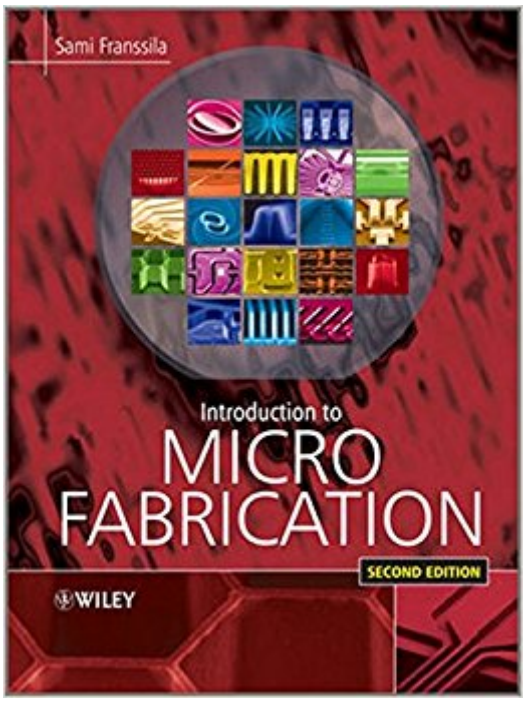
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Introduction To Microfabrication



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Synopsis

This accessible text is now fully revised and updated, providing an overview of fabrication technologies and materials needed to realize modern microdevices. It demonstrates how common microfabrication principles can be applied in different applications, to create devices ranging from nanometer probe tips to meter scale solar cells, and a host of microelectronic, mechanical, optical and fluidic devices in between. Latest developments in wafer engineering, patterning, thin films, surface preparation and bonding are covered. This second edition includes: expanded sections on MEMS and microfluidics related fabrication issues new chapters on polymer and glass microprocessing, as well as serial processing techniques 200 completely new and 200 modified figures more coverage of imprinting techniques, process integration and economics of microfabrication 300 homework exercises including conceptual thinking assignments, order of magnitude estimates, standard calculations, and device design and process analysis problems solutions to homework problems on the complementary website, as well as PDF slides of the figures and tables within the book With clear sections separating basic principles from more advanced material, this is a valuable textbook for senior undergraduate and beginning graduate students wanting to understand the fundamentals of microfabrication. The book also serves as a handy desk reference for practicing electrical engineers, materials scientists, chemists and physicists alike. www.wiley.com/go/Franssila_Micro2e

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Professor Sami Franssila, Helsinki University of Technology, Finland Sami Franssila has taught courses on microfluidics, bioMEMs, microsystems, nanoscience, silicon microtechnology and thin-film technology at Helsinki University of Technology since 1998. He is group leader of the Microfabrication group at Micronova, the Centre for Micro and Nanotechnology which is run jointly by the VTT Technical Research Centre of Finland and Helsinki University of Technology. Professor Franssila researches into micro- and nanofabrication for fluidic, chemical and biological devices, chemical microsystems and thin film technology. He has authored or co-authored over 60 peer reviewed articles, 120 international conference papers and written one textbook Introduction to Microfabrication, published by John Wiley & Sons in 2004.

To start, despite having "Introduction" in the title this is definitely not a book for beginning students. Micorfabrication is a complex, multi-discipline research area that relies heavily on physics, chemistry, crystallography, optics and others. If you don’s have a foundation in any of those reading this book will be quite challenging as its concise nature does not allow for much review material. I, for instance, don’t know much electronics so there are some sections that take more time for me to understand. That is something to consider before purchasing.The other downside to this book: the

end-of-chapter problems are quite obscure and tricky to solve. This is thanks mostly to difficulty finding equations and properties that in a larger, more comprehensive book would not be as big of an issue. The companion website has solutions, etc. but it can still be a nuisance.That having been said, I still give this book 4 stars because it is surprisingly readable and engaging. While background chemistry and physics is often skipped the actual process of microfabrication, which is the topic of the book, is explained in detail from the very beginning of the process all the way through the process of wafer design, choice of materials, lithography techniques and even the economics of microfabrication. The pace is brisk but not too fast and the detail level is high but not overwhelming. The figures are well-made and the book is flexible enough that you can skip to whichever chapters you need without being dependent on what happened previously. The book may not always spell out every tiny detail but if you're into the material it would be easy enough to get a supplemental book to help with the details.In short, for a class related to MEMS, microfabrication or IC this book is worth considering.

I've been using this book for half a semester now as part of an undergraduate course in microfabrication. For an introductory text, I feel like this book has a pretty high barrier to entry. It is counting on the reader having a lot of knowledge from other sources. It is heavy on the chemistry, which makes sense, but it is very seldom that the author provides any assistance. There is no "brush up on the fundamentals" type of chapter that you usually find in introductory textbooks, which is really a pain.Also, the text book problems are less like exercises to build comprehension and more like exercises in futility. In most cases, the book does not give you the tools you need to solve the problems that it asks you to solve. It isn't even that the problems are incredibly difficult, its just that the information to solve them is nowhere to be found in the book. To that end, it feels like the problems were just tacked on so the publisher could market the book to college classrooms. And don't even get me started on the typos. This book is FULL OF THEM. Most times the typos are just grammar and spelling type stuff. While that doesn't hurt the content of the book, it is still pretty sloppy. This is the second edition after all, so I would expect a lot of that stuff to have been cleaned up, but it hasn't been.The book, on the whole, is very readable and it does do a decent job of providing background knowledge of microfabrication. It also has a lot of pretty SEM pictures, so I guess that's something.However, if you are a professor looking to use this as a required text for an undergraduate class, you'd have to be a real sadist to assign the textbook problems...

The book doesnt go deep into the topics. the way is written makes it difficult to understand

I have found Franssilia’s book (both the 1st as well as this edition) to be extremely useful when revisiting some basic topics of microfabrication. For instance, recently I had to write about wafer characterization, serial vs. parallel processes, anisotropic etching etc. and the little bits I’ve forgotten are all in this book.Better yet, as I start reading it, I am captivated and want to read the whole section most of the time. I’d say the book is very well written in that it has this "collection of short novels" style to it.The only other book that makes me a better scientist is Madou’s Fundamentals of Microfabrication. However, Madou’s book is almost the opposite to Franssila’s in terms of captivating and keeping the reader - with Madou, once I found what I need I feel like running away from it, because the information is piled in chunks that are sometimes hard to digest and definitely a bit dry. Franssila’s book does not throw knowledge at the reader quite so copiously, but it does so in a more orderly and pleasant way. In that sense, Franssila’s Introduction to Microfabrication is much better suited to beginners in microtechnology.The 2nd edition of the book brings some important revisions, for instance regarding laser processing.

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