

MULTIWALLED CARBON NANOTUBES AS BUILDING BLOCKS IN NANOELECTRONICS

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I will briefly review our recent experimental work [1, 2, 3, 4] on the use of multiwalled carbon nanotubes (MWCNT) as nanoelectronics building blocks such as single electron transistors (SETs), lumped resistors, and transmission lines. The advantages and drawbacks of the MWCNT realizations will be discussed in each case. According to our results, good quality MWCNTs work well as SETs, whereas strong reservations have to be made concerning their use as highly resistive lumped elements ($\sim 100 \text{ k}\Omega$) or high impedance LC transmission lines ($\sqrt{L/C} \sim 5 \text{ k}\Omega$ owing to the large kinetic inductance of the tube). In addition, I will review the construction methods involved, *viz.* how to manipulate and move nanotubes using atomic force microscope in non-contact mode without feed-back [5]. Recipes how to reduce contact resistance down to a few $\text{k}\Omega$ will also be presented.

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