

Retrieving functional and conformational information from single proteins: towards an AFM-based approach

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Large classes of different proteins (e.g. redox metalloproteins, ion channels) whose functional tasks are fundamental in life-sustaining processes, function by eliciting a current flow (ions, electrons) through them. Due to the intimate connection between structure and function in proteins, understanding their correlation appears of paramount importance. Scanning probe techniques are believed to bear the potentialities for investigating the functional behavior of particular biomolecules [1,2] at the level of the single molecule while retrieving, simultaneously, conformational information. However, due to the particular imaging environment, the accomplishment of this task is not trivial and requires special solutions and experimental set-up.

In this talk I will present the results of our research efforts towards the aforementioned goal [3,4], outlining the chosen technical solutions and the open issues that still prevent us from implementing an AFM which can measure, at the same time, topography and current in water-based environments, and with molecular resolution.

References

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