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Powder Flow Fundamentals of Laser Powder Bed Fusion of Metals *Pharmaceutical Inhalation Aerosol Technology, Third Edition* Science, Technology and Applications of Metals in Additive Manufacturing **Particle Technology and Engineering** Powder Flow **Handbook of Non-Ferrous Metal Powders** Handbook of Food Powders **Titanium Powder Metallurgy and Additive Manufacturing** *Drying in the Dairy Industry Powders and Bulk Solids* How to Design and Implement Powder-to-Tablet Continuous Manufacturing Systems **Alloy Design and Process Innovations** Handbook of Pharmaceutical Granulation Technology **Food Powders Particulate Materials Handbook of Preformulation** *Handbook of Pharmaceutical Wet Granulation Powder Technology* **Particle-particle Adhesion In Pharmaceutical Powder Handling Feature Papers for Celebrating the Fifth Anniversary of the Founding of Processes Particle Science and Engineering** Production, Properties, and Applications of High Temperature Coatings *Proceedings of the 20th International Conference on Fluidized Bed Combustion* Modern Developments in Powder Metallurgy Pharmaceutical Dosage Forms **Black and Smokeless Powders** Brown Rice **Particulate Materials** Production, Handling and Characterization of Particulate Materials **Gravity Flow of Bulk Solids** *Powder Mixing* **Powder Days** *Unit Operations of Particulate Solids* Handbook of Polymers for Pharmaceutical Technologies, Processing and Applications Advancements in Biomass Feedstock Preprocessing: Conversion Ready Feedstocks, Volume II *Testing and Evaluation of Inorganic Materials V* Handbook of Non-Ferrous Metal Powders **Nickel, Cobalt, and Their Alloys Ceramic Forum International Yearbook**

Testing and Evaluation of Inorganic Materials V Nov 20 2019 Collection of Selected, Peer Reviewed Papers from the Proceedings of the Fifth Annual Meeting on Testing and Evaluation of Inorganic Materials, April 16-18, 2014, Guiyang, China. The 115 papers are grouped as follows: Chapter 1: Chemical Composition, Microstructure, Physical Properties and Technologies of Producing and Processing of Inorganic Materials, Chapter 2: Techniques and Devices for Analysis and Testing of Materials Properties

Handbook of Pharmaceutical Wet Granulation Jul 09 2021 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

Fundamentals of Laser Powder Bed Fusion of Metals Nov 25 2022 Laser powder bed fusion of metals is a technology that makes use of a laser beam to selectively melt metal powder layer-by-layer in order to fabricate complex geometries in high performance materials. The technology is currently transforming aerospace and biomedical manufacturing and its adoption is widening into other industries as well, including automotive, energy, and traditional manufacturing. With an increase in design freedom brought to bear by additive manufacturing, new opportunities are emerging for designs not possible previously and in material systems that now provide sufficient performance to be qualified in end-use mission-critical applications. After decades of research and development, laser powder bed fusion is now enabling a new era of digitally driven manufacturing. Fundamentals of Laser Powder Bed Fusion of Metals will provide the fundamental principles in a broad range of topics relating to metal laser powder bed fusion. The target audience includes new users, focusing on graduate and undergraduate students; however, this book can also serve as a reference for experienced users as well, including senior researchers and engineers in industry. The current best practices are discussed in detail, as well as the limitations, challenges, and potential research and commercial opportunities moving forward. Presents laser powder bed fusion fundamentals, as well as their inherent challenges Provides an up-to-date summary of this advancing technology and its potential Provides a comprehensive textbook for universities, as well as a reference for industry Acts as quick-reference guide

