

IICHE NEWSLETTER 2023

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SPOTLIGHT

IIChE Award list: Page 5

IIChE Updates: Page 9

SCHEMCON 2022 Report: Page 11

CHEMCON 2022 Report: Page 13

Climate Change & Sustainable Manufacturing II: Page 19

N TechnOlogy for Climate Change Mitigation: Page 25

Regional Centre Activity Report: Page 30

Student Chapter Activity Report: Page 36

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PRESIDENT'S CORNER



Dear IIChE members,

I wish you all a Happy New Year 2023. May this coming year bring you joy, happiness, contentment and cheers.

I take this opportunity to look back at the year that was and share my thoughts for 2023. The year 2022 was very eventful for IIChE as we emerged from the pandemic. Our Institute continues to spread out as the first overseas Regional Centre of IIChE opened in Calgary, Canada. Four Regional Centres opened at IIT Patna, IISER Bhopal, RGIPT Amethi (U.P.) and NIT Srinagar. You might be aware that the year 2022 was the Platinum Jubilee Year of Indian Institute of Chemical Engineers, since its establishment in 1947. The year was celebrated in a befitting manner by IIChE Headquarters and Regional Centres/Student Chapters by organising various events such as seminars/conferences/workshops across the country throughout the year. The year 2022 ended with the organisation of 75th Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2022) at HBTU Kanpur from 27-30 December 2022.





Looking forward, I feel that our focus should be directed to develop sustainable technological solutions to some of the major challenges currently facing the society such as climate change, bridging the gap between energy demand & supply, health care and food.

Human-induced climate change includes both global warming driven by emissions of Green House gases and the resulting large scale shift in weather patterns. The increasing emissions of carbon dioxide into atmosphere are contributing to climate change. It is expected that global warming could lead to 2.8°C by the end of century and to limit warming to 1.5°C would require halving emissions by 2030 and achieving near-zero emissions by 2050 (Paris Agreement 2015). To achieve these targets, we need to switch our energy consumption to renewable energy sources such as wind, solar & biomass. Fuel cells & energy storage devices are some of the elements of transition to Green Energy. Moreover, generation of hydrogen will be a game changing technology for achieving netzero emission targets as use of hydrogen as fuel does not emit Green House gases. Apart from renewable energy and battery storage systems, hydrogen is key for clean energy transition. Our Prime Minister also launched the National Hydrogen Mission recently. Therefore, I will request you to be a part of National Mission Project to contribute to the society.

During the past 20 years, there has been an ample and growing concern that if we have to continue the present model of development, then energy will be one of the basic defining issues of the century. The demand for energy is soaring like never before and thus there is an urgency that we exercise our mind about the future, about the new energy resources, which will require physical, economical and technological inputs.

Keeping these objectives in mind, the 76th Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2023) is going to be organized by IIChE Headquarters at Heritage Institute of Technology, Kolkata and the theme of the congress is **"Energy Transition: Challenges and Opportunity**".

Just to conclude, Research and Innovation play a major role in the advancement of technology. Our focus should be technical-scientific research which contributes to the development of society. Over the years, our Institute has developed a distinct profile of its own. Even as IIChE is moulding itself and playing a proactive role to keep with ever changing needs of the society and economy, the basic objectives remain largely unchanged. Some of these are as follows:

- 1. To promote advancement of the Science of Chemical Engineering and draw up a code of ethics in the profession.
- 2. To maintain and widen contacts with Chemical Engineering professionals in India and abroad.
- 3. To ensure regular exchange of ideas with other National and International professional Institutes in this field.
- 4. To undertake publication work i.e. journal, monographs, proceedings of seminar/symposia/workshops.





Our endeavour should be that IIChE becomes an international destination for technological development through education, research, innovation & scientific consultancy. Since you have learnt valuable lessons through the pandemic-how to negotiate uncertainty, how to make choices and take decisions under conditions that were unpredictable, I hope these lessons will surely stand you in a good stead in post -Covid world and that you will be able to find solutions to these challenges and steer the society through them.

I look forward to your ideas and suggestions to make IIChE more vibrant and your continued support as we move into 2023.

Happy New Year and May peace, love, health & prosperity follow you always.

Best, Anil K. Saroha

OBITUARY

With profound grief, we announce the sad demise of our following respected Members:
Prof.Arun Kumar Mitra (LF 02514). The late Prof. Mitra joined IIChE on 9 March 1970
Dr. Sivabrata Chatterjee (LM 00290). The late Dr. Chatterjee joined IIChE on 13 November 1958
Dr. SawarnanJit Chopra (HF 08987). The late Dr. Chopra joined IIChE on 25 March 1989
Prof. A.N. Pathak (LM 46279). The late Dr. Chopra joined IIChE on 5 January 2013
Dr. Mohua Ghosh (LM 33741). The late Dr. Ghosh joined IIChE on 29 February 2008
Dr. M. Karunakar Reddy (LM 06061). The late Dr. Reddy joined IIChE on 30 August 1980
Prof. K.N. Jayaveera (LM 53756). The late Prof. Jayaveera joined IIChE on 14 February 2015
Mr. GautomMitra (LM 05381). The late Mr. Mitra joined IIChE on 27 February 1982
We offer our heartfelt condolence to the bereaved families of the departed Members.





ANNOUNCEMENT

- Lala Shriram National Award for "Leadership in Chemical Industry" \triangleright
- NOCIL Award for "Excellence in Design or Development of Process Plant and Equipment" ⊳
- IPCL Award for "Safety/Hazard Management in Petrochemical Industry" ≻
- ONGC Award for "Excellence in Design and Development of Oil/Gas related ProcessPlant and/or Chemicals" ۶
- Hindustan Dorr-Oliver Award for "Excellence in Use of Science and Technology in RuralDevelopment" \triangleright
- Herdillia Award for "Excellence in Basic Research in Chemical Engineering" ICI India Limited Award for "Excellence in Process or Product Development" \triangleright
- \triangleright
- Amar Dye-Chem Award for "Excellence in Research and Development" for ChemicalEngineer below the age of \triangleright 35 years as on 31st December 2022
- Jubilant Award for "Outstanding Work in the area of Green Technology" \triangleright
- Lupin Industries Best Chemical Engineering Teacher Award for the Faculties in PrivateColleges below the age of \triangleright 50 years as on 31.12.2022
- ⊳ Dr A V Rama Rao Foundations Best Ph.D. Thesis and Research Award in ChemicalEngineering/Technology for the Year 2023
- Prof Shyamal Kanti Sanyal Memorial Award for the "Best PhD Thesis in the area of Membranes Research \triangleright with Significant Commercial Potential"
- The Chemical Weekly Prize for "Best Research Paper Published in a High Impact FactorInternational Journal by an Undergraduate Chemical Engineering Student"
- \triangleright (First and Second Prize)
- "Padmashri Professor G D Yadav and Dr (Mrs) Vasanti G Yadav Awards for the most versatile Chemical Engineering/Technology Students in India"
- Professor Ashutosh Sharma Award for the Best Research Paper Published in a National/International Journal by an Undergraduate Chemical Engineering Student (Male/Female alternative year).
- > The forms, duly filled-in should reach the IIChE Office on or before 30th June 2023.
- Ambuja's Young Researcher's Awards for Doing Post-Graduate Studies in India for the Year 2023 (10 awards)
- > The forms, duly filled-in should reach the IIChE Office on or before 31st August,2023
- Shah-Schulman Award 'for the best Ph.D. thesis in the area of Colloid and Interface Science'. ⊳
- Dr K Anji Reddy Innovator of the Year in Chemical Engineering and Technology in India by publishing in Reputed \triangleright International Journal in Chemical Engineering & Biotechnology/Patents of merit.
- Both the forms, duly filled-in should reach the IIChE Office on or before 31st May 2023.

The Institute also invites nomination for:

Acharya P C Ray Award (First and Second Prize) and Ambuja's Best Home Paper or Design Project Report Award (First, Second and Third Prize)

Nomination Forms for these two awards have to be endorsed by the Head of the Department of Chemical Engineering, of the concerned institution. Forms, duly filled-in along with the Project Report should reach the IIChE Office on or before 17th July 2023.

All Nomination forms for Awards and Prizes are available in the Website of the Institute (www.iiche.org.in).





IICHE AWARDS 2022

Following is the list of IIChE Awards and the Awardees. These Awards were presented on the occasion of CHEMCON 2022and SCHEMCON 2022 in recognition of eminence, excellence and talents in various spheres of chemical engineering profession and education.

