PHYSIKOS

DEPARTMENT OF PHYSICS
GARGI COLLEGE

ISSUE 10 | 2022-23

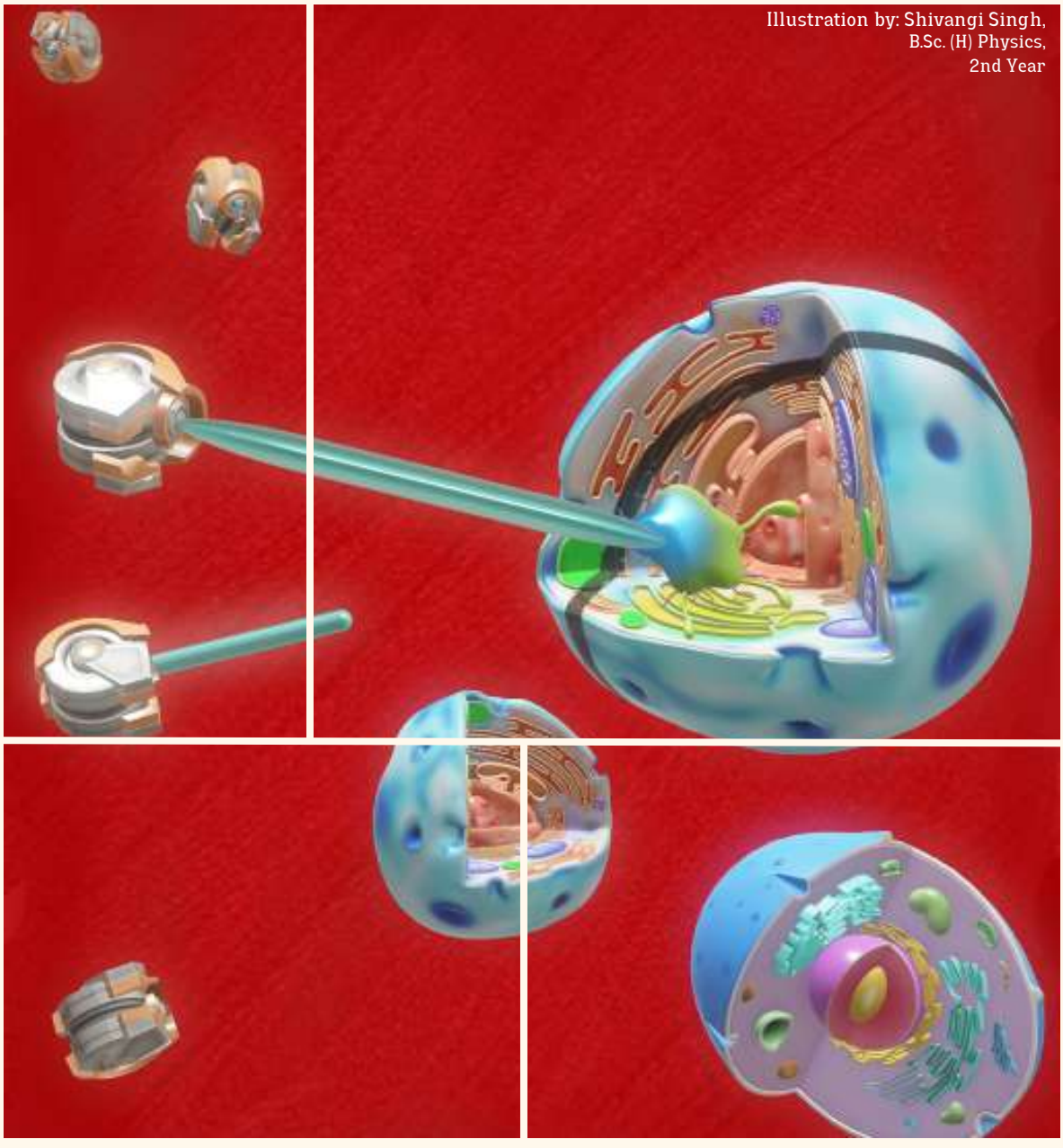

Illustration by: Shivangi Singh,
B.Sc. (H) Physics,
2nd Year

NANOTECHNOLOGY IS AN IDEA THAT MOST PEOPLE SIMPLY DIDN'T BELIEVE.

-Ralph Merkle


Jian Fan/Getty Images/iStockphoto

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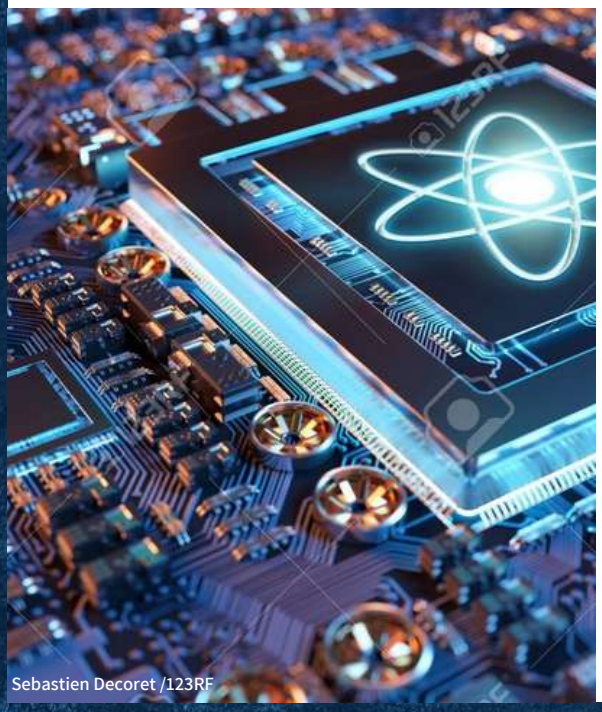
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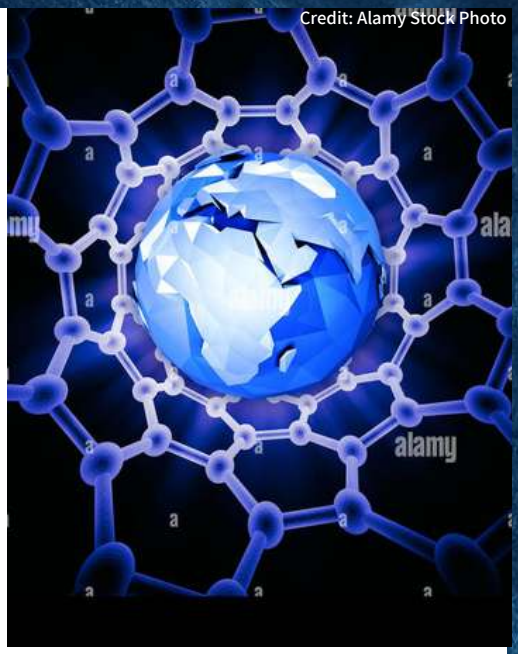

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From the Principal's Desk

My Dear Students,

Congratulations and best wishes on yet another successful Magazine from your department: Physikos, with the theme Nanoscience and Nanotechnology. The theme by itself evokes wonder along with all the myriad ways in helping our lives to flourish on our planet Earth with advances in new frontiers of research in the said field.

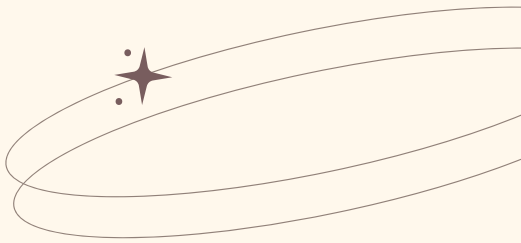
Unfortunately, we read frequently in the daily news and are also experiencing rapid global changes in our climate patterns.

Man-made disasters are on the rise and the responsibility towards leaving a sustainable planet for the next generation is more significant than in any other time in our history. During the last century, research has been increasingly drawn towards understanding the human-nature relationship and has revealed that undoubtedly humans are linked with the natural environment. A lot of work is needed for the sustainability of natural resources and to create awareness about the health benefits associated with engaging with nature. Of these examples, the impacts of the human-nature relationship on people's health have grown with interest as evidence for a connection that accumulates in research literature.

I am confident that you as a Gargi student would take all the learnings to make a difference by bringing change for the better. You shall make us all proud, given the learnings and efforts for contribution to understanding and highlighting relevant science and technology that changes the world for the better.

My best wishes in all your endeavours. Keep Gargi's flag flying higher than ever before!

Prof (Dr) Sangeeta Bhatia
Principal (Offg.)



MESSAGE FROM THE TEACHER- IN CHARGE: PHYSIKOS

Heartiest congratulations for next edition of 'Physikos', the physics department magazine for year 2022-23, to the entire team of magazine. I hope it will be a wonderful experience to go through this magazine.

I wish students of physics department the very best for their future endeavours.

Dr. Hira Joshi
Teacher In Charge, Physics Department
Gargi College, University Of Delhi

MESSAGE FROM THE TEACHER-COORDINATOR

It is a delight to present the 2022-23 issue of Physikos. This will provide a one-stop glimpse of the activities and comprehensive achievements of the Physics Department. I express a deep sense of gratitude to our Principal, Prof. Sangeeta Bhatia for her constant motivation and support to the department. Thanks are also due to our TIC, Dr. Hira Joshi for her guidance. This has only been possible due to the dedicated work done by the dynamic editorial team composed of Yashashvi, Shivangi, Mehak, Kirty, Ruchi, Janhavi and Astha. The coordination, creativity and inputs by the students have also been well displayed. I take this opportunity to congratulate each one of you as well as all the contributors on behalf of myself and our department. The cover page design by Shivangi is truly representative of the theme for this year, “Nanoscience and Nanotechnology”. The magazine aims to inculcate critical thinking, literature survey skills, content writing, designing skills, awareness about plagiarism and ethics in publishing amongst the students. The students also learn and practice time management, team-work and collaboration. These life-long skills are always beneficial for their professional and personal development. They are also highly useful for the popularization of Science, scientific writings and communication. I am sure our students will explore more opportunities as a result of these skills gained through their experiences as a team member of the magazine.

We proudly present the third episode of the Ask-The-Expert Series on the theme of Nanoscience and Nanotechnology with Prof. Shubha Gokhale who has been an eminent researcher in the field. This will familiarize and motivate students to pursue this topic further. This field is widely present amongst others and offers an area of research as well as business opportunities for physics students. We express our heartfelt thanks to her.

An account of the year-long activities will also provide an enriching experience to the students. This includes events such as the Freshers' welcome, Teacher's Day celebration, lectures by eminent scientists and many student-centric activities.

Under the NASI Science-Society program, many students undertook research projects and participated in various activities in association with Prof. Shashi Chawla of Microbiology. Enlightening talks and hands-on sessions were organized throughout the year and covered various exciting topics. This has included the exciting world of Exoplanets by Dr. Priya Hasan (Hyderabad) and Foldscope and awareness about antimicrobial resistance by Dr. Anupma Harshal (Mumbai). Talks by eminent Scientists such as Prof. Ajoy Ghatak, Prof. Anurag Sharma and sessions on the assembly of Telescopes and a Night-gazing session by Mr. Tushar Purohit, IUCAA and Kavita Sansanwal were not only informative but engaged the students with overwhelming responses. These talks will certainly orient the students in research and higher education.

