
A PhD thesis position will be opened in 2006 at the LEM (Molecular Electronics Laboratory) of CEA-Saclay (France). This PhD is a Marie Curie fellowships in the framework of the European project Early Stage Training « CHEMTRONICS ».

The candidate will investigate the use of DNA molecules to fabricate nanoscaffolds for nanodevices self assembly purposes.

**Abstract of the project:**

*Fundamental and technological objectives:*

New techniques for bottom-up fabrication of circuits for nanoelectronics are definitely needed to complement the present top-down approach of circuit fabrication. In this framework it is likely to envision the use of the recognition property of DNA molecules to fabricate two-dimensional nanoscaffolds for self assembly purposes. Single wall carbon nanotubes (SWNTs) occupy a special place within the nano-objects and they are foreseen as one of the main building blocks of future nanoelectronics. However, the future of this class of SWNT-based devices is largely conditioned by the development of a suitable bottom-up self-assembly method. In this framework combining DNA-directed assembly with SWNTs electronics properties seems the solution of choice to develop a versatile self-assemblying technique for the fabrication of nanotube devices and circuits. Moreover, it is also of particular interest to envision the reconfigurability of the disposition and connections of the nano-objects on the scaffold by means of biological molecular motors.

*Approach proposed:*

This PhD work will start by the realisation of topologically simple structures. We will focus on the placement of these structures on the chip, their electrical connection and on their structural rigidity. Then, after the realisation and characterization of simple nanoelectronic devices, their dynamic reconfiguration will be considered.

**Profile of the candidate:**

We are looking for outstanding experimentalists with experience in DNA manipulation. Skills in nanotechnology would be an advantage. Application and a complete CV, including a short summary of previous work and the name and email of two potential referees should be sent to:

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