

Esi Procast 2015 User Manual

A book that provides the mathematical and physical modelling techniques developed for representing metals processing operations such as extraction, refining and solidification. Often referred to as transport phenomena, these techniques are specific to primary metals and used for process optimization and process development now becoming essential as industry moves to on-line computer control of metal processing. This subject matter covers the components of models based on fluid flow; heat and mass transfer; obtaining measurements (data acquisition); optimization of the process; and numerical solutions. Covers the basic principles of numerical solution of differential equations, both finite differences and finite elements. Examples included.

The processes of freezing and melting were present at the beginnings of the Earth and continue to dominate the natural and industrial worlds. The solidification of a liquid or the melting of a solid involves a complex interplay of many physical effects. This 2001 book presents in a systematic way the field of continuum solidification theory based on instability phenomena. An understanding of the physics is developed by using examples of increasing complexity with the object of creating a deep physical insight applicable to more complex problems. Applied mathematicians, engineers, physicists, and materials scientists will all find this volume of interest.

This book is a printed edition of the Special Issue "Intermetallics 2016" that was published

in Metals

This book presents a scientific approach to metal casting design and analysis supported by software tools. Unlike other books in metal casting focused only on the process know-how, this book uncovers the know-why as well. Besides serving the needs of students of mechanical, production and metallurgical engineering, this book is equally meant to benefit practicing engineers involved or interested in casting development, including product designers, toolmakers, foundry engineers, supply chain managers, engineering consultants, researchers, and software developers. The theory discussed in the book is applicable to all types of castings: ferrous and non-ferrous, produced in sand and metal moulds. By gaining a better understanding of the theory and logic involved through creating, analysing and optimizing virtual castings, the readers will learn how to: Design process-friendly cast products, leading to shorter development time Manufacture assured quality castings, leading to fewer rejections and 'surprises' Manage material and energy utilization, leading to higher yield and lower costs.

High Integrity Die Casting Processes

Performance and Operability

Manga Majesty

Numerical Modeling in Materials Science and Engineering

Proceedings of the 14th International Symposium on Superalloys

CASTING TECHNOLOGY AND CAST ALLOYS

"It's about time that a practicing engineer with casting and academic experience has written a book that provides answers to questions about squeeze casting and semi-solid molding/forming that many engineers and students of casting need answered." —Joseph C. Benedyk, PhD, Consultant and retired technical director, Alcoa High Integrity Die Casting Processes provides a comprehensive look at the concepts behind advanced die casting technologies, including vacuum die casting, squeeze casting, and several variants of semi-solid metalworking. Practical applications for these processes are illustrated in numerous case studies. This single-source reference tool presents the latest material in five sections: Basic concepts of die casting and molten metal flow High integrity die casting processes with case studies Product design considerations Controlling quality and avoiding defects Future advances under development Key coverage includes a survey of liquid metal flow, strategies to overcome the limitations of conventional die casting, and potential defects unique to high integrity die casting processes. Also featured are methods for minimizing porosity, reducing cost by design, practical applied statistical process control techniques, designing for manufacturability, and containment methods for potential processing defects. Several chapters present detailed real-world examples illustrating the broad range of applications possible using

high integrity die casting processes. Included with this book is a CD-ROM containing PowerPoint(r) presentations for each chapter. These presentations can be used for training purposes in conjunction with numerous study questions designed to practically apply the content of the book to real-world situations. Selected PowerPoint(r) slides can be used to support engineering proposals, marketing presentations, or customer education seminars. High Integrity Die Casting Processes is a valuable reference for both component producers and component users alike. Process engineers, tool designers, manufacturing engineers, production managers, and machine operators will acquire a better understanding of these advanced die casting processes to optimize manufacturing and improve product quality. Component designers, product engineers, purchasing agents, buyers, supplier quality engineers, and project managers will gain insight into these processes and develop superior products by design.

This book provides an overview of metal casting technologies starting from its historical evolution to casting design strategies that are being followed today in foundries and other metal casting industries. The details of most of the casting processes and their applications are also included for completeness. Foundry practices such as mold materials and molding techniques, pattern

making and cores, furnaces, pouring, cleaning and heat treatment etc. are discussed in detail. Finally, current practices in casting design are demonstrated. Further developments in the field through computational methods and virtual reality are also described.