Dr. B.P.Godrej Life Time Achivement Award Prof. Ashutosh Sharma, IIT-Kanpur

Shri Dhirubhai Ambani Orator Award Prof. Ashutosh Sharma, IIT-Kanpur

LalaShriram National Award for Leadership in Chemical Industry Shri Samir S Somaiya, CMD, TheSomaiya Group

Herdillia Award for Excellence in Basic Research In Chemical Engineering Dr. Vimal Chandra Srivastava, **G B Pant Institute Chair Professor,** IIT-Roorkee

NOCIL Award For Excellence In Design And Development of Process Plant And Equipment Dr. A Gangagni Rao, Chief Scientist, CSIR-IICT, Hyderabad

ICI India Ltd Award for Excellence in Process or Product Development Prof. Anil Kumar Saroha, IIT-Delhi, New Delhi

Amar Dye-Chem Award for "Excellence in Research and Development" For Chemical Engineering below the Age of 35 Years Dr. Hari Prakash Veluswamy, IIT Roorkee

Dr. K. Anji Reddy Innovator of the Year Award in Chemical Engineering and Technology Having Publications in International Journals in Chemical Engineering & Biotechnology or Having Patent/(S) Dr. VirendraKisanRathod, ICT Mumbai

Jubilant Award for Outstanding Work in the Area of Green Technology

Dr. Biswajit Mandal, Haldia Institute of Technology, Haldia

P. K.Nair Biennial Memorial Award for Excellence in Design or Development of Process Plant and Equipment Ms. Sutanwi Lahiri, BARC, Trombay, Mumbai

Prof. Ashutosh Sharma Award for Best Research Paper Published in a National/ International Journal by an Undergraduate Chemical Engineering Student (Female) MsVrushali Rajendra Varude, ICT Mumbai

Prof.Shyamal Kanti Sanyal Memorial Award for the Best PhD Thesis in the Area of Membranes Research with Significant Commercial Potential Dr. Kakali Priyam Goswami, IIT Guwahati





Padmashri Professor G D Yadav and Dr (Mrs) Vasanti G Yadav Awards for the Most Versatile Chemical Engineering/Technology Students in India (2 Prizes – Best Male & Female)

Male – Mr. Soumyajit Kundu, Heritage Institute Of Technology Female – Ms. Bushra Mukhdoomi, NIT Srinagar

Solenis Bharat Ratna Prof C N R Rao Medal and Chemcon Distinguished Speaker Award Prof. Nasib Qureshi, ARS, Dept of Agriculture, Govt. of USA

RPG Life Sciences Padma Vibhushan Prof M M Sharma Medal and Chemcon Distinguished Speaker Award

Dr. Shishir Sinha, Director General, CIPET

Asian Paints Padma BibhushanDr R A Mashelkar Medal and Chemcon Distinguished Speaker Award Prof. Thaddues Ezeji, Deptof Bio Engineering, Ohio StateUniversity, USA

Deepak Group's Padma Bhushan Prof L K Doraiswamy Chemcon Distinguished Speaker Award

Prof. Jayant K. Singh, Head, Dept of Chemical Engineering, IIT, Kanpur

Hetero Drugs Prof G S Laddha Chemcon Distinguished Speaker Award Mr. John Rodrigues, Business Leader, Digital Transformation, Emersion

Chemical Weekly's Padmashri Dr G P Kane Chemcon Distinguished Speaker Award Ms. Prerna Chatterjee, Global Sustainability, Sr. Manager, BASF, NJ, USA

CSIR-IICT-Avon's Padmashri Dr G S Sidhu Chemcon Distinguished Speaker Award Mr. Ranjan Sinnarkar, Director Sales, Emerson Automation Solutions, India

Sartorius India's Chemcon Distinguished Speaker Award Mr. Alok Pandit, CEO, Equinox Software Services

UPL Smt Sandra R Shroff Chemcon Distinguished Speaker Award Prof. (Dr.) Asim K Duttaroy, Faculty of Medicine, University of Oslo, Norway

Hikal's Chemcon Distinguished Speaker Award Mr. Goutam Samanta, Head, PV Technology, Juniper Green Energy, Gurgaon

CSIR-CSMCRI Chemcon Distinguished Speaker Award Prof. Makarand M Ghangrekar, Dept of Civil Engineering, IIT Kharagpur

CSIR-CLRI Padmabhushan Dr Y Nayudamma Chemcon Distinguished Speaker Award Dr. Stephen Hughes, Director, GenScript, USA





DOST Professor S K Sharma Medal and Chemcon Distinguished Speaker Award Dr. Veera M Boddu, Environmental Protection Agency, Govt. of USA

CSIR-NEERI Chemcon Distinguished Speaker Award

Mr. Debabrata Ghosh, Director Sales and VP (Sales & Mktg), Oerlikon Textile India Pvt. Ltd.

CSIR-NCL'S Professor K VenkataramanChemcon Distinguished Speaker Award (Biennial) Mr. ChiragSoni, Sales & Technical Service Manager, Eastman Chemical Co., USA

Lab India's Padma Bhushan Professor R Kumar Chemcon Distinguished Speaker Award (Biennial)

Prof. Vinay Kumar Srivastava, Past President, IIChE

Indorama Dhunseri Chemcon Distinguished Speaker Award

Mr. Suresh Padmanabhan, Global Technology Head (PET), Indorama Ventures Ltd., Thailand

Shah-Schulman Award 'For The Best Ph.D. Thesis In The Area Of Colloid And Interface Science'for 2021

Dr. Iyman Abrar, BITS Pilani, Hyderabad and Guide, Dr. Ashok N Bhaskarwar, IIT Delhi

Dr A V Rama Rao Foundation Best Ph D Thesis and Research Award

Dr. Somen Mondal, IIT Guwahati; Guide: Prof. Subrata Kr Majumder, IIT Guwahati

The Chemical Weekly Prize for Best Research Paper Published in a High Impact Factor International Journal by an Undergraduate Chemical Engineering Student (First And **Second Prizes)**

1st Prize: Mr. Shikhar Dinesh Singh, ICT Mumbai; 2nd Prize: Ms. Pragya Narayana Prasad, SVNIT, Surat

Chemical Weekly Award for the Best Paper Published in the Institute's Journal (ICE-2021)

Dr. G M Jagannadha Raju, Andhra University; Dr. G V S Sharma, Andhra University Dr. K V Ramesh, Andhra University; and, Dr. C B Sarma, Andhra University

IIChE NRC Award Best Paper in "Indian Chemical Engineer" 2021 Dr. G M Jagannadha Raju, Andhra University; Dr. G V S Sharma, Andhra University Dr. K V Ramesh, Andhra University; Dr. C B Sarma, Andhra University

The Kuloor Memorial Award for the Best Technical Paper Published In the Journal of the Institute in the Issues of the Preceding Year

Dr. G M Jagannadha Raju, Andhra University; Dr. G V S Sharma, Andhra University Dr. K V Ramesh, Andhra University; Dr. C B Sarma, Andhra University





IIChE NRC Award 2nd Best Paper in "Indian Chemical Engineer" 2021

Dr. Rajat Chakraborty, Jadavpur University; Dr. MonosijMaitra, Jadavpur University Dr. Swapnendu Chatterjee, Jadavpur University; Dr. Punam Mukhopadhyay, Jadavpur University

Sisir Kumar Mitra Memorial Award to the Second Best Technical Paper Published in the Journal of the Institute in the Issues of thePreceding Year

Dr. Rajat Chakraborty, Jadavpur University; Dr. Monosij Maitra, Jadavpur University Dr. Swapnendu Chatterjee, Jadavpur University; Dr. Punam Mukhopadhyay, Jadavpur University

IIChE NRC Award 3rd Best Paper in "Indian Chemical Engineer" 2021 Ms. Meera T. Sose, and Dr. V K Rathod, ICT Mumbai

Mrs.Chinnamaul Memorial Prize For Best Tech Paper Presented in Preceding Year Chemcon Ms. RituParashar, B. C. Nailwal; N. Goswami, Soumitra Kar A K Adak, A K Singha, S C Parida; S Mukhopadhyay (all from BARC)

The Late Lakshmi Nandakumar Award for A Lady Student For The Best Presentation in SCHEMCON of the Year Ms. Kalyani Deshmukh, ICT, Mumbai

Gouri Dutta Award for the Best Paper Presentation in SCHEMCON of the Year Mr. S S Mugesh, Annamalai University

Ambuja's Young Researcher's Awards for doing Post-Graduate Studies in India after GATE Examination (10 Prizes)

 Mr Appanu Sushvanth Reddy, SVNIT Surat;
 Mr Debanjan Dutta, Heritage Institute of Technology Kolkata;
 Mr Prateek Chowdhury, Heritage Institute of Technology Kolkata;
 Mr Biswadeep Pal, IIT(ISM);
 Mr Mangal, IIT Guwahati;
 Mr Annapureddy Praveen Kumar Reddy, IIT Guwahati;
 Mr ShankuPratim Borah, IIT Guwahati
 Mr Rahul Painuly, IIT Jodhpur;
 Mr Goga Ram, IIT Jodhpur; and,
 Iakshmi Rajpoot, MNNIT, Allahabad.

Ambuja's Best Student Chapter Award (2 Prizes) <u>1st Prize:</u> Ssn College of Engineering, Kalavakkam, Chennai 2nd Prize: Sri Venkateswara College of Engineering, Sriperumbudur, Chennai

Pidilite's Best Student Chapter Award Shroff S R Rotary Institute, Ankleshwar

Prof.P.Sen Gupta Award For Best Employee of The Year (IIChE HQ Office) Mr Amlan Mondal, Office Subordinate, IICHE HQ

M PChary Memorial Award Dr. Debiparna De, CSIR-IICT Hyderabad

Best Regional Centre Trophy

<u>Category "A" Best, Hyderabad Regional Centre, IIChE; Category "B" Best, Amaravati Regional</u> Centre, IIChE and <u>Category "B" Second Best, Bhubneswar Regional Centre, IIChE</u>





IICHE UPDATES



Clockwise from top left: **1.** Signing of MoU between RGIPT & IIChE; **2**. Dr. H.L. Roy birth anniversary (2.11.22) at IIChE HQ office; **3**. Inauguration of Srinagar RC at NIT Srinagar; **4**. Renovated IIChE HQ building, Kolkata; **5**. 6th Council meeting (26.12.22) at HBTU, Kanpur; **6**. Inauguration of Patna RC at IIT Patna; **7**. Senior Council Members meeting industry executives at Vivanta Hotel, Kolkata (9.11.22); **8**. Council Members meeting Lt. Governor, J&K, Shri Manoj Sinha on 2.7.22; **9**. 75th Independence Day celebration at IIChE HQ office (15.8.22) **Middle top**: IIChE officials meeting Addl. Chief Secretary, Dept. of Power, West Bengal (9.11.22)

Below: Inauguration of a new lift at IIChE HQ office (25.2.23)





Renovation of IIChE HQ Building: As part of the Platinum Jubilee celebration of IIChE, the Headquarters building of the Institute (H.L. Roy Building) has undergone extensive renovation. The fivestorey building is looking even more impressive with a **fresh coat of painting**. An **annex part** of Dr. H.L. Roy Building has been constructed with state-of-the-art facilities, which is already being used for educational purposes. **The old lift has been replaced with a new one**. Work is underway for installation of **15 kilowatt solar panels** at the roof top of the building,

CSR Funds and Donation under 80G: IIChE has been granted registration (registration No: CSR00033870) by the Union Ministry of Corporate Affairs for receiving Corporate Social Responsibility (CSR) funds and donations under Section 80G of the Income Tax Act, 1961. **The maiden CSR activity fund of Rs. 25 Lakh has been received from Dhunseri Petrochem Industries Ltd.**

New Regional Centres:In recent period, IIChE Regional Centres have been introduced in four premier academic institutes, namely, **Patna Regional Centre at** Indian Institute of Technology, Patna; **Srinagar Regional Centre** at National Institute of Technology, Srinagar; **Bhopal Regional Centre** at Maulana Azad National Institute of Technology Bhopal, and **Amethi Regional Centre** at Rajiv Gandhi Institute of Petroleum Technology, in Jais, Amethi.

