

Book Review

Enzyme and Microbial Biosensors:

Techniques and Protocols

edited by Ashok Mulchandani and Kim R. Rogers

*The Humana Press, Totowa, NJ;
1998; ISBN 0-896031-410-0; 264 pp.; \$69.50 (hardcover)*

"Bewildering array of research," "virtual explosion," "myriad of permutations," and similar phrases grace the introductory notes or remarks of many books and symposia on this topic. Most biosensor aficionado would agree that such descriptions are not merely hyperbole. If such is the case, does the need for yet another biosensor tome exist? If the reader's viewpoint is one outside of or on the periphery of the field, yet desiring to perform experimental work in this arena, the need does exist.

As the title and preface of this book indicate, the editors intended to provide graduate students and researchers a tutorial in enzyme and microbial biosensor applications. (A companion volume addresses affinity sensors.) Exhaustive reviews of the state of the art exist, but attempting to make a jump start from such a review would be ill advised. Mulchandani and Rogers have assembled an international group of authors that presents a comprehensive panel of biosensors—comprehensive in that each chapter focuses on a different signal transduction technique.

If a reader seeks an overview of the literature on a particular biosensor analyte or technique, he or she should seek other works. (This text contains ample references to start one in that direction.) But for a graduate student or researcher who needs a jump start in the field, *Enzyme and Microbial Biosensors* is a good place to begin for several reasons. First, the organization of this volume around transducer technology allows the reader to look about the laboratory for available equipment. Second, the consistent format among chapters is useful and refreshing. Third, most chapters include concise descriptions of the fundamentals and developmental history of the highlighted transducer. Fourth, commercial sources for the reagents and materials are given in F. W. Scheller et al.'s contribution, "Enzyme Biosensors Based on Oxygen Detection." And finally, virtually every chapter includes tips for ensuring experimental success or warns the experimenter of potential pitfalls.

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Book Review

Affinity Biosensors

Techniques and Protocols

edited by Kim R. Rogers and Ashok Mulchandani

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This book is divided into 15 chapters and is considered as the companion volume to the one on catalytic biosensors entitled *Enzyme and Microbial Biosensors: Techniques and Protocols*. Part 1 covers the variety of principles affinity biosensors are based on, whereas part 2 is on biosensor-related techniques. The separation is somewhat arbitrary. The articles are written by competent experts and cover the subjects in reasonable depth. A most attractive feature of the book is its most detailed description of typical experiments, which makes it a useful source for practitioners.

In part 1, immunosensors are described that are based on thermistors, surface plasmon resonance, piezoelectric crystals, evanescent wave excited fluorescence, fluorescence resonance energy transfer, grating couplers, and other schemes. The formats vary substantially and range from planar sensor interfaces to hollow fibers, and both irreversible and reversible systems (Chapter 7) are described.

In part 2, biosensors are covered that are based on ion-selective electrodes, DNA intercalating dyes, field effect transistors, liposomes, bilayer membranes, or eukaryotic cells. Despite the heterogeneity of methods, the chapters are a pleasure to read because the authors do not give lengthy introductions into the basic principles of the respective sensors but rather (and correctly!) assume that readers of such a book are familiar with the fundamental schemes.

I consider this book a real asset for those experimentally working with biosensors, even though immunosensors represent the major fraction of the book; a stronger focus on hybridization assays would have been desirable. The protocols, special notes, and safety items provide details that normally do not appear in journal articles. Hence, this book is unusually helpful to the increasing number of researchers in the biosensor field.

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