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### KEY=PDF - JULISSA NELSON

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### THE SUPERALLOYS

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### FUNDAMENTALS AND APPLICATIONS

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*Cambridge University Press Superalloys are unique high-temperature materials used in gas turbine engines, which display excellent resistance to mechanical and chemical degradation. This book presents the underlying metallurgical principles which have guided their development and practical aspects of component design and fabrication from an engineering standpoint. The topics of alloy design, process development, component engineering, lifetime estimation and materials behaviour are described, with emphasis on critical components such as turbine blading and discs. The first introductory text on this class of materials, it will provide a strong grounding for those studying physical metallurgy at the advanced level, as well as practising engineers. Included at the end of each chapter are exercises designed to test the reader's understanding of the underlying principles presented. Solutions for instructors and additional resources are available at [www.cambridge.org/9780521859042](http://www.cambridge.org/9780521859042).*

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### SUPERALLOYS II

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### HIGH-TEMPERATURE MATERIALS FOR AEROSPACE AND INDUSTRIAL POWER

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*Wiley-Interscience A comprehensive review of the latest developments in the pursuit of superalloys.*

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### SUPERALLOYS

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### A TECHNICAL GUIDE, 2ND EDITION

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*ASM International This book covers virtually all technical aspects related to the selection, processing, use, and analysis of superalloys. The text of this new second edition has been completely revised and expanded with many new figures and tables added. In developing this new edition, the focus has been on providing comprehensive and practical coverage of superalloys technology. Some highlights include the most complete and up-to-date presentation available on alloy melting. Coverage of alloy selection provides many tips and guidelines that the reader can use in identifying an appropriate alloy for a specific application. The relation of properties and microstructure is covered in more detail than in previous books.*

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### SUPERALLOYS 2012

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*John Wiley & Sons A superalloy, or high-performance alloy, is an alloy that exhibits excellent mechanical strength at high temperatures. Superalloy development has been driven primarily by the aerospace and power industries. This compilation of papers from the Twelfth International Symposium on Superalloys, held from September 9-13, 2012, offers the most recent technical information on this class of materials.*

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### SUPERALLOYS

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### ALLOYING AND PERFORMANCE

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*ASM International "This practical guide provides an introduction for understanding the compositional complexity of superalloys superalloy and the wide range of alloys developed for specific applications. The basics of alloying, strengthening mechanisms, and structure of superalloys are explained in optimizing particular mechanical properties, oxidation/corrosion resistance, and manufacturing characteristics such as castability, forgeability, and weldability."--Publisher's description.*

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### SUPERALLOYS FOR INDUSTRY APPLICATIONS

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*BoD - Books on Demand In recent years, superalloys have been widespread usage in aerospace gas turbine engine parts. The main reason of it is that these materials have high yield, ultimate tensile strength, and very good corrosion/oxidation resistance, and they combine these good properties with an excellent creep resistance at elevated temperatures. In spite of their outstanding properties, superalloys can lose their mechanical strength because of wear, tear, and crack formation when they are exposed to high-service temperatures and heavy working conditions. Moreover, corrosion is another important issue for superalloys because the materials of gas turbine engine parts are exposed to harsh engine environments, which consist of many pollutants and hot gases. Therefore, special attention must be given to the corrosion behavior of superalloys. This book provides information on the interaction between the microstructure of alloys and their mechanical properties and also the position of superalloys in the manufacturing industry. Topics cover the minimization of the formation of microsegregation and detrimental phases in the GTA welding of superalloys, oxidation kinetics of nickel-based superalloys used in the manufacture of rings for aircraft engines, a review of the work done over the last two decades to understand the hot corrosion behavior of superalloys used in advanced coal-based power plants, ultrasonic-assisted machining of Inconel 718, dry high-speed turning of Ti-6Al-4V titanium alloy, and laser welding in dentistry. The book "Superalloys for Industry Applications" consists of contributions by scientists and engineers who are experienced in the production, design, and analysis of materials from all around the world. We hope that this book will be an irreplaceable source of study for manufacturing, degradation mechanisms, and reliability of superalloys.*

