Enzyme Reactor Engineering Series

Analysis of Enzyme Reaction Kinetics

2-Volume Set

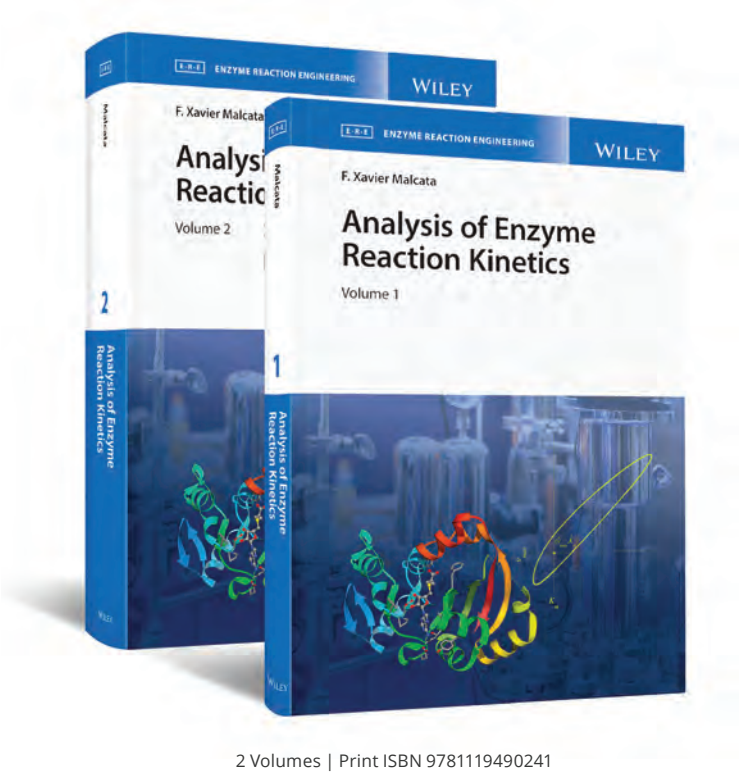
By *F. Xavier Malcata*

Chemical Engineering

Comprehensively introduces readers to modelling of rate of enzymatic reactions, including effects of physicochemical parameters

Analysis of Enzyme Reaction Kinetics describes rate expressions pertaining to enzymatic reactions, including modulation by physicochemical factors, as well as tools for prediction and control of how fast substrates are transformed to products. Volume 1 details rate expressions mathematically derived from mechanistic postulates and is complemented by appropriate statistical approaches to fit them to experimental data. Volume 2 discusses the effects of physical and chemical parameters upon the rates of both enzyme-catalyzed and enzyme-deactivation reactions.

Starting with basic concepts and historical perspectives, the first volume introduces readers to the mathematics of rate expressions. It then goes on to cover kinetic features and the many forms of Michaelis & Menten's-type rate expressions (single and multiple enzymes, autocatalysis, single and multiple substrates, multiphasic systems, etc.), and concludes with the statistical analysis of rate expressions – including the assessment of data, fitting of models to data, and generation of data themselves. The second volume introduces readers to physicochemical modulation of reaction rate – starting with basic concepts, and looking specifically at temperature-, mechanical force-, pH- and compound-driven effects: both unimodal and bimodal deactivation are considered.



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Analysis of Enzyme Reaction Kinetics is a comprehensive work for those studying or working with enzyme reactions, or practitioners involved in the control of reactors.

THE AUTHOR

F. Xavier Malcata, PhD, is Full Professor at the Department of Chemical Engineering at the University of Porto in Portugal, and Researcher at LEPABE – Laboratory for Process Engineering, Environment, Biotechnology and Energy. He is the author of more than 400 highly cited journal papers, eleven books, four edited books, and fifty chapters in edited books. He has been awarded the Elmer Marth Educator Award by the International Association of Food Protection (USA) and the William V. Cruess Award for excellence in teaching by the Institute of Food Technologists (USA).

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Enzyme Reactor Engineering Series

Mathematics for Enzyme Reaction Kinetics and Reactor Performance

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By *F. Xavier Malcata*

Chemical Engineering

This two volume set details the mathematical background required for systematic and rational simulation of both enzyme reaction kinetics and enzyme reactor performance

Mathematics for Enzyme Reaction Kinetics and Reactor Performance is the first set in a unique multi-volume collection on Enzyme Reactor Engineering, and relates specifically to the wide mathematical background required for systematic and rational simulation of both reaction kinetics and reactor performance; and to fully understand and capitalize on the modelling concepts developed. It accordingly reviews basic and useful concepts of Algebra (first volume), and Calculus and Statistics (second volume).

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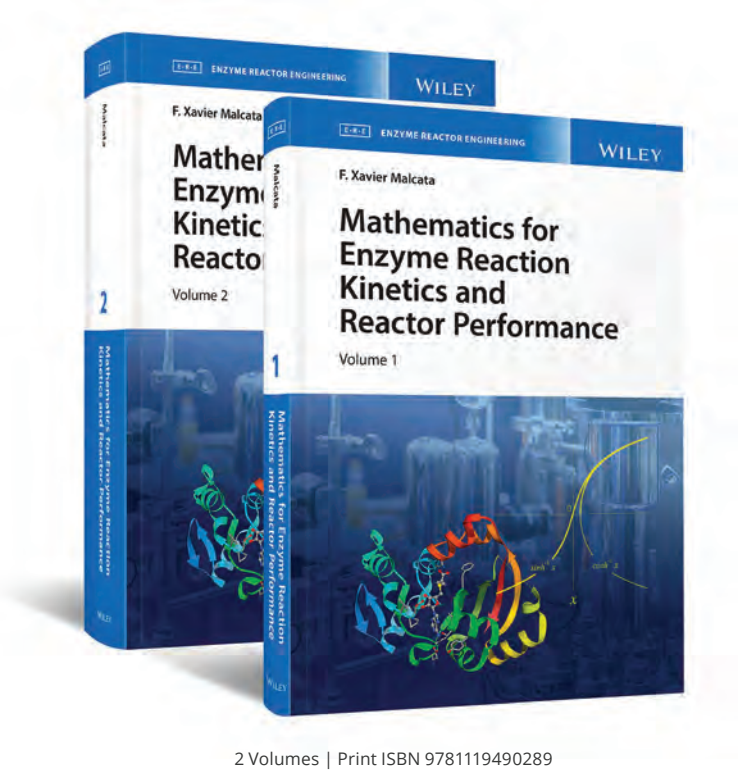

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Mathematics for Enzyme Reaction Kinetics and Reactor Performance is an excellent reference book for students in the fields of chemical, biological and biochemical engineering, and will appeal to all those interested in the fascinating area of white biotechnology.

THE AUTHOR

F. Xavier Malcata, PhD, is Full Professor at the Department of Chemical Engineering at the University of Porto in Portugal, and Researcher at LEPABE – Laboratory for Process Engineering, Environment, Biotechnology and Energy. He is the author of more than 400 highly cited journal papers, eleven books, four edited books, and fifty chapters in edited books. He has been awarded the Elmer Marth Educator Award by the International Association of Food Protection (USA) and the William V. Cruess Award for excellence in teaching by the Institute of Food Technologists (USA).

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