



Semiconductor Material and Device Characterization

By Dieter K. Schroder

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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:

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- 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.

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Editorial Review

Review

"The book is well-illustrated and provides an ample bibliography." (*Optics & Photonics News*, 4 November 2015)

"I strongly recommend this book for those who want to learn device characterization." (*IEEE Circuits & Devices Magazine*, November/December 2006)

From the Publisher

The first book devoted to modern techniques of semiconductor characterization, this comprehensive guide to semiconductor measurement methods is detailed enough for a two-term graduate course. Organized for quick access so that it can be used as a handbook of specific characterization techniques. Processes are characterized through the use of test structures and the main techniques used within the semiconductor industry are thoroughly explained. While the majority of the book is devoted to widely used electrical characterization methods, the more specialized optical, chemical and physical methods are also covered. Contains over 1,300 references.

From the Back Cover

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