

Contents

Part I Photometry, Color Sensors and Fluorescence Labels

Color Sensors and Their Applications	3
Poenar Daniel Puiu	

Addressing of Concentration Spaces for Bioscreenings by Micro Segmented Flow with Microphotometric and Microfluorimetric Detection	47
J. Michael Köhler, Anette Funfak, Jialan Cao, Dana Kürsten, Steffen Schneider, and P. Mike Günther	

Nanotechnology for Diagnostic and Sensing: Soft and Advanced Imaging/Sensing Approaches to Analyze Biomolecules	83
Alessandra Aloisi and Ross Rinaldi	

Part II Optical Waveguides

Integrated Optical Microsystems for Interferometric Analytics	103
Gian Giuseppe Bentini and Marco Chiarini	

Refractometric Photonic Chips for Biosensing	155
Raphael K. Kribich	

Part III Surface Plasmon Resonance

Surface Plasmon Resonance Bioanalytical Platform to Appraise the Interaction Between Antimicrobial Peptides and Lipid Membranes	183
Mihaela Gheorghiu, Sorin David, Andreea Olaru, Cristina Polonschii, and Eugen Gheorghiu	

Biological Applications of Surface Plasmon Resonance Imaging 211
L. Leroy, E. Maillart, and T. Livache

Part IV Raman Spectroscopy

Lab-on-a-Chip Surface-Enhanced Raman Spectroscopy 229
A. März, P. Rösch, T. Henkel, D. Malsch, and J. Popp

**Microfluidic Raman Spectroscopy for Bio-chemical
Sensing and Analysis** 247
Praveen C. Ashok and Kishan Dholakia

Part V Optical Characterization and Manipulation in Bioreactors

**Polymeric Microfluidic Devices for High Performance Optical
Imaging and Detection Methods in Bioanalytics** 271
Holger Becker and Claudia Gärtner

**Chip Systems for Analysis of Nucleic Acids with Integrated
Amplification and Detection** 289
Wolfgang Fritzsche, Mark Kielpinski, Matthias Urban, Thomas Henkel,
Sabine Werres, Robert Möller, Stefan Wagner,
Marko Riedel, and Sandra Julich

**Optofluidic Microsystems for Application in Biotechnology
and Life Sciences** 305
S. Sinzinger, B.P. Cahill, J. Metze, and M. Hoffmann

Index 325