

9th Workshop
„Chemical and Biological Micro Laboratory Technology“

Ilmenau/Elgersburg (Thuringia, Germany, February 20-22, 2018)

Program

Tuesday, February 20th

13:00 opening/welcome

Microfluidic Operations and Control *(Michael Köhler)*

13:10 – 13:50 **M. Motosuke**
(Keynote-Presentation) Tokyo University of Science, Japan
“Interfacial Flow Modulation in Microfluidic Platform”

13:50 – 14:30 **C. Cierpka**
(Keynote-Presentation) TU Ilmenau, Germany
“Optical Flow Field Characterization in Microfluidics”

14:30 – 14:50 **M. Heymann**
MPI of Biochemistry, Martinsried, Germany
“Designing Microfluidic Workflows to Capture Biological Dynamics”

14:50 – 15:10 **J. Hartmann, S. Hardt**
TU Darmstadt, Germany
“Concentration and Size Separation of DNA Molecules at Liquid/Liquid Interfaces”

15:10 – 15:30 **F. Reichmann, N. Kockmann**
TU Dortmund, Germany
“Mass Transfer Studies for Bubble Breakup Mechanisms in Micronozzles”

15:30 – 16:00 coffee break

Droplet-based Lab Technologies *(Detlev Belder)*

16:00 – 16:40 **H. Löwe^{1,2}, J. Heinrich¹, E. Eidmann¹, L. Bai³**
(Keynote-Presentation) ¹ J. Gutenberg-University Mainz, Germany; ² Fraunhofer ICT-IMM, Mainz, Germany;
³ Tsinghua University, Beijing, P.R. China
“Droplet-based Micro Fluidics – a Playground for Scientists or Base for Technical Applications”

16:40 – 17:00 L. Vobecká, J. Tuček, Z. Slouka, **M. Přibyl**
University of Chemistry and Technology, Prague, CZ
“Electric Field Assisted Transport of Droplets in Microreactors”

17:00 – 17:20 **S. Hengoju^{1,2}, M. Tovar^{1,2}, T. Weber^{1,3}, M. Choudhary¹, T. Becker⁴, M. Roth¹**
¹ Leibniz Institute for Natural Product Research & Infection Biology, HKI Jena, Germany
² FSU Jena, Germany; ³ TU Ilmenau, Germany; ⁴ LaCoSys GmbH Jena, Germany
“One Sensor for Multiple Colors: Fluorescence Detection in Droplet Microfluidics Using Frequency-division Multiplexing”

- 17:20 – 17:40 **B. P. Cahill¹**, J. Cao², K. Nobu¹, S. Schneider², S. Wiedemeier¹, T. Nacke¹, G. Gastrock¹, J. M. Köhler²
¹Institut für Bioprozess- u. Analysenmesstechnik, Heiligenstadt, Germany; ²TU Ilmenau, Germany
“Dose Response Testing of Bacterial Growth Using Impedimetric Sensing of Microfluidic Droplets”
- 17:40 – 19:00 **Poster Session** (including coffee break / refreshments)
- 19:00 dinner at “Hotel am Wald”

Wednesday, February 21st

Microreactors and Flow Synthesis (*Christophe A. Serra*)

- 08:30 – 09:10 **D. Belder**
(Keynote-Presentation) University of Leipzig, Germany
“Integrating Chemical Synthesis and Analysis at the Microscale”
- 09:10 – 09:40 M. Sebek, **N. Steinfeldt**
(Keynote-Presentation) Leibniz-Institut für Katalyse, Rostock, Germany
“Degradation of Cyanides with Ozone in a Falling Film Microreactor”
- 09:40 – 10:00 **J. Heinrich**, H. Löwe
J. Gutenberg-University Mainz, Germany
“Micro Controller as Tools for Self-monitoring Reaction Control - One Step Forward to Establish an Internet of Lab”
- 10:00 – 10:20 **W. Krieger**, W. Zhang, N. Kockmann
TU Dortmund, Laboratory of Equipment Design, Germany
“Local Noninvasive Measurement of Gas-liquid Mass Transfer and Chemical Selectivity in Capillary Reactors”
- 10:20 – 10:40 **Z. Peng**
Nanjing University of Science & Technology, P. R. China
“Micro-Segmented Flow Technology Applied for Synthesis and Shape Control of Lead Styphnate Micro-Particles”
- 10:40 – 11:10 coffee break

