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KEY=ALUMINUM - SOLIS KELLEY

SOLIDIFICATION CHARACTERISTICS OF ALUMINUM ALLOYS: WROUGHT ALLOYS

PHYSICAL METALLURGY OF DIRECT CHILL CASTING OF ALUMINUM ALLOYS

CRC Press *Pulling together information previously scattered throughout numerous research articles into one detailed resource, Physical Metallurgy of Direct Chill Casting of Aluminum Alloys connects the fundamentals of structure formation during solidification with the practically observed structure and defect patterns in billets and ingots. The author examines the formation of a structure, properties, and defects in the as-cast material in tight correlation to the physical phenomena involved in the solidification and the process parameters. The book draws on the author's advanced research to provide a unique application of physical metallurgy to direct chill (DC) casting technology. He examines structure and defect formation— including macrosegregation and hot tearing. Each technology-centered chapter provides historical background before reviewing current developments. The author supports his conclusions with computer simulation results that have been correlated with highly progressive experimental data. He presents a logical system of structure and defect formation based on the specific features of the DC casting process. He also demonstrates that the seemingly controversial results reported in literature are, in fact, caused by the different ratio of the same mechanisms. Compiling recent results and data, the book discusses the fundamentals of solidification together with metallurgical and technological aspects of DC casting. It gives new insight and perspective into DC casting research.*

AL-SI ALLOYS

AUTOMOTIVE, AERONAUTICAL, AND AEROSPACE APPLICATIONS

Springer *This book details aluminum alloys with special focus on the aluminum silicon (Al-Si) systems - that are the most abundant alloys second only to steel. The authors include a description of the manufacturing principles, thermodynamics, and other main characteristics of Al-Si alloys. Principles of processing, testing, and in particular applications in the Automotive, Aeronautical and Aerospace fields are addressed.*

INTERMETALLIC COMPOUNDS

FORMATION AND APPLICATIONS

BoD - Books on Demand *Intermetallic compounds are usually brittle with high melting points. Their properties are often found among ceramic and metallic materials. In most cases, their hot corrosion resistance and simultaneously hardness are important. One of the main applications of intermetallic compounds is for superalloy turbine blades in which they show appropriate high-temperature-related properties. This book collects new developments about intermetallic compounds and their recent usages.*

ENCYCLOPEDIA OF ALUMINUM AND ITS ALLOYS, TWO-VOLUME SET (PRINT)

CRC Press *This encyclopedia, written by authoritative experts under the guidance of an international panel of key researchers from academia, national laboratories, and industry, is a comprehensive reference covering all major aspects of metallurgical science and engineering of aluminum and its alloys. Topics covered include extractive metallurgy, powder metallurgy (including processing), physical metallurgy, production engineering, corrosion engineering, thermal processing (processes such as metalworking and welding, heat treatment, rolling, casting, hot and cold forming), surface engineering and structure such as crystallography and metallography.*

MULTICOMPONENT PHASE DIAGRAMS: APPLICATIONS FOR COMMERCIAL ALUMINUM ALLOYS

Elsevier *Despite decades of extensive research and application, commercial aluminum alloys are still poorly understood in terms of the phase composition and phase transformations occurring during solidification, cooling, and heating. Multicomponent Phase Diagrams: Applications for Commercial Aluminum Alloys aims to apply multi-component phase diagrams to commercial aluminum alloys, and give a comprehensive coverage of available and assessed phase diagrams for aluminum-based alloy systems of different dimensionality. Features data on non-equilibrium phase diagrams, which can rarely be obtained from other publications Extensive coverage of all groups of commercially important alloys and materials*

TRENDS IN WELDING RESEARCH 2012: PROCEEDINGS OF THE 9TH INTERNATIONAL CONFERENCE

ASM International *The Trends conference attracts the world's leading welding researchers. Topics covered in this volume include friction stir welding, sensing, control and automation, microstructure and properties, welding processes, procedures and consumables, weldability, modeling, phase transformations, residual stress and distortion, physical processes in welding, and properties and structural integrity of weldments.*

PROCEEDINGS OF THE 2013 INTERNATIONAL SYMPOSIUM ON LIQUID METAL PROCESSING AND CASTING (LMPC)

