

DEPARTMENT OF CIVIL ENGINEERING  
PRESENTS

# K-ONSTRUCTZ

A Departmental Magazine

**THE ROAD TO SUCCESS IS  
ALWAYS UNDER  
CONSTRUCTION**

OCTOBER 2023



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# VISION

Developing motivated, skilled and highly competent Civil Engineers to excel in Education, Research, Entrepreneurship and Technological services, so that the department as well as the Institute will be recognized high in a global scenario

# MISSION

To empower the students with broad and in-depth knowledge in Civil Engineering fundamentals and their applications in practical as well as professional fields to meet socio-economic challenges. To educate the students in the latest technologies in Civil Engineering, imbibe in them human values, self confidence, team work and independent thinking in solving diverse problems in the related field so that they can serve the society. To achieve international recognition by developing professional Civil Engineers, offering continuing education and interacting with industries by emphasizing research and development.





*I am glad that a departmental magazine "K-onstructz" has been published for all. I must appreciate all the students and the faculty members who worked tirelessly and within a tight time-frame to achieve this.*

*This magazine will serve as a platform for all the students of CE department to hone their skills in literacy, poetry, innovation and research ideas. The staff will contribute to make it more interesting in terms of emerging technologies and lateral developments.*

*I am sure it will be everyone's delight.*

*Prof. (Dr.) Tapas Sadhu  
Head of Department  
Heritage Institute of Technology*







**PROF. (DR.)  
SUBHA SANKAR  
CHOWDHURY  
DEPARTMENTAL  
COORDINATOR**

*I would appreciate the students from our department for their enthusiasm ... You are the person who can change the world. You have a big responsibility to make the world better. I know you can do this very well. All the best to my dear student.*

*I highly appreciate this initiative by our students for the first time. Our E-magazine K-ONSTRUCTZ publishes the research, development and ideas of technological advancement and encourages the creative side of our students. I do hope that they will continue with this.*



**PROF. (DR.) SARMILA  
SAHOO**





**PROF.  
SAURAV KAR**

*Certainly I would say this is one of the greatest initiatives taken by our department. I whole heartedly thank the total team of students and all the faculty members of our department.....*

*Wishing all the members and students directly or indirectly associated with K-ONSTRUCTZ a grand success. Hope K-onstructz will create a revolutionary footprint towards the upgradation of Civil Engineering department of HIT-K*



**PROF.  
PRITHWIS SAHA**





**PROF.  
PUJA BASU CHAUDHURI**

*“I would appreciate the initiative taken by our Civil Engineering Department and especially which cannot be fulfilled without help of our beloved students. Thank you the team for your enormous effort. Hope we can publish many more e-magazines in future with help of you all. Best wishes.”*

*“I would like to express hoe delighted I am with the initiative taken by the students and professors of our department to compile and publish our E-magazine, K-onstructz. This magazine helps students to showcase their knowledge of the advancements Civil Engineering is making as well as their talent in extra curricular activities.”*



**PROF.  
RUDRA PRASAD  
ROYCHOWDHURY**





**PROF.  
BEDSHRUTI SEN**

***“A great initiative from the students. This magazine would certainly enhance our technical knowledge and cover the aspects of recent development in civil Engineering. All the best for your future endeavor .”***

***“I would highly acknowledge the students for this great initiative of publishing the departmental E magazine, K-ONSTRUCTZ . Also I would like to appreciate the innovative write-ups, poems by the students. Best wishes to all of you.”***



**PROF. (DR.)  
CHANDRIMA  
BHADRA**



2024

K-CONSTRUCTZ

# ACHIEVEMENT

BY THE RESPECTED  
FACULTY

PROF. (DR.) PUJA BASU CHAUDHURI



**Congratulations & Thank  
You ma'am for making us  
proud through your  
achievement in the field of  
Civil Engineering**



# EDITOR'S MESSAGE



**MOULIK SARKAR**  
EDITOR-IN-CHIEF

Dear readers it gives us immense joy and satisfaction to finally introduce the e-magazine K-Constructz

Just like the Gods and Asuras churned the ocean of milk to extract the nectar, we have tried to churn out the creativity from our entire department



# EDITOR'S MESSAGE



**MEGH DEB**

EDITOR

**K-Constructz** has created an exclusive space in my heart by its uniqueness and ideology

Everyone has some innate talents and all of us need a stage to exhibit that talent, K-Constructz is that stage



# MUSIC OF STRUCTURES

Nowadays we can find that there are many ways to construct a secure building. We can fight the environmental difficulties that are seen in building a structure. There are lots of new technologies by which we can construct a building more efficiently, and more easily. 3d printing technology is the latest one apart from that Green Technology Construction, uses of non-biodegradable materials in making of building blocks are also very much innovative. These are all the structural part of a building. But when it comes to beauty, calmness, peace of a building we have to think the architectural part. Keeping that in mind I start thinking how to create such a space where we can find our essential peace and calmness. I, personally not good in designing but I like music the most and also know that there is a great connection between music and peace. In that way I start imagining what if I can merge music with building. I researched this matter in internet and found that there is a term named "Harmonious Spaces" which is basically a part of architecture department. I think There is music in my body, my rhythmic heartbeat. There's harmony in nature, there's melody in emotions and there's dynamics in dreams. They are all basically different terminologies, used in music as well as in architecture.

