



# 3rd International Symposium on Pharmaceutical Engineering Research – SPhERe

25 – 27 September 2019

## Final Programme

Version: v3.0; 2019-09-20

### WEDNESDAY, 25 SEPTEMBER 2019

11:00 Registration

### 13:00 OPENING

Opening and Welcome Prof. Dr.-Ing. Stephan Scholl, Conference Chair

Welcome Björn Thümler, Minister for Science & Culture of the German State of Lower Saxony

Welcome Prof. Dr.-Ing. Anke Kaysser-Pyzalla, President of TU Braunschweig

### SESSION I: Microsystems for Analytics, Screening & Continuous Processing

13:45 **KEYNOTE LECTURE** Emulation of Gut-Liver Crosstalk: An Organ-on-Chip Platform for Translational Research and Drug Development. *A. Mosig, University Hospital Jena*

14:20 **Parallel Multi-Parametric Monitoring of Single Pancreatic Islets in a Microfluidic Organ-on-Chip System Made from Glass.** *T. Schulze<sup>1,3,4</sup>, K. Mattern<sup>2,3</sup>, A. Dietze<sup>2,3</sup> and I. Rustenbeck<sup>1,3,4</sup>*

*<sup>1</sup>Institute of Pharmacology and Toxicology, <sup>2</sup>Institute of Microtechnology, <sup>3</sup>PVZ-Center of Pharmaceutical Engineering and <sup>4</sup>QUANOMET – Quantum and Nanometrology at the TU Braunschweig*

14:40 **Fish in Chip: A Microfluidic Platform for Light Sheet Microscopy of Zebrafish Larvae.** *K. Mattern<sup>1,3,4</sup>, J. W. von Trotha<sup>2</sup>, R. W. Köster<sup>2</sup>, A. Dietzel<sup>1,3</sup>*

*<sup>1</sup>Institut für Mikrotechnik, TU Braunschweig, <sup>2</sup>Institut für Zoologie, TU Braunschweig, <sup>3</sup>Zentrum für Pharmaverfahrenstechnik (PVZ), TU Braunschweig, <sup>4</sup>minds GmbH i.G., Braunschweig.*

15:00 **Continuous Krapcho Dealkoxycarbonylation in API Synthesis.** *M. C. Rehbein<sup>1,2</sup>, S. Husmann<sup>1</sup>, J. Wolters<sup>1</sup>, L. Priess<sup>1</sup>, C. Lechner<sup>3</sup>, C. Kunick<sup>2,3</sup>, S. Scholl<sup>1,2</sup>*

*<sup>1</sup>TU Braunschweig, Institute for Chemical and Thermal Process Engineering; <sup>2</sup>TU Braunschweig, Center for Pharmaceutical Engineering; <sup>3</sup>TU Braunschweig, Institute for Medicinal and Pharmaceutical Chemistry*

## WEDNESDAY, 25 SEPTEMBER 2019 – CONTINUATION

15:20 **Scaffold-based Lung Tumor Cultures on Porous Microparticle Substrates.**  
*D. Dhamecha, D. Le, R. Movsas, J. U. Menon, University of Rhode Island*

15:40 **COFFEE BREAK**

## POSTER SESSION

16:15 For posters, a 3 min introductory presentation is scheduled, followed by a dedicated poster session.

18:15 **Guided PVZ Tours**

19:15 **GET TOGETHER**

## THURSDAY, 26 SEPTEMBER 2019

### SESSION II: Production Processes for Chemical API

8:30 **INVITED LECTURE Shaping the Process to Fit the Assets: The Lonza Way.**  
*A. Klein, Lonza AG, Visp*

8:55 **Solvation Free Energy Predictions from Molecular Dynamics Simulations by Improved Alchemical Pathways and Optimized Force Field Parameters.**  
*A. Mecklenfeld<sup>1,2</sup>, G. Raabe<sup>1</sup>*  
*<sup>1</sup>Institut für Thermodynamik, TU Braunschweig; <sup>2</sup>Center of Pharmaceutical Engineering, TU Braunschweig*

9:15 **Gentle production of needle like crystals in an innovative ASKR – experiments on residence time distribution and segmental crystallization.**  
*A. Wilk, Wilk-Graphite, Lörrach*

9:35 **Ligands for M-NHC synthesis: Continuous Flow Di-N-Alkylation of 1H-Benzimidazole in a Fixed Bed Reactor.** *T. Sauk<sup>1,2</sup>, C. Heiduk<sup>1,2</sup>, L. Henke<sup>1,2</sup>, C. Xiao<sup>1,2</sup>, S. Scholl<sup>1,2</sup>*  
*<sup>1</sup>TU Braunschweig, Institute for Chemical and Thermal Process Engineering; <sup>2</sup>TU Braunschweig, Center for Pharmaceutical Engineering*

