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A REVIEW OF NANOTECHNOLOGY APPLICATIONS

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ABSTRACT

A basic clarity: **Nanotechnology is the engineering of functional systems at the molecular scale**. [1] This covers both in progress work and concept that are more superior. In its unique sense, 'nanotechnology' refers to the projected knack to construct items from the bottom up, using system and tools being developed today to make complete, high show products.

Nanotechnology, or, as it is sometimes called, molecular manufacturing , is a division of engineering that deals with the design and manufacture of enormously small electronic circuits and mechanical devices built at the molecular point of matter. The Institute of Nanotechnology in the U.K. expresses it as Science and Technology where tolerances and capacity in the range of 0.1 nanometer (nm) to 100 nm play a grave role.

Nanotechnology is frequently talked about collectively with micro-electromechanical systems (MEMS), a subject that usually contains nanotechnology but may also include technologies superior than the molecular level.

The properties of artificial products depend on how those particles are arranged. If we know about exactly how many doping atoms are in a single transistor and exactly where each individual doping atom is located and placed roughly the right number in roughly the right place, we can make a working transistor.

Artificial systems able to make a wide range of no biological products like diamond beneath programmatic control are likely to be more brittle and less adaptable in their response to changes in their environment than organic systems. At the same time they should be simpler and easier to design.

Thus the progress of technology around the world has previously known us more precise, less expensive manufacturing technologies that can make an extraordinary

assortment of new products. Everything requires the computer is a major reason why people should research and develop Nanotechnology.

1. THE NARRATION OF NANOTECHNOLOGY

The Narration of Nanotechnology traces the growth of the concepts and investigational work falling under the broad group of nanotechnology. [2] Although nanotechnology is a relatively recent development in scientific study, the improvement of its central concepts happens over a longer period of time. The initial ever concept was presented in 1950 but the famous professor of physics Dr .Richard P. Feynman. In 1974 the Term "NanoTechnology" had been coined by Norio Taniguichi.

The form of nanotechnology in the 1980s was reasoned by the convergence of experimental proceed such as the invention of the scanning channel microscope in 1981 and the innovation of fullerenes in 1985, with the clarification and popularization of a conceptual framework for the objectives of nanotechnology beginning with the 1986 publication of the book Engines of making.

The field was subject to growing public awareness and argument in the early 2000s, with famous debates about both its potential implications as well as the possibility of the applications imagined by advocates of molecular nanotechnology, and with governments affecting to promote and fund research into nanotechnology.

The early 2000s also saw the early stages of commercial submission of nanotechnology, although these were limited to mass applications of nanomaterials rather than the transformative relevance envisioned by the field.

2. CONFLICTING DEFINITIONS

Regrettably, conflicting definitions of nanotechnology and blurred distinctions between significantly different fields have intricate the effort to appreciate the differences and build up sensible, effective policy. [3]

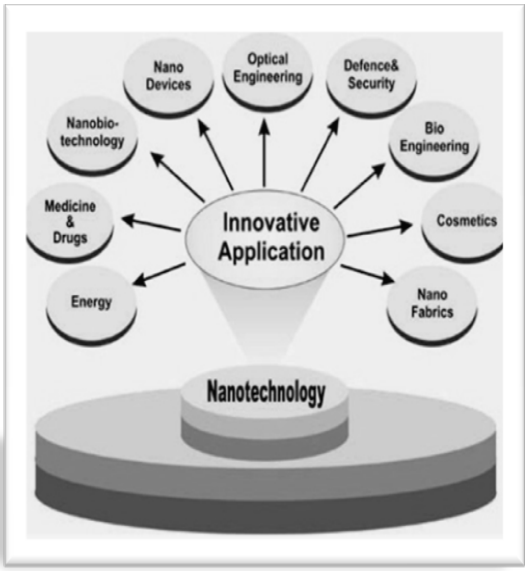
The risks of today's nanoscale technologies (nanoparticle toxicity and so on.) cannot be treat the same as the risks of longer-term molecular manufacturing (economic disturbance, unstable arms race, etc.). It is a error to put them jointly in one basket for policy consideration each is significant to address, but they offer unusual problems and will require different solutions.

3. COMMON-PURPOSE TECHNOLOGY

Nanotechnology is sometimes referred to as a common purpose technology. [4] That's because in its tremendously developed form it will have significant collision on almost all manufacturing industries and all areas of society. It will offer better built, cleaner, longer lasting, safer, and smarter products for the residence, used for communications, used for medicine, used for transportation, for agriculture, and for production in general.

4. APPLICATION OF NANO TECHNOLOGY

- MEDICINE OF NANO TECHNOLOGY[5]
- NANO BIO-TECHNOLOGY
- GREEN NANO-TECHNOLOGY
- ENERGY RELEVANCE OF NANO-TECHNOLOGY
- INDUSTRIAL RELEVANCE OF NANO-TECHNOLOGY
- POTENTIAL RELEVANCE OF CARBON NANO TUBES
- NANO-ART



4.1. NANO MEDICINE

Nanomedicine is the claim of nanotechnology (the engineering of small machines) to the anticipation and treatment of disease in the human body. [6]This evolving discipline has the possible to dramatically change medical science.

Recognized and near-future nanomedicine applications include activity monitors, chemotherapy, needleless injectors, pacemakers, biochips, insulin pumps, OTC tests, nebulizers, hearing aids, medical flow sensors and glucose monitoring ,blood pressure and drug delivery systems.

