

Nanotechnology essay



**ASSIGN
BUSTER**

From nickering our health to even ending our lives through bio weapons. The point is that nanotechnology is a fast improving human feat that can change lives. The use of nanotechnology in the field of medicine could revolutionize the way we identify and heal wounds to the human body and disease in the future, and countless processes only conceptualized a few years ago are making exceptional breakthrough towards becoming realities.

Nanotechnology can have a discussion from its roots of science and engineering all at the same time. This mixture of two human inventions and skill brought about a new generation for mankind. Nano is a prefix for a thing that is a billionth of that thing.

Imagine, these things can only be seen through a microscope. Small robots at nationals are now doing big things for the world. Nanotechnology is designing, manipulating, building, producing applying devices under one-hundred nanometer to control its shape and size, properties, and functions. (Freesias, 2005) It has been developed by humans for a few years now.

Even at its baby stages, great feats have been achieved by humankind. Nanotechnology is making a debut as a new branch of science and engineering and there has been problems and evaluations from some roofs who are scared that there might be risks to humans and the environment that we don't know about yet, for example tiny inappropriate may be toxic under certain circumstances. The implications of nanotechnology are wide-ranging and could include medicine, military applications, computing and astronomy.

Nanotechnology is being used already in certain materials like self-cleaning glass, sunscreens, lipsticks and even antibacterial socks. Inappropriate' small size might allow them to get places that conventional particles would not be able to go. This could mean entering into deep within the lungs when inhaled, then passing into the bloodstream and reaching other organs. Simply put robots and nanotechnology together and narcotics was made. These robots exhibit the size of a billionth of a meter. These narrators were developed according to various purposes like therapy, disease-control and the like. This process is called medicines.

The creation of narrators is a great phenomenon that can help a doctor's opinion to treat different sicknesses and diseases. (Civilians, 2008) Yes, it is a phenomenon now that can drastically change how humans live in the near future. Medicines according to Freesias(2005) is the process of diagnosing, treating, and preventing disease and traumatic injury of relieving pain, and of preserving and improving human health, using molecular tools and molecular knowledge of the human body. " Basically that is the natural use of medicines -? to make better lives and maybe even save lives.

Known health organizations like World Health Organization (WHO) and Center for Disease Control (CDC) have been improving this technology and the future of medicinal advancement relies on nanotechnology. In 1959, Richard P. Funnyman had a lecture called ' There's Plenty of Room at the Bottom" where he discussed the idea of creating machines that would create smaller machines that would also be the way to create machines of atomic size. (Freesias, 2005) The idea of using nanotechnology in medicine started when Richard p. Funnyman proposed using medicines to cure heart diseases.

In the book, “ Current Status of Medicines and Medical Narcotics”, Funnyman said that “ A friend of mine (Albert R.

Hobbs) suggests a very interesting possibility for relatively small machines. He says that, although it is a very wild idea, it would be interesting in surgery if you could swallow the surgeon. You put the mechanical surgeon inside the blood vessel and it goes into the heart and looks around. (Of course the information has to be fed out.) It finds out which valve is the faulty one and takes a little knife and slices it out. Other small machines might be permanently incorporated in the body to assist some inadequately functioning organ. ” Funnyman then urged people that manufacture of such machine can be done.

His words greatly affected two people who contributed most in medicines namely, Eric Drexel and Robert Freesias Jar. In 1 986, Eric Drexel wrote the book, Engines of Creation, where he proposed the concept Of cell repair machines which might repair in a precise manner DNA, organelles and other cellular structures. In 1 996, Robert Freesias Jar. Rote a detailed article of a concept about medicinal components narrators. His collection of Medicines books, papers and articles expresses his concept. Then in the early cays, first generation medicinal capabilities have emerged and have been developed since.

(Cashing-Garrett, 2014) Currently, medicines is aiding in the development of some areas in medicine. An article entitled, “ Nanotechnology and Medicines” by Carols Rebels Roomer and Xavier Anta Accelerate lists some examples of these. Developing artificial biological matter: cells, tissues,

organs, and blood substitutes ; Tissue repairing and strengthening: Repairing will be applicable to damaged tissue arising from diseases, accidents and cryogenic. On the other hand, strengthening can make human bones or muscles more resistant.

