



lokmanya tilak jankalayan shikshan sanstha's

**PRIYADARSHINI COLLEGE OF ENGINEERING**

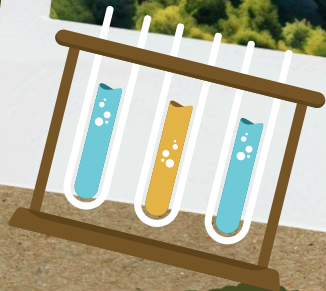
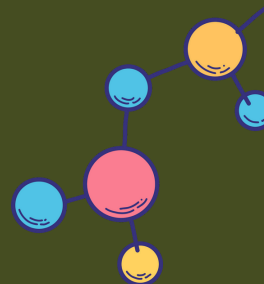
AN AUTONOMOUS INSTITUTION

(Approved by A.I.C.T.E., New Delhi & Govt. of Maharashtra, Affiliated to RTMNU, Nagpur)

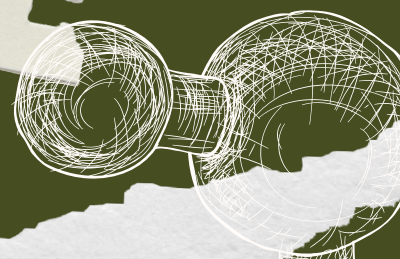
**DEPARTMENT OF CHEMICAL ENGINEERING**

# CHESS WORLD 23-24

*Annual departmental magazine*



**Transforming  
molecules, powering  
the future.**





# **CHESS COMMITTEE 23-24**



**Mrs. Anjali KurveBangre**  
(ChESS Coordinator)



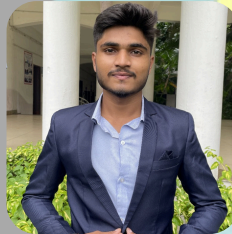
**Ms. Sejal Gedam**  
(President)



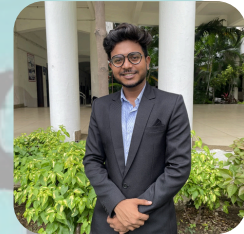
**Mr. Aditya Swamy**  
(vice-president)



**Ms. Rutuja Wakulkar**  
(Secretary)



**Mr. Ayush Ladse**  
(Joint Secretary)



**Mr. Rajesh Patil**  
(Treasurer)



**Mr. Sahil Boldhane**  
(Sub-Treasurer)



**Ms. Prachi Patel**  
(Technical Event Coordinator)



**Ms. Devashree Hanmante**  
(Cultural Coordinator)





Ms. Mansi Kathoke  
(Cultural Co-coordinator)



Mr. Shreyash Manvatkar  
( Sports Coordinator)



Mr. Mihir Bapat  
(SportsCo-coordinator)



Ms. Kirti Raut  
(Magazine Coordinator)



Ms. Kashish Chaudhary  
( Social Media Coordinator)





**Dr. Satish Chaturvedi**  
**Chairman, LTJSS**  
**EX-Minister for Labour & Textile**  
**Ex-Guardian Minister,**  
**Nagpur District, Nagpur**

*Message...*

*Dr. Satish Chaturvedi Chairman, LTJSS EX-Minister for Labour & Textile Ex-Guardian Minister, Nagpur District, Nagpur It gives me immense pleasure to note that Department of Chemical Engineering, Priyadarshini College of Engineering is bringing out an annual magazine ChESS WORLD for the year 2023-24. I wish the institute should maintain academic excellence in the process of preparing students to live, learn & work in technology rich world. I compliment all those associated with the magazine for all their dedication, commitment and professionalism. I am sure that magazine will attain greater heights of professional excellence in the years to come. I wish the Department & Institute many more years of productive service to the state of Maharashtra.*

**Dr. Satish Chaturvedi**  
**Chairman, LTJSS,**  
**Nagpur**





**Smt. Abha Chaturvedi**  
**Secretary, LTJSS,**  
**Nagpur**

*Message...*

*Smt. Abha Chaturvedi Secretary, LTJSS, Nagpur A magazine "ChESS World-2023-24" provides an opportunity to the Chemical Engineering students and staff to lent free expression to their creative and original thoughts. Magazine plays an instrumental role in providing greater exposure to the students, to develop written communication skill & command over the language that enhances professionalism. I wish all very best in your endeavour.*

**Smt. Abha Chaturvedi**  
**Secretary, LTJSS,**  
**Nagpur**





**Shri Dushyant Chaturvedi**  
**Director GB, LTJSS,**  
**Nagpur**

*Message...*

*I am pleased to know that students of Chemical Engineering Department of Priyadarshini College of Engineering, Nagpur is bringing out fourth issue of their 'CHESS WORLD' for the year 2023-24 on the various areas of Chemical Engineering varying from bio-diesel to nanotechnology. I believe, ChESS WORLD 2023-24 will arouse interest in Chemical Engineering students and will provide stimulating and rewarding tool for budding engineers. I congratulate editorial and wish them further success in their endeavour.*

**Shri Dushyant Chaturvedi**  
**Director GB, LTJSS,**  
**Nagpur**





**Dr. Vivek Nanoti**  
**Director Engineering, LTJSS,**  
**Nagpur**

*Message...*

*It gives me an immense pleasure to note that the Department of Chemical Engineering of Priyadarshini College of Engineering is bringing out the annual departmental magazine. "Learning is a continuous process from the minute we are born, until we die." Priyadarshini College provides a platform for every student to develop his learning skills through magazine. As you scan through the pages, it will enlighten you with the important milestones that the department has achieved this year. Besides, our budding talents have expressed their thoughts, ideas, hopes, feelings, aspirations and convictions in a creative way. This magazine should be a good source of guidance for faculty and coming batches of students in choosing activities of their choice in their future for building their carrier. I congratulate Head, Teaching and non teaching staff, editorial board and students of the Chemical Engineering Department for bringing this edition of Magazine ChESS WORLD 2023-24. Wish you all the best.*

**Dr. Vivek Nanoti**  
**Director Engineering, LTJSS,**  
**Nagpur**





**Dr. S. A. Dhale**  
**Principal, PCE,**  
**Nagpur**

### *Message.....*

*It gives me immense pleasure in presenting departmental magazine "ChESS WORLD 2023-24". PCE, Nagpur started with Specialized Chemical Engineering Dept. in Rashtrasant Tukadoji Maharaj Nagpur University in 1999-2000 with an objective to provide quality education and excellence in ever changing field of technical education. Having successfully cross the various hurdles encountered on the way of its growth, Chemical Engineering Department has grown in stature & strength today, and has become one of the finest educational institutions dedicated to the pursuit of knowledge and excellence, Today Chemical Department is not just the Department but is a family in which the educational community, the management, staff students, parents and alumni work united to faster this "FAMILY SPIRIT". The entire atmosphere of Chemical Dept. is permeated by this spirit, which promotes collaboration and co-operation leading to human family of peace and harmony. With this spirit guiding us, we have made a deep impact in creating goodwill among all sections of society. The time line of magazine is very impressive... "Life is to Beautiful.. Just Smile" I am sure that the student of Chemical Engineering Dept. in PCE will be benefitted to a large extent from the information and education contents of this magazine. A word to those who have contributed to the magazine, they should continue their practice of writing articles, poems, fillers, and a habit they can develop to perfection with the passage of time.*

**Dr. S. A. Dhale**  
**Principal, PCE,**  
**Nagpur**





**Dr. G.M. Asutkar**  
**Vice Principal, PCE,**  
**Nagpur**

*Message.....*

Priyadarshini College of Engineering is one of the leading institutes which have taken a leap forward in the quality technical education. In globalization, engineers & technologists are forming the backbone of any nation's economic development but the competition in all walks of life has just become precipitous. In this context, Department of Chemical Engineering which is propagating an excellent teaching and learning environment, caring for human sensitivity and at the same time striving to maintain the quality of education to match the demands of the time, is really rare one. Today, ChESS is one of the most sought for chemical engineering students both at the technical and non-technical growth. We firmly believe that we shall be counted amongst the best at the national level in times to come. We wish to see you at top position in your future. All the best for your future!

**Dr. G.M. Asutkar**  
**Vice Principal, PCE,**  
**Nagpur**





**Dr. Swarda R. Mote**  
**Head, Department of Chemical Engineering,**  
**PCE, Nagpur**

*Message.....*

Ever since the department of Chemical Engineering started its journey over more than two decades back, the department has been simultaneously and successfully performing the multiple roles of creating new knowledge, acquiring new capabilities and producing an intelligent human resource pool contributing in various domains of the society. The Department has always been on a high growth path and has experienced and dedicated faculty with strong commitment to engineering education who work with zeal and enthusiasm to provide a vibrant and optimum learning environment. The growth of expertise in the department is commendable. In keeping with the department's vision, the holistic development of the students is focused upon that instills a habit of continued learning and a sense of responsibility in them to contribute towards the betterment of the society. The periodically updated curriculum imparts technical knowledge to the students and the application based environment in the state of the art laboratories complements the same. The students are motivated to participate in paper presentation, workshops and seminars that are essential to maintaining proficiency. Cultural activities are also promoted through various forums like CHESS, IICHE Students chapter at the departmental level. A large percentage of students also qualify GATE for pursuing higher studies. The department also conducts research activities, research facilities and various student activities. I congratulate the Chess Forum for completing years successfully. Also congratulate the whole team of students and Faculty for edition of Chess world.

**Dr. Swarda R. Mote**  
**Head of Department of Chemical Engineering, PCE,**  
**Nagpur**





**Mrs. Anjali Kurve- Bangre,  
ChESS Coordinator, PCE,  
Nagpur**

*Message.....*

*Dear all, Our annual ChESS World Magazine 2023-24, over the years has grown to have uniqueness of its own. I identify with the emotions and knowledge that each page portrays and look upon the magazine as an entity in itself. It talks about our department of Chemical Engineering, Priyadarshini College of Engineering, Nagpur, with pride and joyfulness. Here lies a humble Hope that you will enjoy and appreciate it. Our department encourages true freedom of expression, mutual respect, and a sense of responsibility in all our students. Departmental magazine is a sign of holistic progression of the curriculum and extra-curriculum of our college. I am glad to have such a lovely platform which provides opportunities to students as well as teachers to showcase their talent. This magazine is just the potential of students that are channelized by teachers cum facilitators with a holistic student centric method. Each page of the magazine is a reflection of students; efforts, knowledge, art, thinking, creativity and passion. Mrs. Anjali Kurve- Bangre, ChESS Coordinator, PCE, Nagpur I congratulate the team for their collective efforts to take one step ahead. Keep growing ....Keep learning....& Happy reading!!!*

**Mrs. Anjali Kurve- Bangre,  
ChESS Coordinator, PCE,  
Nagpur**



## **Vision of Priyadarshini College of Engineering**

To become one of the India's leading Engineering Institutes in both education and research. We are committed to provide quality and state-of-the-art technical education to our students, so that they become technologically superior and in turn contribute for creating a great society.

