumar has been nominated as an External Examiner to evaluate the project submitted to Sub-Directorate for Research Projects, National Research and Development Agency (ANID) of the Ministry of Science, Technology, Knowledge and Innovation of Chile, Chile.

- Dr. R.Anantharaj, ASP/Chem delivered a guest lecture on “Experiment and Qunatum Chemical Calculation for the Removal of Water Pollutants Using Ionic Liquid And Deep Eutectic Solvent” at International Seminar Series on "Water in Circular Economy" on 27-07-2022.

- Dr. P. Senthil Kumar, Professor/Chemical Engineering delivered the technical talk titled "Hydrothermal carbonization of sugarcane bagasse for the removal of antibiotics from water systems" in the National Level Online Faculty Development Program on “Current Trends and Innovations in Biological Sciences” organized by Faculty of Allied Health Sciences and Chettinad Institution’s Innovation Council, Chettinad Academy of Research and Education, Kelambakkam, Chennai on 22-08-2022.

- Dr. P. Senthil Kumar has acted as Doctoral Committee Member for the full time research candidate, Mr. Magesh N, Ph.D. Synopsis Meeting from Sathyabama Institute of Science and Technology.

- Dr. K. Sathish Kumar, Prof/Chem acted as Chairman - Technology Board in Central Valuation Anna University, Chennai from 12.06.2022 to 16.06.2022.

- Dr. B. Ambedkar ASP/Chem attended Online DC meeting for the Research scholar Ms. Pratiksha Sandilya Sarma (Reg.No RC2213010011002 -Full Time) on 22nd August, 2022; 1.30 PM. at SRM Institute of Science and Technology Directorate of Research S.R.M. Nagar, Kattankulathur -603203, Chengalpattu District.

- Dr. R. Parthiban Prof/Chemical Engg acted as a Chairperson in the Technical session of the Two-day International Conference on “Environmental Pollution and Control Technologies” (EPACT - 2022) organized by Annamalai University, Chidambaram during August 26-27, 2022.

- Dr. Nalinkanth V. Ghone, ASP/Chem inducted as Review Editor on the Editorial Board of Biomaterials for journals of Frontiers in Materials, Frontiers in Bioengineering and Biotechnology and Frontiers in Molecular Biosciences.

- Dr. P. Senthil Kumar, Professor/Chemical Engineering received **AICTE National Technical Teachers Award (NTTA-2022)**. This award was given by Ministry of Education, Government of India during Shikshak Parv 2022, inaugural conclave organised by Ministry of Education, CBSE, AICTE and Ministry of Skill Development and Entrepreneurship in New Delhi on 6th September 2022.

- Dr. K. Sathish Kumar, Prof/Chem delivered a guest lecture on "Basics of Biochemical Thermodynamics" at the department of Biotechnology, Anand Institute of Higher Technology, Chennai on 10.09.2022.

INTERNATIONAL JOURNAL PAPER

- Progress in the production of hydrogen energy from food waste: A bibliometric analysis, Adithya Sridhar, Muthamilselvi Ponnuchamy, Ponnusamy Senthil Kumar, Ashish Kapoor and Leilei Xiao, International Journal of Hydrogen Energy, https://doi.org/10.1016/j.ijhydene.2021.09.258, 2022, Clarivate, 7.139

- Hybrid metal organic frameworks as an exotic material for the photocatalytic degradation of pollutants present in wastewater: A review, Gomathi Ramalingam, Rekha Pachaiappan, P. Senthil Kumar, Shanmugapriya Dharani, Saravanan Rajendran, Dai-Viet N. Vo, Tuan K.A. Hoang, Chemosphere, Vol. 288, pp. 132448, 2022, Clarivate, 8.943

- A review on recent advancements in bioenergy production using microbial fuel cells, M.Ramya, P. Senthil Kumar, Chemosphere, Vol. 288, pp. 132512, 2022, Clarivate, 8.943

- Lab on a chip technologies for food safety, processing, and packaging applications: a review, Adithya Sridhar, Ashish Kapoor, Ponnusamy Senthil Kumar, Muthamilselvi Ponnuchamy, Balasubramanian Sivasamy, Dai-Viet Nguyen Vo, Environmental Chemistry Letters, https://doi.org/10.1007/s10311-021-01342-4, 2022, Clarivate, 13.615

- Valorization of agro-industrial wastes for biorefinery process and circular bioeconomy: A critical review, P.R. Yaashikaa, P. Senthil Kumar, Sunita Varjani, Bioresource Technology, Vol. 343, pp. 126126, 2022, Clarivate, 11.889

- Cellulase enzyme catalyst producing bacterial strains from vermicompost and its appliction in low-density polyethylene degradation, Veena Gayathri Krishnaswamy, Rajalakshmi Sridharan, P.Senthil Kumar, Mariyam Jaffer Fathima, Chemosphere, Vol. 288, pp. 132552, 2022, Clarivate, 8.943

•A disposable modified screen-printed electrode using Egg white/ZnO rice structured composite as practical tool electrochemical sensor for formaldehyde detection and its comparative electrochemical study with Chitosan/ZnO nanocomposite, G. Padmalaya, Kilaru Harsha Vardhan, P.Senthil Kumar, M. Ajmal Ali, Tse-Wei Chen, Chemosphere, Vol. 288, pp. 132560, 2022, Clarivate, 8.943

•Gadolinium doped CeO_2 for efficient oxygen and hydrogen evolution reaction, S. Swathi, R. Yuvakkumar, P.Senthil Kumar, G. Ravi, M. Thambidurai, Cuong Dang, DhayalanVelauthapillai, Fuel, Vol. 310, pp. 122319, 2022, Clarivate, 8.035

•Impact of compression ratio on combustion behavior of hydrogen enriched biogas-diesel operated CI engine, Pali Rosha, Sandeep Kumar, P.Senthil Kumar, C.N. Kowthaman, Saroj Kumar Mohapatra, Amit Dhir, Fuel, Vol. 310, pp. 122321, 2022, Clarivate, 8.035

•A comprehensive insight from microalgae production process to characterization of biofuel for the sustainable energy, C.N. Kowthaman, P.Senthil Kumar, V. Arul Mozhi Selvan, D. Ganesh, Fuel, Vol. 310, pp. 122320, 2022, Clarivate, 8.035

•Nanoparticles approach to eradicate bacterial biofilm-related infections: A critical review, Fairoz Ali Al-Wrafy, Adel Ali Al-Gheethi, Senthil Kumar Ponnusamy, Efaq Ali Noman, Shaima Abdul Fattah, Chemosphere, Vol. 288, pp. 132603, 2022, Clarivate, 8.943

•Recent advances and sustainable development of biofuels production from lignocellulosic biomass, A.Saravanan, P.Senthil Kumar, S. Jeevanantham, S. Karishma, Dai-Viet N.Vo, Bioresource Technology, Vol. 344, pp. 126303, 2022, Clarivate, 11.889

•Investigation of PEG directed Sb_2WO_6 for dyes removal from wastewater, SP. Keerthana, R. Yuvakkumar, P.Senthil Kumar, G. Ravi, S.I. Hong, Dhayalan Velauthapillai, Chemosphere, Vol. 291, pp. 132677, 2022, Clarivate, 8.943

•Assessment of in vitro antimicrobial efficacy of biologically synthesized metal nanoparticles against pathogenic bacteria, Pramod U.Ingle, Jayanta K.Biswas, Monojit MondalbMahendra K.Rai, P.Senthil Kumar, Aniket K.Gade, Chemosphere, Vol. 291, pp. 132676, 2022, Clarivate, 8.943

▪Continuous electrodeionization on the removal of toxic pollutant from aqueous solution, B.Senthil Rathi, P. Senthil Kumar, Chemosphere, Vol. 291, pp. 132808, 2022, Clarivate, 8.943

▪A review of recent progress on photocatalytic carbon dioxide reduction into sustainable energy products using carbon nitride, Rekha Pachaiapan, Saravanan Rajendran, P.Senthil Kumar, Dai-Viet N.Vo, Tuan K.A. Hoang, Chemical Engineering Research & Design, Vol. 177, pp. 304-320, 2022, Clarivate, 4.119

▪Bioethanol from hydrolysate of ultrasonic processed robust microalgal biomass cultivaed in dairy wastewater under optimal strategy, K.Dhandayuthapani, P.Senthil Kumar, Wen Yi Chia, Kit Wayne Chew, V. Karthik, H. Selvarangaraj, P. Selvakumar, P. Sivashanmugam, Pau Loke Show, Energy, Vol. 244, pp. 122604, 2022, Clarivate, 8.857

▪Identification and sequencing of bacteria from crop field: Application of bacteria –agro-waste biosorbent for rapid pesticide removal, A. Saravnan, P.Senthil Kumar, S. Jeevanantham, P. Harikumar, V. Bhuvaneswari, Sravya Indraganti, Environmental Technology & Innotion, Vol. 25, pp. 102116, 2022, Clarivate, 7.758

▪Heavy metal toxicity, sources, and remediation techniques for contanated water and soil, Shams Forruque Ahmed, P.Senthil Kumar, Mahtabin Rodela Rozbu, Anika Tasnim Chowdhury, Samiha Nuzhat, Nazifa Rafa, T.M.I. Mahlia, Hwai Chyuan Ong, M. Mofijur, Environmental Technology & Inntion, Vol. 25, pp. 102114, 2022, Clarivate, 7.758

