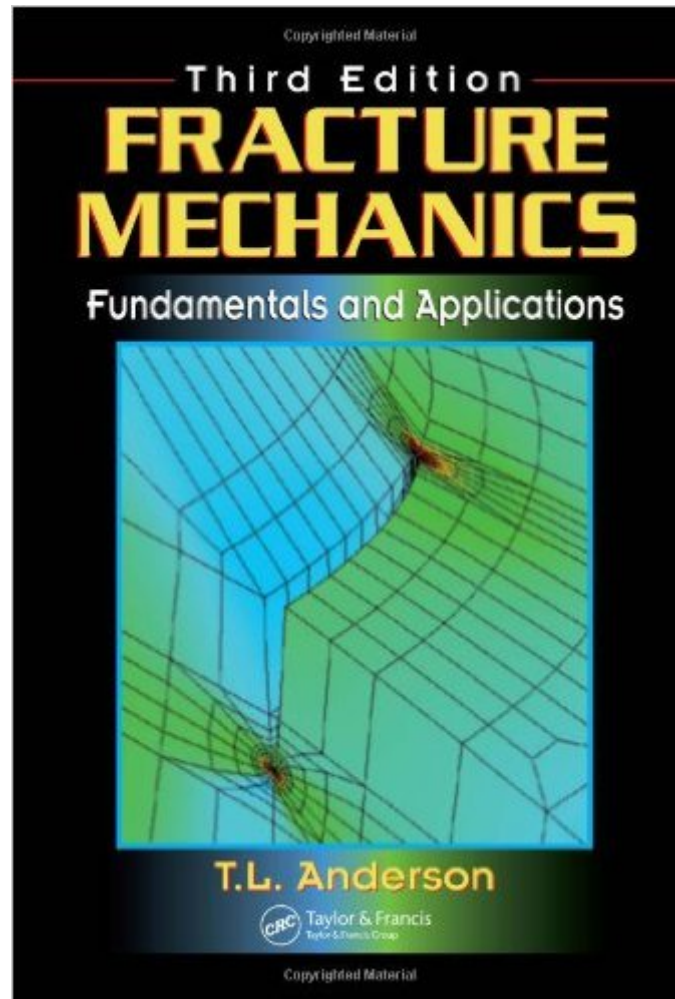


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Fracture Mechanics: Fundamentals And Applications, Third Edition



Synopsis

With its combination of practicality, readability, and rigor that is characteristic of any truly authoritative reference and text, *Fracture Mechanics: Fundamentals and Applications* quickly established itself as the most comprehensive guide to fracture mechanics available. It has been adopted by more than 100 universities and embraced by thousands of professional engineers worldwide. Now in its third edition, the book continues to raise the bar in both scope and coverage. It encompasses theory and applications, linear and nonlinear fracture mechanics, solid mechanics, and materials science with a unified, balanced, and in-depth approach. Reflecting the many advances made in the decade since the previous edition came about, this indispensable Third Edition now includes:

- A new chapter on environmental cracking
- Expanded coverage of weight functions
- New material on toughness test methods
- New problems at the end of the book
- New material on the failure assessment diagram (FAD) method
- Expanded and updated coverage of crack closure and variable-amplitude fatigue
- Updated solutions manual

In addition to these enhancements, *Fracture Mechanics: Fundamentals and Applications*, Third Edition also includes detailed mathematical derivations in appendices at the end of applicable chapters; recent developments in laboratory testing, application to structures, and computational methods; coverage of micromechanisms of fracture; and more than 400 illustrations. This reference continues to be a necessity on the desk of anyone involved with fracture mechanics.

Book Information

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Customer Reviews

Two specific things about this book keep me from rating it higher: 1- The book has a lot of errors. For instance, the polynomial equations for the stress concentration factors (K_I) in chapter 2 are labeled incorrectly. The diagrams for Center Cracked Tension and Double Edge Notched Tension are reversed. There are also other errors, but to list them all here would be pointless. 2- The problem set is close to worthless. Of the 600 page book, there are 18 pages of problems, or less than 100 total problems. The problems are not even that difficult. The "derivations" in the problem sets hardly require more than 2-3 lines of work, and very little deep thought. In other words, the problems are superficial. Because of the lack of good problems and the errors (in fact, one of the problems seems to have an error in the difference between compliance and stiffness), I wouldn't feel comfortable using this book as a reference. No doubt, it does provide an excellent introduction or overview of fracture mechanics in general, but I would not feel comfortable with this book as my main source of information. There are also few examples with solutions to motivate learning. A good teacher is necessary to go beyond the basics of this text.

This book covers most of the fundamental topics in fracture mechanics. I recommend it to my undergraduate students. It is very easy to understand. This book is a fundamental source in fracture mechanics. It is a classic book recommended by numerous bibliographies regarding this field of study.

This book is a must for mechanical engineers who work in the field of fracture mechanics. It covers the subjects entirely. It is very easy to understand. This book is a fundamental source in fracture mechanics.

The book is wonderful introduction to Fracture Mechanics. There are couple of glaring errors in the book, which hopefully will be corrected in the next editions. Apart from that I would recommend it to all those who are trying to get their basics right in fracture mechanics.

As a structural engineering graduate student I have found this book to be excellent. It provides a good balance of derivation and practical application. This is one of several books our professor used as references for a class in nonlinear fracture mechanics and I have found this one to be among the best to reference. It adds much of the background that can not be covered in each lecture and provides a reasonable number of examples. The book is well organized and clearly presented making it easy to learn from. My only complaint is that because of the limited amount of

derivations included it is sometimes difficult to understand how certain equations came to be. This has been particularly challenging when trying to take what I've learned and apply it to a different situation - those intermediate steps and the accompanying assumptions are vital. I obviously can't review this book from a fracture mechanics material scientist point of view but for a structural engineer this book has been very helpful for learning about this field and is one that I will likely refer to in the future when facing fracture problems.

I think that this book is a must have for anyone in the field of fracture and fatigue. I own all three editions and I am mostly happy with all of them. That being said there are some major drawbacks that should be recognized. 1. As others have pointed out there are many typos in the equations. I learned of some of these typos the hard way. I had to go back to the original journal papers in some cases to find the correct form of the equations...after much wasted time and confusion. 2. Each edition seems to drop information on certain topics. 3. This book is not a stand alone book, which is ok, but the author should do a better job of pointing the reader to the most useful references and noting where he is skipping steps. This point is especially important to recognize when working through the derivations of K , J and CTOD.

If I recall correctly, there are a few mistakes in the derivations of some equations. That said, it's a great reference book for those already familiar with the subject.

That's a must for every engineer who wants to design something with the latest criteria available. Many levels of knowledge of the subject available.

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