Picotechnology

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For the company, see Pico Technology.

The term **picotechnology** is a portmanteau of picometer and technology, intended to parallel the term nanotechnology.

Overview

It is a hypothetical future level of technological manipulation of matter, on the scale of trillionths of a meter or picoscale (10^{-12}). This is three orders of magnitude smaller than a nanometer (and thus most nanotechnology) and two orders of magnitude smaller than most chemistry transformations and measurements. Picotechnology would involve the manipulation of matter at the atomic level. A further hypothetical development, femtotechnology, would involve working with matter at the subatomic level.

Applications

Picoscience is a term used by some futurists to refer to structuring of matter on a true picometer scale. Picotechnology was described as involving the alteration of the structure and chemical properties of individual atoms, typically through the manipulation of energy states of electrons within an atom to produce metastable (or otherwise stabilized) states with unusual properties, producing some form of exotic atom.[1] Analogous transformations known to exist in the real world are redox chemistry, which can manipulate the oxidation states of atoms; excitation of electrons to metastable excited states as with lasers and some forms of saturable absorption; and the manipulation of the states of excited electrons in Rydberg atoms to encode information. However, none of these processes produces the types of exotic atoms described by futurists.

Alternatively, picotechnology is used by some researchers in nanotechnology to refer to the fabrication of structures where atoms and devices are positioned with sub-nanometer accuracy. This is important where interaction with a single atom or molecule is desired, because of the strength of the interaction between two atoms which are very close. For example, the force between an atom in an atomic force microscope probe tip and an atom in a sample being studied varies exponentially with separation distance, and is sensitive to changes in position on the order of 50 to 100 picometers (due to Pauli exclusion at short ranges and van der Waals forces at long ranges).

Picotechnology its been around actually since 1930 and before. There is a company that uses picotechnology and they call it pico-physics for over 20 years developing products from atoms and their ingredient base is the periodic table, and sell into industrial applications for Agriculture, Medical Cures, Chemical Replacement and Cleaning using just 1 element an Atom at 350 pm that works atomic electro mechanical and has no active ingredient, just energy. http://www.biobased.us. Its not futurists for Biobased USA its yesterday.

See also

- Femtotechnology
- IBM (atoms)
- Technological singularity

- There's Plenty of Room at the Bottom

References

1.

1. *Sharma1, Rakesh; Sharma, Avdhesh; Chen, Ching J. (14 November 2011). "Emerging Trends of Nanotechnology towards Picotechnology: Energy and Biomolecules". Nature Precedings. doi:10.1038/npre.2010.4525.1. Retrieved 4 November 2012.*

External links

- Picotechnology at the Nanosciences group at CEMES, France.
- Weinacht, T.C., Ahn, J., and Bucksbaum, P.H. (22 June 1998) Measurement of the Amplitude and Phase of a Sculpted Rydberg Wave Packet. *Physical Review Letters* pp. 5508–5511 v. 80 no. 25