John Wiley & Sons *This book offers a blend of academic and industrial papers on topics including advances in controls and process simulation, ingot defect formation and characterization studies, and process parameter-material properties characterization. The collection includes papers on the following topics: Primary and Secondary Melt Processing including VIM, VAR, ESR, EBCHR, Plasma Melting Physical Property Measurements of Liquid Metals Casting and Solidification of Liquid Metals Modeling of Metallurgical Processes including Heat/Mass Flow Modeling of Liquid Metal and Solidification Ceramic, Slag and Refractory Reactions with Liquid Metals Refining, Evaporation and Gas/Metal Reactions Fundamentals of Reactions Involving Liquid Metals in Productions Processes*

THERMAL CONDUCTIVITY 23

CRC Press *This book contains keynote lectures and 54 technical papers, presented at the 23rd International Thermal Conductivity Conference, on various topics, including techniques, coatings and films, theory, composites, fluids, metals, ceramics, and organics, related to thermal conductivity.*

ALUMINUM ALLOY CASTINGS

PROPERTIES, PROCESSES, AND APPLICATIONS

ASM International J. G. (Gil) Kaufman is currently president of his consulting company, Kaufman Associates.

ESSENTIAL READINGS IN LIGHT METALS, VOLUME 3, CAST SHOP FOR ALUMINUM PRODUCTION

Springer ONE OF A FOUR-BOOK COLLECTION SPOTLIGHTING CLASSIC ARTICLES Original research findings and reviews spanning all aspects of the science and technology of casting Since 1971, The Minerals, Metals & Materials Society has published the Light Metals proceedings. Highlighting some of the most important findings and insights reported over the past four decades, this volume features the best original research papers and reviews on cast shop science and technology for aluminum production published in Light Metals from 1971 to 2011. Papers have been divided into ten subject sections for ease of access. Each section has a brief introduction and a list of recommended articles for researchers interested in exploring each subject in greater depth. Only 12 percent of the cast shop science and technology papers ever published in Light Metals were chosen for this volume. Selection was based on a rigorous review process. Among the papers, readers will find landmark original research findings and expert reviews summarizing current thinking on key topics at the time of publication. From basic research to industry standards to advanced applications, the articles published in this volume collectively represent a complete overview of cast shop science and technology, supporting the work of students, researchers, and engineers around the world.

PULSE LASER POWDER BED FUSION OF HIGH STRENGTH ALUMINUM ALLOYS

"This work presents the foundation and results of a study of the pulse laser powder bed fusion process (P-LPBF). It focuses on the unique opportunity offered for the additive manufacturing (AM) industry to control the microstructure and mechanical properties of high strength aluminum alloys. A literature review has been presented covering the topics; additive manufacturing, high strength aluminum alloys, solidification physics, and evaporation phenomena. The work goes on to present results of a P-LPBF processing study of Al-Zn-Mg-Cu and Al-Mg-Si alloys. It was found that as built specimens of 98.0±0.5 Vol% density were achievable for the Al-Zn-Mg-Cu alloy, whereas samples with 99.3±0.4 Vol% density were produced from the Al-Mg-Si alloy. Solidification microstructures were examined and found to present highly refined second phases with coarse melt pool regions for both alloys. Quantitative analysis of the solidification behaviour of the Al-Zn-Mg-Cu alloy was conducted with the CGM and KGT microstructure development models. It was concluded that neither alloy exhibited significant departure from equilibrium solidification behaviour. The bulk chemical analyses of P-LPBF specimens of each alloy indicated that significant solute loss had occurred. Standard T6 heat treatment procedures were applied to the samples, yielding the expected microstructure and hardness results. The observed hardness of the Al-Zn-Mg-Cu alloy samples were found to fall below the wrought material while Al-Mg-Si alloy samples were able to slightly exceed the wrought properties. Solute loss was identified as the main variable driving this phenomenon. The AA7175 composition was more sensitive to solute loss as it depended more heavily on precipitation strengthening, while AA6061 made significant use of the Hall-Petch hardening mechanism, allowing it to tolerate substantial solute loss while maintaining the desired mechanical properties. In summary, this work has investigated the microstructural, mechanical, and chemical properties of two solidification crack susceptible aluminum alloys. The findings clearly demonstrate promising results for the feasibility of P-LPBF AM processing of high strength aluminium alloys." --

ALUMINUM AND ALUMINUM ALLOYS

ASM International This one-stop reference is a tremendous value and time saver for engineers, designers and researchers. Emerging technologies, including aluminum metal-matrix composites, are combined with all the essential aluminum information from the ASM Handbook series (with updated statistical information).

