DIRECTION DES SCIENCES DE LA MATIERE,
INSTITUT RAYONNEMENT MATIÈRE DE SACLAY

SERVICE DE PHYSIQUE ET DE CHIMIE DES SURFACES ET DES INTERFACES

SEMINAIRE *

Vendredi 4 Mai 2012 à 11h00

Bâtiment 466, salle 111 - CEA Saclay, 91191, Gif sur Yvette

FluidFM technology: from single-cell manipulation to nanoparticles lithography

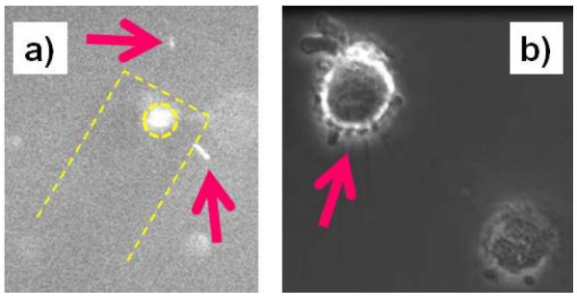
Dr. Tomaso Zambelli

Laboratory of Biosensors and Bioelectronics, Institute for Biomedical Engineering, ETH Zurich, Switzerland

(invité par Jérôme Polesel Maris)

Glass micropipettes are the typical instrument for intracellular injection, patch clamping or extracellular deposition of liquids into viable cells. The micro pipette is thereby slowly approached to the cell by using micro manipulators and visual control through an optical microscope. During this process, however, the cell is often mechanically injured which leads to cell death and failure of the experiment. To overcome these challenges and limitations of this conventional method we developed the FluidFM technology, an evolution of standard AFM microscopy combining nanofluidics via cantilevers with integrated microfluidic channel. [1] The channel ends at a well defined aperture at the apex of the AFM tip while the other extremity is connected to a reservoir. The instrument can therefore be regarded as a multifunctional micropipette with force feedback working in liquid environment.

We are focusing on three applications for single-cell biology: i) displacement [2] and adhesion of microorganisms, ii) force-controlled formation of gigaseal, and iii) single virus deposition on cell surfaces.
Yet, the FluidFM is suited for local surface-chemistry experiments too.



***a)** Two fluorescent viruses ejected from a microchanneled cantilever. **b)** The arrow indicates a blebbing cell after being selected and infected with the FluidFM.*

*** SERA PRECEDE D'UNE PAUSE-CAFE A PARTIR DE 10H30**

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