

**INDIAN INSTITUTE OF CHEMICAL ENGINEERS**  
**(NORTHERN REGIONAL CENTRE)**

July 6, 2022

**ANNUAL REPORT 2021-22**  
**(1<sup>st</sup> July 2021 – 30<sup>th</sup> June, 2022)**

*Dear Members,*

It is a great honour to serve this esteemed Institute as the Honorary Secretary since July 2021. I thank NRC for bestowing this responsibility on me. The surge in activities during the preceding year shows the wholehearted efforts of the NRC members even during the COVID time.

The Executive Committee elected for the year 2021-23 is as under.

<b>Chairman</b>	Dr. S. Nand	<b>Vice Chairman</b>	Prof. Anil Verma
<b>Honorary Secretary</b>	Mr. C.P. Srivastava	<b>Honorary Joint Secretary</b>	Dr. Dhiraj Kumar Garg
<b>Honorary Treasurer</b>	Mr. Amit Jain		
<b>Members</b>	Prof. Anil K. Saroha	Prof. V.K. Srivastava	Prof. S.S. Sambhi
	Mr. Abhijit Bikas Pal	Mr. Subhash Tandon	Dr. Siddhartha Mukherjee
	Dr. Anomitra Chakravarty	Mr. Anshuman Agrawal	
<b>Co-opted Members</b>	Dr. S.N. Chakravarty	Mr. Shyam Bang	

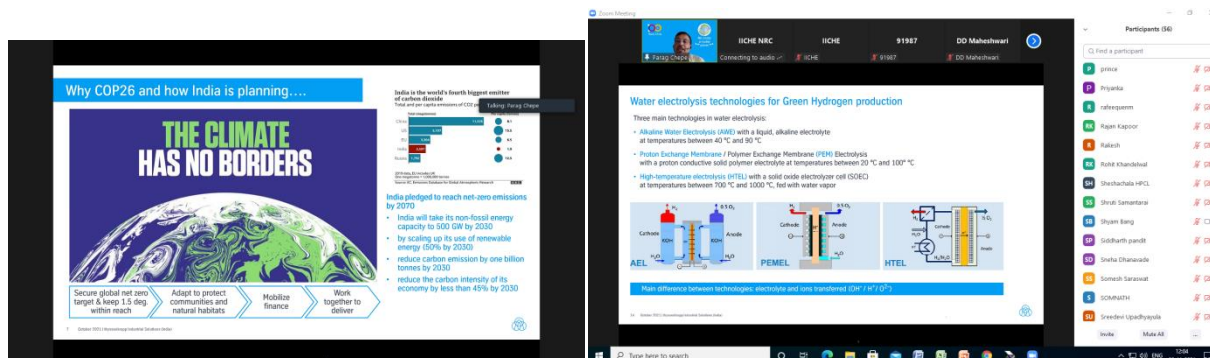
## Activities of NRC

During the year 2021-22, we have organized number of activities on behalf of IChE (Northern Regional Centre) and also jointly with other organizations as mentioned below.

S. No.	Date	Venue	Title
1	31/07/2021	Online via GoToMeeting application	48 <sup>th</sup> Annual General Meeting of Northern Regional Centre
2	25/09/2021	ONLINE via zoom	LECTURE SERIES – “LEARNING WITH LEADERS ONLINE”
			<b>TOPIC</b>
			<b>SPEAKER</b>
			Digitalization – Challenges & Opportunities in Chemical Industries
			Mr. Vivek Gupta, Joint Vice-President & Head-Instrumentation & Digitalization, M/s DCM Shriram Ltd.
3	23/10/2021	ONLINE via zoom	LECTURE SERIES – “LEARNING WITH LEADERS ONLINE”
			<b>TOPIC</b>
			<b>SPEAKER</b>
			Operational safety in Chemical Process Industry
			Mr. Subhash Tandon, Former Executive Vice-President, Chlor-Alkali, DCW Ltd.
4	20/11/2021	ONLINE via zoom	IChE (Northern Regional Centre) Webinar on “ <b>HYDROGEN ECONOMY/GREEN HYDROGEN</b> ”
			<b>TOPIC</b>
			<b>SPEAKER</b>
			Hydrogen Economy/ Green Hydrogen
			Mr. Parag Chepe, Chief Engineering Officer & Executive Director – Engineering, M/s Thyssenkrupp Industrial Solutions (India) Private

