

### Sunday October 9, 2016

**13:00 Registration**

#### Session Workshop 1

**14:00 Preparative HPLC of Peptides and Small Molecules: Phase Screening, Method Optimisation, Process Design**

Michael SCHULTE (MERCK KGAA, Darmstadt, Germany)

Jochen STRUBE (CLAUSTHAL UNIVERSITY OF TECHNOLOGY, Clausthal-Zellerfeld, Germany)

#### Session Workshop 2

**From Development to Commercial Scale: DoE, QbD, Regulatory, Process Validation**

Alessandro BUTTE

(ETH ZURICH, Zurich, Switzerland)

**15:30 Coffee Break**

#### Session Workshop 3

**16:00 Multicolumn Processes: From Historical SMB to the Latest Advances in the Purification of Biomolecules**

Massimo MORBIDELLI (ETH ZÜRICH, Zürich, Switzerland)

José Paulo MOTA (UNIVERSIDADE NOVA DE LISBOA, Caparica, Portugal)

Arvind RAJENDRAN (UNIVERSITY OF ALBERTA, Edmonton, AB, Canada)

#### Session Workshop 4

**Process Design for Purification of Biomolecules**

Alois JUNGBAUER (UNIVERSITY OF NATURAL RESOURCES AND LIFE SCIENCES, Vienna, Austria)

Bernt NILSSON (LUND UNIVERSITY, Lund, Sweden)

**17:45 SPICA 2016 Opening Ceremony**

**18:00 KL01 - Current Innovation Challenges in the Development of non-Mab Biotherapeutics**

Georg KLIMA

(BOEHRINGER INGELHEIM, Vienna, Austria)

**18:45 Welcome Reception**

**20:00 End of the Day**

### Monday October 10, 2016

**08:00 Registration**

#### Session 1

##### Session Chair

Bernt NILSSON  
(LUND UNIVERSITY, Lund, Sweden)

**09:00 KL02 - What Can We Learn from Art in the Better Design of Production Equipment for Biopharmaceuticals?**

Martin HOFMANN  
(BIOTECHFLOW, Stroud, Glos, United Kingdom)

**09:40 OC01 - Viscous Fingering Dynamics in Preparative Liquid Chromatography**

Michel MARTIN  
(ECOLE SUPÉRIEURE DE PHYSIQUE ET CHIMIE/CNRS/PMMH, Paris, France)

**10:00 OC02 - Computational Fluid Dynamics Study of Viscous Fingering in Supercritical Fluid Chromatography**

Arvind RAJENDRAN  
(UNIVERSITY OF ALBERTA, Edmonton, AB, Canada)

**10:20 Coffee Break & Exhibition**

#### Session 2

##### Session Chair

Jochen STRUBE  
(CLAUSTHAL UNIVERSITY OF TECHNOLOGY, Clausthal-Zellerfeld, Germany)

**10:50 OC03 - Unified Design of Chromatographic Separation Processes**

Tuomo SAINIO  
(LAPPEENRANTA UNIVERSITY OF TECHNOLOGY, Lappeenranta, Finland)

**11:10 OC04 - Application of Expanded Bed to the Production of Industrial Enzymes**

Esteban FREYDELL  
(DSM, Delft, The Netherlands)

**11:30 OC05 - Some Insights in Centrifugal Partition Chromatography Engineering - Application to Alkaloids Separation at Production Scale**

Luc MARCHAL  
(UNIVERSITÉ DE NANTES, Saint Nazaire, France)

**11:50 OC06 - Simultaneous Optimization of Chromatographic Process Configuration and Operating Conditions**

Johannes SCHMÖLDER  
(FRIEDRICH-ALEXANDER-UNIVERSITÄT ERLANGEN-NÜRNBERG, Erlangen, Germany)

**12:10 Lunch Break & Exhibition**

**12:20 Vendor Seminars by Agilent Technologies, Daiso Fine Chem & Rotachrom Technologiai (12:20-13:20)**

### Session 3

#### Session Chair

José Paulo MOTA  
(UNIVERSIDADE NOVA DE LISBOA, Caparica, Portugal)

**13:30 KL03 - Design and Control of Continuous Downstream Processing for Cost Efficient Manufacturing of Biopharmaceuticals**

Oliver KALTENBRUNNER  
(AMGEN INC., Thousand Oaks, United States)

**14:10 OC07 - Investigation and Development of Preparative Recycling Size Exclusion Chromatography**

Kathleen MUELLER  
(FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG, Erlangen, Germany)

**14:30 OC08 - Modelling Scale-Up of Preparative Chromatography Columns Taking into Account Extra Column Effects and Variations of Packing Quality**

Susanne SCHWEIGER  
(AUSTRIAN CENTRE OF INDUSTRIAL BIOTECHNOLOGY, Vienna, Austria)