▪Transformation of aqueous methyl orange to green metabolites using bacterial strains isolated from textile industry effluent, KarthikVelusamy, Selvakumar Periyasamy, Ponnusamy Senthil Kumar, Femina Carolin C, Thanikachalam Jayaraj, M. Gokulakrishnan, P. Keerthana, Environmental Technology & Innovation, Vol. 25, pp. 102126, 2022, Clarivate, 7.758

▪Facile synthesis of zinc oxide nanoparticles using glycerol as cross-linker and the kinetic studies for the photocatalytic degradation of acid blue 113 dye, Chitra Sekaran; Dhanya Vishnu; Balaji Dhandapani; T. Alagesan; G. Balaji, Results in Chemistry, Volume 4, 100377, 2022, Scopus,

▪Desulfurization of Gasoline Using Deep Eutectic Solvents Based on Tetrabutylammonium Bromide, Vijayalakshmi Gosu, Rohitash Kumar, Anantharaj Ramalingam, U. K. Arun Kumar, Amit Kumar Kashyap, and Verraboina Subbaramaiah, Journal of Chemical Engineering Data, https://doi.org/10.1021/acs.jced.2c00172, 2022, Web of Science, 2.694

▪Sustainable approach on the biodegradation of azo dyes: A short review, B. Senthil Rathi, P.Senthil Kumar, Current Opinion in Green and Sustaable Chemistry, Vol. 33, pp. 100578, 2022, Clarivate, 8.843

▪Cannabis: Chemistry, extraction and therapeutic applications, Falguni Pattnaik, Sonil Nanda, Shobhangam Mohanty, Ajay K. Dalai, Vivek Kumar, Senthil Kumar Ponnusamy, Satyanarayan Naik, Chemosphere, Vol. 289, pp. 133012, 2022, Clarivate, 8.943

▪Superhigh adsorption of cadmium(ii) ions onto surface modified nano zerovalent iron compoite (cns-nzvi): characterization, adsorption kinics and isotherm studies, Prabu Deivasigamani, Senthil Kumar Ponnusamy, Sathish Sundararaman, Suresh A, Chemistry & Chemical Technolgy, Vol. 15(4), pp. 457-464, 2022, Scopus, 0.775

▪Recent progression of flower like ZnSe@$MoSe_2$ designed as an electrocatalyst for enhanced supercapacitor performance, M. Sangeetha Vidhya, R. Yuvakkumar, P.Senthil Kumar, G. Ravi, Dhayalan Velauthapillai, Majede Bijad, Topics in Catalysis, Vol. 65, pp. 684-693, 2022, Clarivate, 2.781

▪Investigation of pure and g-C_3N_4O loaded $CdWO_4$ photocatalytic activity on reducing toxic pollutants, SP. Keerthana, R. Yuvakkumar, P.Senthil Kumar, G. Ravi, S.I. Hong, Dhayalan Velauthapillai, Chemosphere, Vol. 291, pp. 133090, 2022, Clarivate, 8.943

▪In vitro and in vivo comparative analysis of differentially expressed genes and signaling paways in breast cancer cells on interaction with mesenchymal stem cells, Hariharan Jayaraman, Ashwin Anandhapadman, and Nalinkanth Veerabadran Ghone, Applied Biochemistry and Biotnology, 9, 2022, Web of Science, 2.926

▪Bioethanol production optimization through machine learning algorithm approach: biomass characteristics, saccharification, and fermentation conditions for enzymatic hydrolysis, Nithianantharaj Vinitha, Jaikumar Vasudevan, Kannappan Panchamoorthy Gopinath, Biomass Conversion and Biorefinery, 13399-022-03163, 2022, Clarivate, 4.987

▪Desulfurization of Gasoline Using Deep Eutectic Solvents Based on Tetrabutylammonium Brmide, Vijayalakshmi Gosu, Rohitash Kumar, Anantharaj Ramalingam, U. K. Arun Kumar, Amit Kumar Kashyap, and Verraboina Subbaramaiah, Journal of Chemical Engineering Data, https://-doi.org/10.1021/acs.jced.2c00172, 2022, Web of Science, 2.694

▪Promotion of methane production by magnetite via increasing acetogenesis revealed by metagenome-assembled genomes, Jiafeng Yu, Jian Liu, P.Senthil Kumar, Yunwei Wei, Meng Zhou, Dai-Viet N. Vo, Leilei Xiao, Bioresource Technology, 345, 2022, Clarivate, 11.889

•Heterostructured two dimensional materials of MXene and Graphene by hydrothermal method for efficient hydrogen production and HER activities, V. Thirumal, R. Yuvakkumar, P.Senthil Kumar, G. Ravi, A. Arun, Ramesh K. Guduru, Dhayalan Velauthapillai, International Journal of Hydrogen Energy, https://doi.org/10.1016/j.ijhydene.2021.12.045, 2022, Clarivate, 7.139

•Facile route for synthesis of FeO/Fe_3C/g-Fe_2O_3 carbon composite using hydrothermal carbonization of sugarcane bagasse and its use as effective adsorbent for sulfamethoxazole removal, G. Prasannamedha, P.Senthil Kumar, Vignesh Shankar, Chemosphere, Vol. 289, pp. 133214, 2022, Clarivate, 8.943

•Green synthesis of ZrO2 nanoparticles and their nanocomposites for multiple applications: A review, Thuan Tran, Duyen Thi Cam Nguyen, Ponnusamy Senthil Kumar, Azam Taufik Mohd Din,Aishah Abdul Jalil, Dai-Viet N. Vo, Environmental Chemistry Letters, Vol. 20, pp. 1309-1331, 2022,Clarivate, 13.615

•Antibacterial and anticancer potential of mycosynthesized titanium dioxide (TiO_2) nanoparticles using Hypsizygus ulmarius, K. Manimaran, S Loganathan, D Gnana Prakash and D. Natarajan, Biomass Conversion and Biorefinery, https://doi.org/10.1007/s13399-022-03186-6, 2022, Clarivate, 4.987

NATIONAL CONFERENCE ATTENDED

•Dr. Balaji D presented a paper entitled Integrated nanobiochar from plant residues as a potent sorbent in the removal of copper ions in the two-day National Conference on New Trends and Innovations in Bioengineering (NTIB 2022) organized by the Department of Biotechnology, Faculty of Engineering, at Karpagam Academy of Higher Education on May 30-31, 2022.

INTERNATIONAL CONFERENCE ATTENDED

- Dr. Balaji Dhandapani presented a paper entitled 'Enhanced photocatalytic degradation and kinetic studies of Acid Blue 113 dye by synthesized Ni^{2+} and Ag^{2+} doped ZnO Nanocatalyst"' in Second International Conference on "Sustainable Materials and Technologies for Bio and Energy Applications SMTBEA-2022", organized by SSN Institutions, Kalavakkam, Chennai-603110, in association with Elavenil Science Association & Indian Science and Technology Association during 13-15, July 2022. Received best paper awardfor the session.

- Dr. R. Parthiban presented a paper entitled "SUSTAINABLE TECHNOLOGY FOR SURFACE RUN-OFF PURIFICATION USING GRANITE POWDER BASED PERVIOUS CONCRETE" in the Two-day International Conference on "Environmental Pollution and Control Technologies" (EPACT - 2022) organized by Annamalai University, Chidambaram during August 26-27, 2022.

PROJECTS APPLIED

- Dr. P. Senthil Kumar Ph.D, ASP/ChemProject Title:A novel zero discharge hybrid technology for desalination, PI: Dr. P. Senthil Kumar/Professor/Chemical Engineering; Co-PI Dr. B. Senthil Rathi /AP/Chemical Engineering, St. Joseph's College of Engineering, Chennai, Total Budget (INR): 98,36,916. Funding Agency: Ministry of New and Renewable Energy (R&D Division), Government of India under Renewable Energy Research and Technology Development Programme (RE-RTD-2022)

- Dr. R. Anantharaj, ASP/Chem, PI: Dr. R. Anantharaj/ASP/Chem, Co-PI: Dr. K.Sathish Kumar/Prof./Chem, Total Budget (INR): 14000400/- Funding Agency: DST-EWO

- Dr. K. Sathish Kumar, Prof/Chem, Project Title: Fabrication of a water purification membrane using iron recovered from mine waste, PI: Dr. K. Sathish Kumar/Prof/Chem, Co-PI: Dr. R. Anantharaj/ASP/Chem, Total Budget (INR): 24,96,750. Funding Agency: SERB-SURE

PATENTS

- Dr. B. Ambedkar ASP/Chem, Dr. Nagarajan Ramamurthy Prof/Chem– IITM, Dr. Ravichandar Babarao Sr. Scientist/Applied Science – RMIT Australia, Mangaleswari Santhosh Kumar Research Scholar/Chem, Dr. Sathish Kumar Kannaian, Prof-HoD/Chem, got their Patent titled "Intensification of Sono-assisted CO_2 Stripping using Hydrophobic Nanoparticles" Published on 16.09.2022. (Application number: 202241050337).

