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Nota di contenuto	Cover; Title Page; Contents; Preface; Introduction; Chapter 1. Confocal Laser Scanning Microscopy; 1.1. Introduction; 1.1.1. Context and framework of chapter; 1.1.2. From wide-field microscopy to confocal microscopy; 1.2. Principle and implementation; 1.2.1. General principle; 1.2.2. Axial and lateral resolution in confocal microscopy; 1.2.3. Some notions of fluorescence; 1.2.4. Main elements of a confocal scanning laser microscope; 1.3. Applications in biology, potential and limitations; 1.3.1. Basic elements of biology for the neophyte; 1.3.2. Fluorescent labeling 1.3.3. Practical implementation of confocal microscopy1.4. Related and derived techniques; 1.4.1. Advanced contrast modes: FRAP, FLIP, FLIM, FRET, etc; 1.4.2. The contribution of nonlinear contrast modes; 1.4.3. Recent major advances: overcoming the diffraction limit; 1.5. Bibliography; Chapter 2. Flow Cytometry (FCM) Measurement of Cells in Suspension; 2.1. History of FCM; 2.2. Components of the cytometer: fluidics, optics and signal processing; 2.2.1. Fluidics; 2.2.2. Optics; 2.2.3. Signal processing; 2.3. Experimentation strategy; 2.3.1.

Visualizations of the spectra

2.3.2. Compensation of fluorescences 2.3.3. Checking the optical bench; 2.3.4. Presentation of parameters A/H/W; 2.3.5. Graphical presentation; 2.4. Types of platform for FCM; 2.4.1. Clinical platform; 2.4.2. Research platform; 2.5. Principle of cell sorting; 2.6. Analyzed parameters; 2.6.1. Light scattering; 2.6.2. Fluorochromes; 2.7. Applications in biology; 2.7.1. Clinical; 2.7.2. Research; 2.7.3. Environment; 2.7.4. Plant biology; 2.7.5. Industrial microbiology; 2.8. Complementarities of the FCM with the other cytometries, confocal and dynamic; 2.9. Cytometry on beads, LUMINEXTM type

2.10. Scientific societies 2.11. Websites to visit; 2.12. Bibliography; 2.13. Reference books; Chapter 3. Optical Coherence Tomography; 3.1. Introduction; 3.2. Principles of OCT; 3.3. Frequency-domain OCT; 3.4. Spatial resolution; 3.5. Applications of OCT; 3.5.1. Ophthalmology; 3.5.2. Internal medicine; 3.5.3. Other fields of application; 3.6. Extensions of OCT; 3.7. Full-field OCT; 3.7.1. Principle; 3.7.2. Spatial resolution; 3.7.3. Dynamics and sensitivity; 3.7.4. Operating speed; 3.7.5. Applications; 3.8. Conclusion; 3.9. Bibliography; Chapter 4. Therapeutic Applications of Lasers

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5.1.2. Surface plasmon resonance sensors

Sommario/riassunto

Optics is a science which covers a very large domain and is experiencing indisputable growth. It has enabled the development of a considerable number of instruments, the optical component or methodology of which is often the essential part of portent systems. This book sets out show how optical physical phenomena such as lasers - the basis of instruments of measurement - are involved in the fields of biology and medicine.Optics in Instruments: Applications in Biology and Medicine details instruments and measurement systems using optical methods in the visible and near-infrared,