



Chemical Engineering Department



SCHOOL OF TECHNOLOGY
PANDIT DEENDAYAL ENERGY UNIVERSITY



NEWSLETTER

January to March - 2021
Volume 2, Issue 1

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VISION

To impart quality education in an industry research driven modules to motivate the young chemical engineers for creating knowledge wealth to help generate employability following professional ethics and focus towards a sustainable environment and benefits to the society.

MISSION

- ◆ To facilitate the chemical engineering students with the state-of-the-art facilities with focus on skill development, creativity, innovation and enhancing leadership qualities.
- ◆ To nurture creative minds through mentoring, quality teaching & research for building a value based sustainable society.
- ◆ To work in unison with the national and international level academic and industrial partners by venturing into collaborations to tackle problems of bigger interest to society.
- ◆ To build an encouraging environment for the young faculties and staff by providing safe work culture, transparency, professional ethics and accountability that will empower them to lead the department in right spirit.
- ◆ To inculcate the culture of continuous learning among the faculties by encouraging them to participate in a professional development programs and envisage to address the social, economic and environmental problems.

EDITORIAL TEAM

Dr. Rajat Saxena (Faculty Co-ordinator)
Dr. Abhishek Yadav (Faculty Co-ordinator)
Mr. Manish Shewaramani (Staff Co-ordinator)

Mr. Vandan Dudhat (Student Co-ordinator)
Mr. Poojan Chaklasiya (Student Co-ordinator)

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DIRECTOR SOT
HOD
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Message from Desk...



Prof. Sunil Khanna
Director, SOT, PDEU

Director

Dear Colleagues and Students:

The advent of circular economy in Chemical systems is leading to the development of an economic system aimed at minimizing waste and making the most of resources. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse and return to the biosphere, and aims for the elimination of waste through the superior design of materials, products, systems and business models. The drivers of the circular economy would be the advances in computational modelling, data analytics, optimization tools, and next-generation bio-based catalysts to produce fuels and chemicals at scale with lower emissions.

As we @ PDEU embark on this journey of circular economy in Chemical Engineering, I am Happy to Introduce the next issue of the Newsletter which not only share with all its readers the latest news and developments in the Department of Chemical Engineering but would also be sensitizing all of us on the latest trends and developments in the adoption of the circular economy.

The limitless power of technology to do good and the conviction of my faculty colleagues and students that the golden age is ahead of us - and not behind us – brings about the best in all of us which is reflected in their achievements.

Compliments to the editorial team for their passion for perfection and unbound creativity

HOD, Dept. of Chemical Engineering

It gives me immense pleasure to share newsletter of the Chemical Engineering Dept., Jan - Mar 2021. The Department of Chemical Engineering at PDEU, Gandhinagar is one of the premier departments that provides a unique educational and research environment. The primary focus of the department is to empower our students to provide them all round development. The emphasis is on building strong interdisciplinary and industrial collaborations. Our primary missions is to nurture our students with multi-dimensional skill sets. We disseminate knowledge to our undergraduate and graduate students through active research and its implementation by involving them in live projects etc. The Department is committed to achieve excellence in these activities, and evaluates the success and leadership of its programs using the highest standards of quality, innovation, and visibility, while at the same time providing a friendly and supportive atmosphere. The students are emphasized for good academics, placements and participation in co-curricular activities. The faculty members are encouraged to publish research papers in reputed journals, participate in Faculty Development Programs and workshops through a well-supported system. The department preserves its achievements and publish its all activities through this quarterly



Dr. Swapnil Dharaskar
Head, Chemical Engineering

Editorial Team



Dr. Rajat Saxena
Faculty
Co-ordinator



Dr. Abhishek Yadav
Faculty
Co-ordinator



Mr. Manish Shewaramani
Staff
Co-ordinator



Mr. Vandan Dudhat
Student
Co-ordinator



Mr. Poojan Chaklasiya
Student
Co-ordinator

Faculty Board : Publications

| S. No. | Title and Journal Details | Authors | Month |
|--------|--|--|---------------|
| 1 | An experimental investigation of the performance of biodiesel production techniques: Optimization, kinetics, and energy analysis', Thermal Science and Engineering Progress, Thermal Science and Engineering Progress, Volume 22, pp. 100842 | Anvita Sharma, Pravin Kodgire , Surendra Singh Kachhwaha | January 2021 |
| 2 | Physicochemical and thermodynamic properties of aqueous blends of 3-aminopropyl triethoxysilane and amines at 298.15–333.15 K, Journal of Molecular Liquid, 332, 115440 (Q1 Journal, Elsevier, I.F. 5.065) | Sweta Balchandani , Bishnupada Mandal, Swapnil Dharaskar | January 2021 |
| 3 | Stimulation of CO ₂ solubility in reversible ionic liquids activated by novel 1-(2-aminoethyl piperazine) and bis (3-aminopropyl) amine, Separation and Purification Technology, 262, 118260 (Q1 Journal, Elsevier, I.F. 5.77) | Sweta C Balchandani , Bishnupada Mandal, Swapnil Dharaskar | January 2021 |
| 4 | Experimental investigation on the yield of solar still using manganese oxide nanoparticles coated absorber, Case Studies in Thermal Engineering, Vol 25, Pages 100905 | Hitesh Panchal, Heri Nurdiyanto, Kishor Kumar Sadasivuni, Swapnil Dharaskar , S Shanmugan | February 2021 |
| 5 | Synergetic effects of organic and inorganic additives on improvement in hydrophilicity and performance of PVDF antifouling ultrafiltration membrane for removal of natural organic material from water, Journal of Applied polymer science, Volume138, Issue 24 50568. | Bharti Saini and Manish Kumar Sinha | February 2021 |
| 6 | Comprehensive hydro-chemistry and geothermal water quality of Konkan, Maharashtra, India for sustainable industrial development, Groundwater for Sustainable Development, Vol 12, 100518 | Manan Shah Yogen-drasingh Pawar Mohit Patel Jigarkumar Patel Nehal Patel | February 2021 |



