

Enzymes are the (impeccably green) catalysts that make the Chemistry of Life run smoothly and efficiently, and understanding how they work has been a major challenge for Biological Science for many years. Despite tremendous progress our understanding still fails the ultimate, practical test – of designing and making artificial systems with catalytic efficiencies to rival those of natural enzymes. ‘Artificial enzymes’ has been a hot topic for many years, but until now no textbook has been devoted specifically to this subject. **From Enzyme Models to Model Enzymes** is the first to provide a critical introduction to, and overview of, this exciting area. It is aimed at both students and more senior researchers with interests in this and the many related fields.

The book starts with a systematic overview of the most important properties of natural enzymes, with special emphasis on mechanisms and catalytic efficiency. There follows a summary of the mechanisms involved in the major classes of reaction they catalyze, and of the logical progression from simple mechanistic models for particular reactions to the first, rudimentary model enzymes. Catalytic efficiency is the key criterion for inclusion. A careful analysis of the strengths and limitations of the classical design-based approach to catalysis by enzyme mimics leads on to a critical discussion of recent advances, which combine selection routines with iterative techniques for creating and improving catalysts by biomimetic methods. The meaningful comparison of natural and artificial catalysts requires a quantitative understanding based on the interpretation of kinetic measurements. Key skills in data interpretation are introduced in a guided approach that connects the formal treatment of kinetic measurements with their chemical and biological mechanistic interpretation.

This book provides a convenient entry point into the chemistry for the biochemist and molecular biologist, and for the chemist an entrée into the biological methods that are of rapidly growing importance in this and a number of other topical areas.

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