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### SUPERALLOYS 2016

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### PROCEEDINGS OF THE 13TH INTERNATIONAL SYMPOSIUM ON SUPERALLOYS

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*Wiley-TMS*

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### THE SUPERALLOYS

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*John Wiley & Sons*

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## MACHINING OF STAINLESS STEELS AND SUPER ALLOYS

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### TRADITIONAL AND NONTRADITIONAL TECHNIQUES

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*John Wiley & Sons Provides a comprehensive description for machining technologies of stainless steels and super alloys with consideration to current industrial applications. Presents current and recent developments related to traditional and nontraditional machining techniques of stainless steels and super alloys Arranges types of stainless steels and super alloys in qualitative and quantitative form, as related to their machining characteristics, providing the reader with information regarding optimum working condition for each material Proposes a 10-level machinability chart to rank important grades of stainless steels Arranges the machinability rating of the most commonly used super alloys in a descending order Presents non-traditional machining processes along with some hybrid processes which have been applied successfully to stainless steels and super alloys*

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### SUPERALLOYS, SUPERCOMPOSITES AND SUPERCERAMICS

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*Elsevier Superalloys, Supercomposites and Superceramics reviews the state of superalloy technology and some of the more salient aspects of alternative high temperature systems such as superceramics and supercomposites. Superalloy topics range from resource availability to advanced processing such as VIM, VAR, and VADAR, along with investment casting and single crystal growth, new superplastic forming techniques and powder metallurgy, structure property relationships, strengthening mechanisms, oxidation, hydrogen embrittlement, and phase predictions. This book is comprised of 22 chapters that explore key issues of high temperature materials in a synergistic manner. The first chapter reflects on the growth of the superalloy industry and its technology over the past 40 years. The discussion then turns to some of the trends in superalloy development, focusing on what is understood to be meant by the term strategic materials and the current status of resources and reserves in the United States. Particular attention is given to the supply sources and availability of strategic materials. The results achieved from the research program undertaken by NASA Lewis Research Center named Conservation Of Strategic Aerospace Materials (COSAM) are also presented. The chapters that follow explore alternative high temperature systems such as intermetallics, fiber reinforced superalloys, and the processing and high temperature properties of ceramics and carbon-carbon composites. This book will be a valuable resource for professionals and graduate students interested in learning about superalloys, supercomposites, and superceramics.*

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### POWDER METALLURGY OF SUPERALLOYS

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### BUTTERWORTHS MONOGRAPHS IN MATERIALS

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*Elsevier Powder Metallurgy of Superalloys details the advancement of powder metallurgy in the context of producing superalloys. The book is comprised of nine chapters that cover the underlying principles of superalloys produced through powder metallurgy. The text first covers concerns in pre-alloyed dispersion-free powders, such as powder production and characterization; powder consolidation methods; and quality control and non-destructive evaluation of P/M superalloys. The next chapter talks about oxide-dispersion-strengthened superalloys. Next, the book discusses joining techniques for P/M superalloys and the practical applications of P/M superalloys. The title will be of great use to professionals in the materials manufacturing industry.*

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### THE MICROSTRUCTURE OF SUPERALLOYS

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*Routledge Presents all the main aspects of the microstructure of nickel-base superalloys, and includes micrographs chosen from among a large range of commercial and academic alloys, from the as-cast product to in-situ components, worn from in-service use. Including more than 100 illustrations, the text explains all the transformation mechanisms involved in the origination (creation) of microstructures during solidification or heat treatments (crystallization paths, segregation, crystal orientation, precipitation, TCP, coarsening and rafting, etc.). It includes up-to-date information and data such as phase diagrams, crystallographic structures, and relationships with functional properties. Nearly 300 references provide a key to further investigation.*

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## SUPERALLOYS

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### A TECHNICAL GUIDE

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*Asm International*

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### SUPERALLOYS 2020

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### PROCEEDINGS OF THE 14TH INTERNATIONAL SYMPOSIUM ON SUPERALLOYS

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*Springer Nature 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.*

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### ALLOY 625

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### MICROSTRUCTURE, PROPERTIES AND PERFORMANCE

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*Springer Nature This book gives a brief history of the development of Alloy 625 and a detailed account of its physical, mechanical, and corrosion properties. It also addresses different types of microstructural changes the Alloy 625 undergoes at intermediate temperatures; provides details of properties deterioration due to such microstructural changes; assesses the alloy damage during the in-service inspection of plants; and provides criteria for the damage evaluation for various destructive and non-destructive testing. It combines the industrial data and literature together in one place for damage assessment of service exposed Alloy 625 components. This book serves as a guide to practicing engineers in the industry interested in the use of Alloy 625 and in academia for students pursuing advanced courses in materials science. Alloy 625 is a versatile nickel-chromium-molybdenum alloy known for its unique combination of high strength, excellent fabricability and weldability, and outstanding corrosion resistance.*

