

Atomic Force Microscopy: imaging biological matter at high resolution

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Atomic Force Microscopy (AFM) is a powerful technique based on the sensing of local interaction forces to image biological samples in physiological environment with sub-nanometer resolution. By optimizing a series of different operating modes, AFM can address the complexity of biological systems on different scales, from single molecules to cells and tissues, providing unique insights into biomolecule functional structure and dynamics, molecular interactions and recognition, as well as cell morphology and membrane protein structure, to mention some. Moreover, AFM can be operated as a biomechanical nano-probe to study the complex mechanism of cell mechanosensing and mechanotransduction.

In this lecture we will give few examples of high-resolution AFM images applied to different biological systems, and discuss complementarities with other microscopy techniques.