It has been our constant effort to create awareness about e-waste. A drive was organized under the NASI project in partnership with our Eco club, Avni. We have been encouraging students towards Own-a-Mug so as to reduce solid waste. Proudly, we express gratitude to DRIIV – Effective Education and BP Planet for SPOC of Dr. Alka Garg and Prof. Vandna Luthra to mentor three BP Fellows, Ms.Yukta (Phy (H)), Ms. Arya (Phy. Sc.) and Ms. Priya (Phys(H)). They have been instrumental in motivating fellow students towards the reduction of solid waste, behavioral changes and also for a collection of plastic on the campus. I am sure that they will continue their work in this direction.

It is always a moment of joy to celebrate the achievements of students in academic, cultural, sports and other fronts. Furthermore, many students have undertaken research projects mentored by faculty members. Hearty congratulations to all of them and best wishes for the future.

Our alumni form a special place in our hearts. It is a delight to introduce Dr. Surbhi Sharma who has been progressing in higher education and has taken her valuable time out for sharing her experiences for the benefits of our students in this issue of Physikos.

Last but not the least, we are thankful to all the non-technical staff who have always been very supportive. We express thanks to the administrative, accounts and office staff for their continued support.

Best wishes to all the students from all of us and we will look forward to hear from you. Stay Connected.

We will look forward to the valuable suggestions which will certainly help in improvement of the forthcoming issues. Kindly bring to our notice should there be any inadvertent error.

"Believe in yourself. You are braver than you think, more talented than you know, and capable of more than you imagine"

-Roy T. Bennett, The Light in the Heart.

Teacher Editor-cum-Coordinator, Physikos
Professor Vandna Luthra
Department of Physics,
vandna_arora@yahoo.com

Editor's NOTE

YASHASHVI DESHWAL,
2nd year, B.Sc. (H) Physics
EDITOR

I'm very thrilled and excited to introduce the 10th edition of the annual magazine of the Department of Physics, PHYSIKOS.

Serving as the editor this year for the first time was such an enriching experience for me. I got to explore my creativity in ways I couldn't have imagined before and it helped me enhance my skills. This has taught me about the professional side of designing and editing including copyright, layouts, avoiding plagiarism, and most importantly, publishing your work. I am extremely thankful to Vandna Ma'am for giving me this opportunity to learn and contribute. I am grateful to my parents for their immense support and motivation.

A lot of effort has been put into this and everything was made successful with the sincere contribution of the team members.

PHYSIKOS is a reflection of student's creativity and efforts throughout the year. In this edition the theme revolves around the most widespread field, Nanotechnology. An 'ask the expert' and 'Q & A' sessions have also been reported for better understanding of the topic.
Hope you will enjoy it and suggestions are always welcomed.

Happy reading!

Ask the Expert- Episode III

with Professor Shubha Gokhale, IGNOU, Nanoscience and Nanotechnology in conversation with Prof. Vandna Luthra, Gargi College

It is a delight to have conversation with eminent scientist and educationalist from across the country. Her teaching and scientific interests has been of immense benefits to the students and faculty members alike. She is a leading expert in nanoscience and nanotechnology. This field has grown leaps and bound and finds extensive applications in diverse fields and offers immense career opportunities. Surely, this conversation will be beneficial for the readers especially our students. On the behalf of our college and department, I whole-hearted thank Prof. Shubha Gokhale for accepting our invitation and for sparing her valuable time.

~Professor Vandna Luthra

A Brief CV: Prof. Shubha Gokhale

Pursued Masters and Ph.D. in Physics from Pune University followed by Post-Doctoral fellowships at Indian Institute of Sciences, Bangalore and Technical University, Munich, Germany. Possess a Masters degree in Law (Intellectual Property Rights) from Turin University, Italy.

Worked in the Instrumentation Science Department of Pune University from 1993-2000. After that working as a Professor of Physics at Indira Gandhi National Open University, New Delhi till now.

Research interests include Surface Science, Materials Science, Sensor Technology, Semiconductor and Ferrite nanostructures.
More than 30 publications in reputed International journals, and several conference presentations.

Q & A

Q1. Dear Prof. Gokhale, kindly provide an update on the research and development in the field of Nanoscience and Nanotechnology and some highlights of your work.

Nanotechnology has been a recent buzz word, maybe in the last 10-15 years. However, the field is not at all new. Most of the biological systems function with the help of tiny components which range from the nano or micrometer sizes. The best example is the DNA, which governs our entire life, is hardly 20-30 nm in size! So nature has been working with nanotechnology since eternity. We, humans, who believe in seeing, could appreciate its importance when technological advances allowed us to measure such small dimensions and handle such tiny systems.

With the development of techniques like scanning tunneling microscopy (STM), which allowed viewing of a material surface at atomic level as well as movement of individual atoms as per requirement, nanotechnology got a sudden boost. Further research showed that the nanostructures can be synthesized even with cost effective techniques like chemical routes, which further popularized research in this field.

Use of nano- devices in micro-electronics, quantum machines, targeted drug delivery, forensic science, self-cleaning surfaces are a few common examples where we come across nanotechnology very often.

Q2. At which level should Nanoscience and Nanomaterials courses be offered: at Secondary school level, at UG level, or at PG level?

Knowledge about anything is desired at every level. The depth of the knowledge depends on the background of the learner. Since biology is taught right from school level and we have heard the words like cells, amoeba etc from those days, there is no harm in mentioning at that level also about nanotechnology, citing some practical examples of technology. Detailed analysis and experience in synthesis can be introduced from the college level. This is essential, since the equipment required to characterize the nanosystems is pretty sophisticated and demand a certain level of maturity in handling them. Theoretical analysis required for designing / tailoring of nanosystems is also possible, when a strong scientific basis in physics, chemistry and mathematical modeling is acquired.

Q3. Can you mention some of the institutes/courses students can join after completing B.Sc (H) Physics and B.Sc (Physical Sciences)?

There are many reputed institutes/ universities offering nanotechnology courses in India and abroad. IISc, IISERs, NISER, Post- graduate departments of reputed universities like DU, JNU, JMI are the best places in India to pursue further studies in the field.

Q4. Kids become curious about this subject from a very young age. Still, as far as formal education is concerned in this field, majorly it is done at the PG level in Indian Universities. Kindly share your thoughts on this.

While answering the second question, I guess, I have already shared my thought on the topic.

Q5. What advantages and disadvantages does this field offer?

Every scientific field has its own advantages and disadvantages. I think science, per se, is never done with bad intentions. But its application in different ways, without knowing its implications, can be harmful. The best example is Einstein's E=mc2 ! Who would have thought that it could be used for massive destruction weapons in the form of atomic bombs?

So, nanotechnology also has its advantages and disadvantages. For example, during the infant years of nanotechnology, gold nanoparticles were used in some cosmetics promising a glowing skin, but it was not realized that the dimensions of nanoparticles are so small, that they can penetrate through our skin pores and affect the body functioning. So the rampant use of such products did result in some serious cases. Afterwards, naturally, corrective actions were taken by the regulatory bodies to check such uses.

Another hazard faced by the public in general is unchecked waste disposal containing nanoparticle products. If such products are left free in nature, they can get into the water bodies or atmosphere and cause harm to living beings.

Since this field is relatively new, many of its advantages and disadvantages have yet to come into our knowledge.

Q6. How can students be made aware of the recent developments in this field?

I feel students are better equipped as far as information gathering is concerned in the digital era. There are many websites giving such information. However, here, I find the role of a teacher is important in guiding them to the right resources which are authentic and reputed. This can be in the form of some e-book repositories or journal papers as well. Students can be encouraged to even buy some standard books on the subject. College library should also be encouraged by the teachers to procure a few standard text books and some good new arrivals in their stock.

Q7. Can you elaborate on tailoring of properties for various applications?

Tailoring of material properties to suit the needs of human beings is the basis of most of the material science research these days. You can decide the colour of the light emitted by an LED by tailoring the band-gap of the material used in it. The hardness of the machine parts subjected to wear and tear in manufacturing factories can be improved by applying a nanometer thickness hard coating on them. Nanoparticles used as lubricants can provide a very good frictionless surface. Long carbon tubes can be used for preparing light-weight sporting equipments. And there are numerous such examples.

Q8. What is the current status of research in this field in our country vis-a-vis the rest of the world? ?

Indian science is in no way lagging behind the international research in my opinion. Due to the seamless boundaries of knowledge exchange facilitated by IT, governmental and non-governmental efforts of knowledge exchange across the universities/ research institutions in the form of scientific exchange programmes and collaborative arrangements, Indian researchers are getting all the possible incentive to perform at par with the international peers.

Q9. What are the current challenges in this field?

As I said, this is a newly emerging area of science and technology and the available laboratory facilities are not wide spread yet. This becomes a challenging task, since everyone cannot afford to build the entire infrastructure required in every place. So the work has to be carried out by sharing the resources available at different places by collaborative arrangements. This causes some delays in getting results at times.

Further, commercializing an invention or a product is also not a straight forward process. For example, you develop some gas sensors in your laboratory. Then you have to carry out its tests in the field, may be in the factories. When the effectiveness of the product is proven, it needs to be manufactured on a large scale. The support system required to obtain patents, raise funding and identify a manufacturer to commercialize the product may not be available at all places.

Q10. What are scopes for the science graduates vis-a-vis engineering students in this field currently and in the near future in India and abroad?

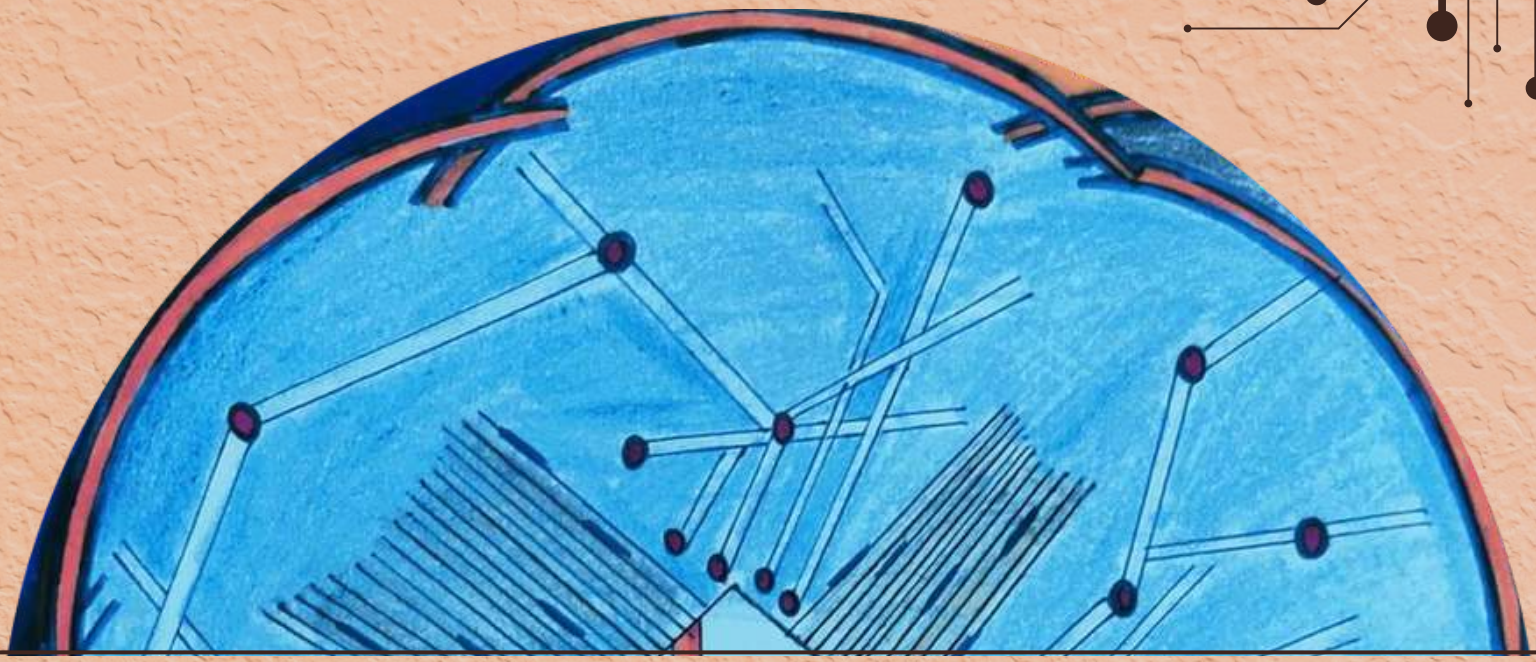
Engineers can produce a product based on the technology developed on the solid basis of scientific knowledge. Analysis and reasoning are the virtues of the scientists. Technology works on the principles proposed by scientists. When some system fails, the analysis of the failure can be done on the scientific basis only.