Biotechnology, Sensing and Screening (*Andreas Schober*)

- 11:10 – 11:40 **F. v. Stetten**
(Keynote-Presentation) University of Freiburg, Germany
“Digital Genotyping of Single Pathogenic Bacteria Directly from Nasal Swab Samples”
- 11:40 – 12:00 **G. Roth**
(Keynote-Presentation) University Freiburg, Germany
“Microfluidic Microarray Generation”
- 12:00 – 12:20 A. Kleiber, G. Mayer, **T. Henkel**
Leibniz-Institute of Photonic Technology IPHT, Jena, Germany
“Imaging Flow Cytometry Exploites the Third Dimension for Cell Imaging”
- 12:20 – 12:40 **L. Dähne**, M. Olszyna, M. Himmelhaus, G. Dähne, C. Guernth-Marschner, M. Kirschbaum; Surflay Nanotec GmbH, Berlin, Germany
“Label Free Detection of Biomolecules by Low-Q-Whispering Gallery Modes and Required Microfluidic Structures”

- 12:40 – 13:00 **M. Saupe**, S. Wiedemeier, M. Groth, R. Römer, G. Gastrock
Institut für Bioprocess- u. Analysenmesstechnik, Heiligenstadt, Germany
“Cancer Cell Spheroids as 3D Model for Drug Testing in Pipe Based Bioreactors”
- 13:00 – 14:00 lunch at Hotel am Wald
- 14:00 excursion “ICE Tunnel, Goldisthal” (*page 7*)
- 19:30 dinner at castle Elgersburg

Thursday, February 22nd

Particle Technologies for Analytical, Chemical and Biomedical Applications (*Holger Löwe*)

- 08:30 – 09:10 S. Ding, W. Yu, A. Kavand, M. F. Attia, J. Wallyn, **C. A. Serra**, D. Chan-Seng, N. Anton,
(**Keynote-Presentation**) T. F. Vandamme
Université de Strasbourg, France
“Microfluidic Systems for the Production of Polymeric Nanoparticles as Potential Carriers for Biomedical Applications”
- 09:10 – 09:50 **J. Polte**
(**Keynote-Presentation**) Humboldt-Universität zu Berlin, Germany
“From Time-resolved Nanoparticle Growth Studies to Catalyst Syntheses”
- 09:50 – 10:10 **A. Knauer**, J. M. Köhler
TU Ilmenau, Germany
“The Influence of Electrostatic Effects on the Shape, Stability and Composition of Noble Metal Nanoparticles”
- 10:10 – 10:30 **L. Stolle**, M. Thiele, C. Singh, T. Henkel, A. Csáki, W. Fritzsche
Leibniz-Institute of Photonic Technology IPHT, Jena, Germany
“Synthesis of Formanisotropic Nanoparticles and Their Application”
- 10:30 – 10:50 coffee break

Biomedical Microfluidics and Synthetic Biology (*Gunter Gastrock*)