ALUMINUM ALLOYS

THEIR PHYSICAL AND MECHANICAL PROPERTIES : PROCEEDINGS OF THE 6TH INTERNATIONAL CONFERENCE ON ALUMINUM ALLOYS, ICAA-6 : TOYOHASHI, JAPAN, JULY 5-10, 1998

FUNDAMENTALS OF ALUMINIUM METALLURGY

RECENT ADVANCES

Woodhead Publishing Fundamentals of Aluminium Metallurgy: Recent Advances updates the very successful book Fundamentals of Aluminium Metallurgy. As the technologies related to casting and forming of aluminum components are rapidly improving, with new technologies generating alternative manufacturing methods that improve competitiveness, this book is a timely resource. Sections provide an overview of recent research breakthroughs, methods and techniques of advanced manufacture, including additive manufacturing and 3D printing, a comprehensive discussion of the status of metalcasting technologies, including sand casting, permanent mold casting, pressure diecastings and investment casting, and recent information on advanced wrought alloy development, including automotive bodysheet materials, amorphous glassy materials, and more. Target readership for the book includes PhD students and academics, the casting industry, and those interested in new industrial opportunities and advanced products. Includes detailed and specific information on the processing of aluminum alloys, including additive manufacturing and advanced casting techniques Written for a broad ranging readership, from academics, to those in the industry who need to know about the latest techniques for working with aluminum Comprehensive, up-to-date coverage, with the most recent advances in the industry

ALUMINUM ALLOYS--CONTEMPORARY RESEARCH AND APPLICATIONS

CONTEMPORARY RESEARCH AND APPLICATIONS

Elsevier This book discusses the structure and properties of the current and potential aluminum alloys in terms of their structure (and structural transformations by new processing methods) and the relationship between structure and mechanical and other properties. The alternative materials that challenge aluminum are considered as well, since the challenge of new competitive materials is a strong influence on innovation. The book bridges the gap between current scientific understanding and engineering practice. It is an up-to-date reference that will be of use to researchers and advanced students in metallurgy and materials engineering.

TRANSACTIONS OF THE AMERICAN FOUNDRYMEN'S SOCIETY

CASTING ALUMINUM ALLOYS

THEIR PHYSICAL AND MECHANICAL METALLURGY

Butterworth-Heinemann Casting Aluminum Alloys, Second Edition, the follow up to the fall 2007 work on the structure, properties, thermal resistance, corrosion and fatigue of aluminum alloys in industrial manufacturing, discusses findings from the past decade, including sections on new casting alloys, novel casting technologies, and new methods of alloys design. The book also includes other hot topics, such as the implementation of computational technologies for the calculation of phase equilibria and thermodynamic properties of alloys, the development of software for calculation of diffusion processes in aluminum alloys, computational modeling of solidification microstructure and texture evolution of multi-component aluminum materials. In addition to changes in computational predictive abilities, there is a review of novel casting aluminum alloy compositions and properties, as well as descriptions of new casting technologies and updates to coverage on the mechanical properties of aluminum casting alloys. Presents a discussion of thermodynamic calculations used for assessing non-equilibrium solidifications of casting aluminum alloys Expands coverage of mathematical models for alloy mechanical properties, helping facilitate the selection of the best prospective candidate for new alloy development Contains a new section that describes the self-consistent evaluation of phase equilibria and thermodynamic properties of aluminum alloys

ESSENTIAL READINGS IN LIGHT METALS, CAST SHOP FOR ALUMINUM PRODUCTION

John Wiley & Sons ONE OF A FOUR-BOOK COLLECTION SPOTLIGHTING CLASSIC ARTICLES Original research findings and reviews spanning all aspects of the science and technology of casting Since 1971, The Minerals, Metals & Materials Society has published the Light Metals proceedings. Highlighting some of the most important findings and insights reported over the past four decades, this volume features the best original research papers and reviews on cast shop science and technology for aluminum production published in Light Metals from 1971 to 2011. Papers have been divided into ten subject sections for ease of access. Each section has a brief introduction and a list of recommended articles for researchers interested in exploring each subject in greater depth. Only 12 percent of the cast shop science and technology papers ever published in Light Metals were chosen for this volume. Selection was based on a rigorous review process. Among the papers, readers will find landmark original research findings and expert reviews summarizing current thinking on key topics at the time of publication. From basic research to industry standards to advanced applications, the articles published in this volume collectively represent a complete overview of cast shop science and technology, supporting the work of students, researchers, and engineers around the world.

