

Liquid AFM for biological applications



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Context A high sensitivity atomic force microscope (AFM), using laser Doppler velocimetry, has been developed to achieve images of structures at the nanoscale in vacuum, as well as in liquid medium. This is a powerful tool to investigate solid-liquid interface at the atomic scale. This AFM could also be adapted to the observation of biological objects (such as cell membrane) in their natural environment.

Objectives We aim to adapt the liquid AFM to the study of biological objects in liquid medium. Under vacuum situation, the very high sensitivity of this AFM should allow to determine the nature of the investigated materials from their attraction forces.

Methods The improvement of the AFM is considered in both vacuum and liquid situation. Work will be conducted on the signal analysis for the laser Doppler velocimetry, and on a fluidic system for the liquid situation. Further study will afterwards be conducted to observe specific features of cells membranes.