There are many parallels between architecture and music. Both have their specialist language but it's striking how many of these are shared. If we look at a list of the elements of music we can see that many of these terms are regularly used to describe architecture. Rhythm in architecture is visual and describes repeating patterns such as rows of "columns" or the arrangement of "windows". Next dynamic architecture involves changes and variations a façade that steps in and out or up and down along its length. For example a building can demonstrate harmony if there is similarity in the design of different building components or different building materials sit well together. Building materials give building texture and form primarily describes a building's shape but the crucial share term is composition meaning the planned arrangement of parts to form a whole. Architectural composition is the arrangement of building components in space sense with our eyes. Musical composition is the arrangement of sound and time sense with our ears. Architectural composition is given its distinctive character or quality through choice of materials like timber, glass, brick and so on and the musical equivalent is the choice or range of instruments and sounds available to a composer like strings, percussion, brass and so on. Most interesting part is that both compositions are dreamed up in the creators head and put to paper as a set of instructions for others to execute. Architectural drawings instruct builders on how to construct a particular building while a musical score instructs musicians on the performance of a particular piece. Let me clear this one, lets say that picture at the busy building site with all the builders holding drawings for their specialist trade each working away on the different parts of the building to create the whole now picture the orchestra and all the musicians with their sheet music each playing their part in combination to perform the overall piece of music. As we have seen parallels can be drawn between architecture and music but the fundamental difference is that one is visual, set in space and one is aural, set in time so can we translate the visual, physical, spatial components of architecture to the aural, intangible, time-based components of music. Can we look at a building and hear it sounds. I think that could I design a house with a tone in a way that would make me forget about the worries? Could I design an office space with rhythm to increase the effectiveness of the work done in space? Could I design a healthcare facility with harmony to allow for better



and faster healing? There is a quote from a German writer Johann Wolfgang Von Goethe that

“Architecture is frozen music”. This suggests solidifying giving physical presence the sounds. Similar to the impact of music on the human mind it influences space as well. Music creates moods and adds intangible dimension to the space. A minute of music can create an entirely different mood in the room. The effect of music in an open space is much different versus the effect in a closed space. And the impact of those spaces is diverse on different people. The same music had different impact in different spaces. In a serene secluded open space voices in a public open space versus in a closed soundproof room. There are two reasons for this result.

One is the relationship between the space and the music and the other is the relationship between the human mind and the space we are in. Music has an impact on the human mind as well as the space where we listen to or perform the music in. Interesting part is when music is being played at any place that space comes to life . Music that can be emotionally experienced in spaces like serenity in a religious space. We can feel music in certain spaces. Imagine a space situated in a secluded area, surrounded by trees and a lake, someone enters a semi-open space that leads to a close space with solid walls and indirect ambient natural lighting. There’s a focal point at the center of the space with a beam of direct light on it. Do you feel music in the arrangement of the space? So before I told about materials which is an important factor in designing. For example acoustic materials used in an auditorium or a recording studio, enhance the music play. Using creative materials a space can be enhanced to create echo, vibrations, and such effects which will heighten the feel of music as well as the dynamics of the activity performed in the space. For the open and semi-open spaces, the music created by trees and plants as well as the texture helps set a particular mood to the space and complement the activities performed in the space. We can communicate our feelings through music while building design is an expression of feelings in the form of structures. We can use music to respond to the context created within the space. What we perceive through different senses gets analyzed simultaneously by the brain. So we can translate this unique ability of the brain into a unique designing character.

**AISHIK KAYAL**

2nd Year CIVIL Dept.  
Roll No. - 2258035



# शारद अक्षकार

आकाश काँदछे नेई कोन शारदमुख  
मा आछेन कष्टे, बड़ोई ये असुख

बनेदियानार आतिशय्य पेरिये  
विज्जापनेर ब्यबसा  
एई टाकार खेलाय आसल मा  
मुखाटि आज ब्वापसा।

टाकार खेला, अनेक आलो रास्ता भरा लोक  
बृष्टि भेजा गरिब चाषिदेर उँसबेतेओ शोक।

अभिनन्दन आसछे फिरे  
मेला जुड़े देखा हँयार छबि,  
एसबेर माबेओ एककीत्त  
अक्षकारेई मुछे यय ये करि।

*Ayushman Majumdar*  
3rd Year, Civil Dept.  
Roll - 2158067



# Special Achievements In Civil Engineering

Civil engineering is a diverse field, and special achievements can vary widely. Some notable achievements in civil engineering might include designing and building innovative and sustainable structures, making advancements in construction materials or techniques, or contributing to the development of critical infrastructure projects. Achievements could also involve research breakthroughs, awards, or leadership roles within

In September 2021, the Istanbul Airport (officially known as Istanbul Airport or Istanbul Havalimanı) was already a significant modern achievement in civil engineering. It officially opened in April 2019 and serves as a major international hub in Turkey. Here are some key features and achievements associated with the Istanbul Airport:

- 1. Size and Capacity:** Istanbul Airport is one of the largest airports in the world in terms of its terminal size and passenger capacity. It was designed to handle millions of passengers annually, making it a critical transportation hub for the region.
- 2. Efficient Design:** The airport's design incorporates state-of-the-art engineering and architectural elements to create an efficient and modern passenger experience. This includes advanced baggage handling systems, passenger terminals, and a layout designed for ease of navigation.



# ধ্বংসের পথে ঐতিহ্য

পুরোনো দেওয়াল যাচ্ছে ভেঙ্গে উঠছে নতুন গড়ে  
ইতিহাস বোধহয় যাচ্ছে মুছে সভ্যতারই জোরে।  
পুরাতন সব স্মৃতিগুলো যাচ্ছে হারিয়ে রোজ  
যতই খোঁজো চারিদিকে পাবে না তার খোঁজ।  
তলার উপর তলা উঠে আকাশ যাবে ছোঁয়া  
জানালা দিয়ে দেখ শহরটাকে, শুধুই কেবল ধোঁয়া।

রোজই দেখি নতুন করে ভাঙছে এক বাড়ি  
বিপজ্জনক তকমা দিয়েই ভাঙছে তাড়াতাড়ি।  
পুরোনো এই শহরটা যে নতুন সাজে সাজছে  
এইখানেতে ঠাই নেই তার মনে মনে কাঁদছে।  
পুরোনো বাড়ি যত্ন করার লোকের বড় অভাব  
বয়স হলেই ভাঙা বাড়ি এই হয়েছে স্বভাব।

Rupankar Chaktrabarti  
3rd Year, Civil Dept.  
Roll - 2158056



# The Art Of Time Management

## Balancing Academics, Social Life, and Self-Care

Time, they say, is a finite resource, and nowhere is this truer than in the life of a college student.

