

Nanotechnology And Drug Delivery Volume Two Nano Engineering Strategies And Nanomedicines Against Severe Diseases

Characterization and Biology of Nanomaterials for Drug Delivery: Nanoscience and Nanotechnology in Drug Delivery describes the techniques successfully employed for the application of nanocarriers loaded with the antioxidant enzyme, catalase, and thus targeted to endothelial cells. Methods of nanocarrier synthesis, loading within various systems, and the characterization of nanocarriers for targeting activities are covered, as are their advantages, disadvantages and applications. Reflecting the interdisciplinary nature of the subject matter, this book includes contributions by experts from different fields, all with various backgrounds and expertise. It will appeal to researchers and students from different disciplines, such as materials science, technology and various biomedical fields. Enables readers from different fields to access recent research and protocols across traditional boundaries Focuses on protocols and techniques, as well as the knowledge base of the field, thus enabling those in R&D to learn about, and successfully deploy, cutting-edge techniques Explores

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both current and emerging classes of nanomaterials, along with their fundamentals and applications

The recent introduction of nanomedicines in the drug therapy arena is revolutionizing the management of severe diseases. The key advance in the field is the optimization of the biological fate of drug molecules, thus improving the therapeutic effect while keeping to a very minimum the associated toxicity.

Volume one of this book series, *Nanoplatfoms in Drug Delivery*, established the basic aspects in the development of drug-loaded nanoplatfoms, the so-called nanomedicines or nanodrugs, focusing on representative materials and strategies used in their formulation. Taking advantage of the advanced conceptualizations on nanomedicine engineering that were described in volume one, volume two, *Nano-Engineering Strategies and Nanomedicines against Severe Diseases*, analyzes in depth special features related to the formulation of nanoplatfoms for oral, dental, topical and transdermal, pulmonary and nasal, ocular and otic, vaginal, and brain drug delivery and targeting. Particular aspects of nanomedicine engineering and in vivo fate associated with the routing of drug administration are given special attention. In addition, an up-to-date view is presented on the use of nanomedicines against severe diseases, such as cancer, cardiovascular diseases, neurodegenerative disorders, infectious

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diseases, chronic inflammatory diseases, and metabolic diseases. The chapters analyze the key factors that need to be controlled to achieve the optimum therapeutic effect. Attention is further given to gene delivery and the recent concept of nanotheranosis.

Nutrient Delivery: Nanotechnology in the Agri-Food Industry, Volume Five, discusses the fabrication, merits, demerits, applications, and bioavailability enhancement mechanisms of various nanodelivery systems. Recent developments in various nanodelivery systems are also highlighted. Volume 5 contains twenty chapters, prepared by outstanding international researchers from Argentina, Brazil, Canada, China, Croatia, India, Iran, Ireland, México, Pakistan, Portugal, Serbia, Sri Lanka, and the United States. In recent years, the delivery of micronutrients at nanoscale has been widely studied as these systems have the potential to improve bioavailability, enable controlled release and enhance stability of food bioactives to a greater extent. The nanodelivery systems typically consist of the food bioactive compound encapsulated and stabilized in food grade ingredients such as lipids, proteins or polysaccharides with diameters ranging from 10 nm to 1000 nm. Among these, the lipid based delivery systems such as nanoemulsions, solid lipid nanoparticles, nanoliposomes and micelles are widely studied for the delivery of lipophilic bioactive compounds. These delivery vehicles

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improve the solubility, permeability, stability and bioavailability of the lipophilic compounds thereby enhancing their potential for oral delivery and functional food development. On the other hand, the hydrophilic bioactives are delivered through protein, polysaccharide or biopolymer based colloidal nanosystems such as hydrogels, nanogels and polymer nanoparticles. The major concern other than solubility is the intestinal permeability of the micronutrients. For instance, the delivery system for compounds with poor intestinal permeability and low solubility need to be carefully designed using suitable lipids and surfactants. Offers updated material for undergraduate and postgraduate students in food science, biotechnology, and related engineering fields Provides a valuable resource of recent scientific progress, along with most known applications of nanomaterials in the food industry for researchers, engineers, and academics Includes novel opportunities and ideas for developing or improving technologies in the food industry

