

Bioreactor

M

O₂

CO₂

pH

Nutrient

Alkali / Acid

Soluble O₂

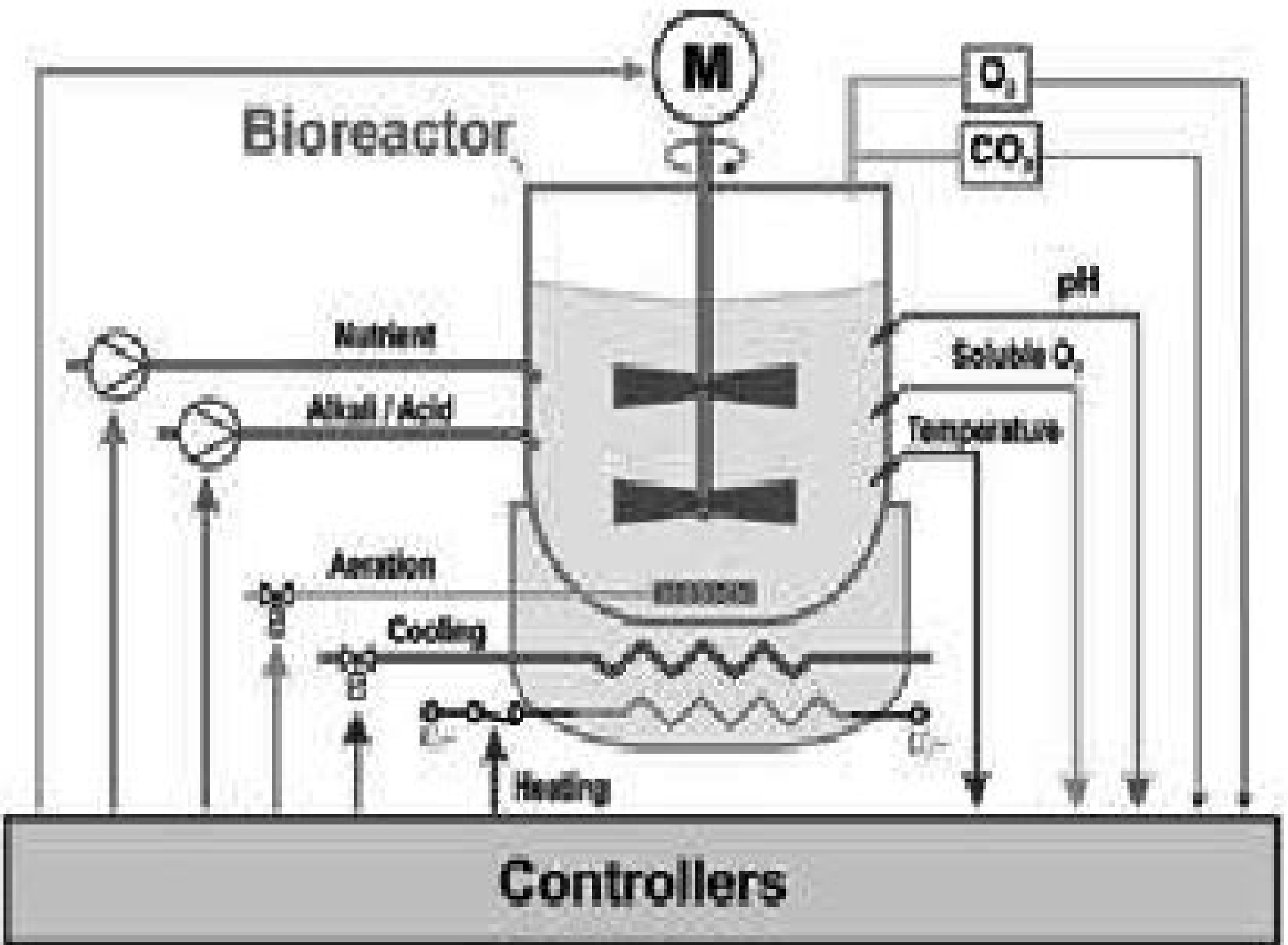
Temperature

Aeration

Cooling

Heating

Controllers



Basic Bioreactor Design Basic Bioreactor Design

Ying-Ying Zheng



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Basic Bioreactor Design Klaas van't Riet, Johannes Tramper, 1991-01-07 Based on a graduate course in biochemical engineering provides the basic knowledge needed for the efficient design of bioreactors and the relevant principles and data for practical process engineering with an emphasis on enzyme reactors and aerated reactors for microorganisms Includes exercises