## **Mission of Priyadarshini College of Engineering**

1. Fostering a dynamic learning environment that equips students with Technical expertise, problem-solving skills and a deep commitment to ethical practices.
2. To cultivate a culture of innovation, incubation, research and entrepreneurship that drives technological advancements.
3. To uphold the spirit of mutual excellence while interacting with stake holders of our Institutional ecosystem.
4. Promoting lifelong learning, professional growth and ensuring holistic development of students and the well being of society.

## **Vision of the Chemical Engineering Department**

We are committed to provide quality technical education to students in the field of Chemical engineering to meet the expectations of industries and society.

## **Mission of the Chemical Engineering Department**

- M1:** To provide quality technical education in Chemical Engineering.
- M2:** To Create technocrats as per rapidly changing Industry need and to develop them responsible citizens for lifelong learning and research.
- M3:** To develop versatile personalities with sound academics and entrepreneurial skills with moral and ethical values



### **Program Education Objectives (PEOs)**

**PEO1:** Apply fundamental technical knowledge and skills to find creative solutions to technological challenges and problems in various domains of chemical Engineering.

**PEO2:** Analyze, design and use skills in order to formulate and solve chemical Engineering problems as per changing Industry needs to cater society

**PEO3:** To develop multidimensional personality to practice chemical engineering in an ethical manner, as an individual or a team member, implementing eco- friendly sustainable technologies for the benefit of industry and society.

### **Program Specific Outcomes (PSOs)**

1. Demonstrate an understanding of basic concept, terminology, and principles of chemical engineering and to apply it in problem-solving scenarios through hands-on experiences. Design a
2. unit operation and unit process to solve engineering problems using basic engineering principles and methods and to exhibit proficiency in applying technology to Industry, Society and Environmental problems. Demonstrate the ability to work effectively as part of a team and
3. practice professional behavior and ethics.



## Chemical Engineering Department at a Glance....

The Department of Chemical Engineering was established in 1999-2000 with a view of imparting state of the art education in the cutting edge technologies of the world. The sanctioned intake in the 1999 was 60 students per year. The Department has since then seen tremendous growth in all aspects. The chemical engineering department is housed in an ultramodern complex, and having well equipped laboratories with modern equipment's. It is only Chemical Engineering department Accredited by NBA, New Delhi in the RTM Nagpur University region amongst all affiliated Engineering Colleges. Since biotechnology has close links with chemical engineering in areas such as reactor design, processing and modelling it is being visualized an extension of the department of chemical engineering.

### Faculty Members

Sr. No	Name of Faculty	Designation	Experience	Qualification
1	Dr. Swarda Mote	Head and Associate professor	23 yrs.	M.E, PhD
2	Dr. Kiran Bhuyar	Assistant Professor	16 yrs.	M-Tech, PhD
3	Prof. Abdul Sheikh	Assistant Professor	10 yrs.	M-Tech, PhD
4	Prof. Payal Baitule	Assistant Professor	11 yrs.	M-Tech, PhD Pursuing
5	Mrs. Snehal Deshmukh	Assistant Professor	9 yrs.	M.Tech. PhD Persuing
6	Prof. Anjali Kurve (Bangre)	Assistant Professor	8.5 yrs.	M-Tech, PhD Pursuing
7	Prof. Minal Patil	Assistant Professor	2.6 yrs.	M-Tech, PhD Pursuing
8	Dr. Payal Bhautik	Assistant Professor	6.5 yrs.	M-Tech, PhD
9	Dr. Kalyani Motghare	Assistant Professor	10 yrs.	ME, PHD
10	Ms.Ritul Choudhari	Assistant Professor	6 months	M.Tech
11	Mrs.Khushboo Salodkar	Assistant Professor	6 months	M.Tech



## **Non-Teaching Staff**

<b>Sr. No</b>	<b>Name of Faculty</b>	<b>Designation</b>	<b>Experience</b>	<b>Qualification</b>
1	Mr. Abhilesh Kombe	Technical Assistant	20 yrs.	Diploma in Chemical Engineering
2	Mr. Narendra Dongre	Technical Assistant	15 yrs.	B.E. Chemical Engineering
3	Mr. Bhrigunath Mishra	Attendant	20 yrs.	S.S.C.
4	Mr. Viru Lonare	Attendent	10 yrs.	ITI

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**Total Area of Department:** 10006.08 Sq.mt.

**Non-Teaching Staff:** 04

**Laboratories:** 10

**Departmental Library:** Area 8 Sq.mt.

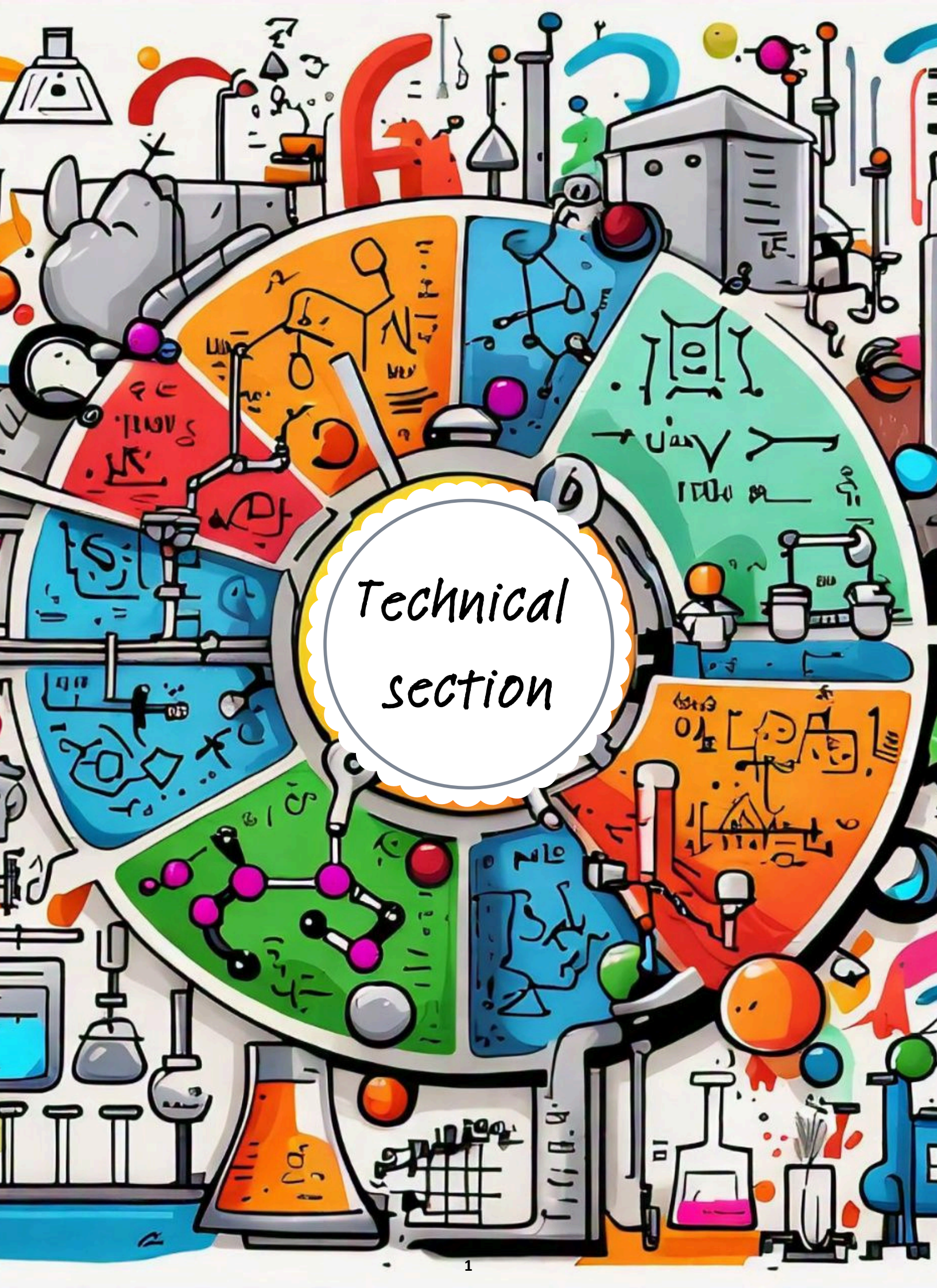
**Departmental Library Books:** 250

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## **Grant Received By The Department From Various Funding Agencies (2010-2024)**

<b>SR. NO.</b>	<b>TYPE OF GRANT</b>	<b>RUPEES</b>	<b>FROM</b>	<b>PERIOD</b>	<b>COORDINATOR/ CO-CORDINATOR</b>
1.	Research Promotion Scheme	17,00,000/-	AICTE	2012-2017	Dr. R.P. Ugwekar/ Dr. A.Waheed. Deshmukh
2.	Industry Institute Interaction Cell	9,60,000/-	AICTE	2011-2013	Prof. Mrs. S.R. Mote
3.	Entrepreneurship Development Cell	6,50,000/-	AICTE	2012-2013	Dr. R. P. Ugwekar
4.	Staff Development Programme	2,00,000/-	AICTE	June 2011 2 Weeks	Prof. Mrs. S. R. Mote
5.	Department of Science & Technology	13,500/-	DST		Dr. R. P. Ugwekar
6.	Young scientist travel support	1,39,000/-	SERB/ DST India	2014-2015	Dr. R. S. Khedkar
7.	Young scientist travel support	20,000/-	SERB/ DST India	2014-2015	Dr. R. S. Khedkar
8.	Seminar Grant	1,00,000/-	AICTE	Sept 2014	Dr. R. P. Ugwekar
9.	MODROBS (Modernization of Mass Transfer Lab)	3,57,000/-	AICTE	2012-13 For 1 Year	Dr. R. P. Ugwekar/ M. D. Waghmare
10.	MODROB (For PCD Laboratory)	15,98,500/-	AICTE	2017-18 For 2 Year	Dr. S.K. Deshmukh
11.	Prerna Scheme	8,56,000/-	AICTE	2018-19 For 2 Year	Dr. S.K. Deshmukh
12.	STTP	3,03,000/-	AICTE	2018-19 For 1 Year	Dr. A.Waheed. Deshmukh
13.	MODROB (MO Laboratory)	16,03,000/-	AICTE	2018-19 For 2 Year	Dr. A.Waheed. Deshmukh
14	STTP	3,39,333/-	AICTE	2020-2021	Dr. S.R. Mote
15	RPS	19,37,255/-	AICTE	2020-2021	Dr. S .R Mote
16	EGEA	27,00,00/-	EU	2019-2020	Dr. S. R Mote
17.	EGEA				Dr. A Waheed Deshmukh
	<b>TOTAL</b>	<b>85,00,000/-</b>			





*Technical  
section*



## **The Biodiversity is more than just All of species on Earth.**

Dr. Kiran D. Bhuyar

(Professor, Dept. Of Chemical Engineering, PCE,Nagpur)

### **Biodiversity:**

The word biological diversity refers to all forms of life, including plants, animals, fungi, and microorganisms.

