Development Of Biomedical Applications Of Non Equilibrium

The book covers preparation, designing and utilization of nanohybrid materials for biomedical applications. These materials can improve the effectiveness of drugs, promote high cell growth in new scaffolds, and lead to biodegradable surgical sutures. The use of hybrid magneto-plasmonic nanoparticles may lead to non-invasive therapies. The most promising materials are based on silica nanostructures, polymers, bioresorbable metals, liposomes, biopolymeric electrospun nanofibers, graphene, and gelatin. Much research focuses on the development of biomaterials for cell regeneration and wound healing applications. Keywords: Biomedical Materials, Cell Growth, Cell Regeneration, Wound Healing, Surgical Sutures, Non-invasive Therapies , Drug Transport, Tissue Engineering, Cardiovascular Implants, Fracture Repair Implants, Biodegradable Materials, Hybrid Magneto-plasmonic Nanoparticles, Silica Nanostructures, Polymers, Bioresorbable Metals, Liposomes, Biopolymeric Electrospun Nanofibers, Graphene, Gelatin-based Hydrogels.

Biomedical Applications of Nanoparticles describes the most interesting and investigated biomedical applications of nanoparticles, emphasizing their therapeutic impact. Progress made in the therapy of severe diseases, such as cancer and difficult infections is strictly correlated to the scientific progress and technological development in the field of materials science. Nanoparticles have numerous therapeutic applications, starting with the design of new drugs, delivery systems, therapeutic materials, and their contribution to the development of preventive strategies. The book highlights the impact of nanoparticles on the therapy of infections, antimicrobial effect and also anti-cancer strategies. Successful examples are given throughout the book, along with analysis in order to improve future outcomes of novel therapies. Highlights the term nanotherapeutics and presents several classifications of nanotherapeutics from different points-of-view Presents the recent progress related to nanotherapeutics in the oral cavity Provides the recent progress in the field of biomedical nanoparticles

Microfluidics or lab-on-a-chip (LOC) is an important technology suitable for numerous applications from drug delivery to tissue engineering. Microfluidic devices for biomedical applications discusses the fundamentals of microfluidics and explores in detail a wide range of medical applications. The first part of the book reviews the fundamentals of microfluidic technologies for biomedical applications with chapters focussing on the materials and methods for microfabrication, microfluidic actuation mechanisms and digital microfluidic technologies. Chapters in part two examine applications in drug discovery and controlled-delivery including micro needles. Part three considers applications of microfluidic devices in cellular analysis and manipulation, tissue engineering and their role in developing tissue scaffolds and stem cell engineering. The final part of the book covers the applications of microfluidic devices in diagnostic sensing, including genetic analysis, low-cost bioassays, viral detection, and radio chemical synthesis. Microfluidic devices for biomedical applications is an essential reference for medical device manufacturers, scientists and researchers concerned with microfluidics in the field of biomedical applications and life-science industries. Discusses the fundamentals of microfluidics or lab-on-a-chip (LOC) and explores in detail a wide range of medical applications Considers materials and methods for microfabrication, microfluidic actuation mechanisms and digital microfluidic technologies Considers applications of microfluidic devices in cellular analysis and manipulation, tissue engineering and their role in developing tissue scaffolds and stem cell engineering

The field of healthcare is seeing a rapid expansion of technological advancement within current medical practices. The implementation of technologies including neural networks, multi-model imaging, genetic algorithms, and soft computing are assisting in predicting and

identifying diseases, diagnosing cancer, and the examination of cells. Implementing these biomedical technologies remains a challenge for hospitals worldwide, creating a need for research on the specific applications of these computational techniques. Deep Neural Networks for Multimodal Imaging and Biomedical Applications provides research exploring the theoretical and practical aspects of emerging data computing methods and imaging techniques within healthcare and biomedicine. The publication provides a complete set of information in a single module starting from developing deep neural networks to predicting disease by employing multi-modal imaging. Featuring coverage on a broad range of topics such as prediction models, edge computing, and quantitative measurements, this book is ideally designed for researchers, academicians, physicians, IT consultants, medical software developers, practitioners, policymakers, scholars, and students seeking current research on biomedical advancements and developing computational methods in healthcare.

