

1. Record Nr.	UNINA9910141379403321
Autore	Murphy Douglas B
Titolo	Fundamentals of light microscopy and electronic imaging / / Douglas B. Murphy, Michael W. Davidson
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Blackwell, 2012
ISBN	1-283-64427-4 1-118-38290-0 1-118-38291-9
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (xiii, 538 p.)
Altri autori (Persone)	DavidsonMichael W <1950-> (Michael Wesley)
Disciplina	502.8/2
Soggetti	Microscòpia Imatges - Processament - Tècniques digitals Microscopy Image processing - Digital techniques
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Title page; Copyright page; Contents; Preface; Acknowledgments; CHAPTER 1: Fundamentals of Light Microscopy; Overview; Optical Components of the Light Microscope; Aperture and Image Planes in a Focused, Adjusted Microscope; Koehler Illumination; Adjusting the Microscope for Koehler Illumination; Fixed Tube Length versus Infinity Optical Systems; Precautions for Handling Optical Equipment; Care and Maintenance of the Microscope; CHAPTER 2: Light and Color; Overview; Light as a Probe of Matter; The Dual Particle- and Wave-Like Nature of Light; The Quality of Light Properties of Light Perceived by the EyePhysical Basis for Visual Perception and Color; Addition and Subtraction Colors; CHAPTER 3: Illuminators, Filters, and the Isolation of Specific Wavelengths; Overview; Illuminators and Their Spectra; Illuminator Alignment and Bulb Replacement; Filters for Adjusting the Intensity and Wavelength of Illumination; Neutral Density Filters; Colored Glass Filters; Interference Filters; Effects of Light on Living Cells; CHAPTER 4: Lenses and Geometrical Optics; Overview; Reflection and Refraction of Light; Image Formation by a Simple Lens

Rules of Ray Tracing for a Simple Lens; Object-Image Math; The Principal Aberrations of Lenses; Designs and Specifications of Objectives; Special Objective Designs; Markings on the Barrel of an Objective; Image Brightness; Objective Parfocality; Condensers; Oculars; Microscope Slides and Coverslips; The Care and Cleaning of Optics; Dust; Immersion Oil; Scratches and Abrasions; Mechanical Force; CHAPTER 5: Diffraction and Interference in Image Formation; Overview; Diffraction and Interference; The Diffraction Image of a Point Source of Light; The Constancy of Optical Path Length between Object and Image; Effect of Aperture Angle on Diffraction Spot Size; Diffraction by a Grating and Calculation of Its Line Spacing, D ; Abbe's Theory for Image Formation in the Microscope; A Diffraction Pattern Is Formed in the Rear Aperture of the Objective; Preservation of Coherence: Essential Requirement for Image Formation; CHAPTER 6: Diffraction and Spatial Resolution; Overview; Numerical Aperture; Spatial Resolution; Depth of Field and Depth of Focus; Optimizing the Microscope Image: A Compromise between Spatial Resolution and Contrast; CHAPTER 7: Phase Contrast Microscopy and Darkfield Microscopy; Overview; Phase Contrast Microscopy; The Behavior of Waves from Phase Objects in Brightfield Microscopy; Wave Terminology and the Importance of Coherence; Depiction of Wave Interactions with Sine Wave and Vector Diagrams; The Role of Differences in Optical Path Lengths; The Optical Design of the Phase Contrast Microscope; Alignment; Interpreting the Phase Contrast Image; Darkfield Microscopy; Theory and Optics; Image Interpretation; CHAPTER 8: Properties of Polarized Light; Overview; The Generation of Polarized Light; Polarization by Reflection and Scattering

Sommario/riassunto

Fundamentals of Light Microscopy and Electronic Imaging, Second Edition provides a coherent introduction to the principles and applications of the integrated optical microscope system, covering both theoretical and practical considerations. It expands and updates discussions of multi-spectral imaging, intensified digital cameras, signal colocalization, and uses of objectives, and offers guidance in the selection of microscopes and electronic cameras, as well as appropriate auxiliary optical systems and fluorescent tags. The book is divided into three sections covering opti
