



BITS Pilani

Pilani Campus



DEPARTMENT OF CHEMICAL ENGINEERING



FACEBOOK: <https://www.facebook.com/chemengbitspilani/pilani-campus>

LINKEDIN : <https://www.linkedin.com/company/chemical-engineering-department-bits-pilani-pilani-campus/>

innovate

achieve

lead

Department at a Glance

The Department of Chemical Engineering at BITS-Pilani, Pilani Campus is one of the premier departments in the country that provides a unique educational and research environment. The broad vision of the Department of Chemical Engineering is to excel in teaching/learning, innovative research and industry engagement and to disseminate the same in order to become a world leader in chemical engineering and allied interdisciplinary areas. The primary mission of Department of Chemical Engineering is to enable the students to imbibe technical and analytical skills through the culture of logical and critical thinking. The other goal is to establish modern infrastructure and conducive research environment for carrying out academic and sponsored research.



Vision of the Department

To excel in teaching/learning, innovative research and industry engagement and to disseminate the same in order to become a world leader in chemical engineering and allied interdisciplinary areas.

Mission of the Department

- To impart quality education and training in chemical engineering and associated fields to enable the students to imbibe technical and analytical skills through the culture of logical and critical thinking.
- To inculcate sense of social and environmental responsibility among students which inspires them to apply chemical engineering principles in solving industrial problems through sustainable and eco-friendly technologies for the betterment of industry and nation.
- To establish modern infrastructure and conducive research environment for carrying out academic and sponsored research.
- To foster spirit of excellence and professional leadership in students and faculty members through exposure to leading academic institutions, research organizations and external experts.
- To generate suitable opportunities for sustained interaction and collaboration with academia and industry.

Message from the Head of Department



Dr. Pratik N. Sheth

Professor & HoD

Established in 1964, the Chemical Engineering Department of BITS Pilani, Pilani campus surpassed more than 58 years. We are in a mature state where the main areas of academics, teaching, research, and industry engagement, are explored and developed. The expertise of the faculty members, who graduated from renowned and prime institutes, spans the whole spectrum of the multidisciplinary nature of Chemical Engineering and allied subjects. At BITS Pilani, students are exposed to a high standard of teaching, are involved in state-of-the-art research endeavors work in the industry through Practice School and get a placement in relevant organizations. Our aim is to inculcate social and environmental responsibility and well-being in young minds while we train them to be future leaders in their chosen

fields of interest, be it corporate, research, core or analytics. Chemical Engineering Department has been ranked in the top 301-350 by QS World University Subject Rankings 2022 and in the top 11 in India.

We strive to excel and achieve more year after year and look forward to improving our footprints. We invite and encourage enthusiastic, hard-working students with strong technical backgrounds and rational critical thinking to be part of our legacy and pursue a doctoral degree via a full-time or part-time program. We provide modern infrastructure, conducive research environment, and proper guidance for full-time students. The part-time program involves working professionals passionate about learning, growing, and enhancing career opportunities. Together we can build the future.

Academic Programmes

B.E. Chemical Engineering

Admission is purely merit basis, according to the score obtained in BITS Admission Test (BITSAT). Students, who are appearing for 12th or have passed 12th Examination the very previous year only are eligible to appear in the BITSAT. Additionally, students must fulfill the requirement of minimum 75% PCM marks in 12th examination. There are approximately 90 Experimental Setups, Covering Process Control, Heat Transfer, Mass Transfer, Fluid Mechanics, Reaction Engineering, Mechanical Operations, Engineering Chemistry, etc., as a part of the departmental under graduate teaching curriculum.

For more details: <http://www.bitsadmission.com/>



WILP (Work Integrated Learning Program)



It is a continuing technical education programs designed to create a smarter future ready workforce for the organizations. Since 1979, WILP has helped corporate leaders to connect their learning investments with their business. Additionally, this program significantly contributes toward productivity enhancement, employee retention and succession planning in organizations. There are more than 30 programmes, 90 corporate partners, and 1000 faculty members connected in this program, while 20000 working professional are enrolled currently and 70000 working professional graduated out so far.

For more details: <https://bits-pilani-wilp.ac.in/programmes-for-organisation.php>

M.E. Chemical Engineering

There are two routes of admission; one in through GATE and other is through HD test. This higher degree program of department is research centric and prepares the students for a productive research/professional career. This degree provides salient features such as intensive research training under one-year dissertation option, rigorous industrial exposure under six-month practice school option, hands on experience in the state of the art analytical instrumentation and software facilities, unique research methodology training by the faculty members, and thorough teaching training under experienced faculty members. There is a Provision for vertical transfer from ME to PhD Program.

For more details: <http://www.bitsadmission.com/>



Doctor of Philosophy (Ph.D.)