Handbook of Non-Ferrous Metal Powders Oct 20 2019 The manufacture and use of the powders of non-ferrous metals has been taking place for many years in what was previously Soviet Russia, and a huge amount of knowledge and experience has built up in that country over the last forty years or so. Although accounts of the topic have been published in the Russian language, no English language account has existed until now. Six prominent academics and industrialists from the Ukraine and Russia have produced this highly-detailed

account which covers the classification, manufacturing methods, treatment and properties of the non-ferrous metals (aluminium, titanium, magnesium, copper, nickel, cobalt, zinc, cadmium, lead, tin, bismuth, noble metals and earth metals). The result is a formidable reference source for those in all aspects of the metal powder industry. * Covers the manufacturing methods, properties and importance of the following metals: aluminium, titanium, magnesium, copper, nickel, cobalt, zinc, cadmium, noble metals, rare earth metals, lead, tin and bismuth. * Expert Russian team of authors, all very experienced * English translation and update of book previously published in Russian.

Handbook of Non-Ferrous Metal Powders Jun 20 2022 Handbook of Non-Ferrous Metal Powders: Technologies and Applications, Second Edition, provides information on the manufacture and use of powders of non-ferrous metals that has taken place for many years in the area previously known as Soviet Russia. It presents the huge amount of knowledge and experience that has built up over the last fifty years. Originally published in Russia by several prominent scientists, researchers and engineers, this presents an update to the first book that includes sections on classification, properties, treatment methods and production. This updated edition contains new content on the powders, along with newer methods of 3D printing. Covers the manufacturing methods, properties and importance of the following metals: aluminum, titanium, magnesium, copper, nickel, cobalt, zinc, cadmium, noble metals, rare earth metals, lead, tin and bismuth Includes new content on recent advances, such as additive manufacturing and 3D printing of non-ferrous metal alloys and specific powders for advanced techniques, including metal injection molding technologies Expands on topics such as safety engineering in the production of powders and advanced areas of engineering research, such as nanopowder processes

Powder Technology Jun 08 2021

Powder Days Mar 25 2020 *An Outside Magazine Book Club Pick* "A sparkling account."—Wall Street Journal An electrifying adventure into the rich history of skiing and the modern heart of ski-bum culture, from one of America's most preeminent ski journalists The story of skiing is, in many ways, the story of America itself. Blossoming from the Tenth Mountain Division in World War II, the sport took hold across the country, driven by adventurers seeking the rush of freedom that only cold mountain air could provide. As skiing gained in popularity, mom-and-pop backcountry hills gave way to groomed trails and eventually the megaresorts of today. Along the way, the pioneers and diehards—the ski bums—remained the beating heart of the scene. Veteran ski journalist and former ski bum Heather Hansman takes readers on an exhilarating journey into the hidden history of American skiing, offering a glimpse into an underexplored subculture from the perspective of a true insider. Hopping from Vermont to Colorado, Montana to West Virginia, Hansman profiles the people who have built their lives around a cold-weather obsession. Along the way she reckons with skiing's problematic elements and investigates how the sport is evolving in the face of the existential threat of climate change.

Handbook of Preformulation Aug 10 2021 Preformulation studies are the physical, chemical, and biological studies needed to characterize a drug substance for enabling the proper design of a drug product, whereas the effectiveness of a drug product is determined during the formulation studies phase. Though the two disciplines overlap in practice, each is a significantly distinct phase of new drug development. Entirely focused on preformulation principles, this fully revised and updated Handbook of Preformulation: Chemical, Biological, and Botanical Drugs, Second Edition provides detailed descriptions of preformulation methodologies, gives a state-of-the-art description of each technique, and lists the currently available tools useful in providing a comprehensive characterization of a new drug entity. Features: Addresses the preformulation studies of three different types of new active entities - chemical, biological, and botanical, which is the latest established class of active ingredient classified by the FDA Illustrates the activities comprised in preformulation studies and establishes a method of tasking for drug development projects Includes extensive flow charts for characterization decision making Gives extensive theoretical treatment of principles important for testing dissolution, solubility, stability, and solid state characterization Includes over 50% new material

