

# Conference Program & Show Info

**FILTECH**

October 22 – 24, 2019  
Cologne – Germany

The Filtration Event  
[www.Filtech.de](http://www.Filtech.de)

**Koelnmesse · Cologne · Germany**



# FILTECH

October 22 – 24, 2019  
Cologne – Germany

The Filtration Event  
[www.Filtech.de](http://www.Filtech.de)

Join the largest  
Filtration Event  
worldwide





## The Conference

Register to benefit from  
top level knowledge and...

## ... know-how transfer

With the **FILTECH** taking place from 22.-24. October 2019 the City of Cologne in Germany will turn into the place to be for all those involved with filtration and separation and adjacent sectors. **FILTECH 2019** Conference will feature once again the latest advances and techniques in liquid/solid and gas/particle separation (dust, gas & air filtration) in 3 days of in depth exposure. Technology and know-how transfer is a main target.

### More than 200 Lectures from 35 Countries

An exciting programme gives a representative cross-section of the different procedures and appliances of separation technology as well as across the industry about the applications, from the preparation of mineral raw materials, the chemistry, environmental technology and water purification down to the pharmacy and biotechnology. The latest results from basic research, innovative equipment-based solutions and procedures will also be presented.

### The Filtration Event

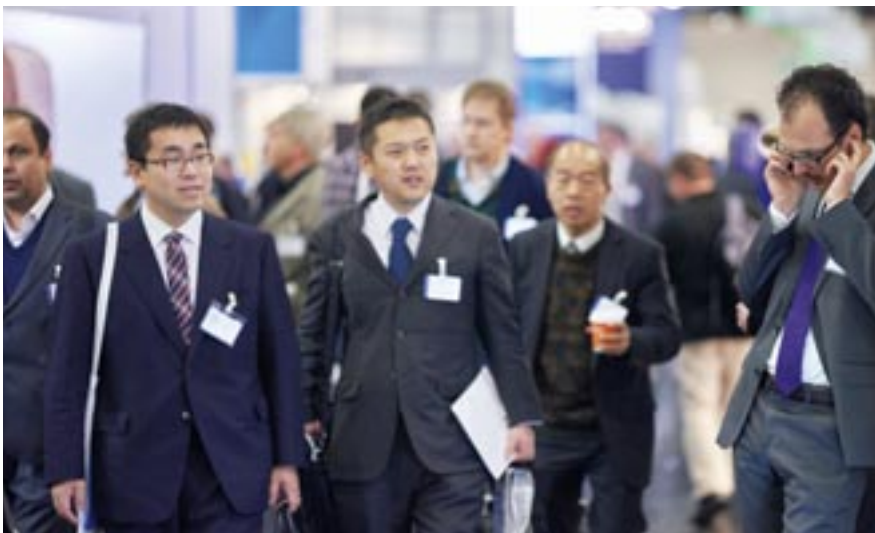
**FILTECH** is the largest and most important special interest event worldwide devoted entirely to Filtration and Separation technology in all industries. The event is a must for all those concerned with researching, purchasing, selling, designing or improving Filtration and Separation equipment and services.

400+ Exhibitors

# The International Exhibition...

## ... Platform for your success

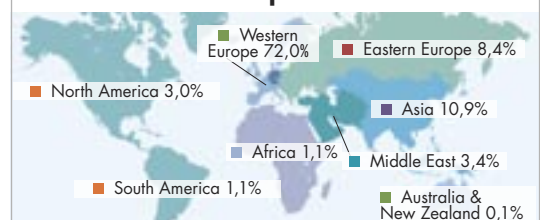
**FILTECH** is the globally acknowledged platform and solution provider for all industries covering every market segment. This exhibition is a must for all those concerned with purchasing, selling, designing or researching filtration & separation equipment and services. In 2018 more than 34,5% of all international guests came from non european countries – in total 73 nations were represented offering exhibitors a unique possibility to generate new business. At **FILTECH 2019** trade visitors will find targeted solutions for their Filtration & Separation tasks whatever market they are in.



### Visitor Profile FILTECH 2018

CEO, President, Director, Executive	34,5%
Marketing, Sales, Business Development	27,3%
Procurement, Purchase, Sourcing	14,2%
R&D, Quality, Applications	11,6%
Manufacturing, Production, Operations	8,4%
Other	4,0%

### International Participation FILTECH 2018





# Become an Exhibitor

## Your Participation includes:

**Free Print Communication Package**, incl. free entry in the exhibition catalogue incl. address, contact details, 4c company logo, company/product description and 18 keywords in the product index listing.

**Free Online Communication Package**, incl. free entry at **FILTECH** website incl. company description (german & english), 4c company logo, pictures, 18 keywords in the product index and 10 keywords in the market index.

**Free publication** of Exhibitor news/press releases at the **FILTECH** website including pictures.

**Get-Together Reception** - 22 October 2019, 6 pm

**Free Promotion Codes** to invite clients/customers

**Free Company branded Stickers**

**Free Company branded Exhibitor Badges**



# Register as a Trade Visitor

**Pre-Register until  
October 05, 2019**

## Opening Hours Exhibition

**October 22–23, 2019**

9:00 am - 6:00 pm

**October 24, 2019**

9:00 am - 5:00 pm

**Venue: Koelnmesse**

Hall 11.1, East Entrance

Deutz-Mülheimer-Str. 35

50679 Cologne

Germany

Your **FILTECH 2019** Visitor Registration includes:

Free copy of the exhibition catalogue & hall plan as well as a free public transport ticket for visitors who pre-register by October 05, 2019.

Registration Fees	Pre-Registration until 05.10.2019	Registration from 06.10.2019
1-Day Visitor Ticket	€ 20.00	€ 40.00
2-Day Visitor Ticket	€ 25.00	€ 45.00
3-Day Visitor Ticket	€ 30.00	€ 50.00

Fees already incl. 19% German VAT

**+++ Pre-register for fast track entrance to the exhibition +++**

## Plan your visit

### The tool for Trade Visitors

Make your visit easy and effective by using your **FILTECH planning tool**.

You can easily plan your visit online, check the exhibitors and their hall positions, mark them and print it out for your planning.

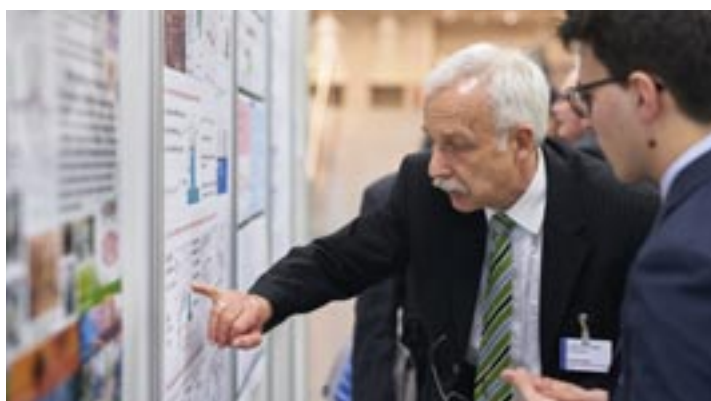
[www.Filtech.de](http://www.Filtech.de) → [exhibition/visitor-floor-plan](http://exhibition/visitor-floor-plan)



### Short Course I

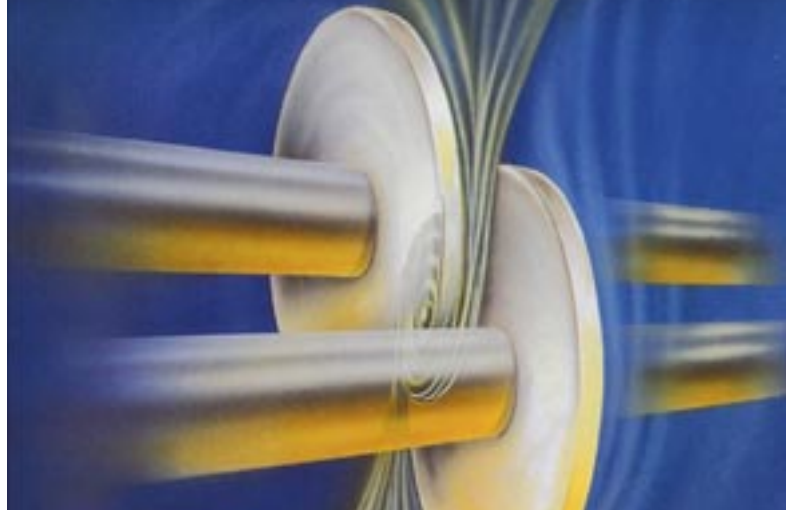
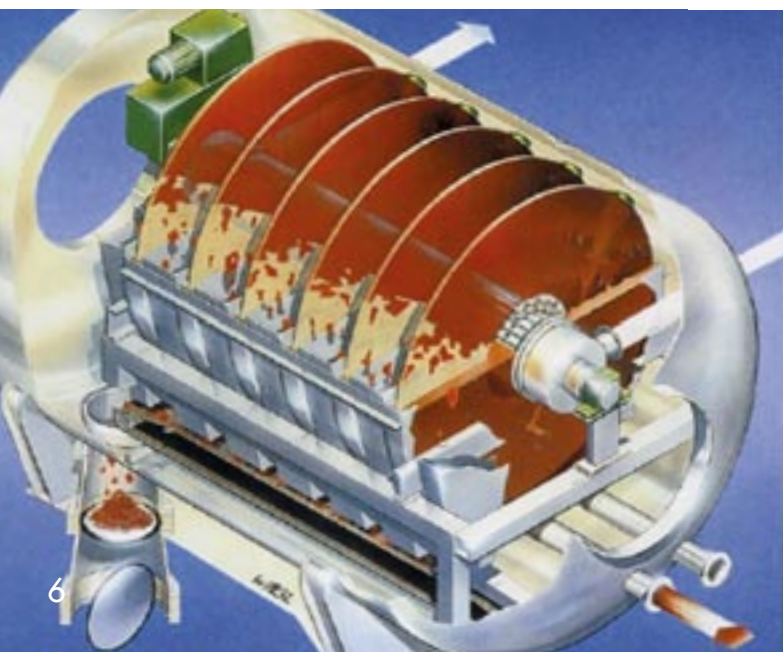
# Solid/Liquid Separation

This 1-day Course "Solid/Liquid Separation" is of interest to engineers, scientists, managers and other technical personnel involved in solid-liquid separation in the process and other industries. They will find the course informative, regardless of whether they design, purchase, research or use filtration and separation equipment. Plant engineers, technicians and operators should find the course materials directly applicable, and graduate research students will value the expert introduction to the technologies. It is a comprehensive review of the processes involved in the separation of solids from liquids, which will emphasise practical aspects and present appropriate theoretical information as necessary.



