Distillation & Absorption 2006

4-6 September 2006

Distillation & Absorption 2006

London

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2006 Distillation & Absorption

INTRODUCTION

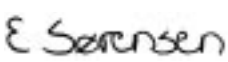
On behalf of the organising committee, it gives us great pleasure to welcome you to the 8th Distillation & Absorption conference in London, UK on 4–6 September 2006. Leading the organisation has been the Institution of Chemical Engineers, working in close collaboration with the European Federation of Chemical Engineers' Working Party on Distillation, Absorption and Extraction, with sponsorship from the American Institute of Chemical Engineers. Delegates from all corners of the world are making the journey to London and we look forward to meeting all of you during the course of your stay.

It is now nearly 50 years since the first Distillation & Absorption conference was held in Brighton in 1960. The first meetings were held in Brighton at approximately 10-year intervals and therefore became know as 'the Brighton conferences'. In 1987, it was recognised that more frequent meetings were needed, so the next conference was in 1992 in Birmingham (UK), then 1997 in Maastricht (The Netherlands) and the lastest in 2002 in Baden-Baden (Germany).

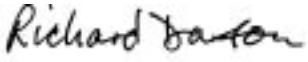
Distillation and absorption are hugely important industrial separation technologies. They produce the world's petroleum fuels, treat most of our natural gas, and are involved in a host of processes making the chemicals and other products that the world needs. Large in scale, and heavy in energy usage, there are enormous incentives to introduce new and better methods and equipment to improve the sustainability of these operations.

The London conference will showcase the newest and best in distillation and absorption technology from all over the world, presented in 5 plenary lectures, 64 scientific lectures and 31 posters. Outside the session lecture theatres, you will also find numerous sponsors and exhibitors are presenting their contributions.

We wish you all an exciting and productive conference in London.



Eva Sorensen
Chair of Organising Committee



Richard Darton
Chairman of the EFCE Working Party

ORGANISING COMMITTEE

Claire Adjiman	Imperial College London, UK
Richard Darton	Oxford University, UK (Chair of EFCE Working Party)
Stuart Fraser	BP, UK
Megan Jobson	University of Manchester, UK
Eva Sorensen (Chair)	University College London, UK
Rafic Traboulssi	Sulzer Chemtech (UK) Ltd, UK
Malcolm Woodman	BP, UK

KEYNOTE SPEAKERS

Plenary lectures will be delivered throughout the conference, on a variety of aspects relating to distillation and absorption:

Dr Steven E Koonin, BP, UK

Dr Steven Koonin is BP's Chief Scientist and is responsible for BP's long range technology plans and activities, particularly those "beyond petroleum." He also has purview over BP's major university research programmes around the world and provides technical advice to BP's senior executives on matters on Group significance. Dr Koonin was educated at Caltech (B S in physics), and at MIT (PhD in theoretical physics). He joined the Caltech faculty in 1975, becoming a full professor in 1981 and serving as the Institute's Provost from 1995 to 2004. Dr Koonin has been on leave from Caltech since 2004 to serve as BP's Chief Scientist.

Professor Ross Taylor, Clarkson University, USA

Ross Taylor is the Kodak Distinguished Professor of Chemical Engineering at Clarkson University in Potsdam, New York, where he has been since 1980. He currently serves as chair of the Department of Chemical Engineering. He received BSc, MSc and PhD degrees from the University of Manchester, Institute of Science and Technology in England. Professor Taylor is the author or co-author of over 70 refereed journal articles and he is a co-author (with Prof. R. Krishna of the University of Amsterdam) of the textbook Multicomponent Mass Transfer (Wiley, 1993) and (with Dr Harry Kooijman) of ChemSep, a software package for simulating multicomponent separation processes.

Urs Fankhauser, Sulzer Chemtech Ltd, Switzerland

Urs Fankhauser is President of Sulzer Chemtech Ltd, Member of the Executive Management of the Sulzer Group and President of the Board of Sulzer India Limited. He has been working in industry for more than 20 years and has held various senior management positions within the Sulzer Group. He has worked in the UK, Singapore, China and the USA. Since 2002 he has been based in Switzerland as President of Sulzer Chemtech. He has a Degree as Dipl. Ing. HTL and an MBA from Healey Management College, UK.