Porous Silicon for Biomedical Applications, Second Edition, provides an updated guide to the diverse range of biomedical applications of porous silicon, from biosensing and imaging to tissue engineering and cancer therapy. Across biomedical disciplines, there is an ongoing search for biomaterials that are biocompatible, modifiable, structurally sound, and versatile. Porous silicon possesses a range of properties that make it ideal for a variety of biomedical applications, such as controllable geometry, tunable nanoporous structure, large pore volume/high specific surface area, and versatile surface chemistry. This book provides a fully updated and detailed overview of the range of biomedical applications for porous silicon. Part One offers the reader a helpful insight into the fundamentals and beneficial properties of porous silicon, including thermal properties and stabilization, photochemical and nonthermal chemical modification, protein modification, and biocompatibility. The book then builds on the systematic detailing of each biomedical application using porous silicon, from bioimaging and sensing to drug delivery and tissue engineering. This new edition also includes new chapters on in-vivo assessment of porous silicon, photodynamic and photothermal therapy, micro- and nanoneedles, Raman imaging, cancer immunotherapy, and more. With its acclaimed editor and international team of expert contributors, Porous Silicon for Biomedical Applications, Second Edition, is a technical resource and indispensable guide for all those involved in the research, development, and application of porous silicon and other biomaterials, while providing a comprehensive introduction for students and academics interested in this field. Reviews the fundamental aspects of porous silicon, including the fabrication and unique properties of this useful material. Discusses a broad selection of biomedical applications, offering a detailed insight into the benefits of porous silicon in both research and clinical settings. Includes fully updated content from the previous edition, as well as brand new chapters, covering topics such as porous silicon micro- and nanoneedles, and cancer immunotherapy.

This book presents cutting-edge research and developments in the field of biomedical engineering, with a special emphasis on results achieved in Vietnam and neighboring low- and middle-income countries. Covering both fundamental and applied research, and focusing on the theme "Healthcare technology for smart city in low- and middle-income countries," it reports on the design, fabrication, and application of low-cost and portable medical devices, IoT devices, and telemedicine systems, on improved methods for biological data acquisition and analysis, on nanomaterials for biological applications, and on new achievements in biomechanics, tissue engineering, and regeneration. It describes the developments of molecular and cellular biology techniques, and statistical and computational methods, including artificial intelligence, for biomedical applications, covers key public/occupational health issues and reports on cutting-edge neuroengineering techniques. Gathering the proceedings of the 8th International Conference on The Development of Biomedical Engineering in Vietnam, BME 8, 2020, Vietnam, the book offers important answers to current challenges in the field and a source of inspiration for scientists, engineers, and researchers with various backgrounds working in different research institutes, companies, and countries.

Biomedical Applications of Magnetic Particles discusses fundamental magnetic nanoparticle physics and chemistry and explores important biomedical applications and future challenges. The first section presents the fundamentals of the field by explaining the theory of magnetism, describing techniques to synthesize magnetic particles, detailing methods to characterize magnetic particles, and quantitatively describing the applied magnetic forces, torques, and the resultant particle motions. The second section describes the wide range of biomedical applications, including chemical sensors, cellular actuators, drug delivery, magnetic hyperthermia, magnetic resonance imaging contrast enhancement, and toxicity. Additional key features include: Covers both introduction to physics and characterization of magnetic nanoparticles and the state of the art in biomedical applications Authoritative reference for scientists and engineers for all new or old to the field Describes how the size of magnetic nanoparticles affects their magnetic properties, colloidal properties, and biological properties. Written by a team of internationally respected experts, this book provides an up-to-date authoritative reference for scientists and engineers.

Materials for Biomedical Engineering: Biopolymer Fibers discusses the use of biopolymer fibers in the development of biomedical applications. It provides a recent review of the main types of polymeric fibers and their impact in biomedicine and related fields. The development of different instruments, such as sensors, medical fibers, and textiles are discussed, along with how they greatly benefited by progress made in polymeric fibers. The book provides a comprehensive and updated reference on the latest research in the field of biopolymers and their composites in relation to medical applications. Provides a valuable resource of recent scientific progress, highlighting the application and use of polymeric fibers in biomedical engineering that can be used by researchers, engineers and academics Includes novel opportunities and ideas for developing or improving technologies in biopolymers by companies, biomedical industries, and other sectors Features at least 50% of references from the last 2-3 years

This book presents a road map for applying the stages in conceptualization, evaluation, and testing of biomedical devices in a systematic order of approach, leading to solutions for medical problems within a well-deserved safety limit. The issues discussed will pave the way for understanding the preliminary concepts used in modern biomedical device engineering, which include medical imaging, computational fluid dynamics, finite element analysis, particle image velocimetry, and rapid prototyping. This book would undoubtedly be of use to biomedical engineers, medical doctors, radiologists, and any other professionals related to the research and development of devices for health care.

