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| Nota di contenuto | Biosensor Nanomaterials; Contents; Preface; List of Contributors; 1: New Micro - and Nanotechnologies for Electrochemical Biosensor Development; 1.1 Introduction; 1.2 Carbon Nanotubes; 1.2.1 Carbon Nanotubes Used in Catalytic Biosensors; 1.2.2 Carbon Nanotubes Used in Affinity Biosensors; 1.3 Conductive Polymer Nanostructures; 1.3.1 Conductive Polymer Nanostructures Used in Catalytic Biosensors; 1.3.2 Conductive Polymer Nanostructures Used in Affinity Biosensors; 1.4 Nanoparticles; 1.4.1 Nanoparticles Used in Catalytic Biosensors; 1.4.2 Nanoparticles Used in Affinity Biosensors<br>1.5 ConclusionsReferences; 2: Advanced Nanoparticles in Medical Biosensors; 2.1 Introduction; 2.2 Nanoparticles; 2.2.1 Gold Nanoparticles; 2.2.2 Magnetic Nanoparticles; 2.2.3 Quantum Dots; 2.2.4 Silica - Based Nanoparticles; 2.2.5 Dendrimers; 2.2.6 Fullerenes; 2.3 Conclusions and Outlook; References; 3: Smart Polymeric Nanofibers Resolving Biorecognition Issues; 3.1 Introduction; 3.2 Nanofibers; 3.2.1 pH - Sensitive Nanofibers; 3.2.2 Temperature - |

Responsive Nanofibers; 3.3 Electrospinning of Nanofibers; 3.4 Biorecognition Devices; References
4: Fabrication and Evaluation of Nanoparticle - Based Biosensors4.1 Introduction; 4.2 Nanoparticle - Based Biosensors and their Fabrication; 4.2.1 Types of Nanobiosensors; 4.2.1.1 Electrochemical Biosensors; 4.2.1.2 Calorimetric Biosensors; 4.2.1.3 Optical Biosensors; 4.2.1.4 Piezoelectric Biosensors; 4.2.2 Fabrication of Biosensors; 4.2.2.1 Immobilization of Biomolecules; 4.2.2.2 Conjugation of Biomolecules and Nanomaterials; 4.2.2.3 Newer Nanobiosensing Technologies; 4.3 Evaluation of Nanoparticle - Based Nanosensors; 4.3.1 Structural Characterization of Nanoparticle - Based Biosensors
4.3.1.1 Scanning Electron Microscopy4.3.1.2 Transmission Electron Microscopy; 4.3.1.3 Atomic Force Microscopy; 4.3.1.4 X - Ray Diffraction; 4.3.1.5 X - Ray Photoelectron Spectroscopy; 4.3.1.6 UV /Visible Spectroscopy; 4.3.2 Functional Characterization of Nanoparticle - Based Biosensors; 4.3.2.1 Quartz Crystal Microbalance; 4.3.2.2 Ellipsometry; 4.3.2.3 Surface Plasmon Resonance; 4.3.2.4 Cyclic Voltammetry; 4.4 Applications of Nanoparticle - Based Biosensors; 4.5 Conclusions; References; 5: Enzyme - Based Biosensors: Synthesis and Applications; 5.1 Introduction
5.2 Synthesis and Characterization of Biosensor Supports5.2.1 Carbon Nanotubes; 5.2.1.1 Characterization of Carbon Nanotubes; 5.2.1.2 Application of Carbon Nanotubes as Biosensor Supports; 5.2.2 Nanoparticles for Enzyme Immobilization; 5.2.2.1 General Consideration; 5.2.2.2 Application of Nanoparticles as Biosensor Supports; 5.2.3 Polymer Membranes; 5.3 Application of Enzyme - Based Biosensors; 5.3.1 Environmental Monitoring; 5.3.1.1 Phenolic Derivatives; 5.3.1.2 Pesticides; 5.3.2 Medical Diagnostics; 5.4 Conclusions; Acknowledgments; References
6: Energy Harvesting for Biosensors Using Biofriendly Materials

Sommario/riassunto

Focusing on the materials suitable for biosensor applications, such as nanoparticles, quantum dots, meso- and nanoporous materials and nanotubes, this text enables the reader to prepare the respective nanomaterials for use in actual devices by appropriate functionalization, surface processing or directed self-assembly. The main detection methods used are electrochemical, optical, and mechanical, providing solutions to challenging tasks.The result is a reference for researchers and developers, disseminating first-hand information on which nanomaterial is best suited to a particular applicat