Hence a Science graduate is a preferred choice in the R&D Sections of any industry.

With sound knowledge or support in management field, a science graduate can be a founder of a start-up, which can launch new products.

Q11. What efforts can make youngsters experience the joy of Science and be more oriented towards it?

Science fairs organized at educational institutions is the first step to involve the students in science experiments as well as some small projects. There are many competitions organized by various Academies of Science, Teacher Forums, Government institutions like DST, DBT, and many more, where students should be encouraged to participate. This will not only help them show-case their own project/innovation, but also get an opportunity to interact with others in the field, which can pave way to future collaborative ventures.



NANOTECHNOLOGY-RELATED ARTICLES BY STUDENTS

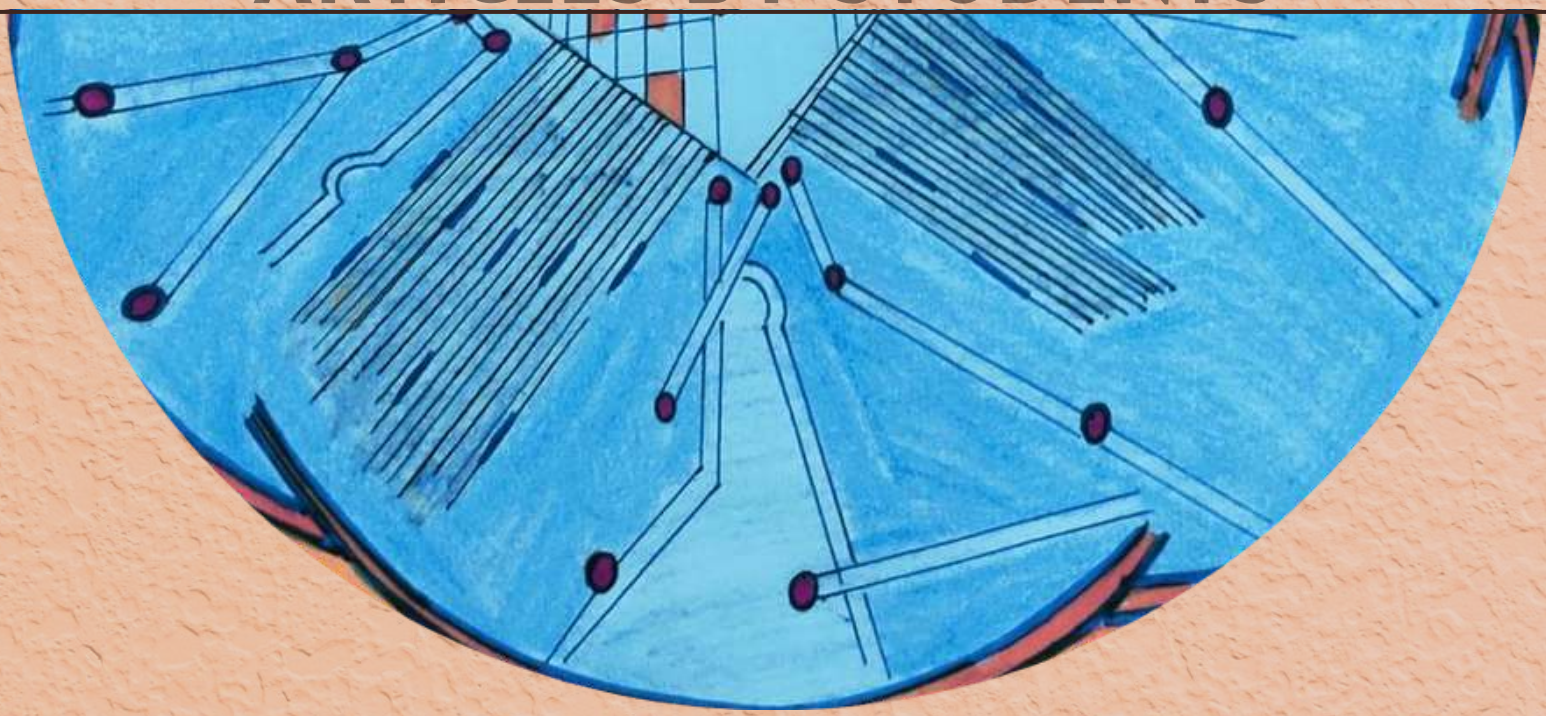


Illustration by Ruchi Singh,
B.Sc. (H) Physics, 2nd year

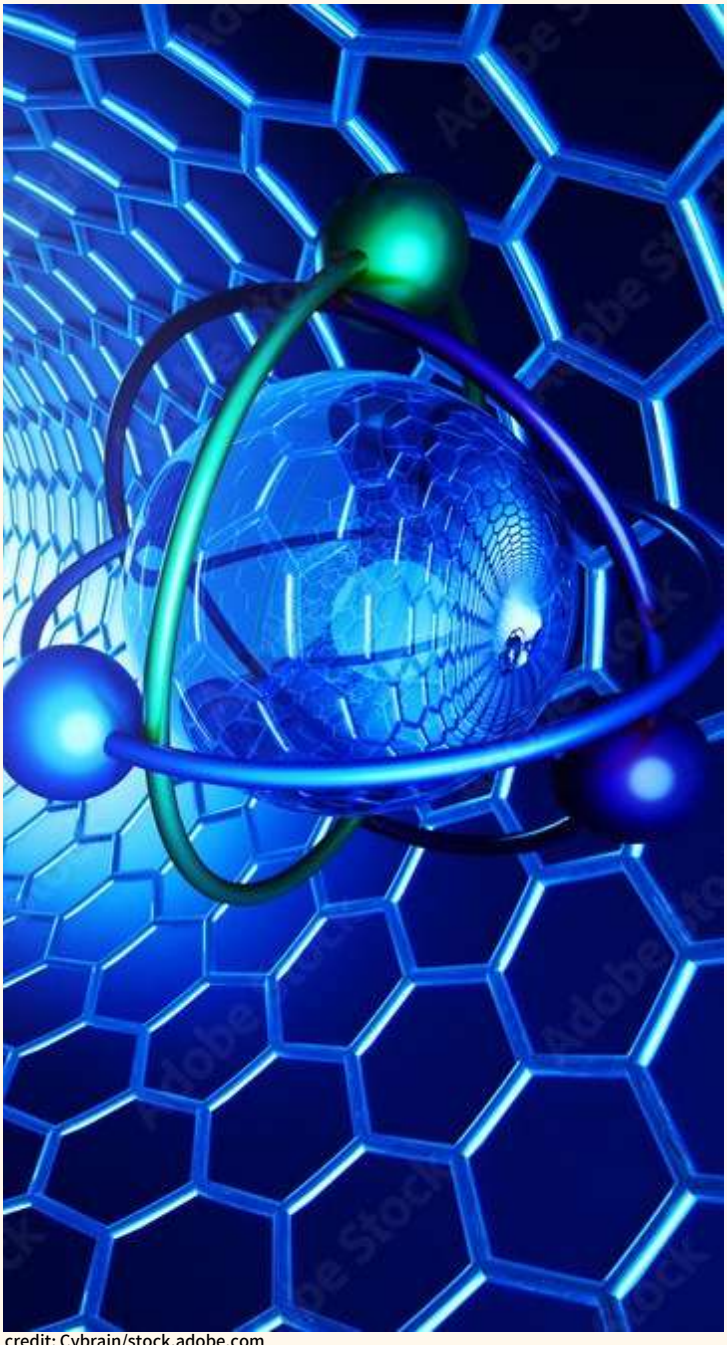
THERE IS PLENTY OF ROOM AT THE BOTTOM: AN INVITATION TO ENTER A NEW FIELD OF PHYSICS

-Richard Feynman

-By Ruchi Singh,
2nd year
B.Sc. (H) Physics

Have you ever heard this phrase? If not then you have been denied from a very interesting field of science and engineering which is NANOPHYSICS (the physics that deals with dimensions and structure in the nanometer range or of any phenomena that occurs in nanoseconds) and NANOTECHNOLOGY (the branch of science and engineering devoted to designing, producing and using structures, devices and systems by manipulating atoms and molecules at nanoscale).

At present, the field of nanophysics and nanotechnology has successfully found its positive approach towards development in society.



credit: Cybrain/stock.adobe.com

There are many applications of studying these approaches. some of them are given below:

- **Nanoelectronic**: It is the application of nanotechnology in the electronic field and its components. It focuses on the improvement of the performance of electronic devices on displays and power consumption while making them in the nanometer range i.e. scaling down the device to the size of integrated circuits. Nanoelectronics is not a single area to deal with. It is a multidisciplinary area that include quantum physics. circuit analysis etc. (As de Broglie wavelength in the semiconductor may be of the order of 100nm, the quantum study at this scale is important for improvement in semiconductor devices.)

- **Nanobiotechnology:** It refers to the combined study of the sciences of biology and nanotechnology. If talking specifically, it refers to scaling down of objects to nano range for application in biotechnology. The most prominent intersection of nanotechnology and biology is seen in the field of nanomedicine which uses nanoparticles and nanodevices in many medical application such as diagnosing, disease monitoring.

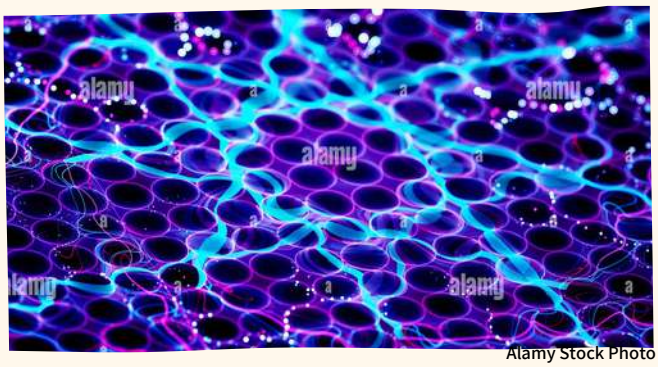
- **Green nanotechnology:** The most concerning field when studying the operation of nanotechnology relates to the use of nanoparticles for storing energy more efficiently. It also promotes the use of renewable energy through green nanotechnology by generating, storing and using energy without emitting dangerous hothouse feasts.

  Solar Cells - Solar cells are presently created from layers of silicon that absorb the sun and convert it to electrical energy but using noble essence similar to gold carpeted on top of silicon, the energy is more efficiently converted into electricity. More energy is lost during the metamorphosis due to the heat conformation. By using nanoparticles there's lower heat emitted therefore producing further electricity.