Design and Development of Biomedical and Surgical Instruments in Biomedical Applications.

Tailor-Made Polysaccharides in Biomedical Applications provides extensive details on all the vital precepts, basics, and fundamental aspects of tailored polysaccharides in the pharmaceutical and biotechnological industries. This information provides readers with the foundation for understanding and developing high-quality products. The utilization of natural polymeric excipients in numerous healthcare applications demands the replacement of the synthetic polymers with natural polymers. Natural polymers are superior in terms of biocompatibility, biodegradability, economic extraction, and ready availability. Natural polymers are especially useful in that they are a renewable source of raw materials, as long as they are grown sustainably. Among these natural polymers, polysaccharides are considered as excellent excipients because they are nontoxic, stable, and biodegradable. Several research innovations have been carried out using polysaccharides in drug delivery applications. This book offers a comprehensive resource to understand the potential of these materials in forming new drug delivery methods. It will be useful to biomedical researchers, chemical engineers, regulatory scientists, and students who are actively involved in developing pharmaceutical products for biomedical applications by using tailor-made polysaccharides. Provides methodology for the design, development, and selection of tailor-made polysaccharides in biomedical applications, including for particular therapeutic applications

Includes illustrations demonstrating the mechanism of biological interaction of tailor-made polysaccharides Discusses the regulatory aspects and demonstrates the clinical efficacy of tailor-made polysaccharides

Biomedical Applications of Functionalized Nanomaterials: Concepts, Development and Clinical Translation presents a concise overview of the most promising nanomaterials functionalized with ligands for biomedical applications. The first section focuses on current strategies for identifying biological targets and screening of ligand to optimize anchoring to nanomaterials, providing the foundation for the remaining parts. Section Two covers specific applications of functionalized nanomaterials in therapy and diagnostics, highlighting current practice and addressing major challenges, in particular, case studies of successfully developed and marketed functionalized nanomaterials. The final section focuses on regulatory issues and clinical translation, providing a legal framework for their use in biomedicine. This book is an important reference source for worldwide drug and medical devices policymakers, biomaterials scientists and regulatory bodies. Provides an overview of the methodologies for biological target identification and ligand screening Includes case studies showing the development of functionalized nanomaterials and their biomedical applications Highlights the importance of functionalized nanomaterials for drug delivery, diagnostics and regenerative medicine applications

Recent advances in nanomedicine offer ground-breaking methods for the prevention, diagnosis and treatment of some fatal diseases. Amongst the most promising nanomaterials being developed are magnetic nanomaterials, including magnetic nanoparticles and magnetic nanosensors. Some nanomagnetic medical applications are already commercially available with more set to be released over the coming years. Nanomedicine, Design and Applications of Magnetic Nanomaterials, Nanosensors and Nanosystems presents a comprehensive overview of the biomedical applications of various types of functional magnetic materials. The book provides an introduction to magnetic nanomaterials before systematically discussing the individual materials, their physical and chemical principles, fabrication techniques and biomedical applications. This methodical approach allows this book to be used both as a textbook for beginners to the subject and as a convenient reference for professionals in the field. Discusses magnetic nanoparticles including nanowires, nanotubes, zero-dimensional nanospheres and naturally existing magnetosomes. Examines intrinsically smart magnetic materials and describes their part in the development of biomedical sensors and biochips, which are often used in biomedical tests. Integrates the research efforts of different disciplines – from materials sciences to biology and electrical engineering to medicine – in order to provide a unified and authoritative guide to a richly interdisciplinary field. This volume is of great appeal to students and researchers in the fields of electrical and electronic engineering, biomedical engineering, nanotechnology, materials science, physics, medicine and biology. It is also of interest to practising engineers, materials scientists, chemists and research medical doctors involved in the development of magnetic materials and structures for biomedical applications.

