# 10th World Filtration Congress

## Discover the Future of Filtration & Separation

**April 14–18, 2008**
**Leipzig · Germany**

**Congress & Exhibition**

**www.wfc10.com**

Programme

WFC 10
10th WORLD FILTRATION CONGRESS
April 14–18, 2008 · LEIPZIG – GERMANY

hosted by

VDI Society for Chemical and Process Engineering

supported by

DECHEMA e.V.

VDI DIN Kommission Reinhaltung der Luft im VDI und DIN Normenausschuss

## Content



## Congress Welcome

As Chairman of WFC10 and on behalf of the **VDI Society for Chemical and Process Engineering** I have the pleasure to invite you to join the 10th World Filtration Congress in Leipzig Germany. It is the first time that Germany has been privileged to host a World Filtration Congress and our aim is to organise a memorable WFC for the world-wide Filtration & Separation community.

The WFC10 will embrace five days from Monday to Friday. The first day is foreseen for **technical short courses.** The afternoon of the last day is reserved for **post-congress plant tours.** The remaining three and a half days are planned for the **technical congress** and **parallel exhibition.** More than **350 technical presentations** with 7 concurrent sessions will be presented and a major international exhibition featuring all relevant aspects of filtration and separation. **Over 150 companies** from the filtration and separation industry and manufacturers of particle measurement instruments will feature the latest innovations and the most modern technology.

Leipzig has been selected as it meets the needs for a successful WFC in every way. Having a tradition going back over 500 years in holding fairs the City of Leipzig today is foremost in providing the most modern facilities and excellent possibilities for travel and accommodation. A vibrant and exciting visitor destination. At the same time the carefully restored historic City of Leipzig offers delegates and visitors alike a unique experience from cultural and historical aspects in a warm and convivial atmosphere. Located in a traditional trading and industrial area the fast developing region around Leipzig is ideally situated to offer interesting site visits within short distances.

We look forward to welcoming you to WFC10 in Germany.

Dr. Harald Anlauf
- Congress Chairman -

## Leipzig

Leipzig is located in eastern Germany, one hour by road or rail from Berlin in the north-west part of the Free State of Saxony. Leipzig currently has about 494,000 inhabitants and enjoys, in general, a relatively mild climate. In April the average temperature is 14°C (57°F).


The City proudly highlights its traditions which are marked by music, arts and literature, architecture, history, and of course by commerce. After all, trade shows have emerged in Leipzig and have been held here for more than 500 years.

Names like J.S. Bach, Martin Luther, or Goethe are closely associated with the Leipzig area. Museums, galleries, collections of traditional and contemporary art, the German Library – everything is there. Participants of WFC10 in Leipzig can enjoy a concert of the Gewandhaus Orchestra or the world-famous St. Thomas Choir just as much as a cabaret show, the hospitality of the Leipzig restaurants, or a decent pub visit after a hard day's work.

It will not be a problem at all to find great down-town locations for dinners or other social gatherings. There are the old and the new Town Hall, the famous "Auerbachs Keller" which appears in Goethe's story about Doctor Faust, or the vaults of the mediaeval fortress **"Moritzbastei",** where the **WFC10 Congress Party** will be held, to mention but a few.

Leipzig is also a perfect starting point for the accompanying persons programme with City tours to **Dresden** with its superb baroque architecture, **Meissen,** famous for it's porcelain, **Wittenberg,** City of Martin Luther's 95 thesis and of course the vibrant Capital **Berlin.** All tours are organized by Leipzig Tourist Service.

Interesting **technical plant tours** will give attendees a unique first-hand experience not only of diverse filtration and separation technologies including advanced equipment, but also of ultramodern industrial production sites. The tours are planned after the WFC10 Closing Ceremony. Reservations for all tours can be made in along with the WFC10 booking formalities.

WFC10 delegates and exhibition visitors can make their hotel reservation via the **Leipzig Tourist Service** which has reserved quotas for WFC10 participants in various hotels of all categories.

WFC10 will be held in the CCL – **Congress Center Leipzig** – which is part of the Leipziger Messe. It is located 20 minutes by tram ride from Central Station and only 10 minutes from the Leipzig Airport. Also it is easily accessible within short tram or taxi distances from most hotels. The CCL has state-of-the-art facilities and offers a very special atmosphere and the experience of latest-generation high-tech.

## Exhibition - April 15-18, 2008

**WFC10** will feature a major exhibition of filtration and separation equipment and services over three and half days from Tuesday morning to Friday midday.

The exhibition is open to WFC10 delegates and trade visitors. In the exhibition over **150 companies** from the world-wide filtration and separation industry and manufacturers of particle measurement instruments will feature the latest innovations and most modern technology. Delegates and professional visitors from all over the world will be able in a business like manner to discuss and solve their filtration tasks with leading experts face to face.

Companies interested in exhibiting at WFC10 can download the exhibitor information as pdf file at the WFC10 homepage or contact **info@wfc10.com** to apply for space. Attractive shell scheme packages are available.

### Opening Hours Exhibition

| | |
|---|---|
| Tuesday, April 15, 2008 | 9:00 am - 6:00 pm |
| Wednesday, April 16, 2008 | 9:00 am - 6:00 pm |
| Thursday, April 17, 2008 | 9:00 am - 6:00 pm |
| Friday, April 18, 2008 | 9:00 am - 1:00 pm |

### Visitor Registration

Congress delegates and Short Course participants have free access to the Exhibition.

### Visitor Registration for the Exhibition

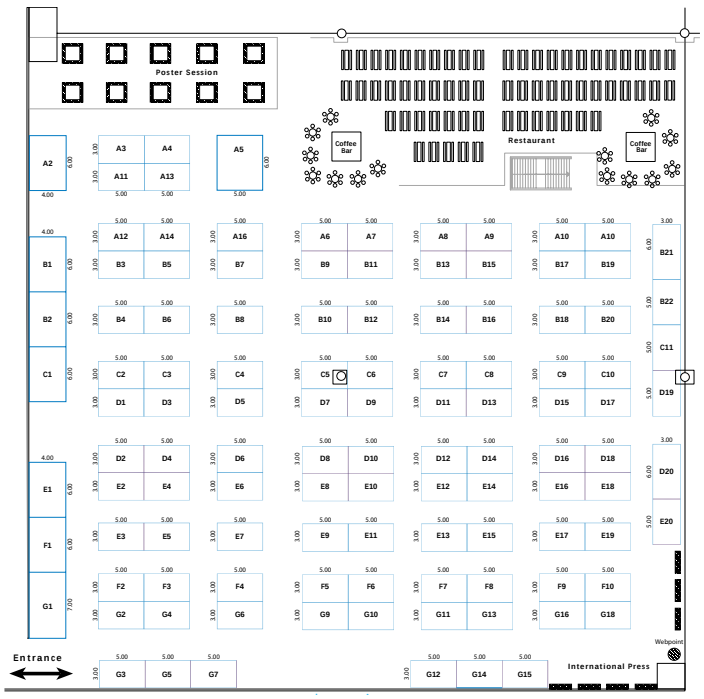
- pre-registered visitors — 20 Euro incl. German VAT
- onsite registration — 30 Euro incl. German VAT

Visitor pre-registration will be available from Winter 2007.

### Visitor Registration includes

- Entrance to the WFC10 Exhibition on all days
- WFC10 Exhibition Catalogue

## Exhibitor list: www.wfc10.com




## Scientific Committee

| | countries & regions |
|---|---|
| Prof. Roger Ben Aim | France |
| Prof. Rolf Berndt | Germany |
| Dr. Reinhard Bott | Germany |
| Dr. Richard C. Brown | Great Britain |
| Dr. Roger de Bruyne | Belgium |
| Prof. George Chase | USA |
| Prof. Wu Chen | USA |
| Prof. José Coury | Brazil |
| Prof. Fuxin Ding | China |
| Prof. Enrico Drioli | Italy |
| Dipl.-Ing. Ulrich Esser | Germany |
| Prof. Rolf Gimbel | Germany |
| Prof. Urban Grén | Sweden |
| Prof. Wilhelm Höflinger | Austria |
| Prof. Kuo-Jen Hwang | Taiwan |
| Prof. Eiji Iritani | Japan |
| Prof. Chikao Kanaoka | Japan |
| Prof. Gerhard Kasper | Germany |
| Prof. Esko Kauppinen | Finland |
| Dr. Karsten Keller | USA |
| Dr. Hermanes Kleizen | Netherlands |
| Prof. Michael Kopf | Germany |
| Prof. Gernot Krammer | Norway |
| Dr. Thomas Langeloh | Germany |
| Prof. Dominique Leclerc | France |
| Prof. Dun-Jong Lee | Taiwan |
| Dr. Markus Lehner | Germany |
| Prof. Dietmar Lerche | Germany |
| Prof. Wallace Leung | Hong Kong |
| Prof. Richard Lydon | Great Britain |
| Prof. Agustin Macias-Machin | Spain |
| Dr. Ernest Mayer | USA |
| Dipl.-Ing. Christoph Maurer | Switzerland |
| Prof. Karoly Molnar | Hungary |
| Prof. Hermann Nirschl | Germany |
| Prof. Lars Nyström | Finland |
| Prof. Marianne Nyström | Finland |
| Dr. Thomas Peters | Germany |
| Dr. Christophe Peuchot | France |
| Prof. Urs Peuker | Germany |
| Dr. Jaroslav Pridal | Czech Republic |
| Prof. Ulrich Riebel | Germany |
| Prof. Peter Scales | Australia |
| Prof. Hans-Joachim Schmid | Germany |
| Prof. José Angel Sorrentino | Venezuela |
| Prof. Gernot Staudinger | Austria |
| Prof. Peter Stelter | Germany |
| Dr. Steve Tarleton | Great Britain |
| Prof. Hans Theliander | Sweden |
| Prof. Kuo-Lun Tung | Taiwan |
| Dr. ir. Kris Van Hege | Belgium |
| Dipl.-Ing. Jean-Francois Vicard | France |
| Prof. Eugène Vorobiev | France |
| Dr. Matthias Waldenmaier | Germany |
| Prof. Richard Wakeman | Great Britain |
| Prof. Stanislav Wronski | Poland |
| Prof. Nanping Xu | China |
| Prof. Yang Zhao | China |

### Organizing Committee

| | |
|---|---|
| Dr. Harald Anlauf | University of Karlsruhe |
| Prof. Eberhard Schmidt | University of Wuppertal |
| Rüdiger Wolfertz | VDI-GVC |
| Dr. Uwe Delfs | VDI-GVC |
| Mike Taylor | Filtech Exhibitions |
| Suzanne Abetz | Filtech Exhibitions |

### Scientific Committee Chairmen

| | |
|---|---|
| Prof. Eberhard Schmidt | University of Wuppertal |
| Prof. Siegfried Ripperger | University of Kaiserslautern |

### Plant Tours

| | |
|---|---|
| Dr. Ronald Oertel | DOW Leuna Olefinverbund |

## Monday, 14.04.2008

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 08:00 – 09:00 | Registration for Short Courses | | | | | | |
| 09:00 – 16:00 | Short Courses | | | | | | |
| 16:00 – 18:00 | Registration + Poster Installation | | | | | | |

## Tuesday, 15.04.2008

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 08:00 – 10:00 | Registration | | | | | | |
| 10:00 – 11:00 | Opening Ceremony | | | | | | |
| 11:00 – 12:00 | Plenary Lecture | | | | | | |
| 12:00 – 13:15 | Lunch | | | | | | |
| 13:15 – 14:30 | Invited Lecture 1 | | M 1 | M 2 | M 3 | G 1 | G 2 |
| 14:30 – 15:00 | Coffee Break + Exhibition | | | | | | |
| 15:00 – 16:15 | L 1 | L 2 | L 3 | Invited Lecture 2 | | G 3 | G 4 |
| 16:15 – 16:45 | Coffee Break + Exhibition | | | | | | |
| 16:45 – 18:00 | L 4 | L 5 | L 6 | M 4 | M 5 | G 5 | G 6 |
| 18:00 | Welcome Reception in the Exhibition Hall | | | | | | |

## Wednesday, 16.04.2008

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 08:30 – 09:45 | L 7 | L 8 | L 9 | M 6 | M 7 | G 7 | G 8 |
| 09:45 – 10:15 | Coffee Break + Exhibition | | | | | | |
| 10:15 – 11:30 | PL 1 | PL 2 | L 10 | PM 1 | PM 2 | PG 1 | PG 2 |
| 11:30 – 12:15 | Poster Session | Poster Session | | Poster Session | Poster Session | Poster Session | Poster Session |
| 12:15 – 13:15 | Lunch | | | | | | |
| 13:15 – 14:30 | L 11 | L 12 | L 13 | M8 | M 9 | Invited Lecture 3 | |
| 14:30 – 15:00 | Coffee Break + Exhibition | | | | | | |
| 15:00 – 16:15 | Invited Lecture 4 | | M 10 | M 11 | M 12 | G 9 | G 10 |
| 16:15 – 16:45 | Coffee Break + Exhibition | | | | | | |
| 16:45 – 18:00 | L 14 | L 15 | L 16 | M 13 | M 14 | G 11 | G 12 |

## Thursday, 17.04.2008

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 08:30 – 09:45 | L 17 | L 18 | L 19 | M 15 | M 16 | G 13 | G 14 |
| 09:45 – 10:15 | Coffee Break + Exhibition | | | | | | |
| 10:15 – 11:30 | L 20 | L 21 | L 22 | PM 3 | PM 4 | PG 3 | PG 4 |
| 11:30 – 12:15 | | | | Poster Session | Poster Session | Poster Session | Poster Session |
| 12:15 – 13:15 | Lunch | | | | | | |
| 13:15 – 14:30 | L 23 | L 24 | L 25 | Invited Lecture 5 | | G 15 | G 16 |
| 14:30 – 15:00 | Coffee Break + Exhibition | | | | | | |
| 15:00 – 16:15 | L 26 | L27 | L 28 | M17 | M18 | Invited Lecture 6 | |
| 16:15 – 16:45 | Coffee Break + Exhibition | | | | | | |
| 16:45 – 18:00 | L 29 | L 30 | L 31 | M 19 | M 20 | G 17 | G 18 |
| 19:30 | Congress Party in the "Moritzbastei" | | | | | | |

## Friday, 18.04.2008

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 08:30 – 09:45 | L 32 | L 33 | M 21 | M 22 | M 23 | G 19 | G 20 |
| 09:45 – 10:15 | Coffee Break + Exhibition | | | | | | |
| 10:15 – 11:30 | L 34 | L 35 | M 24 | M 25 | M 26 | G 21 | G 22 |
| 11:45 – 12:15 | Closing Session | | | | | | |
| 12:30 – 13:15 | Lunch | | | | | | |
| 13:30 – 18:00 | Post Congress Plant Tours | | | | | | |