With lectures, assignments, exams, social gatherings, and the pursuit of personal well-being, the demands on a student's time can seem overwhelming. But fear not; mastering the art of time management can help you strike a harmonious balance between academics, social life, and self-care.

## The Importance of Time Management

Time management is not just a skill; it's a life skill. It's the key to achieving your goals while maintaining your physical and mental well-being. In college, where responsibilities and distractions abound, effective time management becomes paramount. Setting clear goals is the first step. What do you want to achieve in your academic life? What social experiences are important to you? How will you prioritize self-care? Defining your objectives will guide your time allocation and help you create a schedule that works for you.

## Creating a Schedule

One of the most powerful tools in your time management arsenal is a well-structured schedule. Start by creating a weekly or monthly calendar. Allocate specific time blocks for classes, study sessions, social activities, and self-care. A visual representation of your time commitments can be eye-opening and help you make better decisions about how to use your time.

## Academic Time Management

Your primary role as a college student is to excel academically. Effective academic time management ensures that you can meet your coursework demands while leaving room for other aspects of life. Prioritizing study time is essential. Designate specific hours for studying, and stick to them religiously. Determine when you are most productive—morning, afternoon, or evening—and allocate your most challenging tasks to those hours.

## Breaking Tasks into Smaller Steps

Large projects can be daunting. Break them into smaller, manageable tasks with clear deadlines. This approach minimizes procrastination and gives you a sense of accomplishment as you complete each step. Avoiding multitasking is also crucial. Contrary to popular belief, multitasking often hampers productivity. Focus on one task at a time to maintain quality and efficiency in your work.

## Social Life and Relationships

College isn't just about academics; it's a time for personal growth and building meaningful relationships. Prioritizing quality over quantity in your social life can make a big difference. Meaningful connections can be more rewarding than attending every event on campus. Choose activities and friendships that align with your values and interests.

## Communicating Boundaries

Don't be afraid to communicate your study and self-care needs to your friends and peers. They'll likely respect your commitment to your goals and may even join you in adopting healthier time



management habits. Embracing social opportunities is important too. While academics are crucial, don't shy away from social opportunities entirely. They offer valuable experiences, personal growth, and the chance to relax and unwind.

### **Self-Care and Well-being**

Neglecting self-care can lead to burnout and a decline in academic performance. It's not a luxury; it's a necessity. The importance of rest cannot be overstated. Adequate sleep is non-negotiable for cognitive function and overall health. Prioritize sleep by scheduling regular bedtime hours. Incorporate regular physical activity into your routine as well. Even a short daily walk can boost your mood and energy levels.

### **Mindfulness and Stress Management**

Practice mindfulness, meditation, or deep breathing exercises to manage stress and anxiety. These techniques can help you stay calm and focused during challenging times, ultimately improving your overall well-being.

### **Time Management Tools and Techniques**

Now that we've discussed the importance of time management in academics, social life, and self-care, let's explore some practical tools and techniques to help you stay on track. To-do lists are a great starting point. Create daily or weekly to-do lists to keep track of tasks and deadlines. Cross off items as you complete them for a sense of accomplishment.

### **Pomodoro Technique**

Consider using the Pomodoro Technique. It involves working in focused 25-minute intervals followed by a 5-minute break. This method can boost productivity and prevent burnout. Time-blocking is another effective strategy. Allocate specific time blocks for different activities. For example, set aside two hours for studying, followed by an hour for socializing. Utilize digital tools like calendar apps, task management apps, and study aids to streamline your time management efforts.

### **Adapting and Refining Your Approach**

Remember that time management is a dynamic skill that requires constant adaptation. As you progress through college, your priorities and commitments may change. Periodically reassess your goals and schedule to ensure they align with your evolving needs. Flexibility and a willingness to adjust are key to maintaining balance.

### **Conclusion**

Balancing academics, social life, and self-care is an art that every college student can master with practice and dedication. Effective time management isn't about squeezing every minute out of your day; it's about using your time wisely to achieve your goals while nurturing your well-being and relationships. Your time is precious—make the most of it by setting clear goals, creating a structured schedule, and employing practical techniques to navigate the complex college landscape with grace and confidence.

**MOULIK SARKAR**  
3rd Year CIVIL Dept.  
Roll No. - 2158072



## *Why is it so Beautiful?*

you work so hard,  
you work so deep,  
to get into your dream;  
creation of utopian world  
in your head,  
what would I do?  
what would it be?  
Can't wait any longer  
how would it feel?  
Already packed the bags,  
But,  
what if the trains cancelled your way,  
what if the roads blocked,  
the paths change; the rain crushed your dream,  
storms never ceased,  
the sky becomes dark,  
Alas! Poseidon boards your ship to a different  
shore  
I would never be happy here,  
you cry to yourself  
But,  
you don't feel jailed,  
the shore you wanted to leave made you the  
happiest,  
Why is the rose that died smelt the best?  
Why is the god you hate the reason you live?  
If it is meant to be broken, why is it so beautiful?

**PARIJAT CHATTERJEE**

1st Year CIVIL Dept.

