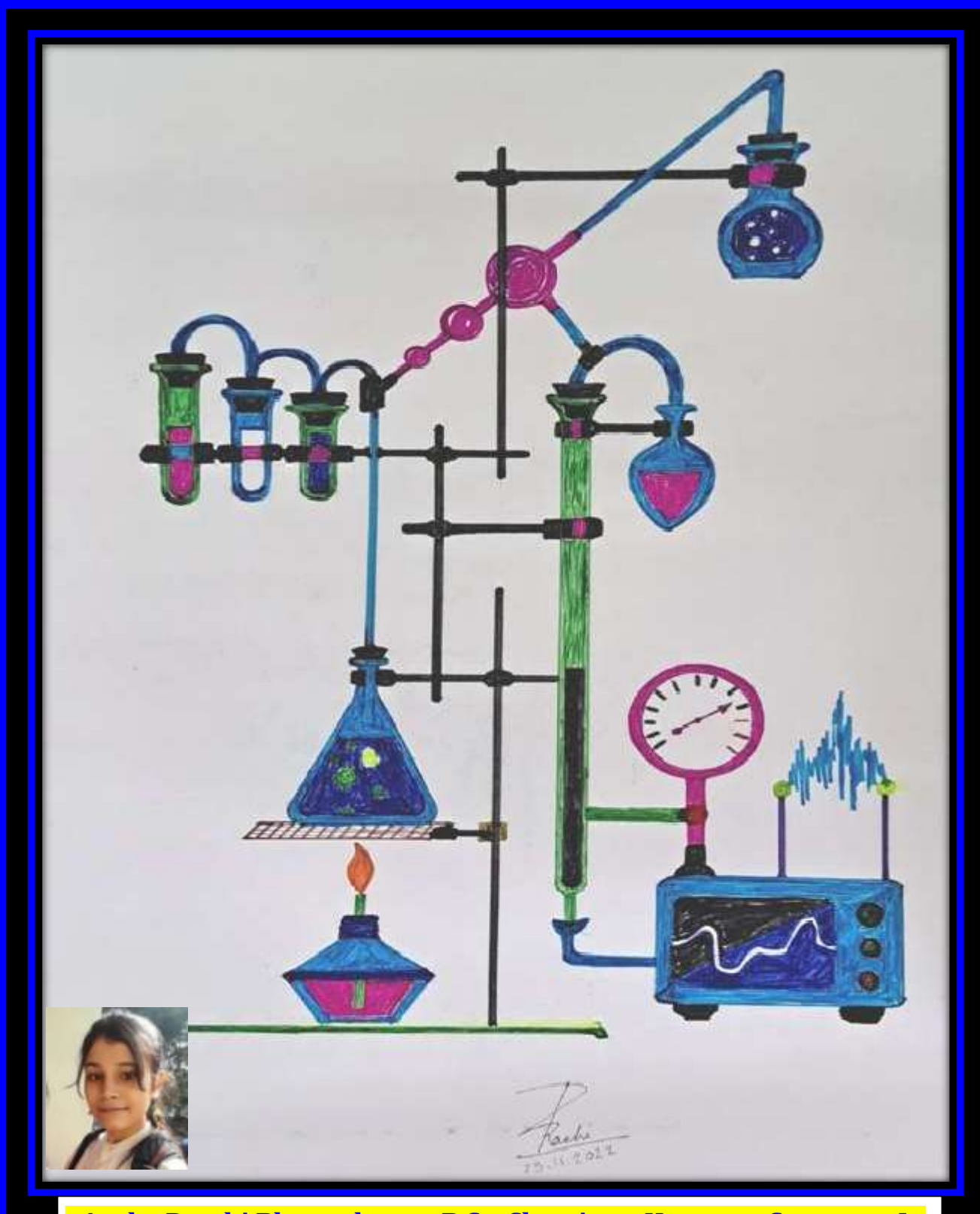


OXY-ZEN

The Chemistry E-Newsletter 2022



Art by Prachi Bhattacharya, B.Sc, Chemistry Honours, Semester-I

Department of Chemistry
Durgapur Government College
Durgapur-713214

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From the Principal's Desk



Dr. Debnath Palit

Dear Readers,

It is a matter of great pleasure to know that the Department of Chemistry has come up with the first edition of, OXY-ZEN, The Chemistry Newsletter 2022, which will serve as a promising window for the students to evolve their creativity, subject expertise and portrayal of their thoughts with confidence. We aim to nurture young individuals to confidently and competently face the challenges of the intensifying competitive world beyond the campus walls and this newsletter will provide them wide exposure beyond the curricular activities.

I acknowledge the sincere team work of the students and faculty members of the Department of Chemistry, who took the initiative to contribute their stimulated thoughts and skills in the completion of this piece of interesting work.

Best wishes for the success of OXY-ZEN, The Chemistry Newsletter 2022.

From the HOD's Desk



Dr. Snigdha Chandra

Warm greetings to everyone!

The department of Chemistry presents the first edition of OXY-ZEN, the Chemistry Newsletter 2022.

Over the years the department of Chemistry has provided the students with opportunities to explore and grow. This newsletter reflects the efforts of the department of Chemistry towards creating an excellent academic environment with a team of distinguished faculty members and staff. The department always encourages the young minds to be humane and inspires them to achieve academic excellence, develop and apply their technical skills to solve real-world problems, and indulge in collaborative activities.

It is enthralling to see the compilations and creative works of our students, and the contributors are greatly applauded for the varied hues in their articles and artwork.

The department is thankful to the Principal, Durgapur Government College for his generous support towards all its academic activities.

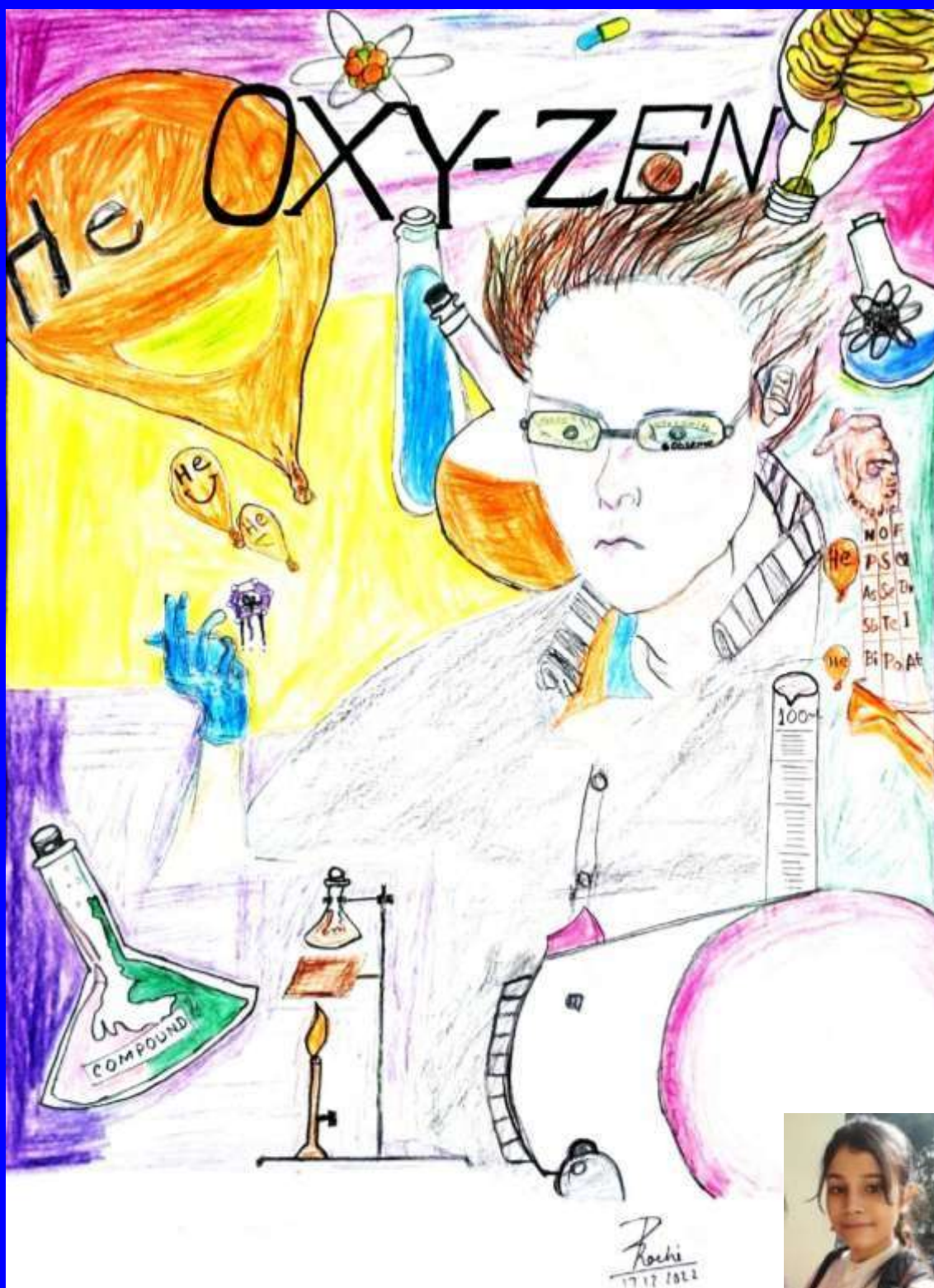
I want to take this opportunity to express my heartfelt thanks to the faculty members, staff and students for the incredible amount of work they have put in to shape this very first edition of OXY-ZEN.

I believe that – “Ignited minds will turn dreams into reality”, and I am confident that this newsletter will continue its journey forever.

All the best to everyone, and happy reading!