The conventional, research-based doctoral degree programme provides a thorough grounding in the fundamental principles of Chemical Engineering, inter-disciplines, and related areas, as well as an intensive research experience. There are two types of Ph.D. options as follows:

Full-time program: For the individuals who would like to pursue Ph.D. in-house, residing on campus. These students are eligible to be considered for a monthly Institute fellowship of Rs. 28,000 or Rs. 31,000 (based on qualification) at the time of admission. The selected candidates will be required to participate in teaching and other developmental activities of the institute.

Part-time program: For working professionals to provide basic facilities and environment for research. Applications for Ph.D. programme are invited

twice in a year and candidates are selected based on the merit.

For more details: <http://www.bitsadmission.com/>



Research Areas



List of Ongoing Research Projects

- Dr. Somak Chatterjee, Dr. Surajit Pande, Use of distillery and domestic wastewater to generate hydrogen and development of a prototype thereof - INR 16 Lakhs , 2023 , Lightatom Electrolyzer.
- Dr. Somak Chatterjee, Dr. K. C. Etika, Design and development of inline sensor for water contamination detection - INR 26.67 Lakhs (35000 USD) , 2020-2023, MKS Vision USA.
- Dr. Somak Chatterjee, Dr. Banasri Roy, Development of different grades of PVDF hollow fiber membranes for development of in-house water filtration systems. - INR 8 Lakhs , 2022-2023, Gujarat Fluorochemicals Ltd. (Industrial Consultancy)
- Dr. Somak Chatterjee, Application of co-axial electrospun novel composite nanofiber membranes towards specific and efficient removal of arsenic, lead, and fluoride from groundwater - INR 27.489Lakhs , 2021-2023, SRG Scheme DST-SERB .
- Dr. K.C. Etika, Test method development for formaldehyde contamination detection in artificial leather samples - INR 5.03 Lakhs, 2022-2023, M/S Mayur Uniquoters Ltd.
- Dr.Sarbani Ghosh, Hybrid Gas Sensors Based on p-Type/n-Type Conducting Polymers- INR 32.989Lakhs, 2021-2023, SRG Scheme DST-SERB .
- Prof. Banasri Roy, Study of the Conversion of Agricultural Residues to Catalysts for Renewable Energy Source Production - INR 38.10 Lakhs, 2021-2024, SERB.
- Prof. Abhishek Dhoble (IIT-BHU) ,Dr. Pratik N Sheth (BITS-Pilani) , Characterization of indigenous cow's dung and urine for scientific advancement and development of utility items - INR 31.04 Lakhs, 2021-2023, DST SEED under SU-TRA-PIC Scheme.
- Dr. Mohit Garg., Molecular modeling of cellulose recycling and regeneration - INR 5.5 Lakhs, 2022-2024, ACRG, BITS Pilani.
- Dr. Mohit Garg., Biodegradable, flexible and printable ambipolar organic field-effect transistors based on cellulose and naphthalenediimide co-polymer - INR 32.49 Lakhs, 2022-2024, SRG Scheme DST-SERB.
- Dr. Srinivas Appari, Prevention of Hazardous Field-Firing of Bagasse and Its Sustainable Utilization as a Raw Material in An Innovative Industrial Process - INR 28.79 Lakhs, 2019 - 2023, MHRD - SPARK

A detailed overview of research projects funded by the institute as well as external grants from industry and several government funding agencies are listed in the following link:

<https://www.bits-pilani.ac.in/pilani/chemicalengineering/SponsoredResearchProjects>

Research Infrastructure

Departmental research activities reflect the interdisciplinary nature of modern Chemical Engineering. Research is organized in numerous themes that cover the contribution to grand challenges in the arena of Chemical Engineering. Department is in sync today's trend with state-of-the-art facilities in terms of having best of analytical facilities to carry out good research work and best of computational facilities.

Research Facilities

Analytical Lab

Atomic Absorption Spectrophotometer (AAS)
Digital Scanning Calorimeter (DSC)
Fourier Transform Infrared Spectrometer (FTIR)
UV-VI Spectrometer Gas Chromatograph (GC)
High Pressure Liquid Chromatograph (HPLC)
Thermal Gravimetric Analyzer (TGA)
DT/TGA
Surface Area Analyzer
pH Ion Meter
Automatic Potentiometric Titrator
Rota Vapor
Digital Viscometer
Volumetric Analyzer (VA)
Micro Centrifuge
Foam Analyzer
Optical Microscope
Digital Gas Flow Meter
Auto Vacuum Desiccator
Ultrasonic Liquid Processor
Freeze Dryer (Lifolizer)
Ion Meter (pH/ORP/ISE/Chloride)/Fluoride
Spin Coating Machine
Contact Angle Meter
Mass Flow Meter