Roll No. - 2358051



# The New Era of MSMEs

## DRIVING ECONOMIC GROWTH AND INNOVATION

*Micro, Small, and Medium Enterprises (MSMEs) have long been recognized as the backbone of economies around the world. They contribute significantly to employment generation, GDP growth, and fostering innovation. However, the landscape of MSMEs is evolving rapidly in the digital age, ushering in a new era characterised by technological advancements, globalisation, and changing consumer behaviour. This essay explores the dynamics of the new era of MSMEs, focusing on how they are driving economic growth and innovation.*

*One of the most prominent aspects of the new era of MSMEs is the integration of technology into their operations. The advent of digital tools, cloud computing, and e-commerce platforms has empowered MSMEs to streamline their processes, reach wider audiences, and enhance their productivity. For instance, small manufacturers can now leverage 3D printing technology to produce prototypes and customized products with greater efficiency. Furthermore, data analytics and artificial intelligence enable MSMEs to gain insights into consumer preferences, optimise supply chains, and make informed decisions, thus enhancing their competitiveness.*

*The new era of MSMEs is marked by increased globalisation. With the growth of e-commerce and the ease of international trade, even the smallest businesses can tap into global markets. Cross-border collaborations and partnerships are becoming more accessible, allowing MSMEs to access resources, expertise, and markets beyond their domestic boundaries. This globalization not only provides new growth opportunities but also exposes MSMEs to diverse perspectives and ideas, fostering innovation and adaptation.*

*Digital marketing and e-commerce have revolutionised the way MSMEs connect with their customers. Through social media, search engine optimization, and online marketplaces, these enterprises can establish their presence, build brand awareness, and directly engage with consumers. This direct interaction enables them to gather feedback and tailor their products or services to meet evolving customer needs. Moreover, e-commerce platforms provide a cost-effective means of selling products, enabling MSMEs to expand their customer base and improve revenue streams.*

*The new era of MSMEs is marked by a culture of innovation and agility. Smaller enterprises often have the flexibility to adapt quickly to changing market conditions and customer demands. They can experiment with new ideas, technologies, and business models without the bureaucracy that larger corporations may face. This entrepreneurial spirit is driving innovation across various sectors, leading to the development of disruptive solutions and the democratization of innovation.*



***Governments worldwide are recognizing the vital role of MSMEs in economic growth and employment generation. Consequently, they are implementing policies and initiatives to support these enterprises. This support includes access to finance, skill development programs, incentives for technology adoption, and simplified regulatory procedures. Such government support is instrumental in nurturing the growth of MSMEs in the new era.***

***The new era of MSMEs is characterised by a convergence of technological advancements, globalisation, digital marketing, innovation, agility, and government support. These factors have created an environment in which MSMEs can thrive and contribute significantly to economic growth and innovation. As this era unfolds, it is imperative for MSMEs to continue adapting and leveraging these opportunities to remain competitive and resilient in an ever-evolving business landscape.***

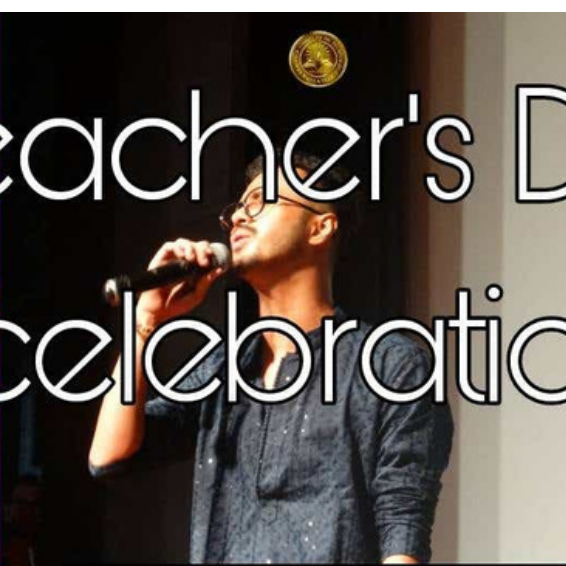
**OISHILEE BARNAS DAS**

**1st year CIVIL Dept.**

**Roll No. - 2358037**



# Teacher's Day celebration





# Dusty Remains

*Grown from the essence of million years, embracing who bore us-  
We complemented each other.  
But, your explosive greed shattered us all.  
Weighing the value of our life, your selfish needs-  
Broke our soul to pieces; disregarding our purpose, you've-  
Burnt us to serve your narcissistic modernity!  
Now, left with little what we had.  
Still we tried holding onto ourselves, clinging with hope.  
But your need detest our hope.  
Grinded us down to no return, our Ashen remains have turned into-  
Your so called 'Cement'.  
You drown us, impel us, and force us the shards of our dead brethren-  
In the name of "Reinforcing".  
Our anguish doesn't reach you, it is "Heat".  
A hopeless rebellion of the dead? No, merely a "Crack"  
Your hypocrisy knows no bound,  
Sheltering your loved ones with the corpse of us.  
Can you guess who we are? Maybe not,  
Don't worry, "Dusty Remains" can't talk.*

**SANKHADIP RONG**  
4th year CIVIL Dept.  
Roll No. - 2058017



# Life as a 1st year Engineering Student

Navigating the Freshman Year Rollercoaster:

## Introduction:

**The first year of engineering college is a thrilling yet daunting experience. It's a time of new beginnings, academic challenges, and self-discovery. In this blog, we'll delve into the life of a 1st-year engineering student, exploring the ups and downs, study routines, and personal growth that come with this exciting phase of life.**

## The Transition:

**1. Course Selection: Choosing your courses can be both exciting and overwhelming. You'll likely have a mix of general education requirements and foundational engineering courses on your schedule.**

