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# Cationic Vectors In Ocular Drug Delivery Researchgate

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Drug Targeting and Stimuli Sensitive Drug Delivery Systems  
Nanoparticulate Drug Delivery Systems  
Nanomedicine in Drug Delivery  
Biology, Challenges and Strategies  
Nanomaterials for Medical Diagnosis and Therapy  
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## VAUGHAN KIM

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**Drug Targeting and Stimuli Sensitive Drug Delivery Systems** Springer Science & Business Media

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 expected 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

**Nanoparticulate Drug Delivery Systems** Springer Science & Business Media

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

Nanomedicine in Drug Delivery Springer Science & Business Media

This book is part of a series dedicated to recent advances on preventive, predictive and personalised medicine (PPPM). It focuses on the theme of "Drug delivery systems: advanced technologies potentially applicable in personalised treatments". The critical topics involving the development and preparation of effective drug delivery systems, such as: polymers available, self-assembly, nanotechnology, pharmaceutical formulations, three dimensional structures, molecular modeling, tailor-made solutions and technological tendencies, are carefully discussed. The understanding of these areas constitutes a paramount route to establish personalised and effective solutions for specific diseases and individuals.

**Biology, Challenges and Strategies** Jones & Bartlett Publishers

Drug Delivery is the latest and most up-to-date text on drug delivery and offers an excellent working foundation for students and clinicians in health professions and graduate students including nursing,

pharmacy, medicine, dentistry, as well as researchers and scientists. Presenting this complex content in an organized and concise format, Drug Delivery allows students to gain a strong understanding of the key concepts of drug delivery. This text focuses on the basic concepts of drug delivery while thoroughly examining various topics such as: CNS delivery Gene delivery Ocular delivery World-wide research on drug delivery Recent advances in drug delivery A significant advancement has been made in the field of drug delivery. This text provides a detailed overview of drug delivery systems, routes of drug administration and development of various formulations. The cutting edge research being carried out in this field will be compiled and a focus on worldwide research on drug delivery and targeting at the molecular, cellular, and organ levels will also be summarized. Each new print copy includes access to the Navigate Companion Website including: Chapter Quizzes, Interactive Glossary, Crossword Puzzles, Interactive Flashcards, and Matching Exercises

*Nanomaterials for Medical Diagnosis and Therapy* CRC Press

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.

**Advances in Composite Nanomaterials, Biomedical Applications and Its Technological Facets** CRC Press

While nutraceuticals were verified to be expedient, they often lack stability, bioavailability, and

permeability, and nano-nutraceuticals are being developed to afford a solution to the problem. *Nanotechnology in Nutraceuticals: Production to Consumption* delves into the promises and prospects of the application of nanotechnology to nutraceuticals, addressing concepts, techniques, and production methods. Nutraceuticals retain less stability, efficacy, and bioavailability when entering the human body. To overcome such problems, nanotechnology shows promise when applied as a tool to improve the quality and stability of nutraceuticals. This book discusses metallic nanoparticles and their applications in the food industry with specific application to nutraceuticals. It includes detailed discussion on potential functional properties of nutraceuticals with regard to antimicrobial activity, anti-inflammatory activity, and anti-cancer activity. Since nanoparticles can be toxic past a certain limit, implementing nanotechnology under thoughtful regulations is considered critical. The book addresses these issues with chapters covering the principles for the oversight of nanotechnologies and nanomaterials in nutraceuticals, the implications of regulatory requirements, the ethics and economics of nano-nutraceuticals, and consumer acceptance of nanotechnology based foods.

*Nano-Engineering Strategies and Nanomedicines against Severe Diseases* Springer Science & Business Media

The recent introduction of nanomedicines in the drug therapy arena is revolutionizing the management of severe diseases. The key advance in the field is the optimization of the biological fate of drug molecules, thus improving the therapeutic effect while keeping to a very minimum the associated toxicity. Volume one of this book series, *Nanoplatforms in Drug Delivery*, established the basic aspects in the development of drug-loaded nanoplatforms, the so-called nanomedicines or nanodrugs, focusing on representative materials and strategies used in their formulation. Taking advantage of the advanced conceptualizations on nanomedicine engineering that were described in volume one, volume two, *Nano-Engineering Strategies and Nanomedicines against Severe Diseases*, analyzes in depth special features related to the formulation of nanoplatforms for oral, dental, topical and transdermal, pulmonary and nasal, ocular and otic, vaginal, and brain drug delivery and targeting. Particular aspects of nanomedicine engineering and in vivo fate associated with the routing of drug administration are given special attention. In addition, an up-to-date view is presented on the use of nanomedicines against severe diseases, such as cancer, cardiovascular diseases, neurodegenerative disorders, infectious diseases, chronic inflammatory diseases, and metabolic diseases. The chapters analyze the key factors that need to be controlled to achieve the optimum therapeutic effect. Attention is further given to gene delivery and the recent concept of nanotheranosis.

