

Niosomal Carriers Enhance Oral Bioavailability Of

Design and Development of New Nanocarriers focuses on the design and development of new nanocarriers used in pharmaceutical applications that have emerged in recent years. In particular, the pharmaceutical uses of microfluidic techniques, supramolecular design of nanocapsules, smart hydrogels, polymeric micelles, exosomes and metal nanoparticles are discussed in detail. Written by a diverse group of international researchers, this book is a valuable reference resource for those working in both biomaterials science and the pharmaceutical industry. Shows how nanomanufacturing techniques can help to create more effective, cheaper pharmaceutical products Explores how nanofabrication techniques developed in the lab have been translated to commercial applications in recent years Explains safety and regulatory aspects of the use of nanomanufacturing processes in the pharmaceutical industry

Nanotechnology is considered as one of the emerging fields of science. It has applications in different biological and technological fields which deal with the science of materials at nanoscale (10⁻⁹). On the other hand, biotechnology is another field that deals with contemporary challenges. Nanobiotechnology fills the gap between these two fields. It merges physical, chemical, and biological principles in a single realm. This combination opens up new possibilities. At nanoscale dimensions, it creates precise nanocrystals and nanoshells. Integrated nanomaterials are used with modified surface layers for compatibility with living systems, improved dissolution in water, or biorecognition leading to enhanced end results in biotechnological systems. These nanoparticles can also be hybridized with additional biocompatible substances in order to amend their qualities to inculcate novel utilities. Nanobiotechnology is used in bioconjugate chemistry by coalescing up the functionality of non-organically obtained molecular components and biological molecules in order to veil the immunogenic moieties for targeted drug delivery, bioimaging and biosensing. This book blends the science of biology, medicine, bioinorganic chemistry, bioorganic chemistry, material and physical sciences, biomedical engineering, electrical, mechanical, and chemical science to present a comprehensive range of advancements. The development of nano-based materials has made for a greater understanding of their characterization, using techniques such as transmission electron microscope, FTIR, X-ray diffraction, scanning electron microscope EDX, and so on. This volume also highlights uses in environmental remediation, environmental biosensors and environmental protection. It also emphasizes the significance of nanobiotechnology to a series of medical applications viz., diagnostics, and therapeutics stem cell technology, tissue engineering enzyme engineering, drug development and delivery. In addition this book also offers a distinctive understanding of nanobiotechnology from researchers and educators and gives a comprehensive facility for future developments and current applications of nanobiotechnology.

Fundamentals of Nanoparticles: Classifications, Synthesis Methods, Properties and Characterization explores the nanoparticles and architecture of nanostructured materials being used today in a comprehensive, detailed manner. This book focuses primarily on the characterization, properties and synthesis of nanoscale materials, and is divided into three major parts. This is a valuable reference for materials scientists, and chemical and mechanical engineers working in R&D and academia, who want to learn more about how nanoparticles and nanomaterials are characterized and engineered. Part one covers nanoparticles formation, self-assembly in the architecture nanostructures, types and classifications of nanoparticles, and signature physical and chemical properties, toxicity and regulations. Part two presents different ways to form nanometer particles, including bottom-up and top-down approaches, the classical and non-classical theories of nanoparticles formation and self-assembly, surface functionalization and other surface treatments to allow practical use. Part three covers

characterization of nanoparticles and nanostructured materials, including the determination of size and shape, in addition to atomic and electronic structures and other important properties. Includes new physical and chemical techniques for the synthesis of nanoparticles and architecture nanostructures Features an in-depth treatment of nanoparticles and nanostructures, including their characterization and chemical and physical properties Explores the unusual properties of materials that are developed by modifying their shape and composition and by manipulating the arrangement of atoms and molecules Explains important techniques for the synthesis, fabrication and the characterization of complex nano-architectures

