

Topics in enzyme and fermentation biotechnology

Volume 2

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This second volume of a series which emanates from the *Handbook of Enzyme Biotechnology* (1975) presents a medley of five contributions somewhat biased towards the engineering and technological readers rather than the biochemists. Considerable freedom has been given to the authors of the individual chapters in the style and emphasis of their presentations which, while no doubt welcomed by the authors, denies the volume any continuity or real identity.

The largest chapter concerns enzymes immobilised on inorganic supports and enzyme reactors. A very thorough catalogue of the types of support and methods of attachment is provided and the important factors in reactor design are comprehensively treated. Unfortunately, however, the enzymes themselves are largely ignored, being treated rather as black boxes. There is little appreciation shown for enzyme structure and a general lack of feeling for their mechanism of action is evident.

An excellent survey of enzyme electrodes and enzyme-based sensors follows. This is an under-exploited but expanding area and this review should certainly stimulate further developments. The enormous potential of this type of analytical system is demonstrated with many specific examples ranging from, on the one hand, the determination of inorganic salts such as phosphate and nitrite to, on the other, enzyme and antibiotic assays. The balance between

sensor design and the reaction chemistry is perfectly judged and the whole chapter is well illustrated.

The chapter on antibiotic inactivating enzymes concentrates largely on β -lactamases and chloramphenicol acetyl transferases. Assay methods and substrate profiles for the various enzymes are described in some detail and all the enzyme parameters are exhaustively tabulated. The biological importance and applications of the enzymes are more cursorily treated and the reader is left with the impression of important enzymes in a vain search for an important role.

The biological treatment of aqueous wastes re-establishes the engineering bias. The microorganisms are definitely treated as subsidiary to the reactor design, packing medium and liquid throughput and the mathematical analysis given more prominence than the chemical conversions involved. The volume is completed by a short chapter on the stabilisation of enzymes which regrettably pays little regard to all that we have learnt from the determination of the three dimensional structures of enzymes and the forces involved in the maintenance of protein structures. Rather it presents a compendium of additives which have been found to act as stabilisers in specific instances but without any attempt at a profound analysis of the reasons why.

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