MAGNESIUM TECHNOLOGY 2014

Springer The Magnesium Technology Symposium, the event on which this collection is based, is one of the largest yearly gatherings of magnesium specialists in the world. Papers in this collection represent all aspects of the field, ranging from primary production to applications to recycling. Moreover, papers explore everything from basic research findings to industrialization. This volume covers a broad spectrum of current topics, including alloys and their properties; cast products and processing; wrought products and processing; forming, joining, and machining; corrosion and surface finishing; ecology; and structural applications. In addition, there is coverage of new and emerging applications in such areas as hydrogen storage.

ENCYCLOPEDIA OF MATERIALS

SCIENCE AND TECHNOLOGY

Accompanying CD-ROM contains The Encyclopedia of Materials Science and Technology on a web access disc.

ALSTRUC

A MODEL FOR SOLIDIFICATION AND HOMOGENISATION OF INDUSTRIAL ALUMINIUM ALLOYS

HOT CRACKING PHENOMENA IN WELDS II

Springer Science & Business Media Failure of welded components can occur during service as well as during fabrication. Most common, analyses of the resistance of welded components against failure are targeted at crack avoidance. Such evaluations are increasingly carried out by modern weldability studies, i. e. considering interactions between the selected base and filler materials, structural design and welding process. Such weldability investigations are particularly targeted to prevent hot cracking, as one of the most common cracking phenomena occurring during weld fabrication. To provide an international information and discussion platform to combat hot cracking, an international workshop on Hot Cracking Phenomena in Welds has been created, based on an initiative of the Institute for Materials and Joining Technology at the Otto-von-Guericke University in Magdeburg and the Division V. 5 - Safety of Joined Components at the Federal Institute for Materials Research and Testing (BAM) in Berlin, Germany. The first workshop was organized in Berlin under the topics mechanisms and phenomena, metallurgy and materials, modelling and simulations as well as testing and standardization. It consisted of 20 individual contributions from eight countries, which were compiled in a book that found a very ready market, not only in the welding community. As a consequence of increasing interest, it has been decided to establish the Workshop on Hot Cracking Phenomena in Welds as a regular event every three years embedded in the International Institute of Welding (IIW). Attached to the IIW Commission IX and II Spring intermediate meetings, the second workshop was organized in March 2007.

LIGHT METALS 2019

Springer The Light Metals symposia at the TMS Annual Meeting & Exhibition present the most recent developments, discoveries, and practices in primary aluminum science and technology. The annual Light Metals volume has become the definitive reference in the field of aluminum production and related light metal technologies. The 2019 collection includes papers from the following symposia: 1. Alumina and Bauxite 2. Aluminum Alloys, Processing, and Characterization 3. Aluminum Reduction Technology 4. Cast Shop Technology 5. Cast Shop Technology: Energy Joint Session 6. DGM-TMS Symposium on Lightweight Metals 7. Electrode Technology for Aluminum Production 8. REWAS 2019: Cast Shop Recycling Technologies 9. Scandium Extraction and Use in Aluminum Alloys 10. Ultrasonic Processing of Liquid and Solidifying Alloys

RAPIDLY QUENCHED METALS 6:

Elsevier Rapidly Quenched Metals 6: Volume 3

RAPID SOLIDIFICATION TECHNOLOGY

AN ENGINEERING GUIDE

CRC Press Rapid solidification processing results in increased strength, and fracture and fatigue resistance of alloys, with concurrent improvements in mechanical, physical and chemical properties. This volume provides a systematic examination of this technology, including metallurgical aspects, processing methods, alloy design, and applications. Each chapter was prepared by a specialist for this volume. The text is well illustrated with more than 400 micrographs and schematics. More than 75 tables provide important reference data.

