

Editorial Note on Advances in Nanotechnology for U-Health Care

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Use of nanotechnology with recent developments for applications in everyday life is discussed here for better health care, mainly in ubiquitous manner. The U-health care is to use any technique, any where on any patient, any time, in any environment. The nanotechnology would give boon to the applications in everyday life and will change the future aspects of life with new research in science and technology, for better health care in U-manner.

With nanotechnology, the matter is controlled to very small size particles, say at molecular scale, in the science, engineering, and technology. The material processed to even to the scale of 1 nano-meter, as per requirement. The nano-meter dimensions are mainly used in the fabrication, characterisation, production and practical applications of the devices and the systems, in medical or other fields.

High surface-to volume ratios are responsible for nanoparticles, with nanoscale size, to get desired properties. The nanotechnology has its role in new innovative development to design new products, day by day, to replace formulate for the chemicals and materials, for the equipment for better environmental conditions and energy sustainability.

Nanotechnology is useful in daily products and is used in hand-washing and bandages and sockets to avoid antimicrobial problem and in UV-protective sunscreens.

In everyday life, nanotechnology is used from the sunglasses to the computer hard drive. This technology has direct effects on the meals and many food materials and agricultural crops due to environmental issues as shown in figure 1, for different applications. Major applications of the nanotechnology are in energy research, defence and security, metallurgy and materials, electronics, optical engineering and communication, biomedical and drug delivery, agriculture and food, cosmetics and paints, biotechnology, and textiles. The problems are easily solved, in each field, by using U-technology. Good, faster, smaller powerful computers with carbon nanotube devices are in use. Advanced Nano-medical devices with lab-on-chip technology are useful for accurate medical devices for reliable medical measurements. Nanomaterial surfaces of nanomaterial on the implants assist in the wear increase but to treat infections and disease and to improve absorption with nanoparticles in pharmaceutical products, with appropriate medical devices to enable chemo therapy drugs to say cancer cells.

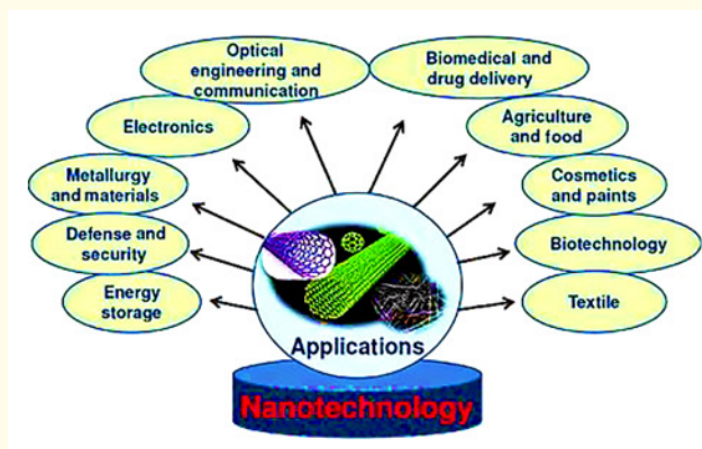


Figure 1: Nanotechnology in everyday life for better health care.

As an example, vehicle fuel efficiency is made better when vehicle parts are made with nano-composite material which are lighter and hard and resistant to chemicals, as compared to metals. Gas mileage is improved by using nanofilters to filter out airborne particles before reaching to combustion chamber. When the fabrics are exposed to optical source, water etc, nanoparticles or nanofibers are good to be used for better clothing. to keep them of light weight and strong with good impact.

Nanoparticles find applications of sun-screens to absorb light including ultra-violet to say, for the treatment of skin cancer.

Plastics made from nanoclays are, generally, used in drink bottles, that increases the resistance to permeation by oxygen, carbon dioxide or moisture. Shel life is thus increased by retaining carbonation and hence the pressure.

Different types of chemical sensors are used to detect nano size particles or molecules for security purposes in an automatic manner, in the industry or inside the human body for tissue studies.

Further, the advanced nanotechnology systems and nanomaterials are, generally, used for the health care in any environment, by renewable energy capture and storage of the battery, etc, Sensors are used for food packaging in any environment for greener engineering and industrial plants.

This technology is useful in the fast treatment of cancer, and for better imaging and diagnosis of disorders. This technology is useful to treat damaged bone tissue or cartilage problem.

The medical devices are used, *in vivo*. This tool has given good developments for diagnostic systems and in general, in health care by nano biomedical systems. Nanoparticles can cause lung damage, but such damages can be blocked with nanotechnology itself.

Nanotechnology gives new aster computers, with more efficient power sources and life-saving medical treatment devices. Although, some of the disadvantages of nanotechnology are economic disruption and threats to security, privacy, health and the environment, yet there are solutions with the same nanotechnology systems. The energy-efficient products like fuel as well as solar cells. are developed as efficient light weight efficient systems.

Nanochip gives path for quantum applications. Recently, researchers have developed a chip having scale-up potential as the main component of the quantum stimulator. Several products are developed for stable photons to produce nanochip devices for health care applications to be used in ubiquitous manner.

Also, in future, nanotechnology will enable development of better new objects with nanotechnology for say, harvesting the energy from the environments or to develop nano sensors for U-health care. Novel nanomaterials and devices are being developed with new conversion mechanisms with respect to energy generation from the movements, as an example, temperature variations, light reflections, bio-assays, etc. Nanotechnology thus gives boon to the applications in everyday life and will change the future aspects of life with new research in science and technology, for better health care in ubiquitous manner.

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