IIChE is delighted to have its first **Overseas Regional Centre** in **Calgary, Canada** at the **University of Saskatchewan,** which has commenced in December 2022.

New Awards: IIChE instituted two awards in 2022, namely, **Indorama DhunseriChemcon Distinguished Speaker Award**' with **an endowment of Rs. 5 lakh**; and, 'Best Author(s) of a **Chemical Engineering Book**' Award with **a donation of Rs. 4 lakh** from **Dr. A Suryanarayana**, **Former Professor, NIT, Rourkela**.

Consultancy Work: The IIChE Headquarters has started undertaking **consultancy work**. In recent period, consultancy service was rendered by Dr. Avijit Ghosh, Honorary Secretary and Dr. Sujoy Bose, Assistant Manager to **Kohinoor Paper Industries Ltd**., South 24 Parganas, West Bengal.

Honour for PadmashriProf. G.D. Yadav: National Science Chair (Govt. of India); Former J C Bose National Fellow; Former Vice Chancellor, ICT Mumbai; and Former President, IIChE; **Prof. G.D. Yadav**, has been appointed to the post of **Distinguished Professor of Chemical Engineering, IIT Guwahati**.

On **24 February 2023**, Prof. Yadav was conferred the **Life Time Achievement award** from the **Indian Drug Manufacturers Association** in Mumbai.

We earnestly wish Padmashri Prof. Yadav that many more honours and accolades come his way.







SCHEMCON - 2022





The 18th annual session of the Students' Chemical Engineering Congress (SCHEMCON-2022) was organized by the Department of Chemical Engineering, National Institute of Technology (NIT) Warangal under the aegis of the IIChE Hyderabad Regional Centre on **23** and **24 September 2022**. The central theme for SCHEMCON 2022 was **Sustainable Technological Advancements in Chemical Industries -2022**.

The inaugural programme was graced by **Padmashri Prof. G.D. Yadav**, former Vice Chancellor, ICT Mumbai and Chief Patron of the conference as the **Chief Guest** and **Prof. N.V. Ramana Rao**, Director, NIT Warangal as well as Patron, SCHEMCON as the Guest of Honour. **Mr. Dinesh Butala**, President, IIChE; **Dr. Avijit Ghosh**, Hony. Secretary, IIChE. **Dr. Sanjay Bharwaj**, Chairman, IIChE Hyderabad RC, **Prof. Ravikumar Puli**, Dean, Student Welfare, NIT Warangal and **Prof. S. Srinath**, Head, Chemical Engineering, NIT Warangal and one of the Chairmen of SCHEMCON 2022, were also present on the occasion. The event was coordinated by **Dr. Rajmohan K.S**, the Secretary, Organizing Committee and **Dr. Raghuraja Pandiyan**, one of the Joint-Organizing Secretaries.

The Keynote Address was delivered by **Padmashri Prof. G.D. Yadav**, Former Vice Chancellor, ICT, Mumbai. Eminent scientists, renowned academics from CSIR, DAE, IITs, Central University as well as Industry professionals delivered Invited Lectures on varied topics. **Around 300 abstracts** were received and **around 280 papers (Oral and poster)** were presented during SCHEMCON-2022.

The conference was conducted offline and online independently. While five parallel sessions were held offline, four parallel sessions were held online. Similarly, Invited Lectures were also delivered online and offline. Students presented their papers as well.

A Technical Quiz contest was also conducted for the students. Different faculty members from Chemical, Biotechnology, Metallurgy, Mathematics, Chemistry, Mechanical and Computer Science from NIT Warangal rendered their support as Session Chairs besides the IIChE Council members, IIChE-HRC executive members.





A cultural show was put on by the students in the evening of 23 September. Prof. N.V.Ramana Rao was the Chief Guest at the programme. For the Valedictory function on 24 September 2022, Shri. B. Rajagopal, Director of Industries, Telangana State was the Chief Guest. Prizes for the winners of technical and other events were also given away at this session. The name of the MP Chary Award winner was announced along with the recipients of the Best Female and the Best Male Presenter. The two-day SCHEMCON-2022 witnessed keen participation in stimulating sessions of dialogues, discourses and discussions by professionals, academics, research scholars and students. SCHEMCON 2023: The 19th Students' Chemical Engineering Congress of IIChE (SCHEMCON 2023) will be organized on **22** and **23 September 2023** by the IIChE Students Chapter, Dept. of Chemical Engineering, Kongu Engineering College, Penrundurai (Tamil Nadu) under the aegis of the IIChE Coimbatore Regional Centre. The theme for SCHEMCON 2023 is Sustainable Future **Contact Details**: The Organising Secretary, SCHEMCON-2023 Department of Chemical Engineering, Kongu Engineering College, Perundurai, Erode- 638 060, Tamil Nadu, India **Contact No:** +91-98428 23432, +91-97503 83957 **E mail** :<u>schemcon2023@gmail.com</u> Website: www.kongu.ac.in





CHEMCON - 2022





Garlanding of the photograph of the Founder President of IIChE, Dr. H.L. Roy at the inaugural ceremony

CHEMCON 2023 Brochure being released at the inaugural event

The 75th (Platinum Jubilee) Annual Session of IIChE, popularly known as Chemical Engineering Congress (CHEMCON-2022), was organized from 27 – 30 December, 2022 by IIChE Kanpur Regional Centre with Harcourt Butler Technical University, Kanpur; Indian Institute of Technology, Kanpur; Chhatrapati Shahuji Maharaj University, Kanpur; and Dr. Ambedkar Institute of Technology for Handicapped, Kanpur as partners. CHEMCON – 2022 was co-sponsored by American Institute of Chemical Engineers (AIChE). RGIPT, Amethi and AKTU, Lucknow were the associates.

The venue was Harcourt Butler Technical University. The central theme of CHEMCON 2022 was "**Sustainability in Chemical Processes through Digitalization, Artificial Intelligence and Green Chemistry**'. The event was attended by aroundN1000 delegates from all over the world. This year's CHEMCON was all the more glorious because it was one of the most prime events marking the Platinum Jubilee celebration of IIChE.

Inaugural Ceremony: The Inaugural Programme was virtually graced by the Hon'ble Chief Minister of Uttar Pradesh, Shri Jyogi Adityanath and physically graced by Shri Ajit Singh Pal, Minister of Uttar Pradesh; Shri Awanish Awasthi, Advisor to Chief Minister of Uttar Pradesh; Shri Nadir B. Godrej, Chairman and Managing Director of Godrej Industries Ltd.; Prof. Samsher, Vice Chancellor, HBTU, Kanpur, Shri. D.M. Butala, President, IIChE; Dr. Avijit Ghosh, Hony. Secretary, IIChE; Shri. Biswanath Chattopadhyay, Chairman, NOC, CHEMCON 2022; Prof. R.K. Trivedi, Chairman, LOC and Dr. S.V.A.R. Sastry, Organising Secretary and Convener, NOC, CHEMCON 2022. The event began with lighting of the lamp and garlanding of the portrait of Dr. H.L. Roy, Founder President, IIChE, followed by the welcome address by Prof. R.K. Trivedi and Shri. Biswanath Chattopadhyay.





The occasion was also virtually addressed by **Giorgio Veronesi**, President of European Federation of Chemical Engineers. He shared the importance of sustainability with respect to chemical engineering processes using digitalization and artificial intelligence. The Vice Chancellor of HBTU, **Prof. Samsher**addressed the air quality problem and how to tackle it using electrical vehicles. Further, **Mr. Nadir Godrej**, in his address emphasized the learning and innovation challenges and ways to tackle them in the 21st century. This was followed by the speech of **Shri Ajit Pal**, who expressed his privilege and honour in being a part of the 75th (PlatinumJubilee)Annual Session of Indian Institute of Chemical Engineers, Chemical Engineering Congress (CHEMCON-2022). He insisted on the importance of an encouraging eco-system comprising research fellowship and inter-disciplinary and inter-university research. **Mr. Avanish Awasthi** highlighted the immense opportunities of development through right investments in the state of Uttar Pradesh.

Finally, the Chief Minister of the state, **Shri Yogi Adityanath**, addressed the delegates through a video message in which he congratulated the IIChE for the Platinum Jubilee and conveyed his best wishes to the participants. He highlighted the 30% contribution of Chemical & Allied Industries to the GDP of the country. He also stressed the importance of innovation in the field of chemical engineering for achieving the US \$5 trillion economy. An **IIChE Platinum Jubilee documentary** was screened at the inaugural programme, which was followed by the IIChE Award Function. The CHEMCON 2022 souvenir was also released for the delegates. The Inaugural function concluded with the Vote of Thanks by the Organizing Secretary, **Dr. S.V.A.R. Sastry**.

