Drug Delivery Approaches

Drug Delivery Approaches Presents authoritative state-of-the-art discussions of the key issues pertinent to transdermal drug delivery, examining those topics necessary to enable a critical evaluation of a drug candidate's potential to be delivered across the skin; from physical chemistry and assessment of drug permeability to available enhancement technologies, to regulator

Transdermal Drug Delivery

Transdermal Drug Delivery This research book covers the major aspects relating to the use of novel delivery systems in enhancing both transdermal and intradermal drug delivery. It provides a review of transdermal and intradermal drug delivery, including the history of the field and the various methods employed to produce delivery systems from different materials such as device design, construction and evaluation, so as to provide a sound background to the use of novel systems in enhanced delivery applications. Furthermore, it presents in-depth analyses of recent developments in this exponentially growing field, with a focus on microneedle arrays, needle-free injections, nanoparticulate systems and peptide-carrier-type systems. It also covers conventional physical enhancement strategies, such as tape-stripping, sonophoresis, iontophoresis, electroporation and thermal/suction/laser ablation. Discussions about the penetration of the stratum corneum by the various novel strategies highlight the importance of the application method. Comprehensive and critical reviews of transdermal and intradermal delivery research using such systems focus on the outcomes of in vivo animal and human studies. The book includes laboratory, clinical and commercial case studies featuring safety and patient acceptability studies carried out to date, and depicts a growing area for use of these novel systems in intradermal vaccine delivery. The final chapters review recent patents in this field and describe the work ongoing in industry.

Transdermal Drug Delivery Systems

Transdermal Drug Delivery Systems The application of drug delivery is a valuable, cost-effective lifecycle management resource. By endowing drugs with new and innovative therapeutic benefits, drug delivery systems extend products' profitable lifecycle, giving pharmaceutical companies competitive and financial advantages, and providing patients with improved medications. Formulation development is now being used to create new dosage forms for existing products, which not only reduces the time and expense involved in new drug development, but also helps with regard to patent protection and bypassing existing patents. Today's culture demands convenience, a major factor determining adherence to drug therapy. Over the past few years, patient convenience-oriented research in the field of drug delivery has yielded a range of innovative drug-delivery options. As a result, various drug-delivery systems, including medicated chewing gums, oral dispersible tablets, medicated lozenges and lollipops, have now hit the market and are very popular. These dosage forms offer a highly convenient way to dose medications, not only for special population groups with swallowing difficulties, such as children and the elderly, but for the general populace as well. This book provides valuable insights into a number of formulation design approaches that are currently being used, or could be used, to provide new benefits from existing drug molecules.

Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems

Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems The regional effects of pretreating with known Chemical Penetration Enhancers (CPE) Azone®, Dimethyl sulfoxide (DMSO) and Oleic Acid (OA) along with solvents Ethanol (EtOH) and Propylene Glycol (PG) on the permeability of the model permeants was then assessed. The CPEs enhanced permeability of the permeants at all sites, however their effect varied depending on the anatomical site to which they
were applied, the general rank order for CAF and CIM was consistently: thigh > abdomen = breast, following OA and DMSO pretreatment, while Azone® resulted in no consistent trend. The rank order for CYP may be summarized as: abdomen >/:- thigh > breast for OA and breast > thigh > abdomen following Azone® and DMSO pretreatment. The rank order for IBU for all CPEs was consistently: abdomen >/:- breast > thigh. Unlike the CPEs, the solvents PG and EtOH, did not enhance (and in some cases retarded) permeability of the permeants. Following both PG and EtOH pretreatment the general rank order for CAF and CIM permeability was consistently: thigh > breast > abdomen, while for CYP and IBU in was: breast > thigh > abdomen and breast > abdomen > thigh, respectively. In order to identify the cause of any permeability differences between the anatomical sites, the permeability kinetics of the model permeants were established by fitting the experimental data in order to derive the partition parameter (Kh) of the permeant between the SC and donor solution and the diffusion parameter (D/h2) of the permeant within the SC. All the CPEs studied had unique and specific mechanisms by which they compromised the barrier function of the SC, however no site-specific mechanism was found. The effectiveness of OA and Azone® depended on the lipophilicity of the permeant, with both greatly enhancing permeability of hydrophilic CAF and CIM. Their effects on the outermost layers of the SC resulted in enhanced partitioning (ER(Kh)) of CAF, CIM and IBU into the SC. Similarly, DMSO greatly enhanced the permeability of CIM and CAF, although this was attributed to enhanced diffusivity (ER(D/h2)).