- 10:50 – 11:30 L. B. Guerzoni, J. Rose, A. Omidinia-Anarkoli, D. Gehlen, **L. De Laporte**
(**Keynote-Presentation**) DWI – Leibniz-Institut für Interaktive Materialien e.V., Aachen, Germany
“The Fabrication of Building Blocks for Tissue Regenerative Hydrogels”
- 11:30 – 12:10 **F. Hollfelder**
(**Keynote-Presentation**) University of Cambridge, UK
“Rules and Tools for Efficient Enzyme Evolution, Recruitment and Discovery in Microfluidic Droplets”
- 12:10 – 12:30 **A. Schober**
TU Ilmenau, Germany
“BioLithoMorphie® a Method for the Construction of 3D Biological Morphologies”
- 12:30 – 12:50 **T. Kirner**
University of Applied Sciences Hamm-Lippstadt, Germany
“Droplet-based Microfluidics for Synthetic Biology”
- 12:50 – 13:10 **S. Wölfel**¹, R. Mrowka²
¹Heidelberg University, Germany
²Experimental Nephrology, University Hospital Jena, Germany
“Microfluidic Multiorgan Chips for Toxicity Testing and Modeling of Organ Interactions”

13:10 – 13:30	T. Rajabi KIT, Karlsruhe, Germany “Organs on Chips: Applications, Challenges and the Future - Replace of Animal Testing and Alternative Approach for Drug Development”
13:30 – 13:50	J. Theobald , M. A. El Maaty, X. Cheng, B. Wetterauer, M. Wink, S. Wölfl Heidelberg University, Germany “Metabolic Activation of Vitamin D3 in a Microfluidic Liver-kidney-on-chip System”
13:50 – 14:00	final remarks

List of Posters

1. **L. Breuer**, R. Welden, B. Schneider, M. J. Schöning, T. Wagner
FH Aachen University of Applied Sciences, Germany
“Towards a Lab-on-a-chip Analysis System Based on Light-addressable Technologies”
2. **J. Cao**¹, L. Yang¹, S. Schneider¹, B. P. Cahill², J. M. Köhler¹
¹TU Ilmenau, Germany; ²Institut für Bioprocess- u. Analysenmesstechnik, Heiligenstadt, Germany
„Integration of Micro Impedimetric with Optical Sensors for Highly-resolved Microfluidic Dose/response Screenings of Soil Bacteria”
3. **N. Djordjević**¹, J. Brandner^{*1}, G. L. Morini²
¹Karlsruhe Institute of Technology, Germany; ²Alma Mater Studiorum Università di Bologna, Italy;
“Non-encapsulated Thermo-chromic Liquid Crystals as Tracer Particles for Local Temperature Measurements”
4. **L. Frey**, S. Lladó Maldonado, D. Rasch, R. Krull
Technische Universität Braunschweig, Germany
“Innovative Microbioreactor Applications in Bioprocess Development”
5. **P. Geesink**¹, L. Mahler^{1,2}, C.-E. Wegner¹ M. Roth² K. Küsel¹
¹Friedrich Schiller University Jena, Germany; ²Hans-Knöll Institute, Jena, Germany
“Exploring Microbial Dark Matter with pL Droplets”
6. **J. Heinrich**, H. Löwe
Johannes Gutenberg-University Mainz, Germany
“INTERNET of LAB (IoL)”
7. **D. Hellmann**, D. W. Agar
TU Dortmund, Germany
“Generation of Uniform Gas-liquid-liquid Slug Flow for Micro Suspension Catalysis”
8. **D. Karl**, C. Deckers, H. Löwe
Johannes Gutenberg-University Mainz, Germany
“Reaction Rate Enhancement in Double Emulsions by Solvophobic Pressure and Gravity Assisted Mixing”
9. **M. Kielpinski**
Leibniz-Institute of Photonic Technology IPHT, Germany
“3D-printed Microfluidic Function Modules to Combine, Plug and Play”
10. **A. Knauer**, J. M. Köhler
TU Ilmenau, Germany
“Application of the Microfluid Segment Technology for the Preparation of Noble Metal Nanoparticles”

