



Molecular Nanotechnology and its Application's

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Description

Molecular technology involves the flexibility to manufacture objects to specific atomic specifications. A central postulate is that any structure that may be nominative which doesn't violate physical law will be designed. Pathways to molecular technology square measure proximate probe technology (the use of enhancements of the scanning tunneling magnifier, STM), biotechnology, and supramolecular chemistry. Mixtures of those technologies seem significantly powerful. The biotechnological approach ought to create it potential to use translation systems to manufacture polymers containing a minimum of ten times as many alternative artificial monomers as there square measure natural amino acids. These polymers may more take up varied alternative molecular devices, and also the use of STMs ought to change the complexes to be organized into subtle machines, as well as molecular computers. The implications embody pocket super automated analyzers and also the ability to base medical medical care on the organic chemistry individuality of specific patients.

Molecular Nanotechnology (MNT) may be a technology that's wont to style complicated structures through mechanosynthesis method, so as to get the right atomic specifications. During this technology, complicated merchandise square measure designed mistreatment nanomachines. This method isn't the least bit kind of like nanomaterials because it relies on molecular producing. The mechanosynthesis method used for this technology are power-assisted by complicated molecular machine systems. The complete method of molecular technology would come with the mix of physical theories with chemical demonstrations and alternative nanotechnologies, additionally to the various ways employed in macro scale factories. Unlike the other typical processes, in MNT a transparent and definite method is disbursed to urge a certain result. MNT is truly a multi-product reaction method during which the molecular reactions square measure to be dead balanced so as to get the thought of chemical process. The merchandise of those reactions square measure once more won't to build a full new system.

Applications of Molecular Technology

Smart materials square measure merchandise that square measure created at micromillimetre scale for doing the specified task. It's already found nice applications within the field of technology. It's

helpful in providing the right response once it comes involved with completely different molecules. Therefore artificial medication might be made which might simply realize the precise viruses and delete them. Another plan of sensible materials is self-healing structures which may be used for removing little tears from the surface similar to the human skin.

A nanosensor also can be known as a sensible material. The sole little distinction is that a nano sized part are ruled by a bigger machine. This machine responds to its surroundings and brings the supposed changes. The most effective example of a nanosensor is that the photosensor. The device is employed to live the sunshine that hits on its surface and convert it into its corresponding electricity and is passes onto another larger device. Such a sensing element once regenerate to nanosize, can value abundant lesser than the traditional ones, and can conjointly use lesser power. But, their applications become restricted.

The main plan behind molecular technology is to form many nanorobots that work along in coordination. These nanorobots ought to even be ready to style and manufacture additional nanorobots with the assistance of subtle building blocks in a man-made setting. There has continuously been a doubt in mind regarding however possible the conception of nanorobots and its replicating options would be. There's a worry of distinction in characteristics with the parent robots through replication. The vision of revolutionary bottom-up technology relies on a thought of molecular assembly technologies wherever nanoscale materials and structures self assemble to microscale structures and at last to macroscopic devices and merchandise. We square measure an extended approach from realizing this vision however researchers square measure busily egg laying the inspiration for nanoscale engineering. Collecting nanoscopic elements into macroscopic materials is associate degree appealing goal however one amongst the big difficulties lies in bridging about six orders of magnitude that separate the nanoscale from the macroscopic world. Till machinery capable of machine-controlled and industrial scale nano assembly will be designed, the correspondence of chemical synthesis and self-assembly is important once dominant materials at the nanoscale. A visible direct approach to molecular technology so is to start out with organic molecules as building blocks. Modest from the point of view of molecular producing visionaries, however quite fascinating to plenty of scientists, analysis into nanofibers, as a modification of organic crystals, is creating smart progress. New analysis results setting out of Kingdom of Denmark supply the premise for a completely unique organic molecule based nanotechnological conception.

Tendency in Molecules

A water molecule may be a very little too little to be technology, it's rather molecular physics, however if we have a tendency to go up thrice in linear size, to 1 nm, we have a tendency to may have several tens of water molecules, or alternative molecules, in some construct. Then, if we have a tendency to go up two orders of magnitude in size, up to a 100 nm, the amount truly goes up 106 times. So, then we have a tendency to square measure talking regarding millions or tens of variant molecules and we're still within the size vary of say a hundred nm, faculty member Kasemo continues.

To put that into perspective, this can be regarding wherever associate degree optical magnifier stops to check things the

wavelength of light may be a few hundred nanometers. So, during this size vary we are able to build things with a couple of tens of atoms or molecules, or we are able to build things with variant atoms, or molecules, that have special purposeful properties, says faculty member Kasemo. The higher dimension of wherever technology ends and microtechnology begins is somewhat floating and depends on the (functional) properties and behavior of the particular system, however sometimes the limit is ready to a couple of hundred nanometers.

This discovery began to revolutionize the building of electrical circuits at the tip of the Fifties and through the 1960. Then started a

development wherever each semiconductor and each alternative part, diodes so on, shrunken for each year. The explanation for this was that you simply get additional purposeful units within the small circuits the additional transistors you had per unit space, thus by shut packing you'll gain in each performance, speed and value, Kasemo explains. So, this started on the macro scale around 1960. On the other hand because the elements continuing to shrink over regarding forty years, the littlest a part of associate degree microcircuit, a semiconductor, would eventually pass the dimensions of 100 nanometers. This happened round the last switch of the century.