



Nanotechnology: The Power of Small in Dentistry

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Nanotechnology or nanoscience refers to research and development of an applied science at the atomic or molecular level (i.e., molecular engineering, manufacturing)

History of nanotechnology

There's plenty of room at the bottom. "Why cannot we write the entire 24 volumes of the encyclopaedia britannica on the head of a pin".

Noble prize in physics 1952. First used the term nano technology in 1974. 2005-2010: 3D Nano systems like robotics, 3D networking and active nano products that change their state during use were prepared.

- **Nano scale:** The nano scale is the place where the properties of most common things are determined just above the scale of an atom. Nano scale objects have at least one dimension (height, length, depth) that measures between 1 and 999 nanometers (1-999 nm).
- **Nano materials:** These nano materials are of Zero dimensional, One dimensional, Two dimensional, Three dimensional
- **Nano particles:** Nanopores, Nanotubes, Quantum dots, Nanoshells, Dendrimers, Liposomes, Nanorods, Nanospheres, Nanowires, Nanobelts, Nanorings, Nanocap

Applications of Nanotechnology in dentistry

The future holds in store an era of dentistry in which every procedure will be performed using equipments and devices based on nanotechnology.

- Nanocomposites and nanoclusters
- Nano-light curable glass ionomer cement
- Nano-impression materials
- Nano particles coating in dental implants
- Nano based bone replacement cements
- Nanoneedles
- Local anaesthesia
- Tooth regeneration
- Nano diagnosis

- Impression materials
- Endodontic regeneration

Anaesthesia

Nanorobots may soon help in overcoming the painful and stressful procedure of local anesthesia administration. A colloidal solution containing millions of active analgesic/anesthetic nanorobots will be applied to the patient's gingiva. Through gingival sulcus, lamina propria, and dentinal tubules, it will reach the pulp within a few minutes.

Nano surgery

Nanoneedles and nano tweezers are also being developed that will make cell surgery a possibility in the near future. Suture needles incorporating nanosized stainless steel crystals are being developed, which may be used to produce incisions at the cell-level.

Conclusion

Nanotechnology is a brand new technology that has already begun. The future that we were watching just in science fiction movies will in the near future be real. Nanotechnology covers a lot of domains today and will cover a lot more in the near future, it is infinitely big and will make a lot of inventions come true like teleportation for which scientists are working on today. Nanotechnology will give us an abundant energy because it will transform energy more effectively.