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Imaging contains many worked examples and homework problems. This is an important and a useful book. Book Review: Biomedical Optics, Page 24/26

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in biological tissues are established, various optical imaging techniques for biological tissues are covered. The imaging modalities include ballistic imaging, quasi-ballistic imaging (optical coherence tomography), diffusion imaging, and ultrasound-aided hybrid imaging.

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called biomedical optics is their solution
guided by their extensive pedagogical
experience they expanded their class notes
and wrote their own textbook for a one
semester course that contains many
worked examples and homework problems
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(optical coherence tomography), diffusion imaging, and ultrasound-aided hybrid imaging. The basic physics and engineering of each imaging technique are emphasized. A solutions manual is available for instructors; to obtain a copy please email the editorial department at ialine@wiley.com.

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Many universities now offer a course in biomedical optics, but lack a textbook specifically addressing the topic. Intended to fill this gap, *An Introduction to Biomedical Optics* is the first comprehensive, introductory text describing both diagnostic and therapeutic

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text, the authors employ numerical examples of clinical and research requirements. Fulfilling the need for a concise biomedical optics textbook, *An Introduction to Biomedical Optics* addresses the theory and applications of this growing field.

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Biomedical optics holds tremendous promise to deliver effective, safe, non- or minimally invasive diagnostics and targeted, customizable therapeutics.

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clinical imaging. This book serves as a reference for students and researchers in optics and biomedical engineering.

Optical Polarization in Biomedical Applications introduces key developments in optical polarization methods for quantitative studies of tissues, while

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Imaging the theory of polarization transfer in a random medium as a basis for the quantitative description of polarized light interaction with tissues. This theory uses the modified transfer equation for Stokes parameters and predicts the polarization structure of multiple scattered optical fields. The backscattering

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polarization matrices (Jones matrix and Mueller matrix) important for noninvasive medical diagnostic are introduced. The text also describes a number of diagnostic techniques such as CW polarization imaging and spectroscopy, polarization microscopy and cytometry. As a new tool for medical diagnosis, optical coherent

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Imaging tomography is analyzed. The monograph also covers a range of biomedical applications, among them cataract and glaucoma diagnostics, glucose sensing, and the detection of bacteria.

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Page 50/68

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Otorhinolaryngology: Head and Neck Surgery gives an overview of current technology in biomedical optics relevant to the field of Otorhinolaryngology and head and neck surgery. It provides a comprehensive source of knowledge for researchers and active clinicians seeking information on the principles and practical

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Imaging use of novel diagnostic and therapeutic technology. While most books focus exclusively on laser surgery, which has been largely unchanged for the past 15 years, optical diagnostics and head and neck PDT (photodynamic therapy) are usually entirely overlooked. This book contains a basic introduction into the

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Imaging physics of light and its propagation, lasers and low-coherent light sources, and photon-tissue interaction in relation to therapeutic and diagnostic use. The principles of various imaging techniques are also discussed (i.e. optical coherence tomography in its variations), as well as the principles and practice of lasers for

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This open access book provides a comprehensive overview of the application of the newest laser and microscope/ophthalmoscope technology in the field of high resolution imaging in microscopy and ophthalmology. Starting

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by describing High-Resolution 3D Light Microscopy with STED and RESOLFT, the book goes on to cover retinal and anterior segment imaging and image-guided treatment and also discusses the development of adaptive optics in vision science and ophthalmology. Using an interdisciplinary approach, the reader will

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learn about the latest developments and most up to date technology in the field and how these translate to a medical setting. High Resolution Imaging in Microscopy and Ophthalmology – New Frontiers in Biomedical Optics has been written by leading experts in the field and offers insights on engineering, biology, and

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Imaging, thus being a valuable addition for scientists, engineers, and clinicians with technical and medical interest who would like to understand the equipment, the applications and the medical/biological background. Lastly, this book is dedicated to the memory of Dr. Gerhard Zinser, co-founder of Heidelberg Engineering

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GmbH, a scientist, a husband, a brother, a colleague, and a friend.

Adaptive Optics for Biological Imaging brings together groundbreaking research on the use of adaptive optics for biological imaging. The book builds on prior work in astronomy and vision science. Featuring

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Contributions by leaders in this emerging field, it takes an interdisciplinary approach that makes the subject accessible to nonspecialists who want to use adaptive optics techniques in their own work in biology and bioengineering. Organized into three parts, the book covers principles, methods, and applications of

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providing the reader with the following
benefits: Gives a general overview of
applied optics, including definitions and
vocabulary, to lay a foundation for clearer
communication across disciplines
Explains what kinds of optical aberrations
arise in imaging through various

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biological tissues, and what technology can be used to correct for these aberrations
Explores research done with a variety of biological samples and imaging instruments, including wide-field, confocal, and two-photon microscopes
Discusses both indirect wavefront sensing, which uses an iterative approach, and

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direct wavefront sensing, which uses a parallel approach. Since the sample is an integral part of the optical system in biological imaging, the field will benefit from participation by biologists and biomedical researchers with expertise in applied optics. This book helps lower the barriers to entry for these researchers. It

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Photoacoustics promises to revolutionize medical imaging and may well make as dramatic a contribution to modern medicine as the discovery of the x-ray

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itself once did. Combining electromagnetic and ultrasonic waves synergistically, photoacoustics can provide deep speckle-free imaging with high electromagnetic contrast at high ultrasonic resolution and without any health risk.

While photoacoustic imaging is probably the fastest growing biomedical imaging

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technology, this book is the first comprehensive volume in this emerging field covering both the physics and the remarkable noninvasive applications that are changing diagnostic medicine.

Bringing together the leading pioneers in this field to write about their own work, Photoacoustic Imaging and Spectroscopy

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Imaging is the first to provide a full account of the latest research and developing applications in the area of biomedical photoacoustics. Photoacoustics can provide functional sensing of physiological parameters such as the oxygen saturation of hemoglobin. It can also provide high-contrast functional imaging of angiogenesis and

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hypermetabolism in tumors in vivo.

Discussing these remarkable noninvasive applications and so much more, this reference is essential reading for all researchers in medical imaging and those clinicians working at the cutting-edge of modern biotechnology to develop diagnostic techniques that can save many

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