**2. Orientation Excitement: Freshmen typically start their journey with an orientation program. This is when you first step onto campus, meet your fellow students, and begin to acclimate to your new surroundings.**

**3. New Friendships: Building new friendships with fellow engineering students is one of the highlights of the freshman year. You'll form bonds over shared late-night study sessions and lab experiments.**

## Academic Challenges:

**1. Introductory Courses: First-year engineering students usually tackle core subjects like calculus, physics, and introductory engineering courses. These subjects provide the foundation for your engineering journey.**

**2. Study Sessions: Late-night study sessions and group study meetings become a regular part of your routine as you work to grasp complex concepts and solve engineering problems.**

**3. Time Management: Balancing academics with social life and extracurricular activities requires effective time management skills. Learning to prioritise tasks becomes essential.**

**4. Adapting to College Life: Adjusting to the pace and independence of college life can be challenging. You'll have to find your rhythm in terms of study habits and daily routines.**



### **Exploring Opportunities:**

- 1. Clubs and Organisations:** Joining engineering clubs and organisations allows you to pursue your passions outside the classroom, whether it's robotics, coding, or design competitions.
- 2. Internship and Career Exploration:** Some students use their first year to explore internship opportunities and career paths. Career fairs and workshops become invaluable resources.

### **Personal Growth:**

- 1. Independence:** Being away from home, you'll learn to manage your finances, laundry, and daily responsibilities independently.
- 2. Resilience:** Overcoming academic challenges and adapting to a new environment fosters resilience and problem-solving skills.
- 3. Self-Discovery:** Many students discover their true interests and passions during their freshman year, which can influence their choice of engineering specialisation.

### **The Rollercoaster Ride:**

- 1. Highs and Lows:** The first year is filled with moments of academic success and challenges. These ups and downs are all part of the learning process.
- 2. Support Systems:** Relying on friends, professors, and academic advisors for support becomes essential. Don't be afraid to seek help when needed.

### **Conclusion:**

**The life of a 1st-year engineering student is a whirlwind of experiences, from the excitement of orientation to the challenges of late-night study sessions. It's a journey of academic growth, personal development, and forging lifelong friendships. As you navigate this rollercoaster, remember that every challenge is an opportunity to learn and grow. Embrace the adventure, stay curious, and keep pushing your boundaries because the first year is just the beginning of your remarkable engineering journey.**

**Oishilee Barna Das**

1st year CIVIL Dept.  
Roll No. - 2358037



# Modern Era of Nanotechnology

## What Is Nanotechnology??

If I have to express the definition of nanotechnology in the simplest way, I will say that it is a special branch of modern science and engineering which is devoted to design, produce the structures and devices by manipulating atoms and molecules at nano scale.

## How Nanotechnology Flourished??

According to the archives, it is expressed that the emergence of nanotechnology as a field in the 1980s occurred through convergence of Drexler's theoretical and public work, which developed and popularized a conceptual framework for nanotechnology, and high-visibility experimental advances that drew additional wide-scale attention to the prospects of atomic control of matter.

## What Is the Dimensionality of Nanotechnology??

Nano materials can be classified in 0D, 1D, 2D and 3D nano materials. The dimensionality play a major role in determining the characteristic of nano materials including physical, chemical and biological characteristics. With the decrease in dimensionality, an increase in surface-to-volume ratio is observed. This indicate that smaller dimensional nano materials have higher surface area compared to highly efficient 3D nano materials.

Recently,two dimensional (2D) nanomaterials are extensively investigated for electronic, biomedical, drug delivery and biological sensor applications.



## What Is the Foundation of Nanotechnology??

1 (One) nanometre (nm) is one billionth, or  $10^{-9}$ , of a meter. By comparison, typical carbon-carbon bond length, or the spacing between these atoms in a molecule are in the range 0.12–0.15 nm, and a DNA double-helix has a diameter around 2nm. On the other hand, the smallest cellular life-forms, the bacteria of the genus Mycoplasma, are around 200nm in length. By convention, nanotechnology is taken as the scale range 1 to 100 nm following the definition used by the National Nanotechnology Initiative in the US. The lower limit is set by the size of atoms (hydrogen has the smallest atoms, which are approximately a quarter of a nm kinetic diameter) since nanotechnology must build its devices from atoms and molecules. The upper limit is more or less arbitrary but is around the size below which the phenomena not observed in larger structures start to become apparent and can be made use of in the nano device.

## What Are the Implications of Nanotechnology??

An area of concern is the effect that industrial-scale manufacturing and use of nano materials would have on human health and the environment, as suggested by nano toxicology research. For these reasons, some groups advocate that nanotechnology be regulated by governments. Others counter that over regulation would stifle scientific research and the development of beneficial innovations. Public health research agencies, such as the National Institute for Occupational Safety and Health are actively conducting research on potential health effects stemming from exposures to nano particles. Some nano particle products may have unintended consequences. Researchers have discovered that bio static silver nano particles used in socks to reduce foot odour are being released in the wash. These particles are then flushed into the waste water stream and may destroy bacteria which are critical components of natural ecosystems, farms, and waste treatment processes. Experts, including director of the Woodrow Wilson Center's Project on Emerging Nano technologies David Rejeski, have testified this.



