

Tuesday 17/04/18

Venue: Hypoteket banquet hall, Kyrkogatan 13, Lund
18:00 Registration and welcome reception

Wednesday 18/04/18

Venue: Palaestra and Odeum, located along the north side of University Square, Lund

08:30 Registration

SESSION 1 Membrane fouling and cleaning – Part 1

Session chair: *I. Wilson (University of Cambridge, UK)*

09:00 Conference introduction and overview
I. Wilson and A.-S. Jönsson (University of Cambridge, UK and Lund University, Sweden)

09:15 Key aspects of membrane plant operations related to fouling and cleaning in the food industry
F. Lipnizki (Lund University, Sweden)

How micro-waves can help to study membrane ageing and consequences on fouling
M. Rabiller-Baudry (Université de Rennes 1- Université Bretagne Loire, France)

Structural organization of casein micelles in concentrated layer during cross-flow ultrafiltration
F. Doudiès (INRA, UMR 1253 Science et Technologie du Lait, France)

10:15 Coffee break and putting up posters

10:45 Cohesive strength of membrane surface fouling layers – effect of crossflow regimes
M. Zhou (Chalmers University of Technology, Sweden)

Cleanability and sanitizability of Aquaporin Inside™ biomimetic hollow fiber forward osmosis elements for use in food dewatering
S. Braekevelt (Aquaporin A/S, Denmark)

The fouling of ultrafiltration membranes during the isolation of phytosterols from orange juice
N.H. Abd Razak (University of Bath, UK)

SESSION 2 **Monitoring and analysis of fouling and cleaning**
Session chair: *J. Chew (University of Bath, UK)*

Development of a method to determine normal and shear stress necessary to remove a swollen soil from a surface
R. Murcek (Fraunhofer Dresden, Germany)

Detection of attachment/detachment of deposits on solid substrate by coda waves interferometry
B. Chen (INRA-PIHM, France)

12:30 *Lunch*

13:30 **Determination of cleaning mechanisms by measuring particle size distributions**
N. Gottschalk (Technische Universität Braunschweig, Germany)

Comparison of detection methods used to determine *Escherichia Coli* and meat exudate removal from stainless steel surfaces following different physical cleaning methods
K.A. Whitehead (Manchester Metropolitan University, UK)

Laboratory methods to predict the cleaning behaviour in a flow channel exemplified by egg yolk layer
M. Helbig (Technische Universität Dresden, Germany)

Dimensional analysis of cleaning-in-place processes for fouled organic material in food processes
H. Deponte (Technische Universität Braunschweig, Germany)

Poster pitches
Session chair: *M. Bird (University of Bath, UK)*

15:00 **Real time monitoring of whey foulants adsorption on polyethersulfone surface**
G. Rudolph (Lund University, Sweden)

Methodology for the demonstration of harmlessness of a detergent on a polyamide reverse osmosis membrane
M. Rabiller-Baudry (Université de Rennes 1- Université Bretagne Loire, France)

Development of zero discharge net flow fluid dynamic gauging for studying cleaning

I. Wilson (University of Cambridge, UK)

Systematic study of the impact of membrane ageing on fouling at critical and limiting fluxes and subsequent cleaning of a polymer membrane used for skim milk ultrafiltration

L. Le Petit (Université de Rennes 1- Université Bretagne Loire, France)

An in situ method for quantifying the strength and thickness of biofilms grown under controlled flow conditions

J. Chew (University of Bath, UK)

Rheological characterization of viscous biofilms using micro-jet impingement

J.-Y. Huang (Purdue University, USA)

Antifouling blend polysulfone-pluronic F127 membranes

T. Plisko (Institute of Physical Organic Chemistry of the National Academy of Sciences of Belarus, Belarus)

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| 15:45 | Coffee break and poster session |
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| 17:00 | End of day 1 |
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| 18:30 | Dinner at Hypoteket banquet hall |
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Thursday 19/04/18

08:30 **Bus from the Cathedral to Alfa Laval**

09:00 **Welcome**
M. Nilsson (Alfa Laval, Sweden)

