

Julio Gomez (Universidad Autonoma de Madrid) AFM based techniques to measure conductivity in the DNA based Nanowires.

e-mail: juliog@pop.uam.es

Nanowires overview: Break-junctions, carbon nanotubes, organic molecules, and quantum wires. SWNT can be described by two numbers, is therefore a crystal, and thus perfection is responsible for their unusual properties. Should the DNA be a conductor (poly(G)-poly(C)) get good bands, but one base out of sequence ruins symmetry. Mask with tungsten fiber covering DNA, metallized SFM tip. Electrostatic force in SFM: a non-intrusive method (conductive tip, cantilever, battery, and molecule). Molecule has both resistance and capacitance. Carbon nanotubes (CNTs) just about shine at edge because both gold and nanotube are conductive. Bias voltage about 2V. Nanotubes and DNA co-adsorbed nanotubes and DNA, CNT shine, DNA does not. DNA electrical properties without any electrical contact. Conducting molecule will not have electric field penetrating the tube (if over an insulating surface.) But it will penetrate the DNA. Comparison of force indicates CNT. High density poly(G)-poly(C) sample, no conductance, Increase humidity, saw that it improved. CNT glowed, but not DNA. Tried to do EFM on CNT and DNA, still CNT shines, DNA does not.