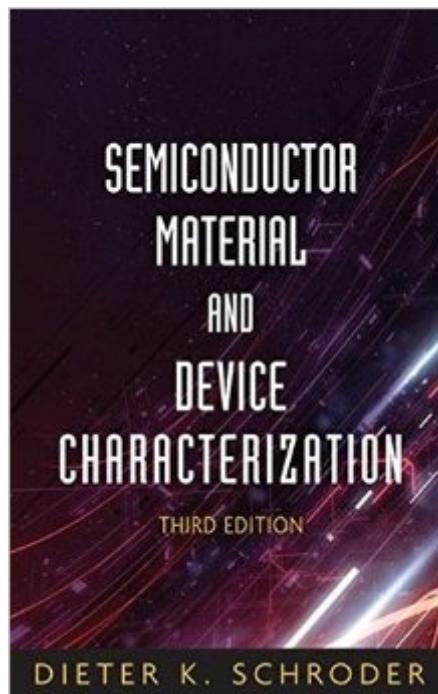


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# Semiconductor Material And Device Characterization



## Synopsis

This Third Edition updates a landmark text with the latest findings. The Third Edition of the internationally lauded *Semiconductor Material and Device Characterization* brings the text fully up-to-date with the latest developments in the field and includes new pedagogical tools to assist readers. Not only does the Third Edition set forth all the latest measurement techniques, but it also examines new interpretations and new applications of existing techniques. *Semiconductor Material and Device Characterization* remains the sole text dedicated to characterization techniques for measuring semiconductor materials and devices. Coverage includes the full range of electrical and optical characterization methods, including the more specialized chemical and physical techniques. Readers familiar with the previous two editions will discover a thoroughly revised and updated Third Edition, including: Updated and revised figures and examples reflecting the most current data and information 260 new references offering access to the latest research and discussions in specialized topics New problems and review questions at the end of each chapter to test readers' understanding of the material In addition, readers will find fully updated and revised sections in each chapter. Plus, two new chapters have been added: Charge-Based and Probe Characterization introduces charge-based measurement and Kelvin probes. This chapter also examines probe-based measurements, including scanning capacitance, scanning Kelvin force, scanning spreading resistance, and ballistic electron emission microscopy. Reliability and Failure Analysis examines failure times and distribution functions, and discusses electromigration, hot carriers, gate oxide integrity, negative bias temperature instability, stress-induced leakage current, and electrostatic discharge. Written by an internationally recognized authority in the field, *Semiconductor Material and Device Characterization* remains essential reading for graduate students as well as for professionals working in the field of semiconductor devices and materials. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

## Book Information

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## **Customer Reviews**

This book simply is the bible of device characterization. No matter if you are an undergrad student or a post-doc researcher this book is a must to have in your arsenal. The text has been put together in a very smooth way that makes it easy to understand the concepts and ideas. If you need more complex understanding you can always refer to the reference list at the end of each chapter. This book is the culmination of years of authors' research and completely trustworthy. The copy of the book that I have is the D.K.Schroder's personal copy that he was having himself. I was his last graduate student when he passed away in 2012.

This is an essential text for engineers, scientists, and graduate students working in the semiconductor field. It contains a thorough review of all major electrical, optical, and physical characterization methods that are commonly used. Descriptions of techniques are generally conceptually oriented, clearly stated, and do not rely excessively on equations. In addition, many useful figures are included to help explain concepts when introduced. Up to date references are included for essentially every technique mentioned.

Schroder has compiled an extensive and very nearly complete guide to modern characterization techniques that apply mostly to semiconductors and solid state devices, but also to techniques used in general materials analysis. We used this text in a graduate level course in EE and found it easy to read through and concise for use as a quick reference. Well worth the money.

This book is an incredible resource for engineers and materials scientists working in the semiconductor field. Getting the most out of it requires a working knowledge of semiconductor physics and that's not a fault of course. The text is very well referenced and does a good job explaining the principle behind the techniques as well as the original references should you need more information. While it is a must-have for the lab, I ended adding it to my personal shelf as well.

Hello, I bought this book several years ago from and I still think that it's a great book for having and "deeply-balanced" (theoretical and, somehow, practical) introduction about most of the characterization approaches. I can remember only once I could not find what I was looking for on it! Compared with the other University texts I have had the chance to read during my studies (Electronic Eng and PhD in Nanotech) and now in my daily work (R&D) I definitively state that this is the best one. A.

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