MICROSTRUCTURE AND PROPERTIES OF MATERIALS

(VOLUME 1)

World Scientific This is an advanced text on the microstructure and properties of materials, the first volume of a possible 3-volume set. While there are many elementary texts in materials science, there are very few advanced texts. Chapter 1 on aluminum alloys presents microstructural optimization and critical considerations in design applications. Chapter 2 on Nickel-base superalloys reviews the compositional, microstructural and processing advances in increasing their maximum use temperature. Chapter 3 on metal matrix composites discusses the strengthening mechanisms of metals dispersed with short fibers or particles. Chapter 4 on polymer matrix composites contains the details of the microstructure property relationships of high performance fibers, polymer matrix material and the advanced composites made therewith. Chapter 5 on ceramics matrix composites describes the fibers and matrix materials used, the processing techniques involved and the mechanical properties under different loading conditions. Chapter 6 on inorganic glasses describes the influence of second phases, both glassy and crystalline on their properties. Chapter 7 on superconducting materials shows the importance of twins, grain boundaries, dislocations and stacking faults. Chapter 8 on magnetic materials introduces the domain structure and its effects on the soft and hard magnetic properties. Contents: Microstructure and Properties of Aluminium Alloys (C P Blakenship, Jr, et al.) Nickel-Base Superalloys (N S Stoloff) Metal Matrix Composites (R J Arsenault) Polymer Matrix Composites (J-K Kim & Y-W Mai) Ceramic Matrix Composites (P G Karandikar et al.) Microstructure of Inorganic Glasses (R H Doremus) Microstructure and Properties of Superconducting Materials (C S Pande) Magnetic Materials (C D Graham, Jr) Readership: Postgraduate students and researchers in materials science. keywords: Microstructure; Phase Diagram; Strengthening; Aluminum Alloy; Hardening; Precipitation; Fracture Toughness; Fatigue Strength; Crack Growth; Aluminum; Age Hardening; Strengthening Mechanisms; Fracture Behavior; Non-Heat Treatable Aluminum Alloys; Structure-Property Relationships; Fatigue; Corrosion Resistance; Ceramic; Composite; Cracking; Fiber; Glass; Glass-Ceramic; Interface; Matrix; Processing; Modulus; Strength

METALLIC MATERIALS WITH HIGH STRUCTURAL EFFICIENCY

Springer Science & Business Media In the fall of 1998, Prof. Sergey Firstov invited me to the Frantcevych Institute for Problems of Materials Science (IPMS) in Kyiv, Ukraine to discuss possible collaborations in the area of advanced metals research. During this visit, a strong mutual interest was

evident in a broad range of structural metals technologies, and a quick friendship was established. Countless subsequent emails and a reciprocal visit to the U. S Air Force Research Laboratory by Prof. Firstov and a team of scientists from IPMS ensued to discuss and detail a broad collaboration in the area of structural metals. Two years after the initial visit, a major investment by the U. S. Air Force Office of Scientific Research (AFOSR) was established to pursue the technologies defined by these interactions. The annual reviews of the AFOSR Ukrainian Metals Initiative were held in late May, a most beautiful time in Kyiv when the lilacs are in bright display and the air is scented with the smell of falling blossoms from the chestnut trees that line the major streets and many parks. The sunny days and mild evenings provide a welcome break from winter, and on weekend evenings festive crowds spill onto the Khreshchatyk, Kyiv's downtown boulevard, to listen to street musicians, watch jugglers and comedians, or simply to celebrate with friends. The annual reviews featured long days of intensive discussion of technical progress, followed in the evenings by the warm hospitality of the Ukrainian hosts.

MICON 86

OPTIMIZATION OF PROCESSING, PROPERTIES, AND SERVICE PERFORMANCE THROUGH MICROSTRUCTURAL CONTROL : A SYMPOSIUM

ASTM International

DIRECT-CHILL CASTING OF LIGHT ALLOYS

SCIENCE AND TECHNOLOGY

John Wiley & Sons Direct-chill casting is the major production route for wrought aluminium and magnesium alloys that are later deformed (rolled, extruded, forged) to the final products. To aid in this process, this book provides comprehensive coverage on topics such as the history of process development in this field, industrial applications, including vertical and horizontal casting, melt preparation, fundamentals of solidification in DC casting, and more. The first book targeted for the industrial researcher and practitioner, it pulls together the practice and process of physics with the goal of improving process performance.

