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for aspiring

Scientists

Technocrats

Engineers

Mathematicians

**CAREER
PLANNING
COMPANION
FOR**

**GRADE 8 TO 12
STUDENTS**



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About the Magazine

ENTECH is a magazine that comes out every month. It is for teenagers between the ages of 13 and 18. The magazine focuses on Science, Technology, Engineering, and Mathematics (STEM). It helps teens find out what they are interested in and what they love. ENTECH shows them how to turn their passion into a career. The magazine has short articles. These are written by professionals, innovators, researchers, and teachers.

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From the desk of Editor

Ethical Considerations in Memory Implants

As technology continues to advance at an unprecedented rate, we are faced with the question of whether we are ready for a world where nothing is forgotten. With the development of memory implants, the possibility of our minds living forever becomes a very real possibility. But with this potential for immortality comes a host of ethical considerations that must be carefully examined.

Memory implants, also known as brain-computer interfaces, are devices that can be implanted into the brain to enhance or replace certain functions. They work by connecting the brain directly to a computer, allowing for the transfer of information and data between the two.

While this technology is still in its early stages, researchers have already made significant advancements. In 2019, scientists were able to successfully implant memories into mice using optogenetics, a technique that uses light to control cells in living tissue. This breakthrough has opened up endless possibilities for memory implants in humans.

The potential benefits of memory implants are vast and could greatly improve our quality of life. For individuals suffering from memory loss due to conditions such as Alzheimer's or traumatic brain injuries, these implants could help restore lost memories and improve cognitive function. Additionally, memory implants could also be used to enhance our abilities. Imagine being able to instantly learn new skills or languages by simply downloading the information directly into your brain.

While the potential benefits of memory implants are exciting, there are also significant ethical considerations that must be addressed. One of the main concerns is the issue of consent. Will individuals be fully aware of the risks and potential consequences before undergoing a memory implant procedure? Will they have control over what memories are implanted and which ones are removed?

There is also the question of who will have access to this technology. Will it only be available to those who can afford it, creating a further divide between the wealthy and the rest of society? And what about privacy? With direct access to our thoughts and memories, how can we ensure that our personal information is not being exploited?

Charudatta Pathak

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KEDARESHWAR GORANALE

UV ALERT: DIY WEARABLE UV RADIATION MONITORING SYSTEM





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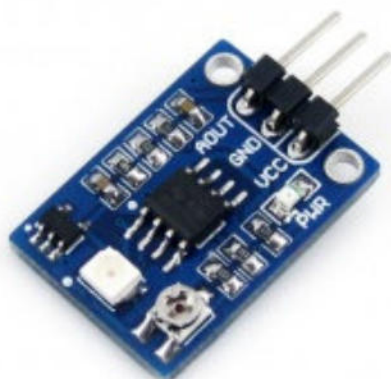
Kedareshwar Goranale

INTRODUCTION

Sunlight helps make vitamin D and keeps our body clock running right. UV rays from the sun can damage our skin. This increases the risk of skin cancer. It's important to watch how much UV light we get. This article talks about a new wearable device that tracks UV exposure. It warns users when UV levels get too high. It tells them when to use sunscreen or find shade. The device uses sensors, wearable tech, and processes data in real time. It aims to protect our health and teach us about UV risks.

WEARABLE TECHNOLOGY AND SENSOR INTEGRATION IN HEALTHCARE

Wearable technology in healthcare includes devices worn on the body. They can measure and monitor bodily functions. A useful application of this technology is a UV exposure tracker. It uses UV sensors, microcontrollers, and wireless communication. This device alerts users about their sun exposure as it happens. The project involves electronics, sensor technology, and data communication. Its purpose is to help manage and prevent skin damage from UV radiation.



CORE TECHNOLOGIES AND COMPONENTS

- UV Sensors (UV Index Sensor - GUYA-S12SD): These sensors detect the intensity of UV radiation. They are essential for the UV tracker. They measure the current UV index to which the wearer is exposed.
- The microcontroller, like an Arduino Uno or ESP8266, is the brain of the wearable device. It collects data from the UV sensor. Then, it processes this data. Its job is to figure out if the UV exposure level is safe or not.
- The ESP8266 Wi-Fi Module is a wireless communication module. It lets the device send data to a smartphone or the cloud. This allows for real-time alerts and tracking.
- Battery (Lithium Polymer Battery): Powers the wearable device, ensuring it remains operational without constant charging.

WHERE TO BUY

You can purchase components online. These include the UV sensor (GUVA-S12SD), Arduino Uno, ESP8266 Wi-Fi Module, and other electronics. Stores like Adafruit, SparkFun, or Amazon sell them. You might also find them at local electronics shops or online stores in your country.

CODE

```
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

// WiFi credentials and Blynk token
char ssid[] = "Your_WiFi_SSID";
char pass[] = "Your_WiFi_Password";
char auth[] = "Your_Blynk_Token";

// Pin where the UV sensor is connected
int uvSensorPin = A0; // Analog input pin that
the sensor is attached to
float uvLevel;
int uvIntensity;

void setup() {
  Serial.begin(9600); // Start serial
communication at 9600 baud
  Blynk.begin(auth, ssid, pass); // Initialize
Blynk
  pinMode(uvSensorPin, INPUT); // Set the UV
sensor pin as an input
}

void loop() {
  uvLevel = analogRead(uvSensorPin); // read
the input on analog pin
  uvIntensity = map(uvLevel, 0, 1023, 0, 11); //
Convert the analog reading (which goes from
0 - 1023) to a UV index (0 - 11+)
  Blynk.virtualWrite(V1, uvIntensity); // Send UV
index to Blynk

  Serial.print("UV Level: ");
  Serial.println(uvLevel);
  Serial.print("UV Intensity (Index): ");
  Serial.println(uvIntensity);

  delay(2000); // Wait for 2 seconds between
readings
}
```

EXPLANATION

Setup Function: Starts serial communication and connects to Blynk. It sets the UV sensor pin to read input.

Loop Function: The Loop Function does several tasks. First, it reads the UV sensor. Then, it converts the sensor's reading to match the UV index scale. After that, it sends this data to the Blynk app. Lastly, it prints the UV index on the serial monitor.

This setup lays the groundwork for using sensor technology in wearable devices. It includes IoT features to improve user interaction and safety. These projects increase understanding of STEM fields. They also show the potential uses of these technologies in the real world.

EDUCATIONAL OPPORTUNITIES

To work in wearable technology, you need a strong background in STEM subjects. This is especially true for devices that monitor health. You can study several courses to get into this field.

Undergraduate Programs: Degrees in Biomedical Engineering, Electrical Engineering, or Computer Science often cover the necessary skills for developing wearable technology.

Vocational Training: Certificates in embedded systems, mobile app development, or IoT (Internet of Things) offer practical experience. They teach specific technical skills.

Continuing Education: Online courses on sensor technology, data analytics, and wireless communication are available on platforms like Coursera or edX.

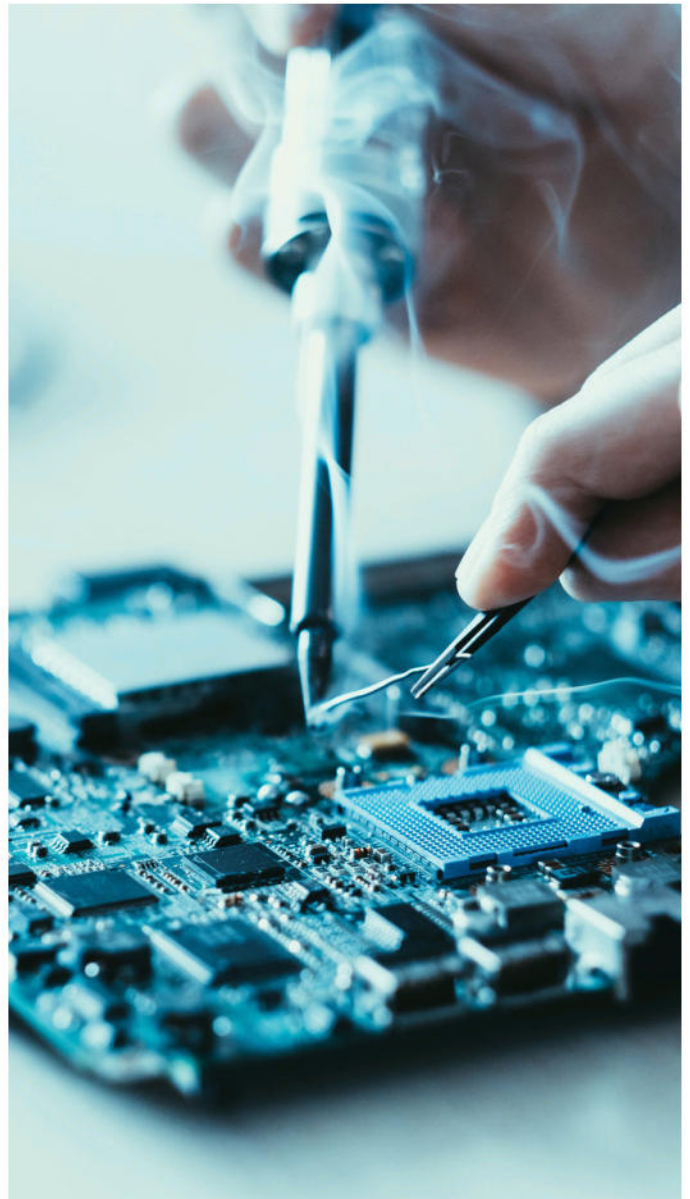
These programs usually include learning through projects, internships, and working with industries. They give students hands-on experience and a look into real-world uses. Students need to be skilled in programming languages such as C and Python. They also need to know circuit design and how to analyze data. Moreover, having certifications in certain technologies or tools for developing wearable devices is important.

