Drug Delivery Nanoparticles Formulation And Characterization Drugs And The Pharmaceutical Sciences

Right here, we have countless book **Drug Delivery Nanoparticles Formulation And Characterization Drugs And The Pharmaceutical Sciences** and collections to check out. We additionally give variant types and with type of the books to browse. The pleasing book, fiction, history, novel, scientific research, as capably as various extra sorts of books are readily clear here.

As this Drug Delivery Nanoparticles Formulation And Characterization Drugs And The Pharmaceutical Sciences , it ends in the works subconscious one of the favored books Drug Delivery Nanoparticles Formulation And Characterization Drugs And The Pharmaceutical Sciences collections that we have. This is why you remain in the best website to look the unbelievable book to have.

Pharmaceutical Nanotechnology - Volkmar Weissig 2019-08-02
This volume details protocols on formulation, surface modification, characterization, and application of a variety of pharmaceutical nanocarriers such as micelles, nanoparticles, dendrimers, carbon dots, polymersomes, and others. Chapters are targeted toward investigators working in academic and industrial laboratories conducting research in the broad field of pharmaceutical sciences, with an emphasis on drug delivery. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, Pharmaceutical Nanotechnology: Basic Protocols aims to be a source of inspiration to all investigators who are interested in the potential of the merger of nanotechnology with pharmaceutical sciences.
Nanoparticles in Pharmacotherapy - Alexandru Mihai Grumezescu 2019-04-24
Nanoparticles in Pharmacotherapy explores the most recent findings on how nanoparticles are used in pharmacotherapy, starting with their synthesis, characterization and current or potential uses. This book is a valuable resource of recent scientific progress that includes the most cutting-edge applications of nanoparticles in pharmacotherapy. It is ideal for researchers, medical doctors and those in academia.
Drug Delivery Systems - 2019-10-23
Drug Delivery Systems examines the current state of the field within pharmaceutical science and concisely explains the history of drug delivery systems, including key developments. The book translates the physicochemical properties of drugs into drug delivery systems administered via various routes, such as oral, parenteral, transdermal and inhalational. Regulatory and product development topics are also explored. Written by experts in the field, this

volume in the Advances in Pharmaceutical Product Development and Research series deepens our understanding of drug delivery systems within the pharmaceutical sciences industry and research, as well as in chemical engineering. Each chapter delves into a particular aspect of this fundamental field to cover the principles, methodologies and technologies employed by pharmaceutical scientists. This book provides a comprehensive examination that is suitable for researchers and advanced students working in pharmaceuticals, cosmetics, biotechnologies, and related industries. Provides up-to-date information on how to translate the physicochemical properties of drugs into drug delivery systems Explores how drugs are administered via various routes, such as oral, parenteral, transdermal and inhalational Contains extensive references and further reading for course and self-study

Nanoconjugate Nanocarriers for Drug Delivery - Raj K. Keservani 2018-06

This new volume presents a plethora of new research on the use of nanoconjugate nanocarriers in drug delivery. Nanotechnology as drug carriers has been observed to increase the level of sophistication through a variety of ways. It helps to alleviate some of the pitfalls of conventional dosage forms, such as few pitfalls such as non-specific drug delivery, dose dumping, poor patient compliance, toxicities linked with higher doses, etc. With chapters from highly skilled, experienced, and renowned scientists and researchers, Nanoconjugate Nanocarriers for Drug Delivery is divided into four sections, providing an introduction to nanocarriers for drug delivery, physicochemical features of nanocarriers, and specific applications dealing with drug delivery in particular. The materials used as well as formulation and characterization have been discussed in detail. The nanocarriers covered in the book include nanoparticles, vesicular carriers, carriers having carbon as the core constituent, dispersed systems, etc. The book also delves into the interaction and associations between drug delivery research and its therapeutic applications in practice. The book integrates a wide variety of case studies, research, and theories in an attempt to reveal the diversity and capture the novel approaches of nanoconjugate nanocarriers for drug delivery employed by developers and content experts in the field. This timely publication will be an essential reference and current awareness source, building on the available literature in the field of pharmacy and biomedical science, while also providing ideas for further research opportunities in this dynamic field.