OXY-ZEN

Content Writing Zone



Art by Prachi Bhattacharya, B.Sc, Chemistry Honours, Semester-I

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With Failure Comes Opportunity

Asmita Mondal

Ph.D. Scholar, Department of Chemistry, Durgapur Government College

Have you ever thought of meeting the hierarchy of eminent Indian scientists under the same roof and getting the fortune to learn from them? Well, nor did I before attending the 2022 ISCB international conference organized at BIT Mesra, Ranchi. This four-day conference was aligned with distinct lectures and presentation sessions. It was not easy to grasp all the theory equally in this short span of time but I would like to draw your attention to my odyssey and make you experience it through my words.

The journey started a day before the conference was scheduled. I was quite precautious about every detail as this was my very first time to attend such a monumental event. I had completed my packing last night only so we could leave the city early in the morning to reach BIT Mesra, Ranchi by noon. The excitement for this trip came with envelopes of fear within. Staying at a hotel room all alone was also something I had never done before, eventually I asked the accommodation cell about the details. Lest did I knew that *Dr. Chandralata Bal*, supervisor of girl's accommodation cell would receive my call and ease my worries in minutes. Nonetheless every bit of this journey came with little surprises. Out of blue she even allotted a roommate to me who was an ex-student of BIT Mesra and came for a poster presentation after submitting her thesis from IISER, Trivandrum. I was in real need for a guide there who would clear all my newbie doubts and *Chandralata* mam exactly handed me that opportunity by assigning *Shourya di* as my roomie. As time passed, we talked through many things. Since I was selected for the oral presentation session, she interpreted some tips to be followed while presenting after which we went for a sound sleep as both of us were equally excited for the next day.

We were already informed that a bus will be waiting for all the participants present in that hotel by 8:30 am sharp which will drive us towards BIT Mesra campus. By the time we reached, there was already a huge line outside the registration desk where we received out i-cards and other accessories. At the first glance, an i-card validating us as a “delegate” quite fascinated me. Then we all headed for the inauguration session, where the director of Bose Institute, *Prof. Uday Bandyopadhyay's* lecture session was of some other level. The aura that he spread in that short span of time was something very worthy to feel. His research work that he was presenting that day was everything related to mitochondria, completely out of my domain but the way he was explained, that's going to stay with me lifelong. Its true that a good teacher could make you fall in love for his subject but never thought it could be possible within an hour or so. Later that day we had some more events followed up by the poster session which was again a first time for me to attend.

Day 2, the day for my oral presentation. A big day, a big opportunity, and I didn't want to miss any experience I was about to have that day. My presentation was in the morning session only. By the time I arrived the hall, it was quite empty as there were parallel sessions running by two other halls also. Well, it made me a little upset that after reaching to this point I never wanted to present in front of emptied chairs. But fortunately, my presentation was last in the queue for that session and lest did I knew that *Prof. Diwan S. Rawat* sir is going to take over the stage after me which immediately filled the room with complete audience and allowed me to speak in front of a well-established crowd. Now since this was my first presentation, I prepared

myself well enough to minimize all my mistakes. Even when my supervisor was busy in her schedule, I would ask for 10 minutes every other day before the occasion to present it and improve my mistakes to whichever extent I can. But being a first year Ph.D. scholar competing with a class full of final year and above scholars does take everything out of you. I gathered my courage to give it all. My presentation went smooth but as I was open for the question answer session, “BOOM,” one of the eminent speakers sitting in the front row asked me a very basic question and it did not even took me seconds to realize that there, I missed my opportunity to secure a position in this competition. I did answer the question but understood the clarity, the specifications I was losing in it. Hence, I was unable to address his query properly. I did receive several appreciations after the session. Whatever the results might be, I still had my hopes that maybe my defaults could be ignored while judgement. Afterall, regarding the presentation, I was quite sure that I did the best among all in that session.

About 60% of the crowd was from renowned institutes like IITs, IISERs, etc. It's very common for them to attend such conference every now and then. Most of them recognize the professors pretty well and are about to repeat their same lectures. So, naturally their passion to attend all the sessions with equal interest diminished and by the 3rd day, most of the participants have left the campus to take a tour at Ranchi. I stayed back to attend the lectures and explore the campus which helped me interact with some biotech researchers of BIT MESRA and they took me for their lab tour. Indeed, we also have big labs in our college but it still has miles to go to be equally equipped. Like they have a mass spectrometer and they modified it to the level that if a simple TLC plate was inserted into the input slab, all required details about that compound are going to come directly through the computer screen. Even some professors of NIT Patna were amazed with the set-up. Though the biggest highlight of that day was attending the plenary lecture of *Dr. Samir K. Brahmachari*, former director general of CSIR, India. Witnessing a person who has the potential to put himself in the same horizon as of *Dr. Homi J. Bhabha & Dr. Vikram Sarabhai* was an experience of some other world. Never imagined before that a lecture of three hours could pass with same amount of excitement from starting till the end. It felt more like a storytelling session. Each and every audience was awestruck after his lecture.

If there's some lecture that I was waiting since the beginning to attend was that of *Prof. Pratim K. Chattaraj*'s, who is a theoretical chemist at IIT Kharagpur which was the first and only plenary lecture in the last day of the conference. I was quite eager to have one to one interaction with him but after his lecture ended, he left the hall and we had to attend the valedictory session. Nevertheless, when there's will there's a way. By the time thanks giving ceremony ended, a bus was arranged to take interested participants for a visit to the *Jonha* falls. This time also I stayed back in the campus as I had to leave early to reach station for homecoming. But I wanted to use this time to find a scope to meet *Prof. Chattaraj* in person. And finally, my wish was granted to meet him. The interaction was short but the courage I had gathered to approach him was far more than what I used during my presentation. Lastly, I would like to acknowledge *Dr. Ashoke Sharon*, HOD, Department of Chemistry, BIT MESRA who was also the *Convenor, ISCB conference, 2022* for his ultimate level of patience and politeness. I was amazed by his vibes that how could a person attend each and every person with equal fortitude irrespective of how big or small their queries were even after supervising all the arrangements and attending all the guest speakers. That really left a deep mark within.

If I had to conclude this whole experience in a word then it would be “bittersweet.” Bitter because even after trying my level best I was yet unable to succeed but the sweetness of the whole tour overpowers it. Exposing oneself in between such eminent speakers and marvelous

scholars help them to understand their true potential. And unless one knows his/her stand in their fields; the room for growth can never be judged properly. So, we always need to have the audacity to break through the limits and conquer our fear, in the meantime never forget to stick to gravity.



ONLINE CLASSES



ARIJIT DEY
B.Sc. Chemistry Honours
Semester-V

Good Morning sir !!!
What is the topic for
today's class ?

An illustration of a man in a blue suit with a red shirt, gesturing with his right hand as if speaking. He is positioned to the left of a large black speech bubble.

Good Morning !!!
Today we will discuss about an
amazing fact related to the history by
which you can understand the
Importance of Chemistry .
At first , Can Anyone tell me , " Who
was Napoleon ?"

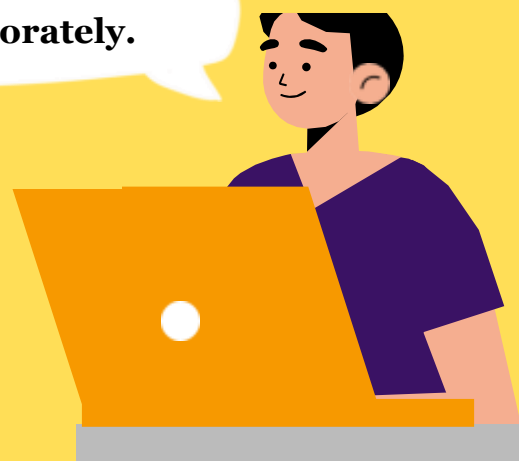
Yes Sir !!!
Napoleon was a
French military
and political
leader .



NAPOLEON BONAPARTE

Did you know the history of the catastrophic Russian defeat of Napoleon's army? Napoleon's army was defeated due to a lack of knowledge in Chemistry.

Sir! Please tell us more about it elaborately.



In 1812, Napoleon Bonaparte marched towards Russia to invade it. At the start of the war assembling a force of over 400,000 soldiers marched towards Russia.

In the end, only 10,000 Frenchmen out of an initial half a million made it out of Russia alive.

Napoleon's Army Might Have Suffered From the Greatest Wardrobe Malfunction in History. Materials scientists thought the army's buttons might be to blame. The harsh Russian winter, combined with the chemical properties of tin, might have led to "Greatest wardrobe malfunction in history." All the Army's clothing had made of Tin sewn on to their uniforms. The bonding structure of Tin atoms began to change as the temperature of Russia approached minus thirty degree celsius and the buttons had crumbled into dust. The army men were holding their clothes instead of using weapons or necessary utilities. Pure Tin was used in the clothings of Napoleon's army, therefore it was highly affected in low temperature. This type of change in crystalline structure of pure tin is called 'Tin Pest'.



ARIJIT DEY
B.Sc (H) Chemistry, III Year

Sir! How it could be avoided ?



Yes, It could be avoided by alloying tin with any electropositive metal or semimetal like Antimony or Bismuth.



**Sir!!!
It's very interesting.**



**Yes , very interesting.
Let's end this class for today .
We will meet again in our
next class.**



Thank You Sir!



Organic Farming in India

What is Organic Farming?

Background:

Organic farming is a form of agriculture which encourages the use of biological and ecological fertilizers and pest controls derived mainly from animal and plant wastes instead of using chemical herbicides, pesticides etc. This practice was first pointed out by British Botanist, Sir Albert Howard. Sir Howard's concept of soil fertility centered on building soil humus with an emphasis on how soil life was connected to the health of crops, livestock and mankind.



URMILA GHOSH
B.Sc. Chemistry Honours
Semester-V

Codex Definition of Organic Farming:

Codex committee on Food labeling has debated "Draft Guidelines for the production, processing, labeling and marketing of organically produced Foods" for adopting a single definition for Organic Agriculture by the Codex Alimentarius Commission at its meeting in June 1999.

According to the proposed Definition

"Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account the regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic biological and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system."



