



Bioreaction Engineering

By Schügerl, K. / Bellgardt, K.-H.

Book Condition: New. Publisher/Verlag: Springer, Berlin | Modeling and Control | Alongside presenting the fundamentals, this book reviews the state of the art of mathematical modeling and control of bioprocesses, while demonstrating the application in various biological systems important to industry. At the same time, the application of different types of models and control strategies are illustrated, taking into account the recent developments in reactor modeling. In addition to modeling and control, the metabolic flux analysis and the metabolic design and their application to bioprocesses are considered. | The Need for Modeling and Control in Biotechnical Processes.- Some Modeling Basics.- Structure and Operation of Biotechnical Plant.- Types and Structure Elements of the Bioreactor.- The Stirred Tank Reactor as an Example for Reactors with Mechanical Energy Input; Reactors with Energy Input by Compressed Air; Membrane Reactors for Bubble Free Aeration; Liquid-Phase; Gas-Phase; Solid-Phase; Biotic Phase; Modes of Operation of a Bioreactor; Batch Cultivation; Fed-Batch Cultivation; Continuous Cultivation; Cultivation with Cell Retention; Repeated or Cyclic Batch or Fed-Batch Cultivation; Aerobic Processes; Anaerobic Processes; Micro-Aerobic Processes;.- References.- A General Principles and Techniques.- 1 Bioreactor Models.- 1.1 Introduction.- 1.2 Interrelations Between the Cells and Their Physical/ Chemical Environment.- 1.3 Stirred Tank (ST) Reactors.- 1.3.1...



Reviews

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-- Dana Hintz

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