CAREER PATH

Job opportunities in wearable technology are growing. This is because more people want personalized healthcare. There are entry-level jobs available. These jobs can be in hardware design, software development, or data analysis. People in these roles work on making and enhancing wearable devices that monitor health.

You can advance to roles like project manager or lead engineer. In these positions, you manage development projects or create new wearable technologies. Big tech companies, healthcare equipment makers, and research centers usually hire for these roles.

There are many research opportunities. These include projects focused on making sensors more accurate. Other projects aim to enhance data privacy. There are also projects working on integrating AI. This AI integration is for predictive analytics in healthcare.



CONCLUSION

Students who love wearable technology and healthcare should work on DIY projects, such as the UV Exposure Tracker. Joining workshops, maker fairs, or hackathons helps get hands-on experience and meet people. It's also helpful to read the latest research and keep up with industry trends. The field often changes. It's key to keep learning. Adapting to new technologies is essential for a successful career in wearable tech and healthcare monitoring.

About the author: Kedareshwar Goranale (BE E&TC) is working with Cognota Healthcare Private Limited as a senior embedded developer.

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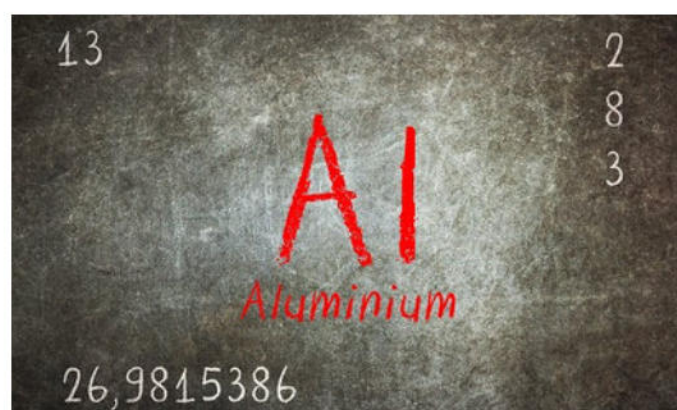
COMBUSTION OF ALUMINIUM PARTICLES: A SHORT REVIEW



A. AFRA ARAH and Dr. Syed Alay Hashim

ABSTRACT

Aluminium combustion is a key area of study. It plays a vital role in combustion processes, especially in propulsion systems. Its reactivity and explosive nature make it a sought-after material. This review summarizes research on aluminium combustion. It looks at what affects the combustion process. The study of aluminium combustion covers how it burns. This involves complex chemical reactions and physical processes. Studies show that the size of the aluminium particles and the amount of oxygen matter a lot. They influence how easily and quickly aluminium ignites. Smaller particles and more oxygen led to faster ignition and shorter burn times. Aluminium combustion is used in many industries. It is in rocket propellants for space, metallurgy, and materials that release energy. Thus, it helps in aerospace, automotive, defense, and materials science advancements.



INTRODUCTION

Aluminium (Al) is a lightweight and strong metal that doesn't rust easily. It is used in solid fuels, fireworks, and to make hydrogen. Its burning process is important and is widely studied. Adding tiny aluminium particles helps make hybrid rocket motors work better. However, Beryllium is not used even though it burns hot. This is because it creates very dangerous byproducts.

When boron burns, it creates a layer of boron oxide on its surface. This layer slows down its burning. Aluminium, on the other hand, is common, safe to use, has a lot of energy for its size, and burns very hot [84 kJ/cm³]. Using very small aluminium particles in fuel helps it burn better and prevents the particles from sticking together. The smaller the particles, the quicker they catch fire, according to the d^2-t law.

Nano-sized aluminium particles are tiny. They burn faster and more easily than larger, micro-sized particles. They need a lower temperature, about 727°C, to ignite. This is because their protective layer breaks down quicker.



As the particles get bigger, they release energy more slowly. Heating them a lot can make them catch fire quicker.

These tiny particles make energy come out quickly and shorten the time it takes to start burning and to burn up. But their use in solid fuel is not widespread because of a tricky Al_2O_3 coating. This coating makes it harder to process the fuel and lowers its quality and power.

This review examines how Aluminium burns, its key factors, and its uses. We'll look into past research to see what affects its burning. We're also interested in how it affects industries and science. We'll pay close attention to particle size, temperature, and oxygen levels. We aim to examine what determines Aluminium's ignition temperature and burning duration.

A BRIEF HISTORY

Since the 1960s, researchers have explored how Al-particles burn. They discovered that aluminium particles do not vaporize at the common surface burning temperature. Instead, they temporarily stick to the surface they are burning on (Hashim 2018, 2). When exposed to air, aluminium forms a thin, inactive Al_2O_3 layer on its surface. This layer makes aluminium burn more slowly. Aluminium oxide, the material of this layer, melts at about $2077^\circ C$. This temperature is much higher than aluminium's melting point (Dilip Srinivas 2016, 2; Hashim 2018, 2). When the heat reaches about $660^\circ C$, the aluminium beneath starts melting. This causes the protective Al_2O_3 layer to crack under stress. Molten aluminium then leaks through these cracks, forming large clumps. At about $2047^\circ C$, the oxide layer completely melts and remains separate from the molten aluminium. As a result, the clumps shatter into smaller, Al_2O_3 -coated droplets. These droplets rapidly oxidize, causing a swift rise in temperature (Hashim 2018, 2). The process of an Al particle burning is depicted in Figure 1.

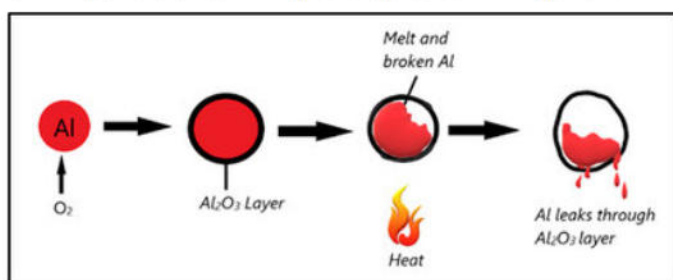


Fig. 1: Different phases of aluminium particle under heating.

ALUMINIUM COMBUSTION MECHANISM

Aluminium combustion happens through several vital mechanisms. When heated, Aluminium forms a protective layer of Aluminium oxide (Al_2O_3). This layer stops further oxidation of the metal beneath it. The central part of combustion is when Aluminium reacts with an oxidizer, like oxygen or halogens. This reaction is exothermic, meaning it releases heat, light, and various combustion products. The heat from the reaction helps light up nearby Aluminium particles, causing them to burn as well. The size of these particles affects how Aluminium burns. During combustion, gas-phase reactions occur between the combustion products and surrounding gases. These reactions create intermediate species and release more heat. Heat and mass must be transferred between particles for the combustion to spread. This process is crucial for the ignition and movement of the combustion front through a bed of particles. Aluminium combustion creates a very bright and hot flame. This flame's characteristics depend on the combustion temperature and the distribution of the particle sizes.

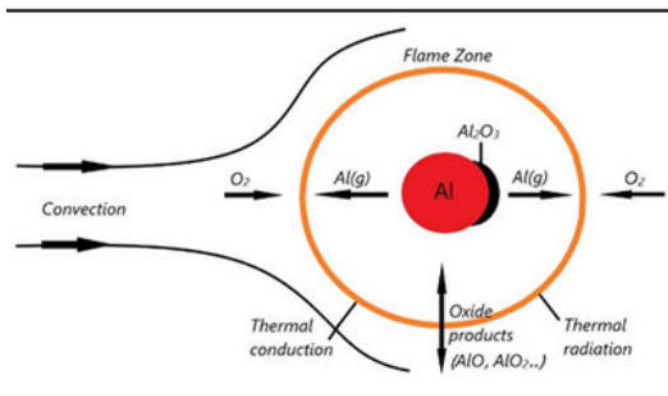


Fig. 2: Model of Aluminium combustion

Fig. 2 shows Aluminium particles catching fire. Some of the burnt product turns into vapor, while some condenses. The vaporized oxide can move to the surface or escape into the air. Adding more oxidizer or increasing the gas temperature makes the flame hotter. This heat can boil the oxide, turning more of it into vapor. This lets the material move away from the flame and alters the gas flow around it. Heating Aluminium particles makes them lighter. This happens as water evaporates and oxygen reacts with the surface, creating an oxide layer. But, if the oxide layer gets too thick, it stops oxygen from reaching the Aluminium.

This makes oxidation slower and can lead to the breaking of the oxide shell. This happens if the temperature goes beyond the melting point of Aluminium (Haidzar 2020, 3). TGA tests have been used by researchers to extensively study the reaction between Aluminium and oxygen.

FACTORS AFFECTING IGNITION TIME

Particle Size Effect

Studies find that particles more significant than 100 micrometers (μm) ignite close to Aluminium oxide's melting point. This temperature is around 2077°C . This happens because the oxide layer must melt from heat expansion before the particle can ignite. Particles sized 1-100 μm can ignite at temperatures ranging from 1027 to 2027°C . Nano-sized particles, however, ignite at much lower temperatures, like 627°C . This lower ignition temperature is due to a phase change in the oxide layer on the particle's surface. Nano-aluminium particles burn in three stages, while micro-aluminium particles burn in four stages. Scientists have done many experiments on how particle size affects burning. They found that the burning time increases with the square of the particle's diameter. When comparing the burning times of different particles, they confirmed that the 'd²-t law' is accurate.