### Course Presenter

Dr.-Ing. Harald Anlauf is Academic Director at the Karlsruhe Institute of Technology (KIT), Institute of Mechanical Process Engineering and Mechanics and since 35 years active in the field of solid liquid separation technology. His academic degrees as Chemical Engineer he earned 1980 and 1985 at Karlsruhe University. 1999-2006 he was Chairman of the VDI-GVC working party „Mechanical Liquid Separation“, since 2000 Co-Chairman of the FILTECH Congress Scientific Committee. 2004-2008 he was Chairman of INDEFI and President of the 10th World Filtration Congress 2008 in Leipzig, Germany. He published 170 technical papers, books etc. and is internationally active in giving consultations and lectures.



### Topics:

- Characterisation of Particles and Particle Separation**
- Density Separation - Static Thickeners and Solid Bowl Centrifuges**
- Depth, Cross Flow and Cake Filters**
- Filter Media**
- Suspension Pretreatment to Enhance Separation Properties**
- Alternative Separation Solutions & Apparatus Combinations**
- Selection Criteria for Separation Equipment**

8.30 h Welcome Coffee

9.00 h **Introduction and Overview**

Systematic survey of separation processes, apparatus examples and separation strategies

10.00 h **Particle Characterization**

Characterization of single particles, particle collectives and particle separation.

10.45 h Coffee Break

11.00 h **Density Separation – Static Thickeners and Solid Bowl Centrifuges**

Separation mechanisms, equipment, mode of operation, application.

12.00 h **Depth and Cross Flow Filtration**

Separation mechanisms, equipment, mode of operation, application

12.45 h Lunch

13.45 h **Cake Filtration – Formation, Washing, Deliquoring**

Separation mechanisms, consequences for practical use.

14.45 h Coffee Break

15.00 h **Cake Filters**

Equipment, mode of operation, application

16.00 h **Filter Media**

Overview and fields of application, influence of media properties on separation results.

16.30 h **Suspension Pretreatment to Enhance Separation Properties**

Additional techniques for enhancing solid-liquid separation processes, physiochemical influences on slurry stability, flocculation

17.00 h **Apparatus Combinations, Alternative Solutions and Apparatus Selection Criteria**

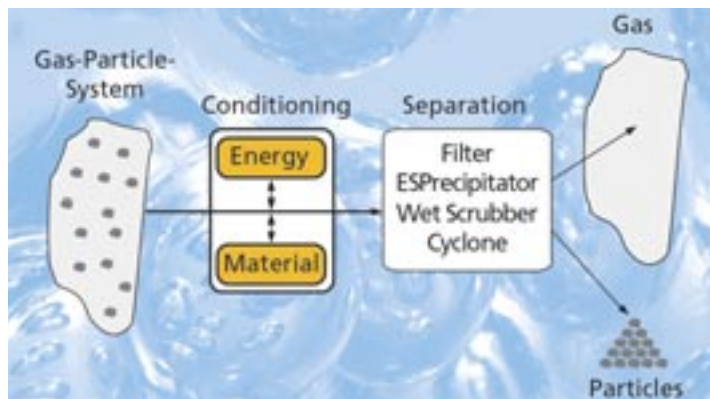
Strategies for process optimization & selection of suitable separation techniques.



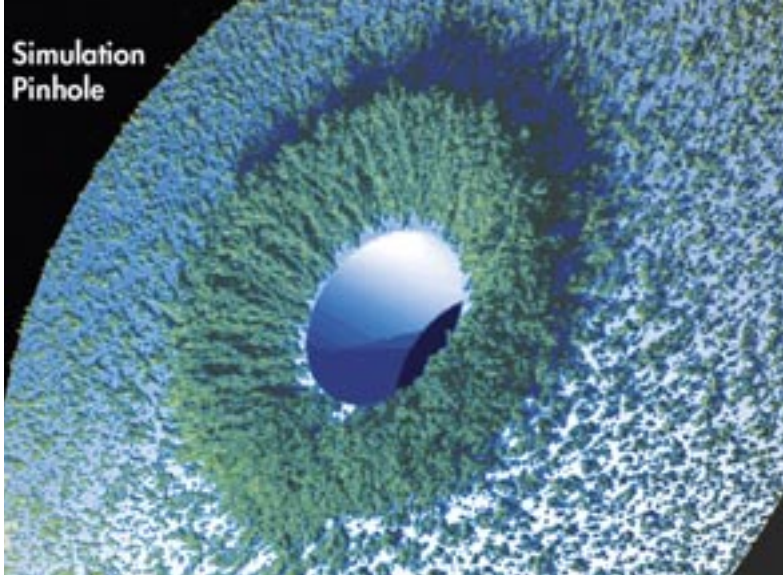
## Short Course II

# Fine Dust Separation

This 1-day "Fine Dust Separation" Short Course is of interest to engineers, technicians, scientists, managers, and other personnel involved in gas-solid separation in the process and other industries. They will find the course informative, regardless of whether they design, purchase, research, or use dust separation equipment for product recovery, emission control, air cleaning or process gas cleaning. It is a comprehensive review of the processes involved in the separation of solid or liquid particles from gases, which will emphasise practical aspects and present appropriate theoretical information as necessary.



Simulation  
Pinhole



## Topics:

**Evaluation & Selection of Dust Collection Equipment**

**Wet Scrubbers**

**Centrifugal Collectors / Cyclones**

**Electrical Precipitators**

**Fibrous Filters / Deep Bed Filters**

**Raw Gas Characterisation and Conditioning**

**Fabric Filters / Surface Filters**

8.30 h Welcome Coffee

### 9.00 h Introduction

Particulate Matter (PM<sub>x</sub>); Dust Separation; Air Cleaning; Overview of the course

### 9.15 h Evaluation of Dust Collection Equipment

Particle size characterisation, concentration measurement, overall and fractional collection efficiency

### 10.00 h Centrifugal Collectors (Cyclones)

Mode of operation, basic designs, application, collection efficiency, pressure drop

10.45 h Coffee Break

### 11.00 h Fibrous Filters (Deep-Bed Filters)

Mode of operation, basic designs, application, collection efficiency, pressure drop

### 11.45 h Fabric Filters (Surface Filters)

Mode of operation, basic designs, application, operating characteristics, design calculations

### 12.30 h Questions and answers

An open-floor question and answer session

13.00 h Lunch

### 14.00 h Wet Scrubbers

Mode of operation, basic designs, design calculations, application, droplet separation

### 14.45 h Electrical Precipitators

Mode of operation, basic designs, design calculations, application, operating characteristics

15.30 h Coffee Break

### 15.45 h Selection of Dust Collection Equipment

Comparison of the different techniques, strength and weaknesses, fields of application, selection procedure

### 16.30 h Raw Gas Conditioning

Additional techniques for enhancing dust separation equipment (Electrical and acoustic enhancement, additive dosing, precoating,...).

### 17.15 h Discussion

An open-floor question and answer session.

## Course Presenter

Prof. Dr.-Ing. habil. Eberhard Schmidt is Full Professor for Safety Engineering/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 was Scientific Secretary of 10th World Filtration Congress. He has published more than 100 technical papers, books, patents, etc. and consulted and lectured throughout the world.



# Plenary and Keynote Lectures...

## ... presented by leading experts

FILTECH 2019 Conference features over 200 technical papers, a Plenary Lecture and 4 Keynote Lectures presented by leading experts. Delegates profit from high-level knowledge transfer and learn about future trends and perspectives!



### Digitalization of Centrifuges – Helpful or senseless?

**Prof. Dr. Hermann Nirschl**

Karlsruhe Institute of Technology (KIT)  
Germany

During the last years digitalization was and is still a major topic in all companies of the process and machinery industry. Besides all business development procedures, the digitalization of processes seems to be a rather challenging task. Although in automotive or aviation industry the future of manufacturing ...



### Enhancing Filter Media Performance during Industrial Gas Filtration

**Prof. Arunangshu Mukhopadhyay**

National Institute of Technology  
India

The major challenge towards industrial gas filtration process is collection of finest particles by filter media with least energy and also achieving longest possible life of filter media. This leads to quite significant technological intervention for designing appropriate filter media as well as filtration system...



### Air Quality Control & Aerosols

**Dr.-Ing. Stefan Haep**

IUTA - Institut für Energie- und Umwelttechnik  
Germany

The control of gaseous and particulate emissions and immissions caused by industrial processes result in filter solutions typically qualified by standardized test methods. The control of non steady loads, typical for real life operating conditions, requires the redesign of filters and the development of advanced testing ...



### Dewatering of Concentrates & Tailings – Large Scale Duties in the Mining Industry

**Dr.-Ing. Götz Bickert**

GBL Process Pty Ltd.  
Australia

Thickening followed by vacuum or pressure filtration is usually applied for both, products (concentrates) and wastes (mine tailings) in huge quantities in the mining industry. While all three unit operations are long known and well understood, the scale but also the abrasiveness of the material still provides huge challenges...