Bioreactor Design Fundamentals Norton G. McDuffie, 2013-10-22 Bioreactor Design Fundamentals presents the development in the bioreactor field This book discusses the applications of biological kinetics and thermodynamics Organized into seven chapters this book begins with an overview of the design of biological reactors that involves determining operating conditions sizing the reactor controlling temperature and sterility and controlling operating variables This text then examines the significance of pH considerations in biological reactor and process design Other chapters consider enzyme kinetics and the equations most commonly used as models for overall enzyme kinetics This book discusses as well the mass transfer rates in bioreactors which are significant because of their effects on some chemical reaction rates in transformations by enzymes or by living cells The final chapter deals with the ideal state of the continuous stirred tank reactors CSTRs This book is a valuable resource for biochemical engineers and industrial microbiologists

Bioreactor Design and Product Yield Open Universiteit (Heerlen, Netherlands), Thames Polytechnic, 1992 This text utilizes basic knowledge of transport phenomena modelling and bioreactor types to develop an in depth approach to the applications of the various bioreactor types The strategy used is a generic one in which relationships between measurable parameters and reactor performance are established This approach provides the reader with knowledge that is applicable in a wide range of circumstances and develops an analytical awareness of the issues involved in bioreactor design and performance

An Introduction to Bioreactor Hydrodynamics and Gas-Liquid Mass Transfer Enes Kadic, Theodore J. Heindel, 2014-03-14 Reviews and compares the major types of bioreactors defines their pros and cons and identifies research needs and figures of merit that have yet to be addressed Describes common modes of operation in bioreactors Covers the three common bioreactor types including stirred tank bioreactors bubble column bioreactors and airlift bioreactors Details less common bioreactors types including fixed bed bioreactors and novel bioreactor designs Discusses advantages and disadvantages of each bioreactor and provides a procedure for optimal bioreactor selection based on current process needs Reviews the problems of bioreactor selection globally while considering all bioreactor options rather than concentrating on one specific bioreactor type

Bioreactor Design Fundamentals Norton G. McDuffie, 1991

Industrial Scale Suspension Culture of Living Cells Hans-Peter Meyer, Diego Schmidhalter, 2014-07-30 The submersed cultivation of organisms in sterile containments or fermenters has become the standard manufacturing procedure and will remain the gold standard for some time to come This book thus addresses submersed cell culture and fermentation and its importance for the manufacturing industry It goes beyond expression systems and integrally investigates all those factors relevant for manufacturing using suspension cultures In so

doing the contributions cover all industrial cultivation methods in a comprehensive and comparative manner with most of the authors coming from the industry itself Depending on the maturity of the technology the chapters address in turn the expression system basic process design key factors affecting process economics plant and bioreactor design and regulatory aspects

Applied Biocatalysis Adrie J.J. Straathof, Patrick Adlercreutz, 2000-01-18 Describing the essential steps in the development of biocatalytic processes from concept to completion this carefully integrated text combines the fundamentals of biocatalysis with technological experience and in depth commercial case studies The book starts with an introductory look at the history and present scope of biocatalysis and proceeds to

Functional Foods and Biotechnology Kalidas Shetty, Dipayan Sarkar, 2020-04-13 The second book of the Food Biotechnology series Functional Foods and Biotechnology Biotransformation and Analysis of Functional Foods and Ingredients highlights two important and interrelated themes biotransformation innovations and novel bio based analytical tools for understanding and advancing functional foods and food ingredients for health focused food and nutritional security solutions The first section of this book provides novel examples of innovative biotransformation strategies based on ecological biochemical and metabolic rationale to target the improvement of human health relevant benefits of functional foods and food ingredients The second section of the book focuses on novel host response based analytical tools and screening strategies to investigate and validate the human health and food safety relevant benefits of functional foods and food ingredients Food biotechnology experts from around the world have contributed to this book to advance knowledge on bio based innovations to improve wider health focused applications of functional food and food ingredients especially targeting non communicable chronic disease NCD and food safety relevant solution strategies Key Features Provides system science based food biotechnology innovations to design and advance functional foods and food ingredients for solutions to emerging global food and nutritional insecurity coupled public health challenges Discusses biotransformation innovations to improve human health relevant nutritional qualities of functional foods and food ingredients Includes novel host response based food analytical models to optimize and improve wider health focused application of functional foods and food ingredients The overarching theme of this second book is to advance the knowledge on metabolically driven food system innovations that can be targeted to enhance human health and food safety relevant nutritional qualities and antimicrobial properties of functional food and food ingredients The examples of biotransformation innovations and food analytical models provide critical insights on current advances in food biotechnology to target design and improve functional food and food ingredients with specific human health benefits Such improved understanding will help to design more ecologically and metabolically relevant functional food and food ingredients across diverse global communities The thematic structure of this second book is built from the related initial book which is also available in the Food Biotechnology Series Functional Foods and Biotechnology Sources of Functional Food and Ingredients edited by Kalidas Shetty and Dipayan Sarkar ISBN 9780367435226 For a complete list of books in this series please visit our

website at <https://www.crcpress.com> Food Biotechnology Series book series CRCFOOBIO TECH *Principles of Bioreactor Design* Binoy Ranjan Maiti, 2018-09-30 Explores some basic aspects of reactor design for both chemical and biochemical systems Chapters introduce the kinetics of chemical reaction engineering the mechanistic model of catalytic gas solid reactions and the residence time distribution for non ideal reactors These concepts are extended to biochemical reactor design