Effect of oxidizer concentration

Several studies have shown that the burning time decreases with higher oxidizer concentrations, as observed by researchers. Oxygen content significantly influences Aluminium combustion. Higher oxygen levels lead to quicker burning times and higher temperatures (Haidzar 2020, 6; Brooks 1995, 3).



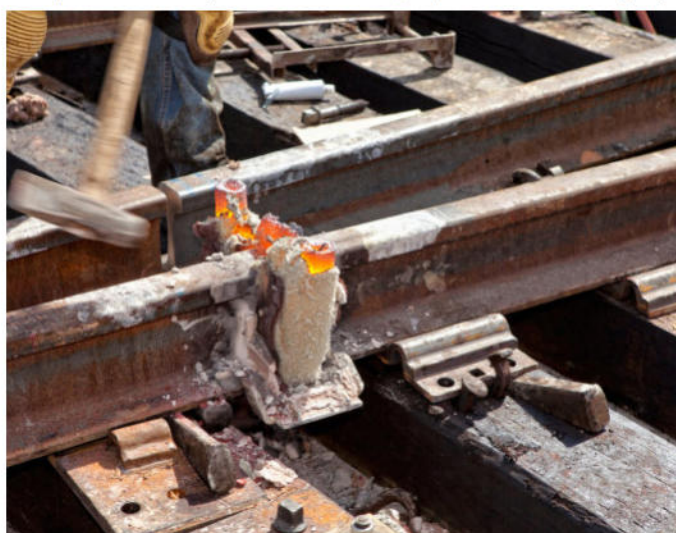
The oxidizer type also matters. Oxygen affects the burning rate the most, while CO_2 affects it the least. This is because oxygen has twice the oxidizer content per mole than carbon dioxide. This could make combustion faster with oxygen than carbon dioxide (Brooks 1995, 4).

Effect of the temperature

The surrounding gas's temperature went up, which made the burning rate increase almost linearly. This continued until the flame's temperature neared the oxide's boiling point of about 1227°C . Then, the increase in burning rate became much steeper. Also, a rise in ambient temperature by around 27°C made particles 6.7 times more likely to ignite. This illustrates the significant impact of ambient temperature on combustion ease.

APPLICATIONS OF ALUMINIUM COMBUSTION

Aluminium combustion finds extensive applications in propellants across various industries, notably aerospace and defense. Aluminium is crucial in solid rocket propellants because it releases much energy when burned. In these rockets, Aluminium particles add to the fuel, boosting the propellant's energy. This leads to higher thrust for efficient space exploration, satellite launches, and military use. When Aluminium burns, it reacts with an oxidizer to create hot gases. This creates safer and more efficient propulsion than traditional rockets. Aluminium powder is also essential in pyrotechnics and explosives, increasing their energy and combustion rate. In the military, it is used in ammunition and incendiary devices for its quick combustion and high energy.



Aluminium is widely used in various fields, such as metallurgy, welding, and chemical synthesis. It is vital in heating industrial furnaces. It also plays a crucial role in thermite reactions. These reactions help in welding and cutting metals by burning Aluminium. Additionally, the combustion of Aluminium is helpful in applying thermal spray coatings. It also aids in chemical synthesis processes (Piercey 2010, 3).

CONCLUSIONS

The review paper examines the burning of Aluminium in detail. It discusses its mechanisms, influences, and industrial uses. The paper focuses on how particle size, oxygen concentration, and temperature affect Aluminium's ignition and burning duration. It finds that Aluminium with smaller particles ignites at lower temperatures and burns more quickly. The paper highlights oxygen's crucial role in burning, noting that increased oxygen levels result in hotter, faster burning. It explains that the spread of the gas mixture controls the burning speed. The paper also talks about how burning Aluminium is used. It is used in rocket propulsion and metal processing. It is also used in making fireworks and explosives. Other industries use it too.

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POLLUTION: ITS TYPES, EFFECTS AND REMEDIATION



Nagraj

INTRODUCTION

Pollution refers to harmful substances entering the environment. These contaminants can hurt living things and the ecosystem. It's a worldwide problem. It impacts our air, water, and the land we inhabit. Understanding the different pollution types is crucial to address and mitigate its impacts effectively.

There are many kinds of pollution. These include air, water, land, noise, thermal, radioactive, plastic, and light pollution. Each type has its features and origins. However, they all harm the environment and human health.

Understanding pollution is essential. It helps us find out what causes it and how it affects us. This knowledge lets us create ways to stop and lessen pollution. We can make better choices by knowing where pollution comes from and its effects. We can do more to reduce pollution and push for more significant changes.



AIR POLLUTION: CAUSES, EFFECTS, AND PREVENTION

Air pollution happens when harmful substances contaminate the air. These substances can harm human health and the environment. Air pollution mainly comes from burning fossil fuels for energy. Industrial activities, such as manufacturing and mining, also cause it. Transportation emissions and agricultural practices contribute to it, too.

Air pollution harms human health in many ways. It can cause respiratory problems like asthma and lung cancer. It can also lead to heart issues and early death. Besides affecting humans, it damages the environment too. It harms ecosystems, depletes the ozone layer, and contributes to climate change.

Prevention measures for air pollution include:

- Clean energy sources like solar or wind power should be used instead of fossil fuels.
- Reducing vehicle emissions through improved fuel efficiency or promoting the use of electric cars.
- Implementing stricter regulations on industrial emissions.
- Promoting sustainable agricultural practices.

WATER POLLUTION: SOURCES, IMPACTS, AND CONTROL MEASURES

Water pollution occurs when harmful substances or pollutants contaminate water bodies such as rivers, lakes, and oceans. The primary sources of water pollution include agricultural runoff, sewage and wastewater discharge, industrial waste, and oil spills.

Water pollution has significant impacts on aquatic life and human health. It can lead to the destruction of ecosystems, loss of biodiversity, and the contamination of drinking water sources. Polluted water can lead to many health issues. These include stomach problems, skin conditions, and cancer.

Control measures for water pollution include:

- Implementing wastewater treatment systems to remove contaminants before they are discharged into water bodies.
- Reducing the use of chemicals in agriculture and industry.
- Promoting sustainable farming practices that minimize runoff.
- Enforcing stricter regulations on waste disposal.



LAND POLLUTION: CAUSES, EFFECTS, AND MITIGATION STRATEGIES

Land pollution refers to the degradation of land resources due to harmful substances or pollutants. The leading causes of land pollution include littering, improper disposal, industrial waste, and deforestation.

Land pollution has widespread effects. It can harm the environment and human health. It causes soil erosion and reduces soil fertility. It also contaminates groundwater and destroys habitats for plants and animals. Exposure to polluted land can also pose health risks to humans through ingesting or inhaling toxic substances.

Mitigation strategies for land pollution include:

- Promoting recycling and proper waste disposal practices.
- Implementing stricter regulations on industrial waste management.
- Reforestation efforts to restore degraded land.
- Educating the public about the importance of responsible land use.

NOISE POLLUTION: EFFECTS ON HEALTH AND ENVIRONMENT

Noise pollution is excessive or unwanted sound that can harm human health and the environment. Human activities mainly cause it. These activities include transportation noise like traffic, industrial noise from machinery, and construction noise.

Noise pollution affects human health in many ways. It can cause hearing loss and tinnitus. It can also increase stress levels and disturb sleep. Prolonged exposure to high levels of noise can also lead to cardiovascular problems and impaired cognitive function.

Noise pollution in the environment affects animals. It disturbs their behavior. It messes with how they communicate and mate. This can cause some species to decline in numbers.

To prevent noise pollution

- wear earplugs or use noise-cancelling headphones to protect your ears.
- Lower noise levels with sound barriers or insulation.
- Enforce rules on vehicle and machinery noise.
- Support the use of quieter technologies.

THERMAL POLLUTION: CAUSES, EFFECTS, AND CONTROL MEASURES

Thermal pollution refers to increased water temperature in natural water bodies due to human activities. Thermal pollution has several leading causes. Power plants use water to cool machinery, causing heat. Deforestation leads to less shade and more sunlight absorption. Urbanization replaces plants with surfaces that absorb heat.

The effects of thermal pollution on aquatic life and water quality are significant. Warmer water can upset ecosystems' balance. This may cause some species to decrease in number or go extinct. It can also reduce dissolved oxygen levels in water, making it difficult for aquatic organisms to survive. Thermal pollution can diminish water quality. It encourages harmful algal blooms to grow. It also makes wastewater treatment less effective.



Control measures for thermal pollution include:

- Cooling towers or closed-loop cooling systems in power plants can reduce water usage and minimize temperature increases.
- Planting trees and preserving natural vegetation to provide shade and reduce heat absorption.
- Implementing regulations on water discharge temperatures.

RADIOACTIVE POLLUTION: RISKS, IMPACTS, AND REMEDIATION

Radioactive pollution is when harmful radioactive substances are present in the environment. It can damage human health and the environment. Nuclear power plants, nuclear accidents, improper disposal of radioactive waste, and mining activities mainly cause it.

The risks and impacts of radioactive pollution are severe and long-lasting. Exposure to high levels of radiation can cause radiation sickness, cancer, genetic mutations, and even death. Radioactive pollution can contaminate soil, water, and air. It destroys ecosystems. Over time, radioactive materials build up in the food chain.

