

Contents

Preface	V
Chapter 1	
Atomic Force Microscopy Provides Molecular Details of Cell Surfaces ..	1
Cora-Ann Schoenenberger, Daniel J. Müller and Andreas Engel	
Chapter 2	
Basic Principles and Applications of Confocal Laser Scanning Microscopy	33
Rolf Borlinghaus and Bernhard Gröbler	
Chapter 3	
Visualization of Neuronal Form and Function in Brain Slices by Infrared Videomicroscopy	55
Hans-Ulrich Dodt and Walter Zieglgänsberger	
Chapter 4	
Time-Resolved Imaging of Membrane Potentials and Cytoplasmic Ions at the Cellular Level with a 50x50 Fiber Array Photodiode Camera	75
S. Hosoi, H. Tsuchiya, M. Takahashi, M. Kashiwasake-Jibu, K. Sakatami and T. Hayakawa	
Chapter 5	
Micromanipulation of Macromolecules: How to Measure the Stiffness of Single Microtubules	89
Harald Felgner, Rainer Frank and Manfred Schliwa	
Chapter 6	
Dynamics of Single Protein Polymers Visualized by Fluorescence Microscopy	101
Josef Käs, Jochen Guck and David Humphrey	
Chapter 7	
The Interaction of Proteins with Membrane Surfaces at Molecular Resolution: The Neutron Reflection Method	139
Thomas M. Bayerl and Andreas P. Maierhofer	

Chapter 8	
The Study of Fast Reactions by the Stopped-Flow Method	159
Wolfgang H. Goldmann, Zeno Guttenberg, Robert M. Ezzel and Gerhard Isenberg	
Chapter 9	
Biomolecular Interactions Analysis (BIA Technology). A Universal Biosensor-Based Technology for Biochemical Research and Development	173
Francis Markey and Franz Schindler	
Chapter 10	
Measuring Cellular Locomotion Forces with Micro-Machined Substrates	195
Catherine G. Galbraith and Michael P. Sheetz	
Chapter 11	
Viscoelasticity, Rheology and Molecular Conformational Dynamics of Entangled and Cross-Linked Actin Networks	211
Erich Sackmann	
Subject Index	259