### CONTENTS

## ENZYMES FOR SPECIALIZED APPLICATIONS

1.	Enzymes for Fuels and Chemical Feedstocks	2
2.	Enzymes in Pulp and Paper Processing	12
3.	Enzymes for Anaerobic Municipal Solid Waste Disposal	22
4.	Thermostable Saccharidases : New Sources, Uses,	
	and Biodesigns	36
5.	Mannan-Degrading Enzymes Produced by Bacillus	
	Species AM-001	52
6.	Proteinases and Their Inhibitors in Biotechnology	62
7.	Subtilisin : Commercially Relevant Model for Large-Scale	
	Enzyme Production	82
8.	Enzymes from Solid Substrates : Recovering Extracellular	
	Degradative Enzymes for Lentinula edodes Cultures Grown	
	on Commercial Wood Medium	95
9.	Producting of Trichoderma reesei Cellulase System	
	with High Hydrolytic Potential by Solid-State Fermentation	111
10.	Role of Statistically Designed Experiments in the Development	
	of Efficient Downstream Processes	123
11.	Enhanced Utility of Polysaccharidases through Chemical	
	Cross-Linking and immobilization : Application	
	to Fungal $\beta$ -D-Glucosidase	137
12.	Bioprocessing Aids in the Recovery of Proteins	152
13.	Chromatography in Enzyme Isolation and Production	169

### LIGNINASES AND OXIDATIVE ENZYMES

14.	Lignin Peroxidase : Catalysis, Oxycomplex, and Heme-Linked	
	Ionization	180
15.	Structure and Regulation of Manganese Peroxidase Gene	
	from Phanerochaete chrysosporium	188
16.	Regulation of Ligninase Production in White-Rot Fungi	200
17.	Laccases of the Ligninolytic Fungus Coriolus versicolor	207
18.	Pilot-Scale Production and Properties of Lignin Peroxidases	225
19.	Chemistry of Lignin Degradation by Lignin Peroxidases	236
20.	Enzymatic Lignin Degradation : An Extracurricular View	247
21.	Lignin-Carbohydrate complexes from Poplar Wood : Isolation	
	And Enzymatic Degradation	270

#### β-GLUCANASES (CELLULASES)

22.	Cellulose : Insights through Recombinant DNA Approaches	290
23.	Structure of Cellulolytic Enzymes	301
24.	Thermal Unfolding of Trichoderma reesei CBH I	313
25.	Bacterial Cellulases : Regulation of Synthesis	331
26.	Cellulomonas fumi β-1,4-Glucanase	349

#### α-GLUCANASES AND POLYSACCHARIDASES

27.	Comparison of Amylopullulanase to α-Amylase	
	and pullulanase	362
28.	Cyclodextrin Glucanotransferases : Technology and Biocatalyst	
	Design	372
29.	Starch Liquefaction with a Highly Thermostable Cyclodextrin	
	Glycosyl Transferase from Thermoanaerobacter Species	384
30.	Reactions of Glucansucrases in the Biomass Conversion	
	Of Sucrose	394

# OTHER POLYSACCHARIDASES, OLIGOSACCHARIDASES,

## AND ISOMERASES

31.	Biotechnological Potential and Production of Xylanolytic	
	Systems Free of Cellulases	408
32.	Catalytic Properties and Partial Amino Acid Sequence	
	of and Actinomycete Endo- $(1  4)$ - $\beta$ -D-Xylanase	
	from Chainia Species	417
33.	Accessory Enzymes Involved in the Hydrolysis of Xylans	426
34.	Comparison of Endolytic Hydrolases That Depolymerize	
	1, 4-β-D-Mannan, 1, 5-α-L-Arabinan, and 1, 4-β-D-Galactan	437
35.	Microbial Strategies for the Depolymerization of Plant	
	and Algal Polyuronates	450
36.	Synergism between $1,3-\beta$ -Glucanases in Yeast Cell	
	Wall Zymolysis	467
37.	Chitinases	478
38.	Xylose-Glucose Isomerases : Structure, Homology	
	and Function	486
INI	DEXES	
Aut	thor Index	503

Affiliation Index	504
Subject Index	504