Remediation measures for radioactive pollution include:

- Decontamination efforts to remove or reduce the presence of radioactive substances in the environment.
- Proper disposal of radioactive waste in secure facilities.
- The development of advanced technologies for the treatment and storage of radioactive materials.

PLASTIC POLLUTION: CAUSES, EFFECTS, AND SOLUTIONS

Plastic pollution happens when plastic waste builds up in the environment. This is especially a problem in oceans and rivers. It is mainly caused by using plastics once, like plastic bags and bottles. Throwing away plastics the wrong way and littering also lead to this pollution.

The effects of plastic pollution on marine life and human health are devastating. Aquatic animals can become entangled in plastic debris or mistake it for food, leading to injury or death. Plastic waste breaks down into tiny pieces called microplastics. Marine animals can eat these microplastics, which then enter the food chain. Humans may be exposed to microplastics by eating contaminated seafood or drinking polluted water. This exposure is worrying and might pose health risks.

There are ways to tackle plastic pollution:

- We can cut down on plastic use by choosing reusable products.
- Recycling helps lower the amount of plastic that reaches landfills or oceans.
- We need stricter rules on single-use plastics.
- Teaching people about the dangers of plastic pollution is crucial.



Light Pollution: Impacts on Wildlife and Human Health

Light pollution is excessive or misdirected artificial light that interferes with natural darkness and disrupts ecosystems. It is mainly caused by outdoor lighting from streetlights, buildings, and sports facilities.

The impacts of light pollution on wildlife behaviour and human health are significant. Wildlife suffers from too much artificial light. It messes up their migration, feeding, and mating. This can cause their numbers to drop and decrease biodiversity. For people, artificial light at night can ruin sleep patterns. This can cause sleep problems, tiredness, and a higher chance of getting chronic diseases like obesity and depression.

Prevention measures for light pollution include:

- Using motion sensors or timers to control outdoor lighting.
- Reducing the intensity and duration of artificial light at night.
- Shielded fixtures are used to direct light downward and minimize glare.
- Promoting the use of energy-efficient lighting technologies.

REMEDIATION OF POLLUTION: BEST PRACTICES AND INNOVATIONS

Pollution remediation deals with cleaning up and fixing polluted places. It aims to cut down or get rid of dangerous substances. The best ways to clean pollution include natural methods. Phytoremediation uses plants to clean soil or water. Bioremediation uses tiny organisms to break down pollutants. It's essential to get local communities involved in cleaning up. This makes sure they take part and have ownership. Also, setting up plans for long-term monitoring and maintenance helps stop pollution in the future.

Innovations in pollution remediation are constantly being developed to address the challenges posed by different types of pollution. Nanotechnology could help clean water and air. It uses tiny particles to capture and remove pollutants. Also, high-tech tools like remote sensing and data analytics track pollution. They pinpoint where cleanup is needed most.

Fixing pollution is vital. It repairs damaged ecosystems, keeps us healthy, and ensures a sustainable future. We can significantly reduce pollution by preventing it effectively, adopting sustainable practices, and investing in new solutions. This will make the environment cleaner and safer for everyone.



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MECHANICAL ENGINEERING EXPLAINED

PART III: CONTRIBUTION OF MECHANICAL ENGINEERS



Atil Arora and Ayush Gupta

CONTRIBUTION OF MECHANICAL ENGINEERS IN VARIOUS FIELDS

Innovation and Technological Advancement:

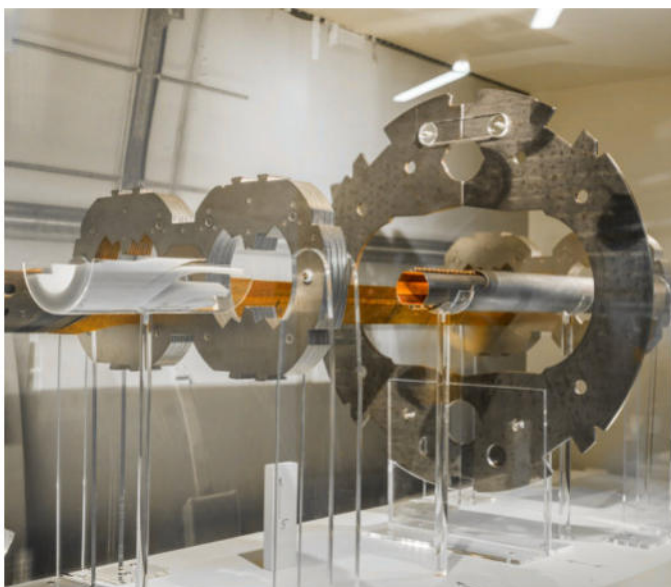
Mechanical engineers are at the forefront of innovation, constantly pushing the boundaries of what is possible. They contribute to developing new technologies, gadgets, and systems that improve our quality of life.

Top Organizations: Fraunhofer Society, National Institute of Standards and Technology, CERN, DRDO, Siemens.

Design and Manufacturing:

Mechanical engineers are crucial in designing and manufacturing various products, from household appliances to cutting-edge aerospace components. Their expertise ensures that these products are functional, efficient, and cost-effective.

Top Organizations: General Electric (G.E.), Tata Steel, Steel Authority of India Limited (SAIL).



Transportation and Automotive Industry:

Mechanical engineers get to build awesome stuff like racing cars, submarines, airplanes, and even space rockets! They use their creativity to design things that can move, fly, or do exciting tricks. They find ways to make less energy machines, like cars that don't need as much gas. This helps keep the Earth clean and healthy.

Top Organizations: Tesla, Ford, Tata Motors, Mahindra & Mahindra, Ashok Leyland, Hero MotoCorp, Kirloskar group, MRF, Bajaj Auto.

Energy Systems and Sustainability:

Mechanical engineers are vital in pursuing sustainable energy solutions. They create new renewable energy technologies. They improve the energy efficiency of current systems. They also discover ways to reduce the environmental impact of power generation.

Top organizations are BHEL (Bharat Heavy Electricals Limited), Bharat Electronics Limited (B.E.L.), TATA POWER, IOCL, BPCL, HPCL, ONGC, GAIL, Oil India Limited, and BARC.

Aerospace Industry:

It helps design and make aircraft and spacecraft. This field is crucial for exploring space. It supports missions that increase our knowledge of the universe.

Top organizations include ISRO, also known as the Indian Space Research Organization. Another is HAL, or Hindustan Aeronautics Limited. NASA stands for the National Aeronautics and Space Administration. SpaceX is short for Space Exploration Technologies Corp. Boeing and Lockheed Martin are also on the list. Roscosmos is the Russian Federal Space Agency. Lastly, there's ESA, the European Space Agency.

Robotics and Automation:

Mechanical engineers are instrumental in developing robotics and automation technologies. These innovations enhance efficiency, precision, and safety across various industries, from manufacturing to healthcare.

Top organizations include Bharat Electronics Limited (BEL), Tata Consultancy Services (TCS), and Wipro Limited. Others are KUKA Robotics India, ABB Group, and FANUC Corporation. Also, Yaskawa Electric Corporation, Rockwell Automation, and DYSON are part of this list.



Energy Sector:

Mechanical engineers' work affects the whole world. They design sustainable energy solutions to solve environmental problems. They also contribute to space exploration. Mechanical engineering is key in changing the world. It helps improve life quality for people everywhere. Mechanical engineers work on creating technologies that minimize environmental impact. This includes developing cleaner energy sources, designing eco-friendly manufacturing processes, and implementing sustainable practices in various industries.

Leading companies in the sector include Adani Green Energy Limited and Tata Power Renewable Energy Limited (TPREL). Others are Suzlon Energy Limited, ReNew Power, Inox Wind Limited, and Vikram Solar.

CAREER PATH:

Mechanical engineering leads to many career options. You can work in public sector units (PSUs), aerospace, automotive, and robotics. You can also join energy sectors or research organizations such as ISRO, BARC, and DRDO. There's a chance to enter new areas like biotechnology too. The skills you get from mechanical engineering let you try different industries to discover what you love. The job market for mechanical engineers is strong. There are chances in automotive, aerospace, energy, manufacturing, and consulting.

At the entry-level, mechanical engineering graduates can secure positions such as:

- Design Engineer
- Manufacturing Engineer
- Quality Assurance Engineer
- Maintenance Engineer
- Project Coordinator

TECH FOCUS

- Assistant Executive Engineer (A.E.E.) in P.S.U.s like IOCL, BPCL, HPCL, ONGC, GAIL, NTPC, C.I.L., NHPC, BHEL, B.E.L.
- Scientist B in Research Org like ISRO, DRDO, BARC.
- I.E.S. (Indian Engineering Services) through UPSC

Career Progression:

With experience, individuals can advance to roles like-

- Senior Design Engineer
- Project Manager
- Engineering Manager
- Director of Operations
- Senior Scientist

Job Roles:

Roles encompass design, manufacturing, quality control, and project management, reflecting the versatility of mechanical engineers.

Job Description:

Responsibilities include designing products, optimizing manufacturing processes, ensuring quality standards, and managing projects efficiently.

Research Opportunities:

Mechanical engineers can engage in research, contributing to advancements in areas like renewable energy, materials science, and robotics.

Funded Projects:

Research opportunities often involve funded projects, providing financial support for innovative endeavours.



CONCLUSION:

In summary, a career in mechanical engineering is like being a problem solver and innovator in various industries. Mechanical engineers use math and science knowledge to design things like cars, machines, and even space equipment. They help industries work smoothly by making sure machines are reliable and efficient.

