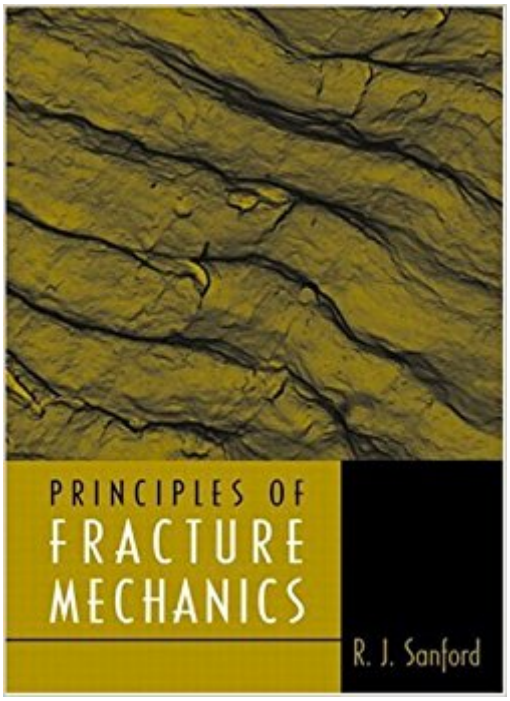
Principles Of Fracture Mechanics



Synopsis

The book is a self-contained manual on the mechanics aspects of the theory of brittle fracture and fatigue. It includes a guided introduction to the linear theory of elasticity with pivotal results for the circular hole, the elliptical hole and the wedge leading up to the general problem of bodies containing cracks. Typical chapters include problems which extend the mathematical developments presented in the book, applications problems requiring numerical and/or graphic responses, and essay/literature study questions. Additionally, more comprehensive exercises requiring integration of the knowledge throughout the book are included as an appendix. For professionals in fields of engineering mechanics and design.

Book Information

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Customer Reviews

Intended for a first course in the mechanics of fracture at the graduate level (or senior undergraduates with a background in engineering mechanics) the focus of the book is on the mathematical principles of linear elastic fracture mechanics and their application to engineering design. The material is presented in a conversational, yet rigorous, manner with the focus on the general formulation of the theory. In this way the origins and limitations of the simplified results presented in other introductory texts is apparent. The selection of topics and order of presentation in the book evolved from a graduate course in fracture mechanics developed by the author over the last two decades. Key Features of the Book Unified mathematical treatment based on the

generalized Westergaard formulation provides a coherent basis for the analytical, numerical, and experimental treatment of crack problems in two dimensions. Introductory chapter on the linear theory of elasticity with pivotal results for the circular hole, elliptical hole, and the wedge leading up to the general problem of bodies with cracks. Thorough treatment of fatigue crack growth behavior including both analytical methods and introductions to the NASGRO 3.0 and AFGROW 4.0 computer programs for lifetime prediction analysis using complex empirical fatigue crack growth models. Extensive tables of fracture properties for a wide variety of metallic materials in both English and S.I. units derived from the NASA database. Broad spectrum of exercises at the end of each chapter ranging from basic analytic derivations to parametric numerical analysis. Also included is a selection of comprehensive open-ended design problems suitable for capstone project assignments or take-home examinations.

Professor Emeritus R.J. Sanford has had two careers involving fracture mechanics. He spent 22 years at the Naval Research Laboratory as a research engineer during a period of intense fracture mechanics discovery at NRL under the direction of George R. Irwin. He left NRL in 1982 to join the faculty at the University of Maryland. At the College Park campus his focus has been on graduate education in solid mechanics and fracture. He is a Fellow in the Society for Experimental Mechanics and has received both their Hetenyi Award (for research) and the Frocht Award (for teaching excellence) and is a member of Committee E08 of the American Society for Materials and Testing (ASTM).

Alright, I’ve haven’t read the final book. I do have an unfinished version that Professor Sanford distributed when I took this class from him at the U of Maryland. The initial version was excellent. I had tried to slog through other presentations on fracture mechanics and had gotten lost in the details.Rather than just presenting the stress intensity factor and other concepts, he gave a good historical development of just where these quantities came from and why anyone would or should use them to predict time to failure.

ARRIVED ON TIME VERY PLEASED

"Principles of Fracture Mechanics" is the most concise yet complete survey on the equations and history of fracture mechanics I have found. Professor Sanford does an excellent job explaining how complex analysis is used to derive many of the equations governing the fracture of metals, without

bogging the reader down in the mathematical details. I found the book to be enlightening. After reading it, I also found myself wishing I could have taken a course in fracture mechanics from Professor Sanford when I was in college.

This is a very good book for an introduction towards Fracture Mechanics. The explanations are quite clear and author presents some straightforward derivations of many of the important concepts (derivation of the stress intensity factor, K, for example). I highly recommend this book to anyone looking at 'breaking' in to this field.

good sale

Fracture and Fatigue Control in Structures: Applications of Fracture Mechanics (Prentice-Hall International Series in Civil Engineering and Engineering Mechanics) Probabilistic fracture mechanics and reliability (Engineering Applications of Fracture Mechanics) Fracture Mechanics of Concrete: Applications of Fracture Mechanics to Concrete, Rock and Other Quasi-Brittle Materials Fracture and Fatigue Control in Structures: Applications of Fracture Mechanics (Astm Manual Series) Dynamic Fracture Mechanics (Cambridge Monographs on Mechanics) Principles of Fracture Mechanics Deformation and Fracture Mechanics of Engineering Materials Fracture Mechanics: Fundamentals and Applications, Fourth Edition Fracture Mechanics: Fundamentals and Applications, Third Edition By T. L. Anderson - Fracture Mechanics: Fundamentals and Applications, Third Edition (3rd Edition) (5/25/05) Advanced Fracture Mechanics (Oxford Engineering Science Series) Fracture Mechanics The Practical Use of Fracture Mechanics Fracture Mechanics: Fundamentals and Applications, Second Edition Elementary engineering fracture mechanics Fracture Mechanics of Polymers (Ellis Horwood series in engineering science) Fracture Mechanics, Second Edition Fundamentals of Fracture Mechanics Fracture Mechanics of Metals, Composites, Welds, and Bolted Joints: Application of LEFM, EPFM, and FMDM Theory Deformation and Fracture Mechanics of Engineering Materials, 5th Edition