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### MICROSTRUCTURE AND PROPERTIES OF MATERIALS

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### (VOLUME 2)

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*World Scientific Publishing Company This is the second volume of an advanced textbook on microstructure and properties of materials. (The first volume is on aluminum alloys, nickel-based superalloys, metal matrix composites, polymer matrix composites, ceramics matrix composites, inorganic glasses, superconducting materials and magnetic materials). It covers titanium alloys, titanium aluminides, iron aluminides, iron and steels, iron-based bulk amorphous alloys and nanocrystalline materials. There are many elementary materials science textbooks, but one can find very few advanced texts suitable for graduate school courses. The contributors to this volume are experts in the subject, and hence, together with the first volume, it is a good text for graduate microstructure courses. It is a rich source of design ideas and applications, and will provide a good understanding of how microstructure affects the properties of materials. Chapter 1, on titanium alloys, covers production, thermomechanical processing, microstructure, mechanical properties and applications. Chapter 2, on titanium aluminides, discusses phase stability, bulk and defect properties, deformation mechanisms of single phase materials and polysynthetically twinned crystals, and interfacial structures and energies between phases of different compositions. Chapter 3, on iron aluminides, reviews the physical and mechanical metallurgy of Fe<sub>3</sub>Al and FeAl, the two important structural intermetallics. Chapter 4, on iron and steels, presents methodology, microstructure at various levels, strength, ductility and strengthening, toughness and toughening, environmental cracking and design against fracture for many different kinds of steels. Chapter 5, on bulk amorphous alloys, covers the critical cooling rate and the effect of composition on glass formation and the accompanying mechanical and magnetic properties of the glasses. Chapter 6, on nanocrystalline materials, describes the preparation from vapor, liquid and solid states, microstructure including grain boundaries and their junctions, stability with respect to grain growth, particulate consolidation while maintaining the nanoscale microstructure, physical, chemical, mechanical, electric, magnetic and optical properties and applications in cutting tools, superplasticity, coatings, transformers, magnetic recordings, catalysis and hydrogen storage.*

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**GB/T-2012, GB-2012 -- CHINESE NATIONAL STANDARD PDF-ENGLISH, CATALOG (YEAR 2012)**

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**CHINESE NATIONAL STANDARD: GB SERIES OF YEAR 2012**

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<https://www.chinesestandard.net> This document provides the comprehensive list of Chinese National Standards - Category: GB, GB/T Series of year 2012.

**ANALYTICAL CHARACTERIZATION OF ALUMINUM, STEEL, AND SUPERALLOYS**

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CRC Press This one-of-a-kind reference examines conventional and advanced methodologies for the quantitative evaluation of properties and characterization of microstructures in metals. It presents methods for uncovering valuable information including precipitate mechanisms, kinetics, stability, crystallographic orientation, the effects of thermo-mechanical processing, and residual stress. The editors of Analytical Characterization of Aluminum, Steel, and Superalloys enlist top industry researchers and practitioners from around the world to analyze the methodologies presented in their areas of expertise. Following traditional metallography methods, the book features an atlas of microstructures for aluminum, steel, and superalloys. The text also examines several material characterization methods rarely covered in other references, provides the framework for using advanced laboratory techniques, and discusses component failure identification methods and other measurements that are crucial to components manufacturing. Enabling the evolution of stronger and more function-specific compositions, Analytical Characterization of Aluminum, Steel, and Superalloys offers engineers, researchers, and materials scientists an invaluable reference of many advanced laboratory techniques in the context of characterization and property evaluation methodologies for metals and alloys.

**SUPERALLOYS**

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BoD - Books on Demand Superalloy, or high-performance alloy, is an alloy that exhibits several key characteristics: excellent mechanical strength, resistance to thermal creep deformation, good surface stability, and resistance to corrosion or oxidation. The crystal structure is typically face-centered cubic austenitic. Superalloy development has relied heavily on both chemical and process innovations. Superalloys develop high temperature strength through solid solution strengthening. An important strengthening mechanism is precipitation strengthening which forms secondary phase precipitates such as gamma prime and carbides. Oxidation or corrosion resistance is provided by elements such as aluminium and chromium. This book collects new developments about superalloys.

