

# Particulate Interactions in Dry Powder Formulations for Inhalation

Xian Ming Zeng

Gary P. Martin

Christopher Marriott



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**Ghousia Begum**



## **Particulate Interactions In Dry Powder Formulations For Inhalation:**

*Particulate Interactions in Dry Powder Formulation for Inhalation* Xian Ming Zeng, Gary Peter Martin, Christopher Marriott, 2000-10-26 Interactions between drug particulates are crucial in determining drug dispersion and deaggregation and ultimately delivery efficiency This book combines principles established in surface and colloidal chemistry with pharmaceutical powder technology It discusses some of the factors affecting particulate interactions and particle fluid interaction in the respiratory tract It review some of the studies carried out in dry powder formulation development and proposes possible strategies in improving DPI efficiency The majority of these principles are applicable to other pharmaceutical solid dosage forms e g tablets and capsules

*Particulate Interactions in Dry Powder Formulations for Inhalation* Xian Ming Zeng, 2003

**Excipient Development for Pharmaceutical, Biotechnology, and Drug Delivery Systems** Ashok Katdare, Mahesh Chaubal, 2006-07-28 To facilitate the development of novel drug delivery systems and biotechnology oriented drugs the need for new yet to be developed and approved excipients continues to increase Excipient Development for Pharmaceutical Biotechnology and Drug Delivery Systems serves as a comprehensive source to improve understanding of excipients and forge potential new avenues for regulatory approval This book presents detailed up to date information on various aspects of excipient development testing and technological considerations for their use It addresses specific details such as historical perspective preclinical testing safety and toxicology evaluation as well as regulatory quality and utility aspects The text also describes best practices for use of various functional excipients and extensive literature references for all topics

Introduction to Particle Technology Martin J. Rhodes, Jonathan Seville, 2024-06-17  
**INTRODUCTION TO PARTICLE TECHNOLOGY** A new edition of the indispensable guide to particulates and powders Particle technology concerns the formation processing and properties of the particles and powders which make up many of the products that surround us Such products range from the cement and aggregate in the built environment to pharmaceuticals and processed foods Most of the process industries involve particles either as essential components such as catalysts or as intermediate or final products and minerals such as the rare earths that are generally mined and processed in particulate form Particles can have many beneficial uses but they can also cause harm in the environment and through inhalation to the individual In all cases the powder properties particularly particle size are crucially important This well known textbook now in its 3rd edition provides an easily understood introduction to the underlying scientific principles of particle technology together with examples of how these principles can be used in practical design and operation of industrial processes Each chapter contains both worked examples and exercises for the student Based on feedback from students and users of the earlier editions this revised and expanded text includes introductory chapters on particles as products and on computational methods The topics have been selected to give coverage of the broad areas of particle technology and include Characterization size analysis surface area Processing granulation fluidization Particle formation granulation crystallisation

