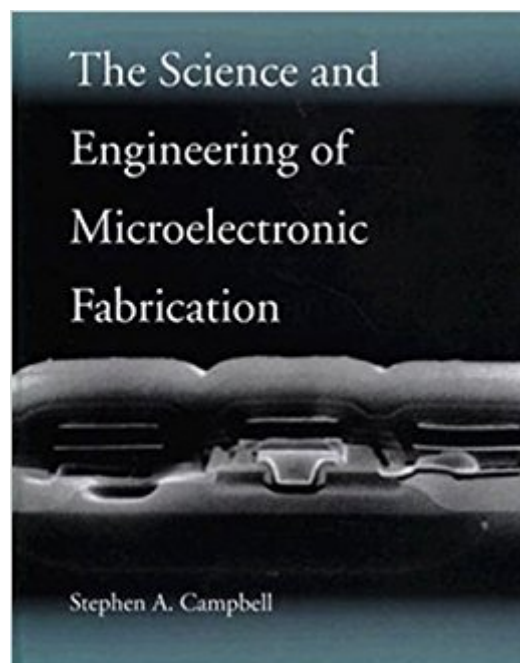




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# The Science And Engineering Of Microelectronic Fabrication (The Oxford Series In Electrical And Computer Engineering)



## Synopsis

The Science and Engineering of Microelectronic Fabrication provides an introduction to microelectronic processing. Geared towards a wide audience, it may be used as a textbook for both first year graduate and upper level undergraduate courses and as a handy reference for professionals. The text covers all the basic unit processes used to fabricate integrated circuits including photolithography, plasma and reactive ion etching, ion implantation, diffusion, oxidation, evaporation, vapor phase epitaxial growth, sputtering and chemical vapor deposition. Advanced processing topics such as rapid thermal processing, nonoptical lithography, molecular beam epitaxy, and metal organic chemical vapor deposition are also presented. The physics and chemistry of each process is introduced along with descriptions of the equipment used for the manufacturing of integrated circuits. The text also discusses the integration of these processes into common technologies such as CMOS, double poly bipolar, and GaAs MESFETs. Complexity/performance tradeoffs are evaluated along with a description of the current state-of-the-art devices. Each chapter includes sample problems with solutions. The book also makes use of the process simulation package SUPREM to demonstrate impurity profiles of practical interest.

## Book Information

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"This book addresses the material in an organized manner. The tool diagrams and photos are very useful. Figures, diagrams, SEMs, TEMs, are plentiful and necessary for this material."--Dr. Susan Marine, Centre College

"Excellent, up-to-date compilation of the physics and engineering of microelectronic chip processing. Good reference book for semiconductor manufacturing labs and engineering libraries. Very well documented."--David Navon, UMass--Amherst

"This is a very attractive book. It has a good balance of science, engineering and technology. The graphical, pictorial and SEM representatives add to the practical value of the book."--H. Thurman Henderson, Department of Electrical and Computer Engineering and Computer Science, University of Cincinnati

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"Appears to represent an excellent balance between practical, 'real world' information and theory. It will serve as an excellent complement to the standard type semiconductor materials and devices course in the realm of engineering applications. Such material should increase student appreciation and motivation for the field of semiconductors and enhance marketability."--Robert Engelken, Arkansas State University

Stephen A. Campbell, Associate Professor of Electrical Engineering in the Department of Electrical Engineering, University of Minnesota.

This excellent book by Stephen Campbell offers a comprehensive, in-depth look at many areas of microelectronics. It is also written in an easy to read style with a large number of relevant references. I recommend this book to anyone interested in the many areas of microelectronics.

I have been using this book since 1997. It is a great book, especially for those with very little knowledge in microelectronics. Reader with non-technical background can easily understand the materials. Lots of picture & diagrams to further enhance understanding. It has helped me with my postgraduate studies, a must for those who wants to know about microelectronics and a good reference for all.

This is the text book for Mr. Campbell's microfabrication class (advanced undergraduate or graduate level) at the University of Minnesota, that's how I got to know this book. It covers all the different areas of modern microfabrication and puts them in the right context to one another. Any previous

knowledge of these topics is not required.

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