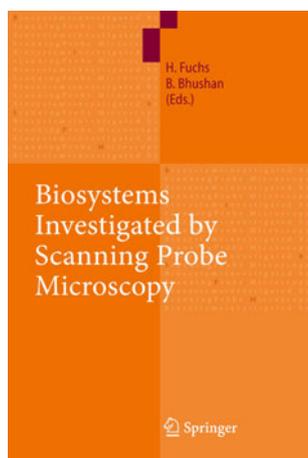


Harald Fuchs, Bharat Bhushan (Eds.): Biosystems investigated by scanning-probe microscopy

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Bibliography
Biosystems investigated by scanning probe microscopy
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Books topic and contents This book is a compilation of 27 contributions representative of the scanning-probe microscopy techniques previously published in the Springer series “Applied Scanning-Probe Methods I–XIII”. The volume is organized in four topical parts.

Part I concerns instrumentation and methods, including a general overview of AFM-based imaging in biology. The contributions reported cover a wide range of AFM-based

techniques. Measurement of cell membrane mechanical properties, receptor–ligand interaction forces on living cells, nanoarray technology, and cantilever-based sensors are present. This part ends with contributions about scanning near-field optical microscopy, ion-conductance microscopy, and scanning-probe lithography. Part II is focused on applications of AFM to DNA and self-assembled monolayers. Part III is mainly about AFM-based studies of interaction forces and mechanical properties in biological membranes, cells, and tissue, including the surfaces of microbes. The last part (IV) focuses on functional bio-surfaces, for example those inspired by the lotus effect and by gecko feet.

Comparison with existing literature For practical aspects of AFM-based methodology, this book finds a valuable counterpart in volume 242 (2004) of the series *Methods in Molecular Biology* by Humana Press entitled “Atomic Force Microscopy: Biomedical Methods and Applications”. The main objective of this series is to provide detailed descriptions of practical procedures.

A book apparently in the same field as this book was published four years ago within the series “Topics in Current Chemistry” (Vol. 285) also by Springer, edited by Paolo Samori, with the title: “STM and AFM Studies on (Bio)molecular Systems: Unravelling the Nanoworld”. It is evident to a careful reader that the topics of these two books are quite different, the latter focussing mainly on supramolecular systems, mostly non-biological with a detailed description of STM theory and applications.

Overlap of the book reviewed here with “Atomic Force Microscopy for Biologists” by Morris, Kirby and Gunning (2nd edition, 2010; Imperial College Press) is much more extensive. This latter book is strongly focused on the

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impact SPM methodology has had on the biological sciences and addresses the field in a very systematic and well organized way. These two books effectively complement each other. The approach of the book reviewed here is less systematic, but the different contributions enclosed are written by leading authors of the different topics, and this makes the difference.

Critical assessment The Springer series “Applied Scanning Probe Methods I–XIII” was published between 2004 and 2009; within the series a set of volumes was published every 12–18 months in order to catch the latest developments in the field. As stated by the editors in the preface of

the book, the main objective is to provide readers working in the field of nanoscience with a comprehensive overview of the techniques, with indications of their potential future developments. Several chapters are from the first volumes of “Applied Scanning Probe Methods I–XIII” series. They need to be updated. On the other hand, most of them are in Part I on the basis of the different instrumentation and methods, so this lack of updating is not crucial. We conclude that this book can be very useful in a laboratory to introduce students to their first steps in AFM, and to provide more experienced researchers with the state-of-the-art of AFM-based methodology presented by outstanding scientists.