Drug Delivery Using Nanomaterials - Yasser Shahzad 2022-01-19

After the drug discovery and development process, designing suitable formulations to safely deliver the optimum dose, while avoiding side effects, has been a constant challenge, especially when drugs are very toxic and have poor solubility and undesirable clearance profiles. With recent advances in synthetic technologies, nanoparticles can be custom-made from a variety of advanced materials to mimic the bioenvironment and can be equipped with various targeting and imaging moieties for site-specific delivery and real-time imaging. Drug Delivery Using Nanomaterials covers advancements in the field of nanoparticle-based drug-delivery systems, along with all the aspects needed for a successful and marketable nanoformulation. FEATURES

Offers a general overview of the entire process involved in the synthesis and characterization of pharmaceutical nanoparticles Covers a broad range of synthetic materials for developing nanoformulations customized for specific disease states, target organs, and drugs Every chapter sequentially builds, providing a progressive pathway from classical nanoparticles to the more advanced to be used as a full drug product by consumers Provides information in a bottom-up manner in that definitions and explanations of relevant background information serve as a framework for understanding advanced concepts This user-friendly reference is aimed at materials engineers, chemical engineers, biomedical engineers, pharmaceutical scientists, chemists, and others working on advanced drug delivery, from academia as well as industry.

Nanotechnology in Drug Delivery - Melgardt M. de Villiers 2008-10-29

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

Basic Fundamentals of Drug Delivery - 2018-11-30

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

Drug Delivery with Targeted Nanoparticles - Yılmaz Çapan 2021-11-30

Nanotechnology has the potential to change every part of our lives. Today, nanotechnology-based products are used in many areas, and one of the most important areas is drug delivery. Nanoparticulate drug delivery systems not only provide controlled delivery of drugs and improved drug solubility but also improve drug efficiency and reduce side effects via targeting mechanisms. However, compared with conventional drug delivery systems, few nanoparticle-based products are on the market and almost all are nontargeted or only passively targeted systems. In addition, obtaining targeted nanoparticle systems is quite complex and requires several evaluation mechanisms. This book discusses the production, characterization, regulation, and currently marketed targeted nanoparticle systems in a broad framework. It provides an overview of targeted nanoparticles' (i) in vitro characterization, such as particle size, stability, ligand density, and type; (ii) in vivo behavior for different targeting areas, such as tumor, brain, and vagina; and (iii) current advances in this field, including clinical trials and regulation processes.

Lipid Nanoparticles: Production, Characterization and Stability -

Rohan Shah 2014-08-28
What are lipid nanoparticles? How are they structured? How are they formed? What techniques are best to characterize them? How great is their potential as drug delivery systems? These questions and more are answered in this comprehensive and highly readable work on lipid nanoparticles. This work sets out to provide the reader with a clear and understandable understanding of the current practices in formulation, characterization and drug delivery of lipid nanoparticles. A comprehensive description of the current understanding of synthesis, characterization, stability optimization and drug incorporation of solid lipid nanoparticles is provided. Nanoparticles have attracted great interest over the past few decades with almost exponential growth in their research and application. Their small particle size and subsequent high surface area make them ideal in many uses, but particularly as drug carrier systems. Nanoparticles made from lipids are especially attractive because of their enhanced biocompatibility imparted by the lipid. The work provides a detailed description of the types of lipid nanoparticles available (e.g. SLN, NLC, LDC, PLN) and how they range from imperfect crystalline to amorphous in structure. Current thoughts on where drugs are situated (e.g. in the core, or at the interface) and how this can be manipulated are discussed. The many techniques for production, including the author's own variant of microwave heating, are fully discussed. Techniques for measuring arguably the most important characteristics of particle size and polydispersity are discussed, along with techniques to measure crystallinity, shape and drug capacity. Finally, a full chapter on techniques for measuring stability, both in the absence and presence of drugs, is discussed, along with suggestions on how to optimize that stability. This work appeals to students of colloid science, practitioners of research into drug delivery and academics alike.

Polymer Nanoparticles for Nanomedicines - Christine Vauthier 2017-01-07
This volume serves as a valuable handbook for the development of nanomedicines made of polymer nanoparticles because it provides researchers, students, and entrepreneurs with all the material necessary to begin their own projects in this field. Readers will find protocols to prepare polymer nanoparticles using different methods, since these are based on the variety of experiences that experts encounter in the field. In addition, complex topics such as, the optimal characterization of polymer nanoparticles is discussed, as well as practical guidelines on how to formulate polymer nanoparticles into nanomedicines, and how to modify the properties of nanoparticles to give them the different functionalities required to become an efficient nanomedicine for different clinical applications. The book also discusses the translation of technology from research to practice, considering aspects related to industrialization of preparation and aspects of regulatory and clinical development.