Advanced Functional Polymers for Biomedical Applications presents novel techniques for the preparation and

characterization of functionalized polymers, enabling researchers, scientists and engineers to understand and utilize their enhanced functionality in a range of cutting-edge biomedical applications. Provides systematic coverage of the major types of functional polymers, discussing their properties, preparation techniques and potential applications Presents new synthetic approaches alongside the very latest polymer processing and characterization methods Unlocks the potential of functional polymers to support ground-breaking techniques for drug and gene delivery, diagnostics, tissue engineering and regenerative medicine

This book highlights recent advances in the field of biomaterials design and the state of the art in biomaterials applications for biomedicine. Addressing key aspects of biomaterials, the book explores technological advances at multi-scale levels (macro, micro, and nano), which are used in applications related to cell and tissue regeneration. The book also discusses the future scope of bio-integrated systems. The contents are supplemented by illustrated examples, and schematics of molecular and cellular interactions with biomaterials/scaffolds are included to promote a better understanding of the complex biological mechanisms involved in material-to-biomolecule interactions. The book also covers factors that govern cell growth, differentiation, and regeneration in connection with the treatment and recovery of native biological systems. Tissue engineering, drug screening and delivery, and electrolyte complexes for biomedical applications are also covered in detail. This book offers a comprehensive reference guide for multi-disciplinary communities working in the area of biomaterials, and will benefit researchers and graduate students alike.

Polymers are important and attractive biomaterials for researchers and clinical applications due to the ease of tailoring their chemical, physical and biological properties for target devices. Due to this versatility they are rapidly replacing other classes of biomaterials such as ceramics or metals. As a result, the demand for biomedical polymers has grown exponentially and supports a diverse and highly monetized research community. Currently worth $1.2bn in 2009 (up from $650m in 2000), biomedical polymers are expected to achieve a CAGR of 9.8% until 2015, supporting a current research community of approximately 28,000+. Summarizing the main advances in biopolymer development of the last decades, this work systematically covers both the physical science and biomedical engineering of the multidisciplinary field. Coverage extends across synthesis, characterization, design consideration and biomedical applications. The work supports scientists researching the formulation of novel polymers with desirable physical, chemical, biological, biomechanical and degradation properties for specific targeted biomedical applications. Combines chemistry, biology and engineering for expert and appropriate integration of design and engineering of polymeric biomaterials Physical, chemical, biological, biomechanical and degradation properties alongside currently deployed clinical applications of specific biomaterials aids use as single source reference on field. 15+ case studies provides in-depth analysis of

currently used polymeric biomaterials, aiding design considerations for the future
Microfluidic Devices for Biomedical Applications, Second Edition provides updated coverage on the fundamentals of microfluidics, while also exploring a wide range of medical applications. Chapters review materials and methods, microfluidic actuation mechanisms, recent research on droplet microfluidics, applications in drug discovery and controlled-delivery, including micro needles, consider applications of microfluidic devices in cellular analysis and manipulation, tissue engineering and their role in developing tissue scaffolds, and cover the applications of microfluidic devices in diagnostic sensing, including genetic analysis, low-cost bioassays, viral detection, and radio chemical synthesis. This book is an essential reference for medical device manufacturers, scientists and researchers concerned with microfluidics in the field of biomedical applications and life-science industries. Discusses the fundamentals of microfluidics or lab-on-a-chip (LOC) and explores a wide range of medical applications Considers materials and methods for microfabrication, microfluidic actuation mechanisms and digital microfluidic technologies Details applications of microfluidic devices in cellular analysis and manipulation, tissue engineering and its role in developing tissue scaffolds, and stem cell engineering
Nanostructured Polymer Composites for Biomedical Applications addresses the challenges researchers face regarding the creation of nanostructured polymer composites that not only have superior performance and mechanical properties, but also have acceptable biological function. This book discusses current efforts to meet this challenge by discussing the multidisciplinary nature of nanostructured polymer composite biomaterials from various fields, including materials science, polymer science, biomedical engineering and biomedicine. This compilation of existing knowledge will lead to the generation of new terminology and definitions across individual disciplines. As such, this book will help researchers and engineers develop new products and devices for use in effective medical treatment. Summarizes the most recent strategies to develop nanostructured polymer composite biomaterials for biomedicine Outlines the major preparation and characterization techniques for a range of polymer nanocomposites used in biomedicine Explores the design of new types of nanostructured polymer composites for applications in drug delivery, tissue engineering, gene therapy and bone replacement
The main focus of this book is on the development of electrospun membranes for advanced biomedical technologies including tissue engineering and drug delivery devices.Serving as a reference book for the beginner this book also provides an in-depth analysis of the challenges to be overcome in the future. Each section of the book covers not only the developments in the various fields of application of the electrospun meshes, but also the advances required for the successful development of new and high-end biomedical applications.Important areas tackled include:Biomedical

applications of the technologySpecific aspects of equipments and materialsSurface characterization and functionalizationIn vitro testing with electrospun meshes. In all of these areas the main achievements, challenges ahead and expert opinions are given, making this book highly unusual in the level of detail covered.