State-of-the-technology tools for designing, optimizing, and manufacturing new materials Integrated computational materials engineering (ICME) uses computational materials science tools within a holistic system in order to accelerate materials development, improve design optimization, and unify design and manufacturing. Increasingly, ICME is the preferred paradigm for design, development, and manufacturing of structural products. Written by one of the world's leading ICME experts, this text delivers a comprehensive, practical introduction to the field, guiding readers through multiscale materials processing modeling and simulation with easy-to-follow explanations and examples. Following an introductory chapter exploring the core concepts and the various disciplines that have contributed to the development of ICME, the text covers the following important topics with their associated length scale bridging methodologies: Macroscale continuum internal state variable plasticity and damage theory and multistage fatigue Mesoscale analysis: continuum theory methods with discrete features and methods Discrete dislocation

dynamics simulations Atomistic modeling methods Electronics structures calculations Next, the author provides three chapters dedicated to detailed case studies, including "From Atoms to Autos: A Redesign of a Cadillac Control Arm," that show how the principles and methods of ICME work in practice. The final chapter examines the future of ICME, forecasting the development of new materials and engineering structures with the help of a cyberinfrastructure that has been recently established. Integrated Computational Materials Engineering (ICME) for Metals is recommended for both students and professionals in engineering and materials science, providing them with new state-of-the-technology tools for selecting, designing, optimizing, and manufacturing new materials. Instructors who adopt this text for coursework can take advantage of PowerPoint lecture notes, a questions and solutions manual, and tutorials to guide students through the models and codes discussed in the text.

Brighter Child(R) Spanish for Grade 2 helps students master beginning foreign language skills. Practice is included for learning number words, neighborhood words, classroom words, and more. School success starts here! Workbooks in the popular Brighter Child(R) series are packed with plenty of fun activities that teach a variety of essential school skills. Students will find help for math, English and grammar, handwriting, and other important subject areas. Each

book contains full-color practice pages, easy-to-follow instructions, and an answer key.

Integrated Computational Materials Engineering (ICME) for Metals

Theory of Plasticity

COMPUTER-AIDED DESIGN AND ANALYSIS

The Ten Rules of Castings

METAL CASTING

Light Metals 2016

Complete Casting Handbook is the result of a long-awaited update, consolidation and expansion of expert John Campbell's market-leading casting books into one essential resource for metallurgists and foundry professionals who design, specify or manufacture metal castings. The first single-volume guide to cover modern principles and processes in such breadth and depth whilst retaining a clear, practical focus, it includes: A logical, two-part structure, breaking the contents down into casting metallurgy and casting manufacture Established, must-have information, such as Campbell's "10 Rules" for successful casting manufacture New chapters on filling system design, melting, molding, and controlled solidification techniques, plus extended coverage of a new approach to casting metallurgy Providing in-depth casting knowledge and process know-how,

from the noteworthy career of an industry-leading authority, Complete Casting Handbook delivers the expert advice needed to help you make successful and profitable castings. Long-awaited update, consolidation and expansion of expert John Campbell's market-leading casting books into one essential handbook Separated into two parts, casting metallurgy and casting manufacture, with extended coverage of casting alloys and new chapters on filling system design, melting, moulding and controlled solidification techniques to compliment the renowned Campbell "10 Rules" Delivers the expert advice that engineers need to make successful and profitable casting decisions

Each chapter of Professor Cambell's new book Castings Practice will take a look at one of his 10 rules. It is to be expected that the Rules wil one day be taken as an outline or blueprint for an international specification on the methods for making reliable castings. John Cambell has over two decades of experience in the casting industry and is the author of over 40 technical papers and patents. He has become well-known in the foundry industry as the originator of the Cosworth casting process, which is becoming accepted throughout the world as a new production process for the casting of cylinder heads and blocks. He is now Federal Mogul Professor of Casting Technology at the University of Birmingham.

* Must-follow rules of castings, from one of the world's leading experts *

Companion volume to the renowned book 'Castings' * Accessible and direct, provides essential information for students of metallurgy and foundry professionals alike

This collection presents papers on the science, engineering, and technology of shape castings, with contributions from researchers worldwide. Among the topics that are addressed are structure-property-performance relationships, modeling of casting processes, and the effect of casting defects on the mechanical properties of cast alloys.