Necessity of Organic Farming in India:

Organic farming helps to maintain the sustainable development by increasing the soil fertility, biodiversity, quality of water and even the rural employment. Our conventional way of farming not only causes soil pollution but also causes water pollution as the chemical fertilizers contain phosphates, nitrates that can be one of the main reason behind water pollution.

1. Organic farming enhances soil fertility by improving its physical, biological and chemical properties.
2. The Composite Water Management Index(CWMI) report 2018 of NITI Aayog stated that about 2 lakh people die every year due to inadequate access to safe water.



3. Organic farming increases biodiversity including important functional groups like plants pollinators and predators. Organic production even helps to reduce public health risks and mounting evidence shows that food growth organically are rich in nutrients, such as Vitamin C, Iron, Magnesium and Phosphorus.

Market of Organic Farming in India:

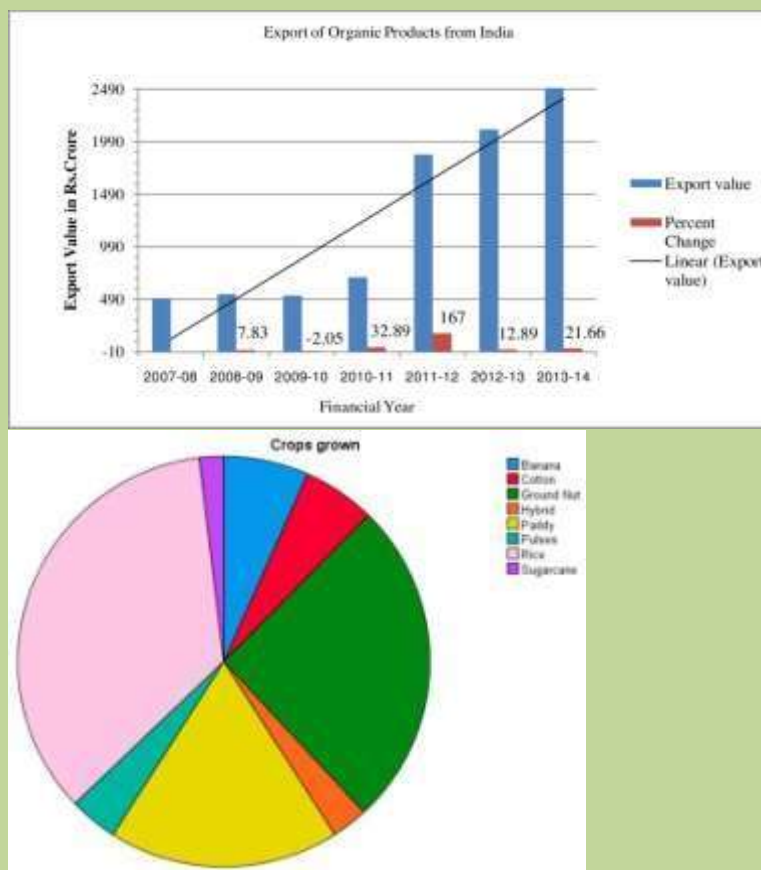
Indian Organic Market

- Total Organic Area: 4.43 million ha
- Total Certified: 17.11 lakh tonnes production
- Total Exports: 69837 MT
- Value of Exports: INR 700 Crore

Global Organic Food Market

- 1999: 15.2 Billion USD
- 2009: 54.1 Billion USD
- 2010: 59.1 Billion USD

According to the estimates by IMARC Group, the organic food market in India is expected to grow at a CAGR of 25.25% during 2022-2027



Indian Organic Food Market Breakup:

On the basis of the product type, the market has been bifurcated into organic beverages, organic cereal and food grains, organic meat, poultry and dairy, organic spices and pulses, organic processed food, organic fruits and vegetables and others. Currently organic beverages hold the majority of the total market share.

Indian Food Market Breakup by distribution channel:

On the basis of distribution channel, the market has been divided into supermarkets and hypermarkets, especially stores, convenience stores, online and others. Among these supermarkets and hypermarkets represents the largest segment.

Break-up by region:

- North India(Dominating)
- West and Central India
- South India
- East India

The Major Players in The Market:

1. Suminter India Organics Pvt Ltd
2. Nature Bis Foods Ltd
3. Organic India Pvt Ltd
4. Sresta Natural Bio Products Pvt Ltd
5. Mother Earth
6. El World Agro
7. Morarka Organic Food Pvt Ltd
8. EcoFarms(India) Ltd

Assistance of Government:

Government Schemes for Organic Farming

1. *“Paramparagat Krishi Vikas Yojana” (PKVY)*: It is a sub-component of Soil Health Management Scheme under National Mission of Sustainable Agriculture aims at development of models of excellence in Organic Farming through a min of traditional wisdom and modern science in value chain mode to install sustainability, ensure long term soil fertility buildup, resource conversation and to offer safe and healthy food grown through Organic Farming.
2. *Mission Organic Value Chain Development for Eastern Region*: Financial assistance and support for form of FDOs provided.
3. *National Mission on Oil-seeds and Oil Palm*: Financial assistance and 50% subsidy to the tune of Rs.300 per hectares is provided.
4. *National Food Security Mission*: Financial Assistance is provided for promotion of Bio-fertilizers.


Major Challenges:

1. Lack of Knowledge
2. Difficult Marketability of Organic Products over Conventional products
3. Lack of Adequate Infrastructure
4. High Cost and Less Outputs
5. Shortage of Biomass

Conclusion:

Organic farming is a flourishing market in India. Although the concept of Organic products over conventional products in little bit foreign for the Indian consumers, it's slowly but surely getting accepted in the country because of it's numerous advantages in sustainable development. So, we can assume that the future of Organic Farming is bright in India despite the very few challenges it is facing right now.

THE CHEMISTRY OF CHOCOLATE



What is Chocolate ?

Chocolate is a food made from roasted and ground cacao seed kernels that is available as a liquid, solid, or paste, either on its own or as a flavoring agent in other foods.

Why is it called a chocolate?

Etymologists trace the origin of the word "chocolate" to the Aztec word "xocoatl," which referred to a bitter drink brewed from cacao beans. The Latin name for the cacao tree, *Theobroma cacao*, means "food of the gods."



DARK CHOCOLATE

Dark chocolate contains 50-90% cocoa solids, cocoa butter and sugar . The solid contain theobromine, toxic to dogs ,and phenylethylamine linked to a feel-good effect.



MILK CHOCOLATE

The main components in milk chocolate is cocoa butter, sugar and milk powder. American brands of chocolate often contain butyric acid , which adds a sour note to the chocolates taste.



WHITE CHOCOLATE

White chocolate does not contain any cocoa solids, only cocoa butter, sugar and milk. Cocoa butter is composed of a number of fatty acids, mainly stearic acid and palmitic acid

Is chocolate an aphrodisiac ?

Phenylethylamine occurs naturally in the brain , and is often referred to as ' the love drug' due to its ability to produce feeling of well being and contentment. It is broken down after ingestion , it has been ruled out as causing a significant aphrodisiac effect.

Tryptophan is a chemical in the brain linked to the production of serotonin ,the neurotransmitter that produces feeling of elation. It is present in chocolate , but only in small quantities.

Why is chocolate toxic to dogs ?

Theobromine is a mild stimulant, similar in effect to caffeine, found in chocolate. This compound is harmless to humans at the level found in chocolate.

In cat and dog , theobromine has much more potent effect, small doses can lead to vomiting and diarrhoea, whilst as little as 50 g of dark chocolate could kill a small dog



Chhanda Ghosh
B.Sc (H) Chemistry, III Year

WOMAN'S EMPOWERMENT

Women's empowerment is something that tells us about the status of women in our society. People have a mindset that girls always need help or they cannot travel alone, they are called weak.

Even in this modern era, we are discussing women empowerment, this automatically triggers the importance of the topic. It is uneven treatment, which leads to the wire on this topic even today.

A women is enough capable of doing things on her own, still people call her weak. Actually they were never given a chance before.



PAYEL RUIDAS
B.Sc. Chemistry Honours
Semester-III

Women should be given equal opportunity to do whatever she wants. Just trust her once and see what else she can do. She will never disappoint you.

In today's world, government is paying a big role for Women Empowerment. Women empowerment is when every women gets the opportunity and right to raise their voices, stand for themselves, gets educated, so that they can know what is and what is not right for them.

The NCC(National Cadet Corps) is performing a huge role for supporting Women Empowerment. Even I am an NCC Cadet. Here, We the women get to lead a mix squadron on men and women, when we do activities like Shooting, Commanding, Drill team and do Physical Activities. Here, we realize that we are expanding our limits, or where else do we get to run extra, March With Rifles and proper hand swing and do all things which sole people think only man can do.

