(The Relationship Between Electronic Nano Memory and Nano Structures) Testing The Effect of Quantum Confinement (Quantum Confinement)

Dr.Afshin Rashid , Assistant Professor

Faculty member Islamic Azad University of Science and Research Branch, Tehran

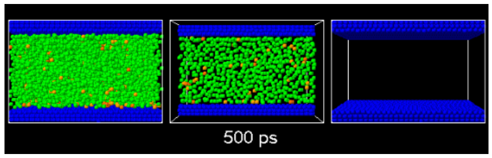
- **Abstract:**

- Nano structure electronic nanostructures are divided into four categories of zero-dimensional, one-dimensional, two-dimensional nanomaterials and three-dimensional bulky nanostructures, based on their dimensions, which are on the nano scale, which are divided by the above methods. They can be produced bottom-up or bottom-up. Due to their very small size, nanostructures show special properties and sometimes different from other ordinary materials in electrical conductivity.

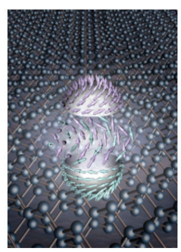
- **Keywords:** Nano Memory , Nanoelectronic , Electromagnetic material , Nano material

Introduction •

In general, nanostructures have three dimensions: length, width and height. If at least one of these dimensions is on the scale of nanotechnology (1-100 nanometers), it is called a nanostructured material. Nanostructures are divided according to how many dimensions they have on the scale of nanotechnology. One of these divisions is according to the number of free dimensions. Free dimension means a dimension that is not on the nano scale and can have any value.There are energy structures (alignment or strip) of materials along each dimension of length, width and height. In other words, every three-dimensional object has three separate energy structures along its three dimensions, the result of which expresses the energy structure of the entire material. Dimensions of nanostructures that are on the nanoscale have so-called quantum confinement. For example, thin layers that have discrete energy levels in one dimension. Quantum limitation means that due to the limitation of nanoscale dimensions, the energy bands become discrete, and the greater the limitation (the smaller the dimensions), the greater the distance between the energy levels. Therefore, one of the main differences of different types of nanostructured materials is the number of continuous energy bands and discrete energy levels in three dimensions, which leads to many changes in their purity.

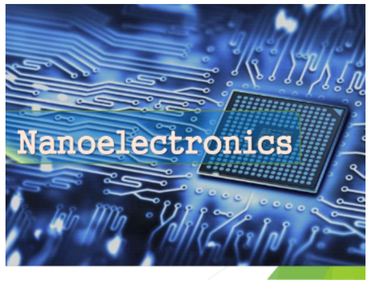


Electronic components can be produced by using nanoparticles under special conditions. This method is also suitable for producing memory and circuits with small dimensions. Nanoparticles are the most common elements in science and nanotechnology, and their interesting properties have made them widely used in chemical, medical and pharmaceutical, electronic and agricultural industries. According to the chemical composition, these particles are divided into metal, ceramic, polymer and semiconductor types. Chemical synthesis and solid state processes such as milling and vapor condensation are common methods for making nanoparticles. It is obvious to control the production process to reach nanoparticles with suitable properties, in this regard, to determine the characteristics of nanoparticles with the methods of microscopic and structural analysis and determining the size and surface, etc. Molecular junctions, which are usually created by sticking molecules to metal electrodes, are able to reduce the dimensions of molecular devices. These connections have a high potential to have the same behavior and function as common electronic components. These molecular devices can be a good substitute or supplement for common technologies and create new capabilities in these technologies.



- **(Nano Structure) is a final summary of the subject of Lindemann change (change structure) in electrical nanostructures.**

All the atoms in Nano Structures at any temperature allocate a certain amount of energy due to their fluctuations. The amplitude of this oscillation is not the same in all the atoms of the nanostructures. Moreover, the surface atoms have a larger range of oscillation due to the greater spatial freedom they have. In this way, the strange behavior of solids in reducing their melting temperature can be explained. When the average value of the atomic vibration range reaches a certain coefficient of the constant value of the network of nanostructures, these vibrations can no longer increase without damaging and destroying the nanoparticle network. Therefore, by increasing the average amplitude of vibrations to larger values, the nanostructures are removed from the crystal lattice and melt. Surface atoms have higher average fluctuations and if the number of surface atoms increases, they can have a clear effect on the average range of fluctuations of all atoms of the material. Therefore, by shrinking the dimensions of nanostructures until the ratio of the number of atoms on the surface to the number of atoms in the volume reaches a significant value, the average range of nanomolecular oscillations will increase significantly; In this situation, with the increase of the surface instability of the material, the melting temperature of Nano Nano Structures will decrease.



