

Abstract

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Title of Thesis: Immobilization of protein macromolecules onto polymer carriers: An overview

Since the 70s, the immobilised enzymes have been getting the attention of not only scientific and laboratory workers, but also industrial companies. Enzymes are unique biocatalysts, which are distinguished by their specificity, environment-friendliness and the ability to react under mild conditions can be easily subject of denaturation or inhibition. With regard to the usually high cost of purchase, the use of these enzymes could often be disadvantageous. Immobilization techniques offer an efficient solution to this problem and greatly simplify the use of enzymes in industry and research. Compared to the free forms, immobilized enzymes show greater activity, stability and allow repeated use as well as easier separation from products.

This thesis contains an overview of the basic methods of immobilization - physical absorption and covalent bonds to the carrier, entrapment, encapsulation and carrier-free techniques using cross-linking. Finally, we outline possible biomedical applications as well as the use of immobilised enzymes in biosensors.