Handbook of Pharmaceutical Granulation Technology Nov 13 2021 This fully revised edition of Handbook of Pharmaceutical Granulation Technology covers the rapid advances in the science of agglomeration, process control, process modelling, scale-up, emerging particle engineering technologies, along with current regulatory changes presented by some of the prominent scientist and subject matter experts around the globe. Learn from more than 50 global subject matter experts who share their years of experience in areas ranging from drug delivery and pharmaceutical technology to advances in nanotechnology. Every pharmaceutical scientist should own a copy of this fourth edition resource. Key Features: Theoretical discussions covering granulation and engineering perspectives. Covers new advances in expert systems, process modelling and bioavailability Chapters on emerging technologies in particle engineering Updated Current research and developments in granulation technologies

Advancements in Biomass Feedstock Preprocessing: Conversion Ready Feedstocks, Volume II Dec 22 2019

Unit Operations of Particulate Solids Feb 22 2020 Suitable for practicing engineers and engineers in training, this book covers the most important operations involving particulate solids. Through clear explanations of theoretical principles and practical laboratory exercises, the text provides an understanding of the behavior of powders and pulverized systems. It also helps readers develop skills for operating, optimizing, and innovating particle processing technologies and machinery in order to carry out industrial operations. The author explores common bulk solids processing operations, including milling, agglomeration, fluidization, mixing, and solid-fluid separation.

Nickel, Cobalt, and Their Alloys Sep 18 2019 This book is a comprehensive guide to the compositions, properties, processing, performance, and applications of nickel, cobalt, and

their alloys. It includes all of the essential information contained in the ASM Handbook series, as well as new or updated coverage in many areas in the nickel, cobalt, and related industries.

Modern Developments in Powder Metallurgy Dec 02 2020 Of Volume 2.- Ferrous Powder Metallurgy.- Some Aspects of the Sintering of Iron Powder.- The Mechanism of Sintering of?-Iron.- Alpha and Gamma Phase Sintering of Carbonyl and Other Iron Powders.- Investigation of the Activated Sintering of Iron Powder.- The Use of Byproduct Steel Powder from Ball-Bearing Production in Powder Metallurgy.- The Corrosion Resistance of Sintered Austenitic Stainless Steel.- Dispersion Strengthening.- Dispersion-Strengthened Nickel by Compaction and Rolling of Powder Produced by Pressure Hydrometallurgy.- On the Mechanisms of Plastic Deformation of SAP-Type Alloys.

Handbook of Food Powders May 19 2022 Many food ingredients are supplied in powdered form, as reducing water content increases shelf life and aids ease of storage, handling and transport. Powder technology is therefore of great importance to the food industry. The Handbook of food powders explores a variety of processes that are involved in the production of food powders, the further processing of these powders and their functional properties. Part one introduces processing and handling technologies for food powders and includes chapters on spray, freeze and drum drying, powder mixing in the production of food powders and safety issues around food powder production processes. Part two focusses on powder properties including surface composition, rehydration and techniques to analyse the particle size of food powders. Finally, part three highlights speciality food powders and includes chapters on dairy powders, fruit and vegetable powders and coating foods with powders. The Handbook of food powders is a standard reference for professionals in the food powder production and handling industries, development and quality control professionals in the food industry using powders in foods, and researchers, scientists and academics interested in the field. Explores the processing and handling technologies in the production of food powders Examines powder properties, including surface composition, shelf life, and techniques used to examine particle size Focusses on speciality powders such as dairy, infant formulas, powdered egg, fruit and vegetable, and culinary and speciality products

Particle Science and Engineering Mar 05 2021 Discussing the state of the art research in particle science and technology and their roles in the environment, this book will contain a selection of high quality papers from the UK-China International Particle Technology Forum IV held in Shanghai. Coverage includes a wide range of topics - synthesis and crystallisation, characterisation and measurement across length scales, multi-scale modelling and simulation, processing and handling of particulate system, nanoparticle technology and particle mechanics - making this a valuable reference for the recent advances and future research directions in the field and related fields. With applications in emerging areas, it will integrate different perspectives of particle science and technology to help the understanding of the fundamentals of particle systems for scientists and engineers in the fields of environmental science, energy and modelling.