The goal of any novel drug delivery system is to provide therapeutic benefits to the patients by increasing duration of drug action, reducing dosing frequency, and controlling drug release rate at the target site, thereby reducing unwanted side effects. *Advanced Technology for Delivering Therapeutics* is a reference book that covers recent developments in the field of drug delivery science and technology. The purpose of this book is to bring together descriptions of some selective technologies including new and promising nanotechnology currently being investigated for drug delivery applications. This book is a useful source of information for graduate and post-graduate students of pharmacy and biomedical science; pharmaceutical This theses on Diabetes Mellitus aims at giving an insight at various aspects of this chronic disease and the risk factors that lead to it; the various ways it develops in the human body; the old and new approaches to treatment, both from a pharmacological and a non pharmacological point of view; ways to prevent and to manage the diabetes complications; how to improve the live of the diabetic patients who are faced with not only physical but also psychological problems; statistical data from around the world which focuses on epidemiology and outlines the issue of the cost of diabetes. Finally, this paper links diabetes mellitus with the Alzheimer's disease as a different expression of diabetes, since it is closely associated with several key neuronal factors implicated in dementia. In many respects, Alzheimer's is a brain form of diabetes. Even in the earliest stages of the disease, the brain's ability to metabolize sugar is reduced. Normally, insulin plays a big role in helping the brain take up sugar from the blood. But, in Alzheimer's, insulin is not very effective in the brain. Consequently, the brain cells practically starve to death

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.

This volume will address an important emergent area within the field of immunomics: the discovery of antigens and adjuvants within the context of reverse vaccinology. Conventional approaches to vaccine design and development requires pathogens to be cultivated in the laboratory and the immunogenic molecules within them to be identifiable. Conventional vaccinology is no longer universally successful, particularly for recalcitrant pathogens. By using genomic information we can study vaccine development in silico: 'reverse vaccinology', can identify candidate subunits vaccines by identifying antigenic proteins and by using equally rational approaches to identify novel immune response-enhancing adjuvants.

The delivery of optimal pharmaceutical services to patients is a pivotal concern in the healthcare field. By examining current trends and techniques in the industry, processes can be maintained and improved. *Pharmaceutical Sciences: Breakthroughs in Research and Practice* provides comprehensive coverage of the latest innovations and advancements for pharmaceutical applications. Focusing on emerging drug development techniques and drug delivery for improved health outcomes, this book is ideally designed for medical professionals, pharmacists, researchers, academics, and upper-level students within the growing pharmaceutical industry.

This book intends to strike a balance between developments in research and the fact that researchers must absorb and link to scientific advances with clinical practice so that the management of diseases can be based on sound physiological concepts. This book addresses several controversial issues regarding a natural molecule with fascinating pharmacological and therapeutic effects. The book contains three sections: Section 1: Pharmacology and Therapeutic Applications of Resveratrol; Section 2: Bioavailability, Metabolism, and Mode of Action of Resveratrol; Section 3: Resveratrol and Its Role in Chronic and Degenerative Diseases. Does it Add Life to Years or Years to Life? It is our hope that this book will motivate readers to approach the evidence on the use resveratrol and thereby spark an interest in making further contributions to the current scientific debate and treatment development efforts.

As one class of the most important steroid hormones, glucocorticoids have long been recognised and their therapeutic benefits have been widely used in clinical treatment, especially in anti-inflammation cases. Glucocorticoids regulate various processes in the body including the mobilization of energy stores, immune functions, gene expression, and maintenance of the homeostasis as well as the stress response, this is not surprising that the concept of "glucocorticoids" is mentioned in almost all medical text books that focus on specific organs or systems such as the cardiovascular system, the immune system, and the neuroendocrine system. The book of *Glucocorticoids - New Recognition of Our Familiar Friend* aims to introduce the latest findings relating to glucocorticoids, either freshly from the laboratory or from clinical case studies, and to open up a new angle of looking at the issue of balancing the therapeutic benefits and side effects brought up by glucocorticoids.

Recent Advances in Novel Drug Carrier SystemsBoD – Books on Demand

This book gathers together the research work of leading Indian scientists actually engaged in pharmaceutical research. The contributors are all distinguished experts in their respective fields. All the contributors are scientists working in Indian laboratories, however their achievements in the field are full of valuable information supplemented with adequate references which help the intended readers in digging out the complete information on any aspect. The book has 17 chapters, 150 figures and over 2150 references and will be of immense use for all pharmaceutical industries, RD laboratories, research scientists in universities colleges, teachers as well as post-graduate and graduate students.

