

# Biochemical Engineering

Fabian E. Dumont  
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Editors



Biotechnology in Agriculture, Industry  
and Medicine Series

NOVA

# Biochemical Engineering Book

**Bernard Atkinson, Ferda Mavituna**



## **Biochemical Engineering Book:**

**Biochemical Engineering** Shigeo Katoh, Jun-ichi Horiuchi, Fumitake Yoshida, 2015-02-02 Completely revised updated and enlarged this second edition now contains a subchapter on biorecognition assays plus a chapter on bioprocess control added by the new co author Jun ichi Horiuchi who is one of the leading experts in the field The central theme of the textbook remains the application of chemical engineering principles to biological processes in general demonstrating how a chemical engineer would address and solve problems To create a logical and clear structure the book is divided into three parts The first deals with the basic concepts and principles of chemical engineering and can be read by those students with no prior knowledge of chemical engineering The second part focuses on process aspects such as heat and mass transfer bioreactors and separation methods Finally the third section describes practical aspects including medical device production downstream operations and fermenter engineering More than 40 exemplary solved exercises facilitate understanding of the complex engineering background while self study is supported by the inclusion of over 80 exercises at the end of each chapter which are supplemented by the corresponding solutions An excellent comprehensive introduction to the principles of biochemical engineering

**Biochemical Engineering** Debabrata Das, Debayan Das, 2019-07-15 All engineering disciplines have been developed from the basic sciences Science gives us the information on the reasoning behind new product development whereas engineering is the application of science to manufacture the product at the commercial level Biological processes involve various biomolecules which come from living sources It is now possible to manipulate DNA to get the desired changes in biochemical processes This book provides students the knowledge that will enable them to contribute in various professional fields including bioprocess development modeling and simulation and environmental engineering It includes the analysis of different upstream and downstream processes The chapters are organized in broad engineering subdisciplines such as mass and energy balances reaction theory using both chemical and enzymatic reactions microbial cell growth kinetics transport phenomena different control systems used in the fermentation industry and case studies of some industrial fermentation processes Each chapter begins with a fundamental explanation for general readers and ends with in depth scientific details suitable for expert readers The book also includes the solutions to about 100 problems

Biochemical Engineering Fabian E. Dumont, Jack A. Sacco, 2009 Biochemical engineering is the application of engineering principles to conceive design develop operate and or use processes and products based on biological and biochemical phenomena Biochemical engineering influences a broad range of industries including health care agriculture food enzymes chemicals waste treatment and energy among others Historically biochemical engineering has been distinguished from biomedical engineering by its emphasis on biochemistry and microbiology and by the lack of a health care focus This is no longer the case There is increasing participation of biochemical engineers in the direct development of pharmaceuticals and other therapeutic products Biochemical engineering has been central to the development of the biotechnology industry given

the need to generate prospective products on scales sufficient for testing regulatory evaluation and subsequent sale This book begins with a review of biodiesel processing technology the use of varied biodiesel in diesel engines and an analysis of economic scale and ecological impact of biodiesel fuel Other areas of research include the application of biochemical engineering in the fishery industry algae growth and waste water management

**Biochemical Engineering, Second Edition** Douglas S. Clark,Harvey W. Blanch,1995-10-26 This work provides comprehensive coverage of modern biochemical engineering detailing the basic concepts underlying the behaviour of bioprocesses as well as advances in bioprocess and biochemical engineering science It includes discussions of topics such as enzyme kinetics and biocatalysis microbial growth and product formation bioreactor design transport in bioreactors bioproduct recovery and bioprocess economics and design A solutions manual is available to instructors only *Biochemical Engineering and Biotechnology Handbook* Bernard Atkinson,Ferda Mavituna,1991

**Biochemical Engineering** Shigeo Katoh,Fumitake Yoshida,2009-12-18 Written by renowned professors drawing on their experience gained in the world s most innovative biotechnology market Japan this advanced textbook provides an excellent and comprehensive introduction to the latest developments in the field It provides an array of questions answers and features numerous applied examples extending to industrial applications with chapters on medical devices and downstream operations in bioprocesses Useful for students studying the fundamentals of biochemical engineering as well as for chemical engineers already working in this vital and expanding field

**Biochemical Engineering Fundamentals** James Edwin Bailey,David F. Ollis,1986 Biochemical Engineering Fundamentals 2 e combines contemporary engineering science with relevant biological concepts in a comprehensive introduction to biochemical engineering The biological background provided enables students to comprehend the major problems in biochemical engineering and formulate effective solutions *Introduction to Biochemical Engineering* D. G. Rao,2005

**Biochemical Engineering** ,1987 **Chemical and Biochemical Engineering** Ali Pourhashemi,Gennady E. Zaikov,A. K. Haghi,2015-01-28 This book facilitates the study of problematic chemicals in such applications as chemical fate modeling chemical process design and experimental design This volume provides comprehensive coverage of modern biochemical engineering detailing the basic concepts underlying the behavior of bioprocesses as well as advances in bioprocess and biochemic

**Introduction to Biochemical Engineering** Dubasi Govardhana Rao,Rao,2010 Designed for an introductory course on Biochemical Engineering this book interweaves bioprocessing with chemical reaction engineering concepts Back cover *Modern Biochemical Engineering* ,1992-06-09 *Biochemical Engineering. [With Illustrations.]* Frederick Charles WEBB (Lecturer in Biochemical Engineering at University College, London.),1963 *Biochemical Engineering* Shigeo Katoh,Jun'ichi Horiuchi,Fumitake Yoshida,2015

**Biochemical Engineering VIII** Robert M. Kelly,K. Dane Wittrup,Subhash B. Karkare,1994 *Modern Biochemical Engineering* ,2014-03-12 *Biochemical Engineering* Shuichi Aiba,Arthur Earl Humphrey,Nancy F. Millis,1973 *Advances in Biochemical Engineering* Tarun K. Ghose,A. Fiechter,N.

Blakeborough,1971

**Biochemical Engineering** James M. Lee,2001

**Advances in biochemical engineering** ,1977

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