Mechanical engineering is always evolving. It includes new advancements in robotics and renewable energy among others. If you're into this field, you won't just study. You'll also work on projects and internships. This helps you keep up with new technologies.

Being a mechanical engineer means more than having a job. It's about contributing to progress and making a positive difference in the world. You might work in research, manufacturing, or start your own projects. Either way, mechanical engineering is both demanding and fulfilling. It helps shape the future.

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EMPOWERING TEENS THROUGH DIGITAL DETOX



Mohini Modak

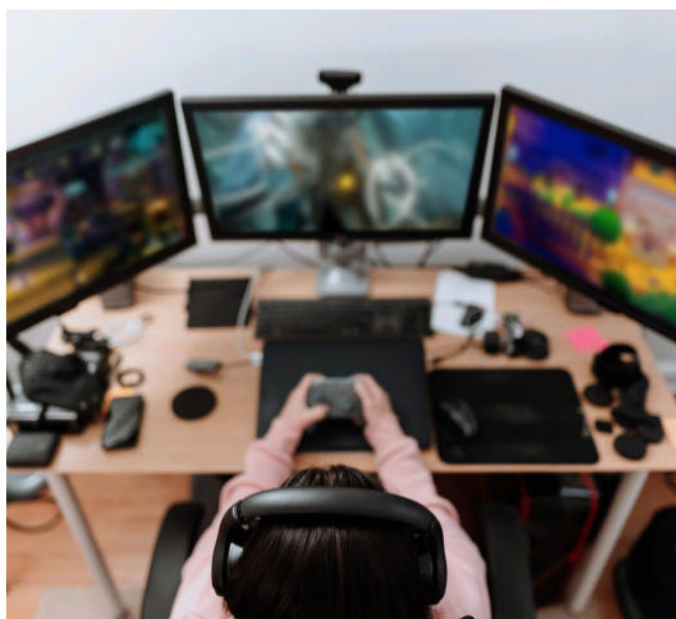
Nowadays, we live in a world full of screens and digital gadgets. The idea of a "digital detox" for teens is important to parents, teachers, and health experts. Teens are using technology more from a young age. People worry about how this may affect their growth, happiness, and how they get along with others.

Teens' addiction to digital gadgets can stem from various factors, including:

- Digital devices give quick rewards, like social media likes or game points. This can make you feel good and keep you coming back, leading to addiction.
- Social Pressure: Teens want to feel accepted by their friends. Many of their friends use digital devices often. This makes teens spend a lot of time online or on screens too.



- Escapism: Digital gadgets escape boredom, stress, or other negative emotions. Teens may turn to screens as a coping mechanism to avoid dealing with real-life challenges or emotions.
- Endless Content: The internet has unlimited entertainment, information, and interactive activities. It's easy for teens to become absorbed and forget about time.
- Lack of Boundaries: Parents or caregivers sometimes don't set clear limits on screen time. This can cause teens to form habits of using devices too much.
- Design Features: Digital platforms and apps use addicting features. These include notifications, autoplay, and infinite scrolling. They keep teens engaged for a long time. This makes it hard for teens to stop using them.



· **Parental Influence:** Teens often model their behaviour after their parents or caregivers. Teens are likelier to emulate this behaviour if adults frequently use digital gadgets.

· **Educational Use:** Even educational content can become addictive if not adequately balanced with other activities. Teens may become overly dependent on digital devices for learning, neglecting other important aspects of their development.



Knowing these factors helps parents, educators, and caregivers. They can act early to lower the risk of teens getting addicted to digital devices. They can also encourage better tech habits.

This practice aims to balance teens’ lives. It offers them chances to do activities that grow their creativity and imagination. These activities also encourage physical activity and talking with others face-to-face. It helps them reduce stress and understand the importance and liveliness of social interaction in the physical world. It can be useful for their holistic growth and development to lead a blissful, contented life.



Let's talk about how addiction to digital devices harms teens. This includes their physical, mental, and social-emotional health.

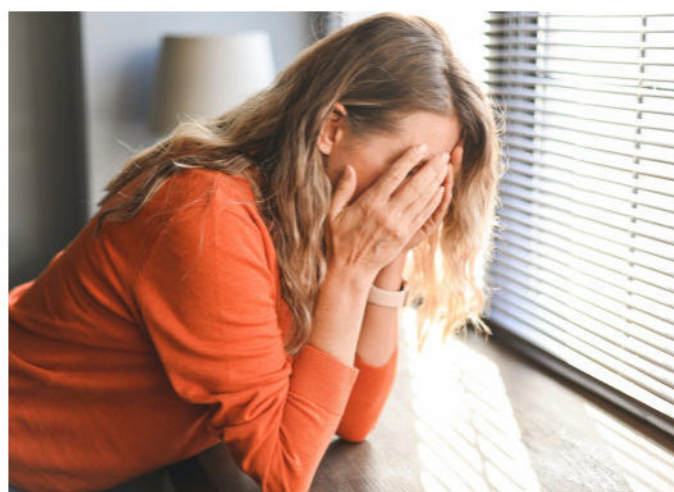
- **Increased Screen Time.** Teens are using digital devices like smartphones, tablets, and computers more than ever. They spend a lot of time on activities that involve screens.
- **Physical Health Issues and Sleep Disruption:** Excessive screen time can lead to various physical health problems, including eye strain, headaches, neck and back pain. Due to exposure to blue light emitted by screens, especially before bedtime the sleep patterns get affected. Using digital devices late at night can harm sleep quality. This may cause tiredness and irritability. It can also make it hard to focus during the day.





- **Sedentary Lifestyle:** Sitting and looking at screens for long hours lowers the amount of physical activity teens get. This increases their risk of becoming obese and facing related health problems.
- **Impact on Brain Development:** Using digital devices for a long time can impact how the brain develops. This mainly affects attention, memory, and decision-making skills. These changes can harm cognitive abilities and school performance.
- **Decline in Social Skills:** Too much time on screens can slow the growth of important social skills. These include understanding others' feelings, talking well, and solving disagreements. Teens might not spend enough time talking directly with others. Instead, they often end up alone, focused on their devices.

- **Emotional Distress:** Digital addiction can lead to emotional issues like stress, anxiety, and depression in teens. This occurs for a few reasons. People feel negative when they compare themselves to others online. They may also experience cyberbullying. Or, they fear they are missing out on online activities, known as FOMO.
- **Poor Academic Performance:** Too much screen time can harm learning and attention. This can lower grades and make it hard to concentrate on tasks, both in school and elsewhere.



Several factors drive this trend. Digital content is easy to access. Technology has become a part of daily life, especially after the COVID-19 pandemic. Also, peers and media have a significant influence.

These effects show why it's important to set healthy limits on screen time. It's key to balance digital activities and real-world experiences. Also, it's crucial to offer guidance and support. This helps teens build responsible and mindful technology habits.

A digital detox for teens involves:

- Choosing to limit or avoid using electronic devices and screens for a set time to encourage better habits.
- Fostering real-world connections.
- Encouraging alternative forms of play and learning.
- Digital Detox is a time when someone stops using electronic devices. This includes Smartphones, video games, and Computers.
- Let's work towards setting a new trend **"Break free of your devices and go on a digital detox"**





First Detox rule:

Go slow. Don't set unachievable targets

Detox Steps:

- Make a gadget list and check whether they are needed
- There is a lot of time for only required gadgets
- Try 'phone stacking' in a social meeting or family meal.
- Make an effort to teach teens to give attention to others.
- Find a detox buddy for teens, or you can be the buddy.
- Leave your gadgets at home when not necessary so that teens will follow you.
- If nothing helps don't shy away from taking a counsellor support. Their therapies work well for severe addiction cases. This is when parents or teens can't detox by themselves.



Conclusion

Digital Detox is a slow-down. It leads to inner peace and a healthier life.

Parents have the power to give their teens the gift of balance in the digital age. They do this through careful guidance and thoughtful decisions. Together, we can start this journey. Our goal is a future where our teens do well both online and offline. Though the parents need to be the change they want to see in their teens.



The author is the director of Horizon Web Technologies. She has experience in digital marketing, blogs writing, and training. She also plays a pivotal role in bringing cyber wellness and safety to the forefront of public discourse.

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WHAT MAKES CARBON THE BUILDING BLOCK OF LIFE ON EARTH?



Dr. Girish S Barpande

Carbon has been known to us for a long time. Recently, interest in carbon has increased for many reasons. People are researching carbon fibre composites and smart materials, like Carbon Nano tubes, more than ever. Although carbon looks simple on the periodic table, it acts in interesting ways. This has led to the development of organic chemistry, a new branch of chemistry.

Do you know that the single common thing that unites the whole life on the earth is Carbon? Be it a human being, an animal, the smallest bacteria, a tree, a plant, or a tiny insect. For decades, scientists have been curious about whether life exists elsewhere in the universe. Carbon is an essential element in the universe, playing a crucial role in the formation of life. Carbon is the fourth most abundant element in the universe. It comes after hydrogen, helium, and oxygen. But what makes carbon so unique? Let's explore.