**Hydroxyapatite** Springer Science & Business Media

The goal of this book is to provide readers with a broad appraisal of topics in global advancements in theoretical and experimental facts, and practical applications of nano-HAp materials based on their synthesis, properties, prospects, and potential biomedical treatments. The perspective of this book involves the preparation of crystalline nano-HAP materials including preferential orientation, various properties and new prospects in biomimetics, bone tissue infections, biomedical implants, regenerative medicinal treatments and a wide range of technological applications. This book is categorized into two main sections: Hydroxyapatite: synthesis, properties, perspectives, and

prospects; and the application of hydroxyapatite: a synergistic outlook. Individual chapters provide a base for a wide range of readers from diversified fields, including students and researchers, who will find in this book simply explained basics as well as advanced techniques of specific subjects related to these phenomena. The book is made up of nine contributions, compiled by experts from wide-ranging fields involved in biomaterials/materials in science and technology from over 15 research institutes across the globe.

*Metal-Based and Other Nanomaterials* Springer

This book presents an overview of the ways in which the latest experimental and theoretical nanotechnologies are serving the fields of biotechnology, medicine, and biomaterials. They not only enhance the efficiency of common therapeutics and lower their risks, but thanks to their specific properties, they also provide new capabilities. Nano-scale measurement techniques, such as nano-indentation and nano-scratch methods, could potentially be used to characterize the physical and mechanical properties of both natural tissues and synthetic biomaterials in terms of strength and durability.

**Non-Viral Gene Delivery Vectors** CRC Press

This is a comprehensive textbook addressing the unique aspects of drug development for ophthalmic use. Beginning with a perspective on anatomy and physiology of the eye, the book provides a critical appraisal of principles that underlie ocular drug product development. The coverage encompasses topical and intraocular formulations, small molecules and biologics (including protein and gene therapies), conventional formulations (including solutions, suspensions, and emulsions), novel formulations (including nanoparticles, microparticles, and hydrogels), devices, and specialty products. Critical elements such as pharmacokinetics, influence of formulation technologies and ingredients, as well as impact of disease conditions on products development are addressed. Products intended for both the front and the back of the eye are discussed with an eye towards future advances.

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*Design of Nanostructures for Versatile Therapeutic Applications* John Wiley & Sons

Provides comprehensive coverage of microneedles for delivering and monitoring patient drugs and vaccines Microneedles are an incredibly active research area and have the potential to revolutionize the way many medicines and vaccines are delivered. This comprehensive research book covers the

major aspects relating to the use of microneedle arrays in enhancing both transdermal and intradermal drug delivery and provides a sound background to the use of microneedle arrays in enhanced delivery applications. Beginning with a history of the field and the various methods employed to produce microneedles from different materials, *Microneedles for Drug and Vaccine Delivery and Patient Monitoring* discusses the penetration of the stratum corneum by microneedles and the importance of application method and force and microneedle geometry (height, shape, inter-needle spacing). Transdermal and intradermal delivery research using microneedles is comprehensively and critically reviewed, focusing on the outcomes of in vivo animal and human studies. The book describes the important topics of safety and patient acceptability studies carried out to date. It also covers in detail the growing area for microneedle use in the monitoring of interstitial fluid contents. Finally, it reviews translational and regulatory developments in the microneedles field and describes the work ongoing in industry. The only book currently available on microneedles Filled with tables, graphs, and black and white images (photographs, micrographs) Authored by four experts in pharmaceuticals *Microneedles for Drug and Vaccine Delivery and Patient Monitoring* is an ideal source for researchers in industry and academia working on drug delivery and transdermal delivery in particular, as well as for advanced students in pharmacy and pharmaceutical sciences.

Methods and Protocols Academic Press

This book addresses the issues relating to a wide variety of ocular diseases from which millions of people suffer. Long-term challenges include visual impairment and ocular blindness. Certain ocular diseases are quite rare, whereas others, such as cataracts, age-related macular degeneration (AMD), and glaucoma, are very common, especially in the aging population. A rapid expansion of new technologies in ocular drug delivery and new drug candidates, including biologics, to treat these challenging diseases in the retina and posterior segments of the eye have recently emerged. These approaches are necessary because the eye has many unique barriers to drug delivery. Thus, this timely reference *Drug Delivery for the Retina and Posterior Segment Disease* compiles and analyzes recent advances in the research and development of drug delivery systems for retina and posterior segment diseases of the eye, with an emphasis on the use of implantable devices, iontophoresis as well as micro- and nanoparticles.

*Focal Controlled Drug Delivery Mucosal Delivery of Biopharmaceuticals* Biology, Challenges and Strategies

Preceded by *The eye* / John V. Forrester ... [et al.]. 3rd ed. 2008.

