

16th Nordic Filtration Symposium - Filtration for Circular Economy

Lappeenranta University of Technology (LUT), Lappeenranta, Finland, August 24 – 26, 2016

Preliminary program

Wednesday, August 24th

- 11:30 – 12:00 **Bus transportation from hotels to LUT**
- 12:00 – 13:00 **Registration and lunch**
- 13:00 – 13:30 **Opening words and introduction of LUT**
Rector Juha-Matti Saksa, Lappeenranta University of Technology
- 13:30 – 14:10 **Circular economy opportunities for Finland, how can they be achieved?**
Kari Herlevi
The Finnish Innovation Fund Sitra, Itämerenkatu 11-13, PL 160, 00181 Helsinki, Finland
- 14:10 – 14:30 **Laccase treatment of galactoglucomannan from thermomechanical pulp mill process water**
Johan Thuvander^a, Petri Oinonen^b and Ann-Sofi Jönsson^a
^a Dept. of Chemical Engineering, Lund University, P.O. Box 124, SE-221 00 Lund, Sweden
^b Ecohelix AB, Hägerstensvägen 137, SE-126 48 Hägersten, Sweden
- 14:30 – 14:50 **Local filtration properties of Kraft lignin: Influence of xylan**
Julie Durruty^a, Tuve Mattsson^{a,b}, and Hans Theliander^{a,b}
^a Department of Chemical and Biological Engineering, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden
^b Wallenberg Wood Science Centre, Royal Institute of Technology, Chalmers University of Technology, SE-100 44 Stockholm, Sweden
- 14:50 – 15:20 **Coffee break + posters**
- 15:20 – 16:00 **Some novel biomass treatments for enhancing separation/extraction processes and the situation of electrically assisted separation**
Eugene Vorobiev
Sorbonne Universités, Université de Technologie de Compiègne (UTC/ESCOM, EA 4297 TIMR), Centre de Recherche de Royallieu, CS 60319, 60203 Compiègne Cedex, France
- 16:00 – 16:20 **Electro-assisted filtration of microcrystalline cellulose**
Jonas Wetterling^{a,b}, Tuve Mattsson^{a,b}, and Hans Theliander^{a,b}
^a Department of Chemistry and Chemical Engineering, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden
^b Wallenberg Wood Science Centre, Royal Institute of Technology, Chalmers University of Technology, SE-100 44 Stockholm, Sweden
- 16:20 – 16:40 **The effect of particle surface charge on filter cake resistance in dead-end filtration**
Søren Lorenzen^a, Kristian Keiding^a and Morten Lykkegaard Christensen^a
^a Department of Chemistry and Bioscience, Aalborg University Fredrik Bajers Vej 7H, 9220 Aalborg East, Denmark

- 16:40 – 17:00 **Break**
- 17:00 – 17:20 **Filtration and washing characteristics of green liquor dregs**
 Mohammad Golmaei, Teemu Kinnarinen, Eeva Jernström and Antti Häkkinen
LUT School of Engineering Science, Lappeenranta University of Technology, Skinnarilankatu 34, FI-53850, Lappeenranta, Finland
- 17:20 – 17:40 **Topic to be confirmed**
 N.N.
- 17:45 **Bus transportation to the hotels**
- 19:00 **Get Together – event, Outotec Dewatering Technology Center**

Thursday, August 25th

- 08:30 – 09:00 **Bus transportation from hotels to LUT**
- 09:00 – 09:40 **Filter cake washing and cleaning - the basis of a sustainable product and process**
 Urs A. Peuker
Institut für Mechanische Verfahrenstechnik und Aufbereitungstechnik, TU Bergakademie Freiberg, Agricolastraße 1, 09599 Freiberg / Sachsen, Germany
- 09:40 – 10:00 **Filtration optimization in mining and metallurgical processes**
 Leena Tantt
Outotec (Finland) Oy, Tukkipatu 1, P.O. Box 29, 53101 Lappeenranta, Finland
- 10:00 – 10:20 **Superposition of compression and shear in filtration**
 Eric Höfgen, Anthony D. Stickland, Peter J. Scales and Robin J. Batterham
Particulate Fluids Processing Centre, Department of Chemical and Biomolecular Engineering, The University of Melbourne, 3010, Australia
- 10:20 – 10:50 **Coffee break + posters**
- 10:50 – 11:10 **Towards a “minimum impact” copper concentrator: recycled water, tailings filtration and dry stacking perspective**
 Tuukka Kotiranta^a, Janne Kauppi^b, Kaj Jansson^c
^a *Outotec, Kuparitie 10, 28330, Pori, Finland*
^b *Outotec, Tukkipatu 1, 53100, Lappeenranta, Finland*
^c *Outotec, Rauhalanpuisto 9, 02230, Espoo, Finland*
- 11:10 – 11:30 **Treatment and utilization of solid waste from the mining industry**
 Paula Vehmaanperä^a, Riina Salmimies^a, Ville Miettinen^b, Antti Grönroos^b and Antti Häkkinen
^a *LUT School of Engineering Science, Lappeenranta University of Technology, Skinnarilankatu 34, FI-53850, Lappeenranta, Finland*
^b *VTT Technical Research Centre of Finland Ltd, P.O. Box 1603, FI-40101, Jyväskylä, Finland*
- 11:30 – 11:50 **Deployment of automatic backwashable filters for treatment, recovery and conservation of water in industrial processes**
 Marco Grippa
DrM, Dr. Mueller AG, Alte Landstrasse 415 CH-8708 Maennedorf, Switzerland