Professor Sigurd Skogestad, Norwegian University of Science and Technology, Norway

Sigurd Skogestad is a Professor of Chemical Engineering at the Norwegian University of Science and Technology (NTNU) where he has been since 1987. He has served as Head of Department of Chemical Engineering (Kjemisk Prosessteknologi) since 1999. He is also the Head of PROST which is a centre for Process Systems Engineering in Trondheim. He received a Siv.Ing. degree (MSc) from the Norwegian University of Science and Technology (NTNU) in Trondheim in 1978 and a PhD from California Institute of Technology in 1987. Professor Skogestad is the author or co-author of over 100 refereed journal articles and he is the co-author (with I Postlethwaite) of the textbook Multivariable Feedback Control - Analysis and Design (1996; 2005).

Dr Robin Thiele, BASF, Germany

Robin Thiele is a research engineer for gas scrubbing at the department of Process Engineering in BASF's central research platform "Chemicals Research and Engineering" at Ludwigshafen, Germany. He has degrees in Chemical and Energy Engineering from the Technical University of Berlin and the University of Surrey in Guildford, UK and a PhD from TU Berlin. He has received an award for outstanding research activities and achievements for coke plant technologies from the German "Verein Deutscher Kokereifachleute e.V. (VDKF)".

Dr Jan-Martin Loning, BASF, Germany

Jan-Martin Loning is a research manager for gas scrubbing at the department of Process Engineering in BASF's central research platform "Chemicals Research and Engineering" at Ludwigshafen, Germany. He has a degree in Chemical Engineering from the Technical University of Clausthal, Germany, where he also obtained a PhD in Chemical Reaction Engineering.

PROVISIONAL PROGRAMME AT A GLANCE

(This technical programme may be subject to change)

Sunday 3 September 2006

17.00 – 19.00 **Registration and Welcome Reception**
Sponsored by: KOCH-GLITSCH LIK MASS TRANSFER TECHNOLOGY

Monday 4 September 2006

08.00 **Registration**

09.00 **Opening Ceremony**

09.20 **Plenary Lecture: Energy for the World: Trends and Technology**
Dr Steven E Koonin, Chief Scientist BP, UK
Session Chairs: Eva Sorensen, UCL, UK & Richard Darton, University of Oxford, UK

10.05 **Coffee Break**

Parallel Sessions

	Theme: Modelling and simulation Session Chairs: Jens-Uwe Repke, TU Berlin, Germany & Eugeny Kenig, University of Dortmund, Germany		Theme: Energy efficiency and sustainability Session Chairs: Zarko Olujic, Delft University, The Netherlands & Elisabetta Brunazzi, University of Pisa, Italy
10.30	Synthesis, design and retrofitting of energy efficient separation processes *A Lucia, A Amale & R Taylor, USA*	10.30	Selection and pilot plant testing of new absorbents for post combustion carbon dioxide capture *R Notz, N Asprion, I Clausen & H Hasse, Germany*
10.55	Selectivity engineering with reactive distillation: Determination of attainable region *V Agarwal, S Thotla & S Mahajani, India*	10.55	Biodiesel production, lubricant fractionating and development of a new boiling point curve through molecular distillation *R Marciel Filho, N Lima Saliva, C B Batistella, M R Wolff Marciel, A Winter, P Shaite & L Medina, Brazil*
11.20	Shortcut evaluation of absorption for synthesis of gas separation networks *M Martin, M Jobson, N Zhang & P Heggs, UK*	11.20	Separation of methanol/butene/MTBE using hybrid distillation-membrane processes *M Peters, S Kauchali, D Hildebrandt & D Glasser, South Africa*
11.45	Thermodynamic analysis of multicomponent distillation-reaction processes for conceptual process design *O Ryll, S Blagov & H Hasse, Germany*	11.45	Thermal integration of a distillation column through side exchangers *S Bandyopadhyay, India*

12.10 Experimental column profile maps with varying Delta Points in a continuous column for the acetone methanol system
C Wilson, D Hildebrandt & D Glasser, South Africa

12.35 Combining shortcut methods and rigorous MINLP optimization for the design of distillation processes for homogeneous azeotropic mixtures
S Kossack, K Kraemer & W Marwuardt, Germany

12.10 Energy-saving characteristics of heat integrated distillation column technology applied to multi-component petroleum distillation
K Horiuchi, K Yanagimoto, K Kataoka & M Nakaiwa, Japan