## What Is the Future of Modern Nanotechnology??

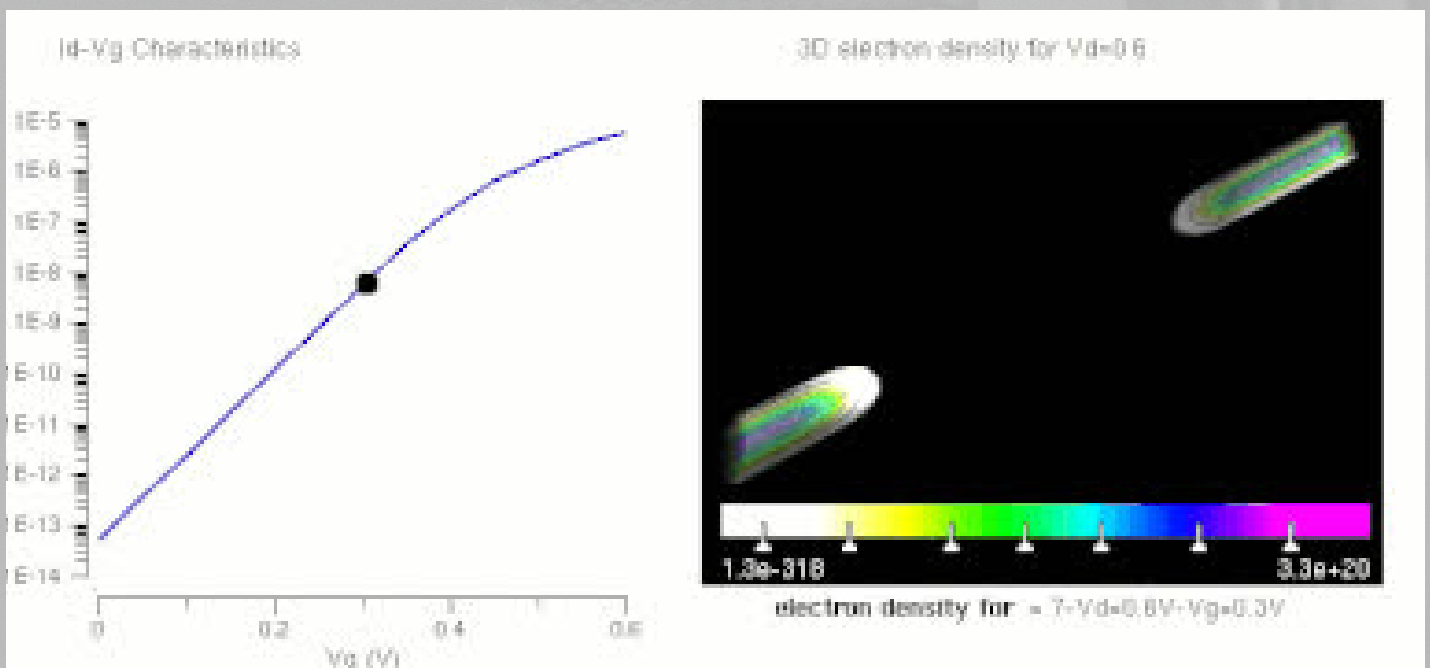
Nanotechnology is an emerging science, which is expected to have rapid and strong future developments. It is predicted to contribute significantly to economic growth and job creation in the EU in the coming decades.

According to scientists, nanotechnology is predicted to have four distinct generations of advancement. We are currently experiencing the first, or maybe second generation of nano materials.

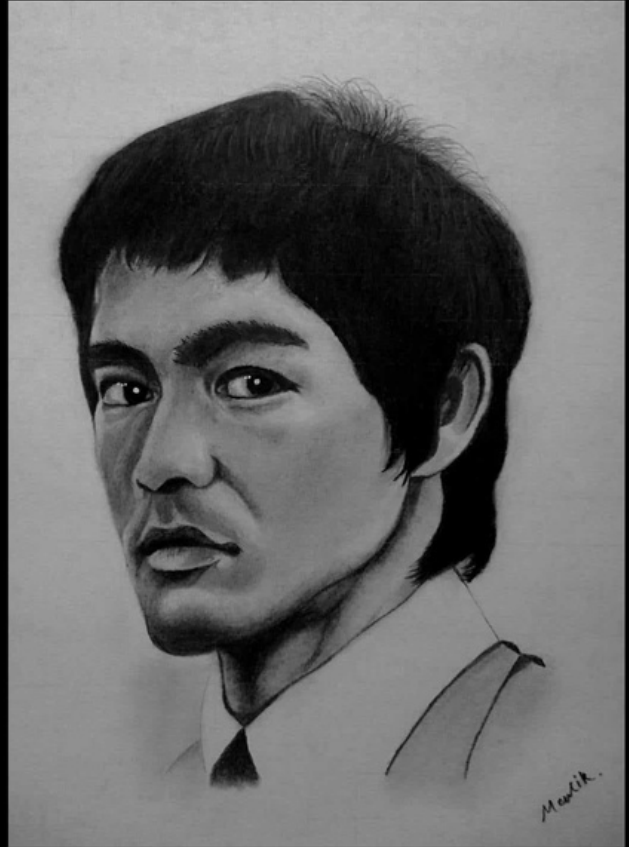
The first generation is all about material science with enhancement of properties that are achieved by the incorporating "passive nano structures". This can be in the form of coatings and/or the use of carbon nano tubes to strengthen plastics.

The second generation makes use of active nano structures, for example, by being bio active to provide a drug at a specific target cell or organ. This could be done by coating the nano particle with specific proteins.

The complexity advances further in the third and fourth generations. Starting with an advance nano system for e.g. nano robotics and moving on to a molecular nano system to control growth of artificial organs in the fourth generation of nano materials.

