

Deformation Fracture Mechanics Of Engineering Materials 5th

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Topics in Fracture and Fatigue A.S. Argon 2012-12-06 Fracture in structural materials remains a vital consideration in engineering systems, affecting the reliability of machines throughout their lives. Impressive advances in both the theoretical understanding of fracture mechanisms and practical developments that offer possibilities of control have re-shaped the subject over the past four decades. The contributors to this volume, including some of the most prominent researchers in the field, give their long-range perspectives of the research on the fracture of solids and its achievements. The subjects covered in this volume include: statistics of brittle fracture, transition of fracture from brittle to ductile, mechanics and mechanisms of ductile separation of heterogeneous solids, the crack tip environment in ductile fracture, and mechanisms and mechanics of fatigue. Materials considered range from the usual structural solids to composites. The chapters include both theoretical points of view and discussions of key experiments. Contributors include: from MIT, A.S. Argon, D.M. Parks; from Cambridge, M.F. Ashby; from U.C. Santa Barbara, A.G. Evans, R. McMeeking; from Glasgow, J. Hancock; from Harvard, J.W. Hutchinson, J.R. Rice; from Sheffield, K.J. Miller; from Brown, A. Needleman; from the Ecole des Mines, A. Pineau; from U.C. Berkeley, R. O. Ritchie; and from Copenhagen, V. Tvergaard.

Mechanical Behavior of Materials William F. Hosford 2010 This is a textbook on the mechanical behavior of materials for mechanical and materials engineering. It emphasizes quantitative problem solving. This new edition includes treatment of the effects of texture on properties and microstructure in Chapter 7, a new chapter (12) on discontinuous and inhomogeneous deformation, and treatment of foams in Chapter 21.

Mechanical Behavior and Fracture of Engineering Materials Jorge Luis González-Velázquez 2019-08-29 This book presents the theoretical concepts of stress and strain, as well as the strengthening and fracture mechanisms of engineering materials in an accessible level for non-expert readers, but without losing scientific rigor. This volume fills the gap between the specialized books on mechanical behavior, physical metallurgy and material science and engineering books on strength of materials, structural design and materials failure. Therefore it is intended for college students and practicing engineers that are learning for the first time the mechanical behavior and failure of engineering materials or wish to deepen their understanding on these topics. The book includes specific topics seldom covered in other books, such as: how to determine a state of stress, the relation between stress definition and mechanical design, or the theory behind the methods included in industrial standards to assess defects or to determine fatigue life. The emphasis is put into the link between scientific knowledge and practical applications, including solved problems of the main topics, such as stress and strain calculation, Mohr's Circle, yield criteria, fracture mechanics, fatigue and creep life prediction. The volume covers both the original findings in the field of mechanical behavior of engineering materials, and the most recent and widely accepted theories and techniques applied to this topic. At the beginning of some selected topics that by the author's judgement are transcendental for this field of study, the prime references are given, as well as a brief biographical semblance of those who were the pioneers or original contributors. Finally, the intention of this book is to be a textbook for undergraduate and graduate courses on Mechanical Behavior, Mechanical Metallurgy and Materials Science, as well as a consulting and/or training material for practicing engineers in industry that deal with mechanical design, materials selection, material processing, structural integrity assessment, and for researchers that incursion for the first time in the topics covered in this book.

Fatigue and Fracture F. C. Campbell 2012 "This book emphasizes the physical and practical aspects of fatigue and fracture. It covers mechanical properties of materials, differences between ductile and brittle fractures, fracture mechanics, the basics of fatigue, structural joints, high temperature failures, wear, environmentally-induced failures, and steps in the failure analysis process."--publishers website.

Deformation and Fracture Mechanics of Engineering Materials Richard W. Hertzberg 2020-07-08 Deformation and Fracture Mechanics of Engineering Materials, Sixth Edition, provides a detailed examination of the mechanical behavior of metals, ceramics, polymers, and their composites. Offering an integrated macroscopic/microscopic approach to the subject, this comprehensive textbook features in-depth explanations, plentiful figures and illustrations, and a full array of student and instructor resources. Divided into two sections, the text first introduces the principles of elastic and plastic deformation, including the plastic deformation response of solids and concepts of stress, strain, and stiffness. The following section demonstrates the application of fracture mechanics and materials science principles in solids, including determining material stiffness, strength, toughness, and time-dependent mechanical

response. Now offered as an interactive eBook, this fully-revised edition features a wealth of digital assets. More than three hours of high-quality video footage helps students understand the practical applications of key topics, supported by hundreds of PowerPoint slides highlighting important information while strengthening student comprehension. Numerous real-world examples and case studies of actual service failures illustrate the importance of applying fracture mechanics principles in failure analysis. Ideal for college-level courses in metallurgy and materials, mechanical engineering, and civil engineering, this popular is equally valuable for engineers looking to increase their knowledge of the mechanical properties of solids.