  Hydrogen fuel cells- Nanotechnology enables the use of hydrogen energy at much-advanced capacity. The conventional energy cells are too big to be stored in volume but nano blades can store a lesser volume of hydrogen than can be saved inside carbon nanotubes for long-term storehouse.

- **Nanographene batteries** - Lithium-ion batteries have been the primary battery technology in electronics for the last decades but due to the dangers of heat and explosion, it is difficult to densify batteries in current uses. Graphene batteries being tested in experimental electric cars have promised capacities 4 times greater than current batteries with cost being 77% lower. It provides stable life cycles of up to 250000cycles which would allow electric vehicles and long-term products a reliable energy source.

  It is concluded that as predicted before the current and future world will be at the highest pace of development and improvement of nanotechnology. There are many more applications in different disciplines that will find their way through the use of nanotechnology and nanophysics.



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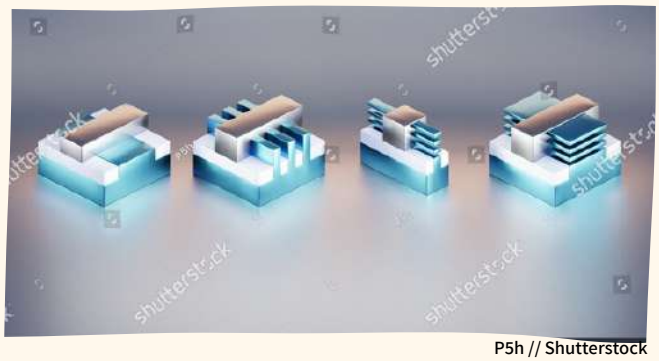

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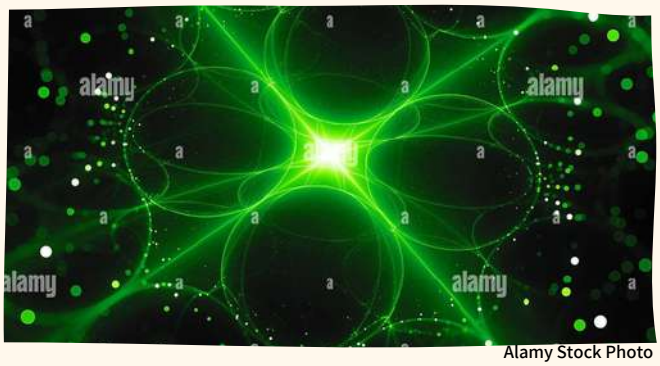

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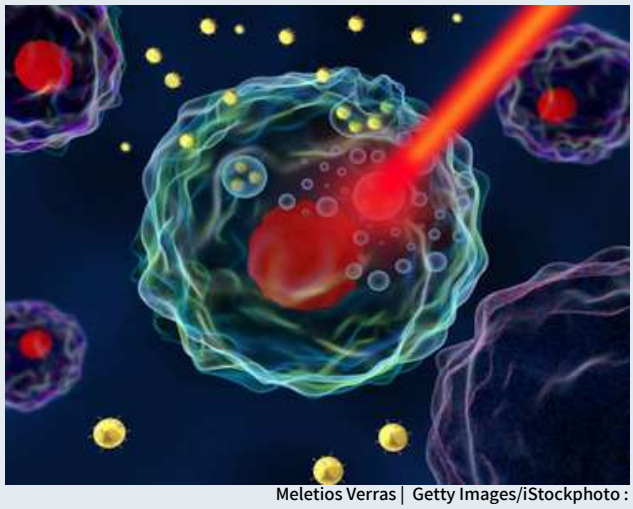
NANOPARTICLES IN MEDICAL SCIENCE

Shivangi Singh
2nd year, B.Sc.(H) Physics

Nanomedicine is the area of science that uses nanotechnology to achieve innovation in the healthcare field. Better, it has the potential to turn molecular discoveries arising from genomics and proteomics into widespread benefits for patients. This particular material is produced on a nanoscale level that is 10^-9 meter scale and is safe to introduce into the body. Various applications for nanotechnology in medicine include diagnosis, imaging, and the delivery of drugs which reinforce professionals to treat various diseases.



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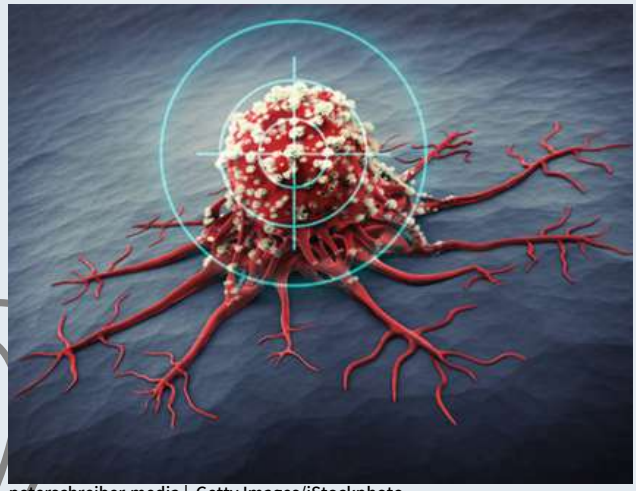

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Target specification of drug delivery

The development in the field of nanoscale technology is starting to alteration in the scientific terrain in terms of the diagnosis of disease, its treatment, and ultimately prevention. This area of research involves attaching nanoparticles onto drugs or liposomes (Small artificial vesicles of spherical shape that can be created from cholesterol and natural, non-toxic phospholipids) to increase, the specific localization of the drug.

Oral drug delivery(ODD) is contemplated as one of the most convenient, optimal, expedient routes of the delivery administration for consummating therapeutic prerequisites. However, there are challenges faced in ODD including drug efficiency, toxicity, and poor availability of drugs. To overcome these mentioned limitations, so-called nanoparticles are designed to maximize the concentration at the target site while minimizing the drug's adverse effect.

While this is a favorable field of research there are only a few nanomedicines that exist that successfully utilize nanotechnology in this manner due to live-defined parameters associated with bearing the correct ratio of particles with the drug of interest.

Control drug release

To achieve controlled drug release by nanoparticles, various strategies can be employed. One of the most commonly used strategies is to encapsulate the drug within the nanoparticle matrix, which can be Academic Report 2 composed of biodegradable polymers, such as Poly(lactic glycolic acid) (PLGA), Chitosan, or alginate. The drug is then released in a controlled manner by diffusion, degradation of the matrix, or a combination of both.

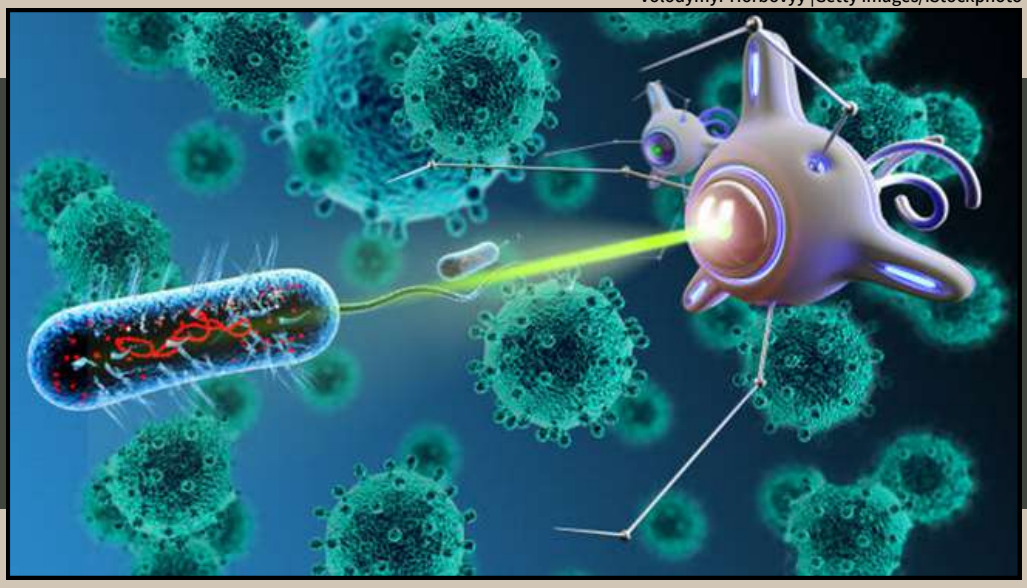
Another strategy for controlled drug release by nanoparticles, modify the surface of the nanoparticle with specific molecules that can trigger drug release in response to specific stimuli, such as changes in pH, temperature, or the presence of enzymes. For example, pH-sensitive particles can be designed to release their cargo in response to changes in the acidity of the surrounding environment, such as in the case of cancer cells, which are known to have a lower PH than healthy cells.

There are several advantages of using nanoparticles for controlled drug release. First, nanoparticles protect the drug from degradation, oxidation, or enzymatic, breakdown, which can increase the drug, solubility, and bioavailability, which can improve the pharmacokinetics and pharmacodynamics. Third, nanoparticles can target specific tissues or cells, which can reduce side effects and increase the efficacy of the drug.

Overall, controlled drug release by nanoparticles has enormous potential in various areas of medicine, including cancer therapy, gene therapy, and vaccine delivery. With further research and development, controlled drug release by nanoparticles is expected to revolutionize the field of drug delivery and improve patient outcomes.

FUTURISTIC VISION IN NANO MEDICINE

Volodymyr Horbovyy |Getty Images/iStockphoto



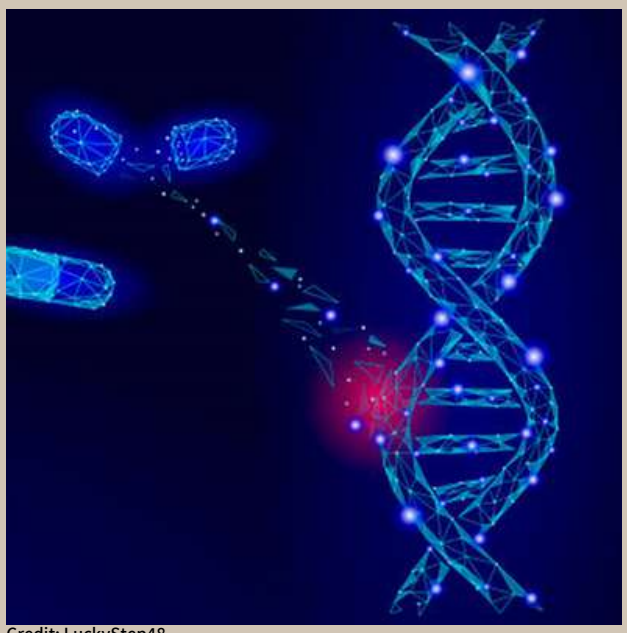
Shivangi Singh
2nd year, B.Sc.(H) Physics

Here are some of the potential future applications of nano particles in medicine: .

Gene therapy: Nanoparticles can be used to deliver genes to cells enabling the treatment of genetic disorders. Additionally, nanoparticles can be engineered to target specific cells or tissues, enhancing the specificity of gene delivery

Diagnostics: Nanoparticles can be used to develop rapid and sensitive diagnostic tests for infectious diseases and other conditions. Additionally, nanoparticles can be engineered to enable real-time monitoring of disease progression and treatment response.

Credit:Kts | Dreamstime.com



Credit: LuckyStep48

Cancer therapy: Nanoparticles can be used to target cancer cells and deliver chemotherapeutic drugs directly to the tumor site, reducing the systematic toxicity associated with conventional chemotherapy. Additionally, nanoparticles can be engineered to respond to specific stimuli, such as changes in pH, or temperature, which can enhance the release and efficacy.