SCHOLAR INFO

- Dr. P. Senthil Kumar, Professor/Chemical Engineering convened the first DC meeting for his full-time research scholar Mr. Denisdon S on 08-07-2022.
- Dr. D. Gnana Prakash, ASP/Chem conducted the Public Ph.D. Viva Voce examination for his full-time research scholar, Mrs. Shabnam Murshid on 11.07.2022.
- Dr. P. Senthil Kumar, Professor/Chemical Engineering convened the Ph.D. Viva Voce Examination for his Full Time Research Scholar, Mrs. G. Janet Joshiba on 12-08-2022
- Dr. K.Sathish Kumar, Prof/Chem conducted the Viva-Voce Examination for his Full-time research scholar, Mr.K.Bogeswaran on 10.08.2022
- Dr. B. Ambedkar ASP/Chem conducted final DC meeting for his Full-time PhD Scholar Ms. R. K. Nilavuckkarasi on 27.08.2022 at 11.30am.
- Ms. P. P. Papitha, PhD Scholar (21245997119) of Dr. B. Ambedkar ASP/Chem had given Confirmation Seminar on 24.08.2022 at 01.45 PM.
- Mrs. S. Mangaleswari, PhD Scholar (21245997126) of Dr. B. Ambedkar ASP/Chem had given Confirmation Seminar on 24.08.2022 at 02.20 PM.
- Dr. B. Ambedkar ASP/Chem conducted Confirmation DC meeting for his Full-time PhD Scholar Mrs. S. Mangaleswari (21245997126) on 19.08.2022 at 02.30 PM.
- Dr. B. Ambedkar ASP/Chem conducted Confirmation DC meeting for his Full-time PhD Scholar Mrs. P. P. Papitha (21245997119) on 12.08.2022 at 11.30 AM.
- Dr. K.Sathish Kumar, Prof/Chem attended the Final DC Meeting for a part-time research scholar, Mr.B.Nataraj on 22.09.2022.

EVENTS ATTENDED

- Dr. K. Jagannathan, ASP/Chem attended a Seminar on "Idea -> Start-Up" conducted by Dr. N. Bhalaji, Associate Professor/IT/SSNCE organized by SSN-IIC on 20.07.22 from 10.00 am to 11:30 am at IT Seminar Hall, SSN College of Engineering.
- Dr. D.Balaji, Associate Professor has attended one day Webinar on “Journal Citation Reports” organized by Clarivate on 10.08.2022.
- Dr. P. Senthil Kumar, Professor/Chemical Engineering attended the ACS Science Talks on Building Partnerships for Sustainability, Organized by American Chemical Society (ACS), on 16-09-2022.

WEBINAR/ GUEST LECTURE CONDUCTED

- Dr. D. Gnan Prakash ASP/Chem and Dr. B. Ambedkar ASP/Chem jointly with SSN-IIC & Alumni Association organized an orientation session on "Opportunities for Students and Faculties: Dynamics of Entrepreneurial Process" on 12th August 2022 (Friday) between 2.00 pm and 3.00 pm.

SEMINAR CONDUCTED

- Dr. P. Senthil Kumar, Professor/Chemical Engineering in Association with SSN Centre of Excellence in Water Research (CEWAR), India and Universiti Tunku Abdul Rahman (UTAR), Malaysia organized the International Seminar Series on "Water in Circular Economy" on 27-07-2022

- Dr. R. Parthiban Prof/Chem and Dr. D. Balaji Asso Prof/Chem organized the inauguration of Indian Institute of Chemical Engineers - SSN Student Chapter on 25 Aug 2022. It was inaugurated by Padmashri Prof G D Yadav, Former Vice Chancellor of ICT Mumbai and Mr DM Butala President IIChE. Along with them another 12 Council members of IIChE from various region of our country participated and interacted with our students and faculty.

WORKSHOP CONDUCTED

- Dr. P. Senthil Kumar, Dr. Kilaru Harsha Vardhan and Dr. B. Chitra Conveners organized the Virtual National Workshop on "How to improve authors citations-Phase II"on 17-06-2022

- Dr. P. Senthil Kumar, Dr. Kilaru Harsha Vardhan and Dr. B. Chitra Conveners organized the Two Days National Workshop on “Writing Scientific Research Paper - Phase IX”, 24-25 June 2022

MOU RELATED NEWS

- Dr. P. Senthil Kumar, Professor/Chemical Engineering had an interaction with Prof. Shane Allen Snyder team, Head, Nanyang Environment & Water Research Institute (NEWRI), Singapore for MoU with SSN on 05-12-2022.

- Dr. P. Senthil Kumar, Professor/Chemical Engineering executed the MoU between Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam and Institute of Engineering and Management, Kolkatta on 08-09-2022. This MoU envisages scientific collaboration for joint product development, internships and other corporations of mutual value. Dr. P. Senthil Kumar Professor/Chemical Engineering coordinated the MoU process.

- Dr. V. Jaikumar Associate Professor/Chemical Engg coordinated the MoU signing between WAY2GROW AGRITECH PVT Ltd., and Sri Sivasubramaniya Nadar College of Engineering on 30.09.2022. This Company was founded in 2020 with a mission of creating growing clean food locally. Their R&D focuses on crop physiology, nutrients and farm management to help the growers get the most out of their produce. They have their own proprietary hardware and software to manage the farm which is backed by deep agricultural science. This MoU envisages scientific collaboration for joint product development, internships, Project work for students and other activities of mutual value

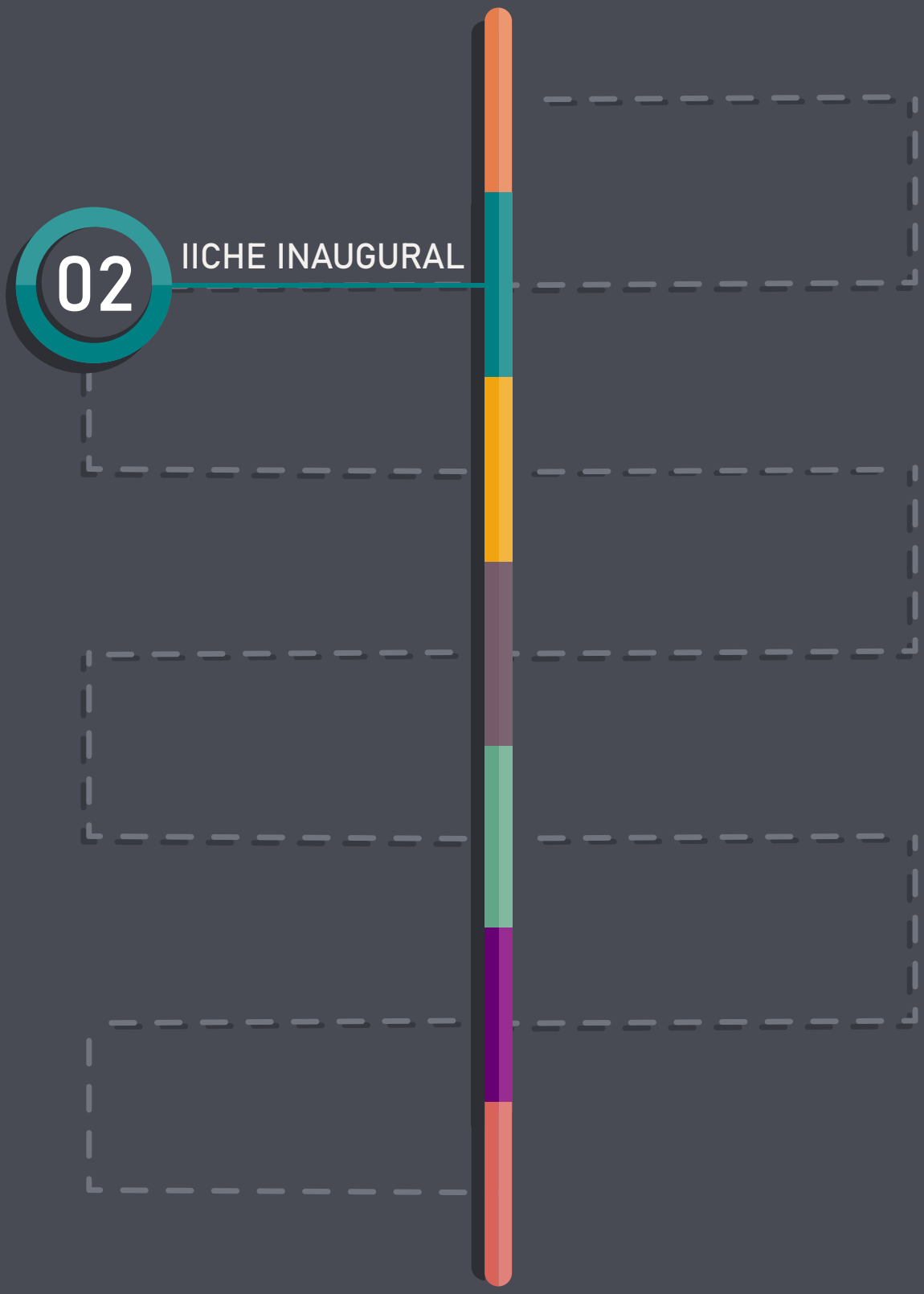
- Dr. V. Jaikumar Associate Professor/Chemical Engg coordinated the MoU process between LEFI AGRITECH PVT Ltd., and Sri Sivasubramaniya Nadar College of Engineering on 30.09.2022. This Company aggressively works on agricultural resources management. They practice soilless agriculture with the minimal usage of water resources and majorly operate on a concept called HYDROPONICS - future of agriculture and are based into developing a standard cultivation procedure for exotic vegetables such as Lettuce, Basil, Thyme etc. This MOU is intended for taking up various student training programmes, internships, placement, Workshops, Collaborative Research and other activities of mutual interest, between SSN and Lefi specifically in the areas of Agricultural Biotechnology, Agricultural Chemistry and Chemical Engineering (Production of Bio-Fertilizers and Pesticides).