; Drug delivery systems: Implementing inside the human body devices that will monitor the state and deliver drugs when needed directly on the appropriate organ (see image beside), will relieve some patients from the dependency of egalitarianism drugs, for example, diabetics with insulin. ;

Genetics: Manipulating DNA chains opens new opportunities to combat hereditary diseases and improve the performance of the human. ; Killing cancer cells: We could design a small device able to identify and kill cancer cells. The device would have a small computer, several binding sites to determine the concentration of specific molecules, and a supply of some poison which could be selectively released and was able to kill a cell identified as cancerous.

The device would circulate freely throughout the body, and would periodically sample its environment by determining whether the binding sites were or were not occupied. Providing oxygen: The narrator in this case is essentially a tiny pressure tank that can be pumped full of up to 9 billion oxygen and carbon dioxide molecules, stored onboard at pressures up to about 1. 000 atmospheres. Later on, these gases can be released from the tiny tank in a controlled manner.

When the narrator passes through the lung capillaries, oxygen partial pressure is high and carbon dioxide partial pressure is low, so the onboard

computer tells the sorting rotors to load the tanks with oxygen and to dump the carbon dioxide. When the device later finds itself in the oxygen-starved peripheral tissues, the sensor readings are reversed. The narrator mimics the action of the natural hemoglobin-filled red blood cells, but it can deliver 236 times more oxygen per unit volume than a natural red cell. You could then hold your breath for nearly 4 hours if sitting quietly at the bottom of a swimming pool.

Or if you were sprinting at top speed, you could run for at least 15 minutes before you had to take a breath. Obstructions in the circulatory system: A narrator enters the blood flow, locates the obstruction, and executes the appropriate mechanical action needed to restore the blood flow. ; Monitoring of the human body: Autonomous molecular machines, operating in the human body, could monitor levels of different compounds and store that information in internal memory. They could determine both their location and the time. Thus, information could be gathered about changing conditions inside the body. These molecular machines could then be filtered out of the blood supply and the stored information (and samples) could be analyzed” There are now research institutes established and funded solely to develop medicines. Examples are the Royal Academy of Engineering in LIKE, National Institutes of Health and the Nappies Medical, Inc. What makes medicines work are narrators.

In a study entitled “ Enhancing medicine with nanotechnology” by Francesco Bizarrely, he discussed how narrators are manufactured. There are several considerations to think about when manufacturing narrators, namely design, intelligence and behavior, tasks, and problems that can arise. In the category <https://assignbuster.com/nanotechnology-essay/>

of design, dimension has the biggest role. The robot has to be big enough for actuators and sensors to function well. Also, it has to be small enough to roam around the circulatory system.

Scientists agree that a narrator has to be less than Mann across. The robots' dimension has to be close to that of a red blood cell. Second, the robot is required to have some kind of motion system. It should be able to move around without harming the patient. Since it is difficult for a small object to move around especially in a liquid, an engine is needed to make this object move. However, this engine would need a battery that is 1000 times bigger than the robot itself. Scientists have thought of some interesting solutions for this problem which include: 1. Using natural blood flow – This solution wouldn't need an engine.

The robot would have to simply go with the blood flow. . Piezoelectric ultrasonic resonant motor 3. Screw drivers 4. Biometry 5. Pumps Third, the shape is also one thing to consider.

Two main factors major affects the shape of the robot: the environment and the function it is designed to perform. There are three “ families” that will categorize all possible shapes of the robot namely: 1. Sphere 2.

Cigar-shaped 3. Diamond-like structure. Fourth, the robot must have the characteristic: absorbability. Since the immune system reacts to a “ foreign” substance, the robot must be able to move around without it being attacked. Fifth would be energy.