Faculty Board : Publications

| S. No. | Title and Journal Details | Authors | Month |
|--------|--|--|---------------|
| 7 | Characterization and assessment of groundwater aquifers from Bakreshwar and Tantloi geothermal fields for its industrial applications, Groundwater for Sustainable Development, Vol 12, 100535 | Manan Shah Harsh Patel Parth Viramgama Dhairya Varanava Deep Maheshwari | February 2021 |
| 8 | Geothermal-solar integrated groundwater desalination system: Current status and future perspective, Groundwater for Sustainable Development, Vol 12, 100506. | Mitul Prajapati, Manan Shah , Bhavna Soni, Sachin Parikh, Anirbid Sircar, Sweta Balchandani , Shuchen Thakore Manthan Tala | February 2021 |
| 9 | Molecular dynamics simulations studies of transport properties of sodium-(polymethacrylate) (Na ⁺ -PMA) in aqueous solutions–Effect of salt concentration. Materials Today: Proceedings (Elsevier) | Dr. Abhishek K. Gupta | March 2021 |
| 10 | Combined Salt Concentration and Degree-of-Ionization Effect on the Structure of Poly (methacrylic acid) in Aqueous Solutions as Revealed by Molecular Dynamics Simulations, Industrial & Engineering Chemistry Research (ACS), 60, 13, 4806–4819 | Dr. Abhishek K. Gupta | March 2021 |
| 11 | An Assessment of Football Through the Lens of Data Science, Annals of Data Science. | Dr. Manan Shah , Poojan Thakkar | March 2021 |
| 12 | α -Fe ₂ O ₃ nanorods decorated with NiMnO ₃ co-catalyst as photo anode for enhanced oxygen evolution reaction in photo electrochemical water splitting, Materials today communications. | Aditya Singh, Ravi Tejasvi , Sujay Karmakar Suddhasatwa Basu | March 2021 |



Faculty Board : Conference Papers

- ◆ **Dr. Abhishek K. Gupta** presented a paper “Transport properties of sodium-(polymethacrylate) (Na⁺-PMA) in aqueous solutions investigated by Molecular Dynamics Simulations” at CRMSC 2021 during 21-22 January, 2021.
- ◆ **Dr. Swapnil Dharaskar** presented a paper in International Conference on Nanoscience and Nanotechnology (ICON-21) at SRM University from 03-04 February, 2021.



- ◆ **Dr. Anirban Dey** presented paper titled "Enhancement of CO₂ absorption capacity in the APDA activated solvent blends for post combustion CO₂ capture Process" in 3rd International Conference on "New and Renewable Energy Resources for Sustainable Future organized by (SKIT), Jaipur (India) in association with Assiut University, Egypt during 11-13 February, 2021.



- ◆ **Dr. Bharti Saini** presented research work in National Conference On New Frontiers in Energy and Environmental Sustainability (NFEES), PDEU Gandhinagar, during 27-28 February, 2021.



- ◆ **Dr. Rajat Saxena** presented a paper titled “Phase Change Material assisted Solar Water Heater for effective Water heating application to fight COVID-19 ” in National Conference On New Frontiers in Energy and Environmental Sustainability (NFEES), PDEU Gandhinagar, during 27-28 February, 2021.

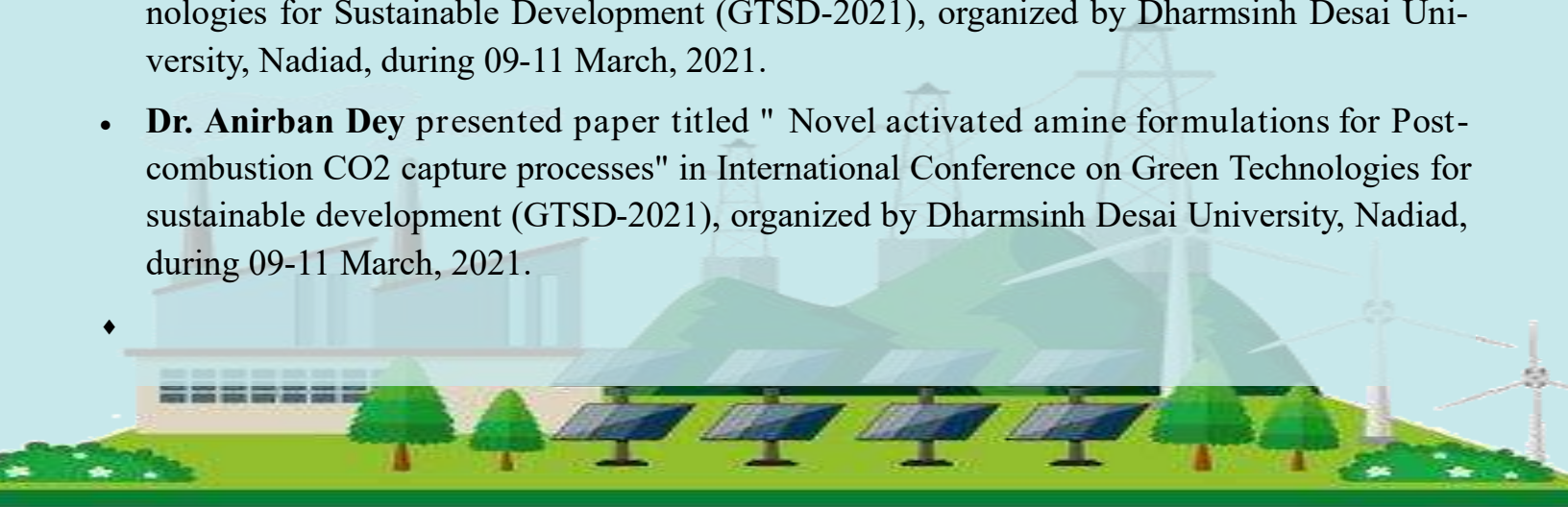
- ◆ **Dr. Swapnil Dharaskar** presented a paper in International Conference on Green Technologies for Sustainable Development (GTSD-2021), from 09-11 March, 2021.

- ◆ **Dr. Ashish Unnarkat** presented a paper “Ethyl benzene oxidation using cobalt oxide supported over SBA-15 and KIT-6 ” at Materials Today proceedings, <https://doi.org/10.1016/j.matpr.2020.09.088>

- ◆ **Dr. Bharti Saini**, Presented research work in International Conference on Green Technologies for Sustainable Development (GTSD-2021), organized by Dharmsinh Desai University, Nadiad, during 09-11 March, 2021.

- ◆ **Dr. Anirban Dey** presented paper titled " Novel activated amine formulations for Post-combustion CO₂ capture processes" in International Conference on Green Technologies for sustainable development (GTSD-2021), organized by Dharmsinh Desai University, Nadiad, during 09-11 March, 2021.

