

# Aspects of the use of nanotechnology and nanomedicine in medicine

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**Abstract**—The objective of this paper is to discuss aspects of the application of the nanotechnologies, especially in medicine, in these days. The design, development and implementation by manipulating form and size on a nanometer-scale of structures, equipment and systems are nanotechnologies. Nanomedicine is the special division Concerned with medicine research of nanotechnology. Nanomedicine is a medicine field which uses nanotechnology knowledge and instruments for disease prevention and treatment. Nanomedicine includes the use for the detection or activation of nanoscale materials in a living organism such as nanoparticles and nanarobots [1]. Nanotechnology is considered completely new, but it is definitely not the only field concerned with atoms and molecules. I have now shown my own actions and manipulation and quantum mechanics to be a totally minor science in different fields of physics, chemistry and biology with atoms and molecules.

**Index Terms**— Nanotechnology, nanomedicine, nanoscale, nanoparticle, nanorobots.

## I. INTRODUCTION

Physicists and engineers who were primarily concerned to create objects or components for other devices with greater precision in terms of the use of a computer made of components manufactured at a certain level of accuracy made initial awareness of the field of nanotechnology. This nanotechnology is now regarded as "top-down"[2].

Winfred Phillops said, "You have to be able to invent things, you have to be able to analyze things and you have to be able to handle things smaller than imagined in ways that have not been done before"



Fig.1 Nanotechnologic tool, nano drone.

Theory of nanotechnology was first introduced in 1959 by physicist Feynman, who at dinner said, at the end there is plenty of room, "stressing that this is a trend that should not be avoided.

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He suggested that nanomachines, nanorobots, and nanoprocessors could grow a broad range and be used to produce large amounts of ultra-small computers and various nanorobots, using automatically precise microscopic instruments and development tools [3].

## II. WHAT'S NANOMEDICINE?

The ordinary human mind is hard to comprehend nanotechnology, because it is entirely different. The research, engineering and technology carried on in nanoscales, of around 1-100 nanometres, comprises nanotechnology basically. One nanometer is a million times shorter than the ant's length. A paper sheet is roughly 100,000 nanometres. Normal ratio of one metre to one nanometer from Earth to a child's body [4]. Nanomedicine is the scientific and technological area in which traumatic diseases and accidents are diagnosed, treated and avoided, pain relieved, people's health sustained and improved, molecular methods used and human body molecules used. Nano-technology and medicine converge to create new therapies and strengthen existing ones. The emerging discipline of Nanomedicine Nanostructures of the same size as biomolecular are manipulated to interact with human cells for nanomedicine [4].

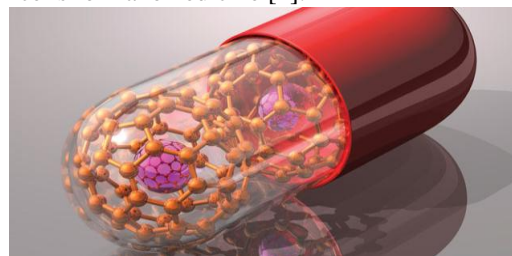


Fig. 2 Capsule that can digest in the body.

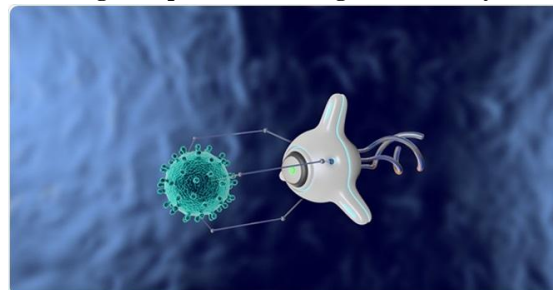


Fig.3. Nanorobot that leak into blood.

## III. THE FUTURE OF NANOTECHNOLOGY

Soluble capsules include sensors and cameras, which are changing the world. In the following we will present some of these capsules as well as their use. Some of them are already on the market, while others are on the way out. Scattered capsules from nanoparticles promise for targeted treatment of

many diseases, including cancer. However, the particles have to be injected into patients, which have limited their usefulness so far. Now, some researchers have developed a new type of nanoparticle that can be taken orally or through the digestive tract, allowing patients to simply take one capsule instead of injections. [3] Here are some of these capsules:

**1. Camera Capsule**



In 2001 PillCam was developed as the first soluble camera, which after entering the body through the throat, does its job (eg looks at the work of the stomach, heart, throat) and digests.

**2. Flutter Capsule**



Vibrating capsules help contract muscles to start digestion. Effectively helps constipation and cleanses the body, without side effects.

**3. Narcotics detection capsule**



Each capsule contains a sensor that transmits information through a special garment worn by the patient. But because of its sensitivity, it costs around \$ 290 billion. But for many people it is a hindrance because personal data is shown, which can create insecurity.

**4. Atmo gas capsule**



The membrane allows gases to enter the capsule. The sensors detect the level of oxygen, hydrogen and CO2 and thus detect the presence or excess of gases in certain parts of the

**5. Smart sensor capsule**



Y-shaped capsules are stored in the stomach for about a month. Sensors detect vital signs for diagnosis and monitor diseases.

**6. Big data availability**



In the future we will have so many information's so that we will need a huge place to store them. Here is a picture of how the big data will be saved. [3]

**7. Sensors everywhere**



Sensors can now be printed in large quantities in flexible spins of low-cost plastic. This opens up the possibility of placing sensors at many points on the critical infrastructure to constantly check if everything is working properly.

**IV. BLOOD FLOW CHANGES**

Sometimes we have some sort of diseases, which make us feel bad but we don't know the problem. Now it is much easier. You just have to take a nanorobot, in a size of a pill and your body is shown in the monitor. In the next 5 or so years, our blood will be flowing with tiny nanorobots to help us avoid getting sick. [4]



**Fig 4. Nanorobots in erythrocytes.**



**Fig 5. Illustration of cancer detection.**

By all means, the researchers predict that after 5 years, we will have injected nanorobots into our bloodstream from where it will become a much more common practice in the medical world. In addition to cancer, people will be able to cure other issues by making nanorobots an optimal way to improve your living conditions.

**V. DISADVANTAGES OF NANOTECHNOLOGY**

As the technology is breaking every border possible, people are getting worried and worried because of it's big impact on everyday lives. Nanoparticles have also been examined for their impact on the heart and blood vessels.

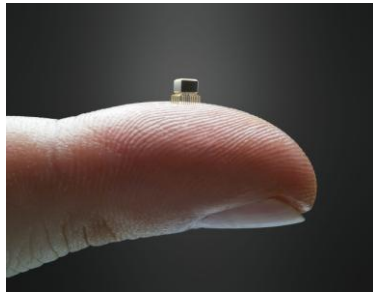


Fig 6. Small nanorobot, but expensive.

More specifically, the arming of nanotechnology could be feasible. It will be easier to develop nuclear bombs and new weapons. One alternative is the so-called "smart bullet," a machine bullet that is very precisely tracked and targeted. These inventions can prove to the military's advantage, but the consequences are serious if they fall into the wrong hands.



Fig 7. Nanotechnology in army.

## VI. CONCLUSION

This research has shown how nanotechnology-when used in a deliberately small scale, the use of matter can offer great advantages, just like any useful technology.

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