# Nanostructured materials: From quantum dots to organic molecules

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Nanostructured materials offer unprecedented possibilities for tailoring properties as a function of size and chemical composition. Examples include confined structures like Quantum Dots (QDs), and organic molecules that may act as nanodevices. This presentation is divided in two sections: (1) the growth and characterization of Ge nanostructures on Si surfaces, for applications in optoelectronics. Critical issues include Ge ŰSi intermixing [1] that occurs during growth, which alters the composition of the as grown Quantum Dots (QDs); the possibility to control QD positioning [2] on patterned substrates; and the stability / metastability of the nanostructures with respect to annealing [3]. (2) Molecules can be considered as the ultimate limit of electronic devices, since their size is about one nanometer [4]. The adsorption of complex molecules on surfaces is now being intensively investigated, both because of the molecules intrinsic properties, and for prospective applications in molecular electronics. Upon adsorption, surfaces do not generally behave as static templates, but may rearrange dramatically to accommodate different molecular species. By means of high-resolution, fast-scanning scanning tunneling microscopy (STM) new insight was recently gained into a number of fundamental processes such as molecular diffusion [5], surface restructuring [6] and molecular self-assembly.

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