

INTRODUCTORY PLENARY LECTURE

Cross disciplinary approaches to nanotechnologies

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ABSTRACT

We briefly overview the architectural issues connected to the progressive merge of nanotechnologies and life-sciences. Starting from the conventional device technologies applied to photonics and electronics (lasers, leds, fet-transistors), a number of new active materials inspired to natural living systems (loto-effect, gecko effect, butterfly effect) are progressively introduced into functional devices to improve their performances. Further evolution of such a concept leads to the new biomimetic technologies which exploit covalent immobilisation of biological systems onto inorganic devices up to peptide and DNA libraries to force the development of materials according to specific genetic codes.

In this frame, novel examples of devices and materials will be presented and discussed such as:

Plastic light emitters

Controlled hydrophobic/hydrophilic materials (engineered wettability of surfaces)

DNA transistors

Respiratory protein transistors

Neuron-circuitry

Biomimetic nanofibers