

Fouling, Cleaning and Disinfection in Food Processing 2006  
20-22 March 2006

**Monday 20 March**

- 9:30**            **Conference Introduction and Overview**  
*Dr. Tony Hasting and Dr. Ian Wilson*
- 10:00**            **Session I - Surfaces**  
Session Chairs - Dr Tony Hasting and Dr Thierry Bénézech
- 10:00**            Assessment of organic material and microbial components on hygienic surfaces  
*J. Verran, P.J. Airey and K. Whitehead*
- 10:25**            Reducing milk protein adhesion rates: a transient surface treatment of stainless steel  
*A.N. Parbhu, M. Danne and S. Hendy*
- 10:50            A study of the effects of surface coating on the initial deposition mechanisms of dairy fouling  
*S.S. Premathilaka, S. Wiehe, M.M. Hyland, X.D. Chen and B. Bansal*
- 10:55            Effect of electroless Ni-P-based composite coatings with different surface free energies on cleaning time of tomato fouling deposit  
*N. Ab Aziz, P.J. Fryer and Q. Zhao*
- 11:00            The influence of surface treatment on removal of food fouling layers  
*P. Saikhwana, T. Geddert, W. Augustin, S. Scholl, W.R. Paterson & D.I. Wilson*
- 11:05            Influences on the result of cleaning in food and pharma industry  
*U. Beck, U. Bobe, G. Reiners and K. Sommer*
- Tea break and Posters**
- 11:40**            The effect of substratum surface topography on the retention of micro-organisms and organic material on defined surfaces  
*K. Whitehead and J. Verran*
- 12:05**            Innovative self-cleaning and bactericide coated polymer films and fabrics under daylight irradiation  
*T. Yuranova, J. Rengifo, A. Rincon, C. Pulgarin and J. Kiwi*
- 12:30**            Solute-membrane fouling interactions during the ultrafiltration of black tea liquor  
*P.J. Evans and M.R. Bird*

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- 14:00            Session II – Measurement and Modelling**  
                    Session Chairs– Prof. Dong Chen and Dr Peter de Jong
- 14:00**        Application of MRI and CLSM for the analysis of biofilm detachment  
*B. Manz, T.R. Neu, F. Volke, C. Staudt, M. Haesner, D. Hempel and H. Horn*
- 14:25**        Monitoring deposit build-up using a novel mechatronic surface sensor (MSS)  
*A. Pereira, R. Rosmaninho, J. Mendes and L.F. Melo*
- 14:50        Diffusion of chlorine dioxide through aqueous and oil films  
*A.A. Hosni, A. Jang, M. Coughlin and P.L. Bishop*
- 14:55        Confocal laser scanning microscopy and fluid dynamic gauging as a tool for  
determination of biofilm stability  
*T.R. Neu , T. Langemann, R. Moehle, T Geddert, W. Augustin S. Scholl,  
D.C. Hempel and H. Horn*
- 15:00        A method for monitoring substratum hygiene using a complex soil; the  
human fingerprint  
*P. Airey and J. Verra*
- 15:05        Monitoring of biofilm development in industrial water circuits by an online-  
sensor-system  
*H. Horn, D. Goll and L. Teichmann*
- 15:10        Investigation of membrane foulants in a drinking water production unit by  
ATR-FTIR spectroscopy and lectin-binding-analysis  
*B. Doumèche, L. Galas, H. Vaudry and P. Di Martino*
- 15:15        Use of a radial flow cell for the cleanability assessment of solid surfaces  
*J. Detry, L. Boulangé-Petermann, P.G. Rouxhet, C. Deroanne and M. Sindic*
- 15:20        Polyaspartic acid as a cleaning agent for calcite and barite deposits  
*J. Braxton, B. Crow and C.S. Grant*
- 15:25        The fouling of ultrafiltration membranes using model tea component  
solutions  
*D. Wu and M.R. Bird*
- 15:30-  
16:00        Tea Break**

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- 16:00**        **Session II – Measurement and Modelling (continued)**  
Session Chairs– Prof. Per Einar Granum and Dr John Chew
- 16:00**        Predicting cleaning: Estimate fluctuations in signal from electrochemical wall shear stress measurements using CFD  
*B.B.B. Jensen, T. Bénézech, P. Legentilhomme, C. Lelièvre and A. Friis*
- 16:25**        Simple models for cleaning 1: Cohesive and adhesive removal in the cleaning of model food deposits  
*W. Liu, Z. Zhang and P.J. Fryer*
- 16:50        Simple models for cleaning 2: Diffusion-reaction behaviour in the cleaning of model food deposits  
*G.K. Christian and P.J. Fryer*
- 16:55        Comparative studies of fluid dynamic gauging and a micromanipulation probe for strength measurements  
*R.J. Hooper, W. Liu, P.J. Fryer, W.R. Paterson, D.I. Wilson and Z. Zhang*
- 17:00        The mechanical effect of rinsing in cleaning of fermentation tank bottoms  
*S. Salo, S. Johnsen, B.B.B. Jensen, E. Storgårds and A. Friis*
- 17:05        Assessing the cleaning of unhygienic geometries in the food industry using computational fluid dynamics (CFD)  
*K. Asteriadou, T. Hasting, M.R. Bird and J. Melrose*
- 17:10        Development of a novel spinning disc deposition system  
*R. Nigo, W.R. Paterson and D.I. Wilson*
- 17:15        *Summary and Close*