12.35 Heat and mass transfer characteristics of an annular sieve tray
A de Rijke, W Tesselaar, M A Gadalla, S Z Olujic & P J Jansens, The Netherlands

13.00 – 14.00 **Lunch Break**

14.00 **Plenary Lecture:**
Still Modelling after all these years: A View of the State of The Art
Professor Ross Taylor, Clarkson University, USA
Session Chairs: Malcolm Woodman, BP, UK & Claire Adjiman, Imperial College London, UK

Parallel Sessions

Theme: Modelling and simulation
Session Chairs: Sanjay Mahajani, Indian Institute of Technology, India & Iqbal Mujtaba, UK

14.50 On the track to understanding three phases in one tower
J-U Repke, A Hoffman, I Ausner, O Villain & G Wozny, Germany

15.15 A non-linear wave model with variable molar flows for dynamic behaviour and disturbance propagation in distillation columns
N P Hankins, UK

15.40 Separation performance of structured packed columns: A comparison of two modelling approaches
A Shilkin & E Y Kenig, Germany

16.05 Prediction of temperature and concentration distribution of distillation sieve trays by CFD
R Rahimi, M-R Rahimi, F Shahraki & M Zivdar, Iran

Theme: Equipment design and Operation
Session Chairs: Henry Kister, Fluor, USA & Harry Kooijman, Shell, The Netherlands

14.50 Mixed-phase feed in mass transfer columns
M Wehrli, F Muggli & H Kooijman, Switzerland

15.15 How to surpass conventional and high capacity structured packing with Raschig Super-Pak
M Schultes & S Chambers, Germany

15.40 Unfixed dividing wall technology for packed and tray distallation columns
B Kaibel, H Jansen, E Zich, Germany & Z Olujic, The Netherlands

16.05 Three-phase distillation in packed columns: Guidelines for development, design and scale-up
R Meier, J Leistner, A Kobus & A G Marl, Germany

POSTER SESSION

Theme: Basic data

D&A108 Evaluation of phase equilibria for dilute mixtures for design purposes
G K Ngigi, D Hildebrandt & D Glasser, South Africa

D&A128 How to decide when and how much to use reactive distillation
J L Mulopo, D Hildebrandt & D Glasser, South Africa

D&A095 Liquid-liquid-liquid equilibrium calculations
F Denes, P Lang & M Lang-Lazi, Hungary

Theme: Modelling and simulation

D&A003 Study of the thermally coupled distillation sequences using a nonequilibrium stage model
E F Abad-Zarate, F I Gomez-Castro, J G Segovia-Hernandez & S-Hernandez, Mexico.

D&A017 CFD simulation and experimental validation of fluid flow in liquid distributors
M Heggemann, S Hirschberg, L Spiegel & C Bachmann, Switzerland

D&A040 Rigorous method of minimum energy calculation for a fully thermally coupled distillation system
I Malinen & J Tanskanen, Finland

D&A059 MINLP optimization of catalytic distillation columns using a rate-based model
J-M Gomez, J M Reneaume, M Meyer & X Meyer, France

D&A075 Strategies for identifying multiplicities in distillation systems using process simulators
S Chokshi & R K Malik, India

D&A094 Neural network based modelling and optimisation in batch reactive distillation
I M Mujtaba & M A Greaves, UK

D&A112 Extended Smoker's equation for calculating number of stages in distillation
S Bandyopadhyay, India

Theme: Control and operation

D&A011 Dynamic analysis of distillation with thermal coupling for different operating conditions
E A Hernandez-Vargas, J G Segovia-Hernandez, S Hernandez & A Jimenez, Mexico

D&A044 Distillation startup of fully thermally coupled distillation columns: theoretical examinations
G Niggemann, S Gruetzmann & G Fieg, Germany

D&A064 Industrial application of a new batch extractive distillation operational policy
P Lang, G Kovacs, B Kotai, J Gaal-Szilagyi & G Modla, Hungary

D&A098 Startup operation of a cyclic middle vessel batch distillation
S Gruetzmann, G Niggemann, T Kapala & G Fieg, Germany

D&A114 Startup analysis of mass- and heat-integrated two-column-systems
P Verbanov, G Wozny & A Klein, Germany

