



## Optical design for biomedical imaging

Rongguang Liang

Research output: Book/Report › Book

25

Scopus  
citations



### Abstract

Designing an efficient imaging system for biomedical optics requires a solid understanding of the special requirements of the optical systems for biomedical imaging and the optical components used in the systems. However, a lack of reference books on optical design (imaging and illumination) for biomedical imaging has led to some inefficient systems. This book fills the gap between biomedical optics and optical design by addressing the fundamentals of biomedical optics and optical engineering, and biomedical imaging systems. The first half provides a brief introduction to biomedical optics and then covers the fundamentals of optics, optical components, light sources, detectors, optical imaging system design, and illumination system design. This also includes important issues related to biomedical imaging, such as autofluorescence from optical materials. The second half of the text covers various biomedical imaging techniques and their optical systems, along with design examples.

ORIGINAL LANGUAGE	English (US)
PUBLISHER	SPIE
NUMBER OF PAGES	492
ISBN (ELECTRONIC)	9780819483706
ISBN (PRINT)	9780819483690
STATE	Published - Jan 24 2011
EXTERNALLY PUBLISHED	Yes

### ASJC Scopus subject areas

Engineering(all)

Physics and  
Astronomy(all)

Biochemistry, Genetics and Molecular  
Biology(all)

### Access to Document









10.1117/3.871548

[Link to publication in Scopus](#)

[Link to citation list in Scopus](#)

# Fingerprint

Dive into the research topics of 'Optical design for biomedical imaging'. Together they form a unique fingerprint.

 Optical design CHEMICAL COMPOUNDS	 Optical Devices MEDICINE & LIFE SCIENCES
 Optics CHEMICAL COMPOUNDS	 Imaging techniques CHEMICAL COMPOUNDS
 Optics PHYSICS & ASTRONOMY	 Imaging systems CHEMICAL COMPOUNDS
 Optical systems CHEMICAL COMPOUNDS	 Optical Imaging MEDICINE & LIFE SCIENCES

[View full fingerprint >](#)

## Cite this

...

Liang, R. (2011). *Optical design for biomedical imaging*. SPIE. <https://doi.org/10.1117/3.871548>

Powered by [Pure](#), [Scopus](#) & [Elsevier Fingerprint Engine™](#) © 2020 Elsevier B.V

"We use cookies to help provide and enhance our service and tailor content. By continuing you agree to [the use of cookies](#)

[About web accessibility](#)

Designing an efficient system for biomedical imaging requires a solid understanding of special requirements of optical systems for biomedical imaging and optical components used in the systems. This book is developed from the SPIE short course Optical Design for Biomedical Imaging that I have been teaching since 2008. It can be used as a reference for students, researchers, and engineers in biomedical fields. Readers can learn about the fundamentals of biomedical optics (light and tissue interaction, effect of tissue on optical system), optical component specification and selection, light sour Printed in the UK. Biomedical sensors using optical bres. Anna Grazia Mignani† and Francesco Baldini‡. Istituto di Ricerca sulle Onde Elettromagnetiche 'Nello Carrara', CNR Via Panciatichi 64, I-50127, Firenze, Italy. Design and manufacturing specifications. The probes require accurate workmanship and hand assembly and must be designed to produce a high back-transmitted signal simultaneously with a fast response time. Major requisites are optimized housing, miniaturization, seal, and transducer stability. Multianalyte detection with an imaging bre bundle: scheme of the optoelectronic system used for both optrode photodeposition and detection. 4.2.2. Gastric and oesophageal pH. Optical Design for Biomed has been added to your Cart. Add to Cart. Buy Now. This is a practical guide to the optical engineering issues in biomedical imaging systems design. Well written, clear and concise, it is a good review of important bio-medical optical systems - the design methods and challenges. The print-quality of the diagrams - many with fine lines that are really feint - was pretty poor in my copy. Read more. Optical Design: Applying the Fundamentals is written for engineers and scientists who have some The Biomedical Engineering Handbook, Third Edition - 3 Volume Set: Biomedical Engineering Fundamentals (The Biomedical Engineering Handbook, Fourth Edition). 1,180 Pages · 2014 · 540 KB · 41,367 Downloads · New! Known as the bible of biomedical engineering, The Biomedical Engineering Handbook, Fourth Edition Biomedical Engineering and Design Handbook, Volume 1: Second Edition, Biomedical Engineering. 686 Pages · 2009 · 4.52 MB · 7,728 Downloads · New! A State-of-the-Art Guide to Biomedical Engineering and D...