DESCRIPTION

This concise introduction to the fundamentals of biological treatment of wastewater describes how to model and integrate biological steps into industrial processes.

The book first covers the chemical, physical and biological basics, including wastewater characteristics, microbial metabolism, determining stoichiometric equations for catabolism and anabolism, measurements of mass transfer and respiration rates and the aerobic treatment of wastewater loaded with dissolved organics. It the moves on to deal with such applications and technologies as nitrogen and phosphorus removal, membrane technology, the assessment and selection of aeration systems, simple models for biofilm reactors and the modeling of activated sludge processes. A final section looks at the processing of water and the treatment of wastewater integrated into the production process.

Essential reading for chemists, engineers, microbiologists, environmental officers, agencies and consultants, in both academia and industry.

ABOUT THE AUTHOR

Udo Wiesmann was Professor of Chemical Engineering at the Technical University of Berlin (Germany) from 1971 - 2003. He changed his field of work from of the topic of Fuel Technology (1961-1968) to Reaction Engineering (1968 - 1972) and then to Environmental Engineering (1972-2005). His research centered on Biological Wastewater Treatment. His special interest
was in kinetic studies of bacteria growth and substrate removal from wastewater and reaction engineering investigations. He has published some 130 scientific papers and presented lectures in six different fields of environmental engineering. Professor Wiesmann was speaker of the German Cooperative Research Program SFB 196 "Biological Treatment of Industrial Wastewater" during 1991-1996 and served in work groups on environmental technology and committees of technical and scientific journals on several associations.

In Su Choi has been a research assistant at the Institute of Chemical Engineering of the Technical University of Berlin (Germany) since 2000. He obtained his B.S. degree in Environmental Engineering from the University of Seoul (Korea) and his Dipl.-Ing. degree from the Technical University of Berlin. He first studied the mass transfer controlled ozonation of highly concentrated azo dyes and was employed in a Korean-German project to investigate the advantages of solid carriers for bacteria in bioreactors for nitrification. In 2005 he completed his Dr.-Ing. degree on the topic of Aerobic Degradation of Surfactant and Nitrification in a Membrane Bioreactor with CO2 and O2 Gas Analysis at the Technical University of Berlin. His research is currently focused on water and wastewater treatment by both chemical and biological means.

Eva-Maria Dombrowski is Professor for Biochemical and Chemical Engineering at the Technische Fachhochschule Berlin (TFH, University of Applied Science), Germany. She studied Chemical Engineering at the Technical University of Berlin and obtained her PhD researching the sedimentation of activated sludge. She spent eight years as a staff scientist at the State Environmental Agency in Berlin in the field of treatment of inorganic compounds of exhaust gas and the water emission situation before being named professor for Biochemical and Chemical Engineering in 1996.

Professor Dombrowski's research is focused on the biological treatment of wastewater and solid waste. Since 2001 she has been chairman of the Hypatia Program, a post-graduate-program for women at the TFH Berlin.

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