A Report on

3rd National Conference on

Advanced Research Techniques in Chemical Engineering

"ARTCHEM-2022"

During 22-23 December 2022

Organised by

Shree Dhansukhlal Thakordas (Colourtex Group)

Department of Chemical Engineering,

Sarvajanik College of Engineering & Technology, Surat

Technically associated with

Chief Patron

CA Rajesh Desai, Chairman SES, Surat

Patron

Prof. Persi Engineer, Provost, SU

Prof. (Dr.) Hiren Patel Principal, SCET

Program Chair

Dr. Vaishali Umrigar, Head, Chemical Engg. Dept. SCET

Organizing Chair

Prof. Rashmita Patel, Chemical Engg. SCET

Prof. Srujal Rana, Chemical Engg. SCET

Technical Chair

Prof. Anand Upadhyay, Chemical Engg. SCET

Publication Chair

Prof. Ashish Parmar, Chemical Engg. SCET

Advisory Committee

Dr. Meghal Desai, Head, ChED, SVNIT

Dr.Deepak Jain, Senior Research Director, Zoetis Pharmaceutical Research laboratory, Navi Mumbai

Mr. Vatsal Naik, MD, MSPL, Surat

Dr. Aman Desai, Director, Aether Industries, Surat

Mr. Pankaj Desai, Head R&D, Colourtex, Surat

Program Committee

Prof. Mousumi Chakraborty, Prof, ChED, SVNIT

Dr. N. V Bhate, Asso. Prof., MSU

Mr. A I Shaikh, AGM, GNFC & VC-IIChE ARC

Prof. S. B. Thakor, Asso. Prof. , VGEC.

Help Desk

Ms. Shilpa Modi, Ms. Ekta Desai

National Conference on Advanced Research Techniques in Chemical Engineering

(ARTCHEM-2022)

December 22-23, 2022

Organized by

Shree Dhansukhlal Thakordas (Colourtex)

Department of Chemical Engineering

Sarvajanik College of Engineering & Technology,

SARVAJANIK UNIVERSITY, SURAT, Gujarat

Sponsored by

ANUPAM RASAYAN INDIA LIMITED

Technically associated with

Media Partner

ChemicalWeekly

The Sarvajanik College of Engineering and Technology, established in 1995, is a leading institution in South Gujarat offering technical education in field of Engineering. The institute is AICTE approved and affiliated to the Gujarat Technological University and now with Sarvajanik University (SU).

The Sarvajanik College of Engineering and Technology (SCET) imparts technical education in nine different Undergraduate and four different Post Graduate Programs of Engineering which encompasses—Civil, Chemical, Computer, Electrical, Electronics & Communication, Information Technology, Instrumentation and Control, Textile Technology and Master of Computer Application.

Chemical Engineering Department

Over the years, the department has progressed at a rapid pace with development in both the spheres of infrastructural facilities and academics. The department has highly qualified faculty members with the aim of achieving excellence in the field of chemical engineering. Department was started from the very first year of the inception of Institute in 1995. Chemical Engineering Department of SCET was accredited by NBA in 2006. The department zealously strives to provide students, the exposure to industrial environment by way of Industrial training, expert lectures and Plant visits. Seminars and workshops are organized frequently to hone their technical and soft skills. The students undergo an extensive course work and extensive laboratory practice in all conventional and advanced areas of Chemical Engineering.

Chemical Engineering Department has organizing 3rd National Conference on "Advanced Research Techniques in Chemical Engineering (ARTCHEM 2022) on 22nd & 23rd December 2022 in technical association with IIChE student chapter and media partner Chemical Weekly. The event was financial sponsored by M/s. Anupam Rasayan India Ltd, Surat.

Aim of ARTCHEM 2022:

1. To discuss new areas of recent developments in technologies with their application in industries towards sustainable development.
2. Create a forum for free exchange of ideas, discussion and debate on the theme.

During this conference, the selected Research/ Review papers were presented by the research scholars, PG & UG students and faculty members of technical institutes. The event was also be open for delegation by other academicians and industrial personnel.

