



# IICHE-MRC E-NEWSLETTER

## MUMBAI REGIONAL CENTER



## FROM CHAIRMAN'S DESK

**Dr. U. Kamachi Mudali**  
**Chairman IICChE-MRC**

With the second wave of COVID-19 pandemic continuing to spread in several parts of the world, the Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) continue to penetrate our immune system. Several new variants of SARS-CoV-2 have been reported across the world, which seem to be spreading faster and more infectious. We have lost many of our near and dear to the Covid. The fear of the third wave still continue to challenge individuals, families, doctors, organisations and governments. It is important to plan well for preventing the future waves of the pandemic by establishing necessary health facilities.

The rapid spread of the COVID-19 pandemic has forced our everyday routine to take a backseat. We have also witnessed a rise in public fear and anxieties and regular life style are highly affected by this. The need of the hour is a tool for engagement to overcome the fear and stress. It is a time to minimise the usage of our gadgets, take a break from the buzz of media and be absorbed by some artwork, music or study that is refreshing and recuperative.

Indian Institute of Chemical Engineers (IICChE) is the premier professional organization which provides a platform for interacting with all the disciplines of science and engineering. IICChE remain the most appropriate congregation to interact with fellow professionals even during the pandemic, which is an important prerequisite for comforting and professional growth. IICChE-MRC continues to conduct and support many events throughout by online means despite the pandemic situation to both young students and senior members. I wish this issue of e-Newsletter too proves beneficial to the scientific fraternity and member community to encourage them to collaborate for a new and better world.

**Dr. U. Kamachi Mudali**

**INDIAN INSTITUTE OF CHEMICAL ENGINEERS**  
**Mumbai Regional Center, B-18 Vardhman Complex,**  
**Gr Floor, Opposite Home Town & 247 Park, LBS Marg,**  
**Vikhroli (West), Mumbai - 400 083**

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- "Membraneless Microfluidic Water Electrolyser for Hydrogen & Oxygen Production" by Dr. Suddhasatwa Basu on 12 December 2020.
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# THE TEAM

## IChE-MRC Executive Committee

### Dr. U. Kamachi Mudali

Dr Anita Kumari

Shri Mahendra Patel

Shri Shreedhar M. Chitanvis

Shri Dhawal Saxena,

Dr. Alpana Mahapatra

Shri Rajesh Jain

Shri Ravindra Joshi

Dr. T.L. Prasad

Shri V.Y. Sane

Shri Joy Shah

Dr. Aparna M. Tamaskar

Prof. V.K. Srivastava

Shri Jagdish Nageshri,

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Hon. Treasurer

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Member Secretary

Member

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Guest Editor IChE-MRC e-Newsletter

Editor IChE-MRC e-Newsletter

# EDITOR'S CORNER



Dear Readers,

Chemical Engineers are special so is IICHEMRC Newsletter. I am happy to share yet another touching issue of IICHEMRC Newsletter. As the global pandemic continues, viral variants have become the latest concern. It has already claimed the lives of hundreds of thousands of people. Different countries are taking different measures. Scientists all over the world are trying to develop vaccines and medicines. With the tremendous spike seen in India as second wave, we still need to learn a lot. While social distancing limits the spread of the disease, it's not enough to end the epidemic. The measures are necessary to fight the pandemic but they have a negative effect on many other aspects of our lives like economy, education, and even on other diseases.

Students are increasingly recognized as a vulnerable population, suffering from higher levels of anxiety, depression, substance abuse, and disordered eating compared to the general population. Therefore, when the nature of their educational experience radically changes, the burden on the mental health of this vulnerable population is amplified. It is found that being a woman, being young adult, having poor general health status, spending more hours on screens, and knowing someone infected, have higher levels of psychological impact. Inadequate efforts to recognize and address mental health challenges, especially during a pandemic, could have long-term consequences on health and education.

The coronavirus lockdown restrictions are again slowly easing in India. But with the fear of third wave and limited healthcare facilities to treat the infection, there's still a long way to go before life returns to normal. So it's best not to err on the side of caution, at least for some more time. The virus is here to stay and we all must be careful as prevention is the best medicine. Art and culture are vital, essential even, to what it means to be human. People found solace in painting, writing, dancing and even cooking! All these helped many with keeping themselves mentally and physically healthy.

Here is an interesting article "Who needs Process Safety Management System?" by Shri Joy M. Shah. Take out time to let us know that you love the article. This issue has mainly presented pictorially the glimpses of recent online events, meetings, and webinars. The respective lectures are available on IICHEMRC website and U-tube. We would like to thank readers for the honest feedback on previous issue of E-Newsletter. Let me reiterate that the Institute needs active support of industry, academia and R&D organisations, and, indeed, the individual members for its active and meaningful sustenance.

Happy reading. Take Care, Stay Safe !

**Jagdish Nageshri**  
Editor, IICHE-MRC e-Newsletter

## Disclaimer

IICHE-MRC has made every effort to ensure that the information in this E-Newsletter is correct & helpful to IICHE members. IICHE-MRC Executive Committee or Editor of the e-Newsletter do not assume and hereby disclaim any liability to any party for any loss, or damage caused by errors or omissions, whether such errors or omissions result from negligence, accident, or any other cause. The views and opinions expressed in the articles are belong solely to the authors and do not necessarily reflect the official policy or position of IICHE-MRC.

# Glimpses of IChEMRC Diamond Jubilee Lecture Series

## “Role of Chemical Engineers in Extraction of Metals for Industrial Applications”

by Dr. R.N. Patra on 21 November 2020



### DIAMOND JUBILEE SPECIAL LECTURE SERIES

Organized by:  
INDIAN INSTITUTE OF CHEMICAL ENGINEERS-MUMBAI REGIONAL CENTER-EC



You all are cordially invited to attend the lecture by “Dr. R.N PATRA” sir on, “Role of Chemical Engineers in the Extraction of Metals for Industrial Applications”

DATE: 21/11/20  
TIME: 6:30 to 7:30 PM

Link : <https://global.gotomeeting.com/join/437903621>



**Dr. R. N PATRA**

#### Guest of Honor



**Dr. U Kamachi Mudali**  
Hon. Chairman IChE-MRC,  
Formerly Distinguished  
Scientist, DAE &  
Chairman & Chief Executive  
Heavy Water Board (HWB)

#### Coordinator

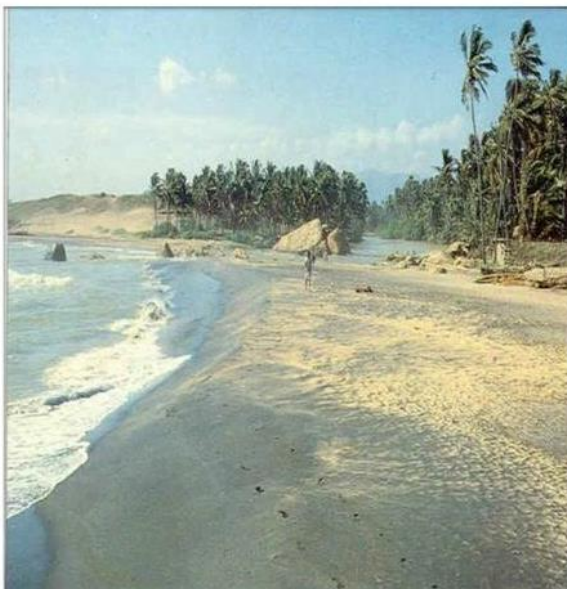


**Shri. Dhawal Saxena**  
Honorary Secretary, IChE-MRC.  
Associate Director Product  
Development, Projects & Market  
at Blast Carblock Pvt. Ltd.

