## Contents

	Preface List of contributors	ix xi
1	Enzymes R o. JENKINS, de montfort UNIVERSITY, uk	1
1.1	Introduction	1
1.2	Classification and nomenclature of enzymes	3
1.3	Protein structure	6
1.4	Forces that stabilise protein molecules	18
1.5	Properties of proteins	19
1.6	Biosynthesis of proteins	24
1.7	Post-translational modification of proteins	29
1.8	Enzymatic catalysis	30
1.9	Future trends	36
	Further reading	39
1.11	Bibliography	40
2	Substrates and their structure G. BUSCHLE-DILLER, AUBURN UNIVERSITY, USA	42
2.1	Non-fibrous substrates and non-substrates	42
2.2	Textile fibers as substrates for enzymes	64
2.3	References	82
3	Catalysis and processing A CAVACOPAULO, UNIVERSITY OF MINHO, PORTUGAL AND G GÜBITZ, GRAZ UNIVERSITY OF TECHNOLOGY, AUSTRIA	86
3.1	Basic thermodynamics and enzyme kinetics	87
3.2	Function of textile processing enzymes	89

VI	Contents
VI	Coments

3.4 Major enzymatic applications in textile wet processing 3.5 Promising areas of enzyme applications in textile processing 3.6 References  Process engineering and industrial enzyme applications V. A. NIERSTRASZ AND M.M. C.G. WARMOESKERKIN, UNIVERSITY OF TWENIE, THE NETHERLANDS  4.1 Introduction 4.2 Large-scale industrial enzyme applications in textiles: an overview 4.3 Industrial applications of enzymes in wet textile processing 4.4 Mass transfer in textile materials 4.5 Process intensification: enhancement of mass transfer in textile materials 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 4.7 References and further reading  154  4.8 Practical aspects of handling enzymes H.B.M.LENING, TNO INSTITUTE FOR INDUSTRIAL TIECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 185 5.5 Health and safety issues 192 5.6 References  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 6.6 The use of activated sludge for the removal of colour	3.3	Homogeneous and heterogeneous enzyme catalysis and kinetics	99
3.5 Promising areas of enzyme applications in textile processing 3.6 References  Process engineering and industrial enzyme applications V. A NIERSTRASZ AND M.M. C.G. WARMOENRENN UNIVERSITY OF TWENTE, THE NETHERLANDS  4.1 Introduction 120 4.2 Large-scale industrial enzyme applications in textiles: an overview 121 4.3 Industrial applications of enzymes in wet textile processing 123 4.4 Mass transfer in textile materials 131 4.5 Process intensification: enhancement of mass transfer in textile materials 14.6 Mass transfer and diffusion limitation in immobilised enzyme systems 14.7 References and further reading 154  5 Practical aspects of handling enzymes H.B.M. LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 192  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205	3.4		107
Process engineering and industrial enzyme applications V. A NIERSTRASZ AND M.M. C. G. WARMOESKERKEN, UNIVERSITY OF TWENTE, THE NETHERLANDS  4.1 Introduction 120 4.2 Large-scale industrial enzyme applications in textiles: an overview 121 4.3 Industrial applications of enzymes in wet textile processing 123 4.4 Mass transfer in textile materials 131 4.5 Process intensification: enhancement of mass transfer in textile materials 142 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 148 4.7 References and further reading 154  5 Practical aspects of handling enzymes 154  The Milling the Nolocy, the Netherlands 158  5.1 Introduction 158 5.2 Enzyme activity 169 5.3 Stabilisation of enzymatic activity 169 5.4 Handling of enzymes 181 5.5 Health and safety issues 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge 197 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge 199 5.6 J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 159 6.1 Hazardous waste 200 6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.5 Effluent treatment 205	3.5		113
V. A NIERSTRASZ AND M.M. C. G. WARMOESKERKEN UNIVERSITY OF TWENIE, THE NETHERLANDS  4.1 Introduction 120 4.2 Large-scale industrial enzyme applications in textiles: an overview 121 4.3 Industrial applications of enzymes in wet textile processing 123 4.4 Mass transfer in textile materials 131 4.5 Process intensification: enhancement of mass transfer in textile materials 142 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 148 4.7 References and further reading 154  5 Practical aspects of handling enzymes 158 H.B. M. LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 158 5.2 Enzyme activity 169 5.3 Stabilisation of enzymatic activity 169 5.4 Handling of enzymes 181 5.5 Health and safety issues 192 5.6 References 197  6 Effluent treatment - Enzymes in activated sludge 197 J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY, AUSTRIA 159 6.1 Hazardous waste 200 6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205	3.6		116
4.2 Large-scale industrial enzyme applications in textiles: an overview  4.3 Industrial applications of enzymes in wet textile processing 4.4 Mass transfer in textile materials 4.5 Process intensification: enhancement of mass transfer in textile materials 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 4.7 References and further reading  5 Practical aspects of handling enzymes H B M LENTING, tho Institute for Industrial TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes H ealth and safety issues 5.5 Health and safety issues 5.6 References  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205		V. A NIERSTRASZ AND M. M. C. G. WARMOESKERKEN,	120
4.2 Large-scale industrial enzyme applications in textiles: an overview 4.3 Industrial applications of enzymes in wet textile processing 4.4 Mass transfer in textile materials 4.5 Process intensification: enhancement of mass transfer in textile materials 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 4.7 References and further reading 4.8 Practical aspects of handling enzymes 4.9 H. B. M. LENTING, tho Institute for Industrial 4.1 TRCHNOLOGY, the Netherlands 4.1 Introduction 4.2 Enzyme activity 4.3 Stabilisation of enzymatic activity 4.4 Handling of enzymes 4.5 Health and safety issues 4.7 References 4.8 References 4.9 Practical aspects of handling enzymes 4.9 Practical aspects of handling enzymes 4.1 Introduction 4.1 Introduction 4.2 Enzyme activity 4.3 Enzyme activity 4.4 Handling of enzymes 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 5.7 References 5.8 References 5.9 Practical aspects of handling enzymes 5.9 Health and Safety issues 5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 5.7 References 5.8 References 5.9 Practical aspects of handling enzymes 5.9 Health and safety in Introduction 5.1 Introduction 5.2 Effluent treatment - Enzymes in activated sludge 5.4 Introduction 5.5 Effluent treatment for incoming water 5.6 References 6.7 Types of textile effluent 6.8 Methods of water treatment for incoming water 6.9 Types of textile effluent 6.1 Treatment of wastewaters from the textile industry 6.2 Effluent treatment 6.3 Effluent treatment 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment	4.1	Introduction	120