The 3rd edition of this popular textbook covers current topics in all areas of casting solidification. Partial differential equations and numerical analysis are used extensively throughout the text, with numerous calculation examples, to help the reader in achieving a working knowledge of computational solidification modeling. The features of this new edition include: □ new chapters on semi-solid and metal matrix composites solidification □ a significantly extended treatment of multiscale modeling of solidification and its applications to commercial alloys □ a survey of new topics such as solidification of multicomponent alloys and molecular dynamic modeling □ new theories, including a theory on oxide bi-films in the treatment of shrinkage problems □ an in-depth treatment of the theoretical aspects of the solidification of the most important commercial alloys including

steel, cast iron, aluminum-silicon eutectics, and superalloys □ updated tables of material constants.

Solidification Characteristics of Aluminum Alloys

Characterization of Minerals, Metals, and Materials 2021

Theory of Solidification

Dendrite Coherency

Braby's Commercial Directory of South, East and Central Africa

Dislocations, Mesoscale Simulations and Plastic Flow

The 2016 collection will include papers from the following symposia:

Alumina and Bauxite Aluminum Alloys, Processing, and Characterization

Aluminum Reduction Technology Cast Shop Technology Electrode

Technology Strip Casting

Numerical Modelling and Simulation of Metal ProcessingMDPI

Includes: South Africa, Rhodesia, Zambia, Malawi, South-West Africa, Mocambique, Angola, Swaaziland, Botsawana and Lesotho.

Industrial Gas Turbines: Performance and Operability explains important aspects of gas turbine performance such as performance deterioration, service life and engine emissions. Traditionally, gas turbine performance has been taught from a design perspective with insufficient attention paid

to the operational issues of a specific site. Operators are not always sufficiently familiar with engine performance issues to resolve operational problems and optimise performance. Industrial Gas Turbines: Performance and Operability discusses the key factors determining the performance of compressors, turbines, combustion and engine controls. An accompanying engine simulator CD illustrates gas turbine performance from the perspective of the operator, building on the concepts discussed in the text. The simulator is effectively a virtual engine and can be subjected to operating conditions that would be dangerous and damaging to an engine in real-life conditions. It also deals with issues of engine deterioration, emissions and turbine life. The combined use of text and simulators is designed to allow the reader to better understand and optimise gas turbine operation. Discusses the key factors in determining the performance of compressors, turbines, combustion and engine controls Explains important aspects of gas and turbine performance such as service life and engine emissions Accompanied by CD illustrating gas turbine performance, building on the concepts discussed in the text

Proceedings of International Conference on Intelligent Manufacturing and Automation

Industrial Gas Turbines

The Mathematical and Physical Modeling of Primary Metals Processing Operations

Български технически каталог

Fundamentals and Applications

The light metal symposia are a key part of the TMS Annual Meeting & Exhibition, presenting the most recent developments, discoveries, and practices in primary aluminum science and technology. Publishing the proceedings from these important symposia, the Light Metals Series has become the definitive reference in the field of aluminum production and related light metal technologies. Light Metals 2011 offers a mix of the latest scientific research findings and applied technology, covering alumina and bauxite, aluminum reduction technology, aluminum rolling, cast shop for aluminum production, electrode technology, and furnace efficiency. These proceedings will help you take advantage of the latest technologies in order to produce high-quality materials while cutting costs and improving profitability at the same time.

This book deals with metal processing and its numerical modelling and simulation. In total, 21 papers from different distinguished authors have been compiled in this area. Various processes are addressed, including solidification, TIG welding, additive manufacturing, hot and cold rolling, deep drawing, pipe deformation, and galvanizing. Material models are developed at different length scales from atomistic simulation to finite element analysis in

order to describe the evolution and behavior of materials during thermal and thermomechanical treatment. Materials under consideration are carbon, Q&T, DP, and stainless steels; ductile iron; and aluminum, nickel-based, and titanium alloys. The developed models and simulations shall help to predict structure evolution, damage, and service behavior of advanced materials.