Lecture Sessions: As customary, post-inauguration, one of the most important events of CHEMCON-2022, the three Memorial Lectures were delivered. Dr. H.L. Roy Memorial Lecture sponsored by Jacobs Worley was delivered by Shri Nadir Godrej; Aker Powergas's Professor N R Kamath and Mrs Ruzena Kamath Memorial Lecture was delivered by Prof. Suddhasatwa Basu, Director, CSIR-Institute of Minerals & Material Technology, Bhubaneswar; and, Inventaa C K Murthy Memorial Lecture was delivered by Dr. Atul Narayan Vaidya, Director, CSIR-National Environmental Engineering Research Institute. Over the next four days, 16 CHEMCON Distinguished Speaker Lectures and five plenary lectures were delivered by eminent academics and renowned scientists as well as top rung industry leaders from the national and international arena.

As convention, **Shri Dhirubhai Ambani Commemoration Day** was celebrated on **28 December 2022**. The session was chaired by **Padmashri Prof. G.D. Yadav**, Former Vice Chancellor of ICT Mumbai. The ChiefGuest for the session was **Prof. Ashutosh Sharma**, IIT Kanpur, who was also the recipient of this year's prestigious **B.P. Godrej Lifetime Achievement Award** from IIChE. During his address to the audience, he mentioned the importance of problem-solving ability, out of the box lateral thinking and creativity. The session concluded with the vote of thanks by **Dr. Avijit Ghosh**, Secretary, IIChE. This was followed by **signing of an MoU between the Society of Chemical Engineers Japan and IIChE**.







Commencement of the DhirubhaiAmbani Commemoration Day

Joint International Symposia:

Three joint International Symposia were organized during CHEMCON-2022. Firstly, with the **Society of Chemical Engineers, Japan** (SCEJ) and **American Institute of Chemical Engineers** (AIChE) were organized on 28 December 2022 and the symposium with the **Canadian Society for Chemical Engineers**(CSChE), Canada was organized on29 December 2022.











Special session for Chemical Engineering students: A special session was held on 28 December 2022 to discuss opportunities for chemical engineers in academia, industryand R&D institutions. Prof. Ajay Dalai from University of Saskatchewan, Canada and Prof. Anil Mehrotra from University of Calgary, Canada interacted with the students of HBTU, Kanpur and various other institutions from across India.

Technical Sessions: Oral and Poster Presentations:

During the four-day event, 10 Parallel Sessions and four Poster Sessions were conducted on topics, such as, Wastewater Treatment, Biomass Utilization and Bio-Energy, Nanotechnology and Nano Science, Artificial Intelligence and its importance in Chemical Engineering, Climate Change and Sustainability, Green Chemistry and Technology, Safety Health & Environment, Air Pollution Control, etc.

Technical Sessions were held in the thematic areas of Mineral Processing, Green Energy, Process Intensification and Novel Separation Processes, Process Modelling and Simulation, Green Industrial Sustainable Chemistry and Engineering, Advanced Techniques in Chemical Engineering, Environmental Engineering with a Focus on Solid Waste Management, Waste Water Treatment, and Safety-Health-Environment, Nano Science and Technology, Petroleum and Polymer, Computational Fluid Dynamics, Biochemical Engineering and Food Technology, Process Safety and Responsible Care, Hydro & Electro Metallurgical Processes, Catalysis and Reaction Engineering, Transport Phenomena and Fluid Dynamics and Other Areas of Chemical Engineering. About 500 papers were presented in the Oral Sessions and more than 150 posters were presented in the Poster Sessions.

Exhibition: An industrial exhibition was organized at the CHEMCON-2022 venue for four days. The major exhibitors were: Anval Valves Pvt. Ltd., Arham Oil Gas Products and Services Pvt. Ltd., ACS International Pvt. Ltd., Flexim Flow India Pvt Ltd., Hydrodyne Teikoku(India) Pvt. Ltd., Hibachi Engineering Pvt. Ltd., IVL Dhunseri Petrochem Pvt. Ltd., JMP, Kamdhenu Group, Lohia Corp., Mazada Pharma Guide / Chemical Outsourcing Guide, Roofsol Energy Pvt. Ltd., Royal Touch Fablon Pvt. Ltd., Kaypear Engineering LLP/310i Technology, S. H. Engitech Pvt. Ltd., Supinco Automation Pvt. Ltd., Syno - PCP Pumps Pvt. Ltd., Oerlikon, and, Vision Craft Industries Pvt. Ltd.

Sponsors of CHEMCON-2022: Industries like Reliance Industries Limited, Indian Oil Corporation Limited, Indorama Dhunseri Petrochem Industries Private Limited, Aditya Birla Chemicals, Oil & Natural Gas Corporation Limited, GAIL (India) Limited, Godrej Industries Limited, UPL Limited, Kamdhenu Limited, BR Agrotech Limited, MCPI Private Limited, Haldia Petrochemicals Ltd, Hibachi Engineering Pvt Ltd, Lohia Corp, Roofsol Energy Private Limited, Oerlikon, Royal Touch Fablon Private Limited, Saraogi Udyog (P) Ltd. Lunarmech Machinenfabrik Limited, Emerson Process Solutions, Eastman Chemical Company, Marubeni India Private Ltd., Sparsh Industries Pvt Ltd., American Institute of Chemical Engineers, ACS International India Private Ltd., and JMP were Sponsors for CHEMCON 2022.







Valedictory Ceremony: The valedictory ceremony of CHEMCON-2022on 30 December 2022 was graced by the Chief Guest for the evening, **Shri Bhanu Pratap Singh Verma**, Hon'ble Minister of State for MSME, Govt. of India. The Guest of Honour was **Shri Raj Kumar Lohia**, Chairman and Managing Director of Lohia Group, Kanpur. Those present on the dais for the occasion were **Prof. Samsher**, Vice Chancellor, HBTU. **Shri D.M. Butala**, President, IIChE; **Dr. Avijit Ghosh**, Hony. Secretary, IIChE; **Shri. Biswanath Chattopadhyay**, Chairman, NOC; **Prof. R.K. Trivedi**, Chairman, LOC and **Dr. S.V.A.R. Sastry**, Organising Secretary and Convener, NOC. At the end, awards and certificates were presented to the delegates. The closure of the grand four-day event was marked by the vote of thanks, offered by Dr.S.V.A.R. Sastry.

IIChE-CHEMCON 2023 and the 76th Annual Session of IIChE will be organized by the Institute Headquarters in Kolkata from **27 to 30 December, 2023** in association with Rajiv Gandhi Institute of Petroleum Technology, Jais; Jadavpur University, Kolkata; Heritage Institute of Technology, Kolkata and University of Calcutta, Kolkata.

The theme of IIChE-CHEMCON-2023 is Energy Transition: Challenges & Opportunities

The venue for IIChE-CHEMCON 2023 will be **Heritage Institute of Technology, Kolkata**

Contact: Dr. Avijit Ghosh Organizing Secretary, IIChE-CHEMCON-2023 Dr. H L Roy Building, Jadavpur University Campus, Kolkata 700032 Email: chemcon2023@iiche.org.in | Ph. No.: +91 9830752111





The call for paper is published. You are cordially invited to submit the abstract of your research work.

The List of Journals/Book Chapter for IIChE-CHEMCON 2023 (Subject to Peer reviewed Process):

- 1. Environmental Science and Pollution Research (Springer): Impact factor: 5.190
- 2. Materials Today Proceedings (Elsvier): Impact factor: 1.46
- 3. Indian Chemical Engineering (Taylor & Francis): 1.019
- 4. Book Chapter: Springer Nature
- 5. Book Chapter, to be Published by IIChE with ISBN and DOI







CLIMATE CHANGE AND SUSTAINABLE MANUFACTURING —II Energy and Water Management to Achieve Excellence

Joy M. Shah¹

*"Earth has everything to meet need of the people but cannot fulfil greed":*Mahatma Gandhi

Introduction:

Energy and water are two natural resources, were available plenty in the world prior to Industrialisation. Everyone was getting their share and mother earth was replacing every year by seasonal changes. However, after start of industrialisation, the use of these natural resources were increasing and time has come where the use is more than being made up by mother earth. Today we are at 0.58 of earth overshoot day, i.e. we are consuming the resources produced naturally within first 58 % of period of the year. Such an extensive use of resources of earth followed by risk of climate change and warming of earth make it mandatory to reduce dependency on natural resources by excelling in use of them. Therefore, it is essential to excel in conservation and management of these natural resource for every manufacturing operation, esp. Energy and Water.

Energy and Water Management pyramid starts with setting of direction, proper operating processes as well as using enablers for achieving excellence.







The Primary framework for Excellence in Energy and Water Management in Chemical, Petrochemical and Hydrocarbon industries can be categories in to following six areas:

*Governance and Management system *Tools and Methodology *Strategic initiatives *People involvement *Results and Performance *Sustainability of framework

1. Governance and Management System:

Governance mechanism is one of the most important pillars of achieving an Excellence. Following are three phases of governance mechanism.

- a. Frame and communicate Policy for Energy management and Water management which is aligned with company's vision and mission.
- a. Define Energy Management and Water Management Structure, typically consists of Energy Management and Water Management Structure, typically consists of the following constituents:
 - i. Site Apex team supported by Core group of 1 4 Engineers and Corporate Apex team. They are responsible for
 - Identification of Strategic Initiatives.
 - Periodic review of bench mark and actual performance of KPI.
 - Providing resources and Direction for Long term plan.
 - Periodic review of schemes for conservation of natural resources.
- ii. Site Energy Group and Water group with 1 senior manager and 1-4 engineers each. They are responsible for :
 Bench marking, identify gaps and status of the organisation.
 Compile, evaluate and prioritise schemes.
 Identify constraint for execution of schemes.
 Support decision making process
 Provide guideline to working group by converting vision in to executable process.
 iii. Working group for each plant consist of at least one qualified Energy / Water Manager or Auditor supported by Technical services, Operation and Maintenance Engineers, esp. Electrical. They are responsible for:
 Energy/ water Audit of plant.
 Execution of various Energy and Water conservation schemes.
 Measurement and monitoring for continuous improvement.