#### IICHE-MRC Executive council

S.no	NAME	Role in IICHE-MRC
1.	Dr Anita Kumari	Hon. Vice Chairperson
2.	Mr. Mohendra Patel	Hon. Treasurer
3.	Mr. Shreedhar .M. Chitrawis	Member
4.	Mr. Rajesh Jain	Member
5.	Mr. Ravindra Joshi	Member
6.	Dr. Alpans Mahapatra	Member
7.	Dr. T.L. Prasad	Member
8.	Mr.V.V.Sane	Member
9.	Dr. Aparna M. Tamaskar	Member

## Beach Sand Mineral Occurrence In India



Placer deposit

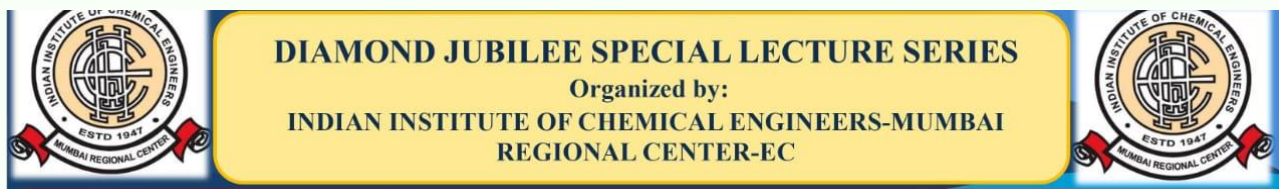


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# Glimpses of IChEMRC Diamond Jubilee Lecture Series

## “Membrane-less Microfluidic Water Electrolyzer for H<sub>2</sub> & O<sub>2</sub> Production”

### by Dr. Suddhasatwa Basu on 12 December 2020



#### Guest of Honor



**Dr. U Kamachi Mudali**  
Hon. Chairman IICHE-MRC,  
Formerly Distinguished  
Scientist, DAE &  
Chairman & Chief Executive  
Heavy Water Board (HWB)



### Dr. Suddhasatwa Basu

#### IICHE-MRC Executive council

Dr. Anita Kumari	Hon. Vice Chairperson
Mr. Mahendra Patel	<b>Hon. Treasurer</b>
Mr. Shreedhar M. Chitanvis	<b>Member</b>
Dr. Alpana Mahapatra	<b>Member</b>
Mr. Rajesh Jain	<b>Member</b>
Mr. Ravindra Joshi	<b>Member</b>
Dr. T. L. Prasad	<b>Member</b>
Mr. V. Y. Sane	<b>Member</b>
Dr. Aparna M. Tamaskar	<b>Member</b>
Mr. Joy Shah	<b>Member</b>

DATE: 12/12/2020

TIME: 6:30 to 7:30 PM

#### Coordinator



**Shri. Dhawal Saxena**  
Hon. Secretary, IICHE-MRC.  
Associate Director Product  
Development,  
Projects & Marketing at Blast  
Carboblocks Pvt. Ltd.

Lecture on “Membraneless Microfluid Water Electrolyser for hydrogen and oxygen production” was conducted on 12th December 2020. The lecture illuminated towards the development of membrane-less microfluidic electrolyser for water electrolysis operating in an asymmetric electrolyte configuration. The membrane-less design of the electrolyser reduces the cost of production, and a considerable reduction in the energy required for water electrolysis is achieved by utilizing electrochemical neutralization energy from the asymmetric electrolyte. The presentation provided a sustainable route for hydrogen production, and the findings in the research will allow attendee to apprehend the expanding application of microfluidics to energy systems.



Continued ...

# Glimpses of IChEMRC Diamond Jubilee Lecture Series

## “Membrane-less Microfluidic Water Electrolyzer for H<sub>2</sub> & O<sub>2</sub> Production”

by Dr. Suddhasatwa Basu on 12 December 2020



Prof. Suddhasatwa Basu completed Ph.D/MS in Chemical Engineering from Indian Institute of Science, Bangalore. Prior to taking over as the Director of CSIR-IMMT, he was Professor and Head of Chemical Engineering Department, IIT Delhi. He has vast work experience on development of Energy Materials and its application to energy conversion and storage devices, e.g., Fuel Cells, Super-capacitor and Battery, Electrolyser for Hydrogen generation by Water Splitting and CO<sub>2</sub> Reduction to Organics. He has published more than 200 articles in high impact journals with H-index 40, 7 patents and 2 technologies transferred to various industries.. He is a Fellow of National Academy of Science of India, Indian National Academy of Engineering, Royal Society of Chemistry UK and received Herdillia Award, Dr A. V. Rama Rao Foundation's Research Award. He is Editor/Assoc Editor/Ed Board member of several international journals published by Willey, Springer, Elsevier and ACS.

