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KEY=METALS - BRIDGET SPENCE

Fatigue Durability of Carburized Steel

A Series of Educat. Lectures. Pres. by Members of the General Motors Corp. Research Staff to the Members of the ASM During the 38. Nat. Metal Congress and Exposition, Oct. 8-12, 1956, Cleveland

Fatigue and Fracture Mechanics

27th Volume

ASTM International

Metal Fatigue: Effects of Small Defects and Nonmetallic Inclusions

Elsevier Metal fatigue is an essential consideration for engineers and researchers who are looking at factors that cause metals to fail through stress, corrosion, etc. This is an English translation of a book originally published in Japan in 1993, with an additional two chapters on the fatigue failure of steels and the effect of surface roughness on fatigue strength. The methodology is based on important and reliable results and may be usefully applied to other fatigue problems not directly treated in this book.

Pressure Vessel Design: The Direct Route

Elsevier This book explores a new, economically viable approach to pressure vessel design, included in the (harmonized) standard EN 13445 (for unfired pressure vessels) and based on linear as well as non-linear Finite Element analyses. It is intended as a supporting reference of this standard's route, providing background information on the underlying principles, basic ideas, presuppositions, and new notions. Examples are included to familiarize readers with this approach, to highlight problems and solutions, advantages and disadvantages. * The only book with background information on the direct route in pressure vessel design. * Contains many worked examples, supporting figures and tables and a comprehensive glossary of terms.

Sources of Information on the Properties of Metals and Alloys

Current Problems in Prevention of Fatigue

The Defense Metals Information Center conducted a brief survey of the present state of knowledge about fatigue with wide coverage to applications and with particular emphasis on means of early detection of fatigue damage. The survey has excluded consideration of reports of proprietary interest and of reports with security classification. However, it has included information from various branches of the U.S. Army, the U.S. Navy, the U.S. Air Force, and the National Aeronautics and Space Administration. The results of such considerations as have been possible are described in the following pages with the objectives of: (1) Delineating the current state of knowledge; (2) Indicating some of the current research toward increasing this knowledge; and (3) Pointing out areas where further work seems desirable. (Author).

Fatigue Crack Growth Thresholds, Endurance Limits, and Design

ASTM International Annotation Contains 24 papers from the November, 1998 symposium of the same name, sponsored by the ASTM Committee E8 on Fatigue and Fracture, and presented by Newman and Piascik (both of the NASA Langley Research Center). The papers focus on such areas as fatigue-crack growth threshold mechanisms, loading and specimen-type effects, analyses of fatigue-crack-growth-threshold behavior, and applications of threshold concepts and endurance limits to aerospace and structural materials. Annotation copyrighted by Book News, Inc., Portland, OR.

Metal Fatigue

Courier Corporation Definitive, clearly written, and well-illustrated volume addresses all aspects of the subject, from the historical development of understanding metal fatigue to vital concepts of the cyclic stress that causes a crack to grow. Examines effect of stress concentrations on notches, theories of fatigue crack propagation, and many other topics. Seven appendixes describe laboratory fatigue testing, stress concentrations, material stress-strain relationships, and more. Invaluable text for students of engineering design and metallurgy.

Aeronautics

Fatigue of Structures and Materials

Springer Science & Business Media Fatigue of structures and materials covers a wide scope of different topics. The purpose of the present book is to explain these topics, to indicate how they can be analyzed, and how this can contribute to the designing of fatigue resistant structures and to prevent structural fatigue problems in service. Chapter 1 gives a general survey of the topic with brief comments on the significance of the aspects involved. This serves as a kind of a program for the following chapters. The central issues in this book are predictions of fatigue properties and designing against fatigue. These objectives cannot be realized without a physical and mechanical understanding of all relevant conditions. In Chapter 2 the book starts with basic concepts of what happens in the material of a structure under cyclic loads. It illustrates the large number of variables which can affect fatigue properties and it provides the essential background knowledge for subsequent chapters. Different subjects are presented in the following main parts: • Basic chapters on fatigue properties and predictions (Chapters 2-8) • Load spectra and fatigue under variable-amplitude loading (Chapters 9-11) • Fatigue tests and scatter (Chapters 12 and 13) • Special fatigue conditions (Chapters 14-17) • Fatigue of joints and structures (Chapters 18-20) • Fiber-metal laminates (Chapter 21) Each chapter presents a discussion of a specific subject.

