

## Semiconductor Optics

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# Preface to the Fourth Edition

The third edition of “Semiconductor Optics” and a reprint of it for the Chinese market, which appeared both in 2007, were again very well received by students and the scientific community world wide.

As a consequence, this fourth edition became necessary. In many of its chapters there are only minor changes and amendments. On the other hand, important progress in this field of research and development made significant updates and amendments in other chapters necessary. Some prominent examples are listed below:

- The progress in the field of Bose-Einstein condensation, especially of cavity polaritons, resulted in a significantly up-dated and enlarged Sect. 20.5.
- The ongoing discussion on the value of the Mott density in an electron-hole plasma addressed already in the third edition resulted in modifications of Chap. 21.
- Random lasing in semiconductors is now treated in some detail in Chap. 22.
- The research boom on ZnO with more than 2,000 publications per year lasts now already for several years. Consequently we present more examples for the optical properties of this semiconductor in various sections. This includes also a more detailed discussion on how the band gap can be deduced from absorption spectra in Sect. 13.1.
- Photonic crystals and meta-materials tend to develop more and more away from semiconductor physics. The same holds partly for THz sources and spectroscopy. Therefore the corresponding sections are up-dated essentially only by adding some new references. Similar arguments hold also for optical computing and for spintronics.
- Finally the author tried again, to reduce the number of misprints, to remove unclear formulations etc. In this context he thanks all readers, who drew his attention on such points.

I conclude this preface with a personal statement. I retired in spring 2010. Though I liked my profession as professor over the last almost 30 years very much, especially research and teaching, I decided not to continue after retirement

to do essentially what I did before (as many other colleagues do), but to abandon gradually science and to accept in my pension age new challenges, mainly in fields of social activities. These activities deem to me more reasonable and rewarding than to increase the number of my publications from more than 450 (from which scientific data bases find generally about 380, which are cited more than 5,800 times) by another 10 or 20. Consequently, this edition of “Semiconductor Optics” will be the last one written and edited by myself. In this sense it is together with some other books and review articles cited in the following chapters my scientific legacy. I hope that students and colleagues will enjoy seeing this book.

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