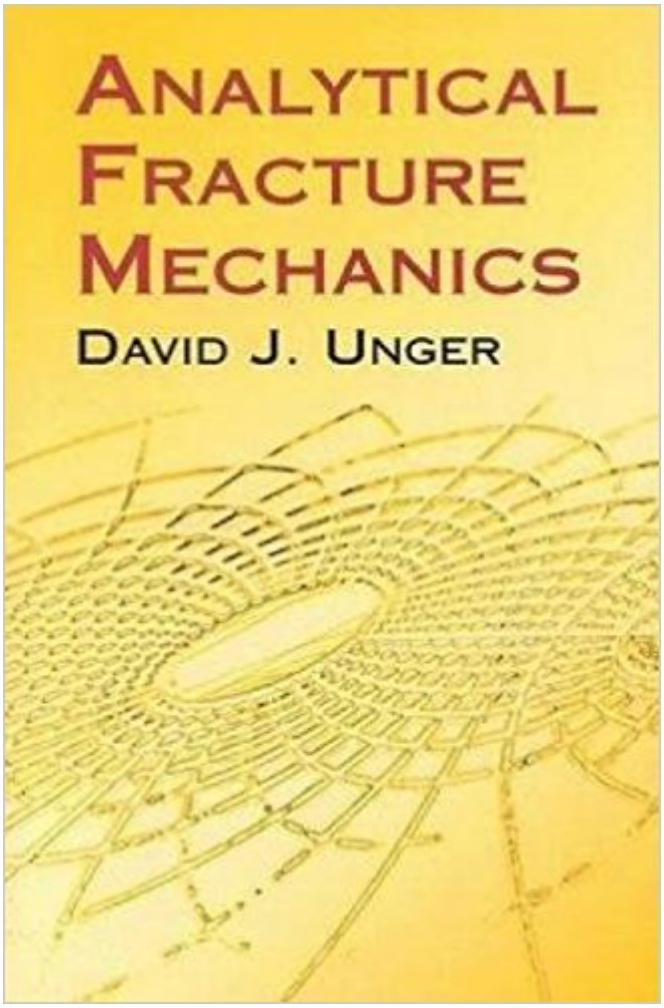
Analytical Fracture Mechanics (Dover Civil And Mechanical Engineering)



Synopsis

"Analytical Fracture Mechanics should prove to be a valuable resource to both the new student and the experienced researcher in fracture mechanics. It is recommended." â ” Applied Mechanics ReviewOne of the central concerns of engineering is the failure of materials. Addressing this concern, fracture mechanics â ” an interdisciplinary subject spanning mechanical, civil, and materials engineering, applied mathematics, and physics â ” predicts the conditions under which such failure will occur due to crack growth. This valuable self-contained text by an expert in the field supplements standard fracture mechanics texts by focusing on analytical methods for determining crack-tip stress and strain fields.Following a comprehensive 120-page introduction â ” which provides all the background necessary for understanding the remaining chapters â ” the book is organized around a series of elastoplastic and hydrogen-assisted crack-tip problems and their solutions. The first chapter presents the only proven solution technique for the second order nonlinear partial differential equation governing a mode I elastoplastic crack problem. Other chapters deal with plastic zone transitions, environmental cracking, and small-scale yielding versus exact linear elastic solutions.One of the excellent features of this book is the clarity with which groups of problems are presented and related to each other. Another is the careful attention it gives to the various modes of fracture (I, II, and III) and to showing the circumstances under which information from a solution for one mode may be used to infer information in another mode. For this edition, the author has added a new appendix, "Stress Across an Elastoplastic Boundary of a Mode I Crack: Parabolic to Hyperbolic Plasticity Transition."

Book Information

Series: Dover Civil and Mechanical Engineering
Paperback: 336 pages
Publisher: Dover Publications (November 10, 2011)
Language: English
ISBN-10: 0486417379
ISBN-13: 978-0486417370
Product Dimensions: 0.8 x 6 x 9 inches
Shipping Weight: 1.2 pounds (View shipping rates and policies)
Average Customer Review: Be the first to review this item
Best Sellers Rank: #2,828,323 in Books (See Top 100 in Books) #90 inÂ Books > Engineering & Transportation > Engineering > Materials & Material Science > Fracture Mechanics #10174

inÂ Books > Engineering & Transportation > Engineering > Mechanical #14963 inÂ Books > Engineering & Transportation > Engineering > Civil & Environmental

Customer Reviews

Unger-Michigan Technological University, Houghton

Fracture and Fatigue Control in Structures: Applications of Fracture Mechanics (Prentice-Hall International Series in Civil Engineering and Engineering Mechanics) Analytical Fracture Mechanics (Dover Civil and Mechanical Engineering) 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) Reinforced Concrete: Mechanics and Design (4th Edition) (Civil Engineering and Engineering Mechanics) Elasticity: Tensor, Dyadic, and Engineering Approaches (Dover Civil and Mechanical Engineering) Flow-Induced Vibrations: An Engineering Guide (Dover Civil and Mechanical Engineering) Dynamic Fracture Mechanics (Cambridge Monographs on Mechanics) Shigley's Mechanical Engineering Design (McGraw-Hill Series in Mechanical Engineering) Mechanical Behavior of Materials: Engineering Methods for Deformation, Fracture, and Fatigue (2nd Edition) Mechanical Behavior of Materials: Engineering Methods for Deformation, Fracture, and Fatigue Code Check Plumbing & Mechanical 4th Edition: An Illustrated Guide to the Plumbing and Mechanical Codes (Code Check Plumbing & Mechanical: An Illustrated Guide) Engineering Mechanics: Statics (Mechanical Engineering) Deformation and Fracture Mechanics of Engineering Materials Deformation and Fracture Mechanics of Engineering Materials, 5th Edition Advanced Fracture Mechanics (Oxford Engineering Science Series) Elementary engineering fracture mechanics Fracture Mechanics of Polymers (Ellis Horwood series in engineering science) Engineering Mechanics: Statics Plus MasteringEngineering with Pearson eText -- Access Card Package (14th Edition) (Hibbeler, The Engineering Mechanics: Statics & Dynamics Series, 14th Edition)