FORMATION OF CARBON

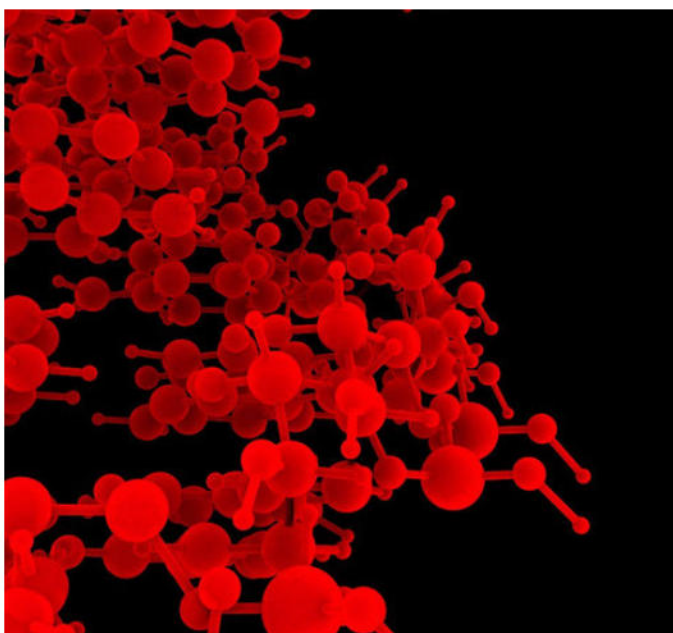
Carbon was created during the Big Bang. It was formed from nuclear fusion reactions. These are the reactions that happened between helium and hydrogen. However, this process only produced small amounts of carbon. The majority of carbon was created through nuclear fusion reactions inside stars.

As stars go through their life cycle, they produce energy by fusing hydrogen atoms to form helium. When stars use up their hydrogen, they begin to fuse helium atoms. This is because of their immense gravity. This process creates heavier elements, such as carbon and oxygen. When these stars end their life, they explode as supernovas. This explosion releases all elements they created into space. This includes carbon. Main source of carbon on our earth is the same.

CARBON CHEMISTRY

Atoms always try to reach a lower energy state to become stable. They do this by combining with other atoms. This process is what chemistry is all about.

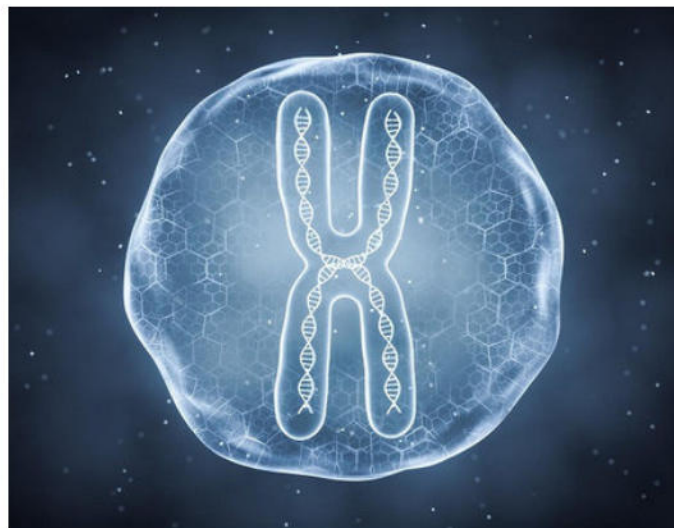
Carbon is neither the most common nor the most stable element on Earth. It has four electrons in its outer shell but needs four more to be stable. This need makes carbon very interactive. It can form strong, stable bonds with many elements. Carbon atoms share or borrow electrons to form various compounds. They do this through covalent bonds. Carbon is in a group of elements in the periodic table that can form up to four bonds. These bonds are called tetravalent bonds. They allow carbon to form many complex compounds. There is a branch of chemistry called Organic Chemistry. It specializes in studying these compounds. This study is extremely important.



ROLE IN LIFE FORMATION

Living things on earth contain a lot more carbon by mass, than Earth does. In fact, they have 10 to 20 times more carbon than that in the earth by percentage. This shows that carbon is playing major role in the formation of life. But why carbon? Why not other elements?

Life on earth might have happened by chance. For life to start, elements need to form complex compounds. Carbon is perfect for life's building blocks. It can form complex compounds because it can make tetravalent bonds. Carbon is common and forms strong bonds.



It's odd that, although many elements can make tetravalent bonds, only Carbon was selected by nature. The reason is that Carbon excels in three important areas compared to other elements. These are its ability to form complex compounds, its abundance, and the strength of its bonds.

THE ABILITY OF CARBON TO MAKE COMPLEX COMPOUNDS

Carbon's unique ability to bond with other elements allows it to form complex molecules essential for life. All known life forms on Earth are based on these carbon compounds.

Carbon bonds are versatile and hence they allow the creation of variety of molecules or compounds. These compounds are complex and have various properties and functions. These bonds can form in various ways. They link together to make chains that are always unique. This leads to the formation of many different compounds. Diversity is essential for life to start. Life needs many complex molecules for various functions. These molecules form the long chains in our DNA.

RELATIVELY ABUNDANT

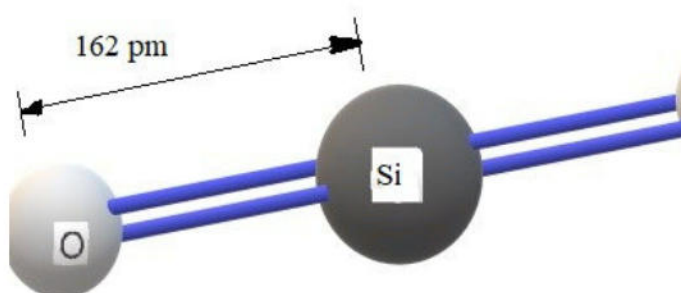
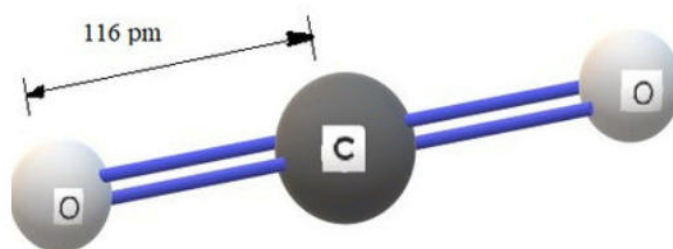
The four most common elements in our body are also the most abundant in the solar system. Carbon is one of these elements. Silicon is another common element on Earth. Like carbon, silicon can form four bonds. However, its bonds are weaker, making it unsuitable for life. The next article discusses this further. Boron, which can form three bonds, could potentially support life. But it is too rare, so nature did not select it for life creation.

BOND STRENGTH

Bond strength is crucial for the molecules to sustain. For a living matter to flourish the molecule and its chain needs to remain intact. They must work correctly in living tissues. Longer chains tend to break more easily. Therefore, stronger carbon bonds are essential for life creation.

Similar to carbon Silicon is a common element that also requires 4 bonds to achieve stability. Also the abundance of silicon on the earth makes it the biggest contender for life formation is silicon. Yet, silicon cannot form the basis of life. Silicon's valence electrons being in the third shell they create longer bonds which consequently are weaker.

In contrast, Carbon is known for its ability to form strong bonds with other elements, especially with itself. This is due to its small atomic size and the ability to form multiple bonds. The average carbon-carbon bond length is around 154 pm. On the other hand, silicon has a larger atomic size and therefore forms longer bonds. The average silicon-silicon bond length is around 235 pm, which is significantly longer than that of carbon. Carbon's valence electrons occupy the second shell. This makes carbon's bonds both shorter and stronger. As a result, carbon forms more durable bonds, essential for life. Similarly, due to their bond strength other plentiful elements, like Nitrogen, are unsuitable for organic chemistry.



In conclusion, three parameters make carbon the right choice by Mother Nature to build life on Earth. The first reason is that carbon has an atomic structure capable of forming tetravalent bonds. This allows it to create a variety of complex compounds. The second reason is its abundance. The third reason is the most important. Carbon forms stronger bonds than Silicon, its main competitor.

Life might exist with different elements in other parts of the universe. However, Earth's temperatures and pressures make carbon the only choice here. Carbon truly is an incredible element that will keep scientists and researchers fascinated by its properties.

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EMBRACING EARTH, ERASING PLASTICS: OUR 2024 PLEDGE FOR THE PLANET



Dr. Sunita Singh

On 22 April 2024, people around the world celebrated Earth Day. This day showed a strong feeling of unity and worry about the environment. It is a day when citizens worldwide engage in activities that contribute to protecting and preserving our planet. The theme for Earth Day 2024 is 'Planet vs. Plastics', highlighting the urgent need to address plastic pollution and its harmful effects on nature. The aim is to cut plastic production by 60% by 2040. This will help reduce the harm plastics cause to both the Earth and human health.

On World Earth Day, the "Plastic vs. Planet" initiative is a pivotal movement in the global environmental landscape. This year's theme focuses on the urgent need to fight plastic pollution and its harmful impacts on Earth. It's more than a campaign. It's a full plan to change how we use plastics. The goal is to live sustainably with Earth's ecosystems.



THE URGENCY OF ACTION

The numbers are shocking: every year, over 11 million tonnes of plastic end up in our oceans. If we don't change, this could triple by 2040. This plastic disaster harms marine life, affecting over 800 species. They suffer from eating plastic, getting tangled in it, and other dangers. The "Plastic vs. Planet" campaign wants to cut worldwide plastic pollution by 80% by 2040. They plan to achieve this goal together with big organizations like the UN Environment Programme (UNEP) and Earthday.org.

GLOBAL MOBILIZATION

The initiative brings together many different groups. These include students, parents, businesses, governments, and NGOs. They all work hard together to remove plastics from our environment.