There are three levels of biological diversity, Species diversity refers to the variety of species that exist., Genetic diversity refers to the range of genes found in plants, animals, fungi, and microbes, and ecological diversity refers to the various habitats that occur.

### **Types of biodiversity**

**Species diversity:** The variety of different types of species found in a given location is referred to as species diversity. It is, at its most fundamental level, biodiversity. It encompasses all types of organisms, from plants to microbes. Individuals of the same species are never identical.

**Genetic diversity:** Variations in the genetic resources of organisms are referred to as t. Every member of a species has a genetic makeup that is distinct from that of others. That is why each person has a unique appearance.

**Ecological diversity:** An ecosystem is made up of both living and nonliving creatures, as well as their interactions. Ecological biodiversity refers to the diversity of plant and animal species that coexist and are linked by food webs and food chains.

### **Importance of biodiversity:**

**1. Economic importance:** Humans rely on biodiversity for raw resources for use and industry. Biodiversity is essential to many livelihoods, including that of farmers, fishermen, and forest workers.

**2. Ecological life support:** Biodiversity supports ecosystems that offer oxygen, clean air and water, plant pollination, pest control, wastewater treatment, and a variety of other ecosystem services.

**3. Recreation:** Birdwatching, hiking, camping, and fishing are just a few of the recreational activities that rely on our unique biodiversity. Biodiversity is also important to our tourism economy.



**4. Cultural importance:** Through the expression of identity, spirituality, and aesthetic appreciation, Australian culture is inextricably linked to biodiversity. Indigenous Australians have profound spiritual beliefs about animals and plants, which have led to strong links and responsibility to biodiversity

**.5. Scientific Importance:** Biodiversity is a treasure trove of systematic ecological data that aids our understanding of the natural world and its origins.

Climate change and biodiversity are interconnected.

Climate change is causing biodiversity loss, and biodiversity loss is causing climate change. Here's how: Destroying and degrading ecosystems releases more carbon dioxide into the atmosphere than burning fossil fuels.

Meanwhile, the consequences of burning fossil fuels — rising global temperatures, an increase in wildfires, and ocean acidification, to name a few — are threatening habitats and wildlife alike. In late 2019 and early 2020, for example, more than 60,000 koalas were killed by wildfires in Australia so massive that nearly 3 billion animals died or were displaced as a result. Earlier this year, the Australian government officially listed koalas as an endangered species.

## **GREEN HYDROGEN IS THE FUTURE OF FUELS AND DECARBONIZATION IS THE NEED OF THE HOUR.**

Divya Maykarkar  
(3rd Year Chemical Engineering)

Here are different types of hydrogens based on their extraction process.

**1) Green Hydrogen:** Green hydrogen is produced using renewable energy sources like wind, solar, or hydroelectric power. It involves the electrolysis of water, releasing no greenhouse gases and is considered environmentally friendly.

**2) Blue Hydrogen:** Blue hydrogen is generated from natural gas through a process called steam methane reforming (SMR) combined with carbon capture and storage (CCS) technology. This approach aims to reduce carbon emissions associated with traditional hydrogen production.

**3) Grey Hydrogen:** Grey hydrogen is produced from natural gas using steam methane reforming without carbon capture. This method generates significant carbon emissions during production and has a notable environmental impact.

**4) Yellow Hydrogen:** Yellow hydrogen is produced through natural gas pyrolysis, splitting methane into hydrogen and solid carbon using high temperatures. The produced carbon can potentially have various applications.

**5) Pink Hydrogen:** Pink hydrogen is on experimental concept involving nuclear electrolysis, utilizing nuclear power for water electrolysis. It aims to provide a low-carbon or carbon-free source of hydrogen, though challenges remain.

**6) Brown hydrogen:** Through a process called coal gasification, which involves dissolving coal to produce hydrogen gas along with carbon dioxide and other gases, brown hydrogen is obtained from coal. Due to its carbon emissions, green hydrogen is more environmentally beneficial.



## **Self Repairing material: Scientists just invented a smartphone screen material that can repair its own scratches**

Tejas Chivhane  
(4th Year Chemical Engineering)

On December 25, 2017 Yu Yanagisawa, chemistry researcher at the university of Tokyo, looks at a piece of repaired broken resin glass after pressing the piece back together at the universities lab in Tokyo. This discovery open the way for super-durable glass that could triple the life span of every day product like car windows, construction materials, fish tanks, and even toilet seats. If you drop your phone and the screen shatters, you usually have two options: get it repaired or replace the phone entirely. Chemists at the University of tokyo, have invented what could become a third option: a phone screen material that can heal itself. The researchers conducted several tests on the material, including its ability to repair itself from cuts and scratches. After they tore the material in half, it automatically stitched itself back together in under 24 hours, Chao Wang, a chemist leading the self-healing material research, tells Business Insider. The material, which can stretch to 50 times its original size, is made of a stretchable polymer and an ionic salt. It features a special type of bond called an ion-dipole interaction, which is a force between charged ions and polar molecules. This means that when the material breaks or has a scratch, the ions and molecules attract to each other to heal the material. This is the first time scientists have created a self-healing material that can conduct electricity, making it especially useful for use for cell phone screens and batteries, Wang says. Some LG phones, like the G Flex, already include a similar material on its back covers that can self-heal scratches. But this material can't conduct electricity, so manufacturers can't use it for screens. Most phone screens have a grid of electrodes underneath, and when you touch it, your finger (which is also conductive) completes a circuit, telling the phone what to do. Wang predicts that this new self-healing material will be used for phone screens and batteries by 2020. The team will present its research at a April 4 meeting of the American Chemical Society, the world's largest scientific organization devoted to the study of chemistry. "Self-healing materials may seem far away for real application, but they will come out very soon with cell phones. Within three years, more selfhealing products will go to market and change our everyday life,. "It will make our cell phones achieve much better performance than what they can achieve right now."

## **Green coal: Can it tackle twin challenges of reducing emission, waste management?**

Kunal Borkar  
(4th Year Chemical Engineering)

**Introduction:-** NTPC has recently opened a green coal manufacturing plant in Varanasi; plants are planned in Madurai and Bhopal as well. National Thermal Power Corporation (NTPC) Vidyut Vyapar Nigam Limited (NVVNL) has recently commissioned a commercial 'green coal' plant in Varanasi, Uttar Pradesh, to produce green coal or torrefied charcoal from waste. This plant is the first-of-its-kind attempt in India to produce green coal from agricultural residue and municipal solid waste (MSW). The project has been awarded to Macawber Beekay, a company providing turnkey solutions to power plants. Currently, the plant's first reactor module with a capacity of 200 tonnes per day is installed and commissioned, and another two modules are in the pipeline.

**What is Green Coal?** Green coal, also known as bio-coal, is considered a sustainable alternative to the polluting conventional coal as it combines agricultural residue and MSW. Green coal has been drawing attention due to its ability to replace coal for energy and, thus, mitigate the amount of CO<sub>2</sub> from coal combustion. It is claimed that replacing a kilogram of coal with the same quantity of green coal can mitigate two kg of CO<sub>2</sub>.

**How is it produced?** Green coal production from MSW involves segregation, mixing and heating processes. The process begins with converting raw waste into refuse-derived fuel (RDF). This is followed by the thermal treatment of the waste at a temperature of 200-300°C inside a 'charcoal reactor', resulting in the formation of a solid fuel with properties similar to normal coal.

**Benefits/Advantage:-** Green Coal, apart from being environment-friendly, has many other benefits: Coal is extracted from mines and transported hundreds of kilometres to the utilisation point. On the other hand, green coal is beneficial in its ability to be produced locally by installing a reactor. Thus, it reduces the burden of transportation costs and is easy to store and transport in bulk owing to its solid nature. It is claimed that green coal emits comparatively fewer pollutants such as sulphur dioxide, particulate matter and greenhouse gases than conventional coal. It will also reduce the amount of MSW sent to landfills and thus will play a significant role in MSW management. Concerning energy security, green coal aids thermal power plants and energy-intensive industries in reducing their dependence on fossil fuels. These environmentally-favourable components make green coal a sustainable option for all the highly polluting sectors, such as thermal power plants, steel plants, cement plants and others that rely on fossil coal. Apart from this pilot project in Varanasi, NVVN also stated to have signed a similar agreement with Bhopal Municipal Corporation. In addition, Madurai, a city in Tamil Nadu, had proposed to set up a similar plant to produce torrefied charcoal at the Vellaikal dump yard. Madurai Corporation's mayor Indrani Ponvasanth said in early March 2023 that the proposal had already been sent to the state government through finance minister Palanivel Thiaga Rajan, according to media reports.



**“STONE PAPER - AN ECOFRIENDLY & TREE-FREE PAPER”**

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Gauri Deshpande /Prachi Patel  
(3rd Year Chemical Engineering)

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Stone paper is evolutionary & ecofriendly substitute for traditional paper which is TREE-FREE , water resistant , tear resistant , BIODEGRADABLE and economical in nature . Major raw materials used in the manufacturing of stone paper are Calcium Carbonate & PLA (Poly Lactic Acid ) . Other raw materials present in the minority are used for coating , increasing its durability or adding color to it.

Limestone or calcium carbonate have properties such as insolubility in water, crystalline structure & alkaline in nature. Insolubility in water makes stone paper water resistant & crystalline nature helps us to crush it into fine powder. PLA is used as a binder having properties such as high melting point of 180- degree Celsius, high strength & high modulus thermoplastic. The pellets of PLA naturally are colorless or transparent hence it won't affect the color of paper. Processing the above components in suitable ratio (80-20%) & maintaining it at a constant temperature gives biodegradable stone paper. Stone paper having a thermal stability of at least 180-degree Celsius can be effectively used as packaging material too.

Manufacturing process includes unit operations such as mining, crushing, mixing & extruding.

Advantages of using stone paper are, being tree – free in nature as it doesn't promote deforestation, having minimum number of carbon footprints in manufacturing process, it doesn't contribute to global warming, it is biodegradable as well as recyclable, hence promoting circular economy, unlike traditional paper, water is not used as a raw material, hence saving fresh water. It's economical as well as ecofriendly. Stone paper can be used for writing, printing & packaging purposes too.