Characterization of Pharmaceutical Nano- and Microsystems - Leena Peltonen 2020-12-21
Learn about the analytical tools used to characterize particulate drug delivery systems with this comprehensive overview Edited by a leading expert in the field, Characterization of Pharmaceutical Nano- and Microsystems provides a complete description of the

analytical techniques used to characterize particulate drug systems on the micro- and nanoscale. The book offers readers a full understanding of the basic physicochemical characteristics, material properties and differences between micro- and nanosystems. It explains how and why greater experience and more reliable measurement techniques are required as particle size shrinks, and the measured phenomena grow weaker. Characterization of Pharmaceutical Nano- and Microsystems deals with a wide variety of topics relevant to chemical and solid-state analysis of drug delivery systems, including drug release, permeation, cell interaction, and safety. It is a complete resource for those interested in the development and manufacture of new medicines, the drug development process, and the translation of those drugs into life-enriching and lifesaving medicines. Characterization of Pharmaceutical Nano- and Microsystems covers all of the following topics: An introduction to the analytical tools applied to determine particle size, morphology, and shape Common chemical approaches to drug system characterization A description of solid-state characterization of drug systems Drug release and permeation studies Toxicity and safety issues The interaction of drug particles with cells Perfect for pharmaceutical chemists and engineers, as well as all other industry professionals and researchers who deal with drug delivery systems on a regular basis, Characterization of Pharmaceutical Nano- and Microsystems also belongs on bookshelves of interested students and faculty who interact with this topic.

Nanoparticle Therapeutics - Prashant Kesharwani 2021-11-06

Nanoparticle therapeutics: Production Technologies, Types of Nanoparticles, and Regulatory Aspects employs unique principles for applications in cell-based therapeutics, diagnostics and mechanistics for the study of organ physiology, disease etiology and drug screening of advanced nanoparticles and nanomaterials. The book focuses on the extrapolation of bioengineering tools in the domain of nanotechnology and nanoparticles therapeutics, fabrication, characterization and drug delivery aspects. It acquaints scientists and researchers on the experiential and experimental aspects of nanoparticles and nanotechnology to equip their rational application in various fields, especially in differential diagnoses and in the treatment of diverse diseased states. This complete resource provides a holistic understanding of the principle behind formation, characterization, applications, regulations and toxicity of nanoparticles employing myriad principles of nanotechnology. Investigators, pharmaceutical researchers, and advanced students working on technology advancement in the areas of designing targeted therapies, nanoscale imaging systems and diagnostic modalities in human diseases where nanoparticles can be used as a critical tool for technology advancement in drug delivery systems will find this book useful. Brings together the novel applications of nanotechnology in biological fields Explores perspectives on technologies through highly organized tables, illustrative figures and flow charts Addresses key multidisciplinary challenges faced by nanotechnologists to foster collaboration among biologists, chemists, physicists, engineers and clinicians

Delivery of Drugs - Ranjita Shegokar 2020-02-01

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, 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. Delivery of Drugs examines the fabrication, optimization, scale-up, biological aspects, regulatory and clinical success of various micro and nano drug delivery systems. The volume covers site and organ specific targeting approaches, technologies used in preparation of micro - nanoparticles, challenges of complex type of drug delivery forms and role of physical methods in achieving targeted drug effect. Written by a diverse range of international researchers the chapters examine the specific aspects of characterization and manufacturing of drug delivery system for pharmaceutical application and its regulatory aspects. 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 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.