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# Glimpses of IICHEMRC Diamond Jubilee Lecture Series

## “Rain Water Harvesting: Rural & Urban opportunities”

by Prof. A.B. Pandit on 17/01/2021



### DIAMOND JUBILEE SPECIAL LECTURE SERIES

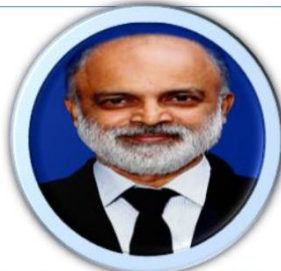
Organized by:

INDIAN INSTITUTE OF CHEMICAL ENGINEERS-MUMBAI REGIONAL CENTER-EC



**You all are cordially invited to attend the lecture by “Dr. A B Pandit” on,  
“Rain Water Harvesting: Rural and Urban opportunities”**

**DATE: 17.01.2021**  
**TIME: 5:00 to 6:00 PM**



Link: Google Meet  
<http://meet.google.com/xdj-cmri-toy>

**Guest of Honor**



**Dr. U Kamachi Mudali**  
Hon. Chairman IICHE-MRC,  
Formerly Distinguished  
Scientist, DAE &  
Chairman & Chief Executive  
Heavy Water Board (HWB)

**Prof. Aniruddha B. Pandit**  
**FNA, FTWAS, FASc, FNASc, FNAE, FMASc,**  
**Sir J.C Bose Fellow, Govt of India**

- ISTE National award for outstanding research, 1995.
- Prof. R. A. Rajadylaksha Best Teacher award, on 15 occasions in the past 20 years.
- VASVIK award, 1996
- Fellow, Maharashtra Academy of Science 1997
- IICHE - Herdilia award for excellence in basic research, 2001
- Distinguished Alumnus award, Institute of Technology-Banaras Hindu University, 2004
- Distinguished Alumnus award, UICT, 2008,
- INSA, Best Teacher award, 2012
- Fellowships of, Maharashtra Academy of Sciences, 2000, Indian National Academy of Engineering, 2006, Indian Academy of Sciences, 2008, Indian National Science Academy, 2009, National Academy of Sciences in India, 2009, Fellow of TWAS 2015.

**Coordinator**



**Shri. Dhawal Saxena**  
Hon. Secretary, IICHE-MRC.  
Associate Director Product  
Development,  
Projects & Marketing at  
Blast Carboblocks Pvt. Ltd.

Prof. Aniruddha B. Pandit earned his B. Tech degree from Institute of Technology, Banaras Hindu University in 1980 and joined for his Ph.D. (Tech) degree in UDCT (now UICT), under the guidance of Prof. J. B. Joshi. From 1984 till 1990 he worked in University of Cambridge, United Kingdom as a Research Associate with Prof. J. F. Davidson. He has developed many novel designs of gas-liquid contactors and also developed new impeller designs. After returning to India in 1990, he joined UICT and was instrumental in starting a program in the area of Hydrodynamic Cavitation. His involvement in the ICT ENERGY group has resulted into many energy efficient patented processes for cooking, solar steam generation and mathematical modelling of smokeless Solid Fuel Stoves. In addition to his research contribution, Prof. Pandit has contributed to innovation in teaching the physical principles of chemical engineering operations. He is actively involved in the area of harnessing solar energy and with tribal population in extending the chemical engineering principles for drying of farm / forest product & water disinfection for potable water. He is currently involved in setting up ICT-DAE Center for Chemical Engineering Education and Research to exploit the principles of chemical engineering in nuclear and allied energy engineering technologies.

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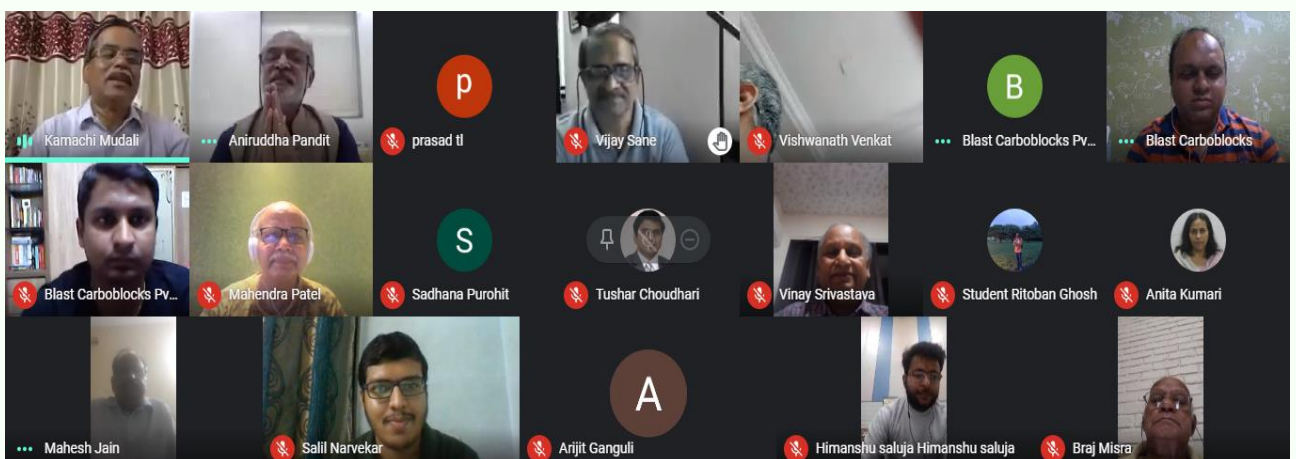
**Glimpses of IChEMRC Diamond Jubilee Lecture Series**  
**“Rain Water Harvesting: Rural & Urban opportunities”**  
 by Prof. A.B. Pandit on 17/01/2021

**Rainwater Harvesting Options: Quantitative Overview**

Prof. Aniruddha B Pandit,  
 Institute of Chemical Technology  
 Acknowledgement: Himanshu Sail

**Micro Catchment Rainwater Harvesting**

**Rooftop and Courtyard Rainwater Harvesting**



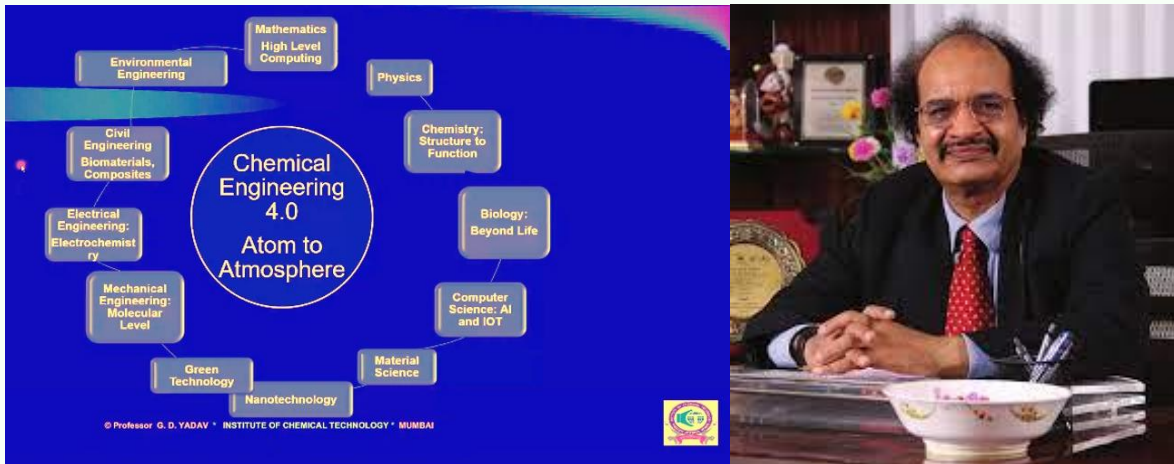
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# Glimpses of IChEMRC Diamond Jubilee Lecture Series