OTHER ACTIVITIES

- Dr. B. Ambedkar ASP/Chem submitted the response for the First Examination Report (FER) to CIntelligence for the Patent Titled “Sono-assisted Ultra-low Temperature CO_2 Stripping/ Carbon-rich Solvent Regeneration” Patent application number 202241007547 on 06.09.2022.

- Dr. D. Balaji, ASP/Chem acted as session chair for the 3rd International Virtual Conference on Recent Trends in "Clean Technologies for Sustainable Environment (CTSE-2022)" at Sri Sivasubramaniya Nadar College of Engineering, Chennai, during 15-16 September 2022.

- Dr. P. Senthil Kumar, Professor/Chemical Engineering received SSN Best Teacher Award (Chemical Engineering) for the years 2020-2021.


02
IICHE INAUGURAL

INAUGURATION OF ASSOCIATION OF CHEMICAL ENGINEERS IICHE - SSN STUDENT CHAPTER

The Association of Chemical Engineers (ACE) and the Indian Institute of Chemical Engineers (IIChE) - SSN Student Chapter are the two prominent student bodies of the Department of Chemical Engineering, SSN. The inaugural ceremony of ACE and IIChE-SSN Student Chapter for the academic year 2022-2023 was held on the 25th of August at the Chemical Seminar Hall.

The Chief Guests for the inaugural event were Dr. G D Yadav, IICHE and Mr. M Butala, President of IICHE. Accompanying them were the council members of IICHE including Vice President Mr. M V Rao, Vice President Mr. Karthikeyan, Honorary Secretary and Honorary Vice President. This being the first offline inaugural in a long time, the Chemical department was honored by their presence.

With the blessings of the Almighty, the program commenced with the welcome address by Dr. R Parthiban. Faculty coordinator for the ACE-IICHE Student Chapter, Dr. D. Balaji, introduced the chief guests for the afternoon.

Professor Ganapati D. Yadav is one of the topmost, highly prolific, and accomplished engineering-scientists in India. He is now selected as the National Science Chair (Mode I) by the Science & Engineering Research Board (SERB) of the Department of Science & Technology, Govt. of India, which is a very prestigious national honor. He also holds the titles of Emeritus Professor of Eminence and was bestowed with J.C. Bose National Fellowship by DST since 2010 until recently. He is internationally recognized by many prestigious and rare awards and has been recipient of two honorary doctorates.

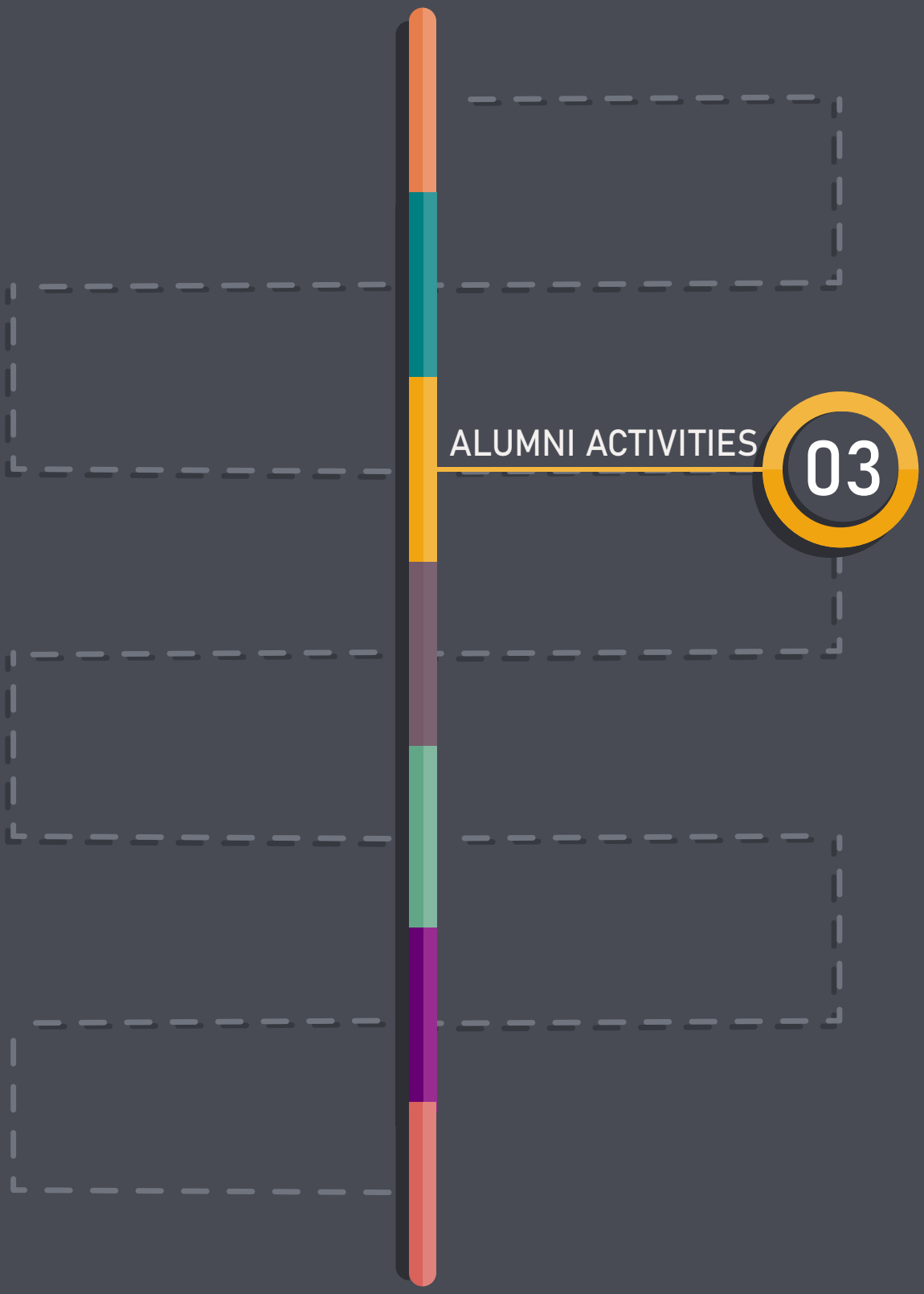
Adding more value to the event, Prof. G D Yadav enlightened the students about the Chemical Engineering education & career prospects. He elucidated the quintessential role of Chemical Engineering and the industry globally in a light yet informative address.

Mr. D M Butala is a Chemical Engineer from Maharaja Sayajirao University (MSU), Baroda, has over 50 years of rich experience Fertilizer & Chemical Sector. He is National President of Indian Institute of Chemical Engineers for 2022 and believes in strong bond between Academia, Industry and R &D. He was conferred with Lala Shriram National Award for Leadership In Chemical Industry for year 2020 by IIChE. His address to the students delivered many encouraging thoughts for the future.

Illuminating special addresses by Vice President Mr. M V Rao, Vice President Mr. Karthikeyan were also delivered.

The SSN ACE-IICHE student chapter was initiated in the year 2007, since then, it has been very active in organizing various guest lectures, workshops, industrial visits, and conferences to enrich the academic curriculum. As of last year, of its many successful events included INVENTE 6.0, a collegewide fest with a plethora of technical and semi-technical events. It seeks to bring out the best in all our participants across domains. STEER 2022 was its national conference, seeking to bring to the limelight emerging arenas of research and development in the Environmental and Energy sector. We are also very proud to have won Ambuja's Best student chapter award for past three years.

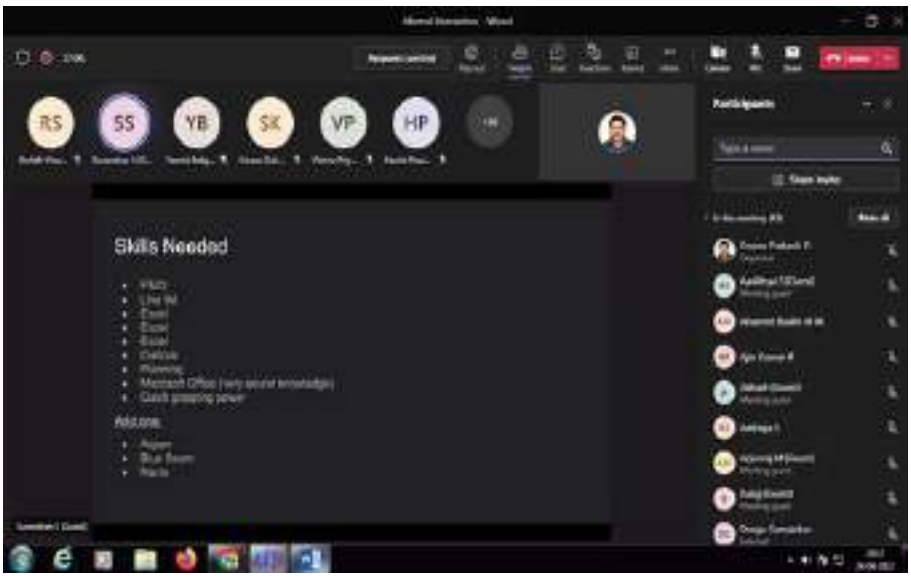
-Compiled by Thirthaa Yuvaraj, Vice President, IIChE SSN Student Chapter.


