

[DOC] Principles Of Powder Technology

Principles Of Powder Technology

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<p>The Principles of Powder Technology-Powder Advisory Centre 1973</p>
<p>Principles of Powder Technology-M. J. Rhodes 1990</p>
<p>Powder processing. Characterizing the single particle. Characterization of powder. mixing and segregation in powders. the storage and flow of powders. Gas fluidization. Pneumatic conveying. Solid-gas separation. Size enlargement. Size reduction. Explosion and fire hazards of powders. health risks of fine powders. Flow of liquid-solid suspensions. Solid-liquid separation.</p>
<p>Particle Breakage-Agba D. Salman 2007-11-01</p>
<p>Particle breakage is an important process within a wide range of solids processing industries, including pharmaceuticals, food, agricultural and mining. Breakage of particles can be defined as intentional and unintentional, depending on whether it is desired or not. Through understanding of the science and underlying mechanisms behind this phenomenon, particle breakage can be either minimised or encouraged within an efficient and effective process. Particle Breakage examines particle breakage at three different length scales, ranging from single particle studies through groups of particles and looking at solid processing steps as a whole. This book is the widest ranging book in the field and includes the most up-to-date techniques such as Distinct Element Method (DEM), Monte Carlo simulations and Population Balance Equations (PBE). This handbook provides an overview of the current state-of-the- art and particle breakage. From the small scale of a single particle, to the study of whole processes for breakage; both by experimental study and mathematical modelling. * Covering a wide range of subjects and industrial applications * Allows the reader an understanding of the science behind engineered breakage processes * Giving an unrestricted and interdisciplinary approach</p>
<p><i>Particle Technology and Engineering</i>-Jonathan P.K. Seville 2016-05-20</p>
<p>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</p>
<p>Pharmaceutical Powder Compaction Technology, Second Edition-Metin Çelik 2016-04-19</p>
<p>Compaction of powder constituents—both active ingredient and excipients—is examined to ensure consistent and reproducible disintegration and dispersion profiles. Revised to reflect modern pharmaceutical compacting techniques, this second edition of Pharmaceutical Powder Compaction Technology guides pharmaceutical engineers, formulation scientists, and product development and quality assurance personnel through the compaction formulation process and application. This unique reference covers: The physical structure of pharmaceutical compacts Bonding phenomena that occur during powder compaction Compression mechanisms of pharmaceutical particles Theories and basic principles of powder compaction New topics include: Compaction data analysis techniques The migration of powder constituents into commercial manufacture Instrumentation for compaction Compaction functionality testing, which is likely to become a USP requirement Design space for compaction Metrics required for scalability in tablet compression Interactive compaction and preformulation database for commonly used excipients</p>
<p>Fundamentals of Laser Powder Bed Fusion of Metals-Igor Yadroitsev 2021-05-23</p>
<p>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</p>
<p><i>Powder Technology in Plastics Processing</i>-Anthony Chi-Ying Wong 2021-08-13</p>
<p>Industrial processes involving handling of solid raw materials are highly dependent on our understanding of the fundamental characteristics and properties of the starting solid materials, as well as whether or not the related process hardware and operation are properly designed and optimized. This is true of almost all plastics manufacturing processes since particulate solids handling is the most elementary processing step. This book provides a broad understanding of powder technology and the significance of particulate solid characteristics that are applicable to plastics manufacturing processes. It focuses on the particular characteristics of solid materials relevant to plastics manufacturing processes. Applications of engineering principles based on the selected solid characteristics which illustrate the uniqueness of the subject are also included. The useful and practical information within offers engineers solutions to otherwise unclear problems commonly encountered in industry. The selected examples of research investigations provided should also inspire readers to formulate further fundamental as well as applied research studies on the inter- and intra-relationship between powder technology and plastics processing technology.</p>
<p>Handbook of Food Powders-Bhesh Bhandari 2013-08-31</p>
<p>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</p>
<p>Powder Metallurgy-S. A. Tsukerman 2013-10-22</p>
<p>Powder Metallurgy discusses the production of metal powders and other materials made from it. It defines the meaning of metal powders with some illustrations. The book also identifies the processes similar between the production of metal powder and ceramic products. The technology involved and the variation in the proces of metallurgy are covered in some chapters of the book. The book enumerates certain advantages in using powder metallurgy over other processes. Methods such as the reduction of the oxides of metals, electrolysis, thermal dissociation, and chemical disintegration are explained. The origin and improvement made on the method are discussed in detail. The goods created using the process are also explained, as well as the types of metals that are being used. A chapter of the book focuses on the flaws of powder metallurgy. The book will provide useful information to metal smiths, chemists, students, and researchers in the field of chemistry.</p>
<p><i>Additive Manufacturing and 3D Printing Technology</i>-G. K. Awari 2021-02-11</p>
<p>Additive Manufacturing and 3D Printing Technology: Principles and Applications consists of the construction and working details of all modern additive manufacturing and 3D-printing technology processes and machines, while also including the fundamentals, for a well-rounded educational experience. The book is written to help the reader understand the fundamentals of the systems. This book provides a selection of additive manufacturing techniques suitable for near-term application with enough technical background to understand the domain, its applicability, and to consider variations to suit technical and organizational constraints. It highlights new innovative 3D-printing systems, presents a view of 4D printing, and promotes a vision of additive manufacturing and applications toward modern manufacturing engineering practices. With the block diagrams, self-explanatory figures, chapter exercises, and photographs of lab-developed prototypes, along with case studies, this new textbook will be useful to students studying courses in Mechanical, Production, Design, Mechatronics, and Electrical Engineering.</p>
<p>Introduction to Particle Technology-Martin J. Rhodes 2008-06-09</p>
<p>Particle technology is a term used to refer to the science and technology related to the handling and processing of particles and powders. The production of particulate materials, with controlled properties tailored to subsequent processing and applications, is of major interest to a wide range of industries, including chemical and process, food, pharmaceuticals, minerals and metals companies and the handling of particles in gas and liquid solutions is a key technological step in chemical engineering. This textbook provides an excellent introduction to particle technology with worked examples and exercises. Based on feedback from students and practitioners worldwide, it has been newly edited and contains new chapters on slurry transport, colloids and fine particles, size enlargement and the health effects of fine powders. Topics covered include: Characterization (Size Analysis) Processing (Granulation, Fluidization) Particle Formation (Granulation, Size Reduction) Storage and Transport (Hopper Design, Pneumatic Conveying, Standpipes, Slurry Flow) Separation (Filtration, Settling, Cyclones) Safety (Fire and Explosion Hazards, Health Hazards) Engineering the Properties of Particulate Systems (Colloids, Respirable Drugs, Slurry Rheology) This book is essential reading for undergraduate students of chemical engineering on particle technology courses. It is also valuable supplementary reading for students in other branches of engineering, applied chemistry, physics, pharmaceuticals, mineral processing and metallurgy. Practitioners in industries in which powders are handled and processed may find it a useful starting point for gaining an understanding of the behavior of particles and powders. Review of the First Edition taken from High Temperatures - High pressures 1999 31 243 - 251 ".This is a modern textbook that presents clear-cut knowledge. It can be successfully used both for teaching particle technology at universities and for individual study of engineering problems in powder processing."</p>
<p>Particulate Interactions in Dry Powder Formulation for Inhalation-Xian Ming Zeng 2000-10-26</p>
<p>Interactions between drug particulates are crucial in determining drug dispersion and deaggregation, and ultimately delivery efficiency. This book combines principles and factors in pharmaceutical powder technology,</p>