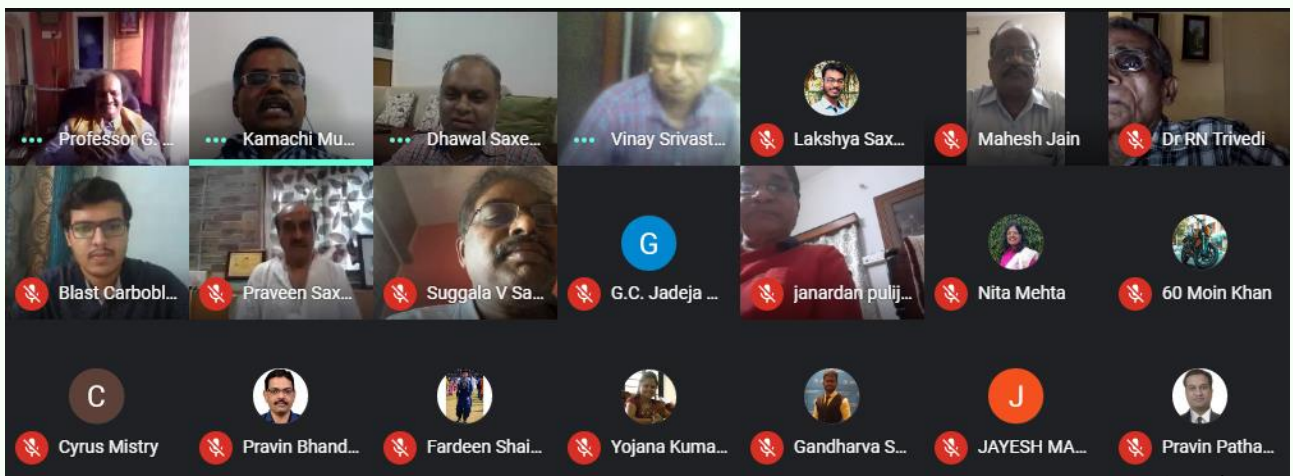
## “Is there any charm and scope left in Chemical Engineering?”

by Prof. G. D. Yadav on 22 May 2021 16:00 to 18:00 hours



Padmashri Prof. G. D. Yadav, who needs no introduction has completed a century in supervision of Doctoral Students. He has supervised 103 Doctoral and 125 Masters Theses, which is a record in ICT and for any Engineering Professor in India. On 22nd May 2021, Prof. Yadav honoured us by giving a lecture on the insightful and thought provoking topic, "Is there any charm and scope left in Chemical Engineering?". This lecture was organized by IChE-MRC as a part of its Diamond Jubilee Lecture Series to commemorate it's 60th year of existence.

The lecture started with an interesting quote by Prof. Yadav, "God is a Chemical Engineer, but Chemical Engineers are not!". Thereafter, sir talked about various fields where there was a lot of scope for further development. Thus proving that indeed, there is still plenty of charm and scope left in Chemical Engineering. During the course of the lecture, sir also reminisced about the talks and lectures he had delivered before. Overall, the lecture was very interesting and all the young chemical engineers have benefited from sir's expertise, insightful knowledge and wisdom.



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# Glimpses of IChEMRC Diamond Jubilee Lecture Series

## “Is there any charm and scope left in Chemical Engineering?”

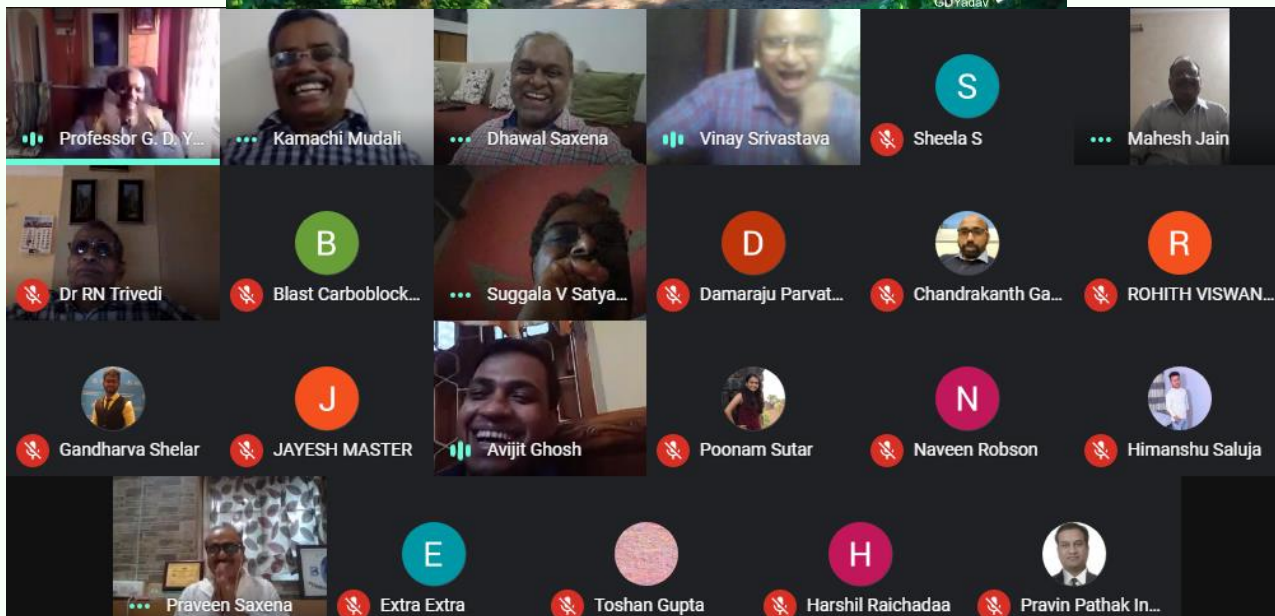
by Prof. G. D. Yadav on 22 May 2021 16:00 to 18:00 hours

### Conclusions.....1

- Chemical Engineering has been evolving continuously and in addition to many of the traditional jobs, chemicals engineers are at the forefront of every innovation.
- There is nothing like a pure science anymore; all boundaries have disappeared. Adaption is the new mantra.
- Adaption , Adaptation & Adoption A new trinity
- Chemistry continues to evolve from its historical focus on molecular structure, reactivity, and synthesis to take on the challenge of making small and large molecules and even systems of molecules with tailored properties and functions.
- Chemistry has bestowed Chemical Engineering with the soul of its functions.