Deformation and Fracture Mechanics of Engineering Materials Richard W. Hertzberg 1996 This edition comprehensively updates the field of fracture mechanics by including details of the latest research programmes. It contains new material on non-metals, design issues and statistical aspects. The application of fracture mechanics to different types of materials is stressed.

Deformation and Fracture Behaviour of Polymer Materials Wolfgang Grellmann 2017-07-12 This book covers the most recent advances in the deformation and fracture behaviour of polymer material. It provides deeper insight into related morphology–property correlations of thermoplastics, elastomers and polymer resins. Each chapter of this book gives a comprehensive review of state-of-the-art methods of materials testing and diagnostics, tailored for plastic pipes, films and adhesive systems as well as elastomeric components and others. The investigation of deformation and fracture behaviour using the experimental methods of fracture mechanics has been the subject of intense research during the last decade. In a systematic manner, modern aspects of fracture mechanics in the industrial application of polymers for bridging basic research and industrial development are illustrated by multifarious examples of innovative materials usage. This book will be of value to scientists, engineers and in polymer materials science.

Testing of the Plastic Deformation of Metals T. W. Clyne 2021-06-10 Discover a novel approach to the subject, providing detailed information about established and innovative mechanical testing procedures.

Mechanics and Mechanisms of Fracture Alan F. Liu 2005

Mechanical Behaviour of Engineering Materials Joachim Roesler 2007-10-16 How do engineering materials deform when bearing mechanical loads? To answer this crucial question, the book bridges the gap between continuum mechanics and materials science. The different kinds of material deformation are explained in detail. The book also discusses the physical processes occurring during the deformation of all classes of engineering materials and shows how these materials can be strengthened to meet the design requirements. It provides the knowledge needed in selecting the appropriate engineering material for a certain design problem. This book is both a valuable textbook and a useful reference for graduate students and practising engineers.

Engineering Materials 2 Michael F. Ashby 2014-06-28 Provides a thorough explanation of the basic properties of materials; of how these can be controlled by processing; of how materials are formed, joined and finished; and of the chain of reasoning that leads to a successful choice of material for a particular application. The materials covered are grouped into four classes: metals, ceramics, polymers and composites. Each class is studied in turn, identifying the families of materials in the class, the microstructural features, the processes or treatments used to obtain a particular structure and their design applications. The text is supplemented by practical case studies and example problems with answers, and a valuable programmed learning course on phase diagrams.

The Physics of Deformation and Fracture of Polymers A. S. Argon 2013-03-07 A physical, mechanism-based presentation of the plasticity and fracture of polymers, covering industrial scale applications through to nanoscale biofluidic devices.

Fundamentals of Fracture Mechanics John Frederick Knott 1973

Fracture Mechanics Dietmar Gross 2011-07-03 - self-contained and well illustrated - complete and comprehensive derivation of mechanical/mathematical results with emphasis on issues of practical importance - combines classical subjects of fracture mechanics with modern topics such as microheterogeneous materials, piezoelectric materials, thin films, damage - mechanically and mathematically clear and complete derivations of results

Damage and Fracture Mechanics Taoufik Boukharouba 2009-08-09 The First African InterQuadrennial ICF Conference “AIQ-ICF2008” on Damage and Fracture Mechanics – Failure Analysis of Engineering Materials and Structures”, Algiers, Algeria, June 1–5, 2008 is the first in the series of InterQuadrennial Conferences on Fracture to be held in the continent of Africa. During the conference, African researchers have shown that they merit a strong reputation in international circles and continue to make substantial contributions to the field of fracture mechanics. As in most countries, the research effort in Africa is und- taken at the industrial, academic, private sector and governmental levels, and covers the whole spectrum of fracture and fatigue. The AIQ-ICF2008 has brought together researchers and engineers to review and discuss advances in the development of methods and approaches on Damage and Fracture Mechanics. By bringing together the leading international experts in the field, AIQ-ICF promotes technology transfer and provides a forum for industry and researchers of the host nation to present their accomplishments and to develop new ideas at the highest level. International Conferences have an important role to play in the technology transfer process, especially in terms of the relationships to be established between the participants and the informal exchange of ideas that this ICF offers.

