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Casting Design and Performance - 2009

Fundamentals of Inorganic Glasses - Arun K. Varshneya 2013-10-22

Although several fine volumes have been published on special topics in glass, *Fundamentals of Inorganic Glasses* is the first book to provide the breadth required of a comprehensive undergraduate textbook. In a clear tutorial style, this volume provides comprehensive coverage of the composition, structure, and properties of inorganic glasses. Designed to serve as the primary text for "glass science" courses at the upper-undergraduate level, this book facilitates learning with a clear discussion of fundamental concepts, chapter-ending problem sets, an emphasis on key ideas, and timely notes on suggested readings. Professor Varshneya has filled a gap in the existing literature by providing a textbook that is uniquely comprehensive while striving always to help the student develop a clear understanding of the fundamentals underlying glass science. Clearly develops fundamental concepts Provides comprehensive discussion of the composition, structure, and properties of inorganic glasses Leads the reader through areas where a deeper understanding is needed Presents necessary mathematics in a readable manner Introduces numerous and interesting real-world examples that give the reader insight into application of the material covered in the text Concludes chapters with problem sets and suggested readings to facilitate self-study

Environmental Degradation of Advanced and Traditional Engineering Materials -

Lloyd H. Hihara 2013-10-23

One of the main, ongoing challenges for any engineering enterprise is that systems are built of materials subject to environmental degradation. Whether working with an airframe, integrated circuit, bridge, prosthetic device, or implantable drug-delivery system, understanding the chemical stability of materials remains a key element in determining their useful life. *Environmental Degradation of Advanced and Traditional Engineering Materials* is a monumental work for the field, providing comprehensive coverage of the environmental impacts on the full breadth of materials used for engineering infrastructure, buildings, machines, and components. The book discusses fundamental degradation processes and presents examples of degradation under various environmental conditions. Each chapter presents the basic properties of the class of material, followed by detailed characteristics of degradation, guidelines on how to protect against corrosion, and a description of testing procedures. A complete, self-contained industrial reference guide, this valuable resource is designed for students and professionals interested in the development of deterioration-resistant technological systems constructed with metallurgical, polymeric, ceramic, and natural materials.

Computational Methods for Microstructure-Property Relationships - Somnath Ghosh

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2010-11-17

Computational Methods for Microstructure-Property Relationships introduces state-of-the-art advances in computational modeling approaches for materials structure-property relations. Written with an approach that recognizes the necessity of the engineering computational mechanics framework, this volume provides balanced treatment of heterogeneous materials structures within the microstructural and component scales. Encompassing both computational mechanics and computational materials science disciplines, this volume offers an analysis of the current techniques and selected topics important to industry researchers, such as deformation, creep and fatigue of primarily metallic materials. Researchers, engineers and professionals involved with predicting performance and failure of materials will find Computational Methods for Microstructure-Property Relationships a valuable reference.

[Encyclopedia of Iron, Steel, and Their Alloys \(Online Version\)](#) - Rafael Colás 2016-01-06

The first of many important works featured in CRC Press' Metals and Alloys Encyclopedia Collection, the Encyclopedia of Iron, Steel, and Their Alloys covers all the fundamental, theoretical, and application-related aspects of the metallurgical science, engineering, and technology of iron, steel, and their alloys. This Five-Volume Set addresses topics such as extractive metallurgy, powder metallurgy and processing, physical metallurgy, production engineering, corrosion engineering, thermal processing, metalworking, welding, iron- and steelmaking, heat treating, rolling, casting, hot and cold forming, surface finishing and coating, crystallography, metallography, computational metallurgy, metal-matrix composites, intermetallics, nano- and micro-structured metals and alloys, nano- and micro-alloying effects, special steels, and mining. A valuable reference for materials scientists and engineers, chemists, manufacturers, miners, researchers, and students, this must-have encyclopedia: Provides extensive coverage of properties and recommended practices Includes a wealth of helpful charts, nomograms, and figures Contains cross referencing for quick and easy search Each entry is written by a subject-matter expert

and reviewed by an international panel of renowned researchers from academia, government, and industry. Also Available Online This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online combination packages. US: (Tel) 1.888.318.2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online.sales@tandf.co.uk

Light Metals 2013 - Barry Sadler 2013-02-21

The Light Metals series is widely recognized as the definitive source of information on new developments in aluminum production technology. This new volume presents proceedings from 2013's Light Metal Symposia, covering the latest research and technologies on such areas as alumina and bauxite, aluminum reduction technology, electrode technology for aluminum production, cast shop for aluminum production, aluminum processing aluminum alloys, and cost affordable titanium IV. It also includes papers from a keynote presentation session discussing impurities in the aluminum supply chain are also included.