In the change (structure) of nano structures, Nano Structure is one of the natural thermal phenomena caused by the shrinking of the material structure, the thermal instability of nanoparticles. As you know, heat has energy E, which 03- the amount of energy is proportional to the temperature of the environment. This energy is equal to KBT. In this relation, KB is Boltermann's constant and a constant value equal to and T is the temperature in Kelvin. Therefore, when the nanostructures are placed in different environments, due to heat, the electrons are given energy (JK-0.01*0.33). Now consider a property of a particle that generally depends on (the volume of the nanoparticle V). The energy of this feature is U and a function of V. When the volume is small enough, so that KBT is greater than U, then the conditions will be thermally unstable. The important feature of all nanostructures is summarized in the fact that the number of (surface) atoms in them is proportional to The number of atoms (volume) is greater. This ratio increases with decreasing size (nanoparticle). Therefore, the size of the nanoparticle is considered its most important feature. The shapes and sizes of nanostructures are naturally determined based on their composition and formation conditions. The characteristics of the nanostructures, in turn, determine the originality of the characteristics of the nanostructures and their possible fields of operation. The range of 1 to 1000nm is introduced as the range of nanostructures, the important characteristic of nanostructures is the control of their processes. organization. The range of nanostructure activity change depends on the nature and shape of the nanostructure. However, if the energy of the nanoparticle field is comparable to the energy of electromagnetic radiation and if significant changes are made in a certain wavelength range with the occurrence of chemical reactions in the irradiated materials, the activity of nanoparticles up to 100nm will be significant.

References :

Review of: \the basis of information that a COBD or Doctor-Board-on-Chip provides, the type of diseasehas been detected". (2024). Qeios. https://doi.org/10.32388/ezyt0iReview

Review of: \The design of micro-nanoscale systems prepares subsystems, devices and structures to inte-grate new phenomena and complex processes without unifying them and regular collaborations". (2024).Qeios. https://doi.org/10.32388/sw773wReview

Review of: \Molecular Fluorine can underlie a wide range of Roman novel chemical reactions. Easily acceptand donate electrons". (2024). Qeios. https://doi.org/10.32388/l0mctlReview

Review of: \Microelectromechanical systems (MEMS) are a combination of mechanical elements, sensors,actuators, and silicon-based nanoelectronic devices made by nanotechnology". (2024). Qeios. https://doi.org/10.32388/qvk1bgReview

Review of: \Some samples have many impurities, such as polyhedral graphite particles, amorphous carbon,and catalyst particles". (2024). Qeios. https://doi.org/10.32388/iaov9uReview

Review of: \Many modeling and functionalization technologies are being developed to control the location,distribution, amount, or structure and orientation of biological nanomolecules at the nanomaterial level".(2024). Qeios. https://doi.org/10.32388/85wmy4Review

Review of: \In many cases, surface chemical modi cations are required to create active groups that can bindto biomolecules". (2024). Qeios. https://doi.org/10.32388/oxwlbwReview

Review of: \In general, an electrical nano-biosensor consists of an immobilized static biological system (based on their own built-in immobilized static biological system)". (2024). Qeios. https://doi.org/10.32388/pq6ho0

Review of: \nanodipole L/d is signicantly reduced, it cannot be used". (2024). Qeios. https://doi.org/ 10.32388/y5s2dbReview of: \Amplication of Nano Wires Nano Wire by Electron Nano Lithography". (2023). Qeios. https://doi.org/10.32388/l3md1n

Review of: \The concept of (Nano assembler)". (2023). Qeios. https://doi.org/10.32388/xrrt0e

Review of: \The degree of order and dimensions of nanowires produced using templates". (2023). Qeios. https://doi.org/10.32388/7siu3m

Review of: \It has been done in the manufacture of nanowires through regular one-dimensional arrays with the help of dierent physical and chemical methods". (2023). Qeios. https://doi.org/10.32388/pg9m4tReview

Review of: \Tubular nanotransistors (3D) Very high electron mobility in graphene". (2023). Qeios. https: //doi.org/10.32388/ik4l3i

Review of: \(Nano-Electronics - Plasmonic Technology) in the design of nano-devices such as nano-transistors and nano-diodes, nano-switches and nano-logic gates". (2023). Qeios. https://doi.org/10.32388/7pndul