an overview  121 4.3 Industrial applications of enzymes in wet textile processing 123 4.4 Mass transfer in textile materials 131 4.5 Process intensification: enhancement of mass transfer in textile materials 142 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 148 4.7 References and further reading 154  5 Practical aspects of handling enzymes H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS 15.1 Introduction 15.2 Enzyme activity 15.3 Stabilisation of enzymatic activity 16.4 Handling of enzymes 18.5 Health and safety issues 19.5 References 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment	4.2		
4.4 Mass transfer in textile materials 4.5 Process intensification: enhancement of mass transfer in textile materials 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 4.7 References and further reading 5. Practical aspects of handling enzymes 6. H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS 7.1 Introduction 7.2 Enzyme activity 7.3 Stabilisation of enzymatic activity 7.4 Handling of enzymes 7.5 Health and safety issues 7.5 Health and safety issues 7.6 References 7.7 Effluent treatment – Enzymes in activated sludge 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. References 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 7. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY. AUSTRIA BINKLEY, UNIVERSITY OF TECHNOL			121
4.4 Mass transfer in textile materials 4.5 Process intensification: enhancement of mass transfer in textile materials 4.6 Mass transfer and diffusion limitation in immobilised enzyme systems 4.7 References and further reading 5. Practical aspects of handling enzymes H B M LENIING TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS 5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 192 6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment	4.3	Industrial applications of enzymes in wet textile processing	123
4.5 Process intensification: enhancement of mass transfer in textile materials  4.6 Mass transfer and diffusion limitation in immobilised enzyme systems  4.7 References and further reading  5 Practical aspects of handling enzymes H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References  192  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment		• • • • • • • • • • • • • • • • • • • •	131
in textile materials  4.6 Mass transfer and diffusion limitation in immobilised enzyme systems  4.7 References and further reading  5 Practical aspects of handling enzymes H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References  192  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 6.7 Mass transfer and diffusion in immobilised 154  158 168 179 158 158 158 158 158 159 159 159 159 169 179 170 170 170 170 170 170 170 170 170 170			
enzyme systems 148 4.7 References and further reading 154  5 Practical aspects of handling enzymes H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS 158 5.1 Introduction 158 5.2 Enzyme activity 159 5.3 Stabilisation of enzymatic activity 169 5.4 Handling of enzymes 181 5.5 Health and safety issues 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 200 6.1 Hazardous waste 200 6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205		in textile materials	142
4.7 References and further reading  154  5 Practical aspects of handling enzymes H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 159 5.3 Stabilisation of enzymatic activity 169 5.4 Handling of enzymes 181 5.5 Health and safety issues 192 5.6 References 197  6 Effluent treatment - Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment	4.6	Mass transfer and diffusion limitation in immobilised	
4.7 References and further reading  154  5 Practical aspects of handling enzymes H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 5.2 Enzyme activity 159 5.3 Stabilisation of enzymatic activity 169 5.4 Handling of enzymes 181 5.5 Health and safety issues 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment		enzyme systems	148
H B M LENTING, TNO INSTITUTE FOR INDUSTRIAL TECHNOLOGY, THE NETHERLANDS  5.1 Introduction 158 5.2 Enzyme activity 159 5.3 Stabilisation of enzymatic activity 169 5.4 Handling of enzymes 181 5.5 Health and safety issues 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge 197  J BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 200 6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205	4.7		154
5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203 6.6 Effluent treatment	5	H. B. M LENTING, THO INSTITUTE FOR INDUSTRIAL	158
5.2 Enzyme activity 5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203 6.6 Effluent treatment	5.1	Introduction	158
5.3 Stabilisation of enzymatic activity 5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203			
5.4 Handling of enzymes 5.5 Health and safety issues 5.6 References 192 5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203 6.5 Effluent treatment			
5.5 Health and safety issues 5.6 References 192 5.6 References 197 6 Effluent treatment - Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA 6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203			
5.6 References 197  6 Effluent treatment – Enzymes in activated sludge J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 200 6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205		• .	
J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF TECHNOLOGY. AUSTRIA  6.1 Hazardous waste 6.2 Types of textile effluent 6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 205		•	
6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205	6	J. BINKLEY, UNIVERSITY OF MANCHESTER INSTITUTE OF SCIENCE AND TECHNOLOGY AND A KANDELBAUER, GRAZ UNIVERSITY OF	199
6.2 Types of textile effluent 201 6.3 Methods of water treatment for incoming water 203 6.4 Treatment of wastewaters from the textile industry 203 6.5 Effluent treatment 205	6.1	Hazardous waste	200
6.3 Methods of water treatment for incoming water 6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203 205			
6.4 Treatment of wastewaters from the textile industry 6.5 Effluent treatment 203			
6.5 Effluent treatment 205			
		•	

	Contents	vii
6.7	Decolourisation by enzymes, fungi, and by biosorption and	
	enrichment cultures	212
6.8	References	219
	Index	223