CHEMICAL ENGINEERING DEPARTMENT

VISHWAKARMA GOVERNMENT ENGINEERING COLLEGE

RADIANCE

Newsletter | July -December 2021

Nr. Visat Three Roads, Sabarmati-Koba Highway, Chandkheda, Ahmedabad – 382424

VOLUME 4, ISSUE 2

From Department Coordinator

Dr. Femina Patel
Department Coordinator

I am glad to note that Chemical Engineering Department is publishing volume 4, issue 2 of the Departmental Newsletter "RADIANCE". The newsletter reflects the extensive collection of important data like activities of faculty members, students, expert lectures, co-curricular & extracurricular activities, etc. during the period of July-December 2021. I am sure, this newsletter will serve as a medium to use the information concerning departmental activities and proceeding for continuous growth. Especially, I congratulate my students to participate in competitive exams.

An eventful year has passed and we are looking forward to the year ahead. Welcoming the New Year, I wish that all of you be blessed with good health, happiness, and success in your endeavours.

Glimpses of the Department

The Department of Chemical Engineering is a vibrant and dynamic Department, with a young and enthusiastic academic staff consisting of two Professors, two Associate Professors, eight Assistant Professors, and one laboratory Assistant. Quality in academics and a whirlpool of personality-enhancing activities have geared the students for the future and prepared them to take new challenges, to explore new avenues, and to realize, cherish as well as fulfil their dreams. Inherent strength, values, teamwork, dedication & vision steam the confidence of the students. The dedicated staff members keep themselves updated about the recent developments in their fields of interest, beyond the curriculum. They are also provided exposure to the environment of the industry parallel to academics. The Department regularly organizes expert lectures beyond the curriculum. The faculty mentors counsel the students from time to time for their career development.

DEPARTMENT VISION

To foster a vibrant environment for creating professional Chemical Engineers with integrity and ethics.

DEPARTMENT MISSION

- To develop open access laboratories and infrastructure for conducive learning.
- To enhance the professional engineering skills along with entrepreneurship, innovativeness and management.
- To strengthen linkages with industries, alumni and professional bodies.
- To undertake industry collaborative projects and research.
- To inculcate professional ethics and make socially responsible engineers.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

The Chemical Engineering program aims to develop versatile professionals who can excel in a variety of career environments. The Program Educational Objectives of B.E. (Chemical) program is:

PEO-1: To prepare graduates who will be skilled in fundamental concepts of Chemical Engineering.

PEO-2: To prepare graduates who will be capable of obtaining position in Industrial, Research, Government, Academic, Entrepreneur or other organizations, which use their technical knowledge and professional skills.

PEO-3: To prepare graduates who will have proficiency in execution of real time Chemical Engineering projects.

PEO-4: To prepare graduates who will contribute to the socio-economic environment of their communities.

"Education is not the filling of a pail, but the lighting of a fire."

–W.B. Yeats

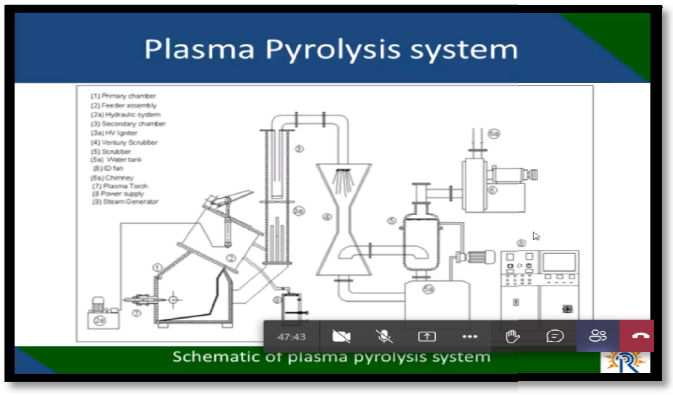
FACULTY AT A GLANCE

Sr. No.	Name	Degree	Area of Specialization	Current Designation
1	Dr. Femina J. Patel	Ph.D.	Heterogeneous Catalysis, Waste Water Treatment, Automotive Emission Control	Professor
2	Dr. Parin D. Shah	Ph.D.	Green Chemistry and Green Engineering, Waste Water Treatment	Professor
3	Prof. Suchen B. Thakore	M.E.	Equipment Design	Associate Professor
4	Prof. Dolly R. Gandhi	M.E.	Thermodynamics	Associate Professor
5	Prof. Zoher Z. Painter	M.E.	Cleaner Production	Assistant Professor
6	Dr. Milap G. Nayak	Ph.D.	Alternative Energy, Plasma Pyrolysis	Assistant Professor
7	Prof. Yogesh J. Morabiya	M.E.	Green Engineering	Assistant Professor
8	Prof. Sahil N. Prajapati	M.E.	Waste Water Treatment	Assistant Professor
9	Prof. Sunil R. Patel	M.Tech.	Waste Water Treatment	Assistant Professor
10	Prof. Jay B. Trivedi	M.E.	Waste Water Treatment	Assistant Professor
11	Dr. Ujvala P. Christian	Ph.D.	Polymer Technology	Assistant Professor
12	Prof. R. R. Merchant	B.E.	Chemical Processes	Assistant Professor

DEPARTMENTAL ACTIVITIES

EXPERT LECTURES

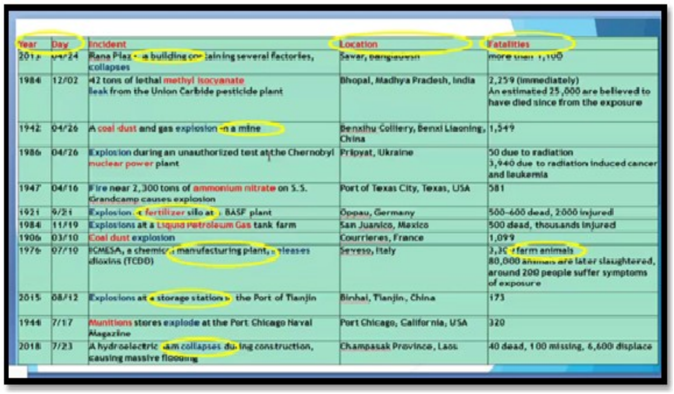
An expert talk on **"Thermal Plasma for Waste Management"** was organized under the banner of the Institution of Engineers India (IEI) Students' Chapter on 3rd July 2021 on Microsoft Teams platform under the coordination of Dr. Milap G. Nayak. The objectives of the expert lecture were to create curiosity among the participants about plasma generation & to discuss the usages of plasma technology over conventional techniques. It focused on encouraging the participants to work with the IPR in their undergraduate or postgraduate research work along with explaining the use of plasma for waste disposal & energy generation. The participants learnt how to categorize the plasma & plasma generation technologies and their advantages over conventional techniques. Mr. P. Vadivel Murugan (Scientific Officer, Institute of Plasma Research - FCIPT division, Gandhinagar) was the distinguished expert of the session, which benefitted around 45 students.