ALUMNI ACTIVITIES
03

ALUMNI ACTIVITIES

Abhishek Krishnan of 2021 batch (currently pursuing Environmental Engineering at Stanford University, California, USA) interacted with final year students who are all aspiring to study Master's in abroad on Friday, 16th September 2022.

Alumni association of Chemical Engineering department organized a webinar titled "Preparation Strategies and Career Prospects in Wood on 24.09.2022 to familiarise the final year and third year students about the recruitment process followed by Wood Plc, a leading engineering, procurement and construction firm. This session was handled by Mr. S. Surendran who completed B.Tech Chemical Engineering in the year 2021 and got placed in Wood plc.

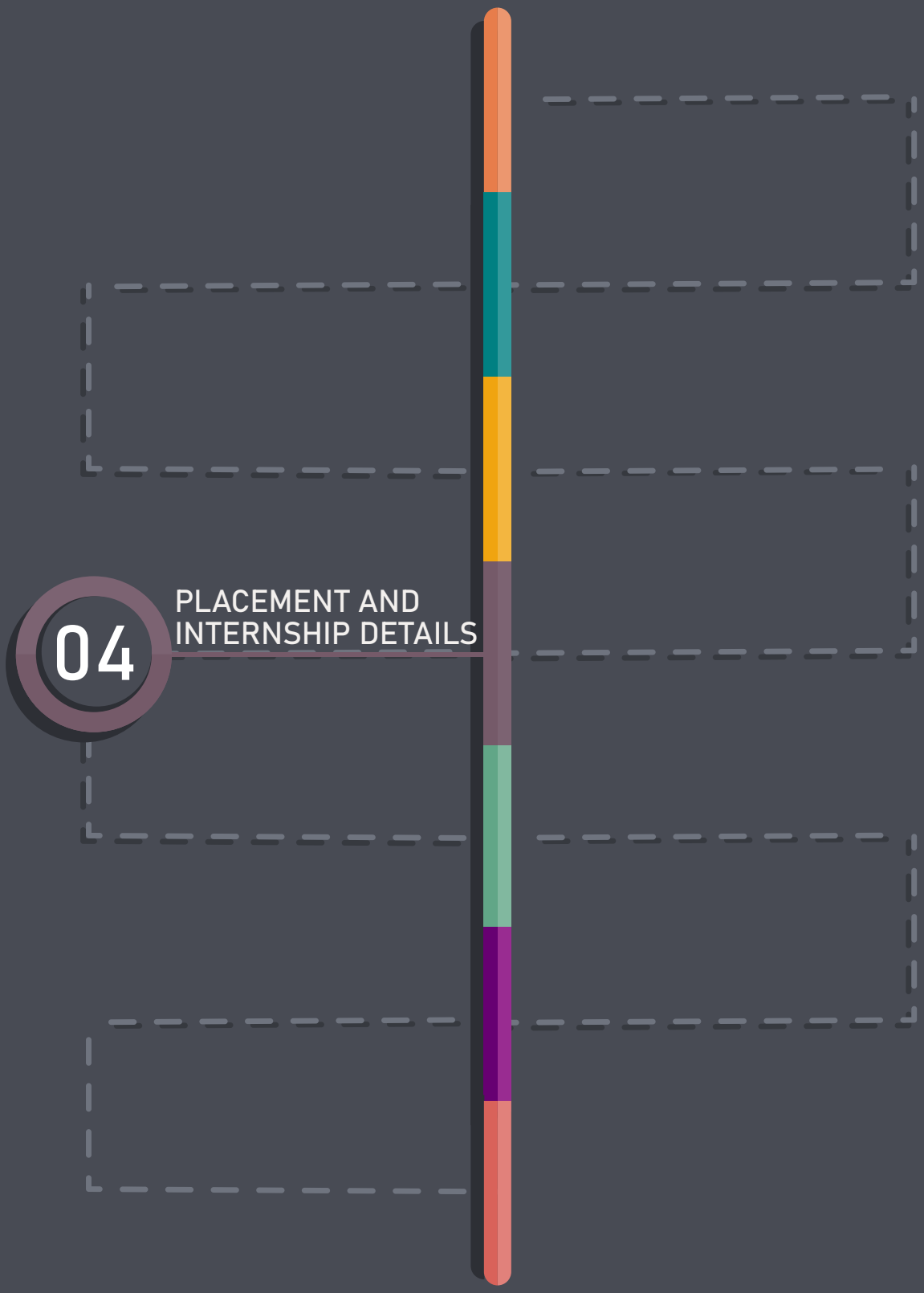


ALUMNI VISIT TO CAMPUS:

Mr. Srinivas Sivaraman (Batch 2015–2019, Department of Chemical Engineering) visited the department on 19th July 2022. He completed his Master's degree in Health Safety & Environment with a focus on chemical process safety from the University of Petroleum and Energy Studies, Dehradun. Having worked in process safety projects for chemical explosions and toxic release studies, He received funding to pursue his Ph.D. research in Safety engineering for ammonia and hydrogen fuel cell applications through the UK EPSRC (Engineering & Physics Sciences Research Council) at Ulster University in collaboration with University of Nottingham, Loughborough University, and University of Birmingham.

On 12th August 2022, SSN Institution's Innovation Council and Alumni Association conducted webinar on "Opportunities for Students and Faculties: Dynamics of Entrepreneurial Process". This session was conducted by Mr. S. Maria Jacob Stani Raja who completed B.Tech - Chemical Engineering in the year 2013.

Mr. S. Maria Jacob Stani Raja
Alumnus - 2013 Batch B.Tech Chemical,
Founder,
Great Minds IAS Academy,
Nagercoil, Tamil Nadu.

