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Nota di contenuto	Preface -- Acknowledgements -- Dedication -- Ray Optics, Wave Optics and Imaging System Designing -- Basics of Electromagnetic Theory for Fluorescence Microscopy -- Electric Field Effects in Optical Microscopy Systems -- Quantum Description of Radiation Field and Optical Microscopy -- Molecular Physics of Fluorescence Markers -- Basics of Fluorescence and Photophysics -- General Fluorescence Imaging Techniques -- Multiphoton Fluorescence Microscopy -- Super Resolution Fluorescence Microscopy -- Image Reconstruction Methodologies for Fluorescence Microscopy -- Future Prospective of Fluorescence Microscopy -- Appendix I -- Appendix II -- Appendix III.
Sommario/riassunto	This book starts at an introductory level and leads reader to the most advanced developments in fluorescence imaging and super-resolution techniques that have enabled the emergence of new disciplines such as

nanobioimaging, multiphoton microscopy, photodynamic therapy, nanometrology and nanosensors. The interdisciplinary subject of fluorescence microscopy and imaging requires complete knowledge of imaging optics and molecular physics. So, this book approaches the subject by introducing optical imaging concepts before going deep into the advanced imaging systems and their applications. Molecular orbital theory forms the basis for understanding fluorescent molecules and thereby facilitates complete explanation of light-matter interaction at the geometrical focus. The two disciplines have some overlap since light controls the states of molecules and conversely, molecular states control the emitted light. These two mechanisms together determine essential fluorescence factors and phenomena such as, molecular cross-section, Stokes shift, emission and absorption spectra, quantum yield, signal-to-noise ratio, Forster resonance energy transfer (FRET), fluorescence recovery after photobleaching (FRAP) and fluorescence lifetime. These phenomena form the basis of many fluorescence based devices. The book is organized into two parts. The first part deals with basics of imaging optics and its applications. The advanced part covers many imaging techniques and related instrumentation that are developed in the last decade pointing towards far-field diffraction limited and unlimited imaging.