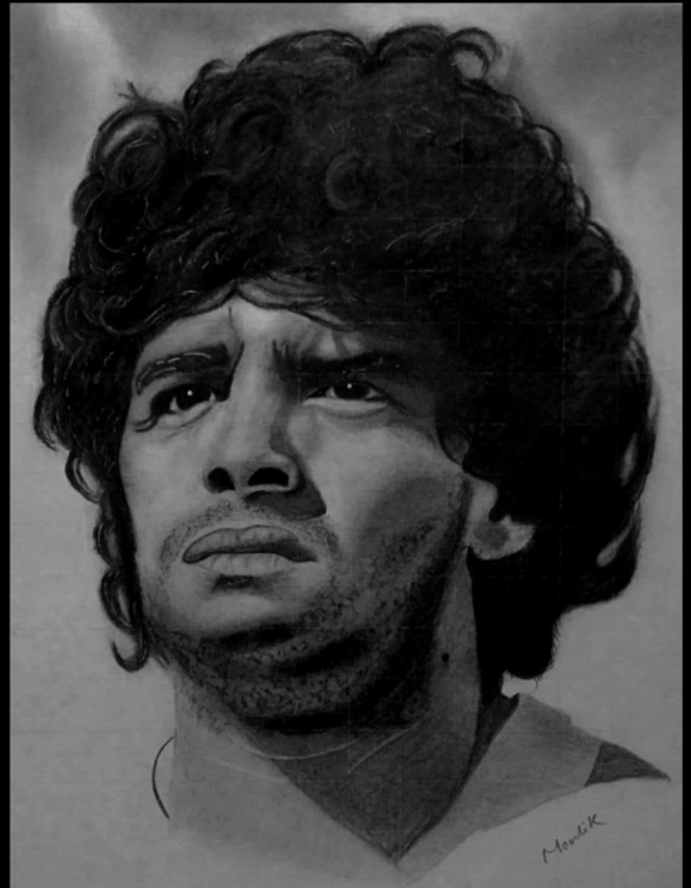






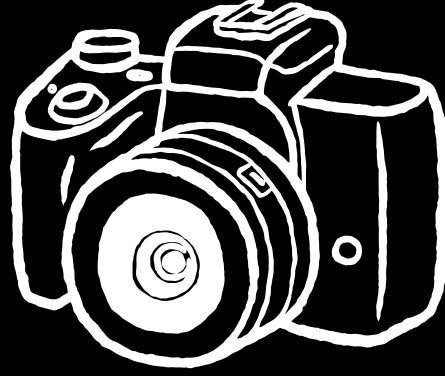
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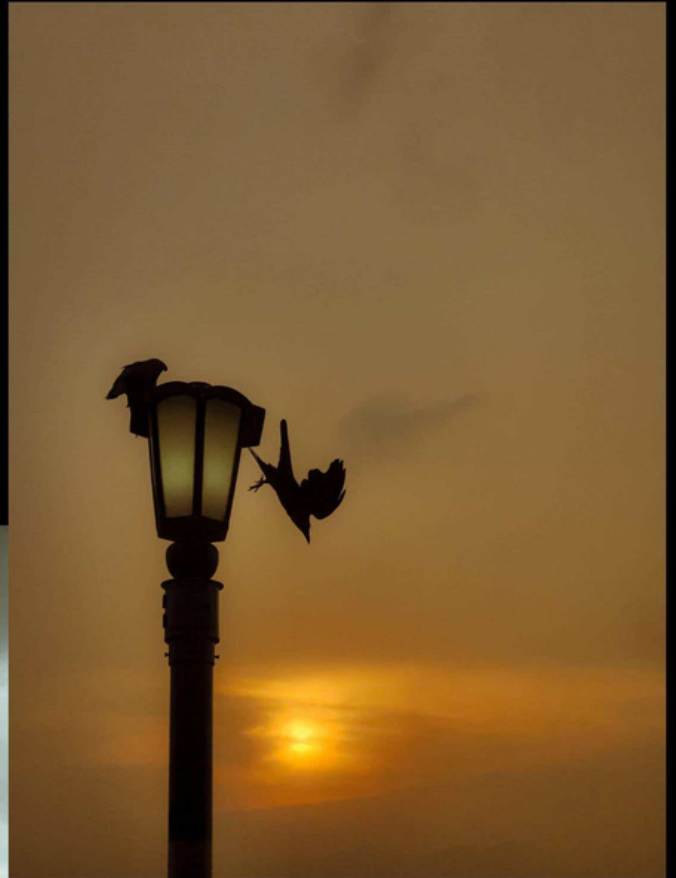
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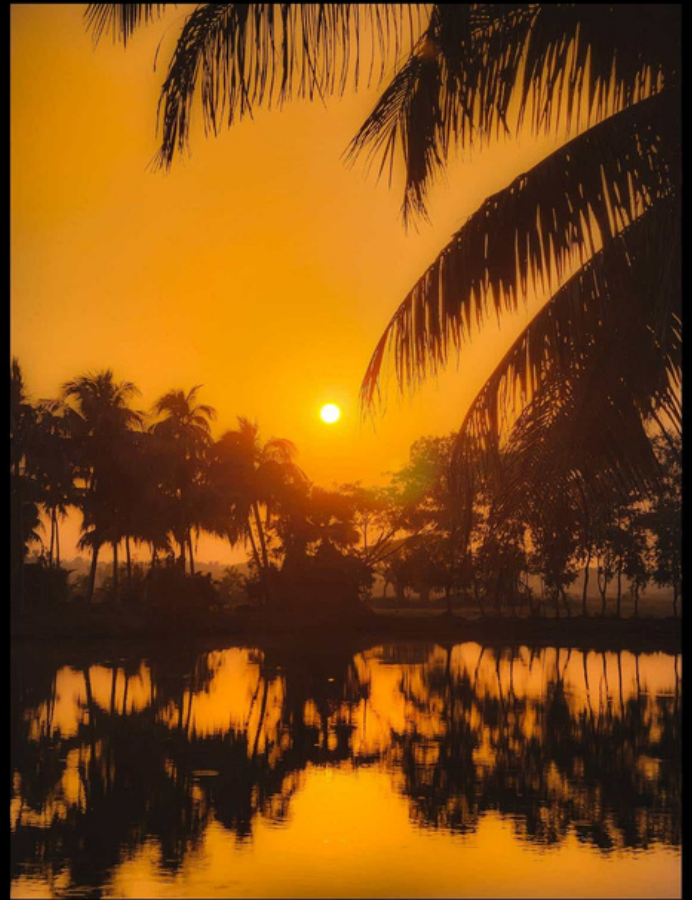