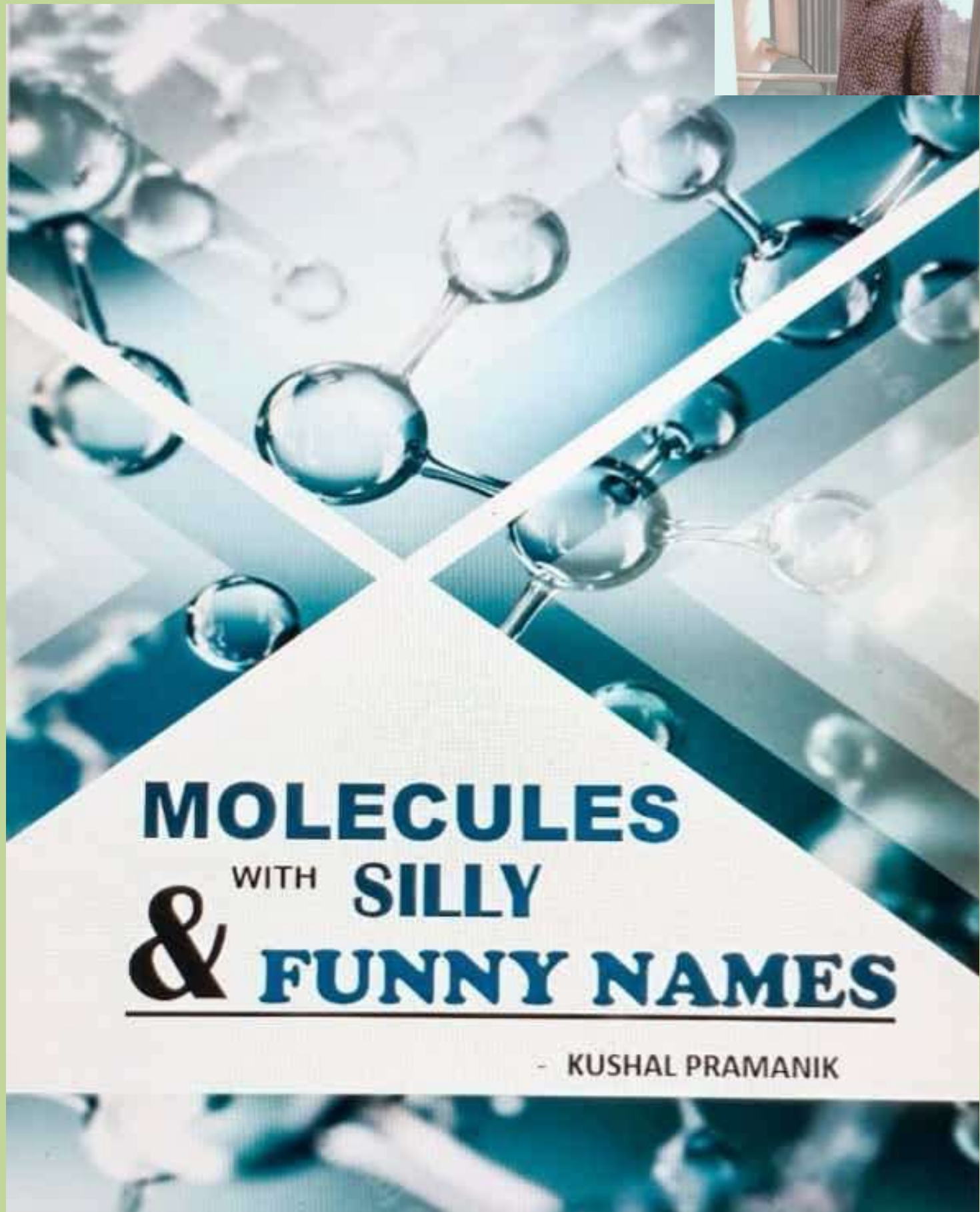
When we do this without thinking what the society will think, that time many women get's inspired. They understand that nothing is there that women cannot do.

The day when every women will start working for themselves standing on a equal level with men in every line of works , the day we can proudly say,

“Yes, our country is equal for everyone ”

Thank you JAI HIND

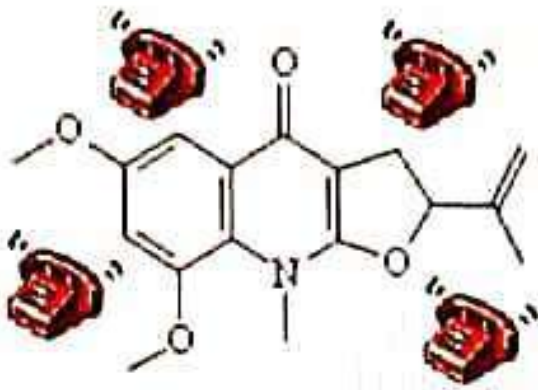
KUSHAL PRAMANIK
B.Sc. Chemistry Honours
Semester-I



MOLECULES
WITH **SILLY**
& **FUNNY NAMES**

- KUSHAL PRAMANIK

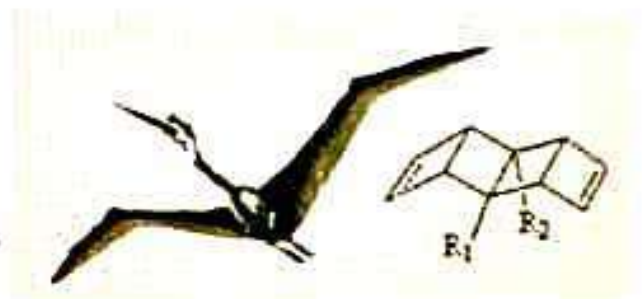
1. Ptelefolone



This molecule rings a bell...It gets its name from the hop tree *Ptelea trifoliata*, and is composed of a ring ketone – or should that be called a ring-tone!

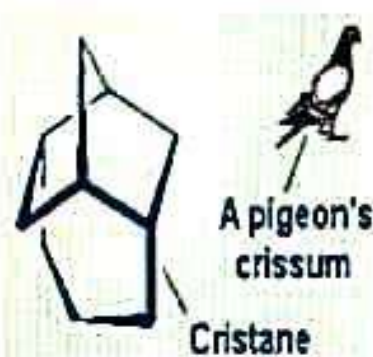
2. Pterodactyladiene

This is a group of molecules that resemble the ancient flying reptiles. The R groups can be altered to give different sized 'heads' or 'tails'.



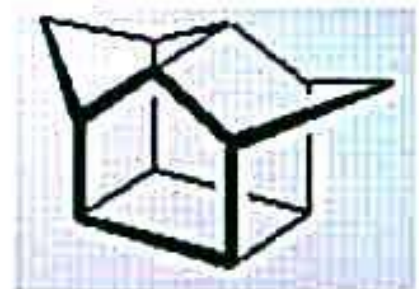
3. Cristane

Well, for the – biologists amongst you, A 'crissum' is the name given to the anus of a bird! Tricyclo[5.3.0.0]decane, was nicknamed cristane since on the evening it was first discovered in Brown University, someone left the window open. A pigeon got into the lab overnight and did what pigeons do – all over the lab and equipment. The clean-up crew named the new molecule in honour of the part of the bird's anatomy that had provided the 'surprisingly abundant gift'.



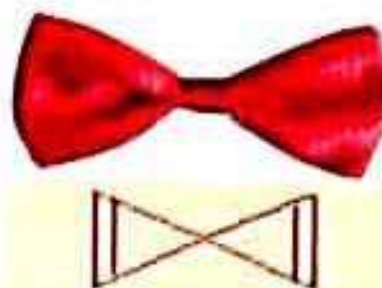
Δ Birdcage

This molecule is so called because it, um, resembles a birdcage, duh. Maybe it should have been used to capture the aberrant pigeon from cristane, above...



5. Bowtiediene

This is another molecule named after its shape – although the preferred name is spiro[3.3]heptadiene.



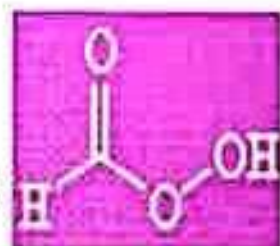
6. Eurekaic Acid

Eureka! Was supposedly the exclamation used by Archimedes when he found something interesting in his bath water. It means 'I have found it', and so when researchers at May and Baker discovered this acid, they felt it was such a 'Eureka moment' that they named the molecule after it.



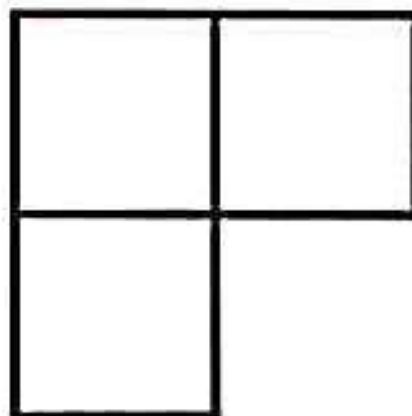
7. Performic Acid

An actor's favourite chemical? As you might expect from a per-acid, it's a very strong oxidising agent, and always puts on a great performance!



8. Broken windowpane

The real name of "broken windowpane" is fenestrane, but the structure bears a striking resemblance to a kitchen window after someone has put a broom handle through one of the panes. "Broken windowpane" has been synthesized, although the unbroken form, named "windowpane", only exists on paper.



10 Interesting Chemistry Facts

HELIUM CAN WORK AGAINST GRAVITY

When helium is cooled to extreme temperatures, just few degrees away from absolute zero, it turns into a super fluid and can flow without friction. It can climb up and over the sides of a glass.

THE HUMAN STOMACH ACID CAN EVEN DISSOLVE RAZOR BLADES

The Human stomach produces Hydrochloric acid of pH 1 to 2, meaning that it has incredibly strong pH. In a study, scientists found that the thickened back of a single edged blade dissolved within 2 hours of immersion in stomach acid.



ANISHAVA PANJA
B.Sc. Chemistry Honours
Semester-I

EARTH'S OXYGEN IS PRODUCED BY THE OCEANS

Have you ever stopped to think where oxygen comes from ? Your first thought may be a rainforest but here is a cool fact – We can thank plant based marine organisms for that fresh air, according to National Oceanic Service. Plankton, seaweed and other photosynthesizers produce more than half of the world's oxygen.

BANANAS ARE RADIOACTIVE

Bananas contain potassium and since potassium decays that makes the yellow fruit slightly radioactive.

HOT WATER FREEZES FASTER THAN COLD WATER

Scientists have found that velocities of water particles have specific disposition while they are hot that allows them to freeze more rapidly. It was named the Mpemba effect.

WATER CAN EXIST IN THREE STATES AT ONCE

At 0.1 degree Celsius and 0.006 atm i.e. at the triple point, water can exist in solid, liquid and gaseous states.

PLASTIC CAN END UP AS FLAVORING AGENT

Researchers are trying to transform plastic bottles into vanilla flavoring agent with genetically engineered bacteria as per reports of the journal GREEN CHEMISTRY.

THE VOID OF AN ATOM

An atom is about 99.9999999% empty space. If you remove the empty space from the atoms of all people, the entire human race would fit in the volume of a sugar cube.

