1. Record Nr. UNINA9910455747003321 Autore Yih Tachung C. Titolo Micro and Nano Manipulations for Biomedical Applications Pubbl/distr/stampa Norwood:,: Artech House,, 2007 [Piscatagay, New Jersey]:,: IEEE Xplore,, [2007] **ISBN** 1-59693-255-4 Descrizione fisica 1 online resource (311 p.) Altri autori (Persone) YihTachung C Talpasanullie Disciplina 610.28/4 Soggetti Nanotechnology Biomedical engineering Dielectrophoresis Microactuators Electronic books. 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 Micro and Nano Manipulations for Biomedical Applications; Contents: Preface: Chapter 1 Introduction: 1.1 The Third Industrial Revolution?: 1.1.1 The First Industrial Revolution--Manufacturing and Transportation; 1.1.2 The Second Industrial Revolution--Computer and Communication; 1.1.3 The Third Industrial Revolution--Health and Environment?; 1.2 Microtechnologies and Nanotechnologies; 1.2.1 Challenges and Opportunities in Nanotechnology; 1.2.2 Micromanipulations and Nanomanipulations; 1.3 Applications and Trends: 1.3.1 Biomedical Science and Engineering. 1.3.2 Health Care and Environmental Applications References; Chapter 2 Nanotechnology Applications in Cancer Imaging and Therapy; 2.1 Introduction; 2.2 Nanotechnology Approaches for In Vivo Diagnostics; 2.2.1 Molecular Imaging Approaches for In Vivo Diagnostics; 2.2.2 Nanotechnology-Based Contrast Agents for In Vivo Imaging: 2.3 Nanotechnology-Based Drug Delivery Systems for Cancer Therapy;

2.3.1 Fundamental Requirements for Drug Delivery Systems; 2.3.2 Cancer Therapy Approaches Using Nanotechnologies; 2.4 Conclusions;

References; Chapter 3 Nanoparticles for Biomedical Applications.

3.1 Introduction3.2 Synthesis of Metallic Nanoparticles; 3.2.1 Synthesis Approaches to Noble Metal Nanoparticles; 3.2.1.1 Introduction; 3.2.1.2 Synthesis of Gold Nanoparticles; 3.2.2 Synthesis of Magnetic Metal Nanoparticles; 3.3 Novel Properties of Metal Nanoparticles; 3.3.1 Unique Properties of Noble Metal Nanoparticles; 3.3.2 Magnetic Properties of Metallic Nanoparticles; 3.4 Application of Metal Nanoparticles in Biomedicine; 3.4.1 Biomedical Detection Using Novel Metal Nanoparticles; 3.4.1.1 Au Nanoparticles; 3.4.1.2 Ag Nanoparticles.

3.4.2 Drug Delivery and Biosensing with Magnetic Nanoparticles3.5 Specific Properties of Quantum Dots; 3.6 Quantum Dots as Fluorescent Biological Labels; 3.6.1 Disadvantages of Organic Dyes, Traditional Biological Labels; 3.6.2 Beneficial Quantum Dot Optical and Spectral Properties; 3.7 Quantum Dots in Biomedical Applications; References; Chapter 4 Microactuators for In Vivo Imaging and Micromanipulators in Minimally Invasive Procedures; 4.1 Minimally Invasive Procedure Applications; 4.2 Endoscopic and In Vivo Imaging Applications; 4.2.1 In Vivo Scanning Microscope.

4.2.2 In Vivo Optical Coherent Tomography Imaging4.3
Micromanipulators for Minimally Invasive Procedures; 4.3.1 Microtools;
4.3.2 Sensors in Micromanipulators; 4.3.3 Navigation; 4.5 Conclusions;
References; Chapter 5 Microactuators; 5.1 Introduction; 5.2
Electrostatic Actuators; 5.3 Thermal Actuators; 5.4 Piezoelectric
Actuators; 5.5 Shape Memory Alloy Actuators; 5.6 Magnetic Actuators;
5.7 Conclusions; References; Chapter 6 Optical Nanomanipulation in a
Living Cell; 6.1 Two-Photon Fluorescence Microscopy; 6.1.1
Introduction: 6.1.2 A Brief Analytical Description.

Sommario/riassunto

Taking bio-device research and development to "the next level," this book covers the latest advances in biomedical microelectromechanical systems (MEMS) and nanoelectromechanical systems (NEMS). The book presents new developments in the synthesis and use of metallic nanoparticles in bio-sensing and drug delivery, including quantum dots semiconductors nanocrystals.