- 11:50 – 13:00 **Lunch + posters**
- 13:00 – 13:40 **Ceramic Nanofiltration Membranes**
 Hannes Richter
Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Hermsdorf branch of the institute, Michael-Faraday-Str. 1, D-07629 Hermsdorf, Germany
- 13:40 – 14:00 **Certifying Precision Filters for Critical Applications**
 K Brocklehurst, G Rideal and A Stewart
Whitehouse Scientific Ltd, Whitchurch Road, Waverton, Chester, CH3 7PB, UK
- 14:00 – 14:20 **Costs for membrane cleaning – an economic assessment**
 Ann-Sofi Jönsson^a and Frank Lipnizki^{a,b}
^a *Department of Chemical Engineering, Lund University, P.O. Box 124, SE-221 00 Lund, Sweden*
^b *Alfa Laval Naskov A/S, Stavangervej 10, DK-4900 Naskov, Denmark*
- 14:20 – 14:50 **Coffee break + posters**
- 14:50 – 15:30 **Filter media – Considerations for the Circular Economy**
 Trevor Sparks
Filtration Group, Kevelaerer Strasse 78, D-47608 Geldern-Walbeck, Germany
- 15:30 – 15:50 **Capillary action filter elements from new combinations of materials**
 Bjarne Ekberg^a, Mika Illi^b, Kari Vanttinen^b
^a *Outotec (Finland) Oy, Urusvuorenkatu 5, 20360 Turku, Finland*
^b *Outotec (Finland) Oy, Rauhalanpuisto 9, 02230 Espoo*
- 15:50 – 16:10 **Exploiting the potential of Additive manufacturing in filtration media designs**
 Neil Burns, Mark Burns, Louise Geekie and Darren Travis
Croft Additive Manufacturing Limited, T1, Taylor Business Park, Risley, Warrington, United Kingdom, WA3 6BL.
- 16:10 – 16:30 **Certifying sub-20 micron meshes by image analysis and challenge testing**
 Graham Rideal
Whitehouse Scientific Ltd, Whitchurch Road, Waverton, Chester, CH3 7PB, UK
- 16:40 – 17:40 **General assembly of the Nordic Filtration Society**
- 17:40 **Bus transportation to the hotels**
- 19:00 **Symposium dinner, Restaurant Kehruuhuone**

Friday, August 26th

- 08:30 – 09:00 **Bus transportation from hotels to LUT**
- 09:00 – 09:40 **Mine Water? Mine Water! – Where does future research need to focus on?**
 Christian Wolkersdorfer
Lappeenranta University of Technology, P.O. Box 20, FI-53851, Lappeenranta, Finland
Tshwane University of Technology (TUT), Private Bag X680, Pretoria, 0001, South Africa

