

<<生物工程导论>>

图书基本信息

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### 内容概要

本书是在DG Rao《IntroductiOnto BiochemicalEngineering》第二版的基础上，经过编者重新组织、删减和修改出版的。主要供生物类专业低年级学生了解生物工程与技术专业的全貌，明晰后续专业课程之间的相互关系，领悟生物工程领域发展的现状和动态及其对社会和经济发展的影响，尤其是当今社会在面临着能源危机、资源危机和环境危机时生物技术所发挥的作用。阅读《生物工程导论(英文改编版)(第2版)》后，可提高学生对专业知识的理解，激发其进一步学习专业知识的兴趣和爱好。对于其他相关专业的学生则可拓展其视野、优化其知识结构、提高其科学素养。

本书既可作为高等院校生物工程、生物技术、化学工程、制药工程和环境工程等专业的导论教材，化学、生物和食品等专业的拓展教材，也可供相关学科从事教学、科研和生物产业管理者学习和参考。

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## 章节摘录

Covalent bonding method provides more permanent linkage between the enzyme and the support material. Covalent bonds can be formed under mild conditions, and the active site of enzyme must remain free from covalent attachments. There is still some possibility for loss of activity of the enzyme during bond formation mainly because of chemical reaction.

(iv) Adsorption One of the simplest methods for enzyme immobilization is by adsorption. Enzymes can be adsorbed physically on a surface-active adsorbent by weak physical forces such as van der Waals' forces or dispersion forces. Commonly used adsorbents are: alumina, clay, silica, anion-exchange resins, these support materials may have to be chemically or physically pretreated. Ion exchange resins DEAE-Sephadex and carboxymethylcellulose (CMC) can also be used as support media. One of the drawbacks with the adsorption procedure is that since adsorption is a non-specific process, many other substances may also be attached to the carrier in addition to the immobilized enzyme. Another disadvantage of this method is that the loading of enzyme on a unit amount of surface is always very low, and the bonding strength is very weak. Still this method is followed for the following distinct advantages: (i) the immobilization procedure is easy and simple (ii) the adsorption process is reversible (iii) enzymes are not deactivated by adsorption.

4.6.2 Properties of Immobilized Enzymes Enzymes are usually immobilized in particle or pellet form; but enzymes may be attached to, or entrapped within carriers in the form of membranes, tubes or fibers, based on the requirements of a given application. In view of this, an immobilized enzyme may have different properties as compared to the same enzyme in a free solution form. The method of immobilization and nature of insoluble carrier may have influence on the enzyme properties. The specific activity may reduce in the immobilized enzyme, particularly if a chemical process is involved in the immobilization method. The enzyme stability may vary on heating or storage. The pH optimum can change by as much as two pH units for the immobilized enzyme, mainly because of the new microenvironment as compared to the pure enzyme. ....?

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