July 24-25, 2017 Rome, Italy Key Topics : Pharmaceutical Nanotechnology, Novel Drug Delivery Technology, Nanomedicine and Drug Delivery, Nanotechnology for Pediatric Medicine, Nanotechnology in Preclinical and Clinical Development, Regulatory Guidance for Pharmaceutical Nanotechnology, Nanotechnology for Targeted Drug Delivery, Future Aspects of Pharmaceutical

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Nanotechnology, Recent Advances in Nanotechnology, Major Challenges in Nanotechnology, Pharmaceutical Companies and Markets, Business Opportunities in Nanotechnology, Nano Pharmaceuticals, Nanomedicines and Biomedical Applications,

This forward-looking book focuses on the recent advances in nanomedicine and drug delivery. It outlines the extraordinary new tools that have become available in nanomedicine and presents an integrated set of perspectives that describe where we are now and where we should be headed to put nanomedicine devices into applications as quickly as possible, while also considering the possible dangers of nanomedicine. The book considers the full range of nanomedicinal applications that employ molecular nanotechnology inside the human body, from the perspective of a future practitioner in an era of widely available nanomedicine. Written by some of the most innovative minds in medicine and engineering, this unique volume will help professionals understand cutting-edge and futuristic areas of research that can have tremendous payoff in terms of improving human health. Readers will find insightful discussions of nanostructured intelligent materials and devices that are considered technically feasible and which have a high potential to produce advances in medicine in the near future. Topics include: Health benefits of phytochemicals and the application

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of colloidal delivery systems Study of non-covalent attachment of recombinant targeting proteins to polymer-modified Adenoviral gene delivery vectors The role of nanoparticles as adjuvants for mucosal vaccine delivery Poly(amido-amine)s as delivery systems for biologically active substances Antimicrobial activity of silver nanoparticles Nanomedicine in the use of cancer treatment Dendrimers, capsules based on lipid vesicles for drug delivery Many other recent achievements

This book introduces the reader to drug delivery with specific emphasis on the use of nanoparticles. It covers properties, characterization, and preparation of different types of nanoparticles and discusses recent advances in their structural design and biomedical application, as well as the issues and challenges associated with their design and use. Some of the topics covered include the potential application of nanoparticles in biomedical fields, hazards associated with use of nanoparticles for drug delivery, size-dependent factors in drug delivery applications, different organic, inorganic and their hybrid systems used in drug delivery, etc. It also highlights use of nanoparticles in controlled and targeted drug delivery, and their application in stimuli-responsive, especially pH-responsive, drug release. Additionally, it also focuses on biomimetic nanoparticles, challenges faced in the designing of nanoparticles for drug

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delivery in cancer, viral and bacterial diseases. The contents of this volume will be useful to researchers and professionals working on advances in targeted drug delivery systems.

Nanopharmaceuticals reviews advances in the drug delivery field via nanovehicles or nanocarriers that offer benefits like targeted therapy and serves as a single dose magic bullet for multiple drug delivery with improved drug efficiency at a lower dose, transportation of the drug across physiological barriers as well as reduced drug-related toxicity. The chapters are written by a diverse group of international researchers from industry and academia. The series Expectations and Realities of Multifunctional Drug Delivery Systems examines the fabrication, optimization, biological aspects, regulatory and clinical success of wide range of drug delivery carriers. This series reviews multifunctionality and applications of drug delivery systems, industrial trends, regulatory challenges and in vivo success stories. Throughout the volumes discussions on diverse aspects of drug delivery carriers, such as clinical, engineering, and regulatory, facilitate insight sharing across expertise area and form a link for collaborations between industry-academic scientists and clinical researchers. Expectations and Realities of Multifunctional Drug Delivery Systems connects formulation scientists, regulatory experts, engineers, clinical experts and regulatory stake holders. The

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wide scope of the book ensures it as a valuable reference resource for researchers in both academia and the pharmaceutical industry who want to learn more about drug delivery systems. Other volumes in the Expectations and Realities of Multifunctional Drug Delivery Systems book series: Delivery of Drugs, Volume 2, 9780128177761 Drug Delivery Trends, Volume 3, 9780128178706 Drug Delivery Aspects, Volume 4, 9780128212226 Encompasses functional aspects of nanocarriers Discusses Intellectual Property landscapes of micro-nano drug carriers Contains in-depth investigation of specific aspects of drug delivery systems