An expert talk on **"Mass Transfer and Separation Processes: Applications in Chemical Process Industries"** was organized on 5th August 2021 on Microsoft Teams platform. The event was honoured by the presence of the experts Dr. Kiran D. Patil (Professor and Head in the School of Chemical, Petroleum and Polymer Engineering) and Dr. Vishwanath Karad (MIT World Peace University, Pune, Maharashtra). This session was coordinated by Dr. Parin D. Shah and Prof. S. B. Thakore. Around 100 students got benefitted from this session. The main focus of this talk was to explain the importance of mass transfer operations and separation processes. Also, to make the students understand the feasibility of various separation processes in chemical process industries and to correlate capital cost and operating cost for separation processes with percentage purity of final products

An expert talk on **"Important Aspects of Process Safety Management"** was organized under the banner of the Indian Institute of Chemical Engineers (IIChE) Students' chapter on 15th September 2021 on Microsoft Teams platform. This expert talk was organized as a part of celebration of Engineer's Day. The main idea of this expert talk is to make the participants aware about the theoretical and practical aspects of process safety and importance of process safety management in chemical process industries. The expert Shri Amit Dave, Senior Technical Advisor-ISOCYANATES, Sadara- UAE discussed about process safety & risk assessment, safety audit, norms for process safety and importance of safety management. The event was coordinated by

Prof. S. B. Thakore and Dr. U. P. Christian. 105 participants were benefitted.



Year	Day	Incident	Location	Fatalities
2013	04/24	Rana Plaza – a building containing several factories, collapses	Savar, Bangladesh	more than 1,100
1984	12/02	42 tons of lethal methyl isocyanate leak from the Union Carbide pesticide plant	Bhopal, Madhya Pradesh, India	2,259 (immediately) An estimated 25,000 are believed to have died since from the exposure
1942	04/26	A coal dust and gas explosion in a mine	Benxihu Colliery, Benxi Liaoning, China	1,549
1986	04/26	Explosion during an unauthorized test at the Chernobyl nuclear power plant	Pripyat, Ukraine	50 due to radiation 3,940 due to radiation induced cancer and leukemia
1947	04/16	Fire near 2,300 tons of ammonium nitrate on S.S. Grandcamp causes explosion	Port of Texas City, Texas, USA	581
1921	9/21	Explosion of fertilizer silo at BASF plant	Oppau, Germany	500–600 dead, 2000 injured
1984	11/19	Explosions at a Liquid Petroleum Gas tank farm	San Juanico, Mexico	500 dead, thousands injured
1906	03/10	Coal dust explosion	Courrieres, France	1,099
1976	07/10	ICMESA, a chemical manufacturing plant, releases dioxins (TCDD)	Seveso, Italy	3,300 farm animals 80,000 animals are later slaughtered, around 200 people suffer symptoms of exposure
2015	08/12	Explosions at a storage station in the Port of Tianjin	Binhai, Tianjin, China	173
1944	7/17	Munitions stores explode at the Port Chicago Naval Magazine	Port Chicago, California, USA	320
2018	7/23	A hydroelectric dam collapses during construction, causing massive flooding	Champasak Province, Laos	40 dead, 100 missing, 6,600 displace

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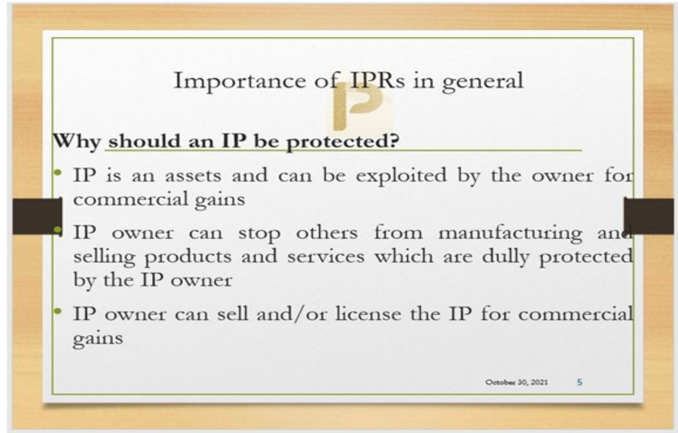
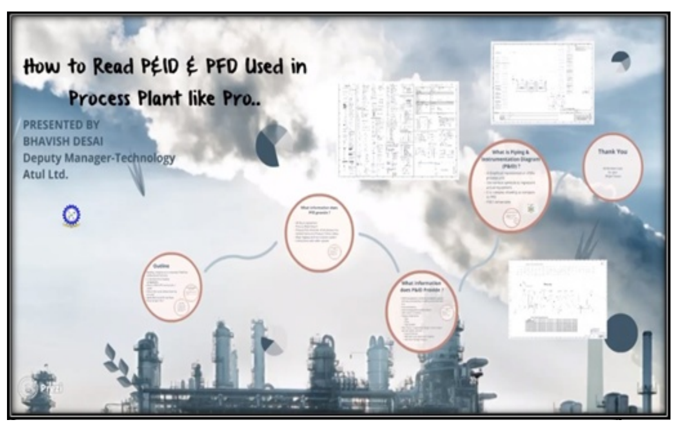
An Expert Lecture on **'Identifying Intellectual Property Component at the Early Stage of Innovation'** was under the Student Start-up & Innovative Policy (SSIP) on 30th October 2021 on Microsoft Teams. The main objective of the lecture was to build awareness among students for Intellectual Property Rights, to deliberate the process of innovation, to boost and to create the importance of problem identification, novel innovation, and file the patent of innovation. It was to make them aware about trademarks, patents, geographical indication, copyrights and to discuss the process of patent and its advantages. Mr. Dinesh Mistry, Proprietor of Chemin – Projects, Baroda, and Gujarat was the distinguished expert of the session, which benefitted around 90 students.



Online workshop on **"Understanding of P & ID and PFD in Chemical Process Plant"** was organized under the banner of the Indian Institute of Chemical Engineers (IIChE) students' chapter on 24th September 2021. This workshop was coordinated by Dr. P. D. Shah and Dr. U. P. Christian and the student organizing team of IIChE students' chapter. Total 98 students of UG and PG Chemical Engineering across the Gujarat State participated in this workshop. The main idea of this workshop was to make aware the participants of the theoretical and practical aspects of understanding of Process Instrumentation Diagram (P&ID) and Process Flow Diagram (PFD) and their applications in Chemical and Allied Industries.



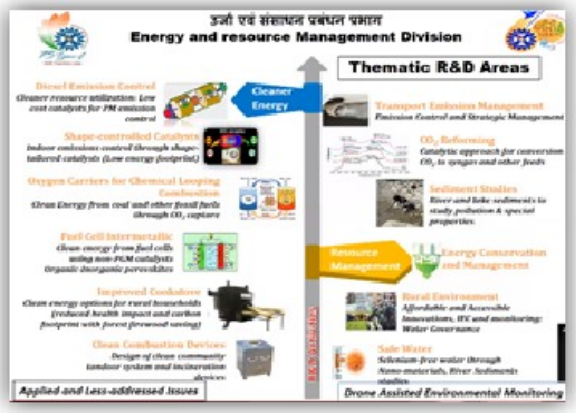
TRAINING PROGRAM ON "CHALLENGES AND EMERGING TRENDS IN CATALYSIS"

An online training on **'Challenges and Emerging Trends in Catalysis'** (total duration of 22 hours) was organized under the banner of the Institution of Engineers India (IEI) from July to September 2021. This training program was attended by around 100 participants from U.G. & P.G. students as well as Research Scholars of Engineering and Science disciplines from various Institutes of Gujarat. The training program was coordinated by Prof. Dolly R. Gandhi and Prof. Yogesh J. Morabiya. The main idea of this training was to make the participants aware about the latest development in the field of catalysis with a theme "Catalysis promising the universe a better habitation". The training deal with four key areas of current interest in catalysts:

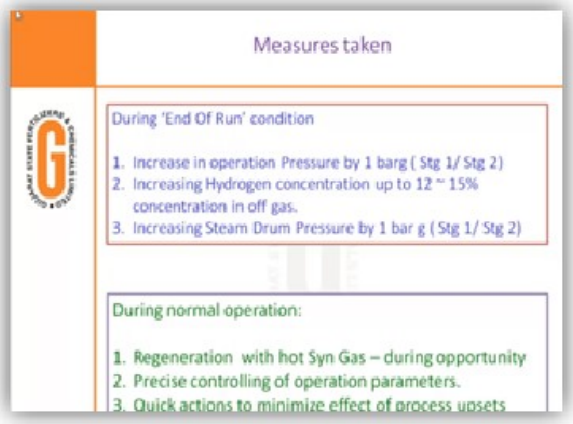
- Catalyst design-is it promising to design new and improved catalysts?
- Catalysis and the environment—how can catalysis improve our use of resources?
- Catalysis and chemical alterations—how can we improve the scope, effectiveness and selectivity of chemical processes?
- Catalysis and energy—how can we improve energy efficiency using catalysis?

The Eminent Speakers from well-known Chemical Industries, Research Institutes, and Universities of India delivered their expert talk on various trends of catalysis.

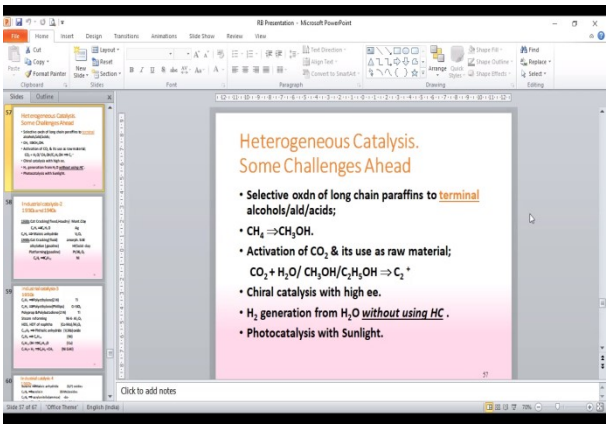
- Dr. Nitin Labhasetwar, Chief Scientist & Head, Energy & Resource Management Division, CSIR - NEERI, Nagpur has covered Environmental Catalysis. He focused on nano-catalyst for energy conservation, catalyst coating, and non-noble metal-based catalyst/material for energy and environmental applications. 106 participants were benefitted.



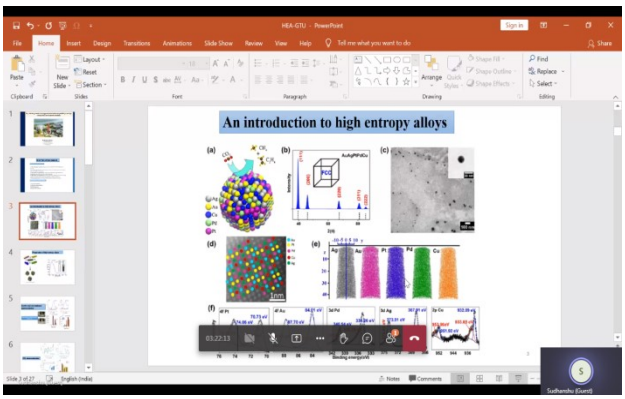
- Mr. D. J. Trivedi, Vice President (Design, Construction, Safety & Fire Services Department), Gujarat State Fertilizers and Chemicals Limited, Vadodara has taken real case study of Challenges in the operation of Benzene Hydrogenation Catalyst. Participants realized that thorough knowledge of the subject is a must and Building up confidence and opening of new dimensions for the methodology of catalyst replacement. 80 participants were benefitted.



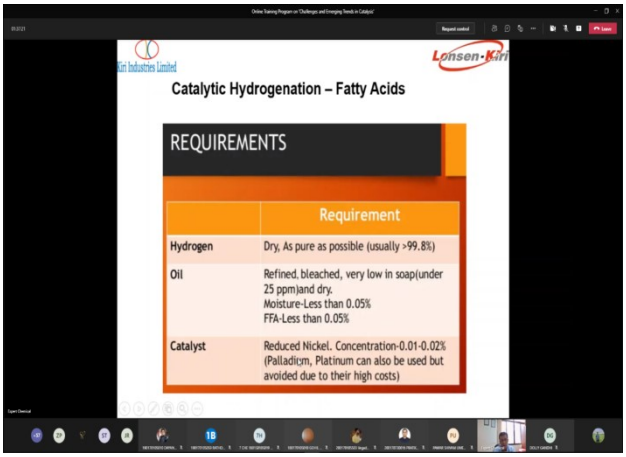
- Dr. Rajib Bandyopadhyay, Professor & Head, Department of Chemistry, School of Technology, PDEU, Gandhinagar talked about Porous Heterogeneous Catalysts for Industrial Application. He included a research pathway for catalysis i.e. literature search, understanding of fundamentals involved, catalyst reparation, its characterization, and finally application. 90 participants were benefitted.



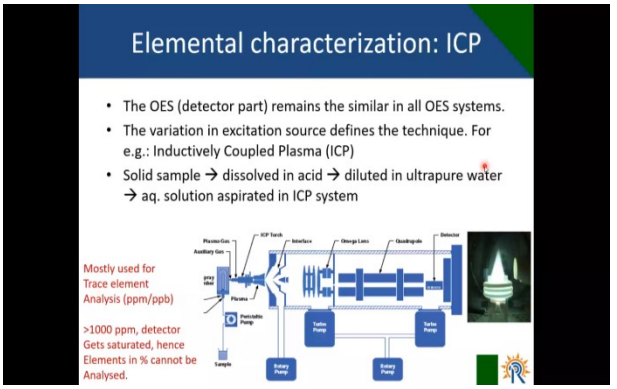
- Dr. Sudhanshu Sharma, Assistant Professor, Chemistry Department, Indian Institute of Technology, Gandhinagar highlighted the Concept of high entropy alloys in catalysis is fairly new and advanced. This is also the initiative towards Universal Catalysts. The expert was also focused on catalysis by high entropy alloys in electrochemical as well as gas-solid reactions. 80 participants were benefitted.



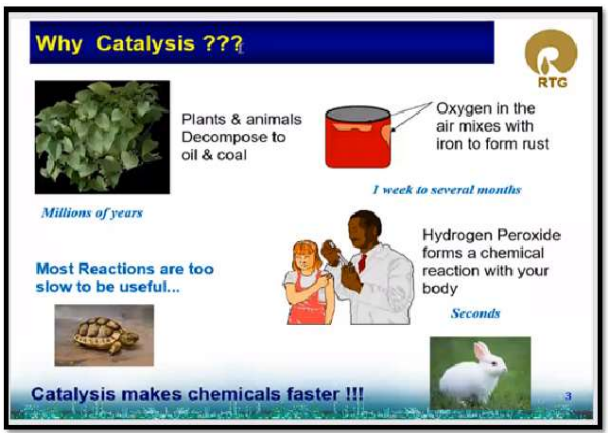
- Dr. Nilesh Mistry, Chief Technology Officer, Lonsen Kiri Chemicals Industries Ltd. Vadodara conveyed a talk on the Application of Catalyst in Dye & Intermediate Industry. He discussed the convention process and compared it with the cleaner process for manufacturing of Indigo solution. He also included catalytic hydrogenation of fatty acid. 80 participants were benefitted.