Mechanisms of Permeation Enhancement in Transdermal Drug Delivery The Handbook of Membrane Separations: Chemical, Pharmaceutical, and Biotechnological Applications provides detailed information on membrane separation technologies as they have evolved over the past decades. To provide a basic understanding of membrane technology, this book documents the developments dealing with these technologies. It explores chemical, pharmaceutical, food processing and biotechnological applications of membrane processes ranging from selective separation to solvent and material recovery. This text also presents in-depth knowledge of membrane separation mechanisms, transport models, membrane permeability computations, membrane types and modules, as well as membrane reactors.

Penetration Mechanism Through the Stratum Corneum Depending on the Structure of Microemulsions

Biomaterials Science Explore this comprehensive discussion of the application of physiologically- and physicochemical-based models to guide drug delivery edited by leading experts in the field Drug Delivery Approaches: Perspectives from Pharmacokinetics and Pharmacodynamics delivers a thorough discussion of drug delivery options to achieve target profiles and approaches as defined by physical and pharmacokinetic models. The book offers an overview of drug absorption and physiological models, chapters on oral delivery routes with a focus on both PBPK and multiple dosage form options. It also provides an explanation of the pharmacokinetics of the formulation of drugs delivered by systemic transdermal routes. The distinguished editors have included practical and accessible resources that address the biological and delivery approaches to pulmonary and mucosal delivery of drugs. Emergency care settings are also described, with explorations of the relationship between parenteral infusion profiles and PK/PD. The future of drug delivery is addressed via discussions of virtual experiments to elucidate mechanisms and approaches to drug delivery and personalized medicine. Readers will also benefit from the inclusion of: A thorough introduction to the utility of mathematical models in drug development and delivery An exploration of the techniques and applications of physiologically based models to drug delivery Discussions of oral delivery and pharmacokinetic models and oral site-directed delivery A review of integrated transdermal delivery and pharmacokinetics in development An examination of virtual experiment methods for integrating pharmacokinetic, pharmacodynamic, and drug delivery mechanisms Alternative endpoints to pharmacokinetics for topical delivery Perfect for researchers, industrial scientists, graduate students, and postdoctoral students in the area of pharmaceutical science and engineering, Drug Delivery Approaches: Perspectives from Pharmacokinetics and Pharmacodynamics will also earn a place in the libraries of formulators, pharmacokineticists, and clinical pharmacologists.

Encyclopedia of Pharmaceutical Technology Transdermal Drug Delivery: Concepts and Application provides comprehensive background knowledge and documents the most recent changes made in transdermal drug delivery. It provides comprehensive and updated information regarding most technologies and formulation strategies used for transdermal drug delivery. There has been recent growth in the number of research articles, reviews and other types of publication in the field of transdermal drug delivery. Research in this area is active both in the academic and industry settings. Ironically, only about 40 transdermal products with distinct active pharmaceutical ingredients are in the market indicating that more needs to be done in this area to chronicle recent advances made in this area and to elucidate the mechanisms involved. Transdermal Drug Delivery will be helpful to researchers in the pharmaceutical and biotechnological industries as well as academics and graduate students working in the field of transdermal drug delivery and professionals working in the field of regulatory affairs focusing on topical and transdermal drug delivery systems. Researchers in the cosmetic and cosmeceutical industries and those in Chemical and Biological Engineering will also find this book useful. Captures the most recent advancements and challenges in the field of transdermal drug delivery Covers both passive and active transdermal drug delivery strategies Explores a selection of state of the art transdermal drug delivery systems.

