

## FluidFM: a powerful new tool that combines nanofluidics with AFM

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Fluid Force Microscopy is a new experimental technique which combines the unique possibilities of nanofluidics with the positional accuracy and force sensitivity of an atomic force microscope to provide a whole new level of control and application possibilities in the field of single cell biology, tissue engineering, biofunctionalization, nanopatterning, and nanolithography [1, 2, 3]

The heart of the system is represented by a hollow cantilever with fluid reservoir attached to a nanofluidics pressure control system and an AFM.

In this talk the working principle of this new experimental technique will be presented, together with application examples experiments of cell adhesion, spatial manipulation, deposition and lithography, injection and extraction.

[1] O. Guillaume-Gentil, T. Zambelli and J. A. Vorholt, Lab Chip 14 (2014) 402

[2] E. Potthoff, D. Franco, V. D'Alessandro, C. Starck, V. Falk, T. Zambelli, J.A. Vorholt, D. Poulidakos, and A. Ferrar Nano Lett 14 (2014) 1069-1079

[3] D. Ossola, M.Y. Amarouch, P. Behr, J. Vörös, H. Abriel and T. Zambelli, Nano Lett (2015)

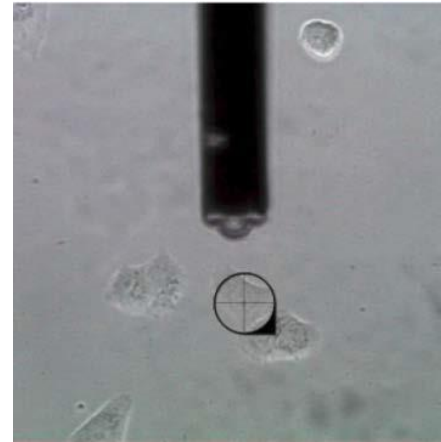


Figure 1. Top view of FluidFM cantilever

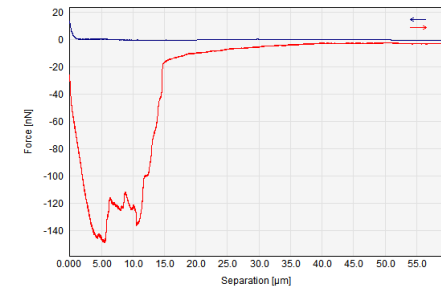


Figure 2. Measuring adhesion forces on a single cell