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Formato	Materiale a stampa
Livello bibliografico	Monografia
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Nota di contenuto	Bioprocess Control; Contents; Chapter 1. What are the Challenges for the Control of Bioprocesses?; 1.1. Introduction; 1.2. Specific problems of bioprocess control; 1.3. A schematic view of monitoring and control of a bioprocess; 1.4. Modeling and identification of bioprocesses: some key ideas; 1.5. Software sensors: tools for bioprocess monitoring; 1.6. Bioprocess control: basic concepts and advanced control; 1.7. Bioprocess monitoring: the central issue; 1.8. Conclusions; 1.9. Bibliography; Chapter 2. Dynamic Models of Biochemical Processes: Properties of Models; 2.1. Introduction 2.2. Description of biochemical processes2.2.1. Micro-organisms and their use; 2.2.2. Types of bioreactors; 2.2.3. Three operating modes; 2.3. Mass balance modeling; 2.3.1. Introduction; 2.3.2. Reaction scheme; 2.3.3. Choice of reactions and variables; 2.3.4. Example 1; 2.4. Mass balance models; 2.4.1. Introduction; 2.4.2. Example 2; 2.4.3. Example 3; 2.4.4. Matrix representation; 2.4.4.1. Example 2 (continuation); 2.4.4.2. Example 1 (continuation); 2.4.5. Gaseous ow; 2.4.6. Electroneutrality and affinity constants; 2.4.7. Example 1 (continuation); 2.4.8. Conclusion; 2.5. Kinetics 2.5.1. Introduction2.5.2. Mathematical constraints; 2.5.2.1. Positivity of

variables; 2.5.2.2. Variables necessary for the reaction; 2.5.2.3. Example 1 (continuation); 2.5.2.4. Phenomenological knowledge; 2.5.3. Specific growth rate; 2.5.4. Representation of kinetics by means of a neural network; 2.6. Validation of the model; 2.6.1. Introduction; 2.6.2. Validation of the reaction scheme; 2.6.2.1. Mathematical principle; 2.6.2.2. Example 4; 2.6.3. Qualitative validation of model; 2.6.4. Global validation of the model; 2.7. Properties of the models
 2.7.1. Boundedness and positivity of variables; 2.7.2. Equilibrium points and local behavior; 2.7.2.1. Introduction; 2.8. Conclusion; 2.9. Bibliography; Chapter 3. Identification of Bioprocess Models; 3.1. Introduction; 3.2. Structural identifiability; 3.2.1. Development in Taylor series; 3.2.2. Generating series; 3.2.3. Examples for the application of the methods of development in series; 3.2.4. Some observations on the methods for testing structural identifiability; 3.3. Practical identifiability; 3.3.1. Theoretical framework; 3.3.2. Confidence interval of the estimated parameters
 3.3.3. Sensitivity functions; 3.4. Optimum experiment design for parameter estimation (OED/PE); 3.4.1. Introduction; 3.4.2. Theoretical basis for the OED/PE; 3.4.3. Examples; 3.5. Estimation algorithms; 3.5.1. Choice of two datasets; 3.5.2. Elements of parameter estimation: least squares estimation in the linear case; 3.5.3. Overview of the parameter estimation algorithms; 3.6. A case study: identification of parameters for a process modeled for anaerobic digestion; 3.6.1. The model; 3.6.2. Experiment design; 3.6.3. Choice of data for calibration and validation; 3.6.4. Parameter identification
 3.6.5. Analysis of the results

Sommario/riassunto

Giving an overview of the challenges in the control of bioprocesses, this comprehensive book presents key results in various fields, including: dynamic modeling; dynamic properties of bioprocess models; software sensors designed for the on-line estimation of parameters and state variables; control and supervision of bioprocesses.

2. Record Nr.	UNINA9910895733803321
Titolo	Boletín de la Real Academia de Córdoba, de Ciencias, Bellas Letras y Nobles Artes
Pubbl/distr/stampa	Córdoba [Spain], : La Academia
Descrizione fisica	1 online resource
Disciplina	056/.1
Soggetti	10.00 humanities: general Literature Humaniora History Periodicals. Cordoba (Spain) History Periodicals Cordoba (Spain) Literature Periodicals Spain Cordoba
Lingua di pubblicazione	Spagnolo
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