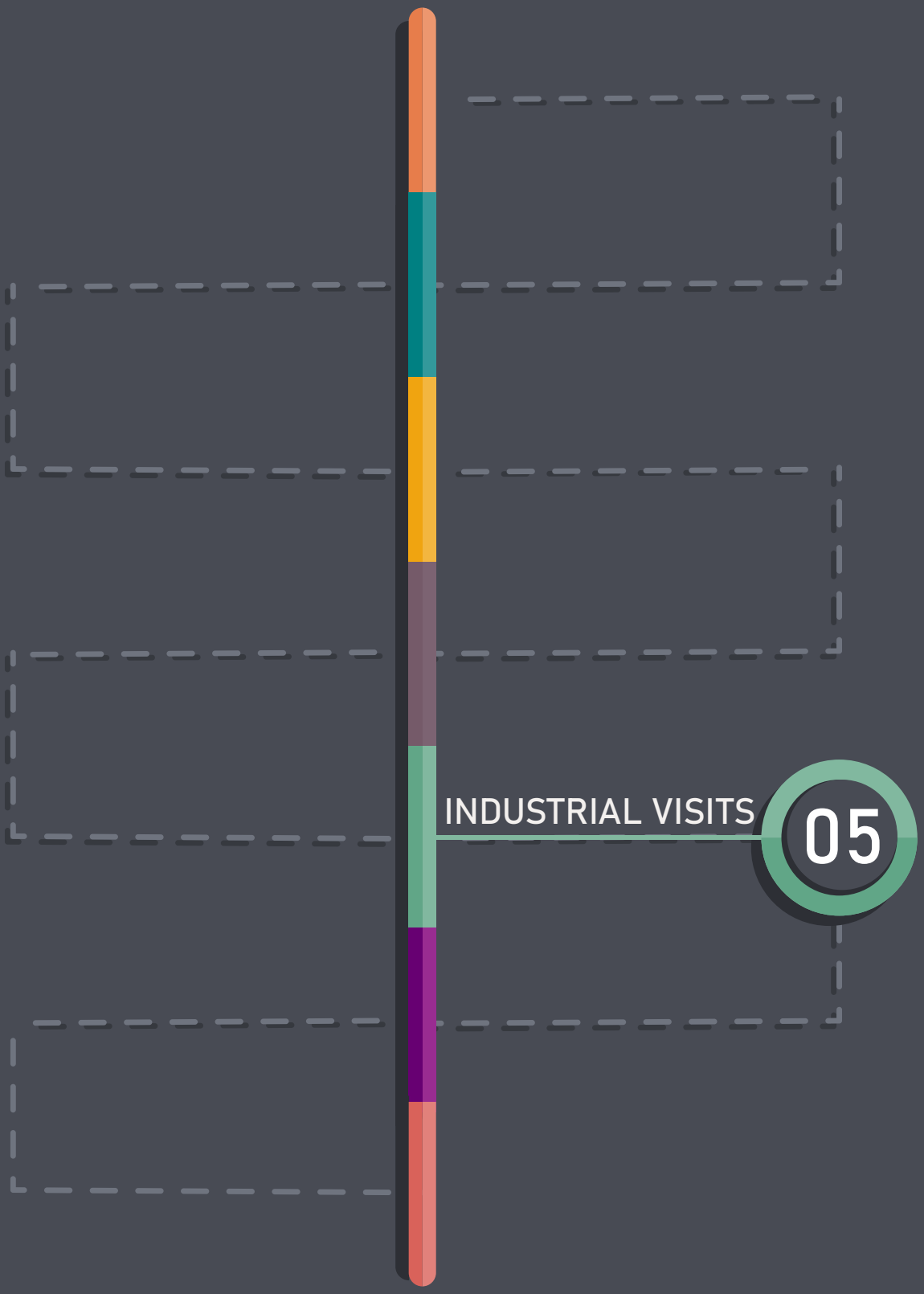

04
PLACEMENT AND
INTERNSHIP DETAILS

PLACEMENT DETAILS - BATCH - 2019 - 2023

S.NO	NAME	COMPANY	CATEGORY	SALARY
1	Aiswarya S	Cognizant	Regular	4,00,000.00
2	Arjunraj M	Cognizant	Regular	4,00,000.00
3	Avanthika S	Technip Energies	Core	6,00,000.00
4	Balaji Muralikrishnan	Wood	Core	6,10,000.00
5	Dinesh Kumar K S	Cognizant	Regular	4,00,000.00
6	Divya Darshini P	TATA Consultancy	Regular	3,60,000.00
7	Durga Gunasekar	Wood	Core	6,00,000.00
8	Eshant Raj	Zifo RnD	Core	4,76,214.00
9	Poojitha Gali	Cognizant	Regular	4,00,000.00
10	Harini	Cognizant	Regular	4,00,000.00
11	Jagadheesh H C	Zifo RnD	Core	4,76,214.00
12	Gowthamraj A	Wood	Core	6,00,000.00
13	Kaavya A	TATA Consultancy	Regular	3,60,000.00
14	Joshua T	Wood	Core	6,00,000.00
15	Kanchana K	Cognizant	Regular	4,00,000.00
16	Persis J	Cognizant	Regular	4,00,000.00
17	Mathivathani J	Cognizant	Regular	4,00,000.00
18	Rohit Viswanath S	Technip Energies	Core	6,10,000.00
19	Reshma A	Wood	Core	6,00,000.00
20	Shruthi Prakash	TATA Consultancy	Core	3,60,000.00
21	Sravya I	Cognizant	Regular	4,00,000.00
22	Supraja M	Cognizant	Regular	4,00,000.00
23	Sriram Gokula Krishnan R	Wood	Core	6,00,000.00
24	Kishore S	Wood	Core	6,00,000.00
INTERNSHIP DETAILS - BATCH - 2019 - 2023				
1	Shruthi Prakash	Amazon	Super Dream	NA
2	Sravya I	Amazon	Super Dream	NA
3	Thirthaa	Amazon	Super Dream	NA
4	Malarkkodi L	Mr. Cooper	Dream	NA

INTERNSHIP 2022-23

S.NO	NAME	YEAR	COMPANY NAME	FROM	TO
1	N Shiva Shunmugam	Third Year	SPIC, Thuthukoodi	16-08-2022	22-08-2022
2	Harsha Anand	Third Year	SPIC, Thuthukoodi	16-08-2022	22-08-2022
3	Sandhya .S	Third Year	SPIC, Thuthukoodi	16-08-2022	22-08-2022
4	Swati Krishna .M	Third Year	SPIC, Thuthukoodi	16-08-2022	22-08-2022
5	Vishal Prakash	Final Year	Indian Adidtives Ltd	01-08-2022	05-08-2022
6	Reshma A	Final Year	Coromandel International	01-08-2022	05-08-2022
7	Persis J	Final Year	Coromandel International	01-08-2022	05-08-2022
8	Jennifer M	Final Year	Technip Energies	27-07-2022	19-08-2022
9	Yamini B	Final Year	Indian Adidtives Ltd	01-08-2022	05-08-2022
10	Surya K	Final Year	SPIC, Thuthukoodi	01-08-2022	05-08-2022
11	Rohith Viswanath S	Final Year	Technip Energies	27-07-2022	19-08-2022
12	Gnanasekar M S	Final Year	SPIC, Thuthukoodi	01-08-2022	05-08-2022
13	Durga Gunasekar	Final Year	SPIC, Thuthukoodi	01-08-2022	05-08-2022
14	Avanthika S	Final Year	MFL,Manali	01-08-2022	12-08-2022
15	Guruprakash M	Final Year	SPIC, Thuthukoodi	01-08-2022	05-08-2022
16	Divya Darshini P	Final Year	SPIC, Thuthukoodi	01-08-2022	05-08-2022
17	Aindrila Mandal	Final Year	NEOS Health Pvt.Ltd	01-09-2022	20-09-2022


INDUSTRIAL VISITS
05

INDUSTRIAL VISITS

I.CHENNAI METRO SEWAGE WATER TREATMENT PLANT:

Location: Koyambedu, Chennai
Date : Sept 26, 2022
Staff Organizer: Dr V Jayakumar

This writeup is about the Industrial visit by the students of chemical engineering department to Chennai metro sewage water treatment plant, Koyambedu, Chennai. The visit was organized by the department of chemical engineering to enhance the knowledge about waste water treatment facilities that are available in our city. Nearly 30 students visited the plant along with one faculty coordinator.

The students gathered in the plant around 9:30 am. At first, the plant coordinator briefed about the entire process of the plant using prototype. He explained about the flow of operation from the inlet of waste water to tertiary step of the treatment. The students were advised to wear face masks before visiting the treatment facilities. The visit was started in the place were all waste water from the entire city would gather, this is the primary treatment step, where larger solid wastes were separated using screening technique. After that students had a look at the sedimentation tank where the settlable solids gets settled.

Then they went to aeration sector, where microbial action was used to treat water. In this step, larger foam was generated which depicts the oxygen pumped for survival of the microbes. Finally, students ended up in tertiary treatment step, where chlorination process takes place. The sludge formed during these processes are used to produce methane gas which supplies energy for entire plant.

At last, students had a visit in the plant's laboratory where they learnt about various analysis like BOD, COD etc.

Students Review:

- The plant coordinator was very friendly.
- The visit was well organized.
- Each and every workers followed safety protocols.
- Without any hesitation students were able to ask their doubts and clarified it well.

-Mohan P,Third Year
Shriram S,Third Year

II.CMWSSB NESSAPAKAM

Location: Nessapakam, Chennai
Date : Sept 26, 2022
Staff Organizer: Dr.Gnanaprakash

One part of the third-year students (30 Students along with 1 faculty coordinator) visited the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) at nessapakam on 26th September. It is one among 12 sewage treatment plants across Chennai region which mainly focuses on treating domestic sewage water. It was a very informative visit as the students learned about the treatment of the waste water and how they reuse it. The students were advised to follow the safety norms inside the plant. This particular plant had 23MLD, 40MLD and 50MLD stations for treating the sewage water. The raw sewage has the BOD of 350mg/L and COD of range 600-800 mg/L. The officials at the plant briefed us about the functioning of the plant and how they safely dispose the sludge without causing health risks to the public. The sludge is also used as the fertilizer in the nurseries as they are rich in the nitrogen content.

This plant uses primary and secondary treatment to treat the sewage water and sludge treatment to treat the sludge produced from the primary and secondary treatment. Secondary effluent treated from STP was used for irrigation; for cultivation of paragrass which was auctioned each year. Then the students visited the clarification tanks and the aeration tanks and learned the purpose of those tanks and the operation method was clearly explained by the officials at the plant. Later on, the students visited the bio gas generation plant and the scrubber section.

The generated biogas is used for running the plant. Bio-gas is a by-product of anaerobic digestion of sludge. Normally Bio-gas is composed of 60% to 65% Methane and 25 to 30% Carbon-dioxide with a trace amount of other gases. The students actively participated in the industrial visit and asked various questions regarding the functioning of plant and the advancements in this process. Thus this was an informative visit to the students.

-Geetha S,Third Year
Sri Varshini B,Third Year

III.AAVIN, SHOLINGANALLUR

Location: Sholinganallur
Date : Sept 23, 2022
STAFF COORDINATOR: Dr.D. Balaji and Dr. Anup Kundu

All the third-year students (63 Students along with 2 faculty coordinators) visited the Aavin Milk Factory located at Sholinganallur on 23th September. We were taken to the Process Control Room where they were explained about the detailed procedure of the types of the milk produced.

The Milk (MIXED MILK) collected from the Unions were first stored in the storage tanks called Silos. The Milk stored is processed to obtain 4 different types of milk based on content of fat and SNF (Solid Non-Fat). After the processing, they were subjected to Pasteurization (the sudden heating and cooling of milk to destroy the microorganisms) and Homogenization (to make size of the particle uniform) and stored in the Silos.