Handbook of Membrane Separations Provides the latest information on imaging technologies and transdermal delivery in skin disorders This important, timely book covers the latest understanding about today's major skin disorders and the development of imaging technologies for skin diagnosis, and the applications...
of micro/nano-technologies for the treatment of skin complications. It also places great emphasis on the critical role that interdisciplinary science occupies to achieve the requisite level of understanding of skin conditions and their management, which is essential to creating technologies that work. Imaging Technologies and Transdermal Delivery in Skin Disorders starts by outlining the structural characteristics of skin and skin appendages. It then discusses the key pathways involved in skin growth and development. Clinical presentations, pathophysiological mechanisms, and current clinical practices used to treat diseases affecting the skin are then introduced. Common preclinical models used for studying the mechanisms of diverse skin diseases, validation of novel therapeutic targets, and screening of new drugs to treat these diseases are also covered. The book examines the latest imaging technologies for understanding in vivo skin changes, as well as technologies such as high-resolution ultrasound imaging, quantitative Magnetic Resonance Imaging, high-resolution Optical Coherence Tomography, and emerging hybrid-imaging modalities. It concludes with chapters introducing emerging drug delivery technologies and potential future innovative developments. Presents up-to-date knowledge of the skin biology and pathologies Introduces advancements in the topic of imaging technology for tracing the drug delivery process, which is rarely systematically reported by other counterparts Covers the latest development in three inter-related directions of drug delivery, imaging, and skin disease intersect for skin research Provides an overview of the latest development of diagnostic and therapeutic technologies for skin diseases Imaging Technologies and Transdermal Delivery in Skin Disorders will be of interest to analytical chemists, materials scientists, pharmaceutical chemists, clinical chemists, biotechnologists, bioengineers, cosmetics industry, and dermatologists.

Dermatological and Transdermal Formulations Containing 350 illustrations, tables, and equations and covering AAPS/FDA guidelines for the experimentation and analysis of in vivo and in vitro percutaneous absorption, this reference provides comprehensive coverage of the development, preparation, and application of topical and transdermal therapeutic systems. Recognized international experts di Novel Drug Delivery Technologies Percutaneous absorption is the development of transdermal drug delivery patches, as well as the treatment of skin disorders. The skin permeability of most drugs is low, but can be enhanced by several mechanisms including electric force. This volume provides coverage of assisted transdermal and topical delivery by the mechanisms of iontophoresis, electroosmosis and electroporation. It starts by introducing the terminology and outlines the historical background. A foundation of the theoretical concepts and mechanisms of iontophoresis and electroporation has been presented, followed by tips on the design of experimental systems for research in this area. Other topics discussed are human and clinical studies with iontophoresis; delivery of peptides, Proteins And Oligonucleotides; Combined Use Of Iontophoresis And electroporation for gene therapy; iontophoretic delivery of insulin for diabetes; and the current status of the commercial development on an iontophoretic patch. This book provides a wealth of theoretical and practical information not easily found in any other single source.

The Art and Science of Dermal Formulation Development “This book is essential when designing, developing and studying biomedical materials. provides an excellent review—from a patient, disease, and even genetic point of view—of materials engineering for the biomedical field. This well presented book strongly insists on how the materials can influence patients’ needs, the ultimate drive for biomedical engineering. [presents an] Interesting and innovative review from a patient focus perspective—the book emphasizes the importance of the patients, which is not often covered in other biomedical material’s books.” —Fanny Raisin-Dadre, BioInteractions Ltd., Berkshire, England Going far beyond the coverage in most standard books on the subject, Biomaterials Science: An Integrated Clinical and Engineering Approach offers a solid overview of the use of biomaterials in medical devices, drug delivery, and tissue engineering. Combining discussion of materials science and engineering perspectives with clinical aspects, this book emphasizes integration of clinical and engineering approaches. In particular, it explores various applications of biomaterials in fields including tissue engineering, neurosurgery, hemocompatibility, BioMEMS, nanoparticle-based drug delivery, dental implants, and obstetrics/gynecology. The book engages those engineers and physicians who are applying biomaterials at various levels to: Increase the rate of successful deployment of biomaterials in humans Lower the side-effects of such a deployment in humans Accumulate knowledge and experience for improving current methodologies Incorporate information and understanding relevant to future challenges, such as permanent artificial organ transplants Using a variety of contributors from both the clinical and engineering sides of the fields mentioned above, this book stands apart by emphasizing a need for the often lacking approach that integrates these two equally important aspects.