Neurodegenerative disease therapy: Nanoparticles can be used to deliver drugs to the brain, enabling the treatment of neurodegenerative diseases, such as Alzheimer's and Parkinson's, as they can be engineered to cross the blood-brain barrier, which is a major barrier to drug delivery in the central nervous system.

Overall, the potential applications of nanoparticles in medicine are vast and varied. With further research and development, nanoparticles are expected to play an increasingly important role in improving patient outcomes and Academic Report 4 advancing the field of medicine

Nano Wonders: Unveiling the marvels of Nanoscience

-By Unnati Yadav,
2nd Year, B.Sc. (H) Physics

- **A nanometer (nm) is a billionth of a meter or a millionth of a millimeter.**
- **1 nanometer is about 8 times the radius of an atom and 100 times smaller than a bacterial cell. At this scale, matter reacts differently. For example -> a material's melting point may change or it may become more reactive.**
- **Nanoscience works on a scale 1000 times smaller than anything that can be seen with an optical microscope.**
- **A human hair is 80,000 nm in diameter.**

- **Nanotechnology was first introduced in 1959 by Nobel prize-winning Physicist, Richard Feynman.**
- **Saturn can float on water like ice because Saturn has a density of less than water, around 0.7 g/cc, whereas the density of water is 1g/cc.**
- **A typical smartphone would not detect touches from fingernails, rubber, or certain fabrics they lack the ions needed for the interaction.**
- **Gravity is weaker than a fridge magnet because when u stick a dime-sized magnet on a fridge, it has enough electromagnetic force to overcome the Earth's gravity and stick to it.**

- **The range of gravity is infinite. Gravity might be the weakest of the fundamental forces but it has an unlimited range. Its strength decreases rapidly as objects move farther apart, but its reach is theoretically infinite.**
- **The days on Venus are longer than its years. Venus is the slowest rotating planet in our solar system and it spins at a speed of 4.05 miles per hour. In contrast, the earth spins at a speed of around 1,040.4 miles per hour.**
- **Venus takes around 225 Earth days to orbit around the sun. (thus completing a Venusian year)**

"SMALL BUT MIGHTY: EXPLORING THE ROLE OF NANOTECHNOLOGY IN NATURE"

-By Kirti Pandey,
2nd Year, B.Sc. (H) Physics

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Nanotechnology, the science of manipulating matter at the atomic and molecular level, has been a topic of growing interest in recent years due to its potential applications in fields such as medicine, energy, and electronics. However, what is often overlooked is the fact that nanotechnology has been utilized by nature for billions of years, with many organisms exhibiting incredible nanostructures and properties.

Nanotechnology in nature: Inspiring Human Innovation

The lotus leaf has a superhydrophobic surface due to the presence of nanoscale bumps and waxes that prevent water droplets from sticking to its surface. This natural phenomenon has inspired the development of self-cleaning surfaces and coatings for a variety of applications, such as solar panels and textiles.

Another example is the iridescent coloration of certain butterflies and birds, which is achieved through the manipulation of nanoscale structures within their wings and feathers. These structures, known as photonic crystals, reflect light in a way that produces vibrant colors without the use of pigments. This has led to the development of new technologies such as photonic sensors and displays.

The gecko, a small lizard, also possesses a unique nanotechnology-inspired ability - the ability to climb walls and ceilings. The gecko's feet have millions of tiny hair-like structures known as setae, each tipped with thousands of nanoscale spatulae. These spatulae interact with the surface on a molecular level, allowing the gecko to stick to surfaces without the use of adhesives. This has inspired the development of new materials for adhesives and even space exploration.

Other examples of natural nanotechnology include the structural coloration of peacock feathers, the self-cleaning properties of shark skin, and the strength and flexibility of spider silk. By studying and understanding these natural nanostructures and properties, scientists and engineers can develop new and innovative technologies that can benefit society.

Scientists have developed a nanoscale drug delivery system inspired by the structure of viruses. This system uses nanoparticles to encapsulate and transport drugs to specific cells or tissues, improving drug efficacy and reducing side effects. Similarly, researchers have developed a photovoltaic material based on the nanostructure of the photosynthetic membrane in plants, which could lead to more efficient solar panels.

Researchers are also studying the nanostructures in the skin of chameleons to develop new materials for camouflage and sensing. The nanoscale structures in the wings of dragonflies could inspire the development of new materials for air filtration and water harvesting.

Pixabay: https://pixabay.com/

CONCLUSION:

The study of nanotechnology in nature offers a unique perspective on how organisms have evolved to manipulate matter at the atomic and molecular levels to achieve remarkable properties and functions. By exploring these natural examples, we can gain insights into the design and development of new materials and technologies that can have a profound impact on our world.

DEPARTMENTAL ACTIVITIES

A COLLECTION-CUM-AWARENESS DRIVE FOR E-WASTE

FROM 12/09/2022 TO 18/09/2022

Objective:

In the modern world, extensive use of electronic goods is leading to the generation of e-waste in bulk amounts. The production of electronic goods not only has a carbon footprint which results in global warming and climate change but also leads to the generation of e-waste. This waste is not only toxic but also non-biodegradable. Since its recycling rate is low, it accumulates in the environment, water, soil, air, and living beings, thereby causing health hazards. Hence, the activity was an attempt to collect the e-waste from students and staff of the College and to engage in creating awareness about the harmful effects of e-waste.

Collaborative Partner: AVNI (Eco club), Gargi College

TEACHER'S DAY Celebration

"Teachers can change lives with just the right mix of chalk and challenges".

To honor the service and dedication of teachers for their students, QUASAR the physics society of Gargi College celebrated Teacher's Day on 5 September 2022. The event started by lighting the lamp followed by singing "Ma Sharade ". The Event further proceeded by giving gifts to the teachers, which was followed by a few entertaining performances, and various games were organized for the teachers such as recitation of poems, singing, and many more. Teachers also played musical chairs, which became very exciting to watch and thereby was enjoyed by both teachers and students. The game was won by Mr. Manraj Meena. Here are some amazing memorable photos from our fun celebration of Teacher's Day.

FRESHER'S ORIENTATION

"Every sunset is an opportunity to reset. Every sunrise begins with new eyes."

~ Richie Norton

It's a new beginning for every student who has just passed their 12th standard and has entered college to pursue their dreams. To welcome our freshers of 2022, our department organized an orientation on 2nd Nov 2022. Orientation programs are aimed at familiarizing the students with an unknown campus environment and with their faculty members, whom they are going to commend for their lifetime. The event started with warm speeches by the teachers and union members who gave them some of the best advice for their upcoming venture. Then the freshers introduced themselves. The event ended with a dance party among students.

BADGE DISTRIBUTION CEREMONY

Challenges are gifts that force us to search for a new centre of gravity. Don't fight them, Just find a new way to stand.

~Oprah Winfrey

Students who took the challenge and tried taking on new responsibilities need to be appreciated. So to appreciate these students, who became union members of our department, an event was organized on 3rd Feb 2023 in which badges were given to the following students for the post of-

Class representative

3rd year- Neha Chaudhary and Archita
2nd year- Priya Kumari and Kirti Pandey
1st year- Sakshi and Janhvi

Joint secretary– Arpita Hansraj

Cultural secretary– Janhvi

Celebration of SCIENCE DAY

**SCIENCE IS A BEAUITIFUL GIFT TO HUMANITY.
WE SHOULD NOT DISTORT IT. ~ A.P.J ABDUL KALAM**

Well said by Neil Bohr that "An expert is a person who has made all the mistakes that can be made in a very narrow field" so to celebrate these experts in the field of science,

QUASAR, the physics society organized an inter-department video-making competition on the lives of Indian scientists and the contribution of women in science on the occasion of National Science Day. We were overwhelmed by the entries that we got from different departments. the competition was judged by Dr. Alka Garg from the physics department and Prof. Aprajita Mohanty from the botany department.

Following students secured these positions in the competition:

- **1ST POSITION-** Mansi Kumara Meena of 2nd year from commerce department.
- **2ND POSITION-** Laxmi Godara of 3rd year from department of physics.
- **3RD POSITION-** Akriti Maurya of 3rd year from department of zoology and Sumitra from department of history.

Winners and participants were provided with e-certificates.

Scintillations

'THE SCIENCE FEST OF GARGI COLLEGE'

One of the most-awaited and celebrated fests of our college is "Scintillations", in which the whole science department organizes different and amazingly fun games and activities with cash prizes. The fest lasted for two days from 28th to 29th March 2023. Students from different colleges of Delhi University were invited to participate in various fun competitions. Our department QUASAR had organized many entertaining games for respective days of the fest.

FIRST DAY OF SCINTILLATIONS

We organized a circuit-making competition named "Make or Break the Circuitry". Participants were asked to make a 555-timer circuit. A circuit diagram and all the necessary apparatus were given to each participant.

The following students bagged the respective positions in this fun competition-

First position- Astha Chaudhary
Second position-Meenakshi Papola
Third position-Ruchi Singh

SECOND DAY OF SCINTILLATIONS

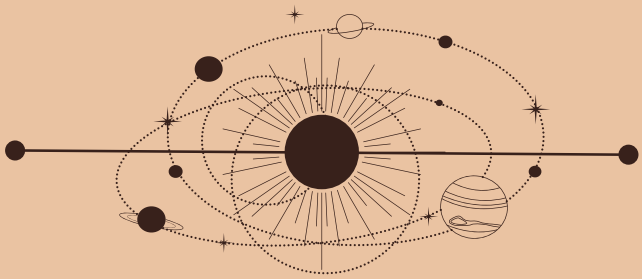
The second day had much more interesting activity than the first day. “Enigma of Clues - treasure hunt” for our young scientists. An overwhelming response was obtained for this game from different departments and colleges, so to get the required number of teams, the main event was followed by another fun game known as Pictionary.

Each team was given a paper carrying different words, and one of the members had to draw whatever was written on the paper and the rest of the members had to guess. The teams having the highest guesses were selected for the treasure hunt. Clues were hidden in the science block at different venues. The first clue was given by our department’s union members to each team, and following that they had to find another clue.

A team from Zakir Hussain College won the ‘Enigma of Clues’,.
The names of the students are as follows-
Shalini Rajor, BBE,
Vidushi, BBE,
Dheeraj Rawat, Sanskrit honours, second year,
Arpit Thakur, Sanskrit honours, second year

Volunteers for Scintillations'23

- Priya rajput
- Anwesha
- Ayushi dharia
- Priya Kumari
- Janhvi
- Arpita hansraj
- Khushi shringi
- Vandana Yadav
- Astha Chaudhary
- Hanshika
- Prerna bhati
- Pallavi
- Mahak
- Shivangi Singh
- Anshita Singh
- Priyal keswani
- Shreya
- Avantika nikhrey
- Ankita
- Kanika
- Ayushi Sharma
- Tanu Raghav
- Meenakshi
- Bhavya S
- Sruthi K
- Trishagni sarkar
- Anamika MS
- Sakshi Srivastav
- Harshita
- Nishtha bhardwaj
- Unnati Yadav
- Shiksha
- Ruchi Singh
- Chavi
- Bhavesha
- Kirti Pandey

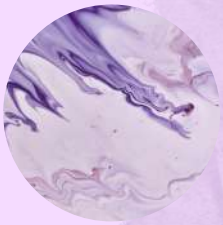


Farewell

A SWEET ENDING TO A NEW BEGINNING

To provide a last fond memory to our beloved and respected seniors and wish them a stroke of very good luck for the new chapter of their lives, we juniors organized a farewell party. The event took place in the presence of our department's teachers. First-year students took the responsibility to give an enjoyable farewell which was done very enthusiastically and successfully

To celebrate this happy ending of their college lives few events were organized such as games followed by speeches by our beloved teachers, dance and singing performances, and tag giving ceremony. Games such as "Do the Hook Step" and " Ms. Quasar" were played very passionately. Lastly, we admit that we were so lucky to have seniors like them, that makes us say goodbye so hard.