Gravity Flow of Bulk Solids May 27 2020

Production, Handling and Characterization of Particulate Materials Jun 27 2020 This edited volume presents most techniques and methods that have been developed by material scientists, chemists, chemical engineers and physicists for the commercial production of particulate materials, ranging from the millimeter to the nanometer scale. The scope includes the physical and chemical background, experimental optimization of equipment and procedures, as well as an outlook on future methods. The books addresses issues of industrial importance such as specifications, control parameter(s), control strategy, process models, energy consumption and discusses the various techniques in relation to potential applications. In addition to the production processes, all major unit operations and characterization methods are described in this book. It differs from other books which are devoted to a single technique or a single material. Contributors to this book are acknowledged experts in their field. The aim of the book is to facilitate comparison of the different unit operations leading to optimum equipment choices for the production, handling and storage of particulate materials. An advantage of this approach is that unit operations that are common in one field of application are made accessible to other fields. The overall focus is on industrial application and the book includes some concrete examples. The book is an essential resource for students or researchers who work in collaboration with manufacturing industries or who are planning to make the switch from academia to industry.

Titanium Powder Metallurgy and Additive Manufacturing Apr 18 2022 Powder metallurgy of titanium and titanium alloys has been increasingly attracting attention of engineers and researchers for over four decades and the 4th International Conference on Titanium Powder Metallurgy & Additive Manufacturing (PMTi 2017, Xi'an, China, from 8 to 10 September 2017) was an event that promoted the progress in this area of the materials science and processing technologies.

Particle-particle Adhesion In Pharmaceutical Powder Handling May 07 2021 This monograph describes the physical principles of adhesion between particles and surfaces. These principles are applied to pharmaceutical processes involved in the manufacture of solid dosage forms such as powders, granules, tablets and dry powder inhalations. To help in the understanding of these systems, physical properties of solid surfaces, and an introduction to the theory of friction is given. Techniques for measuring particle adhesion and fracture mechanical properties of powders are introduced, as far as these are relevant to the processes discussed. The philosophy of the book deviates from that of standard pharmaceutical textbooks, in that it focuses primarily on physical principles involved in the manufacture of dosage forms rather than describing these processes purely by observation.

Powder Mixing Apr 25 2020 The operation of a powder mixer requires a knowledge not only of the mixing mechanisms but of the physical properties of the powders being mixed. Powder Mixing is unique in that it explores the relevant physics of the powder systems including characterization procedures and rheology, and contains an extensive review of