4.2. GREEN NANOTECHNOLOGY

Green nanotechnology refers to the make use of of nanotechnology to enhance the environmental sustainability of method producing unconstructive externalities.[7] It moreover refers to the use of the foodstuffs of nanotechnology to improve sustainability. It includes making green nanoproducts and via nanoproducts in maintain of sustainability.

Green nanotechnology has been explained as the improvement of clean technologies, To minimize potential ecological and human health risks related with the produced and use of nanotechnology products, and to persuade replacement of existing products with new nanoproducts that are extra environmentally friendly throughout their lifecycle.

4.3. ENERGY RELEVANCE OF NANOTECHNOLOGY

New nanotechnology submission is happening in the energy sector. Better energy manufacture, transmission storage, and usage are probable with nanotechnology. [8]

Nanotechnology refers to any technology that includes mechanism that is lesser than 100 nanometers. A nanometer is one billion of a meter. A sole of virus measures just regarding 100 nanometers. Science and trade are working to expand new nanomaterials in the energy sector that may improve energy efficiency, consumption, conversion, storage, and better renewable energy sources

4.4. INDUSTRIAL RELEVANCE OF NANOTECHNOLOGY

Nanotechnology is impacting the field of customer goods, several products that incorporate nanomaterials are already in a variety of items; a lot of which people do not even realize contain nanoparticles,[9] goods with work of fiction functions assortment from easy-to-clean to scratch-resistant.

Examples of those car bumpers are made lighter, sunscreen is extra radiation resistant, artificial bones are stronger, cell phone screens are lighter weight, clothing is more blemishes repellant, glass wrapping for snacks leads to a longer shelf-life, and balls for various sports are made more durable.

4.5. POTENTIAL RELEVANCE OF CARBON NANOTUBES

Carbon NanoTubes (CNTs) are cylinders of one or extra layers of grapheme (lattice). [10]Diameters of (SWNTs) Single-Walled Carbon NanoTubes and (MWNTs) Multi-Walled Carbon NanoTubes are typically 0.8 to 2 nm and 5 to 20 nm, respectively, although (Multi-Walled Nanotubes) MWNT diameters can go over 100 nm. Carbon nanoTubes lengths range from a smaller amount than 100 nm to 0.5 m.

Individual carbon nano tubes walls preserve be metallic or semiconducting depending on the orientation of the lattice with reverence to the tube axis, which is called chirality. MWNT's cross sectional area offers an elastic modulus impending 1 TPa and a tensile strong point of 100 GPa, over 10-fold higher than any manufacturing fiber. MWNTs are normally metallic and can carry currents of up near 10^9 A cm^{-2}. SWNTs can display thermal perform of 3500 W m^{-1} K^{-1}, exceeding that of diamond.

4.6. NANOFINE ART

The Introduction of NanoFineArt for Kids needs the inclusion of interactive learning. Modules of the visual essentials for different age groups to be understand the science of the nano arts. [11] There are very small universe that can only be analysis through very powerful microscopes. Since the nanoscience has not been initiated in a lot of schools globally, this module Contains links to a few selected locations where the children can discover either on their Own or with parents/teachers to develop their knowledge base before attempting to Create their NanofineArt project.

5. CONCLUSION

As a conclusion to this part I would like to say that Nanotechnology is a brand new technology that has just start on, it is a world-shattering science that will change all what we knew before. [12]The future that we were surveillance just in science imaginary tale movies will in the near future be real. This new knowledge wills first of all, keep us well because of nanorobots that will be repair the every damage that we have in our body.

6. WHAT INFERENCE DOES IT HAVE FOR THE FUTURE?

There are many different inferences that nanotechnology has for the future. Some of these inferences are good, while others will not benefit us. [13]On one side, nanotechnology can eventually improve and make our present technology finer and stronger, or could open up

doors for newer technology. On the further hand, no one knows yet the outcome or the consequences of what capacity happen when we persevere with this scale of technology, or what it could do to us and the environment.

Through nanotechnology, we could also develop computer chips by up to 1 billion times the worth. This would mean 'super computers' for almost everyone and a lot more space on all constrains. Also, relating back to the first section of this essay (about the Science Fiction): nanobots- self-assembling bots (or cars, etc).

REFERENCES:

1. https://en.wikipedia.org/wiki/Nanotechnology

2. https://en.wikipedia.org/wiki/History_of_nanotechnology

3. http://www.crnano.org/whatis.htm

4. http://www.123helpme.com/nanotechnology-and-its-purpose-view.asp?id=159181

5. "Nanotechnology Information Center: Properties, Applications, Research, and Safety Guidelines". American Elements, Retrieved 13 May 2011.

6. Nanomedicine, Volume I: Basic Capabilities, by Robert A. Freitas Jr. 1999, ISBN 1-57059-645-X

7. http://www2.mst.dk/udgiv/publications/2006/87-7052-216-2/pdf/87-7052-217-0.pdf

8. http://www.nanowerk.com/nanotechnology-in-energy.php

9. https://en.wikipedia.org/wiki/Industrial_applications_of_nanotechnology

10. https://en.wikipedia.org/wiki/Potential_applications_of_carbon_nanotubes

11. Art- Microsoft Word – NanoArt for Kids Interactive Learning Module .doc

12. http://student-nanotechnology.blogspot.in/2011/03/conclusion.html

13. http://www.essayforum.com/writing/nanotechnology-implications-future-polishing-15787/