GLASS – IS IT A SOLID AS IT SEEMS ?

NO!! Glass as it appears is neither a solid nor its opposite, Liquid. It is rather an amorphous solid and flows continuously but extremely slowly.

THE RAREST ELEMENT ON EARTH

Have you ever wondered what is the rarest element on the earth ? Well it is ASTATINE. Only 28g of Astatine is found in the entire earth crust and scientists have been able to make only 0.00000005 g of the element so far.

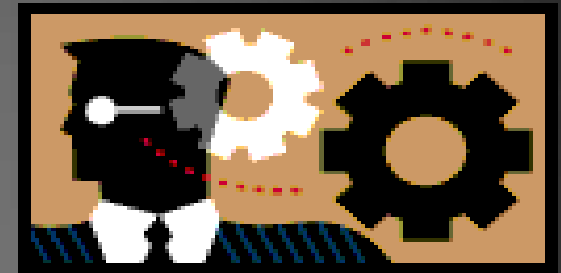
THE DEVELOPMENT OF PLASTICS



SUJAN DEY
B.Sc. Chemistry Honours
Semester-V

What is *Plastic*?

Plastic is defined as an essential ingredient an organic substance of large molecular weight. It is also defined as polymers of long carbon chains. Plastic, this word was derived from the word '**Plastikos**' meaning 'to mould' in Greek.



Uses and Advantages of Plastics :-

- 1. Making of electronic appliances:-*
- 2. Mostly uses in Transport industry:-*
- 3. Uses for Food packaging:-*
- 4. Temporary packing at home:-*
- 5. Making of Medical materials:-*
- 6. Making of different type of toys:-*
- 7. Uses in clothes industry:-*

Effects and Disadvantages of plastics:-

- 1. Plastic takes many years to completely decompose.*
- 2. Recycling process for plastic can be very expensive.*
- 3. Some plastics release toxic materials into the environment.*
- 4. Plastics degrade the quality of the soil.*
- 5. Eating from plastic boxes can cause cancer.*
- 6. Burning plastic releases toxic materials in to the environment.*



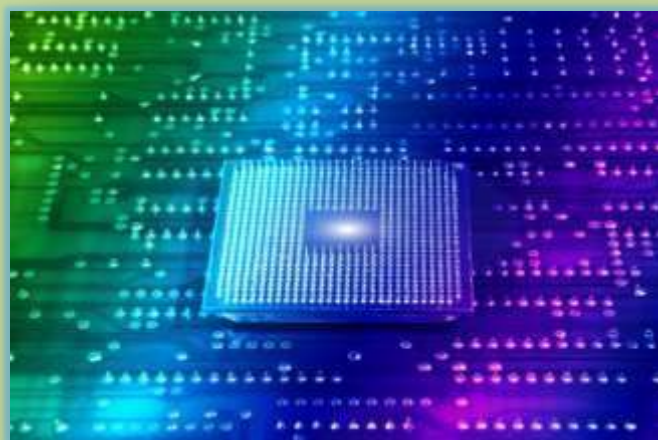
How to reduce plastic use:-

- 1. Replace plastic tupperware for glass or steel containers*
- 2. For any shopping to take a cloth bag*
- 3. Use real silverware for parties instead of plastic*
- 4. Say "paper not plastic" in the store*



Semiconductors in Everyday Life

What are semiconductors? What is so special about semiconductors?



Semiconductors are substances that have conductivity properties between a conductor and non-conductor insulator. Because semiconductors have different atomic structure that allows their conductivity

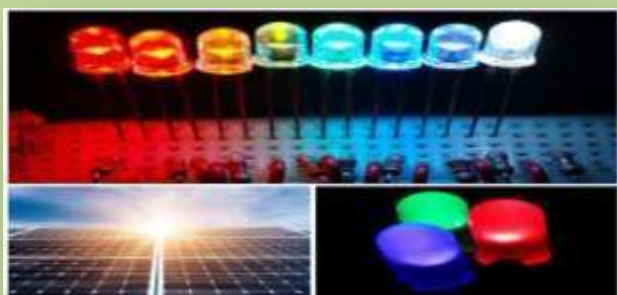


UTSHA HAZRA
B.Sc. Chemistry
Honours
Semester-III

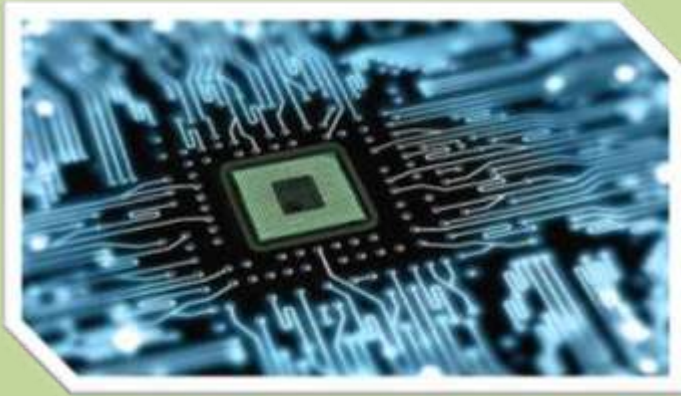
to be controlled by stimulation with electric current or electromagnetic fields. Its resistivity falls as its temperature rises whereas metals behave in an opposite way. The most commonly used semiconductor materials are silicon, germanium, and gallium arsenide. Out of these three, Ge was one of the earliest semiconductor materials used.

USES : Now-a-days we cannot imagine life without smartphones, radios, computers, video games, washing machines, LED bulbs and refrigerators or advanced medical diagnostic equipment. Basically semiconductors are used in every sector of electronics because of their small size and thus highly portable. They require less power as well as have a longer lifespan. Lastly, semiconductor devices are shockproof.

LIGHTING PURPOSE: Some semiconductors usually found in liquid or amorphous form can produce light and are used in **LEDs** and **OLEDs**. Solar panels based on solar energy are made up of **Silicon**, most commonly used.



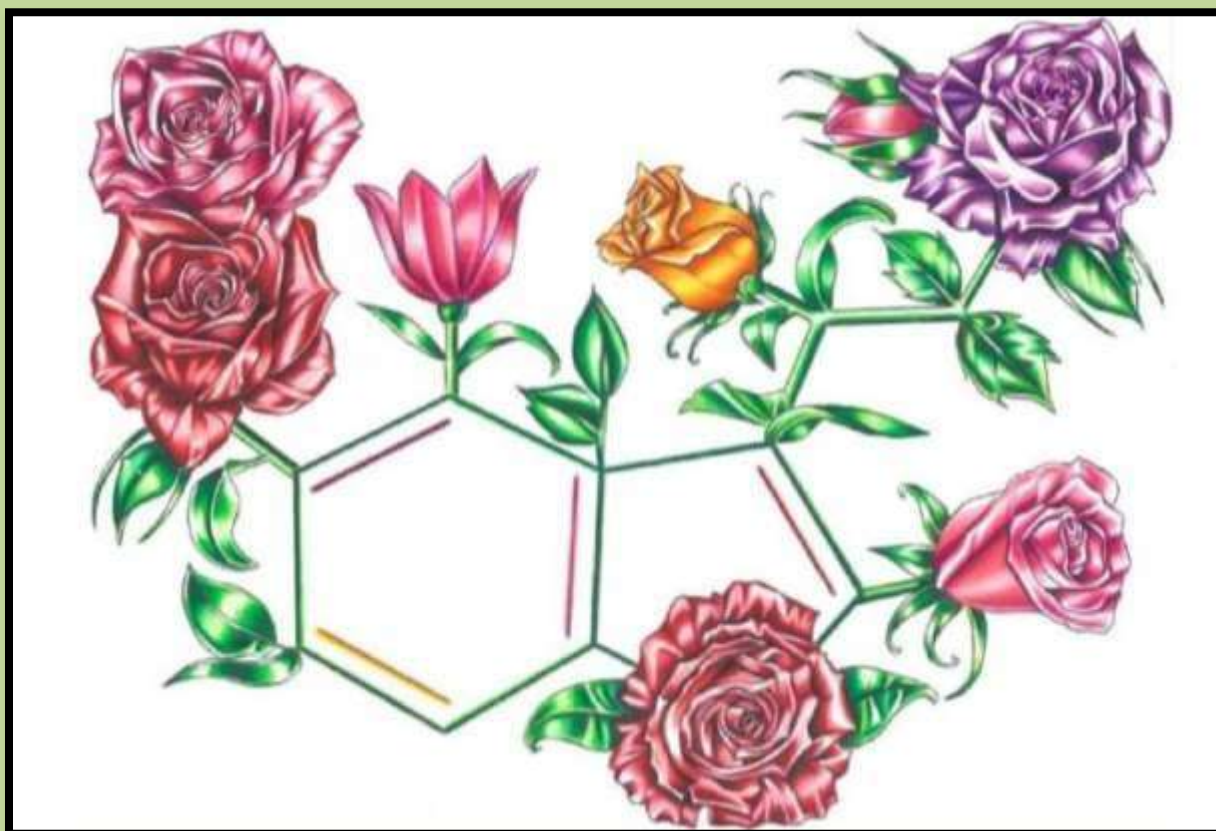
EMBEDDED SYSTEMS: Embedded systems are small computers that form a part of a larger machine. Embedded systems that we commonly use include central heating systems, digital watches, GPS systems, fitness trackers, television, and engine management systems in vehicles.



CONSUMER ELECTRONICS: Mobile phones, laptops, game consoles, microwaves and refrigerators all operate with the use of semiconductor components such as integrated chips, diodes. There are two types of microchips- logic chips (example **CPU**) and memory chips (example **DRAM**). **MOSFET** (metal oxide semiconductor field effect transistor) is the most common semiconductor in the world. Huge amount of tiny **MOSFETS** are used in microchips. They are made up of a set of electronic circuits on a small, flat piece of silicon, with many transistors that can turn on or off the current. Transistors are used for both fast switching and for current amplification. The demand of microchips is so high that there is currently a huge supply issue in various countries.