Advances in Plastic Forming of Metals - Myoung-Gyu Lee 2018-10-18

This book is a printed edition of the Special Issue "Advances in Plastic Forming of Metals" that was published in Metals

[ASM Handbook Set](#) - A. S. M. International 2010-09-30

The ASM Handbook series contains peer-reviewed, trusted information in every area of materials specialization. The series is the industry's best known and most comprehensive source of information on ferrous and nonferrous metals and materials technology and is packed with more than 30,000 pages of articles, illustrations, tables, graphs, specifications and practical examples for today's engineer. Each complete set purchase includes the brand-new ASM Handbooks, Volumes 4B, 4C, 4D, and the Comprehensive Index, Third Edition.

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Labs on Chip - Eugenio Iannone 2018-09-03

Labs on Chip: Principles, Design and Technology provides a complete reference for the complex field of labs on chip in biotechnology. Merging three main areas— fluid dynamics, monolithic micro- and nanotechnology, and out-of-equilibrium biochemistry—this text integrates coverage of technology issues with strong theoretical explanations of design techniques. Analyzing each subject from basic principles to relevant applications, this book: Describes the biochemical elements required to work on labs on chip Discusses fabrication, microfluidic, and electronic and optical detection techniques Addresses planar technologies, polymer microfabrication, and process scalability to huge volumes Presents a global view of current lab-on-chip research and development Devotes an entire chapter to labs on chip for genetics Summarizing in one source the different technical competencies required, *Labs on Chip: Principles, Design and Technology* offers valuable guidance for the lab-on-chip design decision-making process, while exploring essential elements of labs on chip useful both to the professional who wants to approach a new field and to the specialist who wants to gain a broader perspective.

Solidification - Michel Rappaz 2009-08-21
Solidification is one of the oldest processes for producing useful implements and remains one of the most important modern commercial processes. This text describes the fundamentals of the technology in a coherent way, using consistent notation.

Metallurgy and Design of Alloys with Hierarchical Microstructures - Krishnan K. Sankaran 2017-06-14

Metallurgy and Design of Alloys with Hierarchical Microstructures covers the fundamentals of processing-microstructure-property relationships and how multiple properties are balanced and optimized in materials with hierarchical microstructures widely used in critical applications. The discussion is based principally on metallic materials used in aircraft structures; however, because they have sufficiently diverse microstructures, the underlying principles can easily be extended to other materials systems. With the increasing microstructural complexity

of structural materials, it is important for students, academic researchers and practicing engineers to possess the knowledge of how materials are optimized and how they will behave in service. The book integrates aspects of computational materials science, physical metallurgy, alloy design, process design, and structure-properties relationships, in a manner not done before. It fills a knowledge gap in the interrelationships of multiple microstructural and deformation mechanisms by applying the concepts and tools of designing microstructures for achieving combinations of engineering properties—such as strength, corrosion resistance, durability and damage tolerance in multi-component materials—used for critical structural applications. Discusses the science behind the properties and performance of advanced metallic materials Provides for the efficient design of materials and processes to satisfy targeted performance in materials and structures Enables the selection and development of new alloys for specific applications based upon evaluation of their microstructure as illustrated in this work

Essentials of Computational Chemistry -

Christopher J. Cramer 2013-04-29

Essentials of Computational Chemistry provides a balanced introduction to this dynamic subject. Suitable for both experimentalists and theorists, a wide range of samples and applications are included drawn from all key areas. The book carefully leads the reader thorough the necessary equations providing information explanations and reasoning where necessary and firmly placing each equation in context.