11. **A. Mendl**, A. Eberhardt, D. Bošković
Fraunhofer Institute for Chemical Technology, Pfinztal, Germany
“Online Multicomponent Quantification in Continuous Flow Processes by Raman Spectroscopy and Multivariate Data Analysis”
12. **C. Möller**¹, M. Hentschel², T. Hensel², A. Müller², C. Heinze¹, O. Brodersen¹, T. Ortlepp¹
¹ CiS Forschungsinstitut für Mikrosensorik GmbH, Erfurt, Germany; ²Analytik Jena AG, Germany;
“UV-LED Based Diagnostics”
13. **A. Pflieger**, A. Bak, C. Bartzsch, K.-H. Feller
Ernst-Abbe-Hochschule Jena, Germany
“Development of an Optical Chemical Sensor for Glucose Sensing in Microfluidic Lab-on-a-chip-systems”
14. **A. Romanov**, Z. Slouka, M. Přibyl
University of Chemistry and Technology, Prague, CZ
“Enzyme Synthesis and Product Separation Assisted by Electric Field in Microfluidic Chips”
15. **W. Rösing**, J. König, C. Cierpka
TU Ilmenau, Germany
“Development and Characterization of Microfluidic Fuel Cells”
16. **T. Schildhauer**¹, T. Henkel², J. M. Köhler¹
¹ TU Ilmenau, Germany; ² Leibniz-Institute of Photonic Technology IPHT, Germany
“Acoustophoresis: A Powerful Application in Microfluidics for Focussing and Sorting Microparticles”
17. **J. Schleicher**, J. Borowiec, J. Hampl, F. Weise, P. Mai, D. Brauer, S. Singh, A. Schober
TU Ilmenau, Germany
“Co-cultivation of Hepatocytes and Endothelial Cells on a Stacked Cell-sheet-layer System”
18. **O. Shvydkiv**¹, C.-M. Svensson¹, L. Mahler^{1,2}, S. Dietrich^{1,2}, T. Weber^{1,3}, M. Choudhary¹, M. Tovar^{1,2}, M. T. Figge^{1,2}, M. Roth¹
¹ Leibniz Institute for Natural Product Research and Infection Biology, HKI Jena, Germany
² Friedrich Schiller University, Jena, Germany; ³ TU Ilmenau, Germany
“Encoding of Assorted Picoliter Droplet Populations with Colored Microbeads”
19. **D. Šnita**
University of Chemistry and Technology, Prague, CZ
“Mathematical Modeling of Nanometer Scale Layers in Ion Selective Membrane Systems”
20. **J. Tuček**, Z. Slouka, M. Přibyl
University of Chemistry and Technology, Prague, CZ
“Addressing of Oil Droplets by Means of Electric Field in Microfluidic Chips”
21. **C. Üzümlü**, L. Dähne, M. Olszyna, M. Himmelhaus, G. Dähne
Surflay Nanotec GmbH, Berlin, Germany
“Low-Q-Whispering Gallery Modes: A Cost-efficient, Label-free Method for Measuring Interactions Between Biomolecules”
22. **L. Vobecká**, A. Romanov, Z. Slouka, P. Hasal, M. Přibyl
University of Chemistry and Technology, Prague, CZ
“Aqueous Two-phase Systems for the Production of 6-Aminopenicillanic Acid in Microreactors”
23. **L. Zeußel**, C. Ziebolz, M. Gebinoga, J. Hampl, S. Sing, A. Schober
TU Ilmenau, Germany
“Multiphoton-polymerization for Biomedical Applications”
24. **I. Tobehn-Steinhäuser**, S. Görlandt, S. Herbst and T. Ortlepp
CiS Forschungsinstitut GmbH, Erfurt, Germany
“Combined Impedance and Fluorescence Sensor for Whole-cell Analytics”

Maps



From the train station Elgersburg (A) to the venue “Hotel am Wald” (B)
(The distance between (A) and (B) is about 1 km. If you need a pick-up-service, please do not hesitate to contact us.)



Excursion

ICE Tunnel near Goldisthal



Conference Dinner

Castle Elgersburg