Mechanical Behavior of Materials Marc André Meyers 2008-11-06 A balanced mechanics-materials approach and coverage of the latest developments in biomaterials and electronic materials, the new edition of this popular text is the most thorough and modern book available for upper-level undergraduate courses on the mechanical behavior of materials. To ensure that the student gains a thorough understanding the authors present the fundamental mechanisms that operate at micro- and nano-meter level across a wide-range of materials, in a way that is mathematically simple and requires no extensive knowledge of materials. This integrated approach provides a conceptual presentation that shows how the microstructure of a material controls its mechanical behavior, and this is reinforced through extensive use of micrographs and illustrations. New worked examples and exercises help the student test their understanding. Further resources for this title, including lecture slides of select illustrations and solutions for exercises, are available online at www.cambridge.org/97800521866758.

Mechanical Behavior of Materials, Global Edition NORMAN E.. KAMPE DOWLING (STEPHEN L.. KRAL, MILO V.) 2019-08-29 For upper-level undergraduate and graduate level

engineering courses in Mechanical Behavior of Materials. Predicting the mechanical behavior of materials Mechanical Behavior of Materials, 5th Edition introduces the spectrum of mechanical behavior of materials and covers the topics of deformation, fracture, and fatigue. The text emphasizes practical engineering methods for testing structural materials to obtain their properties, predicting their strength and life, and avoiding structural failure when used for machines, vehicles, and structures. With its logical treatment and ready-to-use format, the text is ideal for upper-level undergraduate students who have completed an elementary mechanics of materials course. The 5th Edition features many improvements and updates throughout including new or revised problems and questions, and a new chapter on Environmentally Assisted Cracking.

Mechanical Behavior of Materials Norman E. Dowling 2018-07-20 For upper-level undergraduate and graduate level engineering courses in Mechanical Behavior of Materials. Predicting the mechanical behavior of materials Mechanical Behavior of Materials, 5th Edition introduces the spectrum of mechanical behavior of materials and covers the topics of deformation, fracture, and fatigue. The text emphasizes practical engineering methods for testing structural materials to obtain their properties, predicting their strength and life, and avoiding structural failure when used for machines, vehicles, and structures. With its logical treatment and ready-to-use format, the text is ideal for upper-level undergraduate students who have completed an elementary mechanics of materials course. The 5th Edition features many improvements and updates throughout including new or revised problems and questions, and a new chapter on Environmentally Assisted Cracking.

Mechanical Behavior of Materials Norman E. Dowling 2007 Comprehensive in scope and readable, this book explores the methods used by engineers to analyze and predict the mechanical behavior of materials. Author Norman E. Dowling provides thorough coverage of materials testing and practical methods for forecasting the strength and life of mechanical parts and structural members.

Mathematical Research in Materials Science National Research Council 1993-02-01 This book describes fruitful past collaborations between the mathematical and materials sciences and indicates future challenges. It seeks both to encourage mathematical sciences research that will complement vital research in materials science and to raise awareness of the value of quantitative methods. The volume encourages both communities to increase cross-disciplinary collaborations, emphasizing that each has much to gain from such an increase, and it presents recommendations for facilitating such work. This book is written for both mathematical and materials science researchers interested in advancing research at this interface; for federal and state agency representatives interested in encouraging such collaborations; and for anyone wanting information on how such cross-disciplinary, collaborative efforts can be accomplished successfully.

Fatigue of Materials S. Suresh 1998-10-29 Second edition of successful materials science text for final year undergraduate and graduate students.

Mechanics of Materials 2 E.J. Hearn 1997-11-25 One of the most important subjects for any student of engineering or materials to master is the behaviour of materials and structures under load. The way in which they react to applied forces, the deflections resulting and the stresses and strains set up in the bodies concerned are all vital considerations when designing a mechanical component such that it will not fail under predicted load during its service lifetime. Building upon the fundamentals established in the introductory volume Mechanics of Materials 1, this book extends the scope of material covered into more complex areas such as unsymmetrical bending, loading and deflection of struts, rings, discs, cylinders plates, diaphragms and thin walled sections. There is a new treatment of the Finite Element Method of analysis, and more advanced topics such as contact and residual stresses, stress concentrations, fatigue, creep and fracture are also covered. Each chapter contains a summary of the essential formulae which are developed in the chapter, and a large number of worked examples which progress in level of difficulty as the principles are enlarged upon. In addition, each chapter concludes with an extensive selection of problems for solution by the student, mostly examination questions from professional and academic bodies, which are graded according to difficulty and furnished with answers at the end.