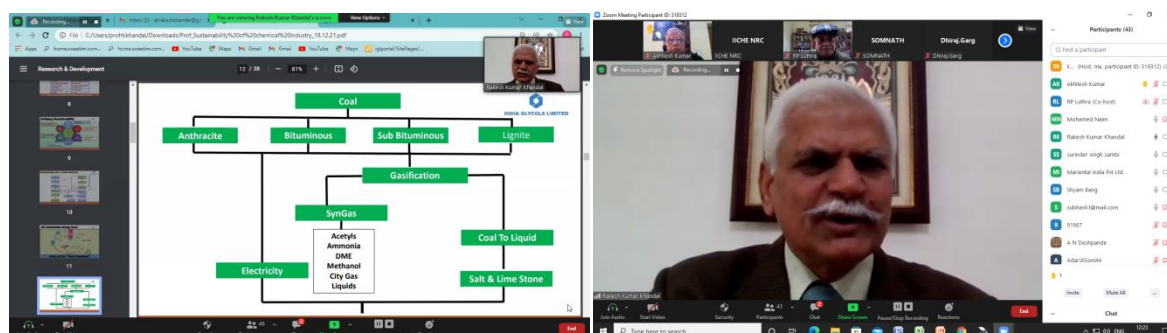
			Limited
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Some photograph/screenshots during the online program –



5	18/12/2021	ONLINE via zoom	LECTURE SERIES – “LEARNING WITH LEADERS ONLINE”
			<b>TOPIC</b>
			Sustainability of Chemical Industry through Carbon Rainbow Concept of Green to Purple: Opportunities and Challenges
			<b>SPEAKER</b>
			Prof. Dr. R.K. Khandal, President, R&D and Business Development, M/s India Glycols Ltd

Some photograph/screenshots during the online program –

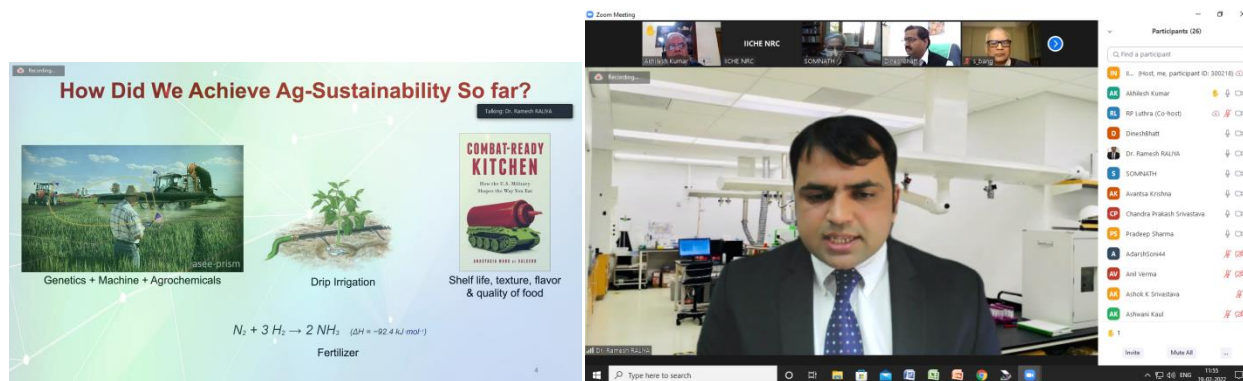


6	19/02/2022	ONLINE via zoom	LECTURE SERIES – “LEARNING WITH LEADERS ONLINE”
			<b>TOPIC</b>
			<b>SPEAKER</b>

Nanotechnology for Sustainable and Precision Agriculture: current state and future perspective