# Tuesday – April 15, 2008

## Plenary Lecture 11:00-12:00

**Porous Media Microfluidics - Common Basis for Optimized Separation and Mixing Processing**
Prof. Erich J. Windhab, Swiss Federal Institute of Technology Zurich (ETH), Laboratory for Food Process Engineering (ILW-LMVT), Switzerland

## Invited Lecture 1 13:15-14:30

**Solid-Liquid-Separation by Cake Filtration**
Dr. Harald Anlauf, Karlsruhe Technical University, Germany

## M1 Gas Separation and Pervaporation 13:15-14:30

**Gas separation with supported ionic liquid membranes,** A. Seeberger*, C. Kern, A. Jess, University of Bayreuth, Germany

**Alternative permeate recovery systems for pervaporation,** D. Shanahan*, C. O'Suilleabnain, I. O'Sullivan, Cork Institute of Technology, Ireland

**Concentration and dewatering of ethanol by organophilic and hydrophilic zeolite membranes,** M. Weyd*, H. Richter, G. Fischer, P. Puhlfürß, I. Voigt, HITK Hermsdorfer Institute for Technical Ceramics; J. Kühnert, inocermic GmbH, Germany

## M2 Potable Water 13:15-14:30

**Safe drinking water for everybody?! Membrane technology from small scale to large scale and vice versa,** H. Futselaar*, J. Geluk, L. Broens, Norit Process Technology B.V.; J. Jacobs, Norit Membrane Technology B.V., Netherlands

**Two years experience with Germanys largest two stage ultrafiltration plant for drinking water production (7,000 m³/h),** S. Panglisch*, R. Gimbel, IWW Water Center; W. Dautzenberg, WAG Nordeifel mbH, Germany

**Potable water production by membrane processes: Effect of bacterial deformation on microorganisms' removal,** N. Lebleu*, C. Causserand, C. Roques, P. Aimar, University Paul Sabatier, France

## M3 New Fibrous Membranes 13:15-14:30

**Effects of parameters on nanofiber diameter determined from electrospinning model,** G. Chase*, C. Thompson, D. Reneker, University of Akron; A. Yarin, University of Illinois at Chigaco, USA

**The development of an enhanced surface filtration medium based on short metal fibres for applications in food & beverage, chemical & pharmaceutical industry,** I. Schildermanns*; D. Santens, NV Bekaert SA, Belgium

**Commercial applications for Disruptor™ alumina nanofiber filter media,** R. Komlenic, Ahlstrom Filtration Inc.; F. Tepper, Argonide Corp., USA

## G1 Surface Filtration I 13:15-14:30

**Assessment of the cleanable dust filtration behaviour of surface treated needle felts by characterisation parameter determined by image analysis,** W. Höflinger*, G. Mauschitz, H. Rud, J. Schuberth, Vienna University, Austria

**Characteristics of bag filter pressure drop profiles,** M. Koch*; G. Krammer, NTNU University, Norway

**Comparing Gas and Liquid Filtration of Nonwovens Transitional Capacity and Energy Consumption,** H. Kleizen*, IDEGO, Delft University, Parker Filtration B.V., Netherlands

## G2 Electrostatic Precipitation 13:15-14:30

**Charge emission characteristics of a drained DBD electrode apparatus for nano-particle charging and precipitation,** M. Wild*, J. Meyer and G. Kasper, Karlsruhe University, Germany

**Separation of oil mists from air flow by a space-charge electrostatic precipitator,** A. Bologa*, H. Paur, H. Seifert, K. Woletz, Forschungszentrum Karlsruhe, Germany

**WeLo – The new electrostatic precipitator,** M. Sauer-Kunze*, GEA Delbag Lufttechnik GmbH, Germany

## L1 Vacuum and Pressure Cake Filtration Fundamentals I 15:00-16:15

**Suspension typology and computer aided characterization of the suspension filterability,** N. Ioannis*, FOS Ltd., Cyprus

**Filter media resistance on continuous solid liquid filters,** J. Tichy*, BHS-Sonthofen, Germany

**Experimental design and evaluation of filtration experiments allowing for superposed sedimentation,** M. Longerich*, A. Damm, Bayer Technology Services GmbH, Germany

## L2 Sedimentation Fundamentals-Analytical Centrifugation I 15:00-16:15

**Acquisition of compression-permeability data of soft and hard colloids based on centrifugation experiments,** E. Iritani*, N. Katagiri, K. Aoki, M. Shimamoto, Nagoya University, Japan

**Separation behaviour of suspensions in polymer solutions studied by multisample analytical centrifugation,** T. Sobisch*, T. Detloff, D. Lerche, L.U.M. GmbH, Germany

**Application of analytical centrifugation for studying solid-liquid separation in papermaking,** H. Liimatainen*, J. Niinimäki , University of Oulu, Finland

## L3 Optimization of Solid-Liquid Separation Processes II 15:00-16:15

**A multi-scale approach to solid-liquid separation task: a paradigm shift,** T. Sheikhzeinoddin*, P. Sharratt, University of Manchester, Great Britain

**A product-centred approach to a multi-stage task in pharmaceuticals: isolation,** T. Sheikhzeinoddin*, P. Sharratt, University of Manchester, Great Britain

**Continuous treatment and scrubbing of bottom ash from thermal waste treatment to produce improved granulate quality,** R. Koralewska*, Martin GmbH; R. Grönnert, Hans Huber AG, Germany; G. Zellinger, Kärntner GmbH; H. Gschaider, Binder+Co AG, Austria

## Invited Lecture 2 15:00-16:15

**Woven and Nonwoven Filter Media**
Prof. Richard Lydon, Clear Edge Group, Great Britain

## G3 Surface Filtration II 15:00-16:15

**Effects of PPS fibre intermixture on the surface structure and the filtration behaviour of PI needle felts for cleanable dust filters,** G. Mauschitz*, J. Schuberth, W. Hoeflinger, Vienna University, Austria

**Effect of operating parameters on stability of jet pulsed bag filter – an experimental study,** M. Saleem*, A. Ijaz, University of the Punjab, Pakistan; G. Krammer, NTNU University, Norway

**Experimental study of cake detachment in cake filtration and electrostatic enhanced cake filtration,** H. Xu*, G. Xiong, Q. Yao, Tsinghua University, P.R. China

## G4 Mist and Droplet Separation 15:00-16:15

**Development of a standardised test method on metalworking fluid mist collector elements,** P. Wlaschitz*, W. Höflinger, Vienna University, Austria

**Filtration of liquid aerosols with a horizontal fibrous filter,** A. Charvet*, Y. Gonthier, A. Bernis, E. Gonze, University of Savoie, France

**Numerical and experimental investigations on the development of oil droplet separators in crankcase ventilation systems,** S. Schütz*, G. Gorbach, A. Zink, K. Kissling, M. Piesche, Stuttgart University, Germany

## L4 Vacuum and Pressure Cake Filtration Fundamentals II 16:45-18:00

**Utilization of statistical design of experiments for improving the efficiency of test filtration tasks,** A. Häkkinen*, M. Huhtanen, J. Kallas, Lappeenranta University; B. Ekberg, Larox Corp., Finland

**Study on the scalability of pressure filtration in pilot and bench scale test equipment,** J. Palmer*, Larox Corp., Finland

**Layout of rotary filters on the basis of laboratory results,** E. Ehrfeld*, R. Bott, T. Langeloh, Bokela GmbH, Germany

## L5 Sedimentation Fundamentals-Analytical Centrifugation II 16:45-18:00

**Theoretical and experimental approach to the settling behaviour of particle-fiber-mixtures,** M. Feist*, H. Nirschl, Karlsruhe University; J. Wagner, G. Hirsch, Darmstadt University, Germany

**Equation for fitting dispersed systems gravity & centrifuge settling data,** M. Mota*, A. Yelshin, University of Minho, Portugal; I. Yelshyna, Polotsk University, Belarus

**Measurement of settling velocity enhancement by magnetic flocculation using manometric sedimentation centrifugation,** M. Stolarski*, C. Eichholz, H. Nirschl, Karlsruhe University, Germany; B. Fuchs, DuPont, USA

## L6 Optimization of Solid-Liquid Separation Processes I 16:45-18:00

**Life-cycle Cost Analysis for the Selection of the Optimal Equipment for Solid-Liquid Separation,** S. Ripperger*, Kaiserslautern University, Germany

**Commercial aspects of solid liquid separations in salt separation applications,** D.E. Keller*, B. Hegnauer, KMPT AG, Germany

**Performance increase in solid-liquid separation,** D. Steindl*, BHS-Sonthofen; J. Tichy, Consulting Engineer, Germany

## M4 Raw/Sea Water Pre-Treatment 16:45-18:00

**Comparison of options for seawater pre-treatment for SWRO plants,** T. Peters*, Consulting for Membrane Technology; O. Schuster, B. von Harten, Membrana GmbH; E. Schmidt, Wuppertal University, Germany; D. Pinto Bascompte, Catalana de Perforations S.A., Spain

**Seawater intake and pre-filtration with Neodren®,** T. Peters*, Consulting for Membrane Technology, Germany

**Application of automatic backflushfilter to improve raw water pre-treatment of reverse osmosis desalination plants,** B. Schlichter*, P. Mehlem, R. Wnuk, HYDAC Process Technology GmbH, Germany; M. Parker, HYDAC Technology Corp., USA

## M5 New Polymer Membranes 16:45-18:00

**A novel thermo-responsive membrane for enantioseparation,** L.-Y. Chu*, M. Yang, H.-D. Wang, H. Song, Sichuan University, P.R. China

**Composite membranes fabricated by plasma polymerization using organic compounds,** D.-T. Tran*, Hanoi University, Vietnam; S. Mori, M. Suzuki, Tokyo Institute of Technology, Japan

**Functional polymer materials to remove ions in conjunction with ultrafiltration membranes,** B. Rivas*, A. Pooley, A. Maureira, E. Peireira, M. del Carmen Aguirre, University of Conception, Chile

## G5 Clogging of Candles and Cartridges 16:45-18:00

**Modelling of the clogging of pleated filter for gas filtration,** M. Rebai*, M. Prat, IMFT; M. Meireles, University Paul Sabatier; P. Schmitz, INSA; R. Baclet, S. Demeulemeester, Mecaplast Group, France

**Study of pressure drop and aerosol penetration during clogging of mini-pleated air filters,** S. Calle-Chazelet*, D. Thomas, J. Remy, Nancy University; S. Artous, A. Joubert, L. Bouilloux, IRSN, France

**Experimental study on flow through concentric porous filter candle,** A. Ijaz*, M. Saleem, University of the Punjab, Pakistan

## G6 Fine Particle Precipitation 16:45-18:00

**Fine dust precipitation in a Bayer-Reither venturi scrubber,** M. Theis*, Bayer Technology Services GmbH; K. Reither, Reither Venturiwäscher GmbH, Germany

**The use of nanostructured porous materials as filter media to capture submicron solid and liquid aerosol particles,** R. Pfeffer*, J. Quevedo, G. Patel, R. Dave, New Jersey Institute of Technology - USA

**Enhancement of the thermophoretic aerosol particles deposition efficiency in a turbulent annular flow configuration,** B. Sagot*, F. Buron, ESTACA; G. Antonini, University of Compiegne, France

# Wednesday, April 16, 2008

## L7 Vacuum and Pressure Cake Filtration Fundamentals III 08:30 - 09:45

**Influence of synthetic suspension components on its physical behaviour,** P. Ginisty*, N. Ahoyo, IFTS; J. Baudez, Cemagref, France; L. Spinosa, CNR, Italy

**Filtration properties in solvent-water mixtures,** S. Neubauer*, U. Peuker, University of Clausthal, Germany

**The influence of morphology and size on constant pressure filtration for two crystallizing systems,** R. Beck*, D. Malthe-Sorenssen, J.-P. Andreassen, NTNU University, Norway; A. Häkkinen, M. Louhi-Kultanen, Lappeenranta University, Finland

## L8 Technical Centrifugal Filtration-Selection and Optimization 08:30 - 09:45

**Systematic of filter centrifuges,** P. Stelter*, HEINKEL Process Technology GmbH, Germany

**Selection of screen- and filter-centrifuges based on material and filtration properties,** U. Esser*, D. Mrotzek, Bayer Technology Services GmbH, Germany

**Computer aided optimization of batch filtering centrifuges,** I. Nicolaou*, FOS Ltd.,Cyprus

## L9 Filter Media Cleaning 08:30 - 09:45

**DEECOM™: A new eco-technology for cleaning metal filters,** S. L. Reynolds*, Carolina Filters, Inc., USA; B. Longworth, J.P. Millington, J. Norris, P. Norris, B&M Longworth Ltd. - Great Britain

**Process strategies avoiding impurities adhering to woven filter media used in inverting filter centrifuges,** S. Stahl*, H. Nirschl, Karlsruhe University, Germany

**Comparison of regeneration methods for ceramic filter media,** J. Puranen*, A. Häkkinen, J. Kallas, Lappeenranta University; B. Ekberg, Larox Corp., Finland

## M6 Process/Waste Water Treatment 08:30 - 09:45

**Membrane technology for recycling and recovery of resources in industrial water and waste water applications – from lab testings to production experiences,** C. Bohner*, EnviroChemie GmbH

**Field experiences with membrane filtration for reuse of biological wastewater effluents,** T. Baum*, S. Theiss, C. Maurer, H. Eipper, Pall GmbH, Germany

**Impacts of the influent toxicity on the efficiency of tertiary filtration of wastewater from petroleum industry,** S. Heng*, N. Lesage, Q. Su, Total Petrochemicals, France

## M7 Reverse Osmosis 08:30-09:45

**Investigations of silica scaling on reverse osmosis membranes,** G. Braun*, T. Harrer, T.- Götz, Cologne University; W. Hater, C. zum Kolk, C. Dupoiron, Henkel KGaA, Germany

**Reverse osmosis pilot plant studies regarding a novel electrochemical method to control $CaCO_3$ scaling,** M. Meinardus*, Grünbeck Wasseraufbereitung GmbH, Germany

**Application of reverse osmosis technology in Kuwait,** M. Al-Saffar*, Kuwait Institute for Scientific Research, Kuwait

## G7 Depth Filtration – Particle Deposition 08:30 - 09:45

**Simulation studies of deposition mechanisms for aerosol particles in fibrous filters including slip flow,** A. Wiegmann*, K. Schmidt, S. Rief, L. Cheng, A. Latz, Fraunhofer Institute for Industrial Mathematics ITWM, Germany