**18:00-19:30** **Session II Poster Session and pre-dinner drinks in Upper Hall, JE**

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**9:30 Session III – Dairy**

Session Chairs – Profs. Albrecht Graßhoff and Marie Paulsson

- 9:30** Review on fouling control in the dairy industry: what do we have and what needs to be done  
*P. de Jong and A.J. van Asselt*
- 10:00** Role of ionic calcium in fouling of heat treated milk  
*S. Prakash, H. Deeth, A. Grandison and M. Lewis*
- 10:25** Effect of preheating on fouling of UHT sterilizing plants by fresh, recombined and reconstituted whole milk  
*A Srirachtra, D.F. Newstead, O.J. McCarthy and A.J.H. Paterson*
- 10:50 **Tea Break**
- 11:15** Analysis of milk fouling in an ohmic heater: effect of temperature and power frequency  
*B. Bansal and X.D. Chen*
- 11:40 Minimum wetting rates for falling-films  
*K.R. Morison, Q. A.G. Worth and N.P. O'Dea*
- 11:45 Deposition on electrode surfaces during thermal processing of milk in an ohmic heater  
*B. Bansal and X.D. Chen*
- 11:50 Simulation of fouling behaviour in a helical triple tube ultra-high-temperature (UHT) milk sterilizer  
*P.K. Sahoo, P.K. Nema and A.K. Datta*
- 11:55 Reducing milk fouling using ultrasonic power  
*S.X. Lin and X.D. Chen*
- 12:00** Demonstration of cleaning kinetics using a pilot-scale test rig and implications for dairy manufacturers  
*M.W. Danne, S.C. Warren, G.C. Knight, J.G. Issa, D.V. Irwin and M.G. Weeks*
- 12:25** Cleaning of whey protein fouling layers using pulsed flow  
*K. Bode, R.J. Hooper, W.R. Paterson, D.I. Wilson, W. Augustin and S. Scholl*

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**Tuesday 21 March**

**14:15 Session III – Dairy (continued)**

Session Chairs – Prof. Peter Fryer and Dr Michael Bird

- 14:15** Probing the mechanisms limiting dissolution of whey protein gels during cleaning  
*R. Mercadé-Prieto, R.J. Falconer, W.R. Paterson and D.I. Wilson*
- 14:40** Optimisation of cleaning of spiral PES ultrafiltration membranes in the dairy industry: Physico-chemical and hydrodynamic aspects  
*M. Rabiller-Baudry, D. Delaunay, L. Paugam, L. Bégoïn and B. Chaufer*
- 15:05 Physico-chemical effect of simple alkaline and acid solutions in cleaning sequences of spiral ultrafiltration membranes fouled by skim milk  
*L. Paugam, M. Rabiller-Baudry, D. Delaunay, J.F. Perez and B. Chaufer*
- 15:10 Dissolving heat induced protein gel cubes in alkaline solutions  
*J.Y. Yoo, X.D. Chen, R. Mercadé-Prieto and D.I. Wilson*
- 15:15 Comparison of whey protein fouling layers derived by deposition and gelation  
*R.J. Hooper, W.R. Paterson and D.I. Wilson*
- 15:20 Development of a novel micro-scale technique for monitoring food proteins undergoing cleaning  
*R.J. Hooper, J.Y.M. Chew, W.R. Paterson and D.I. Wilson*
- 15:25 Cleaning the cleaning solution - an industry approach to CIP recovery  
*D. Irwin, S. Warren, M. Danne and M. Weeks*
- 15:30 Factors affecting the cleaning efficiency of polysulphone membranes after cream ultrafiltration  
*Y. Hernández, A. Grandison, M. Lewis, J. Highnam and A. McInnes*

**15:40-17:00 Tea and Session III Poster Session**

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**Wednesday 22 March**

**9:30 Session III – Microbes**

Session Chairs – Prof. Joanna Verran and Dr Ian Wilson

- 9:30** Influence of wall shear stress variations on microbial removal along different pipe arrangements during cleaning-in-place  
*W. Blel, T. Bénézech, P. Legentilhomme, J. Legrand and C. Le Gentillelièvre*
- 9 :55** Control of flow-generated biofilms with surfactants - evidence of resistance and recovery  
*M. Simões, L.C. Simões, I. Machada, M.O. Pereira and M.J. Vieira*
- 10:20** Investigation of mechanisms of *Bacillus cereus* spore removal during an alkaline cleaning of a tubular ceramic microfiltration membrane  
*P. Blanpain-Avet, C. Faille and T. Bénézech*
- 10:45 Influence of material type and surface benzalkonium chloride preconditioning on biofilm formation and activity  
*M.O. Pereira, S. Machado, L.C. Simões, I. Machado, M. Simões & M.J. Vieira*
- 10:50 UV intensity variation from high output sources - mercury arc lamps  
*D. Chambers, S. Theng and D. Marsden*
- 10:55 Measurement techniques and surface technologies to control biofouling on poultry equipment  
*J.W. Arnold*
- 11:00 Tea Break and Poster Session**
- 11:30** Microbial activity of biopolymers isolated from *Sphagnum papillosum*  
*T. Stalheim, S. Ballance, B.E. Christensen and P.E. Granum*
- 11:55** Microbial inactivation using cold atmospheric gas plasmas  
*X.T. Deng, J.J. Shi, G. Shama and M.G. Kong*
- 12:20 Summary and Close**