This book highlights the evolution of, and novel challenges currently facing, nanomaterials science, nanoengineering, and nanotechnology, and their applications and development in the biological and biomedical fields. It details different nanoscale and nanostructured materials syntheses, processing, characterization, and applications, and considers improvements that can be made in nanostructured materials with their different biomedical applications. The book also briefly covers the state of the art of different nanomaterials design, synthesis, fabrication and their potential biomedical applications. It will be particularly useful for reading and research purposes, especially for science and engineering students, academics, and industrial researchers.

Titanium and its alloys have been widely used as biomedical implant materials due to their low density, good mechanical properties, superior corrosion resistance and biocompatibility when compared with other metallic biomaterials such as Co–Cr alloys and stainless steels. Recently, ?-type titanium alloys have been increasingly considered as excellent implant materials because of the remarkable combination of high strength-to-weight ratio, good fatigue resistance, relatively low Young's modulus, good biocompatibility and high corrosion resistance relative to conventional titanium biomaterials. This book covers recent information about biomedical titanium alloy development and 3D printing. Chapters describe the processing, microstructure, mechanical properties and corrosion properties in detail. Information about the surface modification of titanium alloys for biomedical applications, and manufacturing of titanium alloys by new technologies (such as selective laser melting and electron beam melting), is also presented. Readers will learn about the various types of biomedical titanium alloys, their advantages and disadvantages, their fabrication methods and medical applications. This book is a useful handbook for biomedical engineers, metallurgists and biotechnicians seeking information about titanium-based alloys for biomaterials research and development.

Biomedical Applications of Graphene and 2D Nanomaterials provides a much-needed reference on the biomedical applications of 2D nanomaterials, as well as theoretical knowledge on their structure, physicochemical properties and biomedical applications. Chapters are dedicated to growth areas, such as size and shape-dependent chemical and physical properties and applications, such as in diagnostic and therapeutic products. The book also discusses the concept, development and preclinical studies of 2D nanomaterials-based biomedical tools, such as biosensors, artificial organs and photomedicine. Case studies and reports form the core of the book, making it an ideal resource on potential applications in biomedical science and engineering. This timely resource for scientists and engineers in this rapidly

advancing field features contributions from over 30 leaders who address advanced methods and strategies for controlling the physical-chemical properties of 2D nanomaterials, along with expert opinions on a range of 2D nanomaterials that have therapeutic and diagnostic applications. Presents advanced methods and strategies for controlling the physical-chemical properties of 2D nanomaterials Provides state-of-the-art biomedical applications for 2D nanomaterials, including graphene and boron nitride Includes key information from a broad selection of subject areas for researchers in both materials, engineering and medicine

Materials for Biomedical Engineering: Organic Micro- and Nanostructures provides an updated perspective on recent research regarding the use of organic particles in biomedical applications. The different types of organic micro- and nanostructures are discussed, as are innovative applications and new synthesis methods. As biomedical applications of organic micro- and nanostructures are very diverse and their impact on modern and future therapy, diagnosis and prophylaxis of diseases is huge, this book presents a timely resource on the topic. Users will find the latest information on cancer and gene therapy, diagnosis, drug delivery, green synthesis of nano- and microparticles, and much more. Provides knowledge of the range of organic micro- and nanostructures available, enabling the reader to make optimal materials selection decisions Presents detailed information on current and proposed applications of the latest biomedical materials Places a strong emphasis on the characterization, production and use of organic nanoparticles in biomedicine, such as gene therapy, DNA interaction and cancer management

