



NANOTECHNOLOGY

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ABSTRACT

At present nanotechnology plays a major role in the world. It is used by producing minute particles with the help of technology. Through this, we can do many works that are not possible by humans. It is widely used in medical and industrial fields. It consists of matter of an atom, molecule, and supramolecular scale for industrial purposes. It is also used in textiles, material science, computer devices, sports, and environmental conservation.

1. INTRODUCTION

Nanotechnology is otherwise known as nanotech. It is the combination of matter on an atom, molecule, and supramolecular scale for industrial purposes. This was first used by the Japanese scientist Norio Taniguchi of Tokyo university in 1974, to tell about the semiconductor processes which consist of thin-film deposition and ion beam. The development of this concept has taken a longer period.

It is referred to as the particular technological goal of precisely manipulating atoms and molecules for the use of fabricating macro scale products, hence this is known as molecular technology.

The national nanotechnology Initiative first established the generalized description of nanotechnology, which defined the matter as at least one dimension sized from 1 to 100 Nanometers.

It deals with surface science, molecular biology, semiconductor physics, micro fabrication, engineering, and molecular engineering. Nanoscale was invented with the dimensions to direct the flow of matter on the atomic scale. Nowadays it is widely used in textiles, material science, hardware, sports, environmental conservations, industries, and medicines.

2. APPLICATION OF NANOTECHNOLOGY

- Food industry
- Electronic devices
- Medical field
- Textile and fabrics
- Automobiles
- Sports equipment

These are the fields where nanotechnology is widely used. From this, let us see the role of nanotechnology in various fields.

2.1 FOOD INDUSTRY:

Herewith the help of nanotechnology, the nanoparticles like silver mixed with polymers are used to prevent the food by the way of packaging. By this, we can prevent the food for a longer time. It can be prevented by dust particles. By this, we can protect the texture of food, appearance, taste, nutritional values, etc.

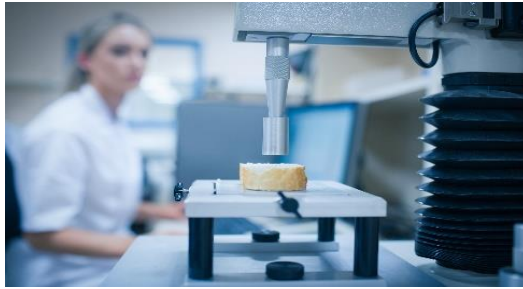


Fig 1: Nanotechnology in the food industry

2.2 ELECTRONIC DEVICES:

Nowadays technologies are improving faster compared to the early 2000s. For instance, in the early 2000s, we had bulky television which is used for our entertainment purpose but after 10 years smart tv was invented, followed by smartphones, then smartphones were further upgraded to the smartwatch. these are done with the use of nanoparticles like graphene, which looks like a thin material and lightweight, these are invented with the help of nanotechnology.

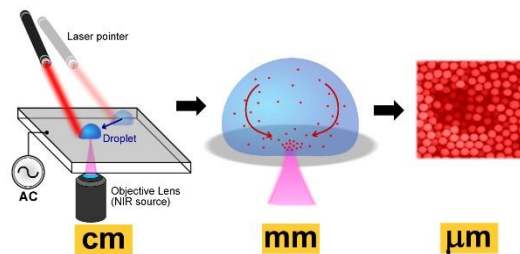


Fig 2: Nanotechnology in Electric fields.

2.3 MEDICAL FIELDS

Cancer treatment plays a major role in medical history. With the help of this surgical instruments are invented. With the help of this doctors will treat the patients by allowing the medicine to intervene in a controlled and sophisticated way, and destroys the cancer cells. The device is connected with the computer and numerous binding settings to identify the concentration of the particular molecular, and delivery of some toxin that could be selectively unrestricted and able to destroy the cell which is recognized as cancer.



Fig 3: Nanotechnology in Medical Fields.

2.4 TEXTILE AND FABRICS:

In the textile industry minute, craftworks are done with the help of nanotechnology, for example, in sarees embroidering work is done with laser work. Some of the specialized fabrics are made with nano-sized particles like silver and titanium, these are used to make a piece of cloth, wrinkle, etc.



Fig 4: Nanotechnology in the Textile and fabrics.

2.5 AUTOMOBILES:

In day-to-day life, Each day is upgraded one new model of vehicle which is smarter compared to the previous model, and then it is introduced in the market. For example, the motor company is upgrading the light system by removing normal brake lights and fixing the LED lights, and then they are upgrading the level of tires in the form of tubeless by using the various polymer nanocomposites, and in-car fluids tungsten nanospheres are used for the mechanical purposes.

GPS sensor was introduced in form of nanoparticles. By fixing it, we can track the item's location where it is located.

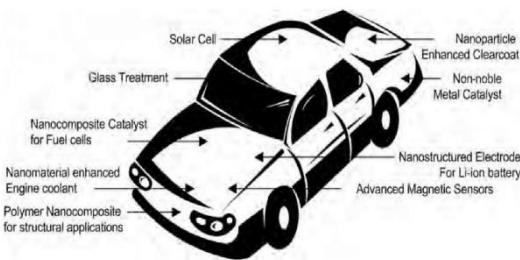


Fig 5: Nanotechnology in Automobiles

2.6 SPORTS EQUIPMENT:

In present sports, the field is improving compared to the early 1990s, by introducing new techniques, equipment, etc with the help of technology. Sensors are introduced in sports to track speed, voice recording, decision making, etc.

For example, In cricket, a minute chip was placed inside the ball which can track the speed of the ball, and the bat which can calculate its hitting power. The most important invention was the introduction of the Decision-making system(DRS) in modern sports day, which plays a major role to solve the decision errors made by umpires and referees on fields.



Fig 6: Nanotechnology in Sports Equipment

3. DAY-TO-DAY LIFE

In day-to-day life, the products which we use are made with the help of nanotechnology. For example, products like cosmetics, pharmaceuticals, powdered food, and sunscreen are made up of nano-sized particles.

4. ADVANTAGES OF NANOTECHNOLOGY

- It created a new type of change in electronic commodities
- Dangerous viruses were killed in the medical field.
- Energy can be generated
- Diagnostic equipment was improved.
- Nano-sized particles created a huge revolution in the modern world.

5. DISADVANTAGES OF NANOTECHNOLOGY:

- It created a deep impact on the environment.
- Due to this unemployment may prevail.
- Economical imbalance may occur
- Hazardous weapons can be easily accessed by enemies.
- It forms a negative impact on human health.

6. CONCLUSION

It created a huge impact in the modern world. Upgrade level of equipment and technology was invented and solved many mysterious problems. Many humans benefited from using this technology.

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