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Preface

The last decade has witnessed an unprecedented convergence of biological, physical, chemical, and engineering sciences that allows the construction of integrated devices that could not have been feasible earlier. Diverse combinations of biotic entities with inanimate platforms are reported that repeatedly break new grounds in the engineering of biochips, biomimetic systems, and bioarrays. One exciting front in this continuously developing field deals the deposition and immobilization of live, functioning cells onto solid surfaces for biosensor applications. The present two volumes set attempts to summarize the state of the art in this field, to highlight several specific research aspects, to describe some of the most relevant applications, and to point out what we believe are the most important future directions for whole-cell sensor systems.

To accomplish this, leading scientific authorities on biosensor-related biological, chemical, and engineering aspects have joined forces by contributing 17 comprehensive review chapters that have been divided into two “Whole-Cell Sensor Systems” volumes. Volume I addresses the two main components of such systems: the cells on the one hand and the devices on the other; the second volume is devoted to a description of a set of present and future applications of whole-cell biosensors.

We have tried to direct the manner by which these issues are addressed here to illustrate the multidisciplinary nature that is essential for such an imaginative combination of diverse scientific disciplines. It is our hope that the resulting compendium of reviews will stimulate students, teachers, and researchers from all related fields to try and tread this exciting path.

Jerusalem Shimshon Belkin
Seoul Man Bock Gu
Editors
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