## Scientific Committee Chairmen

Dr. Harald Anlauf - Karlsruhe - Germany  
 Prof. Eberhard Schmidt - Wuppertal - Germany

## Scientific Committee

Prof. Mônica Lopes Aguiar - São Carlos - Brazil  
 Dr. Harald Banzhaf - Ludwigsburg - Germany  
 Prof. Ching-Jung Chuang - Taoyuan - Taiwan  
 Prof. Kyung-Ju Choi - Seoul - Korea  
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 Dr. Hisao Makino - Yokosuka - Japan  
 Prof. Gerd Mauschitz - Vienna - Austria  
 Prof. Arunangshu Mukhopadhyay - Jalandhar - India  
 Prof. Ioannis Nicolaou - Cyprus  
 Prof. Hermann Nirschl - Karlsruhe - Germany  
 Dr. Thomas Peters - Neuss - Germany  
 Prof. Urs Peuker - Freiberg - Germany  
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 Dr. Anthony Stickland - Melbourne - Australia  
 Prof. Hans Theliander - Gothenburg - Sweden  
 Prof. Dominique Thomas - Nancy - France  
 Prof. Bhaskar N. Thorat - Mumbai - India  
 Prof. Paolo Tronville - Torino - Italy  
 Prof. Kuo-Lun Tung - Taipei - Taiwan  
 Prof. Eugène Vorobiev - Compiègne - France  
 Dr. Matthias Waldenmaier - Kaiserslautern - Germany



### Plenary Lecture Centrifugation – Key Technology for Solid/Liquid/Liquid Separation

**Dr. Harald Anlauf**

Karlsruhe Institute of Technology (KIT) / Germany

Particle/liquid separation can be focused on very different tasks like thickening, purification, fractionation, sorting, extraction or deliquoring. The separation has to be mastered for wide ranges of particle size and shape, specific solid and liquid weight, slurry concentration, chemical composition and rheology, flow rate, process and technical boundary conditions and last but not least demands on the separation results. To solve all the separation problems beside centrifuges many physically different methods and in total more than 2000 different apparatuses and machines are available at present, but always new developments can be observed...



...learn more at  
**FILTECH 2019**



# Session Overview

Monday 21.10.2019 09:00-18:00h

Short Course I · Solid/Liquid Separation

Short Course II · Fine Dust Separation

## Tuesday, 22.10.2019

08:30	Registration									
10:15	Opening Session									
10:45 12:00	<b>PL</b>	Plenary Lecture – Dr. Harald Anlauf, Academic Director – Karlsruhe Institute of Technology (KIT) / Germany Centrifugation – Key technology for solid/liquid/liquid separation								
Lunch – Fair										
13:00 14:15	<b>K1</b>	Digitalization of Centrifuges – Helpful or senseless?	<b>L1</b>	Particle and Slurry Characterization	<b>M1</b>	Membrane Design and Characterization	<b>G1</b>	Air Filtration	<b>F1</b>	Enhancement of Filter Media by Surface Treatment
Coffee Break – Fair										
14:45 16:00	<b>K2</b>	Enhancing filter media performance during industrial gas filtration	<b>L2</b>	Particle, Slurry and Cake Characterization	<b>M2</b>	Micro and Ultra Filtration	<b>G2</b>	Cabin Air Filters	<b>F2</b>	Progress in Wire Mesh Development
Coffee Break – Fair										
16:45 18:00	<b>L3</b>	Cake Filtration - Influences on the Cake Structure	<b>L4</b>	Wet Particle Fractionation	<b>F3</b>	Advanced Filter Media Developments and Manufacturing Methods	<b>G3</b>	Gas and Particle Separation	<b>G4</b>	Mist and Droplet Separation
18:00	Get Together Reception									

## Wednesday, 23.10.2019

09:00 10:15	<b>L5</b>	Cake Filtration - Characterization, Modelling, Scale-up	<b>G5</b>	Surface Filtration I	<b>M3</b>	Separation of Complex Systems	<b>F4</b>	Quality Control and Pore Size Analysis of Filter Media	<b>F5</b>	Bio-Inspired Innovation of Separation
Coffee Break – Fair										
10:45 12:00	<b>K3</b>	Air Quality Control & Aerosols	<b>L6</b>	Cake Filtration - Characterization, Modelling, Simulation	<b>M4</b>	Ceramic Membranes and Fouling	<b>G6</b>	Surface Filtration II	<b>F6</b>	Performance Improvements of Nonwovens
Lunch – Fair										
13:00 14:15	<b>K4</b>	Dewatering of concentrates & tailings in the mining industry	<b>L7</b>	Cake Filtration - Particle Washing	<b>M5</b>	Process and Waste Water Treatment	<b>G7</b>	Filter Test Systems I	<b>F7</b>	Advanced Composite Fiber Materials
Coffee Break – Fair										
14:45 16:00	<b>L8</b>	Short Oral	<b>M6</b>	Short Oral	<b>G8</b>	Short Oral	<b>G9</b>	Short Oral		
16:00 16:45	Poster Presentation		Poster Presentation		Poster Presentation		Poster Presentation			
16:45 18:00	<b>L10</b>	Centrifugal Sedimentation - Decanter Centrifuges	<b>L11</b>	Centrifugal Cake Filtration	<b>F8</b>	Micro and Nanofiltration Media	<b>G10</b>	Filter Test Systems II	<b>G11</b>	Modelling and Simulation

## Thursday, 24.10.2019

09:00 10:15	<b>L12</b>	Cake Filtration - Continuous Vacuum Filters	<b>L13</b>	Depth Filtration and Adsorption - Granular Beds	<b>F9</b>	Filter Media - Modelling, Artificial Intelligence, Machine Learning	<b>G12</b>	Measurement Techniques I	<b>G13</b>	Filter Element Design
Coffee Break – Fair										
10:45 12:00	<b>L14</b>	Cake Filtration - Enhancement of Filter Presses	<b>L15</b>	Depth Filtration and Adsorption - Modelling and Simulation	<b>F10</b>	Numerical Analysis of Filter Media Pore Size and Structure	<b>G14</b>	Measurement Techniques II	<b>G15</b>	Filter Medium Design
Lunch – Fair										
13:00 14:15	<b>L16</b>	Dewaterability of Sludges	<b>L17</b>	Backwashing Filtration	<b>L18</b>	Froth Flotation and Liquid/Gas Separation	<b>G16</b>	Particles for Filter Testing	<b>F11</b>	Numerical Methods for Filter Media Characterization & Improvement
Coffee Break – Fair										
14:45 16:00	<b>L19</b>	Liquid/Liquid Separation	<b>L20</b>	Enhancement of backwashing and cake filtration performance	<b>G17</b>	Monitoring and Control	<b>F12</b>	Advanced Filter Media for Gas Filtration		

Programme is subject to amendments. Up-to-date Programme is available at [www.Filtech.de](http://www.Filtech.de)



# FILTECH 2019 · Conference Programme

## Tuesday, October 22, 2019

08:30-10:15 Registration

10:15 - 10:45 Opening Session

### PL

Plenary Lecture

10:45 room  
12:00 1A

**Centrifugation – Key technology for solid/liquid/liquid separation**, Dr. Harald Anlauf, Karlsruhe Institute of Technology (KIT) / Germany

### K1

Keynote Lecture 1

13:00 room  
14:15 1A

**Digitalization of Centrifuges – Helpful or senseless?**, Prof. Dr. Hermann Nirschl, Karlsruhe Institute of Technology (KIT), Germany

### L1

Particle and Slurry Characterization

13:00 room  
14:15 1B

**Size characterization of plastic microparticles**, R. Ben Aïm\*, N. Petillon, IFTS - Institute of Filtration & Techniques of Separation; C. Causserand, University of de Toulouse, France

**Measuring solid/liquid separation of viscous polydisperse suspensions at gravity and in centrifugal field**, T. Sobisch\*, D. Lerche, LUM GmbH/Dr. Lerche KG, Germany

**Of- and In-line monitoring of separation processes by MRS-Technology**, S. Boldt, P. Dumeier, D. Lerche\*, LUM GmbH; K.-H. Miittenzwey, G. Sinn, Optosphere Spectroscopy GbR, Germany

### M1

Membrane Design and Characterization

13:00 room  
14:15 2

**High-pressure operation of spiral wound membrane elements: The relevant aspect of permeate channel fluid dynamics**, C. Kleffner\*, G. Braun, University of Applied Science Cologne; S. Antonyuk, Technical University Kaiserslautern, Germany

**Flexible polymeric filters with low tortuosity produced in a roll to roll process**, L.C. Sørvik\*, M.-A. Raux, G. Osborg, H. Hemmen, Condalign AS, Norway

**Investigation of polymer volume morphology using automated in-situ ultramicrotomy in SEM and 3D reconstruction**, M. Wu\*, Thermo Fisher Scientific, Netherlands

### G1

Air Filtration

13:00 room  
14:15 4A

**Back cleanable air filter elements for critical dust systems – US HEPA, IFA H and EN1822 HEPA**, M. Wilkens\*, Hengst SE, Germany

**Low pressure drop media for A+ filters**, C. Desquilles\*, P. Blanckaert, Lydall Performance Materials SAS, France; R. Bharadwaj, Lydall Performance Materials, USA

**Filtration performance of PAN fiber produced by centrifugal spinning using DMSO and DMF as solvent**, A.I. P. Salussoglia, M.L. Aguiar\*, Federal University of São Carlos; E.H. Tanabe, Federal University of Santa Maria, Brasil

