Electronic properties of organic layers on oxide-free silicon for the next generation transistors

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Abstract

Organic molecules can be viewed as promising building blocks for electronics. For example, the new AMOLED displays (Active-Matrix Organic Light Emitting Devices) are now currently used in cell phones and have just become cheaper to than the conventional LCD (Liquid Crystal Displays). However the control of the electronic processes occurring in molecular architectures requires a high control of the morphological organization since one crucial aspect is the connection between molecules and electrodes. This talk will address the case of molecules connected to silicon interfaces and clarify charge transport is understood. Using scanning tunnel microscope (STM) and conductive AFM (c-AFM), we show how to use these properties for designing organic transistors, such as a single electron transistor.

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