◆



Faculty Board : Conference Papers

- ◆ **Dr. Pravin Kodgire** attended and presented paper “Comparison of optimization results of applied RSM methods for transesterification of waste cooking oil using microwave assisted method catalyzed by CaO” in 2nd International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy (MMCITRE) Maths Dept, PDEU, 6-8 February, 2021.
- ◆ **Dr. Ashish Unnarkat** participated and presented the paper titled “Bimetallic Catalyzed Decomposition of Hydrogen Peroxide Kinetics, Effect of Support and Reaction Medium” during "2nd International Conference on Aspects of Materials Science and Engineering" ICAMSE2021 Organized by Punjab University Chandigarh, 5-6 March, 2021.
- ◆ **Dr. Bharti Saini** presented research work in International Conference on “Emerging Technologies in water, waste water treatment and solid waste management (ETWM-2021).
- ◆ **Dr. Pravin Kodgire** attended and presented paper entitled “An Ultrasound-Assisted Process for the Optimization of Biodiesel Production from Waste Cottonseed Cooking Oil Using Response Surface Methodology' in International Conference on – Green Technologies for Sustainable Development organized by Dharmsinh Desai University (DDU), Nadiad , Gujarat during 09-11 March, 2021.
- ◆ **Dr. S.K Dash** presented the paper “Effects of CO₂ Solubility and Thermophysical Properties of 40 wt% Aqueous solution of AMP and MEA solvents for CO₂ Capture” in Indo Canadian Research Conclave on Sustainable Approaches to Carbon Capture Sequestration and Utilization (ICRC-CCSU) organised by PDEU, 12-13 March, 2021.
- ◆ **Dr. Rajat Saxena** participated with a paper titled “Study on PCM assisted Constant Temperature water heating system” in Conference on Advances in Thermal-Fluids Engineering (ATFE 2021), organized at PDEU, 25-26 March, 2021.
- ◆ **Dr. Pravin Kodgire** presented a paper entitled “Effectiveness of RSM based Box Behken DOE over conventional method for optimization of biodiesel production” in Advances in Intelligent systems and computation, 978981159953814 in March 2021.



Faculty Board : Project Details

| Sanctioned | | | | |
|------------|--|---|-----------|---|
| S. No. | Project Title | Investigators | Cost | Funding Agency |
| 1 | Mechano-Chemical synthesis of low cost and efficient Perovskite solar cells | Dr. Pankaj Yadav and Dr. Himanshu Choksi | 34,35,520 | GUJCOST |
| 2 | Smart Steam Disinfection System to fight Covid-19 in public places | Dr. Vivek K. Patel, Dr. Rajat Saxena and Dr. Jatin Patel | 18,04,000 | GUJCOST |
| Submitted | | | | |
| 1 | Implementation of Innovative Solar Drying Techniques for Enhanced Food Quality and Shelf Life. | Dr. Rajat Saxena , Dr. Jatin Patel and Dr. Shivmurti Srivastav | 65,96,294 | CRG, SERB, DST |
| 2 | Hydrogen free gasoline desulfurization for BS VI Fuel production. | Dr. Swapnil Dharaskar and Prof. P Parikh | 56,00,000 | Office of the Principal Scientific Adviser, Government of India |

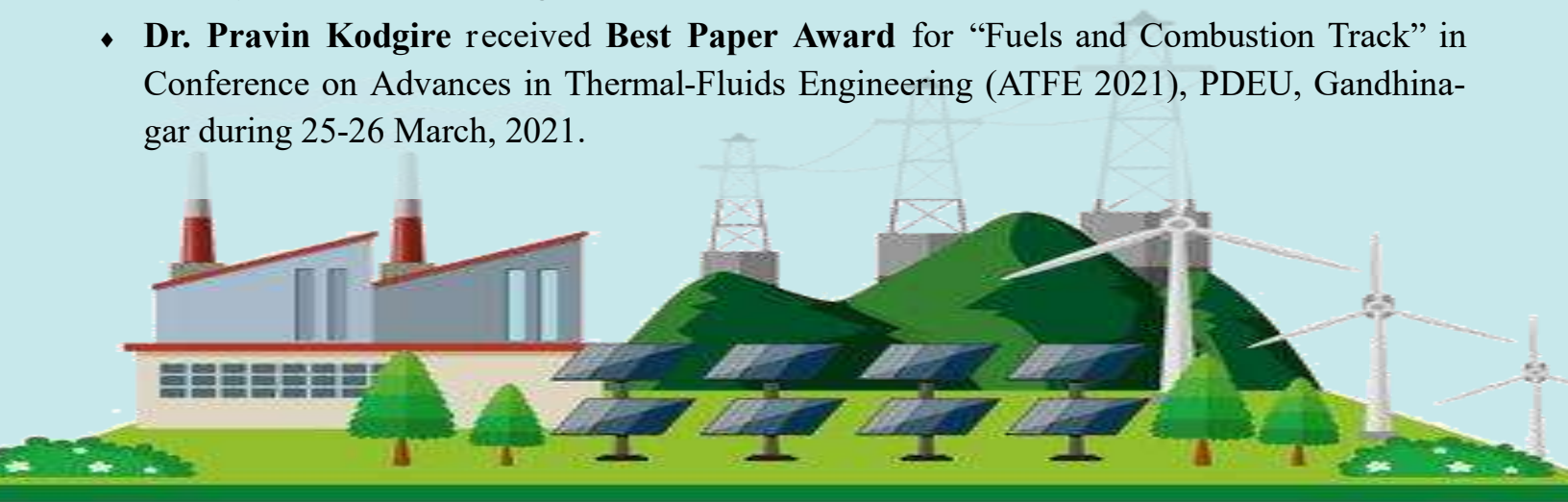
Faculty Board : Consultancy

| S. No. | Work Undertaken | Faculty Name | Amount | Organization |
|--------|------------------|------------------|----------|-----------------------|
| 1 | Consultancy Work | Dr. Sukanta Dash | 1,08,166 | January to March 2021 |