Drug Delivery Nanoparticles Formulation and Characterization - Yashwant Pathak 2016-04-19

Exploring fundamental concepts, Drug Delivery Nanoparticles Formulation and Characterization presents key aspects of nanoparticulate system development for various therapeutic applications and provides advanced methods used to file for regulatory approval.This comprehensive guide features:Process Analytical Techniques (PAT) used in manufacturing Na

Mucosal Delivery of Drugs and Biologics in Nanoparticles - Pavan Muttil 2020-03-18

Nanotechnology has revolutionized the approach to designing and developing novel drug delivery systems. The last two decades have seen a great interest in the use of nanotechnology to offer efficient ways of delivering new and existing drugs and macromolecules. The focus of this book is the application of nanotechnology to deliver drugs and biological agents by the mucosal

routes of administration i.e. nasal, pulmonary, buccal, and oral routes. It provides an overview of nanotechnology in drug delivery with a description of different types of nanoparticles, methods of preparation and characterization, and functionalization for site-specific drug delivery. The emphasis is on the use of nanoparticles in treating various cancers and infectious diseases. It broadens the use of nanoparticles by including biologics, including vaccines and immunotherapies, apart from drugs and acknowledges the concerns around the potential toxicity of nanoparticles to the host; several chapters will discuss the biodistribution of these nanoparticles when mucosal routes of administration are employed. Further, the interaction of nanoparticles with the host's immune cells is discussed. Moreover, it reviews the regulatory aspects of nanotechnology in product development, especially when delivered by the mucosal route of administration. Lastly, discusses the challenges and opportunities to manufacture nanoparticles on an industrial scale. This book is the first of its kind to focus on the design, development and delivery of nanoparticles when administered by different mucosal routes.

Fundamentals of Pharmaceutical Nanoscience - Ijeoma F. Uchegbu 2013-11-23

Nanoscience or the science of the very small offers the pharmaceutical scientist a wealth of opportunities. By fabricating at the nanoscale, it is possible to exert unprecedented control on drug activity. This textbook will showcase a variety of nanosystems working from their design and construction to their application in the field of drug delivery. The book is intended for graduate students in drug delivery, physical and polymer chemistry, and applied pharmaceutical sciences courses that involve fundamental nanoscience. The purpose of the text is to present physicochemical and biomedical properties of synthetic polymers with an emphasis on their application in polymer therapeutics i.e., pharmaceutical nanosystems, drug delivery and biological performance. There are two main objectives of this text. The first is to provide advanced graduate students with knowledge of the principles of nanosystems and polymer science including synthesis, structure, and characterization of solution and solid state properties. The second is to describe the fundamentals of therapeutic applications of polymers in drug delivery, targeting, response modifiers as well as regulatory issues. The courses, often listed as Advanced Drug Delivery and Applied Pharmaceutics; Polymer Therapeutics; or Nanomedicine, are designed as an overview of the field specifically for graduate students in the Department of Pharmaceutical Sciences Graduate Programs. However, the course content may also be of interest for graduate students in related biomedical research programs. These courses generally include a discussion of the major principles of polymer science and fundamental concepts of application of polymers as modern therapeutics. All courses are moving away from the above mentioned course names and going by 'pharmaceutical nanoscience or nanosystems'. This area of research and technology development has attracted tremendous attention during the last two decades and it is expected that it will continue to grow in importance. However, the area is just emerging and courses are limited but they are offered.

Excipient Applications in Formulation Design and Drug Delivery - Ajit S Narang 2015-10-07

In recent years, emerging trends in the design and development of drug products have indicated ever greater need for integrated characterization of excipients and in-depth understanding of their roles in drug delivery applications. This book presents a concise summary of relevant scientific and mechanistic information that can aid the use of excipients in formulation design and drug delivery applications. Each chapter is contributed by chosen experts in their respective fields, which affords truly in-depth perspective into a spectrum of excipient-focused topics. This book captures current subjects of interest – with the most up to date research updates – in the field of pharmaceutical excipients. This includes areas of interest to the biopharmaceutical industry users, students, educators, excipient manufacturers, and regulatory bodies alike.

Nanobiotechnology in Neurodegenerative Diseases - Mahendra Rai 2019-12-02

This book focuses on neurodegenerative diseases which have become a major threat to human health. Neurodegenerative diseases are age related disorders and have become increasingly prevalent in the elderly population in recent years. Hence, there is an urgent need to study and develop new strategies and alternative methods for the treatment of neurodegenerative diseases. This book showcases the promises that nanobiotechnology brings in research, diagnosis, and treatment of neurodegenerative diseases. It is very beneficial for varied group of readers including nanotechnologists, biotechnologists, pharmacists, medical professionals, bioengineers, biochemists and researchers working in this field. Nanobiotechnology in Neurodegenerative Diseases include various chapters including neurodegeneration and neurodegenerative diseases, nanotechnology for the rescue of neurodegenerative diseases, promising potential of nanomaterials for diagnosis and therapy of neurodegenerative diseases, nanotechnology mediated nose-to-brain drug delivery, and formulation and characterization of intranasal nanoparticles of antiretroviral drugs.