Nanoscience teaches us that even the tiniest of ideas can grow into something revolutionary dream big, think small – that's the essence of nanoscience.

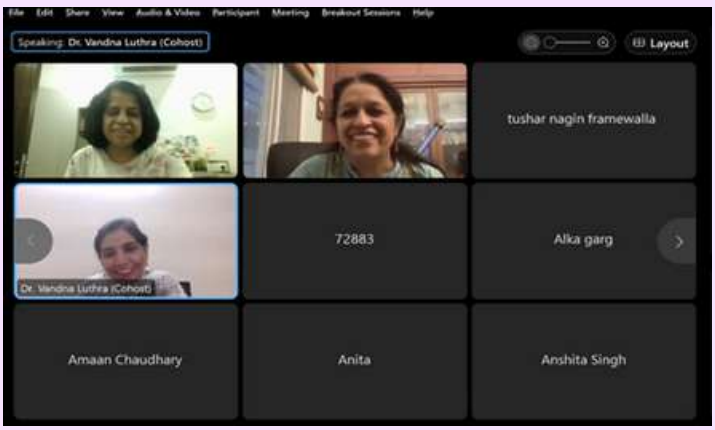
Nanoscience is the art of making the invisible visible and the impossible possible.

WORKSHOPS UNDER NASI

(NATIONAL ACADEMY OF SCIENCES, INDIA)

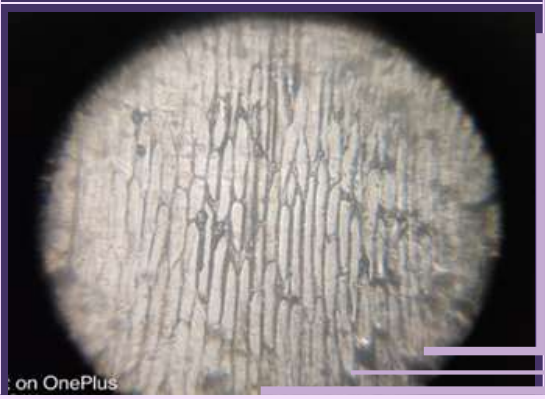
1. Exploring the exoplanets

A talk and demo session on exploring the exciting worlds of exoplanets was organized under NASI on 30 September 2022 in virtual mode. The lecturer was Dr. Priya Hasan. Students were briefed about the exoplanets and even taught to name the exoworlds.



2.A hands on workshop on Foldscope

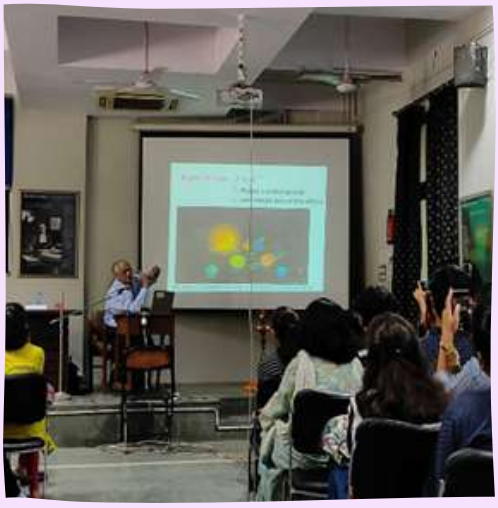
Another yet interesting hands-on workshop was conducted on foldscope. A versatile cost-effective tool for interdisciplinary research and familiarization on antimicrobial resistance(AMR). Students made slides of potato and peeled onion and observed their respective slides under foldscope.



3. Night gazing session

One of the most notable workshops amongst these was held on 17th October 2022. This workshop included the evolution of optics followed by a demo on the assembly of the telescope and at the end, an amazing night gazing session. The keynote speaker was Prof. Anurag Sharma, Emeritus professor, IITD chairman, NASI, Delhi Chapter.

The guest of honor was Prof. Ajoy K Ghatak, Former professor, IITD, President, NASI. The resource person was Mr. Tushar Purohit, Telescope making intern, IUCAA, scicop, Pune. During the night gazing session, we were given a chance to watch Saturn and its beautiful ring. Students from different colleges were also given an opportunity to learn and attend the night gazing session.



PARTICIPATION IN QUANTUM DAY CELEBRATION AT JIIT NOIDA

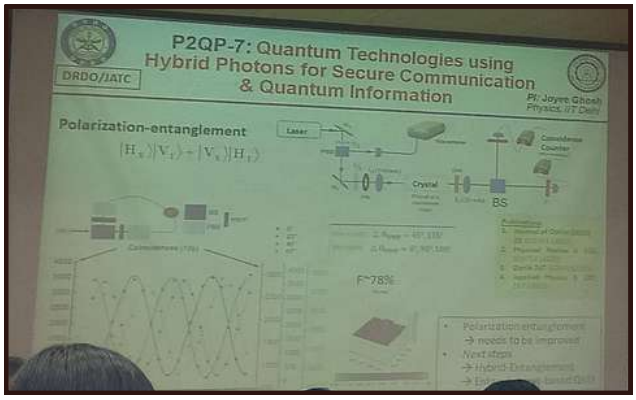
STUDENTS EXPLORED THE FASCINATING WORLD OF QUANTUM ON QUANTUM DAY CELEBRATION AT JIIT NOIDA BY PARTICIPATING IN VARIOUS ACTIVITIES.

By- Kirti Pandey,
2nd year, B.Sc. (H) Physics

On 14th April at JIIT College, students and faculty gathered to celebrate Quantum Day, an event dedicated to exploring the potential of quantum computing and its applications.

The day started with a keynote speech by Prof. Anirban Pathak, JIIT Noida, who highlighted the fact that World Quantum Day is celebrated on April 14, as a reference to 4.14, the rounded first digits of Planck's constant: 4.1356677×10−15 eV·s, also told the advancements made in the field of quantum computing in recent years. The keynote was followed by a demonstration of a quantum random number generator.

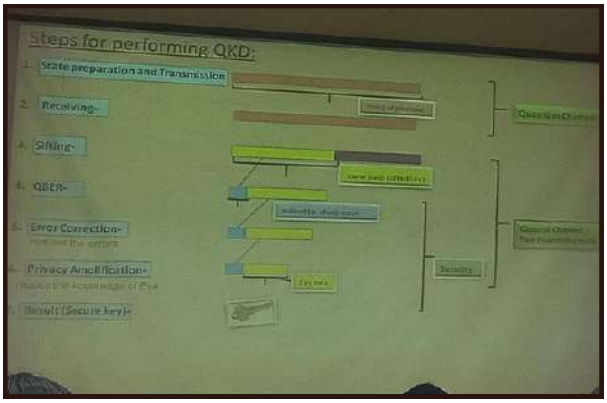
Then we had a small tea break along with the poster presentation by the students.



After that we had a very interesting session on "Entangled photons for Quantum communication" by Dr. Joyee Ghosh, IIT Delhi she told us about Entangled photons which are pairs of particles that are intrinsically linked such that measuring one particle instantly determines the state of the other, making them an important tool for secure quantum communication. This technology has the potential to revolutionize computing beyond the limits of Moore's law, with examples of qubits being used in quantum key distribution (QKD) protocols to securely transmit information over long distances.

Also highlighted the importance of spontaneous parametric down-conversion (SPDC) and implementation of quantum networks in various fields, followed by this we talked on "QKD protocol under free space losses", by Dr. Mitali Sisodia IIT Delhi and a talk on "From Quantum optics to Quantum Secure Communication" By Dr. Bhaskar Kanseri ", IIT Delhi.

The main highlight of his talk was the "Elitzur-Vaidman Bomb Tester ":- The Elitzur-Vaidman bomb tester is a theoretical proposal for a quantum measurement device designed to detect the presence of a bomb without triggering its explosion. It uses the phenomenon of quantum nonlocality to send a photon through two paths, one of which is blocked by the bomb, to determine its presence.



After this, we had a quiz competition in which all the students participated enthusiastically, followed by the talk of Dr. C.M Chandrashekhar IISC Bangalore on the topic "Generation of a random number in Lab".The students got to learn about the basics of quantum computing, including quantum gates, qubits, and quantum algorithms.

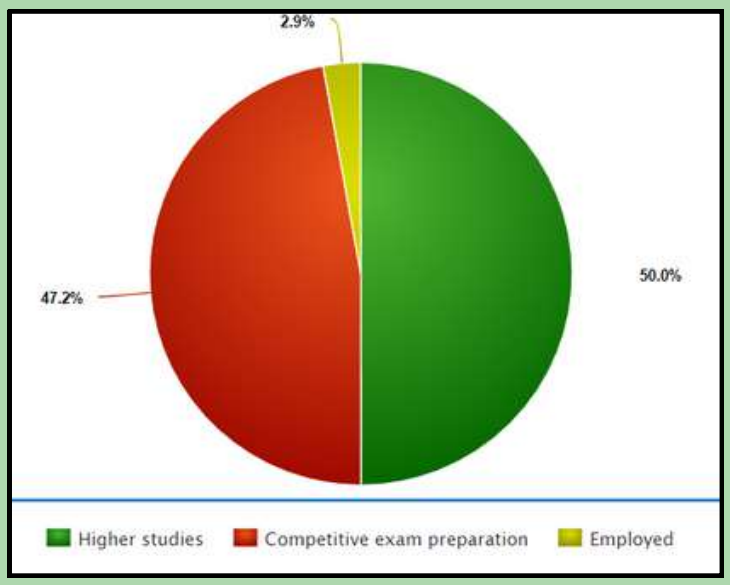
We were also introduced to the different types of quantum computers, such as ion traps, superconducting circuits, and topological qubits. Then we had "Circuit making with Qiskit Competition " followed by a lunch break.

After the break we had lab visits where we saw the workings of the "COW Protocol":- The COW (Coherent One Way) protocol is a quantum cryptography protocol that allows two parties to share a secret key. It uses a weak coherent pulse of light to encode the key and is designed to be resistant to interception and eavesdropping attacks. We also saw Quantum cryptography in Random number to QKD generators and some experiments of material physics like the Photoelectric effect, and Michelson interference.
After this, we had a Prize distribution ceremony for all the competitions which included the quiz, Circuit making, poster presentation, and the pre essay writing competition (this we had to submit online). I(Kirti Pandey) and Muskan Deswal from Gargi College had won the first and second positions respectively in the essay writing competition.

Then we had a photo Session, after capturing some memorable moments through the lens and awarding the deserving individuals, the curtains were drawn on the Quantum Day celebration, as they say, all good things must come to an end. Overall, Quantum Day was an enlightening experience for everyone who attended. It provided a glimpse into the future of computing and the potential of quantum technology to revolutionize various industries, including finance, logistics, and healthcare.
In conclusion, events like Quantum Day are critical in inspiring the next generation of quantum scientists and engineers. They offer an opportunity for students to learn about the latest developments in quantum computing and to engage with experts in the field.
We are grateful to our professor:- Prof. Vandna Luthra, thanks to her for recommending and informing us about this very interesting event. Her suggestion motivated us to participate, and we thoroughly enjoyed the event. Her guidance and support are invaluable, and we are grateful for her continuous efforts in helping us explore new opportunities.

