

*of the chemical engineers ,for the chemical engineers ,
by the chemical engineers*



CHEMISIGHT

A QUARTELY CHEMICAL ENGINEERING NEWSLETTER

JULY-SEPTEMBER'22

Volume 1, Issue 2



Department of Chemical Engineering
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

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Don't **DOWNGRADE**
your **DREAM** just to fit your **REALITY**.
UPGRADE
your **CONVICTION** to match your **DESTINY**....

C

HEMISIGHT is again round the corner with a new theme this time- Is having a degree in Chemical Engineering worth enough to sustain the competitive world? From the teacups we use and takeout containers, to the jumble of sticky notes and f printer, and phone, chemical engineers have influenced every item.

Chemical engineers on a traditional career path may work in the oil and gas, basic or specialty chemicals, or pharmaceutical industries. But with an increase in demand of professionals who can excel in critical problem-solving and can work in multidisciplinary teams, chemical engineers these days are going through a myriad of career shifts from project management, where they are responsible for overseeing engineering project schedules and budget, to technical sales engineering where they have a hands-on role helping customers solve problems. Be it devising sustainable approaches for an environment friendly future or building startups, **Chemical Engineering is now a launchpad on a broader canvas to give air to ones' passion.**

This edition is embellished with some **wonderful writeups** giving more concrete justifications to the editorial article from **the nibs of our sophomores**. The department recently got an esteemed position void as our acclaimed faculty, **Dr. S N Saha** took his retirement from his prestigious work life and this edition wishes heartiest prayers for his upcoming endeavours. **The edition also congratulates the selected students and wishes them good luck to gain success in their work life.**

We wish our readers an exhilarating journey throughout the edition and send our warmest wishes!

Happy Reading!

-Team Chemisight

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FROM THE HOD'S DESK

Valuable words from the Head of Department

The department of Chemical Engineering at GGV always strives to inculcate the habit of introducing multitudes of opportunities that the students can count upon to track down their career path and the recent placement records have indeed justified them.



We are very pleased to roll out this second edition of Chemical Engineering News letter, "**Chemisight**". The team has worked very hard which culminated in the form of this edition . With this edition of CHEMISIGHT the department sought to stress upon the diversity of paths that the branch offers and the hope that the audience will embrace the diversity with a positive outlook.

I extend my wishes to the entire team for coming out with this valuable volume and anticipate a happy time for the readers! I wish they can resolve their struggle with "**Is chemical engineering worth enough?**" and deduce valuable insights after going through this edition.

Enjoy reading and do share your feedback about this issue of news letter.

Greetings

Stay with us and fly higher!

Dr. Raghwendra Singh Thakur

Head of Department

Chemical Engineering

OUR MARGDARSHAK

Humble farewell to one of the most acclaimed faculty of the department on his retirement

Dr. S.N. Saha is indeed a name echoing from the fundamentals of this institute owing to his unsurpassed contributions in bringing name and fame to the students and the institution with his acclaimed work experience of total **40** years. Dr. Saha worked in **BITS Pilani** for more than 13 yrs. as Lecturer and Asstt. Professor and served as the Professor, HoD of Chemical Engineering and later Principal at **Punjab Govt. Engg. College**. Dr. Saha has been working as the Professor of Chemical Engg. in the present **Guru Ghasidas University/Vishwavidyalaya**.



Dr. Samarendra Nath Saha

Dr. Saha has worked as the **Head of the Technical Institute** for some total of 8 years and as the Director of the present University Institute of Technology. He also served as the **Dean of the Faculty of Engg./School of Studies, Engg. & Tech. of the present University** for 8 years. Dr. Saha has guided 4 Lecturers including 1 Mechanical Engg. Lecturer of BITS Pilani for their Ph.D.. In his gigantic and esteemed work life Dr. Saha has published **73 research/technical papers** in various National/International journals/ Proceedings of National/ International seminars specializing in Fluidization Engg., Combustion Engg., and Industrial Pollution Control. Dr. Saha was awarded the **National award for his best research paper publication** in the year 1992 and has been acting as the Expert Member since last 14 years of **AICTE Approval Committee, Scrutiny Committee, Appellate Committee and National Board of Accreditation and UGC NAAC**.

The department thanks him for his endless patience, motivation, and wisdom and his earnest efforts for the betterment of not only the department but also the entire institute. His far-sighted vision is a treasure we will cherish and follow. **Mr. Saha took a retirement from his venearted workplace in the month of August** leaving a void in the institute which will never be refilled. We share our heartiest congratulations to them and wish him prayers and joy for his post-retirement life and endeavours.



