

A REVIEW OF NANO STRUCTURE WITH TWO PROBES METHOD

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Abstract: Nanotechnology has been considered engineering of significant systems. This engineering is performed at molecular level. It follows both aspects present work and concepts. Therefore it is extra advanced. Here the review of nontechnology with two probes method has been proposed here. Nano technology is having projected capability to develop project from bottom up. These are developed today to accomplish products with high performance. There are several researchers who proposed the research work in the field of Nanotechnology Applications. Here existing researches related to nanotechnology have been discussed .This technology is based on concept of Nano arrangements of machines to explore new components from existing ones. The research would withdraw conclusion and discuss the scope of research according to results and discussion.

Keywords: Nanotechnology, Molecular Electronics, CMOS, Molecular junction



[1]INTRODUCTION

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. [10].

of Nanotechnology applications. Scan listings below to find an application of interest, or use navigation bar above to go directly to page discussing an application of interest.

Information Technology: Smaller, faster, more energy efficient and powerful computing and other IT based system.

Energy: More efficient and cost effective technologies for energy production

Solar cells: - Companies have developed Nanotech solar cells that could be manufactured at significantly lower cost than conventional solar cells.

Fuel cells: - Nanotechnology is being used to reduce cost of catalysts used in fuel cells to produce hydrogen ions from fuel such as methanol and to improve efficiency of membranes used in fuel cells to separate hydrogen ions from other gases such as oxygen.

Batteries: Companies are currently developing batteries using Nano materials. One such battery would be a good as new after sitting on shelf for decades. Another battery could be recharged significantly faster than conventional batteries.

Bio fuels: Nanotechnology could improve performance of catalysts used to transform vapors escaping from cars or industrial plants into harmless gasses.

Medicine: Researchers are developing customized Nano particles size of molecules that could deliver drugs directly to diseased cells in patient body. When it's perfected, this method should greatly reduce damage treatment such as chemotherapy does to a patient's healthy cells.[6]

Consumer Goods: Nanotechnology is having an impact on several aspects of food science, from how food is grown to how it is packaged.

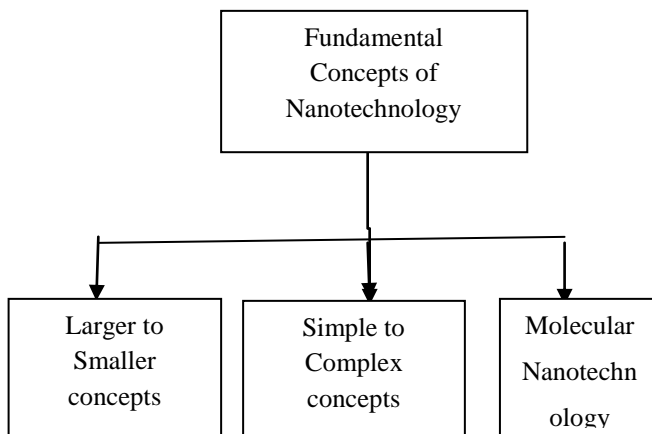


Fig 1 Fundamental Concepts of Nanotechnology

APPLICATION OF NANOTECHNOLOGY

The Understanding Nanotechnology Website is dedicated to providing clear & concise explanations

[2]CURRENT RESEARCH TRENDS

Nanoelectronics are process of using nanotechnology in electronics. The concept is focusing on diverse set of devices and materials. These materials and devices have common characteristic. They are so small those inter-atomic interactions. The quantum mechanical properties are supposed to be considered. Such candidates consist of hybrid molecular/semiconductor electronics. It also considers one-dimensional nanotubes/nanowires. Example is Silicon Nanowires or Carbon Nanotubes. These examples are also consists of advanced molecular electronics.



Fig2 Research Trend of nanotechnology [15]

[3] LITERATURE REVIEW

There are several researchers who proposed the research work in the field of Nanotechnology Applications. Here existing researches related to nanotechnology have been discussed.

Mobasser, Shariat and Firoozi, Ali. (2016) Review of Nanotechnology Applications in Science and Engineering. 6. 84-93. Nanotechnology is helping to considerably improve, even revolutionize, many technology and industry sectors: information technology, energy, environmental science, medicine, homeland security, food safety, and transportation, among many others.

C.R.K. Marrian (2001) Investing in nanotechnology. Summary form only given Nanotechnology is currently the focus of much investment in the USA and worldwide. In the USA, the federal government has an initiated a broad and ambitious program entitled the National Nanotechnology Initiative (NNI).

Bassam Alfeeli, Tariq Mohiuddin (2012) Current status of nanotechnology in Arab Gulf States. A growing number of nanotechnology research, education and industry initiatives have been recently launched by several Arab Gulf States to quickly build scientific capacity and track the worldwide developments in nanotechnology.

Prantosh K. Paul (2018) Nanotechnology Computing having special references to cloud computing and big data management: Techno managerial knowledge study. In this paper basics of Nanotechnology such as its applications in computing and information technology are well illustrated.

James E. Morris (2015) Laboratory course in nanotechnology. A new nanotechnology laboratory course is described with some results from its first pilot offering.

George W. Hinkal (2011) Engineering a change in cancer diagnosis and therapy through nanotechnology The Office of Cancer Nanotechnology Research is the centerpiece of nanotechnology funding leadership at the National Cancer Institute of the National Institutes of Health.

Mihail C. Roco (2010) Nanotechnology progress and future opportunities Nanotechnology has altered the concentrate. The industrial relevance as well as governance since 2000 is also converted. The research work has outlined the progress in foundational knowledge.

