

International Conference



Ion Exchange Technology
for Today and Tomorrow

Sunday 4 - Wednesday 7 July 2004

**Churchill College
University of Cambridge, UK**

FINAL PROGRAMME AND DELEGATE LIST



IEX 2004 - Ion Exchange Technology for Today and Tomorrow

FINAL PROGRAMME

Sunday 4 July

- 16.00 - 18.30 Registration desk opens in the Wolfson Foyer
19.00 Pimms reception in the Buttery Bar
19.30 Buffet in the Buttery Bar

Monday 5 July

- 07.30 Breakfast for residents in the Dining Hall
08.30 Registration desk opens in the Wolfson Foyer
08.45 - 09.00 Opening Remarks
09.00 - 10.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
10.30 - 11.00 Coffee in the Buttery Bar
11.00 - 12.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
12.30 - 14.00 Lunch in the Dining Hall
14.00 - 15.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
15.30 - 16.00 Tea in the Buttery Bar
16.00 - 17.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
17.30 - 18.30 Poster Session and Wine Reception in the Buttery Bar
19.30 Barbeque on the lawn

Tuesday 6 July

- 07.30 Breakfast for residents in the Dining Hall
08.45 - 10.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
10.30 - 11.00 Coffee in the Buttery Bar
11.00 - 12.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
12.30 - 14.00 Lunch in the Dining Hall
14.00 - 15.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
15.30 - 16.00 Tea in the Buttery Bar
16.00 - 16.30 Technical Sessions in the Main Auditorium
16.30 Meeting on International Society of Ion Exchange in the Main Auditorium
17.30 - 18.30 Poster Session in the Buttery Bar / Main College Foyer
19.00 Free Evening

Wednesday 7 July

- 07.30 Breakfast for residents in the Dining Hall
09.00 - 10.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
10.30 - 11.00 Coffee in the Buttery Bar
11.00 - 12.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
12.30 - 14.00 Lunch in the Dining Hall
14.00 - 15.30 Technical Sessions in the Main Auditorium and the Fellows Dining Room
15.30 Presentation of Ion Exchange Awards
Close of Conference

Sunday 4 July

- 16.00 Registration desk opens in the Wolfson Foyer
- 18.30 Registration desk closes
- 19.00 Pimms reception in the Buttery Bar
- 19.30 Buffet in the Buttery Bar

Monday 5 July

- 07.30 Breakfast available for residents in the Dining Hall
- 08.45 Opening Remarks
Michael Cox, Chairman of the Organising Committee

Chairman: M Cox

- 09.00 **Plenary Lecture 1 - Main Auditorium**
Ion Exchange: A Technologist's view of what's next
James McNulty, Rohm and Haas Ltd, UK

High Purity Water

Session A

Main Auditorium

Chairmen: M Sadler and W Höll

- 10.00 **Keynote Lecture**
HPW1 K J Shields, K Fruzzetti (USA) and M A Sadler (UK)
Condensate Polishing in Fossil and Nuclear Steam-water Cycles
- 10.30 COFFEE in the Buttery Bar
- 11.00 B C Conlin, J D Aspen and D Surender (South Africa)
HPW2 Simplified Methods for the Determination of the Ionic Composition of Ion Exchange Resins
- 11.30 A Apblett, S I Kuriyavar, G L Foutch and P Tran (USA)
HPW3 The ETA Fouling Mechanism in Mixed Bed Ion Exchange
- 12.00 B Handy and J C Greene (UK)
HPW4 Predicting the Operating Performance of Condenser Polishing Plant using a Mathematical Model
- 12.30 LUNCH in the Dining Hall

Chairmen: K Blaxall and G Foutch

- 14.00 AD Miller and K Fruzzetti (USA)
HPW5 Optimisation of Ion Exchange in Polishers at PWRs
- 14.30 I Monzie, L Muhr and G Grevillot (France)
HPW6 Development of a Simple Method for Measurement of Ion Exchange Film Mass Transfer Characteristic Time for High Purity Water
- 15.00 B W Widman (USA)
HPW7 Modelling Mixed Bed Ion Exchange Kinetics for Removal of Trace Levels of Divalent Cations in Ultrapure Water
- 15.30 TEA in the Buttery Bar
- 16.00 C Lacher, M Franzreb and W H Höll (Germany)
HPW8 Electrodeionisation Using Magnetic Ion Exchange Resins

Chairmen: D Naden and J L Cortina

- 10.00 K Nash (USA)
H1 Eluants for Ion Exchange-based Separations of Trivalent f-Elements
- 10.30 COFFEE in the Buttery Bar
- 11.00 J L Cortina and V Marti (Spain)
H2 Precious Metal Recycling from Spent Automotive Catalyst Residues by using Hydrometallurgical Processes
- 11.30 Y-Z Wei, K Horiguchi and M Kumagai (Japan), A Bruggeman and P Goethals (Belgium)
H3 Palladium removal from Spent Nuclear Fuel Solution using SiPyR-N3 Anion Exchanger
- 12.00 E Evstatieva and W H Höll (Germany)
H4 Experimental Results on Fluoride Sorption on Activated Alumina in Presence of other Ions
- 12.30 LUNCH in the Buttery Bar