The conference was enriched with keynote speech and session's talks. Accepted and presented papers will be published in the Conference proceedings with ISBN number subject to quality of paper and author's consent. Selected papers will be invited to publish in the special issue of a peer-reviewed journal.

1. Environmental Science and Pollution Research (Springer)

2. Catalysis Research (LIDSEN Publishing Inc.)

Following were the various tracks under which papers & posters are invited:

- Process modelling, simulation and optimization
- Waste Treatment Technology/Advanced Separation Technology
- Sustainable Development & Green Chemistry
- Alternative Fuels/Renewable Energy
- Bio-chemical engineering

- Material Science/ Nano Technology
- Petroleum refinery and Petrochemicals
- Thermodynamics & Kinetics
- Catalysis and Reaction Engineering
- Instrumentation & Process Control

Participation details:

Total No. of Papers

- No. of Papers Submitted:38
- No. of paper Selcted:31

Distribution of Participants category

- Faculty/Scientist-24 %
- Research scholar/PG students-26 %
- UG students-50%

State wise participation

- Gujarat (Gandhinagar, Ahmedabad, Rajkot, Surat, Ankleshwar)
- Maharashtra (Pune, Nagpur)
- Uttarpradesh

Schedule of the Conference

Day-1: 22/12/2022			
Sr.No.	**Time**	**Topic**	**Theme**
Registration & Breakfast (9.00 am-10.00 am) , Venue: SU Seminar Hall			
Inauguration (10.00 am-11.00am), Venue: SU Seminar Hall			
	11:15 – 12:15	**Expert Talk-I: Mr. Gaurang Parekh, Site Director, Solenis Chemical, Ankleshwar**	**Importance of Process safety In Chemical Industry**
Track: Sustainable Development and Green Chemistry, Material Science/Nano Technology, Waste water treatment, Biochemical Engineering, Venue: SU Seminar Hall			
Technical Session – I **Session Chair: Mr. Rilesh Mehta, Process Engineer, Solvay Specialities India Private Limited, Panoli.,** **Shri. A.I. Shaikh, President IICHE ARC** **Prof. Rashmita Patel, Assistant Professor, SCET, Surat**			
Presentation Timings : 07 min+03 min			
1	12.15-12.25	ARTCHEM2207 : Dr Chandrabhushan T. Pal	Extraction of phenolic compounds from biomass waste using emerging green extraction techniques
2	12.25-12.35	ARTCHEM2210 : Payal Kishorbhai Gamit	Recent advancement in bio-polymers: A review study from theoretical view.
3	12.35-12.45	ARTCHEM2209 : Patel Rutu Hitendra, Kashish Khalidbeg mirza	Eco-friendly synthesis and characterization of Selenium nanoparticles for various application
4	12.45-12.55	ARTCHEM2206 : Sagar M. Kapadiya	Valorization of Fruit Waste: A Bio Refinery Approach
5	12.55-01.05	ARTCHEM2227: Neha V. Badgujar	A comprehensive review on biochar of Moringa Oleifera for the treatment of wastewater.
6	01.05-0.1.15	ARTCHEM2214: Janki Trada	Sustainable utilization of Prosopis Juliflora derived Biochar for removal of Methylene blue from Water
Lunch Break (1:15pm-2:15pm)			
Track: Sustainable Development and Green Chemistry, Material Science/Nano Technology, Waste water treatment, Advanced Separation Processes, Venue: N J Seminar Hall			
Technical Session – II (Online +Offline) **Session Chair: Dr. Mousumi Chacraborty, Professor, Chemical Engineering Department, SVNIT, Surat,** **Mr. Gaurang Parekh, Site Director, Solenis Chemical, Ankleshwar,** **Dr. Vaishali Umrigar, HOD Chemical Engineering Department**			
Presentation Timings : 07 min+03 min			
1	2:15-2:25	ARTCHEM2224 : Koradiya Pratik Kishorbhai	Forward Osmosis an Emerging Technique for Oil Water Separation
2	2.25-2.35	ARTCHEM2217 : Gautam Anand Das	Extraction of oil from sunflower seeds using Three Phase Partitioning
3	2.35-2.45	ARTCHEM2218 : Suraj Khartode	Synthesis of TiO_2 nano-particles and doped nanoparticles with application in waste water treatment
4	2.45-2.55	ARTCHEM2219 : Tejas Bobe	Removal of Dyes from Water using Activated Charcoal and Nanoparticles
5	2.55-3.05	ARTCHEM2220 : Akanksha Verma	Interaction of Mustard Husk with microwave radiation: A study on dielectric properties and its variation with frequency
6	3.05-3.15	ARTCHEM2221 : Omkar Naik, Samiksha Jaiswal, Shreyash Ramdatti	Green Hydrogen Production as a Sustainable Initiative for Alternative Energy Source: A Review
7	3.15-3.25	ARTCHEM2222 : Kanani Yashil, Milan Patel, Yashil Kanani, Chirag Parmar	Novel green synthesis of spinel catalyst and studies of its photo catalytic activity for degradation of reactive blue 21 dye under visible light
8	3.25-3.35	ARTCHEM2223 : Musef M Nalband	Glass fiber
9	3.35-3.45	ARTCHEM2230 : Priyank Khirsariya	Review on Modeling and Experimental Measurement of Vapour-Liquid Equilibrium data of System Comprising Green Solvents
10	3.45-3.55	ARTCHEM2213 : Milind K Manoj	Chemical Reaction Control for the Synthesis of silver nanoparticles

