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Book review

Immobilized Cells and Organelles: Volume I, edited by Bo Mattiasson, CRC Press, Boca Raton, FL, 1984, 142 pages, US $55.00.

This volume presents important aspects among the recent developments of immobilized-cell and organelle technology (organelles are specific parts of cells which can continue to manifest their specific biological function when removed from the parent cell, provided that they continue to receive the correct chemical stimulants). Besides a comprehensive overview of classical immobilization methods, some alternative immobilization techniques and their applications are presented. Much of the work covered is relevant to researchers on carbohydrates who have an eye to biotechnology. Carbohydrates are used as immobilization supports, or form part of the link between support and immobilized bioentity (such as cell-surface glycoproteins), whereas, in other cases, the application of the immobilized entity lies in utilization of carbohydrates as substrates, or in conversions of carbohydrates. Each chapter deals specifically either with one class of biocatalytic entity (plant cells, organelles) or one class of immobilization procedure (hollow fiber, microcarrier, or aqueous two-phase system).

Chapter 1, "*Introduction*", by Bo Mattiasson, very briefly and generally projects the current importance and potential of immobilized cells and organelles.

Chapter 2, "*Immobilization Methods*", by Bo Mattiasson, covers such conventional immobilization techniques as covalent coupling, affinity immobilization, adsorption, and entrapment. This short review is well documented. The applications and the limitations of these methods are discussed, and, for each of them, the procedure of representative examples is described.

Chapter 3, "*Immobilized Plant Cells*", is by Peter Brodelius. Besides a short description of the technique of plant-cell tissue-culture, the immobilization of plant cells by entrapment in different polymeric networks is described. The viability of the immobilized cells is compared for the different preparations. The biosynthetic capacity of the immobilized plant-cells is discussed. Investigations on immobilized, permeabilized plant-cells are also reported.

Chapter 4, "*Microcarrier-bound Mammalian Cells*", by Michael Hirtenstein and Julian Clark, is concerned with the use of microcarriers as supports for the monolayer culture of animal cells. The applications of this technique, which is suitable for a wide range of animal cells, are reviewed, and the different microcarrier, cell-culture methods are described.

Chapter 5, "*Hollow Fibre Cell Culture: Applications in Industry*", by John Hopkinson, deals with hollow-fiber cell-culture, and its applications in industry.

Background, design, and operational features, biological aspects, manufacturing considerations, and industrial potential for hollow-fiber, cell-culture systems are discussed.

Chapter 6, "*Immobilized Organelles*", by Atsuo Tanaka and Saburo Fukui, presents recent results on the immobilization of chloroplasts, mitochondria, microsomes, and peroxisomes. The immobilization of algal cells and bacterial chromatophores (as examples of immobilized photosystems) is also discussed.

In Chapter 7, "*Utilization of Aqueous Two-phase Systems for Generating Soluble Immobilized Preparations of Biocatalysts*", by Bo Mattiasson and Bärbel Hahn-Hägerdal, the characteristics of aqueous, two-phase systems are presented, and examples of bioconversion processes carried out in such systems, with extraction of low- or high-molecular-weight products, or both, are discussed.

Although it is a multi-authored book, a common feature is pursued through the different chapters: it conveys a great deal of information in an accessible form. A number of applications are fully discussed and practical aspects are outlined. This book can be highly recommended to those readers who have a general interest in immobilized cells and organelles as a new area of study, or to those who are already specialists in this field.

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