Environment Lab

BOD Incubator
Oven (Hot Air Oven)
Millipore Water Purification System
CO₂ Analyzer
Laminar Hood Chamber
Water Bath Shaker
Ultrapure (Type-1) Water Unit
Hot Plate Magnetic Stirrer
Distilled Water Setup
Double Stage Colony Counter
Autoclave Vertical
Microwave Oven
Deep Freezer
Fermenter Unit
Vacuum Oven
Flue Gas Analyzer
Vacuum Degassing Chamber
REMI Centrifuge

Computer Aided Design Lab

MATLAB
ASPEN ONE Package
COMSOL Multiphysics 5.6
ANSYS FLUENT 22.0

Eng. Chemistry Lab

UHP Autoclave
Dip coating Setup
Ultrasonic Cleaner
Vortex Shaker
Delux Photo Colorimeter
Corona Treater
Digital Potentiometer
Muffle Furnace with PID Controller
Membrane Casting Unit
Stability Chamber
Hollow Fiber Membrane Preparation
Setup
Hollow Fiber Cross Flow Experimentation Setup HFCES

Research Setup Lab

Multistage Fluidized Bed
Distillation Column
Gasifier
Macro-TGA Pyrolysis Setup
Tube Furnace
Muffle Furnace Reactor
HPLC Pump
Recirculating Fluidized Bed
Reversed Jet Flow Reactor
Packed Bed Column

Department Facilities Link : <https://www.bits-pilani.ac.in/pilani/chemicalengineering/Facilities>

Faculty



Dr. Pratik N. Sheth

Professor and HoD

Ph.D.: BITS Pilani, Pilani Campus, India
M.E : BITS Pilani, Pilani Campus, India

RESEARCH INTERESTS:

- Thermochemical Conversion of Biomass
- Modeling & Simulation
- Pyrolysis
- Gasification

SELECTED PUBLICATIONS:

- Sharma, P., Sheth, P.N. and Mohapatra, B.N. "Co-processing of petcoke and producer gas obtained from RDF gasification in a white cement plant: A techno-economic analysis", Energy, Vol. 265, pp. 126248, 2022.
- Pandey, B., P.N. Sheth and Prajapati, Y.K. "Air-CO₂ and oxygen-enriched air-CO₂ biomass gasification in an autothermal downdraft gasifier: Experimental studies", Energy Conversion and Management, Vol. 270, pp.116216, 2022.
- Pandey, B., Prajapati, Y.K., and Sheth, P.N. "CFD analysis of the downdraft gasifier using species-transport and discrete phase model", Fuel, Vol. 328, 125302, 2022.

Google Scholar Page : <https://scholar.google.com/citations?user=S6Im2SYAAAAJ&hl=en&oi=ao>

Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/pratik/profile>



Dr. Banasri Roy

Professor

Ph.D. : Colorado School of Mines, USA
M.Tech.: IIT Kanpur, India

RESEARCH INTERESTS:

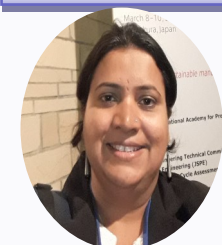
- Heterogeneous Catalyst
- Biomaterials
- Renewable Energy Materials
- Nanotechnology

SELECTED PUBLICATIONS:

- Priyadarshini. I, A. Chowdhury, A. Rao, B. Roy, P. Chattopadhyay, "Assessment of bimetallic Zn/Fe₀ nanoparticles stabilized Tween-80 and rhamnolipid foams for the remediation of diesel contaminated clay soil", J Environ Manage 325, 116596 (2023).
- RamakrishnaChava, Anil Kumar Seriyala, Bhaskar Anurag Varma, Karthiek Yeluvu, Banasri Roy, Srinivas Appari*, Investigation of Ba doping in A-site deficient Perovskite Ni-exsolved Catalysts for Biogas Dry Reforming, International Journal of Hydrogen Energy, 2023 (accepted)
- Anil S, Indrajaya S, Singh R, Appari S, Roy B, "A review on ethanol steam reforming for hydrogen production over Ni/Al₂O₃ and Ni/CeO₂ based catalyst powders", Int J Hydrogen Energ 47, 8177–213 (2022).

Google Scholar Page : <https://scholar.google.com/citations?user=HF4Inh8AAAAJ&hl=en>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/broy/profile>



Dr. Smita Raghuvanshi

Professor

Ph.D.: BITS Pilani, Pilani Campus, India
M.E : BITS Pilani, Pilani Campus, India

RESEARCH INTERESTS:

- Process development for Bio-mitigation of flue gases
- Anaerobic digestion of food waste
- Life cycle Assessment processes

SELECTED PUBLICATIONS:

- Anand A, Raghuvanshi S, Gupta S, Sustainable approach for simultaneously reducing CO₂ and NO from synthetic industrial flue gases using bacterial consortium and domestic wastewater in a suspended glass bioreactor, Biomass Conversion and Biorefinery, 2023 Feb 25:1-6
- Barla RJ, Raghuvanshi S, Gupta S. Process integration for the biodiesel production from biomitigation of flue gases. In Waste and Biodiesel 2022 Jan 1 (pp. 191-215). Elsevier.
- Akshya Khandelwal, Abhishek Anand, Smita Raghuvanshi, Suresh Gupta, "Integrated approach for microbial carbon dioxide (CO₂) fixation process and wastewater treatment for the production of hydrocarbons: Experimental studies", Journal of Environmental Chemical Engineering, 105-116, 9, 2021.