**NICKEL BASE SINGLE CRYSTALS ACROSS LENGTH SCALES**

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Elsevier Nickel Base Single Crystals Across Length Scales addresses the most advanced knowledge in metallurgy and computational mechanics and how they are applied to superalloys used as bare materials or with a thermal barrier coating system. Joining both aspects, the book helps readers understand the mechanisms driving properties and their evolution from fundamental to application level. These guidelines are helpful for students and researchers who wish to understand issues and solutions, optimize materials, and model them in a cross-check analysis, from the atomistic to component scale. The book is useful for students and engineers as it explores processing, characterization and design. Provides an up-to-date overview on the field of superalloys Covers the relationship between microstructural evolution and mechanical behavior at high temperatures Discusses both basic and advanced modeling and characterization techniques Includes case studies that illustrate the application of techniques presented in the book

**WELDING METALLURGY AND WELDABILITY OF NICKEL-BASE ALLOYS**

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John Wiley & Sons The most up-to-date coverage of welding metallurgy aspects and weldability issues associated with Ni-base alloys Welding Metallurgy and Weldability of Nickel-Base Alloys describes the fundamental metallurgical principles that control the microstructure and properties of welded Ni-base alloys. It serves as a practical how-to guide that enables engineers to select the proper alloys, filler metals, heat treatments, and welding conditions to ensure that failures are avoided during fabrication and service. Chapter coverage includes: Alloying additions, phase diagrams, and phase stability Solid-solution strengthened Ni-base alloys Precipitation strengthened Ni-base alloys Oxide dispersion strengthened alloys and nickel aluminides Repair welding of Ni-base alloys Dissimilar welding Weldability testing High-chromium alloys used in nuclear power applications With its excellent balance between the fundamentals and practical problem solving, the book serves as an ideal reference for scientists, engineers, and technicians, as well as a textbook for undergraduate and graduate courses in welding metallurgy.

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**GB/T-2010, GB-2010 -- CHINESE NATIONAL STANDARD PDF-ENGLISH, CATALOG (YEAR 2010)**

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**CHINESE NATIONAL STANDARD: GB SERIES OF YEAR 2010**

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<https://www.chinesestandard.net> This document provides the comprehensive list of Chinese National Standards - Category: GB, GB/T Series of year 2010.

**THE ELEMENTS**

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PediaPress

**MATERIALS FOR NUCLEAR PLANTS**

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**FROM SAFE DESIGN TO RESIDUAL LIFE ASSESSMENTS**

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Springer Science & Business Media The clamor for non-carbon dioxide emitting energy production has directly impacted on the development of nuclear energy. As new nuclear plants are built, plans and designs are continually being developed to manage the range of challenging requirement and problems that nuclear plants face especially when managing the greatly increased operating temperatures, irradiation doses and extended design life spans. Materials for Nuclear Plants: From Safe Design to Residual Life Assessments provides a comprehensive treatment of the structural materials for nuclear power plants with emphasis on advanced design concepts. Materials for Nuclear Plants: From Safe Design to Residual Life Assessments approaches structural materials with a systemic approach. Important components and materials currently in use as well as those which can be considered in future designs are detailed, whilst the damage mechanisms responsible for plant ageing are discussed and explained. Methodologies for materials characterization, materials modeling and advanced materials testing will be described including design code considerations and non-destructive evaluation concepts. Including models for simple system dynamic problems and knowledge of current nuclear power plants in operation, Materials for Nuclear Plants: From Safe Design to Residual Life Assessments is ideal for students studying postgraduate courses in Nuclear Engineering. Designers on courses for code development, such as ASME or ISO and nuclear authorities will also find this a useful reference.

**THE MICROSTRUCTURE OF SUPERALLOYS**

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CRC Press Presents all the main aspects of the microstructure of nickel-base superalloys, and includes micrographs chosen from among a large range of commercial and academic alloys, from the as-cast product to in-situ components, worn from in-service use. Including more than 100 illustrations, the text explains all the transformation mechanisms involved in the origination (creation) of microstructures during solidification or heat treatments (crystallization paths, segregation, crystal orientation, precipitation, TCP, coarsening and rafting, etc.). It includes up-to-date information and data such as phase diagrams, crystallographic structures, and relationships with functional properties. Nearly 300 references provide a key to further investigation.

