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Molecular Engineering using Thin Organic Films

Michael C Petty

School of Engineering and Centre for Molecular and Nanoscale Electronics,
Durham University, Durham DH1 3LE

ABSTRACT OF THE TALK

Most microelectronic devices are based on inorganic semiconductors, in particular silicon.

In contrast, *molecular electronics* (or organic electronics) is concerned with the exploitation of organic compounds in electronic and optoelectronic devices. The subject can be divided into two main themes (although there is substantial overlap). The first concerns the development of devices exploiting the unique macroscopic properties of organic compounds. Examples here are organic electroluminescent displays, plastic transistors and chemical sensors. The second strand to molecular electronics recognises the dramatic size reduction in the individual processing elements in integrated circuits. Molecular-scale electronics therefore deals with the manipulation of organic materials at the nanometre level. There are relatively few techniques currently available to organise organic molecules on this scale. Examples are Langmuir-Blodgett deposition, self-assembly and layer-by-layer electrostatic adsorption. This presentation will provide an overview of such methods and discuss applications of these organic thin films to molecular electronics.