

Contents

1 Introduction	1
Marcela Ayala and Eduardo Torres	

Part I Molecular and Structural Aspects of Peroxidases

2 Molecular Phylogeny of Heme Peroxidases	7
Marcel Zámocký and Christian Obinger	
3 Structural and Functional Features of Peroxidases with a Potential as Industrial Biocatalysts	37
Francisco J. Ruiz-Dueñas and Angel T. Martínez	
4 Redox Potential of Peroxidases	61
Marcela Ayala	
5 Catalytic Mechanisms of Heme Peroxidases	79
Paul R. Ortiz de Montellano	

Part II Prospective Usage of Peroxidases in Industry

6 Potential Applications of Peroxidases in the Fine Chemical Industries	111
Luigi Casella, Enrico Monzani, and Stefania Nicolis	
7 Grafting of Functional Molecules: Insights into Peroxidase-Derived Materials	155
Gibson S. Nyanhongo, Endry Nugroho Prasetyo, Tukayi Kudanga, and Georg Guebitz	

8 Applications and Prospective of Peroxidase Biocatalysis in the Environmental Field	179
Cristina Torres-Duarte and Rafael Vazquez-Duhalt	
 Part III Challenges in the Application of Peroxidases	
9 Enzyme Technology of Peroxidases: Immobilization, Chemical and Genetic Modification	209
Adriana Longoria, Raunel Tinoco, and Eduardo Torres	
10 Reactor Engineering	245
Juan M. Lema, Carmen López, Gemma Eibes, Roberto Taboada-Puig, M. Teresa Moreira, and Gumersindo Feijoo	
11 Deactivation of Hemeperoxidases by Hydrogen Peroxide: Focus on Compound III	291
Brenda Valderrama	
12 Heterologous Expression of Peroxidases	315
Sandra de Weert and B. Christien Lokman	
13 A Compendium of Bio-Physical-Chemical Properties of Peroxidases	335
Humberto Garcia-Arellano	
Index	353

Biocatalysis Based on Heme Peroxidases
Peroxidases as Potential Industrial Biocatalysts
Torres, E.; Ayala, M. (Eds.)
2010, XI, 358 p., Hardcover
ISBN: 978-3-642-12626-0