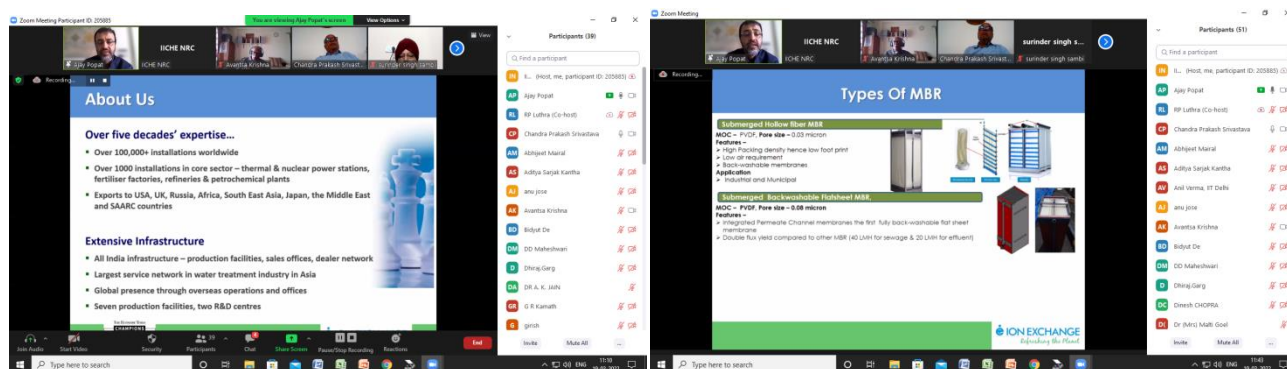
Dr. Ramesh Raliya,  
General Manager & Head -  
Research & Development,  
Indian Farmers Fertiliser  
Cooperative Limited  
(IFFCO)

Some photograph/screenshots during the online program –



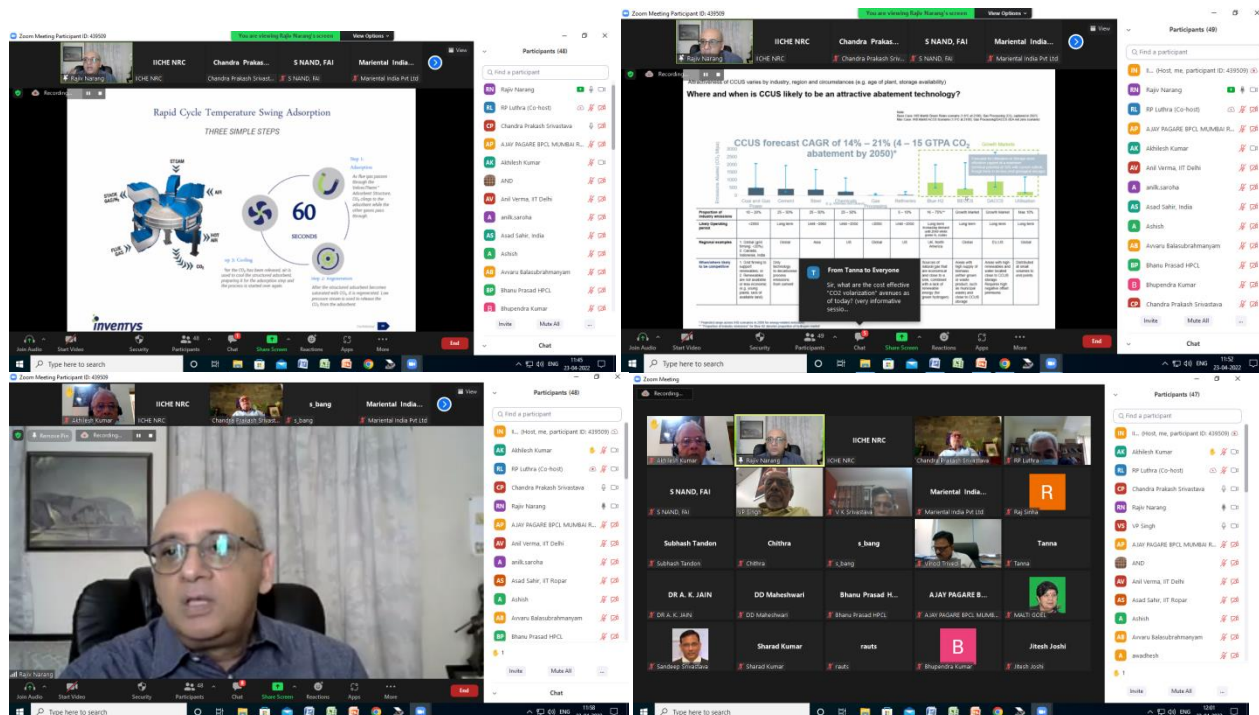
7	19/03/2022	ONLINE via zoom	LECTURE SERIES – “LEARNING WITH LEADERS ONLINE”
			<b>TOPIC</b>
			<b>SPEAKER</b>
			Membrane Bio-Reactors Technology
			Mr. Ajay Papat, President, Ion Exchange (India) Ltd.