American Book Publishing Record Cumulative, 1950-1977: Subject index

Journal of Research of the National Bureau of Standards

Fatigue of Materials

Cambridge University Press This revised and updated second edition of a highly successful book provides an authoritative, comprehensive and unified treatment of the mechanics and micromechanisms of fatigue in metals, nonmetals and composites. The author, a leading researcher in the field, discusses the principles of cyclic deformation, crack initiation and crack growth by fatigue, covering both microscopic and continuum aspects. The book begins with discussions of cyclic deformation and fatigue crack initiation in monocrystalline and polycrystalline ductile alloys as well as in brittle and semi-/non-crystalline solids. Total life and damage-tolerant approaches are then introduced in metals, nonmetals and composites. This will be an important reference for anyone studying fracture and fatigue in materials science and engineering, mechanical, civil, nuclear and aerospace engineering, and biomechanics.

Nuclear Science Abstracts

European Instructional Lectures

Volume 12, 2012, 13th EFORT Congress, Berlin, Germany

Springer Science & Business Media This twelfth volume in the EUROPEAN INSTRUCTIONAL LECTURES series continues the format of educational chapters from across Orthopaedics and Traumatology contributed by distinguished Orthopaedic Educators in Europe. It provides current material and major advances covering a range of topics including: General Orthopaedics, Basic Science and Technology, Musculo-skeletal Tumours, Infections, Paediatric Orthopaedics, Trauma, Spine, Upper Limb, Hip, Knee, Leg, Ankle and Foot. All the lectures were presented at the 13th EFORT Congress in Berlin, Germany. The Lectures are an authoritative source of information illustrated by radiographs, CT's, MRI scans, and other relevant contemporary imaging modalities, operative photographs, line drawings and tables. They are an invaluable source of instruction for Surgeons and Trainees alike.

Advances in Fatigue Science and Technology

Springer Science & Business Media This volume contains the edited version of lectures and selected research contributions presented at the NATO ADVANCED STUDY INSTITUTE on ADVANCES IN FATIGUE SCIENCE AND TECHNOLOGY, held in Alvor, Portugal, 4th to 15th of April 1988, and organized by CEMUL - Center of Mechanics and Materials of The Technical University of Lisbon. The Institute was attended by 101 participants, including 15 lecturers, from 14 countries. The participants were leading scientists and engineers from universities, research institutions and industry, and also Ph.D. students. Some participants presented papers during the Institute reporting the state-of-art of their research projects. All the sessions were very active and quite extensive discussions on scientific aspects took place during the Institute. The Advanced Study Institute provided a forum for interaction among eminent scientists and engineers, from different schools of thought and young researchers. The Institute addressed the foundations and current state of the art of essential aspects related to fatigue science and technology, namely: Short Cracks, Metallurgical Aspects, Environmental Fatigue, Threshold Behaviour, Notch Behaviour, Creep and Fatigue Interactions at High Temperature, Multiaxial Fatigue, Low Cycle Fatigue, Methodology of Fatigue Testing, Variable Amplitude Fatigue, Fatigue of Advanced Materials, Elastic-Plastic Fatigue, and several engineering applications such as welded joints, energy systems, offshore structures, automotive industry, machine and engine components. This book is organized in three parts: Part I: Fundamentals of Fatigue Part II: Engineering Applications Part III: Research Contributions The research contributions covered most of the areas referred above.