Barriers and Application of Nanoparticulate Systems William Andrew

*Drug Delivery Devices and Therapeutic Systems* examines the current technology and innovations moving drug delivery systems (DDS) forward. The book provides an overview on the therapeutic use of drug delivery devices, including design, applications, and a description of the design of each device. While other books focus on the therapy, the primary emphasis in this book is on current technologies for DDS applications, including microfluidics, nanotechnology, biodegradable hydrogel and microneedles, with a special emphasis on wearable DDS. As part of the *Developments in Biomedical Engineering and Bioelectronics* series, this book is written by experts in the field and informed with information directly from manufacturers. Pharmaceutical scientists, medical

researchers, biomedical engineers and clinical professionals will find this an essential reference. Provides essential information on the most recent drug delivery systems available Explains current technology and its applications to drug delivery Contains contributions from biomedical engineers, pharmaceutical scientists and manufacturers

*Treatise on Ocular Drug Delivery* Springer Science & Business Media

*Gene Delivery into Mammalian Cells: An Overview on Existing Approaches Employed In Vitro and In Vivo*, by Peter Hahn and Elizabeth Scanlan \* *Strategies for the Preparation of Synthetic Transfection Vectors*, by Asier Unciti-Broceta, Matthew N. Bacon, and Mark Bradley \* *Cationic Lipids: Molecular Structure/Transfection Activity Relationships and Interactions with Biomembranes*, by Rumiana Koynova and Boris Tenchov \* *Hyperbranched Polyamines for Transfection*, by Wiebke Fischer, Marcelo Calderon, and Rainer Haag \* *Carbohydrate Polymers for Nonviral Nucleic Acid Delivery*, by Antons Sizovs, Patrick M. McLendon, Sathya Srinivasachari, and Theresa M. Reineke \* *Cationic Liposome-Nucleic Acid Complexes for Gene Delivery and Silencing: Pathways and Mechanisms for Plasmid DNA and siRNA*, by Kai K. Ewert, Alexandra Zidovska, Ayesha Ahmad, Nathan F. Bouxsein, Heather M. Evans, Christopher S. McAllister, Charles E. Samuel, and Cyrus R. Safinya \* *Chemically Programmed Polymers for Targeted DNA and siRNA Transfection*, by Eveline Edith Salcher and Ernst Wagner \* *Photochemical Internalization: A New Tool for Gene and Oligonucleotide Delivery*, by Kristian Berg, Maria Berstad, Lina Prasmickaite, Anette Weyergang, Pål K. Selbo, Ida Hedfors, and Anders Høgset \* *Visualizing Uptake and Intracellular Trafficking of Gene Carriers by Single-Particle Tracking*, by N. Ruthardt and C. Bräuchle

*In Vitro and In Vivo Evaluation Methods* Springer

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.

*Drug Delivery Devices and Therapeutic Systems* Springer Nature

There are more than 300 genes that have been identified which carry mutations that cause various forms of retinal dysfunction and degeneration, making the study of retinal diseases a subject of high relevance. In this compendium of original and review articles, many of the diseases and pathways associated with disorders of the retina are examined using animal models, to provide the reader with a good overview of current retinal research. Within this volume, you will find research reports on many of the most prominent retinal disorders, such as diabetic retinopathy (DR), age-related macular degeneration (AMD), choroidal neovascularization (CNV), and retinitis pigmentosa (RP). We



hope that the work presented here will stimulate new ideas and lead to effective treatments for retinal diseases.

**Ocular Drug Delivery Systems** Springer

Mucosal Delivery of Biopharmaceuticals Biology, Challenges and Strategies Springer Science & Business Media

*Drug Delivery for the Retina and Posterior Segment Disease* CRC Press

The brief is the first to focus exclusively on environmentally friendly delivery of pesticides (controlled-release nanoparticulate formulation of pesticides using biodegradable polymers as carriers). The brief also introduces pesticides like Chlorpyrifos and biodegradable polymers like guar-gum. The brief will be extremely useful to the researchers in the field of agrochemicals and will be

equally useful for advanced professionals in the field of biology, chemistry, environmental biology, entomology and horticulture.

Challenges in Delivery of Therapeutic Genomics and Proteomics BoD – Books on Demand

Thanks to their unique properties, chitosan and chitosan-based materials have numerous applications in the field of biomedicine, especially in drug delivery. This book examines biomedical applications of functional chitosan, exploring the various functions and applications in the development of chitosan-based biomaterials. It also describes the chemical structure of chitosan and discusses the relationship between their structure and functions, providing a theoretical basis for the design of biomaterials. Lastly, it reviews chemically modified and composite materials of chitin and chitosan derivatives for biomedical applications, such as tissue engineering, nanomedicine, drug delivery, and gene delivery.

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