MATERIALS SCIENCE & TECHNOLOGY: AIST

ADVANCES IN LASER MATERIALS PROCESSING

TECHNOLOGY, RESEARCH AND APPLICATIONS

Woodhead Publishing *Advances in Laser Materials Processing: Technology, Research and Application, Second Edition*, provides a revised, updated and expanded overview of the area, covering fundamental theory, technology and methods, traditional and emerging applications and potential future directions. The book begins with an overview of the technology and challenges to applying the technology in manufacturing. Parts Two thru Seven focus on essential techniques and process, including cutting, welding, annealing, hardening and peening, surface treatments, coating and materials deposition. The final part of the book considers the mathematical modeling and control of laser processes. Throughout, chapters review the scientific theory underpinning applications, offer full appraisals of the processes described and review potential future trends. A comprehensive practitioner guide and reference work explaining state-of-the-art laser processing technologies in manufacturing and other disciplines Explores challenges, potential, and future directions through the continuous development of new, application-specific lasers in materials processing Provides revised, expanded and updated coverage

WINTER ANNUAL MEETING

TECHNICAL PAPERS PRESENTED AND AVAILABLE

RECENT METALLURGICAL ADVANCES IN LIGHT METALS INDUSTRIES

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON RECENT METALLURGICAL ADVANCES IN LIGHT METALS INDUSTRIES : VANCOUVER, BRITISH COLUMBIA, AUGUST 20-24, 1995

LIGHT METALS 2015

John Wiley & Sons The 2015 collection will include papers from the following symposia: Alumina and Bauxite Aluminum Alloys: Fabrication, Characterization and Applications Aluminum Processing Aluminum Reduction Technology Cast Shop for Aluminum Production Electrode Technology for Aluminum Production Strip Casting of Light Metals

TMS 2012 141ST ANNUAL MEETING AND EXHIBITION, MATERIALS PROPERTIES, CHARACTERIZATION, AND MODELING

John Wiley & Sons This book contains chapters on cutting-edge developments presented at the TMS annual conference of 2012.

THE ENGINEERING INDEX

Since its creation in 1884, Engineering Index has covered virtually every major engineering innovation from around the world. It serves as the historical record of virtually every major engineering innovation of the 20th century. Recent content is a vital resource for current awareness, new production information, technological forecasting and competitive intelligence. The world's most comprehensive interdisciplinary engineering database, Engineering Index contains over 10.7 million records. Each year, over 500,000 new abstracts are added from over 5,000 scholarly journals, trade magazines, and conference proceedings. Coverage spans over 175 engineering disciplines from over 80 countries. Updated weekly.

HANDBOOK OF NON-FERROUS METAL POWDERS

TECHNOLOGIES AND APPLICATIONS

Elsevier 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.

ADVANCES IN THE SCIENCE AND ENGINEERING OF CASTING SOLIDIFICATION

AN MPMD SYMPOSIUM HONORING DORU MICHAEL STEFANESCU

Springer This collection encompasses the following four areas: (1) *Solidification processing: theoretical and experimental investigations of solidification processes including castings solidification, directional solidification of alloys, electromagnetic stirring, ultrasonic cavitation, mechanical vibration, active cooling and heating, powder bed-electron beam melting additive manufacturing, etc. for processing of metals, polymers and composite materials;* (2) *Microstructure Evolution: theoretical and experimental studies related to microstructure evolution of materials including prediction of solidification-related defects and particle pushing/engulfment aspects;* (3) *Novel Casting and Molding Processes: modeling and experimental aspects including high pressure die casting, permanent casting, centrifugal casting, low pressure casting, 3D silica sand mold printing, etc.;* and (4) *Cast Iron: all aspects related to cast iron characterization, computational and analytical modeling, and processing.*

IRON IN ALUMINIUM ALLOYS

IMPURITY AND ALLOYING ELEMENT

CRC Press This volume discusses the phase composition and structure of iron-containing alloys, the influence of iron on various properties, the harmful effects of iron as an impurity. It considers the effect of iron on the structure and properties of aluminium alloys and defines ways to diminish this effect. The book also explores the use of iron in the development of new alloys and composites. It presents analyses of equilibrium and non-equilibrium phase diagrams and structure of iron-containing alloys to the development of new alloys and composite materials. *Iron in Aluminium Alloys: Impurity and Alloying Element* is intended for graduate students, engineers and researchers working in materials science and metallurgy.