This new volume focuses on the ever-growing and ever-sophisticated use of nanobiomaterials in drug delivery. There have been significant developments in the delivery of the active pharmaceutical ingredients to target sites, thereby sparing the normal functioning biological systems from damage, and this volume highlights some of the most important developments in the field. The book first provides an overview of nanobiomaterials and then goes on to report on new developments in drug delivery and nanotechnology, nanobiomaterials as carriers in cancer therapy, and the diverse uses of nanobiomaterials. Broken into sections, the chapters cover: an overview of nanobiomaterials drug delivery and nanotechnology nanobiomaterials as carriers in cancer therapeutics diverse uses

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of nanobiomaterials This volume will be a valuable resource on drug delivery for pharmaceutical manufacturers, healthcare personnel, and researchers. Emerging Nanotechnologies for Diagnostics, Drug Delivery and Medical Devices covers the modern micro and nanotechnologies used for diagnosis, drug delivery, and theranostics using micro, nano, and implantable systems. In-depth coverage of all aspects of disease treatment is included. In addition, the book covers cutting-edge research and technology that will help readers gain knowledge of novel approaches and their applications to improve drug/agent specificity for diagnosis and efficient disease treatment. It is a comprehensive guide for medical specialists, the pharmaceutical-industry, and academic researchers discussing the impact of nanotechnology on diagnosis, drug delivery, and theranostics. Gives readers working in immunology, drug delivery, and medicine a greater awareness on how novel nanotechnology orientated methods can help improve treatment Provides readers with backgrounds in nanotechnology, chemistry, and materials science an understanding on how nanotechnology is used in immunology and drug delivery Includes focused coverage of the use of nanodevices in diagnostics, therapeutics, and theranostics not offered by other books

Microfluidics for Pharmaceutical Applications: From Nano/Micro Systems Fabrication to Controlled Drug Delivery is a concept-orientated reference that features case studies on utilizing microfluidics for drug delivery applications. It is a valuable learning reference

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on microfluidics for drug delivery applications and assists practitioners developing novel drug delivery platforms using microfluidics. It explores advances in microfluidics for drug delivery applications from different perspectives, covering device fabrication, fluid dynamics, cutting-edge microfluidic technology in the global drug delivery industry, lab-on-chip nano/micro fabrication and drug encapsulation, cell encapsulation and delivery, and cell- drug interaction screening. These microfluidic platforms have revolutionized the drug delivery field, but also show great potential for industrial applications. Presents detailed coverage on the fabrication of novel drug delivery systems with desired characteristics, such as uniform size, Janus particles, and particular or combined responsiveness Includes a variety of case studies that explain principles Focuses on commercialization, cost, safety, society and educational issues of microfluidic applications, showing how microfluidics is used in the real world

This new two-volume set, *Drug Delivery Approaches and Nanosystems, Volume 1: Novel Drug Carriers* and *Volume 2: Drug Targeting Aspects of Nanotechnology* presents a comprehensive look at the state-of-the-art research and developments in drug delivery systems using nanotechnology and its applications. Many methods of drug delivery systems have been used, but very few of them have been validated for medical use. A major reason for the above situation, the editors believe, is due to the gap between academia and research, and the gap between academic research and real-time clinical applications and needs. These volumes address that gap. Volume 1

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addresses the ubiquitous applications of nanotechnology or nano-sized materials in the medical field and the real-world challenges and complexities of current drug delivery methodologies and techniques, while Volume 2 focuses on drug targeting aspects of nanotechnology. Together they provide a thorough review of the applications of nanotechnology or nano-sized materials in the medical field and the real-world challenges and complexities of current drug delivery methodologies and techniques. These two volumes will provide a plethora of real-world information for the application of drug delivery approaches via nanotechnology that will be valuable to scientists and researchers as well as faculty and students. The volumes are available separately or together as a set.

Drug Delivery Aspects: Expectations and Realities of Multifunctional Drug Delivery Systems examines the fabrication, optimization, and scale-up of nano and micro carriers. Various aspects like conversion of micro-nano particles into solid dosage form, large scale industry manufacturing challenges of nanocarriers, regulatory considerations on drug device combinations are featured in this volume. Written by a diverse range of international researchers from industry and academia, the chapters examine specific aspects of characterization and manufacturing for pharmaceutical applications as well as regulatory and policy aspects. The Multifunctional Drug Delivery Systems books provide a platform to discuss opportunities and challenges in development of micro-nanomedicine and other drug delivery systems, review industrial

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manufacturing challenges, discuss current and future market trends, facilitate the insight sharing within various expertise area, and establish collaborations between academic scientists, industrial and clinical researchers. This book connects formulation scientists, regulatory experts, engineers, clinical experts and regulatory stake holders. The wide scope of the book ensures it is a valuable reference resource for researchers in both academia and the pharmaceutical industry who want to learn more about the status of drug delivery systems.