OUR WORDSMITHS

Exploring the sphere of chemical engineering with their pens

PURSUING CHEMICAL ENGINEERING

Worthy or Not?

In this modern era where resources are limited, sustainable development has become an important aspect with which the engineers have to deal. Chemical Engineering being one of the most versatile and multi-disciplinary field has provided cutting edge solutions to most pressing problems of society. Problems ranging from basic water filtration to nuclear waste disposal, to efficient batteries and photovoltaic cells all are solved by chemical engineers.



Abhinav Kumar

Sophomore

The chemical engineers are an integral part of developing industries and economies. But even after such high demand the field itself remains underrated. Due to misconceptions and lack of information among students this field remains an unexplored treasure of opportunities.

Innovations in the field of green energy, improving plastic recycling via catalysts, nano-fertilizers developed in India, developing industries and newer technologies seems to keep this sector shining bright and flourishing for years.

But in order to stay ahead of competition students must develop soft skills while adapting and growing with newer technologies and tools like MATLAB, CHEMCAD.

“Choosing Chemical ENGG. is the best mistake one can do “

Top 10 Engineering Specialisations in India



REVOLUTIONING CHEMICAL ENGINEERING

Evolving Technologies in the sphere

A landmark in the development of chemical engineering was the publication in 1901 of the first textbook on the subject, by George E. Davis, a British chemical consultant. This concentrated on the design of plant items for specific operations. The R&D departments at traditional chemical and engineering companies are still inventing, developing, and commercializing new chemical processes and materials. With this feature, we go deep into five new technologies from established companies. In each of these case studies, big companies tackle important problems.



Pranjali Srivastava
Sophomore

1. MODIFYING AN OLD PLASTIC FOR A NEW

Few plastics have been around as long as cellulose acetate. The cellulose acetate maker Celanese traces its roots back to 1918 when Camille Dreyfus established the American Cellulose & Chemical Manufacturing Co. to produce an alternative to the highly flammable material celluloid.

2. PIONEERING A NEW RHODIUM-BASED ISONONYL ALCOHOL PROCESS

In the 1960s, separate teams in the US and UK began researching rhodium to replace cobalt as a hydroformylation catalyst. On June 1, Dow and JM announced the first licensee for a new rhodium-catalyzed process for making isononyl alcohol. Hydroformylation, or oxo synthesis, is the process of converting alkenes to aldehydes by adding a CHO group and hydrogen across the double bond. A subsequent hydrogenation step turns the aldehydes into alcohol.

3. MAKING POLYURETHANE RAW MATERIALS FROM OLD BOTTLES

Polyurethanes are exceptionally versatile. But the nature of polyurethanes—custom blends of molecules bound tightly and often irreversibly with cross-links—makes recycling them a challenge compared with thermoplastics like polyethylene terephthalate (PET) or polypropylene, which can be melted down again. Plastics producers have attempted to boost the sustainability of polyurethanes with greener inputs, such as polyols derived from soybean oil.

4. MAKING SANDALWOOD OIL WITHOUT SANDALWOOD TREES

Instead of relying on stressed and seasonal sandalwood trees, the BASF technique ferments its product from cornstarch-derived sugars using *Rhodobacter sphaeroides*. BASF says its fermentation process yields alpha and beta santalol in a ratio similar to what's in sandalwood oil. Isobionics Santalol “represents the heart note of sandalwood oil and makes it a close alternative to sandalwood oil”, is what the firm using this technique quote.

5. A PAINT THAT KILLS COVID-19. WITH Cu+1

Cu+1 is the active antimicrobial form of the element. The challenge that Corning's technology solved, Lahiri says, was keeping the copper in that oxidation state while also letting it get to the microbes. In April 2019, the firms published a paper in Nature Communications on their innovation, which they describe as an “alkali copper aluminoborophosphosilicate glass ceramic material that acts as a sustainable delivery system for Cu+1 ions.

KNOWING THE UNIVERSAL ENGINEERS

also known as the chemical engineers

As the global population grows to an estimated 9 billion by 2050, issues like energy generation, the management of health, water supply and food production will become more challenging. They are issues that chemical engineers are already looking at to find the next generation of sustainable solutions.