Faculty Board : Recognitions

- ◆ **Dr. Manish Sinha** received **Best Research Poster** award in 1st Faculty Research Symposium organized by PDEU on 4th January, 2021.
- ◆ **Dr. Swapnil Dharaskar** was invited as Research Panel Expert for PhD Selection at GTU on 11th January, 2021.
- ◆ **Dr. Abhishek K. Gupta** received Best Oral presentation in technical session of International Conference CRMSC 2021 organized by Manipal University, Jaipur on 12th January, 2021.
- ◆ **Dr. Swapnil Dharaskar** was selected as Editorial Board Member of LIISPRING Publisher by LIISPRING Odisha on 5th February, 2021.
- ◆ **Dr. Swapnil Dharaskar** received Best Researcher Award in New Science Inventions in New Science Inventions by Science Father on 15th February, 2021.
- ◆ **Dr. Bharti Saini, Dr. Rajat Saxena and Dr. Ravi Tejasvi** won **Best Oral Presentation** award in NFEES-2021 organized by Department of Chemical Engineering, PDEU on 28th February, 2021.
- ◆ **Dr. Sukanta Kumar Dash** has been promoted to Associate Professor, in the Department of Chemical Engineering, PDEU.
- ◆ **Dr. Swapnil Dharaskar** Invited as Research Panel Expert for PhD Selection at GTU on 02nd March, 2021.
- ◆ **Dr. Bharti Saini** received **Best Poster Presentation** Award at International Conference on Green Technologies for sustainable development(GTSD-2021) organized by DDIT Nadiad from 09-11 March, 2021.
- ◆ **Dr. Anirban Dey** received **Best Paper Award** at International Conference on Green Technologies for sustainable development(GTSD-2021) organized by DDIT Nadiad from 09-11 March, 2021.
- ◆ **Dr. Sukanta Dash** chaired a Technical Seession in the "Indo Canadian Research Conclave on Sustainable Approaches to Carbon Capture Sequestration and Utilization (ICRC-CCSU)", PDEU, Gandhinagar, on 12- 13 March, 2021.
- ◆ **Dr. Pravin Kodgire** received **Best Paper Award** for “Fuels and Combustion Track” in Conference on Advances in Thermal-Fluids Engineering (ATFE 2021), PDEU, Gandhinagar during 25-26 March, 2021.



Faculty Board : Lectures Delivered

| Sr. No. | Name of Faculty Member | Title of the Talk | Details | Date |
|---------|------------------------------|--|--|---------------------|
| 1 | Dr. Swapnil Dharaskar | "Green Technology for sustainable development" | Online GUJCOST sponsored Faculty development programme on the theme "Green Chemistry & Technology for sustainable Engineering" organized by PP Savani University, Surat. | 21st January, 2021 |
| 2 | Dr. Swapnil Dharaskar | "Cleaner Fuel Production for Environmental Sustainability " | Online one week FDP on the theme "Green Technology for sustainable Development" organized by Chemical Engineering, VVP, Rajkot sponsored by DST GUJCOST. | 25th February, 2021 |
| 3 | Dr. Sukanta Dash | Industrial CO2 Capture Challenges for Net Zero emission | One day webinar organized by (Dept of Chemical engineering, Qatar University) | 10th February, 2021 |
| 4 | Dr. Ashish Unnarkat | Career Opportunities and Prospects at PDPU | One day webinar organize by Birla School, Gandhinagar | 20th February, 2021 |
| 5 | Dr. Sukanta Dash | Industrial CO2 Capture Challenges for Net Zero emission power plant: sustainable energy environment approach | One Week FDP under AICTE Training and Learning Academy organized by Rajiv Gandhi Proudhyogiki Viswavidhalaya | 15-19th March, 2021 |
| 6 | Dr. Pravin Kodgire | In-Situ Biodiesel Production: Role in Energy management for sustainability | 1st Scientific Forum Series organized by UNversiti Teknologi Petronas sponsored by CBBR and PDEU | 17th March, 2021 |
| 7 | Dr. Rajat Saxena | Utilization of Phase change materials for energy and environment approach | One Week FDP under AICTE Training and Learning Academy (ATAL) organized by Rajiv Gandhi Proudhyogiki Viswavidhalaya | 15-19th March, 2021 |



Faculty Board : Events/ Lectures Organized

| Date | Title of Webinar | Speakers Name | Coordinators | Number of Participants |
|------------------------|---|--|--|------------------------|
| 11-12th January, 2021 | Carbon Capture, utilization and sequestration | Prof. Swadhin Mandal, IISER, Prof. Raj Ganesh Pala, IIT Kanpur | Dr. Swapnil Dharaskar and Dr. Anirban Dey | 70 |
| 05th February, 2021 | Industrial Expert Lecture on "Process Piping Engineering and Safety" | Mr. Chirag Shah, Senior Manager Worley India Ltd. | Dr. Anirban Dey | 55 |
| 06th February, 2021 | The Scope and Challenges of chemical engineers in the industries | Dr. Bibekananda Basu, Retd, GM Reliance Group, Ex-Scientist, BTRA, Mumbai | Dr. Swapnil Dharaskar | 105 |
| 14th February, 2021 | Industrial Expert Lecture on Biofuels and their applications | Dr. Vipin Dhyani, Deputy Manager, R&D, Eicher Engines, Alwar | Dr. Rajat Saxena | 75 |
| 23rd February, 2021 | Development of low cost tubular ceramic membranes for wastewater treatment | Prof. G Pugazhenti, Professor IIT Guwahati, Assam | Dr. Manish Sinha | 115 |
| 27-28th February, 2021 | New Frontiers in Energy and Environmental Sustainability - NFEES2021 | Prof. Shantanu Bandyopadhyay, Dr. Shudhasatwa Basu, Dr. Anurag Gupta, Prof. Kaushik Nath, Mr. Alok Das, Prof. S.S. Bhagwat, Dr. Nitin Labhasetwar, | Dr. Surendra Sasikumar Jampa and Dr. Pravin Kodgire | 120 |
| 5-6th March, 2021 | Shastri Indo-Canadian Lecture Series on "Emerging Trends in CO2 Capture and Green Technologies" | Details in Event Board Section | Dr. Ashish Unnarkat, Dr. Swapnil Dharaskar and Dr. Anirban Dey | 160 |