With the advent of analytical techniques and capabilities to measure particle sizes in nanometer ranges, there has been tremendous interest in the use of nanoparticles for more efficient methods of drug delivery. Nanoparticulate Drug Delivery Systems addresses the scientific methodologies, formulation, processing, applications, recent trends, and e

Nanobiomaterials in Drug Delivery: Applications of Nanobiomaterials presents novel approaches regarding nanostructured drug delivery systems, revealing the most investigated materials for the development of particular nanobioshuttles. This book brings the results of current research to reach those who wish to use this knowledge in an applied setting, providing one coherent text, with focused chapters and easily accessible information. At its core, it is a collection of titles, bringing together many of the novel applications these materials have in biology, also discussing the advantages and disadvantages of each application and the perspectives of the technologies based

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on these findings. At the moment, there is no other comparable book series covering all the subjects approached in this set of titles. Provides up-to-date and well-structured reference material for students, researchers, and practitioners working in the biomedical, biotechnological, and engineering fields Presents a valuable guide to recent scientific progress, along with most known applications of nanomaterials in the biomedical area Proposes novel opportunities and ideas for developing or improving technologies in nanomedicine/nanobiology

With its focus on concrete methods and recent advances in applying nanotechnology to develop new drug therapies and medical diagnostics, this book provides an overall picture of the field, from the fundamentals of nanopharmacy with the characterisation and manufacturing methods to the role of nanoparticles and substances. Actual examples of utilization include drug development issues, translation to the clinic, market prospects, and industrial commercialization aspects. The applications described are taken from cancer treatment as well as other major therapeutic areas, such as infectious diseases and dermatology. An in-depth discussion on safety, regulatory, and societal aspects rounds off the book. Written by a top team of editors and authors composed of the leading experts in Europe and the USA who have pioneered the field of nanopharmacy!

Basic Fundamentals of Drug Delivery covers the fundamental principles, advanced methodologies and technologies employed by pharmaceutical scientists, researchers

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and pharmaceutical industries to transform a drug candidate or new chemical entity into a final administrable drug delivery system. The book also covers various approaches involved in optimizing the therapeutic performance of a biomolecule while designing its appropriate advanced formulation. Provides up-to-date information on translating the physicochemical properties of drugs into drug delivery systems Explores how drugs are administered via various routes, such as orally, parenterally, transdermally or through inhalation Contains extensive references and further reading for course and self-study

Systemic Drug Delivery Strategies: Delivery Strategies and Engineering Technologies in Cancer Immunotherapy, Volume 2 examines the challenges of delivering immunology therapies, focusing specifically on the multiple technologies of affective drug delivery strategies. Immunology (IO) is a growing field of medicine at the interface of immunology and cancer biology leading to development of novel therapeutic approaches, such as chimeric antigen receptor T-cell (CAR-T) and immune checkpoint blockade antibodies, that are clinically approved approaches for cancer therapy. Although currently approved IO approaches have shown tremendous promise for select types of cancers, broad application of IO strategies could even further improve the clinical success, especially for diseases such as pancreatic cancer, brain tumors where the success of IO so far has been limited. This volume of *Delivery Strategies and Engineering Technologies in Cancer Immunotherapy* discusses methods of targeting tumors, CRISPR technology, and vaccine delivery among many other delivery

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strategies. Systemic Drug Delivery Strategies: Delivery Strategies and Engineering Technologies in Cancer Immunotherapy, Volume 2 creates a comprehensive treaty that engages the scientific and medical community who are involved in the challenges of immunology, cancer biology, and therapeutics with possible solutions from the nanotechnology and drug delivery side. Comprehensive treaty covering all aspects of immuno-oncology (IO) Novel strategies for delivery of IO therapeutics and vaccines Forecasting on the future of nanotechnology and drug delivery for IO

This book presents the comprehensive description of basic principles, methodologies, similarities and differences of nano-liposomes and -phytosomes. It focuses on the implications of these nano carriers in drug delivery and also includes detailed classification of nanoionized drug particles, polymeric nanoparticles and hydrophobic nanoparticles. This book concludes with the biological, technical and study-design challenges of Nanopharmaceuticals and presents critical viewpoints of smart DNA nanostructures. The risk factors and regulatory concerns have also been kept in focus and the book includes the toxicity and application of different types of ionic liquids for humans and environment. It also critically describes characteristics, applications and regulatory gaps of nanoparticle-ionic liquid combined systems.