### F1

Enhancement of Filter Media by Surface Treatment

13:00 room  
14:15 4B

**Advances in plasma deposition of functional nanocoatings for filtration applications**, F. Legein\*, S. Loulidi, Europlasma NV, Belgium

**Filter cloths: Bluetes anti-abrasion resin**, D. De Angelis, L.I. Balzaretti\*, M. Motta, M. Reginato, Testori S.p.A., Italy

**A novel coating process for particle binding to textile interface for improved antimicrobial performance**, P. Cronin\*, M. Osiak, Mica NanoTech Ltd, Ireland

### K2

Keynote Lecture 2

14:45 room  
16:00 1A

**Enhancing filter media performance during industrial gas filtration**, Prof. Dr. Arunangshu Mukhopadhyay, National Institute of Technology, Jalandhar, India

### L2

Particle, Slurry and Cake Characterization

14:45 room  
16:00 1B

**The effect of normal load on the shear yield stress of suspensions**, A.D. Stickland\*, E. Höfgen, The University of Melbourne, Australia

**Monitoring technique for mechanical expression using electrokinetic response caused by liquid flow through filter cake**, M. Iwata\*, K. Shimoizu, T. Iwasakia, Osaka Prefecture University, Japan; M.S. Jami, Islamic University Malaysia, Malaysia

**The influence of bimodal particle systems on filter cake structures using micro tomography**, E. Löwer\*, F. Pfaff, T. Leißner, U.A. Peuker, Technical University Bergakademie Freiberg, Germany

### M2

Micro and Ultra Filtration

14:45 room  
16:00 2

**Interaction between polysaccharide and protein on membrane fouling caused by microbial metabolite**, N. Katagiri\*, R. Matsuyama, E. Iritani, Nagoya University, Japan

**Effect of aeration on hollow fiber microfiltration characteristics of activated sludge**, K. Kawasaki\*, H. Hosokawa, A. Minakuchi, Ehime University, Japan

**Influence of oil droplet size distribution on the fouling mechanisms of UF/MF membranes during filtration of oil nano-emulsions**, H. Idrees\*, I. ElSherbiny, S. Panglisch, University Duisburg-Essen (UDE), Germany

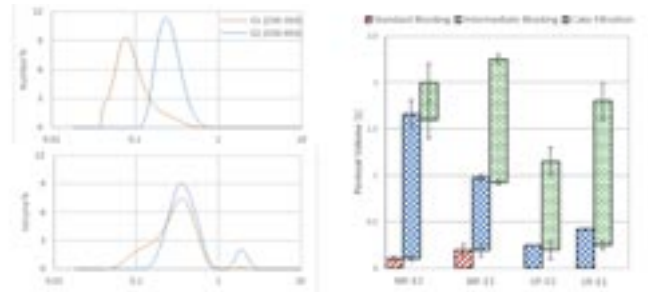


Figure 2: The droplet size distribution of E1 and E2

### G2

Cabin Air Filters

14:45 room  
16:00 4A

**Cabin air quality and energy savings in electric vehicles by using a smart filtration system**, M. Lesage\*, D. Chalet, Ecole Centrale de Nantes; L. del Fabbro, E. Le Nain, Renault SAS, J. Migaud\*, MANN+HUMMEL France; D. Ebnet, MANN+HUMMEL GmbH, Germany

**Test of cabin gas filters**, S. Holfeld\*, R. Heidenreich, Institute of Air Handling and Refrigeration (ILK), Germany

**Maximising comfort and minimising pollutant exposure in the vehicle cabin using the ventilation system**, N. Molden\*, Emissions Analytics Ltd., UK

**F2** Progress in Wire Mesh Development 14:45 room 4B  
16:00

**New developments in woven wire filtration media: 3D high performance filter cloth; Woven wire mesh combinations in solid-liquid separation**, F. Edelmeier\*, F. Meyer, Haver & Boecker OHG, Germany

**Energy reducing polymeric filtration mesh**, J. Kidwell, J. Ferrer, J. Kirk\*, SWM International, USA

**Multipore™: The state-of-the-art wire mesh**, S. Vandendijk\*, Parker Hannifin Purolator, Belgium

**L3** Cake Filtration - Influences on the Cake Structure 16:45 room 1A  
18:00

**Investigation of filter cake characteristics regarding particle shape and wettability**, M. Mohammadfoghi\*, T. Leißner, U.A. Peuker, Technical University Bergakademie Freiberg, Germany

**Understanding the role of cake structure in the filtration of needle-like crystals in the pharmaceutical industry**, G. Perini\*, C. Avendaño, T. Vetter, University of Manchester; W. Hicks, A.R. Parsons, AstraZeneca, UK

**Evaluation of process strategies to homogenize the lautering filter cake structure and enhance wort production**, M. Bandelt Riess\*, P. Först, Technical University of Munich, Germany

**L4** Wet Particle Fractionation 16:45 room 1B  
18:00

**Fractionation of ultrafine particles by size and density: evaluation of separation efficiency by UV-VIS spectrometry**, M. Winkler\*, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Automation of particle classification in a tubular centrifuge based on a dynamic short-cut process model**, T. Sinn\*, M. Gleiß, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Fractionating of finest particles using the crossflow filtration**, P. Lösch\*, K. Nikolaus, S. Antonyuk, Technical University Kaiserslautern, Germany

**F3** Advanced Filter Media Developments and Manufacturing Methods 14:45 room 2  
16:00

**High speed laser drilling of precise micro and nano holes in metallic surface filters**, T. Barthels\*, H. Westergelting, M. Reininghaus, Fraunhofer Institute for Laser Technology ILT, Germany

**Augmented filter media development by virtual prototype optimization**, T. Gose\*, A. Kilian, H. Banzhaf, F. Keller, R. Bernewitz, MANN+HUMMEL GmbH, Germany

**Exentis Group AG: Industrialized Additive Manufacturing**, S. Vasic\*, Exentis Group AG, Germany

**G3** Gas and Particle Separation 16:45 room 4A  
18:00

**Simultaneous dust and noxious gas separation in an entrained-flow adsorber on surface filters**, F. Prill\*, S. Schiller, H.-J. Schmid, University of Paderborn; M. König, I. Hartmann, DBFZ Deutsches Biomasse-forschungszentrum gGmbH, Germany

**A New PM2.5 assessment for a gas-liquid cross-flow array system as Dust Separator**, W. Wei\*, H. Yu, J. Zhu, Sichuan University, China; T. Laming, W. Höflinger, Technical University of Vienna, Austria

**Low concentration SO<sub>2</sub> purification performance of different amine-modified porous materials**, B. Xu\*, X. Yu, Tongji University, China

**G4** Mist and Droplet Separation 16:45 room 4B  
18:00

**Characterization of performance relevant media properties in oil mist filtration**, T. Penner\*, J. Meyer, A. Dittler, Karlsruhe Institute of Technology (KIT), Germany

**Reducing pressure drop of coalescence filtration media by patterned modification of wettability**, M. Wittmar\*, W. Mölter-Siemens, K. Varzandeh, C. Asbach, Institute for Energy and Environmental Technology e.V. (IUTA); L. Tsarkova, T. Bahners, B. Gerbert, DTNW - Deutsches Textilforschungszentrum Nord-West gGmbH, Germany

**New physical principle of dilution system for crankcase ventilation filter testing**, S. Schütz\*, M. Schmidt, PALAS GmbH, Germany

## Wednesday, October 23, 2019

**L5** Cake Filtration - Characterization, Modelling, Scale-up 09:00 room 1A  
10:15

**The effect of particle sedimentation on the performance of pressure filters**, I.S. Fragkopoulos, F.L. Muller, University of Leeds; N.A. Mitchel\*, Process Systems Enterprise (PSE) Ltd.; C.S. MacLeod, AstraZeneca; S. Mathew, Pfizer, UK

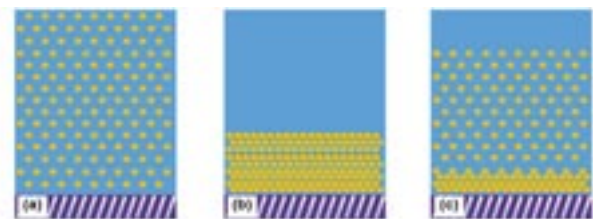


Figure 2: Schematic representation of slurry in systems with (a) no crystal sedimentation prior to filtration, (b) entire crystal sedimentation prior to filtration and (c) partial crystal sedimentation prior to filtration.