Percutaneous Absorption : Mechanisms - Methodology - Drug Delivery , Revised and Expanded The performance of transdermal drug delivery systems are affected by the presence of stratum corneum (SC). Carriers such as microemulsions (MEs) have been developed as skin penetration enhancers. Although the main permeation route for MEs appears to be the pathway through the lipid layers between corneocytes, the interaction mechanism between MEs and lipid layers has not been clarified. In the lipid layers in SC, there are two types of lamellar structures, the long lamellar (L-La) and the short lamellar (S-La). Additionally, the alkyl chains in L-La and S-La are packed in a hexagonal array (Hex) and in an orthorhombic array (OR), respectively. Four types of MEs with different structures containing a deep eutectic solvent (DES) or H2O in the inner phase were prepared using two surfactants, Tween80 and Span20 (T3S1DES, T3S1H2O, T1S3DES, and T1S3H2O as indicated in Table1). Then, we evaluated which ME easily disturbed the lipid packing structures in SC by X-ray diffraction. The result showed that MEs at all compositions disturbed both Hex (d=0.41nm) and OR (d=0.37nm and 0.41nm) (Fig.1a, b), and T3S1H2O disturbed the lipid packing the most. We found that only T3S1H2O disturbed Hex more strongly because of a decrease in the ratio of the peak area of Hex to OR at 50
Investigation of Regional Differences in Transdermal Drug Delivery: Concepts and Application provides comprehensive background knowledge and documents the most recent advances made in the field of transdermal drug delivery. It provides comprehensive and updated information regarding most technologies and formulation strategies used for transdermal drug delivery. There has been recent growth in the number of research articles, reviews, and other types of publications in the field of transdermal drug delivery. Research in this area is active both in the academic and industry settings. Ironically, only about 40 transdermal products with distinct active pharmaceutical ingredients are in the market indicating that more needs to be done to chronicle recent advances made in this area and to elucidate the mechanisms involved. This book will be helpful to researchers in the pharmaceutical and biotechnological industries as well as academics and graduate students working in the field of transdermal drug delivery and professionals working in the field of regulatory affairs focusing on topical and transdermal drug delivery systems. Researchers in the cosmetic and cosmeceutical industries, as well as those in chemical and biological engineering, will also find this book useful. Captures the most recent advancements and challenges in the field of transdermal drug delivery. Covers both passive and active transdermal drug delivery strategies. Explores a selection of state-of-the-art transdermal drug delivery systems.

Role of Cavitation, Surfactants, and Their Synergism in Transdermal Sonophoresis: Presenting authoritative and engaging articles on all aspects of drug development, dosage, manufacturing, and regulation, this Third Edition enables the pharmaceutical specialist and novice alike to keep abreast of developments in this rapidly evolving and highly competitive field. A dependable reference tool and constant companion for years to come.

Investigation of Regional Differences in Transdermal Drug Delivery Long established as a trusted core text for pharmaceutics courses, this gold standard
book is the most comprehensive source on pharmaceutical dosage forms and drug delivery systems available today. Reflecting the CAPE, APhA, and NAPLEX® competencies, Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems covers physical pharmacy, pharmacy practice, pharmacometrics, compounding, and dosage forms, as well as the clinical application of the various dosing forms in patient care. This Tenth Edition has been fully updated to reflect new USP standards and features a dynamic new full color design, new coverage of prescription flavoring, and increased coverage of expiration dates.

Current Technologies To Increase The Transdermal Delivery Of Drugs Updating and expanding the scope of topics covered in the previous edition, Percutaneous Absorption: Drugs, Cosmetics, Mechanisms, Methods, Fifth Edition supplies new chapters on topics currently impacting the field including cutaneous metabolism, skin contamination, exposure to protein allergens, in vitro absorption methodology and the percutaneous absorption of chemical mixtures. Complete with studies on the role of the skin as a key portal of entry for chemicals into the body, this book serves as a detailed reference source for recent advances in the field, as well as an experimental guide for laboratory personnel. Key Features: Details in vivo and in vitro methods for measuring absorption, dermal decontamination, mechanisms of transdermal delivery, and the relationship of transepidermal water loss to percutaneous absorption Considers a range of mathematical models, the safety evaluation of cosmetic ingredients, the absorption of hair dyes, nanoparticles for drug delivery, and other novel methods of drug delivery Discusses topics including skin metabolism, the skin reservoir, and the effects of desquamation on absorption