every inno  
disappears

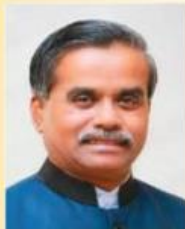


## “Urban Mining of E-Waste”

### “Challenges and Technologies to Reduce, Reuse and Recycle of Materials”

by **Dr. U. Kamachi Mudali, Chairman, IChEMRC on 28 November 2020**

(28<sup>th</sup> Prof. Brahm Prakash Memorial Materials Lecture)



**Dr. U. Kamachi Mudali**

*Former Distinguished Scientist, DAE &  
Chairman and Chief Executive, Heavy Water Board  
Dept. of Atomic Energy, Mumbai  
Immediate Past President, Indian Institute of Metals*

**Dr. U. Kamachi Mudali** is formerly **Distinguished Scientist** of Department of Atomic Energy, and **Chief Executive & Chairman** of Heavy Water Board, a flagship industrial unit of DAE. Dr. Mudali has made pioneering individual contributions to advanced materials & coating technology development; corrosion science, engineering and technology; materials, process and equipment development for reprocessing applications; failure analysis, consultancy and societal contributions; for more than three decades during his service at DAE.

Dr. Mudali is one of the highly cited researchers with **465 Journal publications, 5 patents, and 8910 citations with an h-index of 43 and i-10 index of 245**. He is also recognised in the **World’s Top 2% scientists** from India in the field of Materials. He is the **President** of Electrochemical Society of India, IISc Bangalore; **Chairman** of NACE International India Section; **Chairman**, Indian Institute of Chemical Engineers, IChE-MRC and **Immediate past President** of the Indian Institute of Metals. Dr. Mudali is an **Adjunct Faculty** of Institute of Chemical Technology, Mumbai, and PSG Institute of Advanced Studies, Coimbatore; and was **Professor & Senior Professor** of HBNI University, DAE during 2006-2017, teaching regularly 5 different courses for Engineering and Chemical Sciences disciplines. Dr. Mudali has been decorated with several distinguished recognitions from India and abroad.

Dr. U. Kamachi Mudali has **extensively collaborated with many industries, professional bodies and other research institutions** for promoting Coatings, Surface Engineering & Corrosion research and awareness in the country. Dr. Mudali has co-edited **20 Books/Proceedings**, and is **Editor-in Chief** of IIM-Springer Book Series & CII-CMC Booklet Series, **Associate Editor** of Journal of Electrochemical Society of India, and a Member of Editorial Board of five Journals.



# Who needs Process Safety Management System?

**Joy M. Shah, Founder and Chief Consultant**

Innov8 ProTech Solutions, Sustainability and Management Consultant.

(Former Sr. Vice President – Technical at Reliance Industries Limited)

Author can be contacted on [shahjoym@hotmail.com](mailto:shahjoym@hotmail.com), +919374715109

*“Safety does not come instantly; you have to implement it consistently”*

Recently, I have visited couple of textile industries for Safety Audit. I was informed by site management that they regularly follow Indian standards for Occupational Health and Safety and get Third Party Audits, still nos of accidents and injuries are not reducing. I have checked past audit reports, training records and other statutory compliances, and they are all OK.

I asked them, “Are you aware of OSHA’s standard of Process Safety Management?” Site Management informed that it is for high hazards industries and not applicable to them being low hazards industries even though there were polymerisation reactors, power plants, boilers, use of dyes and paint and some of hazardous chemicals as well as high speed and heavy machineries. This article highlights the importance of Process safety management and how it will help to improve safety performance of low hazards industries (LHI) and heavy machinery industries (HMI) too.

## What is Process Safety Management (PSM)?

As per CCPS, PSM is application of Management Systems and Controls to manufacturing processes in a way that **all hazards are Identified, Understood, and Controlled**, so that **Manufacturing Process related Injuries and Incidents are prevented**. These management systems and controls can be in the form of programs, procedures, audits and evaluation.

Process Safety Management standards were initially developed by OSHA in 1992 for high hazards industries to prevent fatal accidents and release of toxic chemicals. Later on it was accepted by most of chemicals, pharmaceuticals, and hydrocarbon industries due to inherent benefits of following the PSM standards. Now we are looking at its applicability to low hazards and heavy machinery industries.

## Brief description of standards and its applicability to low hazards industries:

There are 14 elements of PSM standard as given below.

Continued ...

# Who needs Process Safety Management System?

## Process Safety Information

To meet the requirement, organisation to develop process safety information of all chemicals, its reactivity, identify critical equipment for its monitoring and control. LHI may have fuels (Highly flammable), DG sets, boilers, power generators, cooling tower, handling of biocides and disinfectants for cooling towers, use of chemicals for raw water treatment and effluent water, use of caustic, acid and chlorine (Highly toxic chemical), use of colours and dyes as well as many other chemicals etc. It is essential that these chemicals are used with utmost respect to avoid accidents.

## Process Hazard Analysis

To meet the requirement of this element, organisation must identify, evaluate, and control hazardous processes, chemicals as well as machineries. Even LHI have such processes and Hazards analysis will definitely bring understanding of hazards and mitigating risk of manufacturing to tolerable level.

## Operating Procedures

This is the element where organisation must develop and implement written operating procedures. Every process whether high or low hazards, operating procedures are required, not only to prevent accidents but meet quality, cost and production targets.

## Incident Investigation

As mentioned earlier, accidents are prevailing in LHI. Management is worried but could not find solution to reduce accident. If those accidents are investigated properly and root cause is identified to take corrective action, such accidents can be prevented even in low hazards industries. Organisation must investigate each accident even in LHI to avoid repeat accidents.

## Management of Change

Almost 80% of accidents can be traced back to changes done without considering all the aspects of hazards. Even in spinning or drawing of textile machine, changes done without hazards evaluation can results in to accident and death. Each organisation must evaluate changes to manufacturing process to determine if there will be any impacts on the health and safety of employees.

Continued ...

# Who needs Process Safety Management System?

## **Mechanical Integrity**

Most of the industries has pressure vessels as well as vessels operating at high temp e.g. furnace. Failure of these equipment can results in to release of material to environment and can injure the people working nearby. Even moving machineries as well as rotary machineries require periodic inspection to avoid failure. Therefore, Process equipment must be designed and installed correctly even in LHI and inspected regularly.

## **Employee Participation**

Safety performance is a function of involvement of employees in safety programs. Weak employee is more vulnerable to an accident. The organisation must involve workers in PSM programs even in LHI.

## **Trade Secrets**

Every organisation have trade secrets which keep them ahead of competition. However, it is essential to disclose the information related to safety of workman. Organisation must provide all information necessary to comply with standards, regardless of the trade secret status of the information.