Google Scholar Page : <https://scholar.google.com/citations?user=EtO5v14AAAAJ&hl=en&oi=ao>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/smita/profile>



Dr. Suresh Gupta

Professor

Ph.D. : BITS Pilani, Pilani Campus

M.Tech.: IIT Kanpur, India

RESEARCH INTERESTS:

- Environmental Engineering
- Separation Processes
- Modeling and Simulation
- Computational Transport Phenomena
- Environmental Management Systems(LCA, EIA)
- Energy Integration

SELECTED PUBLICATIONS:

- Panwar J, Gupta S. One-pot synthesis of metal oxide-clay composite for the evaluation of dye removal studies: Taguchi optimization of parameters and environmental toxicity studies. *Environmental Science and Pollution Research*. 2022 Oct 25:1-21.
- Kumar A, Yeshwanth M, Kumar K, Panwar J, Gupta S. Functionalized Cu-based metal oxide nanoparticles with enhanced Cd²⁺ adsorption capacity and their ecotoxicity assessment by molecular docking. *Journal of Environmental Management*. 2022 Apr 1;307:114523.
- Gaur S, Gupta S, Jain A. Characterization and oil recovery application of biosurfactant produced during bioremediation of waste engine oil by strain *Pseudomonas aeruginosa* gi| KP 16392| isolated from Sambhar salt lake. *Bioremediation Journal*. 2021 Oct 2;25(4):308-25.

Google Scholar Page : <https://scholar.google.com/citations?user=tqwaWI8AAAAJ&hl=en&oi=ao>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/sureshg/profile>



Dr. Arvind Kumar Sharma

Associate Professor

Ph.D. : IIT Madras, India

M.S. : IIT Madras, India

RESEARCH INTERESTS:

- Water and wastewater Treatment
- Fluidization
- Bioreactor Analysis & Design
- Modelling & Simulation

SELECTED PUBLICATIONS:

- Yogesh Dadasaheb Bhujbal and Arvind Kumar Sharma, Multistage Liquid-Solid Fluidized Bed: Hydrodynamics and Mass Transfer Aspects, CHEMCON-2021(ON) sustainable utilization of resources for chemical and Mineral Sector, Dec 26-30, 2021 ,Bhubaneswar, India
- Ankit Pahwa and Arvind Kumar Sharma, Optimization of Multi-Stage Fluidized Bed using Amine Sorbent as an Alternative to Alkanol-Amine for Deep Sour Gas Removal, 36th National Convention of Chemical Engineers | National Conference on Frontier Technologies for 21st Century's Process Industries (online mode), March 6-7, 2021, The Institution of Engineers (India) [Chemical Engineering Division] Durgapur, India.
- Devendra Purbia, Akshya Khandelwal, Amit Kumar and Arvind Kumar Sharma, Graphene-water nanofluid in heat exchanger: Mathematical modelling, simulation and economic evaluation, *International Communications in Heat and Mass Transfer*, 2019, Volume 108,104327.

Google Scholar Page: <https://scholar.google.com/citations?hl=en&user=DtdwBUwAAAAJ>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/arvinds/Profile>



Dr. Hare Krishna Mohanta

Associate Professor

Ph.D. : BITS Pilani, Pilani Campus

M.Tech.: IIT Kanpur, India

RESEARCH INTERESTS:

- Process Monitoring and Control
- Design of soft sensors
- Machine learning and data analytics
- Modelling and Simulation
- Fuel cell materials

SELECTED PUBLICATIONS:

- Vijayan, Venkata S., Hare Krishna Mohanta, and Ajaya Kumar Pani. "Adaptive non-linear soft sensor for quality monitoring in refineries using Just-in-Time Learning—Generalized regression neural network approach." *Applied Soft Computing* 119 (2022): 108546,ISSN 1568-4946
- Vijayan, Venkata S., Hare Krishna Mohanta, and Ajaya Kumar Pani. "Support vector regression modeling in recursive just-in-time learning framework for adaptive soft sensing of naphtha boiling point in crude distillation unit." *Petroleum Science* 18, no. 4 (2021): 1230-1239. ISSN 1995-8226
- Singh, H., Pani, A. K., & Mohanta, H. K. (2019). Quality monitoring in petroleum refinery with regression neural network: Improving prediction accuracy with appropriate design of training set. *Measurement*, 134, 698-709.