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critically reviews some of the studies carried out in dry powder formulation development, and proposes possible strategies for improvi

Unit Operations of Particulate Solids-Enrique Ortega-Rivas 2016-04-19

| 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. |
| *Production, Handling and Characterization of Particulate Materials*-Henk G. Merkus 2015-11-26 |
| 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. |
| *Unit Operations of Particulate Solids*-Enrique Ortega-Rivas 2016-04-19 |
| 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. |
| **Powder Metallurgy**-Fritz V. Lenel 1980 |
| *Powder Sampling and Particle Size Determination*-T. Allen 2003-12-09 |
| Powder technology is a rapidly expanding technology and nowhere more than in particle characterization. There has been an explosion of new particle measuring techniques in the past ten year particularly in the field of on-line measurement. One of the main aims of this book is to bring the reader up-to-date with current practices. One important area of interest is the improvements in on-line light scattering instruments and the introduction of ultrasonic on-line devices. Another is the introduction of on-line microscopy, which permits shape analysis in conjunction with particle sizing. Schools of powder technology are common in Europe and Japan but the importance of this subject has only recently been recognised in America with the emergence of the Particle Research Centre (PERC) at the University of Florida in Gainesville. - Details all the latest developments in powder technology - Written by established authority on powder technology - A comprehensive text covering all aspects of powder technology and handling of particulate solids including characterization, handling and applications |
| *Formulation Technology*-Hans Mollet 2008-11-21 |
| Many chemical substances or compounds - organic or inorganic, natural or synthetic - are not used in their pure form. In order for the active ingredient to be most effective or to obtain the ideal delivery form for the market, the actual synthesis and purification steps are followed by formulation to give end products that range from powders, agglomerates, and granules to suspensions, emulsions, microemulsions, microcapsules, instant preparations, liposomes, and tablets. Formulation combines colloid and surface chemistry with chemical process engineering; sometimes it consists of a simple mixing operation, sometimes it requires an entire series of rather complicated engineering procedures such as comminution, dispersion, emulsification, agglomeration or drying. This book covers basic physico-chemical theory as well as its applications in the chemical industry for the production of pharmaceuticals, agrochemicals, pigments and dyes, food, detergents, cosmetics and many other products; it also provides chemists and chemical engineers with the necessary practical tools for the understanding of the structure/ activity relationship. |
| **Pharmaceutical Manufacturing Handbook**-Shayne Cox Gad 2008-03-21 |
| This handbook features contributions from a team of expert authors representing the many disciplines within science, engineering, and technology that are involved in pharmaceutical manufacturing. They provide the information and tools you need to design, implement, operate, and troubleshoot a pharmaceutical manufacturing system. The editor, with more than thirty years' experience working with pharmaceutical and biotechnology companies, carefully reviewed all the chapters to ensure that each one is thorough, accurate, and clear. |
| *Dispersing Powders in Liquids*-R.D. Nelson 2012-12-02 |
| This book provides powder technologists with laboratory procedures for selecting dispersing agents and preparing stable dispersions that can then be used in particle size characterization instruments. Its broader goal is to introduce industrial chemists and engineers to the phenomena, terminology, physical principles, and chemical considerations involved in preparing and handling dispersions on a commercial scale. The book introduces novices to: - industrial problems due to improper degree of dispersion; - the nomenclature used in describing particles; - the basic physical phenomena, equations, and chemistry involved in particle interactions; - the analytical techniques used for evaluating solid-liquid interfaces - textbooks, courses, societies, and vendors that can provide an advanced understanding of dispersion phenomena. The book provides resources for more experienced technologists by: - discussing characteristics and applications of the various chemical classes of surfactants; - providing procedures for selecting and optimizing a dispersant for a specific solid-liquid system and end-use constraints; - naming typical commercial surfactants and listing the addresses and telephone numbers of their manufacturers; - illustrating the many physical and chemical equilibria that must be considered in modelling a dispersion and guiding the reader to the sources of both data and advanced theoretical treatments required to implement such models. The author has for several years been a consultant in the field of slurry technology, obtaining information, materials, equipment, and expert advice required to solve slurry problems. He also teaches slurry technology and powder dispersion courses to students who are either engineers recently graduated from college or managers recently transferred to plants that handle slurries. His expertise gives the book a wide appeal: as virtually every manufacturing process involves dispersions of powders in liquids, it is of interest to chemists and chemical engineers in industry; the concise definitions, descriptions and examples make it an ideal reference text for teachers and students. |
