

An overview of current research and developments in ultrasensitive bioanalysis

New platforms of ultrasensitive analysis of biomolecules and single living cells using multiplexing, single nanoparticle sensing, nano-fluidics, and single-molecule detection are advancing every scientific discipline at an unprecedented pace. With chapters written by a diverse group of scientists working in the forefront of ultrasensitive bioanalysis, this book provides an overview of the current status and an in-depth understanding of the objectives and future research directions of ultrasensitive bioanalysis. Spanning a wide spectrum of new research approaches, this book:

- Introduces new theories, ideas, methodologies, technologies, and applications of ultrasensitive bioanalysis in a wide variety of research fields
- Includes background, fundamentals, and descriptions of instrumentation and techniques behind every experimental design and approach to help readers explore the promising applications of new tools
- Covers single molecule detection (SMD), single living cell analysis, multi-functional nanoparticle probes, miniaturization, multiplexing, quantitative and qualitative analysis of metal ions and small molecules, and more
- Discusses techniques such as single molecule microscope and spectroscopy, single nanoparticle optics, single nanoparticle sensors, micro- and nano-fluidics, microarray detection, ultramicroelectrodes, electrochemiluminescence, mass spectrometry, and more

This book will be a useful resource and an inspiration for scientists and graduate and undergraduate students in a wide variety of research fields, including chemistry, biology, biomedical science and engineering, and materials science and engineering.

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