## **Agriculture waste of sugrecane bagasse as efficient adsorbent for lead and nickel removal from untreated wastewater**

Bhuvneshwari Chimurkar  
(4th Year Chemical Engineering)

Environmental pollution through industrialization and the excessive use of chemicals all over the world has led to the release of toxic pollutants including heavy metals. The presence of heavy metals in the environment is a serious problem to be addressed in the world today due to their high toxicity, mobility in the environment and non-biodegradability. Heavy metals which originates from the mining, electroplating, refinery and other industrial wastewater can cause potential damage to the ecosystem, human and animal health even at low concentration Disposal of wastewater containing heavy metals (lead, nickel, cadmium, chromium, arsenic, etc.) into terrestrial and aquatic environment, can cause deterioration in water quality and toxicity to human health. At high concentrations, most heavy metal ions can damage cell membrane, alter enzyme activities, disrupt cellular function, and have been linked to birth defects, cancer, skin lesions, growth retardation leading to disabilities, kidney and liver damage and other health problems Nickel is a lustrous, silvery, non-biodegradable toxic metal with atomic number of 28. Uptake of high doses of nickel can cause adverse health effects such as birth defect, cancer, respiratory failure, hepatitis, skin rashes, kidney impairment, and diarrhea Efforts have been made by industries (refinery, mining, tannery, electroplating, fertilizers, textiles, dyes, etc.) for the removal of heavy metals from wastewater through conventional methods (membrane filtration; solvent extraction, ion exchange, reverse osmosis, oxidation, chemical precipitation, etc.). However, these methods have many shortcomings of generation of toxic chemical sludge, incomplete metal removal, low efficiency, requirement of high energy and high reagent. Hence, new cost effective, safe and economic tools are recommended to reduce the limitations of the conventional methods. Biosorption is an alternative, favourable and effective tool highly recommended for the removal of heavy metal ions from waste water because of its many advantages of low operation cost, eco-friendly, minimal or no toxic sludge generation, short operating time, easy to prepare, no supplementary nutrient required, possibility of metal recovery and availability. Numerous biomass-based adsorbents from biological (fungi, algae, yeast and bacteria) and agricultural origin (rice husk, saw dust, banana peels, corn cob, orange peel, sawdust, sugarcane bagasse, etc.), have been used as adsorbent for heavy metal removal from aqueous solutions with promising results Sugarcane (*Saccharum officinarum*) is a widely cultivated tropical plant species in some part of the world (Brazil, India, China, Mexico, South Africa, etc.) which makes up a large proportion of the sugar industries in the world. The composition of sugarcane bagasse is found to consist of about 42 % cellulose, 25 % hemicellulose, and 20 % lignin

### **Preparation of adsorbent**

Sugar cane bagasse (SCB) collected from several sugarcane vendors Thebagasse was soaked and washed with distilled water, oven dried at 40 degreeC for 24 h and crushed to a particle size of 0.1 to 0.2 mm.



## **ELECTRIC AIR TAXI**

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Abhishek Falnikar  
(4th Year Chemical Engineering)

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How nice it would be if you can travel up high in the air, get airborne and boom... land in a different city over a short distance!!

Companies across the U.S., including several startups, are developing electric air taxis that aim to take cars off the road and put people in the sky.

Commercial airlines, specifically, are investing in this type of technology to make trips to and from the airport shorter and faster for consumers in October, Delta Air Lines Joined the list of airlines backing EV technology Startups, with a \$60 million investment in Joby Aviation, a company developing electric vertical takeoff and landing aircraft (eVTOLs), intended to operate as an air taxi service. In 2021, when Joby announced its plan to launch its Uber-like air taxis by 2024, it generated criticism from industry analysts on the ability to launch by that date. But Delta's investment in Joby is a five-year partnership to operate eVTOLs exclusively in Delta's network. Vermont-based BETA Technologies, an electric aviation and aerospace manufacturer, teamed up with Blade Air Mobility, which provides cost-effective air transportation alternatives in some of the most congested areas globally (US, EU, Canada, and India) to make it a reality. BETA's air taxi, ALIA-250 EVA, has been in the works for three years, influenced by the design of the Arctic tern. Since terns migrate further than any other bird, visiting all corners of the earth, it inspired the company to engineer the most efficient flying method. The ALIA-250 EVA has two versions — one optimized for passengers and the other for cargo. The eVTOL is powered by a distributed, direct-drive electric propulsion with 250 NM range and a 50-minute charge time. CEO of Blade, Rob Wiesenthal, explains the significance behind the demo, saying: This demonstration is a big milestone in our transition from helicopters to electric vertical aircraft, and we are pleased that our partners at BETA have designed the right aircraft with the requisite range, capacity, and noise profile, for use in our key markets, including our homebase of New York City.

The electric air taxi demonstration in NYC is a massive milestone for the partnership and sustainable air transportation. BETA has already had test pilots from the US Air Force and Army fly the ALIA-250 in full-pattern evaluations. The Indian Institute of Technology- Madras has developed an electric flying taxi, which they claim would be faster than a helicopter in ferrying passengers. The flying taxi was showcased at the Aero India show that took place in Bengaluru. The start-up informed that the electric flying taxi was developed to ease urban travel. The ePlane company developed the electric flying taxi to make urban travels quicker and hassle-free. The prototype is a electric vertical takeoff and landing (eVOTL) model and offers a range of around 200 kms on a single charge. The startup claims that the electric flying taxi can travel 10 times faster than cars. It also claims the cost of one ride per passenger will be around two times more than what Uber usually charges for the same distance. Pranjal Mehta, CEO of ePlane Company and Professor Satya Chakravarthy, CTO of the startup, said he got the idea build the electric flying taxi after seeing a video on electric ground transportation. The flying taxi does not need much of space to land or takeoff. In fact, it occupies 25 square meter of area to stay parked. It weighs around 200 kgs and comes equipped with 4 ducted fans as its propellers. It can sit two passengers in one ride and can cruise at speeds between 150 kmph and 200 kmph. The maximum cruising altitude of the flying taxi is 457 meters (1,500 ft). The battery from which the flying taxi draws power is not swappable. The company has not given much information about its size and charging details. According to the startup, the flying taxi is ideal for roof-top to roof-top urban air mobility in any city. The ePlane Company has raised around \$1 million fund to develop the model. As of now, this flying taxi requires a pilot to operate.



**GREEN WRAPS: REVITALIZING FOOD PACKAGING**

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Kirti Raut /Aarjavi joshi  
(3rd Year Chemical Engineering)

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Recent analysis has shown that microplastic particles can migrate from packaging material into food items, particularly during processing, storing, and transportation. This leads to a potential risk for consumers, as these microplastic fragments may be ingested along with packaged food, increasing the need to develop sustainable packaging solutions in food industry. This research paper explores the development and characterization of a novel sustainable food packaging material composed by poly lactic acid (PLA), Citric acid (CA), and Starch. The study investigates the synergistic effects of these components in enhancing the mechanical, oxygen-CO<sub>2</sub> barrier, and anti-microbial properties of the packaging material. It has been found that the conventionally used plasticiser i.e. glycerol breaks the hydrogen bonds between hydroxyl groups present in starch molecules thereby reducing its film forming ability. Also, bioplastic at particular composition of starch and glycerol are most hydrophilic. Hence, this problem can be overcome by using CA as a plasticiser which is already approved by FDA for its use in humans. Similarly, the carboxylic groups on CA have the ability to form stronger hydrogen bonds with the hydroxyl group on starch molecules, thereby increasing its ageing resistant ability. Not only this but due to chemical reaction between the carboxyl group of CA and hydroxyl group of starch the starch changes from hydrophilicity to hydrophobicity, preventing them from being water soluble which can be carried out using melt blending

## **Kangen water**

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Trishna Shikdar  
(4th Year Chemical Engineering)

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What is Kangen water?

Kangen water is a form of Ionized water. This type of water is made by Enagic's Kangen Water Machine.

How Kangen water is made?

Electrodialysis is the process used to make Kangen water. In this process electrically charged membranes are used to separate ions from an aqueous solution by electrical potential as driving force.

Properties of Kangen Water-

Micro clustering-

The smallest or less clustered molecule of your drinking water the better our body absorb it and more hydrated we feel. Being well hydrated helps us to increase our stamina, keep our mind alert and think better.

Ionized water has better hydration ability due to microclustering of the water molecule after the ionization process non ionized water molecules are found in cluster of 10-20 molecules while ionized water are found in cluster of 4 – 6 molecules.

Our body absorbs only 15% of regular water and 85-95% kangen water is gets absorb by our body therefore this kangen water provides 6 times more hydration than normal water

Antioxidation-

Oxidation cannot be stopped; research indicates that the process can be slowed down with antioxidants. Antioxidation in liquids can be measured using ORP (Oxidation Reduction Potential) meter. Higher the negative ORP reading it is good for health. Kangen water has the highest antioxidant measured as compared to any liquid on the planet (-470 ORP).



The more effective the reduction of oxidative stress from our body minimizing the risk of cancer and onset of other diseases. Ex. One glass of Kangen water is equal to 16 glasses of green tea

#### Alkalinity-

Many of us lead an acidic lifestyle, from eating a lot of meat (Acidic), drinking carbonated water (highly acidic), experiencing negative emotions (stress), and not having enough sleep. This unhealthy lifestyle turns our body into an acidic state where we are very susceptible to sickness and diseases. Drinking an alkaline water helps us to maintain an environment in our bodies that is nonconductive to diseases.

1. Kangen device produces 5 types of water-
2. Kangen live water (8.5ph- 9.5ph) – Used for drinking and cooking, antioxidant
3. Safety water/clean water(7ph)- Neutral for the baby food making & while taking medication
4. Beauty water(6ph)- toner for skin and hair
5. Strong acidic water(2.5ph)- Disinfectant
6. Strong Kangen live water(11.5ph)-Emulsifier

#### Machines that make Kangen water-


1. Leveluk k8
2. Leveluk sd 501
3. Leveluk sd 501 Platinum
4. Leveluk super 501

#### Benefits of Kangen water-

1. Boosts your immune system
2. Improve digestion
3. Gives muscle relief

#### Disadvantages of Kangen water-

1. It is the most expensive water in the market
2. Improper taking of Kangen water can cause calcification and kidney stones
3. Kangen water when spiked with calcium glycerophosphate causes nausea and constipation.



# Non-technical Section



## Golden Economic Currencies Management in Era of Super Power Chhatrapati Shivaji Maharaj

- Dr. Kiran D. Bhuyar,  
(Professor, Dept. Of Chemical Engineering, PCE, Nagpur)

India's Freedom Sunriser Chhatrapati Shivaji Maharaj was born to Father Shahjiraje Bosale and Maasaheb Jijau in the year 1627 at Fort Shivneri. Shahajiraje gave part of his 'Jagir' to his wife and Jijabai and Shivaji Maharaj. Jijabai was a woman of extraordinary intellect and was solely responsible for fashioning Shivaji's career as the independent King in Mughal dominated Indian scenario.