tableting size reduction Storage and transport hopper design pneumatic conveying standpipes Separation filtration settling cyclones Safety fire and explosion hazards health hazards Engineering the properties of particulate systems to achieve desired product performance Discrete element modelling of particulate systems Introduction to Particle Technology 3rd Edition is essential reading for students of chemical engineering The text is also recommended reading for students of mechanical engineering applied chemistry pharmaceutics physics mineral processing and metallurgy and is an excellent source for practising engineers and scientists looking to establish a working knowledge of the subject     *Fundamentals of Drug Delivery* Heather A. E. Benson, Michael S. Roberts, Adrian C. Williams, Xiaowen Liang, 2021-09-30 A comprehensive guide to the current research major challenges and future prospects of controlled drug delivery systems Controlled drug delivery has the potential to significantly improve therapeutic outcomes increase clinical benefits and enhance the safety of drugs in a wide range of diseases and health conditions Fundamentals of Drug Delivery provides comprehensive and up to date coverage of the essential principles and processes of modern controlled drug delivery systems Featuring contributions by respected researchers clinicians and pharmaceutical industry professionals this edited volume reviews the latest research in the field and addresses the many issues central to the development of effective controlled drug delivery Divided in three parts the book begins by introducing the concept of drug delivery and discussing both challenges and opportunities within the rapidly evolving field The second section presents an in depth critique of the common administration routes for controlled drug delivery including delivery through skin the lungs and via ocular nasal and otic routes The concluding section summarizes the current state of the field and examines specific issues in drug delivery and advanced delivery technologies such as the use of nanotechnology in dermal drug delivery and advanced drug delivery systems for biologics This authoritative resource Covers each main stage of the drug development process including selecting pharmaceutical candidates and evaluating their physicochemical characteristics Describes the role and application of mathematical modelling and the influence of drug transporters in pharmacokinetics and drug disposition Details the physiology and barriers to drug delivery for each administration route Presents a historical perspective and a look into the possible future of advanced drug delivery systems Explores nanotechnology and cell mediated drug delivery including applications for targeted delivery and toxicological and safety issues Includes comprehensive references and links to the primary literature Edited by a team of internationally recognized experts Fundamentals of Drug Delivery is essential reading for researchers industrial scientists and advanced students in all areas of drug delivery including pharmaceutics pharmaceutical sciences biomedical engineering polymer and materials science and chemical and biochemical engineering     *Controlled Pulmonary Drug Delivery* Hugh D.C. Smyth, Anthony J. Hickey, 2011-06-24 The pace of new research and level of innovation repeatedly introduced into the field of drug delivery to the lung is surprising given its state of maturity since the introduction of the pressurized metered dose inhaler over a half a century ago It is clear that our understanding of pulmonary drug delivery has

now evolved to the point that inhalation aerosols can be controlled both spatially and temporally to optimize their biological effects. These abilities include controlling lung deposition by adopting formulation strategies or device technologies and controlling drug uptake and release through sophisticated particle technologies. The large number of contributions to the scientific literature and variety of excellent texts published in recent years is evidence for the continued interest in pulmonary drug delivery research. This reference text endeavors to bring together the fundamental theory and practice of controlled drug delivery to the airways that is unavailable elsewhere. Collating and synthesizing the material in this rapidly evolving field presented a challenge and ultimately a sense of achievement that is hopefully reflected in the content of the volume.

**Inhalation Drug Delivery** Paolo Colombo, Daniela Traini, Francesca Buttini, 2013-02-11 There has been a rapid evolution in the field of inhalation drug therapy including new drugs, increased regulation and quality control and strong pressure from generics. *Inhalation Drug Therapy* brings together the most current inhalation drug research as well as practical developments and processes into one essential guide. Focusing on inhalation products and specific equipment and techniques used in manufacturing and quality control, the book balances research with the industrial aspects of creating the drugs and features a highly regarded author team with both academic and industry experience.

**Aerosol Science** Ian Colbeck, Mihalís Lazaridis, 2014-01-30 *AEROSOL SCIENCE TECHNOLOGY AND APPLICATIONS* Aerosols influence many areas of our daily life. They are at the core of environmental problems such as global warming, photochemical smog and poor air quality. They can also have diverse effects on human health where exposure occurs in both outdoor and indoor environments. However, aerosols can have beneficial effects too: the delivery of drugs to the lungs, the delivery of fuels for combustion and the production of nanomaterials all rely on aerosols. Advances in particle measurement technologies have made it possible to take advantage of rapid changes in both particle size and concentration. Likewise, aerosols can now be produced in a controlled fashion. Reviewing many technological applications together with the current scientific status of aerosol modelling and measurements, this book includes: Satellite aerosol remote sensing; The effects of aerosols on climate change; Air pollution and health; Pharmaceutical aerosols and pulmonary drug delivery; Bioaerosols and hospital infections; Particle emissions from vehicles; The safety of emerging nanomaterials; Radioactive aerosols; Tracers of atmospheric processes. With the importance of this topic brought to the public's attention after the eruption of the Icelandic volcano Eyjafjallajökull, this book provides a timely, concise and accessible overview of the many facets of aerosol science.