different methods that have been employed to study the structure of mixtures. The techniques for achieving structured mixtures such as microencapsulation, and recent developments in deterministic chaos theory and fractal geometry as applied to the study of powder mixing systems, are reviewed. In particular, new techniques for studying the mixing powders based on avalanching theory and critically self-organized systems are studied. These are followed by a review of the wide range of different mixers commercially available and an extensive bibliography. Powder Mixing is an essential reference for all those interested in the basic science of powder mixing and the availability of industrial systems to achieve a mixture of different kinds. The main emphasis of the text is on working principles and operative systems, and is suitable for industrial workers, chemical engineers and students alike.
Pharmaceutical Dosage Forms Nov 01 2020 Pharmaceutical Dosage Forms: Capsules covers the development, composition, and manufacture of capsules. Despite the important role that capsules play in drug delivery and product development, few comprehensive texts on the science and technology of capsules have been available for the research and academic environments. This text addresses this gap, discussing how capsules provide unique capabilities and options for dosage form design and formulation.
Proceedings of the 20th International Conference on Fluidized Bed Combustion Jan 03 2021 The proceedings of the 20th International Conference on Fluidized Bed Combustion (FBC) collect 9 plenary lectures and 175 peer-reviewed technical papers presented in the conference held in Xi'an China in May 18-21,2009. The conference was the 20th conference in a series, covering the latest fundamental research results, as well as the application experience from pilot plants, demonstrations and industrial units regarding to the FBC science and technology. It was co-hosted by Tsinghua University, Southeast University, Zhejiang University, China Electricity Council and Chinese Machinery Industry Federation. A particular feature of the proceedings is the balance between the papers submitted by experts from industry and the papers submitted by academic researchers, aiming to bring academic knowledge to application as well as to define new areas for research. The authors of the proceedings are the most active researchers, technology developers, experienced and representative facility operators and manufacturers. They presented the latest research results, state-of-the-art development and projects, and the useful experience. The proceedings are divided into following sections: • CFB Boiler Technology, Operation and Design • Fundamental Research on Fluidization and Fluidized Combustion • C02 Capture and Chemical Looping • Gasification • Modeling and Simulation on FBC Technology • Environments and Pollutant Control • Sustainable Fuels The proceedings can be served as idea references for researchers, engineers, academia and graduate students, plant operators, boiler manufacturers, component suppliers, and technical managers who work on FBC fundamental research, technology development and industrial application.
Powders and Bulk Solids Feb 16 2022 The book concentrates on powder flow properties, their measurement and applications. These topics are explained starting from the interactions between individual particles up to the design of silos. A wide range of problems are discussed – such as flow obstructions, segregation, and vibrations. The goal is to provide a deeper understanding of the powder flow, and to show practical solutions.
Feature Papers for Celebrating the Fifth Anniversary of the Founding of Processes Apr 06 2021 This book is a printed edition of the Special Issue "Feature Papers for Celebrating the Fifth Anniversary of the Founding of Processes" that was published in Processes
Drying in the Dairy Industry Mar 17 2022 With more than 12M tons of dairy powders produced each year at a global scale, the drying sector accounts to a large extent for the processing of milk and whey. It is generally considered that 40% of the dry matter collected overall ends up in a powder form. Moreover, nutritional dairy products presented in a dry form (eg, infant milk formulae) have grown quickly over the last decade, now accounting for a large share of the profit of the sector. Drying in the Dairy Industry: From Established Technologies to Advanced Innovations deals with the market of dairy powders issues, considering both final product and process as well as their interrelationships. It explains the different processing steps for the production of dairy powders including membrane, homogenisation, concentration and agglomeration processes. The book includes a presentation of the current technologies, the more recent development for each of them and their impact on the quality of the final powders. Lastly, one section is dedicated to recent innovations and methods directed to more sustainable processes, as well as latter developments at lab scale to go deeper in the understanding of the phenomena occurring during spray drying. Key Features: Presents state-of-the-art information on the production of a variety of different dairy powders Discusses the impact of processing parameters and drier design on the product quality such as protein denaturation and viability of probiotics Explains the impact of drying processes on the powder properties such as solubility, dispersibility, wettability, flowability, floodability, and hygroscopicity Covers the technology, modelling and control of the processing steps This book is a synthetic and complete reference work for researchers in academia and industry in order to encourage research and development and innovations in drying in the dairy industry.
Handbook of Polymers for Pharmaceutical Technologies, Processing and Applications Jan 23 2020 Polymers are one of the most fascinating materials of the present era finding their applications in almost every aspects of life. Polymers are either directly available in nature or are chemically synthesized and used depending upon the targeted applications.Advances in polymer science and the introduction of new polymers have resulted in the significant development of polymers with unique properties. Different kinds of polymers have been and will be one of the key in several applications in many of the advanced pharmaceutical research being carried out over the globe. This 4-partset of books contains precisely referenced chapters, emphasizing different kinds of polymers with basic fundamentals and practicality for application in diverse pharmaceutical technologies. The volumes aim at explaining basics of polymers based materials from different resources and their chemistry along with practical applications which present a future direction in the pharmaceutical industry. Each

volume offer deep insight into the subject being treated. Volume 1: Structure and Chemistry Volume 2: Processing and Applications Volume 3: Biodegradable Polymers Volume 4: Bioactive and Compatible Synthetic/Hybrid Polymers

Particulate Materials Sep 11 2021 This book is a comprehensive collection of research in four distinct aspects of particulate materials, namely synthesis, characterisation, processing and modeling.