Mechanical Properties of Materials Joshua Pelleg 2012-06-13 The subject of mechanical behavior has been in the front line of basic studies in engineering curricula for many years. This textbook was written for engineering students with the aim of presenting, in a relatively simple manner, the basic concepts of mechanical behavior in solid materials. A second aim of the book is to guide students in their laboratory experiments by helping them to understand their observations in parallel with the lectures of their various courses; therefore the first chapter of the book is devoted to mechanical testing. Another aim of the book is to provide practicing engineers with basic help to bridge the gap of time that has passed from their graduation up to their actual involvement in engineering work. The book also serves as the basis for more advanced studies and seminars when pursuing courses on a graduate level. The content of this textbook and the topics discussed correspond to courses that are usually taught in universities and colleges all over the world, but with a different and more modern approach. It is however unique by the inclusion of an extensive chapter on mechanical behavior in the micron and submicron/nanometer range. Mechanical deformation phenomena are explained and often related to the presence of dislocations in structures. Many practical illustrations are provided representing various observations encountered in actual structures of particularly technical significance. A comprehensive list of references at the end of each chapter is included to provide a broad basis for further studying the subject.

Deformation and Fracture Mechanics of Engineering Materials Richard W. Hertzberg 1989-01-17 This Third Edition of the well-received engineering materials book has been completely updated, and now contains over 1,100 citations. Thorough enough to serve as a text, and up-to-date enough to serve as a reference. There is a new chapter on strengthening mechanisms in metals, new sections on composites and on superlattice dislocations, expanded treatment of cast and powder-produced conventional alloys, plastics, quantitative fractography, JIC and KIEAC test procedures, fatigue, and failure analysis. Includes examples and case histories.

Geologic Fracture Mechanics Richard A. Schultz 2019-08-08 Introduction to geologic fracture mechanics covering geologic structural discontinuities from theoretical and field-based perspectives.

Handbook of Damage Mechanics George Z. Voyiadjis 2014-10-14 This authoritative reference provides comprehensive coverage of the topics of damage and healing mechanics.

Computational modeling of constitutive equations is provided as well as solved examples in engineering applications. A wide range of materials that engineers may encounter are covered,

including metals, composites, ceramics, polymers, biomaterials, and nanomaterials. The internationally recognized team of contributors employ a consistent and systematic approach, offering readers a user-friendly reference that is ideal for frequent consultation. Handbook of Damage Mechanics: Nano to Macro Scale for Materials and Structures is ideal for graduate students and faculty, researchers, and professionals in the fields of Mechanical Engineering, Civil Engineering, Aerospace Engineering, Materials Science, and Engineering Mechanics. Fracture Mechanics E.E. Gdoutos 2006-03-30 New developments in the applications of fracture mechanics to engineering problems have taken place in the last years. Composite materials have extensively been used in engineering problems. Quasi-brittle materials including concrete, cement pastes, rock, soil, etc. all benefit from these developments. Layered materials and especially thin film/substrate systems are becoming important in small volume systems used in micro and nanoelectromechanical systems (MEMS and NEMS). Nanostructured materials are being introduced in our every day life. In all these problems fracture mechanics plays a major role for the prediction of failure and safe design of materials and structures. These new challenges motivated the author to proceed with the second edition of the book. The second edition of the book contains four new chapters in addition to the ten chapters of the first edition. The fourteen chapters of the book cover the basic principles and traditional applications, as well as the latest developments of fracture mechanics as applied to problems of composite materials, thin films, nanoindentation and cementitious materials. Thus the book provides an introductory coverage of the traditional and contemporary applications of fracture mechanics in problems of utmost technological importance. With the addition of the four new chapters the book presents a comprehensive treatment of fracture mechanics. It includes the basic principles and traditional applications as well as the new frontiers of research of fracture mechanics during the last three decades in topics of contemporary importance, like composites, thin films, nanoindentation and cementitious materials. The book contains fifty example problems and more than two hundred unsolved problems. A "Solutions Manual" is available upon request for course instructors from the author.