**Lactose** Marcel Paques, Cordula Lindner, 2019-03-19 *Lactose: Evolutionary Role, Health Effects and Applications* is a professional reference that addresses the latest research from the fields of food science, nutritional science and evolutionary biology. The book presents an overview of the qualities of lactose, beginning with the intriguing evolutionary biology advantages linked to lactose digestion in humans. In addition, the book addresses how lactose's physiological effects differ from other saccharides and impact human health. The rationale for the application of lactose as an ingredient in products, for example as a

pharmaceutical carrier is also discussed Written in close collaboration by key experts with years of study and practice Lactose Evolutionary Role Health Effects and Applications is the first book to address this topic exclusively Scientists and nutritionists in academia and the dairy and food industry as well as health professionals will benefit from this valuable resource Addresses hot topics such as evolutionary aspects lactose digestion and intolerance lactose metabolism and gut microbial fermentation including their physiological impact food and pharmaceutical applications and lactose in the dairy production chain Serves as a first of its kind professional reference on lactose addressing the latest research in food science nutritional science and evolutionary biology Presents material written by leading experts in lactose in an easily accessible format

**Handbook of Lung Targeted Drug Delivery Systems** Yashwant Pathak, Nazrul Islam, 2021-10-17 Handbook of Lung Targeted Drug Delivery Systems Recent Trends and Clinical Evidences covers every aspect of the drug delivery to lungs the physiology and pharmacology of the lung modelling for lung delivery drug devices focused on lung treatment regulatory requirements and recent trends in clinical applications With the advent of nano sciences and significant development in the nano particulate drug delivery systems there has been a renewed interest in the lung as an absorption surface for various drugs The emergence of the COVID 19 virus has brought lung and lung delivery systems into focus this book covers new developments and research used to address the prevention and treatment of respiratory diseases Written by well known scientists with years of experience in the field this timely handbook is an excellent reference book for the scientists and industry professionals Key Features Focuses particularly on the chemistry clinical pharmacology and biological developments in this field of research Presents comprehensive information on emerging nanotechnology applications in diagnosing and treating pulmonary diseases Explores drug devices focused on lung treatment regulatory requirements and recent trends in clinical applications Examines specific formulations targeted to pulmonary systems

**Pharmaceutical Preformulation and Formulation** Mark Gibson, 2016-04-19 Pharmaceutical Preformulation and Formulation A Practical Guide from Candidate Drug Selection to Commercial Dosage Form reflects the mounting pressure on pharmaceutical companies to accelerate the new drug development and launch process as well as the shift from developing small molecules to the growth of biopharmaceuticals The book meets the ne

Insecticides Ghousia Begum, 2018-05-23 Insecticides are substances used to kill insects They are used primarily in agriculture to control pests that infest crop Nearly all insecticides have the potential to significantly alter ecosystems many are toxic to humans and or animals some become concentrated as they spread along the food chain The presence of these chemicals in both aquatic and terrestrial ecosystems has become an important issue globally The book Insecticides Agriculture and Toxicology provides information on the use of insecticides in pest management in order to enhance crop protection and their effects on nontarget organisms

**Solid State Characterization of Pharmaceuticals** Richard A. Storey, Ingvar Ymén, 2011-03-31 The field of solid state characterization is central to the pharmaceutical industry as drug products are in an overwhelming number of cases produced as solid materials

Selection of the optimum solid form is a critical aspect of the development of pharmaceutical compounds due to their ability to exist in more than one form or crystal structure polymorphism These polymorphs exhibit different physical properties which can affect their biopharmaceutical properties This book provides an up to date review of the current techniques used to characterize pharmaceutical solids Ensuring balanced practical coverage with industrial relevance it covers a range of key applications in the field The following topics are included Physical properties and processes Thermodynamics Intellectual guidance X ray diffraction Spectroscopy Microscopy Particle sizing Mechanical properties Vapour sorption Thermal analysis Calorimetry Polymorph prediction Form selection      **Handbook of Pharmaceutical Wet Granulation** Ajit S.

