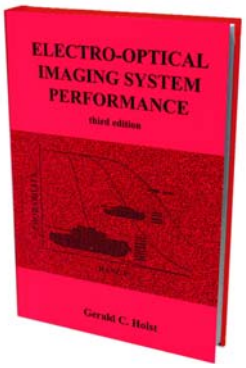


Electro-Optical Imaging System Performance
3rd ed.

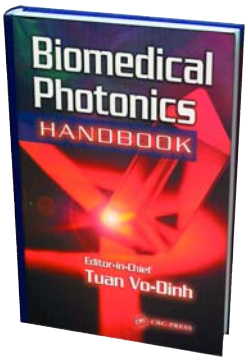
Gerald C. Holst

This book provides a thorough systems engineering approach to the analysis and characterization of the performance of electro-optical imaging systems. Long- and mid-wave infrared thermal imaging systems are its primary focus. It begins with an excellent introduction to the basic principles of system operation and a brief description of the sub-systems involved. MTF theory as applied to sampling systems is addressed in detail. Each standard system type—including common module, EOMUX, EMUX, staring array and line scanner systems—is described in its own chapter. Atmospheric transmittance and atmospheric MTF are covered in good detail. Comparisons between the different system types, as well as between mid-wave and long-wave systems, are given throughout the text and examples are provided where appropriate. Although the material in most chapters remains unchanged with respect to the content of the preceding edition, some clarifications have been included and up to date references have been added. Applicability of the material to near infrared and visible systems is new to this edition, as are some modifications to the MTF analysis and the minimum resolvable temperature metric.

Finally, emphasis is placed on the fact that the eye and the display are becoming more important, to the point that they are often the limiting factors in overall system performance.

The book is well organized, with a complete index and an exhaustive bibliography at the conclusion of each chapter.

SPIE, 2003; $85. Review by Jay Land, US Army-RDECOM AMSRD-AMR-SG-IR, Redstone Arsenal, Alabama.

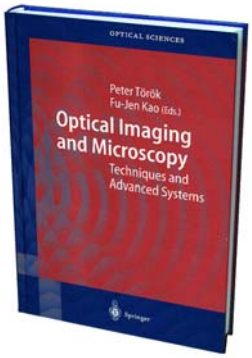


Biomedical Photonics Handbook

Tuan Vo-Dinh, ed.

This straightforward, well-organized book is an excellent reference that consolidates a wealth of information of interest to anyone involved in biophotonics research, teaching, learning or practice.Edited with assistance from a distinguished panel of experts by Tuan Vo-Dinh, director of the Center for Advanced Biomedical Photonics at Oak Ridge National Laboratory, this 1,900-page book features contributions from 150 scientists, engineers and clinicians.Each chapter includes its own extensive list of references (sometimes as many as 200 per chapter). Titles of the seven sections range from photonic devices and tissue optics to diagnostics and treatment. There is coverage of genomics and proteomics, as well as biochips, nanosensors and optical tweezers. The appendix summarizes information on spectroscopic data of biologically and medically relevant species and samples for more than 1,000 compounds and systems. To facilitate navigation, the book includes both a master table of contents as well as separate tables of contents for each chapter. The extensive 32-page index cross-references information across chapters.

CRC Press, 2003; $154. Review by Bogdan Hoanca, assistant professor of management information systems, College of Business and Public Policy, University of Alaska, Anchorage.

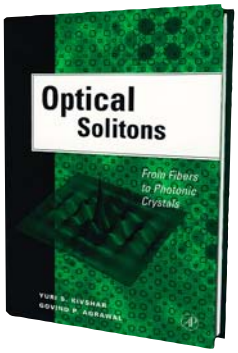


Optical Imaging and Microscopy
Techniques and Advanced Systems

Peter Török and Fu-Jen Kao, eds.

The editors have selected a well known group of contributors who have written a straightforward yet rigorous book. The well-illustrated volume is organized in three parts: the first covers high-aperture optical systems; the second describes modern nonlinear optical techniques applied to microscopy; the third describes low-coherence microscopy, near-field microscopy, adaptive optics, surface plasmon microscopy and optical trapping. I found the descriptions of the theory and the details of the instrumentation very helpful. Important references are included, as is an index. I highly recommend this book for an audience of scientists, engineers, graduate students and optical microscopists

Springer-Verlag, 2003; $119 hardcover. Review by Barry R. Masters, a Fellow of OSA and SPIE, is a consultant in Arlington, Va.



Optical Solitons From Fibers to Photonic Crystals

Yuri Kivshar and Govind P. Agarwal

The development of the field of solitons has come primarily in the course of the past ten years, spurred mostly by advances in material science that have been applied to wave-guiding structures. Solitons promise economic benefits in the area of optical fiber communication systems, since as self-preserving, information-packed waves, they can travel long distances without the aid of repeaters. First however the various modes of dispersion in the fiber optic transport medium need to be compensated for. Much progress towards this end in leading labs has met with success and is ongoing.

Optical soliton theory and applications have been the subject of hundreds of research papers published in all the major physics, optics and electrical engineering periodicals. Yet there are few books on optical solitons in general and even fewer that present information on a level as advanced as this one. Here, readers can obtain all the important theoretical and experimental information pertaining to optical solitons in a single, well-organized book that offers complete coverage of every variety of soliton wave.

For the benefit of prospective readers, the book presents detailed experimental and theoretical information on vortex, vector, parametric, discrete, incoherent and magnetic solitons, as well as on various categories of solitons contained within these general categories. The final chapter touches on soliton matter waves in Bose Einstein condensates in such a way as to trace their similarity to optical solitons.

A good table of contents is supported by a complete index. There are hundreds of references at the end of each chapter. There are also many useful graphs and figures in each chapter. Although there are no problems for the reader to solve, this volume could certainly serve as a textbook.

The target readership of electrical engineers, optical engineers, and physicists interested in the area of optical solitons have a useful new book from two authors who continue to be at the leading edge of their field.

To get the most out of this book, readers should be well-versed in mathematics and have a foundation in the areas of Fourier theory and electromagnetic waveguide mode theory.

Academic Press, 2003; $95. Review by David Finsmith, electro-optical engineer and consultant based in Rochester, N.Y.

The opinions expressed in the book review section are those of the reviewer and do not necessarily reflect those of OPN or OSA.