Fracture at all Scales

Springer This book is a compilation of selected papers from the 2014 New Trends in Fatigue and Fracture (NT2F14) Conference, which was held in Belgrade, Serbia. This prestigious conference brought together delegates from around the globe to discuss how to characterize, predict and analyze the fatigue and fracture of engineering materials, components, and structures using theoretical, experimental, numerical and practical approaches. It highlights some important new trends in fracture mechanics presented at the conference, such as: • two-parameter fracture mechanics, arising from the coupling of fracture toughness and stress constraints • high-performance steel for gas and oil transportation and production (pressure vessels and boilers) • safety and reliability of welded joints This book includes 12 contributions from well-known international scientists and a special tribute dedicated to the scientific contributions of Stojan Sedmark, who passed away in 2014.

The Physics of Metals: Volume 1, Electrons

CUP Archive This advanced 1969 treatise was written by a team of international experts, and presents a definitive account of a major field of modern physics.

A novel micro-mechanical model for prediction of multiaxial high cycle fatigue at small scales

KIT Scientific Publishing

Low Cycle Fatigue

A Symposium

[ASTM International](#)

High Temperature Fatigue

Properties and Prediction

[Springer Science & Business Media](#) About 35 years ago, thermal fatigue was identified as an important phenomenon which limited the lifetime of high temperature plant. In the intervening years many investigations have been carried out, primarily to give guidance on likely endurance (especially in the presence of time dependent deformation) but latterly, with the introduction of sophisticated testing machines, to provide knowledge of the underlying mechanisms of failure. A previous edited book (Fatigue at High Temperature, Elsevier Applied Science Publishers, 1983) summarised the state-of-the-art of high temperature fatigue testing and examined the factors influencing life, such as stress state, environment and microstructural effects. It also considered, in some detail, cyclic crack growth as a more rigorous approach to life limitation. The aim of the present volume (which in style and format follows exactly the same lines as its predecessor) is once again to pursue the desire to translate detailed laboratory knowledge into engineering design and assessment. There is, for example, a need to consider the limitations of the laboratory specimen and its relationship with engineering features. Many design procedures still rely on a simple endurance approach based on failure of a smooth specimen, and this is taken to indicate crack initiation in the component. In this volume, therefore, crack propagation is covered only incidentally, emphasis being placed instead on basic cyclic stress strain properties, non-isothermal behaviour, metallography, failure criteria and the need for agreed testing procedures.

Thermal Fatigue of Metals

[CRC Press](#) Using a mold for centrifugal casting as an example, discusses the types of apparatus and tools that are commonly affected by thermal fatigue during industrial processes, and examines the various factors that lead to such failure. Focuses on the performance of particular industrial components under d

Sources of Information on the Properties of Metals and Alloys (books)

Fatigue of Welded Structures

[CUP Archive](#)

Comprehensive Structural Integrity

[Elsevier](#) The aim of this major reference work is to provide a first point of entry to the literature for the researchers in any field relating to structural integrity in the form of a definitive research/reference tool which links the various sub-disciplines that comprise the whole of structural integrity. Special emphasis will be given to the interaction between mechanics and materials and structural integrity applications. Because of the interdisciplinary and applied nature of the work, it will be of interest to mechanical engineers and materials scientists from both academic and industrial backgrounds including bioengineering, interface engineering and nanotechnology. The scope of this work encompasses, but is not restricted to: fracture mechanics, fatigue, creep, materials, dynamics, environmental degradation, numerical methods, failure mechanisms and damage mechanics, interfacial fracture and nano-technology, structural analysis, surface behaviour and heart valves. The structures under consideration include: pressure vessels and piping, off-shore structures, gas installations and pipelines, chemical plants, aircraft, railways, bridges, plates and shells, electronic circuits, interfaces, nanotechnology, artificial organs, biomaterial prostheses, cast structures, mining... and more. Case studies will form an integral part of the work.