Fracture and Complexity Alberto Carpinteri 2021-06-26 The book explores the two opposite natural trends of composite systems: (i) order and structure emerging from heterogeneity and randomness, and (ii) instability and chaos arising from simple nonlinear rules. Providing insights into the rapidly growing field of complexity sciences, the book focuses on the role of complexity in fracture mechanics. It firstly discusses the occurrence of self-similarity and fractal patterns in deformation, damage, fracture, and fragmentation of heterogeneous materials and the apparent scaling of the nominal mechanical properties of disordered materials, as well as of the time-to-failure after fatigue and creep loading. Then the book addresses criticality in the acoustic emissions from damaged structures and tectonic faults. Further, it examines the snap-back instability in the structural behavior of relatively large composite structures in the framework of catastrophe theory, and lastly describes the transition toward chaos in the dynamics of cracked elements.

Deformation and Failure in Metallic Materials Kolumban Hutter 2013-11-11 This book is devoted to the deformation and failure in metallic materials, summarizing the results of a research programme financed by the "Deutsche Forschungsgemeinschaft". It presents the recent engineering as well as mathematical key aspects of this field for a broad community. Its main focus is on the constitutive behaviour as well as the damage and fracture of metallic materials, covering their mathematical foundation, modelling and numerics, but also relevant experiments and their verification.

Mechanical Properties of Engineered Materials Wole Soboyejo 2002-11-20 Featuring in-depth discussions on tensile and compressive properties, shear properties, strength, hardness, environmental effects, and creep crack growth, "Mechanical Properties of Engineered Materials" considers computation of principal stresses and strains, mechanical testing, plasticity in ceramics, metals, intermetallics, and polymers, materials selection for thermal shock resistance, the analysis of failure mechanisms such as fatigue, fracture, and creep, and fatigue life prediction. It is a top-shelf reference for professionals and students in materials, chemical, mechanical, corrosion, industrial, civil, and maintenance engineering; and surface chemistry.

Micromechanisms of Fracture and Fatigue Jaroslav Pokluda 2010-05-27 Micromechanisms of Fracture and Fatigue forms the culmination of 20 years of research in the field of fatigue and fracture. It discusses a range of topics and comments on the state of the art for each. The first part is devoted to models of deformation and fracture of perfect crystals. Using various atomistic methods, the theoretical strength of solids under simple and complex loading is calculated for a wide range of elements and compounds, and compared with experimental data. The connection between the onset of local plasticity in nanoindentation tests and the ideal shear strength is analysed using a multi-scale approach. Moreover, the nature of intrinsic brittleness or ductility of perfect crystal lattices is demonstrated by the coupling of atomistic and mesoscopic approaches, and compared with brittle/ductile behaviour of engineering materials. The second part addresses extrinsic sources of fracture toughness of engineering materials, related to their microstructure and microstructurally-induced crack tortuosity. Micromechanisms of ductile fracture are also described, in relation to the fracture strain of materials. Results of multilevel modelling, including statistical aspects of microstructure, are used to explain remarkable phenomena discovered in experiments. In the third part of the book, basic micromechanisms of fatigue cracks propagation under uniaxial and multiaxial loading are discussed on the basis of the unified mesoscopic model of crack tip shielding and closure, taking both microstructure and statistical effects into account. Applications to failure analysis are also outlined, and an attempt is made to distinguish intrinsic and extrinsic sources of materials resistance to fracture. Micromechanisms of Fracture and Fatigue provides scientists, researchers and postgraduate students with not only a deep insight into basic micromechanisms of fracture behaviour of materials, but also a number of engineering applications.

Probability Based High Temperature Engineering Leo Razdolsky 2016-08-18 This volume on structural fire resistance is for aerospace, structural, and fire prevention engineers; architects, and educators. It bridges the gap between prescriptive- and performance-based methods and simplifies very complex and comprehensive computer analyses to the point that the structural fire resistance and high temperature creep deformations will have a simple, approximate analytical expression that can be used in structural analysis and design. The book emphasizes methods of the theory of engineering creep (stress-strain diagrams) and mathematical operations quite distinct from those of solid mechanics absent high-temperature creep deformations, in particular the classical theory of elasticity and structural engineering. Dr. Razdolsky's previous books focused on methods of computing the ultimate structural design load to the different fire scenarios. The current work is devoted to the computing of the estimated ultimate resistance of the structure taking into account the effect of high temperature creep deformations. An essential resource for aerospace structural engineers who wish to improve their understanding of structure exposed to flare up temperatures and severe fires, the book also serves as a

textbook for introductory courses in fire safety in civil or structural engineering programs, vital reading for the PhD students in aerospace fire protection and structural engineering, and a case study of a number of high-profile fires (the World Trade Center, Broadgate Phase 8, One Meridian Plaza; Mandarin Towers). Probability Based High Temperature Engineering: Creep and Structural Fire Resistance successfully bridges the information gap between aerospace, structural, and engineers; building inspectors, architects, and code officials.