The collection focuses on the advancements of characterization of minerals, metals, and materials and the applications of characterization results on the processing of these materials. Advanced characterization methods, techniques, and new instruments are emphasized. Areas of interest include, but are not limited to:

- Novel methods and techniques for characterizing materials across a spectrum of systems and processes.*
- Characterization of mechanical, thermal, electrical, optical, dielectric, magnetic, physical, and other properties of materials.*
- Characterization of structural, morphological, and topographical natures of materials at micro- and nano- scales.*
- Characterization of extraction and processing including process development and analysis.*
- Advances in instrument developments for microstructure analysis and performance evaluation of materials, such as computer tomography (CT), X-ray and neutron diffraction, electron microscopy (SEM, FIB, TEM), and spectroscopy (EDS, WDS, EBSD) techniques.*
- 2D and 3D modelling for materials characterization.*

The book explores scientific processes to characterize materials using modern technologies, and focuses on the interrelationships and interdependence among processing, structure, properties, and performance of materials.

The book contains the proceedings of the honorary symposium “Advances in the Science and Engineering of Casting Solidification” (TMS2015, Orlando, Florida, March 15-19, 2015) held in honor of Professor Doru Michael Stefanescu, Emeritus Professor, Ohio State University and the University of Alabama, USA. The book 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.

Practical Nitriding and Ferritic Nitrocarburizing
Energy and Resource Efficiency in Aluminium Die Casting
Methods for Phase Diagram Determination
Science and Engineering of Casting Solidification
Superalloys 2020
Integrated Computational Materials Engineering (ICME)

Phase diagrams are "maps" materials scientists often use to design new materials. They define what compounds and solutions are formed and their respective compositions and amounts when several elements are mixed together under a certain temperature and pressure. This monograph is the most comprehensive reference book on experimental methods for phase diagram determination. It covers a wide range of methods that have been used to determine phase diagrams of metals, ceramics, slags, and hydrides. * Extensive discussion on methodologies of experimental measurements and data assessments * Written by experts around the world, covering both traditional and combinatorial methodologies * A must-read for experimental measurements of phase diagrams

This last book in the six-volume series from NEXTmanga combines cutting-edge illustration with fast-paced storytelling to deliver biblical truth to an ever-changing, postmodern culture. More than 10 million books in over 40 different languages have been distributed worldwide in the series.

The 14th International Symposium on Superalloys (Superalloys 2020) highlights technologies for lifecycle improvement of superalloys. In addition to the traditional focus areas of alloy development, processing, mechanical behavior, coatings, and environmental effects, this volume includes contributions from academia, supply chain, and product-user members of the superalloy community that highlight technologies that contribute to improving manufacturability, affordability, life prediction, and performance

of superalloys.

Plasticity is concerned with the mechanics of materials deformed beyond their elastic limit. A strong knowledge of plasticity is essential for engineers dealing with a wide range of engineering problems, such as those encountered in the forming of metals, the design of pressure vessels, the mechanics of impact, civil and structural engineering, as well as the understanding of fatigue and the economical design of structures. Theory of Plasticity is the most comprehensive reference on the subject as well as the most up to date -- no other significant Plasticity reference has been published recently, making this of great interest to academics and professionals. This new edition presents extensive new material on the use of computational methods, plus coverage of important developments in cyclic plasticity and soil plasticity. A complete plasticity reference for graduate students, researchers and practicing engineers; no other book offers such an up to date or comprehensive reference on this key continuum mechanics subject Updates with new material on computational analysis and applications, new end of chapter exercises Plasticity is a key subject in all mechanical engineering disciplines, as well as in manufacturing engineering and civil engineering. Chakrabarty is one of the subject's leading figures.

Shape Casting

5th International Symposium 2014

Evolution of Metal Casting Technologies

Inverse Heat Transfer

Fundamentals and Engineering Applications with Computer Codes

Light Metals 2011

This monograph provides a field-proven approach to analyze industrial production with a cross-company scope as well as regarding all hierarchical system levels of manufacturing enterprises. The book exemplifies this approach in the context of aluminum die casting, and presents a set of measures which allow a 30 percent energy reduction along the value chain. The target audience primarily comprises researchers and experts in the field but the book may also be beneficial for graduate students.

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.

This book gathers selected papers presented at the Second International Conference on Intelligent Manufacturing and Automation (ICIMA 2020), which was jointly organized by the Departments of Mechanical Engineering and Production Engineering at Dwarkadas J. Sanghvi College of Engineering (DJSCE), Mumbai, and by the Indian Society of Manufacturing Engineers (ISME). Covering a range of topics in intelligent manufacturing, automation, advanced materials and design, it focuses on the latest advances in e.g. CAD/CAM/CAE/CIM/FMS in manufacturing, artificial intelligence in

manufacturing, IoT in manufacturing, product design & development, DFM/DFA/FMEA, MEMS & nanotechnology, rapid prototyping, computational techniques, nano- & micro-machining, sustainable manufacturing, industrial engineering, manufacturing process management, modelling & optimization techniques, CRM, MRP & ERP, green, lean & agile manufacturing, logistics & supply chain management, quality assurance & environmental protection, advanced material processing & characterization of composite & smart materials. The book is intended as a reference guide for future researchers, and as a valuable resource for students in graduate and doctoral programmes.