Nanomaterials for Drug Delivery and Therapy presents recent advances in the field of nanobiomaterials and their important applications in drug delivery, therapy and engineering. The book offers pharmaceutical perspectives, exploring the development

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of nanobiomaterials and their interaction with the human body. Chapters show how nanomaterials are used in treatments, including neurology, dentistry and cancer therapy. Authored by a range of contributors from global institutions, this book offers a broad, international perspective on how nanotechnology-based advances are leading to novel drug delivery and treatment solutions. It is a valuable research resource that will help both practicing medics and researchers in pharmaceutical science and nanomedicine learn more on how nanotechnology is improving treatments. Assesses the opportunities and challenges of nanotechnology-based drug delivery systems Explores how nanotechnology is being used to create more efficient drug delivery systems Discusses which nanomaterials make the best drug carriers

Providing optimal care to patients is a primary concern in the healthcare field. By utilizing the latest resources and research in biomedical applications, the needs and expectations of patients can be successfully exceeded. *Novel Approaches for Drug Delivery* is an authoritative reference source for the latest scholarly research on emerging developments within the pharmaceutical industry, examining the current state and future directions of drug delivery systems. Highlighting therapeutic applications, predictive toxicology, and risk assessment perspectives, this book is ideally designed for medical practitioners, pharmacists, graduate-level students, scientists, and researchers.

The reader will be introduced to various aspects of the fundamentals of nanotechnology

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based drug delivery systems and the application of these systems for the delivery of small molecules, proteins, peptides, oligonucleotides and genes. How these systems overcome challenges offered by biological barriers to drug absorption and drug targeting will also be described.

This volume, the first of the two-volume Drug Delivery Approaches and Nanosystems series, presents a full picture of the state-of-the-art research and development in drug delivery systems using nanotechnology and its applications. It addresses the ever-expanding application of nanotechnology or nano-sized materials in the medical field and the real-world challenges and complexities of current drug delivery methodologies and techniques. Many methods of drug delivery systems have been used, but very few of them have been validated for medical use. A major reason for the above situation, the editors believe, is the gap between academia and research, and the gap between academic research and real-time clinical applications and needs. This volume addresses that gap. This volume presents 12 chapters that provide information about the preparation and characterization of nanocomposite materials used in drug delivery systems; advanced research of carbon nanotubes, nanocomposite materials, and polymer-clay, ceramics, and silicate glass-based nanocomposites; and the functionality of graphene nanocomposites. The book also provides detailed information on the application of nanotechnology in drug delivery systems in health care systems and medicine. The book describes how nanostructures are synthesized and draws attention

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to wide variety of nanostructures available for biological research and treatment applications. This valuable volume provides a wealth of information that will be valuable to scientists and researchers, faculty, and students. Volume 2 of the two-volume series is subtitled Drug Targeting Aspects of Nanotechnology. The volumes are available separately or as a set.

Nanotechnology and Drug Delivery, Volume One Nanoplatforams in Drug Delivery CRC Press

This contribution book collects reviews and original articles from eminent experts working in the interdisciplinary arena of novel drug delivery systems and their uses. From their direct and recent experience, the readers can achieve a wide vision on the new and ongoing potentialities of different drug delivery systems. Since the advent of analytical techniques and capabilities to measure particle sizes in nanometer ranges, there has been tremendous interest in the use of nanoparticles for more efficient methods of drug delivery. On the other hand, this reference discusses advances in the design, optimization, and adaptation of gene delivery systems for the treatment of cancer, cardiovascular, pulmonary, genetic, and infectious diseases, and considers assessment and review procedures involved in the development of gene-based pharmaceuticals.