- Dr. Nirav Jamnapara, Scientific Officer – G, Head, Project & Technology Transfer Section, Institute for Plasma Research, Gandhinagar has mainly discussed Catalyst Characterization Techniques. Participants understood the different types of characterization techniques such as XRD, XRF, SEM, AES, XPS and energy dispersive spectroscopy and their uses. 70 participants were benefitted.

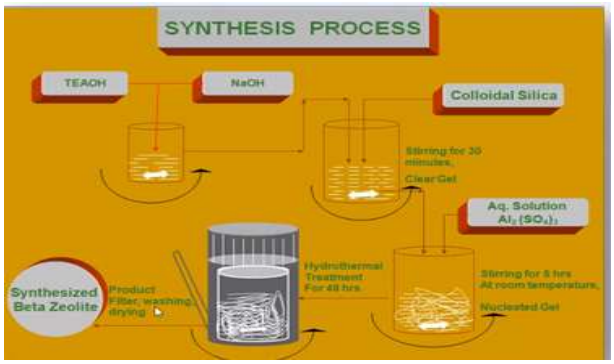


- Dr. Jagannath Das, Adjunct Principal Res. Fellow, RMIT, Melbourne, Australia and Ex Assistant Vice President, Reliance Industries Limited, Vadodara highlighted Zeolites as a catalyst in Petroleum Industries. The speaker also focused on the basics, properties, history, and commercial application of Zeolites as a catalyst. Participants were made aware of the building structure of Zeolite ZSM-5. 90 participants were benefitted.

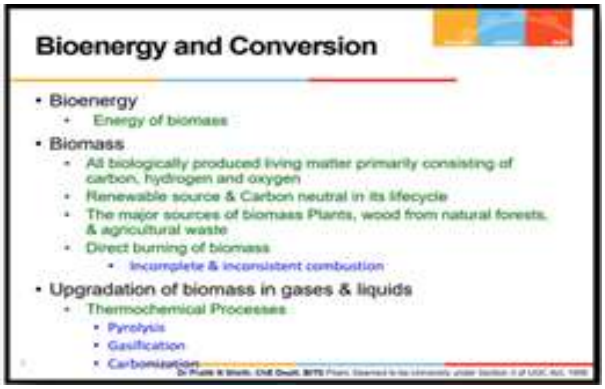


- Dr. Muralidhar Ingale, CEO, Valeshar Biotech Private Limited, Ankleshwar conveyed talk on Recent Trends in Catalysis in Pharmaceutical Industries. Participants have learned about the various catalysts for the production of Methanol and Pregabalin and Suzuki coupling and Cross-coupling reactions. Participants understood the Regulatory Compliance and Guidelines for Pharmaceutical Industries. 67 participants were benefitted.

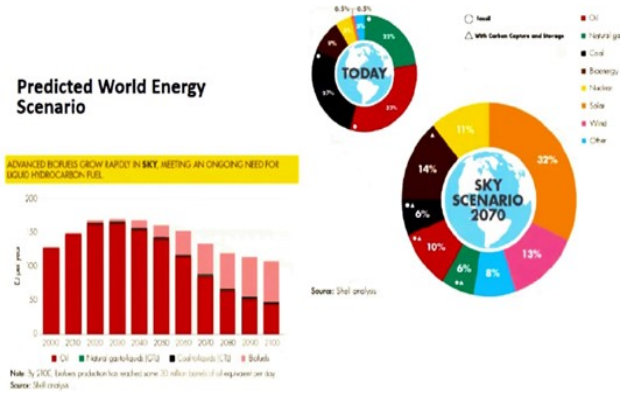
- Dr. Bharat Modhera, Assistant Professor, Maulana Azad National Institute of Technology, Bhopal, Madhya Pradesh delivered his talk on Synthesis and Characterization of Advanced Catalysts for Refinery Process. Participants were made aware of the Synthesis of Zeolite Beta, SAPO-11,34, and the need for nanocrystalline zeolite beta. Participants were made aware of the Catalytic application of zeolite beta, SAPO-11and 34 in petroleum refineries. 60 participants were benefitted.



- Dr. Pratik Sheth, Associate Professor, Chemical Engineering Department, Birla Institute of Technology and Science, Pilani shared his view on Catalysis in the Thermo-Chemical Conversion of Biomass. Participants were made aware of the critical importance of catalysts during the gasification of biomass, important process parameters that affect the conversion of biomass to hydrogen-like Steam to biomass ratio and gasification temperature. 60 participants were benefitted.



- Dr. Paresh Rana, Professor & Head, Chemical Engineering, L. D. College of Engineering, Ahmedabad has covered catalysts for the Conversion of Bio-Platform Molecules. He focused on the importance of bio-platform chemicals and the current demand for biomass-derived bio-platform chemicals. Participants understood the Au-based catalysts characterization and its application in Gas-phase oxidation. Participants have learned about Catalysis in the hydrogenolysis of glycerol. 65 participants were benefitted.



In a net-zero emissions world in 2070, SOLAR, BIOENERGY and WIND dominate renewables supply whilst OIL remains the largest fossil energy source

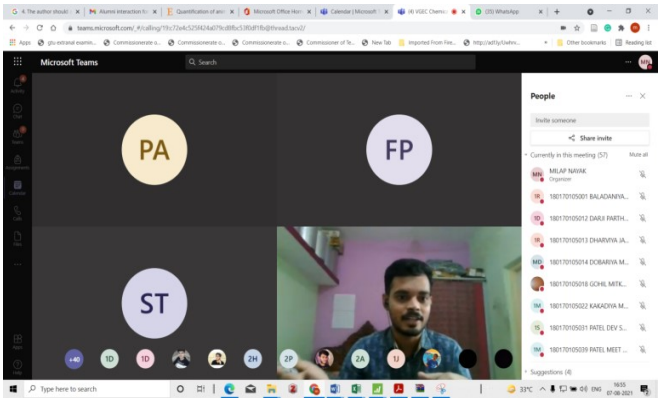
https://www.shell.com/energy-and-innovation/the-energy-future/scenarios/shell-

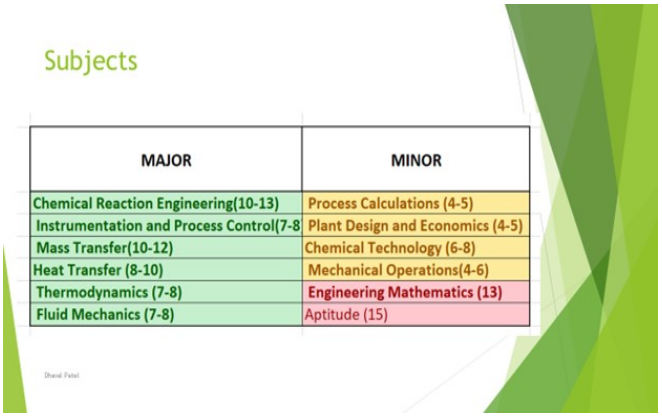
SPOKEN TUTORIAL PROJECT – IIT BOMBAY

DWSIM is an open-source CAPE-OPEN compliant Chemical Process Simulator. It allows one to conduct experiments and analyse data using advanced models and operations. The second batch of 55 undergraduate students from third-year of the Department underwent a two month course, from 8th July 2021. The course was coordinated by Prof. Z. Z. Painter.

