



Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing)

From Brand: Oxford University Press

Download now

Read Online 

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press

Nanofabrication Using Focused Ion and Electron Beams presents fundamentals of the interaction of focused ion and electron beams (FIB/FEB) with surfaces, as well as numerous applications of these techniques for nanofabrication involving different materials and devices.

The book begins by describing the historical evolution of FIB and FEB systems, applied first for micro- and more recently for nanofabrication and prototyping, practical solutions available in the market for different applications, and current trends in development of tools and their integration in a fast growing field of nanofabrication and nanocharacterization. Limitations of the FIB/FEB techniques, especially important when nanoscale resolution is considered, as well as possible ways to overcome the experimental difficulties in creating new nanodevices and improving resolution of processing, are outlined.

Chapters include tutorials describing fundamental aspects of the interaction of beams (FIB/FEB) with surfaces, nanostructures and adsorbed molecules; electron and ion beam chemistries; basic theory, design and configuration of equipment; simulations of processes; basic solutions for nanoprototyping. Emerging technologies as processing by cluster beams are also discussed.

In addition, the book considers numerous applications of these techniques (milling, etching, deposition) for nanolithography, nanofabrication and characterization, involving different nanostructured materials and devices. Its main focus is on practical details of using focused ion and electron beams with gas assistance (deposition and etching) and without gas assistance (milling/cutting) for fabrication of devices from the fields of nanoelectronics, nanophotonics, nanomagnetics, functionalized scanning probe tips, nanosensors and other types of NEMS (nanoelectromechanical systems). Special attention is given to strategies designed to overcome limitations of the techniques (e.g., due to damaging produced by energetic ions interacting with matter), particularly those involving multi-step processes and multi-layer materials.

Through its thorough demonstration of fundamental concepts and its presentation of a wide range of technologies developed for specific applications, this volume is ideal for researches from many different disciplines, as well as engineers and professors in nanotechnology and nanoscience.

 [Download Nanofabrication Using Focused Ion and Electron Bea ...pdf](#)

 [Read Online Nanofabrication Using Focused Ion and Electron B ...pdf](#)

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing)

From Brand: Oxford University Press

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press

Nanofabrication Using Focused Ion and Electron Beams presents fundamentals of the interaction of focused ion and electron beams (FIB/FEB) with surfaces, as well as numerous applications of these techniques for nanofabrication involving different materials and devices.

The book begins by describing the historical evolution of FIB and FEB systems, applied first for micro- and more recently for nanofabrication and prototyping, practical solutions available in the market for different applications, and current trends in development of tools and their integration in a fast growing field of nanofabrication and nanocharacterization. Limitations of the FIB/FEB techniques, especially important when nanoscale resolution is considered, as well as possible ways to overcome the experimental difficulties in creating new nanodevices and improving resolution of processing, are outlined.

Chapters include tutorials describing fundamental aspects of the interaction of beams (FIB/FEB) with surfaces, nanostructures and adsorbed molecules; electron and ion beam chemistries; basic theory, design and configuration of equipment; simulations of processes; basic solutions for nanoprototyping. Emerging technologies as processing by cluster beams are also discussed.

In addition, the book considers numerous applications of these techniques (milling, etching, deposition) for nanolithography, nanofabrication and characterization, involving different nanostructured materials and devices. Its main focus is on practical details of using focused ion and electron beams with gas assistance (deposition and etching) and without gas assistance (milling/cutting) for fabrication of devices from the fields of nanoelectronics, nanophotonics, nanomagnetics, functionalized scanning probe tips, nanosensors and other types of NEMS (nanoelectromechanical systems). Special attention is given to strategies designed to overcome limitations of the techniques (e.g., due to damaging produced by energetic ions interacting with matter), particularly those involving multi-step processes and multi-layer materials.

Through its thorough demonstration of fundamental concepts and its presentation of a wide range of technologies developed for specific applications, this volume is ideal for researches from many different disciplines, as well as engineers and professors in nanotechnology and nanoscience.

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press Bibliography

- Sales Rank: #2469447 in Books
- Brand: Brand: Oxford University Press
- Published on: 2012-05-01
- Original language: English

- Number of items: 1
- Dimensions: 7.40" h x 1.90" w x 10.10" l, 4.75 pounds
- Binding: Hardcover
- 840 pages

 [Download Nanofabrication Using Focused Ion and Electron Bea ...pdf](#)

 [Read Online Nanofabrication Using Focused Ion and Electron B ...pdf](#)

Download and Read Free Online Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press

Editorial Review

Review

The first part of the book includes eight chapters and occupies roughly one-third of the book, whilst the second part incorporates about 20 chapters and takes up about two-thirds of the book. Such a distribution of material ensures that the basic concepts of these technologies are thoroughly explained ... In a word, one would aver that the volume contains essentially everything one would need to gain a deep understanding of the topics and probably a little more besides. K. Alan Shore, Contemporary Physics

About the Author

Ivo Utke is Vice Head of the Laboratory for Mechanics of Materials and Nanostructures at EMPA, The Swiss Federal Laboratories for Materials Testing and Research.

Stanislav Moshkalev is Head of the Nanotechnology Group at the Center for Semiconductor Components, UNICAMP, Campinas, Brazil.

Phillip E. Russell is Distinguished Professor of Science Education and Physics in the Department of Physics and Astronomy, Appalachian State University.

Users Review

From reader reviews:

Maria Davis:

As people who live in often the modest era should be update about what going on or details even knowledge to make these people keep up with the era that is certainly always change and move ahead. Some of you maybe can update themselves by reading through books. It is a good choice for yourself but the problems coming to an individual is you don't know which one you should start with. This Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) is our recommendation to make you keep up with the world. Why, because book serves what you want and want in this era.

Audrey Stockman:

This book untitled Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) to be one of several books in which best seller in this year, this is because when you read this book you can get a lot of benefit in it. You will easily to buy that book in the book shop or you can order it by way of online. The publisher in this book sells the e-book too. It makes you quicker to read this book, because you can read this book in your Mobile phone. So there is no reason to you to past this book from your list.

Kevin Miller:

Don't be worry should you be afraid that this book will filled the space in your house, you might have it in e-book approach, more simple and reachable. That Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) can give you a lot of good friends because by you checking out this one book you have matter that they don't and make an individual more like an interesting person. This specific book can be one of one step for you to get success. This publication offer you information that probably your friend doesn't understand, by knowing more than other make you to be great people. So , why hesitate? Let's have Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing).

Ralph Pettie:

Guide is one of source of understanding. We can add our expertise from it. Not only for students and also native or citizen will need book to know the revise information of year to be able to year. As we know those ebooks have many advantages. Beside most of us add our knowledge, may also bring us to around the world. From the book Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) we can have more advantage. Don't someone to be creative people? To become creative person must love to read a book. Simply choose the best book that ideal with your aim. Don't possibly be doubt to change your life by this book Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing). You can more attractive than now.

**Download and Read Online Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press
#AJ7QCHFTBPK**

Read Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press for online ebook

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press books to read online.

Online Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press ebook PDF download

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press Doc

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press Mobipocket

Nanofabrication Using Focused Ion and Electron Beams: Principles and Applications (Oxford Series in Nanomanufacturing) From Brand: Oxford University Press EPub