This groundbreaking, multidisciplinary work is one of the first books to cover Nanotheragnostics, the new developmental edge of nanomedicine. Through a

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collection of authoritative chapters, the book reports on nanoscopic therapeutic systems that incorporate therapeutic agents, molecular targeting, and diagnostic imaging capabilities. An invaluable reference for researchers in materials science, bioengineering, pharmacy, biotechnology, and nanotechnology, this volume features four main parts on biomedical nanomaterials, advanced nanomedicine, nanotheragnostics, and nanoscaffolds technology.

Pharmacotherapy is often limited by the inefficient activity and severe toxicity of drug molecules. Nanotechnology offers a revolutionary and definitive approach for the efficient delivery of drug molecules to non-healthy tissues and cells. This first volume of a series of two volumes analyzes the basics in the development of drug-loaded nanoplatforms, the so-called nanomedicines. Special attention is given to physicochemical engineering, pharmacokinetics, biocompatibility and biodegradability, representative nanoplatforms (based on lipids, polymers, cyclodextrins, metals, carbon, silica, iron oxides, etc.), and advanced nano-engineering strategies for passive, ligand-mediated, and/or stimuli-sensitive drug delivery and release.

This volume is a thorough presentation of the state-of-the-art research and developments in drug delivery systems using nanotechnology and its applications. The second of this two-volume set, it addresses the applications of

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nanotechnology or nano-sized materials in the medical field and the real-world challenges and complexities of current drug delivery methodologies and techniques. This volume includes 11 chapters that focus on the targeting facet of drug delivery systems. Targeting is a focused maneuver to achieve the specified goals, including achieving the desired result and reaching the specific location. Targeting has now been successfully achieved for several diseases/disorders; however, its role is noteworthy in cancer treatment where chemotherapy is a main course of approach. Nanotechnology-based products have great potential by virtue of their inherent features. This edited book provides a detailed application of nanotechnology in drug delivery systems in health care. The book discusses general principles of drug targeting, material of construction and technological concerns of nanoparticles, and different drug delivery systems and their preparation. Taken together, the informative chapters will provide researchers and scientists as well as faculty and students with valuable research on the effective use of new approaches in advanced drug delivery nanosystems. Volume 1 of the two-volume series is subtitled Novel Drug Carriers. The volumes are available separately or as a set.

The 3rd volume of Advances in Nanotechnology & Applications is a collection of several articles and research papers that were presented at the 3rd Annual

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Nanotechnology Symposium in 2010. The first chapter discusses the inorganic nanoparticles for therapeutics, drug and gene delivery. The second chapter discusses controlled therapy delivery systems using nano magnetic particles and other technologies. The third chapter deals with the nano niosomes as drug delivery systems. Fourth chapter deals with manufacture of nanoparticulate clinical trial materials. Fifth chapter deals with hypothetical application of nano drug and gene delivery using robotic systems. Another interesting chapter is on Titanium nano-tubes for implant applications and drug delivery. Chapters seven and eight discuss the grapheme and fullerene nano particles, and their applications. Chapter nine discusses the status of nanotechnology education with special reference to nanotechnology in pharmaceutical education in USA. Chapters 10 -15 deal with applications of nanotechnology in drug delivery systems. Chapter 11 deals particularly with modulation of crystal growth in micro-emulsion based reactors using polymers.

Metal Nanoparticles for Drug Delivery and Diagnostic Applications addresses the lifecycle of metal nanoparticles, from synthesis and characterization, to applications in drug delivery and targeting. It is an important resource for those in biomaterials, nanomedicine and pharmaceutical sciences, exploring gold, silver and iron-based drug delivery systems for controlled and targeted delivery of

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potential drugs and genes for enhanced clinical efficacy. Nanotechnology is widely used in drug delivery due to its ability to reduce plasma fluctuation of drugs, high solubility, and efficiency, the relatively low cost of nanoscale products, and enhancement of patient comfort, hence this resource is a welcome edition to the science. Illustrates the progression of nanoparticle therapeutics from basic research to applications Explores new opportunities and ideas for developing and improving technologies in nanomedicine and nanobiology Discusses the toxicity of different types of metal nanoparticles and how to ensure their safe use