## **Compliance Audits**

Audit of every activity is last line of defence for sustainable operation. In the absence of audits, organisations can not identify gaps from standards and procedures whether it is HHI or LHI. Audits must be conducted and reported at reasonable intervals.

## **Hot Work permit**

Hot work permits must be issued for any hot work operations taking place near the process or near the flammable material. Hot work is required even in LHI and safe hot work can avoid fire due to gas cylinder, electrical short circuit as well as avoid accident to persons.

## **Pre-Startup Safety Review**

Irrespective of nature of industries, for start-up or commissioning of new or modified facility, several checks are carried out by individual engineers.

Continued ...

## Who needs Process Safety Management System?

Structured PSSR is defined in PSM which must be conducted for new and modified facilities before operations can begin.

### Emergency Planning and Response

This is one of the most important requirements as what are the avenues to reduce damage to life, assets and environment once any accident is happened. Therefore, Employees must be trained on emergency planning and response procedures.

All these PSM requirement is equally applicable to low hazards industries as well as heavy machinery industries for sustainable and safe operation. Therefore IS 14489:2018 – Occupational Health and Safety standards have taken many of these elements of OSHA's 29 CFR 1910.119 in their checklist.

### Training

All employees must be trained and validated for assigned job whether it is related to chemicals, rotary machine or heavy machinery. Un trained workman is likely to injure more frequently.

### Contractors' safety

Large numbers of contract workman is employees in LHI as compared to HHI. All contractors working on or near highly hazardous machineries and chemicals must be trained on emergency procedures and other relevant aspects of the PSM program.

The requirement of such PSM elements is not clearly defined in IS 14489:2018, therefore, this requirement of PSM is not understood by the employee due to lack of training in PSM.

Time has come to take it PSM standards to LHI and HMI for sustainable and safe manufacturing. It is suggested to train employee of LHI and HMI for PSM to adopt knowledge of the elements from OSHA's standard even if it is implemented as per IS 14489:2018.

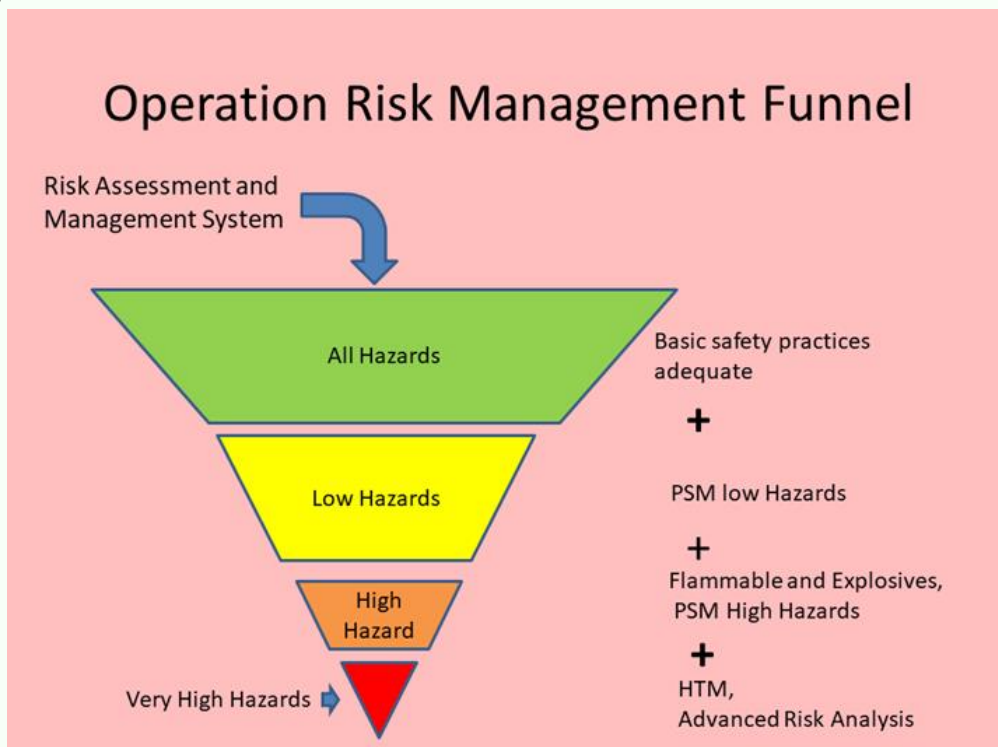
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## Who needs Process Safety Management System?

### Benefits of implementation of PSM in LHI and HMI:

- Avoidance of events that result in loss of facilities, injuries and fatalities, environmental damage, and / or human health impacts
- Avoiding litigation due to partial and permanent disablement of employees.
- Improved employee and labor relations through active engagement and participation in program implementation
- Sustained shareholder value & enhanced image in the investment community
- Improved productivity and cost savings through reduced downtime
- Improved efficiency through consolidation of many safety related activities into a cohesive focused effort
- Improved quality and customer satisfaction through assurance of continued operation within specified limits
- Sustained “right to operate” as granted by the community, government, and other stakeholders

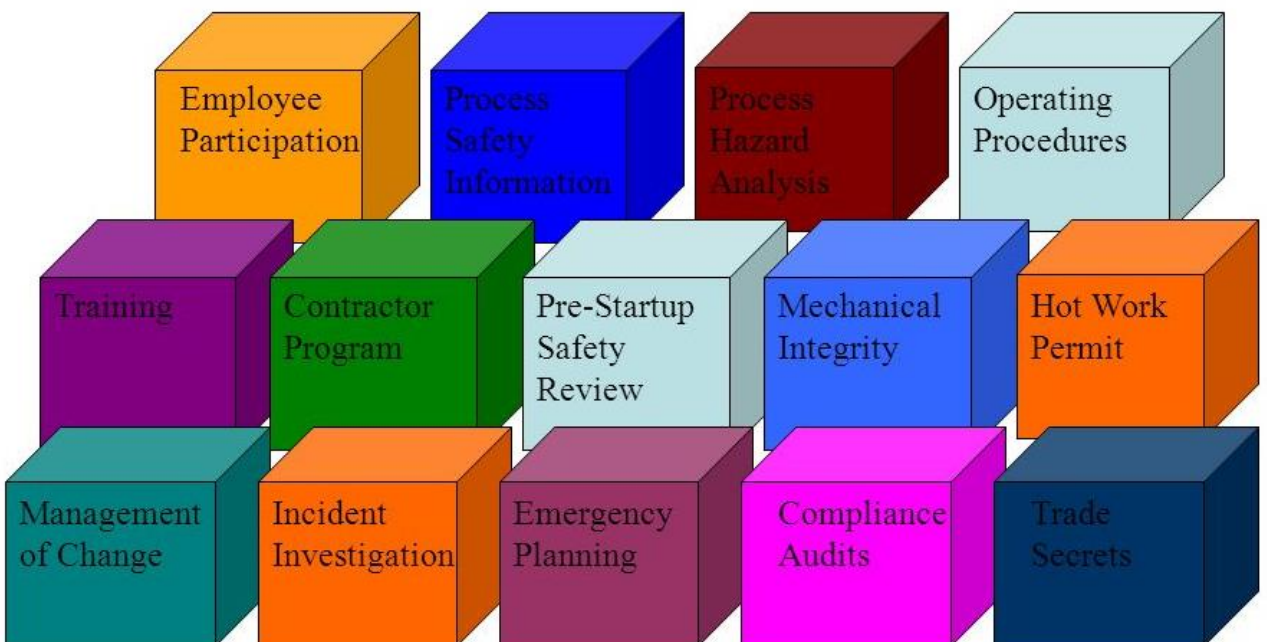
Thus, PSM is a Safety management & control system and should not be limited to Higher Hazards Industries (HHI) only. PSM can also apply in whole or in part to Lower Hazard Industries (LHI) & Heavy Machinery Industries (HMI's). Only difference can be the extent of barriers to contain the risk might be different based on type of the industries and associated risk. It can be depicted in following picture.