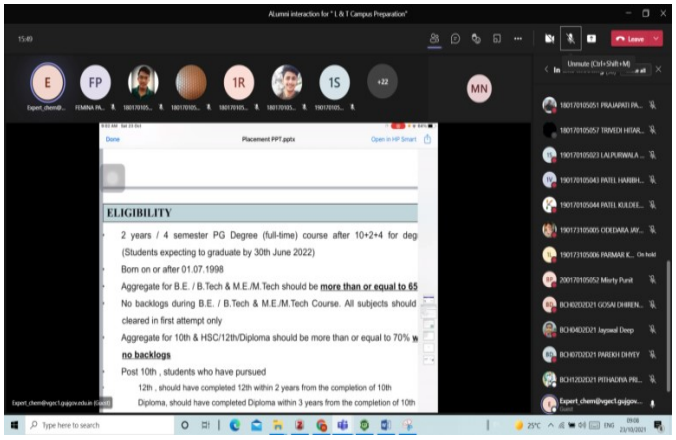
ALUMNI

An Alumni Interaction Session on "GATE Preparation" was organized on 7th August 2021 on Microsoft Teams. The session was enlightened by Kaushal Jethwa (Alumnus 2019 batch, now in IIT Bombay), Nidhi Parmar (Alumnus 2020 batch, now in IIT Madras), Dhaval Patel (Alumnus 2021 batch, now in IIT Madras) and Prince Patel (Alumnus 2021 batch, now in IISc-Bangalore). The event was coordinated by Dr. Milap G. Nayak & Prof. J. B. Trivedi. The event was attended by 45 participants. The session mainly focused on creating curiosity among the students about their Higher Studies along with discussing the importance of the GATE exam and its opportunities for a better career. The participants were also made aware of the basics of the GATE exam such as question framework, materials to be used, preparation strategies and how to crack the exam.





An Alumni interaction on "Student Grooming for Campus Placement" was organized by the Department under the Vishwakarma Alumni Association (VAA) on 23rd October 2021 through the online platform of Microsoft Teams. Miss Pusha Shukla, ((Alumnus 2006 batch) Manager, Technical Safety Hydrocarbon Engineering, L & T Chiyoda Ltd., Vadodara, was invited for the event. The event was coordinated by Dr. Milap G. Nayak and Prof. Jay. B. Trivedi, to prepare the students for campus interviews, to discuss the importance of verbal and nonverbal communication and interaction in interview. It also aimed to strengthen the bond between Alumni and the Department. 43 students got benefitted from it.



RESEARCH AND PUBLICATION

Dr. Milap G. Nayak

Published a paper titled 'Parametric study and optimization of microwave assisted biodiesel synthesis from Argemone Mexicana oil using response surface methodology' at Elsevier: Chemical Engineering and Processing - Process Intensificaion, Volume 170, 10866512, ISSN: 0255-27011.802 (Impact Factor: 4.237).

Prof. Dolly R Gandhi

Published a paper titled 'Naturally occurring Bentonite Clay: Structural Augmentation, Characterization and Application as Catalyst' at International Symposium on Materials of the Millennium: Emerging Trends and Future Prospects (MMETFP2021) organized by Department of Chemistry & Physics, School of Technology, Pandit Deendayal Energy University, Gandhinagar, Gujarat, India and Materials Research Society of India (MRSI) held during 19th to 21st November 2021.

Published a paper titled 'Zeolite Y from Kaolin Clay of Kachchh, India: Synthesis, Characterization and Catalytic Application' at Elsevier: Journal of Indian Chemical Society, Volume 98, Issue 12, December 2021, 100246. (Impact factor 0.3)

Along with Kedar Joshi presented a paper in the poster session on 'Thermodynamic Properties Prediction and Modeling Using Group Contribution Methods for the Binary System of Tetrahydrofuran and Trichloroethylene' at Chemcon-2021, Hybrid mode Event under Indian Chemical Engineering Congress and Indian Institute of Chemical Engineer by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar from 27th to 30th December 2021.

Prof. Z. Z. Painter

Along with Athira Saji presented a Research Paper on 'Water Purification: A case study on Non-potable water from Pathanamthitta, Kerala' at Indian Chemical Engineering Congress (CHEMCON-2021) and the 74th Annual Session of the Indian Institute of

Chemical Engineers (IIChE) by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar from 27th to 30th December 2021.

Along with Miraj Patel presented a paper in the poster session on 'Eco-friendly Acid-Base indicator from flower' at Chemcon-2021, Hybrid mode Event under Indian Chemical Engineering Congress and Indian Institute of Chemical Engineer by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar from 27th to 30th December 2021.

Along with Darshana Deshmukh presented a paper in the poster session on 'Removal of arsenic from water by zero-valent iron nanoparticles' at Chemcon-2021, Hybrid mode Event under Indian Chemical Engineering Congress and Indian Institute of Chemical Engineer by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar from 27th to 30th December, 2021.

FACULTY DEVELOPMENT

Prof. Sunil R. Patel

Attended "Induction Phase-II" training organized by NITTTR, Bhopal, through online mode from 26th July 2021 to 6th August 2021.

Prof. Ujvala Christian

Attended the online FDP on "Advances in Pollution Control Technologies and Sustainable Development", organized by the Chemical Engineering Department, Malaviya National Institute of Technology, Jaipur, Rajasthan from 2nd August 2021 to 6th August 2021.

Prof. Yogesh Morabiya

Completed NPTEL course on "Chemical Process Control" with a consolidated score of 66%

Prof. Zoher Painter

Attended online 74th Annual Session of Indian Institute of Chemical Engineers CHEMCON–2021, Hybrid mode Event under Indian Chemical Engineering Congress and Indian Institute of Chemical Engineer by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar on 27th -30th December 2021.

RESOURCE PERSON

Dr. Ujvala Christian

Delivered expert lecture on "Important Aspects of Sedimentation and Flocculation for Water and Waste Water Treatment" to the students of Diploma in Chemical Engineering of Tapi Diploma Engineering College, Surat on 9th September 2021.

Prof. Sunil Patel & Prof. Jay B Trivedi

Worked as jury for the Grand Finale of Smart Gujarat for the New India Hackathon held at Gujarat University from 10th to 11th August 2021.

Dr. Parin Shah

Has been appointed as a member of the Environment Committee of Gujarat Chamber of Commerce and Industry (GCCI) for year 2021-22 and appointed as Invitee member (Professional) in the Board of Directors of The Green Environment Services Co-Op Society Ltd., Vatva for year 2021-22.

Dr. Milap Nayak

Has been conferred as reviewer for 'Fuel Journal' published by Elsevier in October 2021 and received a research grant for his project titled 'Selective air oxidation of 2-choloro toluene to 2-chlorobenzaldehyde using Mn-Cu bimetallic supported on ZrO_2 and CeO_2' of Rs. 2.0 lakhs funded under STEM for 3 years.