**BASIC COMPOUNDS FOR SUPERALLOYS**

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**MECHANICAL PROPERTIES**

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Elsevier Basic Compounds for Superalloys: Mechanical Properties explores the mechanical properties of the iron group based intermetallic compounds that are the basis of super-alloys. Chapters explore tensile tests and compressive stress and hardness and provide detailed considerations that are

devoted to time dependent deformation, namely creep and cyclic deformation. In addition, a discussion of the nano-crystalline L12 and B2 structures and their mechanical properties is included. Fracture and failure of these materials in both macro and nano-iron based compounds is also considered. This book is ideal for engineers, scientists and technical personnel who work in materials engineering, materials science, and mechanical and chemical engineering. Provides an in-depth focus on the mechanical properties of Fe- superalloy materials Includes a discussion of the static, time dependent and cyclic deformation properties of macro- and nano materials Reviews how superalloy materials behave under a variety of 'in-service' environments and conditions

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## **MACHINING DIFFICULT-TO-CUT MATERIALS**

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### **BASIC PRINCIPLES AND CHALLENGES**

Springer This book focus on the challenges faced by cutting materials with superior mechanical and chemical characteristics, such as hardened steels, titanium alloys, super alloys, ceramics and metal matrix composites. Aspects such as costs and appropriate machining strategy are mentioned. The authors present the characteristics of the materials difficult to cut and comment on appropriate cutting tools for their machining. This book also serves as a reference tool for manufacturers working in industry.

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### **NICKEL, COBALT, AND THEIR ALLOYS**

ASM International This book is a comprehensive guide to the compositions, properties, processing, performance, and applications of nickel, cobalt, and their alloys. It includes all of the essential information contained in the ASM Handbook series, as well as new or updated coverage in many areas in the nickel, cobalt, and related industries.

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## **JOINT EPRI - 123HIMAT INTERNATIONAL CONFERENCE ON ADVANCES IN HIGH-TEMPERATURE MATERIALS**

ASM International Proceedings from: EPRI's 9th International Conference on Advances in Materials Technology for Fossil Power Plants and the 2nd International 123HiMAT Conference on High-Temperature Materials

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## **PROCEEDINGS OF THE 9TH INTERNATIONAL SYMPOSIUM ON SUPERALLOY 718 & DERIVATIVES: ENERGY, AEROSPACE, AND INDUSTRIAL APPLICATIONS**

Springer This technical meeting will focus on Alloy 718 and Superalloys in this class relative to alloy and process development, production, product applications, trends and the development of advanced modeling tools. The symposium provides an opportunity for authors to present technical advancements relative to a broad spectrum of areas while assessing their impact on related fields associated with this critical alloy group. There are continuing innovations relative to these alloys as well as novel processing techniques which continue to extend applications in very challenging environments ranging from corrosion resistance in the deep sea to high-stressed space applications.

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### **ADVANCES IN HIGH-ENTROPY ALLOYS**

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### **MATERIALS RESEARCH, EXOTIC PROPERTIES AND APPLICATIONS**

BoD - Books on Demand High-entropy alloys (HEAs) are a new class of materials attracting attention from researchers all over the world. This book provides a comprehensive overview of the research on HEAs, as well as discusses the mechanical, physical, and chemical properties of new HEAs and their potential applications. Chapters cover such topics as HEA superconductors, HEA composites, high-entropy superalloys, artificial intelligence in HEA design, and more.

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## **INTEGRATED COMPUTATIONAL MATERIALS ENGINEERING (ICME) FOR METALS**

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### **CONCEPTS AND CASE STUDIES**