**Particle capture by air filter media having truncated log-normal fiber diameter distributions and random spacing of fibers,** P. Tronville*, Torino University, Italy; R. Rivers, EQS Inc., USA; Z. Bin, Tongji University, P.R. China

**Comparison of calculated and by means of MRI determined 1-dimensional profiles of deposited particle material in depth filter media with ongoing loading,** J. Hoferer *, J. Meyer, G. Kasper, Karlsruhe University, Germany

## G8 Measurement Techniques 08:30 - 09:45

**Evaluation of filter test rigs for fractional efficiency measurements according to filter test standards,** S. Schütz*, M. Schmidt, L. Mölter, Palas GmbH, Germany

**Real time tunnel ventilation and filter control systems,** H.-J. Grimm*, F. Schneider, Grimm Aerosol Technik GmbH, Germany

**Dust measuring technology for the monitoring of particulate emissions,** H. Födisch*, P. Schengber, Dr. Födisch Umweltmesstechnik AG, Germany

## PL1 10:15 - 12:15

### Deep Bed Filtration for Water and Wastewater

**Water depuration by means of fibrous filter medium,** A. Budyka*, A. Shepelev, V. Rykunov, K. Lukanina, Karpov Institute of Physical Chemistry, Russia

**Rice hull ash and its filtration and separation applications,** W. Li*, C. Berthold, C. Kiser, Q. Richard, Agrilectric Research Company, USA

### Filter Aids - Press Filtration

**Influences on the wort flow in the lautering process during beer production,** J. Tippmann*, J. Voigt, K. Sommer; Munich University Weihenstephan, Germany

**Applied study of mixed filter aids in oily sludge treatment,** X. Hu*, Y. Ma, X. Qi, S. Ye, C. Liu, Chonghua; Northeastern University, P.R. China

### Sedimentation Fundamentals-Analytical Centrifugation

**Stability prediction of concentrated suspensions: Comparison of NMR and analytical centrifuge measurements,** S. M. Pancera*, N. Nestle, V. Boyko, Y. Liu, BASG AG, Germany

### Centrifugal Sedimentation

**CFD multiphase flow simulation of a solid bowl centrifuge with radial compartments,** X. Romaní Fernández*, H. Nirschl, Karlsruhe University, Germany

### Hydrocyclones

**Eulerian two phase flow simulation of a hydrocyclone by CFD,** R.-M. Wu*, C.-Y. Hsu, Tamkang University, Taiwan

**Experimental investigation of the motion trajectory of solid particles inside the hydrocyclone by a Lagrange method,** L.-Y. Chu*, Z.-B. Wang, W.-M. Chen, S.-G. Wang, Sichuan University, P.R. China

### Filter Media Blockage-Initial Stage of Cake Filtration

**Fouling of filter media: Solubility of oxalate solutions,** M. Louhi-Kultanen*, A. Häkkinen, J. Kallas, Lappeenranta University; Bjarne Ekberg, Larox Corp., Finland

**Effect of cake-septum interface in assessing sludge filterability,** H. Yükseler*, U. Yetis, I. Tosun, Middle East University, Turkey

### Particle Measurement - Contamination Control

**Granulometry and morphology by microscopy and image analysis,** O. Huin*, Microvision Instruments SAS, France

**Microbes verification on oxygen consumption rate measurement of biofilm in drinking water,** L.-F. Chen*, W.-L. Lai, Shu-Te University, Taiwan

## PL2 10:15 - 12:15

### Separation Enhancement by Electric Forces

**Electrofiltration of PHB,** G. Gözke*, I. Perner-Nochta, C. Posten, Kalrsruhe University, Germany

### Separation Enhancement by Chemical Additives

**Charge effects determine the filtration resistance in cake filtration and crossflow filtration experiments,** D. Curvers*, H. Saveyn, P. Van der Meeren, Ghent University, Belgium

### Laboratory Vacuum and Pressure Cake Filtration

**Miniaturisation of filtration processes - A necessity for the pharmaceutical industry,** A. Schreiner*, R. Schneeberger, Novartis Pharma; S. Jerman, ETH Zurich, Switzerland

**Are standards in designing industrial filters for solid liquid filtration wisely and necessary,** H.-P. Schmid*, J. Tichy, BHS-Sonthofen; S. Ripperger, University of Kaiserslautern, Germany

**Filtration Properties in Organic Solvents,** S. Neubauer*, U. Peuker, Clausthal University, Germany

### Technical Vacuum and Pressure Cake Filtration

**Study on parameters affecting belt filtration of a metal precipitate suspension,** S. Hirvisaari*, A. Häkkinen, J. Kallas, Lappeenranta University; B. Ekberg, Larox Corp.; A. Rautanen, Tamfelt Corp.; S. Storbacka, OMG, Finland

**Development of and automated online quotation tool,** O. Sieking*, E. Eenovaara, S. Henttu, Larox Corp., Finland

### Technical Vacuum and Pressure Cake Filtration – Media and Components

**Easy installation and improved performance with a new filter press cloth design for applications in e.g. waste water,** B. Maurer*, Sefar AG, Switzerland

### Press Filtration Fundamentals

**Mass transfer from porous particles during the pressing of biological materials,** M. Petryk*, Ternopil University, Ukraine; E. Vorobiev, University of Compiegne, France

### Slurry Pretreatment by Precipitation and Crystallization

**Enhancing phosphogypsum filtration with sorbitan sesquioleate additive: Theory and practice,** E.A. Abdel-Aal*, M.M. Rashad, CMRDI, Egypt; H. El-Shall, University of Florida, USA

**Boron recovery from the clay wastes of boron industry by solid-liquid extraction,** I. Kipcak*, M. Özdemir, Eskisehir Osmangazi University, Turkey

**Boron recovery from borax sludge using solid-liquid extraction followed by precipitation,** I. Kipcak*, M. Özdemir, Eskisehir Osmangazi University, Turkey

## L10 Filter Media Blockage – Initial Stage of Cake Filtration 10:15 - 11:30

**Pore fouling behaviors in constant pressure and constant flux filtration of very dilute suspension,** E. Iritani*, N. Katagiri, Y. i Sugiyama, Nagoya University; K. Yagishita, Sanshin Mfg. Co., Ltd., Japan

**Zeta potential of filter media and its influence on the initial stages of cake filtration,** C. Schnitzer*, S. Ripperger, Kaiserslautern University, Germany

**Adoption of blocking filtration laws to sludge filtration analysis,** H. Yükseler*, I. Tosun, U. Yetis, Middle East Technical University, Turkey

## PM1 Membrane Fouling 10:15 - 12:15

**Resonance pulsed flow in cross flow filtration,** C. Pflieger*, D. Lisicki, D. Beckmann, Institute for Bioprocessing & Analytical Measurement Techniques; J. Briesovsky, BB ResoPuls; E. Flindt, T. Reischl, membraPure GmbH; U. Metzler, Dingslebener Privatbrauerei Metzler, Germany

**Diagnosis of membrane fouling by autopsy – A case study,** I. M. El-Azizi*, R. G. Edyvean, Sheffield University, Great Britain

**Analysis of particle fouling in different kinds of membranes during microfiltration,** K.-J. Hwang*, C.-Y. Liao, Tamkang University, Taiwan

**Application of electric field to reduce the fouling in crossflow microfiltration,** C.-J. Chuang* , C.-C. Hsiung, Z.-H. Cheng, Chung Yuan University, Taiwan

**Effect of membrane material-cum-morphology on the dead-end micro-filtration of protein solution during filtration cycles,** K.-L. Tung*, S. Wang, D. Nanda, C.-C. Hu, C.-L. Li, Chung Yuan University; J. Huang, Yeu Ming Tai Chemical Industrial Co. Ltd., Taiwan

**Defouling of polymeric membranes during microfiltration processing using ultrasound in various membrane modules,** A. Maskooki, Food Research Institute of Khorasan; S. A. Mortazavi; University of Mashad, Iran; A. Maskooki, Nanyang University, Singapore

**Modified UF/NF membranes by LBL polyelectrolytes films for easy handling biofouling,** M. Pontié*, E. Joudren, University of Angers, France

**Relative effect of osmotic pressure and fouling on flux decline in nanofiltration of whey and skimmed milk,** B. Chaufer*, H. El Khabbaze, B. Balannec, University Rennes 1, France; K. Elkacemi, University Mohamed V-Agdal, Morocco

**Performances of an out-of-basin MBR for treating TFT-LCD wastewater,** C.-H. Hsieh*, C.-M. Feng, C. Chou, S. Tan, Topco Scientific Co., Ltd.; C.-Y. Chung, J. C. Liu, Taiwan University, Taiwan

## PM2 Mechanisms, Modelling, Simulation, Design 10:15-12:15

**Modelling and simulation of transport phenomena in open-channel spiral wound modules for seawater desalination,** O. Wagner*, J. Hapke, University Hamburg-Harburg, Germany

**Modelling of the mass transfer in a hollow fiber dialyzer coupled with ultrafiltration operations,** C.-D. Ho*, J.-W. Tu, Tamkang University, Taiwan

**Investigation of mass transport in membrane-based separation of aqueous protein mixture,** O. Trifunovic*, P. M. Bongers, Unilever, Netherlands

**Lattice Boltzmann simulation on flow in porous medium of ceramic filter,** Ji Zhongli*, S. Meiyu, C. Honghai, University of Petroleum Beijing, P.R. China

**Adaptive neural fuzzy inference system to modeling of flux and fouling during ultrafiltration of soy protein concentrate,** J. Sargolzaei *, M. Purafshari Chenar, Ferdowsi University of Mashhad, Iran

**CFD simulation of a flat membrane module as a tool to explain fouling distribution,** B. Balannec*, D. Delaunay, M. Rabiller-Baudry, University Rennes, France; J.M. Gozálvez-Zafrilla, University of Valencia, Spain

**Investigation of dynamic filters using CFD,** L. Steinke*, Y. Taamneh, S. Ripperger, University of Kaiserslautern, Germany

**Mathematical Modeling of the Simultaneous Absorption of $CO_2$ and $H_2S$ in a Hollow Fiber Membrane Contactor,** J. Fathikalajahi*, P. Keshavarz, S. Ayatollahi, Shiraz University, Iran

**Using fractional factorial design to determine the effect of the operational parameters on water flux in ultrafiltration,** W.-L. Lai*, S.-W. Liao, J.-J., Chen, Tajen University; Li-Fu Chen, Shu-Te University, Taiwan

**Is there a need to remove active pharmaceutical ingredients (API) from pharmaceutical manufacturing plant aqueous waste streams and could membrane technology (reverse osmosis and nanofiltration) offer a solution?,** L. O'Callaghan*, Cork Institute of Technology, Ireland

## PG1 Surface Filtration 10:15-12:15

**Filtration performance characteristics of high temperature pleatead filters which operated in conventional bag filter and Cybag filter,** Y.-O. Park*, N. Hasolli, KIER; H.-J. Roh, Chung-Nam University, Korea

**Efficient and economic particulate collection from the flue gas by the advanced hybrid particulate collectors,** Y.-O. Park*, N. Hasolli, H.-K. Choi, KIER; Korea

**Blow back system for hot gas filter installations using sintered metal fibre filter elements,** I. Schildermans*, V. Kuijken, S. Vandendijk, A. Aust, NV Bekaert SA, Belgium

**Particle layer detachment under consideration of transient kinetic effects,** Q. Zhang*, E. Schmidt, University of Wuppertal, Germany

**Aspects of nozzle effect on the pulse-jet cleaning of a ceramic filter,** J.-H. Choi*, L. Yu, J.-H. Kim, K.-M. Sakong, Y.-C. Bak, Gyeongsang University, Korea

**Permeability of ceramic filters for high temperature gas filtration,** J. R. Coury*, E. A. Moreira, G.M.C. Silva, M.D.M. Innocentini, University of Sao Carlos; C.R. Rambo, D. Muller, D. Hotza, University of Santa Catarina, Brazil

**Performance evaluation of cellular ceramic membranes for hot aerosol filtration,** M.D.M. Innocentini*, V.P. Rodrigues, University of Ribeirao Preto; G.M.C. Silva, R.C.O. Romano, J.R. Coury, University of Sao Carlos; R.G. Pileggi, University of Sao Paulo, Brazil

**Gas filtration: Influence of operational variables on cake formation and detachment in different filter types,** P.A. Paschoal*, M.L. Aguiar, University of Sao Carlos, Brazil

**Study on gas-solid filtration using cellulose fiber filtering media,** M.L. Aguiar*, D.F. Torre, E.H. Tanabe, V.M. Osorio, University of Sao Carlos, Brazil

**Study of the profundity of particles penetration in different fabric filters,** M.L. Aguiar*, E.H. Tanabe, E.J. Ricco, K.B. Rodriguez, University of Sao Carlos, Brazil

**Experiment on pressure drop for felt filter with and without PTFE membrane,** J. Liu*, N. Zhao, Y. Zhuang, D. Chang, H. Li, X. Sun, Northeastern University, P.R. China

**Effects of corona electrified solid particles on the efficiency and pressure drop of a fabric filter,** J.R. Coury*, University of Sao Carlos; M.V. Rodriguez, M.A.S. Barrozo, University of Uberlandia, Brazil

## PG2 Solid Gas Separation 10:15-12:15

**Investigations into the collection of fine dust by plants,** D. Bracke*, G. Reznik, H. Mölleken, E. Schmidt, University of Wuppertal, Germany

**Development of a model equation for dust suppression by using a water-spraying system,** W. Höflinger*, P. Grundnig, G. Mauschitz, J. Gao, Vienna University, Austria

**Use of water sprays for reduction of airborne dust pollution,** U. Klenk*, E. Schmidt, University of Wuppertal, Germany

**The study of the size particles´s influence on the venturi scrubbers´s perfomance,** J.J.R. Damasceno*, M.S.C. Gama, N.C. Silva, University of Uberlandia, Brazil

**Simulation of jet breakup and droplet dispersion in venturi scrubbers,** J.A.S. Goncalves*, S.L.I. Norcia, J. R. Coury, University of Sao Carlos, Brazil

**Experimental study on the multi-orifice injection of liquid in a venturi scrubber,** V.G. Guerra*, J.A.S. Goncalves, J.R. Coury, University of Sao Carlos, Brazil

**Trace heavy metals emission control through enhanced submicrometer range filtration: Experimental determination of performance,** C. Gutierrez-Canas*, Legarreta J.A., University of the Basque Country; Sapin; D.Y. Pui, S.-C- Kim, University of Minnesota, USA

**Entrance effect in a plate-wire electrostatic precipitator,** J.R. Coury*, E.E. Valdes, University of Sao Carlos, Brazil