Conclusion:

India's semiconductor component market will see its cumulative revenues climb to \$300 billion during 2021-2026, according to ISMR, 2019-2026, a joint research by the India electronics and semiconductor association. Mostly, the semiconductor industry in India depends on imports.



SEROTONIN MOLECULE



TANMOY SHOW MONDAL
B.Sc. Chemistry Honours
Semester-V



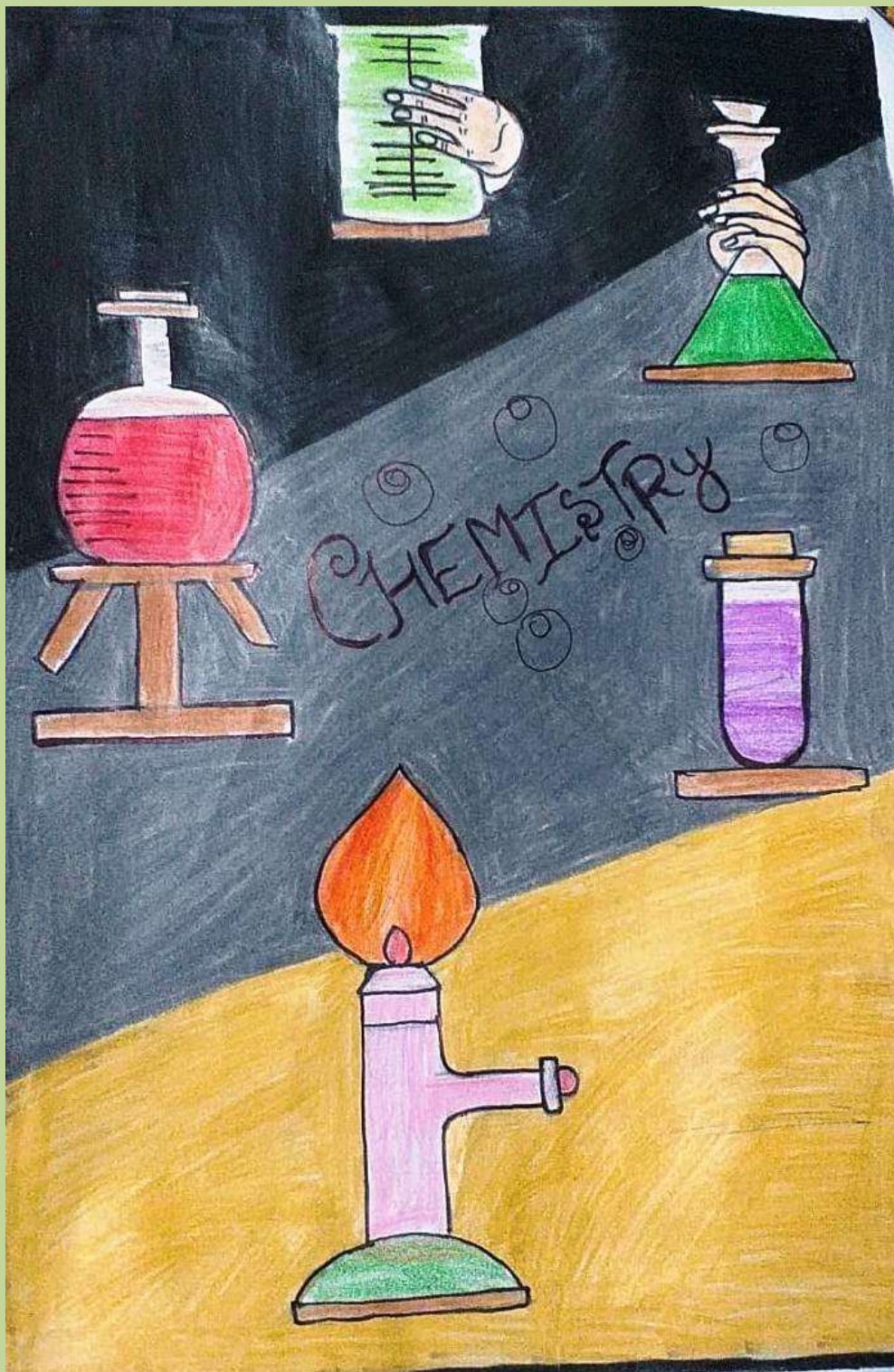
ASMITA MONDAL
Ph.D. Scholar
Department of Chemistry



KUSHAL PRAMANIK
B.Sc. Chemistry Honours
Semester-I



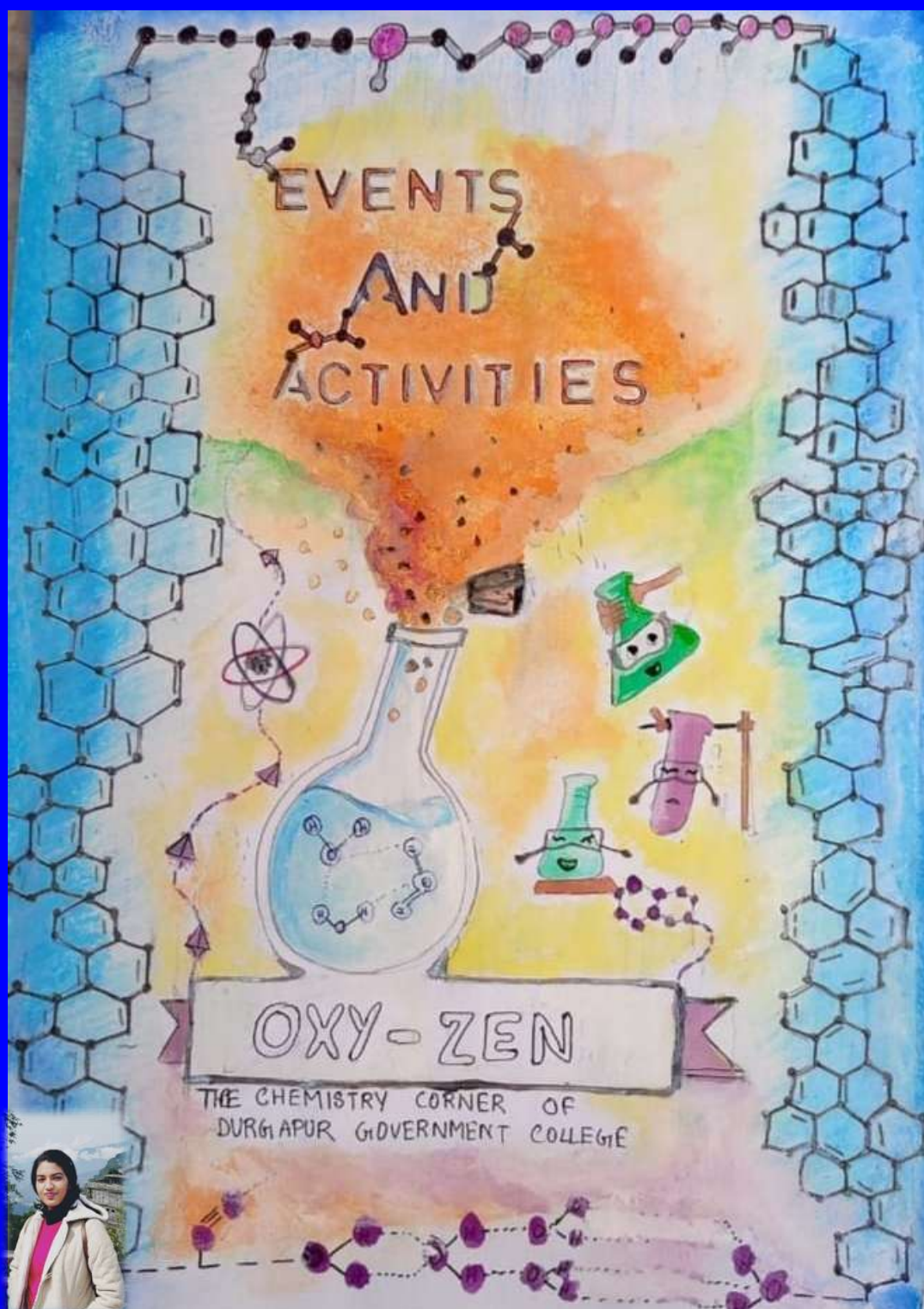
SUJAN DEY
B.Sc. Chemistry Honours
Semester-V



SUJAN DEY
B.Sc. Chemistry Honours
Semester-V

OXY-ZEN

Events and Activity Zone



Art by Utsha Hazra, B.Sc, Chemistry Honours, Semester-III

Department of Chemistry
Durgapur Government College
Durgapur-713214

Visit to Old Age Home at Durgapur by students and faculty members (14-11-2022)



Quiz Competition on "Environmental Studies" (21-11-2022)

Quiz on **Environmental Studies**









Date: 22 November, 2022

Time: 1 PM - 2 PM



Our Teams




Team A

-  Aishwariya Das
-  Rajdip Patra
-  Anishava Panja
-  Asmita Adak
-  Sanat Mandi
-  Prachi Bhattacharya
-  Utsab Das
-  Susovan Das

Team B

-  Pallabi Karmakar
-  Kushal Pramanik
-  Debjit Pande
-  Ayan Raj Kumar
-  Shashwata Roy
-  Priyanka Roy Chowdhury
-  Dhruvajyoti Akhuli

Rules and Regulations

-  The teams will be asked alternately, a total of 15 questions carrying 1 point each.
-  Teams will have 1 minute to answer each question.
-  If a team is unable to answer a question within the time given, the opposing team will get a chance to answer the same question for a bonus point.

