A self-contained treatment of the latest fluorescence applications in biotechnology and the life sciences

This book focuses specifically on the present applications of fluorescence in molecular and cellular dynamics, biological/medical imaging, proteomics, genomics, and flow cytometry. It raises awareness of the latest scientific approaches and technologies that may help resolve problems relevant for the industry and the community in areas such as public health, food safety, and environmental monitoring.

Following an introductory chapter on the basics of fluorescence, the book covers: labeling of cells with fluorescent dyes; genetically encoded fluorescent proteins; nanoparticle fluorescence probes; quantitative analysis of fluorescent images; spectral imaging and unmixing; correlation of light with electron microscopy; fluorescence resonance energy transfer and applications; monitoring molecular dynamics in live cells using fluorescence photo-bleaching; time-resolved fluorescence in microscopy; fluorescence correlation spectroscopy; flow cytometry; fluorescence in diagnostic imaging; fluorescence in clinical diagnoses; immunochemical detection of analytes by using fluorescence; membrane organization; and probing the kinetics of ion pumps via voltage-sensitive fluorescent dyes.

With its multidisciplinary approach and excellent balance of research and diagnostic topics, this book is an essential resource for postgraduate students and a broad range of scientists and researchers in biology, physics, chemistry, biotechnology, bioengineering, and medicine.
ABOUT THE AUTHOR

Ewa M. Goldys, PhD, is Professor in the Department of Physics at Macquarie University in Sydney, Australia. She has done extensive work in materials science, nanotechnology and biotechnology and is currently focused on research into how these can underpin novel applications in life sciences and medical technologies.

Alan R. Hibbs, PhD, is Director of BIOCON, a company devoted to advanced microscopy in the life sciences and medicine, and is also senior lecturer in microbiology at Monash University in Melbourne, Australia.

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