Mrs. S.P. Tondare (2001) Nanotechnology and Its Advent in Electronics and Communication Networks. Objective of research was to study scope of nanotechnology. Atsushi Ogasawara (2004) Applying Nanotechnology to Electronics Technologies that handle nano scale materials, and in a narrow sense, technologies that handle unique phenomena that arise in 10 to 100 nm size range.

Sumereder Prospects (2007) Nanotechnology in Electrical Power Engineering. Generally the economic aspect is pointed out, but also a higher efficiency or a reduction of losses predicts this new technology a successful appearance in power engineering. In this research state of art in nanotechnology

Alain De Neve Military (2011) Uses of Nanotechnology and Converging Technologies. Military applications that could result from advances in nanotechnology and converging technologies have been rarely discussed by scholars and political-military planners. Though NT holds great promises, it also poses grave risks for international security and future military balances.

R. D. Handy (2012) Nanotechnology in Fisheries and Aquaculture. The audience for this briefing research is professionals working in fisheries and aquaculture industries. Overall aim is to outline what nanotechnology and nano materials are, and then go.

Kuldeep purohit (2012) Fresh Advances in Nano technology. Nanotechnology is gaining importance rapidly as a most powerful technology. Its immense potential promises possibility of significant changes

in near term future, once most essential machines - called Universal

Anna Pratima G. Nikalje (2015) Nanotechnology and its Applications in Medicine. Nanotechnology is the study of extremely small structures, having size of 0.1 to 100 nm. Nano medicine is a relatively new field of science and technology. Brief explanation of various types of pharmaceutical nano systems is given. Classification of nano materials based on their dimensions is given.

James R. Heath (2003) et al proposed research on Molecular Electronics. Molecular gears that oscillate against each other as they are stimulated by the addition or removal of a single electron.

Ratner, Mark Introducing (2002) stated molecular electronics. Molecular electronics and optoelectronics depend for their existence on the molecular organization of space.

V Aradhya, (2013) introduced the Single-molecule junctions beyond electronic transport.[17]The idea of using individual molecules as active electronic components provided the impetus to develop a variety of experimental platforms to probe their electronic transport properties.

Kandil, Magy. (2016) did research on the role of nanotechnology in electronic properties of materials. Nanotechnologies promise to be the foundation of the next industrial revolution. What role can they play in electronic devices? This question has been raised, directly or indirectly, by various authors and institutions since the year 2000

S. Hassan M. Jafri,1,2(2015) proposed research on Nano-fabrication of molecular electronic junctions by targeted modification of metal-molecule bonds.

Reproducibility, stability and the coupling between electrical and molecular properties are central challenges in the field of molecular electronics. The field not only needs devices that fulfill these criteria

M. A. REED, provided research work on The Electrical Measurement of Molecular Junctions. We present the investigation of the electrical transport of metal/(organic molecule or monolayer)/metal junctions. Utilizing a novel mechanically controllable break junction to form a statically stable system,

Deb Newberry (2014) Nanotechnology: Exemplifying the essence of STEM education. The last several decades have seen nanoscience concepts move from research level students and educators to undergraduate level content. More recently, high school educators have used nanotechnology to ignite student interest in science

Deb M. Newberry (2012) A modularized approach to nanotechnology education: Opportunities, challenges and requirements. The discipline of nanoscale science

has evolved significantly over the last several decades. It has moved from equipment development and discovery at the molecular and atomic level to an increasing number of technology applications and product development.

[4]RESEARCH GAP

Many researchers presented researches on resonant electron tunneling through azurin in air and liquid by scanning tunneling microscopy. Some researchers have stated the current status of Nanotechnology in Arab Gulf States. A growing number of Nanotechnology research, education and industry initiatives have been recently launched by several Arab Gulf States to quickly build scientific capacity and track the worldwide developments in Nanotechnology. Many researchers discussed on Nanotechnology progress and future opportunities. Nanotechnology R&D has changed its focus, industrial relevance and governance since 2000 when was proposed in various national programs as a key science and technology development for 21st century. Nanotechnology is gaining importance 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. Authors have proposed investing in Nanotechnology to represent a redirection of existing budget lines.

[5]PROPOSED WORK

In proposed model Nano technology has been compared with traditional. 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.

Molecular Nanotechnology has been termed as technology that is dependent on ability to develop structures to complex, atomic specifications. It is performed using mechanosynthesis. It is different from Nanoscale materials.

Molecular Nanotechnology is quite different from Nano technology; it works at molecular level. It arranges & configures its devices & instruments atomically. This technology is based on concept of Nano arrangements of machines to explore new components from existing ones. It doesn't works on randomization of molecules but on systematic positioning of every single molecule.

[6]CONCLUSION

In scope of these new findings it seems possible that Nanotechnology solves present & coming problems & add new functionality to microelectronic circuits & systems. Nanotechnology creates a new & very promising technological area with new applications & products. Research on polymer electronics is not a fancy of well equipped laboratories which have too much time & money. Nanotechnology be one technology besides other for future electronic systems. The age of Nanotechnology electronic had begun. It is not primarily a replacement for existing electronic technologies, but opens up prospect of completely new applications that combine features of transistor, LED, detector & interconnect devices with freedom of design, flexibility and low cost of plastics.

[7]FUTURE SCOPE

The research work has considered the Modelling of charge transport using two probe methods. It would withdraw conclusion and discuss the scope of research according to results and discussion. The research work would provide the study the existing need and challenges in field of Nanotechnology. It would perform the comparative analysis of tradition work with proposed work in order to represent how proposed model is better than previous.

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