

1. Record Nr.	UNINA9910139750703321
Titolo	Cellular and biomolecular recognition [[electronic resource]] : synthetic and non-biological molecules // edited by Raz Jelinek
Pubbl/distr/stampa	Weinheim, : Wiley-VCH Chichester, : John Wiley [distributore], 2009
ISBN	1-282-68353-5 9786612683534 3-527-62701-4 3-527-62702-2
Descrizione fisica	1 online resource (371 p.)
Altri autori (Persone)	JelinekRaz
Disciplina	579 620.192
Soggetti	Biomolecules Cellular recognition Biomimetics Biomolecules - Structure
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	Cellular and Biomolecular Recognition; Contents; Preface; List of Contributors; 1: Development of Functional Materials from Rod-Like Viruses; 1.1 Introduction; 1.2 Overview; 1.2.1 TMV; 1.2.2 M13 Bacteriophage; 1.3 Programmable Protein Shells; 1.3.1 Chemical Modifications; 1.3.2 Genetic Modifications; 1.3.2.1 Genetic Modification of TMV; 1.3.2.2 M13 Genetic Modification; 1.3.3 Chemical Modification in Combination with Genetic Mutation; 1.4 Templated Syntheses of Composite Materials; 1.4.1 Synthesis of Inorganic Materials Using TMV as the Template; 1.4.2 Bacteriophage M13 as the Template 1.5 Self-Assembly of Rod-Like Viruses 1.5.1 Controlled 1D Assembly; 1.5.1.1 TMV Head-to-Tail Assembly; 1.5.1.2 Conductive 1D TMV Composite Fibers; 1.5.1.3 Weaving M13 Bacteriophage into Robust Fibers; 1.5.1.4 Nanoring Structure; 1.5.2 Fabrication of Thin Films by 2D Self-Assembly; 1.5.3 Controlling the 3D Assembly of TMV and M13; 1.6 Virus-Based Device and Applications; 1.7 Outlook; References; 2:

Biomimetic Nanoparticles Providing Molecularly Defined Binding Sites - Protein-Featuring Structures versus Molecularly Imprinted Polymers; 2.1 Introduction; 2.2 Core Materials and Functionalities 2.2.1 Inorganic Core Materials 2.2.1.1 Inorganic Crystalline Nanoparticles; 2.2.1.2 Particles with Silica Cores; 2.2.1.3 Metals and Metal Oxides; 2.2.2 Organic Core Materials; 2.2.2.1 Polymers, Lipids and Fullerenes; 2.3 Functional Shells; 2.3.1 Organic Shells; 2.3.2 MIPs; 2.3.2.1 Tools for MIP Development; 2.3.2.2 Bulk MIP and Proteins; 2.3.2.3 Nanospheric MIPs in General; 2.3.2.4 Nanospheric MIPs and Proteins; 2.4 Applications; 2.4.1 Biopurification; 2.4.1.1 Magnetic Nanoparticles; 2.4.1.2 MIPs with Magnetizable Cores; 2.4.2 Drug Delivery and Drug Targeting 2.4.2.1 Nanoparticle Systems for Drug Delivery 2.4.2.2 Ligands on Nanoparticle Surfaces; 2.4.2.3 Targeting of Specific Cells; 2.5 Products; 2.5.1 MIPs-Applications and Products; 2.5.2 Luminex Assay; 2.6 Conclusions; References; 3: Interaction Between Silica Particles and Human Epithelial Cells: Atomic Force Microscopy and Fluorescence Study; 3.1 Interaction of Silica with Biological Cells: Background; 3.2 Interaction of a Silica Particle with the Cell Surface: How It Is Seen with AFM; 3.2.1 AFM; 3.2.2 AFM on Cells; 3.2.2.1 Cell Culture; 3.2.2.2 AFM; 3.2.3 AFM Probe Preparations 3.2.4 Models to Analyze the Cell Surface: Need for a Two-Layer Model 3.2.5 Experimental Data; 3.2.5.1 Surface Brush on Cancer and Normal Cells; 3.2.5.2 Measurement of Adhesion: Silica Particle-Cell Interaction; 3.2.5.3 Can the Difference in Adhesion Be Used to Detect Cancer Cells?; 3.3 Ultra-Bright Fluorescent Silica Particles to Be Used to Study Interaction with Cells; 3.4 Ultra-Bright Fluorescent Silica Particles to Distinguish Between Cancer and Normal Cells; 3.4.1 Methods and Materials; 3.4.1.1 Spectrofluorometric and Optical Measurements of the Particles Attached to Cells 3.4.1.2 Detection of Affinity of Fluorescent Silica Particles to Cells

Sommario/riassunto

With its exploration of the scientific and technological characteristics of systems exploiting molecular recognition between synthetic materials, such as polymers and nanoparticles, and biological entities, this is a truly multidisciplinary book bridging chemistry, life sciences, pharmacology and medicine. The authors introduce innovative biomimetic chemical assemblies which constitute platforms for recruitment of cellular components or biological molecules, while also focusing on physical, chemical, and biological aspects of biomolecular recognition. The diverse applications covered include