D&A117 Robust online optimization based on controller performance metrics for a high-pressure distillation column
T Barz, H Arellano-Garcia & G Wozny, Germany

Theme: Equipment design and operation

D&A014 Comparison of the effective surface area of some highly effective random packings third and fourth generation
N Kolev, S Nakov, L Ljutzkanov & D Kolev, Bulgaria

D&A022 The sandwich packing – a new type of structured packing to increase capacity and mass transfer of distillation columns
M Jodecke, T Friese, G Schuch, B Kaibel & H Jansen, Germany

D&A079 Liquid distribution properties of conventional and high capacity packings
Z Olujic, R Baak, J Haaring, The Netherlands & B Kaibel, H Jansen, Germany

D&A104 Experimental evaluation of sulphur dioxide absorption in water
R-H Chavez, J de J Guadarrama & J Klapp , Mexico

D&A106 Hydraulic measurements of sieve plate
K I Keskinen, H-M Ahlfors & J Aittamaa, Finland

D&A146 Variation of the interfacial area during CO_2 absorption into alkanolamines aqueous solutions in a bubble column reactor
E Alvarez, M A Cancela, R Maceiras & J M Navaza, Spain

D&A153 Prediction of temperature and concentration distributions of distillation sieve trays by CFD
R Rahimi, M-R Rahimi, F Shahraki & M Zivdar, Iran

D&A154 A study on an energy-saving tray DDV with new structures
Z B Zhang, Y C Liang, W M Meng & Z Zhou, China

Theme: Process troubleshooting and handling operational problems

D&A016 Modeling of mixture separation in a column with structured packing: Effects of liquid maldistribution
S Sunder, Y Trifonov, & P Houghton, Russia

D&A162 Vapour – liquid mass transfer performance of modular catalytic structured packing
M Beherens, S Z Olujic & P J Jansens, The Netherlands

D&A172 Dividing wall column revamp optimises xylene production
B Slade, USA

Theme: Integrated, hybrid and novel processes

D&A013 A high-efficiency distillation system for batch or semi-batch chemical reactors
H Noda, T Mukaida, M Kaneda, H Yamaji & K Kataoka, Japan

D&A047 On thermodynamics of evaporation processes in nonequilibrium systems
A Toikka, Russia

D&A065 Continuous three phase distillation: A process for separating thermally instable substances
M Ottenbacher & H Hasse, Germany

D&A074 Development of a hybrid solvent recovery process (combination of distillation and vapour permeation)
A Ohligschlager, Germany

Theme: Energy efficiency and sustainability

D&A012 Internal column-to-column heat transfer characteristics for energy-saving distillation system
H Noda, T Mukaida, M Kaneda, K Kataoka & M Nakaiwa, Japan

D&A006 Method of design for packed column type HIDiC
T Nakanishi, K Aso, T Takamatsu, K Matsuda, M Nakaiwa & S Hasebe, Japan

D&A084 Mass transfer characteristics in structured packing for CO_2-emission reduction processes
S van Loo, E P van Elk, The Netherlands, L Raynal, France, G F Versteeg, The Netherlands

D&A101 An internally heat-integrated distillation column (HIDiC) in Japan
K Iwakabe, M Nakaiwa, K Huang, K Matsuda, T Nakanishi, T Ohmori, A Endo & T Yamamoto, Japan

Tuesday 5 September 2006

08.30 **Plenary Lecture: Challenges and Opportunities for the Suppliers of Technologies, Equipment and Services for Separation Towers**
Urs Fankhauser, President of Sulzer Chemtech Ltd, Switzerland
Session Chairs: Stuart Fraser, BP, UK & Hartmut Schoenmakers, BASF, Germany

Parallel Sessions

Theme: Modelling and simulation
Session Chairs: Ross Taylor, Clarkson University, USA & Malcolm Woodman, BP, UK

09.20 Rate-based modelling and simulation of reactive stripping
I Mueller, E Y Kenig & M Kloeker, Germany

09.45 A modified model of computational mass transfer for distillation column
Z M Sun, X G Yuan, C J Liu & K T Yu, China

10.10 Application of the penetration theory for gas-liquid mass transfer without liquid bulk differences with systems with a bulk
E P van Elk, M C Knaap & G R Versteeg, The Netherlands