John Wiley & Sons FOCUSES ENTIRELY ON DEMYSTIFYING THE FIELD AND SUBJECT OF ICME AND PROVIDES STEP-BY-STEP GUIDANCE ON ITS INDUSTRIAL APPLICATION VIA CASE STUDIES This highly-anticipated follow-up to Mark F. Horstemeyer's pedagogical book on Integrated Computational Materials Engineering (ICME) concepts includes engineering practice case studies related to the analysis, design, and use of structural metal alloys. A welcome supplement to the first book—which includes the theory and methods required for teaching the subject in the classroom—Integrated Computational Materials Engineering (ICME) for Metals: Concepts and Case Studies focuses on engineering applications that have occurred in industries demonstrating the ICME methodologies, and aims to catalyze industrial diffusion of ICME technologies throughout the world. The recent confluence of smaller desktop computers with enhanced computing power coupled with the emergence of physically-based material models has created the clear trend for modeling and simulation in product design, which helped create a need to integrate more knowledge into materials processing and product performance. Integrated Computational Materials Engineering (ICME) for Metals: Concepts and Case Studies educates those seeking that knowledge with chapters covering: Body Centered Cubic Materials; Designing An Interatomic Potential For Fe-C Alloys; Phase-Field Crystal Modeling; Simulating Dislocation Plasticity in BCC Metals by Integrating Fundamental Concepts with Macroscale Models; Steel Powder Metal Modeling; Hexagonal Close Packed Materials; Multiscale Modeling of Pure Nickel; Predicting Constitutive Equations for Materials Design; and more. Presents case studies that connect modeling and simulation for different materials' processing methods for metal alloys Demonstrates several practical engineering problems to encourage industry to employ ICME ideas Introduces a new simulation-based design paradigm Provides web access to microstructure-sensitive models and experimental database Integrated Computational Materials Engineering (ICME) for Metals: Concepts and Case Studies is a must-have book for senior level undergraduates, first-year graduate level students, and industry researchers aiming to comprehend and employ ICME in the design and development of new materials.

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## **SUPERALLOYS 1984**

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## **PROCEEDINGS OF THE FIFTH INTERNATIONAL SYMPOSIUM ON SUPERALLOYS**

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### **CRACKS IN SUPERALLOYS**

Linköping University Electronic Press Gas turbines are widely used in industry for power generation and as a power source at hard to reach locations where other possibilities for electrical power supplies are insufficient. New ways of producing greener energy is needed to reduce emission levels. This can be achieved by increasing the combustion temperature of gas turbines. High combustion temperatures can be detrimental and degrade critical components. This raises the demands on the high temperature performance of the superalloys used in gas turbine components. These components are frequently subjected to different cyclic loads combined with for example dwell-times and overloads at elevated temperatures, which can influence the crack growth. Dwell-times have been shown to accelerate crack growth and change cracking behaviour in both Inconel 718, Haynes 282 and Hastelloy X. On the other hand, overloads at the beginning of a dwell-time cycle have been shown to retard the dwell-time effect on crack growth in Inconel 718. More experiments and microstructural investigations are needed to better understand these effects. The work presented in this thesis was conducted under the umbrella of the research program Turbo Power; "High temperature fatigue crack propagation in nickel-based superalloys", where I have mainly looked at fatigue crack growth mechanisms in superalloys subjected to dwell-fatigue, which can have a devastating effect on crack propagation behaviour. Mechanical testing was performed under operation-like cycles in order to achieve representative microstructures and material data for the subsequent microstructural work. Microstructures were investigated using light optical microscopy and scanning electron microscopy (SEM) techniques such as electron channeling contrast imaging (ECCI) and electron backscatter diffraction (EBSD). The outcome of this work has shown that there is a significant increase in crack growth rate when dwell-times are introduced at maximum load (0 % overload) in the fatigue cycle. With the introduction of a dwell-time there is also a shift from transgranular to intergranular crack growth for both Inconel 718 and Haynes 282. The crack growth rate decreases with increasing overload levels in Inconel 718 when an overload is applied prior to the dwell-time. At high temperature, intergranular crack growth was observed in Inconel 718 as a result of oxidation and the creation of nanometric voids. Another observed growth mechanism was crack advance along  $\gamma$ -phase boundaries with subsequent oxidation of the  $\gamma$ -phase. This thesis comprises two parts. Part I gives an introduction to the field of superalloys and the acting microstructural mechanisms related to fatigue and crack propagation. Part II consists of five appended papers, which report the work completed as part of the project.

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**HIGH-TEMPERATURE OXIDATION-RESISTANT COATINGS**

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**COATINGS FOR PROTECTION FROM OXIDATION OF SUPERALLOYS, REFRACTORY METALS, AND GRAPHITE**

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National Academies

**ADDITIVE MANUFACTURING APPLICATIONS FOR METALS AND COMPOSITES**

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*IGI Global Additive manufacturing (AM) of metals and composites using laser energy, direct energy deposition, electron beam methods, and wire arc melting have recently gained importance due to their advantages in fabricating the complex structure. Today, it has become possible to reliably manufacture dense parts with certain AM processes for many materials, including steels, aluminum and titanium alloys, superalloys, metal-based composites, and ceramic matrix composites. In the near future, the AM material variety will most likely grow further, with high-performance materials such as intermetallic compounds and high entropy alloys already under investigation. Additive Manufacturing Applications for Metals and Composites is a pivotal reference source that provides vital research on advancing methods and technological developments within additive manufacturing practices. Special attention is paid to the material design of additive manufacturing of parts, the choice of feedstock materials, the metallurgical behavior and synthesis principle during the manufacturing process, and the resulted microstructures and properties, as well as the relationship between these factors. While highlighting topics such as numerical modeling, intermetallic compounds, and statistical techniques, this publication is ideally designed for students, engineers, researchers, manufacturers, technologists, academicians, practitioners, scholars, and educators.*

