

# Redox Biocatalysis: Fundamentals and Applications

Daniela Gamenara, Gustavo Seoane, Patricia Saenz Méndez, Pablo Domínguez de María



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#### Paves the way for new industrial applications using redox biocatalysis

Increasingly, researchers rely on the use of enzymes to perform redox processes as they search for novel industrial synthetic routes. In order to support and advance their investigations, this book provides a comprehensive and current overview of the use of redox enzymes and enzyme-mediated oxidative processes, with an emphasis on the role of redox enzymes in chemical transformations. The authors examine the full range of topics in the field, from basic principles to new and emerging research and applications. Moreover, they explore everything from laboratory-scale procedures to industrial manufacturing.

*Redox Biocatalysis* begins with a discussion of the biochemical features of redox enzymes as well as cofactors and cofactor regeneration methods. Next, the authors present a variety of topics and materials to the research and development of full-scale industrial applications, including:

- Biocatalytic applications of redox enzymes such as dehydrogenases, oxygenases, oxidases, and peroxidases
- Enzyme-mediated oxidative processes based on biocatalytic promiscuity
- All the steps from enzyme discovery to robust industrial processes, including directed evolution, high-throughput screening, and medium engineering
- Case studies tracing the development of industrial applications using biocatalytic redox reactions

Each chapter ends with concluding remarks, underscoring the key scientific principles and processes. Extensive references serve as a gateway to the growing body of research in the field.

Researchers in both academia and industry will find this book an indispensable reference for redox biotransformations, guiding them from underlying core principles to new discoveries and emerging industrial applications.

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