Characterization and Biology of Nanomaterials for Drug Delivery - Shyam Mohapatra 2018-10-05

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

Nanoarchitectonics in Biomedicine - Alexandru Mihai Grumezescu 2019-03-20
Nanoarchitectonics in Biomedicine describes this new area of nanoscience that has emerged as a major branch of nanoscience. The book brings together recent applications and discusses the advantages and disadvantages of each process, offering international perspectives on the technologies based on these findings. It offers new insights for nanoarchitectonics, starting with the currently used methods of synthesis and characterization of such materials, along with their biomedical applications. Authored by a wide range of international scientists, this volume shows how nanoarchitectonics is being used to create more efficient medical treatment solutions. Users will find this to be an important research resource for those wanting to learn more on the emerging topic of nanoarchitectonics in biomedical science. Explores how design aspects, smart materials and personalized materials are used in biomedicine today Offers global perspectives on how nanoarchitectonics is used in different regions Presents an important research resource for those wanting to learn more on the emerging topic of nanoarchitectonics in biomedical science

Recent Advances in Novel Drug Carrier Systems - Ali Demir Sezer 2012-10-31
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.

Nanomaterials: Evolution and Advancement towards Therapeutic Drug Delivery (Part II) - Surendra Nimesh 2021-06-02
The development of a vector for the delivery of therapeutic drugs in a controlled and targeted fashion is still a major challenge in the treatment of many diseases. The conventional application of drugs may lead to many limitations including poor distribution, limited effectiveness, lack of selectivity and dose dependent toxicity. An efficient drug delivery system can address these problems. Recent nanotechnology advancements in the biomedical field have the potential to meet these challenges in developing drug delivery systems. Nanomaterials are changing the biomedical platform in terms of disease diagnosis, treatment and prevention. Nanomaterials aided drug delivery provides an advantage by enhancing aqueous solubility that leads to improved bioavailability, increased resistance time in the body, decreased side effects by targeting drugs to the specific location, reduced dose dependent toxicity and protection of drugs from early release. In this two-part book, the contributors have compiled reports of recent studies illustrating the promising nanomaterials that can work as drug carriers which can navigate conventional physiological barriers.

A detailed account of several types of nanomaterials including polymeric nanoparticles, liposomes, dendrimers, micelles, carbon nanomaterials, magnetic nanoparticles, solid lipid-based nanoparticles, silica nanomaterials and hydrogels for drug delivery is provided in separate chapters. The contributors also present a discussion on clinical aspects of ongoing research with insights towards future prospects of specific nanotechnologies. Part II covers the following topics: · Solid lipid nanoparticles and nanostructured lipid carriers · Silica based nanomaterials · Hydrogels · Metallic nanoparticles · Computational and experimental binding interactions of drug and β-cyclodextrin · Clinical milestones in nanotherapeutics · Drug delivery systems based on poly(lactide-co-glycolide) and its copolymers The book set is an informative resource for scholars who seek updates in nanomedicine with reference to nanomaterials used in drug delivery systems.

Nanodispersions for Drug Delivery - Raj K. Keservani 2018-09-24

This volume addresses efforts to overcome the shortcomings of conventional dosage forms by exploiting the principles of nanoscience to deliver drugs for medical treatment. Nanodispersions are an important aspect because they possess globules/particles in sizes usually below 1000 nm in which the drug is dispersed in a continuous medium employing surface-active agents as stabilizers. With chapters written by experienced scientists and researchers in the field, this volume provides an abundance of information on various aspects of nanodispersions for drug delivery. The book is divided into several sections: nanoemulsions, nanosuspensions, and diverse dispersed systems. The chapters detail what nanodispersions have demonstrated in the past and what they are expoected to continue to do in the future as the technology further evolves. Key features: • Provides an overview of nanoemulsions for drug delivery • Introduces the general principles, classification, and methods of preparation of nanoemulsion-based drug delivery systems • Presents information relevant to specific routes of applications of nanoemulsions • Looks at the various aspects of nanosuspensions, including their formulation components, preparation methods, unique features, methods of characterization, and applications in various routes of administration • Explores nanomicellar approaches for drug delivery • Discusses the preparation, applications, and clinical considerations of nanogels for drug delivery