| **Materials Processing**-Lorraine F. Francis 2015-12-28 |
| Materials Processing is the first textbook to bring the fundamental concepts of materials processing together in a unified approach that highlights the overlap in scientific and engineering principles. It teaches students the key principles involved in the processing of engineering materials, specifically metals, ceramics and polymers, from starting or raw materials through to the final functional forms. Its self-contained approach is based on the state of matter most central to the shaping of the material: melt, solid, powder, dispersion and solution, and vapor. With this approach, students learn processing fundamentals and appreciate the similarities and differences between the materials classes. The book uses a consistent nomenclature that allow for easier comparisons between various materials and processes. Emphasis is on fundamental principles that gives students a strong foundation for understanding processing and manufacturing methods. Development of connections between processing and structure builds on students' existing knowledge of structure-property relationships. Examples of both standard and newer additive manufacturing methods throughout provide students with an overview of the methods that they will likely encounter in their careers. This book is intended primarily for upper-level undergraduates and beginning graduate students in Materials Science and Engineering who are already schooled in the structure and properties of metals, ceramics and polymers, and are ready to apply their knowledge to materials processing. It will also appeal to students from other engineering disciplines who have completed an introductory materials science and engineering course. Coverage of metal, ceramic and polymer processing in a single text provides a self-contained approach and consistent nomenclature that allow for easier comparisons between various materials and processes Emphasis on fundamental principles gives students a strong foundation for understanding processing and manufacturing methods Development of connections between processing and structure builds on students' existing knowledge of structure - property relationships Examples of both standard and newer additive manufacturing methods throughout provide students with an overview of the methods that they will likely encounter in their careers |
| *Processing of Particulate Solids*-J.P. Seville 2012-12-06 |
| Over half of the products of the chemical and process industries are sold in a particulate form. The range of such products is vast: from agrochemicals to pigments, from detergents to foods, from plastics to pharmaceuticals. However, surveys of the performance of processes designed to produce particulate products have consistently shown inadequate design and poor reliability. `Particle technology' is a new subject facing new challenges. Chemical and process engineering is becoming less concerned with the design of plants to produce generic simple chemicals (which are often single phase fluids) and is now more concerned with speciality `effect' chemicals which may often be in particulate form. Chemical and process engineers are also being recruited in increasing numbers into areas outside their traditional fields, such as the food industry, pharmaceuticals and the manufacture of a wide variety of consumer products. This book has been written to meet their needs. It provides comprehensive coverage of the technology of particulate solids, in a form which is both accessible and concise enough to be useful to engineering and science students in the final year of an undergraduate degree, and at Master's level. Although it was written with students of chemical engineering in mind, it will also be of use and interest to students of other disciplines. It comprises an account of the fundamentals of teh subject, illustrated by worked examples, and followed by a wide range of selected applications. |
| *Handbook of Non-Ferrous Metal Powders*-Oleg D Neikov 2009-02-24 |
| 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. |
| *Aulton's Pharmaceutics E-Book*-Kevin M.G. Taylor 2013-07-29 |
| Pharmaceutics is one of the most diverse subject areas in all of pharmaceutical science. In brief, it is concerned with the scientific and technological aspects of the design and manufacture of dosage forms or medicines. An understanding of pharmaceutics is therefore vital for all pharmacists and those pharmaceutical scientists who are involved with converting a drug or a potential drug into a medicine that can be delivered safely, effectively and conveniently to the patient. Now in its fourth edition, this best-selling textbook in pharmaceutics has been brought completely up to date to reflect the rapid advances in delivery methodologies by eye and injection, advances in drug formulations and delivery methods for special groups (such as children and the elderly), nanomedicine, and pharmacognosy. At the same time the editors have striven to maintain the accessibility of the text for students of pharmacy, preserving the balance between being a suitably pitched introductory text and a clear reflection of the state of the art. New to this edition New editor: Kevin Taylor, Professor of Clinical Pharmaceutics, School of Pharmacy, University of London. Twenty-two new contributors. Six new chapters covering parenteral and ocular delivery; design and administration of medicines for the children and elderly; the |