This book covers a complex and developing academic scientific area. It focuses on describing the interplay between the chemistry of drug molecules and membrane transporters. It also aims to guide researchers in setting up experiments that may help in understanding the mechanisms and kinetics involved in drug absorption, transport and delivery. Starting with an introduction to the topic, Molecular Biopharmaceutics then considers the following: physico-chemical characterisation of drug candidates; membrane transport of drug candidates; describing and predicting bioavailability.

This book describes the theories, applications, and challenges for different oral controlled release formulations. This book differs from most in its focus on oral controlled release formulation design and process development. It also covers the related areas like preformulation, biopharmaceutics, in vitro-in vivo correlations (IVIVC), quality by design (QbD), and regulatory issues.

Nanophytomedicine is a field that involves the application of nanomedicine-based systems to phytotherapy and phytopharmacology. This book assesses the clinical successes and failures of nanophytomedicine and also highlights emerging concepts in this field. The content is divided into three sections, the first of which describes core issues in the pharmaceuticals industry in connection with the successes, failures and prospects of nanophytomedicine. The second section highlights recent advances in phytomedicine formulation development based on nanotechnology approaches, while also discussing a variety of nanocarrier systems for the successful delivery of phytomedicines. Focusing on the clinical perspective, the third section addresses the current clinical status of nanophytomedicine as a single drug therapy or combinatorial drug therapy, pharmacovigilance, pharmacokinetics, drug interactions and toxicological profiles, while also providing concluding remarks on recent experimental findings, and considering ethical issues & regulatory challenges in nanophytomedicine. Given its scope, the book offers a valuable guide for early career researchers, young scientists, master level students, academics and industrial scientists working in various healthcare fields, e.g. the pharmaceutical and biological sciences, life sciences, biotechnology, biomedical engineering, and nanobiotechnology.

The suspension dosage form has long been used for poorly soluble active ingredients for various therapeutic indications. Development of stable suspensions over

the shelf life of the drug product continues to be a challenge on many fronts. A good understanding of the fundamentals of disperse systems is essential in the development of a suitable pharmaceutical suspension. The development of a suspension dosage form follows a very complicated path. The selection of the proper excipients (surfactants, viscosity imparting agents etc.) is important. The particle size distribution in the finished drug product dosage form is a critical parameter that significantly impacts the bioavailability and pharmacokinetics of the product. Appropriate analytical methodologies and instruments (chromatographs, viscometers, particle size analyzers, etc.) must be utilized to properly characterize the suspension formulation. The development process continues with a successful scale-up of the manufacturing process. Regulatory agencies around the world require clinical trials to establish the safety and efficacy of the drug product. All of this development work should culminate into a regulatory filing in accordance with the regulatory guidelines. *Pharmaceutical Suspensions, From Formulation Development to Manufacturing*, in its organization, follows the development approach used widely in the pharmaceutical industry. The primary focus of this book is on the classical disperse system – poorly soluble active pharmaceutical ingredients suspended in a suitable vehicle.

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.

A concise one-stop-practical reference for the various physicians dealing with fungal infections, *Antifungal Therapy* appeals to infectious disease physicians, transplant surgeons, dermatologists, and intensivists, as well as basic scientists and pharmaceutical company researchers interested in the state of antifungal therapy. This book provides a comprehensive, up-to-date overview of the pertinent issues pertaining to antifungal treatment. Divided into four interrelated sections for a cohesive discussion covers: history of antifungals from the discovery of the polyenes to the echinocandins antifungal susceptibility methods patient management animal models in drug development therapeutic strategies pharmacokinetic and pharmacogenomics trends in resistance

Innovative and fusion technologies have shown an incredible ability to improve various aspects of society, such as healthcare systems. Nanobiotechnology is one such technology that is being applied to medical equipment and treatment approaches. Many pharmaceutical and medical companies have begun to count on medical nanotechnology due to its abundant applications and practical uses. *Innovative Approaches for Nanobiotechnology in Healthcare Systems* is a pivotal reference source that provides insights into a comprehensive collection of novel techniques used for the development of safe drugs using the available resources for diverse deadly diseases.

This book discusses the various platforms of nanobiotechnology that are utilized in various fields. It is expected that bionanosystems will play a crucial role in the treatment of human diseases and the improvement of existing healthcare systems. This book is ideal for scientists, biotechnologists, microbiologists, medical professionals, entrepreneurs, policymakers, researchers, academicians, and students.

