Nano Laboratory on a Chip (LOC) is a Nano Electrical Device That Consists of One or More Laboratory Agents on a Nano Chip With Dimensions of Several Nanometers

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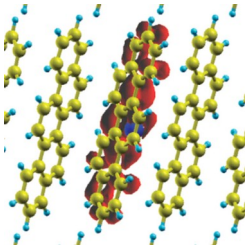
- **Abstract:**

- Using synthetic nano sensors and LOC nanochips, it is possible to identify very small amounts of chemical contamination or virus and bacteria in agricultural, food and medical systems. Also, among these sensors, we can mention a sensor based on nanowires that detects damage caused by radiation in the medical and laboratory industries.

- **Keywords:** Nanoelectronic , nano chip , nano bio chip, Enzyme Chip Nano

• Introduction

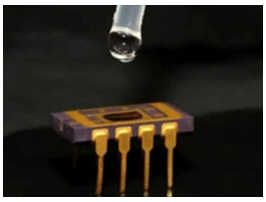
These nanosensors are placed in blood cells. Also, Lab on a chip (LOC) is a device that consists of one or more laboratory operators on a chip with dimensions of a few millimeters or square centimeters and deals with very small volumes of liquids. And it can give us a lot of desired information from one sample.



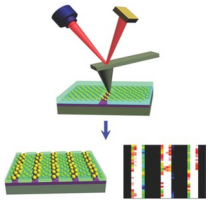
These synthetic nanosensors and gas nanosensors are prepared by attaching special particles to the ends of carbon nanotubes and calculating the vibration frequency in the presence or absence of particles. These nanosensors are often used to detect and control chemical reactions by nanoparticles. The construction of gas nanosensors has been one of the most important topics in recent decades due to their many applications in various food, chemical, health, military and even space research industries. Leakage of deadly gases is one of the daily dangers of industrial life. Unfortunately, the alarm systems in the industry often fail to detect such gas leaks very late. Examples of this type of sensors are made of single-layer nanotubes with a thickness of about one nanometer and can absorb toxic gas molecules. They are also able to detect a small number of molecules of deadly gases in the environment. Such gas sensors have been successfully tested to identify ammonia and nitrogen dioxide gases, which are among the toxic gases. These sensors will be used to detect bio-chemical war gases, air pollutants and even organic molecules in space .

• The most important parameters affecting the optimal dimensions of nanochips

Most of the ingredients of chips and nanochips are silicon. By applying the appropriate voltage (threshold voltage) to the silicone solution, the repulsive force overcomes the surface tension of the silicone and a jet is formed. By evaporating the solvent from the jet, the liquid phase changes to solid and the primary nano materials of the chips are formed. Many parameters affect the characteristics of the nanostructures produced by this method, the most important parameters are the distance between the needle and the collector, the applied voltage, the flow rate and the concentration of the silicone solution; By changing these parameters, the optimal dimensions of nanochips can be achieved. The diameter of the nanostructures has a linear relationship with the flow rate and distance, and a non-linear relationship with the potential and concentration of the silicon solution in the production of nanochips and nanotransistors. By increasing the distance and electric potential, the diameter of nanostructures decreases and increases by increasing the flow rate and electric potential.



In the production of nanochips and nanotransistors, when the repulsive force overcomes the surface tension, the electric field reaches a critical value or threshold. At first, the jet moves in a linear pattern, then slowly moves away from the linear pattern and forms a complex shape along the way to the collector. The structure and structure of the production of nanochips and nanotransistors and the length of the jet is proportional to the applied voltage. The Taylor nanocone structure changes from convex to concave by changing the field strength and subsequently (jet charge density). The miniaturization of components in microelectronic systems and circuits has caused the significant growth of this industry in recent years. The speed of growth of this industry is such that with the smaller components, the number of transistors in the unit area of each semiconductor chip and nanochips has increased. Reducing the dimensions of these components can reduce the consumption of raw materials and energy, reduce the cost of these parts, and increase their speed and efficiency. Therefore, making and developing electronic tools with smaller dimensions and greater speed and efficiency has .become more important day by day



Lithography is one of the most common methods for making electronic circuits. With the help of this method, structures can be made with precision and dimensions of 01 nm. Finding techniques with the help of which this method can be used for the industrial production of these .parts (nanochips and microchips)

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