Some photograph/screenshots during the online program –



8	23/04/2022	ONLINE via zoom	LECTURE SERIES – “LEARNING WITH LEADERS ONLINE”
		<b>TOPIC</b>	<b>SPEAKER</b>
		Carbon Capture Technologies - the present and the future	Mr. Rajiv Narang, Director, Process Economics Program, IHS Markit

Some photograph/screenshots during the online program –



### 9. Foundation Day of Indian Institute of Chemical Engineers (Northern Regional Centre), New Delhi

The Foundation Day program was held on 15<sup>th</sup> January, 2022 via online mode. During this occasion, one lecture was organized.

Shri Siddharth Singh, Lead India Analyst and Coordinator (Consultant), International Energy Agency (IEA) presented a paper on “Building a net zero future: the outlook of energy and emissions in India”.

During the Foundation Day celebration, merit-cum-means Scholarships were distributed to 21 students from IIT Delhi, UIET Kanpur, NIT Srinagar, MNIT Jaipur and DCRUST Murthal.

**10. Seminar on ‘Production and Use of Green Hydrogen and Green Ammonia in Process Industry’ held on 24-25 June, 2022 at IIT Delhi**

Indian Institute of Chemical Engineers (Northern Regional Centre) and Department of Chemical Engineering, Indian Institute of Technology (IIT), Delhi in association with Fertiliser Association of India (FAI) organized a Seminar on ‘**Production and Use of Green Hydrogen and Green Ammonia in Process Industry**’ on 24<sup>th</sup>– 25<sup>th</sup> June, 2022 at IIT Delhi via hybrid mode to commemorate Platinum Jubilee year of Indian Institute of Chemical Engineers.

The Seminar was inaugurated by Dr. Mansukh Mandaviya, Hon’ble Minister of Chemicals & Fertilizers and Health & Family Welfare. Mr. Bhagwanth Khuba, Hon’ble Minister of State for Chemicals & Fertilizers and New & Renewable Energy, Government of India was the Guest of Honour. Mr. K. S. Raju, Chairman, Fertiliser Association of India, Dr. A. K. Ganguli, Officiating Director, Indian Institute of Technology (IIT), Delhi also addressed the delegates. Prof. Anil K. Saroha, Head, Chemical Engineering Department, IIT Delhi, presented the vote of thanks.

A panel discussion was moderated by Dr. S. Nand. Other panelists were Mr. Mohit Bhargava, CEO, NTPC Renewable Energy Ltd, Prof R.R. Sonde, IIT Delhi, Dr. Dipesh Pherwani, Scientist, MNRE, GOI and Mr. Venkat Pattabathula, Principal Consultant, SVP Chemicals Plant Services, Australia.

The Seminar was held in hybrid form in the campus of IIT Delhi. It was attended by more than 200 delegates from Government, Industry and Academic/research Institutions.