The Maratha Empire is one of the most important Empire in Indian history. The Maratha Empire came to the power with the emergence of Chhatrapati Shivaji Maharaj, after his coronation in 1674. and ended with the British East India Company ruled, After the fall of the Kingdom of Yadavas to Allauddin Khilji, they lost their independence but acquired political and military experience, for the next few centuries by serving under various sultanates of Deccan. The coins throw the light on the times of Marathas as well as the contemporary history of India. The history of India is incomplete without the Marathas and their Coins.

Shivaji Maharaj, by winning the Torna fort in the year 1645; free his people from the Sultanate of Bijapur. Later, he won many forts and placed the area under his control and established 'Hindu Swaraj'. He formed the independent Maratha kingdom with Raigad as his capital and successfully fought against the Mughals to defend their kingdom. He was crowned as Chhatrapati, (sovereign) of the new Maratha kingdom in 1674. Later, he also founded an Independent Maratha nation, with Raigad as its capital after exploiting guerrilla warfare with Adilshah of Bijapur and Mughal Emperor Aurangzeb.

During his rule, Chhatrapati Shivaji Maharaj issued coins in two metals gold and copper. The gold coins issued by him are known as Huns and the copper coins issued by him are known as Shivrais. Shivaji Maharaj was the first ruler to start Raj Shaka (Royal Era).





### Types of Coins:

There were three types of Coins launched by Chhatrapati Shivaji Maharaj's

#### i) Gold Coins ii) Silver Coins iii) Copper & Other Coins.

**1\* Shivaji Maharaja's Gold Coins :** Sabhasad has given many gold coins. Gambar, Mohar, Pulli and Hons were gold coins, there are various types these were, 1) Sangari 2) Sivrai 3) Padsahi 4) Devrai 5) Acyutrai 6) Ramcandrara 7) Satami 8) Ibrahim 9) Ulphakari 10) Tadpatri 11) Afraji 12) Bivaluri 13) Pavanaiki 14) Gold Bars 15) Fanams 16) Cukrams etc.

Gold Mohar = 14 Silver rupees = 1 Hon. = 16 Falams

1 Pagado = 16 Falams and 1 Chakram = 10 Falams

100 Hons = 160 Chhatrapati Chakras.

\* 1 Guarda = 5 Rupees \* 1 New Pagada = 5 Rupees



#### 2\* Shivaji Maharaja's Silver Coins

1 Rupees 2 Asrafis 3 Abashis 4 Dabholi Kabri 5 Chauli Kabri 6 Basri Kabri

1 Calni = 100 Rupees

1 Khazana = 100 Rupees, 12 Tankas, 25 Dams

1 Alamgiri = 16 Tankas and 15 Dams (Bying) & 16 Tankas and 9 Dams (Selling) 1 Rupees.

#### 3\* Shivaji Maharaja's Copper & Other Coins.

In this category consist in Shivrai or Chhatrapati, Sajgani, Tiruka, Paisa, Ruka, Dam, Adka, Jital, Budgrooks and cowries may be included.

After the death of Shivaji Maharaj at Swarajya Capital Raigad Fort, the hold of the Maratha Empire was carried by his two sons Shambhuji and Rajaram. Both Shambhuji and Rajaram ruled Maratha Empire briefly.







In 1681, Sambhaji sat on the throne of Maratha after the death of his father, Shivaji Maharaj. After sitting on the throne of the Maratha Empire, he defeated the Portuguese and Chikka Deva Raya of the Mysore Empire.

Later, Shambhuji fought bravely against Mughal Empire, later he was captured by Mughal Emperor Aurangzeb, and was tortured to death.

Rajaram ruled the Maratha Empire but died soon. After the death of Rajaram, the young son of Shambhuji, Shahu was made to sit on the throne of the Maratha Empire.

References: Economic Policy of Chhatrapati Shivaji (1646-1680), by V. J. Arekar, Published by Sharddha Publication, Chembur, Mumbai (Bombay), 1994,







## IN PRAISE OF FRIENDS AND FOES


Phool Isliye Achhe Hain Ki  
Khushbu Ka Paigam Dete Hain,  
Kaante Islite Achhe Hai Ki Daaman  
Thaam Lete Hain,  
Dost Isliye Achhe Hain Ki Woh  
Mujh Par Jaan Dete Hain,  
Aur Dushmano Ko Main Kaise  
Kharab Keh Doon...  
Woh Hi Toh Hain Jo Mehfil Mein  
Mera Naam Lete Hain.

-Mihir Bapat  
3rd year





# JOURNEY



A journey which started in early two thousands,  
continues today.

From being a notorious child, an ambitious  
teenager and handling situations in our own way.

And now we stand in our present today,  
Growing and developing ourselves in a unique  
way. Doing everything with our own satisfaction  
and pleasure, and gaining happiness which any  
apparatus can't measure.

Just remember the journey how beautiful it is, and  
never to regret about the opportunities you miss.  
And just always be what you are, remembering the  
journey through which you come so far

-Maifuz Ali  
1st year





# ती कशी असावी?

ती कशी असावी?

कधी कधी माझ्या हृदयात हे प्रश्न येते  
ती जशी माझ्या हृदयाचे प्राण असावी  
ती जशी कोणत्या रोमॅंटिक फिल्म ची कहानी असावी  
ती जशी माझे सूर्य मे तिचा चंद्र असावे  
ती जशी अश्रु मी तिचे पुसणारा असावे  
ती जशी कहानी मी तिचे मधुर गीत असावे  
ती जशी माझे प्रेम मी तिचा प्रेमी असावे  
ती जशी नदी मी तिचा किनारा असावे  
ती कधी रुसली तर मी तिला हसवणारा असावे  
तरी पण कधी कधी माझ्या हृदयात येते.....ती कशी असावी?

-Piyush Chawade  
3rd year





## CHESS COMMITTEE पर रचीत की गयी कविता

सब कहते है प्रियदर्शिनी के गली गली में शोर है!  
यार हम केमिकल वालो की बात ही कुछ और है।  
FRM, OPT पढ़ने का अलग ही एक नशा है !  
लेकिन chemistry में titration करते करते हो जाता बुरा हाल है।  
एक तरफ ethanol एक तरफ phenol!  
चलो यार chemical engineers कुछ कर दिखाए कमाल।  
यहां chess committee मे बैठने वालो में मोहब्बते मुज्जोर है!  
और जिनसे बंधे है हम वह प्रेम की एक डोर है ।  
कोई president कोई coordinator अलग अलग सबके काम है!  
लेकिन Rajesh की कॉमेडी के बिना सूनी सबकी शाम है।  
Prachi और ayush के बिना हो जाते सब बोर है !  
तो एक तरफ aditya और shreyas का छाया चारो ओर जोर है।  
सबके सहायता करने वाले sahil और mihir twins है !  
तो एक तरफ kashish और kirti social media और magazine की queens है ।  
Sejal के नाम का छाया चारो ओर जोर है!  
तो एक तरफ devashree के गानों पर होता once more हैं।  
लेखिका हैं हम लिखते कविता!  
Rutuja और mansi ka स्वभाव सबको है प्रियता।  
इस CHESS को एक साथ रखने वाले anjali mam गुरु हमारे!  
यही देते हमे ज्ञान का सागर  
इसिसे बहता हमारा ज्ञान का महासागर।  
इसलिए तो कहते है.....  
प्रियदर्शिनी के गली गली में शोर है!  
यार हम केमिकल वालो की बात ही कुछ और है।

-Kalyani Dekate

2nd year







## Inkbound Reverie

In the silent corridors of doubt, she stands,  
A dreamer with quill in determined hands.  
No belief surrounds her, a solitary fight,  
Yet, she pens her dreams in the ink of night.

Society's whispers, a dissonant refrain,  
But in her words, resilience shall reign.  
Her dreams scorned by skeptical gazes,  
Yet, she persists through the doubting mazes.

In the echo of skepticism, she finds her voice,  
A dreamer's quill, a rebellious choice.  
No allies in her battle for the unseen,  
Her pen dances on the canvas, serene.

On the canvas of disbelief, her tales unfold,  
A clandestine rebellion, a story to be told.  
Desires flutter like pages in the wind,  
Yet, the world's tempest threatens to rescind.

On the dreaming path, she treads alone,  
Her tales, seeds of courage, are sown.  
In the quiet rebellion of her written words,  
A symphony of dreams, like sweet-singing birds.  
She fights with ink against a binding fate,  
The dreamer's quill, an unyielding advocate.

Igniting worlds on paper, a clandestine art,  
A writer's journey, a beating heart.  
In the corridors of doubt, she stands still,  
She dreams, she writes, with the dreamer's quill



Divya

-Divya Maykarkar  
3rd year





## SOUL'S RESONANCE

Fragile heart, burdened by obligation, let me live carefree,  
Breathing deeply, a strange Savior in familiar enemies.

Tired of lies, silent I remain,  
Hope dwindles daily, yet I seek innocence again.

A pure heart finds luxury in simplicity's embrace,  
Love pursues beauty beyond a face adorned with grace.

Dreams, like torn pages, unfold before my eyes,  
In my heart's corner, hope lingers to rebuild my skies.

Locked in a false happiness, my soul I conceal,  
Shielding it from the palpable pain, reality's ordeal.  
The immortality of love, relevant if no fear prevails,  
A timeless refuge as perishable woes assail.

An honest soul, not always cherished, may burn or be  
slashed,

Lies, ephemeral, can't endure, forever unmasked.

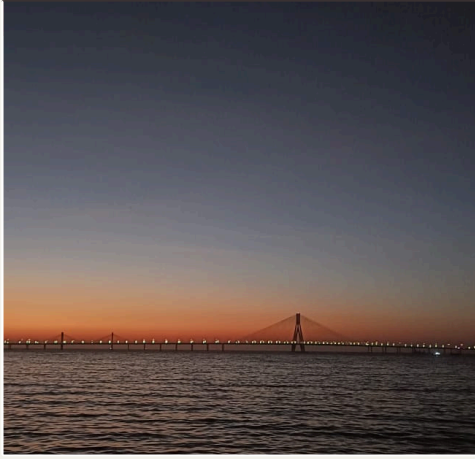
Truth, unalterable, resists the winds of change,  
A steadfast presence in life's ever-evolving range.

Destiny, an illusion, shaped by choices we make,  
A small world within the grand, where significance takes.  
Happiness resides in the realm of thoughts profound,  
A myth shattered only by the wings of accountability,  
unbound.

