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| Nota di contenuto | Christian Eggeling, Stefan W. Hell: STED Fluorescence Nanoscopy -- Ke Xu, Sang-Hee Shim, and Xiaowei Zhuang: Super-Resolution Imaging Through Stochastic Switching and Localization of Single Molecules: An Overview -- Markus Sauer: A Practical Guide to dSTORM: Super-Resolution Imaging with Standard Fluorescent Probes.- Matthew D. Lew, Steven F. Lee, Michael A. Thompson, Hsiao-lu D. Lee, and W. E. Moerner: Single-Molecule Photocontrol and Nanoscopy -- Susan Gayda, Per Niklas Hedde, Karin Nienhaus, and G. Ulrich Nienhaus: Probes for |

Nanoscopy: Fluorescent Proteins.- Dmytro A. Yushchenko and Marcel P. Bruchez: Tailoring Fluorescent Labels for Far-Field Nanoscopy -- Pedro F. Aramendia and Mariano L. Bossi: Probes for Nanoscopy: Photoswitchable Fluorophores -- Thorben Cordes, Jan Vogelsang, Christian Steinhauer, Ingo H. Stein, Carsten Forthmann, Andreas Gietl, Jürgen J. Schmied, Guillermo P. Acuna, Sebastian Laurien, Birka Lalkens, and Philip Tinnefeld: Far-Field Nanoscopy with Conventional Fluorophores: Photostability, Photophysics, and Transient Binding -- Gert De Cremer, Bert F. Sels, Dirk E. De Vos, Johan Hofkens, and Maarten B.J. Roeffaers: NASCA Microscopy: Super-Resolution Mapping of Chemical Reaction Centers -- Maximilian H. Ulbrich: Counting Molecules: Toward Quantitative Imaging.- Mario Brameshuber and Gerhard J. Schütz: In Vivo Tracking of Single Biomolecules: What Trajectories Tell Us About the Acting Forces.

Sommario/riassunto

This book describes developments in the field of super-resolution fluorescence microscopy or nanoscopy. In 11 chapters, distinguished scientists and leaders in their respective fields describe different nanoscopy approaches, various labeling technologies, and concrete applications. The topics covered include the principles and applications of the most popular nanoscopy techniques STED and (f)PALM/STORM, along with advances brought about by fluorescent proteins and organic dyes optimized for fluorescence nanoscopy. Furthermore, the photophysics of fluorescent labels is addressed, specifically for improving their photoswitching capabilities. Important applications are also discussed, such as the tracking and counting of molecules to determine acting forces in cells, and quantitative cellular imaging, respectively, as well as the mapping of chemical reaction centers at the nano-scale. The 2014 Chemistry Nobel Prize® was awarded for the ground-breaking developments of super-resolved fluorescence microscopy. In this book, which was co-edited by one of the prize winners, readers will find the most recent developments in this field.