Bioprocess Engineering: Kinetics, Sustainability, and Reactor Design

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Bioprocess Engineering involves the design and development of equipment and processes for the manufacturing of products such as food, feed, pharmaceuticals, nutraceuticals, chemicals, and polymers and paper from biological materials. It also deals with studying various biotechnological processes. "*Bioprocess Kinetics and Systems Engineering*" first of its kind contains systematic and comprehensive content on bioprocess kinetics, bioprocess systems, sustainability and reaction engineering. Dr. Shijie Liu reviews the relevant fundamentals of chemical kinetics-including batch and continuous reactors, biochemistry, microbiology, molecular biology, reaction engineering, and bioprocess systems engineering- introducing key principles that enable bioprocess engineers to engage in the analysis, optimization, design and consistent control over biological and chemical transformations. The quantitative treatment of bioprocesses is the central theme of this book, while more advanced techniques and applications are covered with some depth. Many theoretical derivations and simplifications are used to demonstrate how empirical kinetic models are applicable to complicated bioprocess systems.

- Contains extensive illustrative drawings which make the understanding of the subject easy
- Contains worked examples of the various process parameters, their significance and their specific practical use
- Provides the theory of bioprocess kinetics from simple concepts to complex metabolic pathways
- Incorporates sustainability concepts into the various bioprocesses

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