

1. Record Nr.	UNINA9910140495403321
Titolo	Soft matter nanotechnology : from structure to function // edited by Xiaodong Chen and Harald Fuchs
Pubbl/distr/stampa	Weinheim, Germany : , : Wiley-VCH, , 2015 ©2015
ISBN	3-527-68216-3 3-527-68215-5
Descrizione fisica	1 online resource (457 p.)
Disciplina	530.413
Soggetti	Soft condensed matter Nanostructured materials Nanotechnology
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	Soft Matter Nanotechnology: From Structure to Function; Contents; List of Contributors; Preface; 1. Chemical Reactions for the Synthesis of Organic Nanomaterials on Surfaces; 1.1 Introduction; 1.1.1 Ullmann Coupling; 1.1.2 Condensation Reactions; 1.2 Alkane Polymerization; 1.3 Azide-Alkyne Cycloaddition; 1.4 Glaser Coupling; 1.5 Decarboxylative Polymerization of Acids; 1.6 Conclusions; Acknowledgments; References; 2. Self-Assembly of Organic Molecules into Nanostructures; 2.1 Introduction; 2.2 Classification of Nanostructures 2.3 General Self-Assembly Method for the Construction of Nanostructures 2.3.1 Reprecipitation; 2.3.2 Gelation; 2.3.3 Langmuir-Blodgett Technique; 2.3.4 Layer-by-Layer Assembly; 2.3.5 Self-Assembly in Solution; 2.4 Molecular Design and Building Blocks; 2.4.1 Amphiphiles; 2.4.1.1 Typical Amphiphiles; 2.4.1.2 Bolaamphiphiles; 2.4.1.3 Gemini Amphiphiles; 2.4.1.4 Triangular Amphiphiles; 2.4.1.5 Supra-amphiphiles; 2.4.2 Gelators; 2.4.2.1 Cholesterol-Based Gelators; 2.4.2.2 Alkane- and Fatty Acid-Based Gelators; 2.4.2.3 Nucleoside-Based Gelators; 2.4.2.4 Amino Acid- and Peptide-Based Gelators

2.4.2.5 Carbohydrate-Based Gelators  
2.4.3 -Functionalized System;  
2.4.3.1 Porphyrin; 2.4.3.2 Molecular Graphene; 2.4.3.3 -Conjugated Gelators; 2.4.4 Dendrimers; 2.5 Functions of Some Typical Nanostructures; 2.5.1 Vesicles/Hollow Spheres; 2.5.2 Nanotubes; 2.5.2.1 Self-Assembled Lipid Nanotubes; 2.5.2.2 Self-Assembled Peptide Nanotubes; 2.5.2.3 Functionalization of Nanotubes; 2.5.3 Nanofibers; 2.6 Conclusions and Outlook; References; 3. Supramolecular Nanotechnology: Soft Assembly of Hard Nanomaterials; 3.1 Introduction; 3.2 Soft Cell-Like Structures with Hard Nanomaterials 3.2.1 Cerasome: Inorganic Surface Cell 3.2.2 Flake-Shell Capsule; 3.2.3 Metallic Cells; 3.3 For Hierarchical Assembly: LbL and Others; 3.3.1 Mesoporous Carbon in Hierarchical Assembly; 3.3.2 Mesoporous Carbon Capsule in Layer-by-Layer Film; 3.3.3 Layer-by-Layer Assembly of Graphene and Ionic Liquids; 3.3.4 LbL Films of Mesoporous Silica Capsule for Controlled Release; 3.4 Summary; Acknowledgments; References; 4. Nanoparticles: Important Tools to Overcome the Blood-Brain Barrier and Their Use for Brain Imaging; 4.1 Introduction; 4.2 Physiology of the Blood-Brain Barrier 4.2.1 The Endothelial Blood-Brain Barrier 4.2.2 The Blood-CSF Barrier; 4.2.3 Regulation of the Barrier Tightness; 4.2.4 Transport Routes and Drug Permeability across the Blood-Brain Barrier; 4.2.5 In vitro Models of the BBB and Blood-CSF Barrier; 4.3 Definition and Type of Nanoparticles and Nanocarriers for Brain Uptake; 4.3.1 Organic Nanoparticles; 4.3.1.1 Polymeric Nanoparticles; 4.3.1.2 Liposomes and Lipidic Nanoparticles; 4.3.1.3 Nanomeric Emulsions, Micelles, and Nanogels; 4.3.1.4 Carbohydrates; 4.3.2 Inorganic Nanoparticles; 4.3.2.1 Magnetic Nanoparticles 4.3.2.2 Semiconductor Nanoparticles

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Sommario/riassunto

Xiaodong Chen is a Singapore NRF Fellow and Nanyang Assistant Professor at the School of Materials Science and Engineering, Nanyang Technological University (Singapore). He received his BSc degree in Chemistry from Fuzhou University (China) in 1999, his MSc degree in Physical Chemistry from the Chinese Academy of Sciences in 2002, and his PhD degree in Biochemistry from the University of Münster (Germany) in 2006. After his postdoctoral work at Northwestern University (USA), he started his independent research career at Nanyang Technological University in 2009. His research interests include s

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