



3rd International Symposium on Pharmaceutical Engineering Research – SPhERe

25 – 27 September 2019

Final Programme

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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^{1,3,4}, K. Mattern^{2,3}, A. Dietze^{2,3} and I. Rustenbeck^{1,3,4}*

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

14:40 **Fish in Chip: A Microfluidic Platform for Light Sheet Microscopy of Zebrafish Larvae.** *K. Mattern^{1,3,4}, J. W. von Trotha², R. W. Köster², A. Dietzel^{1,3}*

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

15:00 **Continuous Krapcho Dealkoxycarbonylation in API Synthesis.** *M. C. Rehbein^{1,2}, S. Husmann¹, J. Wolters¹, L. Priess¹, C. Lechner³, C. Kunick^{2,3}, S. Scholl^{1,2}*

¹TU Braunschweig, Institute for Chemical and Thermal Process Engineering; ²TU Braunschweig, Center for Pharmaceutical Engineering; ³TU 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^{1,2}, G. Raabe¹
¹Institut für Thermodynamik, TU Braunschweig; ²Center 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^{1,2}, C. Heiduk^{1,2}, L. Henke^{1,2}, C. Xiao^{1,2}, S. Scholl^{1,2}*
¹TU Braunschweig, Institute for Chemical and Thermal Process Engineering; ²TU Braunschweig, Center for Pharmaceutical Engineering

9:55 **COFFEE BREAK**

SESSION III: Production Processes for Biological API

10:30 **INVITED LECTURE CO₂ 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^{1,2}, L. F. Kalz¹, Y. Jia¹, M. Grull^{1,2}, T. Beuerle^{1,2}, L. Beerhues^{1,2}*
¹Institute of Pharmaceutical Biology, TU Braunschweig; ²Center 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. Triemer¹, K. Gilmore², A. Seidel-Morgenstern^{1,3}*
¹Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg; ²Max Planck Institute of Colloids and Interfaces, Potsdam; ³Otto 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,¹ Y. Deng,^{1,3} J. Shen^{1,2}*
¹Department of Biomedical and Pharmaceutical Sciences, University of Rhode Island; ²Department of Chemical Engineering, University of Rhode Island; ³School 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^{1,2}, J. H. Finke^{1,2}, M. Juhnke³ & A. Kwade^{1,2}*
¹Institut für Partikeltechnik, TU Braunschweig, ²PVZ, Centre of Pharmaceutical Engineering, TU Braunschweig; ³Novartis 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. Pommerehne^{1,2}, J. Niebusch¹, N. Wurzler¹, R. Krull^{1,2}
¹Institute of Biochemical Engineering, TU Braunschweig; ²Center 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. Evert¹, M. Heine¹, A. Roß¹, U. Rau²
¹Fraunhofer Institute for Toxicology and Experimental Medicine, ITEM; ²TU 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. Weis¹, M. Evers², M. Thommes², S. Antonyuk¹*
¹Institute of Particle Process Engineering, Technische Universität Kaiserslautern;
²Laboratory 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^{1,2}, J.-L. Wichmann^{1,2}, A. Kwade^{1,2}
¹Institute for Particle Technology; TU Braunschweig; ²Center of Pharmaceutical Engineering
- 10:05 **PGX Technology: Novel Tailor-Made and Tuneable Delivery Systems for Poorly Water-Soluble Bioactives.** *B. Seifried^a, F. Temell^b, D. Vine^b, R. Couto^b, B. Yepez^a, E. Wong^a, P. Moquin^a*
^aCeapro Inc., Edmonton; ^bUniversity 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^{1,2}, M. Kruppa^{1,2}, S. Bahnmüller^{1,2}, J. H. Finke^{1,2}, C. Schilde^{1,2}*
¹Institute for Particle Technology, TU Braunschweig; ²Center 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^{1,2}, V. Maurer^{1,2}, J. C. Porsiel¹, F. Stah³, T. Scheper³, G. Garnweitner^{1,2}*
¹Institute for Particle Technology, TU Braunschweig; ²Centre for Pharmaceutical Engineering Research (PVZ), TU Braunschweig; ³Institute for Technical Chemistry, Leibniz University Hannover

FRIDAY, 27 SEPTEMBER 2019 – CONTINUATION

- 12:15 **Formulation of Cannabidiol in Lipid Carriers.** *N. Francke¹, L. Grüne¹, H. Bunjes^{1,2}*
¹TU Braunschweig; Institut für Pharmazeutische Technologie; ²PVZ - 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**