Drug Permeation Enhancement Drug delivery technologies modify drug release profile, absorption, distribution and elimination for the benefit of improving product efficacy and safety, as well as patient convenience and compliance. Drug release is from: diffusion, degradation, swelling, and affinity-based mechanisms. Controlled Drug delivery highlights how the multifunctionality of several materials can be achieved and valorized for pharmaceutical and biopharmaceutical applications. Topics covered in this comprehensive book include: Controlled drug delivery systems-Introduction; Polymers; Microencapsulation; Mucosal Drug Delivery system; Implantable Drug Delivery Systems; Transdermal Drug Delivery Systems; and Gastro retentive drug delivery systems. This book gives guidance on how to approach modifications of biopolymers for drug delivery systems and materials for implants. It is also describes structure-properties relationships in proposed excipients, drug delivery systems and biomedical materials. Innovation in Transdermal Drug Delivery 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 drum 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.

Enhancement of Transdermal Drug Delivery This book describes a broad area of nanomedicine which involves mainly applications, diseases, and diagnostics. The comprehensive coverage provides researchers, academics, and health specialists with a great tool, that includes techniques applicable to various uses. Handbook of Membrane Separations The Art and Science of Dermal Formulation Development is a comprehensive guide to the theory and practice of transdermal and topical formulation development, covering preclinical studies, evaluation, and regulatory approval. It enables the reader to understand the opportunities and challenges in developing products and how risks can be mitigated. Over the last 25 years, expertise in this area has declined whilst drug delivery systems for other administration routes have developed significantly. The advantages offered by transdermal and topical drug delivery remain compelling for sectors including the pharmaceutical industry, personal care, and cosmetics. This text addresses the dearth of expertise and discusses how skin can be a route of delivery and the processes in formulation development, but how such an application is very different to that used for oral, IV, and other administration routes. Key Features: Presents a practical guide for both industry and academia Focuses on and draws together the fundamental principles behind transdermal and topical drug delivery Illustrates the practicalities of formulation design using key case studies Gives an understanding of the skin as a route of delivery and how formulation development for such application differs from that for other administration routes

Nanomedicine for Drug Delivery and Therapeutics The flux ratio of ara-A to ara-H in the dermis is comparatively higher during prodrug delivery from saturation level topical application (donor concentrations). PRODRUG-BASED TRANSDERMAL DRUG DELIVERY: A PHYSICAL MODEL APPROACH TO SIMULTANEOUS TRANSPORT AND METABOLISM OF VIDARABINE-2',3'-DIACETATE IN HAIRLESS MOUSE SKIN. Since publication of the Second Edition in 1989, numerous innovations have occurred that affect the way scientists look at issues in the field of percutaneous absorption. Focusing on recent advances as well as updating and expanding the scope of topics covered in the previous edition, Percutaneous Absorption, Third Edition provides thorough coverage of the skin’s role as an important portal of entry for chemicals into the body. Assembles the work of nearly 80 experts—more than the Second Edition—into a unified, comprehensive volume that contains the latest ideas and research! Complete with nearly 600 drawings, photographs, equations, and tables and more than 1600 bibliographic citations of pertinent literature, Percutaneous Absorption, Third Edition
Mechanisms of Transdermal Drug Delivery Demand for better reliability from drug delivery systems has caused designers and researchers to move away from trial-and-error approaches and toward model-based methods of product development. Developing such models requires cross-disciplinary physical, mathematical, and physiological knowledge. Combining these areas under a single cover, Understanding Drug Release and Absorption Mechanisms builds a firm understanding of all elements needed to conceive, build, and implement successful models of drug release. Written by experts with broad industrial and academic experience, this book discusses the underlying physical principles, shows how to build mathematical models based on these principles, and finally compares the resulting models with experimental results. The authors begin by introducing the basics of modeling, physiological details of gastrointestinal and dermal absorption pathways, rheology, mass transport and thermodynamics, dissolution and partitioning, as well as size effects on the dissolution of crystallites. From this baseline, the authors explore applications in drug release from various delivery systems, specifically matrix systems, microemulsions, and permeability through membranes. Working systematically from theory to working models, Understanding Drug Release and Absorption Mechanisms: A Physical and Mathematical Approach demonstrates the steps involved in designing, building, and implementing realistic and reliable models of drug release without unrealistically simplifying the theoretical parameters.