Prof. Dolly R Gandhi

Has been conferred as reviewer for "Chemical Review and Letters" published by Iranian Chemical Science and Technologies Association in December 2021.

Prof. Zoher Z Painter

Has been conferred as reviewer for "Chemical Review and Letters" in Academia Letters published by Academia.edu in December 2021.

STUDENT ACHIVEMENT

Patent No: 377930 vide Application No. 201921029055 on "A Method of Bonding Diamond Crystals" by Jash Ukani (Chemical Engineering Department) and Dr. K. R. Gurjar has been granted on 17th October,2021

Kedar Joshi received the best paper presentation award in the e-poster session on "Thermodynamic Properties Prediction and Modeling Using Group Contribution Methods for the Binary System of Tetrahydrofuran and Trichloroethylene" at Chemcon-2021, Hybrid mode Event under Indian Chemical Engineering Congress and Indian Institute of Chemical Engineer by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar on 27th -30th December, 2021.

- **Jha Aniket, Ahir Brijesh, Pathak Abhishekanand, Kannaujiya Ajay and Barad Param** have won the first prize in the 'Tug of War' game in Sports Meet 2k21 event which was organized by the NSS Group of L. D. College of Engineering on 9th December 2021.

- **Suraj Navikar and Pandav Anjali** presented a paper titled "Treatment of Industrial Waste Water by Advanced Oxidation Processes: An Overview" at SCHEMCON 2021, Annual Congress organized by MANIT and IISER Bhopal on 22nd – 23rd October 2021.

- **Sanket Lalpurwala**
  - Participated in online Poster Competition "Chemboard" organized by IIChE Student Chapter USCT, Delhi and won 2nd Prize (INR 500 Cash) on 6th December 2021.
  - Served as Core Team Member of Advanature VGEC for the span of 2020-21 and now serving as 'Secretary' of Advanature VGEC.
  - Completed NPTEL course on "Technologies for Clean and Renewable Energy Production" with a consolidated course score of 73%.
- **Ravindar B Jugran** completed NPTEL course on "Chemical Process Control" with a consolidated score of 49%.

STUDENTS PLACEMENTS

Sr. No.	Student Name	Company Name	
1	Ahuja Prem V.	Alembic Pharmaceutical Dist. Panchmahal, Halol	
2	Bhagat Kundan V.	Val Organics Pvt. Ltd., Mumbai	
3	Bootwala Kushay S.	Torrent Pharmaceuticals Ltd, Kadi	
4	Desai Rajdeep L.	Parshwanath Group of Industries, Ahmedabad	
5	Dholu Monik H.	Meghmani Industries Ltd. Vatva, Ahmedabad	
6	Gajera Himanshukumar B.	Reine Life Science, Ankleshwar	
7	Hathia Vishal M.	Tata Chemicals, Mithapur	
8	Lakkad Jenish S.	Torrent Pharmaceuticals Ltd, Kadi	
9	Lal Blesswell	Matangi Industries Ltd. Vatva, Ahmedabad	
10	Parmar Dishant D.	RSJ Industries Vatva, Ahmedabad	
11	Patel Udit R.	GACL, Vadodara	
12	Pathan Mahirkhan I.	Alembic Pharmaceutical Dist. Panchmahal, Halol	
13	Piparotar Piyush N.	Kutch Chemical Industries Limited, Gandhi Dham, Gujarat	
14	Radadiya Krunalkumar A.	Glenmark Life Science, Ankleshwar	
15	Shingadiya Sandip P.	Alembic Pharmaceutical Dist. Panchmahal, Halol	
16	Bhamre Jaykumar D.	Jay Chemical Industries Limited Khambhat	
17	Buhecha Akash P.	Chiripal Industries Limited Ahmedabad	
18	Chaubey Nishant R.	Torrent Pharmaceuticals Ltd, Kadi	
19	Ghori Harshil S.	Madhu Silica Pvt. Ltd. Bhavnagar	
20	Parmar Jigneshkumar M.	Meghmani Organics Ltd. Vatva, Ahmedabad	

COURSES COMPLETED

Nirav Dobariya (Sem: 6)
Viajaysinh Jadeja (Sem: 6)
Darshan Joshi (Sem: 6)
Sanket Lalpurwala (Sem: 6)
Nikita Makwana (Sem: 6)
Parth Patel (Sem: 6)
Mohit Vamja (Sem: 6)
Viren Suthar (Sem: 6)
Narendra Vegada (Sem: 6)
Kishan Bhalodiya (Sem: 6)

Participated in DWSIM training organized at Vishwakarma Government Engineering College in July 2021 semester, with course material provided by the Spoken Tutorial Project, IIT Bombay.

Sanket Lalpurwala (Sem: 6)

Gopi Paghdal (Sem: 6)
Jitendra Parmar (Sem: 6)
Parth Patel (Sem: 6)
Nitin Sabalpara(Sem: 6)
Paneliya Mihir (Sem: 6)
Narendra Vegada(Sem: 6)
Rachit Suthar (Sem: 6)
Kishan Bhalodiya (Sem: 6)
Rahul Tanna(Sem: 6)
Keyur Panchal (Sem: 6)
Raj Patel (Sem: 6)
Keval Rathod (Sem: 6)

Attended training program (online) on 'Challenges and Emerging Trend in Catalysis' organized by Chemical Engineering Department, VGEC under the banner of Institution of Engineers (India) during July to September 2021.

PARTICIPATION IN WEBINAR AND QUIZ

Kotadiya Harmish (Sem: 4)
Jha Aniket (Sem: 4)
Patel Kamya (Sem: 4)
Chauhan Karan (Sem: 4)
Patel Harmeet (Sem: 4)
Savaliya Harsh (Sem: 4)
Memon Amena (Sem: 4)
Avinash Lakum (Sem: 4)
Abhishekanand Pathak (Sem: 4)
Dhrupal Jinja (Sem: 4)
Ajay Kannaujiya (Sem: 4)
Punit Mistry (Sem: 4)
Nirav Sakhiya (Sem: 4)
Paresh Kanzariya (Sem: 4)

Participated in the "FIT INDIA FREEDOM RUN2.0" organized by Gujarat Technological University on 21st October 2021.

Kamya Patel (Sem: 4)
Karan Chauhan (Sem: 4)
Omkumar Rana (Sem: 4)
Pritesh Pithadiya (Sem: 4)
Jeet Patel (Sem: 4)

Attended a National level webinar on "Role of Chemical Engineers in Electronic industry" organized by Training and Placement Cell, USCT on 11th November 2021.

Karan Chauhan (Sem: 4)
Savaliya Harsh (Sem: 4)
Mistry Punit (Sem: 4)

Participated in the CHEM-O-PERIODIGY quiz competition organized by the IIChE Student Chapter, USCT on 8th December 2021.

Patel Sujal (Sem: 4)

Participated in the "Legal Awareness for Woman Related Laws" organized by GTU on 28th October 2021.

Mistry Punit (Sem: 4)
Pithadiya Pritesh (Sem: 4)
Jayswal Deep (Sem: 4)
Vadhaiya Nikunj (Sem: 4)

Completed training course on "Theory and Practical Aspects of Household Solar Thermal Gadgets" organized by CSIR-Central Salt & Marine Chemicals Research Institute, Bhavnagar on 4th & 5th October 2021.