Quiz Competition on "Environmental Studies" (21-11-2022)



Visit to National Institute of Technology, Durgapur by UG and PG students along with faculty members under the DBT STAR COLLEGE SCHEME (25-11-2022)



Workshop on "Soil Testing and Fundamentals of Fertilizer Recommendation" and "Observance of World Soil Day" under the DBT STAR COLLEGE SCHEME (05-12-2022)

DEPARTMENTS OF CHEMISTRY, BOTANY AND ZOOLOGY DURGAPUR GOVERNMENT COLLEGE

Departments of Chemistry, Botany and Zoology, are presently well established learning centres at the undergraduate and postgraduate levels. The departments has witnessed several eminent teachers and produced brilliant graduates and dedicated researchers to prove the accountability. The perfect blend of experienced and young faculty members reaches its planned goals of student outcome through team work. Our students have been placed for higher studies in IITs, IISER and other institutes of national repute. The Departments have recently received grants under the DBT STAR COLLEGE SCHEME, which will include several activities to promote undergraduate teaching with student-centric mechanism such as Add on Courses, hands on training programmes, visits to research laboratories, new open ended experiments , more availability of equipment for students, invited lecture series, collaborations with other institutes etc with special focus on interdisciplinary dimension.



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DBT STAR COLLEGE SCHEME

One Day Workshop on "Soil Testing and Fundamentals of Fertilizer Recommendation" and "Observance of World Soil Day"

December 05, 2022
Venue: Bidhan Prekshagriho
(2nd Floor of Library Building)



Organized by
Departments of Chemistry, Botany and Zoology
Durgapur Government College

SCHEDULE

Inaugural Session: 10:30 hrs to 11:00 hrs

Technical Session I: 11:00 hrs to 12:30 hrs

Speakers of the Technical Session I:

Prof. Biswapati Mandal,

Ex Pro-Vice Chancellor, Bidhan Chandra Krishi Viswavidyalaya

Dr. Chirantan Chattopadhyay,

Ex. Vice Chancellor, Uttar Banga Krishi Viswavidyalaya, Coochbehar

Dr. Subhendu Bhadraroy,

Senior Consultant, Rallis India Ltd, Bengaluru

Dr. F. H. Rahman,

Principal Scientist, Indian Council of Agricultural

Research (ICAR)-Agricultural Technology

Application Research Institute (ATARI) Kolkata

Partha Bhattacharya

Ex Deputy General Manager, IFFCO, Kolkata

Technical Session II: 13:00 hrs to 14:00 hrs

Hands on Training on soil collection, sampling, soil testing, interpretation of results, preparation of soil health card by

Dr. Sr. Md. Azizur Rahaman

Senior Scientist and Head

Krishi Vigyan Kendra, Burdwan

Dr. D. Ghora, Subject matter Specialist

ICAR-CR/JAF-Krishi Vigyan Kendra,

BudbudFarmers-Scientists-Students Interactive

Session: 14:30 hrs to 15:30 hrs

Discussion on Soil Health Card and distribution:

15:30 hrs to 16:00 hrs

Valedictory Session: 16:30 hrs to 17:00 hrs



Invited Lecture and Interactive Session Series by Dr. Jaydeb Chakrabarti, Professor, Saha Institute of Nuclear Physics, Kolkata under the DBT STAR COLLEGE SCHEME (07-12-2022)

DEPARTMENT OF CHEMISTRY DURGAPUR GOVERNMENT COLLEGE

Established in 1972 to offer undergraduate chemistry programmes, Department of Chemistry, is presently a well established learning centre of chemistry at the undergraduate and postgraduate levels. The 50 year old chequered history of the department has witnessed several eminent teachers and produced brilliant graduates and dedicated researchers to prove its accountability. The perfect blend of experienced and young faculty members reaches its planned goals of student outcome through team work. Our students have been placed for higher studies in IITs, IISER and other institutes of national repute. The Department has recently received grants under the DBT STAR COLLEGE SCHEME, which will include several activities to promote undergraduate teaching with student-centric mechanism such as Add on Courses, hands on training programmes, visits to research laboratories, new open ended experiments, more availability of equipment for students, invited lecture series, collaborations with other institutes etc.



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DBT STAR COLLEGE SCHEME

Invited Lecture and Interactive Session Series

"From Atoms to Proteins: Molecular

Dynamics as a tool"

December 07, 2022



Dr. Jaydeb Chakrabarti

Senior Professor of CBMS Dept. (Group Leader)
S. N. Bose National Centre for Basic Sciences, Kolkata
Under Department of Science and Technology (DST),
Government of India

Organized by

Department of Chemistry
Durgapur Government College

ABSTRACT OF THE LECTURE

Atomic motions are responsible for the molecular properties, be it a small molecule like carbon di-oxide or a large molecule like proteins. The larger the molecule, the more difficult it is to associate the molecular properties to atomic motions. Molecular dynamics simulations with the advent of faster computers emerge an indispensable tool to understand the behaviour of proteins. In this lecture we shall learn how to use Molecular Dynamics methods to describe the atomic motions in a protein and relate to its function to conformation.

SCHEDULE

11.00 am to 11.30 am: Inaugural Session

Welcome Speech by Head, Department of Chemistry and the words of wisdom from the Principal, Durgapur Government College, Objective of the lecture series by Coordinator, DBT Star College Scheme

11.30 am to 5 pm

Invited Lecture by Dr. Jaydeb Chakrabarti followed by Interactive Session with students on the use of Molecular Dynamics methods



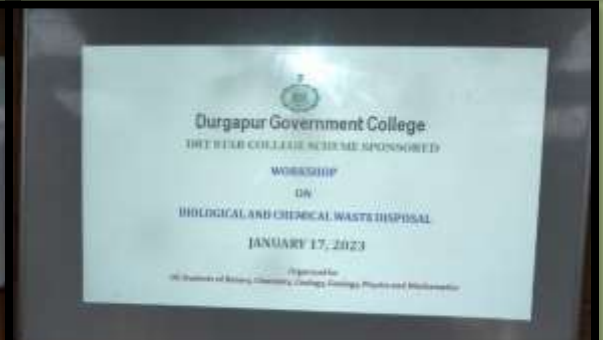
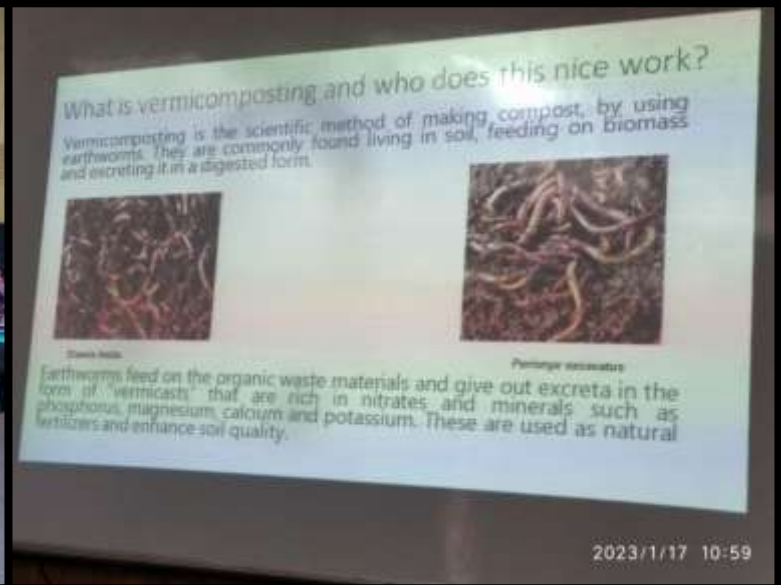
Visit to Saha Institute of Nuclear Physics, Kolkata with Department of Physics under the DBT STAR COLLEGE SCHEME (09-12-2022)



Visit to Organic Farm at Durgapur along with the
Departments of Botany and Zoology under the
DBT STAR COLLEGE SCHEME
(22-12-2022)



Workshop on "Biological and Chemical Waste Disposal" under the DBT STAR COLLEGE SCHEME (17-01-2023)



Invited Lecture and Interactive Session Series by
Dr. Sankar Chandra Moi, Professor and Head
Department of Chemistry
National Institute of Technology, Durgapur
DBT STAR COLLEGE SCHEME
(08-02-2023)



Students Enrolled

UG students of the Departments of Botany, Chemistry, Zoology, Mathematics, Physics and Geology

Contact Hours = 36 hours

Course Class Timings

Special Class mentioned in the UG Routine of Departments of Botany, Chemistry, Zoology, Mathematics, Physics and Geology

- ✓ Lectures will be delivered through offline mode
- ✓ Practical Hands on training classes will be conducted in Central Computer Laboratory
- ✓ No Fee will be charged for the course
- ✓ Attendance will be taken in each class
- ✓ Students have to submit their project reports and assignments on or before the stipulated date and time
- ✓ Certificates will be provided to students after successful completion of the course.



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DBT STAR COLLEGE SCHEME

Add on Course

(Winter School Training Programme)

on

“Bioactivity of organic compounds by Computational Studies”

November 24, 2022 to February 28, 2023



Organized by

Department of Chemistry, Botany and Zoology
Durgapur Government College

Course Objectives

Use of Computers is inevitable in almost each and every field of education, especially for the science and technology. Computational studies has gradually emerged as an important branch to understand the fruitful interplay between the theory and experiments in research and industry. This initiative has been taken by Durgapur Government College to enable students use different software, online sites and analyze data, which will be required for their higher studies and will also make them industry ready. Computational Chemistry and Computational Biology are not included in the University Curriculum and hence we aim to provide this course to bridge the curricular gap

Course Outcome

After completion of the course, the undergraduate students will be able to use different software for drawing chemical structures, feeding them to the online resources for the prediction of bioactivity of organic compounds

Students Enrolled

UG students of the Departments of Botany, Chemistry, Zoology, Mathematics, Physics and Geology

Contact Hours = 36 hours

Course Class Timings

Special Class mentioned in the UG Routine of Departments of Botany, Chemistry, Zoology, Mathematics, Physics and Geology

- ✓ Lectures will be delivered through offline mode in Central Computer Laboratory
- ✓ Practical Hands on training classes will be conducted in Chemistry, Botany and Zoology Laboratory
- ✓ No Fee will be charged for the course
- ✓ Attendance will be taken in each class
- ✓ Students have to submit their project reports and assignments on or before the stipulated date and time
- ✓ Certificates will be provided to students after successful completion of the course.