Understanding Drug Release and Absorption Mechanisms The microscopic structure of the epidermis and its derivatives; Mathematical models of percutaneous absorption; Mechanism of percutaneous absorption from physicochemical evidence; Cutaneous metabolism of xenobiotics; Occlusion does not uniformly enhance penetration in vivo; Structure activity correlations in percutaneous absorption; Regional variation in percutaneous absorption; Cutaneous permeation of lipophilic molecules, effects of enhancers; Studies on the permeability of infant skin; Interaction of vehicles with model skin membranes in the permeation process; Relationships of percutaneous absorption and penetration of chemicals from drinking water while bathing or swimming; Classification of percutaneous penetration enhancers, a conceptional diagram; In vivo methods for percutaneous absorption measurements; In vivo animal models for percutaneous absorption; Determination of percutaneous absorption by in vitro techniques; The influence of metabolism on percutaneous absorption; Localization of compounds in different skin layers and its use as an indicator of percutaneous absorption; Evaporation and penetration from skin; Dermal decontamination and percutaneous absorption; Interrelationships in the dose response of percutaneous absorption; Blood flow as a technology in percutaneous absorption, the assessment of the cutaneous microcirculation by laser doppler and photplethysmographic techniques; Calculations of body exposure from percutaneous absorption data; Human skin sandwich flap model for percutaneous absorption; Stripping method for measuring percutaneous absorption in vivo; Noninvasive radioisotope counting on skin, surface or external counting; The human skin blanching assay as an indicator of topical corticosteroid bioavailability and potency, an update; Skin absorption from patch test systems, relevance to allergic contact dermatitis and transdermal delivery systems; In vitro systems for the assessment of drug release from topical formulations and transmembrane permeation; Percutaneous penetration as a method of delivery to muscle and other tissue; Optimizing percutaneous absorption; Facilitated percutaneous absorption of charged drugs; Action of penetration enhancers on human stratum corneum as assessed by differential scanning calorimetry; Ultrasound as a transdermal enhancer; Iontophoretic Drug Delivery, Effects of physicochemical factors on the skin uptake of drugs; In vivo percutaneous absorption, effect of repeated application versus single dose; In vitro testing of topical pharmaceutical formulations.

Percutaneous Absorption 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 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, pharmacologists, dermatologists, cosmetic scientists, toxicologists, public health officials, manufacturers of cosmetic and toiletry products, and graduate students in these disciplines! An invaluable reference source for readers who need to keep up with the latest developments in the field, Percutaneous Absorption, Third Edition is also an excellent experimental guide for laboratory personnel.

Transdermal Delivery of Drugs Transdermal delivery offers several biomedical advantages over conventional routes including avoidance of presystemic and systemic first pass metabolism and controlled release over extended period. Physical enhancement mechanisms including here are iontophoresis, electro-
poration, ultrasound, photomechanical waves, magnetophoresis, microfabricated microneedles, radiofrequency-driven skin microchanneling and transfersomes. Iontophoresis is being explored for drugs whose delivery is not benefited by chemical enhancer. Sonophoresis is a process that exponentially increases the absorption of topical compounds into the epidermis, dermis and skin appendages by ultrasonic energy. A Transfersomes possess an infrastructure consisting of hydrophobic and hydrophilic moieties together and as a result can accommodate drug molecules with wide range of solubility.

Controlled Novel Drug Delivery Applications of Nanocomposite in Drug Delivery discusses and explores the applications of nanocomposites in the area of drug delivery. Starting with a scientific understanding of drug delivery fundamentals, the book explores the utility of nanocomposites in the area of controlled, transdermal, osteo-articular tuberculosis and stimulus sensitive drug delivery applications. The book intricately details and discusses a variety of methods for their preparation, while also highlighting specific applications of nanocomposites in targeted drug delivery. Discusses nanocomposite and nanotechnology for drug delivery. Outlines the mechanisms involved in targeted drug delivery using nanocomposites. Includes synthesis methods for nanocomposites used in controlled drug delivery. Lists various applications of nanocomposites in drug delivery.