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 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.

Recent technological advancements, socio-economic trends, and population lifestyle modifications throughout the world indicate the need for foods with increased health benefits. The clear relationship between the food that we eat and our well-being is widely recognized. Today, foods are not only intended to satisfy hunger and provide necessary nutrients: they can also confer additional health benefits, such as preventing nutrition-related diseases and improving physical and mental well-being. This book provides a comprehensive overview of developments in the field of functional foods and food supplements. Readers will discover new food matrices as innovative natural sources of bioactive compounds endowed with health-promoting properties. Studies on chemical, technological, and nutritional characteristics of healthy food ingredients, analytical methods for monitoring their quality, and innovative formulation strategies are included.

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.

Nanomedicinal Approaches Towards Cardiovascular Disease summarizes information about nanotechnology that is used in the diagnosis and regenerative treatment of heart diseases. Chapters in this reference introduce the reader to the basics of cardiac nanomedicine and cardiac regeneration before moving to advanced topics such as nanomedicine in cardiovascular diagnosis, imaging and therapeutics. Key Features - 13 chapters that cover nanotechnological aspects of cardiovascular diseases, contributed by expert scholars - Simple, reader-friendly text suitable for readers of all academic levels - Covers introductory topics of nanomedicine regenerative medicine in cardiovascular disease, cardiovascular diagnosis and therapeutics - Covers advanced topics such as cardiovascular nanotherapeutics, cardiac reprogramming, biomimetics, drug delivery systems and smart nanomaterials - Includes a chapter on ethical implications in cardiovascular nanomedicine - Includes bibliographic references for each chapter Nanomedicinal Approaches Towards Cardiovascular Disease is a simple, informative reference on cardiovascular nanomedicine for scholars, healthcare professionals and nanotechnology enthusiasts, alike, which provides holistic knowledge on the subject in a single volume.

Nanotechnology seeks to exploit distinct technological advances controlling the structure of nanoscale biomaterials at a nanodimensional scale approaching individual molecules and their aggregates or supramolecular structures. The term "nanomedicine" is used to describe those technologies under the umbrella of nanotechnology that have therapeutic applications in human health. This book presents recent trends and research achievements in the field of pharmaceutical nanotechnology and advanced drug delivery nanosystems, especially for theranostic purposes. The applications of drug delivery nanosystems considered carriers of active pharmaceutical ingredients (APIs) (e.g., proteins, peptides, and nucleic acids) are analyzed on the basis of technology, preparation protocols, and biomedical applications. The book also extensively reports on the principles, design protocols, and applications of nanosystems in drug delivery, imaging, and targeting of active molecules of pharmaceutical interest. A suitable drug delivery system is an essential element in achieving efficient therapeutic responses of drug molecules. With this desirability in mind, the book unites different techniques through which extremely small-sized particles can be utilized as a successful carrier for curing chronic as well as life-threatening diseased conditions. This is a highly informative and prudently organized book, providing scientific insight for readers with an interest in nanotechnology. Beginning with an overview of nanocarriers, the book impetuses on to explore other essential ways through which these carriers can be employed for drug delivery to varieties of administrative routes. This book discusses the functional and significant features of nanotechnology in terms of Lymphatic and other drug targeting deliveries. The book is presenting depth acquaintance for various vesicular and particulate nano-drug delivery carriers, utilized successfully in Pharmaceutical as well as in Cosmeceutical industries along with brief information on their related toxicities. In addition, the work also explores the potential applications of nanocarriers in biotechnology sciences for the prompt and safe delivery of nucleic acid,

protein, and peptide-based drugs. An exclusive section in the book illuminates the prominence and competent applicability of nanotechnology in the treatment of oral cancer. The persistence of this book is to provide basic to advanced information for different novel carriers which are under scale-up consideration for the extensive commercialization. The book also includes recent discoveries and the latest patents of such nanocarriers. The cutting-edge evidence of these nanocarriers available in this book is beneficial to students, research scholars, and fellows for promoting their advanced research.