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DBT STAR COLLEGE SCHEME

Add on Course

(Winter School Training programme)

“Characterization of Chemicals and analysis of the Material safety Data Sheet before performing experiments”

November 24, 2022 to February 28, 2023



Organized by

Department of Chemistry, Botany and Zoology
Durgapur Government College

Course Objectives

Characterization of Chemicals on the basis of their hazardous effects on the health and environment is an important area of concern, which is often overlooked in the course curriculum of undergraduate studies. However, the knowledge of such characterization is essential before performing experiments. This course is intended to fill the curricular gap so that students will be able to determine the hazardous effects of chemicals and the safety measures to be adopted before performing experiments in the laboratories by accessing the material safety data sheet analysis.

Course Outcome

After completion of the course, the undergraduate students will be able to characterize chemical compounds by classifying them on the basis of safety symbols. They will be able to analyze the material safety data sheet of chemicals before performing experiments and the safety measures to be adopted while using chemicals in the laboratories.

DBT STAR COLLEGE SCHEME

Add on Courses (Winter School Training Programme) on

“Bioactivity of organic compounds by Computational Studies” and

“Characterization of Chemicals and analysis of the Material safety Data Sheet before performing experiments”

November 24, 2022 to February 28, 2023



UGSS-DGCCHEM

Undergraduate Student Seminar Series (2022-23)

*Organized by
Department of Chemistry
Durgapur Government College*



DECEMBER 13, 2022 @ 12.00 TO 13.00 HRS

The UGSS-DGCCHEM showcases subject understanding, communication and presentation skills of undergraduate students

Theme: Stereochemistry
[Core Course: UG Semester-I (Honours)]

LIST OF SPEAKERS

*(Students of UG Semester-I Honours,
Department of Chemistry, Durgapur Government College)*

Name of Student Speaker	Topic
Rajdip Patra	Cis-trans, syn-anti and E/Z notations
Anishava Panja	Optical Activity, Specific Rotation
Asmita Adak	Enantiomers and Diastereomers
Sanat Nandi	Racemic Mixture and Resolution
Prachi Bhattacharya	D/L and R/S Configuration
Susovan Das	Fischer, Sawhorse and Newmann Projection Formulae
Pallabi Karmakar	D/L and R/S Configuration
Kushal Pramanik	Enantiomers and Diastereomers
Shashwata Roy	Fischer, Sawhorse and Newmann Projection Formulae
Dhrubajyoti Akhuli	Cis-trans, syn-anti and E/Z notations

UGSS-DGCCHEM

Undergraduate Student Seminar Series (2022-23)

*Organized by
Department of Chemistry
Durgapur Government College*



NOVEMBER 17, 2022 @ 10 AM TO 11 AM

The UGSS-DGCCHEM showcases subject understanding, communication and presentation skills of undergraduate students

Theme: Environmental Chemistry
[DSE Course: UG Semester-V (Honours)]

LIST OF SPEAKERS

*(Students of UG Semester-V Honours,
Department of Chemistry, Durgapur Government College)*

Name of Student Speaker	Topic
SUJAN DEY	Composition and Structure of Atmosphere
ARIJIT DEY	Catalytic Converter
URMILA GHOSH	Major Air Pollutants
SUJOY PAUL	Biological Oxygen Demand and Chemical Oxygen Demand
SOUMYA GUHA	Major Water Pollutants
PAPIYA GHOSH	Acid Rain, Smog and Eutrophication
ARYAN SHAH	Electrostatic Precipitators and Cyclone Collectors
CHHANDA GHOSH	Global Warming and Ozone Depletion
TANMOY SHOW MONDAL	Waste Water Treatment Processes

UGSS-DGCCHEM

Undergraduate Student Seminar Series (2022-23)

*Organized by
Department of Chemistry
Durgapur Government College*



NOVEMBER 18, 2022 @ 12 PM TO 1 PM

The UGSS-DGCCHEM showcases subject understanding, communication and presentation skills of undergraduate students

LIST OF SPEAKERS

*(Students of UG Semester-III Honours,
Department of Chemistry, Durgapur Government College)*

Theme: Pharmaceutical Chemistry
[Skill Enhancement Course: Semester-III (Honours)]

Name of Student Speaker	Topic
ANANYA KONER	Aspirin, Paracetamol and Ibuprofen (Synthesis and Medicinal Uses)
PAYEL RUIDAS	Synthesis and Medicinal Uses of Chloramphenicol
SNEHASHIS MONDAL	Synthesis and Medicinal Uses of Phenobarbitol and sulphonamides
UTSHA HAZRA	Synthesis and medicinal uses of Dapsone, Diazepam and Zidovudin

UGSS-DGCCHEM

Undergraduate Student Seminar Series (2022-23)

*Organized by
Department of Chemistry
Durgapur Government College*



NOVEMBER 18, 2022 @ 12.00 TO 13.00 HRS

The UGSS-DGCCHEM showcases subject understanding, communication and presentation skills of undergraduate students

Theme: Green Chemistry
[DSE Course: UG Semester-V (Honours)]

LIST OF SPEAKERS

*(Students of UG Semester-V Honours,
Department of Chemistry, Durgapur Government College)*

Name of Student Speaker	Topic
SUJAN DEY	Ultrasound Assisted Green Synthesis
ARIJIT DEY	Bio-catalyst in Green Chemistry
URMILA GHOSH	Atom Utilization
SUJOY PAUL	Green Solvents
SOUMYA GUHA	Microwave assisted Green Synthesis
PAPIYA GHOSH	Twelve principles and Synthesis
ARYAN SHAH	Green Catalyst
CHHANDA GHOSH	Ionic liquid as Green Solvent
TANMOY SHOW MONDAL	Aqueous Phase Reaction

UGSS-DGCCHEM

Undergraduate Student Seminar Series (2022-23)

*Organized by
Department of Chemistry
Durgapur Government College*



NOVEMBER 18, 2022 @ 3 PM TO 4 PM

The UGSS-DGCCHEM showcases subject understanding, communication and presentation skills of undergraduate students

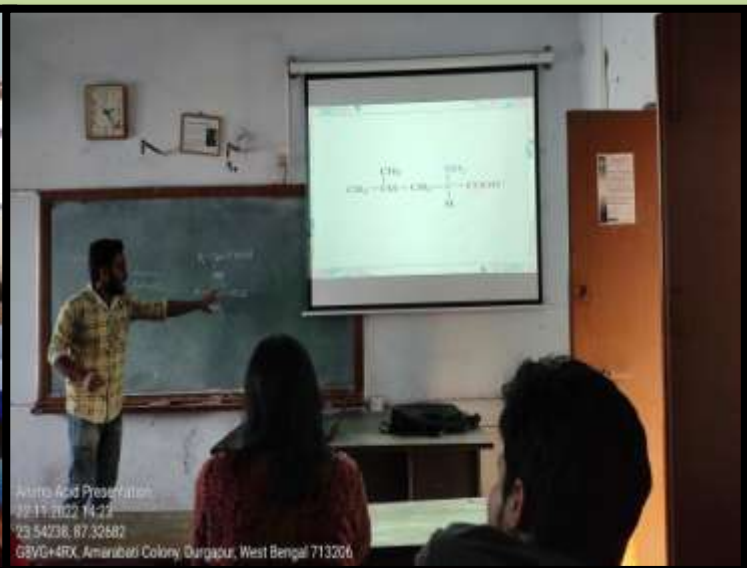
Theme: Amino acids
[Core Course: UG Semester-V (Honours)]

LIST OF SPEAKERS

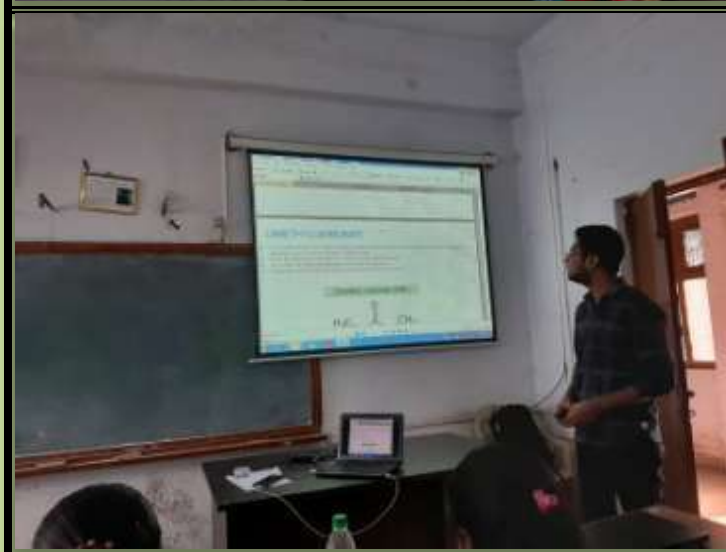
*(Students of UG Semester-V Honours,
Department of Chemistry, Durgapur Government College)*

Name of Student Speaker	Topic
SUJAN DEY	Classification of Amino Acids
ARIJIT DEY	Concept of Isoelectric point
URMILA GHOSH	Ninhydrin Reaction
SUJOY PAUL	Az lactone Synthesis
SOUMYA GUHA	Strecker Synthesis
PAPIYA GHOSH	Gabriel synthesis of amino acids
ARYAN SHAH	Synthesis of amino acids from Acetamidomalonic ester
CHHANDA GHOSH	Physical and chemical Properties of amino acids
TANMOY SHOW MONDAL	Bucherer Hydantoin synthesis

Glimpses of Student Seminars (UG Odd Semester 2022)



Glimpses of Student Seminars (UG Odd Semester 2022)



Glimpses of Student Seminars (UG Odd Semester 2022)