- 09:40 – 10:00 **Characterization of membrane foulants at ambient temperature anaerobic membrane bioreactor treating low-strength industrial wastewater**
Agata Zarebska^a, Hamse Kjerstadius^b, Irena Petrinic^c, Hermina Buksek^c, Jasmina Korenak^c, Jes la Cour Jansen^b and Claus Helix-Nielsen^{a,c}
^a Department of Environmental Engineering, Technical University of Denmark, Bygningstorvet Building: 115, 139, 2800 Kgs. Lyngby, Denmark
^b Department of Chemical Engineering, Faculty of Engineering, Lund University, Getingevägen 60, 221 00 Lund, Sweden
^c Faculty of Chemistry and Chemical Engineering, University of Maribor, Smetanova ulica 17, 2000 Maribor, Slovenia
- 10:00 – 10:20 **Impact of sludge flocs on membrane fouling in membrane bioreactors**
Morten L. Christensen, Wolfgang Nissen, Mads K. Jørgensen
Department of Chemistry and Bioscience, Aalborg University, Frederik Bajers Vej 7H, DK-9220 Aalborg Øst, Denmark
- 10:20 – 10:50 **Coffee break + posters**
- 10:50 – 11:10 **Concentration by forward osmosis to high TDS**
Eliisa Järvelä, Hanna Kyllönen, Juha Heikkinen and Antti Grönroos
VTT Technical Research Centre of Finland Ltd, P.O. Box 1603, FI-40101, Jyväskylä, Finland
- 11:10 – 11:30 **Effect of the electrocoagulation to the settling of mining and mineral industry solids - comparison of electrochemical vs. conventional settling methods**
Niko Isomäki^a, Mika Martikainen^b, and Tuomas van der Meer^b
^a Outotec Research Center, Kuparitie 10, P.O. Box 69, FI-28101, Pori, Finland
^b Outotec Finland, Rauhalanpuisto 9, P.O. Box 1000, 02230, Espoo, Finland
- 11:30 – 11:50 **Removal of sulphate from mining waters by electrocoagulation**
Maria Mamelkina, Ritva Tuunila, Mika Sillanpää and Antti Häkkinen
^a LUT School of Engineering Science, Lappeenranta University of Technology, Skinnarilankatu 34, FI-53850, Lappeenranta, Finland
- 11:50 – 12:40 **Lunch + posters**
- 12:40 – 13:00 **EPS and cationic composition influence on sludge fouling propensity**
Mads K. Jørgensen^a, Marta Nierychlo^a, Poul Larsen^a, Asbjørn H. Nielsen^b, Morten L. Christensen^a, Per H. Nielsen^a
^a Department of Chemistry and Bioscience, Aalborg University, Fredrik Bajers Vej 7H, DK-9220 Aalborg Øst,
^b Department of Civil Engineering, Aalborg University, Fredrik Bajers Vej 7H, DK-9220 Aalborg Øst
- 13:00 – 13:20 **Recent Developments in industrial self-cleaning microfiltration**
Ville Hakala
Sofi Filtration, Luoteisrinne 4 A, 02270 Espoo, Finland
- 13:20 – 13:40 **Recovery of phosphorous from membrane concentrates**
Kimmo Arola, Mari Kallioinen and Mika Mänttari
Lappeenranta University of Technology, P.O. Box 20, FI-53851, Lappeenranta, Finland
- 14:00 **Bus transportation to the railway station / hotels**

Poster presentations

Incorporation of submerged Membrane Bioreactor (MBR) in conventional activated sludge (CAS) process for municipal wastewater treatment: A comparative assessment

Khum Gurung*, Mohamed Chaker Ncibi, Jean-Marie Fontmorin, Heikki Särkkä and Mika Sillanpää

Laboratory of Green Chemistry, School of Engineering Science, Lappeenranta University of Technology, Sammonkatu 12, FI-50130 Mikkeli, Finland

Significance of membrane bioreactor design on the biocatalytic performance of glucose oxidase and catalase: Free vs. immobilized systems

Sofie T. Morthensen, Anne S. Meyer, Henning Jørgensen and Manuel Pinelo

^a Department of Chemical and Biochemical Engineering, Center for Bioprocess Engineering, Building 229, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark

Detoxification of a liquid stream from biomass pretreatment by nanofiltration

Mohd Shafiq Mohd Sueb, Jakub Zdarta, Gunnar Jonsson, Anne S. Meyer, Henning Jørgensen and Manuel Pinelo

^a Department of Chemical and Biochemical Engineering, Center for Bioprocess Engineering, Building 229, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark

Influence of pre-filtration on membrane performance during isolation of lignin-carbohydrate-complex's from spent sulfite liquor

Basel Al-Rudainy and Ola Wallberg

Department of Chemical Engineering, Lund University, P.O. Box 124, SE-221 00 Lund, Sweden

Influence of feed composition and membrane fouling on forward osmosis performance

Carina Schneider^a, Rajath Sathyadev Rajmohan^a, Agata Zarebska^a and Claus Hélix-Nielsen^{a,b}

^a Technical University of Denmark, Department of Environmental Engineering, Bygningstorvet, Building 115, 2800 Kgs. Lyngby, Denmark

^b University of Maribor, Laboratory for Water Biophysics and Membrane Processes, Faculty of Chemistry and Chemical Engineering, Smetanova ulica 17, 2000 Maribor, Slovenia

Correlation between Blaine index and filtration characteristics of different materials

Dmitry Safonov, Teemu Kinnarinen and Antti Häkkinen

LUT School of Engineering Science, Lappeenranta University of Technology, Skinnarilankatu 34, FI-53850, Lappeenranta, Finland