

Chemical Engineering Seminars – HT 2009

*Week 4, Wednesday February 11th 2009, 4:00PM-5:00PM
Lecture Room 1, Thom Building, Engineering Science*

Membrane Bioreactors and I - Modelling challenges from biokinetics to fouling

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Abstract

Due to their unique advantages like controlled biomass retention, improved effluent quality and decreased footprint, membrane bioreactors (MBR) are being increasingly used in wastewater treatment. In MBRs, biology and membrane interact in a number of ways which makes modelling of all aspects of process design such as biokinetics, membrane fouling and fluid dynamics a challenging task. The talk will show research results on, e.g., the use of filtration theory, CFD studies of the bubbly flow inside modules, circulating flow in the MBR tank and maintenance kinetics as examples.

Biography

Anja Drews studied Chemical Engineering at TU Berlin and UC Dublin. In 1997, she graduated (Dipl.-Ing.) from TU Berlin and first went to the Chair of Biochem. Eng. at TUB to do a PhD. When funds ran out, she changed to the Chem. Eng. Chair in 1999 and started a PhD on "Cultivation of *Ustilago maydis* in a membrane bioreactor" supervised by Prof. Matthias Kraume. During that time she also carried out an industrial contract research project on cleaning of CIP waters from pharmaceutical production using nanofiltration, which involved tasks ranging from initial membrane screening and plant design to trouble-shooting during start-up of the full-scale plant. After her PhD in 2004, she became assistant lecturer at the Chair. Her lectures included biochemical engineering, membrane processes and fundamentals of fluids and heat and mass transfer. She was a visiting fellow at the UNESCO Centre for Membrane Science & Technology, Sydney, from August to November 2007. She was appointed Dept. Lecturer at Oxford in January 2009. Her current research interests include MBR, membrane fouling, biological kinetics, model-based monitoring, fluid dynamics and NF.