This text emphasizes the underlying metallurgical principles of casting technology so that the students can develop a sound set of analytic skills, helpful in the development of improved casting processes and products. The pictorial and diagrammatic support provided throughout reinforces the clarity of the text for a thorough understanding of the metal casting concepts and technologies. Besides comprehensive coverage of the casting processes and elaborate discussion of properties of cast irons, cast steels, and cast nonferrous alloys, the text also familiarizes the students with the most recent developments in binder systems, casting practices, solidification processing, metal filtration, metallurgy of cast alloys, alloy design, and energy and environment management. The book is primarily designed for degree and diploma students pursuing courses in metallurgical, mechanical, and production engineering disciplines as well as

for candidates studying for Associate Membership Examinations (AMIIM, AMIE, Grad. IIF). It would also benefit M.Tech./M.E. students specializing in foundry technology and allied disciplines.

Spanish, Grade 2

Advances in the Science and Engineering of Casting Solidification

A Historical Perspective

Advancing Computational and Experimental Methods

An MPMD Symposium Honoring Doru Michael Stefanescu

The Revelation of the End Times!

This book introduces research advances in Integrated Computational Materials Engineering (ICME) that have taken place under the aegis of the AFOSR/AFRL sponsored Center of Excellence on Integrated Materials Modeling (CEIMM) at Johns Hopkins University. Its author team consists of leading researchers in ICME from prominent academic institutions and the Air Force Research Laboratory. The book examines state-of-the-art advances in physics-based, multi-scale, computational-experimental methods and models for structural materials like polymer-matrix composites and metallic alloys. The book emphasizes Ni-based superalloys and epoxy matrix carbon-fiber composites and encompasses atomistic scales, meso-scales of coarse-grained models and discrete dislocations, and micro-scales of poly-phase and polycrystalline microstructures. Other critical phenomena investigated include the relationship between microstructural morphology, crystallography, and mechanisms to the material response at different scales; methods of identifying representative volume elements using microstructure and material characterization, and robust

deterministic and probabilistic modeling of deformation and damage. Encompassing a slate of topics that enable readers to comprehend and approach ICME-related issues involved in predicting material performance and failure, the book is ideal for mechanical, civil, and aerospace engineers, and materials scientists, in academic, government, and industrial laboratories.

In the past twenty years, new experimental approaches, improved models and progress in simulation techniques brought new insights into long-standing issues concerning dislocation-based plasticity in crystalline materials. During this period, three-dimensional dislocation dynamics simulations appeared and reached maturity. Their objectives are to unravel the relation between individual and collective dislocation processes at the mesoscale, to establish connections with atom-scale studies of dislocation core properties and to bridge, in combination with modelling, the gap between defect properties and phenomenological continuum models for plastic flow. Dislocation dynamics simulations are becoming accessible to a wide range of users. This book presents to students and researchers in materials science and mechanical engineering a comprehensive coverage of the physical body of knowledge on which they are based. It includes classical studies, which are too often ignored, recent experimental and theoretical advances, as well as a discussion of selected applications on various topics.

This monograph acts as a benchmark to current achievements in the field of Computer Coupling of Phase Diagrams and Thermochemistry, often called CALPHAD which is an acronym for Computer CALculation of PHase Diagrams. It also acts as a guide to both the basic background of the subject area and the cutting edge of the topic, combining comprehensive discussions of the underlying physical principles of the CALPHAD method with detailed descriptions of their application to real complex multi-component materials. Approaches which combine both thermodynamic and kinetic models to interpret non-equilibrium phase transformations are also reviewed.