Chemical Engineers are known as UNIVERSAL ENGINEERS as they help in saving the environment, focus on sustainability and renewing energy resources. The demand for Chemical Engineering is comparatively less as compared to other leading branches.

FIELDS IN WHICH CHEMICAL ENGINEERING PLAY A PROMINENT ROLE :

Green in fashion:

Chemical Engineers are combining science and engineering with merchandising and design to bring consumers tangible, usable, wearable products that promote sustainability using bio-based regenerated fabrics.

Food Technology:

Certain groups have predicted that the world may experience widespread food shortages by 2050 and stood up for aid? Chemical Engineers! They came up with optimised methods to provide food for the growing population such as herbal fertilizers.

ROLE OF CHEMICAL ENGINEERS DURING GLOBAL PANDEMIC :

Apart from social distancing certain measures taken by Chemical Engineers to enhance the conditions are of:

• Development of advanced Masks:

Chemical engineers are working to develop a viral, filtration mask that will provide strong protection along with high breathability and comfort. The focus is on developing new nanoengineered membrane materials including different nano porous filter materials for protective fabrics, respirators, and rapid separation of biological particles from clinical samples.

• Medicines:

Chemical engineers are collaborating with virologists to help expedite SARS-cov2 antiviral drug screening by incorporating nano-vesicles into a high throughput screening process

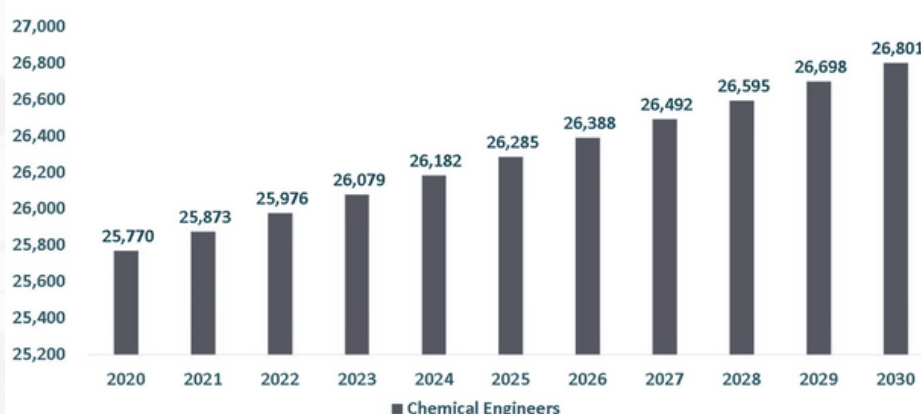
• Rapid diagnosis and Vaccine development:

Chemical engineers created a membrane-incorporated, viral-particles-separation device. This device could be used to separate virus particles or serum from 15 mL whole blood in 10 minutes without the need for a centrifuge or electricity. This can help in developing methods of rapid diagnosis and expediting vaccine development.



Penumakka Marium Shruthi
Sophomore

Chemical Engineer Employment Forecast



CHEMICAL ENGINEERS AND THEIR CHOICES

Let's enlist them!

George E. Davis, an English engineer, founded the field of Chemical Engineering in the late 19th Century. Whenever we are thinking about Chemical Engineering as career options, there are lots of questions that arise in our mind, job sustainability being one of the most prominent among them.

Chemical engineers conceive and design processes involved in chemical manufacturing. The main role of chemical engineers is to design and troubleshoot processes for the production of chemicals, fuels, foods, pharmaceuticals, and biologicals, to name just a few.

- It happens because of lack of awareness. The work of a Chemical engineer requires deep knowledge of Physics, Chemistry, and Mathematics. It relies on Computer-aided design (CAD) systems to create chemical plants and equipment.
- As a student we just consider CSE, and IT branches to be related to technical fields. However, there are various fields and scopes in this branch. For example, technological innovation through mass production, product quality control, petroleum refining plastics, batteries, agricultural chemicals (fertilizers, pest control, and weed control), explosives, etc.
- Nanomaterials and pharmaceuticals are some of the fields where as chemical engineers, we can make our career.
- During Covid-19 Pandemic, Chemical Engineer played an important role to recover from the pandemic by creating Vaccines.
- According to the Bureau of Labor Statistics (BLS), employment of Chemical engineers is projected to grow 14% from 2021 to 2031. This is much faster than the average for all occupations. About 2000 openings are projected each year and it held approximately 26,900 jobs in 2021. Its services depend largely on the demand for the products of various manufacturing industries.
- Utilization of sludge gas, extraction of Silica from burnt Paddy Hush Solar Pump, and Solar Plantation are some projects which are cost-efficient and have great demand these days.
- Multi Stage Flash Distillation and Multi Effect Distillation with Thermo Compression (MEDTVC). It has been deployed not only for nuclear waste treatment but for society at large in line with the Jal Jeevan Mission. Government of India to provide safe drinking water at the household level.
- Recently, In the field of Chemical Engineer "Xylitol" sugar alcohol derived from natural products, has potential anti-diabetic and anti-obesogenic effects. Its production from sugarcane bagasse using Ultrasonic fermentation is a potential opportunity for the forward integration of sugarcane industries in India.
- 1000 LPH BWRO plant deployment of water purification technology in 50 villages in India. **"It's not our abilities that show what truly we are, it is our choices".**



