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| 1. Record Nr.           | UNINA9910816401303321  |
| Titolo                  | Bio- and bioinspired nanomaterials / / edited by Daniel Ruiz-Molina, Fernando Novio, and Claudio Roscini   |
| Pubbl/distr/stampa      | Weinheim, Germany : , : Wiley-VCH, , 2015<br>©2015   |
| ISBN                    | 3-527-67584-1<br>3-527-67582-5<br>3-527-67585-X  |
| Descrizione fisica      | 1 online resource (487 p.)   |
| Disciplina              | 572.51   |
| Soggetti                | Bioinorganic chemistry<br>Inorganic compounds<br>Nanostructured materials  |
| 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 at the end of each chapters and index.   |
| Nota di contenuto       | Bio- and Bioinspired Nanomaterials; Contents; List of Contributors; Foreword; Preface; Part I: Bionanomaterials; 1 Synthesis of Colloidal Gold and Silver Nanoparticles and their Properties; 1.1 Introduction; 1.2 Physical and Chemical Properties of Gold and Silver Nanoparticles; 1.2.1 Optical Properties of Gold and Silver Nanoparticles; 1.2.2 Electronic Properties of Gold and Silver Nanoparticles; 1.3 Synthesis of Gold and Silver Core Nanoparticles; 1.4 Transfer to Aqueous Media of Gold and Silver Nanoparticles from Organic Solvents; 1.5 Some Applications of Gold and Silver Nanoparticles<br>AcknowledgmentsReferences; 2 Ceramic Smart Drug Delivery Nanomaterials; 2.1 Introduction; 2.2 Biodistribution, Toxicity, and Excretion of Nanoparticles; 2.3 Mesoporous Silica Nanoparticles; 2.4 Calcium Phosphate Nanoparticles; 2.5 Carbon Allotropes; 2.6 Iron Oxide Nanoparticles; References; 3 Polymersomes and their Biological Implications; 3.1 Introduction; 3.2 Self-Assembly of Amphiphiles; 3.3 Polymersome - The Synthetic Analog of a Liposome; 3.3.1 Polymersome Preparation Methods; 3.3.1.1 Batch Methods; 3.3.1.2 |

Continuous Flow Methods; 3.3.2 Characterization of Polymersomes  
3.4 Polymersomes as Drug Delivery Devices 3.4.1 Tuning Membrane Properties and Controlling the Release; 3.4.1.1 pH-Responsive Polymersomes; 3.4.1.2 Hydrolysis of Polymersomes Built from Biodegradable Polymers; 3.4.1.3 GSH-Responsive (Redox) Vesicles; 3.4.1.4 Temperature-Responsive Polymers; 3.4.1.5 Magnetic Release; 3.4.2 Surface Functionalization and Targeting Strategies; 3.5 Embedding Channel Proteins in Artificial Polymer Membranes and Creating New Applications; 3.6 Conclusions and Outlook; List of Abbreviations; References; 4 MOFs in Pharmaceutical Technology; 4.1 Introduction  
4.2 Metal-Organic Frameworks 4.2.1 Description; 4.2.2 Synthesis, Formulation, and Functionalization/Shaping; 4.2.2.1 Synthesis and Formulation/Shaping; 4.2.2.2 Functionalization; 4.2.3 Stability and Toxicity; 4.3 MOFs for Therapeutics; 4.3.1 BioMOFs; 4.3.2 Active Ingredient Adsorption and Release from MOFs; 4.3.2.1 Drugs; 4.3.2.2 Cosmetics; 4.3.3 Understanding; 4.3.3.1 Encapsulation; 4.3.3.2 Release; 4.3.4 Theranostics; 4.3.5 Efficacy; 4.4 Conclusions; List of Abbreviations; References; 5 Amorphous Coordination Polymer Particles for Biomedicine; 5.1 Introduction  
5.2 Interaction of Nanoplatforms with the Biological Environment 5.3 CPPs as Realistic Alternative to Classical Nanosystems; 5.3.1 Encapsulation Systems Based on CPPs; 5.3.2 Active Metal-Organic Units; 5.3.2.1 Active Metal Ions; 5.3.2.2 Drugs as Bridging Ligands; 5.3.2.3 Active Complexes; 5.3.3 Smart Delivery Systems; 5.3.4 Bioimaging; 5.3.5 Biocompatibility of CPPs; 5.4 Conclusion and Future Challenges; References; 6 Magnetic Nanoparticles for Magnetic Hyperthermia and Controlled Drug Delivery; 6.1 Introduction; 6.2 Principles of Magnetically Induced Heat Generation  
6.3 Synthesis of MNPs and their Heat Performance

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#### Sommario/riassunto

A comprehensive overview of nanomaterials that are inspired by or targeted at biology, including some of the latest breakthrough research. Throughout, valuable contributions from top-level scientists illustrate how bionanomaterials could lead to novel devices or structures with unique properties. The first and second part cover the most relevant synthetic and bioinspired nanomaterials, including surfaces with extreme wettability properties, functional materials with improved adhesion or structural and functional systems based on the complex and hierarchical organization of natural composites.

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