Metallurgy for the Non-Metallurgist, Second Edition - Arthur C. Reardon 2011

The completely revised Second Edition of *Metallurgy for the Non-Metallurgist* provides a solid understanding of the basic principles and current practices of metallurgy. The new edition has been extensively updated with broader coverage of topics, new and improved illustrations, and more explanation of basic concepts. It is a "must-have" ready reference on metallurgy!

Fundamentals of Laser Powder Bed Fusion of Metals - Igor Yadroitsev 2021-05-23

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

Heat Treating 2011 - ASM Heat Treating Society. Conference and Exposition 2011-01-01

Fundamentals of Metal-Matrix Composites - Subra Suresh 2013-10-22

'Metal-Matrix Composites' are being used or considered for use in a variety of applications in the automotive, aerospace and sporting goods industries. This book contains sixteen chapters, all written by leading experts in the field, which focus on the processing, microstructure and characterization, mechanics and micromechanics of deformation, mechanics and micromechanics of damage and fracture, and practical applications of a wide variety of metal

composites. A particularly noteworthy feature of this authoritative volume is its collection of state-of-the-art reviews of the relationships among processing, microstructural evolution, micromechanics of deformation and overall mechanical response.

ASM Handbook - 1990

These volumes cover the properties, processing, and applications of metals and nonmetallic engineering materials. They are designed to provide the authoritative information and data necessary for the appropriate selection of materials to meet critical design and performance criteria.

Handbook of Induction Heating - Valery Rudnev 2017-07-14

The second edition of the *Handbook of Induction Heating* reflects the number of substantial advances that have taken place over the last decade in theory, computer modeling, semiconductor power supplies, and process technology of induction heating and induction heat treating. This edition continues to be a synthesis of information, discoveries, and technical insights that have been accumulated at Inductoheat Inc. With an emphasis on design and implementation, the newest edition of this seminal guide provides numerous case studies, ready-to-use tables, diagrams, rules-of-thumb, simplified formulas, and graphs for working professionals and students.

Neural Networks Theory - Alexander I. Galushkin 2007-10-29

This book, written by a leader in neural network theory in Russia, uses mathematical methods in combination with complexity theory, nonlinear dynamics and optimization. It details more than 40 years of Soviet and Russian neural network research and presents a systematized methodology of neural networks synthesis. The theory is expansive: covering not just traditional topics such as network architecture but also neural continua in function spaces as well.

Handbook of Materials Failure Analysis with Case Studies from the Aerospace and Automotive Industries - Abdel Salam Hamdy Makhlouf 2015-09-01

Handbook of Materials Failure Analysis: With Case Studies from the Aerospace and Automotive Industries provides a thorough understanding of the reasons materials fail in

certain situations, covering important scenarios, including material defects, mechanical failure as a result of improper design, corrosion, surface fracture, and other environmental causes. The book begins with a general overview of materials failure analysis and its importance, and then logically proceeds from a discussion of the failure analysis process, types of failure analysis, and specific tools and techniques, to chapters on analysis of materials failure from various causes. Later chapters feature a selection of newer examples of failure analysis cases in such strategic industrial sectors as aerospace, oil & gas, and chemicals. Covers the most common types of materials failure, analysis, and possible solutions Provides the most up-to-date and balanced coverage of failure analysis, combining foundational knowledge, current research on the latest developments, and innovations in the field Ideal accompaniment for those interested in materials forensic investigation, failure of materials, static failure analysis, dynamic failure analysis, fatigue life prediction, rotorcraft, failure prediction, fatigue crack propagation, bevel pinion failure, gasketless flange, thermal barrier coatings Presents compelling new case studies from key industries to demonstrate concepts Highlights the role of site conditions, operating conditions at the time of failure, history of equipment and its operation, corrosion product sampling, metallurgical and electrochemical factors, and morphology of failure

Heat Transfer Handbook - Adrian Bejan
2003-06-30

Chapters contributed by thirty world-renown experts. * Covers all aspects of heat transfer, including micro-scale and heat transfer in electronic equipment. * An associated Web site offers computer formulations on thermophysical properties that provide the most up-to-date values.

ASM Handbook - 1990

These volumes cover the properties, processing, and applications of metals and nonmetallic engineering materials. They are designed to provide the authoritative information and data necessary for the appropriate selection of materials to meet critical design and performance criteria.