Failure of Materials in Mechanical Design Jack A. Collins 1993-10-06 Failure of Materials in Mechanical Design

Mechanical Behavior of Materials Zainul Huda 2022-01-02 This textbook supports a range of core courses in undergraduate materials and mechanical engineering curricula given at leading universities globally. It presents fundamentals and quantitative analysis of mechanical behavior of materials covering engineering mechanics and materials, deformation behavior, fracture mechanics, and failure design. This book provides a holistic understanding of mechanical behavior of materials, and enables critical thinking through mathematical modeling and problem solving. Each of the 15 chapters first introduces readers to the technologic importance of the topic and provides basic concepts with diagrammatic illustrations; and then its engineering analysis/mathematical modelling along with calculations are presented. Featuring 200 end-of-chapter calculations/worked examples, 120 diagrams, 260 equations on mechanics and materials, the text is ideal for students of mechanical, materials, structural, civil, and aerospace engineering.

Engineering Materials 1 Michael F. Ashby 1996

Deformation and Fracture Behaviour of Polymers Wolfgang Grellmann 2013-03-09 This book gives an overview of recent advances in the fracture mechanics of polymers, morphology property correlations, hybrid methods for polymer testing and polymer diagnostics, and biocompatible materials and medical prostheses, as well as application examples and limits.

Transport Phenomena in Materials Processing David R. Poirier 2016-12-06 This text provides a teachable and readable approach to transport phenomena (momentum, heat, and mass transport) by providing numerous examples and applications, which are particularly important to metallurgical, ceramic, and materials engineers. Because the authors feel that it is important for students and practicing engineers to visualize the physical situations, they have attempted to lead the reader through the development and solution of the relevant differential equations by applying the familiar principles of conservation to numerous situations and by including many worked examples in each chapter. The book is organized in a manner characteristic of other texts in transport phenomena. Section I deals with the properties and mechanics of fluid motion; Section II with thermal properties and heat transfer; and Section III with diffusion and mass transfer. The authors depart from tradition by building on a presumed understanding of the relationships between the structure and properties of matter, particularly in the chapters devoted to the transport properties (viscosity, thermal conductivity, and the diffusion coefficients). In addition, generous portions of the text, numerous examples, and many problems at the ends of the chapters apply transport phenomena to materials processing.

Fracture Mechanics Chin-Teh Sun 2011-10-14 Most design engineers are tasked to design against failure, and one of the biggest causes of product failure is failure of the material due to fatigue/fracture. From leading experts in fracture mechanics, this new text provides new approaches and new applications to advance the understanding of crack initiation and propagation. With applications in composite materials, layered structures, and microelectronic packaging, among others, this timely coverage is an important resource for anyone studying or applying concepts of fracture mechanics. Concise and easily understood mathematical treatment of crack tip fields (chapter 3) provides the basis for applying fracture mechanics in solving practical problems. Unique coverage of bi-material interfacial cracks (chapter 8), with applications to commercially important areas of composite materials, layered structures, and microelectronic packaging. A full chapter (chapter 9) on the cohesive zone model approach, which has been extensively used in recent years to simulate crack propagation. A unified discussion of fracture criteria involving nonlinear/plastic deformations

Fracture Mechanics Alan T. Zehnder 2012-01-03 Fracture mechanics is a vast and growing field. This book develops the basic elements needed for both fracture research and engineering practice. The emphasis is on continuum mechanics models for energy flows and crack-tip stress- and deformation fields in elastic and elastic-plastic materials. In addition to a brief discussion of computational fracture methods, the text includes practical sections on fracture criteria, fracture toughness testing, and methods for measuring stress intensity factors and energy release rates. Class-tested at Cornell, this book is designed for students, researchers and practitioners interested in understanding and contributing to a diverse and vital field of knowledge.

Failure Analysis of Engineering Materials Charles R. Brooks 2002 This text introduces the important aspects associated with the failure analysis of engineering components; and provides a treatment of both macroscopic and microscopic observations of fracture surfaces. --