Български технически каталог издание 2016/2017

Intermetallics 2016

Mechanisms of Diffusional Phase Transformations in Metals and Alloys

Drying and Energy Technologies

Lattice Boltzmann Method

Large-Scale Nonlinear Optimization

Numerical Modelling and Simulation of Metal Processing

This book reviews and discusses recent advances in the development of methods and algorithms for nonlinear optimization and its applications, focusing on the large-dimensional case, the current forefront of much research. Individual chapters, contributed by eminent authorities, provide an up-to-date overview of the field from different and complementary standpoints, including theoretical analysis, algorithmic development, implementation issues and applications.

This book provides a comprehensive overview of essential topics related to conventional and advanced drying and energy technologies, especially motivated by increased industry and academic interest. The main topics discussed are: theory and applications of drying, emerging topics in drying technology, innovations and trends in drying, thermo-hydro-chemical-mechanical behaviors of porous materials in drying, and drying equipment and energy. Since the topics covered are inter-and multi-disciplinary, the book offers an excellent source of information for

engineers, energy specialists, scientists, researchers, graduate students, and leaders of industrial companies. This book is divided into several chapters focusing on the engineering, science and technology applied in essential industrial processes used for raw materials and products. Developed by the late metallurgy professor and master experimentalist Hubert I. Aaronson, this collection of lecture notes details the fundamental principles of phase transformations in metals and alloys upon which steel and other metals industries are based. Mechanisms of Diffusional Phase Transformations in Metals and Alloys is devoted to solid-solid phase transformations in which elementary atomic processes are diffusional jumps, and these processes occur in a series of so-called nucleation and growth through interface migration. Instead of relying strictly on a pedagogical approach, it documents the evolution of phase transformation concepts. The authors present topics by describing a phenomenon and then following up with a corresponding hypothesis or alternative explanation. In this way, the book also shows how the field continues to evolve and meet new challenges. Integrated with information from a number of key papers and review articles, this volume reflects this revered and influential instructor's unique and passionate way of introducing well-established theories and knowledge in a systematic way, at the same time introducing, in great detail, how a new idea or interpretation of a phenomenon has emerged, evolved, and

gained its current status. If the published version of a theory or a model was too condensed, Aaronson worked the problem out in painstaking detail so that graduate students could follow the derivations. This collection is full of such unique "Aaronsonian idiosyncrasies," which add immense value as a powerful tool for learning in this challenging materials field.

This book introduces the fundamental concepts of inverse heat transfer problems. It presents in detail the basic steps of four techniques of inverse heat transfer protocol, as a parameter estimation approach and as a function estimation approach. These techniques are then applied to the solution of the problems of practical engineering interest involving conduction, convection, and radiation. The text also introduces a formulation based on generalized coordinates for the solution of inverse heat conduction problems in two-dimensional regions.

ICIMA 2020

Using Multiscale Modeling to Invigorate Engineering Design with Science Solidification

Solidification and Casting

CALPHAD (Calculation of Phase Diagrams): A Comprehensive Guide Metal Casting Processes, Techniques and Design

This book introduces readers to the lattice Boltzmann method (LBM) for solving transport phenomena – flow, heat and mass

transfer – in a systematic way. Providing explanatory computer codes throughout the book, the author guides readers through many practical examples, such as: • flow in isothermal and non-isothermal lid-driven cavities; • flow over obstacles; • forced flow through a heated channel; • conjugate forced convection; and • natural convection. Diffusion and advection–diffusion equations are discussed, together with applications and examples, and complete computer codes accompany the sections on single and multi-relaxation-time methods. The codes are written in MatLab. However, the codes are written in a way that can be easily converted to other languages, such as FORTRANm Python, Julia, etc. The codes can also be extended with little effort to multi-phase and multi-physics, provided the physics of the respective problem are known. The second edition of this book adds new chapters, and includes new theory and applications. It discusses a wealth of practical examples, and explains LBM in connection with various engineering topics, especially the transport of mass, momentum, energy and molecular species. This book offers a useful and easy-to-follow guide for readers with some prior experience with advanced mathematics and physics, and

will be of interest to all researchers and other readers who wish to learn how to apply LBM to engineering and industrial problems. It can also be used as a textbook for advanced undergraduate or graduate courses on computational transport phenomena

Computing application to materials science is one of the fastest-growing research areas. This book introduces the concepts and methodologies related to the modeling of the complex phenomena occurring in materials processing. It is intended for undergraduate and graduate students in materials science and engineering, mechanical engineering and physics, and for engineering professionals or researchers.

Complete Casting Handbook
Castings Practice