Narang, Sherif I.F. Badawy, 2018-08-31 Handbook of Pharmaceutical Wet Granulation Theory and Practice in a Quality by Design Paradigm offers a single and comprehensive reference dedicated to all aspects of pharmaceutical wet granulation taking a holistic approach by combining introductory principles with practical solutions Chapters are written by international experts across industry academic and regulatory settings and cover a wide spectrum of relevant and contemporary wet granulation topics techniques and processes The books focus on process analytical technology quality by design principles granulation equipment modeling scale up control and real time release makes it a timely and valuable resource for all those involved in pharmaceutical wet granulation Discusses fundamentals of theory and current industrial practice in the field of wet granulation including product and process design and role of material properties in wet granulation Examines the modern evolution of wet granulation through current topics such as established and novel process analytical technologies PATs and product development and scale up paradigms Written for scientists working within the pharmaceutical industry as well as academics regulatory officials and equipment vendors who provide PAT tools and granulation equipment      Drug Delivery Anya Hillery, 2016-09-15 This book provides a comprehensive introduction to advanced drug delivery and targeting covering their principles current applications and potential future developments This edition has been updated to reflect significant trends and cutting edge advances that have occurred since the first edition was published All the original chapters have been retained but the material therein has been updated Eight new chapters have been added that deal with entirely new technologies and approaches Features Offers a comprehensive introduction to the fundamental concepts and underlying scientific principles of drug delivery and targeting Presents an in depth analysis of the opportunities and obstacles afforded by the application of nanotechnologies for drug delivery and targeting Includes a revised and expanded section on the major epithelial routes of drug delivery currently under investigation Describes the most recent emerging and innovative technologies of drug delivery Provides real life examples of the clinical translation of drug delivery technologies through the use of case studies Discusses the pertinent regulatory hurdles and safety issues of drug delivery and targeting systems crucial considerations in order to achieve licensing approval for these new technologies      **Inhalation Aerosols** Anthony J. Hickey, Heidi M. Mansour, 2019-03-21 Inhalation aerosols continue to be the basis for successful lung therapy for several

diseases with therapeutic strategies and the range of technology significantly evolving in recent years In response this third edition takes a new approach to reflect the close integration of technology with its application After briefly presenting the general considerations that apply to aerosol inhalation the central section of the book uses the focus on disease and therapeutic agents to illustrate the application of specific technologies The final integrated strategies section draws the major points from the applications for disease targets and drug products

***Particle-Lung Interactions*** Peter Gehr,Christian Mühlfeld,Barbara Rothen-Rutishauser,Fabian Blank,2009-09-25 Written by an expanded team of leading international scientists the second edition thoroughly investigates research and therapies for managing adverse physiological effects of air borne particles on the respiratory tract The book examines the lung as the gateway for particle damage to organs outside the respiratory system and provide the informat

***Pulmonary Drug Delivery*** Ali Nokhodchi,Gary P. Martin,2015-08-03 Drug therapy via inhalation route is at the cutting edge of modern drug delivery research There has been significant progress on the understanding of drug therapy via inhalation products However there are still problems associated with their formulation design including the interaction between the active pharmaceutical ingredient s APIs excipients and devices This book seeks to cover some of the most pertinent issues and challenges of such formulation design associated with industrial production and desirable clinical outcome The chapter topics have been selected with a view to integrating the factors that require consideration in the selection and design of device and formulation components which impact upon patient usability and clinical effectiveness The challenges involved with the delivery of macromolecules by inhalation to both adult and pediatric patients are also covered Written by leading international experts from both academia and industry the book will help readers formulation design scientists researchers and post graduate and specialized undergraduate students develop a deep understanding of key aspects of inhalation formulations as well as detail ongoing challenges and advances associated with their development

***Glutamate and GABA Receptors and Transporters*** Jan Egebjerg,Arne Schousboe,Povl Krogsgaard-Larsen,2001-10-04 The ubiquitous presence of glutamate and GABA receptors in the nervous system makes these receptor systems pivotal to our understanding of neurotransmission Cloning of the molecular components of these receptor systems has provided insights to the selectivity of many drugs and detailed characterisation at the molecular level is emerging Moreover

***Phagocytosis: New Insights for the Healthcare Professional: 2013 Edition*** ,2013-07-22

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