**14:50 OC09 - Scalability of Mechanistic Models for Ion Exchange Chromatography under Highly Overloaded Conditions**

Thiemo HUUK  
(KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT), GOSILICO, Karlsruhe, Germany)

**15:10 Coffee Break & Exhibition**

### Session 4

#### Session Chair

Dorota ANTOS (RZESZOW UNIVERSITY OF TECHNOLOGY, Rzeszow, Poland)

**15:40 KL04 - Continuous Purification Platforms for Viral Vectors Based on Multicolumn Simulated Countercurrent Chromatography**

José Paulo MOTA  
(UNIVERSIDADE NOVA DE LISBOA, Caparica, Portugal)

**16:20 OC10 - When Scaling-Up Chromatography is not Trivial**

**16:40 OC11 - Development of a Continuous Downstream Cascade for the End-to-End Integrated Manufacture of Monoclonal Antibodies**

Fabian STEINEBACH  
(ETH ZÜRICH, Zurich, Switzerland)

**17:00 OC12 - Continuous Integrated Antibody Digestion and Purification**

Nicole ULMER  
(ETH ZURICH, Zurich, Switzerland)

**17:20 Poster Session 1 (even numbers) & Beer Party**

**18:20 End of the Day**



**Tuesday October 11, 2016**

### Session 5

#### Session Chair

Massimo MORBIDELLI  
(ETH ZÜRICH, Zürich, Switzerland)

**08:30 KL05 - Understanding Protein Unfolding and Aggregation in Cation Exchange and Protein A Chromatography Columns**

Giorgio CARTA  
(UNIVERSITY OF VIRGINIA, Charlottesville, United States)

**09:10 OC13 - Preparative Separation and Characterization of Charge Variants of Several Blockbuster Antibody Therapeutics**

Nico LINGG  
(UNIVERSITY OF NATURAL RESOURCES AND LIFE SCIENCES, VIENNA, Vienna, Austria)

**09:30 OC14 - Polyvalent Buffers in Ion Exchange Chromatography Using Salt Tolerant Resins**

Egbert MÜLLER  
(TOSOH BIOSCIENCE GMBH, Darmstadt, Germany)

**09:50 OC15 - Effect of Isotherm Nonlinearity on the Retention Behaviour of Proteins in Hydrophobic Interaction and Multimodal Chromatography**

Dorota ANTOS  
(RZESZOW UNIVERSITY OF TECHNOLOGY, Rzeszow, Poland)

**10:10 OC16 - SMB Separation of Peptides**

Joachim KINKEL  
(GEORG-SIMON-OHM UNIVERSITY OF APPLIED SCIENCES, Nuernberg, Germany)

**10:30 Coffee Break & Exhibition**

### Session 6

#### Session Chair

Joachim KINKEL  
(GEORG-SIMON-OHM UNIVERSITY OF APPLIED SCIENCES, Nuernberg, Germany)

**11:00 OC17 - General Gradients for Preparative Protein Chromatography**

Bernt NILSSON  
(LUND UNIVERSITY, Lund, Sweden)

**11:20 OC18 - PAT for Preparative Chromatography of Proteins: Real-Time Monitoring of a Capture and Polishing Step**

Matthias RÜDT  
(KARLSRUHE INSTITUTE OF TECHNOLOGY, Karlsruhe, Germany)

**11:40 OC19 - Pore Diffusion Coefficients of Proteins in Multicomponent Mixtures**

Alexander MATLSCHWEIGER  
(BOKU VIENNA, Vienna, Austria)

**12:00 OC20 - Improving Washing Strategies of Human Mesenchymal Stem Cells Using Negative Mode Expanded Bed Chromatography**

## Programme

Cristina PEIXOTO  
(IBET, Oeiras, Portugal)

**12:20 Lunch Break sponsored by AMPAC Fine Chemicals & Exhibition**

**12:30 Vendor Seminars by AKZO Nobel/Kromasil & Chiral Technologies Europe (12:30-13:30)**

**13:40 Poster Session 2 (odd numbers)**

### Session 7

#### Session Chair

Michael SCHULTE  
(MERCK KGAA, Darmstadt, Germany)

**14:40 KL06 - Strategies for Improving the Productivity of Chromatography or Proteins**

Shuichi YAMAMOTO  
(YAMAGUCHI UNIVERSITY, Ube, Japan)

**15:20 OC21 - Optimization of Primary Recovery and Downstream Processing for Protein Purification from E. Coli Homogenates**

Rainer HAHN  
(BOKU VIENNA, Vienna, Austria)

**15:40 OC22- Influence of Mixed Electrolytes and PH on HIC-Adsorption and Partial Molar Volume of Proteins**

Eva HACKEMANN  
(TU KAISERSLAUTERN, Kaiserslautern, Germany)