Details of speakers and title of presentation is given below:

Sl. No.	Participation Mode	Speakers	Title of presentation
1.	In-person	Dr. Vandana Kumar, Additional Secretary, MNRE	Plenary Lecture on ‘Green Hydrogen/Ammonia Policy’
2.	In-person	Prof. S. Basu, Director, CSIR-Institute of Minerals & Materials Technology (IMMT), Bhubaneswar and Central Institute of Mining and Fuel Research (CIMFR), Dhanbad	Plenary Lecture on ‘Hydrogen Economy: Myth or Reality – Scope of 3D Printed Micro Electrolyser’
3.	Virtual	Mr. Jacobus de Letter, Yara Clean Ammonia, Norway	Plenary Lecture on ‘Clean Ammonia’
4.	In-person	Dr. Sandeep K C, BARC Mumbai	The Development of Alkaline Water Electrolyzer Technology at BARC for green hydrogen production
5.	Virtual	Mr. Tirtha Biswas, Ohmium India Mumbai	Experience of Commercial Scale PEM Based Electrolyzer
6.	Virtual	Dr. (Mrs.) N. Kalaiselvi, Director, CECRI (CSIR), Karaikudi	Green Hydrogen eco system: Path forward to end-to-end value chain for clean energy
7.	Virtual	Dr. Ashish Lele, Director, CSIR-NCL, Pune	Role of Green Hydrogen for Clean Transportation
8.	In-person	Mr. DMR Panda, NTPC	Green Hydrogen Projects and Plans of NTPC
9.	Virtual	Ms. Hao Zuo, TOYO Engineering Corporation, Japan	TOYO's Carbon Neutral Business Activities & Green Ammonia
10.	In-person	Dr. S. Nand, Additional Director General, Fertiliser Association of India, New Delhi	Prospects of Green Ammonia in Fertilizer Industry
11.	Virtual	Mr. Deepak Shetty, Stamicarbon BV, Netherlands	Stamicarbon Small Scale Green Ammonia – A major step towards Decarbonisation of

			Fertilizer Production
12.	In-person	Mr. Harsh Kumar, KBR	Technological Options for Green Ammonia Production
13.	In-person	Mr. Bakul Pant, Haldor Topsoe, Faridabad	Green Ammonia: Key to Decarbonization of Industry, Agriculture & Beyond
14.	In-person	Mr. Gautam Sen, Ex-ED, ONGC	Options for storage of Hydrogen

### **11. PROGRAMME WITH LOVRAJ KUMAR MEMORIAL TRUST (LKMT):**

LKMT in association with IChE (NRC), conducted an Annual Memorial Lecture and two conclaves i.e. LKMT R&D Conclave-2021 and LKMT Conclave-2022 as below:

#### **11.1 ANNUAL LECTURE -**

The Annual Memorial Lecture of Lovraj Kumar Memorial Trust was delivered by Dr. Fatih Birol, Executive Director, International Energy Agency (IEA), Paris, France, on “India’s Place in the New Global Energy Economy” on 24<sup>th</sup> September, 2021 through virtual mode.

#### **11.2 LKMT R&D CONCLAVE – 2021 ON ‘CARBON CAPTURE & UTILIZATION’ -**

The Lovraj Kumar Memorial Trust organized the LKMT R&D Conclave - 2021 on the theme "Carbon Capture and Utilization" in association with Federation of Indian Petroleum Industry (FIPI) and Indian Institute of Chemical Engineers (Northern Regional Centre) on November 27, 2021 from 16:00 hrs to 19:00 hrs (IST) via virtual mode.

The speakers and titles of presentations are as below:

<b>Speaker</b>	<b>Topic of Presentation</b>
Dr. Abhinav Trivedi Consultant (S&T), NITI Aayog	CCUS Policy Enablers for India
Dr. Ajit Sapre Group President, Reliance Industries Ltd	Technology Developments for Sustainability: One Perspective
Prof. A.B. Pandit Vice Chancellor, Institute of Chemical Technology, Mumbai	Opportunities in Indian Energy Sector: Urban and Rural Sectors
Dr. Debashish Bhattacharjee Vice President, Technology & New Materials Business, Tata Steel Limited	CCU Implementation in Steel plants – A case study of Tata Steel
Dr. R.N. Maiti Senior General Manager, Engineers India Ltd R&D	CO2 Capture and Utilization - EIL's Initiatives

#### **11.3 LKMT CONCLAVE-2022 ON ‘ENERGY STORAGE (BATTERY & HYDROGEN)’ -**

The Lovraj Kumar Memorial Trust organized the LKMT Conclave on “Energy Storage (Battery & Hydrogen)” in association with Federation of Indian Petroleum Industry (FIPI) and Indian Institute of Chemical Engineers (Northern Regional Centre) on Friday, the 4th March, 2022 from 16:00 hrs to 19:00 hrs (IST) via virtual mode.