Multifunctional Systems for Combined Delivery, Biosensing, and Diagnostics explores how multifunctional nanocarriers are being used in combined delivery and diagnostics in contemporary medicine. Particular attention is given to efforts to i) reduce the side effects of therapeutic agents, ii) increase the pharmacological effect, and iii) improve aqueous solubility and chemical stability of different therapeutic agents. The chapters focus on applications of nanostructured materials and nanocarriers, highlighting how these can be used effectively in both diagnosis and delivery. This applied focus makes the book an important reference source for those wanting to learn more about how specific nanomaterials and nanotechnology systems can help to solve drug delivery and diagnostics problems. This book is a valuable resource for materials scientists, bioengineers, and medical researchers who are looking for an applications-oriented guide on how nanotechnology and nanomaterials can be used effectively throughout the medical treatment process, from diagnosis to treatment. Explores the benefits of using a variety of nanomaterials as drug delivery agents Explains how nanocarriers can reduce the side effects of therapeutic agents Provides an analysis of the pros and cons of using specific nanocarriers to solve particular diagnosis and delivery problems This volume focuses on novel therapeutics and strategies for the development of pharmaceutical products, keeping the drug molecule as the central component. It discusses current theoretical and practical aspects of pharmaceuticals for the discovery and development of novel therapeutics for health problems. Explaining the necessary features essential for pharmacological activity, it takes an interdisciplinary approach by including a unique combination of pharmacy, chemistry, and medicine along with clinical aspects. It takes into consideration the therapeutic regulations of the USP along with all the latest therapeutic guidelines put forward by WHO, and the US Food and Drug Administration.

This new edition brings you up-to-date on the role of pharmaceuticals and its future paradigms in the design of medicines. Contributions from over 30 international thought leaders cover the core disciplines of pharmaceuticals and the impact of biotechnology, gene therapy, and cell therapy on current findings. Modern Pharmaceuticals helps you stay current

Liposomes have received increased attention in recent years. Nevertheless, liposomes, due to their various forms and applications, require further investigation. These structures can deliver both hydrophilic and hydrophobic drugs. The preparation of liposomes results in different properties for these systems. In addition, there are many factors and difficulties that affect the development of liposome drug delivery structures. The purpose of this book is to concentrate on recent developments in liposomes. The articles collected in this book are contributions by invited researchers with long-standing experience in different research areas. We hope that the material

presented here is understandable to a broad audience, not only scientists but also people with a general background in many different biological sciences. This volume offers up-to-date, expert reviews of the fast-moving field of liposomes and is divided in two major sections: 1. Introduction; 2. Liposomes general properties

Under a single cover, this book brings together various aspects of functional bioengineered materials and nanostructured biomaterials including commonly used implants and sustained release nanodevices. The book includes expert reviews on the advances and current problems associated with the implants and nanodevices. Containing recent citations and bibliographies, this book will be an indispensable source of information for new researchers and scientists.

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 nanoinonized 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.

The self-assembly of synthetic surfactants and other non-phospholipids into vesicles was first studied in the 1970s by cosmetic scientists when non-ionic surfactant vesicles or niosomes were reported. Since this time a large body of research has sought to define these systems primarily as drug carriers and also as features of interest to the colloid scientist. Synthetic surfactant vesicles, as the name implies, may also be fabricated from a vast array of amphiphiles, including a number of pharmaceutically acceptable materials. They may also be prepared in a variety of shapes and sizes and have a number of applications. This book is designed to serve as an introductory text to the science of non-phospholipid vesicles and will be of use to colloid, drug delivery, cosmetic, and materials scientists. It aims to acquaint the reader with the physicochemistry and biomedical applications of these synthetic surfactant non-phospholipid vesicles. Part one introduces the reader to physicochemical aspects of these synthetic surfactant dispersions and explores the diversity of materials that may be used to formulate vesicles. Part two details methods of vesicle preparation and the application of synthetic surfactant vesicles in a variety of fields ranging from anti-cancer chemotherapy to immunization.

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 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

Percutaneous Penetration Enhancers in a mini-series format comprising five volumes, represents the most comprehensive reference on enhancement methods – both well established and recently introduced – in the field of dermal/transdermal drug delivery. In detail the broad range of both chemical and physical methods used to enhance the skin delivery of drugs is described. All aspects of drug delivery and measurement of penetration are covered and the latest findings are provided on skin structure and function, mathematics in skin permeation and modern analytical techniques adapted to assess and measure penetration. In offering a detailed description of the methods currently in use for penetration enhancement, this book will be of value for researchers, pharmaceutical scientists, practitioners and also students.?

