

# PUBLICATIONS

## THIRD ROTENBURGER FERMENTATION SYMPOSIUM

**Enzyme Technology.** Edited by R. M. Lafferty. Pp. 314. ISBN 3-540-12479-9. \$46.50. (Springer-Verlag, Berlin-Heidelberg: 1983).

This book represents the proceedings of the IIIrd Rotenburger Fermentation Symposium held in 1982 in Kassel. Enzyme technology was the main subject of the symposium and is defined by the editor as "the scientific study of proteinaceous catalysts derived from living organisms and the application of the knowledge to solve specific problems". An attempt was made to balance the symposium topics between basic scientific research and practical applications. The book covers a wide range of active enzyme technology areas.

The book contains the text of four opening lectures, the first two of which are very brief and introductory; the other two review "parameters involved in heterogeneous biocatalysis" and "unusual catalytic properties of usual enzymes". The rest of the papers are grouped into six sections, each containing between two and five contributions, more or less topically homogeneous.

Section I, entitled "Enzyme Production" contains papers on an aldehyde dehydrogenase from alkane-grown *Acinetobacter calcoaceticus*, the induction of cellulases in *Trichoderma reesei*, and on extracellular acid proteins from *Rhizopus rhizopodiformis*. In addition, there is a brief paper on the application of recombinant DNA in enzyme technology, and an unrelated, but interesting paper from the Cetus group on enzymatic halogenation of allyl alcohol to heterogeneous dihalide derivatives. The mechanism appears to involve an initial enzymatic oxidation and incorporation of a halide, followed by a non-enzymatic reaction to insert a second halide.

Section II, entitled "Cell Disintegration" includes only two papers; one is a fairly comprehensive review and discussion of freeze pressing, and the second describes experiments with a 20 liter high speed industrial bead mill.

Section III, "Enzyme Purification", also contains only two contributions.

The first actually deals with recovery of activity of solvent-denatured catalase and differences between crude and crystallized enzyme. The use of aqueous two-phase systems for the isolation and purification of enzymes and biological active proteins by liquid-liquid extraction has been investigated since 1977 by M. Kula and her co-workers; we enjoyed the brief review on the current status of this technique.

Section IV contains well written reviews on the production of maltose and glucose, on enzymatic polymerization of lignin, and on the application of enzymes to organic synthesis; the latter paper, however, contains no references. The paper "preparation of isotopically-labeled amino acids with L-methionine  $\alpha$ -lyase" describes simple methods for specific labeling of various L-amino acids with deuterium or tritium.

The four papers on novel methods and applications of immobilized enzymes and cells in Section V are all of high quality. The first describes the use of the enzyme thermister as a flow analyzer in biotechnology. The enzyme thermister is a novel analytical instrument based on the use of an immobilized enzyme in a simple flow calorimeter, and can be used for measuring and monitoring metabolites, enzymes, and microbial activities. Its application as a flow analyzer in biotechnology was successfully demonstrated. Another paper describes two coimmobilized biocatalyst systems: *Aspergillus niger* mycelium with internal glucose oxidase and catalase and additionally bound glucoamylase for

oxygen removal from beer; and living *Saccharomyces cerevisiae* cells coimmobilized with pepsin as an envelope, for wine must fermentation. Another paper reviews the formation of biocatalytic systems by ionotropic gelation, including spherical alginate, chitosan, and chitosan-alginate biocatalysts. The application of these immobilization procedures for resting, viable and multiplying cells is demonstrated. The last paper in this section deals with the bioconversions of penicillins and cephalosporins as well as biosynthesis of other peptide antibiotics.

Two additional papers on  $\beta$ -lactam and peptide antibiotic semi-synthesis using enzymes can be found in the final section entitled "Enzyme Reactions and Process Design". This section also contains papers on a multi-enzyme membrane process for L-alanine production from pyruvate with NAD regeneration, and on a tubular recycle membrane reactor for continuous operation with soluble enzymes.

In summary, this book provides an overview of the recent status of several active areas of enzyme technology, an activity that has enjoyed a revival of interest in recent years. The contributors are among the leading researchers in the field. Although there are few, if any, references to work published after 1982, the book is a useful source of information for students, instructors and researchers interested in enzyme technology.

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## LIPOSOMES IN VOLUMES

**Liposome Technology.** Edited by Gregory Gregoriadis. *Volume I, Preparation of Liposomes.* Pp. 268, ISBN 0-8493-5316-5. \$83.00. *Volume II, Incorporation of Drugs, Proteins, and Genetic Materials.* Pp. 231. ISBN 0-8493-5317-3. \$64.00. *Volume III, Targeted Drug Delivery and Biological Interaction.* Pp. 292. ISBN 0-8493-5318-1. \$83.00 (CRC Press, Inc., Boca Raton, FL:1984).

The study of liposomes is a common technological theme that runs through many diverse aspects of biological science, and has stimulated areas of investigation as diverse as membrane and receptor studies, drug delivery and immunology. Once again Dr. Gregoriadis has edited a book on liposomes, appropriately titled *Liposome Technology*. Previous volumes on liposomes have focussed on