



## Biophotonics for medical applications [

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Monografía

Biophotonics for Medical Applications presents information on the interface between laser optics and cell biology/medicine. The book discusses the development and application of photonic techniques that aid the diagnosis and therapeutics of biological tissues in both healthy and diseased states. Chapters cover the fundamental technologies used in biophotonics and a wide range of therapeutic and diagnostic applications. Presents information on the interface between laser optics and cell biology/medicineDiscusses the development and application of photonic techniques which aid the diagnosis

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**Contenido:** Front Cover; Biophotonics for Medical Applications; Copyright; Contents; Contributors; Woodhead Publishing Series in Biomaterials; Part One: Materials, technologies, and processes; Chapter 1: Multimodal diffuse optical imaging for biomedical applications; 1.1. Introduction; 1.1.1. Light interaction with biological tissue; 1.1.2. Multimodal approaches in optical imaging; 1.2. Optical imaging platforms for multimodal imaging; 1.2.1. Optical imaging instrumentation; 1.2.2. Multimodal optical platforms; 1.2.2.1. Optical-MRI platforms; 1.2.2.2. Optical-CT platforms; 1.2.2.3. Optical-US platforms 1.2.2.4. Fusion of optical imaging with PET1.3. Theoretical considerations; 1.3.1. Forward modeling methods; 1.3.2. Multimodality optical imaging and use of structural priors; 1.4. Clinical applications of multimodal optical imaging; 1.5. Future perspectives in multimodal optical imaging; References; Chapter 2.3. Potential applications2.3.1. Switchable wettability on photoresponsive surfaces; 2.3.2. Optical switches; 2.3.3. Optobioelectronic devices; 2.3.4. Biocatalysts; 2.3.5. Biosensors; 2.3.6. Biomedical engineering; 2.4. Conclusions and future trends; References; Chapter 3: Optical fibres and sensors for biomedical applications; 3.1. Optical fibres; 3.1.1. Geometry and refractive index; 3.1.2. Propagation; 3.1.3. Fabrication and materials; 3.1.4. Optical fibre sensor technologies; 3.1.4.1. Intensity-modulated sensors; 3.1.4.2. Phase-modulated sensors; 3.1.5. Micro/nanofibres 3.1.6. Photonic crystal fibres3.2. Optical fibre sensors; 3.2.1. Biomolecular sensors; 3.2.2. Cellular microenvironment sensors; 3.2.3. Temperature sensors; 3.2.4. pH sensors; 3.2.5. Gas sensors; 3.2.5.1. Oxygen sensors; 3.2.5.2. Carbon dioxide sensors; 3.2.6. Blood flow sensors; 3.2.7. Pressure

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