Theme: Equipment design and operation
Session Chairs: Mike Lockett, Praxair, USA & Rafic Traboulssi, Sulzer Chemtech, UK

09.20 High-Performance trays: Getting the best capacity and efficiency
I Nieuwoudt, G Spencer & J Penciak, USA

09.45 The use of directional momentum devices on fractionation trays
M Pilling, D Summers, USA & P Schaeffer, M Wehrli, Switzerland

10.10 Distillation trays that operate beyond the limits of gravity by using centrifugal separation
H Kooijman, G Konijn, E Vos, P Wilkinson, G Mosca & L Tonnon, The Netherlands

10.35 **Coffee Break**

Parallel Sessions

Theme: Integrated, hybrid and novel processes
Session Chairs: Andrzej Gorak, University of Dortmund, Germany & Christoph Grossmann, BASF, Germany

10.55 Development of a new distillation based process for Trioxane production
T Grutzner, N Lang, M Siegert, E Strofer & H Hasse, Germany

11.20 Pressure optimisation of an original system of pressure swing with a reactive column
J Bonet, M I Galan & J Costa, Spain & R Thery, X Meyer, M Meyer, JM Reneaume, France

Theme: Process troubleshooting and handling operational problems
Session Chairs: Lothar Spiegel, Sulzer Chemtech, Switzerland & Stuart Fraser, BP, UK

10.55 Troubleshoot packing maldistribution upset using temperature surveys and Gamma scans
H Z Kister, W J Stupin & J E Oude Lenferink, USA

11.20 Foaming effect on random packing performance
G X Chen, T J Cai, USA & K T Chuang, A Afacan, Canada

11.45 Methyl acetate hydrolysis in a reactive divided wall column
S Sander, C Flisch, Switzerland & E Geissler, H Schoenmakers, O Ryll & H Hasse, Germany

12.10 Conceptual design of reactive dividing wall columns
G Daniel, P Patil, R Dragomir & M Jobson, UK

12.35 Experimental investigation of reactive distillation in combination with membrane separation
C Buchaly, P Kreis & A Gorak, Germany

11.45 Structured packing flooding: Its measurement and prediction
M J Lockett, R A Victor & J F Billingham, USA

12.10 Troubleshoot packing maldistribution upset - Boiling and flashing in packed tower distributors
H Z Kister, W J Stupin & J E Oude Lenferink, USA

12.35 A new method to predict the susceptibility form maldistribution formation in packed columns based on pressure drop correlations
M Duss, Switzerland

13.00 – 14.00 **Lunch Break**

14.00 **Plenary Lecture: The Do's and Don'ts of Distillation Column Control**
Professor Sigurd Skogestad, Norwegian University of Science and Technology, Norway
Session Chairs: Eva Sorensen, UCL, UK & Juhani Aittamaa, Helsinki University of Technology, Finland

Parallel Sessions

Theme: Basic data
Session Chairs: Magdalena Bendova, Institute of Chemical Process Fundamentals, Czech Republic & David Glasser, The University of the Witwatersrand, South Africa

14.50 The experimental simulation of the saddle point region in a distillation column profile mapby using a batch apparatus
T Modise, S Kauchali, D Hildebrandt & D Glasser, South Africa

15.15 New method for the determination of batch heteroazeotropic distillation regions
G Modla, P Lang, Hungary

15.40 Miniplant in modelling distillation for an isooctane process
K Jakobsson, T Ouni, P Lievo, P Uusi-Kyyny, C Dell'Era, A Pyhalahti & J Aittamaa, Finland

Theme: Control and operation
Session Chairs: Andre de Haan, University of Twente, The Netherlands & Tony Wilson, University of Nottingham, UK

14.50 Retrofit design for gas sweetening processes
P Patil, Z Malik & M Jobson, UK

15.15 Design of industrial reactive absorption processes in sour gas treatment using rigorous modelling and accurate experimentation
R Thiele, R Faber, J-U Repke, H Thielert & G Wozny, Germany

15.40 Theoretical and experimental study of the absorption rate of H_2S in $CuSO_4$ solutions: The effect of enhancement of mass transfer by a precipitation reaction.
H ter Maat, M Al-Tarazi, J A Hogendoorn, J P M Nierderer & G F Versteeg, The Netherlands

