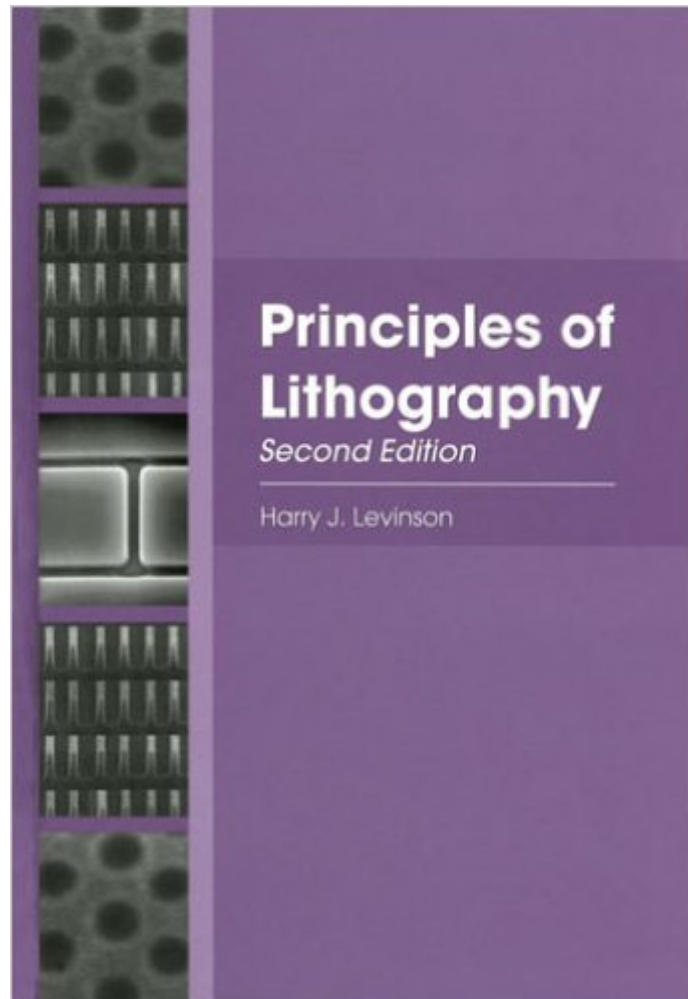


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Principles Of Lithography, Second Edition (SPIE Press Monograph Vol. PM146)



Synopsis

Lithography is a field in which advances proceed at a swift pace. This book was written to address several needs, and the revisions for the second edition were made with those original objectives in mind. Many new topics have been included in this text commensurate with the progress that has taken place during the past few years, and several subjects are discussed in more detail. This book is intended to serve as an introduction to the science of microlithography for people who are unfamiliar with the subject. Topics directly related to the tools used to manufacture integrated circuits are addressed in depth, including such topics as overlay, the stages of exposure, tools, and light sources. This text also contains numerous references for students who want to investigate particular topics in more detail, and they provide the experienced lithographer with lists of references by topic as well. It is expected that the reader of this book will have a foundation in basic physics and chemistry. No topics will require knowledge of mathematics beyond elementary calculus. Contents - Preface - Overview of lithography - Optical pattern formation - Photoresists - Modeling and thin film effects - Wafer steppers - Color Plates overlay - Masks and reticles - Overcoming the diffraction limit - Metrology - The limits of optical lithography - Lithography costs - Alternative lithography techniques - Appendix A: Coherence - Index

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Customer Reviews

This is an excellent book for engineers, whether in photolithography or not, to acquire an overview and understanding of modern deep sub-micron photolithography and the challenges microlithographers face. It is well written and easy to read. Levinson takes you through the entire process of lithography step by step with both the mathematics involved, but also, an intuitive explanation of what the technical issues involved are. The drawings done for the figures are done well and easily understood and printed with clarity. As for photos used for figures in the book, they are also well done, and of the proper brightness and contrast so that they are easy to view and comprehensible. They are not like some books, where you wonder if the illustration was a fifth generation photocopy or just incomprehensible. Levinson also includes a chapter on metrology. If you are producing a microlithographic pattern you need to be able to measure it, and critical dimensions in lithography are not *dues ex machina*. The book has problem exercises at the end of each chapter to allow the reader to test themselves on what they have learned. I also recommend working out many of the equations as an exercise. Levinson also doesn't neglect the historical development of the practice of lithography. There is an explanation on why early lithography tended to have high overexposure and then went to 1:1 imaging and issues driving this. Also, there is a good chapter on the claims in the 1980s that optical lithography would not get past 1 micron resolution, and why this subsequently didn't prove to be true. Levinson bravely also writes up a section on the future limits of lithography and in a few years we will see if he was right.

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