- iv. Small groups, consisting of 2-3 shop floor persons from each unit, who are facing the assets. They are responsible for:
 - Ideating various conservation initiatives.
 - Spreading the awareness to all employees of their unit.
 - Timely completion of energy and water conservation projects.
- v. Corporate or Central Energy group consisting of one senior leader with 1-4 energy engineers. They are responsible for:
- Keeping an eye for improvement worldwide.
- Availability of new technology
- Multi-site coordination.
- Sharing the good practices amongst all sites and provide direction for improvement possibilities.
- Lead Energy and Water professional network for solution and sharing technological advancement.
- Customise Energy and Water management strategy to become a pace setter in reducing Energy and water foot print of all products. It takes inputs from SWOT, Benchmarking, new capacity addition, monitoring systems and global target to make medium term and long term plans to support to make annual plans for each plant and department. The annual plan will define energy and water conservation targets for each department and plants.

2. Tools and Methodology:

To achieve an excellence and remain ahead of the others, it is essential to use right methodology and use right tools which can be selected from following list.

- i. Bench marking and Gap analysis inter site, national and global.
- ii. Real time monitoring and off line Optimisation
- iii. Six Sigma and Innovation D4
- iv. Energy Audit Statutory, Intra site and inter site
- v. Kaizen, Quality circle and Brain storming
- vi. Identify and implement Best Operating Practices
- vii. Obtain certification for ISO 50001:2018, ISO 50002:2014, ISO 50003:2014
- viii. Use of software tools, such as:
- Modelling and Logic based optimisers, e.g. Pro Steam, DMC plus,
- Pinch analysis e.g. Super Target
- Monitoring and Targeting tool, e.g. IP21, IX
- Statistical analysis tools. E.g. Minitab
- Process Simulators. e.g. Aspen, PROII





- Reconciliation tools e.g. Sigma fine
- Heat Exchangers Simulation. e.g. HTRI
- Training Simulators Plant specific.

3. Strategic initiatives

Sustainable manufacturing is not possible without proper strategy. Strategy is required to convert wish to action plans. They can be deployed through short term and long term actions as given below:

- For capturing ideas and converting in to executable plan which consists of
- i. Suggestion scheme
- ii. Small group activities
- iii. Quality circle
- iv. Engineers networking and inter-site meet.
- v. EnCon and WatCon month celebration
- vi. Increase of certified Energy and Water managers
 - b. Alternate energy and water source
 - i. Risk analysis of failure
 - ii. Renewable energy scope and execution
 - iii. Alternate water supply
 - iv. Alternate fuel supply
 - c. Long term plan
- v. Zero Liquid Discharge
- vi. Energy conservation road map
- vii. Best practice analysis
 - Developing standards and procedures
- viii. Adopting best technology

4. People's Involvement

People are the backbone of any systems to excel. They need to be trained, guided, mentored, coached as well as motivated by various means. Some of the means are given below:





a. Capability Building

i. BEE certified EA/EM

- ii. Awareness and training program to shop floor people
- iii. Participation in conference
- iv. Presentation of papers
- v. Internal and Inter site award
- vi.. Award for champions
- vii. Award for best energy manager

b. Best Operating Practices

i.Prepare Best Operating Practices by subject matter expertii.Implement Best Operating Practices

c. Application for various awards i.Associate people for application preparation ii.Send right people to receive award iii.Wide circulation of award honour

d. Regular role change and associate everyone in this drive over 10 years

5. Results and Performance

Excellence and sustainability is measured by results. There can be many KPI for monitoring and control. They can be categorised as Leading and Lagging indicators. The most significant KPI are listed below.

- Trend of specific energy and water consumption.
- Number of project implemented without investment
- Number of Projects identified and implemented with investment.
- Saving achieved during the year and trend of annual saving
- Annual energy and water bill
- Number of employees involved during the year
- Number of suggestions received
- Number of training program conducted
- Number of employees awarded

6. Sustainability of framework

Sustainability framework means the continuity of improvement cycle. This can be achieved by establishing PDCA cycle by:

i. Annual review and continuous improvement

ii.Prepare annual plan and convert it to energy and water conservation targets for section heads and plants objectives.

iii.Balance score card and include targets and schemes in annual plan for each person.

iv. Monthly or quarterly monitoring of plan Vs actual and provide resources.

v. Annual competency assessment.





Once frame work is in place and people involved in this drive of sustainable manufacturing are motivated to deliver; and Excellence will be at doorstep of every manufacturing company.

I am sure that Professional Chemical Engineers will appreciate their role to establish the Management system within the organisation for achieving best in class. In the next article, various ideas for Energy and Water conservation opportunities for Chemical, Petrochemical and Hydrocarbon Sectors shall be shared.

The conservation of natural resources is the fundamental problem, unless we solve that problem, it will avail us little to solve all others – Theodore Roosevelt

The author Joy M. Shah is the Founder and Chief Consultant, Innov8 ProTech Solutions, Sustainability and Management Consultant. Formerly, he was Senior Vice President (Head-Technical) at Reliance Industries Ltd. He has also been a member of the IIChE Chemical Process Safety, Energy and Environment Committee since 2018. For the last three years, he is consultant for Energy and Water Management as well as Green company advice, branding and sustainable manufacturing.

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Nuclear Technologies for Climate Change Mitigation and Adaptation Dr. T. L. Prasad

Faculty Member, Homi Bhabha National Institute, Mumbai

The spectre of Chernobyl and Fukushima, along with the enduring problem of nuclear waste, have kept 'energy generated by splitting atoms' on the sidelines, even if that energy is virtually carbon free. Nuclear for Climate change mitigation is gaining renewed attention among nuclear professionals and scientists with the goal for opening a dialogue with policymakers and the public about the necessity of including nuclear energy among the carbon-free solutions to climate change. Roughly 30 countries are currently considering, planning or establishing nuclear power programmes, ranging from sophisticated and advanced economies to developing nations. Bangladesh, Belarus, the UAE and Turkey are in the process of building or have recently begun operating their first reactors and several countries in Africa are considering nuclear development as a clean energy solution.

Almost half a decade after signing of the Paris Agreement, it is time to wake up to the enormity of the challenge that the world faces to limit the global temperature to 1.5°C. The global climate is at a critical juncture and together we need to reach Net Zero carbon emissions by no later than 2050 if we are to have a chance of achieving this and protecting our planet's future. Again the COP 26 in Glasgow provided a critical opportunity for the nations to come together and take action, collectively changing the way we think about climate and setting us on the path towards achieving 'Net Zero'.

There is a need for scientific and technologically neutral approach to energy policy and financing that can promote sustainable collaboration between nuclear and renewables. In this article the reasons for 'Net Zero through Nuclear and associated technologies' and their advantages are discussed with a few observations with regard to the countries, such as, India. The research areas to be addressed are also highlighted.

Reason 1: Nuclear is a proven and effective low carbon energy source:

- ✓ Nuclear has been a key low carbon energy source for over 60 years. With around 440 reactors in operation across 30 different countries, nuclear accounted for 10% of global electricity production at the end of 2019.
- \checkmark The lifetime CO₂ emissions of nuclear relative to the energy it provides, or 'carbon intensity', are very low, similar to that of wind and hydropower. The countries which have the lowest carbon intensity are those with a large component of nuclear and hydropower. France, which produces approximately three quarters of its electricity from nuclear, has the lowest per capita emissions of the seven largest industrialised countries (G7).
- ✓ As a direct result of nuclear replacing fossil fuel sources, more than 60Gt of CO_2 equivalent greenhouse gas emissions have been avoided globally since 1970. Using nuclear instead of fossil fuels has also prevented an estimated 1.84 million air pollution related deaths and it is estimated that a further 7 million deaths could be avoided by 2050 if nuclear replaced fossil fuel sources on a large scale.





✓ Despite the impressive global (5x) growth of solar and wind between 2000 and 2018, the use of fossil fuels has remained constant, representing roughly 80% of the total global energy supply. This correlates with a decline in the share of nuclear generation over this time period, even though nuclear generation in absolute terms has increased.

Reason 2: Nuclear is available, scalable and deployable:

- ✓ The consensus across major international institutions (UN, OECD-IEA, EU) is that all low carbon technologies, including nuclear, will need to be deployed urgently and at scale in order to achieve Net Zero targets. This is reflected in the latest IPCC report which shows a median projection of more than double the current primary energy supply from Nuclear being required by 2050 in order to limit global temperature rise to 1.5°C.
- ✓ Nuclear is an available and scalable technology, with a limited footprint, which has been deployed rapidly to positive effect in the past. Over the past 50 years, new nuclear projects have represented the fastest method of achieving decarbonisation in terms of clean energy added per capita annually. This is reflected by the Swedish nuclear program where, from 1970, 10.9 GWe of new nuclear capacity was added in less than 15 years. Swedish CO₂ emissions per capita have decreased by 75% since 1970.
- ✓ Small Modular Reactors (SMRs) have the potential to bolster new large nuclear projects. With the promise of reducing on-site construction time through modular manufacture of components, SMRs offer the possibility of increased scalability of deployment as well as reduced capital costs and associated financial risk, once established. Certain leading nuclear nations project that both small and large nuclear projects can contribute towards achieving Net Zero.

