

# NANOELECTRONICS

(Future of electronics)

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Nanoelectronics refer to the use of nanotechnology on electronics components, especially transistors. Although the term nanotechnology is generally defined as utilizing technology less than 100nm in size. Nanoelectronics often refer to transistor devices that are so small that inter atomic interactions and quantum mechanical properties need to be studied extensively.

The aim of Nanoelectronics is to process, transmit and store information by taking advantage of properties of matter that are distinctly different from macroscopic properties. The relevant length scale depends on the phenomena investigated: it is a few nm for molecules that act like transistors or memory devices, can be 999nm for quantum dot where the spin of the electrode is being use to process information. Microelectronics, even if the gate size of the transistor is 50nm, is not an implementation of nanoelectronics, as known new qualitative physical property related to reduction in size are being exploited. The sub-voltage and deep-sub-voltage nanoelectronics are specific and important fields of R&D, and the appearance of new ICs operating almost near theoretical limit on energy consumption per 1 bit processing is inevitable.

Currently, nanotechnology is described as revolutionary discipline in terms of its possible impact on industrial applications. Nanotechnology offers potential solutions to many problems using emerging nanotechniques. Depending on the strong interdisciplinary character of nanotechnology there are many research fields and several potential applications that involve nanotechnology.