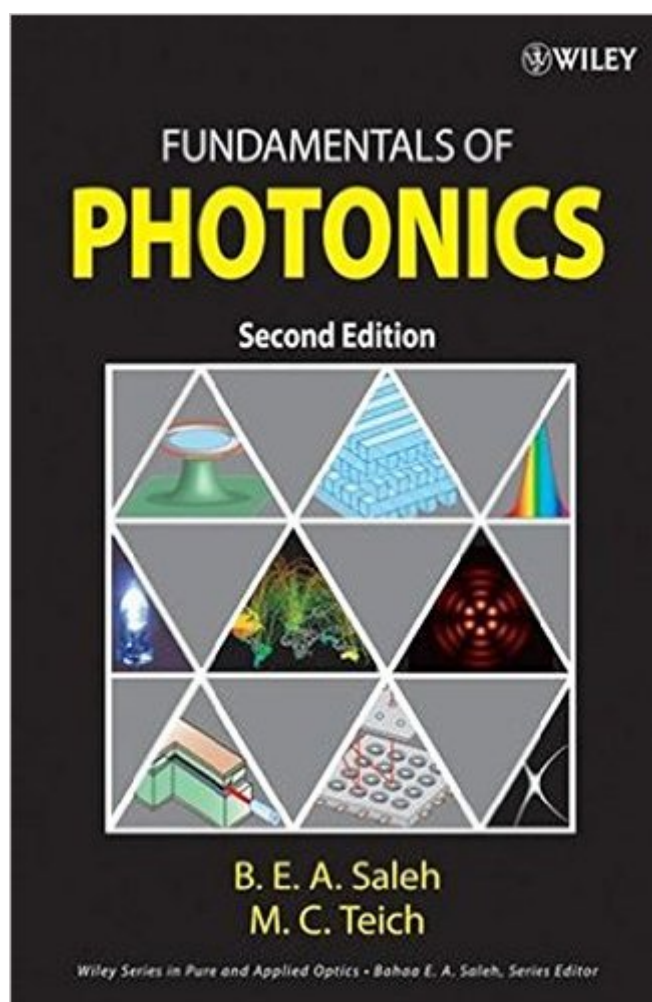


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# Fundamentals Of Photonics



## Synopsis

Now in a new full-color edition, *Fundamentals of Photonics*, Second Edition is a self-contained and up-to-date introductory-level textbook that thoroughly surveys this rapidly expanding area of engineering and applied physics. Featuring a logical blend of theory and applications, coverage includes detailed accounts of the primary theories of light, including ray optics, wave optics, electromagnetic optics, and photon optics, as well as the interaction of photons and atoms, and semiconductor optics. Presented at increasing levels of complexity, preliminary sections build toward more advanced topics, such as Fourier optics and holography, guided-wave and fiber optics, semiconductor sources and detectors, electro-optic and acousto-optic devices, nonlinear optical devices, optical interconnects and switches, and optical fiber communications. Each of the twenty-two chapters of the first edition has been thoroughly updated. The Second Edition also features entirely new chapters on photonic-crystal optics (including multilayer and periodic media, waveguides, holey fibers, and resonators) and ultrafast optics (including femtosecond optical pulses, ultrafast nonlinear optics, and optical solitons). The chapters on optical interconnects and switches and optical fiber communications have been completely rewritten to accommodate current technology. Each chapter contains summaries, highlighted equations, exercises, problems, and selected reading lists. Examples of real systems are included to emphasize the concepts governing applications of current interest.

## Book Information

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## Customer Reviews

Great book! They assigned/suggested this book as a study guide for the preliminary exams in my

Ph.D. program, and it has remained my go-to reference ever since. It consists of chapter-length (or longer) treatments of topics that warrant their own textbooks and graduate classes, but they always contain the most essential information, clearly explained. I have the 1st edition, but it looks like I will now have to order the 2nd edition too. This book is just completely indispensable for students and professionals in the field. Trivia: Fundamentals of Photonics makes a cameo appearance in "Spiderman 2" during a sequence when Peter Parker is hitting the books.

As everyone has mentioned the book is a great reference book but absolutely terrible as a textbook especially for an introductory course into photonics. There are next to NO EXAMPLES in the book as it is almost entirely theory based with no applicational references. The number of students who learn by a pure theory method for instruction is next to none. Unfortunately trying to get the solution manual that accompanies the book is next to impossible whether from legitimate or illegitimate means. As my instructor does not give problems from the book using the solutions manual as a reference would be ideal. Honestly I wanted to give this book a zero due its disorganization and lack of examples however because it does have good reference material I couldn't. As a student I DO NOT recommend this book however as someone looking to use it on a supplemental basis to another course/project I can and do recommend it. That being said whether the price is worth it for a supplemental source is debatable.

I used this textbook in my Photonics first-year graduate class, and have been consulting it since for anything it covers, even the topics we didn't cover in class. It's a superb book, and if you have any excuse to buy it, do so! Pros:-It is clear. This is a big deal. Equations are explained; concepts are elucidated, and the variables are clearly defined. (There's even an index in the back describing what each variable is used for--in the whole book!) Color pictures are useful, although perhaps not strictly necessary.-It is comprehensive. As my librarian said, "That looks big enough to kill somebody with"--it is a huge book (although a bit annoying to carry around). It covers all the topics you would want, and does a very good job.-It is modern. It addresses the topics you would want to find in a modern book. It doesn't include outdated function-tables or methods (e.g. the Cornu spiral), now that computers do all of that.-It is correct. There are few, if any, typos in the book. Cons:-Cost. It is expensive, no getting around that. That said, I'll be using it for years.-The problems may not be exactly what you need for your course. The few examples that it has are worked out well, and hopefully your professor will guide you through the problems.-Derivations are not always present or worked through; this is more of an engineering textbook than a physics one. In short, I highly

recommend this book! In fact, I wish that all physics & engineering textbooks took this model of writing. The authors managed to make it suitable both for a class and for teaching it to yourself, without being too verbose.

If you could only have one general photonics book - this is the one to have. It must have been a 'labor of love' to write - and it is truly outstanding in its comprehensiveness and clarity. I use it constantly - wouldn't be without it.

This book is great! I have been studying this photonics book for a while now. It presents material in a very conceptual way. I appreciate its simplicity. I find its concepts transparent and easy to understand. I highly recommend this book.

Dr. Saleh is an amazing professor, looking forward to his imaging and display class next semester. oh yeah and his fundamentals of photonics book allowed for me to get a foot in the door for my job. Cheers to all of your effort and to much more to learn from an awesome person

You don't have to have a PhD in physics to understand the material in this book. All you need is a basic understanding of calculus and physics (electricity and magnetism). The book is well-written and full of good example problems. The graphics are very clear and laid-out well. To put things into perspective, there is also some coverage of the historical aspects of the field.

If you look for a thorough discussion about optics and photonics, this 1100+ pages tome is the source you should consult. Throughout its 24 chapters you will find information about the foundations of the field (wave, beam, and Fourier optics, polarization, etc.), wave propagation, laser optics, optoelectronics, and lightwave systems and devices. Each chapter ends with a long list of references comprising both books and articles as well as several problems. Historical issues are also included. There are plenty of excellent figures, many of which colored. What can you ask more?

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