Nanotechnology-based therapeutics, operating at scales of billionths of a metre, have great potential for future expansion in altering the scale and methods of drug delivery. The availability of these novel formulations to once-inaccessible areas of the body has greatly expanded the therapeutic window of existing drug molecules. Nanoparticulate drug delivery highlights and examines the transition of nanoparticulate drug delivery systems from the laboratory into a commercially viable sector. The first chapters of the book provide an overview of the use and characterization of nanoparticulate systems as drug carriers, including the assessment of their morphology, sterility and potential toxicity. In the latter part of the book, chapters cover nanotoxicology, regulatory aspect and clinical trials,

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ending with an overview of several case studies and a look towards future developments. Discusses the issues surrounding nanoparticulate products, based on personal experience of their formulation Provides an overview of new application areas, including RNA interference Outlines the pros and cons of nanoparticulate products, and discusses how these may influence their route into the commercial sector

March 19-21, 2018 | Berlin, Germany Key Topics : Drug Targeting and Design, Drug Delivery Technologies, Nanoparticulate Drug Delivery Systems, Pharmaceutical Nanotechnology, Nanomedicine and Nanotechnology, Smart Drug Delivery Systems, Biomaterials in Drug Delivery, Vaccine Drug Delivery Systems, Medical Devices for Drug Delivery, Peptides and Protein Drug Delivery, Green & Sustainable Pharma, 2D & 3D Printing in Drug Delivery, Pre-Formulation & Formulation Aspects, Pharmacokinetics and Pharmacodynamics in drugs, Routes of Drug Delivery, Nanotechnology in Drug Delivery, Global Drug Delivery Policy, Biomedicine and Pharmacotherapy,

This book takes a systematic approach to address the gaps relating to nanomedicine and bring together fragmented knowledge on the advances on nanomaterials and their biomedical applicability. In particular, it demonstrates an exclusive compilation of state of the art research with a focus on fundamental

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concepts, current trends, limitations, and future directions of nanomedicine. Nano-carriers for Drug Delivery: Nanoscience and Nanotechnology in Drug Delivery presents recent discoveries in research on the pharmaceutical applications of the various types of nanosystem-based drug delivery systems. As many nanosystems have reached the market over the past decade, this book proves their benefits to patients. It explores these new carriers and the advances in drug delivery they have facilitated. Reflecting the interdisciplinary nature of the subject matter, the book includes experts from different fields, and with various backgrounds and expertise. It will appeal to researchers and students from different disciplines, such as materials science, technology and various biomedical fields. Coverage includes industrial applications that bridge the gap between lab-based research and practical industrial use. The resulting work is a reference and practical source of guidance for researchers, students and scientists working in the fields of nanotechnology, materials science and technology and biomedical science. Enables readers from different fields to access recent research and protocols across traditional boundaries Focuses on protocols and techniques, as well as the knowledge base of the field, thus enabling those in R&D to learn about, and successfully deploy, cutting-edge techniques Includes sections on nanocarrier systems

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Emerging Nanotechnologies in Immunology: The Design, Applications and Toxicology of Nanopharmaceuticals and Nanovaccines aims to deliver a systematic and comprehensive review of data concerning the nature of interaction and nano-related risks between the nanopharmaceuticals currently in the pipeline of S&T development for skin, ocular and nasal drug delivery, including absorption, toxicity, and the ability to distribute after systemic exposure. The book's contributors address a representative set of the broad spectrum of nanopharmaceutics presently being used, including cationic lipid nanoparticles, polymeric PLGA, PLA nanoparticles, biomacromolecules-based nanoparticles, and other scaffolds tissue-engineered skin substitutes. In addition, regulation and risk are also covered since the safety of these nanopharmaceuticals still represents a barrier to their wide and innovative use. Provides a thorough knowledge of the safety aspects of nanopharmaceuticals currently under research Focuses on the characterization and quantification of nanopharmaceutics to allow readers to understand the correlation between the nature of the materials and their potential nanotoxicological effects Includes a thorough overview of legal and regulatory aspects and a discussion of the ethical issues related to the R&D of nanopharmaceuticals Smart materials, which can change properties when an external stimulus is

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applied, can be used for the targeted drug delivery of an active molecule to a specific site in the correct dosage. Different materials such as liposomes, polymeric systems, nanomaterials and hydrogels can respond to different stimuli such as pH, temperature and light and these are all attractive for controlled release applications. With so many papers available on smart and stimuli-responsive materials for drug delivery applications it's hard to know where to start reading about this exciting topic. This two volume set brings together the recent findings in the area and provides a critical analysis of the different materials available and how they can be applied to advanced drug delivery systems. With contributions from leading experts in the field, including a foreword from distinguished scientist Nicholas Peppas, The University of Texas at Austin, USA, the book will provide both an introduction to the key areas for graduate students and new researchers in the stimuli-responsive field as well as serving as a reference for those already working on fundamental materials research or drug delivery applications.