**Study on cyclone tube air filter used for vehicle engines,** M. Li*, J. Wang, B. Wang, Y. Sun, China North Vehicle Research Institute, P.R. China

**Experimental study of gas-solid two-phase flow in the guide vane cyclone tube,** J.-J. Wang*, Y. Guo, Y.-H. Jin, University of Petroleum Dongying, P.R. China

**Personal impactor to measurements aerosol inhalation dose,** D.A. Pripachkin*, A.K. Budyka, Karpov Institute of Physical Chemistry; A.G. Tsovyanov, Institute of Biological Physics, Russia

## L11 Technical Vacuum and Pressure Cake Filtration 13:15-14:30

**Optimizing industrial filters at Pyhäsalmi mine in Finland,** P. Rantala*, Helsinki University, Finland

**Separation, washing and demoisturing of PTA in a single process unit - Advanced filtration of terephthalic acid with the hi-bar oyster filter,** R. Bott*, T. Langeloh, M. Schiessl, Bokela GmbH, Germany

**The multi-Purpose rotary drum filter,** T. Langeloh*, R. Bott, Bokela GmbH, Germany

## L12 Technical Centrifugal Sedimentation for Ultrafine Particles 13:15-14:30

**Centrifugal separation in biopharmaceutical processing,** W.-F. Leung*, The Hong Kong Polytechnic University, Hong Kong

**Classification of nanoparticles in the centrifugal field,** F. Fuchs*, M. Doby, S. Reddell, A. Trasatti, DuPont Engineering, USA

**Fine solids separation within biodiesel process,** M. Kopf*, G. Bergjohann, Pieralisi Deutschland GmbH, Germany

## L13 Filter Media Characterization – Porometry – Integrity Testing I 13:15-14:30

**Homogeneity of commercial filter cartridges,** K. Gupta*, A. Jena, Pourous Materials, Inc., USA

**Bubble point and pore size distribution measurements of filter papers, wovens and nonwovens using a pore size meter PSM 165,** S. Große*, A. Rudolph, Topas GmbH, Germany

**Filter media pore size comparison between porometry and glass bead challenge testing,** G. Rideal*, Whitehouse Scientific Ltd., Great Britain; E. Mayer, DuPont Engineering, USA

## M8 Produced Water Treatment 13:15-14:30

**Feasibility of using ceramic ultra- and nanofiltration membranes for efficient treatment of produced water,** P. Czermak*, M. Ebrahimi, University of Giessen-Friedberg; P. Mund, Atech Innovations GmbH, Germany

**Crossflow microfiltration of oil from synthetic produced water,** Y.H.D. Alanezi*, R.J. Wakeman, R.G. Holdich, Loughborough University, Great Britain

**Preparation of nano-sized particles modified PVDF/$Al_2O_3$/$TiO_2$ ultrafiltration membrane and study on its performances for oilfield wastewater treatment,** S. Yu*, Q. Zhao, H. Lu, J. Yang, D. Wang, Harbin Institute of Technology, P.R. China

## M9 Nanofiltration 13:15-14:30

**Nanofiltration: A method for solute removal from non-aqueous solvents,** E.S. Tarleton*, Loughborough University, Great Britain

**Organophilic nanofiltration by polymeric membranes,** T. Beeskow*, GMT Membrantechnik GmbH; J. Stegger, Borsig Membrane Technology GmbH, Germany

**Pre-oxidation effect on TOC removal in surface water treatment by nanofiltration,** G.H.R. Nabi Bidhendi*, A.Torabian, H. Etemadi, A.A. Ghadimkhani, Tehran University, Iran

## Invited Lecture 3 13:15-14:30

**Gas Cleaning Technology,** Prof. Gernot Krammer NTNU - University of Science and Technology, Norway

## Invited Lecture 4 15:00-16:15

**Solid-Liquid-Separation by Deep Bed Filtration,** Prof. Rolf Gimbel University of Duisburg Essen, Germany

## M10 Characterisation by SAXS 15:00-16:15

**Modifying a small-angle X-ray scattering-camera for a time-reduced characterisation of nanoparticles,** V. Goertz*, H. Nirschl, Karlsruhe University, Germany

**Spatial and temporal in-situ evolution of concentration profile probed by SAXS during ultrafiltration of casein micelles,** C. David*, F. Pignon, A. Magnin, University of Grenoble; T. Narayanan, M. Sztucki, European Synchrotron Radiation Facility; G. Gésan-Guiziou, INRA Agrocampus Rennes, France

**In-situ characterization of anisotropic colloids deposition by SAXS during crossflow ultrafiltration,** F. Pignon*, C. David, A. Magnin, University of Grenoble; M. Sztucki, European Synchrotron Radiation Facility, France

## M11 Dynamic Filtration I 15:00-16:15

**Rotation filtration with ceramic membrane discs: presentation of industrial and municipal applications,** C. Münch*, F. Koppe, Kerafol GmbH, Germany

**Dynamic cross-flow filtration of biological suspensions, e.g. bakers yeast,** S. Neubauer*, U.A. Peuker, Clausthal University, Germany

**Particle classification using dynamic filtration,** Y. Taamneh*, S. Ripperger, University of Kaiserslautern, Germany

## M12 Dairy Products I 15:00-16:15

**Impact of physico-chemical feed properties on deposit layer formation and filtration in the microfiltration of milk proteins,** W. Kühnl*, A. Piry, A. Tolkach, U. Kulozik, Munich University; T. Grein, S. Ripperger, Kaiserslautern University, Germany

**Effect of physico-chemical changes on critical hydrodynamic conditions and protein transmission during microfiltration (0.1 µm) of skimmed milk,** G. Gésan-Guiziou*, F. Garnier, F. Rousseau, INRA Agrocampus Rennes; A. Jimenez, SOREDAB SAS, France

**Role of physico-chemical environment on limiting & critical fluxes in ultrafiltration, nanofiltration and reverse osmosis of modified skim milks,** M. Rabiller-Baudry*, H. Bouzid, L. Paugam, University Rennes, France

## G9 Depth Filtration – Nanofibre Layers 15:00-16:15

**Experimental investigation on air filtration of submicron particulates by nanofiber filter,** W.-F. Leung*, C.-H. Hung, The Hong Kong Polytechnic University, Hong Kong

**Investigation of filters with a single nanofiber layer on a substrate,** D.Y.H. Pui*, J. Wang, S.C. Kim, University of Minnesota, USA

**Filtration properties of cellulose filter media with polymer nanofiber layer,** S. Petrik*, M. Maly, J. Duchoslav, L. Plistil, Elmarco Ltd.; J. Hruza, University of Liberec, Czech Republic

### G10 Hot Gas Cleaning 15:00 - 16:15

**Effect of cake residence time on the regeneration efficiency of high temperature surface filters: experiment and model,** N. Döring*, J. Meyer, G. Kasper, Karlsruhe University, Germany

**Study of the behaviour of a catalytic ceramic candle filter in a lab-scale unit at high temperatures,** E. Simeone*, W. de Jong, P.J. Jansens, Delft University, Netherlands; M. Nacken, S. Heidenreich, Pall Filtersystems GmbH, Germany

**High temperature granular bed filtration of biomass gasification gas,** D. Stanghelle*, A. Norheim, O.K. Sonju, J. Hustad, NTNU University, Norway

### L14 Large Scale Treatment of Water and Wastewater 16:45 - 18:00

**Large scale experiences in wastewater filtration: A practical insight,** M. Barjenbruch*, Berlin University, Germany

**Experience from world's largest sea water filtration plant for oil reservoir injection,** M.H. Al-Ghamdi*, Saudi Aramco, Saudi Arabia

**The impact of wastewater quality on receiving water bodies in Eastern Cape, South Africa,** A.N. Osode*, University of Fort Hare; M. Sibewu, M.N.B. Momba, Tshwane University, South Africa

### L15 Centrifugal Filtration Fundamentals 16:45 - 18:00

**Advances in mathematical models and numerical methods for gravity and centrifugal sedimentation and filtration of polydisperse suspensions,** R. Bürger*, University of Conception; A. Garcia, University del Norte, Chile

**Steam enhanced centrifugation of compressible products,** U.A. Peuker*, Clausthal University, Germany

**Purification of particulate solids on centrifuges,** F. Ruslim*, H. Nirschl, Karlsruhe University, Germany

### L16 Filter Media Characterization – Porometry – Integrity Testing II 16:45 - 18:00

**A study of the mechanism of wet and dry filtration using NIST traceable glass microspheres,** G.R. Rideal*, E.A. Roberts, A. Stewart, J. Storey, Whitehouse Scientific Ltd., Great Britain

**Advances in laboratory performance evaluation of hydraulic filter elements - Application to the study of aircraft hydraulic filter elements,** P. Madhavan*, L. Bensch, Pall Corp.; X. Tao, Southwest Research Institute, USA

**Filterability of mineral based gear lubrication oils,** K. Farooq*, Pall Corporation, USA

### M13 Dynamic Filtration II 16:45 - 18:00

**Dynamic cross flow microfiltration of viscous suspensions,** S. Mirza*, Somicon AG, Switzerland; R. Bott, E. Ehrfeld, Bokela GmbH, Germany

**Dynamic cross-flow filtration with ceramic filter membranes,** B. Hegnauer*, KMPT AG, Germany

**Influence of different parameters on membrane flux and nutrient re-tention of digester effluent filtrate in a single-shaft-disk-filter,** R. Maas*, V. Bagehorn, E. Friedrich, H. Friedrich, Fraunhofer IKTS, Germany

### M14 Dairy Products II 16:45 - 18:00

**Microfiltration for the reduction of microorganisms in complex food systems: Effect of operating conditions and ingredient interactions,** V. Kaufmann*, U. Kulozik, Munich University, Germany

**Effect of membrane length, membrane resistances and process conditions on the fractionation of milk proteins by microfiltration,** A. Piry*, W. Kühnl, A. Tolkach, U. Kulozik, Munich University, T. Grein, S. Ripperger, Kaiserslautern University, Germany

**Membrane adsorption chromatography – A novel hybrid technology for the separation of high value bioactive molecules such as glycosylated peptides,** M. Kreuß*, U. Kulozik, Munich University, Germany

### G11 Depth Filtration – Modelling 16:45 - 18:00

**Simulation of dust filtration in consideration of the incident flow using a coupling of analytical filtration models with CFD code,** P. Kopf*, M. Piesche, Stuttgart University, Germany

**Initial collection efficiency of neutral aerosol particles in bipolarly charged fibrous filters,** A. Podgorski*, Warsaw University, Poland; A. Balazy, Cummins Filtration, Inc., USA

**Nonsteady-state performance of mechanical fibrous filters,** A. Balazy*, Cummins Filtration, Inc., USA; A. Podgorski, Warsaw University, Poland

### G12 Industrial (Hot) Gas Cleaning 16:45 - 18:00

**Star-Bags™ – Application of an advanced filter media construction for greater filtration efficiency and production capacity,** M.J. Neate*, Albany Int. Pty Ltd, P.R. China; B. Currwell, Albany Int. Pty Ltd, Australia

**Backpulse cleaned filtration system for the retention of alumina particles in NOx-gas streams,** I. Schildermans*, H. Verbauwhede, S. Vandendijk, NV Bekaert SA, Belgium

**Recent advances in particulate filtration technologies for coal gasification based power generation plants,** S.D. Sharma*, CSIRO Energy Technology, Australia

## Thursday – April 17, 2008

### L17 Deep Bed Filtration – Modelling, Test and Simulation I 08:30 - 09:45

**Basic model for suspension transport in porous media (for petroleum and environmental engineering),** P. Bedrikovetsky*, University of Rio de Janeiro/Petrobras, Brazil; A. Shapiro, University of Denmark DTU, Denmark

**Optimization of non-woven metallic filter media based on probability model,** S. Ishikawa*, Kansai Wire Netting Co., Ltd.; A. Shimosaka, Y. Shirakawa, J. Hidaka, Doshisha University, Japan

**On coupled micro- and macro simulation for filtration processes,** Z. Lakdawala*, O. Iliev, A. Wiegmann, Fraunhofer ITWM, Germany

### L18 Technical Vacuum and Pressure Cake Filtration – Media & Components 08:30 - 09:45

**Larox "Wave-Dri" microwave drying for Pannevis RT vacuum belt filters,** L. Kaipia*, S. Manninen, Larox Corp., Finland; J. Seinen, Larox B.V., Netherlands

**Latest developments in woven filter media for gypsum dewatering in modern FGD,** A. Aust*, Sefar AG, Switzerland

**Pigments getting finer and finer – A new answer to this challenge,** M. Maurer*, Sefar AG, Switzerland

### L19 Separation Enhancement by Electric Forces 08:30 - 09:45

**Comparative analysis of electro-osmotic dewatering and electroforced sedimentaion,** M.S. Jami,* Islamic University Malaysia; Malaysia; M. Iwata, Suzuka National College, Japan

**Electrohydrodynamic transport in nanoporous filter cakes,** B. Schäfer*, H. Nirschl, Karlsruhe University, Germany

**Solid-liquid expression enhancement from plant tissues by pulsed electric fields,** E. Vorobiev*, N. Grimia, N. Lebovka, University of Compiègne; J. Vaxelaire, ENSGTI, France

### M15 Modelling of Membrane Processes 08:30 - 09:45

**Modelling and optimization of multi-stage membrane filtration processes,** Z. Kovacs*, W. Samhbaber, University of Linz, Austria

**Modelling the effect of particle size in microfiltration,** D. Hammami*, A. Ayadi, LRAE ENIS, Tunisia; P. Schmitz, INSA; M. Prat, IMFT, France

**Modelling the separation of protein solutions by means of cross-flow filtration,** T. Grein*, S. Ripperger, Kaiserslautern University; A. Piry, W. Kühnl, U. Kulozik, Munich University, Germany

### M16 Membrane Fouling 08:30 - 09:45

**Determining fouling parameters from microfiltration tests,** W.F. Leung*, The Hong Kong Polytechnic University, Hong Kong

**Core-shell particles as model compound for studying fouling,** M.L. Christensen*, M.B.O. Andersen, T.B. Nielsen, K. Keiding, Aalborg University, Denmark

**Characterization of fouling membranes in the HCPAC-MF systems,** X.-J. Yan*, S.-L. Yu, S.-T. Fu, X. Yang, Harbin Institute of Technology, P.R. China

### G13 Particles and Filter Tests 08:30 - 09:45

**Filter test with soot generation from 7.5 nm up to 200 nm and a mass concentration from 100 mg/h up to 3 g/h,** G. Lindenthal, Consulting for Particle Technology, M. Schmidt,*, L. Mölter, Palas GmbH; Germany

