

Biological Applications of AFM: Molecular Recognition Force Microscopy for Studying Biomolecule Interactions at Single Molecular Level

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In the past decade, the development of experimental tools allowing the precise application and measurement of weak forces has opened new perspectives in material and life sciences. Mechanical experiments with single molecules have become possible, and for the first time fundamental intramolecular and intermolecular interactions could be studied directly at the single molecular level.

One of these important techniques is molecular recognition force microscopy (MRFM). It was developed as one of the chemical force microscopic (CFM) techniques permitting the study of specific interactions between molecules, and between residues composing a large molecule. In this talk, I will introduce the theoretical backgrounds and experimental manifestations of the MRFM technique, then discuss briefly the applications of MRFM to the studies of protein-protein, carbohydrate-protein, DNA-DNA interactions.