Continued ...



# Process Safety Management



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# Six Sigma Training Concluding Session OSIP-2020

on 31/10/2020



## CONCLUDING SESSION OF LEAN SIX SIGMA TRAINING OSIP 2020

Organized by  
Students of IICChE Lean Six Sigma Training Group



You All are cordially invited to attend the Concluding Session of Lean Six Sigma training OSIP-2020

Link: <https://meet.google.com/atq-zvce-rfw>



**Prof. V. V. Basava Rao**  
President, IICChE



**Dr. Avijit Ghosh**  
Hon. Sec. IICChE,  
Convenor, OSIP-2020,  
Prof, Heritage Institute of Technology, Kolkata

**Course Coordinator**



**Shri. Dhawal Saxena**  
Associate Director Product Development, Projects & Marketing at Blast Carboblocks Pvt. Ltd.

**KEYNOTE SPEAKER**



**Shri. Sharad chandra Karve**  
ASQ Certified Master Black Belts Trainer for RIL (4th from India).



**Shri. Vinayak Marathe**  
Ex- Sr. Vice President, R&D Division, RIL, Mumbai.



**Dr. Yogesh Koparkar**,  
Associate Director, Jubilant Life Sciences, Site Head Nira, Bussiness Excellence



**Shri. Ankur Chaturvedi**  
Head of Manufacturing Operations, Montage Chemicals Pvt, Ltd



**Shri. Amit Mhatre**,  
Process Engineer, Laxmi Organics Mumbai.



**Shri. Pranav Patil**  
Master in Chemical Engineering (ICT Mumbai).



**Shri. Atul Wankhade**  
GM Max Pro, UPL Limited

DATE -31 OCT 2020  
Time - 5:00 to 7:00 pm

Live ON:  
IICChE - MRC  
ChemBridge



# Glimpses of SCHEMCON - 2020 Celebration

9th October 2020 09:00 Hours



## SCHEMCON-2020



Inaugural Program: October 9, 2020 at 9 AM

Organized by



<https://youtu.be/tBLegA14R3c>

Indian Institute of Chemical Engineers, Headquarters



**Mr. C.P. Gurnani**  
CEO & Managing Director, Tech Mahindra



**Padmshri Prof. G.D. Yadav**  
Emeritus Professor of Eminence & Former Vice Chancellor, ICT Mumbai



**Mr. Biswanath Chattopadhyay**  
CEO IVL Dhunseri Petrochem Industries Limited



**Prof. Basab Chaudhuri**  
Vice-Chancellor, WBSU



**Prof. V. V. Basava Rao**  
President, IICHE



**Prof. M. V. Rao**  
Vice President, IICHE



**Mr. P.K. Saxena**  
Vice President, IICHE



**Dr. Avijit Ghosh**  
Organizing Secretary, SCHEMCON 2020

<https://us02web.zoom.us/j/85228187246>

### Panel Discussion on "Manufacturing up-gradation by Artificial Intelligence"

Date: 10<sup>th</sup> October, 2020

Panel Members

Time: 14:00 – 15:00 Hours



**Prof. V. K. Rattan,**  
VC, GNA University



**Dr. Sanjeev Katti,**  
Director General,  
Energy Center ONGC



**Sh. Sushil Kumar,**  
Past President IICHE,  
Ex unit Head RIL Dahej



**Sh. R G Rajan,**  
Ex CMD,  
Rashtriya Chemical & fertilizer



**Mr. Saurabh Srivastava,**  
Google Research Centre



**Dr. U Kamachi Mudali,**  
Ex. CMD,  
HeavyWater Board

Chairperson



**Prof. V. V. Basava Rao,**  
President, IICHE

Moderator



**Mr. Praveen Saxena,**  
Vice President, IICHE, Director & CEO Blast Carboblocks Pvt, Ltd

# Glimpses of CHEMCON - 2020 Celebration

27-29 December 2020



## Indian Chemical Engineering Congress

&

## 73<sup>rd</sup> Annual Session of Indian Chemical Engineers

# CHEMCON-2020

(online mode)

December 27-29, 2020



“Exploring Recent Trends in Chemical Engineering”

Jointly Organized by

Indian Institute of Chemical Engineers (IICChE)  
Headquarters

&

IICChE - Hyderabad Regional Centre

**SPONSORS**



# Glimpses of CHEMCON - 2020 Celebration

27-29 December 2020



Indian Chemical Engineering Congress & 73<sup>rd</sup> Annual Session of Indian Chemical Engineers

## CHEMCON-2020

(online mode)

December 27-29, 2020

“Exploring Recent Trends in Chemical Engineering”

Jointly Organized by

Indian Institute of Chemical Engineers (IICHE) Headquarters  
& IICHE - Hyderabad Regional Centre