The speakers and titles of presentations are as below:

<b>Speaker</b>	<b>Topic of Presentation</b>
Dr. S.A. Ilangovan Outstanding Scientist, Deputy Director - PCM Entity, Vikram Sarabhai Space Centre (ISRO)	Lithium-ion Battery
Prof. Tata N. Rao Director, International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)	Super-capacitor
Prof. Pratibha Sharma Department of Energy Science & Engineering, Indian Institute of Technology Bombay	Metal Hydride storage for Hydrogen
Prof. Palani Balaya Associate Professor, Dept. of Mechanical Engineering, National University of Singapore	Sodium-ion Batteries
Dr. Neel Sirosh Composites Advanced Technologies (CATEC Gases) USA	High Pressure Hydrogen Storage Systems

## **12. Student Chapters**

During recent year, IChE has taken a decision that the Regional Centres will be the mentor and guide of the student's chapters. Based on that, IChE-NRC takes keen interest in the student's chapters. Following are the details of the activities of student's chapters in NRC:

<b>Sl. No.</b>	<b>Student Chapter</b>	<b>Coordinator</b>	<b>Activity Report</b>
1.	DCRUST, Murthal	Dr. Manju Rani	Activity report attached
2.	Delhi Technological University	Dr. Manish Jain	No activity reported
3.	Shiv Nadar University	Dr. Priyanka Katiyar	No activity reported
4.	USCT - GGSIPU	Dr. Dinesh Kumar	Activity report attached
5.	AMU Aligarh	Dr. Parvez Khan	No activity reported
6.	Galgotias University	Dr. Gagnesh Sharma	No activity reported

## **13. AMIChE Examinations**

IChE Associate Membership Examination is being conducted twice a year, usually during March and September, simultaneously at different centers in India.

NRC conducted one IChE Association Membership Examinations 2022 - in the month of **May 2022**.

Number of candidates appeared for the AMIChE Exams - 31



#### 14. Publications

- Dr. S.N Chakravarty requested to publish ‘ENCYCLOPEDIA FOR RUBBER PRODUCTS MANUFACTURING’ as part of the IChE-NRC activity under publication of Technical Literature etc. The EC deliberated the proposal and it was decided to go ahead with the proposal of printing of the book and IChE-NRC and the author will share 50% each of the surplus generated by the sale of 200 copies. IChE-NRC agreed to provide financial assistance of Rs. 80,000/- for this proposal.

The book was published and is available with Dr. S.N. Chakravarty. However, Dr. Chakravarty refunded the contribution of Rs. 83,675/- and also acknowledged in his book of the support of IChE-NRC towards publication of this book.

- All the events presentations and photographs are available on our website [www.iichenrc.org](http://www.iichenrc.org) which is continuously updated.

#### 15. New Members

An updated list of members’ directory is available on our website. The present status of membership of NRC is as under.

<b>TOTAL NRC MEMBERS AS PER LIST RECEIVED FROM HQ</b>	<b>484</b>
New Members added during June 2021 to June 2022	8

#### 16. Scholarship

The Executive Committee in its Meeting#3/2021-22 has approved the increase in amount of each scholarship from Rs. 20000/- to Rs. 30000/- of IChE-NRC Golden Jubilee Scholarships from the year 2021-22. One scholarship\* has been instituted by G. J. Samaj Kalyan Nyas of Rs. 20,000/-.