Bioreactor System Design Juan A. Asenjo, 1994-11-17 Describes the state of the art techniques and methods involved in the design operation preparation and containment of bioreactor systems taking into account the interrelated effects of variables associated with both upstream and downstream stages of the design process The importance of the initial steps in the development of a bioprocess such as strain and media selection that have an overwhelming influence on all further operations is emphasized This work is intended for biochemical chemical and bioprocess engineers biotechnologists industrial biochemists micro and molecular biologists food scientists and upper level undergraduate and graduate students in these disciplines

Multiphase Bioreactor Design Joaquim M.S. Cabral, Manuel Mota, Johannes Tramper, 2001-09-20 Bioreaction engineering is fundamental to the optimization of biotechnological processes and the production of biochemicals by enzymes microbial plant and animal cells and higher organisms A reference text for postgraduate students and researchers in biochemical engineering and bioreactor design Multiphase Bioreactor Design describes the

Bioreactor Design Concepts for Viral Vaccine Production Surajbhan Sevda, Sachin Kumar, 2024-05-12 Bioreactor Design Concepts for Viral Vaccine Production covers a range of interdisciplinary chapters from the engineering perspective of bioreactor design to the biotechnological perspectives of vector design for vaccine development The book covers bioreactor concepts such as static systems single use systems stirred tanks perfusion wave and packed beds It reviews options for efficient and economical production of human vaccines and discusses basic factors relevant for viral antigen production in mammalian cells avian cells and insect cells This book will be a great resource for those interested in implemented novel bioreactor design or experimental schemes towards intensified or and enhanced vaccine production Covers the fundamentals of bioreactor designs Provides strategies for designing a successful vector based vaccine Discusses the applications of biological kinetics thermodynamics and basic substrate requirements for viral vaccine production

Plant Biotechnology Michael W. Fowler, Graham Warren, Murray Moo-Young, 1992 Today it is generally accepted that one of the key areas of biotechnology for the next century will be in plant based biotechnology Biotechnology has created new opportunities for plant scientists with important applications to agriculture and forestry This reference text is divided into five sections for ease of presentation The first section focuses on the structure composition and functionality of plant cells and genes with particular emphasis on the cellular and molecular biology of plants and cultured cells Section two is concerned with the direct exploitation of cell cultures for the production of useful substances The third section deals with regeneration and propagation systems The fourth section considers the increasingly central area of genetic manipulation of plant cell systems

The last section is on specific applications in plant biotechnology This reference work is a survey of these various facets of plant biotechnology The individual chapters and the follow up literature cited allow an easy access to the various subject areas and will hopefully stimulate interest in these rapidly moving and exciting fields of research **The Journal of the Association of Physicians of India** ,1999

Landfill Bioreactor Design & Operation Timothy G. Townsend,2018-12-19 Using biotechnology to help control landfill processes can mitigate costs shorten the time needed to process solid waste and ease the typical ecological damage to the land being used This first of its kind book provides regulators designers landfill owners and operators with information that supports the utility of landfill bioreactors and provides design and operating criteria essential for the successful application of this technology It pulls together laboratory pilot and full scale experiences into one concise guide to designing and running municipal landfills as bioreactors *Landfill Bioreactor Design and Operation* covers the history and background of landfill technology research studies of actual bioreactor landfills expected leachate and gas yields specific design criteria operation guidelines and reuse of landfill sites to avoid having to establish new sites For anyone looking for an alternative to large wasteful landfill sites this book provides a practical alternative to the problem

Agrindex ,1992 **Revue Roumaine de Chimie** ,2007 **Genetic Engineering News** ,2007 **Advanced Biochemical Engineering** Henry R. Bungay,Georges Belfort,1987 Very Good No Highlights or Markup all pages are intact

Computational Technologies for Fluid/thermal/structural/chemical Systems with Industrial Applications Vladimir V. Kudriavtsev,Chris R. Kleijn,1998 This two volume set of papers from the July 1998 Conference emphasizes industrial applications of computational technologies with a focus upon case studies technology and commercial CFD software development Volume I 37 articles discusses multiphase flows and CFD fluid thermal and structure inter

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