Day-2: 23/12/2022			
Sr.No.	**Time**	**Topic**	**Theme**
Breakfast (9.30 am-10.30am)			
	10:30 – 11:30	**Expert Talk-II : Dr. N. V. Bhate, Professor, M. S. University, Vadodara**	**Green Solvents**
Track: Process Simulation, Venue: N J Seminar Hall			
Technical Session – III **Session Chair: Dr. N. V. Bhate, Professor, Chemical Engineering Department, M. S. University, Vadodara,** **Prof. Ashish Parmar, Assistant Professor, SCET, Surat**			
Presentation Timings : 07 min+03 min			
1	**11.45-11.55**	ARTCHEM2225:Vinod Dinkar Pakhale	Designing and Simulation of 2D2D Cyclone Separator by Computational Fluid Dynamic and Aspen Plus
2	**11.55-12.05**	ARTCHEM2202 : Abdulkarem Hussein	Molecular dynamics simulations studies of Water-DMSO mixtures
3	**12.05-12.15**	ARTCHEM2215 : Shivang Yadav	Production of Sodium Cyanide through packed bed reactor.
4	**12.15-12.25**	ARTCHEM2211 : Mr. Mukesh B. Dhangar	Challenges and opportunities: The Chemical Industry of India
5	**12.25-12.35**	ARTCHEM2231 : Ashish Borse	Industrial IoT
6	**12.35-12.45**	ARTCHEM2201: Saleh Hussein Abduraboh Ahmed	Structural properties insights of Water-methanol mixtures – An atomistic molecular dynamics simulations study
7	**12.45-12.55**	ARTCHEM2228: Dr. Pankaj Gohil	Simulation Investigation of thermodynamic properties of an oval shape novel flame shield used over a gas stove burner
Lunch Break (1:00pm-2:00pm)			
	2:00 to 3:30	**Expert Talk-III: Shri. Vatsal Naik, Managing Director, MSPL, Sachin**	**Comparison of Different Evaporation Techniques**
Track: Sustainable Development and Green Chemistry, Material Science/Nano Technology, Waste water treatment, Advanced Separation Processes, Venue: N J Seminar Hall			
Technical Session – IV **Session Chair: Mr. Vatsal Naik, Managing Director, MSPL, Sachin** **Prof. Srujal Rana, Assistant Professor, SCET, Surat**			
Presentation Timings : 07 min+03 min			
1	**3:30-3:40**	ARTCHEM2208 : Sachin Vaidh	Exploration of TiO_2 Nanoparticles Embedded Chitosan Beads for Leachate Treatment Collected from Solid Waste Dumping Site
2	**3.40-3.50**	ARTCHEM2216 : Sufiyan Pathan	Membrane distillation
3	**3.50-4.00**	ARTCHEM2203 : Satishkumar K. Movaliya	Novel $LaFe_2O_4$ spinel structure photo catalyst: Synthesis, characterization and photo catalytic degradation of Rhodamine B dye
4	**4.00-4.10**	ARTCHEM2204 : Manish R Nasit, Sunil M Badgujar	Process intensification for removal of chromium from synthetic waste water by iron oxide nanoparticles
5	**4.10-4.20**	ARTCHEM2229 : Sunil M Badgujar	Novel ultrasound assisted synthesis of metal oxide nanoparticles using co-precipitation method
6	**4.20-4.30**	ARTCHEM2226: Swati Patel	Biodegradation of hydrocarbon by Pseudomonas SS6 specie and its application in electricity generation
7	**4.30-4.40**	ARTCHEM2205 :Dr Parwathi Pillai	Removal of phenol using activated carbon prepared with rice husk nanoparticles from ground water
8	**4.40-4.50**	ARTCHEM2212:Krushil Patel	Degradation of dye effluent using tio_2 nanoparticle in presence of visible light source