Chairmen: L Weatherley and K Nash

- 14.00 M J Haron, W M Z Wan Yunus, S H Salleh and Y M Ahmed (Malaysia)
H5 Sorption of Arsenic on La-poly (hydroxamic acid) Resin Complex
- 14.30 A I Bortun, J J Pardini and C J Butler (USA), S A Khainakov and J R García (Spain)
H6 Zirconium Based Inorganic Ion Exchangers
- 15.00 N Suzuki, M Igarasahi, H Suzuki, M Ito, Y Kanzaki and Yu Komatsu
H7 Cs⁺ Selectivity of Layered Phosphates
- 15.30 TEA in the Buttery Bar
- 16.00 E Alfaro and J Frenay (Belgium)
H8 Recovery of Gold from Alkaline Thiosulfate Solutions with Ion Exchange Resins
- 17.30 Poster session and Wine reception in the Buttery Bar / Main College Foyer
- 19.00 Barbeque on the Lawn

Tuesday 6 July

- 07.30 Breakfast available for residents in the Dining Hall

Chairman: M Cox

- 08.45 **Plenary Lecture 2 - Main Auditorium**
Michael Streat (Loughborough University, UK)
Renewable Adsorbents for the Removal of Trace Contaminants from Water and Effluents

Chairman: M Cox and D Shallcross

- 09.30 **Keynote Lecture**
EP1 D N Muraviev (Spain) and R Kh Khamizov (Russia)
Sustainable Development and Ion Exchange: Green Ion Exchange Technologies

- 10.00 C Valderrama, V Marti, J De Pablo, M Rovira and J L Cortina (Spain)
EP2 Laboratory Evaluation of Hyper-reticulated Polymeric Adsorbents (Macronet) for Dye Removal Processes
- 10.30 COFFEE in the Buttery Bar
- 11.00 R Thompson, N Jemaa, M Paleologou, C Brown and M Sheedy, (Canada)
EP3 Splitting of Kraft Mill Green Liquors using a Snake-cage Polyelectrolyte Resin
- 11.30 M Dreusch and W H Höll (Germany)
EP4 Separation and Recovery of Heavy Metals from Wastewaters by pH Parametric Pumping
- 12.00 PJ Lloyd-Jones (UK), J R Rangel-Mendez (USA) and M Streat (UK)
EP5 Characterisation, Evaluation and Application of Economical Adsorbents in Cadmium Removal from Aqueous Solutions
- 12.30 LUNCH in the Dining Hall

Chairmen: S Gare and V Soldatov

- 14.00 G Akcin, G Cetin and S Kocaoba, (Turkey) and W H Höll (Germany)
EP6 Recovery of Chromium from Tannery Wastewaters
- 14.30 F Mijangos, M Kamel, M P Elizalde and M Ortueta (Spain)
EP7 Kinetics of Chromium (III) Stripping from Polymeric Matrix using Hydrogen Peroxide in Alkaline Media
- 15.00 N Kabay and M Arda, (Turkey), A Trochimczuk (Poland) and M Streat (UK):
EP8 Removal of Chromate by Solvent Impregnated Resins (SIRs) Stabilised by Coating and Chemical Crosslinking
- 15.30 TEA in the Buttery Bar
- 16.00 O Gibert, J de Pablo, J L Cortina and C Ayora (Spain)
EP9 Biosorption of Heavy Metals onto Municipal Compost as Filling Material for Permeable Reactive Barriers for *in-situ* Acid Mine Drainage Treatment
- 16.30 Meeting to discuss International Society of Ion Exchange in the Main Auditorium
 Michael Cox and Arup SenGupta

Biotechnology/Pharmacy and Food

Session B

Fellows Dining Room

Chairmen: J Irving and E Zaganiaris

- 09.30 K B Merck and J H Hanemaaijer (Netherlands)
B/P/F1 Development of Adsorptive Separation Processes for Food Industries
- 10.00 C Jensen and M Pillay (South Africa), G Rossiter (USA) and H Mononen (Finland):
B/P/F2 The Impact of Smaller Diameter Resin Beads on Process Kinetics and Economics in the Sugar Industry – a Case Study
- 10.30 COFFEE in the Buttery Bar
- 11.00 A Kostova and H-J Bart (Germany)
B/P/F4 Reactive Sorption of Amino-acids on Impregnated Resins

- 11.30 J Nolte, M Bataineh, B Haciosmanoglu and M Grote
B/P/F5 Membrane Systems Developed for the Separation of Pharmaceutical Residues from Water
- 12.00 E S Santos, R Guirardello and T T Franco (Brazil)
B/P/F3 Chitosanese Extraction and Purification by Expanded Bed Adsorption
- 12.30 LUNCH in the Dining Hall

