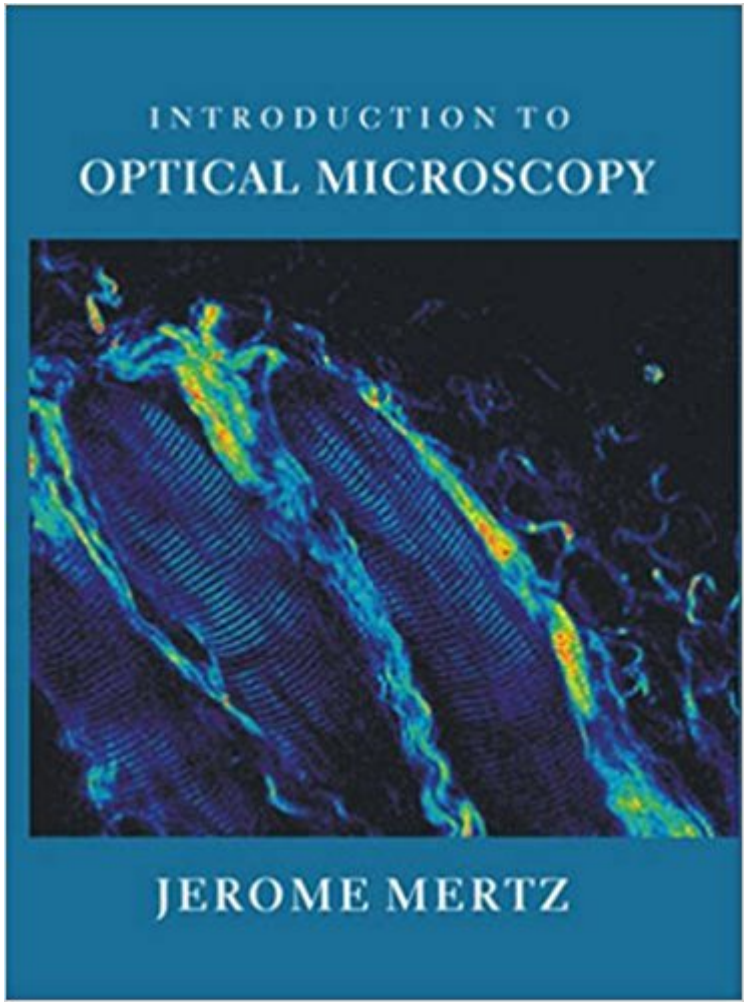
Introduction To Optical Microscopy



Synopsis

Introduction to Optical Microscopy provides a rigorous and comprehensive overview of the fundamentals of optical microscopy. Starting from basic principles in Fourier optics, partial coherence, 3D imaging theory, and the physics of scattering and fluorescence, Introduction to Optical Microscopy explores a broad range of microscopy techniques. These include classical techniques such as phase contrast, confocal microscopy, etc., and progress to more modern techniques such as holographic microscopy, optical coherence tomography, two-photon microscopy, coherent anti-Stokes Raman scattering microscopy, etc.. The final chapters present a survey of new directions, including structured illumination and superresolution. Introduction to Optical Microscopy is designed to provide a solid theoretical foundation for graduate students or researchers who want to enter the field. While valuable as a reference, it can also serve as a textbook, as it includes a corresponding website that provides problem sets and an instructorâ ™s solution manual.

Book Information

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Customer Reviews

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I am a graduate student who works on optical microscopes. I actually took the class with the author of this book, so perhaps I am a bit biased, however I found the book to be very insightful.Pros:-The book has good coverage of many modern optical imaging techniques, including OCT, Digital Holography, Two Photon microscopy, some of the more standard non-linear techniques, and super-resolution techniques.-Several gems of intuition in the book-There is a reasonable amount of math to back up the descriptions, but it is "good" math because it is presented in a way that really reinforces the concepts, it is not math-for-math's-sake like I have seen in many esoteric graduate-level textbooks.-I like how the references are discussed in the test (i.e. "see [5] for a very readable review, and see [6-8] for more in-depth reviews with an emphasis on ...")-Intuitive approach to 3D Optical Transfer functions, interesting and unique discussion of radiometeryCons:-some of the notation is slightly non-standard, but usually this places more emphasis on the content and less on the math (so not necessarily a con)-a few of the earlier chapters (on background material) are a little hard for an introduction level book

No doubt a must have for anyone who wants to learn microscopy.

Great introduction, but lots of the outlined theory doesn't match experimental observation. In particular transmitted light modalities that rely on the interference of fields for example DIC or PC are treated in the same way as florescence modalities, despite a well known non-linearity in the transfer function.

This is a must for those that want to understand how microscopes work. It provides you with a coherent theoretical framework to adress all classic techniques but also (and most importantly) "new microscopies". This books really makes you understand the physics that underlie optical microscopy and will surely help anyone willing to engage in this exciting field of research.

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