Google Scholar Page : <https://scholar.google.com/citations?user=cxaKC3MAAAAAJ&hl=en&oi=ao>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/harekrishna/profile>



Dr. Pradipta Chattopadhyay

Associate Professor

Ph.D. : University of Tulsa, USA

M.S. : Texas A&M University-Kingsville, USA

RESEARCH INTERESTS:

- Foam property evaluation
- Modeling and characterization
- Aqueous foam stability

SELECTED PUBLICATIONS:

- Priyadarshini, I, A. Chowdhury, A. Rao, B. Roy, P. Chattopadhyay, "Assessment of bimetallic Zn/Fe₀ nanoparticles stabilized Tween-80 and rhamnolipid foams for the remediation of diesel contaminated clay soil", J Environ Manage 325, 116596 (2023).
- Gaur S, Sahani A, Chattopadhyay P, Gupta S, Jain A. Remediation of waste engine oil contaminated soil using rhamnolipid based detergent formulation. Materials Today: Proceedings. 2022 Sep 9.
- Karthick A, Chattopadhyay P. Optimum conditions of zero-valent iron nanoparticle stabilized foam application for diesel-contaminated soil remediation involving three major soil types. Environmental Monitoring and Assessment. 2021 Sep;193(9):1-5.

Google Scholar Page : <https://scholar.google.com/citations?user=AQ4sbhsAAAAJ&hl=en&oi=ao>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/pradipta/profile>



Dr. Ajaya Kumar Pani

Assistant Professor

Ph.D. : BITS Pilani, Pilani Campus, India

M.Tech.: IIT BHU, India

RESEARCH INTERESTS:

- Process modelling, simulation & control
- Industrial fault detection and diagnosis
- Artificial Intelligence
- Machine Learning

SELECTED PUBLICATIONS:

- Palla, G. L. P., & Pani, A. K. (2023). Independent component analysis application for fault detection in process industries: Literature review and an application case study for fault detection in multiphase flow systems. Measurement, 112504.
- Arpitha, V., & Pani, A. K. (2022). Machine Learning Approaches for Fault Detection in Semiconductor Manufacturing Process: A Critical Review of Recent Applications and Future Perspectives. Chemical and Biochemical Engineering Quarterly, 36(1), 1-16.
- Venkata Vijayan, Mohanta, Hare K., and Ajaya Kumar Pani. "Adaptive non-linear soft sensor for quality monitoring in refineries using Just-in-Time Learning—Generalized regression neural network approach." Applied Soft Computing 119 (2022): 108546.

Google Scholar Page : <https://scholar.google.co.in/citations?user=T67UsvkAAAAJ&hl=en>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/akpani/profile>



Dr. Amit Jain

Assistant Professor

Ph.D. : BITS Pilani, Pilani Campus, India

M.E. : BITS Pilani, Pilani Campus, India

RESEARCH INTERESTS:

- Environmental Engineering
- Biochemical Engineering
- Process system Engineering

SELECTED PUBLICATIONS:

- Shailee Gaur, Suresh Gupta, & Amit Jain (2023), 'Production, characterization, and kinetic modeling of biosurfactant synthesis by Pseudomonas aeruginosa gi [KP 163922]: a mechanism perspective', World Journal of Microbiology and Biotechnology, 39, 178.
- Shailee Gaur, Aditya Sahani, Pradipta Chattopadhyay, Suresh Gupta & Amit Jain (2023), 'Remediation of Waste Engine Oil Contaminated Soil Using Rhamnolipid based Detergent Formulation', Materials Today: Proceedings, 77:1, 31-38, DOI: <https://doi.org/10.1016/j.matpr.2022.08.452>.
- Shailee Gaur, Suresh Gupta & Amit Jain (2021), 'Characterization and oil recovery application of biosurfactant produced during bioremediation of waste engine oil by strain Pseufomonas aeruginosagi [KP 163922] isolated from sambhar salt lake,

Google Scholar Page : https://scholar.google.com/citations?user=D5QW-_cAAAAJ&hl=en

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/amitjain/profile>



Dr. Bhanu Vardhan Reddy Kuncharam

Assistant Professor

Post Doc : Worcester Polytechnic Institute, USA

PhD : Texas A&M university, Texas, USA

RESEARCH INTERESTS:

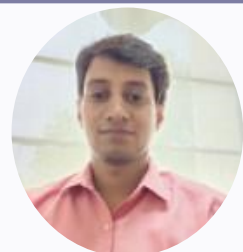
- Membrane Separations (Mixed Matrix Membranes, Catalytic Membranes)
- Computational Fluid Dynamics,
- Catalysis and Reactor Engineering

