1. Record Nr. UNINA9910810218303321

Titolo	Intelligent surfaces in biotechnology : scientific and engineering concepts, enabling technologies, and translation to bio-oriented applications / / edited by Marcus Textor, H. Michelle Grandin
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, c2012
ISBN	9786613620798 9781280590962 1280590963 9781118181232 1118181239 9781118181249 1118181247 9781118181218 1118181212
Edizione	[1st ed.]
Descrizione fisica	1 online resource (428 p.)
Classificazione	TEC021000
Altri autori (Persone)	TextorMarcus GrandinH. Michelle
Disciplina	610.28/4
Soggetti	Biomedical materials Biotechnology - Materials Smart materials Surfaces (Technology)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Machine generated contents note: Chapter 1. Stimulus Responsive Polymers as Intelligent Coatings for Biosensors: Architectures, Response Mechanisms, and Applications Vinalia Tjong, Jianming Zhang, Ashutosh Chilkoti and Stefan Zauscher 1.1 Introduction 1.2 SRP Architectures for Biosensor Applications 1.3 Mechanisms of Response 1.4 Sensing and Transduction Mechanisms 1.5 Limitations and Challenges 1.6 Conclusion and Outlook Chapter 2. Smart Surfaces for Point-of-Care Diagnostics Michael A. Nash, Allison L. Golden, John M. Hoffman, James L. Lai, and Patrick S. Stayton 2.1 Introduction 2.2

Standard Methods for Biomarker Purification, Enrichment, and Detection 2.3 Smart Reagents for Biomarker Purification and Processing 2.4 Sample-Processing Modules for Smart Conjugate Bioassays 2.5 Devices for use in Smart Conjugate Bioassays 2.6 Conclusions Chapter 3. Design of intelligent surface modifications and optimal liquid handling for nanoscale bioanalytical sensors Laurent Feuz, Fredrik Hook and Erik Reimhult 3.1 Introduction 3.2 Orthogonal small (nano) scale surface modification using molecular self-assembly 3.3 Alternative surface patterning strategies 3.4 The challenge of analytic transport 3.5 Concluding remarks Chapter 4. Intelligent Surfaces for Field Effect Transistor Based Nano-biosensing Akira Matsumoto, Yuji Miyahara Kazunori Kataoka 4.1 Introduction 4.2 Field effect transistor based biosensors 4.3 Intelligent surfaces for signal transduction and amplification of Bio-FETs 4.4 New targets of Bio-FETs 4.5 Future Perspective Chapter 5. Supported lipid bilayers: intelligent surfaces for ion channel recordings Andreas Janshoff and Claudia Steinem 5.1 Introduction 5.2 Supported lipid bilayers 5.3 Characterizatics of SSMs 5.4 Ion channels in SSMs 5.5 Future perspective: Ion channels in micropatterned membranes Chapter 6. Antimicrobial and anti-inflammatory intelligent surfaces Hans J. Griesser, Heike Hall. A. Toby , A. Jenkins, Stegani S. Griesser, Krasimir Vasilev 6.1 Introduction 6.2 Antibacterial strategies 6.3 Bioactive antibacterial surfaces 6.4 Stimulus-responsive antibacterial coatings for wound dressings 6.5 Anti-inflammatory surfaces 6.6 Conclusions and Outlook Chapter 7. Intelligent Polymer Thin Films and Coatings for Drug Delivery Alexander N. Zelikin, Brigitte Stadler 7.1 Introduction 7.2 Surface Mediated Drug Delivery 7.3 Drug Delivery Vehicles With Functional Polymer Coatings 7.4 Outlook Chapter 8. Micro- and Nanopatterning of Active Biomolecules and Cells Daniel Aydin, Vera C. Hirschfeld-Warmeken, Ilia Louban and Joachim P. Spatz 8.1 Introduction 8.2 Chemical Approaches for Protein Immobilization 8.3 Biomolecule patterning by "top-down" techniques 8.4 Biomolecule Nanoarrays bu Block Copolymer Nanolithography 8.5 Application of Nanostructured Surfaces to Study Cell Adhesion 8.6 Conclusion Chapter 9. Responsive polymer coatings for smart applications in chromatography, drug delivery systems and cell sheet engineering Rogerio P. Pirraco, Masayuki Yamato, Yoshikatsu, Kenichi Nagase, Masamichi Nakayama, Alexandra P. Marques, Rui L. Reis and Teruo Okano 9.1 Introduction 9.2 Temperature-responsive chromatography 9.3 Temperature-responsive polymer micelle 9.4 Temperature-responsive culture surfaces 9.5 Cell sheet Engineering 9.6 Conclusions.

Sommario/riassunto

"This resource gives a comprehensive overview of surface modifications for applications in biotechnology using intelligent coatings. The coverage includes chemical properties, characterization methods, coating techniques, state-of-the-art examples, and an outlook on the promising future of this technology. It enables the interested materials scientist, chemist, or engineer to gain a comprehensive overview of the field, highlighting applications, with each chapter written by an expert in that particular area. Applications covered include tissue engineering, biotribology, drug targeting and delivery, wound healing, biosensors, nanopatterning, and bioinspired design of new smart materials and surfaces"--