Total number of applications received	-	30
<b>Selected Students</b>	-	<b>21</b>
B.Tech/B.E. Students	-	16
M.Tech/M.E. Students	-	5

The recipients of the Scholarship were announced during the online programme on the occasion of Foundation Day celebration of NRC held on 15<sup>th</sup> January 2022 as below:

Sl. No.	Student’s Name	University	Year in which studying	Scholarship Amount (₹)
1	Ms. Divya Singh	UIET CSJM University, Kanpur	III (B.Tech)	₹ 30,000/-
2	Ms. Bushra Mukhdoomi	NIT Srinagar	IV (B.Tech)	₹ 30,000/-
3	Ms. Niharika Aggarwal	Malviya National Institute of Technology, Jaipur	III (B.Tech)	₹ 30,000/-

4	Ms. Neha Sharma	UIET CSJM University, Kanpur	III (B.Tech)	₹ 30,000/-
5	Mr. Sagar Nain	DCRUST Murthal	IV (B.Tech)	₹ 30,000/-
6	Mr. Mohd. Kaif	UIET CSJM University, Kanpur	III (B.Tech)	₹ 30,000/-
7	Mr. Utkarsh Tripathi	UIET CSJM University, Kanpur	IV (B.Tech)	₹ 30,000/-
8	Mr. Shivam Sharma	DCRUST Murthal	IV (B.Tech)	₹ 30,000/-
9	Ms. Choudhari Jyoti Narayanlal	NIT Srinagar	II (B.Tech)	₹ 30,000/-
10	Mr. Abdul Kadir	DCRUST Murthal	IV (B.Tech)	₹ 30,000/-
11	Ms. Shakshi S.	NIT Srinagar	IV (B.Tech)	₹ 30,000/-
12	Mr. Abhishek Dhiman	DCRUST Murthal	II (B.Tech)	₹ 30,000/-
13	Mr. Aditya Gupta	DCRUST Murthal	IV (B.Tech)	₹ 30,000/-
14	Mr. Pankaj Kumar	IIT Delhi	II (B.Tech)	₹ 30,000/-
15	Mr. Faheem Hameed	NIT Srinagar	IV (B.Tech)	₹ 30,000/-
16	Mr. Priyanshu* (*Awarded GJ Samaj Kalyan Nyas Scholarship)	DCRUST Murthal	II (B.Tech)	₹ 20,000/-
17	Ms. Aarti	IIT Delhi	IV (Dual Degree)	₹ 30,000/-
18	Mr. Satyam Yadav	IIT Delhi	IV (Dual Degree)	₹ 30,000/-
19	Mr. Manish	DCRUST Murthal	I (M.Tech)	₹ 30,000/-
20	Mr. Ganesh L. Naik	IIT Delhi	III (Dual Degree)	₹ 30,000/-
21	Mr. Virender	DCRUST Murthal	I (M.Tech)	₹ 30,000/-

## **17. FINANCIAL SUPPORT / SPONSORSHIPS**

### **IICChE (Northern Regional Centre) Award during CHEMCON**

IICChE NRC has been giving award for best paper presentation during CHEMCON. The same was continued in 2021 by awarding Rs. 8,000/- for the best paper presentation during CHEMCON.

The Executive Committee in its Meeting#3/2021-22 has approved the increase in amount for IChE (NRC) Award for best paper during CHEMCON from Rs. 8000/- to Rs. 15000/- for the future CHEMCON.

#### **18. Financial Support for S-CHEMCON-2021**

IChE-NRC has been giving financial support of Rs. 25,000/- to the S-CHEMCON every year. The same was continued in 2021 and Rs. 25,000/- was given to MANIT Bhopal.

#### **19. Sponsorship for ‘International Conference on Advances in Chemical and Material Sciences (ACMS-2022)’**

The IChE-NRC has provided sponsorship of Rs.50,000/- (Rupees Fifty Thousand Only) to support the ‘International Conference on Advances in Chemical and Material Sciences (ACMS-2022)’ as part of the Platinum Jubilee Year of ‘Indian Institute of Chemical Engineers’ (IChE) held on 14<sup>th</sup> – 16<sup>th</sup> April 2022 in Kolkata, organized by IChE Headquarters in association with Heritage Institute of Technology Kolkata, National Institute of Technology Jalandhar, and Osmania University College of Technology, Hyderabad.

I thank the Executive Committee Members, Participating Members and Staff of NRC for their efforts / support in conducting the activities during the year 2021-22. I also take this opportunity to express our gratitude and thanks to the Chairman, IChE-NRC for his guidance in the NRC activities.

Thank you all for your continuing support and guidance and solicit the same for future.



**(C.P. Srivastava)**  
**Honorary Secretary**