Swati Priya
Sophomore

In every field, we can make our career and it depends totally on us what we choose.

OUR FACULTY

Their achievements, our aspirations

PUBLICATIONS

S.NO.	NAME OF THE FACULTY	TITLE OF THE ARTICLE / BOOK CHAPTER / BOOK	JOURNAL / BOOK NAME	VOL. ISSUE	INDEXED IN (SCOPUS/SCI/UGC-CARE/OTHERS)	MONTH & YEAR
1	Prof. S.N.Saha	Kinetic and Equilibrium Studies of Biosorption of Methylene Blue and Crystal Violet using Leaf Biomass (<i>Albizia saman</i>) as Adsorbent	Chemical Engg. and Sc. Jl.	Vol.7,No.1	SCI	July, 2022
2	Prof. S.N.Saha	A Review of Moringa Oleifera Characteristics & Therapeutic Utilization	High Technology Letters	Vol.28,No.7	SCOPUS	July, 2022
3	Mr. G. P. Dewangan and Prof. S.N.Saha	Prediction of minimum and complete fluidization velocity and transport disengaging height of the segregated coal in a cold flow fluidized bed	Particulate Science and Technology	doi 10.1080/02726351.2022.2103861	SCI E	July, 2022
4	Mrs. A N Joshi and Dr. A. K. Chandrakar	Efficacy of natural oils and conventional chemicals in the physical extraction of 4-hydroxybenzoic acid from aqueous solution	J. Indian Chem. Soc.	Vol. 99, Issue 8	SCOPUS	July, 2022
5	Dr. Ghoshna Jyoti	Kinetics study of esterification reaction of acrylic acid with n-butanol	Materials Today: Proceedings		Scopus	Sept 2022

SEMINARS

S.NO	FACULTY NAME	TITLE OF THE EVENT	INDEXED IN (SCOPUS/SCI/UGC-CARE/IEEE)	DATE	VENUE
1	Dr. R. S. Thakur	Practical Aspects of Water Treatment Plant	--	19/07/2022	Virtual mode. At Chemical Engg. GGV Bilaspur
2	Dr. Ghoshna Jyoti	Practical Aspects of Water Treatment Plant	--	19/07/2022	Virtual mode. At Chemical Engg. GGV Bilaspur
3	Dr. Sandeep Dharmadhikari	Webinar on "Practical Aspects of Water Treatment Plant"	NA	19/07/2022	Virtual mode. At Department of Chemical Engg. SoS., E&T, GGV Bilaspur (C.G.)
4	Dr. Sandeep Dharmadhikari	Nanosensors & Devices	-	22-26 August 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
5	Dr. Saurabh Meshram	Nanosensors & Devices	-	22-26 August 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
6	Dr. Ghoshna Jyoti	Refresher Course on "Research Methodology"	UGC HRDC	22/08/2022 to 5/09/2022	GGV Bilaspur
7	Dr. Amit Jain	Nanosensors & Devices	-	22-26 August 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
8	Dr. Amit Jain	Faculty Knowledge sharing program		06/08/2022	IBS Bilaspur
9	Dr. Amit Jain	Workshop "National Curriculum Framework"	Committee member	05/08/2022	GGV Bilaspur
10	Dr. Sandeep Dharmadhikari	Energy Harvesting & Storage Materials & Devices	-	12-16 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
11	Gautam Prasad Dewangan	Energy Harvesting & Storage Materials & Devices	-	12-16 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
12	Dr. Ghoshna Jyoti	Energy Harvesting & Storage Materials & Devices	-	12-16 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
13	Mrs. A. N. Joshi	Energy Harvesting & Storage Materials & Devices	-	12-16 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
14	Dr. R. S. Thakur	Energy Harvesting & Storage Materials & Devices	-	12-16 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
15	Dr. Saurabh Meshram	Energy Harvesting & Storage Materials & Devices	-	12-16 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
16	Dr. Saurabh Meshram	Outcome based curriculum Design		05-09 September 2022	NITTTR Chandigarh (Remote Center GGV Bilaspur)
17	Dr. Sandeep Dharmadhikari	Energy Harvesting & Storage Materials & Devices	-	12-16 September	NITTTR Chandigarh (Remote Center GGV Bilaspur)

