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<<生物反应工程原理>>

图书基本信息

书名：<<生物反应工程原理>>

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内容概要

本书从2003年开始在世界范围内（主要是欧美）被用作课程教材，足以证明其影响力。
这是第3版，在以前版本的基础上进行了大幅修改。
本书的核心理念在于：设计生物过程首先要基于对生物系统的模拟，因此，需要引入生物科学里数学、定量的方法，以期和工程科学完美结合，以指导最佳生物过程的设计，相对于国内大多数生物反应工程教材，本书更注重基础、注重数学方法。
这是特别值得借鉴的。

在基础科学部分，本书设计第2、3、4、5章，分别从生物分子、物料守恒、生物反应热力学和生化反应系统四方面介绍生物过程的科学实质、
第6、7、8章，结合前面四章内容，系统总结了酶、细胞、细胞群落三个生物反应过程。
侧重于用数学方法描述酶催化、细胞（群落）转化过程，特别重视基础科学和工程科学的结合。

第9、10、11章介绍生物反应中的工程问题，主要包括发酵过程的没计、气液传质以及生物过程放大
本书理念先进，层次清楚，基础和工程结合紧密，特别值得引入国内教育领域。

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版权页：插图：Matrix algebra is necessary to understand, even on a superficial level, theconcepts discussed in papers on Systems Biology, and we introduce matrix-basedMetabolic Flux Analysis in Chap. 5. But the subject is introduced slowly aftersimple networks have been studied by methods that require very little beyond basicalgebra. Similarly, at the end of Chap. 3, methods that are necessary to evaluate thequality of experitnental data are discussed, but only after many examples whereelemental and redox balances are used to analyze steady-state rate data and toderive the stoichiometry of bioreactions. When in Chap. 6 reactions catalyzed byimmobilized enzymes are treated, one must apply some basic concepts fromtransport phenomena. Diffusion into the pellets is treated with the help of detailedexamples. The objective is to give the reader an understanding of the topic which ison the par with that given in standard texts on Chemical Reaction Engineering. The book has more than 100 examples and notes. The Examples will help thereader to better understand the text while topics which extend the text, sometimesby pointing to applications in different areas, are treated in Notes. The teaching of the examples is further extended into the Problem sections of each chapter. Some of the examples and problems are simple illustrations of the text, while others aredetailed quantitative studies relevant for building up a further understanding of bio-reactions, both for use in scientific studies and for design of equipment. The designexamples often refer to the collaboration of the authors with major bio-techcompanies - suitably reformulated if necessary. Hopefully these design examples demonstrate that Bio-reaction Engineering, by combining core subjects from Chemical Engineering and the Bio-Sciences, contributes to secure bioprocesses aprominent place in the process industry.

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编辑推荐

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