**The influence of test aerosol parameters on the filtration efficiency of electret filters,** I.L. Tuinman*, C. van Gulijk, TNO Defense Security and Safety, Netherlands

**Separation behaviour of airborne particles & bioaerosols on particulate respirators and respirator filter media,** T. Voigt*, S. Ripperger, Kaiserslautern University; G. Helmke, B. Ahlert, Fulda University, K.W. Müller, BGN, Germany

### G14 Fibrous Filter 08:30 - 09:45

**Experimental investigations concerning the origin of particle penetration during dust filtration with nonwoven filter media,** T. Häusle*, H. Rieger, H. Sauter, Mahle Filtersysteme GmbH, Germany

**Collection of nanoparticles on fibrous media: Filtration efficiency and clogging effect,** G. Mouret*, D. Thomas, S. Call-Chazelet, Nancy University; D. Bemer, INRS, France

**Air filtration performance of fine to nano size fibrous materials formed from polymeric film stretch,** K.-J. Choi*, AAF International, USA

### L20 Deep Bed Filtration – Modelling, Test and Simulation II 10:15 - 11:30

**On new challenges for CFD simulation in filtration,** O. Iliev*, Z. Lakdawala, Fraunhofer ITWM; M. Dedering, W. Stausberg, IBS Filtran, Germany; R. Ciegis, V. Starikovicius, Vilnius University, Lithuania

**Importance of the CFD simulations for the design of efficient filters,** W. Stausberg*, M. Dedering, IBS Filtran; O. Iliev, Z. Lakdawala, P. Popov, Fraunhofer Institute for Industrial Mathematics ITWM, Germany

**Setting a new milestone in filter media design: Simulating performance according multipass test based on 3D fiber structures,** M.J. Lehmann*, H. Banzhaf, G.-M. Klein, M. Durst, Mann+Hummel GmbH; S. Rief, A. Wiegmann, Fraunhofer ITWM, Germany

### L21 Press Filtration Fundamentals I 10:15 - 11:30

**Describing the shear and compressive behavior of fine particulate filter cakes using characteristic solids volume fractions,** A. Erk*, BASF AG, W. Stahl, H. Anlauf, Karlsruhe University, Germany

**Dewatering and flow behaviour of fine limestone particle packings,** T. Mladenchev*, J. Tomas, University of Magdeburg, Germany

**Solid/liquid expression and fluidity behaviour of kaolin suspensions in the presence of a dispersant,** E. Vorobiev*, O. Larue; University of Compiègne; M. Loginov, Nikolai Lebovka, Institute of Biocolloidal Chemistry, Ukraine

### L22 Separation Enhancement by Magnetic Forces 10:15 - 11:30

**Existing and potential applications of magnetic fields in particle technology,** C. Eichholz*, M. Stolarski, H. Nirschl, Karlsruhe University, Germany

**Magnetic filtration processes in selective bio separation,** C. Eichholz*, M. Stolarski, H. Nirschl, Karlsruhe University, Germany

**Continuous selective high gradient magnetic bio separation using novel rotating matrix centrifugation,** M. Stolarski*, C. Eichholz, H. Nirschl, Karlsruhe University, Germany; K. Keller, Solae, B. Fuchs, DuPont, USA

## PM3 Inorganic/Ceramic Membranes 10:15 - 12:15

**Feasibility of ceramic ultra- and nanofiltration membranes for removal of endotoxins,** P. Czermak*, M. Ebrahimi, University of Giessen-Friedberg; G. Catapano, University of Calabria, Italy

**Two stage integrated ceramic membrane reactor system for the continuous enzymatic synthesis of oligosaccharides,** M. Ebrahimi*, University of Giessen-Friedberg, Germany; P. Czermak, Kansas State University, USA

**Characterization of ceramic nanofiltration membranes for operations with near and supercritical $CO_2$,** V. Herdegen*, G. Härtel, R. Haseneder, Freiberg University, Germany

**MEMBRALOX® IC A new range of high compactness ceramic Crossflow filtration membranes,** J. Guibaud*, P. Chanaud, J.M. Cayrey V. Lasserre, PALL Exekia, France

**Goat milk fractionation and protein concentration by ceramic and polymeric membranes,** B. Cancino*, C. Astudillo, University of Valparadiso, Chile

**Preparation and characterization of new inorganic supports based on natural moroccan phosphate for microfiltration & ultrafiltration membranes applications,** I. Barrouk*; S. Alami Younssi; A. Elbizane, FSTM Mohammedia, A. Kabbabi, J. Maghnouji, CERPHOS, Morroco; M. Persin; A. Larbot, University of Montpellier, France

**Filtration of BSA and ß-cyclodextrin solutions by using inorganic membrane,** T.-W. Cheng*, K.-W. Lin, Y.-L. Chiu, Tamkang University, Taiwan

**Preparation of nano-sized alumina modified ultrafiltration membrane and its treatment efficiency for polymer flooding oil extraction wastewater,** S. Yui*, Y. Lu, D. Wang, H. Lv, Harbin Institute of Technology, P.R. China

**Adhesion of particles on ceramic membranes,** T. Quadt*, E. Schmidt, University of Wuppertal, Germany

## PM4 Special Membranes and Complex Systems 10:15 - 12:15

**Enhanced membrane separation process for biogas upgrading – Operating experiences of feeding biomethane into the Austrian gas grid,** M. Harasek*, A. Makaruk, M. Miltener, R. Schlager, Vienna University, Austria

**Investigation of He/$CO_2$ selectivity in palladium composite membranes,** M. Dogan*, O. Altinisik, G. Dogu, Gazi University, Turkey

**Ionic liquid recovery from wastewater by nanofiltration,** J.F. Fernández*, E. Chilyumova, D. Waterkamp, J. Thöming, University of Bremen, Germany

**Linseed oil extraction by high voltage electrical discharges followed by separation oil-in-water emulsions by dynamic microfiltration,** J.-L. Lanoiselle*, L. Li, L. Ding, X. Liao, E. Vorobiev, University of Compiègne, France

**Chromatography membrane reactor system (CMCRS) for the continuous synthesis of galactosyl-oligosaccharides,** L. Engel*, M. Ebrahimi, K. Schams, P. Czermak, University of Giessen-Friedberg, Germany

**Homogeneous catalysts recycling by nanofiltration: one step further to the sustainable production,** T. Renouard*, A. Keraani, M. Rabiller-Baudry, C. Fischmeister, University Rennes 1, France

**Nanofiltration membrane performances in concentrated and diluted phosphoric acid media,** B.Chaufer*, H. Diallo, M. Rabiller-Baudry, University Rennes 1, France

**The effect of feed solution pH on membrane microstructure and performance: An inside understanding by PALS analysis and molecular dynamic simulation,** K.-L. Tung*, D. Nanda, K.-S. Chang, J.Y.-C. Jean, Chung Yuan University, Taiwan

**Future of desalination in Turkey,** A. Turkman*, F. Ertug, Dokuz Eylül University, Turkey

**Degradation of 1,2 dibromoethane by direct UV photolysis and with UV/$H_2O_2$,** Y. Diamant*, A. Meir, J. Rabani, Atlantium Technologies Ltd., Israel

**A MEMS-based wet-wet differential pressure sensor for aggressive media with integrated temperature sensor,** P.E. Andersen*, Grundfos Sensor A/S, Denmark; G. Drews, Grundfos GmbH, Germany

## PG3 Depth Filtration 10:15 - 12:15

**Improved CFD modeling of fibrous media for air cleaning applications,** P. Tronville*, Torino University, Italy; R. Rivers, EQS, Inc, USA; Z. Bin, Tongji University, P.R. China

**Influence of unevenness of porous structure of filtration papers on distributing of stream in pores,** A.G. Denysenko*, Kharkiv University, Ukraine

**Dispersion of aerosol particles in inhomogeneous fibrous filter media,** A. Podgorski*, A. Jackiewicz, Warsaw University, Poland; A. Balazy, Cummins Filtration, Inc., USA

**Filtration of silver nanoparticle agglomerates,** D.Y.H. Pui*, S.-C- Kim, J. Wang, M. Emery, University of Minnesota, USA

**Deposition of charged submicron aerosol particles in fibrous filters,** V.A. Kirsch*, Frumkin Institute of Physical Chemistry; A.K. Budyka, Karpov Institute of Physical Chemistry, Russia

**Experimental research on collecting efficiency of lube-oil filtration paper,** H.-M. Fu*, X. Su, Z. Lo, X. Zhou, Donghua University, P.R. China

**Orthogonal test and regression analysis on granular bed filter,** H.-M. Fu*, L. Yang, Y. Zhao, P. Guo, Donghua University, P.R. China

**Research on the influence of aerosol concentration to the HEPA performance testing,** D. Chang*, J. Liu, B. Chen, Northeastern University, P.R. China

**The study of the PSU filtrater medium,** J.-D. Wang*, China North Vehicle Research Institute, P.R. China

**Effect of temperature on PPS felt filter,** J. Liu*, N. Zhao, N. Mao, X. Lin, D. Chang, X. Sun, Northeastern University, P.R. China

**FP nanofiber filtering material for aerosol monitoring,** A.K. Budyka*, I.U. Filatov, Y.N. Filatov, V.G. Mamagulashvili, Karpov Institute of Physical Chemistry; Y.N. Martynyuk, JSC NPP Doza, Russia

**Investigation of electrospun polysulfone fibrous material for nuclear power station filters,** A.I. Gulajev*, J.N. Filatov, A.K. Budyka, V.G. Mamagulashvili, Karpov Institute of Physical Chemistry, Russia

## PG4 Combined Processes 10:15 - 12:15

**Examination of effectivity of the CRT- DPF based on $Ti_4O_7$,** P. Fuc*, Poznan University, Poland

**High porosity sinters TiO 2-xNx as an active carrier used in DPF Filter,** J. Merkisz*, P. Fuc, Poznan University; D. Oblakowska, Crakow University, Poland

**Non Pt catalyst group in active part of new PM fiter,** J. Merkisz*, P. Fuc, Poznan University; D. Oblakowska, M. Gramatyka, Crakow University, Poland

**Reliability of particle emissions measurement on engine test stand,** J. Merkisz*, J. Pielecha, Poznan University, Poland

**Experimental investigation on the particle capture by single sphere using low temperatures (below 0°C),** A. Macias-Machín*, M. Socorro, J.M. Verona, J. Umbría, O. Gonzalez-Diaz, University of Las Palmas, Spain

**Reduction of NOx emission with NaOCl oxidant on typical 200 MWe coal fired power boiler,** M. Jedrusik*, M.A. Gostomczyk, A. Swierczok, Wroclaw University, Poland

**Application of an iranian clinoptilolite zeolite in the original and pre exchanged forms in adsorption of nitrogen and oxygen gases,** M. Sohrabi*, A. Mohammadia, Amirkabir University; C. Falamaki, Materials and Energy Research Centre, Iran

**Mathematical modeling and experimental study of bezene adsorption kinetics in a zeolite bed,** M. Petryk*, Ternopil University, Ukraine; J. Fraissard, University P. et M. Curie; S. Leclerc, D. Canet, University Nancy 1, France

**Numerical analysis on achieving the even sorbent dispersion in the lab-scale facility of DSI process for improving the $SO_2$ removal efficiency.,** J.D. Chung*, J.W. Kim, Y.M. Park, Y.P. Bae, Hoseo University, Korea

**Research of process of adsorption of multicomponent gas mixture,** F. Yusubov*, C. Ibragimov, R. Babayev, State Oil Academy, Azerbaijan

## L23 Deep Bed Filtration – Modelling, Test and Simulation III 13:15 - 14:30

**Initial efficiency colector models for up flow direct filtration: proposals and analysis,** L.D. Bernardo*, A. Botari, University of Sao Paulo, Brazil

**Transitional capacity and particle removal efficiency connecting novel performance parameters of nonwovens,** H. Kleizen*, IDEGO, Delft University, Parker Filtration B.V., Netherlands

**Dynamic filter efficiency. The effect of filter performance on fluid cleanliness in dynamic operating systems,** C. Juhasz*, Scientific Services, Inc., USA

## L24 Press Filtration Fundamentals II 13:15 - 14:30

**Average cake filtration properties: Are they all that different to the local ones?,** R.G. de Kretser*, P.J. Scales, S.P. Usher, H. Saha, University of Melbourne, Australia

**Pore pressure measurement during cake filtration,** E. Chantoiseau*, P. Arlabosse, Mining University d'Albi-Carmaux, France

**Thermodynamic solution of filtration and expression,** S. Kuri*, Kuri Chemical Engineers Inc., H. Ohya, Yokohama University, Japan

## L25 Separation Enhancement by Chemical Additives I 13:15 - 14:30

**Physico-chemical aspects on the separation of fine, nanoscale particles from fluids,** H. Nirschl*, Karlsruhe University, Germany

**Variation of filtration behavior by manipulation of the filter cake structure,** M. Hieke*, H. Nirschl, Karlsruhe University, Germany

**Effect of lecithin addition on crude linseed oil filtration,** R. Savoire*, E. Vorobiev, J.-L. Lanoisellé, University of Compiègne, France

## Invited Lecture 5 13:15 - 14:30

**Membrane Separation**
Prof. Enrico Drioli, University of Calabria, Italy

## G15 Filter Test Systems 13:15 - 14:30

**New methods for conformity-of-production and inspection & maintenance testing of filters,** M. Kasper*, T. Mosimann, Matter Engineering AG, Switzerland

**Practice-relevant lifetime of cleanable filter media,** M. Schmidt*, L. Mölter, Palas GmbH, Germany

**Investigation of the filtration behaviour of an artificial filtration test rig in comparison to an industrial filter unit – Differences and possibilities of scale up,** G. Gasparin*, Inspec Fibres GmbH, Germany

## G16 Special Filter Media 13:15 - 14:30

**Investigation of an electret degradation under severe conditions and its remediation,** P. Tsai*; University of Tennessee, USA

**Industrial scale nanofiber technology for filtration applications,** D. Stranska*, J. Svobodova, S. Petrik, Elmarco Ltd., Czech Republic

**Design of seamless sintered metal powder filter elements,** R. Röhling*, GKN Sinter Metals Filters GmbH, Germany

## L26 Deep Bed Filtration for Water and Wastewater 15:00 - 16:15

**A novel fibrous filter for particle removal and coalescence applications,** D.G. Griffiths*, Fibra Ltd., Great Britain

**Effect of particle size on particle capture performance of polypropylene non-woven fibrous filter,** T. Oshita*, Yamashin-Filter Corp.; K. Nakamura, K. Matsumoto, Yokohama University, Japan

**Modification of diatomaceous earth-based depth filters with nanosized basic or amphoteric metal oxides to promote virus removal from water,** B. Michen*, M. Wegmann, T. Graule, Swiss Federal Laboratories for Materials Testing and Research, Switzerland