SELECTED PUBLICATIONS:

- Tanvidkar, P., Nayak, B., & Kuncharam, B.V.R. (2023). Study of dual Filler Mixed Matrix Membranes with acid-functionalized MWCNTs and Metal-Organic Framework (UiO-66-NH₂) in Cellulose Acetate for CO₂ Separation. Journal of Polymers and the Environment, 1-14.
- Tanvidkar, P., Jonnalagedda, A. and Kuncharam, B.V.R, (2023). Investigation of Cellulose Acetate and ZIF-8 mixed matrix membrane for CO₂ separation from model biogas. Environmental Technology, (just-accepted), pp.1-27
- Priya Tanvidkar, Aditya Jonnalagedda, Bhanu Vardhan Reddy Kuncharam, Fabrication and testing of Mixed Matrix Membranes of UiO-66-NH₂ in Cellulose Acetate for CO₂ separation from model biogas. Journal of Applied Polymer Science. 2022, e53264,

Google Scholar Page : <https://scholar.google.com/citations?user=kkBb-dMAAAAJ&hl=en>

Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/bhanuwardhan/profile>



Dr. Jay Pandey

Assistant Professor

Postdoc: University of Amsterdam,
Netherlands, 2016

PhD: Chemical Engineering, IIT Delhi, 2014

RESEARCH INTERESTS:

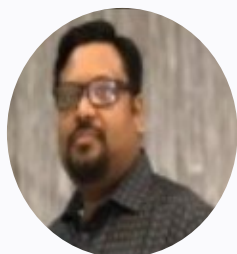
- Electro-chemical Engineering
- Advanced Materials (Membrane & electro-catalyst)
- Fuel cells & batteries
- Artificial Intelligence
- Predictive Modelling & simulations
- Electro-chemical kinetics & transport

SELECTED PUBLICATIONS:

- Jay Pandey, Advanced Functional Materials for PEM Fuel Cell: Building Clean & Sustainable Environment, ICON-NLSE-2022, Department of Chemical Engineering, BITS Pilani, April, 14-16, 2022.
- Pradeep Kumar, Ram Patel, Jay Pandey, Production and Stabilization of Biomass Derived Bio-Oil using Non-Catalytic Pyrolysis Approach, Journal of Energy Resources and Conversion 1 (2021) 1-17.
- Pradeep Kumar, Jay Pandey (2020), Studies on Biomass Torrefaction for Energy Densification of the Fuel, Advances in Energy Research, Springer Proceedings in Energy, 2, 195-200, 2020

Google Scholar Page : https://scholar.google.com/citations?hl=en&user=alCFRXMAAAAJ&view_op=list_works&sortby=pubdate

Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/jaypandey/Profile>



Dr. Krishna C. Etika

Assistant Professor

Post Doc. : IIT Madras, India

Ph. D. : Texas A&M university, Texas, USA

RESEARCH INTERESTS:

- Radar absorbing materials
- Super gas barrier coatings
- Intumescent coatings

SELECTED PUBLICATIONS:

- I.Dogra, B.R.Kumar, K.C. Etika, M.Chavali, A.S.Khalifa, A.F. Gharib, A.E Askary, "Environmentally friendly low-cost graphene oxide-cellulose nanocomposite filter for dye removal from water, Journal of King Saud University - Science, Volume 34, Issue 5, 2022
- R.K.Bheema, A.K. Ojha, A.V.P.Kumar and K.C.Etika*, "Synergistic influence of barium hexaferrite nanoparticles for enhancing the EMI shielding performance of GNP/epoxy nanocomposites", J Mater Sci 57, 8714–8726, 2022.
- R.K. Bheema and K.C. Etika "Facile One-Pot Hydrothermal Synthesis of Copper Nanowires and Their Impact on the EMI Shielding Capability of Epoxy Composites", Chem. Eng. Technol. 2022, 45, No. 3, 410–416.

Google Scholar Page : <https://scholar.google.com/citations?user=e4kYT2IAAAAJ&hl=en&oi=sra>

Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/etikakrishna/Profile>



Dr. Mohit Garg

Assistant Professor

Post Doc : Linköping University, Sweden
Ph.D: Chemical Engineering, IIT Kharagpur

RESEARCH INTERESTS:

- Molecular Dynamics Simulation
- Nano-scale Heat and mass transport
- Bio-electronics
- Biomolecular Engineering
- Electro-chemistry

SELECTED PUBLICATIONS:

- Mohit Garg, Mathieu Linares, Igor Zozoulenko, Theoretical rationalization of self-assembly of cellulose nanocrystals: effect of surface modification and counterions. *Biomacromolecules*, 21 (8), 3069–3080 2020
- Garg M, Zozoulenko I. Ion Diffusion through Nanocellulose Membranes: Molecular Dynamics Study. *ACS Applied Bio Materials*. 2021 Dec 8;4(12):8301-8.
- Garg M, Apostolopoulou-Kalkavoura V, Linares M, Kaldéus T, Malmström E, Bergström L, Zozoulenko I. Moisture uptake in nanocellulose: the effects of relative humidity, temperature and degree of crystallinity. *Cellulose*. 2021 Sep;28

Google Scholar Page : <https://scholar.google.com/citations?user=w213zU0AAAAJ&hl=en&oi=ao>
Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/mohitgarg/profile>



Dr. Priya C. Sande

Assistant Professor

Ph.D. : BITS Pilani, Pilani Campus, India
M.E. : BITS Pilani, Pilani Campus, India

RESEARCH INTERESTS:

- Computational Fluid Dynamics
- Multiphase flow
- Petroleum and Heavy Oils Testing and Processing

SELECTED PUBLICATIONS:

- Ajita Neogi, Hare K. Mohanta, Priya C. Sande, Particle image velocimetry investigations on multiphase flow in fluidized beds: A review, *Flow Measurement and Instrumentation*, Volume 89, 2023, 102309, ISSN 0955-5986
- Kannan J, Sande PC. Reinterpretation of the Geldart A powder classification based on Eulerian–Eulerian CFD simulation. *International Journal of Chemical Reactor Engineering*. 2022 Jul 18.
- Kashetti S, Anand GK, Sande PC. CFD Simulation of EOR Technique, by with Gas the Injection Nanoparticles of CO₂ by-LPG Using Along the Eulerian–Eulerian Approach. *Recent Trends in Fluid Dynamics Research: Select Proceedings of RTFDR 2021*. 2022:237.

Google Scholar Page : <https://scholar.google.com/citations?user=HFmkLYkAAAAJ&hl=en&oi=sra>
Faculty Profile Webpage: <https://universe.bits-pilani.ac.in/pilani/priya/Profile>



Dr. Sarbani Ghosh

Assistant Professor

Post Doc.: Linköping University, Sweden
Ph.D. : IIT Kharagpur, India

RESEARCH INTERESTS:

- Gas Adsorption and separation in nano-materials
- Material design for organic electronic devices
- Simulation techniques: DFT, MD, GCMC

SELECTED PUBLICATIONS:

- S. Ghosh, Y. Chen, X. Liu, I. V. Zozoulenko, M. Fahlman and S. Braun, Experimental and Theoretical Investigation into the Polar- on Structures of K-doped Polyfluorene Films, *The Journal of Physical Chemistry*, 125(1), (2021), pp. 937–945.
- S. Ghosh and I. Zozoulenko, Effect of Substrate on Structural Phase Transition in a Conducting Polymer during Ion Injection and Water Intake: A View from a Computational Microscope, *ACS Applied Electronic Materials*, 2(12), (2020), pp. 4034–4041.
- M. Moser, T. C. Hidalgo, J. Surgailis, J. Gladisch, S. Ghosh et al., Side Chain Redistribution as a Strategy to Boost Organic Electrochemical Transistor Performance and Stability, *Advanced Materials*, 32, (2020), p. 2002748

Google Scholar Page : <https://scholar.google.co.in/citations?user=gZEIDJIAAAAJ&hl=en>
Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/sarbanighosh/profile>



Dr. Somak Chatterjee

Assistant Professor

Ph.D. : IIT Kharagpur, India

M.Tech.: IIT Kharagpur, India

RESEARCH INTERESTS:

- Filtration
- Adsorption
- Sensors
- Specialized surface
- Modelling of flow through Porous media
- Biocidal Extraction

SELECTED PUBLICATIONS:

- Mishra D, Singh SK, Adhikari A, Chatterjee S. Polyaniline and polypyrrole impregnated polyethersulfone based composite polymer beads for defluoridation application. Journal of Environmental Chemical Engineering. 2022 Oct 1;10(5):108283.
- Patel VB, Chatterjee S, Dhoble AS. A review on pectinase properties, application in juice clarification, and membranes as immobilization support. Journal of Food Science. 2022 Aug;87(8):3338-54.
- Chatterjee S, Etika K, Krause A, Hahn DL, Sahni H, inventors; Mks Vision LLC, assignee. System and method for detecting lead in water. United States patent US 11,371,978. 2022 Jun 28.

Google Scholar Page : <https://scholar.google.com/citations?user=6OfOUIwAAAAJ&hl=en&oi=ao>

Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/somakchatterjee/profile>



Dr. Srinivas Appari

Assistant Professor

Post Doc.: IMCE, Kyushu University, Japan.