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 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.

Lipid-Based Nanocarriers for Drug Delivery and Diagnosis explores the present state of

widely used lipid-based nanoparticulate delivery systems, such as solid lipid nanoparticles (SLN), nanostructured lipid carriers (NLC), nanoliposomes, micelles, nanoemulsions, nanosuspensions and lipid nanotubes. The various types of lipids that can be exploited for drug delivery and their chemical composition and physicochemical characteristics are reviewed in detail, along with their characterization aspects and effects of their dimensions on drug delivery systems behavior in-vitro and in-vivo. The book covers the effective utilization of these lipids based systems for controlled and targeted delivery of potential drugs/genes for enhanced clinical efficacy. Provides the present state of widely used lipid-based nanoparticulate delivery systems Explores how lipid-based nanocarriers improve drug delivery safety Describes the nanoformulation design and the preparation methods of lipid-based nanocarriers

Today we find the applications of nanotechnology in all spheres of life. Nanotechnology: Therapeutic, Nutraceutical and Cosmetic Advances discusses recent advances in the field, particularly with therapeutics, nutraceuticals and cosmetic sciences. Therapeutics is an area which has perhaps benefitted the most, although nanoscience and technology have quietly entered the realms of food science and are playing pivotal roles in the efficient utilization of nutraceuticals. Finally, even before therapeutics came cosmetics and companies started marketing unique products embedding the beneficial and advanced properties enabled by the use of nanostructures. This book highlights trends and applications of this wonderful new technology.

Understand and assess the design, delivery, and efficacy of orally administered drugs A practical guide to understanding oral bioavailability, one of the major hurdles in drug development and delivery, Oral Bioavailability: Basic Principles, Advanced Concepts, and Applications is designed to help chemists, biologists, life science researchers, pharmaceutical scientists, pharmacologists, clinicians, and graduate and students become familiar with the fundamentals and practices of the science of oral bioavailability. The difference in rate and extent between a drug taken orally and the actual amount of a drug reaching the circulatory system, oral bioavailability is an essential parameter for determining the efficacy and adverse effects of new and developing medications, as well as finding an optimal dosing regimen. This book provides a much-needed one-stop resource to help readers better understand and appreciate the many facets and complex problems of oral bioavailability, including the basic barriers to oral bioavailability, the methods used to determine relevant parameters, and the challenges of drug delivery. In addition, this comprehensive book discusses biological and physicochemical methods for improving bioavailability, integrates physicochemistry with physiology and molecular biology, and includes several state-of-the-art technologies and approaches—Caco-2 cell culture model, MDCK, and other related cell culture models—which are used to study the science of oral bioavailability.

Plants produce chemicals as part of their normal metabolic activities. These include primary metabolites found in all plants, such as sugars and fats, as well as secondary metabolites, which can have therapeutic effects in humans and be refined to produce drugs. Plants synthesize a bewildering variety of phytochemicals, but most are derivatives of a few biochemical motifs. Numerous herbal-derived substances have been evaluated for their therapeutic potential. These include alkaloids, coumarins, saponins, plant pigments and flavonoids. Flavonoids, carotenoids and anthocyanins are

probably the best known of these substances due to their antioxidant properties. Carotenoids: Structure and Function in the Human Body presents comprehensive coverage of carotenoids. The text covers the scientific literature and clinical significance of this organic pigment, with an emphasis on its therapeutic potential. The authors approach carotenoids from a range of perspectives, from their structural and physicochemical properties to their distribution in nature, interaction with the human metabolism, and use as a coloring agent in various products. The intake, metabolism and secretion of anthocyanins in the human body are covered in-depth, as are the biosynthetic pathways through which these compounds are synthesized in the natural system. Factors affecting stability and extraction are listed, and health-related uses and biological activities are covered in great detail. Present and future trends in carotenoid research are also presented. This book provides a solid background in carotenoids for researchers and professionals in food science, food technology, nutrition, biology, chemistry and medical sciences.

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