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remarks and other directions; 1.8 Acknowledgments; 1.9 References; Chapter 2 Biosensors for pesticides; 2.1 Introduction 2.1.1 Need for pesticide biosensors 2.1.2 Developments in pesticide biosensors; 2.1.3 Thrust areas for pesticide biosensors; 2.2 Biocatalysts used in pesticide biosensors; 2.2.1 Enzymes used in pesticide biosensors and their features; 2.2.2 Immobilization methods used in pesticide biosensors design; 2.3 Enzyme-based biosensors construction; 2.3.1 Pesticides measuring principles; 2.3.2 Inhibition-based biosensors; 2.3.3 Catalysis-based biosensors; 2.3.4 Flow injection biosensors; 2.3.5 Enzyme reactivation; 2.4 Pesticide immunosensors; 2.4.1 Detection methods for pesticide immunosensors 2.4.2 Immunosensors for pesticides 2.4.3 Regeneration of pesticide immunosensors; 2.5 Whole cell and tissue-based pesticide biosensors; 2.6 Major interfering compounds and sample pretreatment; 2.7 Conclusions; 2.8 Acknowledgments; 2.9 References; Chapter 3 Electrochemical glucose biosensors; 3.1 Introduction; 3.2 Forty years of progress; 3.3 First-generation glucose biosensors; 3.3.1 Redox interferences; 3.3.2 Oxygen dependence; 3.4 Second-generation glucose biosensors; 3.4.1 Electron transfer between GOx and electrode surfaces; 3.4.2 Use of artificial mediators 3.4.3 Attachment of electron-transfer relays 3.5 In-vitro glucose testing; 3.6 Continuous real-time in-vivo monitoring; 3.6.1 Requirements; 3.6.2 Subcutaneous monitoring; 3.6.3 Towards non-invasive glucose monitoring; 3.7 Conclusions and outlook; 3.8 References; Chapter 4 New trends in ion-selective electrodes; 4.1 Introduction; 4.1.1 State-of-the-art; 4.1.2 Most important biomedical applications of ion-selective electrodes; 4.2 Classical ion-selective electrodes; 4.2.1 Understanding of the operational principles; 4.2.2 Response characteristics: selectivity and detection limits 4.2.3 Reference electrodes

Sommario/riassunto

This book broadly reviews the modern techniques and significant applications of chemical sensors and biosensors. Chapters are written by experts in the field - including Professor Joseph Wang, the most cited scientist in the world and renowned expert on sensor science who is also co-editor. Each chapter provides technical details beyond the level found in typical journal articles, and explores the application of chemical sensors and biosensors to a significant problem in biomedical science, also providing a prospectus for the future. This book compiles the expert knowledge of many special