As time unfolds, accountability trims desire's wings,  
Yet within this complexity, the quest for innocence lingers.  
Refined and polished,

-Divya Maykarkar  
3rd year





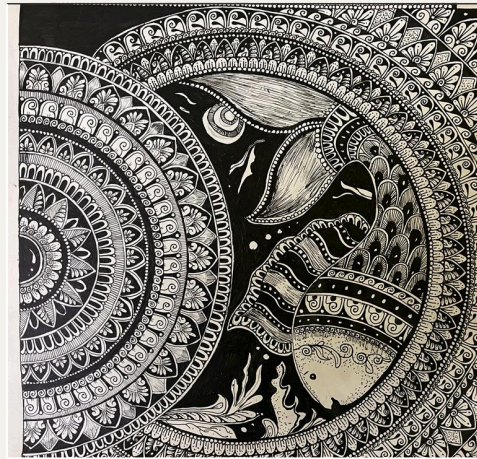
Gauri Deshpande  
-3rd year



Piyush Chawade  
-3rd year



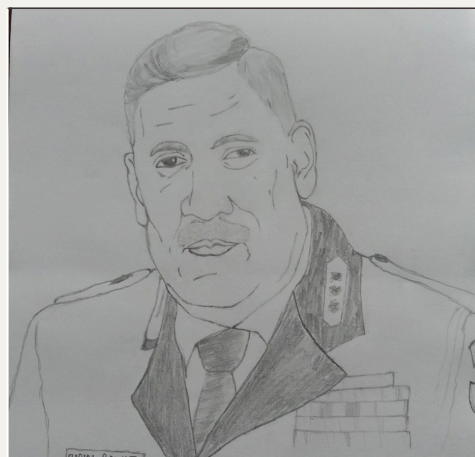
Kirti Raut  
-3rd year



Trupti Hedau  
-2nd year



Janhvi Atalkar  
-2nd year



Shreyas Manwatkar  
-3rd year



# Chess Installation 23-24





# INDUSTRIAL VISIT





# **GLIMPSES OF STUDENT ACHIEVEMENTS**



**1st Best Paper Award  
Winners held by ISTE**



**2nd Prize Winners in  
National Youth Innovation  
Challenges**



**3rd Prize IDP winners in  
REACT'24 held at LITU**



**2nd Prize winner at debate  
competition held under  
AKAM JNARDDC, Nagpur**

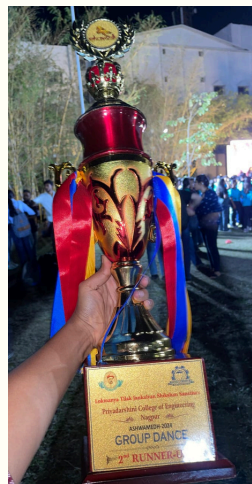


## EVENTS 23-24





# **ASHWAMEDH - 2K24**



***Group Dance  
2nd Runner-Up  
in Ashwamedh-  
2024***



***Badminton  
Runner-Up Boys  
in Ashwamedh  
2024***





*Congratulations*

**TOPPERS OF VII SEMESTER (W -2023)**

SR NO	NAME OF STUDENT	RANK	PERCENTAGE	SGPA
1	Rakshit Gedam	I	81.85 %	8.20
2	Sarthaki Kathale	II	79.85%	8.13
3	Bhagyashri Shinde	III	76.85%	7.63

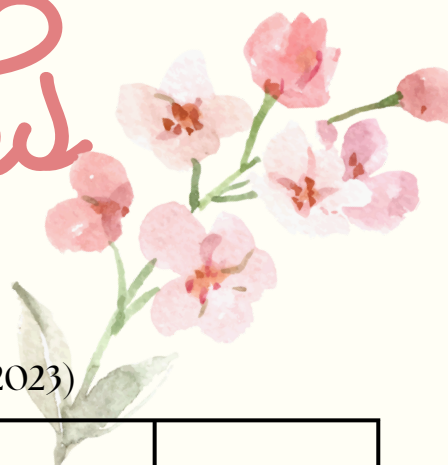
**TOPPERS OF VIII SEMESTER (S-2024))**

SR NO	NAME OF STUDENT	RANK	PERCENTAGE	SGPA
1	Sarthaki Kathale	I	87.65%	8.76
2	Rakshit Gedam	II	85%	8.5
3	Bhagyashri Shinde Anuj Kinkar	III	84.45%	8.4





*Congratulations*



**TOPPERS OF V SEMESTER (W -2023)**

SR NO	NAME OF STUDENT	RANK	PERCENTAGE	SGPA
1	Ms. Kirti Raut	I	82.85%	8.43
2	Ms. Prachi Patel	II	79.85%	8.08
3	Himanshu Gonnade	III	79.57%	8.12

**TOPPERS OF VI SEMESTER (S-2024))**

SR NO	NAME OF STUDENT	RANK	PERCENTAGE	SGPA
1	Ms. Mansi Kathoke	I	81%	8.49
2	Himanshu Gonnade	II	80.14%	8.12
3	Ms. Kirti Raut	III	78.7%	8.04





*Congratulations*



**TOPPERS OF III SEMESTER (W-2023)**

SR NO	NAME OF STUDENT	RANK	PERCENTAGE	SGPA
1	Ms.SHWETA P.MORE	I	78%	7.80
2	Ms.TANUSHREE H.THAKRE	II	76.87%	7.5
3	Ms.KAJAL V.BAGHELE	III	76%	7.69

**TOPPERS OF IV SEMESTER (S-2024)**

SR NO	NAME OF STUDENT	RANK	PERCENTAGE	SGPA
1	Ms. Tanushreee Thakare	I	78.92%	8.26
2	Piyush Atkare	II	74.76%	7.51
3	Ms.KAJAL V.BAGHELE	III	73.07%	7.40



**DEPARTMENT OF CHEMICAL ENGINEERING**  
**STUDENTS ACHIEVEMENT 2023-2024**

Sr no.	EVENT	DATE	STUDENT NAME (PARTICIPANT)	ORGANIZER & VENUE	REMARKS
1	CHEMIX-2024	06/04/2024	Aditya Swamy	VNIT, Nagpur	Presented paper
2	National Conference in Recent Trends in Chemical Engineering & Technology (REACT-24)	30/03/2024 to 01/04/2024	Kirti Raut Aditya Swamy Piyush Chawade Prachi Patel	LITU, Nagpur	Won 3rd prize in IDP
3	National Conference in Recent Trends in Chemical Engineering & Technology (REACT-24)	30/03/2024 to 01/04/2024	Mansi Kathoke	LITU, Nagpur	Presented paper
4	National Conference in Recent Trends in Chemical Engineering & Technology (REACT-24)	30/03/2024 to 01/04/2024	Divya Maykar	LITU, Nagpur	Presented paper
5	Circular Economy Campaign 2023-Vidarbha	26/07/2023	Devashree Hanmante	Priyadarshini College of Engineering	Won 2nd Prize
6	National Youth Day-Innovation & Startup Challenge 2024	19/01/2024	Prachi Patel, Gauri Deshpande, Kirti Raut, Aarjavi Joshi	VNIT Nagpur	Won 2nd Prize
7	An Inter College Socio-Technical Event Abhyudaya 2023 Youth Parliament	10/09/2023	Mansi Kathoke	LIT Nagpur	Participated



Sr no.	EVENT	DATE	STUDENT NAME (PARTICIPANT)	ORGANIZER & VENUE	REMARKS
8	6th Edition of LITMUN 2023 as delegate of Ambalika in the committee Mahabharata	26/08/2023 to 27/08/2023	Mansi Kathoke	LIT Nagpur	Participated
9	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Vaishnavi Tadase , Ved Chacharkar, Achal Derkar , Aditya Swamy , Aman Kakde	CSIR-National Environmental Engineering Research Institute	Participated
10	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Deekshita Patil Hrashal lende Deepanshu gadkari Prachi patel	CSIR-National Environmental Engineering Research Institute	Participated
11	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Devesh Chauhan Isha Ghutke Dipanshu Kawale Kashish CHoudhari	CSIR-National Environmental Engineering Research Institute	Participated
12	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Kirti Raut Mihir Bapat kunal borkar Mohammad Israr Sheikh, Rakshit Gedam	CSIR-National Environmental Engineering Research Institute	Participated
13	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Sujal Shahu, Tanushree Thakre, Trupti Hedau, Urvashi Malwade	CSIR-National Environmental Engineering Research Institute	Participated
14	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Priyanshu Wankhede, Rahul Fulambarkar, Piyush Chawade	CSIR-National Environmental Engineering Research Institute	Participated
15	Activity On Noise Monitoring & Data Collection	5/11/2023 to 18/11/2023	Sahil Boldhane, Sanket Bagmare, Shreyash Manwatkar	CSIR-National Environmental Engineering Research Institute	Participated
16	Workshop on Kinectics Study of Microbial Growth	23/02/2023	Yash Pardhi	Priyadarshini college of Engineering	Participated



# ***Priyadarshi College of Engineering, Nagpur.***

## ***Department of Chemical Engineering***




### Placed students list 2023-24

sr no.	Students Name	Discipline	Year of paasing from institution	on/off campus placement	Name of the employer	Photo
1	Anshul Bhoyar	Chemical	2024	on campus	<ul style="list-style-type: none"> <li>• WORLEY INDIA PRIVATE LIMITED, Mumbai</li> <li>• Solar Group</li> </ul>	
2	Anuj Kinkar	Chemical	2024	on campus	WORLEY INDIA PRIVATE LIMITED, Mumbai	
3	Bhuvaneshwri Chimurkar	Chemical	2024	on campus	WORLEY INDIA PRIVATE LIMITED, Mumbai	
4	Riya Fukat	Chemical	2024	on campus	WORLEY INDIA PRIVATE LIMITED, Mumbai	
5	Priyanshu Khapecar	Chemical	2024	on campus	Solar Group, Nagpur	
6	Samiksha Jaiswal	Chemical	2024	on campus	Solar Group, Nagpur	
7	Rutuja Wakulkar	Chemical	2024	on campus	Solar Group, Nagpur	
8	Bhairavi Bawane	Chemical	2024	on campus	Solar Group, Nagpur	
9	Saurabh Tayade	Chemical	2024	on campus	Solar Group, Nagpur	
10	Tejas Chivane	Chemical	2024	on campus	Solar Group, Nagpur	