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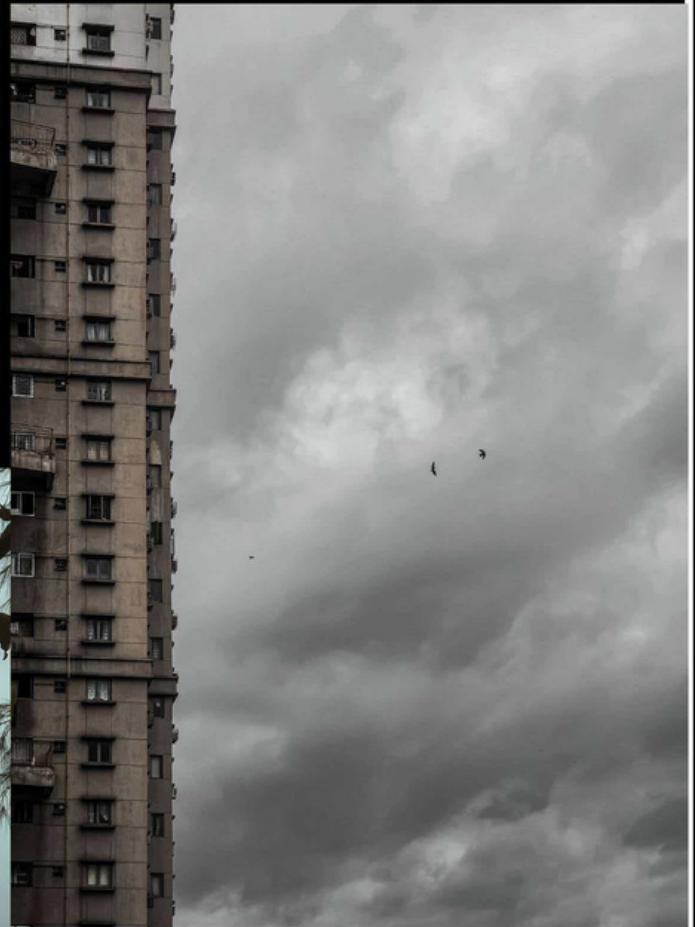




ARKADIP PAUL

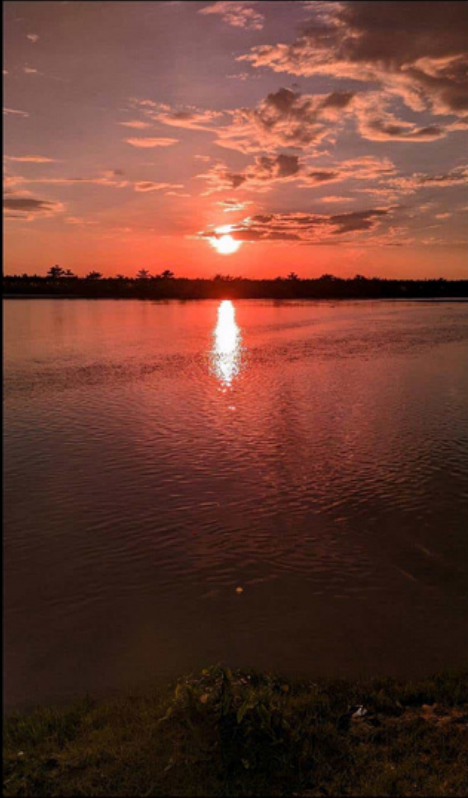
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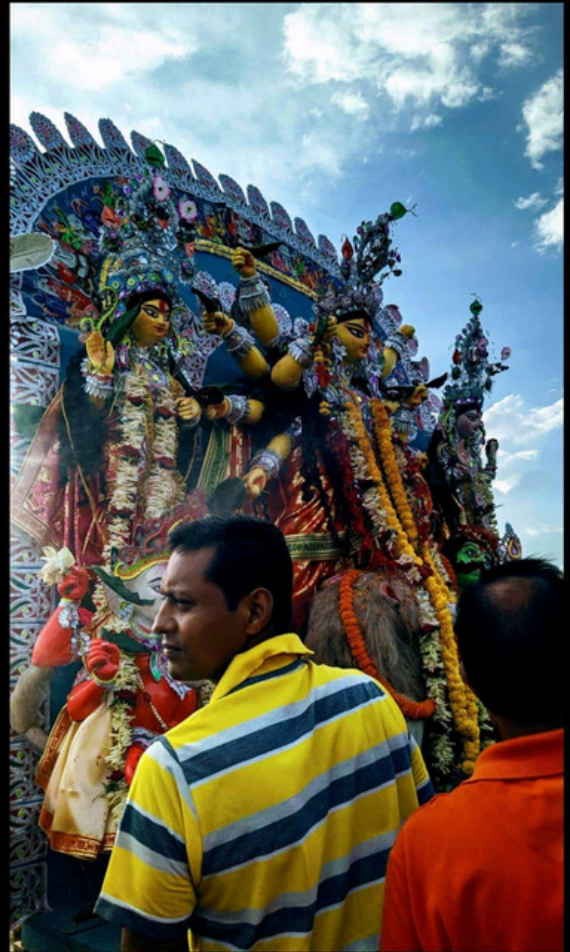
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*THANK YOU*