Fundamentals of Modeling for Metals Processing

- ASM International. Handbook Committee 2009
This Handbook provides an overview of the development of models of metallic materials and how the materials are affected by processing. This knowledge is central to understanding of the behaviour of existing alloys and the development of new materials that affect nearly every manufacturing industry. Background on fundamental modeling methods provides the user with a solid foundation of the underlying physics that support the mechanistic method of many industrial simulation software packages. The phenomenological method is given equal coverage

Comprehensive Nuclear Materials - Todd R Allen 2011-05-12

Comprehensive Nuclear Materials discusses the major classes of materials suitable for usage in nuclear fission, fusion reactors and high power accelerators, and for diverse functions in fuels, cladding, moderator and control materials, structural, functional, and waste materials. The work addresses the full panorama of contemporary international research in nuclear materials, from Actinides to Zirconium alloys, from the worlds' leading scientists and engineers. Critically reviews the major classes and functions of materials, supporting the selection, assessment, validation and engineering of materials in extreme nuclear environment Fully integrated with F-elements.net, a proprietary database containing useful cross-referenced property data on the lanthanides and actinides Details contemporary developments in numerical simulation, modelling, experimentation, and computational analysis, for effective implementation in labs and plants

Handbook of Thermal Process Modeling Steels - Cemil Hakan Gur 2008-12-22

An Emerging Tool for Pioneering Engineers Co-published by the International Federation of Heat Treatment and Surface Engineering. Thermal processing is a highly precise science that does not easily lend itself to improvements through modeling, as the computations required to attain an accurate prediction of the microstructure and properties of work

Steel Heat Treatment Handbook - 2 Volume Set - George E. Totten 2006-11-14

This reference presents the classical perspectives that form the basis of heat treatment processes while incorporating descriptions of the latest advances to impact this enduring technology. The second edition of the bestselling Steel Heat Treatment Handbook now offers abundantly updated and extended coverage in two self-contained volumes:

Continuum Scale Simulation of Engineering Materials - Dierk Raabe 2006-03-06

This book fills a gap by presenting our current knowledge and understanding of continuum-based concepts behind computational methods used for microstructure and process simulation of engineering materials above the atomic scale. The volume provides an excellent overview on the different methods, comparing the different methods in terms of their respective particular weaknesses and advantages. This trains readers to identify appropriate approaches to the new challenges that emerge every day in this exciting domain. Divided into three main parts, the first is a basic overview covering fundamental key methods in the field of continuum scale materials simulation. The second one then goes on to look at applications of these methods to the prediction of microstructures, dealing with explicit simulation examples, while the third part discusses example applications in the field of process simulation. By presenting a spectrum of different computational approaches to materials, the book aims to initiate the development of corresponding virtual laboratories in the industry in which these methods are exploited. As such, it addresses graduates and undergraduates, lecturers, materials scientists and engineers, physicists, biologists, chemists, mathematicians, and mechanical engineers.

Coating Technology for Vehicle Applications - Sung Chul Cha 2015-04-20

This book describes current, competitive coating technologies for vehicles. The authors detail how these technologies impact energy efficiency in engines and with increased use of lightweight materials and by varying coatings applications can resolve wear problems, resulting in the increased lifecycle of dies and other vehicle components.

Recommended Values of Thermophysical Properties for Selected Commercial Alloys - K. C. Mills 2002

BIM Handbook - Rafael Sacks 2018-07-03
Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built. The BIM Handbook, Third Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Information on the ways in which professionals should use BIM to gain maximum value New topics such as collaborative working, national and major construction clients, BIM standards and guides A discussion on how various professional roles have expanded through the widespread use and the new avenues of BIM practices and services A wealth of new case studies that clearly illustrate exactly how BIM is applied in a wide variety of conditions Painting a colorful and thorough picture of the state of the art in building information modeling, the BIM Handbook, Third Edition guides readers to successful implementations, helping them to avoid needless frustration and costs and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.