Ph.D. : IIT Hyderabad, India

RESEARCH INTERESTS:

- Heterogeneous Catalysis
- Detailed Kinetic Modeling
- Renewable energy
- Machine Learning for Catalysis

SELECTED PUBLICATIONS:

- A. K. Seriyala, A. Rao, C. Leclerc, S. Appari, B. Roy, "Effects of metal loading and support modification on the low-temperature steam reforming of ethanol (LTSRE) over the Ni-Sn/CeO₂ catalysts", Int J Hydrogen Energ. <https://doi.org/10.1016/j.ijhydene.2023.01.039>
- Pawar V, Ponugoti PV, Janardhanan VM, Appari S. Experimental studies of catalyst deactivation due to carbon and sulphur during CO₂ reforming of CH₄ over Ni washcoated monolith in the presence of H₂S. The Canadian Journal of Chemical Engineering. 2022 Aug;100(8):1858-67.
- Shukla SS, Chava R, Appari S, Bahurudeen A, Kuncharam BV. Sustainable use of rice husk for the cleaner production of value-added products. Journal of Environmental Chemical Engineering. 2022 Feb 1;10(1):106899.

Google Scholar Page : <https://scholar.google.com/citations?user=B2FUYeAAAAAJ&hl=en>

Faculty Profile Webpage: <https://www.bits-pilani.ac.in/pilani/srinivasappari/profile>

Staff



Mr. Suresh Kumar Sharma
Operation Assistant



Mr. Jangvir
Technical Assistant



Mr. Kuldeep Kumar
Sr Technician



Mr. Ashok Saini
Maintenance Assistant



Mr. Jeevan Lal Verma
Junior Operation Assistant



Mr. Sunder Lal Harijan
Junior Operation Assistant

WAICEE

The department of chemical engineering conducts a Workshop on Analytical Instruments for Chemical and Environmental Engineers (WAICEE) is held biennially. The workshop provides a sound knowledge of the basic principles of analysis, an understanding of the instrumentation involved, and the opportunity to become familiar with practical techniques. The analytical instruments such as Gas Chromatography, High-Performance Liquid Chromatography, Ultraviolet-visible spectroscopy (UV-VIS Spectrophotometer), Atomic Absorption Spectrophotometer, Fourier Transform Infrared Spectrophotometer, Dynamic Foam Analyzer, Thermal Gravimetric Analyzer, X-Ray Diffraction, Gas Chromatography-Mass Spectrometry, Differential Scanning Calorimetry etc. would be covered. The workshop covers theoretical aspects like an introduction to instrumentation, operation, troubleshooting, calibration, method development, and limitations presented by eminent researchers from allied organizations. The sessions also consist of a practical demonstration on the sophisticated instruments mentioned above.

Professional memberships and Affiliations

Chemical Engineering Association

Chemical Engineering Association (ChEA) is the largest student body of chemical engineering department responsible for handling various affairs conducted by it throughout the year. The core committee for the Association is inducted every year from among the Freshers, who continue to be a part of it in the future. The Association is headed by a Prof-in-charge, while the student leaders are from the third year. The contributions of the first-yearites towards the Association are acknowledged and serve as a key basis for the selection of both - the team of Second Year Representatives and the Annual ChE Deptt. Awards presented to the meritorious students for curricular and extracurricular activities during the Farewell Ceremony. The Farewell Ceremony is conducted every semester at the end of the Second Semester. The Association apart from conducting the Farewell Ceremony every semester also conducts various guest lectures, seminars and talk shows by famous Academicians, Scholars, reputed Scientists and Eminent Industry Experts having humongous contributions in all facets of nation building.

Indian Institute of Chemical Engineers (IChE Pilani Capter)

Indian Institute of Chemical Engineers (IChE) Pilani Regional Center (PRC) actively engages students and faculty in chemical engineering and allied fields through various activities. IChE PRC conducts various seminars, workshops and invited lectures. IChE PRC also mentors Student Chapter which conducts various activities for engaging chemical engineering students. IChE PRC student chapter recently conducted: (a) The Chemicool Challenge was a trivia based on chemicals from everyday life which saw outstanding participation from all over the country, (b) Chem-e-chronicles is an ongoing series of informative interviews of faculty members and research scholars (both PhD and Master's students) which aims at creating awareness about research work and boosting research culture among the students, especially undergraduates.

American Institute of Chemical Engineers Students' Chapter

In older times, when the connection with other parts of world was not possible, many a times researchers ended up founding something which was already discovered in other part of world. It would have been so helpful if the researchers had a way of being in touch among themselves and collaborate to enhance the inventions. That exactly serves as the foundational belief of the American Institute of Chemical Engineers (AIChE), the purpose of connecting Chemical Engineering Professionals with a global network of intelligent, resourceful colleagues and their shared wisdom. We, the members of Aiche Bits Pilani aim to delve deeper into core Chemical Engineering and explore various aspects of chemical engineering while focusing on building formal, soft and teamwork skills. We want to create an atmosphere to encourage

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