Kinetics of Bio-Reactions

This chapter predicts the specific rates of reaction by means of a mathematical expression, the kinetics of the reaction. This expression can be derived through a mechanistic interpretation of an enzymatically catalyzed reaction, but it is essentially of empirical nature for cell reactions. The models can be used in mass balances for design of processes under process conditions not yet studied experimentally. The value of the predictive kinetic model depends on the quality of the experimental data on which the model is based, and well-founded kinetic models for enzyme reactions have a considerable predictive power. This is also true for cell reaction models, when the model is used in its proper context. The chapter first discusses the kinetics for enzymatically catalyzed reactions (“enzyme reactions”). The kinetics can be derived from a mechanistic model. Then, the chapter derives empirical expressions for cell reactions by analogy with enzyme reactions.

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