Reason 3: Nuclear is a flexible and affordable source of clean energy:

- ✓ Deployment of renewable has risen rapidly and must continue to do so. However, this increases the volatility of energy systems and introduces a greater requirement for grid flexibility. Nuclear is a source of clean energy which is both dispatchable and flexible and can therefore replace fossil fuels and integrate with variable renewables.
- ✓ There are ongoing developments to further improve the operational flexibility and efficiency of nuclear reactors through design, as well as through more diverse application. This includes applying nuclear as a method of clean energy storage within hybrid systems by utilising nuclear-generated process heat or hydrogen as a form of storage.
- ✓ New technologies, including SMRs, offer the potential for more widespread and dispersed integration with renewables and other clean energy sources, supporting a more decentralised system where required, and bringing supply closer to points of demand.
- ✓ Recent research has shown that nuclear remains the cheapest dispatchable low-carbon technology and the cost of decarbonising electricity is lowest when the mix includes optimal amounts of this type of clean and consistent generation capacity. Another recent study finds that nuclear is the clean energy source with the highest system value for reducing carbon intensity. System value is an important holistic measure which quantifies the total impact of each source upon the wider energy system.





Reason 4: Nuclear can deliver more than just low carbon electricity:

- ✓ Global electricity production, which is projected to increase significantly, currently accounts for 40% of total greenhouse gas emissions and it is still dominated by fossil fuel sources (64% of total electricity production). Fossil fuels are also used extensively across other sectors such as transport, heating and industrial processes.
- ✓ Nuclear has the ability to produce hydrogen effectively, which can then be used as an alternative to fossil fuels to support wider decarbonisation. Nuclear-produced hydrogen can also be used in clean energy systems to add further grid flexibility. The concept of a clean hydrogen economy is receiving political and business momentum, with the number of associated policies and projects around the world expanding rapidly.
- ✓ Nuclear reactors also have the ability to supply heat to support more diverse non-electric applications that would provide economic, environmental and efficiency-related benefits. These wider 'cogeneration' applications can include, amongst others, district heating, industrial process heat and seawater desalination.

Reason 5: Nuclear supports inclusive and sustainable global development:

- ✓ Nuclear is strongly aligned to the UN Sustainable Development Goals (SDGs) and can be used to address energy poverty by delivering clean energy globally, supporting high living standards, good health, a clean environment and a sustainable economy.
- ✓ According to the IEA, new nuclear capacity of 15 GWe is required on average every year between 2020 and 2040 in order to meet their projected, SDG aligned, Sustainable Development Scenario (SDS). This will be critical for securing a cleaner and more inclusive energy future.
- ✓ Nuclear delivers skilled jobs and economic benefits. A recent study on the European economy found that every Euro spent on nuclear generates an additional 5 Euros in EU GDP, and every direct job created in the nuclear industry creates 3.2 jobs in the EU economy as a whole.
- ✓ For these reasons, new nuclear can directly facilitate the global post COVID-19 recovery process: creating long term jobs and promoting sustainable economic development whilst increasing energy resilience and driving forward the clean energy transition.

Reason 6: Nuclear techniques can complement conventional climate science technologies

Nuclear techniques can complement conventional climate adaptation and climate science technologies and approaches. An integrated approach to address the causes and effects of climate change, in order to develop and apply mitigation measures, and contributes to climate adaptation and climate science in the few key areas such as follows:

✓ Sustainable Land Management - During erosion and deposition processes the FRNs (Fallout Radio Nuclides) move with the soil particles and can hence be used to trace the amount of soil eroded over large areas and over extended periods of time. Isotopic techniques can likewise be used to assess sediment sources of erosion in watersheds, thus facilitating targeted and better soil conservation practices.





- ✓ *Climate smart agriculture* Climate change affects the distribution of insect and fungal pests, and therefore patterns of agrochemical usage. Stable isotopes of major elements have been successfully applied to trace and monitor sources and transport of solutes in agro ecosystems. Combining these isotopic signatures with other analytical approaches including bio monitoring and bioassays, along with risk assessment tools, allows monitoring of agricultural inputs and the transfer of these chemicals to the environment and the food supply chain.
- ✓ Food production systems The effects of climate change pose stresses of various kinds, biotic and abiotic, to crop varieties. Mutation breeding produces new varieties of crops that are adapted to abiotic stresses through inducing genetic changes and developing varieties that in addition to their original traits have traits that make them thrive under changed environmental conditions. This technology has helped to rapidly improve many crops to perform better in harsh environments or to be resistant to new pathogens. Also nuclear and related techniques help to rapidly and effectively respond to food safety incidents and emergencies.
- ✓ Sustainable water management Isotope hydrology uses isotopes to track the movement of water through the hydrological cycle, to trace the original source of groundwater, and to examine mixing processes within different components of the hydrological cycle (precipitation, surface water, groundwater). Although there are many useful isotope tracers in hydrology, the two most common are stable isotopes of oxygen and hydrogen, as these elements make up the water molecule.
- ✓ Ocean change and marine ecosystems Nuclear technologies, such as isotopic age determination, custom radiotracer applications to assess biological stress from diverse contaminants or forensic source tracking provide useful insights into the consequences of climate change and ocean change impacts on marine ecosystems and coastal structures. A portfolio of nuclear techniques addresses topics such as atmosphere/ocean exchange, coastal and marine carbon sequestration, sea-level rise, ocean acidification, warming and deoxygenation and the fate and transport of radioactive, inorganic and organic contaminants and biotoxins associated with harmful algal blooms. Nuclear and tracer techniques such as uranium-thorium (U/Th) series radio nuclides, receptor binding assay (RBA) methods and compound specific isotope analyses are used to identify, source and track the spatial and temporal drivers of ocean health.

Recommendations and Conclusions

Climate change is a key global challenge and as such needs to be addressed in a coherent and comprehensive manner. While the scientific community is generally well aware of the potential of nuclear science and technology for climate adaptation, decision-makers, and the broader development and financing communities, are not. As a consequence, for instance, the contribution of nuclear technologies in support of climate adaptation solutions rarely features in NDCs or as part of multi-stakeholder initiatives. For required scale up, there is need to raise awareness about nuclear technology solutions related to climate adaptation and their complementarily with more conventional approaches to ensure optimisation and sustainability of results.

India's 2017 total CO_2 emissions, according to figures from the International Energy Agency, were of 2162 million tonnes - the third highest in the world. However its energy consumption of 0.7 tonnes of oil equivalent per capita was one of the world's lowest, and its per capita carbon emissions of 1.6 tonnes are also low. India has set a target of reaching net-zero carbon emissions by 2070. This was the fifth - and last - in a list of Indian pledges as per National Statement to the COP26 climate conference in Glasgow.





India will reach its non-fossil energy capacity of 500 GW by 2030. Go green through nuclear in parallel

- ➢ India will meet 50% of its energy requirements from renewable energy by 2030. Private participation in strategic sector helps in meeting timelines. It may be time to consider suitable amendments of existing Atomic Energy Act.
- > India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030.Deployment of developed technologies needs to be stressed.
- > By 2030, India will reduce the carbon intensity of its economy by less than 45%.
- ➢ By the year 2070, India will achieve the target of net-zero.By doubling the nuclear electricity generation between 2020 and 2050 will help in meeting net zero ambitions

ONLINE INTERNSHIP PROGRAM (OIP) 2023

IIChE will start a new batch for the **online internship program (OIP-2023)** from **10 March 2023.** The objective is to bridge the gap between the industry and academia. OIP-2023 will be also considered as the part of the internship program for the Diploma, UG, and PG professional and degree programs as per the AICTE curriculum. This internship training will be a unique opportunity for the students to do an internship from the industry, which is the actual requirement to become employable for the industry.

Aim of the online internship program:

1. Assist the students' development of employer-valued skills, such as, teamwork, communications and attention to learn Engineer's responsibilities and ethics.

2. Enhance and/or expand the student's knowledge of a particular area(s) of skill.

3. Expose the student to professional role models or mentors who will provide the student with support in the early stages of the internship and provide an example of the behaviours expected in the intern's workplace. To familiarize with various materials, processes, products and their applications along with relevant aspects of technology and troubleshooting.

4. To know about the particular industry and its operation, product specification and market value. To gain experience in writing technical project reports.

OIP-2023 (New Batch) Application form:

https://forms.gle/RCezVBaxczNhKh2o7

Subject available for the Internship:

1. Chemical Process Technology (CPT)

- 2. 6-Sigma (Yellow Belt)
- 3. Biochemical Engineering
- 4. Petroleum Refinery Engineering (PRE)
- 5. Matlab and AI-ML (MAIML)

Classes will be held during Saturday and Sunday in the Evening time (6-8PM) only.





REGIONAL CENTRE ACTIVITIES

Amaravati Regional Centre

Dr. M. Venkateswara Rao Endowment Lecture on **Process Systems Engineering and its Applications in Chemical Engineering** was delivered on **27 October 2022. Prof. Rafiqul Gani**, former Professor, Department of Chemical & Biochemical Engineering, the Technical University of Denmark delivered the lecture. **Mr. D.M. Butala**, President, IIChE (2022) was the Chief Guest on the occasion and the Guests of Honour were **Prof. C. Karthikeyan**, Vice President, IIChE and **Dr. Avijit Ghosh**, Honorary Secretary, IIChE.

Prof. Rafiqul Gani has been a pioneering researcher and thought leader in the field of process systems engineering (PSE). Presently, he is an Adjunct Professor at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea and at Hong Kong University of Technology at Guangzhou, China.

A Webinar was organised on 22 May 2022 on 'Growth, Challenges and Opportunities for Indian Pharma Industry' in association with all the Student Chapters under Amaravati RC. The Webinar was inaugurated by Mr. M V Ramana, CEO and Head, Branded Formulations business, Dr. Reddy's Laboratories, Hyderabad. Dr A Sarath Babu, Professor, Dept. of Chemical Engineering, National Institute of Technology, Warangal was the Guest of Honour. Mr. J Murali Mohan, Managing Director, Jocil Limited, Guntur and Immediate Past Chairman, Amaravati RC presided over the inaugural function and conducted the proceedings.