Catalysis

Session B

Fellows Dining Room

Chairman: M Cox

- 14.30 E du Toit and W Nicol (South Africa)
CAT1 Modelling the Rate Inhibiting Effect of Water as a Product on Reactions Catalysed by Cation Exchange Resins
- 15.00 A De Lucas, M Perez-Collado and F Larrondo and J F Rodriguez (Spain)
CAT2 Removal of Caesium Catalyst from Polyols by Ion Exchange on Amberlite 25
- 15.30 TEA in the Buttery Bar
- 16.30 Meeting to discuss International Society of Ion Exchange in the Main Auditorium
 Michael Cox and Arup SenGupta
- 17.30 Poster Session in the Buttery Bar / Main College Foyer
- 19.00 Free evening

Wednesday 7 July

Potable Water Treatment

Session A

Main Auditorium

Chairmen: R Clayton and A Sengupta

- 07.30 Breakfast available for residents in the Dining Hall
- 09.00 T Dahlke, M Franzreb and W H Höll (Germany)
WT1 Development and Application of Magnetic Micro Ion Exchangers for Heavy Metal Removal by Complexation
- 09.30 L R Weatherley and N D Miladinovic (New Zealand)
WT2 Ammonia Removal from Aqueous Solution by the Macronet Cationic Ion Exchanger MN500
- 10.00 D Stetter, O Dördelmann and H Overath (Germany)
WT3 Selective Removal of Nickel and other Trace Metals from Drinking Water
- 10.30 COFFEE in the Buttery Bar
- 11.00 J Irving and F Boodoo (UK)
WT4 Selective Contaminant removal from Natural Water
- 11.30 N Makarova, T Mitchenko, A Mitchenko, H Shevchuk and G Abbt-Braun (Ukraine)
 Composition of Sorbents for Complex Water Purification
- 12.30 LUNCH in the Dining Hall

Chairmen: K Blaxall

- 14.00 R L Bruening and N E Izatt (USA)
IED1 Molecular Recognition Technology for Life Sciences Separations
- 14.30 M P Tsyurupa, V A Davankov, N B Ferapontov, A N Gruzdeva and N L Strusovskaya (Russia)
IED2 Sorption of Water and Electrolytes by Ion Exchange Resins and Neutral Sorbents with a Hypercrosslinked Polystyrene Matrix
- 15.30 TEA in the Buttery Bar

Chairmen: M Streat and Y Komatsu

- 09.00 A I Kalinitichev (Russia) and W H Höll (Germany)
F1 Multi-component Ion Exchange Dynamics with the Equilibria Described by Surface Complexation Theory
- 09.30 J L Provis, G C Lukey and D C Shallcross (Australia)
F2 An Improved Model for Binary System Ion Exchange Equilibria
- 10.00 V S Soldatov (Poland), V M Zelenkovskii and T V Bezyazychnaya (Belarus):
F3 Computer Modelling of Hydration of the Functional Groups in Ion Exchangers
- 10.30 COFFEE in the Buttery Bar
- 11.00 A K Sengupta and P Li (USA)
F4 Ion Exchange of Trace Contaminants: Some Observations and Underlying Mechanism
- 11.30 T Sainio, J Tiihonen and E Paatero (Finland)
F5 Mass Transfer Coupled with Volume Changes in Ion-Exchange Resin Beads
- 12.30 LUNCH in the Dining Hall

Chairman: G Solt

- 14.00 H Matsumoto, R Yamamoto and A Tanioka (Japan)
M1 Ion-Pairing Effect in Ion-Exchange Membranes: Low-Water-content Charged Membrane System
- 14.30 N A Tikhonov (Russia)
M2 Oscillations of Concentration at Diffusion of Ions through an Ion-Exchange Membrane
- 15.30 TEA in the Buttery Bar
- 16.30 Presentation of Ion Exchange Awards - David Naden, Chairman of Separation, Science and Technology Group
- Close of conference by M. Cox

ORGANISING COMMITTEE

Chairman: Michael Cox
Treasurer: Simon Parsons
Secretary: Mike Sadler
Committee members: Kevin Blaxall
Harry Eccles
David Naden
Simon Gare

POSTERS

Please take time to view the posters at the conference. There is a separate booklet containing the abstracts. The posters will remain up for the duration of the conference and will be attended by the one of the authors at the following times:

Monday 5 July 17.30 - 18.30

Tuesday 6 July 17.30 - 18.30

EXHIBITIONS

The following organisations will have exhibition tables in the Main foyer/refreshments area:

Christ Kennicott Water Technology Ltd
Ecolochem International Inc (and trailer in college grounds)
Johnson Matthey
Purolite International Ltd
Finex-Oy
Dionex (UK) Ltd
Bayer
Metrohm UK Ltd