How to Design and Implement Powder-to-Tablet Continuous Manufacturing Systems Jan 15 2022 How to Design and Implement Powder-to-Tablet Continuous Manufacturing Systems provides a comprehensive overview on the considerations necessary for the design of continuous pharmaceutical manufacturing processes. The book covers both the theory and design of continuous processing of associated unit operations, along with their characterization and control. In addition, it discusses practical insights and strategies that the editor and chapter authors have learned. Chapters cover Process Analytical Technology (PAT) tools and the application of PAT data to enable distributed process control. With numerous case studies throughout, this valuable guide is ideal for those engaged in, or learning about, continuous processing in pharmaceutical manufacturing. Discusses the development of strategy blueprints in the design of continuous processes Shows how to create process flowsheet models from individual unit operation models Includes a chapter on characterization methods for materials, the use of statistical methods to analyze material property data, and the use of material databases Covers the evolving regulatory expectations for continuous manufacturing Provides readers with ways to more effectively navigate these expectations

Black and Smokeless Powders Sep 30 2020 Some 600 pipe bomb explosions have occurred annually in the United States during the past several years. How can technology help protect the public from these homemade devices? This book, a response to a Congressional mandate, focuses on ways to improve public safety by preventing bombings involving smokeless or black powders and apprehending the makers of the explosive devices. It examines technologies used for detection of explosive devices before they explode--including the possible addition of marking agents to the powders--and technologies used in criminal investigations for identification of these powders--including the possible addition of taggants to the powders--in the context of current technical capabilities. The book offers general conclusions and recommendations about the detection of devices containing smokeless and black powders and the feasibility of identifying makers of the devices from recovered powder or residue. It also makes specific recommendations about marking and tagging technologies. This volume follows the work reported in Containing the Threat from Illegal Bombings (NRC 1998), which studied similar issues for bombings that utilize high explosives.

Production, Properties, and Applications of High Temperature Coatings Feb 04 2021 Heat resistant layers are meant to withstand high temperatures while also protecting against all types of corrosion and oxidation. Therefore, the micro-structure and behavior of such layers is essential in understanding the functionality of these materials in order to make improvements. Production, Properties, and Applications of High Temperature Coatings is a critical academic publication which examines the methods of creation, characteristics, and behavior of materials used in heat resistant layers. Featuring coverage on a wide range of topics such as, thermal spray methods, sol-gel coatings, and surface nanoengineering, this book is geared toward students, academicians, engineers, and researchers seeking relevant research on the methodology and materials for producing effective heat resistant layers.

Brown Rice Aug 30 2020 This book provides a broad-based foundation of knowledge about brown rice, including the latest information on health benefits and disease prevention resulting from consumption of brown rice, and information on consumer knowledge, attitudes, and behaviors towards brown rice. It is the first book of its kind to provide a comprehensive review of current brown rice science and technology, regulatory/policy issues, dietary intake, consumer interest and health promotion. The edited volume focuses on the latest developments in breeding varieties for high quality brown rice, varietal variations, defects, milling, cooking quality, eating quality, post-harvest management and methods to improve shelf life. Contributing authors address the physical, chemical, engineering, nutritional and glycemic qualities of brown rice in different chapters. Authors also discuss the physiological functions of brown rice in vivo and radical scavenging activity, emphasizing their importance to growers, technologists and consumers, and providing insight into future advances. This comprehensive collection benefits scientists, nutritionists, dieticians, diabetic educators, and professionals in the food industry. The information covered is valuable for food scientists and technologists working to develop new brown rice products and enhancing the taste, quality, and health profile of brown rice.