### L27 Technical Mechanical-Thermal Press Filtration 15:00 - 16:15

**Thermally assisted press-filtration processes - An overview,** S. Couturier*, IFTS, France; U.A. Peuker, Clausthal University, Germany

**Hot filter presses - Industrial and international experiences with Rollfit®,** A. Reiser*, Reisser Eilers & Partner AG, Switzerland

**Hot filter press - Filtration, washing and thermal drying in a filter press,** D. Mrotzek*, U. Esser, M. Longerich, Bayer Technology Services GmbH, Germany

### L28 Separation Enhancement by Chemical Additives II 15:00 - 16:15

**Cationic polymer desorption kinetics from sludge,** H. Saveyn*, P. Van der Meeren, Ghent University, Netherlands; S.K. Dentel, University of Delaware, USA

**Sludge floccation: From laboratory to wastewater treatment plant,** P. Ginisty*, C. Peuchot, IFTS, France

**Interaction of polyelectrolyte with sewage sludge and lignite in conditioning of flocculated sludge,** K.B. Thapa*, E. Qi, A.F.A. Hoadley, A. Stevens, Monash University, Australia

### M17 Separation of Complex Systems 15:00 - 16:15

**Novel yeast & oil drop microfiltration equipment,** T. Stillwell*, W. Sumritwatchasai, R.G. Holdich, S.R. Kosvintsev, Loughborough University, Great Britain

**The effect of pH on the separation of manure nutrients with reverse osmosis membranes,** L. Masse*, D.I. Massé, Agriculture and Agri-Food Canada; Pellerin, A. Pellerin et fils Ltée, Canada

**Influence of extractant molar volume on the alkali metal membrane extraction in closed system,** Z. Albaraka*, D. Trebouet, M. Burgard, Strasbourg University, France; J.M. Loureiro, University of Porto, Portugal,

### M18 Membrane Characterisation 15:00 - 16:15

**High sensitivity binary gas integrity test for parvovirus retentive filters provides enhanced virus retention assurance,** S. Giglia*, M. Krishnan, Millipore Corp., USA

**X-ray microtomography analysis on the 3D pore morphology and connectivity of polymeric membrane,** K.-L. Tung*, T.-T. Wu, C.-C. Chien, C.-Y. Lin, Chung Yuan University, Y.-F. Song, Y.-M. Chen, National Synchrotron Radiation Research Center, Taiwan

**Preparation and characterization of positively charged nano-filtration membranes,** P.K. Bhattacharya*, M. Rajagopalan, B.B. Gupta, Institute of Technology Kanpur, India

### Invited Lecture 6 15:00 - 16:15

**Simulation of Particle Separation Processes**
Prof. Uwe Janoske
University of Cooperative Education Mosbach, Germany

### L29 Adsorption-Absorption in Deep Bed Filtration for Water & Wastewater 16:45 - 18:00

**Removal of xeno-estrogenic pollutants by an yeast saccharomyces cerevisiae strain from water,** A. Ghirisan*, S. Dragan, C. Cimpoiu, V. Micluas, University Cluj-Napoca; C. Roman, Research Institute for Analytical Instrumentation, Romania

**Deep bed filtration optimization: Study of physical fouling and chemical saturation of permeable reactive barriers at pilot scale,** P. Ginisty*, IFTS; A. Esnault-Filet, Soletanche Bachy, France

**Use of wood fiber filter for advanced treatment of municipal wastewater,** H. Kim*, Y.-K. Kim, M.-Y. Oh, Kangwon University, Korea

### L30 Particle Measurement – Contamination Control 16:45 - 18:00

**A review of methods and techniques available for particle sizing and/or counting in liquid contamination control,** C. Peuchot*, S. Couturier, IFTS, France

**Monitoring of cleanliness level in hydraulic and lube fluids using the mesh blockage technique,** H. Karl*, Pall GmbH, Germany; C. Goasdoue, Pall France, France; M.J. Day, Pall Europe Ltd., Great Britain

**Measurement of water separation efficiency of diesel fuel filters,** C. Peuchot*, N. Petillon, IFTS, France

### L31 Separation Enhancement by Chemical Additives III 16:45 - 18:00

**Industrial wastewater treatment utilizing zeta potential measurements,** S. Emeish*, Al-Balqa' Applied University, Jordan

**Artificial neural networks for on-line control of coagulation in drinking water treatment,** H.-J. Mälzer*, A. Nahrstedt, S. Panglisch, IWW Water Center; S. Strugholtz, University of Duisburg-Essen; J. Gebhardt, aquatune – Dr. Gebhardt & Co. GmbH, Germany

**Classification of manganese-doped zinc sulfide nanoparticles by size,** Y. Mori*, Y. Arao, H. Ishizuka, Doshisha University, Japan

### M19 Membrane Modules Modelling (CFD) 16:45 - 18:00

**Computational fluid flow of porous SiC ceramic filtering modules and optimization of the channel edge form geometry,** S. Alexopoulos*, G. Breitbach, B. Hoffschmidt, Aachen University, Germany; P. Stobbe, Stobbe Tech Ceramics A/S, Denmark

**CFD studies for flow and concentration profiles in feed channels of spiral-wound membrane modules,** M. Shakaib*, S.M.F. Hasani, M. Mahmood, University of Karachi, Pakistan

**Modelling the two phase flow in a pilot submerged Membrane bioreactor,** E. Nguyen Cong Duc*, B. Lesjean, Berlin Center of Competence for Water; Germany; C. Levrecq, Anjou Recherche, France

### M20 Submerged Membranes 16:45 - 18:00

**The effect of the kind of the sludge solids containing in the excess activated sludge on the filtration characteristics of hollow fiber microfiltration,** K. Kawasaki*, A. Matsuda, H. Tanimoto, R. Nagasaki, Ehime University; D. Omori, Daiki Axis Co., Japan

**Membrane separation processes assisted by in situ streaming potentials measurement in low pressure MF/UF immersed membranes,** M. Pontié*, Angers University, France

**Treatment of wastewater using microfiltration submerged membranes,** S. Bou-Hamad*, A. Al-Safar, A. Al-Sariafi, Kuwait Institute for Scientific Research, Kuwait

### G17 Filter Media Fabrication 16:45 - 18:00

**New hot melt technology to bond and separate filter media,** M. Puffe*, Nordson Deutschland GmbH, Germany

**Nanofibers by centrifuge spinning to improve filter media,** M. Dauner*, A. Ullrich, ITV Denkendorf; F. Reiter, Reiter Oberflächentechnik GmbH, Germany

**Nanostructured porous metal membrane filter,** S.-J. Park*, D.G. Lee, KIER, Korea

### G18 Combined Processes 16:45 - 18:00

**Adsorptive removal of nitrogen oxides in cabin air filters,** U. Sager*, A. Görgülü, F. Schmidt, University Duisburg-Essen, Germany

**The removal of ozone and nitrogen oxides by HVAC filters,** A. Ginestet*, D. Pugnet, CETIAT, France

**Experimental investigation of diesel exhaust particles loading on high performance mechanical air filters,** W. Poon*, E. Fischer, W. L. Gore & Associates, Inc., USA

## Friday – April 18, 2008

### L32 Precoat Filtration-Body Feed Filtration-Filter Aids 08:30 - 09:45

**Concept and practical results with new filter system for kieselguhr-free filtration of beer,** A. Zeller*, KHS AG, Germany

**Framework for selecting thin-cake candle filter technology for removing solid contaminant fines from recirculating acid gas scrubbing fluid streams,** B.A. Perlmutter*, G.E. Schlager, BHS-Filtration Inc., USA

**Rice hull ash for water and drinking water treatment,** W. Li*, C. Berthold, C. Kiser, Q. Richard, Agrilectric Research Company, USA

### L33 Hydrocyclones 08:30 - 09:45

**Modelling of liquid-liquid separation in hydrocyclones - coupled solution of population balances with flow field simulation,** G. Gorbach*, S. Schütz, M. Piesche, Stuttgart University, Germany

**Using pressure profiles to study the effects of air-core formation in a hydrocyclone,** M.J. Doby*, DuPont, USA; A.F. Nowakowski, University of Sheffield; T. Dyakowski, University of Manchchester, Great Britain

**Separation of Fischer-Tropsch wax from catalyst using hydrocyclones,** P. Zhou*, H.-L. Wang, Z.-S. Bai, Y.-H. Zhang, Q. Yang, J. Ma, East China University, P.R. China

### M21 New Separation Concepts 08:30 - 09:45

**Pulsed flow microfiltration with a spiral wound membrane,** R.G. Holdich*, S.R. Kosvintsev, S. Zhdanov, Loughborough University, Great Britain

**$Al_2O_3$ microporous membranes prepared on wet substrate by plasma spray coating technology,** C.-C. Hsiung*, K.-L. Tung, C.-J. Chuang, T.-C. Ling; Chung Yuan University, Taiwan

**Development of a novel high performance continuous cake-less filtration system,** T. Mori*, T. Katsuoka, B. Ochirkhuyag, J. Tsubaki, Nagoya University; T. Sugimoto, Chuo Kakohki Co. Ltd., Japan

### M22 Micro Sieves 08:30 - 09:45

**Application of stainless steel micro sieves produced by "on-the-fly" fibre laser perforation exemplified by fermentation sludge treatment,** M. Baumeister*, K. Dickmann, Laser Center Münster LFM; D. Richter, pro-net , Germany

**Microsieves – Low filter area, high performance,** A. Damm*, Bayer Technology Services GmbH, Germany: B. Brocades, Fluxxion B.V., Belgium

**Micro filtration with silicon nitride micro sieves and high frequency back pulsing,** C.N. Koh*, T. Wintgens, T. Melin, Aachen University, Germany; F. Pronk, B. Brocades, Fluxxion B.V., Belgium

### M23 Membrane Bio Reactor I 08:30 - 09:45

**Containerized MBR plants for wastewater treatment,** S. Richter*, U. Brüß, A3 Water Solutions GmbH, Germany

**Ceramic membrane bio reactor for industrial waste water treatment a case study,** J. Guibaud*, S. Paranthoen, A. Balaire, Pall Corp, France

**AirLift MBR: large-scale side-stream system for municipal waste water treatment,** H. Futselaar*, L. Broens, Norit Process Technology B.V.; R. Rosberg, Norit X-Flow B.V.; J. Jacobs, Norit Membrane Technology B.V., Netherlands

### G19 Filter Classification and Standardisation 08:30 - 09:45

**Developments in the standardization of methods of measuring the performance of air filters,** P. Tronville*, Torino University, Italy; J. DymentJ, Great Britain

**Which filter class is requested in a typical HVAC system?,** T. Carlsson*, Scandfilter AB, Sweden

**Energy-efficiency-classification of air filters,** M. Mayer*, T. Caesar, J. Klaus, Freudenberg Vliesstoffe KG, Germany

### G20 Simulation of Diesel Particulate Filters 08:30 - 09:45

**Simulation of ceramic DPF media, soot deposition and pressure drop evolution,** S. Rief*, K. Schmidt, A. Wiegmann*, Fraunhofer Institute for Industrial Mathematics ITWM, Germany

**Numerical investigations of diesel particulate filter systems with 2D and 3D simulation models,** T. Deuschle*, M. Piesche, Stuttgart University, Germany

**Computational fluid dynamics simulation of soot filtration in wall-flow diesel particulate traps for automotive applications,** S. Bensaid*, D. Marchisio, D. Fino, G. Saracco, V. Specchia, Torino University, Italy

**L34 Water Separation from Biodiesel by Filtration and Coalescence 10:15 - 11:30**

**Effects of biodiesel fuels of water separation performance in diesel fuel,** G.B. Bessee*, Southwest Research Institute, USA

**Effects of diesel fuel additives on water separation performance,** G.B. Bessee*, Southwest Research Institute, USA

**Factors of influence in water separation from biodiesel-ultra low sulfur diesel blends,** C. M. Stanfel*, Ahlstrom Engine Filtrtation LLC, USA

**L35 Gravity Sedimentation/ Flotation 10:15 - 11:30**

**BayFlotech – Make things clearer,** D. Ulrich*, Bayer Technology Services GmbH, Germany

**Evaluation of degree of extraction under various operating parameters in an inclined-plate extractor/separator aided with hydrodynamic study using flow visualization technique,** S.S. Daood*, S. Munir, Z.H. Rizvi, M.A. Butt, University of the Punjab, Pakistan

**Fine particles separation in recovered paper suspensions,** G. Hirsch*; J. Wagner; S. Schabel, Darmstadt University; M. Feist, Karlsruhe University, Germany

**M24 Special Membrane Applications 10:15 - 11:30**

**Nanofiltration as a sustainable water defluoridation operation dedicated to large scale pilot plants for the future,** M. Pontié*, H. Dach, Angers University, France

**Properties of downward and upward ultrafiltration of nanoparticle suspensions,** Y. Mukai*, S. Shida, E. Iritani, Nagoya University, Japan

**Experimental study on the desalination of polymer-flooding oil-extraction wastewater with UF-EDR combined system,** S.-L. Yu*, J. Xu, X. Zuo, D. Wang, J. Liu, H. Lu, Harbin Institute Technology, P.R. China

**M25 Product Processing 10:15 - 11:30**

**Influence of membrane polymer on adsorptive fouling in microfiltration of wine,** O. Schuster*, W. Ansorge, B. von Harten, Membrana GmbH; M. Ulbricht, University Duisburg-Essen, Germany

**Application of binary packing for starch separation by hydrodynamic chromatography,** M. Mota*, J.A. Teixeira, A. Yelshin, University of Minho; R. Diash, University of Bragança, Portugal

**Improved virus retention assurance using novel high productivity parvovirus retentive filters,** M. Krishnan*, Millipore Corp., USA; G. Kern, Millipore SAS, France

**M26 Membrane Bio Reactor II 10:15 - 11:30**

**Development and operation of a submerged flat sheet membrane system for wastewater treatment in MBR,** W. Lamparter*, S. Krause, U. Meyer-Blumenroth, R. Voigt, Microdyn-Nadir GmbH, Germany

**Mechanism of enhanced biological nitrogen and phosphorus removal in ICAS-MBR System,** Y. Wang*, S.-L. Yu, F. Zhao, D. Wang, Harbin Institute of Technology, P.R. China

**Effect of cyclophosphamide and its main metabolites on the performance of a membrane bioreactor,** C. Albasi*, L.F. Delgado, V. Faucet-Marquis, A. Leszkowicz, University of Toulouse; M. Audran, Lapeyronie Hospital, M. Castegnaro, CDS, France

**G21 Filter Element Production 10:15 - 11:30**

**Spunlaced filtermedia – A proven technology that offers superior performance,** V. Lorentz*, Norafin GmbH, Switzerland

**Low pressure plasma coatings allows to produce in an economical, environmental friendly way,** M. Pauwels*, Europlasma N.V., Belgium

**High efficient cleanable depth filter media for process gas filtration and a inno-vative all-purpose compact filter apparatus,** E. Schmalz*, STFI e.V., Germany

**G22 Simulation of Particle Separation 10:15 - 11:30**

**Flow phenomena in mechanical separation technology,** C. Seyfert*, N. Sautter, S. Schütz, M. Piesche, Stuttgart University, Germany

**New advancements of the CFD numerical flow simulation of particulate flow and separation,** M. Lotfey*, ANSYS Fluent Deutschland GmbH, Germany

**The design of electrostatic precipitators by use of physical models,** P. Tronville*, Torino University; I. Gallimberti, G. Bacchiega, IRS; R. Sala, Matec; Italy

**Closing Session 11:45**

Announcement of the Host of the next WFC.