**FILOS – Module I: The novel software for the reliable analysis of filtration test data and suspension characterization including washing and deliquoring of filter cakes**, I. Nicolaou\*, NIKIFOS Ltd, Cyprus

**FILOS – Module II: The novel software for the reliable selection, performance prediction and optimization of filters for the cake forming filtration of suspensions**, I. Nicolaou\*, NIKIFOS Ltd, Cyprus

**G5** Surface Filtration I 09:00 room 1B  
10:15

**Cleanable filter media go close to zero emission**, H.-J. Imming\*, BWF Tec GmbH & Co. KG, Germany

**Investigating the cleaning efficiency of filters clogged with metallic nanoparticles**, N. Khirouni\*, D. Bemer, Institut National de Recherche et de Sécurité (INRS); A. Charvet, D. Thomas, Lorraine University, France

**New test method for bag house filters**, R. Heidenreich\*, A. Böhme, S. Herrmann, Institute of Air Handling and Refrigeration (ILK), Germany

**M3** Separation of Complex Systems 09:00 room 2  
10:15

**Technical extraction of EPS from streptococcus thermophilus by dynamic cross-flow filtration on a pilot scale**, F. Häffele\*, H. Nirschl, Karlsruhe Institute of Technology (KIT); J. Bulla, G. Surber, D. Jaros, H. Rohm, Technical University Dresden (TUD), Germany



# Discover the Future of Filtration & Separation

**Bagasse extracts fractionation by combination of membrane and chromatographic technologies**, P.-Y. Pontalier\*, V. Oriez, J. Peydecastaing, ENSIACET, France

**Sustainable production in the metal industry – Separation of valuable components from acidic effluents**, F. Rögener, Technical University Cologne, Germany; J. Lednova, Polytechnical University Peter the Great, Russia

## F4 Quality Control and Pore Size Analysis of Filter Media 09:00 10:15 room 4A

**Optical quality control of filter media: MIDA X makes hidden defects visible**, H. Oerley\*, Dr. Schenk GmbH, Germany

**Measuring the maximum pore size of a filter, choosing the most statistically robust parameter**, K.G. Brocklehurst and G.R. Rideal\*, Whitehouse Scientific Ltd, UK

**Characterisation of micron pore size filter media comparison of methods**, G.R. Rideal\*, Whitehouse Scientific Ltd, UK; A. Häkkinen, M. Ängeslävä, Lappeenranta University of Technology (LUT), Finland

## F5 Bio-Inspired Innovation of Separation 09:00 10:15 room 4B

**Bionics in application: Superhydrophobic functional textiles for the removal of oil contamination from water**, I. Noll\*, M. Akdere, T. Gries, RWTH Aachen University; M. Mail, W. Barthlott, University of Bonn, Germany

**Separation of crude oil from crude oil contaminated water using bio-waste-waste polythene composite**, K.A. Ibe\*, E.E. Elemike, B.C. Okoro, Federal University of Petroleum Resources Effurun, Nigeria

**Bio-inspired separation - Formulation of an innovation model and ideation tool to boost innovation in the sector of separation technology**, A. Bianciardi\*, Politecnico di Milano, Italy

## K3 Keynote Lecture 3 10:45 12:00 room 1A

**Air Quality Control & Aerosols**, Dr.-Ing. Stefan Haep, Institute for Energy and Environmental Technology e.V. (IUTA), Germany

## L6 Cake Filtration - Characterization, Modelling, Simulation 10:45 12:00 room 1B

**Network model of porous media - Review of old ideas with new methods**, S. Esser\*, E. Löwer, U.A. Peuker, Technical University Bergakademie Freiberg, Germany

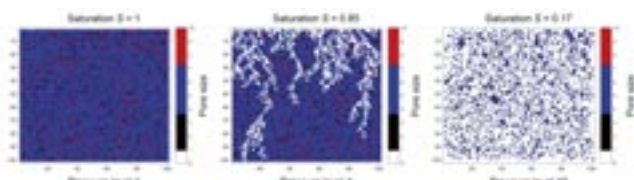


Figure 1: Dewatering equilibrium at different applied pressure levels

**Numerical and experimental investigation of filter cake formation during solid-liquid separation by resolved CFD-DEM coupling**, V. Puderbach\*, S. Antonyuk, Technical University Kaiserslautern; K. Schmidt, IT for Engineering (it4e) GmbH, Germany

**Simulation Based Analysis of the Multi-Stage Filter Cake Washing**, T. Sprott\*, A. Brueckner, B. Hoffner, University of Applied Sciences Mannheim, Germany

## M4 Ceramic Membranes and Fouling 10:45 12:00 room 2

**Ceramic membrane system for drinking water application operating with high flux**, M. Kaschek, M. Sartor\*, CERAFILTEC Germany GmbH, Germany; K.G. Gabriel, CERAFILTEC FZCO, Dubai

**Improved fouling resistance of ceramic membranes using organic/inorganic modification for water purification**, J. Lee\*, J.-H. Ha, I.-H. Song, Korea Institute of Materials Science (KIMS), Korea

**Antifouling grafting of nanofiltration membranes: new insights into membrane fouling mechanisms**, G. Mustafa\*, ICCBS University of Karachi, Pakistan; K. Wyns, A. Buekenhoudt, University of Antwerp; V. Meynen, VITO NV - Flemish Institute for Technological Research, Belgium

## G6 Surface Filtration II 10:45 12:00 room 4A

**A comparative investigation of soluble filter cakes upon contact with liquid droplets**, A. D. Schwarz\*, J. Meyer, A. Dittler, Karlsruhe Institute of Technology (KIT), Germany

**Measurement of the porosity of spherical particle deposit formed by filtration: Discussion on the Peclet number's effect**, J. Nuvoli\*, S. Bourrous, F.-X. Ouf, D. Thomas, Institut de Radioprotection et de Sûreté Nucléaire (IRSN), France

**Pressure drop evolution during dust loading of hollow-fiber membranes**, P.I. Bulejko\*, O.J. Křištof, T. Sverák, Brno University of Technology; J. Ondráček, Academy of Sciences of the Czech Republic; M. Dohnal, Zena Membranes s.r.o., Czech Republic

## F6 Performance Improvements of Nonwovens 10:45 12:00 room 4B

**New Development in Bag Filtration**, C. Rodewald\*, PALL GmbH, Germany

**Combinatorial optimization of double-layered filtration media for higher performance**, J.R. Gorle\*, Parker Hannifin, Finland

**Flow resistance evaluation through nonwoven filter media**, K.-Ji Choi\*, Clean & Science Co., Ltd., USA

## K4 Keynote Lecture 4 13:00 14:15 room 1A

**Dewatering of concentrates and tailings – Large scale duties in the mining industry**, Dr.-Ing. Götz Bickert, GBL Process Pty Ltd, Australia

## L7 Cake Filtration – Particle Washing 13:00 14:15 room 1B

**Washing performance prediction of horizontal vacuum belt filters for different wash modes**, G. Krammer\*, Graz University of Technology; R. Raberger, Andritz AG, Austria

**Characterization and simulation of displacement washing processes in filter cakes**, B. Hoffner\*, University of Applied Sciences Mannheim, Germany

**Dewatering and rewatering effects on the multistage cake washing**, A. Brückner\*, T. Sprott, B. Hoffner, University of Applied Sciences Mannheim, Germany

## M5 Process and Waste Water Treatment 13:00 14:15 room 4A

**Recent developments in industrial wastewater treatment by aerobic and anaerobic Membrane Bioreactors**, F. Rögener\*, L. Papendorf, S. Steinhauser, Technical University Cologne; Germany

**Experimental study of the separation degradation of dyes using composite photocatalytic membrane treatment**, S. Sakarkar\*, RMIT University, Australia

**Cost-optimized sustainable water management in the mining industry based on membrane processes**, T. Peters\*, Membrane Consulting, Germany

**G7**

**Filter Test Systems I**

13:00 room  
14:15 **4A**

**Filter media testing in accordance with ISO 16890**, M. K. Schmidt\*, PALAS GmbH, Germany

**Two years of filter testing experiences according to new ISO 16890**, C. Kappelt\*, A. Rudolph, C. Peters, S. Große, Topas GmbH, Germany

**Aspects of air filter testing: dust loading**, M. Stillwell\*, Particle Technology Ltd, UK

**F7**

**Advanced Composite Fiber Materials**

13:00 room  
14:15 **4B**

**Sinterflo® FMC (fibre metal composite) – Development and application**, B. Allbutt\*, Porvair Filtration Group Ltd, UK; A. Goux\*, Bekaert Fiber Technologies, Belgium

**Bekaert Bekipor® Metal Fiber Media Filtration Solutions for Hydraulics**, M. Van Hooreweder\*, A. Goux\*, Bekaert Fiber Technologies, Belgium

**Methods to increase the filtration performance of metal woven wire cloths**, M. Müller\*, Spörl KG, Germany

**L8**

**Short Oral + Poster Presentation**

14:45 room  
16:00 **1A**

## Depth Filtration and Adsorption

**Metal Porous Filter Development using Additive Manufacturing**, N. Burns\*, M. Burns, Croft Filters Ltd.; D. Travis, L. Geekie, A. Molyneux, Croft Additive Manufacturing Ltd., UK

## Characterization and Simulation of Porous Structures

**Combined porous mesh metals for filters and capillary fencing devices**, V. A. Devisilov\*, Yu. M. Novikov, V.A. Bol'shakov, Bauman Moscow State Technical University, Russia,

**Geometrical model of the porous structure of the permeable material and the new experimental method of determining its structural characteristics**, V. A. Devisilov\*, A.L. Sintsov, E. Yu. Sharai, Bauman Moscow State Technical University, Russia

## Characterization of Porous Materials to Meet Regulatory Demands

**Addressing liquid filtration regulatory complexity with HACCP**, F. Lybrand\*, C. Rich, T. Vest, Hollingsworth and Vose Company, USA

## Continuous Cake Filtration

**Separation and dewatering of biological microparticles from low concentrated suspensions by using the energy efficient thin film filtration**, Z. Lam\*, H. Anlauf, H. Nirschl; Karlsruhe Institute of Technology (KIT), Germany

## Depth Filtration and Adsorption

**Assessment of commercial cartridge filters for usage in low-cost household water treatment systems**, A. Afkhami\*, P. Dunlop, D. Dixon, N. Ternan, H. Lubarsky, P. Fernandez-Ibanez, Ulster University, UK

**Design of a multi-purpose fuel filter sytem to better understand the challenges of biodiesel filtration**, B. Csontos\*, H. Bernemyr, A. Christiansen Erlandsson, KTH Royal Institute of Technologies; M. Pach, H. Hittig, Scania CV AB, Sweden

**A probabilistic-statistical model of change in particle size distribution in fine filters**, A.N. Grechushkin\*, V.A. Lvov, Bauman Moscow State Technical University, Russia