Food Powders Oct 12 2021 This useful reference is the first book to address key aspects of food powder technology. It assembles organized and updated information on the physical properties, production, and functionality of food powder, previously unavailable in book form.

Ceramic Forum International Yearbook Aug 18 2019

Particle Technology and Engineering Aug 22 2022 Particle Technology and Engineering presents the basic knowledge and fundamental concepts that are needed by engineers dealing with particles and powders. The book provides a comprehensive reference and introduction to the topic, ranging from single particle characterization to bulk powder properties, from particle-particle interaction to particle-fluid interaction, from fundamental mechanics to advanced computational mechanics for particle and powder systems. The content focuses on fundamental concepts, mechanistic analysis and computational approaches. The first six chapters present basic information on properties of single particles and powder systems and their characterisation (covering the fundamental characteristics of bulk solids (powders) and building an understanding of density, surface area, porosity, and flow), as well as particle-fluid interactions, gas-solid and liquid-solid systems, with applications in fluidization and pneumatic conveying. The last four chapters have an emphasis on the mechanics of particle

and powder systems, including the mechanical behaviour of powder systems during storage and flow, contact mechanics of particles, discrete element methods for modelling particle systems, and finite element methods for analysing powder systems. This thorough guide is beneficial to undergraduates in chemical and other types of engineering, to chemical and process engineers in industry, and early stage researchers. It also provides a reference to experienced researchers on mathematical and mechanistic analysis of particulate systems, and on advanced computational methods. Provides a simple introduction to core topics in particle technology: characterisation of particles and powders: interaction between particles, gases and liquids; and some useful examples of gas-solid and liquid-solid systems Introduces the principles and applications of two useful computational approaches: discrete element modelling and finite element modelling Enables engineers to build their knowledge and skills and to enhance their mechanistic understanding of particulate systems

Particulate Materials Jul 29 2020 Naturally occurring or manufactured through chemical and/or physical processes, particulate materials are substances consisting of individual particles which have significance to the global economy, society and environments. Due to the diversity and intrinsic nature, manufacturing, handling and processing of particulate materials still face numerous challenges. Aimed at addressing these challenges, this book contains a selection of papers discussing the state-of-the-art research in particulate materials science that were presented at the UK–China Particle Technology Forum III held at Birmingham, UK in 2011. Classified into four distinct topics namely synthesis, characterisation, processing and modelling, the chapters showcase the advances in these areas including a range of advanced synthesis methods for example, spray-pyrolysis, supercritical fluid synthesis assisted with ultrasound, continuous synthesis using supercritical water, hydrothermal synthesis of nano-particulate materials and jet milling. For characterisation, various methods for characterising particulate materials at both particle and system levels are introduced and how these properties affect the behaviour of particulate materials in various processes, such as inhalation, filling, and consolidation, are discussed. In the processing section, recent advances such as capsule filling, micro-dosing, dry granulation, roll compaction, milling, and more are presented. The last section concerns mathematical and numerical modelling in particulate materials, for which the book includes both analytical methods and advanced numerical methods, such as discrete element methods (DEM), computational fluid dynamics (CFD), lattice Boltzmann methods (LBM), coupled DEM/CFD and DEM/LBM, and their applications. Particulate Materials is aimed at research communities dealing with these diverse materials, and scientists and engineers in powder handling industries, such as pharmaceutical, food, fine chemical and detergents.