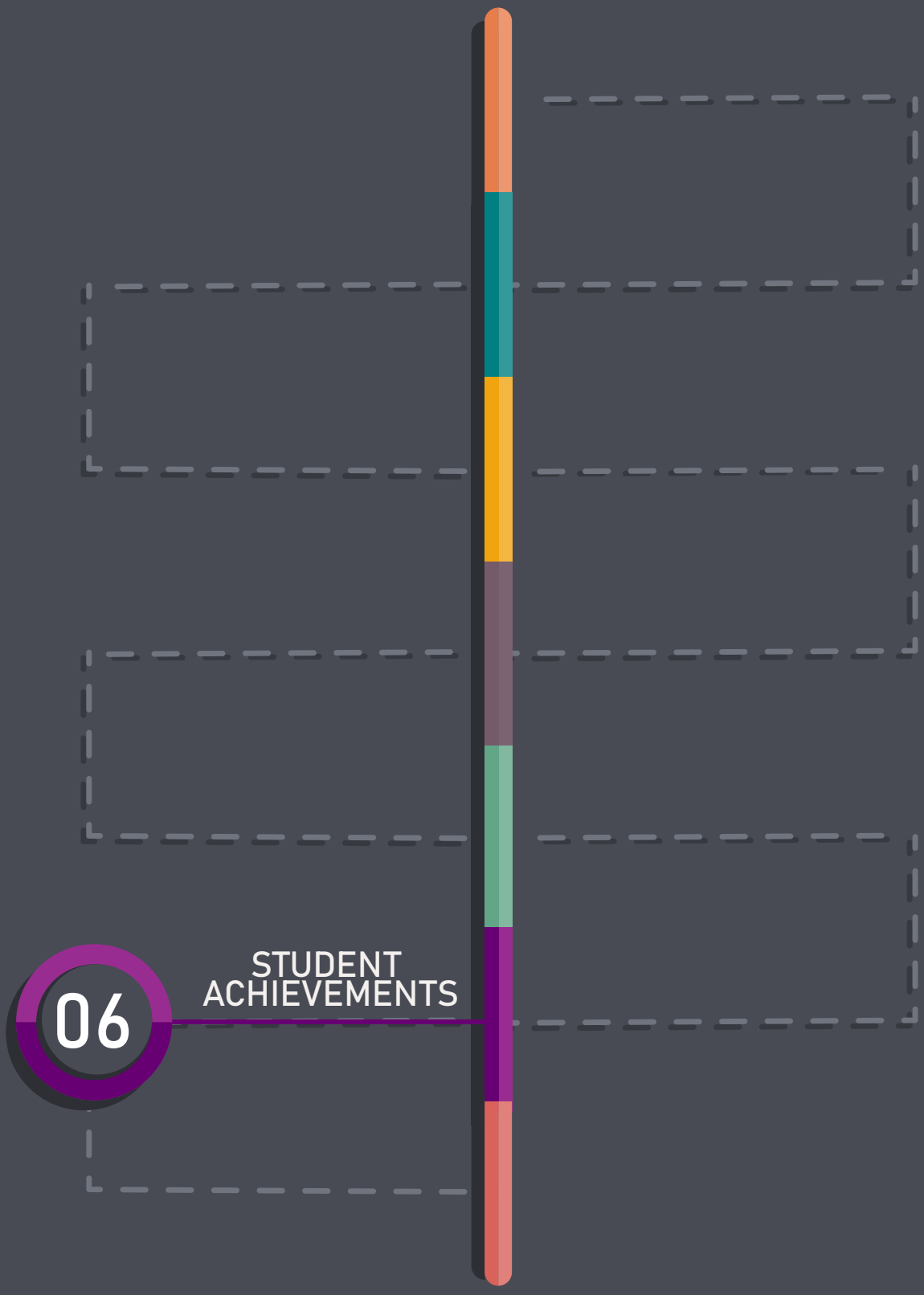
The different types of milk obtained are:

S.NO.	CLASS OF MILK	FAT%	SNF%
1.	Standardized Milk	4.5	8.5
2.	Toned Milk	3.0	8.5
3.	Double Toned Milk	1.5	9.0
4.	Skimmed Milk	Not more than 0.5	8.7
5.	Full Cream Milk	6.0	9.0

Then we visited the Quality Control Laboratory where various tests were being performed to check on the quality of the milk before processing or packaging which would then distributed to different parts of Chennai. The COB (Clot on Boiling) test is done to check on the warmth stability of the milk through processing. Methylene Blue Dye Reduction Test, commonly known as MBRT test is used as a quick method to assess the microbiological quality of raw and pasteurized milk.

After visiting the Quality Control Laboratory, we visited the place where the milk is put into packets which is fully automated and the cold storage for the storage of milk. The students actively showed their interest by clarifying their doubts with the authorities and they found it very informative.

-Janarth R, Third year


06
STUDENT
ACHIEVEMENTS

KALLKI SELVAN K N

Second Year

Kallki Selvan has received YOUTH ICON OF INDIA Award on 01-09-2002 & THE DHRUV RATAN Award on 05-09-2002 for his excellence in Extra curricular activities.

He also had secured the prestigious KALAI ILAMANI award from the Government of Tamil Nadu. Another star added to his repertoire would be the state award that he acquired in the yoga competition [Yoga Nakshatra]. He has a stamp of himself from the Indian postal department to acknowledge his essay writing abilities on an inland letter. He had completed 6 grades in Keyboard-Carnatic from Annamalai University and also an initial grade from Trinity College, London. He wants to become a multi-faceted personality in life.

UNTRODDEN PATHS

Singing, dancing, sports, etc are some among the plethora of talents possessed by students. But some students, if not many, have talents which are not familiarised. Some students wield the sword of not-so-mainstream talents in their armoury and flaunt it effortlessly.

This section is devoted to bring out the not-so-mainstream talents among students and to dictate their journey along the untrodden paths of their talents.

Writer's Knack

Hi. I am Lohita S and I'm in my final year of chemical engineering. Apart from racking my brains to relate thermodynamics with reaction engineering, I indulge in a bit of creative writing to soothe my mind. The first time I felt the pull towards creative writing was in fifth grade when my teacher praised me for an essay and the swell of pride I felt was something I wanted to hang on to. Later, I came across the school magazine filled with writings from different minds and I wanted to be a part of it. For a few years, I didn't make the cut but with a lot of practice I finally got recognised. Being a writer has given me an identity and I feel happy that I set out to pursue it. I started participating in poetry/prose competitions and I've won a few of them. One such competition was the national creative writing competition hosted by Mypedia. I won Rs 10000 for that but the best part was being called a young author and getting my poem published in their book.

I now write poems in an Instagram page and post a few prose pieces on a lifestyle blog. I love reading thrillers and most of the time they influence my work. Recently, I have started to write slam poetry. It's the recitation of poetry and honestly, I feel it captures more emotion because it's not only in the form of words but a voice as well.

In college, I was recognised for writing more than ever as I had joined the English Literature Club (ELC) where I got to meet other people with the same kind of passion that I have. I participated in the SSN Creative writing contest '22 and won the third place in the poetry category. In addition to that I participated in SSNMUN '22 as a reporter in the International Press committee and I had won 'high commendation'. I was a member of the organising committee of ELC events and a few SSNMUN editions and now I hold the position of the Under Secretary General for the Delegate Affairs division of SSNSNU-C MUN 2023.

I'm thankful for the opportunities that were presented to me and everyone who support my work and believe in me. Acknowledgement is something that everyone their growth.

-Lohita S, Fourth year

Color grading contentment

Hello, I'm S.Vaideesh of 3rd year chemical engineering. Three years ago, I started my journey as a freelance colorist. Color grading helps you create a mood or coherent sensibility with your color palette. Different from color correction, which makes your images look exactly like they appear in real life, color grading conveys a visual tone. Even during my childhood I was fascinated about films and how they were created. At my school days, I was very much inclined towards video editing and I learnt some softwares through Youtube and what not. Later I realised, video editing isn't my niche. It was really tiring and that's when I stumbled upon a beautiful advertisement which caught my eye on color grading.

I started out color grading as an hobby and soon it turned out to become professional. My social media accounts have been a major source of attracting clients. Although I've tried several websites which I thought would help me land my first gig, Instagram and Facebook didn't let me down. At first I did a lot of pro bono works and slowly I started charging people. My first paid project was a short film which was from Los Angeles. I was super happy to work on it. After quite a few projects, I started to reach out to big time artists, with whom I could collaborate. Somehow I got hooked up with a project for AR Rahman and we worked on music video. I've worked with brands like Sony, Nikon, Butterfly and artists like Ar Rahman, Kamal Hasan, Snoop dog and etc. Countless music videos, short films and commercials have been down the pipeline. Nothing would've been possible without my parents and I'm really grateful for their blessings and support.