Nanomaterials for Drug Delivery and Therapy - Alexandru Mihai Grumezescu 2019-03-14

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 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

Nanotechnology for Oral Drug Delivery - João Pedro Martins 2020-07-30

Nanotechnology for Oral Drug Delivery: From Concept to Applications discusses the current challenges of oral drug delivery, broadly revising the different physicochemical barriers faced by nanotechnolgy-based oral drug delivery systems, and highlighting the challenges of improving intestinal permeability and drug absorption. Oral delivery is the most widely used form of drug administration due to ease of ingestion, cost effectiveness, and versatility, by allowing for the accommodation of different types of drugs, having the highest patient compliance. In this book, a comprehensive overview of the most promising and up-to-date engineered and surface functionalized drug carrier systems, as well as opportunities for the development of novel and robust delivery platforms for oral drug administration are discussed. The relevance of controlling the physicochemical properties of the developed particle formulations, from size and shape to drug release profile are broadly reviewed. Advances in both in vitro and in vivo scenarios are discussed, focusing on the possibilities to study the biological-material interface. The industrial perspective on the production of nanotechnology-based oral drug delivery systems is also covered. Nanotechnology for Oral Drug Delivery: From Concept to Applications is essential reading for researchers, professors, advanced students and industry professionals working in the development, manufacturing and/or commercialization of nanotechnology-based systems for oral drug delivery, targeted drug delivery, controlled drug release, materials science and biomaterials, in vitro and in vivo testing of potential oral drug delivery technologies. Highlights the relevance of oral drug delivery in the clinical setting Covers the most recent advances in the field of nanotechnology for oral drug delivery Provides the scientific community with data that can facilitate and guide their research

Silk-based Drug Delivery Systems - Elia Bari 2020-10-05

Silk proteins show excellent biocompatibility, controllable biodegradability and non-immunogenicity, and as such are studied extensively worldwide for biomedical applications. In particular, there is increasing interest in their use for drug delivery systems. This focussed book on silk proteins for drug delivery systems, delves into a key emerging area to outline the concepts and define the field. Covering spider silk and silk worm cocoons, the editors elucidate the extraction, structure and properties of silk sericin and silk fibroin. Showing how these proteins are employed in micro and nano drug delivery systems, their use in pre-clinical and clinical trials, and closing with chapter on sustainability- driven innovation in the pharma industry, this book is ideal for graduates and researchers in biomaterials science and pharmaceutical science.

Poly(lactic-co-glycolic acid) (PLGA) Nanoparticles for Drug Delivery - Prashant Kesharwani 2023-03-02

Poly(lactic-co-glycolic acid) (PLGA) Nanoparticles for Drug Delivery is a comprehensive guide to PLGA

nanoparticles for targeting various diseases, covering principles, formation, characterization, applications, regulations and the latest advances. Sections introduce the fundamental aspects of PLGA nanoparticles for drug delivery, including properties, preparation methods, characterization, drug loading methods, and drug release mechanisms, along with a focus on applications. Application of PLGA nanoparticles for the treatment of cancer, inflammatory, cerebral, cardiovascular, and infectious diseases, as well as in regenerative medicine, photodynamic and photothermal therapy, and gene therapy, are all explained in detail. The final chapters explore recent advances and regulatory aspects. This book is a valuable resource for researchers and advanced students across nanomedicine, polymer science, bio-based materials, chemistry, biomedicine, biotechnology, and materials engineering, as well as for industrial scientists and R&D professionals with an interest in nanoparticles for drug delivery, pharmaceutical formulations and regulations, and development of innovative biodegradable materials. Presents the fundamentals of PLGA nanoparticles, including properties, preparation, characterization, and biofate and cellular interactions Provides in-depth coverage of a broad range of specific applications of PLGA nanoparticles across disease treatment, regenerative medicine and therapeutic areas Offers a methodical approach to PLGA nanoparticles in drug delivery that is supported by data tables, illustrative figures and flowcharts