Jha Aniket (Sem: 4)
Pithadiya Pritesh (Sem: 4)

Participated in the "TATVA HOUR 1.0" organized by the IIChE Student Chapter, USCT on 6th December 2021.

Patel Dev (Sem: 4)
Kannaujiya Ajay (Sem: 4)
Mistry Punit (Sem: 4)

Completed the e-quiz on "Life of Gandhiji" organized by SCOPE with valid score on 2nd October 2021.

Mistry Punit (Sem: 4)

Pithadiya Pritesh (Sem: 4)
Jayswal Deep (Sem: 4)

Participated in the webinar on "Contemporary Advances and Innovations in Physical Chemistry" organized by the NVS group, Sardar Patel University on 16th October 2021.

Kannaujiya Ajay (Sem: 4)
Mistry Punit (Sem: 4)
Mahida Aditya (Sem: 4)

Completed an online quiz on "Indian Air Force" organized by Ministry of Defence and MyGov on 19th December 2021.

Parmar Chirag (Sem: 4)
Jayswal Deep (Sem: 4)
Vadhaiya Nikunj (Sem: 4)

Completed an online quiz on "Fundamental Knowledge of e-Commerce" with 90% score on 19th December 2021.

Kannaujiya Ajay (Sem: 4)
Jha Aniket (Sem: 4)

Completed the online quiz on" Competition Law" on 19th December, 2021.

Jha Aniket (Sem: 4)
Kannaujiya Ajay (Sem: 4)

Completed the quiz on "Elimination of Violence against Women" on 25th November, 2021.

Mistry Punit (Sem: 4)

Attended webinar on "Role of Chemical Engineers in Bioresearch" organized by IIChE Students Chapter, USCT on 24th November 2021.

Vaghani Utsav (Sem: 4)

Participated in Technical Quiz of the State level event "INN-O-SPARK" organized by the Innovator Club, L. D. College of Engineering on 29th October 2021.

Joshi Darshan (Sem: 6)
Ravindra Jugran (Sem: 6)

Participated in Chem- e-Quiz organized by IIChE student chapter, Bharuch on 30th July 2021.

Sanket Lalpurwala (Sem: 6)

Participated in Webinar on "Recent Trends and Prospects in Chemical Engineering" (National Level) organized by School of Technology, GSFC University, Gujarat on 7th July 2021.

Participated in Webinar on "Wealth Creation through Personal Financial Management" (National Level) organized by Mechanical Engineering Department, GEC, Dahod in association with AMFI (Association of Mutual Funds in India) on 9th July 2021.

Participated in the National Level Project Presentation Competition (Technovision 2.0) organized by IICHE student chapter, Dr. D.Y. Patil Institute of Engineering, Management and Research, Pune through online medium on 21st August 2021.

Participated in Webinar on "Role of Chemical Engineers in Electronic Industry" (National Level) organized by Training and Placement Cell, USCT, Delhi on 11th November 2021.

Participated in Webinar on "Role of Chemical Engineers in Bio Research" (National Level) organized by IIChE Student Chapter, USCT, Delhi on 24th November 2021.

Paghdal Gopi (Sem: 6)

Participated in National Level Festival "UMANG 2021" hosted by L. D. College of Engineering on 30th And 31th October 2021.

Parmar Jitendra (Sem: 6)

Attended online quiz competition on "Saksham quiz (PCRA)" organized by MyGov on 14th August 2021.

Attended physical sports on "Asian sports and fitness board" organized by National Sports and Physical Fitness board on 12th September 2021.

Attended School games and activities development foundation organized by youth development foundation on 25th November 2021.

Attended Shapath on"COVID-19" organized by UNICEF for every child on 11th November 2021

Attended online quiz competition on "Seva Samrpan" organized by MyGov on 26th November 2021.

Attended online quiz competition on "Har Ghar Nal Har Ghar Jal" organized by MyGov 29th November 2021.

Attended online quiz on "Linux Commands" organized by the Internal Quality Assurance Cell (IQAC) & Department of Information Technology of Thakur Shyamnarayan Degree College on 27th December 2021.

Sabalpara Nitinkumar (Sem: 6)

Attended online Webinar on "Disaster Management", jointly organized by NSS Cell of Sardar Patel College of Engineering (SPCE), Bakrol & NSS Cell of GTU, Ahmedabad, on 24th August 2021.

Attended online National level Poster making competition, organized by IIChE Students' Chapter Vishwakarma Government Engineering College, Chemical Engineering Department, VGEC, Ahmedabad, on 15th September 2021.

Paneliya Mihir (Sem: 6)

Attended five-day workshop on "Advances in Chemical Engineering & Process Industries" organized by the Department of Chemical Engineering under the aegis of llChE. Student Chapter, NIT Srinagar during 16th to 20th August 2021.

Attended "CHEMSPART 2021" and successfully presented a poster "q-Line feed condition" held at Chemical Engineering Department at Dr. D. Y. Patil Institute of Engineering Management & Research, Akurdi on 15th September 2021.

Attended "E-Poster making competition" held at Chemical Engineering Department at VGEC, Ahmedabad on 15th September 2021.

Panchal Keyur (Sem: 6)

Participated in the POSHAN (PM'S OVERARCHING SCHEME FOR HOLISTIC NOURISHMENT) 2.0 QUIZ organized by Ministry of Education and MyGov on 7th September 2021.

Patel Raj (Sem: 4)

Attended 14th M.P. Chary Memorial Lecture (online) on "Engineering our way to superior surfaces for Industrial benefits" by Dr. Shrikant Joshi Organized by Indian Institute of Chemical Engineers, Hyderabad regional chapter and University College of Technology, Osmania University, Hyderabad on 31st July 2021.

Participated and successfully completed the Quiz on the Topic "Traffic Signs" Organized by the ROAD SAFETY PATROL from 11th August, 2021 to 14th August 2021.

Participated in Webinar on "Disaster Management" jointly organized by NSS Cell of Sardar Patel College of Engineering (SPCE), Bakrol and NSS Cell, GTU, Ahmedabad, on 24th August 2021.

Rathod Keval (Sem: 6)

Attended five-day workshop on "Advances in Chemical Engineering & Process Industries" organized by the Department of Chemical Engineering under the aegis of llChE-Student Chapter, NIT Srinagar during 16th to 20th August 2021.

Attended "CHEMSPART 2021" and successfully presented a poster "q-Line feed condition" held at Chemical Engineering Department at Dr. D. Y. Patil Institute of Engineering Management & Research, Akurdi on 15th September 2021.

Attended "e-Poster making competition" held at Chemical Engineering Department at VGEC, Ahmedabad on 15th September 2021.

TECHNICAL ARTICLES BY FACULTY MEMBER AND STUDENT

Simultaneous removal of chromium and nickel from aqueous solution by Electro-coagulation

Prof. Sunil R. Patel and Mahirkhan Pathan

Now a day's large quantity of industrial effluent containing heavy metal ions is generating by industry and facing a big challenge for treatment of effluent. Electro coagulation (EC) assists us in the removal of heavy metal ions and other impurities from wastewater. This research work focuses on the simultaneous removal of chromium and nickel from synthetic wastewater by EC process. The research work has been carried out under Student Start-up & Innovation Policy (SSIP) scheme.