Accelerator Physics, Technology and Applications

[World Scientific](#) Originally invented for generating the first artificial nuclear reactions, particle accelerators have undergone, during the past 80 years, a fascinating development that is an impressive example of the inventiveness and perseverance of scientists and engineers. Since the early 1980s, accelerator science and technology has been booming. Today, accelerators are the prime tool for high energy physics to probe the structure of matter to an unknown depth. They are also, as synchrotron radiation sources, the most versatile tool for characterizing materials and processes and for producing micro- and nanostructured devices. The determination of the structure of large biomolecules is presently among the best examples of the application of synchrotron radiation. Finally, accelerators have grown more and more important for medicine, which is relying on them for advanced cancer therapy and radio-surgery. And there are more applications, including the generation of neutrons for materials science, the transmutation of nuclear waste with simultaneous production of electrical power, the sterilization of medical supplies and of foodstuff, and the inspection of trucks by customs or security services. This book is meant to provide basic training in modern accelerators for students, teachers, and interested scientists and engineers working in other fields. It is a result of the 3rd International Accelerator School, held in 2002 in Singapore under the auspices of the Overseas Chinese Physics Association (OCPA). Reputable experts, including a recent prize-winner, cover the field of cyclic and linear accelerators from the basic theoretical tools to forefront developments such as the X-ray free electron laser or the latest proton therapy facilities under construction. Accelerators, the art of building them, and the science for understanding their function have become a very exciting field of research. This book conveys the excitement of the experts to the reader. The proceedings have been selected for coverage in: • Index to Scientific & Technical Proceedings® (ISTP® / ISI Proceedings) • Index to Scientific & Technical Proceedings (ISTP CDROM version / ISI Proceedings) • CC Proceedings — Engineering & Physical Sciences Contents: Particle Accelerators: An Introduction (C Zhang) A Guided Survey of Synchrotron Radiation Sources (H O Moser) Transverse Beam Dynamics: Linear Optics (Q Qin) Transverse Beam Dynamics: Closed Orbit Correction and Injection (C-C Kuo) Transverse Beam Dynamics: Dynamic Aperture (Q Qin) Longitudinal Beam Dynamics — Energy Oscillation in an Electron Storage Ring (Y Jin) Photoinjectors (I Ben-Zvi) Synchrotron Radiation (C T Lee) Lattice Design for Synchrotron Radiation Source Storage Rings (Y Jin) Spallation Neutron Source and Other High Intensity Proton Sources (W Chou) RF Electron Linac and Microtron (S-H Wang) Collective Beam Effects in Storage Rings (Z Guo) Designing Superconducting Cavities for Accelerators (H Padamsee) Accelerator Magnets: Dipole, Quadrupole and Sextupole (C S Hwang) Emittance and Cooling (C T Lee) RF Systems for Light Source Storage Rings (Z T Zhao) Vacuum System (J R Chen) RFQ Design and Performance (J Fang) Insertion Devices: Wigglers and Undulators (C S Hwang) Medical and Industrial Applications of Electron Accelerators (Y Lin) High Gain Free Electron Lasers (L H Yu) Proton Therapy: Accelerator Aspects and Procedures (H-U Klein & D Krischel) Introduction to Synchrotron Radiation Applications (H O Moser et al.) Readership: Researchers, practitioners, academics and graduate students in accelerator physics. Keywords: Accelerator Physics; Particle Accelerators Synchrotron Radiation; Micro and Nanostructured Devices; Electron Laser X-Ray Free

Deformation and Fracture Mechanics of Engineering Materials

"The sixth edition provides supplemental materials to enhance both the learning and teaching experiences of students and faculty. A number of video recordings have been added to the text to flesh out certain topics; these recordings have been well received in both Lehigh University classrooms and industrial short courses given throughout the world. Special attention is given to discussions and their interpretation of fatigue fracture surface markings in metals and engineering plastics. A new video recording has been created expressly for this edition that eerily connects works of fiction with real

events; in one case, a 1949 novel describes a fictional account of the fatigue failure of an imagined commercial airliner that predated the 1954 catastrophic fatigue failure of the de Havilland Comet commercial airliner. Then again, an 1898 novel described the sinking of an imagined cruise liner, named Titan, 14-years before the sinking of the R.M.S. Titanic. The similarities in the sinking of both Titan and Titanic vessels are mesmerizing"--

Metal-Hydrogen Systems

Proceedings of the Miami International Symposium on Metal-Hydrogen Systems, 13-15 April 1981, Miami Beach, Florida, U.S.A.