Ultrasound-mediated Transdermal Drug Delivery This e-book provides an overview of current technologies used to increase the topical/transdermal delivery of drugs, its protocols, advantages and limitations. It includes exclusive chapters on chemical enhancers, Iontophoresis, Sonophoresis, Electroporation, Microneedles and the more recent use of micro/nanoparticles to deliver drugs throughout the skin. The e-book's generalized approach on the topic is aimed to be helpful in drug discovery, drug delivery and toxicological research and to provide a broader perspective on the topic to readers with respect to current literature available on the.

Novel Delivery Systems for Transdermal and Intradermal Drug Delivery

Transdermal Drug Delivery Provides an up-to-date and critical examination of biophysical techniques used in the analysis of molecular mechanisms underlying transdermal drug delivery as well as a physical and chemical evaluation of the stratum corneum necessary for the enhancement of percutaneous drug transport. Reflects the hands-on experience of established and novel researchers in the field.

Novel Drug Delivery Systems for Chinese Medicines The Handbook of Membrane Separations: Chemical, Pharmaceutical, Food, and Biotechnological Applications, Second Edition provides detailed information on membrane separation technologies from an international team of experts. The handbook fills an important gap in the current literature by providing a comprehensive discussion of membrane application.

Percutaneous Penetration Enhancers Chemical Methods in Penetration Enhancement Providing a comprehensive review of drug permeation enhancement, this reference covers the fundamental aspects of physical and chemical enhancement for the transport of both peptides and nonpeptides through the skin, mucosae, and cornea. Expanding the frontiers of drug delivery research, drug permeation enhancement details the barrier properties of skin; examines skin penetration enhancers; investigates the transdermal delivery of proteins and peptides by iontophoresis; describes electrically mediated transdermal drug delivery; analyzes obstacles to the transmucosal delivery of peptides and proteins; and discusses ocular peptide absorption mechanisms. Written by 35 international authorities working in academia, government, and industry, Drug Permeation Enhancement is for pharmaceutical scientists, research dermatologists, biotechnologists, toxicologists, and graduate students in these disciplines.

Electrically Assisted Transdermal And Topical Drug Delivery

Percutaneous Absorption

Transdermal Drug Delivery This invaluable reference presents a comprehensive review of the basic methods for characterizing bioadhesive materials and improving vehicle targeting and uptake-offering possibilities for reformulating existing compounds to create new pharmaceuticals at lower development costs. Evaluates the unique carrier characteristics of bioadhesive polymers and their power to enhance localization of delivered agents, local bioavailability, and drug absorption and transport! Written by over 50 international experts and reflecting broad knowledge of both traditional bioadhesive strategies and novel clinical applications, Bioadhesive Drug Delivery Systems discusses mechanical and chemical bonding, polymer-mucus interactions, the effect of surface energy in bioadhesion, polymer hydration, and mucus rheology analyzes biochemical properties of mucus and glycoproteins, cell adhesion molecules, and cellular interaction with two- and three-dimensional surfaces covers microbalances and magnetic force transducers, atomic force microscopy, direct measurements of molecular level adhesions, and methods to measure cell-cell interactions examines bioadhesive carriers, diffusion or penetration enhancers, and lectin-targeted vehicles describes vaginal, nasal, buccal, ocular, and transdermal drug delivery reviews bioadhesive interactions with the mucosal tissues of the eye and mouth, and those in the respiratory, urinary, and gastrointestinal tracts explores issues of product development, clinical testing, and production and more! Ampley referenced with over 1400 bibliographic citations, and illustrated with more than 300 drawings, photographs,
tables, and display equations, Bioadhesive Drug Delivery Systems serves as a sound basis for innovation in bioadhesive systems and an excellent introduction to the subject. This unique reference is ideal for pharmaceutical scientists and technologists; chemical, polymer, and plastics engineers; biochemists; physical, surface, and colloid chemists; biologists; and upper-level undergraduate and graduate students in these disciplines.