The robot would need some kind of power supply. One of the solutions is the unionized battery for electrical energy. Another solution is called chemical powering which uses the chemicals already in the human blood namely: glucose and oxygen.

Last solution named is heat which is the use body heat. Sixth aspects to consider are sensors and actuators. Sensors would serve as the brain Of the robot. Its job is to receive messages, detect obstacles, compute and implement the appropriate response. The type and number of sensors vary according to the type of work the narrator is designed to do.

The types of encores has two main categories which are obligatory and optical. Actuators as well vary according to the type of work the robot is designed to do. Here are the main families of actuators: ; Probes, knives and chisels – To remove blockages and plaque, a narrator will need something to grab and break down material ; Microwave emitters and ultrasonic signal generators – To destroy cancerous cells, doctors need methods that will kill a cell without rupturing it ; Electrodes – Two electrodes protruding from the narrator could kill cancer cells by generating an electric current, heating the cell up until it dies ; Lasers – Tiny, powerful lasers could burn away harmful material like arterial plaque, cancerous cells or blood clots. The lasers would literally vaporize the tissue. The seventh feature to discuss would be communication.

Since the narrators are launched as a swarm, there is a need for a way to communicate. Communication is needed so the narrators could coordinate and work efficiently. Other factors include swarm intelligence and control.

Swarm intelligence is the equivalent intelligence of a group of narrators working together. Lastly, it is important to know what a swarm can do together. Here listed are the swarm's tasks: a. Treatment of localized medical problems b.

. Cure for cancer c. Anna-surgery d. Immune system augmentation e. Arteriosclerosis prevention f. Drug delivery g. Implantable devices h.

Improve bodily functions i. Cystic fibrosis treatment j. Reciprocity k.

Chromatically l. Respiratory Diseases m. Monitor patient nutrient concentration n.

Regenerating Tissues o. Super human powers p. Conventional medical techniques have drawbacks which medicines can remedy. From an article, “Nabobs: The Future of Medicine”, there is a list of the major advantages of medicines over the conventional medical quenches. 1. Minimal or no tissue trauma. 2. Considerably less recovery time.

3. Less post-treatment care required. 4.

Continuous monitoring and diagnosis from the inside. 5. Rapid response to a sudden change. The use of nanotechnology in medicine offers some exciting possibilities. Some are just theories, some are just starting to bloom and others are already contributing in saving lives of humans. Nanotechnology in medicine requires applications of inappropriate currently in the works, as well as more thorough research that incorporate the use of manufactured Anna-robots to make rehabilitations at the cellular level. Bosses, 2007) In

Boson's work we can come down to an idea of success in medicine through the use of nanotechnology best.

Other works and researches by Bosses are these: A. Researchers at MIT using inappropriate to deliver vaccine. The inappropriate protect the vaccine, allowing the vaccine time to trigger a stronger immune response. B. Researchers are developing a method to release insulin that uses a sponge-like matrix that contains insulin as well as encapsulate containing an enzyme. When the glucose level rises the encapsulate release hydrogen ions, which bind to the fibers making up the matrix.

The hydrogen ions make the fibers positively charged, repelling each other and creating openings in the matrix through which insulin is released. C. Researchers at MIT have developed a nonpolitical that can be taken orally and pass through the lining of the intestines into the bloodstream. This should allow drugs that must now be delivered with a shot to be taken in pill form. D. Researchers are also developing a nonpolitical to defeat viruses. The nonpolitical does not actually destroy virus molecules, but delivers an enzyme that prevents the reproduction of virus molecules in the patient's bloodstream. An application of nanotechnology in medicine evolving at the present involves engaging inappropriate to deliver drugs, or cures to specific types of cells such as cancer cells.

A group of South Korean scientists developed narrators that can treat cancer. These narrators seek cancer cells unlike chemotherapy which attacks the entire body. It is called " Bacterium". These Bacteriologist are non-toxic salmonella bacterium that is attracted to chemicals released by

cancer cells. (Kobo, 2014) According to the article that have read, humankind is on the brink of curing cancer through the wonderful world of nanotechnology.