Day-1: 22/12/2023: Inaugural Ceremony:

Prayer	Neha Singh, student BE-IV CH
Welcome speech &About SCET	Principal, SCET , Prof. (Dr.) Hiren Patel
Floral Greeting	
Lighting of the Lamp	Dignitaries on the dais
About the Conference	Dr. VaishaliUmrigar, HOD, Chemical
About IIcHE	Mr. A.I.Shaikh, President, AR-IIcHE
Introduction of the chief guest	Prof. Rashmita Patel, Co-ordinator
Words of encouragement	Mrs. Mona Anand Desai, Vice Chairperson, Anupam Rasayan Ind Ltd, Surat
Presidential Address	Shri CA Rajesh Desai, Chairman, SES
Memento Presentation	
Vote of Thanks	Prof. SrujalRana, Event Co-ordinator
National Anthem	

Expert Talk-I: Speaker: Mr. Gaurang Parekh, Site Director, Solenis Chemical, Ankleshwar.

- Topic :Importance of Process safety In Chemical Industry
- Track: Sustainable Development and Green Chemistry.

Session-1:

Session Chair: Mr.Rilesh Mehta, Process Engineer,Solvay Specialities India Private Limited, Panoli

Session-II:

1. Session Chair: Dr.Mousumi Chacraborty, Professor, Chemical Engineering Department, SVNIT, Surat
2. Mr.Gaurang Parekh, Site Director, Solenis Chemical, Ankleshwar

Day-2: 23/12/2023:
Expert Talk-II : Dr. N. V. Bhate, Professor, M. S. University, Vadodara

Topic: Green Solvents

Session Chair: Dr. N. V. Bhate, Professor, Chemical Engineering Department, M. S. University, Vadodara.

Expert Talk-III : Mr.Vatsal Naik, Managing Director, MSPL, Sachin

Topic: Comparison of Different Evaporation Techniques

Acknowledgements

The Chemical Engineering Department would like toacknowledge,

- **Technical Association**: IIcHE (Indian Institute of Chemical Engineers) Chapter, ARC
- ***Financial Sponsor:*** M/s. Anupam Rasayan India Ltd.
- **Media Partner**: Chemical Weekly
- **Special Issue**: (Publication house)
  1. Environmental Science and Pollution Research (Springer).
  2. Catalysis Research (LIDSEN)
- Advisory Committee of ARTCHEM 2022
- Invited experts and session chairs for different sessions from industry and academic institutes
- Managing trustees and office bearers of the Sarvajanik University and Sarvajanik Education Society
- Prof. (Dr.) Hiren Patel, Principal, SCET
- Dr. Chirag Pauwala, Dean R&D, SCET
- Prof.(Dr.) Vaishali Umrigar, Head, Chemical Engineering Department
- One and all for their direct or indirect support

Compiled by: Prof. Rashmita Patel,

Co-ordinator, ARTCHEM 2022