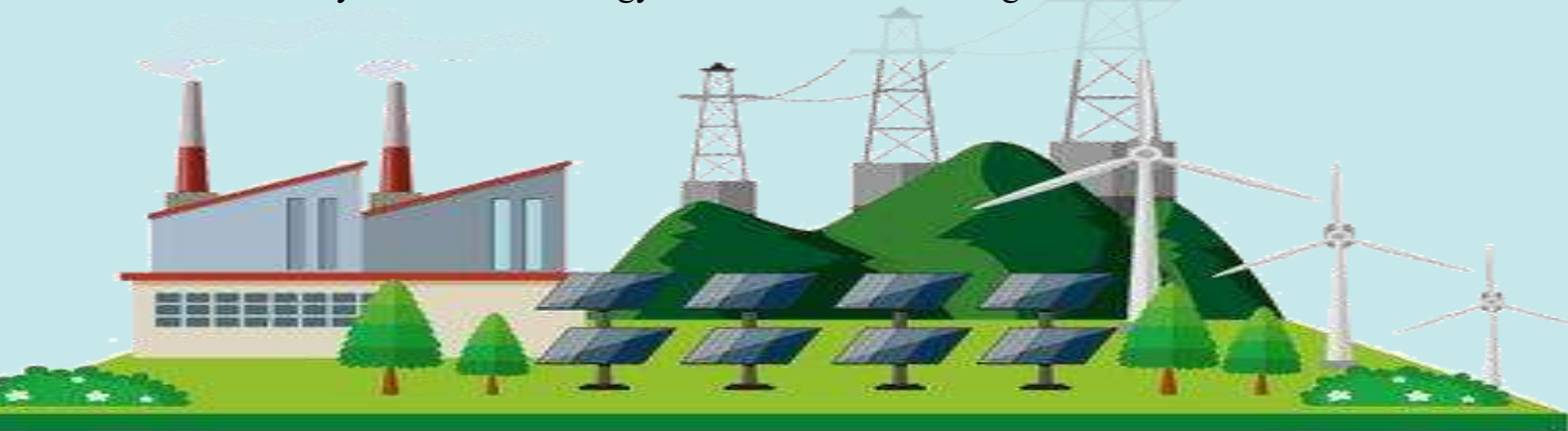


Faculty Board : Events attended

- **Dr. Swapnil Dharaskar** attended **one week STTP** on “Building Energy Efficiency: An Approach towards Sustainable Development from 28th December, 2020 to 01st January, 2021.
- **Dr. Ashish Unnarkat** participated & completed successfully **AICTE Training And Learning (ATAL)** Academy Online FDP on "Green Technology & Sustainability Engineering" at Malaviya National Institute of Technology Jaipur, from 4-8 January, 2021.
- **Dr. Anirban Dey and Dr. Bharti Saini** attended **one week Online FDP** on “Waste Technology” organized by National Institute of Technology Durgapur, from 18-22 January, 2021.
- **Dr. Swapnil Dharaskar** attended **one week STTP** on “Furistics Innovations on Solar Technologies” from 08-12 February, 2021.
- **Dr. Ashish Unnarkat** participated & completed successfully **AICTE Training And Learning (ATAL)** Academy Online FDP on "Blended Learning and Flipped Classroom" at Sardar Vallabhbhai National Institute of Technology Surat, from 08-12 February, 2021.
- **Dr. Manan Shah** attended 46th Stanford Geothermal Workshop from 16-18 February, 2021.
- **Dr. Rajat Saxena** attended 05 days **Online Training Programme** on Performance Evaluation of Low, Medium and High Temperature Solar Thermal Systems using System Advisor Model (SAM) organized by National Institute of Solar Energy (NISE) from 22-26 February, 2021.
- **Dr. Ashish Unnarkat** participated in GUJCOST Sponsored One Day International Webinar on "Future of Chemical Science and Engineering: Research, Industry and Education" Organized by Department of Chemical & Biochemical Engineering, School of Engineering, Indrashil University, Rajpur, Kadi, Gujarat held on 23rd March, 2021.
- **Dr. Rajat Saxena** participated as organizing team member in conference on Advances in Thermal-Fluid Engineering (ATFE 2021) during 25-26 March, 2021.

Laboratory Update

- **ETC Characterization Set-up** Installation was inducted by Department under Energy and Environmental Research Laboratory at cost of INR 4,15,000/- with the coordination of Dr. Rajat Saxena on 22nd February 2021. Instrument is in line with developing experimental facility for M. Tech. Energy and Environment Management Course.



Faculty Board : Lectures Delivered/ Organized

SOT SCHOOL OF TECHNOLOGY

PDPU PANDIT DEENDAYAL PETROLEUM UNIVERSITY

WEBINAR SERIES - MODULE 1

Carbon Capture, Utilization and Sequestration

By CO₂ Research Group, School of Technology, PDPU

11th Jan 2021 – 12th Jan 2021

Time : 5:00 pm – 7:30 pm

SPEAKERS

PROF. S. S. MANDHAN
Director General, PDU

PROF. S. KHANNA
Director - School of Technology, PDU

PROF. TRACY BEHSON
Department of Chemical Engineering, James Watson, TX, USA

PROF. ANURAG A. GUPTA
Senior Advisor, CO₂ Research Group, PDPU

PROF. SWADHIN MANDAL
IISD, Kolkata, India

PROF. RAJ KUMAR S. PILLAI
IIT Kanpur, Kanpur, India

PROF. RAMESH K. GUDURU
CO₂ Research Group, PDPU

REGISTRATION FEE:
Students/Research Scholars - ₹ 100/-
Faculty - ₹ 300/-
Industry Professionals - ₹ 500/-

E-Certificates will be Provided

Register Now!

INDUSTRIAL EXPERT TALK

PDEU PANDIT DEENDAYAL ENERGY UNIVERSITY

SOT SCHOOL OF TECHNOLOGY

SCOPE AND CHALLENGES FOR CHEMICAL ENGINEERS IN INDUSTRIES

Moderator
Dr. Swapnil Dharaskar
HOD, Chem. Engg., PDEU, Gandhinagar

Expert Speaker
Dr. B. Basu
Retd. GM, Reliance Group, Ex-Scientist, BTRA, Mumbai

Organized by
Department of Chemical Engineering
School of Technology
& IICHe Student Chapter PDEU

6th February, 2021 Saturday | 4:00- 5:00 PM

Platform Google Meet

PDEU PANDIT DEENDAYAL ENERGY UNIVERSITY

SOT SCHOOL OF TECHNOLOGY

INDUSTRY EXPERT LECTURE

Biofuels and Their Applications

Moderator
Dr. Rajat Saxena
Assistant Professor, PDEU

Expert Speaker
Dr. Vipin Dhyani
Deputy Manager (R&D), Eicher Engines, Alwar

Organized by
Department of Chemical Engineering
School of Technology
& IICHe Student Chapter, PDEU

Sunday, 14th February 2021 | 10:30 AM to 11:30 AM

PDEU PANDIT DEENDAYAL ENERGY UNIVERSITY

SOT SCHOOL OF TECHNOLOGY

AICHE The New Face of Chemical Engineers

DEVELOPMENT OF LOW-COST TUBULAR CERAMIC MEMBRANES FOR WASTEWATER TREATMENT

Moderator
Dr. Manish Kumar Sinha
Assistant Professor
Dept. of Chemical Engineering
PDEU, Gandhinagar