In this work the nickel (Ni) and chromium [Cr(VI)] removal by electro coagulation (EC) from synthetic solution in a batch reactor using both the electrodes made of iron is studied. In present work, electro coagulation process was applied to evaluate the impact of process variables such as pH, current density, composition of Ni and Cr (VI) and electrode distance for the removal of Ni and Cr (VI) from solution. The experimental investigation showed that, current density (CD) value of 89.45 A/m^2, electrode distance (ED) value of 0.7 cm, pH value of 4.5, operating time of 60 minutes, are the optimal operating parameters to achieve 88.45 % and 95.47 % removal efficiency of Ni and Cr (VI) respectively. In additional, when the current density increased the increase of Ni and Cr (VI) removal and specific electrical energy consumption (SEEC). It was also observed that the lower electrode distance favours higher removal efficiency of Ni and Cr (VI).

Highlights

- Iron electrodes for Cr(VI) and Ni removal are found very effective.
- High current density favours high removal with high specific electrical energy consumption (SEEC).
- Increase of electrode distance decrease removal of Cr(VI) and Ni percentage.

Biodiesel form non-edible oil using microwave heat source.

Dr. Milap Nayak

- **Need of study:**
  Biodiesel is one of the renewable energy source, having less sulphur content, and high flash point. Lower carbon emission compared to the conventional source make suitable for the forthcoming years. Use of non-edible oil reduces the burden on food vs. fuel crisis, and is abundantly available. Compare to conventional methods involving high energy loss during heat transfer, the use of microwave reduces the energy loss and also fasten the reaction rate. This technical report will briefly discuss the microwave-assisted trans-esterification of papaya oil into its biodiesel.

- **Procedure:**
  The trans-esterification requires three moles of methanol for one mole of oil and it yields biodiesel and glycerol. During the experimental investigation, the factor affecting the trans-esterification such as methanol to oil molar ratio, catalyst amount, temperature and time on the yield of the biodiesel are studied. Biodiesel being lighter in weight compared to glycerol can be easily separated further characterized. Optimization of process parameters are carried out to find the maximum yield of biodiesel.

- **Result:**

  Study reveals that, yield passing through the maxima and excess molar ratio, temperature, catalyst and time has detrimental effect on biodiesel yield. The maximum yield of papaya based biodiesel is obtained at 62.33 °C, 0.95 wt% catalyst, 3.30 minutes and 9.50:1 molar ratio.

Considerations for Valve Automation

Shubham Kumar (190170105016)

The decision to automate a valve requires several considerations. Below are some factors, but certainly not all, that an engineer must consider when choosing an actuator:

1. Application

What are we trying to accomplish in the system with this valve? Is this a flow control loop, an isolation valve, pump protection? What are the factors in the process—such as pressure, temperature and flow rates—required for the application? While these are typically considered when specifying a valve, they are still critical to understanding how they can impact the performance of an actuator.

For example, if an actuator is undersized or not specified correctly to the valve and process variables, it may not have the proper amount of force to fully close the valve, resulting in unreliable process control. A typical given multiple of the valve's operating torques to ensure proper operation of the actuator is 25%.

2. Control System Scheme

Users should consider how the control system will interact with the actuator. They should also determine if the actuator will utilize air or electricity to operate. Will there be a control signal in the form of a relay output and solenoid or 4-20 milliamp (mA) signals to a controller? What feedback requirements are required from the actuator? For example, a requirement could be a feedback signal in the form of 0-10 volts to verify valve position back to the programmable logic controller (PLC).

3. Asset Reliability & Criticality

Another negative result of choosing the wrong actuator is the loss of repeatability in control. The wrong actuator can work in an application for a short time but, if this valve were to malfunction, there may be an impact on the process that could affect the users or possibly the environment. Users should examine what action the unit needs to take in the event of loss of control or power. Furthermore, look into any legal requirements, codes or standards that demand a specific level of performance.

4. Cost

While cost is not the only deciding factor, to make the most technical and economic choice, every engineer must consider the overall project budget when selecting the actuator. While there is the consideration of the initial investment cost, there is also the need to operate and maintain an asset over its life cycle. Depending on the air or electric consumption or cost to maintain and repair, a lower initial cost benefit may be lost over time when trying to resolve issues with a troubled unit.

Optimal Centrifugal Pump Selection

Nirav Dobariya (190170105011)

There is a lot of buzz around optimal pump selection. Much of the discussion encompasses pump system design optimization. What is lacking in these discussions is a consensus about what optimization means, how it is achieved and what the outcomes are for an optimized pump. People use "optimized" to refer to any of the following pump qualities:

- pump with the lowest initial cost
- pump that consumes the least amount of energy
- pump with the lowest lifetime maintenance
- pump that lasts the longest

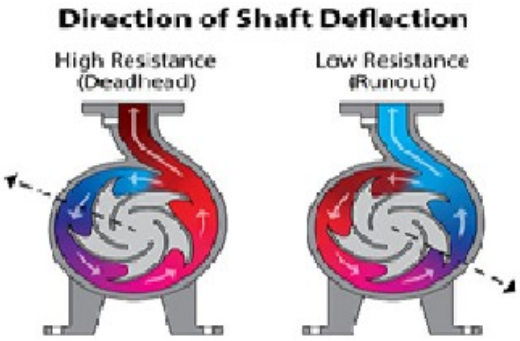


Fig.1 Effects of flow resistance on shaft deflection and operating temperature
(Images courtesy of Ruthman Companies)

Defining Optimal Pump Operation

Pump manufacturers, through performance testing, determine the efficiency for each model pump to achieve optimal pump selection. This point is called the best efficiency point (BEP). BEP should be stated on all centrifugal pump curves. At the BEP, the least amount of fluid is bypassed back to the low-pressure (or suction) side. The pump runs the smoothest at this point; the flow is the cleanest moving through the pump.

During normal operation, a good rule of thumb is that a centrifugal pump should always be operated between 50% and 120% of the BEP. With a pump selected just at BEP, fluctuations in the flow can result in operation outside the pump's BEP. From BEP, it only takes 20% movement to go too far out on the curve, creating the potential for cavitation and increased radial loads.

Therefore, it may be best to target selections at around 85% of BEP. This allows system fluctuations of 35% to the right and left of BEP, without moving out of the acceptable 50% to 120% window.

Selecting the Optimal Pump for a System

Often, it is not enough to select a pump based on just one specific flow and head. The amount of fluid moved by the pump is limited by the resistance to the flow, the physical capacity of the pump, and the amount of flow that can enter the pump. The pump simply spins and moves fluid with no regard to the intended flow rate or desired pressure.

During system design and pump selection, because the full range of real-world operating conditions can never be fully known or predicted, it is common practice for system engineers to "pad" expectations to accommodate this variability.

CREATIVE CORNER

Snehi Borsania
3rd Year (Chemical)

Education is the only tool to win over all the violence

Education makes a door to bright future

Education is a way to success in life.

दौड

सुख दु:ख की अनोखी दौड़ है,
ना जाने यहां कितने मोड़ है?
मन से प्रयत्न करो मिलेगा ही,
अगर तेरी मेहनत तनतोड़ है।
संभाल, जिह्वा फिसल जाएगी,
उसके कहा हड्डियो के जोड़ है?
खुद में जांख के नही देखता वो,
एकदूसरे को गिराने की होड़ है।
अन्य वस्तु से क्यो इतनी रुचि?
पुस्तक हि यहां पर अजोड़ है।

- **Adarsh Prajapati**
2nd Year (Chemical)