ALUMNI BATCH OF 2019-2022
DEPARTMENT OF PHYSICS
GARGI COLLEGE

In the alumni batch of 2019-2022, a significant 50% of the students have chosen to pursue higher studies. The majority of them have enrolled in the University of Delhi for their Master of Science (MSc) programs. Moreover, one alumna has chosen to pursue higher studies abroad (Edinburg) for her Master's degree.
Another 47.2% of the alumni are dedicatedly preparing for competitive examinations, reflecting their aspirations to secure prominent positions in various governmental and private sectors.
Furthermore, 2.9% of the graduates have already entered the job market and are employed in the government sector.



Another graduate has taken a completely different path by venturing into the field of filmmaking, which exhibits the versatility and passion among the alumni in pursuing creative career choices. Additionally, one alumna has opted for a diploma in yoga science, emphasizing their interest in holistic health and well-being.

Overall, the alumni batch of 2019-2022 displayed a commendable dedication towards academic advancement and preparation for future opportunities. It exemplifies the diverse interests and aspirations of the graduates, showcasing their potential to excel in their chosen paths, be it in academia, competitive examinations, employment, or unconventional career fields.

WHAT THE STUDENTS ARE CURRENTLY PURSUING?

1. Revathi R Nair	:M.Sc Nanomedicine, Amity University Noida
2. Sejal Gupta	:Selected as PA/SA in SSC CGL 2022
3. Vaishali bhaskar	:M.Sc Physics from dept of physics and astrophysics
4. Poonam Kumari	:M.Sc (hons.)physics from Miranda house Delhi University
5. Anchal	:M.Sc Physics, Delhi University
6. Gunjan Bisht	:M.Sc Physics, Department of Physics, DU
7. Rakhi	:M.Sc physics from Hansraj college
8. Aayushi Singh	:M.Sc physics (DU)
9. Anjali Kumar	:M.Sc physics IIT Roorkee
10. Chelsi	:Bachelor of Education at Malaram kothari Teachers Training college, churu, Rajsthan
11. Payal Yadav	:Diploma in Yoga science from Morarji Desai National Institute of Yoga
12. Anjali	:MSc physics (Delhi University)
13. Priyanshi Mishra	:Masters of Science in physics , National Institute of Technology, Surathkal Karnataka
14. Samiha Sehgal	:MSc Particle and Nuclear Physics from The University of Edinburgh
15. Akshita Sharma	:MSc (Physics) From Kirori Mal College ; University Of Delhi
16. Namra Arya	:M.Sc. Physics, Department of Physics and Astrophysics, University of Delhi
17. Nitya Kumari	:Student, MA Filmmaking, London Film School
18. Meenakshi	:Masters of Biomedical Engineering

Our Shining Alumna

It is a matter of privilege and delight to introduce Dr. Surbhi Sharma as our alumna (2006-2009). Her journey in the field of Nanoscience and Nanotechnology will surely inspire the readers. She is making significant contributions in this field, especially for green renewable energy resources. I remember how enthusiastic she was to undertake a research project whilst at Gargi and her dedicated endeavors from IITD to Australia are noteworthy. I am immensely thankful to Dr. Surabhi Sharma for sparing her valuable time and for displaying exemplary commitment as our shining alumni. Best wishes for your future assignments. We will look forward to interacting with you in the near future.

Prof. Vandna Luthra

I am Dr. Surbhi Sharma and presently working as a Manufacturing Chemist/Scientist in the research and development (R&D) sector in Western Australia leading and number 1 integrated green technology, energy, and metals company Fortescue.

Our mission is to develop novel green technologies to reduce the dependency on fossil fuels by harnessing renewable energy resources such as green solar, wind, geothermal, and hydropower to achieve zero carbon emission by 2030. I am passionately working towards the development and implementation of hydrogen generation technologies to introduce a green industrial revolution for decarbonizing our planet. Before that, I worked as an Analyst in the Australian Laboratory Services (ALS), Geochemistry division, Perth Western Australia.

I completed my Bachelor of Science (B.Sc.) in Physics from Gargi College in 2009. I still look back at that time with extreme gratitude with lots of golden memories. I joined Gargi College in my teenage years with so many dreams. I got my first flavor of research when I completed my final year project (Interfacing of various laboratory experiments using Phoenix) with Dr. Vandna Luthra and decided to continue my further studies in Physics. To follow my passion, I enrolled in Hansraj College, University of Delhi, and completed my Master of Science (M.Sc.) in Physics in 2011. My thrust of knowledge and keen research interest has driven me to complete another M.Tech. degree in Solid State Materials from the Department of Physics, Indian Institute of Technology (IIT) Delhi in 2014. I qualified for the GATE (Graduate Aptitude Test of Engineering) test for getting enrollment in M.tech. After that, I completed my doctoral degree (Ph.D.) in Physics, at IIT Delhi in 2019. During my Ph.D. I actively worked for the development and fabrication of various photoelectrode systems for the generation of hydrogen and nanocomposite systems for water remediation and got hands-on experience with various characterization instruments and data analysis tools. After that, I worked as a postdoctoral fellow in the Department of Physics at IIT Delhi, India as well as at Curtin University, Perth Australia leading to 16 publications (478 citations). My present research interests include plasmonics, synthesis of nanomaterials, polymers, and nanomaterials for various applications such as sensing, photocatalysis, and green fuel production technologies.

Proper mentorship, hard work, and perseverance are really important for getting a successful career in life. I will always remain indebted to respectful Dr Krishna Meha, Dr. Nisha Gupta, Dr. Vandna Luthra, Dr. Indu Dutt, Dr. Supreeti Das, Dr. Alka Garg, Dr. Anita, and Santosh Sir for their invaluable guidance, support, and motivation in shaping my career.

STUDENT'S ACHIEVEMENTS

NAME	BATCH	ACHIEVEMENTS
Priya Rajput	2020-2023	• Served as the President of Physics Society. • Internship under IBM Skillsbuild Innovation Camp. • Participated in World Environment Day questionnaire. • Attended workshop by IUAC on National Science Day. • Attended lecture on "Ask an Expert cum Career Counselling International Webinar Series" under NASi - Science Society Program. • Internship on Artificial intelligence under Smartknower. • First year Certificate. • Attended workshop on Revisiting Wellbeing: Perspectives, Challenges, And The Road. • Project on Earthquake magnitude determination. • Attended workshop on optics, evolution and demo on assembly of Telescope.
Archita	2020-2023	• Participated in "skills build innovation camp" at IBM. • Attended a skill development workshop on "excel 101" , wegyanam.

NAME	BATCH	ACHIEVEMENTS
Yashashvi Deshwal	2021-2024	• Member of Sparx for the session of 2023. • Editor of Sparx and Student's Council for the session 2024. • Won 1st position in group dance event 'Mudra', NSUT, Delhi . • Won 2nd position in group dance event 'Rendezvous' ,IIT,Delhi. • Won 2nd position in group dance event 'Izraaz', LSR College, Delhi University. • Won 2nd position in group dance event 'Choreonite', Sri Ventakeshawara College, Delhi University. • Won 2nd position in group dance event 'Aramya', Hindu College, Delhi University. • Won 3rd position in solo dance event 'Hop drop Kpop' , Pol. Sci. Dept of JMC. • Graphic editor for Scintillations'23.
Shreya Samantaray	2021-2024	• Working as Senior Core Member of "HUES". • Participated in poster making competition on "Physics in Forensic Science" , department of physics and Astrophysics, DU. • Received a certificate on "DATA ANALYTICS WITH PYTHON PROGRAMMING" by IITR. • Won 1st prize in Poster making competition on "Smart Village" organised by KR Mangalam University. Received a cash prize of Rs3000/-

NAME	BATCH	ACHIEVEMENTS
Arpita Hansraj	2022-2025	• Served as Joint secretary of physics society. • Worked as a member of event team at Uddeshya Delhi NGO. • Worked as a member of Content creator team at Break.The.Ice. • Worked as a member of Content creator team at Edutool. • Worked as core HR team member at Saday Sadev NGO. • Working as team lead at Saday Sadev NGO. • Working in a project -Dhairya under Saday Sadev NGO.
Bhavesha Singh	2022-2025	• Participated in the" NIUS Exposure and nurture camp" in astronomy by TIFR, MUMBAI. • Won 3rd position in "MEERA MEMORIAL PAPER READING COMPETITION" at St.Stephen's College, Delhi.
Janhvi	2022-2025	• Served as cultural secretary in physics society. • Worked as a HR in Uddeshya delhi (NGO). • Participated in "Shree Ram trading challenge'23", SRCC.

NAME	BATCH	ACHIEVEMENTS
Hanshika	2022-25	• Member of "Euphony " • Won 3rd position in western music group singing competition 'Odyssey' at IIIT Delhi. • Won 1st position in western music group singing competition 'Sabrang' at Deshbandhu College. • Won 1st position in western music group singing competition 'Quo Vadis' at IIFT Delhi. • Won 1st position in western music group singing competition 'Exuberance' at Sri Aurobindo College. • Won 3rd position in western music group singing competition 'Engifest' at DTU. • Won 1st position in western music group singing competition 'Rendezvous' at IIT Delhi. • Won 2nd position in western music group singing competition 'Tarang' at LSR. • Won 1st position in western music group singing competition 'Kalrav' at Deen Dayal Upadhyay. • Won 1st position in western music group singing competition 'Crescendo' at Saheed Sukhdev College. • Won 2nd position in western music group singing competition 'Ullas' at Kamla Nehru College.

STAR ACHIEVERS

BATCH 2020-23

BATCH 2021-24

BATCH 2022-26

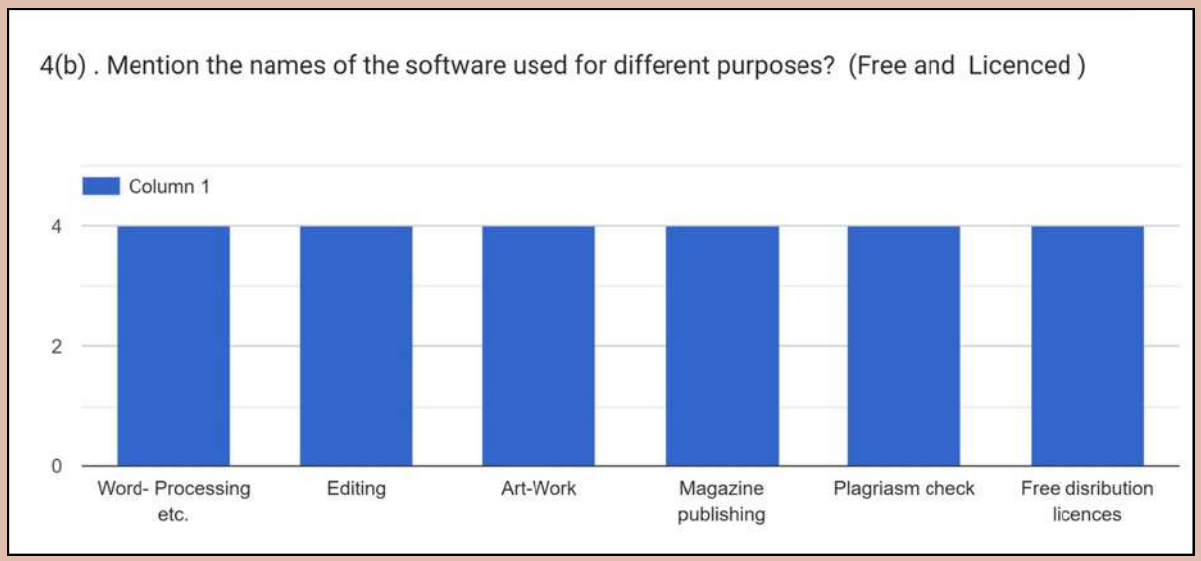
Learnings from The Magazine

Professor Vandna Luthra
Physics Department

There is a lot that goes into each magazine but at the same time there is a lot that one can take from it. Being packed with information, magazines provide a chance to extend your knowledge in a particular area of interest and discover the latest developments in the field. The magazines have been invaluable opportunities for both the students writing and editing as well as the students reading. There are a plethora of techniques and skills that have been picked up from these magazines, such as content writing, teamwork and the importance of ethics in publishing.