EXPERT SPEAKER
Prof. G. Pugazhenti
IIT Guwahati, Assam

Organized by:
DEPARTMENT OF CHEMICAL ENGINEERING
SCHOOL OF TECHNOLOGY
& AICHE STUDENT CHAPTER PDEU

22nd February 2021, Tuesday
3:00 - 4:00 pm
Platform : Microsoft Teams

PPSU P. P. SAVANI UNIVERSITY

School of Engineering

Dst

FOUR DAYS FACULTY DEVELOPMENT PROGRAM (FDP) ON THE THEM GREEN CHEMISTRY & TECHNOLOGY FOR SUSTAINABLE ENGINEERING

18th - 21st JANUARY, 2021 (04.00 PM TO 5.30 PM)

| | |
|--|---|
| DAY - 1 (Date: 18th January, 2021) | DAY - 2 (Date: 19th January, 2021) |
| DR. KISHORE NANDA Professor, Chemical Engineering Department, Indian Institute of Technology (IIT), Guwahati, Assam, India | DR. Z V P MURTHY HOD Professor, Chemical Engineering Department, Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India |
| DAY - 3 (Date: 20th January, 2021) | DAY - 4 (Date: 21st January, 2021) |
| DR. KAUSTUBHA MOHANTY Professor, Chemical Engineering Department, Indian Institute of Technology (IIT), Guwahati, Assam, India | DR. SWAPNIL A DHARASKAR Head and Associate Professor, School of Technology, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India |
| CHIEF PATRON | PATRON |
| DR. PARAG SANGHANI Professor, P.P. Savani University | DR. NIRAJ SHAH Dean, School of Engineering, P.P. Savani University |
| MODERATOR | DR. DEEPAK SINGH PANWAR School of Engineering, P.P. Savani University |
| WHO CAN PARTICIPATE: Faculty Members, Research Scholar and PhD scholars from the Academic/ Research Institutions. E-certificate will be given to those candidates who successfully complete the FDP. | FDP REGISTRATION LINK: https://forms.gle/IKVSDUgPH1wVW5D6 No Registration Fees |

Department of Chemical Engineering, Qatar University cordially invites you to a seminar on

INDUSTRIAL CO₂ CAPTURE CHALLENGES FOR NET ZERO EMISSION

By
Prof. Sukanta Dash, PhD.

Date: 17 February 2021
Time: 12:30PM – 2:00PM
Venue: Virtual on WebEx (click the link)

Abstract

Fossil fuels are expected to play an important role in the future global energy system despite the effort of renewable energy; however, technical solutions are needed to reduce carbon dioxide (CO₂) emissions from combustion which is responsible for global warming. Carbon capture, utilization, and storage (CCUS) is a key technological challenge that can achieve this goal. CCUS is a process that includes the separation of CO₂ from industrial plant effluents, to be used as a feedstock for useful products and/or permanently stored in geological formations. Out of the many CO₂ separation technologies, the regenerative chemical absorption is a proven one and can be readily deployed, however the process should be economically acceptable.

This presentation will discuss:

- New activated and blended poly-amines for CO₂ absorption and desorption.
- Thermodynamic modeling and estimation of Energy Requirements.
- Process modeling, simulation and pilot plant design

Some of the industrial implementation of CO₂ capture from coal fired boiler flue gas and the key lessons learned will also be discussed.

SOT SCHOOL OF TECHNOLOGY

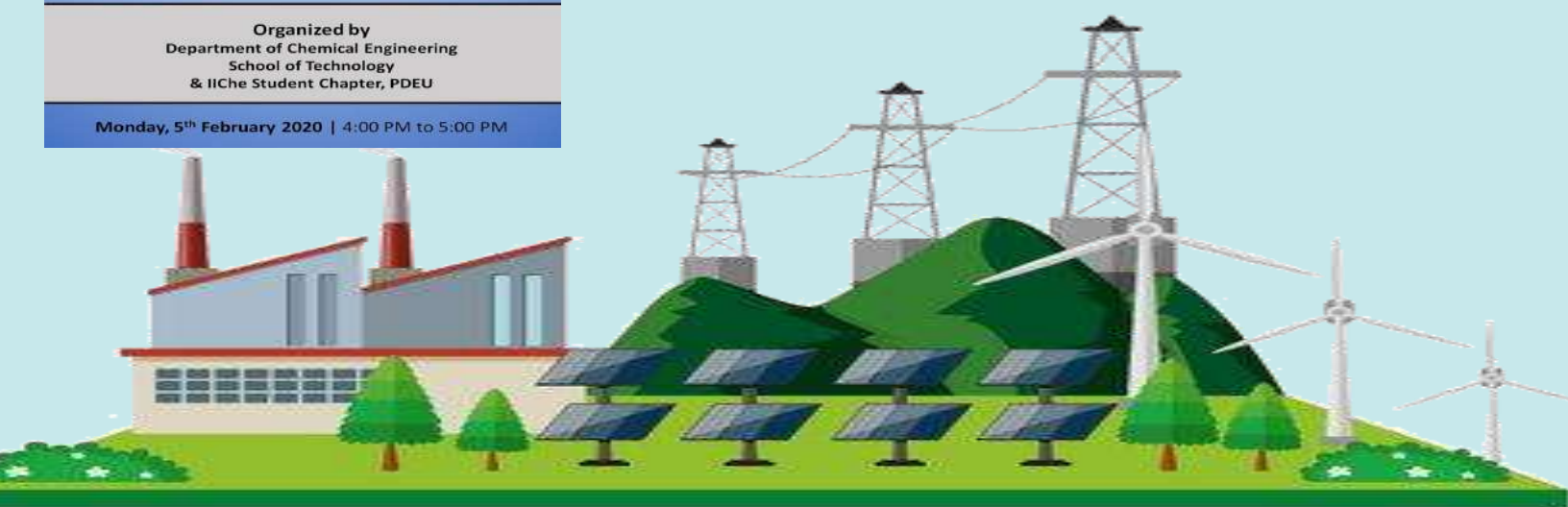
INDUSTRIAL EXPERT SESSION

PROCESS PIPING ENGINEERING & SAFETY

Expert Speaker
Mr. Chirag Shah
Senior Manager, Piping Engineering
Worley India Pvt. Ltd. Vadodara

Organized by
Department of Chemical Engineering
School of Technology
& IICHe Student Chapter, PDEU

Monday, 5th February 2020 | 4:00 PM to 5:00 PM



Conference: NFEES-2021



Event Board: Lecture Series

Indo Canadian Research Lecture Series on "Emerging trends in CO2 Capture and Green Technologies"

The screenshot shows the homepage of dewjournal.com. It features a navigation bar with 'Home', 'Contact Us', 'Submit Article', 'Recent Articles', 'Events', 'Latest Books', and 'Contact'. Below the navigation bar, there are several promotional banners and sections:

- E-Subscription:** Focus on energy, oil & gas, renewables, marine, engineering, mach.
- Editorial Calendar (2021):** Includes a section for the Indo Canadian Research Conclave on Sustainable Approaches to Carbon Capture Sequestration and Utilization (ICRC-CCSU) on 11 March 2021.
- Advertising:** Promotes 'DEW - Video Channel' and 'DEW JOURNAL LIVE & Learning Platform'.
- Media Partner:** Features 'APM' (Asia Pacific Marine) with the tagline 'COME AND DISCOVER THE FUTURE OF VESSELS SOLUTIONS FOR TOMORROW'.
- Current Issue:** Shows the cover of the journal 'DEW'.