16.05 **Coffee Break**

Parallel Sessions

Theme: Basic data
Session Chairs: Claire Adjiman, Imperial College London UK & Alexander Toikka, St Petersburg State University, Russia

16.30 Representation of CO_2 and H_2S solubility in aqueous MDEA solutions using extended Kent and Eisenberg model
P Patil, Z Malik & M Jobson, UK

16.55 Solvent properties of functionalised ionic liquids for CO_2 absorption
L M Galan Sanchez, G W Meindersma & A B de Haan, The Netherlands

17.20 Standardisation of mass transfer measurements – A basis for the description of absorption processes
B Hupen, A Hoffmann, A Gorak, J-M Loning, M Haas, T Runowski & K Hallenberger, Germany

Theme: Equipment design and operation
Session Chairs: Mohammad Kalbassi, Air Products, UK & Izak Nieuwoudt, Koch-Glitsch, USA

16.30 Wetting performance and pressure drop of structured packings: CFD and experiment
A Afkar, P Kolbb, U Buhlmann & H-J Bart, Germany

16.55 Modelling and measurement of macroscopic flow fields in structured packings
B Mahr & D Mewes, Germany

17.20 Experimental investigation of reactive distillation packing Katapak-SP 11: hydrodynamic aspects and size effects
E Brunazzi & A Viva, Italy

19.00 **Conference Dinner (Optional)**

Wednesday 6 September 2006

08.30 **Plenary Lecture: Industrial Absorption - Current Status and Future Aspects**
Dr Jan-Martin Loning & Dr Robin Thiele, BASF, Germany
Session Chairs: Megan Jobson, University of Manchester, UK & Marcus Duss, Sulzer Chemtech, Switzerland

Parallel Sessions

Theme: Basic data
Session Chairs: Hans-Jorg Bart, Technical University of Kaiserslautern, Germany & Peter Lang, Technical University of Budapest, Hungary

09.20 Phase transitions in quaternary reacting systems with esterification reaction
M Toikka, Russia

09.45 Liquid-liquid equilibrium in binary mixtures of 1-ethyl-3-methylimidazolium ethylsulfate and hydrocarbons
M Bendova, Czech Republic

Theme: Control and operation
Session Chairs: Günter Wozny, Technical University of Berlin, Germany & Michel Meyer, ENSIACET, France

09.20 Self-optimizing control configurations for two product distillation columns
E S Hori & S Skogestad, Norway

09.45 Distillation column control using the whole temperature profile
M Chew, W E Jones & J A Wilson, UK

10.10 Absorption of carbonyl sulphide in aqueous puperazine
P J G Huttenhuis, A Mohn, S van Loo & G F Versteeg, The Netherlands

10.10 Control properties of alternatives schemes to thermally coupled distillation columns for temary mixture separations
R Alcantara-Avila, J Cabrera-Ruiz, V E Tamayo-Galvan, J G Segovia-Hernandez, & S Hernandez, Mexico

10.35 **Coffee Break**

Parallel Sessions

Theme: Integrated, hybrid and novel processes
Session Chairs: Megan Jobson, University of Manchester, UK & Santanu Bandyopadhyay, Indian Institute of Technology, India

10.55 Industrial experience with hybrid distillation-pervaporation or vapor permeation applications
M Roza & E Maus, Switzerland

11.20 Optimal configuration, design and operation of continuous hybrid distillation/pervaporation processes
T M Barakat & E Sorensen, UK

11.45 Stabilizing operation of a 4-product integrated Kaibel column
J Strandberg & S Skogestad, Norway

12.10 Enrichment of natural products using an integrated solvent-free process: Molecular distillation
L V Fregolente, E B Moraes, P F Martins, C B Batistella, M R Wolf Maciel, A P Afonso & M H M Reis, Brazil

12.35 Riser design in foam fractionation
P J Martin, M Swain & R C Darton, UK

Theme: Control and operation
Session Chairs: Sigurd Skogestad, Norwegian University of Science and Technology, Norway & Sten Bay Jorgensen, DTU, Denmark

10.55 Production of propyl acetate by reactive distillation: From experiments to simulation
M Brehlin, D Rouzineaul & M Meyer, France, F Fomer, J-U Repke & G Wozny, Germany

11.20 Entrainer selection for the synthesis of fatty acid esters by entrainer- based reactive distillation
M C de Jong, A C Dimian, N J M Kuipers & A B de Haan, The Netherlands

