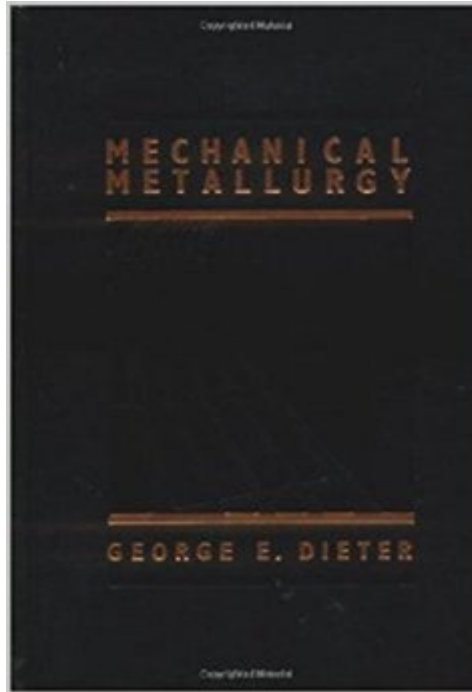


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# Mechanical Metallurgy



## Synopsis

Examines the behaviour of materials under stress and their reaction to a variety of hostile environments. This book covers mechanical metallurgy, from an understanding of the continuum description of stress and strain, through crystalline and defect mechanisms of flow and fracture, and on to a consideration of major mechanical property tests.

## Book Information

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## Customer Reviews

This is one of the best text books I have ever read. Prof. Dieter has the exceptional ability to cover a wide range of topics in a clearly understandable, easy to read and perfectly comprehensible manner. Although the book is on mechanical behavior of metals, it can easily be used to learn the fundamental concepts of elasticity, plasticity, fracture mechanics and dislocation theory. These topics constitute the background to study the mechanical behavior of any material and Dieter's book teaches them in an elegant manner. Especially if you are a practicing metallurgist, this book will stay on your desk throughout your career and you'd refer to quite often. Although the price of the book is high, it is definitely worth spending your money on. It is a invaluable classic in the field of mechanical behavior of metals. I highly recommend it.

This book covers the entire scope of mechanical behavior in a single volume! How Dieter

accomplished his, I can't imagine. But he did. He covers everything, from the fundamentals of stress and strain, through dislocation theory, basic deformation and fracture, and the whole scope of metal-forming operations. If you need it, it's in this book. Two complaints: 1) There is relatively little coverage of computer modeling, FEM, etc. These are the future of engineering, and Dieter needs to get on the boat when (if) he writes a fourth edition. 2) The index is USELESS. These two faults don't change the fact that this is one of the most important single books ever written in the field of material science.

Metallurgy is one of the oldest established branches of materials science, and science in general. Yet many of the underlying principles, such as dislocation theory and plasticity, have only been explored within the last 100 years or so. As such, there is a wealth of information in metallurgy that one could learn. This book by G. Dieter is one of the better books to use to learn about metallurgy. Coming in at 800 pages even, this book is a thorough study of the principles behind mechanical metallurgy and is appropriate for both students in the field and practicing engineers. The book provides complete mathematical treatments of numerous subjects within mechanical metallurgy, including crystallography of defects, thermodynamics of plastic flow, kinetics, etc... The book is somewhat old-fashioned in that it leaves out more modern topics such as the use of computer simulations in metallurgy. Because of this, the book does not deserve 5 stars. But due to its breadth and coverage of other topics, it deserves 4 out of 5 stars.

As said by others, Prof Dieter not only knows his subject, but educates clearly from the most basic basics on up. Of particular interest are his coverage of fundamentals of stress, strain and deformation, both elastic and plastic. These are the essential building blocks on which the subsequent understanding of manufacturing, mechanical and fatigue design are based. It's a great book, and remains on my "keeper" bookshelf many years after graduation, unlike the majority of others. Yes, the index is very incomplete, but if you read the book, as opposed to try to refer to sections, it's not that relevant. (Maybe even intentional?) I say this because I think understanding only comes with addressing the basics and following the order in which they're presented.

I purchased a more expensive book from the selection thinking it would be in better quality. I was very disappointed by the highlighter in the book and you could see the previous owner's name. The book in general has a terrible index. The information inside is useful enough.

Good Undergraduate metallurgy books are hard to find, this one's an essential for any forging class and any metallurgist's bookshelf.

An excellent primer on all aspects of mechanical metallurgy, covering the basics of dislocation theory for an understanding of mechanical properties of materials; fracture mechanics; and metal forming processes.

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