The poster for the Shastri Indo-Canadian Research Lecture series is organized by the CO₂ Research Group, Department of Chemical Engineering, Energy University (PDEU), Gandhinagar, Gujarat, India. The event is scheduled for 5th & 6th March, 2021.

Speakers:

- Prof. S. S. Manoharan (Director, School of Technology India)
- Prof. S. Khanna (Director, School of Technology India)
- Prof. George Shimizu (Professor, Department of Chemistry, University of Calgary, Canada)
- Dr. Anurag A. Gupta (Senior Mentor, PDEU)
- Prof. Anand B. Rao (Head, Centre for Technology Alternatives for Rural Areas, IIT Mumbai)
- Prof. M.K. Mondal (Professor, Chemical Engineering, IIT BHU)
- Prof. Anil Verma (Professor, Chemical Engineering, IIT Delhi)

Registration Details: The lecture series will be held on an online platform. There is NO REGISTRATION FEE for the lecture series. E-certificate will be provided to all the attendees. Attendance for 80% sessions is compulsory to get an e-certificate.

 Organized by CO₂ Research Group, Department of Chemical Engineering, Energy University (PDEU), Gandhinagar, Gujarat, India.

Indo-Canadian Research Lecture series
On
"Emerging Trends in CO₂ Capture and Green Technologies"
 Organized by
CO₂ Research Group, Department of Chemical Engineering,
Pandit Deendayal Energy University, Gandhinagar, India

March 5 - 6, 2021

Program Overview:

| Day-1: March 5th, 2021 (Friday) | |
|---|--|
| 10:00 am - 10:10 am | Opening annotations by Moderator (Dr. Swapnil Dharaskar) |
| 10:10 am - 10:30 am | Welcome Address with Keynote Presentation by Prof. S. Sundar Manoharan , Director General, PDEU, Gandhingar |
| 10:35 am - 10:45 am | Inaugural Address by Prof. Sunil Khanna , Director SOT, PDEU |
| 10:50 am - 11:00 am | Address by Dr. Prachi Kaul , Shastri Indo-Canadian Institute (SICI) India. |
| 11:05 am - 11:55 am | Speaker 1: Prof. George Shimizu , Department of Chemistry, University of Calgary, Canada. Topic:- Taking New Solid CO ₂ Sorbents from Discovery to Commercialization |
| 12:05 am - 12:25 pm | Speaker 2: Dr. Anurag A. Gupta , Senior Mentor - PDEU, India Topic:- CO ₂ Research at PDEU- Exploring Options for Value Addition |
| 12:30 pm | Closing remark |
| Day-2: March 6th, 2021 (Saturday) | |
| 10:00 am - 10:05 am | Opening remarks by Moderator (Dr. Swapnil Dharaskar/Dr. Dey) |
| 10:10 am - 10:55 am | Speaker 1: Prof. M. K. Mondal Department of Chemical Engg, IIT BHU, India Topic:- "Recent trends of chemical absorption in the field of CO ₂ Capture" |
| 11:00 am - 11:45 am | Speaker 2: Prof. Anil Verma Department of Chemical Engg, IIT Delhi, India Topic:- "Sustainable Energy and Environment: Electro-Chemical Engineering Perspective" |
| 11:50 am - 12:30 pm | Speaker 3: Prof. Anand B. Rao Head, Centre of Technology Alternatives for Rural Areas IIT Mumbai, India Topic:- Relevance of CCS in India |
| 12:30 pm - 12:40 pm | Vote of Thanks (Dr. Ashish Unnarkat) |

***Schedule is in IST**

The top screenshot shows a Zoom meeting interface with a grid of participants. The main screen displays the event poster for the Shastri Indo-Canadian Research Lecture series.

 The bottom screenshot shows a presentation slide from the University of Calgary. The slide title is "Taking New Solid CO₂ Sorbents from Discovery to Commercialization" by George Shimizu. It is part of the Shastri Indo-Canadian Research Series on Emerging Trends in CO₂ Capture and Green Tech, held on March 5, 2021. A small video feed of Prof. George Shimizu is visible in the bottom right corner of the slide.



Indo Canadian Research Conclave on sustainable approaches to carbon capture sequestration and utilization (ICRC-CCSU)

Dr. Ashish Unnarkat (Convener), Dr. Manan Shah and Dr. Swapnil Dharaskar (Co-Conveners) organized the two days Bi-national International conference – **Indo-Canadian Research Conclave on Sustainable Approaches to Carbon Capture Sequestration and Utilization (ICRC-CCSU)** supported by **Shastri Indo-Canadian Institute (SICI)** under the flagship of Golden Jubilee Conference and Lecture Series Grant (GJCLSG) on 12-13 March, 2021. The media partners were DEW Journal and Petrowatch.com.

Energy has been and will remain the key ingredient required for economic development of any Nation. However, current statistical data of emissions poses a big question mark which propels us to put more emphasis on searching and building clean and green technologies for reducing environmental impact. Indian economy is on high tide towards and rapid growth with initiatives like Make in India and Atma Nirbhar Bharat from Govt. of India. India stands as planets third largest emitter of greenhouse gas (GHG) emissions. The conference was in line to the broader objective of CO₂ Research Group at PDEU and was intended to explore on the solutions, technologies, and breakthrough research for CO₂ mitigation covering the width and depth of the theme Carbon Capture Sequestration and Utilization (CCSU).

The conference was conducted in Hybrid Mode (Online as well as Offline mode). Participants from PDEU were present in offline mode and participants from other locations were present in online mode. Conference focused on the themes of (a) CO₂ Capture and Sequestration (b) CO₂ Conversion to Chemicals and Fuels (c) CCSU Challenges & Opportunities (d) CCSU Life Cycle Assessment (e) CCSU Latest Technologies Development (f) CCSU Emerging technologies

The conference saw distinguished speakers from Indian and Canadian Universities and Young researchers from reputed institutes like IITs, NITs and CSIR Labs (NEERI, CSM-CRI) across the country working in the domain of CCSU. The conference had 4 sessions with 8 distinguished talks and a 4 sessions by young researchers. ICRC-CCSU team was able to fetch 500+ registrations and a turnaround of 150+ participants round the clock on online and offline platform. The conference saw participation from more than 10+ Industry delegates during the event. The conference saw around 50+ faculties and students available at PDEU Auditorium attending the conference.