11.45 Functionalised solvents for olefin isomer purification by reactive extractive distillation
N J M Kuipers, A E Wentink, A B de Haan, The Netherlands & J Scholtz & H Mulder, South Africa

12.10 Separation of maximum azeotropes by extractive distillation in a middle-vessel column
B Kotai, P Lang & T Balazs, Hungary

12.35 Pressure swing batch distillation for the homogenous azetropic separation
J-U Repke, A Klein, & G Wozny, Germany, & I D L Bogle, UK

13.00 **Closing Ceremony**

The above technical programme is subject to change

SPONSORSHIP AND EXHIBITION

A large number of prestigious companies have already taken up sponsorship opportunities for the event, but there are still a number of opportunities available. Alternatively, you could take exhibition space to take advantage of the unique opportunity to promote your products to the key names in the distillation and absorption field.

If you would like to receive a copy of our sponsorship/exhibitors pack, please contact:
Rosemary Cragg, Conference Officer on:
t: +44 (0) 1788 534476 f: +44 (0) 1788 560833 e: rcragg@icheme.org

IChemE FLUID SEPARATIONS SUBJECT GROUP

Separations lie at the heart of chemical engineering. Purifying the raw materials, recovering intermediates, removing by-products and unreacted feed, or purifying the final product – these steps are found in most manufacturing processes. Distillation, extraction and absorption are well-known fluid separations, used to make a host of chemical and oil products. The scale can vary from a daily production of thousands of tonnes for an oil fractionation or water treatment, to fractions of a gram for protein recovery. Integrating the separation steps into the overall process design requires a great deal of skill, as does the operation of actual equipment.

The Fluid Separations Subject Group aims:

- to bring together people involved with different aspects of separation processes to discuss common problems and latest advances
- to improve the relevance and quality of research and promote its implementation

Activities include:

- meetings on specific separations topics
- newsletter and website
- training courses
- representation of professional interests worldwide

To join the subject group, which is open to all at a cost of £12.50 per annum, please contact:
Jane Varnum-Wilson
t: +44 (0) 1788 578214 f: +44 (0) 1788 560833 e: jvarnum-wilson@icheme.org

GENERAL INFORMATION

Venue

The conference will take place in the sophisticated facilities on the South Kensington campus of Imperial College London. The venue is situated in one of London's finest locations, adjacent to such landmarks as the Science, Natural History and Victoria & Albert Museums and The Royal Albert Hall. Harrods and Hyde Park are just a few minutes' walk away. Few London locations offer such a diversity of attractions and amenities.

Getting there

South Kensington campus

Imperial College London
London SW7 2AZ
t: +44 (0)20 7594 9494 (Main Switchboard)

From Heathrow airport

Take the Underground train (Piccadilly Line) to South Kensington station (50 minutes travelling time).

From Gatwick airport

Take a the train to Victoria station (journey time 40 minutes) and then by Underground train (Circle or District Line; westbound) to South Kensington.
Gatwick and Heathrow airports are some distance from central London and a taxi is not recommended for the whole journey. However, if you have to do so, establish the cost before you get in.

On foot

From South Kensington station, the campus is only five minutes' walk. Either follow the subway signposted to the museums or walk north up Exhibition Road. The College is next to the Science Museum.

By car

Car parking at the South Kensington campus is severely restricted and you are advised NOT to bring a car unless permission has been given. After 6pm, at weekends and during vacations, the Imperial College car park is open to the paying public. Parking in the streets surrounding the College is at pay and display or parking meters for limited periods only.

Accommodation

Accommodation, ranging from student halls to hotels of all categories, is available. Further information can be obtained by contacting:

The Accommodation Link
Imperial College London
South Kensington Campus
London, SW7 2AZ

t: +44 (0) 20 7594 9507/11, f: +44 (0) 20 7594 9504/5, e: accommodationlink@imperial.ac.uk or use the online booking request form at www.imperial-accommodationlink.com

Social Programme

Welcome Reception

To welcome you to the conference on the evening of Sunday 3 September delegates are invited to attend a welcome reception. The reception is sponsored by: KOCH-GLITSCH UK MASS TRANSFER TECHNOLOGY

Please indicate on the registration form if you wish to attend.