OUR FACULTY

Their achievements, our aspirations

PATENTS

S.NO	FACULTY NAME	TITLE OF THE PATENT	NATIONAL / INTERNATIONAL	MONTH AND YEAR
1	Dr. Ghoshna Jyoti	Solar energy sunshade curtain for car (369494-001)	National (Patent filed)	July,2022
2	Dr. Amit Jain	Design of Absorber Plate for Solar Collector	National (Accepted)	September,2022

HIGHLIGHTS

- Prof. S.N. Saha, being the Standing Hearing Committee & Standing Appellate Committee Member of AICTE, participated the online meeting on 07/07/2022 for resolving the cases of 9 Technical Institutes of Maharashtra.
- Dr. Sandeep Dharmadhikari reviewed two research papers for the Iranian Journal of Chemistry and Chemical Engineering. (SCI IF. 0.759) and was appointed as an external examiner for practical viva in Department of Food Processing & Technology, Atal Bihari Vajpayee Vishwavidyalaya (ABVV) dated: 25/07/2022.
- Pre-submission seminar of Mr. Gautam Prasad Dewangan, Mr. Saumitra Tiwari, Mrs. A.N. Joshi and Mr. Neeraj Chandraker, Ph.D. Scholars of the Department of Chemical Engineering have conducted successfully online mode.
- Dr. Amit Jain received "Rakt Mitra Samman" by the Society of Akaltara for donating blood more than 10 times.



OUR STUDENTS

Their stories , our accomplishments



ACHIEVEMENTS

Ms. Anaswara MV , 3rd Year, B. Tech., Chemical Engineering student has been Shortlisted among the Top 50 of Solve for Tomorrow initiative presented by FIIT Delhi and Samsung. She is eligible for a 1,00,000 Scholarship.

Students in their 3rd and 5th year of engineering participated in informative sessions on "**Application of Aspen Plus Simulation Software for Chemical Engineering Students**" and "**Transport Processes in Biomedical Engineering**".

SELECTIONS

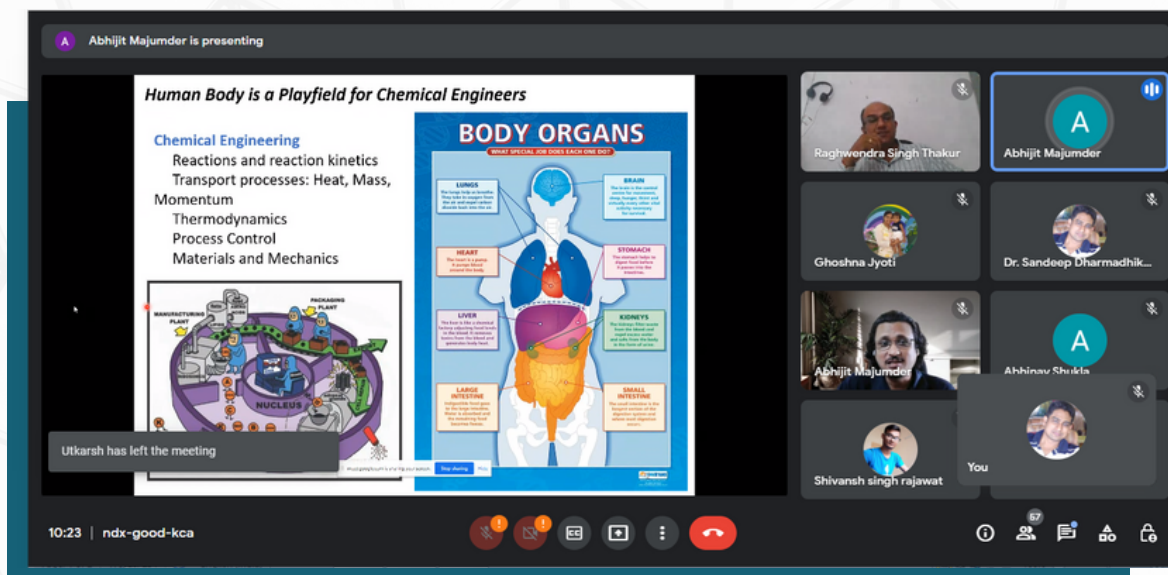
Abhishek Soni, Amit Dixit, Nishek Gautam, Pranjal Nirmalkar and Ujjwal Kumar were selected as **Graduate Engineering Trainee** at **Suzalkem Technologies Pvt. Ltd. Hyderabad** bringing immense pride and sense of accomplishment to the entire department .