# Travel Information

## AIR FARE DISCOUNTS

WFC10 participants can get up to 20% discount with the Star Alliance network. The Star Alliance™ member airlines are pleased to be appointed as the Official Airline Network for WFC10. Simply call the reservation office of any participating Star Alliance member airline and quote the EVENT CODE LH008S8.
**www.wfc10.com/staralliance**

## FREE PUBLIC TRANSPORT FOR WFC10 DELEGATES - The "MDV/LVB-Congress Ticket"

entitles you to free rail travel between Leipzig/Halle Airport Railway Station and Leipzig Central Station and return with the "Airport Express" plus unlimited free travel on the Leipzig public transport bus and regional train services from April 14-18, 2008.

## VENUE: CONGRESS CENTER LEIPZIG

The "Congress Center Leipzig" is situated on the "Messe Leipzig" Fair Ground in the North of the City, a 20 minute tram ride from Central Station.

**Congress Center Leipzig**
**Messe Allee 1**
**04356 Leipzig – Germany**
**www.ccl-leipzig.de**

## HOTEL RESERVATION

In Leipzig various hotels of all price levels are available.
Hotel reservations can be made via the Tourist Office Leipzig.

Hotel reservation forms are available at
**www.wfc10.com/hotels as pdf-files.**

For detailed Tourist information also visit **www.Leipzig.de**

STAR ALLIANCE
AIR CANADA
AIR NEW ZEALAND
ANA
ASIANA AIRLINES
Austrian
bmi
LOT POLISH AIRLINES
Lufthansa
Scandinavian Airlines
SINGAPORE AIRLINES
SOUTH AFRICAN AIRWAYS
Spanair
swiss
TAP PORTUGAL
THAI
UNITED
US AIRWAYS

# Short Courses - April 14, 2008

6 Short Courses presented by leading experts are planned for the first day. The Short Course registration includes:

- Short Course Notes
- Refreshments during breaks
- Entrance to the WFC10 Exhibition
- Leipzig Public Transport Ticket
- Lunch
- WFC10 Exhibition Catalogue

## Short Course I - Particle Systems Characterization

**Course Presenter**

**Prof. Dr.-Ing. Ulrich Riebel** holds the chair of Particle Technology at Brandenburg Technical University in Cottbus since 1994. Main areas of interest include on-line and in-situ particle measurement at high concentration, aerosol measurement and gas cleaning with numerous publications and patents.

**SCOPE:**

- Size, shape and physical properties of single particles
- Particle size distributions
- Sedimentation, inertial motion, diffusion and electrical mobility
- Other physical properties used in characterization
- Structure and permeability of filter cakes
- Flocculation and dispersion of particles
- Selected measurement methods for size, shape and zeta potential
- Selection criteria for measurement methods
- Discussion of applications

## Short Course II - Dust Separation

**Course Presenter**

**Prof. Dr.-Ing. habil. Eberhard Schmidt** is Professor of Safety Technology/ Environmental Protection at Wuppertal University. His academic degrees he earned 1991 and 1998 at Karlsruhe University. From 1993 to 1994 he was affiliated with the Joint Research Centre in Ispra/Italy. In the years 1998 and 1999 he was with Degussa company in the department of process engineering/particle technology. He is Co-Chairman of the FILTECH Conference and Scientific Secretary of 10th World Filtration Congress and has published more than 100 technical papers, books, patents etc. and consulted and lectured throughout the world.

**SCOPE:**

- Evaluation of dust collection equipment
- Centrifugal collectors / cyclones
- Fibrous filters / deep bed filters
- Fabric filters / surface filters
- Wet scrubbers
- Electrical precipitators
- Selection of dust collection equipment
- Raw gas conditioning

## Short Course III - Multiphase-Flow-Simulation

**Course Presenters**

**Prof. Dr.-Ing. Martin Böhle,** Bergische University of Wuppertal

**Privatdozent Dr.-Ing. habil. Steffen Schütz** is senior scientist at the Institute of Mechanical Process Engineering at the University of Stuttgart.

**Prof. Dr.-Ing. habil. Uwe Janoske** is head of the study program Virtual Engineering at the University of Cooperative Education and the Steinbeis Transfer Centre Simulation in Mechanical and Process Engineering.

**SCOPE:**

- Fundamentals of computational fluid dynamics
- Euler/Euler
- Euler/Lagrange
- VOF
- Population balance
- Lattice Boltzmann
- Smooth particle hydrodynamics

## Short Course IV - Continuous Vacuum and Pressure Filters for Solid-Liquid-Separation

**Course Presenters**

**Dr.-Ing. Harald Anlauf** is senior scientist in the Institute of Mechanical Process Engineering at Karlsruhe Technical University. He is the past Chairman of the VDI-GVC-Working Party "Mechanical Liquid Separation", Chairman of FILTECH Conference and present Chairman of INDEFI and WFC10.

**Dr.-Ing. Reinhard Bott** is founder and managing director of BOKELA GmbH, Karlsruhe. BOKELA is a leading and worldwide active company for mechanical process engineering and among others supplier of modern continuous vacuum and pressure filters.

**SCOPE:**

- Technical overview
- Fundamentals of cake filtration, washing and dewatering
- Apparatus design and operation
- Filter media – slurry pretreatment
- Apparatus selection criteria
- Cost analysis

## Short Course V- Centrifuges for Solid-Liquid-, Liquid-Liquid- and 3-Phase-Separation

**Course Presenters**

**Prof. Dipl.-Ing. Michael H. Kopf** lectures Down-Stream Processing at Mannheim University and is process specialist of PIERALISI Deutschland GmbH, Eibelstadt and as well for the Application Centre Biofuels of PIERALISI Group, Italy. He is member of the VDI-GVC-Working Party "Mechanical Liquid Separation"

**Dipl.-Ing. (FH) Bruno Hegnauer** is process specialist for filtration centrifuges and Head of the Innovation Management of the KMPT Group, Germany. He is member of the VDI-GVC-Working Party "Mechanical Liquid Separation".

**SCOPE:**

- Overview on centrifugal equipment used in industry
- Fundamentals of sedimentation in centrifuges
- Cake filtration in centrifuges
- Cake washing and dewatering
- Apparatus design and operation
- Apparatus selection criteria
- Process-applications

## Short Course VI - Cross-Flow-Micro- and Ultra-Filtration

**Course Presenter**

**Prof. Dr.-Ing. Siegfried Ripperger** has the chair of Mechanical Process Engineering at the Technical University Kaiserslautern. He was head of development for technical membranes in the chemical industry and is since more than 15 years Professor. He is chairman of the ProcessNet-Working Party "Mechanical Liquid Separation", Member of the Working Party "Membrane Technology" of the DECHEMA and editor in chief of the journal "Filtrieren und Separieren".

**SCOPE:**

- Overview of the market and the applications
- Used membranes and their characterisation
- Plant design and operation modes
- Membrane module designs
- Flux influencing parameters
- Basic approaches for modelling the separation an permeation process
- Further methods for increasing flux values (e.g. periodical back pulsing)
- Life cycle cost estimations
- Process-applications

| Short Course | Booking number | Early Bird | Regular |
|---|---|---|---|
| April 14, 2008 | | until Dec. 31. | after Dec. 31. |
| Short Course I | S-1 | 450 Euro | 490 Euro |
| Short Course II | S-2 | 450 Euro | 490 Euro |
| Short Course III | S-3 | 450 Euro | 490 Euro |

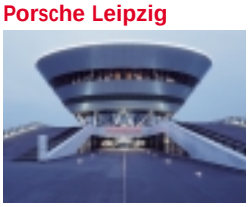
| Short Course | Booking number | Early Bird | Regular |
|---|---|---|---|
| April 14, 2008 | | until Dec. 31. | after Dec. 31. |
| Short Course IV | S-4 | 450 Euro | 490 Euro |
| Short Course V | S-5 | 450 Euro | 490 Euro |
| Short Course VI | S-6 | 450 Euro | 490 Euro |

Fees already include 19% German VAT.

# Post-Congress Plant Tours - April 18, 2008

Interesting technical plant tours will give attendees a unique first-hand experience not only of diverse filtration and separation technologies including advanced equipment, but also of spectacular and ultramodern industrial production sites. The tours are planned after the WFC10 Closing Ceremony on April 18, 2008. The guided tours (in English) are scheduled between 2:30 pm and 4.30 pm. Depending on the distance to the plant tour busses start between 1:30 and 2:15 pm at the Congress Center and will be back at the Congress Center between 4:30 and 5:00 pm. The maximum number of participants is limited. An early reservation is recommended.

## Porsche Leipzig — Production of the "Cayenne"



The Leipzig assembly plant incorporates the latest advances in car manufacturing as it aims to meet customer needs and expectations. Modern, modular manufacturing allows flexible, demand-orientated vehicle production. In close collaboration with well-established service providers, the production process can be dynamically adapted at any time to meet current requirements. Moreover, modular production improves quality as well as reducing costs.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 18, 2008 | 2 hours | 2:00 pm | 24 Euro |

- Departure from Congress Center Leipzig: 2:00 pm
- Guided Tour at Porsche Plant: 2:30 - 4:30 pm
- Arrival at Congress Center Leipzig: 4:50 pm

Note: Price includes bus travel, snack & guided tour in English
**Booking number A**

## BMW Leipzig

The BMW car plant represents a new concept in car production. The new production campus combines the construction process of the automobile with the everyday activities which surround the production plant employing more than 5.000 employees. The central building forms the communications hub and meeting place of the plant; it is from here that all other areas of the car plant can be seen or experienced. Semi-finished body shells are transported through the central building from each of the three respective core areas on specially constructed conveyors.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 18, 2008 | 2 hours | 2:15 pm | 16 Euro |

- Departure from Congress Center Leipzig: 2:15 pm
- Guided Tour at BMW Plant: 2:30 - 4:30 pm
- Arrival at Congress Center Leipzig: 4:45 pm

Note: Price includes bus travel & guided tour in English
**Booking number B**

## Vattenfall Europe Generation – Power Plant Lippendorf

Worlds largest brown coal plant.
The Lippendorf base-load power plant is located in the Free State of Saxony, about 15 kilometres south of Leipzig, the City of fairs. As early as in 1969 and 1971, power plant facilities for generating electricity from lignite were built in Thierbach nearby. As retrofitting with up-to-date environmental technology was not possible due to technical and economic reasons, two newly built units were started up in Lippendorf. With a net efficiency of approx. 43 percent, Lippendorf power station is presently one of the most up-to-date plants generating power from lignite worldwide.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 18, 2008 | 2.25 hours | 1:45 pm | 16 Euro |

- Departure from Congress Center Leipzig: 2:15 pm
- Guided Tour at Vattenfall Plant: 2:30 - 4:00 pm
- Arrival at Congress Center Leipzig: 4:50 pm

Note: Price includes bus travel & guided tour in English
**Booking number C**

## Stora Enso Sachsen GmbH in Eilenburg

The mill in Eilenburg is one of the most up-to-date newsprint paper mills in the world. Recycled newsprint and de-inked market pulp have been produced here since September 1994. Recovered paper is our most important raw material. It is delivered in bales or inbulk and afterwards processed in a modern flotation de-inking plant. In this process the printing inks and other impurities are removed from the recovered paper pulp. The result is a standard or improved quality newsprint paper ranging from 40 to 52 g/m2, produced on a 10-metre wide twin-wire paper machine.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 18, 2008 | 1.5 hours | 1:30 pm | 16 Euro |

- Departure from Congress Center Leipzig: 1:30 pm
- Guided Tour at Stora Enso Plant: 2:30 - 4:00 pm
- Arrival at Congress Center Leipzig: 4:50 pm

Note: Price includes bus travel & guided tour in English
**Booking number D**

## InfraLeuna – Owner and Operator of Leuna Site

InfraLeuna GmbH is the owner and operator of the infrastructure facilities which are situated at the chemical site Leuna – the foremost industrial venue in Central Germany. More than 20 international companies and numerous of small businesses operate from here. During this tour you learn about the history and development and the future of the chemical site Leuna. The tour includes a bus tour through the site.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 18, 2008 | 1.5 hours | 1:45 pm | 16 Euro |

- Departure from Congress Center Leipzig: 1:45 pm
- Guided Tour at Leuna Site: 2:30 - 4:00 pm
- Arrival at Congress Center Leipzig: 4:50 pm

Note: Price includes bus travel & guided tour in English
**Booking number E**

## Dow Chemicals – Site Böhlen

Dow is a diversified global chemical company that harnesses the power of innovation, science and technology to constantly improve what is essential to human progress. The Company offers a broad range of products and services to customers in more than 175 countries, helping them to provide everything from fresh water, food and pharmaceuticals to paints, packaging and personal care products. About 2,300 employees ensure the smooth operation of all facilities in Central Germany. Leading-edge technologies are the basis for highest safety standards and improved environmental protection. Within the region of Halle/Leipzig, Dow is one of the largest employers and also the largest plastics and synthetic rubber producer in the Eastern part of Germany.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 18, 2008 | 1.5 hours | 1:45 am | 16 Euro |

- Departure from Congress Center Leipzig: 1:45 pm
- Guided Tour at Leuna Site: 2:30 - 4:00 pm
- Arrival at Congress Center Leipzig: 4:50 pm