Fundamentals of Materials Modelling for Metals Processing Technologies - Jianguo Lin 2015-03-24

This book provides a comprehensive introduction to the unique theory developed over years of research on materials and process modelling and its application in metal forming technologies. It starts with the introduction of fundamental theories on the mechanics of materials, computational mechanics and the formulation of unified constitutive equations. Particular attention is paid to elastic-plastic formulations for cold metal forming and unified elastic-viscoplastic constitutive equations for

warm/hot metals processing. Damage in metal forming and numerical techniques to solve and determine the unified constitutive equations are also detailed. Examples are given for the application of the unified theories to solve practical problems encountered in metal forming processes. This is particularly useful to predict microstructure evolution in warm/hot metal forming processes. Crystal plasticity theories and modelling techniques with their applications in micro-forming are also introduced in the book. The book is self-contained and unified in presentation. The explanations are highlighted to capture the interest of curious readers and complete enough to provide the necessary background material to further explore/develop new theories and applications.

Fundamentals of Materials Science and Engineering - William D. Callister, Jr.

2022-07-14

Fundamentals of Materials Science and Engineering provides a comprehensive coverage of the three primary types of materials (metals, ceramics, and polymers) and composites. Adopting an integrated approach to the sequence of topics, the book focuses on the relationships that exist between the structural elements of materials and their properties. This presentation permits the early introduction of non-metals and supports the engineer's role in choosing materials based upon their characteristics. Using clear, concise terminology that is familiar to students, the book presents material at an appropriate level for student comprehension. This International Adaptation has been thoroughly updated to use SI units. This edition enhances the coverage of failure mechanism by adding new sections on Griffith theory of brittle fracture, Goodman diagram, and fatigue crack propagation rate. It further strengthens the coverage by including new sections on peritectoid and monotectic reactions, spinodal decomposition, and various hardening processes such as surface, and vacuum and plasma hardening. In addition, all homework problems requiring computations have been refreshed.

Proceedings of the 13th World Conference on Titanium - Vasisht Venkatesh 2016-04-26

This book contains the Proceedings of the 13th World Conference on Titanium.

Shape Casting - Murat Tiryakioğlu 2011-04-12

In a career spanning almost six decades, Prof. John T. Berry has made significant contributions towards building our understanding of solidification and process-structure-property relationships in shaped castings. Celebrating his contributions, the Fourth International Shape Casting Symposium, which takes place at the 2011 TMS Annual Meeting & Exhibition, has been organized in his honor. Shape Casting 2011 contains the proceedings of the symposium in which scientists and engineers from around the world presented their own research findings, discussed challenges in the field, and projected future directions. Papers explore such topics as liquid metal quality; filling and feeding systems; process modeling for shaped castings; structure-property relationships; performance of shaped castings; and machinability of castings.

DeGarmo's Materials and Processes in Manufacturing - Degarmo 2011-08-30

Now in its eleventh edition, DeGarmo's Materials and Processes in Manufacturing has been a market-leading text on manufacturing and manufacturing processes courses for more than fifty years. Authors J T. Black and Ron Kohser have continued this book's long and distinguished tradition of exceedingly clear presentation and highly practical approach to materials and processes, presenting mathematical models and analytical equations only when they enhance the basic understanding of the material. Completely revised and updated to reflect all current practices, standards, and materials, the eleventh edition has new coverage of additive manufacturing, lean engineering, and processes related to ceramics, polymers, and plastics.

Tribology of Additively Manufactured Materials - Pradeep Menezes 2022-08-12

Tribology of Additively Manufactured Materials: Fundamentals, Modeling, and Applications starts with a look at the history, methods and mechanics of additive manufacturing (AM), focusing on power bed fusion-based and direct energy deposition-based additive manufacturing. Following sections of the book provide a foundational background in the fundamentals of tribology, covering the basics of surface engineering, friction and wear, corrosion and tribocorrosion, and the tribological

considerations of a variety of AM materials, such as friction and wear in non-metallic and metallic AM materials, degradation in non-metallic AM components, and corrosion and tribocorrosion in AM components. The book then concludes with a section covering modeling and simulation scenarios and challenges related to the tribology of AM materials, providing readers with the processing conditions needed to extend and strengthen the lifetime and durability of AM materials and components. Provides theoretical, experimental and computational data for a better understanding of the complex tribological behaviors in additively manufactured components Discusses applications of additively manufactured components, considering their tribological properties Studies how unique surface roughness and texture develop in additively manufactured components and how these unique characteristics affect their tribological function Outlines variables, additive manufacturing methods and performance of additively manufactured components Equips readers with a better understanding of degradation effects due to tribology and corrosion

Superplasticity - K. A. Padmanabhan 2018-12-08 This book combines the perspectives of materials science of Superplasticity, on the one hand, and those of design and mechanics, on the other, in order to provide a holistic view of materials, design, mechanics and performance which will lead to useful solutions of societal benefits, in addition to providing great intellectual challenges. After considering the experimental evidence for superplasticity in different classes of materials, the book discusses the physics-based models, along with their advantages and limitations. Then, the analyses for superplastic forming available in the framework of continuum mechanics, finite element analysis and numerical simulations are presented. Finally, the authors highlight some successful industrial applications. This book is recommended as a text book for courses on Superplasticity and as supplementary use for courses on Materials Processing, Manufacturing, High Temperature Deformation, Nanotechnology and Mechanical Behavior of Materials. Persons working in Department of Materials Science and Engineering, Physics, Mechanics, Mechanical

Engineering, Aerospace Engineering, Metallurgy, Ceramics and Geo-sciences are likely to find the book to be useful. It is also recommended as a reference source for practicing engineers involved in the design, processing and manufacture of industrial components, which exploit the unique properties associated with superplastic materials.

Handbook of Metal Injection Molding - Donald F Heaney 2018-11-01

Metal injection molding combines the most useful characteristics of powder metallurgy and plastic injection molding to facilitate the production of small, complex-shaped metal components with outstanding mechanical properties. Handbook of Metal Injection Molding, Second Edition provides an authoritative guide to this important technology and its applications. Building upon the success of the first edition, this new edition includes the latest developments in the field and expands upon specific processing technologies. Part one discusses the fundamentals of the metal injection molding process with chapters on topics such as component design, important powder characteristics, compound manufacture, tooling design, molding optimization, debinding, and sintering. Part two provides a detailed review of quality issues, including feedstock characterisation, modeling and simulation, methods to qualify a MIM process, common defects and carbon content control. Special metal injection molding processes are the focus of part three, which provides comprehensive coverage of micro components, two material/two color structures, and porous metal techniques, as well as automation of the MIM process and metal injection molding of large components. Finally, part four explores metal injection molding of particular materials, and has been expanded to include super alloys, carbon steels, precious metals, and aluminum. With its distinguished editor and expert team of international contributors, the Handbook of Metal Injection Molding is an essential guide for all those involved in the high-volume manufacture of small precision parts, across a wide range of high-tech industries such as microelectronics, biomedical and aerospace engineering. Provides an authoritative guide to metal injection molding and its applications

Discusses the fundamentals of the metal injection molding processes and covers topics such as component design, important powder characteristics, compound manufacture, tooling design, molding optimization, debinding, and sintering. Comprehensively examines quality issues such as feedstock characterization, modeling and simulation, common defects and carbon content control.

ASM Handbook - ASM International 2003

Commodities and Commodity Derivatives -

Helyette Geman 2009-09-24

The last few years have been a watershed for the commodities, cash and derivatives industry. New regulations and products have led to an explosion in the commodities markets, creating a new asset for investors that includes hedge funds as well as University endowments, and has resulted in a spectacular growth in spot and derivative trading. This book covers hard and soft commodities (energy, agriculture and metals) and analyses: Economic and geopolitical issues in commodities markets. Commodity price

and volume risk. Stochastic modelling of commodity spot prices and forward curves. Real options valuation and hedging of physical assets in the energy industry. It is required reading for energy companies and utilities practitioners, commodity cash and derivatives traders in investment banks, the Agrifood business, Commodity Trading Advisors (CTAs) and Hedge Funds. In *Commodities and Commodity Derivatives*, Hélyette Geman shows her powerful command of the subject by combining a rigorous development of its mathematical modelling with a compact institutional presentation of the arcane characteristics of commodities that makes the complex analysis of commodities derivative securities accessible to both the academic and practitioner who wants a deep foundation and a breadth of different market applications. It is destined to be a "must have" on the subject." —Robert Merton, Professor, Harvard Business School "A marvelously comprehensive book of interest to academics and practitioners alike, by one of the world's foremost experts in the field." —Oldrich Vasicek, founder, KMV