SESSION 3 Heat transfer fouling and cleaning
Session chair: J. Lindau (TetraPak, Sweden)

09:15 **Effects of nitrogenous substances on heat transfer fouling using thin stillage fluids**
K.D. Rausch (University of Illinois at Urbana-Champaign, USA)

A comparison of the mechanical constitutive behaviour of milk protein deposits and fouling deposits from raw milk
M. Böl (Technische Universität Braunschweig, Germany)

Analysis and imaging of fouling deposits in dairy heat exchangers
M. Riihimäki (University of Oulu, Finland)

10:15 *Coffee break*

11:00 **Structural and compositional changes during UHT fouling removal – Mechanisms of the cleaning process**
T. Nylander (Lund University, Sweden)

Effects of sugars on whey protein fouling characteristics
B.Y. Zhang (Purdue University, USA)

SESSION 4 Surfaces and modifications
Session chair: O. Santos (Alfa Laval, Sweden)

The antimicrobial effect of metal substrates on food pathogens
K.A. Whitehead (Manchester Metropolitan University, UK)

12:00 **Presentation of Alfa Laval and the factory**

12:30 *Lunch*

- 13:30** **Comparison of fouling of raw milk and whey protein solution on stainless steel and fluorocarbon coated surfaces**
I. Wilson (University of Cambridge, UK)
- VMT is new multifunctional antifouling filler**
Y. Orooji (Nanjing Tech University, China)
- Surface modification of stainless steel targeting dairy fouling mitigation**
S. Zouaghi (Université de Lille, France)

SESSION 5 **Membrane fouling and cleaning – Part 2**
Session chair: F. Lipnizki (Lund University, Sweden)

Vibration of 3-D printed spacers for fouling control in a submerged membrane filtration process
B. Wu (Nanyang Technological University, Singapore)

14:50 *Coffee break*

- 15:10 **Membrane fouling during microfiltration of milk into casein and whey fractionations**
O. Escursell (University of Bath, UK)
- Membrane modification in ultrafiltration of skim milk**
A. Bilyukevich (Institute of Physical Organic Chemistry of the National Academy of Sciences of Belarus, Belarus)
- Opportunities and challenges of membrane cleaning**
S. Dörries (Ecolab, Germany)
- Real-time fouling monitoring in food and biorefining industries – Needs and possibilities**
M. Kallioinen (Lappeenranta University of Technology, Finland)

16:30 **Bus back to the Cathedral**

17:00 **End of day 2**

18:30 *Dinner at Hypoteket banquet hall*

Friday 20/04/18

Venue: Palaestra and Odeum, located along the north side of University Square, Lund

SESSION 6 **Cleaning methods including jet nozzles**
Session chair: *Thierry Benezech (INRA, France)*

09:00 **Quantifying the effect of solution formulation on the removal of soft solid food deposits from stainless steel surfaces**
G. Cuckston (University of Cambridge, UK)

Flowing foam for the removal of *B. Subtilis* and *B. Cereus*. spores from stainless steel surfaces
A. Al Saabi (INRA-PIHM, France)

Enzyme-based cleaning of coconut milk foulants
P. Saikhwan (Thammasat University, Thailand)

Effect of jet length and surface curvature on cleaning of tank walls
R. Rosario Fernandes (University of Cambridge, UK)

10:20 *Coffee break*

10:50 **Influence of the nozzle distance on the cleaning result compared to the jet break up and the mechanical forces on an industrial scale**
E. Fuchs (Technische Universität Dresden, Germany)

Simulation of jet cleaning: Diffusion model for swellable soils
M. Joppa, (Technische Universität Dresden, Germany)

An investigation into the cleaning mechanisms of liquid jets and sprays used in batch cleaning
A. Rodgers (University of Leeds, UK)

Cleaning of tank surfaces fouled by egg yolk
J. Yang (Technical University of Denmark, Denmark)

12:30 **Conference Summary**
F. Lipnizki (Lund University, Sweden)

12:45 *Lunch*

13:30 **Close**