Poster Session

A poster session will take place during the afternoon of Monday 4 September, with complimentary light refreshments sponsored by: SULZER

Conference Dinner

A conference dinner will take place on the evening of Tuesday 5 September at Imperial College London. The evening will commence with a drinks reception in the poster/exhibition area from 19.00 allowing delegates the opportunity to view the posters and exhibitions on display. Dinner will commence at 20.00 hours. The cost of the dinner will be £45.00 + VAT, which will include wine. Please indicate on the registration form if you wish to attend.

REGISTRATION FORM

2006 Distillation & Absorption

Please return this form with your remittance to:
Conferences Department
IChemE, 165–189 Railway Terrace, Rugby CV21 3HQ, UK
t: +44 (0)1788 578214 f: +44 (0)1788 560833

Organisation Name: .....

Last Names: ..... First Names: .....

Title: (Dr/Mr/Mrs/Miss/Ms/Prof/Eur Ing)..... Gender: Male ❑ Female: ❑

Company: .....

Job Title: ..... Department: .....

Preferred address for pre-conference correspondence: Work ❑ Home ❑

Country:..... Company/House Number: .....

Post/Zip Code: .....

Address: .....

.....

.....

Town/City: ..... County/State: .....

Direct Telephone:..... Direct Fax: .....

Email: .....

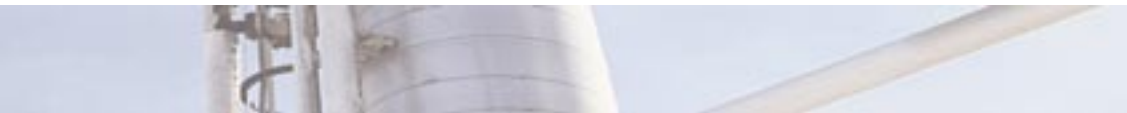
Special Dietary Requirements: .....

Please tick relevant box for payment.

A VAT invoice will be issued upon receipt of payment.

- ❑ £475.00 + VAT= £558.13 Academic
- ❑ £535.00 + VAT = £628.63 Industrial
- ❑ £100.00 + VAT = £117.50 Student

These fees include attendance at the conference sessions on Monday 4 September, Tuesday 5 September and Wednesday 6 September, all conference documentation, lunch and interval refreshments for three days, welcome drinks reception on Sunday evening, and light refreshments during the Poster Session on Monday afternoon 4 Septmeber.



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Welcome Reception

❑ I wish to attend the welcome reception on Sunday 3 September 2006 and require (___) tickets (Maximum 2 tickets) This event is FREE of charge

Conference Dinner

❑ £45.00 + VAT = £52.88 I wish to attend the conference dinner on Tuesday 5 September and require (___) tickets

Method of Payment

(Payment must be received in full before the event date otherwise admission cannot be guaranteed)

❑ Cheque enclosed (made payable to Institution of Chemical Engineers)
Please send to **IChemE, Conferences Department, 165–189 Railway Terrace, Rugby CV21 3HQ, UK**

❑ Please debit my credit/debit card (Payment in £ sterling only):

Cardholder name (as it appears on the card): .....

Billing address (if different from overleaf): .....

.....

Post/Zip Code: .....

❑ Mastercard ❑ Visa ❑ Visa Debit/Delta ❑ Maestro ❑ Solo ❑ AMEX

Card Number: .....

Valid From Date: ..... Expiry Date: .....

Issue Number: (debit only) .....

Card Holder's Signature: .....

Card Holder's Telephone Number .....

❑ Please invoice my company quoting purchase order number/reference: .....
(Please send a copy of your purchase order with your registration form)

Cancellation Policy

Cancellations received in writing before 4 August 2006 will be subject to an administrative charge of £50.00 + VAT. No refunds will be made for cancellations received after this date, but copies of any documentation will be sent on. Substitutions welcome at any time. We reserve the right to cancel or alter the programme.

Data Protection

In accordance with the Data Protection Act IChemE (and companies processing data on its behalf) will hold and use the data contained on this form for administration purposes, to keep you informed of its activities, and offer goods and services provided by the Institution

❑ If you would prefer not to receive IChemE product and service literature please mark the box
❑ If you would prefer not to receive emails on IChemE product and service literature please mark the box
The Institution is fully registered under the Data Protection Act as both a data user and a computer bureau