This issue is important worldwide. It aims to cut plastic production by 60% by 2040. The final goal is a future without plastic.

NEED FOR POLICY AND INNOVATION

The key to the success of "Plastic vs. Planet" is developing and implementing robust policies. The proposed United Nations Treaty aims to tackle plastic pollution. It is expected to be completed by the end of 2024. This shows the world's commitment to addressing this problem. Alongside policy, innovation plays a crucial role. Investing in alternative materials and technologies is essential to transition away from our dependence on plastics.

IMPORTANCE OF PUBLIC AWARENESS AND EDUCATION

Raising public awareness about the dangers of plastic pollution is another cornerstone of the initiative. The campaign aims to make people worldwide more aware and active. It teaches about the health effects on humans, animals, and all plant life. This includes demanding transparency and research on the effects of plastics on health and the environment².

FUTURE PERSPECTIVE

The road ahead is fraught with challenges. The petrochemical industry makes most of the plastic. It has a long history of causing pollution and unfair environmental harm. Addressing these systemic issues is critical to achieving the goals of the "Plastic vs. Planet" initiative². However, with challenges come opportunities. Public and political interest in reducing plastic pollution is increasing. This offers a great opportunity to improve the planet's health significantly.



CONCLUSION

As we commemorate World Earth Day, the "Plastic vs. Planet" initiative is a rallying cry for collective action. It's a movement that transcends individual efforts, requiring the collaboration and commitment of the entire global community. We can create a future where the planet wins over plastic. We do this by following sustainability, innovation, and education. We must act now. The health of our planet and the well-being of future generations rely on our choices today.

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HOW IT IS MADE:

THE LEAD ACID BATTERY - PART 7

PLATE PASTING

PASTING

The pasting stage involves applying active material to the grid. The grid acts as both a mechanical support and an electrical conductor. This step creates the plate. The plate is the main component of a lead-acid battery.

There are two ways to combine grids and active material as necessary:

Belt pasting is a technique used to paste individual panels resulting from grids' melting process.

In Drum pasting continuous strips of grids are produced with expansion, punching, or continuous casting systems.

BELT PASTER

It has a cotton strip. This strip supports the grids when pasting. There is also a hopper. It comes with toothed and paddle rollers. These rollers feed the paste onto the grid.

Two grids are set in a straight line on a mechanical separator. They are placed on a cotton belt. This belt moves them to the area where paste (active material) is applied. After that, they go to the transfer line. The belt then goes through scraping, washing, and pressing areas. This process gets the belt ready for the next pasting cycle.

An automatic system feeds the hopper. It has level control and rotating rollers. This system doses the right amount of active material. The material is used on the grid below.

This system works well with melted grids. It has a belt made of layered needled cotton. Even when the belt touches the paste, it hardly sticks to it.

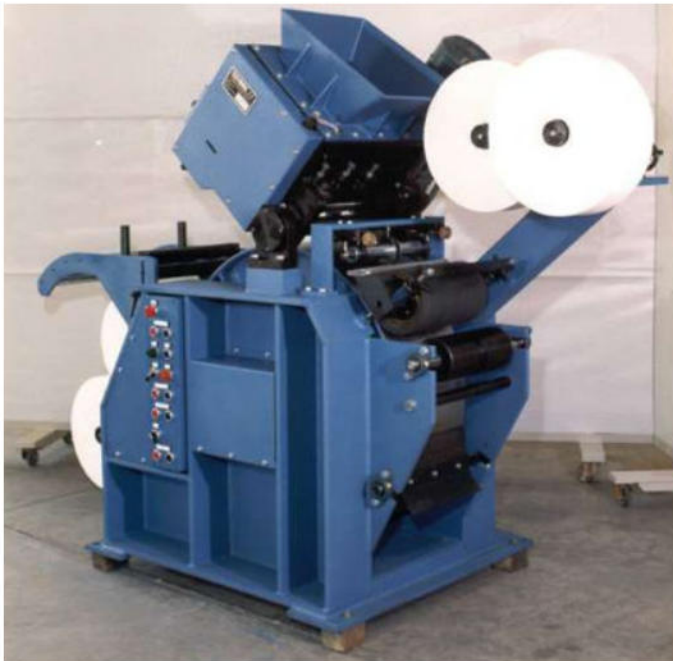


Belt paster

Drum-pasting machine

In continuous strip grids, the active material is covered with paper. This is to handle the cutting process. It makes using a cotton belt unnecessary. This is because it helps prevent sticking. So, a surface-hardened steel drum is used instead. It lasts much longer. This means there's no need to worry about belt wear costs.

The machine will have a body made out of a steel drum. It will feature controlled speed. Additionally, it will have a hopper designed to measure out the active material. It will need drums to hold and spread the paste on the plate surfaces. First, a paper layer is placed on the drum. Then, the strip of grids moves under the hopper to get the right amount of paste. While moving at the drum's speed, it goes under another rubber cylinder. This cylinder centers and presses the paper on the top side.



GRID STRIP DIVISION SYSTEM

The pasted grids are put into a machine. This machine has timing systems and cutting blades. It cuts the individual grids by slicing through their connection points. The machine has a bench for holding and supporting the cut grids. There is another bench for aligning the grids side by side. This preparation is for their next treatments.

DRYING TUNNEL

After stacking, the plates quickly go through a special drying tunnel. This prevents them from sticking to each other. The tunnel heats the surfaces of the plates quickly. But, it keeps the core of the plates below 60 °C. This is done to dry any paste residues on the surface that could cause sticking during stacking.



STACKING SYSTEM

A stacker with suction picks up the plates from the drying tunnel. It separates the plates and straightens them at the edges. Then, it moves the plates to where they are prepared for packaging. Here, two devices that can adjust their height pick up the plates. They stack the plates into packages. These packages are then gathered and placed on a pallet.

A double amount of lowering devices is required. We use one to prepare the package and the other to unload and restore operations. At this point, the plates have a lead grid. This grid offers mechanical support and helps with electron flow. Inside, there's a mix of different materials (Pb, PbO, PbO₂, PbSO₄, H₂SO₄, H₂O). Also included are specific additives for either negative or positive plates. These components are crucial. They form what is known as the active material.



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The Rise of Anxiety: A Scientific Perspective

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Rice University Engineers Develop Miniature Brain Stimulator for Human Patients

SCARF: The World's Fastest Camera at 156.3 Trillion Frames Per Second

Zuckerberg's Meta Launches MTIA Chip To Rival Nvidia's AI Offerings In Cloud Business

Nvidia's AI Chip Dominance Under Threat: Major Tech Companies Collaborate to Level the Playing Field

Google Announces Axion Arm-Based CPU and AI Chip for Data Centers

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Google's Latest Innovation in Weather Forecasting: SEEDS

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Call for Articles

Invitation to Share Your Expertise in ENTECH Magazine

Are you passionate about inspiring and educating the next generation of scientists, technocrats, engineers, and mathematicians?

Do you have valuable expertise that you want to share with young minds?

Look no further than ENTECH Digital Magazine.

ENTECH is a monthly publication that aims to inspire and educate budding scientists, technocrats, engineers, and mathematicians from class 8 to 12. We believe in the power of knowledge and strive to provide engaging content that sparks curiosity and fosters a love for STEM subjects.

We are currently accepting article submissions for our upcoming issues. Whether you have insights on the latest technological advancements, practical tips for aspiring engineers, or fascinating stories from your own scientific experiments – we want to hear from you! Our article word count ranges from 500 to 3000 words, allowing ample space for in-depth exploration of your chosen topic.

To share your expertise with our readership, simply reach out to our editor by filling the form on our website at address:

<https://entechonline.com/contact-us/call-for-articles/>

Include a brief summary of your proposed article along with any relevant credentials or experience. We value originality and creativity, so feel free to think outside the box when it comes to your submissions.

By contributing to ENTECH Digital Magazine, not only will you be able to showcase your knowledge and passion but also make a positive impact on young minds eager to learn. Join us in shaping the future generation of scientists and technologists by sharing your expertise today!

Warm regards

Editorial Team

Calling for Contributions!

Introducing ENTECH Magazine, a breath of fresh air in the world of STEM publications! Our mission is to nurture the passion for science, technology, engineering, and mathematics among teenagers. We believe that knowledge should be accessible to all without any unnecessary distractions. That's why we are committed to providing a clutter-free reading experience by keeping our magazine free from irritating pop-ups and logins.

At ENTECH Magazine, your privacy is our top priority. We have no intention of collecting any personal information from our readers or monetizing it in any way. We rely on the support of our dedicated readers to keep us alive and provide high-quality content that inspires and educates.

By contributing to ENTECH Magazine, you are not only helping us continue our mission but also ensuring that teenagers across the globe have access to valuable STEM resources. Join us on this exciting journey as we empower young minds and shape the future of science and technology together!

Scan the QR code below and contribute INR 10 or more!




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Editorial Team
ENTECH Digital Magazine

Exciting opportunity to join the ENTECH Magazine Editorial Board and inspire future STEM enthusiasts!

ENTECH is an upcoming publication specifically designed for aspiring Scientists, Technocrats, Engineers, and Mathematicians. Our target audience consists of students aged 13 to 17 who are fascinated by careers in Science, Technology, Engineering, and Mathematics (STEM).

We aim to empower and inspire these young minds by providing them with valuable insights, educational resources, and real-life success stories from professionals in the field.

We are currently looking for experts for a valuable addition to our editorial board.