This book collects reviews and original articles from eminent experts working in the interdisciplinary arena of nanotechnology use in drug delivery. From their direct and recent experience, the readers can achieve a wide vision on the new and ongoing potentialities of nanotechnology application of drug delivery. Since

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the advent of analytical techniques and capabilities to measure particle sizes in nanometer ranges, there has been tremendous interest in the use of nanoparticles for more efficient methods of drug delivery. On the other hand, this reference discusses advances in design, optimization, and adaptation of gene delivery systems for the treatment of cancer, cardiovascular, pulmonary, genetic, and infectious diseases, and considers assessment and review procedures involved in the development of gene-based pharmaceuticals.

Nano Drug Delivery Strategies for the Treatment of Cancers discusses several current and promising approaches for the diagnosis and treatment of cancer by using the most recent developments in nanomedical technologies. The book presents introductory information about the biology of different types of cancer in order to provide the reader with knowledge on their specificities. In addition, it discusses various novel drug delivery systems, detailing their functionalities, expected outcomes and future developments in the field, focusing on brain, mouth and throat, breast, lung, liver, pancreas, stomach, colon, bool, skin and prostate cancers. The book is a valuable source for cancer researchers, oncologists, pharmacologists and nanotechnologists who are interested in novel drug delivery systems and devices for treatment of various types of cancer that take advantage of recent advances in this exciting field. Discusses a wide range

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of promising approaches for the diagnosis and treatment of cancer using the latest advancement in cutting-edge nanomedical technologies Provides foundational information on different types of cancer and their biology to help the reader choose the best nano drug delivery system for patients Presents novel drug delivery systems based on nanoparticles, microparticles, liposomes, self-assembling Micelles and block copolymer micelles

Nanostructures for Drug Delivery extensively covers the various nanostructured products that have been tested as carriers in target drug delivery systems. In addition, the book analyses the advantages of, and issues related to, using nanostructured materials in drug delivery systems, also detailing various nanocarrier preparation techniques. As delivering the drug to the target site is a major problem in providing effective treatment for many diseases, this book covers the latest advancements in numerous nanotechnological products that are being used in disease detection, controlled drug delivery, as biosensors, and in tissue engineering that have been developed for more efficient patient healthcare. Due to the versatility of nanostructured materials, it is now possible to deliver a drug at its target site in a more accurate and efficient way. This volume is an up-to-date, state-of-the-art work that highlights the principal mechanistic aspects related to the delivery of active nanoscale therapeutic agents (natural or

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synthetic) and their release profile in different environmental media. It highlights nanoscale encapsulation strategies and discusses both organic and inorganic nanomaterials as carriers and delivery platforms. Demonstrates how nanostructures are successfully employed in drug delivery stems and as drug delivery agents, allowing biomaterials scientists and biochemists to create more effective drug delivery systems Offers an overview of recent research into the use of nanostructures in drug delivery techniques in a cogent, synthesized way, allowing readers to quickly familiarize themselves with this area Includes examples of how the application of nanostructures have improved the efficiency of drug delivery systems, showing medical scientists how they are beneficial Delivery of Drugs: Expectations and Realities of Multifunctional Drug Delivery Systems, Volume Two examines the formulation of micro-nanosized drug delivery systems and recaps opportunities for using physical methods to improve efficacy via mechano-, electroporation. The book highlights innovative delivery methods like PIPAC, including discussions on the regulatory aspects of complex injectables. Written by a diverse range of international researchers from industry and academia, the chapters examine specific aspects of characterization and manufacturing for pharmaceutical applications as well as regulatory and policy aspects. This book connects formulation scientists, regulatory experts, engineers,

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clinical experts and regulatory stakeholders. This level of discussion makes it a valuable reference resource for researchers in both academia and the pharmaceutical industry who want to learn more about the status of drug delivery systems. Encompasses the functional aspects of nano-micro carriers
Demonstrates physical methods to improve drug efficacy
Contains in-depth investigation on the specific aspects of drug delivery systems

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