Workshop on Membrane Fouling and Monitoring

September 21st - 22nd 2012
Balliol College, University of Oxford

September 21st
Breakfast 8-9 am in Hall
All technical sessions are in LR23

INTRODUCTION AND BIOFOULING OVERVIEW

8.30 am Introduction Tony Fane and Robert Field

Summary of the 2011 meeting in Singapore - Harry Ridgway

“Fouling in reverse osmosis: Characteristics, controls and monitoring”. Tony Fane (SMTC, NTU, Singapore)

“Kinetic study of seawater Reverse Osmosis membrane fouling”, M.T. Khan, C.O. Manes and J-P Croue (WDRC, KAUST)

“Biofouling on membranes – no silver bullet, but strategies” Hans-Curt Fleming (University of Duisburg-Essen)

Discussion

10.30-11.00 am Coffee/Tea
11.00 am TRANSPARENT EXOPOLYMERS

“Revised Paradigm for Aquatic Biofilm Formation: Facilitation by Microgel Transparent Exopolymer Particles” Tom Berman, Edo Bar-Zeev and Ilana Berman-Frank, (Kinneret Limnological Laboratory)

“Comparison Between Colloidal Transparent Exopolymer Particles (TEP) from Bacteria and Algae and their Role in Microfouling of RO Membranes”. Harvey Winters (KAUST)


Discussion

12.30 pm Lunch in Hall

1.30 pm FOULING OBSERVED

“Paving the road towards reproducible experimental mixed-species biofilm research” Yehuda Cohen (NTU Singapore)

“To what degree can CLSM help understand fundamentals of biofouling in low-pressure membrane filtration?” TorÖve Leiknes (NTNU, Trondheim)

“Rheological properties of thin alginate fouling layers developing during RO membrane desalination” D.C. Sioutopoulos, T. B. Goudoulas, E.G. Kastrinakis, S.G. Nychas, A.J. Karabelas (CERTH, Aristotle University of Thessaloniki, Greece)

Discussion

3.00-3.30 pm Tea/Coffee

3.30 pm PRETREATMENT

“Reducing Anionic and Hydrophobic Biofoulants With Nonwoven Filter Media Having High Flux Rate and Low Pressure Drop” Rod Komlenic (Ahlstrom Filtration)

“Assessment of biofouling reduction for biofilter as a pretreatment for RO desalination by Gayathri Naidu, Sanghyun Jeong, Roger BenAim, Saravanamuthu Vigneswaran, Jaya Kandasamy (IFTS, Toulouse)

“Biopolymer fouling in UF and its control” Zheng Xing (Grundfos)

Discussion
Workshop Dinner (co-sponsored by KAUST): 6.30 for 7.15 pm SCR
September 22nd
Breakfast 8-9 am in Hall
All technical sessions are in LR23

9.00 am MEMBRANE-FOULANT INTERACTIONS

“RO and NF membrane fouling by mixed foulants” Chuyang Tang (SMTC, NTU, Singapore)

“Progress towards predicting organic fouling of RO membranes: Correlation of resistances in constant flux and constant pressure filtration” A. J. Karabelas, D.C. Sioutopoulos”, (CPERI and CERTH, Aristotle University of Thessaloniki, Greece)

“Membrane biofouling characterization in a membrane based septic tank” Sher Jamal Khan, Saadat Ali, C. Visvanathan, V.L. Pillay, (National University of Sciences and Technology, Islamabad, Pakistan)

Discussion

10.30-11.00 am Coffee/Tea

11 am MODELLING AND FOULING

“Interfacial Hydrodynamics and Fouling – New Insight on the Drag Force Induced by Permeation Through a Membrane” Guy Ramon (Princeton)

“Molecular simulations of foulant adsorption to membrane materials” Harry Ridgway (WDRC, KAUST)

“Benchmark modelling for all types of MBR configurations for improved process control” Dr Parneet Paul (Brunel, UK)

Discussion

12.30 pm Lunch in Hall

1.30 pm SENSORS and MONITORS

“A view inside the black box made possible with Ultrasonic Time Domain Reflectometry”. Victor Sim (NTU, Singapore)

“Optical surface sensor, capable to simultaneously detect and distinguish biological and abiotic deposits” Hans-Curt Fleming University of Duisburg-Essen

“Simultaneous mitigating and in situ monitoring biofouling of seawater RO membrane and spacer” Justin C-T Lin, Hui-Ling Yang, CP Huang

“A reflection upon the ideal membrane characteristics of a Membrane Integrity Sensors” Robert Field, University of Oxford
Discussion

3.00-3.30 pm Tea/Coffee
3.30 pm STRATEGY AND COST +WRAP-UP DISCUSSION

"Particle fouling in MF/UF: how can in situ characterisation influence filtration strategy?" Corrine Cabassud INSA, Toulouse

“Development of a Cost Model to Evaluate Production Cost Targets for Low Fouling Ceramic Membranes in Water Treatment” Graeme Pearce, Membrane Consultancy Associates

Wrap-up discussion

Close circa 5 pm

Dinner in Hall at 6.15 pm

**Workshop on Membrane Fouling and Monitoring**

*September 21st - 22nd 2012*

*Balliol College, University of Oxford*

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<th>Options</th>
<th>Description</th>
<th>Cost £</th>
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<tr>
<td>1</td>
<td>Registration for workshop (21st and 22nd Sept) including accommodation** and all meals including conference dinner</td>
<td>310</td>
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<tr>
<td>2</td>
<td>Category 1 in twin room; partner taking breakfast and conference dinner**</td>
<td>445</td>
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<tr>
<td>3</td>
<td>Day rate plus conference dinner on Friday 21st Sept</td>
<td>180</td>
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<tr>
<td>4</td>
<td>Registration for workshop (21st and 22nd Sept) including accommodation THREE nights (including Saturday night 22nd September) and all meals including conference dinner</td>
<td>365</td>
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<tr>
<td>5</td>
<td>Category 4 in twin room; partner taking breakfast and conference dinner</td>
<td>520</td>
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For paying the above please see BANK DETAILS FOR PAYMENT Below

6 Arriving early and wanting accommodation Contact conference.manager@balliol.ox.ac.uk
** Please note that the inclusive accommodation for categories 1 and 2 is for the 20th and 21st September. Those wanting to stay for three nights including night of 22nd September should book category 4 or 5.

Those wanting to extend their stay further, or arrive before the 20th, should (i) email conference.manager@balliol.ox.ac.uk and (ii) pay separately for these elements.

Please send form below (or equivalent information) by email to:
Professor Robert W Field (cc Liza Brandon): email: robert.field@eng.ox.ac.uk and cc chemeng.secretary@eng.ox.ac.uk

Thanks

Registration Form

<table>
<thead>
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<th>Number of persons being registered</th>
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<tbody>
<tr>
<td>Number of accompanying partners</td>
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<tr>
<td>Category booked (see below)</td>
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For each person being registered:

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<th>Given name</th>
<th>Title</th>
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Expected date by which payment will be sent via bank transfer. See instructions below.

BANK DETAILS for WORKSHOP PAYMENT

Europe
Bank: The Co-operative Bank plc
Bank Address: 13 New Road, Oxford, OX1 1LG
Bank Account Name: Balliol College
Bank Sort Code: 08-90-38  Bank Account No: 50574094
Please include reference: "R FIELD CONF"

OVERSEAS Registrations:

Additional Details
Bank Identifier No. GB36 CPBK 0890 3850 5740 94
Bank Swift Code: CPBK GB22
Please include reference: "R FIELD CONF"