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Sommario/riassunto

Here, the modeling of dynamic biological engineering processes is presented in a highly understandable way using a unique combination of simplified fundamental theory and direct hands-on computer simulation. Throughout, the mathematics is kept to a minimum, yet the 60 simulation examples supplied on a CD-ROM with this second edition illustrate almost every aspect of biological engineering science. Many of the examples are taken from the authors' own research, and each is described in detail, including the model equations. The programs are written in the modern user-friendly simulation language Berkeley Madonna, which runs on both Windows PC and Power-Macintosh computers. Madonna solves models comprising many ordinary differential equations using very simple programming, yet is so powerful that the model parameters may be defined as "sliders", which allow the effect of their change on the model behaviour to be seen almost immediately. Users may include data for curve fitting, and perform sensitivity or multiple runs. The results can be seen simultaneously on multiple-graph windows or by using overlays - resulting in a tremendous learning effect.; The authors' extensive experience, both in university teaching and international courses, is reflected in this well-balanced presentation, which is suitable for teachers, students, biochemists and engineers. The result is a greater understanding of the formulation and use of mass balances and kinetics for biological reaction engineering, written in a most stimulating manner.