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Nota di contenuto	Title Page; Series Editor's Preface; Preface; Summary; Symbols; Abbreviations; Contents; Introduction to Biosensors; The Molecular Orchestra of Life; Definition of a Biosensor; History of Biosensors; Biosensor Properties; Sensor Terminology; A History of Plasmonics; The Topic of This Book; Surface Sensitive Techniques; Electrical Signal Transduction; Mechanical Signal Transduction; Optical Signal Transduction; Kinetics of Molecular Binding to Surfaces; Reversible Interactions and Equilibrium Establishment; Mass Transport and Performance Limits; Model Accuracy; Surface Functionalization Creating Inert Surfaces Recognition Elements; Functionalization for Arrays; Lipid Membranes; Optics Crash Course; The Plane Wave; Optical Properties of Materials; When Light Encounters a Material; Overview of Plasmons; Nanoparticle Plasmons; The Extinction Cross Section; The Electrostatic Limit; Very Small Particles; Slightly Larger Particles; Other Particle Shapes; Influence from Surface Support; Bioapplications of Plasmonic Particles; Surface Plasmons; Single Interface; Excitation by Light; Influence from Roughness; Optically Thin Films; Dispersion in Multilayers; Fresnel Calculations Wire Plasmons The Success of Surface Plasmon Resonance; Nanoholes in

Metal Films; Single Holes; Nanohole Arrays; Utilizing the Structure; The Near Field; Experimental Methods; Analytical Methods; Coupling Effects; Metamaterials; Numerical Methods; Plasmon Interactions with Excitons; Plasmon Spectroscopy; The Extinction Spectrum; Spectroscopy Configurations; Sources of Noise; Specifications and Guidelines; Miniaturization; Scattering Spectroscopy; Angular Spectroscopy; Imaging; Spectral Analysis; The Resonance Peak; Parameters for Optimal Performance; Defining Sensitivity; Quantitative Analysis

A Generic Formalism Determining the Spatial Sensitivity Distribution; Relating Refractive Index to Concentration; Thickness Determinations; An Integrated View of Sensor Performance; The Generic Signal; Maximizing Sensitivity; The Importance of Equilibrium Establishment; Sensor Size; Current Performance Limits; Advanced Plasmonic Biosensors; Combined Sensors; Electrochemical Plasmonic Sensors; Plasmonic Electrodes for Piezoelectric Sensors; Interferometric Plasmonic Sensors; References

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Sommario/riassunto

In this book, Andreas Dahlin has written a comprehensive and thorough review of plasmonic biosensors that operate by refractometric detection. After an introductory chapter on biosensors, in which he sets out the concepts of biosensing in its application to such areas as proteomics, medical diagnostics and environmental control, he undertakes an integrated coverage of surface chemistry, surface physics and optics, specifically related to the requirements of design of a plasmonic biosensor. Sections on nanoparticle plasmons and surface plasmons follow, leading to a review of SPR technology for

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