## Backwashing filters

**HETA smart filtration 4.0**, H. Hensel\*, HETA Verfahrenstechnik GmbH, Germany

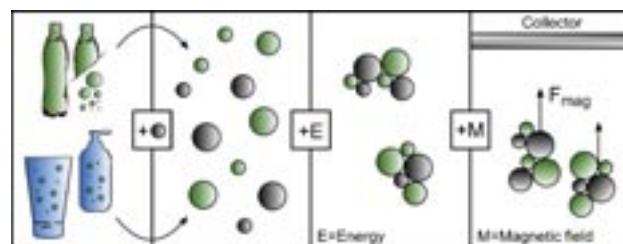
## Self Cleaning Filters

**Filtering of high solids concentration media using complex powerful to the flow**, E.Y. Sharai\*, V.A. Devisilov, Bauman Moscow State Technical University, Russia

**Simulation of solid particle separation in self-cleaning filter with dynamic filtration**, E.Y. Sharai\*, V.A. Devisilov, Bauman Moscow State Technical University, Russia

## Magnetic Separation

**Applied colloidal aggregation: Separation of fine polymer particles from dilute suspensions by magnetic seeded filtration (Microplastics)**, F. Rhein\*, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany



**Investigation of magnetic separation for the cleaning of automatic transmission fluids**, P. Rack\*, M. Dederling, D. Feggeler, IBS-Filtran GmbH; R. Kirsch, Fraunhofer Institute for Industrial Mathematics (ITWM); E. von Lavante, University Duisburg-Essen (UDE), Germany

## Hydrocyclones

**A probability and statistical model of particle separation in hydrocyclones**, A.V. Krokhina\*, V.A. Lvov, A.N. Grechushkin, Bauman Moscow State Technical University, Russia

**M6**

**Short Oral + Poster Presentation**

14:45 room  
16:00 **2**

**Development of microfiltration membranes of biodegradable biomass plastics with the aid of surfactants and their application to depth filtration**, T. Tanaka\*, H. Minbu, A. Ochiai, M. Taniguchi, Niigata University, Japan

**Effect of ethanol concentration on filter cake characteristics in micro-filtration of yeast suspension**, N. Katagiri\*, K. Tomimatsu, E. Iritani, Nagoya University, Japan

**Membrane bioreactor as polishing step in the treatment of galvanic wastewater**, B. Mayr\*, T. Garstenauer, EnviCare Engineering GmbH, Austria

**Microsand cross flow filtration in cooling towers water circuit – a sustainable approach for hvac systems**, S. Roel Backes\*, Evoqua Water Technologies GmbH, Germany

**Application of antifouling filter media based on nanofibres in liquid filtration**, I. Vincent\*, D. Kimmer, L. Lovecka, M. Kovarova, L. Musilova, D. Vesela, Tomas Bata University, Czech Republic



# Discover the Future of Filtration & Separation

**The effect of membrane structure prepared from carboxymethyl cellulose and cellulose nanofibrils for filtration and biochromatographic separation**, V. Kokol\*, University of Maribor, Slovenia

**Investigation of PES membrane volume morphology for filtration using automated in-situ ultramicrotomy in SEM and 3D reconstruction**, M. Wu\*, Thermo Fisher Scientific, Netherlands

**Improving the performance of direct contact membrane distillation utilizing spacer-filled channel**, Y. Taamneh\*, Jordan University of Science and Technology, Jordan

**Heat exchange simulation for single HF membrane module using CFD modeling**, H.-J. Shin\*, C.-K. Lee, R.E.D Inc., Korea

**Analytical photo-centrifugal filtration (ACF): Membrane resistance and filterability**, S. Boldt, D. Lerche\*, LUM GmbH, Berlin, Germany; M. Loginov, UMR STLO, INRA-Agrocampus Ovest, France

**G8**

Short Oral + Poster Presentation

14:45  
16:00

room  
**4A**

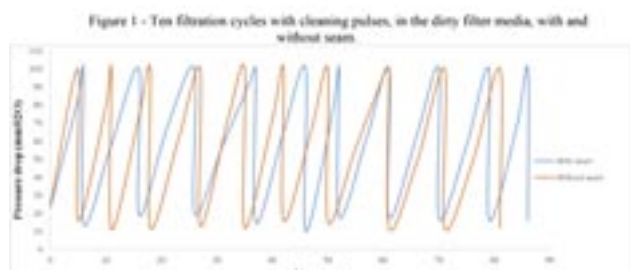
**Simulation and experiments on the cake formation in dust filtration with fabric filters**, Q. Zhang\*, D. Horst, E. Schmidt, University of Wuppertal, Germany

**Influence of the deliquescence and efflorescence of hygroscopic salt particles on the performance of surface filters**, D. Horst\*, Q. Zhang, E. Schmidt, University of Wuppertal, Germany

**Experiments on the rearrangement behaviour of dust in wall flow filters**, S. Jüttermann\*, M. Kaul, E. Schmidt, University of Wuppertal, Germany

**Efficiency of collection of particulate matter and maximum pressure drop of precoat**, B.K.S.A. Andrade\*, M.L. Aguiar, Federal University of São Carlos; R. Sartim, Federal University of Espírito Santo, Brazil

**Collection efficiency of a bag after 3 years of use in a bag filter**, C.R. de Lacerda\*, M.L. Aguiar, Federal University of Sao Carlos; R. Sartim, Federal University of Espirito Santo, Brazil



**Investigation of the Filtration Kinetics of Depth Filter considering Tomographic Data**, K. Hoppe\*, Anhalt University of Applied Sciences; L. Wischemann, G. Schaldach, R. Zielke, W. Tillmann, M. Thommes, D. Pieloth, Dortmund University; D. Renschen, DMT GmbH & Co.KG, Germany

**Numerical simulation of the deposition and filtration characteristics of viscous particles on PTFE filter surface**, Z. Xue, F. Qian\*, J. Zhu, Y. Han, J. Lu, Anhui University of Technology, China

**A new set-up for characterisation of particle collection efficiency on elastic single fibres**, L. Poggemann\*, J. Meyer, A. Dittler, Karlsruhe Institute of Technology (KIT), Germany

**Experimental characterization of particle structure re-arrangement and detachment from a steel fiber exposed to hot air flow**, J. Zoller\*, J. Meyer, A. Dittler, Karlsruhe Institute of Technology (KIT), Germany

**Round robin test to evaluate the test method according to ISO 16890 - Air filters for general ventilation**, T. Schuldt\*, F. Schmidt, University Duisburg-Essen (UDE); E. Däuber, T. Engelke, Institute for Energy and Environmental Technology e.V. (IUTA), Germany

**Generation and characterisation of reactive/inert particle aerosols**, J. Thieringer\*, J. Meyer, A. Dittler, Karlsruhe Institute of Technology (KIT), Germany

**Characterization of an electrostatically charged water spray for reducing fine dust emissions**, M. Zillgitt\*, E. Schmidt, University of Wuppertal, Germany

**Experimental methods in dust emission prediction**, N. Schwindt\*, E. Schmidt, University of Wuppertal, Germany

**Investigation of regeneration stability of pulse-jet regenerated filter media under laboratory test conditions**, P. Spanring, N.A. Nowak, T. Laminger\*, G. Mauschitz, Vienna University of Technology, Austria

**G9**

Short Oral + Poster Presentation

14:45  
16:00

room  
**4B**

**Experimental assessment of deposition of synthetic fibrous dust within the ductwork of residential ventilation systems**, N. Alessandria, S. Sedlar, G. Mauschitz, T. Laminger\*, Technical University of Vienna; A. Svec, Fa. Adalbert Svec, Germany

**Controlling specific properties of paper wet lays for air filtration by means of hydro-entanglement**, R. Heidenreich\*, Institute of Air Handling and Refrigeration (ILK); T. Schulze, Thüringisches Institut für Textil- und Kunststoff-Forschung e.V.; F. Gebauer, Papiertechnische Stiftung (PTS), Germany

**Deodorizing filters containing visible light photocatalysts for air purifiers**, Y. Lee\*, H. Kim, D. Lee, LG Hausys R&D Center, Korea

**Performance of Nanofiber Filters and HEPA in the collection of nanoparticle for air filtration**, A.I.P. Salussoglia, V.G. Guerra, M.L. Aguiar\*, Federal University of São Carlos, Brazil

**Effect of the temperature on the degradation of polyphenylene sulfide non-woven bag-filter media by NO<sub>2</sub> gas with a continuous-flow exposure method**, K. Fukui\*, K. Ito, M.I.F. Rozy, T. Fukasawa, T. Ishigami, Hiroshima University, Japan

**Modelling of the mechanical aging behaviour of PLA-based nonwovens and monofilaments under filter application-relevant conditions**, C. Schippers\*, L. Tsarkova, Deutsches Textilforschungszentrum Nord-West gGmbH (DTNW); J. S. Gutmann, University Duisburg-Essen; R. Taubner\*, Saxon Textile Research Institute (STFI), Germany

**Experimental study on the preparation of ceramic fiber filter element for hot gas filtration**, L. Miao\*, Z. Ji, X. Wu, Z. Liu, J. Lu, L. Cong, China University of Petroleum (Beijing), China

**Production and characterization of filter media obtained by electrospinning for applications in air filtration**, D.P.F. Bonfim\*, V.G. Guerra, M.L. Aguiar, Federal University of São Carlos, Brazil

**Powder sampling with a pressure port on the high pressure natural gas filter for differential pressure gauge**, X. Song\*, X. Wu, D. Wang, Z. Ji, China University of Petroleum, China

**Droplet size measurement of cutting fluid aerosols**, L. Hillemann\*; S. Holfeld; R. Heidenreich, Institute of Air Handling and Refrigeration (ILK), Germany

**Development and performance test of MIL-88 based filter structure using electrophoretic deposition**, J Lee\*, J.Y. Lee, S.-H. Lim, Kookmin University, Korea