**16:00 OC23 - Negative and Positive Multi-Column Chromatographic Strategies for the Purification of Enveloped Virus-Like Particles**

Ricardo SILVA  
(IBET - INSTITUTO DE BIOLOGIA EXPERIMENTAL E TECNOLÓGICA, Oeiras, Portugal)

**16:20 Coffee Break & Exhibition**

### Session 8

#### Session Chair

Andreas SEIDEL-MORGENSTERN  
(MAX PLANCK INSTITUTE FOR DYNAMICS OF COMPLEX TECHNICAL SYSTEMS, Magdeburg, Germany)

**16:50 OC24 - Model Predictive Control of 4-Zone Simulated Moving Bed Chromatography for the Separation of Bicalutamide Enantiomers**

Ju Weon LEE  
(MAX-PLANCK-INSTITUTE FOR DYNAMICS OF COMPLEX TECHNICAL SYSTEMS, Magdeburg, Germany)

**17:10 OC25 - Concurrent Modeling and Design Approach for Development of Multi-Component Simulated Moving Bed Processes**

Yoshiaki KAWAJIRI  
(GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, United States)

**17:30 OC26 - A Method for Designing Flow-Through Chromatography Processes**

## Programme

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Sumiko HASEGAWA  
(YAMAGUCHI UNIVERSITY, Ube, Japan)

**17:50 OC27 - Simulated Periodic Counter-Current Chromatography (SPCCC) - A Scale-Down Model for Multicolumn Continuous Chromatography Process Development**

Gang WANG  
(KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT), Karlsruhe, Germany)

**18:10 OC28 - Integrated Counter Current Chromatography (iCCC) - A Platform Alternative for a Protein a Free mAB and SCFV Downstream**

Fabian MESTMÄCKER  
(CLAUSTHAL UNIVERSITY OF TECHNOLOGY, Clausthal-Zellerfeld, Germany)

**18:30 End of the Day**

**20:00 Symposium Banquet**

### Wednesday October 12, 2016

#### Session 9

**08:30 Session Chair**

Tuomo SAINIO  
(LAPPEENRANTA UNIVERSITY OF TECHNOLOGY, Lappeenranta, Finland)

**08:30 OC29 - Experimental Analysis and Theoretical Description of Multiphase Flow in the Context of Liquid Chromatography**

Franziska ORTNER  
(ETH ZURICH, Zurich, Switzerland)

**08:50 OC30 - Ionic Liquid-Liquid Chromatography (ILLC)**

Martyn EARLE  
(QUILL RESEARCH CENTRE, Belfast, United Kingdom)

**09:10 OC31 - Ion Exclusion Chromatography: Model Development and Experimental Results**

Gabriele LODI  
(POLITECNICO DI MILANO, Casteggio, Italy)

**09:30 OC32 - Tuning of Peak Deformations, Due to Co-Solvent Adsorption, in Preparative Supercritical Fluid Chromatography**

Torgny FORNSTEDT  
(KARLSTAD UNIVERSITY, Karlstad, Sweden)

**09:50 Poster Prizes**

**10:10 Coffee Break & Exhibition**

#### Session 10

**Session Chair**

Eric VALERY  
(NOVASEP, Pompey, France)

**10:40 KL07 - The Effect of Column Heterogeneity and Column Structure on the Accuracy of Overloading Studies**

Attila FELINGER  
(UNIVERSITY OF PECS, Pécs, Hungary)

**11:20 OC33 - Separation of a Quaternary Chiral Mixture Using Different Simulated Moving Bed Strategies**

António E. RIBEIRO  
(POLYTECHNIC INSTITUTE OF BRAGANÇA, Bragança, Portugal)

**11:40 OC34 - Model-Based Design of Preparative Binary and Ternary Separations with Liquid-Liquid Chromatography**

Raena MORLEY  
(TECHNICAL UNIVERSITY OF MUNICH, Freising, Germany)

**12:00 OC35 - Applying the Ideal Adsorbed Solution Theory to Describe Elution Profiles in Case of Complex Single Component Isotherms**

Andreas SEIDEL-MORGENSTERN  
(MAX PLANCK INSTITUTE FOR DYNAMICS OF COMPLEX TECHNICAL SYSTEMS, Magdeburg, Germany)



## Programme

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- 12:20**    **OC36 - Liquid-Liquid Chromatographic Separation of Natural Compounds Using Biphasic Systems Containing Deep Eutectic Solvents: Experimental and Computational Studies**  
Mirjana MINCEVA  
(TECHNICAL UNIVERSITY OF MUNICH, Freising, Germany)
- 12:40**    **Closing Remarks**