The two day conference ICRC-CCSU was indeed full on knowledge sharing and learning for all the participants. The conference witnessed the eminent presence of Prof S. Sundar Manoharan (Director General PDEU), Prof RK Vij, (Director SPT), Sunil Khanna (Director SoT), and Director SICI Dr Prachi Kaul – All of them has wonderfully set the tone of the conference at the inaugural. Unanimously thrusting and supporting the very intention of the conference on the topic of global interest that is Carbon Capture Sequestration and Utilization.

The conference was able to assimilate the knowledge, opened the newer avenues in the domain of Carbon Capture Sequestration and Utilization. The conference boosted the vision of PDEU and its CO₂ Research Group which opened the path for wider connect and collaborations. The conference was able to provide platform for all the leading researchers, academicians and industry professionals working on CCSU to share, learn and collaborate. It was an exciting journey that paved lot of research directions to the budding engineers. The conference ended with the high note of delivering to the expectations of all and committed to come out with critical solutions to the carbon problem with the support and initiatives at PDEU.

Event Board: International Conference (ICRC-CCSU)



Student Board : Publications

| S. No | Title and Details | Name of Student and Guide | Month and Year |
|-------|---|--|----------------------|
| 1. | An environment friendly approach for heavy metal removal from industrial wastewater using chitosan based biosorbent: A review” Sustainable Energy Technologies and Assessments, 43, 100951. | Yashvi Sheth and Dr. Swapnil Dharaskar | February, 2021 |
| 2. | Comparison of optimization results of applied RSM methods for transesterification of waste cooking oil using microwave assisted method catalyzed by CaO, nd International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy (MMCITRE) PDEU | Nirav Prajapati and Dr. Pravin Kodgire | 6-8 February, 2021 |
| 3. | Analysis of RSM method for optimization of Ultrasound-assisted KOH catalyzed biodiesel production from waste cotton-seed cooking oil', 2nd International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy (MMCITRE) PDEU | Suvik Oza and Dr. Pravin Kodgire | 6-8 February, 2021 |
| 4. | Comparison of optimization results of applied RSM based Full Factorial Design (FFD) and Central Composite Design (CCD) methods for biodiesel production from waste cooking oil using microwave assisted method catalyzed by CaO, National conference 'New Frontiers in Energy and Environmental Sustainability 20201' NFEES2021, PDEU | Nirav Prajapati and Dr. Pravin Kodgire | 27-28 February, 2021 |
| 5. | Analysis of RSM based BBD and CCD techniques applied for biodiesel production from waste cotton-seed cooking oil via ultrasound method', National conference 'New Frontiers in Energy and Environmental Sustainability (NFEES-2021), PDEU | Suvik Oza and Dr. Pravin Kodgire | 27-28 February, 2021 |



Student Board : Conference Papers

| S. No | Title and Details | Name of Student and Guide | Month and Year |
|-------|--|---|----------------------|
| 6. | An Ultrasound-Assisted Process for the Optimization of Biodiesel Production from Waste Cottonseed Cooking Oil Using Response Surface Methodology', International Conference on – Green Technologies for Sustainable Development 2021, Dharmsinh Desai University (DDU), Nadiad | Suvik Oza , Nirav Prajapati and Dr. Pravin Kodgire | 09-11 March, 2021 |
| 7. | Comparison of RSM based optimization techniques for bio-diesel production using the microwave-assisted method', Advances in Thermal Fluid Engineering conference , PDEU | Suvik Oza , Nirav Prajapati and Dr. Pravin Kodgire | 25-26 March, 2021 |
| 8. | Photocatalytic Dye Degradation using Nickel Ferrite Spinel and its Nano Composite", New Frontiers in Energy and Environment Sustainability (NFEES 2021) | Parth Shah, Kartik Joshi , Femina Patel, Dr. Manan Shah and Dr. Ashish Unnarkat | 27-28 February, 2021 |
| 9. | A review on application Phase Change Materials for Building Energy Conservation, New Frontiers in Energy and Environmental Sustainability (NFEES-2021) | Abhishek Kagalkar - 19M-CH001 and Dr. Rajat Saxena | 27-28 February, 2021 |
| 10. | A Review on Medium Temperature Application of Nano Enhanced Phase Change Materials (NEPCMs), New Frontiers in Energy and Environmental Sustainability (NFEES-2021) | Hamzah Salah Abdul Menem - 19MCH019 and Dr. Rajat Saxena | 27-28 February, 2021 |
| 11. | Effectiveness of triphenyl methyl phosphonium tosylate as a catalyst and extractant in ultrasound -assisted oxidative desulfurization of fuel, New Frontiers in Energy and Environmental Sustainability (NFEES-2021) (Best Presentation Award) | Ms. Komal Desai and Dr. Swapnil Dharaskar | 27-28 February, 2021 |



Students Board : Achievements

Mrs. Anvita Sharma successfully defended her **Ph.D. thesis** on “Studies on Biodiesel Production from Waste Cooking Oil using Process Intensification Techniques” on 10th March, 2021 under the supervision of Dr Pravin Kodgire and Prof Surendra Singh Kachhwaha. Heartiest Congratulation to Dr. Anvita and her supervisors.



HEARTIEST CONGRATULATIONS FOR QUALIFYING - GATE 2021

Neilansh Saxena



AIR 74

Kushal Shah



AIR 119

Zeel Asti



AIR 207

Tanmay Sanghvi



AIR 416

Brijesh Khunt



AIR 973

Chirag Shir



AIR 1043

Avani Makhesana



AIR 1135

Vinod Suthar



AIR 1135

Shreya Singh



AIR 1135

Chahat Jain



AIR 1498

Shrushti Barvaliya



AIR 2056

| | | | |
|----------|----------------|-----|--------|
| 17BCH027 | Nikunj Agarwal | CAT | 99.09% |
|----------|----------------|-----|--------|

Mr. Nilaksh Kakadiya got admission in University of the West of Scotland for Project Management M.Sc. Programme for term January 2021 to May 2022.

Placements

Ms. Jalpa Gajera got Selected in Infosys.

Mr. Keval Makwana got selected in Unschool Learning.