latest in plant medicines; nanotechnology and nanomedicines, and the delivery of biopharmaceuticals. Thoroughly revised and updated throughout. provides a logical, comprehensive account of drug design and manufacture includes the science of formulation and drug delivery designed and written for newcomers to the design of dosage forms New to this edition New editor: Kevin Taylor, Professor of Clinical Pharmaceutics, School of Pharmacy, University of London. Twenty-two new contributors. Six new chapters covering parenteral and ocular delivery; design and administration of medicines for the children and elderly; the latest in plant medicines; nanotechnology and nanomedicines, and the delivery of biopharmaceuticals. Thoroughly revised and updated throughout.

Aerosol Measurement-Pramod Kulkarni 2011-09-09

Aerosol Measurement: Principles, Techniques, and Applications Third Edition is the most detailed treatment available of the latest aerosol measurement methods. Drawing on the know-how of numerous expert contributors; it provides a solid grasp of measurement fundamentals and practices a wide variety of aerosol applications. This new edition is updated to address new and developing applications of aerosol measurement, including applications in environmental health, atmospheric science, climate change, air pollution, public health, nanotechnology, particle and powder technology, pharmaceutical research and development, clean room technology (integrated circuit manufacture), and nuclear waste management.

Inhalation Drug Delivery-Paolo Colombo 2012-12-19

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.

Advanced Powder Technology I-Lucio Salgado 1998-12-15

The 1st International Latin-American Conference on Powder Technology, attended by more than 180 participants from eleven nations, was held in Águas de Lindóia, São Paulo, Brazil, November 1997. Volume is indexed by Thomson Reuters CPCI-S (WoS).

Characterization of Porous Solids and Powders: Surface Area, Pore Size and Density-S. Lowell 2012-09-14

The growth of interest in newly developed porous materials has prompted the writing of this book for those who have the need to make meaningful measurements without the benefit of years of experience. One might consider this new book as the 4th edition of "Powder Surface Area and Porosity" (Lowell & Shields), but for this new edition we set out to incorporate recent developments in the understanding of fluids in many types of porous materials, not just powders. Based on this, we felt that it would be prudent to change the title to "Characterization of Porous Solids and Powders: Surface Area, Porosity and Density". This book gives a unique overview of principles associated with the characterization of solids with regard to their surface area, pore size, pore volume and density. It covers methods based on gas adsorption (both physi and chemisorption), mercury porosimetry and pycnometry. Not only are the theoretical and experimental basics of these techniques presented in detail but also, in light of the tremendous progress made in recent years in materials science and nanotechnology, the most recent developments are described. In particular, the application of classical theories and methods for pore size analysis are contrasted with the most advanced microscopic theories based on statistical mechanics (e.g. Density Functional Theory and Molecular Simulation). The characterization of heterogeneous catalysts is more prominent than in earlier editions; the sections on mercury porosimetry and particularly chemisorption have been updated and greatly expanded.

Metal Oxide Powder Technologies-Yarub Al-Douri 2020-06-02

Metal Oxide Powder Technologies: Fundamentals, Processing Methods and Applications reviews the fundamentals, processing methods and applications of this key materials system. Topics addressed comprehensively cover chemical and physical properties, synthesis, preparation, both accepted and novel processing methods, modeling and simulation. The book provides fundamental information on the key properties that impact performance, such as particle size and crystal structure, along with methods to measure, analyze and evaluate. Finally, important applications are covered, including biomedical, energy, electronics and materials applications. Provides a comprehensive overview of key topics both on the theoretical side and the experimental Discusses important properties that impact metal oxide performance, processing methods (both novel and accepted), and important applications Reviews the most relevant applications, such as biomedical, energy, electronics and materials applications

The International Journal of Powder Metallurgy & Powder Technology- 1984

Powders and Bulk Solids-Dietmar Schulze 2021-09-02

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.

Materials for Additive Manufacturing-Yusheng Shi 2021-02-12

Materials for Additive Manufacturing covers the materials utilized in the additive manufacturing field, including polymers, metals, alloys and ceramic materials. A conceptual overview of the preparation and characterization of the materials and their processing is given, beginning with theoretical aspects that help readers better understand fundamental concepts. Emerging applications in medicine, aerospace, automotive, artwork and rapid manufacturing are also discussed. This book provides a comprehensive overview of materials, along with rapid prototyping technologies. Discusses the preparation and characterization of materials used for additive manufacturing Provides descriptions of microstructures and properties of the parts produced by additive manufacturing Includes recent industrial applications of materials processed in additive manufacturing

Characterisation of Bulk Solids-Don McGlinchey 2009-02-12

Handling of powders and bulk solids is a critical industrial technology across a broad spectrum of industries, from minerals processing to bulk and fine chemicals, and the food and pharmaceutical industries, yet is rarely found in the curricula of engineering or chemistry departments. With contributions from leading authors in their respective fields, Characterisation of Bulk Solids provides the reader with a sound understanding of the

techniques, importance and application of particulate materials characterisation. It covers the fundamental characteristics of individual particles and bulk particulate materials, and includes discussion of a wide range of measurement techniques, and the use of material characteristics in design and industrial practice. The reader will then be in a better position to diagnose solids handling and processing problems in industry, and to deal with experts and equipment suppliers from an informed standpoint. Written for post-graduate engineers, chemical scientists and technologists at all stages of their industrial career, the book will also serve as an ideal primer in any of the specialist areas to inform further study.

Sintering-Suk-joong L. Kang 2004-11-27

Sintering is the process of forming materials and components from a powder under the action of thermal energy. It is a key materials science subject: most ceramic materials and many specialist metal powder products for use in key industries such as electronics, automotive and aerospace are formed this way. Written by one of the leading experts in the field, this book offers an unrivalled introduction to sintering and sintering processes for students of materials science and engineering, and practicing engineers in industry. The book is unique in providing a complete grounding in the principles of sintering and equal coverage of the three key sintering processes: densification, grain growth and microstructure. Students and professional engineers alike will be attracted by the emphasis on developing a detailed understanding of the theory and practical processes of sintering, the balanced coverage of ceramic and metal sintering, and the accompanying examination questions with selected solutions. Delivering unrivalled depth of coverage on the basis of sintering, science, including thermodynamics and polycrystalline microstructure. Unique in its balanced coverage of the three key sintering elements - densification, grain growth and microstructure. A key reference for students and engineers in materials science and engineering, accompanied by examination questions and selected solutions.

Solid—Gas Separation-Ladislav Svarovsky 2013-10-22

Solid—Gas Separation presents a brief and highly technical account of the principles and technology of gas-cleaning. The book deals with three associated aspects of gas-cleaning: the relevant dimensionless groups, the efficiency of separation and the economics of gas cleaning. The text begins with the discussion of the principles of particle separation and classification of equipment; general characteristics of equipment; and dimensionless groups for modeling and equipment scale-up. Subsequent chapters are devoted to the examination of the efficiency of separation, aero-mechanical dry separators, scrubbers, electrostatic precipitators, and filters. The last chapter deals with the economics of gas-cleaning equipment selection. Environmental and industrial engineers will find the text very useful.

Interface Dynamics-D. Berthe 1988-09-01

Many tribologists are today not only explicitly concerned with interface action but also with interface composition. This proceedings volume presents a timely review on topics ranging from interface dynamics to interface elimination, covering all factors such as contact stress fields, interface rheology, and boundary slip, that control the passage from formation to elimination. The volume contains 45 papers divided into 13 sessions, that were presented at the symposium.

Powder Technology Handbook-Hiroaki Masuda 2006-01-13

The Powder Technology Handbook, Third Edition provides a comprehensive guide to powder technology while examining the fundamental engineering processes of particulate technology. The book offers a well-rounded perspective on powder technologies that extends from particle to powder and from basic problems to actual applications. Pro

Adsorption by Powders and Porous Solids-Jean Rouquerol 2013-09-06

The declared objective of this book is to provide an introductory review of the various theoretical and practical aspects of adsorption by powders and porous solids with particular reference to materials of technological importance. The primary aim is to meet the needs of students and non-specialists who are new to surface science or who wish to use the advanced techniques now available for the determination of surface area, pore size and surface characterization. In addition, a critical account is given of recent work on the adsorptive properties of activated carbons, oxides, clays and zeolites. Provides a comprehensive treatment of adsorption at both the gas/solid interface and the liquid/solid interface Includes chapters dealing with experimental methodology and the interpretation of adsorption data obtained with porous oxides, carbons and zeolites Techniques capture the importance of heterogeneous catalysis, chemical engineering and the production of pigments, cements, agrochemicals, and pharmaceuticals

Powder Metallurgy-Leszek A. Dobrzański 2018-06

Over the previous years, Powder Metallurgy (PM) has known an impressive development. This is eloquently highlighted by the upgraded classification of its present applications given. Powder metallurgy products cover a broad range of applications and are used in the automotive, electrical, business machine, agricultural machine, sewing machine and other industries. Powder metallurgy process can be applied to not only metal materials but also ceramics and organic materials, which both are employed as structural and electrical products.Powder Metallurgy presents state of the art in the theoretical principles, manufacturing technology, and properties of powder; technology of forming processes; the technology of sintering, heat treatment; and testing methods. In recent years, the use of prealloyed stainless steel powders has lent itself to consolidation at higher temperatures through supersolidus liquid phase sintering. Mechanical properties of sintered structural parts improving, for overcoming the PM limitations concerning the complex shape and large parts realization as well as for the advanced materials obtaining, like nanocrystalline materials, intermetallics and composites, the most recent methods for this purpose are being considered. The worldwide contributions to powder metallurgy present excellent and significantly important research topics to evaluate various properties and performance of PM materials for applying these materials as actual components.Portraying detailed information, original research and development, this book will be beneficial for the readers to develop their knowledge and harmonize specific information concerning these topics and will convince the manufacturers about the advantages of using the powder metallurgy technology in many branches of industry.

Dairy Technology-P. Walstra 1999-04-23

Describes the efficient transformation of milk into a variety of products, focusing on the changes in raw material, and intermediate and final products, as well as the interactions between products and processing equipment. The book details the procedures for ensuring processing efficiency and product quality.