**LIST OF ENGLISH-TRANSLATED CHINESE STANDARDS [GB/T]**

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**ENGLISH-TRANSLATED CHINESE STANDARDS**

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*https://www.codeofchina.com HTTPS://WWW.CODEOFCHINA.COM EMAIL:COC@CODEOFCHINA.COM "Codeofchina Inc., a part of TransForyou (Beijing) Translation Co., Ltd., is a professional Chinese code translator in China. Now, Codeofchina Inc. is running a professional Chinese code website, www.codeofchina.com. Through this website, Codeofchina Inc. provides English-translated Chinese codes to clients worldwide. About TransForyou TransForyou (Beijing) Translation Co., Ltd., established in 2003, is a reliable language service provider for clients at home and abroad. Since our establishment, TransForyou has been aiming to build up a translation brand with our professional dedicated service. Currently, TransForyou is the director of China Association of Engineering Construction Standardization (CECS); the committeeman of Localization Service Committee / Translators Association of China (TAC) and the member of Boya Translation Culture Salon (BTCS); and the field study center of the University of the University of International Business & Economics (UIBE) and Hebei University (HU). In 2016, TransForyou ranked 27th among Asian Language Service Providers by Common Sense Advisory. "*

**GB/T 14992-2005: TRANSLATED ENGLISH OF CHINESE STANDARD. (GBT 14992-2005, GB/T14992-2005, GBT14992-2005)**

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**CLASSIFICATION AND DESIGNATION FOR SUPERALLOYS AND HIGH TEMPERATURE INTERMETALLIC MATERIALS [AFTER PAYMENT, WRITE TO & GET A FREE-OF-CHARGE, UNPROTECTED TRUE-PDF FROM: SALES@CHINESESTANDARD.NET]**

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*https://www.chinesestandard.net [After payment, write to & get a FREE-of-charge, unprotected true-PDF from: Sales@ChineseStandard.net] This Standard specifies the classification, naming principles and naming procedures of designation, and general chemical composition, etc. for superalloys and high temperature intermetallic materials. This Standard applies to deformed superalloys, cast superalloys (isometric crystal cast superalloys, directionally solidified columnar crystal superalloys, and single crystal superalloys), superalloy wire for welding, powder metallurgy superalloys, dispersion strengthened superalloys and high temperature intermetallic materials.*

**METALLIC MATRIX COMPOSITES**

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**COMPOSITE MATERIALS**

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*Elsevier Composite Materials, Volume 4: Metallic Matrix Components provides an in-depth report and a reference on the technology of metal-matrix composites. The book starts by giving an introduction to metal-matrix composites, and by discussing the principal metal-laminate fabrication methods, the properties of metal laminates, and materials engineering of laminated-metal composites for specific applications. The text also describes the technology in eutectic superalloys of nickel and cobalt; nickel alloys reinforced with alpha-Al<sub>2</sub>O<sub>3</sub> filaments; and the problems and progress encountered in developing wire-reinforced superalloys. The fiber-reinforced titanium alloys; the development of metal-matrix composites reinforced with high-modulus graphite fibers; as well as the development, the physical and mechanical properties, and the engineering considerations for the use of boron-aluminum are also encompassed. Materials scientists and engineers will find the book invaluable.*

**10TH INTERNATIONAL SYMPOSIUM ON HIGH-TEMPERATURE METALLURGICAL PROCESSING**

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*Springer In recent years, global metallurgical industries have experienced fast and prosperous growth. High-temperature metallurgical technology is the backbone to support the technical, environmental, and economical needs for this growth. This collection features contributions covering the advancements and developments of new high-temperature metallurgical technologies and their applications to the areas of processing of minerals; extraction of metals; preparation of refractory and ceramic materials; sintering and synthesis of fine particles; treatment and recycling of slag and wastes; and saving of energy and protection of environment. The volume will have a broad impact on the academics and professionals serving the metallurgical industries around the world.*