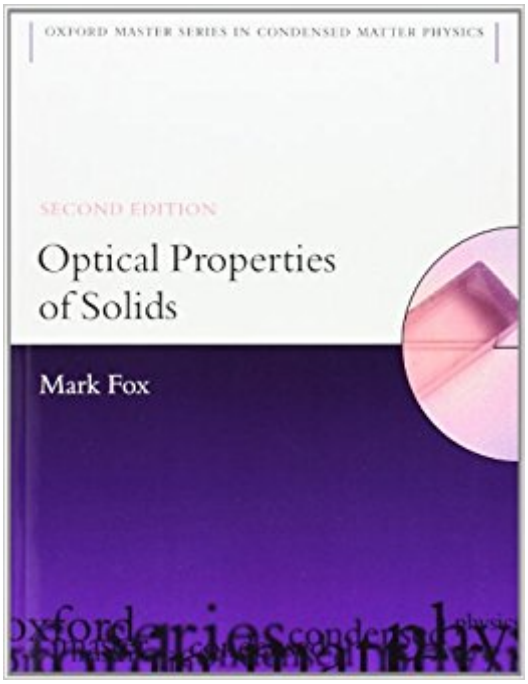
Optical Properties Of Solids (Oxford Master Series In Physics)



Synopsis

The second edition of this successful textbook provides an up-to-date account of the optical physics of solid state materials. The basic principles of absorption, reflection, luminescence, and light scattering are covered for a wide range of materials, including insulators, semiconductors and metals. The text starts with a review of classical optics, and then moves on to the treatment of optical transition rates by quantum theory. In addition to the traditional discussion of crystalline materials, glasses and molecular solids are also covered. The first edition included a number of subjects that are not normally covered in standard texts, notably semiconductor quantum wells, molecular materials, vibronic solid state lasers, and nonlinear optics. The basic structure of the second edition is unchanged, but all of the chapters have been updated and improved. Futhermore, a number of important new topics have been added, including: DT Optical control of spin DT Quantum dots DT Plasmonics DT Negative refraction DT Carbon nanostructures (graphene, nanotubes and fullerenes) DT NV centres in diamond The text is aimed at final year undergraduates, masters students and researchers. It is mainly written for physicists, but might also be useful for electrical engineers, materials scientists and physical chemists. The topics are written in a clear tutorial style with worked examples, chapter summaries and exercises. To request a copy of the Solutions Manual, visit: http://global.oup.com/uk/academic/physics/admin/solutions

Book Information

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Customer Reviews

Review from previous edition: "Fox has succeeded in offering a good, compact, senior level

presentation of the optical properties of solids." --American Journal of Physics

Mark Fox, Professor of Physics at the University of Sheffield, began his research career at Christ Church, Oxford, in 1986, as a Junior Research Fellow. After a post-doctoral position with AT&T Bell Laboratories in the US, he returned to Oxford as a Royal Society University Research Fellow. He moved to Sheffield in 1998, becoming Professor there in 2006.

It is very insightful about fundamentals and basic concepts. At the same time, it is comprehensive and cover most of the related topics. 4-star comes from not detailed discussions in the topics. However, you can find a good Bibliography regarding the relevant chapters Apart from that, it is helpful to comprehend and to digest very basics.

Great book and a great resource as an intro to solid state book. Very clear and includes final solutions in the back. Highly recommended.

I've just read the first six chapters but I can firmly say that this book is clear in its explanations, meticulous and well ordered! It takes a very good and deep look at band gaps in materials. I'd recommend it to anyone in optics, electronics or anyone dealing with semiconductor materials.

Clear and concise. A good qual study book for physical chemistry students wanting a quick refresher or more background in some physics.

This book is much less formal than traditional texts (Kittel, etc.) and much more focused. Some readers may find this to be a shortcoming, but I feel the book is more accessible than the alternatives.

I liked this book! It's too bad my professor stopped using it three weeks into the semester. Recommended.

This book is one of the classics on optical properties. It's generally considered to be the standard in the field.

I thought this book was a good basic introduction to the field of optical properties of solids. The

strong point of this book is that it is well organized and gives many examples. It starts with the basics of Maxwell's equation, then moves on to talk about luminescence, excitons, quantum wells, luminescence centers ... I enjoyed reading about the examples given. It gives many basic descriptions of how optoelectronics device work such as light emitting diodes and Ti:sapphire lasers.This book is geared toward anybody who has taken one semester of basic quantum and one semester of electricity and magnetism. It is easy to read and contains many diagrams. Chapters end with a useful list of references that go into more details. This book is not a reference for graduate level treatment of optical properties of solids. The nonlinear optics part is short and shallow. The quantum mechanical description is basic.Overall, I would recommend this book to anybody that is learning for the first time about optical properties of solids. Solid state physics textbooks by Ashcroft & Mermin and Kittel do not contain a useful and up-to-date section on optical properties of solids. This book fills the gap.

Physical Sciences)