**Environmental issues of waste tire recycle system**, U. Kohowala\*, Sigma Technologies, Sri Lanka

**Macro-scale simulation of fibrous liquid aerosol filters**, A. Baumann\*, D. Hoch, J. Niessner, Heilbronn University of Applied Sciences, Germany

**Micro-scale simulation of fibrous liquid aerosol filters**, D. Hoch\*, A. Baumann, J. Niessner, Heilbronn University of Applied Sciences, Germany

**L10**

**Centrifugal Sedimentation - Decanter Centrifuges**

16:45 room  
18:00 1A

**About dynamic modeling and process simulation of solid bowl centrifuges**, M. Gleiß\*, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Dynamic simulation of mechanical dewatering of compressible cake in decanter centrifuges**, P. Meneskou\*, M. Gleiß, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Clarification of low concentrated microalgae suspensions by decanter centrifuge**, M.C. Quesada Salas, E. Clavijo Rivera\*, G. Willig, F. Allais, AgroParisTech, France

**L11**

**Centrifugal Cake Filtration**

16:45 room  
18:00 1B

**The Krauss-Maffei peeler centrifuge with pneumatic cake discharge**, G. Grim\*, ANDRITZ KMPT GmbH, Germany

**Determining the filtration properties of different protein crystals in the centrifugal field using low volume samples**, B. Radel\*, T.H. Nguyen, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**CENTRISTAR - A novel software for filter centrifuges**, I. Nicolaou\*, NIKIFOS Ltd, Cyprus

**F8**

**Micro and Nanofiltration Media**

16:45 room  
18:00 2

**Some aspects of application nanostructured filter media in air and water filtration**, D. Kimmer\*, I. Vincent, L. Lovecka, M. Kovarova, L. Musilova, Tomas Bata University; J. Ondracek, Institute of Chemical Process Fundamentals of the CAS, v. v. i., Czech Republic

**Low-cost porous ceramic filters for potential microfiltration and ultrafiltration applications**, J.-H. Ha\*, J. Lee, I.-H. Song, Korea Institute of Materials Science (KIMS), Korea

**New Flexible Ceramic Filter Media for Microfiltration**, M. ten Hove, M. Barsacchi, G. Gadafalch Gazquez\*, Eureka B.V., Netherlands

**G10**

**Filter Test Systems II**

16:45 room  
18:00 4A

**Developing a tester for automated in-line filter testing**, T. Johnson\*, TSI Incorporated, USA; J. Spielvogel, TSI GmbH, Germany

**HEPA/ULPA filter leak testing for production control using solid PSL (Polystyrene-Latex) aerosol**, M. Gahlert\*, A. Rudolph, C. Peters, S. Große, Topas GmbH, Germany

**Filter testing regarding separation efficiency in terms of airborne fungal spores**, B. Führer\*, C. Hartl, P. Lukas., G. Ettenberger, OFI Technology & Innovation Ltd.; M. Nachtnebel, J. Rattenberger, ZFE Graz Centre for Electron Microscopy, Austria

**G11**

**Modelling and Simulation**

16:45 room  
18:00 4B

**Flow through randomly-oriented fibrous filters**, J. Chaudhuri\*, K. Boettcher, P. Ehrhard, Technical University Dortmund, Germany

**The influence of slip flow on Filtration simulations on the nano scale**, L. Cheng\*, S. Linden, A. Wiegmann, Math2Market GmbH, Germany

**Numerical and experimental investigations on loading-dependent particle deposition in electret filter media**, M. Kerner\*, S. Antonyuk, Technical University Kaiserslautern; K. Schmidt, IT for Engineering (it4e) GmbH; S. Schumacher, C. Asbach, Institute of Energy and Environmental Technology e.V. (IUTA), Germany

## Thursday, October 24, 2019

**L12**

**Cake Filtration - Enhancement of Continuous Vacuum Filters**

09:00 room  
10:15 1A

**CORES - Vacuum drum filter for highly corrosive media**, W. Knobloch\*, ANDRITZ KMPT GmbH, Germany

**Proof-of-concept of a newly developed device for the coupled generation and separation of crystalline particles**, L. Löbnitz\*, T. Dobler\*, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Prediction of cake solids content in vacuum belt filters from temperature data**, T. Kinnarinen\*, H. Montonen., M. Huttunen., J. Ahola, T. Lindh., V. Karvonen, A. Häkkinen, Lappeenranta University of Technology (LUT), Finland

**L13**

**Depth Filtration and Adsorption - Granular Beds**

09:00 room  
10:15 1B

**Feedbacks on performance tests with Filtralite® media compared to conventional media filters at pilot scale**, C. Helmer\*, O. Danel, J.-F. Robin, A. Brehant, SUEZ Environment CIRSEE, France

**Performance of adsorption system for water desalination using metal organic framework**, N. Genidi\*, A.S. Hassan, Hamad Bin Khalifa University, Qatar

**New approaches for phosphate recovery applying iron hydroxide containing material in adapted sorption processes**, A. Gerbeth\*, B. Gemende, T. Riedel, F. Hascher, N. Pausch, University of Applied Sciences Zwickau; M. Leiker, R. Heiduschke, E. Schimann, P.U.S. Produktions- und Umweltservice GmbH, Germany

**F9**

**Filter Media - Modelling, Artificial Intelligence, Machine Learning**

09:00 room  
10:15 2

**Filtration modeling and simulation with GeoDict, from filter media to filter element**, M. Azimian\*, C. Kühnle, S. Linden, A. Wiegmann, Math2Market GmbH, Germany

**Identification of fiber characteristics of a filter media based on artificial intelligence (AI) with GeoDict**, A. Griebner, R. Westerteiger, A. Wiegmann\*, M. Azimian, Math2Market GmbH, Germany

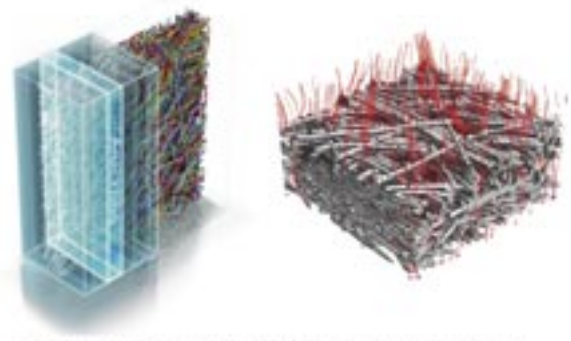


Fig. 1: left: artificial intelligence (AI)-based identification of fiber characteristics, right: particulate flow simulation through the media

**Optimizing spunbond nonwovens for filter media production using a novel approach of machine learning and fiber/fluid simulations**, S. Gramsch\*, A. Sarishvili, A. Schmeißer, Fraunhofer Institute for Industrial Mathematics ITWM, Germany



# Discover the Future of Filtration & Separation

## G12 Measurement Techniques I

09:00 room  
10:15 4A

**Investigation of low-cost PM-sensors regarding the suitability for emission measurement for pulse-jet cleaned filters**, P. Bächler, J. Meyer, A. Dittler, Karlsruhe Institute of Technology (KIT), Germany

**Measuring PM2.5 for cleanable filter media in ISO 11057 or ASTM D6830 tests using an optical aerosol spectrometer Promo® LED**, P. Gäng\*, FilTEq-Filtration Testing Equipment and Services GmbH; Germany

**A setup for measuring passenger car brake dust particles emissions**, M.J. Lehmann\*, S.E. Pfannkuch, E. Thébault, A. Beck, MANN+HUMMEL GmbH, Germany

## G13 Filter Element Design

09:00 room  
10:15 4B

**Associating filters by series for optimizing the retention capacity of nanoparticles**, A. Charvet\*, S. Pacault, D. Thomas, Lorraine University, France

**A sustainable, modular and lean solution for pocket filter assembly**, J. Kowalczyk\*, D. Ciocco, A. Schwartz, B. Laurent, et al., Bollhoff Attexor SA, Switzerland

**Pre-filter design of high efficient multilayer filter media for pulse cleanable filter cartridges for challenging atmospheric conditions**, F. Heuzeroth\*, Hengst SE, Germany

## L14 Cake Filtration - Enhancement of Filter Presses

10:45 room  
12:00 1A

**Benefits of filter presses with artificial intelligence (AI) support in the chemical and mining industries**, A. Decker\*, ANDRITZ Separation GmbH, Germany

**In-situ cleaning process of chamber filter presses with sensor-controlled and demand-oriented automation**, P. Morsch, H. Anlauf, H. Nirschl, Karlsruhe Institute of Technology (KIT); R. Werner, D.U. Geier, T. Becker, Technical University of Munich, School of Life Sciences Weihenstephan, Germany

**New pilot for sludge electrofiltration and electrodewatering**, J. Desabres\*, B. Demasures, CHOQUENET SAS; E. Vorobiev, Technical University of Compiègne, France

## L15 Depth Filtration and Adsorption - Modelling and Simulation

10:45 room  
12:00 1B

**Modeling the dynamics of filtration processes under variable flow conditions**, R. Kirsch, S. Osterroth\*, Fraunhofer Institute for Industrial Mathematics (ITWM), Germany

**A flexible approach for meso-scale filtration modelling based on open-source CFD**, U. Heck\*, M. Becker, DHCAE Tools GmbH, Germany

**Predicting collision efficiencies of colloidal nanoparticles in single spherical and fibrous collectors: A numerical study**, D. Segets\*, University Duisburg-Essen (UDE), Germany; H. Lee, D. Pui, University of Minnesota (UMN); S.-C. Chen, Virginia Commonwealth University (VCU), USA

## F10 Numerical Analysis of Filter Media Pore Size and Structure

10:45 room  
12:00 2

**Enhancing bubble-point testing capabilities on wire meshes by numerical analysis**, D. Herper\*, GKD - Gebr. Kufferath AG, Germany