sr no.	Students Name	Discipline	Year of paasing from institution	on/off campus placement	Name of the employer	Photo
11	Deekshita Patil	Chemical	2024	on campus	Solar Group, Nagpur	
12	Shreyas Ramdatti	Chemical	2024	on campus	MACLEODS PHARMACEUTICALS LIMITED, Gujarat	
13	Mayur Kathoke	Chemical	2024	on campus	MACLEODS PHARMACEUTICALS LIMITED, Gujarat	
14	Mohammad Israr Sheikh	Chemical	2024	on campus	MACLEODS PHARMACEUTICALS LIMITED, Gujarat	
15	Kunal Borkar	Chemical	2024	on campus	MACLEODS PHARMACEUTICALS LIMITED, Gujarat	
16	Surendra Kumbhalkar	Chemical	2024	on campus	MACLEODS PHARMACEUTICALS LIMITED, Gujarat	
17	Rakshit Gedam	Chemical	2024	on campus	MACLEODS PHARMACEUTICALS LIMITED, Gujarat	
18	Syed Mustaqeem Quadri	Chemical	2024	on campus	Kent Engineering India Private Limited, Mumbai	
19	Dhanashri kale	Chemical	2024	on campus	Solar Group, Nagpur	
20	Abhishek Falnikar	Chemical	2024	on campus	Solar Group, Nagpur	
21	Vikram Hajare	Chemical	2024	on campus	Leading Edge Industrial Corporation , Nagpur	
22	Pravin Hatwar	Chemical	2024	on campus	Inventyes Research Company pvt. Ltd. Nagpur	
23	Sarthak pawse	Chemical	2024	on campus	Inventyes Research Company pvt. Ltd. Nagpur	
24	Gaurav Maske	Chemical	2024	on campus	Inventyes Research Company pvt. Ltd. Nagpur	



sr no.	Students Name	Discipline	Year of paasing from institution	on/off campus placement	Name of the employer	Photo
25	Yash Pardhi	Chemical	2024	on campus	Inventyes Research Company pvt. Ltd. Nagpur	
26	Snehal Sarve	Chemical	2024	on campus	Inventyes Research Company pvt. Ltd. Nagpur	
27	Gagan Mehta	Chemical	2024	off campus	Ecologique Science Technik (I) Pvt. Ltd.	



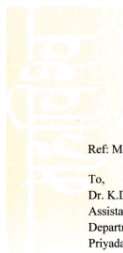


# FACULTY ACHIEVEMENTS

LOKMANYA TILAK JANKALYAN SHIKSHAN SANSTHA'S

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF CHEMICAL ENGINEERING



Ref: MGMU003/23-24/RO/Ph.D./ 608

10<sup>th</sup> August 2023

To,  
Dr. K.D. Bhuyar  
Assistant Professor  
Department of Chemical Engineering  
Priyadarshini College of Engineering  
Nagpur - 440019

Sub: Recognition as Ph.D. Research Co-Supervisor for Ph.D. Program in the subject of Chemical Engineering (Including Food Technology and Food Processing Technology)

Sir,

1. Please refer to your application for approval as a Ph.D. Research Supervisor for the Ph.D. program of MGM University, Aurangabad.
2. This is to inform you that the Hon'ble Vice-Chancellor of University has accepted the recommendations of Research & Recognition Committee meeting held on 01<sup>st</sup> July 2023 and under the provisions of MGM University, Ph.D. Ordinance O.7, you have been recognized as a Research Co-Supervisor for Ph.D. program in the subject of Chemical Engineering (Including Food Technology and Food Processing Technology) under the faculty of Engineering and Technology.



Registrar 10/8/23  
MGM University  
Aurangabad

Copy to:

1. The Dean  
Faculty of Engineering and Technology  
MGM University,  
Aurangabad - 431003
2. The Principal  
Jawaharlal Nehru Engineering College  
MGM University,  
Aurangabad -431003

SELF-FINANCED STATE UNIVERSITY ESTABLISHED BY MAHARASHTRA ACT NO.3008 OF 2019  
MGM UNIVERSITY, MGM CAMPUS, H-6, CIDCO, AURANGABAD - 431 003 INDIA, Tel. No. (91) 240-6481000, Email - registrar@mgm.ac.in, Website - www.mgm.ac.in

*THE WELL KNOWN ACADEMICIAN DR. KIRAN D. BHUYAR IS  
HONOURLY **SELECTED AS PH.D. SUPERVISOR AT MGM  
UNIVERSITY, CHHATRAPATI SAMBHAJI NAGAR IN THE YEAR 2023-  
24. HE WILL BE MOTIVATING AND GUIDING THE PH.D. SCHOLARS  
IN THE FIELD OF CHEMICAL ENGINEERING, FOOD TECHNOLOGY  
AND FOOD PROCESSING ENGINEERING IN INDUSTRY & PUBLIC  
SOCIETY WELFARE CONTEXT FOR THE DEVELOPMENT OF NATION.***



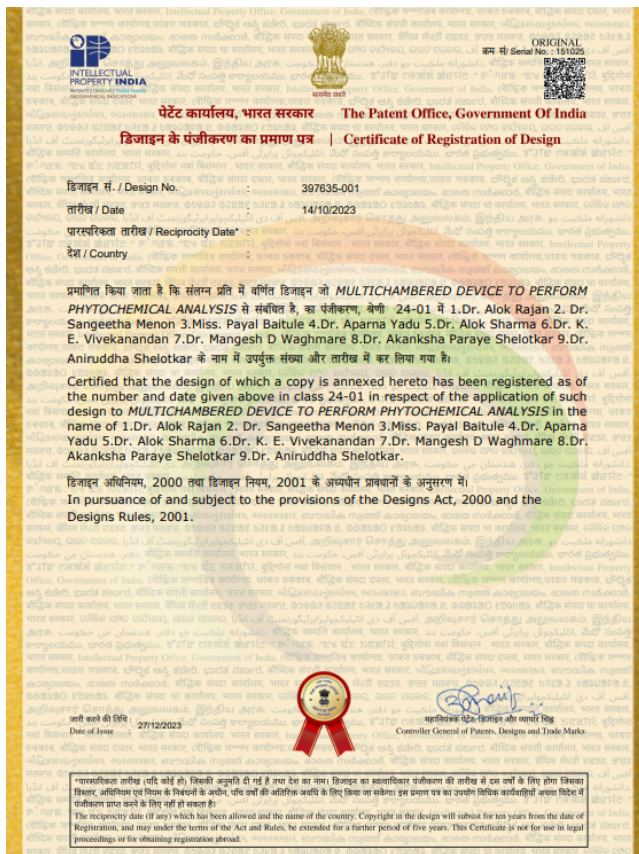
# FACULTY ACHIEVEMENTS



LOKMANYA TILAK JANKALYAN SHIKSHAN SANSTHA'S

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF CHEMICAL ENGINEERING



**Ms. PAYAL BAITULE GRANTED DESIGN PATENT  
397635-001 DATED 14/10/2023 ON MULTI  
CHAMBERED DEVICE TO PERFORM  
PHYTOCHEMICAL ANALYSIS.**



# FACULTY ACHIEVEMENTS



LOKMANYA TILAK JANKALYAN SHIKSHAN SANSTHA'S

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF CHEMICAL ENGINEERING



PROF. (MRS.) SNEHAL S DESHMUKH HAS TOPPED THE NPTEL  
ONLINE CERTIFICATION EXAM OF “**RESEARCH  
METHODOLOGY**” IN TOP TOPPER 5% WITH SILVER MEDAL  
HELD AT APRIL 21, 2024.

ALSO, MA'AM WAS HONOURED AS AN “**ACTIVE REVIEWER**”  
OF JOURNAL OF EMERGING TECHNOLOGY AND INNOVATIVE  
RESEARCH.



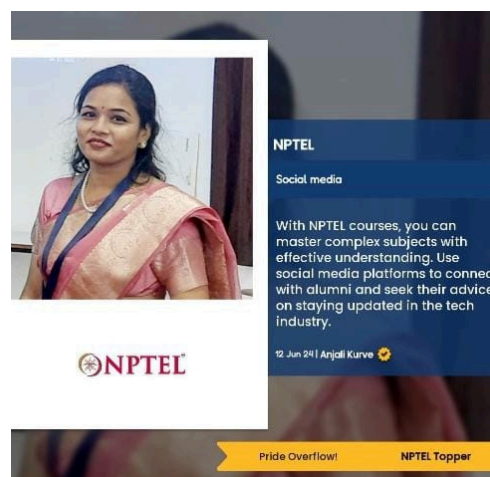
# FACULTY ACHIEVEMENTS



LOKMANYA TILAK JANKALYAN SHIKSHAN SANSTHA'S

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF CHEMICAL ENGINEERING



PROF. (MRS.) ANJALI KURVE-BANGRE HAS TOPPED THE NPTEL ONLINE CERTIFICATION EXAM OF “**RESEARCH METHODOLOGY**” IN TOP TOPPER 5% WITH SILVER MEDAL HELD AT APRIL 21, 2024.

ALSO, MA'AM WAS HONoured AS AN “**ACTIVE REVIEWER**” OF **JOURNAL OF EMERGING TECHNOLOGY AND INNOVATIVE RESEARCH** AND IN **JOURNAL OF EXPERIMENTAL AGRICULTURE INTERNATIONAL**.



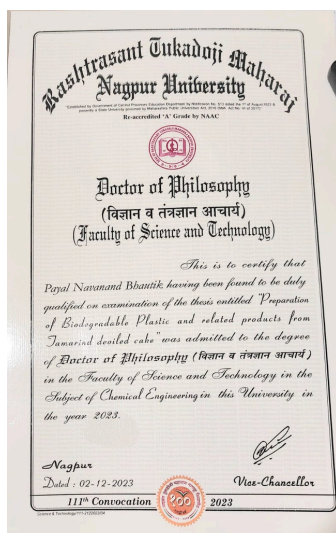
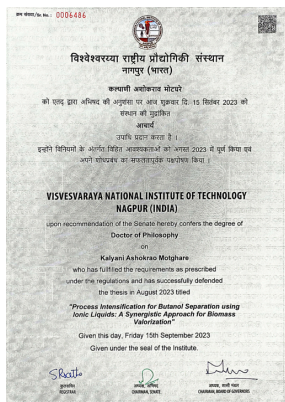


# FACULTY ACHIEVEMENTS

LOKMANYA TILAK JANKALYAN SHIKSHAN SANSTHA'S

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF CHEMICAL ENGINEERING



DR. KALYANI MOTGARE

AND

DR. PAYAL N. BHAUTIK

SUCCESSFULLY COMPLETED THEIR **PHD** IN CHEMICAL  
ENGINEERING ON DECEMBER 2, 2023.



