COLLOQUIUM

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“New materials for nanoelextronics"

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Paraskevi, 10 Februariou 2006

11.00

Abstract

New materials are the driving force behind the majority of the high-tech developments. The never ending need for cheaper, faster information processing and larger recording capabilities, results to a continuous minutarisation of the electronic devices. As the sizes of these structures are already well into the nanoscale region, the performance demands are impossible to meet without changing some of the critical materials in use. At the same time, research on new materials, such as ZnO, is opening exciting new possibilities for applications. Keeping in mind that cost reduction is one of the most important parameters for the success of a specific technology, it is preferable to integrate the new materials into existing technologies, such as the Si technology.

In this talk, recent work done in four fields will be briefly presented:

a) the replacement of SiO2 as the gate oxide in CMOS
b) the use of metallic nanoparticles for smaller, faster and more reliable non-volatile memories
c) the use of metallic magnetic nanoparticles for denser and more reliable recording media
d) the deposition of ZnO nanostructures for a variety of applications