Inaugural Program: 27th December 2020 at 9:30 AM



<https://youtu.be/hogrkdYCs0>



Chief Guest

**Prof. K. Vijay Raghavan,**  
Principal Scientific Adviser Government of India



Guest of Honour

**Padmshri Prof. G.D. Yadav**  
Former Vice Chancellor, ICT Mumbai,  
Former President, IICHE



Guest of Honour

**Prof. S. Venkateshwar**  
Former President, IICHE



Guest of Honour

**Shri. Satyanarayana,**  
Chairman, Inventaa Industries Pvt. Ltd



<https://us02web.zoom.us/j/82639198742>



Guest of Honour

**Prof. V. V. Basava Rao**  
President, IICHE



**Prof. M. V. Rao**  
Vice President, IICHE



**Shri. Praveen Saxena**  
Vice President, IICHE



**Dr. Sanjay Bhardwaj**  
Organizing Secretary,  
CHEMCON 2020



**Dr. Avijit Ghosh**  
Organizing Secretary,  
CHEMCON 2020

## AWARD CEREMONY AND VALEDICTORY SESSION

Plenary Lecture By Prof. Georges Belfort, US National Academy of Engineering



Chief Guest

**Prof. Georges Belfort,**  
US National Academy of Engineering



Guest of Honour

**Shri. Raj Nair,** Chairman,  
Avalon Consulting Ltd.



Guest of Honour

**Dr. K. Sainath,** Managing Director,  
Clair Engineers Pvt. Ltd.



Guest of Honour

**Prof. P. De,** Former President



<https://us02web.zoom.us/j/82639198742>



Guest of Honour

**Prof. V. V. Basava Rao**  
President, IICHE



**Prof. M. V. Rao**  
Vice President, IICHE



**Shri. Praveen Saxena**  
Vice President, IICHE



**Dr. Sanjay Bhardwaj**  
Organizing Secretary,  
CHEMCON 2020



**Dr. Avijit Ghosh**  
Organizing Secretary,  
CHEMCON 2020

# IChE founder's Day - 2020 Celebration

2<sup>nd</sup> May 2020 16:00 Hours



## IChE Founder's Day

2<sup>nd</sup> November at 4 PM

Organized by

Indian Institute of Chemical Engineers, Headquarters



Dr. H. L. Roy

Chief Guest



Prof. V. K. Srivastava  
Past President, IChE

Eminent Speaker



Mr. D. M. Butala  
Council member & Former Vice President

Eminent Speaker



Dr. S Sridhar  
Principal Scientist, IICT Hyderabad

Topic:

1. Challenges in Chemical Engineering
2. Innovative Chemical Engineering for Mitigation of Covid-19 and Provision of Safe Drinking Water



Prof. V. V. Basava Rao  
President, IChE



Prof. M. V. Rao  
Vice President, IChE



Mr. P.K. Saxena  
Vice President, IChE



Dr. Avijit Ghosh  
Honorary Secretary, IChE

<https://us02web.zoom.us/j/85418964818>

# Online Internship Program (OIP - 2021) Inauguration

8<sup>th</sup> May 2020 15:30 Hours



## Online Internship Program (OIP-2021)

From 8<sup>th</sup> May to 31<sup>st</sup> June 2021

Organized by

Indian Institute of Chemical Engineers, Headquarters

Invitation at the Inaugural Session on: 8<sup>th</sup> May 2021 at 15:30 hrs

Batch-2

9-Sessions

1200+ Students

68+ Experts

Chief Guest



Sri. Ashok Patel  
Managing Director,  
Simalin Chemical Industries Pvt Ltd

Guest of Honour



Sri. Ravisankar Sharma  
COO-Manufacturing  
Apcotex Industries Ltd.

Guest of Honour



Sri. K. P. Ravinatha Shetty  
VP - Operation Aurobindo Pharma Ltd.

Guest of Honour



Prof. Lalit Kumar Awasthi  
Director, Dr B R Ambedkar NIT, Jalandhar

Guest of Honour



Dr. Shekhar Bhirud  
CEO-API, Akums Lifesciences Ltd

President, IChE



Prof. M. K. Jha  
NIT Jalandhar

Vice-President, IChE



Mr. P. K. Saxena  
Director & CEO  
Blast Carboblocks Pvt. Ltd

Vice-President, IChE



Prof. N. Balasubramanian  
Anna University

Chief Coordinator OIP-2021



Dr. Avijit Ghosh  
Honorary Secretary, IChE  
HIT Kolkata



Please contact for any query:  
[iicheqfb@gmail.com](mailto:iicheqfb@gmail.com) / 9830752111

# IICHe Forthcoming Event at a Glance

## 1<sup>st</sup> Announcement

Indian Chemical Engineering Congress  
&  
74<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers

# CHEMCON-2021

December 27 - 30, 2021, Bhubaneswar, India

“Sustainable Utilisation of Resources for Chemical & Mineral Sectors”

Jointly Organized by



Indian Institute of Chemical Engineers  
Bhubaneswar Regional Centre

&



CSIR- Institute of Minerals and  
Materials Technology, Bhubaneswar

In Association with



Institute of Chemical Technology  
-IndianOil Odisha Campus Bhubaneswar



## IICHE Forthcoming Event at a Glance

### Registration Fees for CHEMCON-2021:

Categories of Membership	Amount
IICHE Member	₹ 3500*
Senior IICHE Member over 65 Years	₹ 2500*
Non-IICHE Member/Industrial Personnel	₹ 4500*
Postgraduate Student	
IICHE Member	₹ 2000*
Non-IICHE Member	₹ 3000*
Non-IICHE Member including Life Member Fee	
Age: 26-50 Years	₹ 3500+7000**
Age: 51-65 Years	₹ 3500+6000**
Spouse <sup>#</sup> Accompanying Indian Delegate (All Categories)	₹ 2500*



### Important Dates:

Abstract Submission	1 <sup>st</sup> June 2021
Last Date of Abstract Submission	31 <sup>st</sup> August 2021
Intimation of Acceptance of Abstract	1 <sup>st</sup> July - 15 <sup>th</sup> September 2021
Full Paper Submission	1 <sup>st</sup> August - 31 <sup>st</sup> October 2021
Last Date of Full Paper Submission	31 <sup>st</sup> October 2021
Registration (Early bird) <sup>⊗</sup>	Upto 15 <sup>th</sup> September 2021
Registration (Normal)	16 <sup>th</sup> September - 30 <sup>th</sup> November 2021
Registration Closing	1 <sup>st</sup> December 2021
Registration (Spot) <sup>**</sup>	At CHEMCON-2021 Venue

⊗ Early bird gets a discount of 5% on the registration fee.

\*\* Spot registration will be with 5% extra on the normal registration fee.

(Not applicable for new members registering for the first time with the Institute during the CHEMCON-2021)

For all the queries, kindly contact us through our official email: [chemcon74@gmail.com](mailto:chemcon74@gmail.com)

[www.chemcon2021.com](http://www.chemcon2021.com)

Further correspondence can be made to the Organizing Secretary:

**Dr. C. Eswaraiah**

Organizing Secretary, CHEMCON-2021

CSIR-Institute of Minerals & Materials Technology, Bhubaneswar-751 013, ODISHA, INDIA

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