New strategies for electrical contacts in nanoscales systems

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Electrical contacts in nanomaterials include a number of topics such as electrical transport characterization in one and two dimensional materials and importantly, molecular electronics. Researchers working on this subject have developed a variety of techniques including optical and e-beam lithography, stencil mask evaporation, break junctions … In this talk, I will briefly review this techniques. This will help me to introduce a new technique that we called Probe Assisted Nanowires (PAN) lithography. The technique is based on the precise positioning of long gold nanowires (10 µm long and 50 nm diameter) using an atomic force microscopy tip. This technique does not requires polymer mask sand hence the samples are not contaminated by organic residuals. In addition the electrodes are reconfigurable allowing to contact different nanoobjects with the same macroscopic configuration. Using this procedure we aim at contacting nanoobjects with sizes below 5 nm.