9:55 **COFFEE BREAK**

### SESSION III: Production Processes for Biological API

10:30 **INVITED LECTURE CO<sub>2</sub> Extraction – a Production Process for the Recovery of API.**  
*D. Gerard, Flavex GmbH, Rehlingen*

10:55 **Engineering Yeast Toward Production of Bioactive Polycyclic Polyprenylated Acylphloroglucinols.** *B. Liu<sup>1,2</sup>, L. F. Kalz<sup>1</sup>, Y. Jia<sup>1</sup>, M. Grull<sup>1,2</sup>, T. Beuerle<sup>1,2</sup>, L. Beerhues<sup>1,2</sup>*  
*<sup>1</sup>Institute of Pharmaceutical Biology, TU Braunschweig; <sup>2</sup>Center of Pharmaceutical Engineering (PVZ), TU Braunschweig*

## THURSDAY, 26 SEPTEMBER 2019 – CONTINUATION

- 11:15 **Efficient Coupling of Extraction and Partial Synthesis for the Production of the Antimalarial Artemisinin.** *S. Triemer<sup>1</sup>, K. Gilmore<sup>2</sup>, A. Seidel-Morgenstern<sup>1,3</sup>*  
*<sup>1</sup>Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg; <sup>2</sup>Max Planck Institute of Colloids and Interfaces, Potsdam; <sup>3</sup>Otto von Guericke University, Magdeburg*
- 11:35 **A Tool Box for Transgene Expression in CHO Cell Lines.** *M. Heine, L. Rabsch, H. Ziehr, Fraunhofer Institute for Toxicology and Experimental Medicine, ITEM*

## 11:55 LUNCH

## HOT TOPIC SESSION CANNABIS FOR MEDICINAL USE – PRODUCTION CHALLENGES AND LEGAL REQUIREMENTS

- 13:00 **Cannabis for Medical Use – Key Elements of Regulation**  
*W. Knöss, Federal Institute for Drugs and Medical Devices, Bonn*
- 13:45 **Cultivation and Production of Medicinal Cannabis - Global View**  
*C. Zieres-Nauth, Medropharm Deutschland GmbH, Schwülper*

## 14:15 COFFEE BREAK

## SESSION IV: Formulation

- 14:40 **KEYNOTE LECTURE Pellets 4.0 – Advanced Fluidized Bed Technologies.**  
*A. Grave, Glatt GmbH, Binzen*
- 15:15 **Use of Inverse Gas Chromatography in Formulation Development of Solid Dosage Forms.** *J. Patera, P. Zámotný, T. Školáková, M. Slámová, E. Soldánová, University of Chemistry and Technology, Prague*
- 15:35 **Development of an Orodispersible Pediatric Formulation for Poorly Water Soluble, Unpalatable Drugs.** *K. Ibrahim,<sup>1</sup> Y. Deng,<sup>1,3</sup> J. Shen<sup>1,2</sup>*  
*<sup>1</sup>Department of Biomedical and Pharmaceutical Sciences, University of Rhode Island; <sup>2</sup>Department of Chemical Engineering, University of Rhode Island; <sup>3</sup>School of Pharmacy, Fujian Medical University, Fuzhou, P. R. China*
- 15:55 **Influence of Formulation Parameters During Drying of API Nanosuspensions in a Fluidized Bed Granulation Process.** *M. Wewers<sup>1,2</sup>, J. H. Finke<sup>1,2</sup>, M. Juhnke<sup>3</sup> & A. Kwade<sup>1,2</sup>*  
*<sup>1</sup>Institut für Partikeltechnik, TU Braunschweig, <sup>2</sup>PVZ, Centre of Pharmaceutical Engineering, TU Braunschweig; <sup>3</sup>Novartis Pharma AG, Virchow 6.1.231, Basel*

## 16:15 COFFEE BREAK

## THURSDAY, 26 SEPTEMBER 2019 – CONTINUATION

### SESSION V: Pharmaceutical and Biological Processes

- 16:35 **INVITED LECTURE** Process Intensification in Viral Vaccine Manufacturing.  
*U. Reichl, MPI Magdeburg*
- 17:00 **Particle Based Cultivation of *Lentzea aerocolonigenes* in Membrane Aerated Stirred Bioreactors for Increased Rebeccamycin Production.**  
*K. Schrunner<sup>1,2</sup>, J. Niebusch<sup>1</sup>, N. Wurzler<sup>1</sup>, R. Krull<sup>1,2</sup>*  
*<sup>1</sup>Institute of Biochemical Engineering, TU Braunschweig; <sup>2</sup>Center of Pharmaceutical Engineering, TU Braunschweig*
- 17:20 **Accelerating Biomanufacturing by Modeling of Continuous Bioprocessing – Piloting Case Study of Monoclonal Antibody Manufacturing.** *J. Strube, S. Zobel-Roos, TU Clausthal*
- 17:40 **Developing A Glucose-Limited Galactose-Supplemented Fed-Batch Strategy.**  
*M. Evert<sup>1</sup>, M. Heine<sup>1</sup>, A. Roß<sup>1</sup>, U. Rau<sup>2</sup>*  
*<sup>1</sup>Fraunhofer Institute for Toxicology and Experimental Medicine, ITEM; <sup>2</sup>TU Braunschweig, Braunschweig*
- 18:00 **End of Second Conference Day**