Elsevier Metal-Hydrogen Systems covers the proceedings of the Miami International Symposium on Metal-Hydrogen Systems. The book presents studies that discuss the possibility of exploiting hydrogen as an alternative energy source through metal-hydrogen systems. The first part of the text covers the general concerns with the system, such as getting and utilizing metal hydrides and developing hydrogen permeable metal membranes for the Li/LiH-process. The subsequent articles cover a much more specialized and specific topics, such as diffusion of hydrogen in metals; interaction of hydrogen with structure; hydride properties, formation, and utilization; and hydrogen storage. The book will be of use to scientists, engineers, and technicians who are involved in the research, development, and implementation of alternative energy technology.

Iron and Steel Industry and British Foundryman

Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Encephalitis

It's Mitochondria, Not Hypochondria

Chelsea Green Publishing "Original edition published in 2017 by Hammersmith Books, London, United Kingdom"--T.p. verso.

Generic Approaches to Risk Based Inspection Planning for Steel Structures

vdf Hochschulverlag AG

Handbook of Structural Welding

Processes, Materials and Methods Used in the Welding of Major Structures, Pipelines and Process Plant

Woodhead Publishing This handbook provides a comprehensive analysis of the current state of welding technology as applied to large structures and process plant. The author takes account of the increasing necessity for engineers at all levels to be aware of problems such as fatigue failure and provides advice.

Interferometry

Recent Developments and Contemporary Applications

The authors provide an overview of recent developments in the field of interferometry. To achieve this aim, a broad range of topics is presented by experts who have summarized recent results drawn from theory and experiments. The simplicity and versatility of interferometry technique can be easily seen in the broad range of problems discussed in the text. This important book project presents recent, unique updates on interferometry.

The Metallurgist and Materials Technologist

Fatigue of Materials

Cambridge University Press This revised and updated second edition of a highly successful book provides an authoritative, comprehensive and unified treatment of the mechanics and micromechanisms of fatigue in metals, nonmetals and composites. The author, a leading researcher in the field, discusses the principles of cyclic deformation, crack initiation and crack growth by fatigue, covering both microscopic and continuum aspects. The book begins with discussions of cyclic deformation and fatigue crack initiation in monocrystalline and polycrystalline ductile alloys as well as in brittle and semi-/non-crystalline solids. Total life and damage-tolerant approaches are then introduced in metals, nonmetals and composites. This will be an important reference for anyone studying fracture and fatigue in materials science and engineering, mechanical, civil, nuclear and aerospace engineering, and biomechanics.

Metal Progress

The William M. Murray Lectures, 1953-1967

A Collection of Prestige Lectures Presented at National Meetings of the SESA Scientific and Technical Aerospace Reports

NATIONAL SERVICE

Xlibris Corporation Among the countries we served in during our National Service time were the United Kingdom, Europe, West Africa and the Far East. Only Kevin O'Sullivan saw active service. He describes the shock and the violence of ambushing terrorists while on patrol in Malaya. Michael Crowe in the navy visited more places than anyone and Barry Brown spent eighteen months in multi-cultural and vibrant West Africa travelling in Nigeria and the Gold Coast (Ghana). We all describe varying frustrations with the Services, which we responded to with cynicism and humour. But we all agree that it was an interesting and enjoyable experience and David Russell speaks for all of us when he writes that his understanding of the human condition was broadened enormously.

Applied Mechanics Reviews