Developments in mesoporous ceramics in drug delivery, nanomedicine, and bone tissue regeneration have opened promising developments in biomedical research, many applicable in the clinic in the near future. Due to the ability to fine-tune the physicochemical properties of these materials, the field has experienced an impressive burst in the number of publications. As controlled drug delivery systems are one of the most promising applications for human health care, it is now necessary to set the milestones of this technology, from the very basic to the most advanced. Biomedical Applications of Mesoporous Ceramics: Drug Delivery, Smart Materials and Bone Tissue Engineering is a comprehensive overview of silica-based mesoporous materials with special attention given to their use in drug delivery systems, sophisticated stimuli-responsive materials, and bone tissue engineering. The book provides a comprehensive overview of the basic aspects of the properties of mesoporous materials, with a focus on textural properties such as surface and porosity. Starting from this consolidated knowledge, it then addresses various aspects of more sophisticated stimuli-responsive materials and bone tissue engineering, detailing the research and development of these biomedical applications.

Composites in Biomedical Applications presents a comprehensive overview on recent developments in composites and

their use in biomedical applications. It features cutting-edge developments to encourage further advances in the field of composite research. Highlights a completely new research theme in polymer-based composite materials Outlines a broad range of different research fields, including polymer and natural fiber reinforcement used in the development of composites for biomedical applications Discusses advanced techniques for the development of composites and biopolymer-based composites Covers fatigue behavior, conceptual design in ergonomics design application, tissue regeneration or replacement, and skeletal bone repair of polymer composites Details the latest developments in synthesis, preparation, characterization, material evaluation, and future challenges of composite applications in the biomedical field This book is a comprehensive resource for advanced students and scientists pursuing research in the broad fields of composite materials, polymers, organic or inorganic hybrid materials, and nano-assembly.

The volume includes presentations of technological and research accomplishments along with novel approaches in nanomedicine and nanotechnology. It explores the different types of nanomedicinal drugs with their production and commercial significance. Other topics discussed are the use of natural and synthetic nanoparticles for the production of drugs, different types of nanoparticles systems, drug carriers, wound-healing antimicrobial activity, effects of natural materials in nanomedicine, and toxicity of nanoparticles. The valuable information presented in this volume will help to keep those in this field up to date on the key findings, observations, and fabrication of drugs related to nanomedicine and nanotechnology. With chapters written by prominent researchers from academia, industry, and government and private research laboratories across the world, the book will prove to be a rich resource.

With its content taken from only the very latest results, this is an extensive summary of the various polymeric materials used for biomedical applications. Following an introduction listing various functional polymers, including conductive, biocompatible and conjugated polymers, the book goes on to discuss different synthetic polymers that can be used, for example, as hydrogels, biochemical sensors, functional surfaces, and natural degradable materials. Throughout, the focus is on applications, with worked examples for training purposes as well as case studies included. The whole is rounded off with a look at future trends.

Tissue engineering involves seeding of cells on bio-mimicked scaffolds providing adhesive surfaces. Researchers though face a range of problems in generating tissue which can be circumvented by employing nanotechnology. It provides substrates for cell adhesion and proliferation and agents for cell growth and can be used to create nanostructures and nanoparticles to aid the engineering of different types of tissue. Written by renowned scientists from academia and industry, this book covers the recent developments, trends and innovations in the application of nanotechnologies in tissue engineering and regenerative medicine. It provides information on methodologies for designing and using

biomaterials to regenerate tissue, on novel nano-textured surface features of materials (nano-structured polymers and metals e.g.) as well as on theranostics, immunology and nano-toxicology aspects. In the book also explained are fabrication techniques for production of scaffolds to a series of tissue-specific applications of scaffolds in tissue engineering for specific biomaterials and several types of tissue (such as skin bone, cartilage, vascular, cardiac, bladder and brain tissue). Furthermore, developments in nano drug delivery, gene therapy and cancer nanotechonology are described. The book helps readers to gain a working knowledge about the nanotechnology aspects of tissue engineering and will be of great use to those involved in building specific tissue substitutes in reaching their objective in a more efficient way. It is aimed for R&D and academic scientists, lab engineers, lecturers and PhD students engaged in the fields of tissue engineering or more generally regenerative medicine, nanomedicine, medical devices, nanofabrication, biofabrication, nano- and biomaterials and biomedical engineering. Provides state-of-the-art knowledge on how nanotechnology can help tackling known problems in tissue engineering Covers materials design, fabrication techniques for tissue-specific applications as well as immunology and toxicology aspects Helps scientists and lab engineers building tissue substitutes in a more efficient way

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