-Vaideesh S, Third year

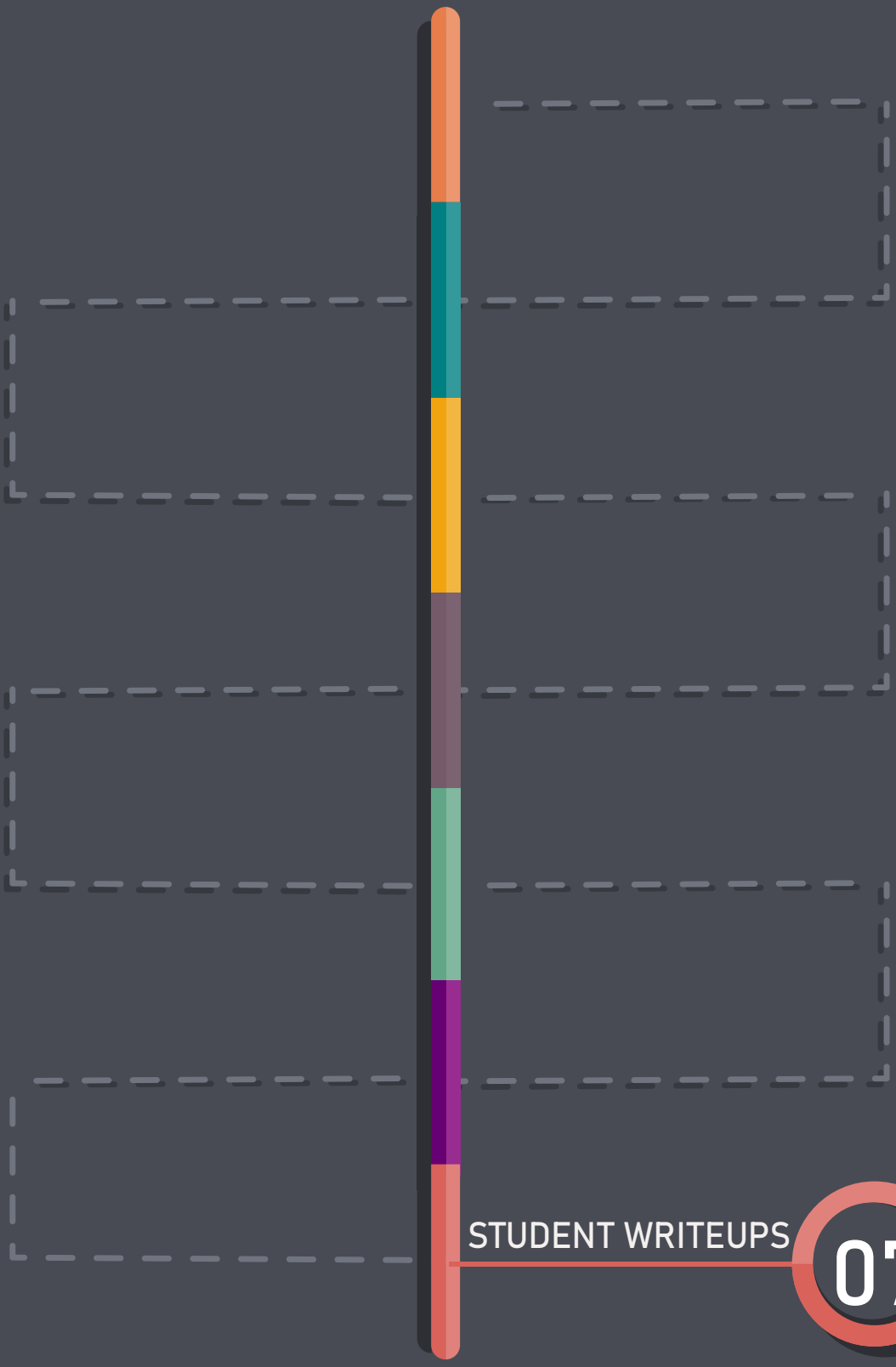
The artistic adventure

Hi this is Neeshanth.S , final year Chemical Engineering. Ever since my 4th or 5th grade, I really admired people who were into performing arts and specifically in dancing and acting. This fascination soon became an obsession after I enrolled myself for dance classes in my 6th grade, even though I was on the heavier side I could pick up steps and do well and this boosted my morale in general. And sooner when I was in my 8th grade, I got an opportunity to play the lead in a stage drama that in our school campus. I absolutely loved performing there. And in my tenth grade a group of us decided to do short films, initially we were just having fun with it and as a result of that process we learnt a lot of things from scripting, cinematography, lighting etc.

Whenever we had time, we used to try shooting a short film then and there. Eventually a short film of ours won runners up in a national level short film festival in IIM Bangalore. We then did a few more and at every attempt there was always improvement in one or the other departments.

In recent times, I acted in a movie called “Maane Thaane Ponmaane” directed by my dear friend Sanjai Menon, which backed several awards in every college fest we submitted it to, in various categories. A famous YouTube channel known as Cinema Calendar bought the movie to feature in their channel. I have been lucky to have a circle who are as passionate as I am and my family who have always been supportive in all my interests.

Neeshanth S, Fourth year



STUDENT WRITEUPS 07

APPLICATION OF ARTIFICIAL INTELLIGENCE IN CHEMICAL MANUFACTURING

Artificial intelligence is a hot topic in today's business world. Many companies use AI applications to optimize their operations and improve their bottom line. But what about chemical manufacturers? Can AI be used in this industry as well? The answer is a resounding "yes!". In this article we will discuss about the benefit of using AI in chemical manufactures and outline the specific applications that can help the production process.

ARTIFICIAL INTELLIGENCE AND CHEMICAL MANUFACTURING:

The ultimate goal for the manufacturing units within the chemical industry is to produce more while improving quality and reducing costs. That wouldn't be possible without automating the repetitive tasks. But there's much more to it - AI can also help manufacturers detect downtime and leakages, monitor and optimize the resources and energy consumption, or, what's even more important, control the quality of the production process with advanced analytics.

In the chemical industry, the usage of AI technologies is actually way less common than in transportation or finance, but in recent years, it has started gaining momentum. Since the chemical manufacturers carry great responsibility and need to stick to strict quality management protocols, automatization may have been approached by them cautiously. However, now that AI has gone mainstream and proven its potential, the chemical manufacturers are becoming much more open to its implementation.

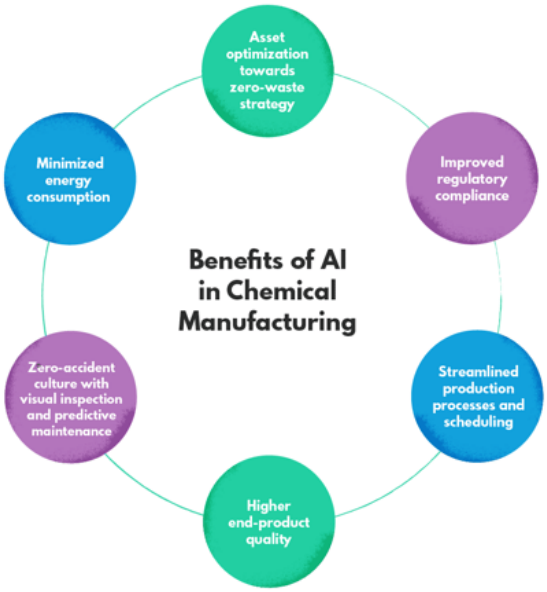
HOW CAN AI HELP IMPROVING CHEMICAL MANUFACTURING INDUSTRIES:

Due to their complexity, the chemical manufacturing processes require constant quality control and supervision. Because of their structure and usual production volume, the issues undetected in the early stages can escalate very quickly, generating huge costs and compromising the security of the establishment and the clients.

Here's where AI technologies come to the scene. While traditional algorithms may be efficient in some aspects of manufacturing, they do not learn – contrary to machine learning models. By identifying patterns, predicting future events, and suggesting the most efficient solutions based on the available data, ML provides a range of possibilities to the manufacturers that would be out of reach not that long ago.

AI can solve the most common issues encountered by chemical manufacturers, including:

- downtimes on the production line
- leakages and contamination
- unstable and compromised quality
- low or fluctuating yields
- excessive waste production
- inefficient resources use
- lengthy discovery process
- energy use optimization



OPTIMISING OPERATIONAL EFFICIENCY:

Artificial intelligence can help chemical factories optimize operations. Applying AI can help minimize the input required to run a business operation (cut costs of energy, operations, production) while maximizing the output (meaning such variables as business growth, customer satisfaction, revenue, and so on). In this context, analytics is also a secret weapon of manufacturers. Taking advantage of the available data, they can better understand the ongoing processes and predict future scenarios. While for the first purpose, the explanatory models work just fine, for the second, they'll need to reach out for predictive analytics. Advanced predictive analytics does more than just forecasting – it can suggest how to respond to the predicted events in the safest and most cost-efficient manner.

INCREASING YIELDS AND REDUCING EXCESSIVE WASTE:

Sustainable manufacturing practices are a key goal for most chemical manufacturers, with governments and consumers demanding that companies reduce their environmental impact. AI can help by monitoring various production processes in real-time to spot where changes need to be made. This technology can also help streamline operations to produce more products while using less energy and materials.

Every chemical manufacturing company deals with some level of waste, whether it's a result of overproduction, misjudgement during recipe formulation, or contamination. The good news is that artificial intelligence can help reduce or even eliminate this type of waste.

There are two ways AI can be leveraged to achieve this goal: data-driven decision making and machine learning-based predictions. In both cases, the focus is on understanding past behaviours to improve future actions. Data-driven decision making relies on analysing past data to understand and identify the underlying causes of waste and recommend corrective actions.

INCREASED QUALITY ASSURANCE:

Quality assurance aims to prevent defects in manufactured products, and AI based tools are perfect for that. To maximize the efficiency of quality control, manufacturing companies may use computer vision – a rapidly developing AI-based technology with great potential in the production sector. In its case, the cameras fuelled with deep learning algorithms carry out visual inspections, verifying whether the product or its components fulfil all the requirements. The pixels in the image get scanned and evaluated by the algorithm to separate the good elements from the defective ones. Even though computer vision is mainly used in other production sectors, it can serve chemical manufacturers for material recognition or classification based on physical properties.

PLANNING PRODUCTION:

To optimize the chemical manufacturing processes, it's also worth including the AI's predictions in the planning. What will be the demand for a particular substance or drug in a specific year? What quantities of substrates do we need to stock up on? Which ingredients should be replaced and with which to reduce the chemical production costs without compromising quality?

Machine learning algorithms can provide the manufacturers with an approximate answer based on the available data. That facilitates data management for scheduling and maintaining maximum cost-efficiency and long-term planning. It allows each chemical company to prepare for increased and decreased demand periods.

CONCLUSION:

After looking through all the applications listed above, you'll probably agree with us that the potential of AI for chemical manufacturing is impressive. Aside from optimizing the manufacturing processes, reducing downtimes and waste, and increasing yield, the chemical industry can use it for research purposes to develop new, better chemical combinations that are cheaper, safer, and friendlier for the environment.

-Tharun Kumar, Third year

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