Nanoemulsions - Seid Mahdi Jafari 2018-02-24

Nanoemulsions: Formulation, Applications, and Characterization provides detailed information on the production, application and characterization of food nanoemulsion as presented by experts who share a wealth of experience. Those involved in the nutraceutical, pharmaceutical and cosmetic industries will find this a useful reference as it addresses findings related to different preparation and formulation methods of nanoemulsions and their application in different fields and products. As the last decade has seen a major shift from conventional emulsification processes towards nanoemulsions that both increase the efficiency and stability of emulsions and improve targeted drug and nutraceutical delivery, this book is a timely resource. Summarizes general aspects of food nanoemulsions and their formulation Provides detailed information on the production, application, and characterization of food nanoemulsion Reveals the potential of nanoemulsions, as well as their novel applications in functional foods, nutraceutical products, delivery systems, and cosmetic formulations Explains preparation of nanoemulsions by both low- and high-energy methods

Nanopharmaceutical Advanced Delivery Systems - Vivek Dave 2020-12-29

The book provides a single volume covering detailed descriptions about various delivery systems, their principles and how these are put in use for the treatment of multiple diseases. It is divided into four sections where the first section deals with the introduction and importance of novel drug delivery system. The second section deals with the most advanced drug delivery systems like microbubbles, dendrimers, lipid-based nanoparticles, nanofibers, microemulsions etc., describing the major principles and techniques of the preparations of the drug delivery systems. The third section elaborates

on the treatments of diverse diseases like cancer, topical diseases, tuberculosis etc. The fourth and final section provides a brief informative description about the regulatory aspects of novel drug delivery system that is followed in various countries.

Nanoparticles in Life Sciences and Biomedicine - Ana Rute Neves 2018-02-13

The creation of new and more efficient therapies for improving human health greatly depends on drug delivery systems. Nanotechnology has emerged as a powerful strategy for the development of nanoparticles, such as nanoemulsions, liposomes, nanocrystals, and nanocomplexes, applied in the diagnosis, treatment, or theranostics of several pathologies and diseases. This book reviews the most recent research and development in nanotechnology and, following a multidisciplinary approach, presents new strategies for drug delivery, including aspects from chemistry, physics, biology, and imaging methodologies and exploiting several administration routes, internalization pathways, site-specific delivery strategies, and the potential cytotoxicity of nanoparticles. Beginning with a description of the importance and application of nanotechnology for enhancing existing therapy, the book moves on to detailing oral, topical, pulmonary, brain, cancer, and anti-inflammatory drug delivery approaches; gene delivery approaches; theranostic approaches; and nanoparticle cytotoxicity. Practical and user friendly, it is suitable for advanced undergraduate, graduate, and postgraduate students of nanoscience and nanotechnology; researchers in nanoscience, nanotechnology, chemistry, biology, biochemistry, pharmaceutical sciences, medicine, and bioengineering, especially those with an interest in drug delivery or theranostics; and academia and university readership.

Lipid Nanocarriers for Drug Targeting - Alexandru Mihai Grumezescu 2018-04-16

Lipid Nanocarriers for Drug Targeting presents recent advances in the area of lipid nanocarriers. The book focuses on cationic lipid nanocarriers, solid lipid nanocarriers, liposomes, thermosensitive vesicles, and cubosomes, with applications in phototherapy, cosmetic and others. As the first book related to lipid nanocarriers and their direct implication in pharmaceutical nanotechnology, this important reference resource is ideal for biomaterials scientists and those working in the medical and pharmaceutical industries that want to learn more on how lipids can be used to create more effective drug delivery systems. Highlights the most commonly used types of lipid nanocarriers and explains how they are applied in pharmacy Shows how lipid nanocarriers are used in different types of treatment, including oral medicine, skin repair and cancer treatment Assesses the pros and cons of using different lipid nanocarriers for different therapies

Applications of Nanotechnology in Drug Discovery and Delivery - Chukwuebuka Egbuna 2022-08-26

Applications of Nanotechnology in Drug Discovery and Delivery, in the Drug Discovery Update series, presents complete coverage of the application of nanotechnology in the discovery of new drugs and efficient target delivery of drugs. The book highlights recent advances of nanotechnology applications in the biomedical sciences, starting with chapters that provide the basics of nanotechnology, nanoparticles and

nanocarriers. Part II deals with the application of nanotechnology in drug discovery, with an emphasis on enhanced delivery of pharmaceutical products, with Part III discussing toxicological and safety issues arising from the use of nanomaterials. This book brings together a global team of experts, making it an essential resource for researchers, drug developers, medicinal chemists, toxicologists and analytical chemists. Serves as a guide to drug developers working in pharma, biotech and academia, bringing together the latest research on the topic Presents recent information on the use of nanomaterials for the development of drugs using engineered nanocarriers to target specific delivery Features a global team of contributing experts who discuss nanotechnology applications in drug discovery as well as safety issues and challenges

Application of Nanotechnology in Drug Delivery - Ali Demir Sezer 2014-07-25

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 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.

