

1. Record Nr.	UNINA9910132204703321
Titolo	Advanced sensor and detection materials // edited by Ashutosh Tiwari and Mustafa M. Demir ; cover design by Russell Richardson
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , 2014 ©2014
ISBN	1-118-77409-4 1-118-77403-5 1-118-77370-5
Descrizione fisica	1 online resource (535 p.)
Collana	Advanced Material Series
Disciplina	681.2
Soggetti	Detectors Detectors - 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	Cover; Title Page; Copyright Page; Contents; Preface; Part 1: Principals and Prospective; 1 Advances in Sensors' Nanotechnology; 1.1 Introduction; 1.2 What is Nanotechnology?; 1.3 Significance of Nanotechnology; 1.4 Synthesis of Nanostructure; 1.5 Advancements in Sensors' Research Based on Nanotechnology; 1.6 Use of Nanoparticles; 1.7 Use of Nanowires and Nanotubes; 1.8 Use of Porous Silicon; 1.9 Use of Self-Assembled Nanostructures; 1.10 Receptor-Ligand Nanoarrays; 1.11 Characterization of Nanostructures and Nanomaterials; 1.12 Commercialization Efforts; 1.13 Future Perspectives; References 2 Construction of Nanostructures: A Basic Concept Synthesis and Their Applications 2.1 Introduction; 2.1.1 Importance of Nanomaterials; 2.1.2 Synthetic Methods; 2.2 Formation of Zinc Oxide Quantum Dots (ZnO-QDs) and Their Applications; 2.3 Needle-Shaped Zinc Oxide Nanostructures and Their Growth Mechanism; 2.4 Flower-Shaped Zinc Oxide Nanostructures and Their Growth Mechanism; 2.5 Construction of Mixed Shaped Zinc Oxide Nanostructures and Their Growth Mechanism; 2.6 Summary and Future Directions; References; 3 The Role of the Shape in the Design of New Nanoparticles; 3.1 Introduction

3.1.1 The Importance of Shape and Size in the Design of New Nanoparticles; 3.2 The Importance of Shape as Nanocarriers; 3.2.1 Targeting and Shape; 3.3 Influence of Shape on Biological Process; 3.3.1 Biodistribution; 3.3.2 Phagocytosis; 3.3.3 Cytotoxicity; 3.4 Different Shapes of Polymeric Nanoparticles; 3.4.1 Synthesis; 3.4.2 Classification by Synthesis Method; 3.4.3 Classification by Initial Shape; 3.5 Different Shapes of Non-Polymeric Nanoparticles; 3.5.1 Gold Nanorods; 3.5.2 Carbon Nanotubes; 3.5.3 Fullerenes; 3.6 Different Shapes of Polymeric Nanoparticles: Examples; 3.6.1 Hexagonal Form; 3.6.2 Toroidal; 3.6.3 Conical; 3.6.4 Ellipsoids; 3.6.5 Disks; 3.7 Another Type of Nanoparticles; 3.7.1 Electrospun; 3.7.2 Vesicles; Acknowledgments; References; 4 Molecularly Imprinted Polymer as Advanced Material for Development of Enantioselective Sensing Devices; 4.1 Introduction; 4.2 Molecularly Imprinted Chiral Polymers; 4.3 MIP-Based Chiral Sensing Devices; 4.3.1 Electrochemical Chiral Sensor; 4.3.2 Optical Chiral Sensors; 4.3.3 Piezoelectric Chiral Sensing Devices; 4.4 Conclusion; References; 5 Role of Microwave Sintering in the Preparation of Ferrites for High Frequency Applications; 5.1 Microwaves in General; 5.2 Microwave-Material Interactions; 5.3 Microwave Sintering; 5.4 Microwave Equipment; 5.5 Kitchen Microwave Oven Basic Principle; 5.6 Microwave Sintering of Ferrites; 5.7 Microwave Sintering of Garnets; 5.8 Microwave Sintering of Nanocomposites; References; Part 2: New Materials and Methods; 6 Mesoporous Silica: Making "Sense" of Sensors; 6.1 Introduction to Sensors; 6.2 Fundamentals of Humidity Sensors; 6.3 Types of Humidity Sensors; 6.4 Humidity Sensing Materials; 6.5 Issues with Traditional Materials in Sensing Technology; 6.6 Introduction to Mesoporous Silica; 6.7 M41S Materials

Sommario/riassunto

The development of sensors at macroscopic or nanometric scales in solid, liquid, or gas phases, contact or noncontact configurations, has driven the research of sensor & detection materials and technology into high gear. The emphasis on detection techniques requires the use of spin crossover organic, inorganic and composite materials and methods that could be unique for sensors fabrication. The influence of length, composition and conformation structure of materials on their properties and the possibilities to adjust sensing properties by doping or addin
