

- Preface p. ix
- Chapter 1. Sewer Systems and Processes p. 1
 - 1.1 Introduction and Purpose p. 1
 - 1.2 Sewer Developments in a Historical Perspective p. 4
 - 1.3 Types and Performance of Sewer Networks p. 5
 - 1.4 The Sewer as a Reactor for Microbial Processes p. 7
 - 1.5 A New Approach p. 9
- Chapter 2. Chemical and Physicochemical Aspects of In-Sewer Processes p. 11
 - 2.1 Redox Reactions p. 11
 - 2.2 Chemical Kinetics in a Microbiological System p. 25
 - 2.3 References p. 36
- Chapter 3. Wastewater in Sewers--Substrates and Microbiology p. 37
 - 3.1 Quality of Wastewater p. 37
 - 3.2 Microbial Reactions and Quality of Substrate p. 40
 - 3.3 References p. 63
- Chapter 4. Air-Water Equilibrium and Mass Transfer--Odors and Reaeration in Sewers p. 65
 - 4.1 Air-Water Equilibrium Conditions p. 66
 - 4.2 Air-Water Transport Processes p. 73
 - 4.3 Odorous Compounds in Sewer Networks p. 77
 - 4.4 Reaeration in Sewer Networks p. 85
 - 4.5 References p. 91
- Chapter 5. Aerobic and Anoxic Processes--Process Concept and Model p. 95
 - 5.1 Illustration of Aerobic Transformations in Sewers p. 96
 - 5.2 A Concept for the Aerobic Microbial Transformations of Wastewater in Sewers p. 99
 - 5.3 Process Descriptions p. 106
 - 5.4 Sewer Process Model p. 112
 - 5.5 Oxygen Mass Balance and Modeling in Sewers p. 115
 - 5.6 Anoxic Transformations in Sewers p. 121
 - 5.7 References p. 125
- Chapter 6. Anaerobic Processes--Sulfide Formation and Integrated Modeling p. 129
 - 6.1 Hydrogen Sulfide in Sewers--A Historical Overview p. 129
 - 6.2 Hydrogen Sulfide in Sewer Networks p. 131
 - 6.3 Anaerobic Microbial Transformations of Organic Matter in Sewers p. 158
 - 6.4 An Integrated Aerobic-Anaerobic Model Concept for Microbial Wastewater Transformations p. 160
 - 6.5 References p. 166
- Chapter 7. Methods for Sewer Process Studies and Model Calibration p. 171
 - 7.1 Methods for Field-, Pilot-, and Bench-Scale Studies p. 171
 - 7.2 Methods for Determination of Components and Parameters for Sewer Process Modeling p. 181
 - 7.3 Final Remarks p. 200
 - 7.4 References p. 201
- Chapter 8. Applications--Integrated Process Design and Operation of Sewers p. 205
 - 8.1 Wastewater Design--An Integrated Approach for Wastewater Treatment p. 205

- 8.2 Structural and Operational Impacts on Wastewater Quality Transformations in Sewers p. 206
- 8.3 Tools for Prediction of Sewer Processes p. 211
- 8.4 Model Simulations of Sewer and Treatment Plant Interactions p. 214
- 8.5 Sewer Processes in an Integrated and Sustainable Perspective p. 223
- 8.6 References p. 227
- Appendix A Nomenclature p. 229
- Index p. 233
- About the Author p. 237