Science, Technology and Applications of Metals in Additive Manufacturing Sep 23 2022 Science, Technology and Applications of Metal Additive Manufacturing provides a holistic picture of metal Additive Manufacturing (AM) that encompasses the science, technology and applications for the use of metal AM. Users will find design aspects, various metal AM technologies commercially available, a focus on merits and demerits, implications for qualification and certification, applications, cost modeling of AM, and future directions. This book serves as an educational guide, providing a holistic picture of metal AM that encompasses science, technology and applications for the real-life use of metal AM. Includes an overall understanding of metal additive manufacturing, Including steps involved (process flow) Discusses available commercial metal AM technologies and their relative strengths and weaknesses Reviews the process of qualification of AM parts, various applications, cost modeling, and the future directions of metal AM

Powder Flow Dec 26 2022 Powder flow has attracted increased attention in recent years as novel formulated and functional products are being developed in powder forms, particularly in pharmaceutical and high value additive manufacturing industries. This book meets a need for a truly integrated modern treatment of dry powder flow, covering theory, robust characterisation techniques, modelling tools and applications. Written by leaders in the field, the book opens by introducing the wide range of powder processing problems faced by industry, the complexities of powders and the myriad of ways their flow behaviour can be characterised. The authors then move on, with contributions from experts, to describe fundamental properties that can be measured, defining the states of stress and shear rate and the considerations that need to be taken account. By providing a comprehensive treatment of all available characterisation techniques, as well as various modelling tools, the reader obtains a clear, practical overview. Case studies and applications connect theory to practical examples across a broad range of industries. This book stands out by not only providing the reader with guidance on what to measure but also how to interpret results, ensuring this is an invaluable text for anyone working on powder flow in the chemical, pharmaceutical and manufacturing industries, as well as students and researchers across chemical and process engineering disciplines.

Pharmaceutical Inhalation Aerosol Technology, Third Edition Oct 24 2022 This fully revised and updated third edition of Pharmaceutical Inhalation Aerosol Technology encompasses the scientific and technical foundation for the rationale, design, componentry, assembly and quality performance metrics of therapeutic inhalers in their delivery of pharmaceutical aerosols to treat symptoms or the underlying causes of disease. It focuses on the importance of pharmaceutical engineering as a foundational element of all inhaler products and their application to pulmonary drug delivery. The expanded scope considers previously unaddressed aspects of pharmaceutical inhalation aerosol technology and the patient interface by including aerosol delivery, lung deposition and clearance that are used as measures of effective dose delivery. Key Features: Provides a thoroughly revised and expanded reference with authoritative discussions on the physiologic,pharmacologic, metabolic, molecular, cellular and physicochemical factors, influencing the efficacy and utilization of pharmaceutical aerosols Emphasizes the importance of pharmaceutical engineering as a foundational element of all inhaler products and their application to pulmonary drug delivery Addresses the physics, chemistry and engineering principles while establishing disease relevance Expands the ‘technology’ focus of the original volumes to address the title more directly Offers an

impressive breadth of coverage as well as an international flavour from outstanding editors and contributors
Powder Flow Jul 21 2022 Powder flow has attracted increased attention in recent years. This book stands out by not only providing the reader with guidance on what to measure but also how to interpret results.
Alloy Design and Process Innovations Dec 14 2021 Additive manufacturing (AM) is one of the manufacturing processes that warrants the attention of industrialists, researchers and scientists, because of its ability to produce materials with a complex shape without theoretical restrictions and with added functionalities. There are several advantages to employing additive manufacturing as the primary additive manufacturing process. However, there exist several challenges that need to be addressed systematically. A couple such issues are alloy design and process development. Traditionally alloys designed for conventional cast/powder metallurgical processes were fabricated using advanced AM processes. This is the wrong approach considering that the alloys should be coined based on the process characteristics and meta-stable nature of the process. Hence, we must focus on alloy design and development for AM that suits the AM processes. The AM processes, however, improve almost every day, either in terms of processing capabilities or processing conditions. Hence, the processing part warrants a section that is devoted to these advancements and innovations. Accordingly, the present Special Issue (book) focuses on two aspects of alloy development and process innovations. Here, 45 articles are presented covering different AM processes including selective laser melting, electron beam melting, laser cladding, direct metal laser sintering, ultrasonic consolidation, wire arc additive manufacturing, and hybrid manufacturing. I believe that this Special Issue bears is vital to the field of AM and will be a valuable addition.