Besides **Mr. M V Ramana**, the other speakers for the Webinar included **Mr. Krishna Elasagaram**, General Manager-Works (Site Head), Wanbury Pharma Ltd.; **Dr R N Josyula**, Pharma Consultant; Mr. J. Nagesh, JBN Technologies, Vijayawada; **Mr. L Nagesh Kumar**, Former GM (Technical, The Andhra Sugars Ltd, Tanuku, Andhra Pradesh. The Technical Sessions were summed up by **Dr N Sambasiva Rao**, Vice-Chairman, Former GM (Technical), The Andhra Sugars Ltd., Tanuku, Andhra Pradesh.

A Symposium was organised on 27 January 2023 on Ideation, Innovation, Development and Technology Transfer of Industrially Scalable Processes by the Department of Chemical Engineering, NIT Andhra Pradesh in association with Amaravati RC and Institution's Innovation Council.

Annamalai-Neyveli Regional Centre

A **Webinar** on industrial safety was organised on **5** and **6 March 2022** as part of the Platinum Jubilee celebration of IIChE. The Webinar was inaugurated by IICHE president **Shri. D.M. Butala**, who delivered a special lecture on **Lessons Learnt from Accidents**. Seven other eminent speakers from various industries and universities made presentations at the Webinar.





EPACT 2022, an International conference on **Environmental Pollution and Control Technologies** was held on **26**, **27 August 2022**.

Bhubaneswar Regional Centre

ODICHEM-2022,a Seminar on'Investment**Opportunities**forAncillaryandDownstream**Industries in Odisha**' was organised at Bhubaneswar on 15**October 2022.** It was heldin association with the IndustrialPromotion and Investment Corporation of Odisha Ltd(IPICOL), Bhubaneswar. The seminar was a part of the IIChEPlatinum Jubilee Celebration.

The objective of the seminar was to identify the ancillary and downstream industries around the major industries in Odisha so that the potential investors, including the start-ups, could consider these industries for investment.

A series of lectures were delivered as part of the seminar, focussing on Mining and Metallurgy; Chemical, Petrochemical and Fertiliser; etc. Invited Speakers were renowned authorities representing premier industrial organisations and research bodies.



Hyderabad Regional Centre

A **Lecture Series** was conducted by Hyderabad RC in association with the Student Chapters under its aegis.

- As part of the series, Lectures were organised at **Anurag University** Student Chapter on **7 January 2022** and **4 February 2022**. The first one was on the topic, **How Chemical Engineers are Redefining the Product Development (Pharmaceutical Space)** by **Mr. Birendra David**, Delivery Manager-Inhalation and Director-Process EngineeringFormulations at Dr. Reddy's Laboratories Ltd.
- The second lecture was titled, **Process, Innovation and Automation: A Chemical Engineer's Perspective** by **Dr. John P. Singh, Data Advisor, Halliburton, USA.**
- On **4 March 2022**, an online Lecture was organised at BITS Pilani Hyderabad, which was delivered by **Ms. Sujata Bandyopadhyay** from Ansys. The Lecture was titled, **Simulation-driven Product Development: Chemical Engineering Perspective**.





- An online Lecture was organised at Jawaharlal Nehru Technological University (JNTU) Hyderabad, University College of Engineering Student Chapter on 6 May, 2022, titled, Journey of Chemical Engineer. It was delivered by Dr Makarand Pimplapure, Founder and Managing Director, MakSpeed Technologies, Pune.
- A Lecture was organised on 3 June 2022 at Jawaharlal Nehru Technological University, Anantapur, titled, Diagnostic Testing in a Post-COVID World Enabled by Microfluidic Technologies. Dr. Dhananjaya Dendukri, Co-founder& Chief Executive Officer of Achira Labs, delivered the lecture.

On **3 April 2022**, a **Lecture**, titled, **Learn to Reverse Chronic Diseases Naturally**, was delivered by **Mr. Lalit M Kapoor**, a Silicon Valley entrepreneur-turned -nutritionist. The programme was organised in association with East Maredpally Resident Welfare Association.



The **15th M.P. Chary Memorial Lecture** was organised in association with the Department of Chemical Engineering, University College of Technology, Osmania University (UCT,OU). Following the welcome address by Dr. Sanjay Bharadwaj, Chairman, Hyderabad RC, the Chief Guest, Prof. Chinta Sailu, Principal - UCT, OU, highlighted the relevance of digitalisation, artificial intelligence (AI) and machine learning(ML) in the present scenario.

The Memorial Lecture was delivered by **Prof. Ravindra Gudi**, IIT Bombay, Dean (Alumni and Corporate Relations).

The title of the Lecture was on **Exciting Opportunities in Digitalization, AI and ML**. The event Convenor was **Dr. Sanjay Bhardwaj**, Chairman, IIChE-HRC and **Dr. S. Ilaiah**, Hony. Regional Secretary, IIChE-HRC was the Co-convenor of the event. It was attended by 200 students, scientists and faculty members from various colleges.

On **18 June 2022, Inter-College Competitions** and a **Seminar**, titled, **Recent Innovations in Chemical Engineering (RICE)-2022** were organized by the Hyderabad RC in association with Student Chapter, Department of Chemical Engineering, at University College of Technology, Osmania University (UCT,OU).

Student Chapters from Anurag University, BITS Pilani Hyderbad campus, Chaitanya Bharathi





Institute of Technology (CBIT), JNTU College of Engineering Anantapur (JNTUA), JNTU College of Engineering Hyderabad (JNTUH), National Institute of Technology Warangal (NITW), Padmashri Dr. B.V. Raju Institute of Technology (BVRIT), Rajiv Gandhi University of Knowledge Technologies Basar (RGUKT Basar) and University College of Technology-Osmania University (UCT–OU) participated in the inter-college competitions. The Chief Guest at the inauguration programme was Senior Prof. Chinta Sailu, Principal, UCT, OU. The Guest of Honour, former National President of IIChE, Prof. V. V. Basava Rao. Dean, Faculty of Technology, Prof. Kavita Waghrey and Head, Department of Chemical Engineering, Prof. V. Ramesh Kumar were also present and spoke on the occasion.

Later, **Prof. V.V. Basava Rao**, former President, Indian Institute of Chemical Engineers, delivered a lecture, titled, **Green Hydrogen Production: Challenges and Opportunities**. **Dr. Prof. S. Sridhar, Chief Scientist & Professor**, delivered a lecture, titled, **Combating Covid-19 and Water Scarcity through Innovation in Chemical Engineering**.

The lectures were followed by competitions for students in **Scientific model making, technical quiz, essay** and **elocution**. The event was attended by more than 120 students, Professors, scientists and industry professionals from various organizations.





Northern Regional Centre

Under the **Learning with the Leaders** series, a **Lecture**, titled, **An Overview of Electric Vehicle** and **Role of Chemical Engineers** was delivered on **27 September 2022** by **Prof. Anil Verma**, Department of Chemical Engineering, IIT, Delhi. The lecture was followed by an interactive session.

On the occasion of the **Foundation Day** on **28 January 2023**, a presentation on **Inculcating Critical Thinking and Creativity** - **The Berkeley Experience** was made by **Prof. Daljit Singh**, Former Counsellor (Science & Technology), Embassy of India, Washington DC, USA. This was followed by an interactive session. At the beginning, **Dr. S. Nand**, Chairman, Northern RC offered welcome address and an introduction.





A Seminar, title, Recent Developments in Catalysis in Process Industry, is scheduled for 21, 22 March 2023.

Jaipur Regional Centre

On **8 April 2022**, Jaipur RC in association with Manipal University Jaipur (MUJ) held a Lecture on **Novel Biochar and Activated Carbon Production from Biomass and their Industrial Applications**, delivered by **Prof. Ajay K. Dalai**, Distinguished Professor in Chemical Engineering and Canada Research Chair (Tier 1) in Bio-energy Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, Canada. The event was coordinated Dr. Manisha Sharma, Assistant Professor, MUJ; Dr. Madhu Agarwal, Chairperson IIChE-JRC and Dr. Rajeev Kumar Dohare, Hony. Regional Secretary IIChE-JRC.

Prof. Dalai discussed the potential of biochar obtained from pyrolysis of biomass in various sectors, such as, soil applications, water and wastewater treatment. He also briefed about the research activities being conducted at University of Saskatchewan and discussed various opportunities for graduate students as intern at the university. The lecture was followed by an interaction with faculty members.

Patna Regional Centre

Patna RC of IIChE was inaugurated on **12 November 2022** at IIT Patna in the presence of **Mr. D. M. Butala**, President, IIChE (2022); **Prof. M.K. Jha**, Past President, IIChE; **Dr. Avijit Ghosh**, Honorary Secretary, IIChE; **Prof, K.N. Singh**, Director, IIT Patna; **Mr. Praveen Saxena**, Honorary Registrar, IIChE; **Prof. G.D. Yadav**, Past President, IIChE as well as AICTE nominee to the Council and **Prof. A.S.K. Sinha**, Director, Rajiv Gandhi Institute of Petroleum Technology, Amethi.



On the occasion, an **International Workshop** on **The Role of Chemical and Allied Engineering in Environmental Protection and Green Energy** was also organised on **12** and **13 November 2022** by the Department of Chemical and Biochemical Engineering, IIT Patna.





Pune Regional Centre

Prof. P.K. Khanna, Defence Institute of Advanced Technology, Pune delivered a Lecture on **18 June 2022** on the occasion of the AGM of the Pune RC .This was the first offline lecture programme, organised by the Pune RC since the onset of the pandemic. Mr. Alok Pandit, Chairman, Pune RC; Dr. Utkarsh Maheswari, Hony. Secretary, Pune RC and Dr. Prafulla Garge, Hony. Treasurer, Pune RC were present along with other members.