**Influence of fiber size distribution on the permeability of fibrous filters**, N. Bardin-Monnier\*, A. Charvet, D. Thomas, Lorraine University, France

**A multi-scale study of the permeability of compressed nonwoven filter media**, M. Kabel, R. Kirsch, S. Rief\*, S. Staub, Fraunhofer Institute for Industrial Mathematics ITWM, Germany

## G14 Measurement Techniques II

10:45 room  
12:00 4A

**Measurement of the PM2.5 oil concentration in water-oil miscible metal working fluid droplet emissions and a new aerosol generator for high oil-water-droplet concentrations**, T. Laminger\*, W. Höflinger, Vienna University of Technology, Austria, J. Weber, M. Schmidt, L. Moelter, Palas GmbH, Germany; R. Piringner, AUVA, Austria

**Benefits of single photometer technology in an automated filter tester**, G. Patel\*, ATI - Air Techniques International, USA

**Performance of two online particulate matter measurement principles in a fertilizer industrial prilling tower**, E. Krauss\*, M.L. Aguiar, Federal University of Sao Carlos, Brazil

## G15 Filter Medium Design

10:45 room  
12:00 4B

**Novel sintered metal filter elements: Performance evaluation in biomass gasification conditions**, S. Tuomi\*, E. Kurkela, M. Kurkela, I. Hiltunen, VTT Technical Research Centre of Finland Ltd, Finland; H. Balzer, A. Wierhake, GKN Sinter Metals Filters GmbH, Germany

**Use of metallic filters to prevent the degradation of HEPA filters in case of vapour release**, S. Bourrous\*, M. Barrault, A. Brunisso, INRS Institut National de Recherche et de Sécurité, France

**Innovative design, analysis and optimization of woven filter media through experimental and computational methods**, M. Azimian\*, J. Becker, A. Wiegmann, Math2Market GmbH; A. Mantler, F. Meyer, F. Edelmeier, HAVER & BOECKER OHG, Germany

## L16 Dewaterability of Sludges

13:00 room  
14:15 1A

**Sludge solids concentration: Which are the limits?**, P. Ginisty\*, IFTS - Institute of Filtration & Techniques of Separation, France; J.B. Kopp, Sewage Sludge Treatment Consulting KBKopp, Germany; A.K. Melsa, L. Spinosa, International Organization for Standardization - ISO TC275/WG6 Working Group

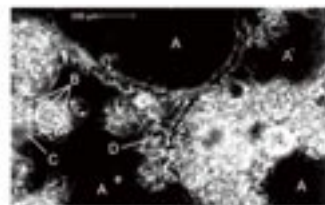


Figure 1. Water distribution in flocculated sludge (Kopp, 2000, modified 2019)

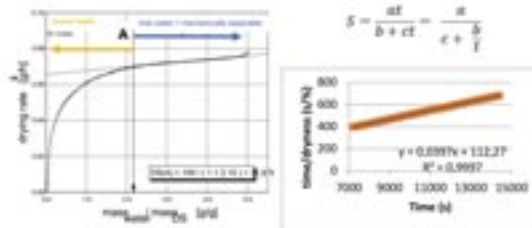


Figure 2. Curves for free water bound water and dryness limit determination

**Why dewaterability of sewage sludge occurs upstream- a model to quantify the effects**, J. B. Kopp\*, Sewage Sludge Treatment Consulting KBKopp, Germany

**Filtered dry stack tailings: The 'state of play' for high capacity tailings filter plants**, R. Whittering\*, Ausenco, UK; M. Pyle, G. Lane, Ausenco, Australia

## L17

### Backwashing Filtration

13:00 room  
14:15 1B

**Cost and energy saving through automatic backwash filter in PE production**, S. Schöpf, W. Watzinger\*, Lenzing Technik GmbH, Germany

**Influencing parameters to improve the regeneration efficiency of backwashing filters**, P. Morsch\*, H. Anlauf, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Assessment of filter media properties for automatic self-cleaning filters**, T. Buchwald\*; U. Peuker, Technical University Bergakademie Freiberg, Germany

## G16

### Particles for Filter Testing

13:00 room  
14:15 4A

**New synthetic nano-aerosol for accelerated realistic ageing of air filters**, J.A. Marval Díaz, E. Norata, P. Tronville\*, Politecnico di Torino, Italy

**Comparison of different discharging methods and test aerosols for measuring the efficiency of electret filters**, S. Schumacher\*, R. Jasti, C. Asbach, Institute for Energy and Environmental Technology e.V. (IUTA); M. Kerner, S. Antonyuk, Technical University Kaiserslautern, Germany

**Testing the efficiency of process filtration of viruses in gases with protein nanoparticle surrogates**, M. Nazir\*, Memsep Filtration Ltd., UK; R. Dalal, A. Kamble, S. Singh, A. Sharma, R. Dalal, FSP Technologies, India

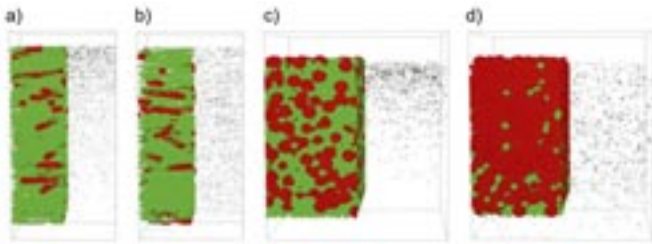
## F11

### Numerical Methods for Filter Media Characterization and Improvement

13:00 room  
14:15 4B

**Process simulation and characterization of nonwoven inhomogeneities and their negative effect on filtration due to local flow rate heterogeneities**, D. Hietel\*, O. Iliev, A. Schmeißer, I. Shklyar, Fraunhofer Institute for Industrial Mathematics (ITWM), Germany

**Improving depth-filter media using a new multi-scale approach**, M. Kuhn\*, C. Geerling, H. Briesen, Technical University of Munich; M. Azimian, A. Wiegmann, Math2Market GmbH, Germany



Exemplary results for fibrous (a and b) as well as packed-bed depth-filter media (c and d). In all cases, the right half of the filter structure is hidden to show the internally deposited impurity particles which are displayed in black. Red and green are the two-sized constituents of the corresponding filter media; red is the larger fraction. a) and c) are base cases, c) and d) are optimized filter media showing a much more homogenous deposition along the filter depth compared to the base cases.

**Computer-aided study of the diesel-water separation efficiency of screen meshes**, O. Elsayed, R. Kirsch, S. Osterroth, Fraunhofer Institute for Industrial Mathematics (ITWM); S. Antonyuk, Technical University of Kaiserslautern, Germany

## L18

### Froth Flotation and Liquid/Gas Separation

13:00 room  
14:15 2

**Hydrodynamic Influences in Dissolved Air Flotation**, A. Hassan\*, N. Genidi, Hamad Bin Khalifa University, Qatar

**Optimization of gas input in aqueous two-phase flotation (ATPF) for enzyme purification**, L. Jakob\*, J. Singer, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany

**Air separation from a hydraulic tank using special meshes**, A. Zakaria, Abou Bekr Belkaid University, Algeria; J. Gorle\*, Parker Hannifin, Finland

## L19

### Liquid/Liquid Separation

14:45 room  
16:00 1A

**Automatic water disposal for heavy duty and industrial applications – Removal of hydrocarbons to ensure environmental protection**, L. Spelter\*, J. Neumann, MANN+HUMMEL GmbH, Germany

**A methodology for estimating water droplet sizes and predicting filter performance in diesel fuel and lube oil applications**, M.F. Alzoubi\*, John Crane Inc., USA; E. Barega, T. van der Linde, Netherlands

**Best Practice for Liquid-Liquid separation with cartridge coalescers**, C. Rodewald\*, PALL GmbH, Germany

## L20

### Enhancement of backwashing and cake filtration performance

14:45 room  
16:00 1B

**Investigation about cohesion and adhesion in backwashing filtration based on penetrometry and tension tests**, Y. Feith\*, P. Morsch, H. Anlauf, H. Nirschl, Karlsruhe Institute of Technology (KIT), Germany; P. Ginisty, Institut de la Filtration et des Techniques Séparatives (IFTS), France

**Amelioration of phosphoric acid separation from phosphogypsum crystals using physical and chemical techniques**, E.A. Abdel-Aal\*, Central Metallurgical Research and Development Institute (CMRDI), Egypt

**The effect of seeding and particle properties on the cake filtration characteristics**, S. S. Haramkar\*, B. N. Thorat, S.V. Jadhav, Institute of Chemical Technology, Mumbai, India

## G17

### Monitoring and Control

14:45 room  
16:00 4A

**A new methodology for continuous scanning of particle aerodynamic diameter and application to filtration performance assessment of a room air purifier**, S. Payne\*, J. Symonds, Cambustion Ltd; T. Johnson, Cambridge University, UK

**VisionAir Clean for clean room air change rate optimization**, J.W. Rajala\*, S. O'Reilly, AAF Flanders, USA

**Smart air filtration, air filters go digital - Chances and risks of new roads to market**, T. Stoffel\*, DELBAG GmbH, Germany

## F12

### Advanced Filter Media for Gas Filtration

14:45 room  
16:00 4B

**smartMELAMINE® - The first melamine meltblown nonwoven**, C. Löning\*, smartMELAMINE d.o.o., Slovenia

**Welstrat: An innovative filter media for hot air filter application**, L. Joshi\*, N. Shukla\*, Welspun India Ltd., India

**Pore Size of the Spunlaced Nonwovens and Optimization of the Parameters for Air Filtration Application**, A. Patnaik\*, L. Maduna, Cape Peninsula University of Technology, South Africa

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# FILTECH 2019 · Cologne

October 22 – 24, 2019 · Koelnmesse · Germany

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