### EVENING EVENT

#### 19:00 Evening Event Including Conference Dinner

##### Venue of the Evening Event

Herzog Anton Ulrich Museum • Museumstraße 1 • 38100 Braunschweig

## FRIDAY, 27 SEPTEMBER 2019

### SESSION VI: Solid Preparations

- 8:30 **KEYNOTE LECTURE Amorphous Drugs and Dosage Forms – New Developments and Perspectives.** *T. Rades, University of Copenhagen*
- 9:05 **DEM-PBM Simulation of Pharmaceutical Pellet Rounding in the Spheronization Process.** *D. Weis<sup>1</sup>, M. Evers<sup>2</sup>, M. Thommes<sup>2</sup>, S. Antonyuk<sup>1</sup>*  
*<sup>1</sup>Institute of Particle Process Engineering, Technische Universität Kaiserslautern;*  
*<sup>2</sup>Laboratory of Solids Process Engineering, Technical University Dortmund*
- 9:25 **Identification of Controlling Steps of Drug Release Using Regression Modeling of Tablet Disintegration.** *K. Dufkova; D. T. Tran; P. Zamosny, University of Chemistry and Technology, Prague*
- 9:45 **Effect of Process Parameters on Interfacial Properties of Bilayer Tablets.**  
*J. H. Finke<sup>1,2</sup>, J.-L. Wichmann<sup>1,2</sup>, A. Kwade<sup>1,2</sup>*  
*<sup>1</sup>Institute for Particle Technology; TU Braunschweig; <sup>2</sup>Center of Pharmaceutical Engineering*
- 10:05 **PGX Technology: Novel Tailor-Made and Tuneable Delivery Systems for Poorly Water-Soluble Bioactives.** *B. Seifried<sup>a</sup>, F. Temell<sup>b</sup>, D. Vine<sup>b</sup>, R. Couto<sup>b</sup>, B. Yepez<sup>a</sup>, E. Wong<sup>a</sup>, P. Moquin<sup>a</sup>*  
*<sup>a</sup>Ceapro Inc., Edmonton; <sup>b</sup>University of Alberta, Department of Agricultural, Food and Nutritional Sciences, Edmonton*

### 10:25 COFFEE BREAK

### SESSION VII: Solid & Liquid Preparations

- 10:50 **INVITED LECTURE Design and Processing of Solid Dispersions in Pharmaceutical Industry.** *C. Timpe, F. Hoffmann-La Roche, Basel*
- 11:15 **Manufacturing of Defined Porous Silica Aggregates for the Production of Individualized Medicines.** *S. Melzig<sup>1,2</sup>, M. Kruppa<sup>1,2</sup>, S. Bahnmüller<sup>1,2</sup>, J. H. Finke<sup>1,2</sup>, C. Schilde<sup>1,2</sup>*  
*<sup>1</sup>Institute for Particle Technology, TU Braunschweig; <sup>2</sup>Center of Pharmaceutical Engineering, PVZ, TU Braunschweig*
- 11:35 **Electrostatic Precipitation of Submicron Particles in a Molten Carrier.** *A. Justen, A. Dobrowolski, D. Pieloth, H. Wiggers, M. Thommes*  
*Laboratory of Solids Process Engineering, Department of Biochemical and Chemical Engineering, TU Dortmund*
- 11:55 **Niosomal targeted drug delivery and bioimaging systems for Glioma.** *D. Ag Selegi<sup>1,2</sup>, V. Maurer<sup>1,2</sup>, J. C. Porsiel<sup>1</sup>, F. Stah<sup>3</sup>, T. Scheper<sup>3</sup>, G. Garnweitner<sup>1,2</sup>*  
*<sup>1</sup>Institute for Particle Technology, TU Braunschweig; <sup>2</sup>Centre for Pharmaceutical Engineering Research (PVZ), TU Braunschweig; <sup>3</sup>Institute for Technical Chemistry, Leibniz University Hannover*

## FRIDAY, 27 SEPTEMBER 2019 – CONTINUATION

- 12:15      **Formulation of Cannabidiol in Lipid Carriers.** *N. Francke<sup>1</sup>, L. Grüne<sup>1</sup>, H. Bunjes<sup>1,2</sup>*  
*<sup>1</sup>TU Braunschweig; Institut für Pharmazeutische Technologie; <sup>2</sup>PVZ - Zentrum für Pharmaverfahrenstechnik*

## FINAL SESSION

- 12:35      **POSTER AWARD**
- 12:45      **General Discussion, Concluding Remarks.** *S. Scholl, Conference Chair*

## FAREWELL

- 13:00      **End of Conference**