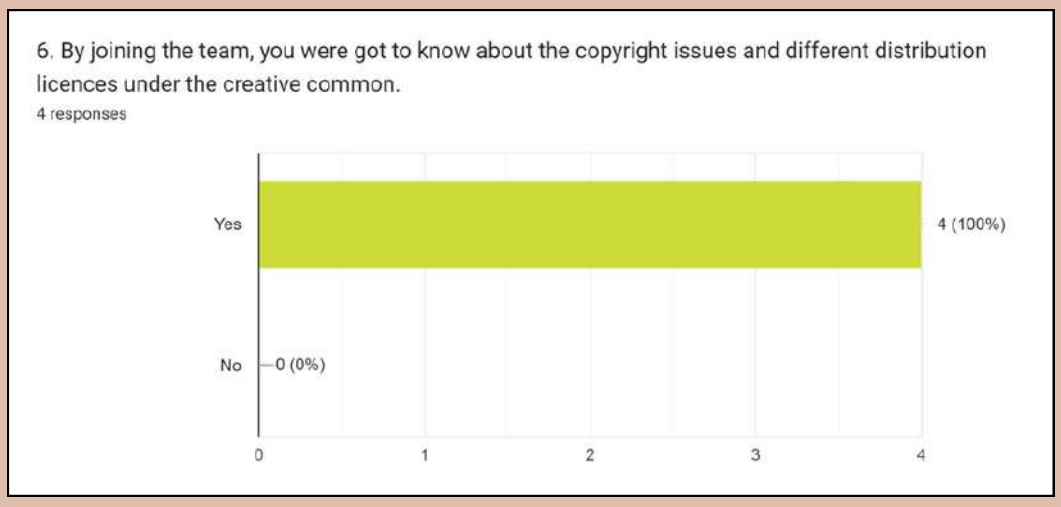
Here we look at some of the responses we received from the students regarding feedback to the magazine.

1. The first question looks at the different softwares that were used within the development of this magazine. Most importantly, we observe free distribution licenses used widely across the board.



2. Notably, within the softwares used, we see a great use of Canva which allows for a collaborative approach to the project.

3. We see many students learning about the importance of copyright and how to appropriately license your work.



4. The importance of copyright issues highlighted once again.

8, Write the significance and importance of this excercise and its role in ethics for publishing. Also specify how this training will be beneficial for your future endeavours?

4 responses

By knowing about plagiarism and copyright issues we can make our content more authentic which is most important part of ethics of any writing.. it will be very beneficial for our future as it makes us more professional and make my creative writing skills more ethical..

The original work of a specific site/person/organisation is specified therefore it seems important for publishing any content anywhere. This has help me to respect every individual's hard work and research.

By working on this magazine, one gets to know about the DOs and DONTs while publishing a work, which I think is very useful when you're in a field where you have to publish research papers. It is very important to know key things like copyright and plagiarism while working on a piece. I think this exercise of working on a magazine helps a lot in introducing all those that are required while publishing.

We learnt about plagiarism and also learnt to use the editing app canva. this will help us in future also.

THE TEACHING FACULTY

From left to right:
1st row: Mr. Munish, Dr. Supreeti Das, Dr. Anita , Dr. N. Chandrika Devi, Dr. Manvi, Dr. Archana Tripathi, Ms. Mansi Agrawal, Mr. Man Raj
2nd row: Dr. Alka Garg, Dr.Hira Joshi, Dr. Vandna Luthra and Dr. Deepti Lehri

THE LAB FACULTY

From left to right: Mr. Shekhar Chand, Mr. Santosh, Mr. Sushil, Mr. Vinod Dubey, Mr. Sher Bahadur, Mr. Baleshwar Prasad, Mr. Hemraj, Mr. Sanjeev Kumar

UNION MEMBERS

President- Priya Rajput

Vice- President- Anwesha Bhattacharjee

Treasurer- Priya Kumari

General Secretary- Ayushi Dharia

Cultural Secretary- Janhvi

Joint Secretary- Arpita

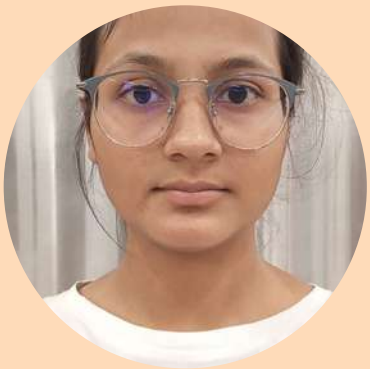
BATCH OF 2023

Harshita Mathpal

Shristi

Riya

Prachi Beniwal



Mantasha Naqeeb

Swati Bajia

Ritu

Sakshi

Neha Chaudhary

Anushka Singh

Samya Singh

Archita

Kajal

Yukta

Anusha

Neha Jangra

Gursimran Kaur

Bhawana

Laxmi Godara

Rachaiyta

Priyanka

Nikita

Anjali

Komal Rawat

Raveena

Khushi

Ayushi

Priya Kumari

Priya Rajput

Sonia

Members of Physikos 2022-23

Mahak Wahane,
2nd year, B.Sc. (H) Physics
Content Writer

I heartily express my gratitude towards the teacher for providing me an opportunity to be a part of physikos team. Working together as a team was one of the best experience. It helped me gain knowledge about software. I hope you all enjoy reading it as much as we have enjoyed creating it.

Kirti Pandey,
2nd year, B.Sc. (H) Physics
Content Writer

"A happy life is one spent in learning"
I am grateful to Vandna Luthra Ma'am for giving me the opportunity to be a part of the Physikos Team. The process of editing and designing enabled me to learn software Canva, it also taught me how to check plagiarism and proof reading, it helped me learn team work. It was very enlightening experience with team #physikos.

Ruchi Singh,
2nd year, B.Sc. (H) Physics
Content Writer

It is a great pleasure to be a part of team of magazine 'Physikos-2022-23'. I had a great experience and a lot of learning from it such as the knowledge of plagiarism, copyright etc.Thanks to the teacher coordinator and team members for their cooperation.

Shivangi Singh,
2nd year, B.Sc. (H) Physics

Content Writer

I want to take a moment to express my gratitude for being a part of this incredible magazine team. It's been a beautiful journey working alongside such talented individuals and our mentor Dr. Vandna Luthra ma'am. Being a part of the team have not only enriched my skills with certain editing softwares , but also fostered a sense of collaboration. I hope you relish our team's work.

Astha Chaudhary,
2nd year, B.Sc. (H) Physics

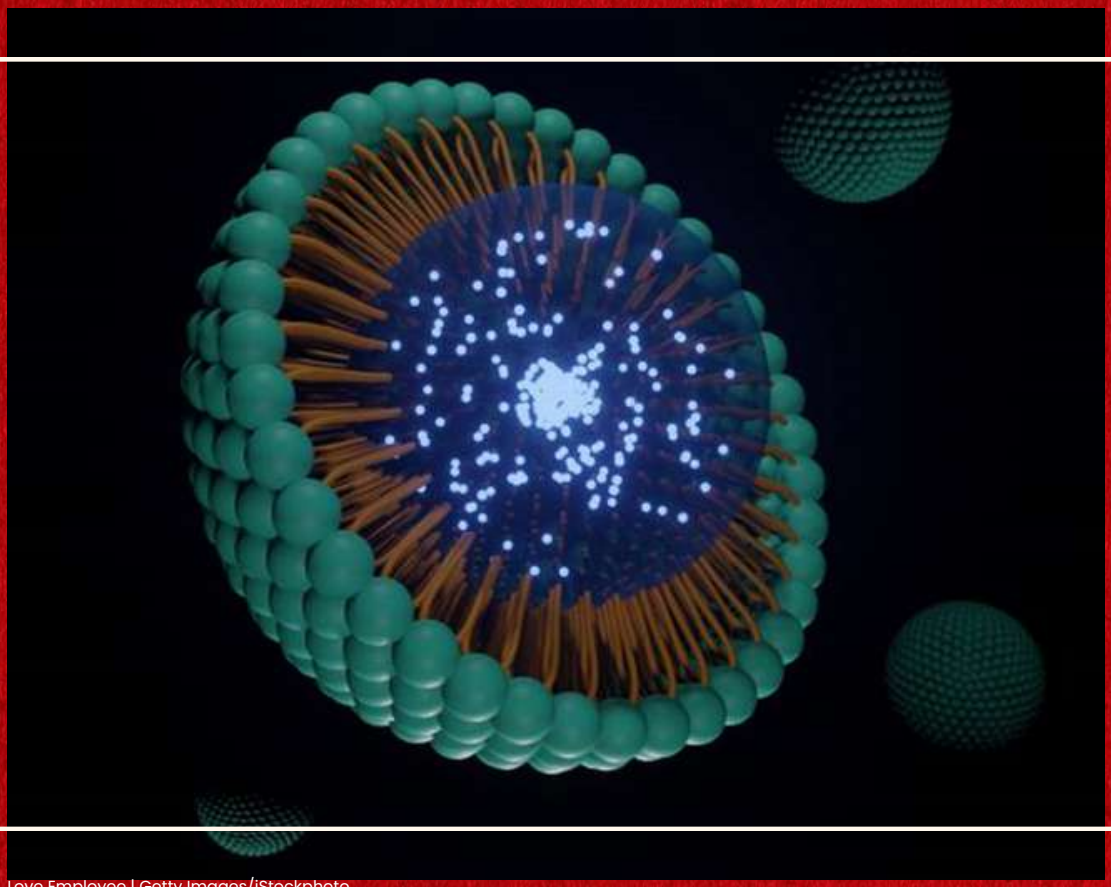
Volunteer

It is a great pleasure to be a part of the team of magazine 'Physikos-2022-23'. I had a great experience and a lot of learning from it such as the knowledge of copyright , convincing others, cooperation, using Canva etc. Thanks to the teacher coordinator and team members for their support.

Janhvi Bansal
1st year, B.Sc. (H) Physics

Content Writer

"Learn everything you can, anytime you can, from anyone you can." In this journey of magazine, I have learnt many things with my cheerful seniors and respected Dr.Vandna mam . Even though deep down I know, I have not worked that much but I had a great experience with this magazine. Thank you to all for helping and guiding me.



Love Employee | Getty Images/iStockphoto

"WHEN A NANOTECH COMPANY MATURES AND BECOMES A REAL BUSINESS, IT BECOMES SOMETHING ELSE. IT BECOMES A BIOTECH COMPANY OR A CLEANTECH COMPANY OR A MEMORY CHIP COMPANY. NANOTECHNOLOGY HAS FUELED THE CORE INNOVATIONS IN ELECTRONICS AND ENERGY."

- Steve Jurvetson.