Note: Price includes bus travel & guided tour in English
**Booking number F**

## Coach tour: Leipzig live — Sunday, April 13, 2008

A guided tour by coach is just a thing for those seeking an overall impression of the city.
In the suburb of Gohlis in the Northern part of Leipzig there are two outstanding sights attracting the visitor's attention: Gohliser Schlösschen, an architectural jewel built as a burgeois summer residence in the 18th century and Schiller House. The tour continues through Waldstrassenviertel and the Central Stadium, host some of the 2006 FIFA World Cup matches. The suburb of Plagwitz used to be an industrial district within Leipzig in the 19th century. In the south-east section of the city we make a stop at the Battle of Leipzig Monument and at the Russian church. These memorials were consecrated in 1913 commemorating the fallen at the "Battle of the Nations in 1813". The monument is 91 metres high - Germany's largest memorial building.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 13, 2008 | 2 hours | 3:00 pm | 19 Euro |

Note: Departure from City Centre. Price includes bus travel & guided tour in English - reservation required. **Booking number 1**

## Walking tour: Leipzig live — Sunday, April 13, 2008

The city´s colorful past and lively present can be glimpsed everywhere. Take a stroll through the city centre –there´s plenty to explore! Visit the Marketplace with the Old City Hall, Barthels Hof, the Coffe Baum restaurant and coffee museum, St Thomas's Church, the Mädler Passage containing the legendary restaurant Auerbachs Keller tavern, Specks Hof arcade and St Nicholas's Church. Each place will help to discover more about the diverse traditions, personalities and history of Leipzig.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 13, 2008 | 2 hours | 10:00 am | 8,50 Euro |
| April 14, 2008 | 2 hours | 3:00 pm | 8,50 Euro |

Note: Departure from City Centre. Price includes guided tour in English - reservation required. **Booking number 2**

## Coach tour: Leipzig live — Monday, April 14, 2008

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 14, 2008 | 2 hours | 3:00 pm | 8,50 Euro |

Note: Departure from City Centre. Price includes bus travel & guided tour in English - reservation required. **Booking number 3**

## Day Trip: Meissen — Monday, April 14, 2008

Long before reaching Meissen, visitors are welcomed by the tall towers of Meissen Cathedral and Albrechtsburg Castle on the hill overlooking the town. Containing one of the most famous tombs of the Wettin dynasty, the cathedral is considered the quintessence of pure Gothic, while Albrechtsburg Castle is the most important secular building of the late Gothic era in Germany. The State Porcelain Manufactory is the cradle of European porcelain production, whose beginnings go back to alchemist Johann Friedrich Böttger, the inventor of 'white gold'. After visiting the manufactory you can stroll along the dreamy lanes of the old town and sample Meissen's excellent wine.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 14, 2008 | 8 hours | 9:30 am | 79 Euro |

Note: Departure from Leipzig City Centre. Price incl.
- bus travel & guided tour in English & German
- Walking tour with visit to Albrechtsburg Castle or the cathedral
- Visit to the State Porcelain Manufactory
- Lunch (main course without drinks)

– reservation required **Booking number 4**

## Day Trip: Wittenberg — Tuesday, April 15, 2008

Almost everything in Wittenberg reminds us of Martin Luther – such as the Castle Church with the famous door which he nailed his 95 Theses and housing the tombs of Luther and Melanchthon, the town church with the Cranach altar, Luther Hall, Melanchthon´s house, and the residential palace of the elector. In short, two decades was all it took to lay the foundations of Wittenberg´s fame. Wittenberg´s great era began with Martin Luther´s Theses in 1517 and finished with his interment in the Castle Church in 1546. Shakespeare gave the town a place in world literature by having Hamlet study there. Visit the town known as the „Mother of the Reformation", and set off on the trail of the movement which was born here and changed the world.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 15, 2008 | 8 hours | 9:30 am | 84 Euro |

Note: Departure from Leipzig City Centre. Price includes
- bus travel & guided tour in English & German
- Walking tour with visit to the Castle and the Town Church
- Visit of the Luther Hall
- Lunch (main course without drinks)

– reservation required **Booking number 5**

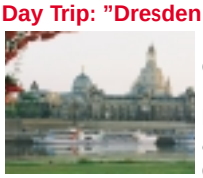
## Walking Tour: Leipzig – City of Music — Wednesday, April 16, 2008

Ever since Bach´s arrival in Leipzig in 1723 the city has been known as a city of music. But a lot of other musician also left traces: Clara Wieck was born here, married Robert Schumann, and spent the first years of their marriage in Inselstrasse. Felix Mendelssohn-Bartholdy was conductor of the Gewandhaus Orchestra for 12 years before he died at 38 in 1847. Richard Wagner was born right in the city center. Their heritage is still very much alive in Leipzig.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 16, 2008 | 2 hours | 10:00 am | 8,50 Euro |

Note: Departure from Leipzig City Centre. Price includes guided tour in English **Booking number 6**

## Day Trip: "Dresden – Saxonys Capital" — Thursday, April 17, 2008



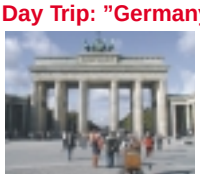
Under the influence of Augustus the Strong, Dresden evolved into a work of art comprising splendid Baroque architecture on the River Elbe surrounded by beautiful countryside. In the 19th century, Romantic art and music flourished here, and nowadays as the capital of Saxony, the city is still a cultural centre – but also one of Europe's modern high-tech locations. The day trip includes a visit to Zwinger Palace, Taschenberg Palace and the Catholic Court Church, as well as a stroll on Brühl Terrace, affording a marvellous view of the Elbe.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 17, 2008 | 8 hours | 9:30 am | 79 Euro |

Note: Departure from Leipzig City Centre. Price includes
- bus travel & guided tour in English & German
- Coach tour of Dresden
- Walking tour of the old town
- Lunch (3-course meal, excl. drinks)

– reservation required **Booking number 7**

## Day Trip: "Germany's new Capital" — Saturday, April 19, 2008



Berlin at the dawn of the new millenium is a young, pulsating, attractive, unique metropolis – yet also a cultural capital with a long history. The highlights of the tour include a stroll across Alexanderplatz with TV tower, a drive along the lively boulevard Unter den Linden including Berlin Cathedral and the Island of Museums to the Brandenburg Gate, and a visit to the Reichstag, the German parliament. Experience the sparkle and vitality of the German capital.

| Date | Duration | Departure | Price per Person |
|---|---|---|---|
| April 17, 2008 | 8 hours | 9:00 am | 89 Euro |

Note: Departure from Leipzig City Centre. Price incl.
- bus travel & guided tour in English & German
- Coach tour of Berlin
- Walking tour
- Lunch (3-course meal, excl. drinks)

– reservation required **Booking number 8**

All prices including 19% German VAT:

## Welcome Reception– April 15, 2008

Congress delegates, short course participants and exhibitors are invited to the WFC10 Welcome reception on Tuesday, April 15, 2008 at 6:00 pm in the Exhibition hall.

## Congress Party – April 17, 2008

The Congress Party will be held Thursday at 7:30 pm in the Moritz-Bastei a superb location in the City Center of Leipzig.

Built between 1551 and 1553 the Moritzbastei is the only remaining part of the ancient city fortifications, nestled behind the Gewandhaus Concert Hall and City Skyscraper. The Moritzbastei was commissioned by Elector Moritz of Saxony in the 16th century and later named after him. It has survived 400 tumultuous years and it was used in many different ways. In 1974 students began to work on the Moritzbastei, freeing it of the debris it was filled with. Since 1989, after the fall of the Berlin Wall, the Moritzbastei serves as a cultural centre and events location.


Each Congress delegate automatically receives one free ticket for the Party. Additional tickets for accompanying persons can be bought onsite.

Ticket price: 45 €.

Ticket includes: Free access to the party, musical entertainment, international buffet, wine, beer and softdrinks. Prices already incl. 7% VAT.

## The WFC 10 is supported by

VDI Society for Chemical and Process Engineering · DECHEMA e.V. · VDI DIN Kommission Reinhaltung der Luft im VDI und DIN Normenausschuss · GDCh · The FILTRATION Society

ČSCHI · mce · AFS · DGMT

## Regulations

**Hosted by**
VDI Society for Chemical and Process Engineering

**Congress Secretariat**
Filtech Exhibitions Germany
PO Box 12 25 – 40637 Meerbusch – Germany
phone: +49(0)21 32/93 57 60
fax: +49(0)21 32/93 57 62
e-mail: Info@wfc10.com

**Venue**
Congress Center Leipzig
Messe-Allee 1 – 04356 Leipzig – Germany

**Opening hours onsite registration office**
Monday, April 14, 2008, 8.00–18.00 h
Tuesday, April 15 – Friday, April 18, 2008, 8.00 – 18.00 h

**Payment**
Make a bank transfer in EURO funds (code: WFC10 & your name) to:

Filtech Exhibitions Germany
Deutsche Bank Düsseldorf
Bank Account: 8818866
Sort Code: 30070010
BIC/SWIFT: DEUTDEDDXXX
IBAN: DE28300700100881886600

**Pay via AMEX/VISA/MASTERCARD**
A VAT invoice will be issued with the congress/short course registration confirmation.

**Send a cheque with the registration form in EURO funds (code: WFC10 & your name)**

The Congress programme is subject to amendments. The Congress programme lists speakers, co-authors, affiliations, countries and regions.

Errors and omissions expected.

**Plant Tours**
Apply early. Places limited. Due to production reasons cancellation is possible. Delegates with a cardiac pace maker are not permitted to visit the Porsche plant.

**Cancellations**
Substitutions may be made at any time but please advise the organizer of a change of name. If you find it necessary to cancel the registration completely, please notify the organizer immediately. Provided written notice is received by February 15, 2008 a full refund will be given less a 10% administration charge. Provided written notice is given by March 14, 2008 a 50% refund will be given. It is regretted that no refunds can be given for registration cancelled after this date. The organizers responsibility is limited to the rules and regulations according to the legal regulations. The minimum number of attendees for short courses is 10.

**The Congress registration includes**
- Congress proceedings (books & CD) featuring all papers
- Refreshments during breaks
- Lunch voucher/s
- Welcome Reception on April 15, 2008, Location: Congress Center Leipzig
- Congress Party with banquet & drinks on April 17, 2008* Location: Moritz Bastei Leipzig
- Entrance to the WFC10 Exhibition
- WFC10 Exhibition Catalogue
- Leipzig Public Transport Ticket

* included in 4-Day-Tickets only

**Speakers will be automatically registered at the early bird rate.**

**The Short Course registration includes**
- Short Course Notes
- Refreshments during breaks
- Lunch
- Welcome Reception on April 15, 2008, Location: Congress Center Leipzig
- Entrance to the WFC10 Exhibition
- WFC10 Exhibition Catalogue
- Leipzig Public Transport Ticket

**All Prices inclusive 19% German VAT.**

# WFC 10 REGISTRATION FORM

VDI Society for Chemical and Process Engineering

April 14, 2008 – Short Courses · April 18 – Congress Plant Tours
**April 15-18, 2008 – World Filtration Congress/Exhibition**
**Congress Center Leipzig · Messe-Allee 1 · 04356 Leipzig · Germany**

Return to Congress Secretariat:

**Filtech Exhibitions Germany**
**PO Box 12 25**
**40637 Meerbusch – Germany**

**Fax: +49 (0)2132 93 57 62**

## CONGRESS

| | Date | Early Bird until 31.12.2007 | Normal Price from 01.01.2008 |
|---|---|---|---|
| ☐ Congress Ticket | 15.-18.4.2008 | € 735,– | € 865,– |
| ☐ Congress Ticket | 15.4.2008 | € 330,– | € 370,– |
| ☐ Congress Ticket | 16.4.2008 | € 330,– | € 370,– |
| ☐ Congress Ticket | 17.4.2008 | € 330,– | € 370,– |
| ☐ Congress Ticket | 18.4.2008 | € 330,– | € 370,– |

## SHORT COURSES 14.4.2008

| | Early Bird until 31.12.2007 | Normal Price from 01.01.2008 |
|---|---|---|
| ☐ Short Course I – Particle Systems Characterization | € 450,– | € 490,– |
| ☐ Short Course II – Dust Separation | € 450,– | € 490,– |
| ☐ Short Course III – Multiphase-Flow-Simulation | € 450,– | € 490,– |
| ☐ Short Course IV – Continuous Vacuum and Pressure Filters for Solid-Liquid-Separation | € 450,– | € 490,– |
| ☐ Short Course V - Centrifuges for Solid-Liquid-, Liquid-Liquid and 3-Phase-Separation | € 450,– | € 490,– |
| ☐ Short Course VI – Cross-Flow-Micro- and Ultra-Filtration | € 450,– | € 490,– |

### Plant Tours 18.4.2008

| All prices per person | Code | Price | Number of Attendies |
|---|---|---|---|
| ☐ Porsche Leipzig | A | € 24,– | ____ |
| ☐ BMW Leipzig | B | € 16,– | ____ |
| ☐ Vattenfall Europe Generation | C | € 16,– | ____ |
| ☐ Stora Enso Sachsen | D | € 16,– | ____ |
| ☐ InfraLeuna | E | € 16,– | ____ |
| ☐ DOW Chemicals | F | € 16,– | ____ |

### City Tours

| All prices per person | Code | Date | Price | Number of Attendies |
|---|---|---|---|---|
| ☐ Coach Tour "Leipzig by bus" | 1 | 13.04. | € 19,– | ____ |
| ☐ Walking Tour "Leipzig live" | 2 | 14.04. | € 8,50 | ____ |
| ☐ Coach Tour "Leipzig by bus" | 3 | 14.04. | € 19,– | ____ |
| ☐ Day Trip "Meissen" | 4 | 14.04. | € 79,– | ____ |
| ☐ Day Trip "Wittenberg" | 5 | 15.04. | € 84,– | ____ |
| ☐ Walking Tour "Leipzig-City of Music" | 6 | 16.04. | € 8,50 | ____ |
| ☐ Day Trip "Dresden" | 7 | 17.04. | € 79,– | ____ |
| ☐ Day Trip "Berlin" | 8 | 19.04. | € 89,– | ____ |

**All Prices inclusive 19% German VAT.**

### Participant

☐ Mr. ☐ Mrs. ☐ Prof. ☐ Dr. Name, First Name

Company/Institution

Street/PO Box

Post Code, Town, Country

Phone Fax

E-mail

### Terms of Payment

☐ **Cheque enclosed** ☐ **Bank Transfer** ☐ **Credit Card Payment** (CVC required)
☐ **AMEX** ☐ **VISA** ☐ **Mastercard**

Card Number: Cardholder verification code (CVC):

Cardholder Name: Expiry date (MM/YY):

### Accompanying Persons

In case you are accompanied by persons who wish to attend Plant or City Tours please indicate the name and Code/s of the tours they wish to attend.

booked Tour/s, Code…: Name, First Name

booked Tour/s, Code…: Name, First Name

booked Tour/s, Code…: Name, First Name

With my signature I acknowledge the rules and regulations of the WFC10 Congress.

Date: Signature: