



## INVESTIGATING THE SCOPE OF NANOTECHNOLOGY : A REVIEW

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**Abstract:-** Nanotechnology is manipulation of matter on an atomic, molecular, & supra molecular scale. Earliest, widespread description of nanotechnology referred to particular technological goal of precisely manipulating atoms & molecules for fabrication of macro scale products, also now referred to as molecular nanotechnology. These devices could be recycled. They could be reused and they reduce environmental stress. These devices needs less power. Nano devices are mobile as well as light weighted. They are required in order to develop display devices that better picture quality.

Keywords:-Nanotechnology, Manipulation, Molecular,

ISSN : 2278-6848



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Research Publication and Seminar

### [1] INTRODUCTION

Nanotechnology is manipulation of matter on an atomic, molecular, & supra molecular scale. Earliest, widespread description of nanotechnology referred to particular technological goal of precisely manipulating atoms & molecules for fabrication of macro scale products, also now referred to as molecular nanotechnology.

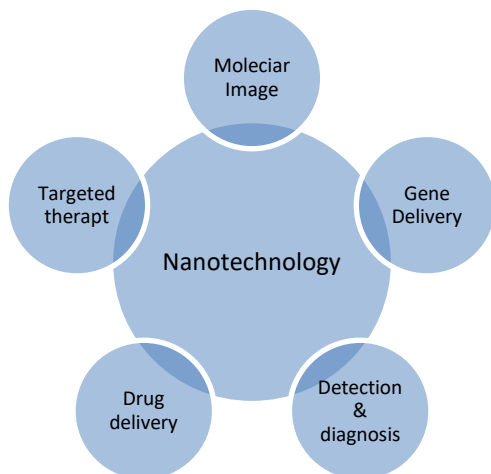


Fig 1 Nanotechnology

A more generalized description of nanotechnology was subsequently established by National Nanotechnology Initiative, which defines nanotechnology as manipulation of matter with at least one dimension sized from 1 to 100 nanometers. This meaning mirror information that quantum mechanical result are important at this quantum realm scale, & so definition shifted from a particular technological goal to a research category inclusive of all types of research & technologies that deal with special properties of matter which occur below given size threshold. It is familiar to see plural form nano technologies as well as nano level technologies to pass on to broad range of scanner & supplications whose common trait is size.

### [2] FUNDAMENTAL CONCEPTS

Nanotechnology is engineering of useful systems at molecular level. This covers both present work & concepts that are extra advanced. In unique sense,



nano technology submit to projected capacity to construct project from bottom up, using techniques & tools being developed today to make complete, high performance products. To set that scale in one more context, relative size of a nanometer to an indicator is same as that of a marble to range of earth. Or one more way of putting it: a nanometer is sum an average man's fuzz grows in time it takes him to raise razor to his face.

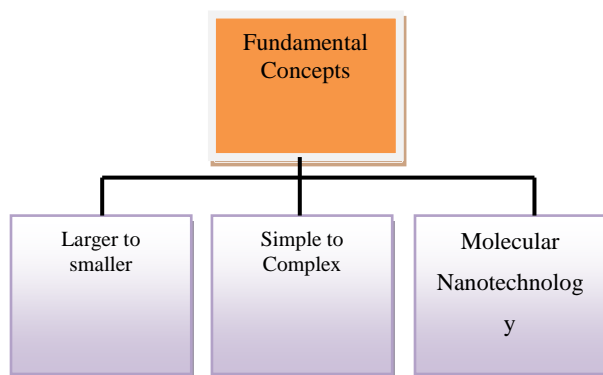


Fig 2 Fundamental concept

Two main approaches are used in nanotechnology. This methods, equipment & expedient are built from molecular components which assemble themselves chemically by principles of molecular recognition. This approach, some objects are built from big body without atomic level control.

### 1. Larger to smaller

Image of reconstruction on a clean Gold surface, as visualized using scanning tunneling microscopy. Positions of individual atoms composing surface are visible.

Several phenomena become pronounced as size of system decreases. Se includes statistical mechanical

effects, as well as quantum mechanical effects, for example quantum size effect where electronic properties of solids are altered with great reductions in particle size.

### 2. Simple to complex

Modern synthetic chemistry had reached point where it is possible to prepare small molecules to almost any structure. Se methods are old today to fabricate a wide diversity of useful chemicals like pharmaceuticals or saleable polymers. This aptitude raises question of extend this kind of manage to next-bigger level, seeking methods to assemble these only molecules into supra molecular assemblies consisting of more molecules arranged in a well defined manner.

### 3. Molecular nanotechnology

Molecular nanotechnology, sometimes called molecular manufacturing, describes engineered nano systems operating on molecular scale. Molecular nanotechnology is especially associated with molecular assembler, a machine that could produce a desired structure or device atom-by-atom using principles of mechanizing thesis.

## [3] LITERATURE REVIEW

**Mrs. S.P. Tondare (2001) Nanotechnology & Its Advent in Electronics & Communication Networks. [1]**

Objective of research was to study scope of nanotechnology. They studied basics of coherent switching & interferences & discussed quantum pots as well as electronic waveguides. They briefly looked at some problems in implementation of switching systems. Conclusion of Research is that a light was thrown on emerging commercial applications of nano-electronics.

**Atsushi Ogasawara (2004) Applying Nanotechnology to Electronics [2]**

Technologies of nano level materials & in a thin intelligence technologies that handle matchless phenomena that arise in 10 to 100 nm size range. Materials of these sizes have been prepared using two techniques, top down & bottom-up methods. top down method is applied to process macro -scale materials into smaller sizes just as in semiconductor process.

**Sumreder Prospects (2007) Nanotechnology in Electrical Power Engineering [3]**

Main interest of nanotechnology is not electrical power engineering but there were a lot of possible applications to improve electrical, mechanical, thermal or chemical properties of electric power equipment. Often economic facet is sharp out, but also a upper effectiveness or a decrease of losses predicts this latest technology a successful appearance in power engineering. In this research state of art in nanotechnology, possibilities & applications in electric power engineering were investigated.

**Alain De Neve Military (2011) Uses of Nanotechnology & Converging Technologies [4]**

Military system that could effect from improve in nanotechnology & congregated technologies have been rarely discussed by scholars & political-military planners. Though NT holds great promises, it also poses grave risks for international security & future military balances.

**Kuldeep purohit (2012) Fresh Advances in Nano technology [6]**

Nanotechnology is ahead significance rapidly as a most powerful technology. Its immense potential promises possibility of significant changes in near term future, once most essential machines -called Universal Assembler & Nano computer are built. Present research aims to reviews previous work done & recent advancements in field of nanotechnology.

**Inderdeep Singh Bhatia (2013) Microelectronics to Nano electronics[9]**

This research talks about various candidate technologies that were approached for purpose of miniaturization. It tells about pros & cons for every candidate technologies which were researched to succeed throne of present day silicon based technology. These nano materials suggested are smaller in size & exhibit properties of self assembly & self recognition.

**[4] ADVANTAGE OF NANO TECHNOLOGY**

We talk about most successful technology till now in world of scientific industry then nanotechnology is name which blinks in mind. Some of its dynamic & mind-shaking features are described below.

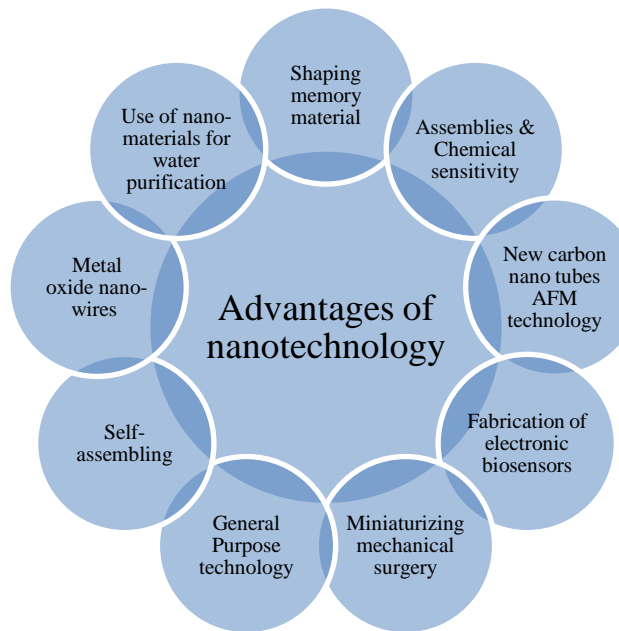


Fig 3 Advantage of Nanotechnology

This technology had wonderful features, which are not present in any other technology. Phenomena, which were not possible few years back, are now easily implemented with help of nanotechnology.

## [5] LIMITATIONS OF NANOTECHNOLOGY

1. The biggest problem with this is cost effectiveness. But that could change with new material. But chemists have found a way to make cheap plastic solar cells flexible enough to paint onto any surface & potentially able to provide electricity for wearable electronics or other low power devices.

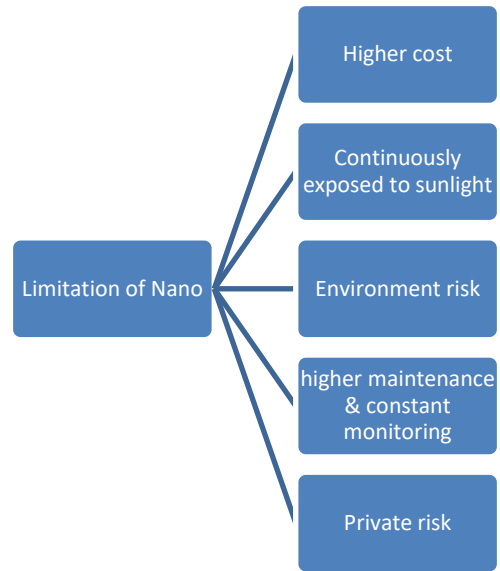


Fig 4 Limitation of Nano

2. Relatively shorter life span when continuously exposed to sunlight.
3. Could possibly require higher maintenance & constant monitoring.
4. Employment estimates are only as good as estimates of nano stakeholder population. Estimates dependent on firm disclosure of nano related activities.
5. Without survey or US census micro data, employment estimates are dependent on secondary sources.

## [6] OBJECTIVE

The objective of his research is to make study of nano technology.

Here we would make comparative analysis with performance of traditional technologies with modern technology.

The base for comparison is performance, power consumption, and Heat generation, Technical



feasibility of implementation, portability & Limitation of traditional technologies.

## [7] FUTURE SCOPE

Microelectronics technology at combination within silicon is plastic to simple rolling up of circuits that needs a lesser amount of power & they could be manufactured at a fraction of cost involved at making semiconductor chips. Nanotechnology has been number of upcoming filed of notice where number of research is leaving on to manufacture microelectronic components on plastic substrates which would allow manufacturing of gadgets through just printing process. Nanotechnology is to manipulate of client's electronics & principal form root for main progression at design of electronic circuits & manufacture of printed circuit boards. Era of polymer electronics had taken a great start & all technological companies have turned their entire research towards nanotechnology.

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