

International Symposium on Membrane Biofouling

28-30 April 2010 ~ Copper Queen Hotel ~ Bisbee, Arizona USA

...Science & Solutions

International Symposium on Membrane Biofouling: Science & Solutions
28-30 April 2010 | Copper Queen Hotel | Bisbee | Arizona 85603

Please Note... To view and download symposium photographs and copies of all slide presentations and posters, please visit www.ISMB-2010.com. Thank you!

Summary of the Symposium... The problem of bacterial adhesion and biofouling of reverse osmosis and other separation membranes was addressed by some of the world's leading experts in late April of 2010 at the historic Copper Queen Hotel in Bisbee, Arizona USA. The program included:

INVITED PRESENTATIONS BY:

Prof. Tony Fane: Nanyang Tech. Univ., Singapore; Univ. New South Wales, Australia
Prof. Hans-Curt Flemming: Biofilm Centre, University of Duisburg-Essen, Germany
Prof. Eric Hoek: Civil and Environmental Engineering, Univ. California, Los Angeles
Prof. Martin Reinhard: Civil and Environmental Engineering, Stanford University
Prof. Menachem Elimelech: Civil and Environmental Engineering, Yale University
Prof. Hans-Vrouwenvelder: Wetsus Center of Excellence, Leeuwarden, the Netherlands
Dr. Harry Ridgway: Consulting Professor, Stanford Univ; President, AquaMem Scientific
Dinner Speaker: Mr. Gil Clark ~ President & Director, Telescopes in Education Foundation

POSTER PRESENTATIONS BY:

Prof. Rene Schneider: Universidade de São Paulo, São Paulo, Brazil
Dr. Judith Herschell: Herschell Environmental, LLC, Pittsburgh, Pennsylvania
Dr. Susan Altman: Sandia National Laboratories, Albuquerque, New Mexico
PhD Candidate Sophie Walewijk: Civil and Environ. Engineering, Stanford University
Prof. Moshe Herzberg: Ben-Gurion University, Israel

IMPROMPTU PRESENTATIONS BY:

Dr. Peter Eriksson
Dr. Amir Zlotkin

Dr. Harry Ridgway, Consulting Professor at Stanford University and President of AquaMem Consultants in Rodeo, New Mexico organized and hosted the two-day symposium with sponsorship from the National Water Research Institute, Malcolm-Pirnie, Inc., and the Wetsus Center of Excellence for Sustainable Water Technology, Leeuwarden, Netherlands.

Key subject areas addressed during the symposium included:

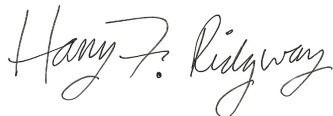
- ❖ The natural history, ecology and biology of biofilms including the critical role of EPS in determining biofilm morphology and function (**HC Flemming**)
- ❖ Brief review of the history, theory, and properties of current and emerging membrane technologies, including ceramic and biomimetic membranes (**HF Ridgway**)

- ❖ Exploration of bacterial adhesion to membranes, including the effects of membrane surface properties on initial bacterial attachment **(E. Hoek)**
- ❖ Mechanisms of early biofilm formation, including the concepts of critical flux and cake- or biofilm-enhanced concentration polarization as important considerations in membrane performance **(T. Fane)**
- ❖ Role of nitric oxide (NO) as a biofilm dispersive agent and its potential for controlling membrane biofouling **(T. Fane)**
- ❖ The impact of biofilms on the rejection of trace organics and other solutes by membrane materials **(M. Reinhard)**
- ❖ Recent advances in understanding nano-scale membrane structure and function **(M. Reinhard)**
- ❖ Genetic expression in membrane biofilms **(M. Elimelech)**
- ❖ Forward (direct) osmotic processes **(M. Elimelech)**
- ❖ Role of biofilm processes in membrane bioreactors (MBRs) **(T. Fane)**
- ❖ Development of multidimensional (3D) models of membrane biofouling and the role of spacer design in flow dynamics **(H. Vrouwenvelder)**
- ❖ Design, evaluation and application of the Membrane Fouling simulator (MFS) **(H. Vrouwenvelder)**
- ❖ Application of nuclear magnetic resonance (NMR) spectroscopy in delineating and analyzing the flow dynamics of membrane modules **(H. Vrouwenvelder)**
- ❖ Role of spacer design and materials in membrane biofouling phenomena **(H. Vrouwenvelder)**
- ❖ Examination of novel approaches and technological advancements in detecting and monitoring of membrane biofilms **(HC Flemming)**

The symposium spanned two full days of presentations and discussions. A special afternoon poster session on Day 1 was followed by a social hour and an evening dinner. Mr. Gil Clark, President and Director of the Telescopes in Education Foundation gave an after-dinner presentation concerning how to inspire young people and students to enter the sciences as a potential career choice through hand-on experience and effective mentorship.

Professor Phil Stewart, Director of the Center for Biofilm Engineering at Montana State University had planned to provide a presentation on the afternoon of the last day of the symposium. Unfortunately, he was unable to travel to the meeting due to closure of the airport in Bozeman, MT due to a snowstorm. To fill in Prof. Stewart's time slot, Dr. Peter Eriksson of GE Power and Water, Inc. and Dr. Amir Zlotkin of Hutchinson Water, Inc. each kindly provided brief presentations on some of their recent research findings.

Harry F. Ridgway, PhD



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