Srinagar Regional Centre

On the occasion of the **inauguration** of the Srinagar RC on 2 July 2022 at NIT Srinagar, the members of IIChE Council, present on the occasion, namely, IIChE President **Mr. D. M. Butala**; Immediate Past President, Prof. **M. K. Jha**; Former President **Padmashri Prof. G. D. Yadav**; Honorary National Secretary, **Dr. Avijit Ghosh** and Honorary Registrar, **Mr. Praveen Saxena** were felicitated. Mr. Butala delivered a lecture on Recent Trends Of Sustainability in the Process Industry.



Trivandrum Regional Centre

On the occasion of the AGM on **26 June 2022**, the following distinguished members were **felicitated**.

Mr. Samir Kumar Das (Superannuated from Vikramsarabhai Space Centre, Thiruvananthapuram, Kerala)

Mr. Sasikumar KP

(Superannuated from HLL Life Care Limited, Thiruvananthapuram. Kerala)

Mr.E A Subramanian

(Appointed as Managing Director, Kerala State Drugs and Pharmaceuticals Ltd, Alappuzha, Kerala)

A **Lecture** was also delivered by **Prof. Dr. PA Soloman**, Dept. of Chemical Engineering, Govt. Engineering College, Thrissur on the topic **Introduction to Design of Experiments Using Minitab**.





STUDENT CHAPTER ACTIVITIES

Anil Neerukonda Institute of Technology & Sciences, Visakhapatnam

During **16** – **29 August 2022**, ANITS IIChE Students chapter at the Department of Chemical Engineering, ANITS under the IIChE Waltair Regional Centre organized a **value-added course** on **SCILAB - an Open-source Tool (A Practical Approach)**. A total of 48 students attended the course, which focussed programming and problem-solving skills.

Another course on **Identification and Understanding of Potential Hazards in Chemical Industries** was conducted during 17 – 30 **August 2022**, which was attended by 35 students.





An Industry Visit to Dr. Reddy's Laboratories was organised on 27 August 2022. Faculty members and Students of Chemical Engineering department participated in the tour.

A Lecture was delivered on 22 September 2022 by Mr. A. Prasad, Superintendent Engineer, ONGC, Eastern Offshore Asset, Kakinada, on Oil and Gas Exploration in ONGC. He also explained the role of chemical engineers in petroleum industries.

Viswakarma Government Engineering College, Ahmedabad



On **15 September 2022**, an elocution competition was organized under the guidance of IIChE student chapter faculty coordinator Dr. Ujvala Christian. The event was conducted as a part of National Engineer's Day celebration. Student participants had to express their views on any one of total three technical topics and they were evaluated by two industrial experts. Two winners were selected.

36 | P a g e





Government Engineering College, Bharuch

Chemoquiz, a quiz competition, was organized on **29** and **30 April 2022** as part of the National level Technical festival **TECHTONIC2022**. A total of 60 students from different colleges participated. Gandhi Nirav and Yash Bhavsar from GEC Bharuch got the first prize and Bhuva Jenis and Makadia Shrey, also from GEC Bharuch, were runners up.

On **30 May 2022**, an industry visit to **Bharuch District Co-operative Milk Producers' Union Ltd., Dudhdhara Dairy**, Bharuch was organized for the students of the Chemical Engineering Department.

The entire method of milk processing was explained to the students. They were also taken to the Pasteurisation unit, Homogenisation unit, Ghee making unit, Paneer making unit and maintenance section.



Sri Sivasubramaniya Nadar College of Engineering, Chennai

INVENTE, the flagship tech-fest, was organized on **3** and **4 November 2022.** Held since 2016, INVENTE included several events, namely, Paper Presentation (Online), Poster presentation, ChemConnexions, Jumanji, Deep Waters, Puzzle Hunt, ChemWordle, Trippy Trivia, etc. Several engineering colleges and institutes from across the nation participated in the tech-fest.

Annamalai University, Annamalai Nagar

A half-day **Industry Visit** to the **Heubach Colour Pvt. Ltd**., Cuddalore was undertaken on **6 July 2022** for the 3rd year students of Chemical Engineering. Heubach Colour is one of the leading manufacturers of synthetic pigments, used majorly in dye and plastic industries.







Jawaharlal Nehru Technological University, Anantapur

On **2 October 2022**, a **Webinar** was organized on **Shrimad Bhagavad Gita**. It was meant for students, faculty members and professionals. **Mr. Surya Prakash Rao.S**, Assistant Professor, Chemical Engineering, BVRIT-Narsapur was the key speaker.

K. K. Wagh Institute of Engineering Education and Research, Nashik



30 July 2022: There was an **interaction** with Alumni, **Mr. Sham Tade**, Process Engineer, Technoforce India Pvt. Ltd., Nashik.

17 August 2022: Prof. Dr. K. Suresh, Assistant Professor MANIT, Bhopal delivered a **Lecture**, titled, **Cost-effective and Eco-friendly Ceremic Membranes for Wastewater Treatment**.

27 August 2022: A **Lecture** on **Career Opportunities in Chemical Engineering** was delivered by **Mr. Ganesh Sapariya**, Process Engineer, Emerson Export Engineering Centre, Nashik.

30 August 2022: Mr. C. R. Mohikar, Petro-Project Consultant, Nashik delivered a Lecture, titled, **Process & Process control (IA- Intelligent Automation**).

1 September 2022: A **Counselling Session** on Career Opportunities was conducted by **Dr. Pratibha Chandak**, Counsellor, K. K. Wagh Institute of Engineering Education and Research, Nashik.



3 September 2022: A **Lecture**, titled, **Piping Design - Layout Design and Scope of Piping**, was delivered by Parag Palve, Piping Department Head, Praj Industries Ltd., Pune.





16 September 2022: A **Lecture**, titled, **Overview of Thermodynamics** was delivered by **Dr. Ravi Kumar Peetala**, Associate Professor, Department of Mechanical Engineering, NIT Warangal.

22 September 2022: A **Lecture**, titled, **Synergistic Effect of UV and Chemical Treatment on Biological Degradation of Polystyrene** by **Dr. Vijay Kumar R.P.**, Assistant Professor, Department of Chemical Engineering, VNIT Nagpur.

1 October 2022: A **Lecture** on **Fuel Cell** was delivered by **Dr.LeelaManoharAeshala**, Assistant Professor, Department of Chemical Engineering, NIT Srinagar.

11 October 2022: **Dr. V. V. Mahajani,** Superannuated Professor, Institute of Chemical Technology, Mumbai presented a **Talk** on **Project Management**.

Coming Event: **March 2023**: **ChemFest** is scheduled to be organised.

Madan Mohan Malaviya University of Technology, Gorakhpur

To celebrate *Azadika Amrit Mahotsav*, the Student Chapter at the Dept. of Chemical Engineering along with the Department of Pharmaceutical Science and Technology and the University in general hosted a seven-day national programme during 11 - 17 August 2022. The inauguration was marked by a motivational Lecture by **Dr. Prateek Khare** on 11 August.

Other events held under the programme included **Poster Presentation competition** on the themes of Freedom fighters, National Flag, 75 years of our Independence, Indian Culture, etc., on **11 August** and **Selfie with Tiranga** on **12 August**, **Storiesofchange@75** on **13 August**. This event required the students to present a story on the theme of India's freedom struggle, tricolour, etc. On **14 August**, a Documentary, titled, **Legend: Dr. APJ Abdul Kalam** was screened. On **15 August**, an event **to upload certificates provided by MOC** was organized, participated by many students, faculty members and staff. On **16 August**, a Lecture was delivered online on the topic, **Freedom to**







Explore the Students Life in Different Dimension for Robust Career Development by **Mr. Vipin Sharma**, Formulation & Development Scientist, Dr. Reddy's Laboratories, Hyderabad. On the final day, **17 August**, another expert Lecture was delivered online by **Mr. Satwik Singh**, Senior Production Engineer, IFFCO, titled, **The Production of Urea ViaNano Technology.**

MIT, Mahe, Manipal

A National Symposium, CHEMIGNITE-2023, was organized on 3 and 4 March 2023, which was supported by IIChE Mangalore RC. The central theme for the symposium was Chemical Engineering in the 21st Century. Events under the symposium were Guest Lectures, Paper Presentation [°]1 . Prof. P.K.Karanth Memorial Quiz Competition.

National Institute of Technology, Srinagar

A week-long Workshop was held in hybrid mode during 28 June - 2 July 2022 on Recent Trends Sustainable and Green Technology in (RTSGT-2022). The Workshop was organized by the Dept of Chemical Engineering, Student Chapter NIT Srinagar and sponsored by IIChE Doaba RC, Jalandhar; Tamil Nadu Paper Ltd. (TNPL); Level 9 infrastructure Developers; Khan Lab Care and Jaykon Scientific Industries. The workshop was coordinated by Dr. Tanveer Rasool, Dr. Leela Manaohar & Dr. Malik Parveez. Dr. M. A. Rather, and Dr. Shashikant Kumar were the conveners. A Group Discussion and a Quiz Contest were also held as part of the programme.

The winners received cash prize and certificates.

BITS Pilani, Hyderabad

On **30** and **31 March 2022**, programmes, titled, **Nuclear Blues and UnderPressure** were conducted.





Jawaharlal Nehru Technological University, Hyderabad

FUSION 2K22 was organized in association with Hyderabad RC on 25 and 26 April 2022. Prof. P. Sujatha, Principal, JNTU College of Engineering Anantapur (JNTUACEA); Prof B. Durga Prasad, Vice Principal, JNTUACEA; Prof. M. Vijaya Kumar, Rector JNTUA; and the Chief Guest of the inaugural function, Prof. G. Ranga Janardhana, Vice-chancellor JNTUA were present at the inaugural function. Following an introduction about FUSION 2K22 and an address by the Chief Guest, Prof. G. Ranga Janardhana, the dignitaries planted saplings in the central courtyard of the Department of Chemical Engineering. The keynote address was virtually delivered by Mr. D. M. Butala, President, IIChE. He spoke about the current trends and future scope as well as importance of Chemical Engineering in India and beyond.









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