Board members will have the opportunity to shape the content direction of ENTECH magazine and contribute their insights on various topics related to STEM education. This opportunity presents a momentous occasion for individuals to exert a substantial influence on the forthcoming cohort of STEM enthusiasts.

Additionally, being part of our editorial board will offer exposure within the industry and provide networking opportunities with like-minded individuals who are passionate about promoting STEM education.

Our commitment requirement is flexible and manageable. Editorial board members can contribute articles or reviews while aligning with their existing commitments.

Together, let's inspire young minds towards a bright future in STEM!
If you would like more information about this exciting opportunity, please don't hesitate to reach out by filling out the form on our website at address:

<https://entechonline.com/join-us/join-editorial-board/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

Editorial Team

Join ENTECH magazine as a Guest Editor for our Special Issue!

ENTECH is specifically designed for aspiring Scientists, Technocrats, Engineers, and Mathematicians aged 13 to 17. Our mission is to provide them with inspiring content that showcases the endless possibilities and exciting careers within STEM.

We aim to empower and inspire these young minds by providing them with valuable insights, educational resources, and real-life success stories from professionals in the field.

Guest editors will have the opportunity to propose a special theme-based issue that aligns with their expertise and our target audience's interests. This is an excellent chance to share insights and contribute directly to shaping young minds' understanding of STEM education and careers.

Guest editors will be featured prominently in the special issue, which will enable them to gain visibility among our readership through their author bios and acknowledgements.

Let's work together towards inspiring the next generation of STEM enthusiasts! To express interest or discuss potential themes, please fill out the form at link:

<https://entechonline.com/join-us/join-as-guest-editor/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

Editorial Team

A Unique Opportunity to Become a Channel Partner of ENTECH Magazine!

ENTECH digital magazine is specifically designed for aspiring Scientists, Technocrats, Engineers, and Mathematicians in the age group of 13 to 17. We understand the importance of fostering curiosity and passion for STEM subjects among young learners.

Currently, we are looking for stakeholders in STEM education like scientific equipment, stationary, laptops, PCs, tablets, and DIY kit manufacturers or suppliers, book publishers, educational consultants, career counsellors, educational camps, tours, and workshop organizers as channel partners of ENTECH digital magazine.

Our esteemed channel partners will be provided a dedicated space on our website and a special mention in our monthly digital magazine. A small contribution from stakeholders in STEM education will help us stay alive and provide quality content to young aspirants in STEM education.

Let's work together towards inspiring the next generation of STEM enthusiasts! If you are interested in becoming a channel partner, please feel free to reach out by filling out the form at our website address:

<https://entechonline.com/join-us/channel-partner/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

Editorial Team

ENTECH Exhibition

Exciting Opportunity to Showcase Your STEM Education Initiatives!

ENTECH magazine is specifically designed for aspiring Scientists, Technocrats, Engineers, and Mathematicians in the age group of 13 to 17. We understand the importance of fostering curiosity and passion for STEM subjects among young learners. By organizing this exhibition together, we can provide them with a platform to explore various STEM disciplines and discover exciting career opportunities.

We are seeking organizations that are leaders in the field of STEM education and can propose innovative ideas for the exhibition. The exhibition will not only help to create an impactful event but also give an opportunity to connect with a highly receptive audience that is eager to learn about the latest advancements in Science, Technology, Engineering, and Mathematics.

ENTECH magazine will provide extensive promotion through our online platforms, ensuring maximum visibility for the organization. This collaboration will not only showcase our commitment towards shaping future generations but also position the organization as a thought leader within the industry.

There can be a special track at the exhibition in which students can showcase posters or projects on STEM subjects.

Let's work together towards inspiring the next generation of STEM enthusiasts! If you are interested in volunteering as an organizer or a team member, please feel free to reach out by filling out the form below. We would be happy to provide more information and answer any questions you may have.

please feel free to reach out by filling out the form at our website address:

<https://entechonline.com/join-us/submit-exhibition-proposal/>

Warm regards

Editorial Team

Join ENTECH Magazine in Organizing a Conference on STEM Education!

ENTECH magazine is specifically designed for aspiring Scientists, Technocrats, Engineers, and Mathematicians in the age group of 13 to 17. We understand the importance of fostering curiosity and passion for STEM subjects among young learners. By organizing this exhibition together, we can provide them with a platform to explore various STEM disciplines and discover exciting career opportunities.

ENTECH is specifically designed for aspiring Scientists, Technocrats, Engineers, and Mathematicians aged 13 to 17. Our mission is to provide them with inspiring content that showcases the endless possibilities and exciting careers within STEM.

We are inviting proposals for organizing a conference on STEM education. The objective of the conference is to inspire these young minds by providing them with valuable insights and educational resources to pursue rewarding careers.

Individuals, groups, NGOs, organizations, schools, colleges, and other stakeholders in STEM education can propose a conference agenda that encompasses innovative teaching methodologies, emerging technologies, career guidance, and real-world applications of STEM subjects. There can be a special track at the conference in which students can present papers or showcase posters on STEM subjects.

Organizing a conference with us will provide an opportunity to gain exposure among our dedicated readership base and network with other influential professionals in the industry. We are committed to publishing a special issue on proceedings of the conference for the rapidly growing community of aspiring scientists, technocrats, engineers, and mathematicians.

Let's work together towards inspiring the next generation of STEM enthusiasts! If you are interested in volunteering as an organizer or a team member, please feel free to reach out by filling out the form at our website address:

<https://entechonline.com/join-us/submit-conference-proposal/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

Editorial Team

Call for News / Announcements

Calling for News / Announcements for our monthly magazine, ENTECH. ENTECH is a magazine dedicated to inspiring and empowering budding scientists, technocrats, engineers, and mathematicians in the age group of 13 to 17. Our aim is to provide valuable resources and insights to students who aspire to pursue a career in these fields.

All stakeholders in STEM education can share information with us about new discoveries, technological advancements, upcoming events or competitions, educational opportunities, admission schedule, entrance examination schedule, or any other relevant updates by filling out the form at our website address:

<https://entechonline.com/contact-us/submit-news/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

Editorial Team

Advertise with us!

**Are you a stakeholder in the world of STEM education, such as
book publishers, EdTech companies,
career counsellors,
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universities,
scientific equipment manufacturers/resellers,
scientific DIY kit manufacturers/resellers,
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scientific app developers,
computer coding institutes,
summer/winter training camp organizers,
scientific workshop organizers,
vocational training institutes and others alike?
Look no further!**

ENTECH is a cutting-edge publication specifically designed to inspire and empower young minds aged 13 to 17 in the fields of science, technology, engineering, and mathematics (STEM).

With a dedicated focus on teenagers and their passion for science, technology, engineering, and mathematics (STEM), ENTECH Magazine offers you a unique opportunity to showcase your products and services directly to this highly influential demographic.

Not only do we offer prime advertising space within our digital publication, but we also provide opportunities for sponsorships and partnerships.

Don't miss out on this unique opportunity to connect with the future leaders of innovation.

Contact us today by filling out the form available on our website at address:

<https://entechonline.com/contact-us/advertise-with-us>

Let's discuss how we can tailor an advertising package that suits your specific goals and budget.

We would be happy to provide more information and answer any questions you may have.

**Warm regards
Director
Coneixement INDIA (OPC) Pvt Ltd, Pune**

Calling nominations for “APP of the month”

Don't miss out on reaching the next generation of innovators!

Introducing ENTECH Magazine, the ultimate platform for inspiring and empowering young minds in the fields of STEM! We are calling nominations for proposed "APP of the Month" feature, providing an exclusive opportunity for your product or service to directly reach and engage with the highly influential teenage demographic.

With a dedicated focus on teenagers and their passion for science, technology, engineering, and mathematics, ENTECH Magazine is at the forefront of providing captivating content that educates and excites. Our publication is a trusted resource for young minds aged 13 to 17, offering them a chance to explore the latest advancements in STEM.

By being featured as our "APP of the Month," you will gain unparalleled exposure to a targeted audience hungry for innovative solutions. Imagine the impact your product or service could have on shaping the future of these aspiring scientists, engineers, and tech enthusiasts!

Don't miss out on this incredible opportunity to showcase your offerings directly to this influential demographic. Join us at ENTECH Magazine and position your brand as a leader in inspiring the next generation of STEM enthusiasts. Nominate your app today by filling out the form available on our website at address:

<https://entechonline.com/contact-us/submit-app-of-the-month/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

**Editorial Team
ENTECH Digital Magazine**

Calling nominations for “Book of the month”

Don't miss out on reaching the next generation of readers!

Introducing ENTECH Magazine, the ultimate platform for inspiring and empowering young minds in the fields of science, technology, engineering, and mathematics (STEM).

Our mission is to provide teenagers aged 13 to 17 with valuable content that fuels their curiosity and passion for these subjects.

With a dedicated focus on this influential demographic, ENTECH Magazine offers you an unparalleled opportunity to showcase your publication directly to the next generation of innovators.

We are currently calling for nominations for our “Book of the Month” feature. This is your chance to get your book in front of thousands of young readers who are eager to expand their knowledge and explore new ideas. Our readers trust us to curate the best content that aligns with their interests and aspirations.

Don't miss out on this incredible opportunity! Submit your nomination today and let us help you reach a passionate audience of young minds hungry for knowledge. Together, we can inspire the next generation of STEM leaders.

You can nominate your book by filling out the form available on our website at address:

<https://entechonline.com/contact-us/submit-book-of-the-month/>

We would be happy to provide more information and answer any questions you may have.

Warm regards

**Editorial Team
ENTECH Digital Magazine**