Ekansh Kumar was selected as **Technical Executive** at **Cheminova Panoli** raising the bars of the department to greater heights.

DEPARTMENTAL EVENTS

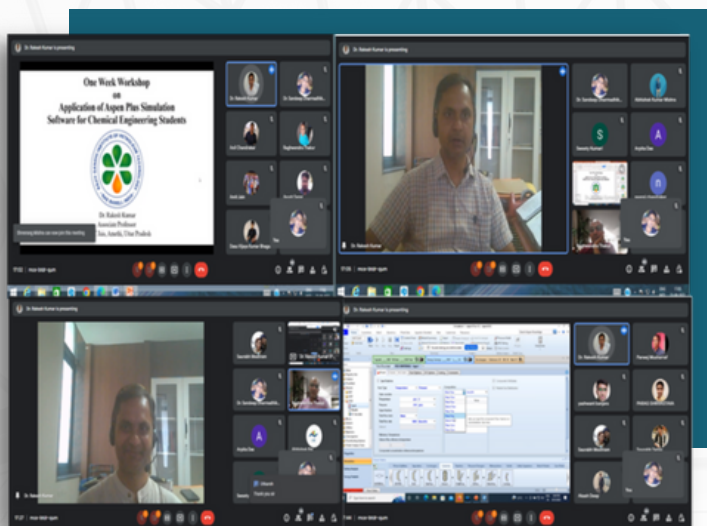
Reliving the moments of importance

WEBINAR ON "TRANSPORT PROCESS IN BIOMEDICAL ENGINEERING"



On 20/08/2022 a webinar on "**Transport Process in Biomedical Engineering**" was organized by the department which was attended by more than 60 final students audience. Dr. Abhijit Majumdar briefed the technical session and the importance of the transport phenomenon everywhere which was indeed enlightening and informative for the audience. The faculty members took their deepest efforts for a smooth functioning of the webinar.

WEBINAR ON "APPLICATION OF ASPEN PLUS SIMULATION SOFTWARE FOR CHEMICAL ENGINEERING STUDENTS"



A one-week workshop on "**Application of Aspen Plus Simulation Software for Chemical Engineering Students**" was organized by the department from August 22 to August 26, 2022 at 5:00 PM to 6:00 PM. where Dr. Rakesh Kumar, Associate Professor, Chemical Engineering Department, Rajiv Gandhi Institute of Petroleum Technology, Jais, Amethi explained the audience about the relevance of Aspen plus Software for the students of Chemical Engineering.

DEPARTMENTAL EVENTS

Reliving the moments of joy

TEACHER'S DAY 2022



Under the supervision of dr. Sandeep Dharmadikari and Dr. Ghoshna Jyoti, "**Teacher's Day 2022**" was organized by the students of Chemical Engineering on September 5, 2022 expressing gratitude to the 'Guru-shishya parampara'. The faculty members were showered with tokens of gratitude and the event was one of its kind with it's exemplary and wonderful showcase of talents by students.



Keep a little **FIRE** burning,
however **SMALL**,
however **HIDDEN**....

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ill we see you again, remember that though Chemical Engineering skills are broadly applicable and valuable, it can be daunting for individual engineers to envision their next career step. **“The key is to pinpoint problems that get you excited and that you are passionate about solving. Then, find a job that lets you solve those problems”** is what advisable.

What we can anticipate and move forwards with our fingers crossed is nothing but the **HOPE**, which needs to kept kindling with hard work and persistence!

THE TEAM



Dr. Raghwendra Singh Thakur



Dr. Sandeep Dharmadhikari



Dr. Ghoshna Jyoti



Abhishek Acharyya



Rupali Mishra



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