Advances in Nanotechnology-Based Drug Delivery Systems - Anupam Das Talukdar 2022-06-06

Advances in Nanotechnology-Based Drug Delivery Systems covers the core concepts and latest research regarding the use of nanoscale materials for the development and application of drug delivery systems. The book introduces the reader to nanotechnology in drug delivery, covering the synthesis, encapsulation techniques, characterization and key properties of nanoscale drug delivery systems. Later chapters review the broad range of target applications, including site-specific delivery of drugs for cardiovascular disease, cancer, bacterial infection, bone regeneration. and much more. This book helps translate advanced research into a clinical setting, analyzing the toxicity and health and safety challenges associated with utilizing nanotechnology in biomedicine. This will be a useful reference for those interested in nano-sized drug delivery in biomedicine, including academics and researchers in materials science, biomedical engineering, pharmaceutical science and related disciplines. Provides a clear introduction to nanotechnology in drug delivery, covering key principles, synthesis, characterization and unique properties of nanoscale materials for drug delivery systems“/li> Discusses preclinical, clinical and patented nano-drug delivery systems, enabling the reader to grasp the current state-of-the-art and market Covers a broad range of targets for nanoscale drug delivery systems, such as in neurological disorders, oral disease, renal disease, cancer, skin protection, and much more

Nanoparticles for Drug Delivery - K.

S. Joshy 2021-06-21
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 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.

Nanobiomaterials - Anil K. Sharma 2018-01-03
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 of nanobiomaterials This volume will be a valuable resource on drug delivery for pharmaceutical manufacturers, healthcare personnel, and researchers.

Nanoparticulate Drug Delivery Systems - Deepak Thassu 2007-03-30
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

Biogenic Nanoparticles for Cancer Theranostics - Chittaranjan Patra 2021-06-01
Biogenic Nanoparticles for Cancer Theranostics outlines the synthesis of biogenic nanoparticles to become cancer theranostic agents. The book also discusses their cellular interaction and uptake, pharmacokinetics, biodistribution, drug delivery efficiency, and other biological effects. Additionally, the book explores the mechanism of their penetration in cancerous tissue, its clearance, and its metabolism. Moreover, the in vitro and in vivo toxicological effects of biogenic nanoparticles are discussed. This book is an important reference source for materials scientists and biomedical scientists who are looking to increase their understanding of how biogenic nanoparticles are being used for a range of cancer treatment types. Metal nanoparticles have

traditionally been synthesized by classical physico-chemical methods which have many drawbacks, such as high energy demand, high cost and potential ecotoxicity. As a result, the biosynthesis of metal nanoparticles is gaining increasing prominence. Biosynthesis approaches to metal nanoparticles are clean, safe, energy efficient and environment friendly. Explains the synthesis methods and applications of biogenic nanoparticles for cancer theranostics Outlines the distinctive features of biogenic nanoparticles that make them effective cancer treatment agents Assesses the major challenges of using biogenic nanoparticles on a mass scale

Antibody-Mediated Drug Delivery Systems - Yashwant V. Pathak 2012-05-15

This book covers various aspects of antibody mediated drug delivery systems – theoretical aspects, processing, viral and non-viral vectors, and fields where these systems find and /or are being evaluated for applications as therapeutics and diagnostic treatment. Chapters discuss actual applications of techniques used for formulation and characterization. Applications areas include cancer, pulmonary, ocular diseases; brain drug delivery; and vaccine delivery. The contributing authors represent over 10 different countries, covering recent developments happening around the globe.

Smart Drug Delivery System - Ali Demir Sezer 2016-02-10

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 smart 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, diabetic, genetic, and infectious diseases, and considers assessment and review procedures involved in the development of gene-based pharmaceuticals.