NANOTECHNOLOGY

PREPARED BY:

Vishesh bilwal (10)
Shradha Gandhi (21)
Amrita Harjani (24)
Mukti Mehendale (46)
Krupa Mehta (49)
Pinky Mehta (50)
S.Y.BBA (1)
GROUP NO: 06
What is Nanotechnology?

Manufacturing materials, devices and machines at the nanometer, or atomic/molecular, scale.
Nanoscale

1 meter = 100 centimeter

1 meter =

1000 millimeter

1 m =

10000000 micrometer

1 m = 10^9
How Nanotechnology Works

- Ranges between 1 nm to 100nm
- Atomic force microscope
- Arrange carbon atoms in different way
- Enables to alter the properties of materials
Historical Development

1867 - James Clerk Maxwell

During the first decade of the 20th century - Richard
Conceptual Origin

"plenty of Rooms at the Bottom" - Richard Feynman 1959

Term was defined by Norio in 1974
USES OF NANOTECHNOLOGY

BY:
AMRITA HARJANI (24)
What a technological advancement is!

Nanotechnology has a board range of predicted uses:

• Ranging from micro surgery to repairing cells
• Building specific products from their components in industrial chemical manufacture.
• It also has major implications in the realm of computing.
• STRONG SCREWS

An **example** of this may be within repairing broken bones.

• MILITARY USES

The use of them can be classified in four ways:

1) Damage to The Lungs

2) Other Entry Methods

3) No Natural Immunity & Nano Bomb
Nanobots drilling into a tumor.
An IBM Logo made with 35 Xenon atoms

IBM Deskstar 25GP has the world's highest areal density (3.74 billion bits) or bits per square inch of any desktop PC hard drive.
Nano Getar - $5 \times 10^{-7}\text{m} = 500\text{nm}$ long
Hairjacks

Nano Gears

NASA Ames

Hydrogen Benzyne Molecule

NanoGear
Nanocomposites

Examples:

• A plastic nanocomposite is being used for "step assists" in the GM Safari and Astro Vans.

It is scratch-resistant, light-weight, and rust-proof, and generates improvements in strength and reductions in weight, which lead to fuel savings and increased longevity.
Nanocrystals

Examples:

Metal nanocrystals might be incorporated into car bumpers, making the parts stronger, or into aluminum, making it more wear resistant.

Metal nanocrystals might be used to produce bearings that last longer than their conventional counterparts, new types of sensors and components for computers and electronic hardware.
End???

- Do you feel this is the end???
- I guess it's not...
- This is just a beginning...
- But what next...
Next one
• The next thing in my mind is Picotechnology.
• Don’t you think that we are suppose to try for the same?
• Pico is nothing but 0.01 Å of the distance, which means thousandth part of the nano.
• This is what Indian scientists should be looking for.
“Success will require the most advanced equipment and the most skilled engineers. There will be big expenses, but there will be huge rewards”...
IMPLICATIONS OF NANOTECHNOLOGY

MADE BY: KRUPA MEHTA
SY DIV: 1
ROLL NO.: 49
The implications of nanotechnology run the gamut of human affairs from the medical, ethical, mental, legal and environmental, to fields such as engineering, biology, chemistry, computing, materials science, military applications, and communications.

1. Health implications of nanotechnology:

   i. Nanotoxicology

   ii. Nanomedicine
2. **Environmental implications:**

- *Nanopollution* is a generic name for all waste generated by nanodevices or during the nanomaterials manufacturing process. It is probably one great challenge to nanotechnology: how to deal with its nanopollutants and nanowaste.

Potential to benefit the environment:

- *Nanofiltration*

- *Research* is underway to use nanomaterials for purposes including more efficient solar cells, practical fuel cells, and environmentally-friendly batteries.
3. **Regulation of nanotechnology**
   - Whether nanotechnology or nanotechnology-based products merit special government regulation?
   - The Material Safety Data Sheet that must be issued for certain materials.
   - The development of comprehensive regulation of nanotechnology will be vital to ensure that the potential risks associated with the research and commercial application of nanotechnology do not overshadow its potential benefits.

4. **Societal implications:**
   - Potential benefits and risks for developing countries

5) **Implications of molecular nanotechnology:**
FUTURE OF NANOTECHNOLOGY

BY:
PINKY MEHTA
ROLL NO:50
"Nano" is becoming an increasingly trendy term in science fiction and popular culture, but this is not without reason.

The truth is that the likely future of all technology will look like something out of present-day science fiction because of the remarkable abilities of nanoscale objects.

Advances in micro and nanotechnology has significantly influenced the growth of next generation sensors which are small in size, consume less power, have better specificity and low weight.

Current products of nanotechnology are much more ordinary – reinforced plastics for the body of bicycles, stain-resistant clothes, better cosmetics and healthcare products, and tennis rackets reinforced with carbon nanotubes.
• Some authors who discussed the future of nanotechnology differentiate between *incremental nanotechnology*, *evolutionary nanotechnology*, and *radical nanotechnology*.

• An emerging field within nanotechnology is known as *bionanotechnology*, which is a synthetic technology based on the principles and chemical pathways of living organisms.

• If nanotechnology were to follow the paths of other new technologies (digital communications, the Internet) the early predictions – for the first ten years – would tend to overestimate the impact of the technology (much less is achieved compared to predictions); the long-term prediction – for the first 50-75 years – would tend to underestimate that impact (much more is achieved compared to predictions).
EXAMPLES

- FUTURE PAPER MADE BY USING NANOTECHNOLOGY

- FUTURE CAR MADE BY USING NANOTECHNOLOGY
References

- Google.com
- Wikipedia
- www.bowlesphysics.com
THANK YOU