***Priyadarshi College of Engineering, Nagpur.***  
***Department of Chemical Engineering***

**Faculty Achievement**  
**2023-24**

sr no.	Name of Event	Title	Date	Venue	Name of Faculty
1	34th National Level Inter University Chemical Engineering Students Paper Presentation Seminar	Scope & Study of Life Cycle Assesment: An Environment Freriendly Approach Towards Sustainability	2023	–	Anjali Kurve-Bangre
2	National Conference on Research Innovations in ICT & Computing Technologies	Investigation of Engine Performance using Mathematical Modelling	2023	–	Anjali Kurve-Bangre
3	National Conference on Environmental Sustainable Technologies (NEST-2023)	Production Of Biofertilizer from Waste Hair	2023	–	Anjali Kurve-Bangre
4	International Conference on Trends in Energy & Environmental Research for Sustainable Development (TEERSD-2023)	Optimization Technique: Transesterification of UCO to produce Biodiesel	2023	–	Anjali Kurve-Bangre
5	International conference on Emerging Techno- Economic Development for Sustainable Environment	Eco Friendly Biopesticide from Custard Apple Seeds oil and Neem Seeds Oil A sustainable Approach to Pest Management	12-13 January 2024	IPS Academy Indore	Mrs. Minal Patil
6	International conference on Emerging Techno- Economic Development for Sustainable Environment	Eco Friendly Biopesticide from Custard Apple Seeds oil and Neem Seeds Oil A sustainable Approach to Pest Management	12-13 January 2024	IPS Academy Indore	Ms.Payal N. Bhautik



# ***Priyadarshi College of Engineering, Nagpur.***

## ***Department of Chemical Engineering***

**Paper published by the faculty of the  
department**

sr no.	Name of Faculty	Title of Paper	Journal/ Conference	Year of publication
1	Dr. S. R. Mote	1. Nano Material & Nano Technology 2. Recycling of used milk pouches to tiles: An innovative green initiative 3. Green initiative towards sustainable transport	1. IC 2. TIJER 3. JETIR	1. Sep 2023 (23-24) 2. Feb 2024 (23-24) 3. Feb 2024 (23-24)
2	Dr. AWAS Deshmukh	Exploring the Potential: Comparative Analysis of Disinfectant Derived from Waste Fruit Seeds	Transactions of the Indian National Academy of Engineering	Sep 2023
3	Dr. K. D. Bhuyar	Optimization of Photocatalytic Removal of nigrosine dye using green synthesized MgO NP	Biomass conversion & Biorefinary	23-24
4	Mrs. P.K. Baitule	Corrosion inhibition of mild steel in NH <sub>4</sub> Cl+NaOH environment containing azadirachla indica leaf extract	Int.J.Corrosion scale inhibition	2024
5	Mrs.S.S. Deshmukh	1. Green initiative towards sustainable transport 2. Recycling of used milk pouches to tiles: An innovative green initiative 3. Cassava leaves as a fertilizer : A sustainable technique 4. Application of Nanofluid in CO <sub>2</sub> capture 5. A Review Paper On: Green Synthesis Method for preparation of SiO <sub>2</sub> Nanoparticle 6. Review on methods and technologies for extracting impurities from industrial waste water	1. JETIR 2. TIJER 3. IJRAMT 4. INCHESS 5. CHEM TECHNOVA 6. TEERSD	1. Feb 2024 2. Feb 2024 3. Feb 2024 4. Feb 2024 5. March 2024 6. 2023



sr no.	Name of Faculty	Title of Paper	Journal/ Conference	Year of publication
5	Mrs.S.S. Deshmukh	7. Alternatives for carbon dioxide capture 8. Preparation of Bio plastic Reinforced from cellulose 9. Green initiative towards sustainable transport	7. IJSRTEM 8. Vel tech Hi Tech 9. IISSS	7. March 2023 8. Sept 2023 9. Nov 2023
6	Mrs. Anjali Kurve	1. Investigation of Engine performance using mathematical Modelling 2. Recycling of used milk pouches to tiles: An innovative green initiative 3. Green initiative towards sustainable transport 4. Cassava leaves as a fertilizer : A sustainable technique 5. Scope & Study of LCA: An Environment friendly approach towards sustainability 6. Optimization Techniques: Trans esterification of UCO to produce Biodiesel 7. Production of Bio fertilizer from waste Hair 8. Green initiative towards sustainable transport	1. NCRIICT-2023 2. TIJER 3. JETIR 4. IJRAMT 5. INCJESS 6. TEERSD 7. Vel tech Hi Tech 8. IISSS	1. Mrach 2023 2. Feb 2024 3. Feb 2024 4. Feb 2024 5. Feb 2024 6. 2023 7. Sept 2023 8. Nov 2023
7	Dr.Payal Bhautik	Exploring the Potential: Comparative Analysis of Disinfectant Derived from Waste Fruit Seeds	Transactions of the Indian National Academy of Engineering	Sep 2023
8	Dr.Kalyani Motghare	1. Microwave assisted recovery of butanol from aqueous media: Process intensification approach 2. Recovery of Biobutanol using Ionic liquids 3. Ionic liquids as solvents for separation 4. Recovery of Biobutanol using Ionic liquids Book Chapter 5. Ionic liquids as solvents for separation	1. Materials Today 2. Wiley 3. CRC Press 4. 978-3-527-35066 -7 Wiley 5. 978-1-003-20345-2 CRC Press	1. 2024 2. 2024 3. 2023 4. 2024 5. 2023
9	Ms.Khushbu Salodkar	Preparation of Zeolite from incense stick ash	Chemix 2024	April 2024



Priyadarshini College of Engineering, Nagpur

Department of Chemical Engineering

Session 2023-2024

Duration: 01/07/2023 TO 10/04/2024

Sr. No	Name of Program	Resource Person	Total No. of participants	Date	Incharge Faculty	Outcome/Expected Outcome
1.	Traditional day & vasant panchami celebration	In presence of All Departmental Faculties	52+11	14/02/2024	Mrs.Anjali Kurve-Bangre	Students enriched the students with traditional, cultural and patriotic thought with spreading the happiness with friendly environment
2.	Industrial Visit	OrangeCity Garment Clusture OCGC Pvt. Ltd., Uppalwadi, Nagpur	56+2	09/02/2024	Dr. K.D.Bhuyar, Ms.Payal Baitule	Inculcate the practical knowledge among students with experimental approach
3.	Harvest Gala: The Aura of Happiness"	.Dr. Nita Thakre (Head, CT Department,PCE , Nagpur)	120+12	18/01/2024	Mrs.Anjali Kurve-Bangre	Cultivate and promote social harmony with different culture and traditions.
4.	Departmental Sports Room Inauguration	Dr.S.R.Mote (Head Of Deptt.) In presence of All Departmental Faculties		10/01/2024	Mrs.Anjali Kurve-Bangre	Students encouraged and promoted with physical health, mental and social fitness required to be a part of sports is essential for a <u>healthy lifestyle</u> . In addition, this on the happiness that one can feel in being a part of it.
5.	Mixed Martial Arts Demonstration & Training	Ms.Sakshi Gajbhiye (MMA Trainer)	85+12	26/10/2023	Mrs.Anjali Kurve-Bangre	Self Defense and women empowerment
6.	Guest Talk	Mr. P. Manekar (Principal Scientist, CSIR-NEERI, Nagpur)	56+12	21/10/2023	Mrs.Anjali Kurve-Bangre	Students enriched with technical knowledge. They got platform to show cased their talent, management skills and leadership
7.	Inauguration of IICHE student	Mr. P. Manekar (Principal	56+12	21/10/2023	Mrs.Anjali Kurve-Bangre	Students enriched with technical knowledge.



	Chapter & Installation of Committee member for 2023-24	Scientist, CSIR-NEERI, Nagpur)				They got platform to show cased their talent, management skills and leadership.
8.	Founder's Day Celebration	Donation at Sai Ashrams Nehru Bal Sadan, MIDC	45+12	11/10/2023	Dr. Kalyani Motghare	Celebrating the birthday of hon. Dr. Satishji Chaturvedi with gratitude by donation.
9.	Industrial Visit	Mahananda Milk Industry, Wadi MIDC, Nagpur	45+2	09/10/2023	Dr. K.D.Bhuyar	Inculcate the practical knowledge among students with experimental approach
10.	Inauguration of Alumni Lecture Series	Mr.Vivek Jangde (ESTPL, Nagpur)	87+12	06/10/2023	Mrs.Snehal Deshmukh	Sharing the knowledge about start-ups and flourishing with the bond between teachers, students and college days
11.	Teacher's Day celebration	In presence of All Department-al Faculties	78	05-09-2023	Mrs.Anjali Kurve-Bangre	Students willingly showed their love, respect and affection towards teachers
12.	Cultural programs by students in category of stand-up comedy/open mike, solo/duet dance/ solo song	In presence of All Department-al Faculties	110+12	25-08-2023	Mrs.Anjali Kurve-Bangre	Students got platform to show cased their talent
13.	Technical Quiz on Chemical Engineering for studentst	In presence of All Department-al Faculties	97+12	25-08-2023	Mrs.Anjali Kurve-Bangre	Students got platform to show cased their talent & enriched with technical knowledge.
14.	Expert talk on Cleaner Energy & Environment: Challenges & Opportunities	Dr.Nitin Labhsetwar (Chief Scientist, CSIR-NEERI, Nagpur)	100+12	25-08-2023	Mrs.Anjali Kurve-Bangre	Students influenced and convinced being a human must act with environmental friendly approaches.
15.	Inauguration of ChESS student forum & Installation of Committee member for 2023-24	Dr.Nitin Labhsetwar (Chief Scientist, CSIR-NEERI, Nagpur)	110+12	25-08-2023	Mrs.Anjali Kurve-Bangre	Students enriched with extra-curricular activities. They got platform to show cased their talent, management skills and leadership
16.	AKAM Circular Economy Campaign 2023	Dr.Dora Thomas (Humanity deptt, PCE),	370	26/07/2023	Dr. S.R. Mote, Mrs.Anjali Kurve,	students got platform to show cased their talent & enrich



	under G20 association with JNARDDC	Dr.G.D.Mehta (Mech.Deptt,PC, Dr.Amol Mankar (JNARDDC)			Mrs. M. Patil, Dr.P.Bhautik, Ms. P.Baitule, Mrs.S.Deshmukh	with technical knowledge
	Industry-Institute Interaction Meet	Mr.Sachin Palsokar, Mr. Tanmay Deshmukh, Mr. Kapil Jangde, Mr. Hardik Thakral, Mr.Utkarsh Khopkar	20	12/07/2023	Mr.Abdul R.Sheikh & Mrs.Anjali Kurve-Bangre	The fruitful discussion to Inculcate the practical & theoretical knowledge among students with experimental approach



## **PRIYADARSHINI COLLEGE OF ENGINEERING**

(Approved by A.I.C.T.E., New Delhi & Govt. of Maharashtra, Affiliated to RTMNU, Nagpur)



*Priyadarshini College of Engineering, Hingna Rd,  
Digdoh Hills, Nagpur, Maharashtra 440019*



*PH: +91-7104-299681,  
FAX: +91-7104-299648*



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