



CONFERENCE PROGRAMME

Sunday, 5th June 2022

16:30 – 18:30	Registration
18:30 – 18:45	Opening ceremony
18:45 – 19:45	Opening lecture <i>Variations on a theme of process intensification in enzyme-catalyzed synthesis</i> Bernd Nidetzky , Graz University of Technology and acib, Austria
Chairs:	Polona Žnidaršič Plazl , University of Ljubljana, Slovenia Bruno Zelić , University of Zagreb, Croatia
20:00	Welcome party

Monday, 6th June 2022

8:00 – 9:00	Registration
9:00 – 9:55	Plenary talk <i>Advances in application of nanobioconjugates as catalysts in flow</i> Laszlo Poppe , Budapest University of Technology and Economics, Hungary
Chair:	Bruno Bühler , Helmholtz-Centre for Environmental Research, Leipzig, Germany
Session	ENZYMATIC MICROREACTORS
Chairs:	Roland Wohlgemuth , Łódź University of Technology, Poland Jennifer Littlechild , University of Exeter, United Kingdom
10:00 – 10:30	Keynote lecture <i>A use case analysis on the continuous biocatalytic oxyfunctionalization of ethylbenzene</i> Selin Kara , Aarhus University, Denmark, and Leibniz University Hannover, Germany
10:30 – 10:50	<i>Discovery of new biocatalysts accelerated by microfluidics</i> Michal Vašina , Pavel Vanacek, Jiri Hon, David Kovar, Hana Faldynova, Antonin Kunka, Tomas Buryska, Christoffel P. S. Badenhorst, Stanislav Mazurenko, David Bednar, Stavros Stavrakis, Uwe T. Bornscheuer, Andrew deMello, Jiri Damborsky, Zbynek Prokop Masaryk University, Czech Republic; St. Ann's Hospital, Czech Republic; Brno University of Technology, Czech Republic; Greifswald University, Germany; ETH Zürich, Switzerland
10:50 – 11:20	Coffee break
11:20 – 11:40	<i>Biphasic biocatalysis in microfluidic droplets and slug flow systems</i> Lanting Xiang , Jennifer Solarczek, Anett Schallmeyer, Iordania Constantinou Technical University Braunschweig, Germany
11:40 – 12:00	<i>Development of a sustainable continuous synthesis of 1,1'-dityrosol-8,8'-diacetate, a potential new antidiabetic drug, by laccase-mediated oxidation</i> Francesca Annunziata , Lucia Tamborini, Marina Cvjetko Bubalo, Janez Košmrlj, Polona Žnidaršič Plazl University of Milan, Italy; University of Zagreb, Croatia; University of Ljubljana, Slovenia
12:00 – 12:20	<i>Preparation of cross-linked enzymatic nanoaggregates and their application using microfluidic system</i> Tadej Menegatti , Žan Lavrič, Polona Žnidaršič Plazl University of Ljubljana, Slovenia
12:20 – 12:40	<i>Asymmetric bioreductions of beta-ketoesters by enantio-complementary self-sufficient heterogeneous biocatalyst</i> Daniel Andrés-Sanz , Fernando López-Gallego Basque Research and Technology Alliance (BRTA), IKERBASQUE, Basque Foundation for Science, Spain

12:40 – 13:00 *A chemoenzymatic strategy for the green flow synthesis of the natural product hordenine*
Stefania Gianolio, David Roura Padros, Francesca Paradisi University of Bern, Switzerland

13:00 – 14:30 Lunch

Session CELLS WITHIN MICRODEVICES

Chairs:	Ines Mandić Mulec , University of Ljubljana, Slovenia Alexander Grünberger , Bielefeld University, Germany
14:30 – 15:00	Keynote lecture <i>Microfluidic single-cell cultivation: A key for next generation bioprocess development</i> Alexander Grünberger , Bielefeld University, Germany
15:00 – 15:20	<i>High-throughput microfluidic imaging & deformability flow cytometry</i> Andrew J. deMello , Gregor Holzner, Mohammed Asghari, Anand Rane, Stavros Stavrakis ETH Zürich, Switzerland
15:20 – 15:40	<i>Low-cost stroboscopic illumination for deformability cytometry</i> Špela Zemljič-Jokhadar, Jure Derganc University of Ljubljana, Slovenia
15:40 – 16:00	<i>Application of a fully sensor-equipped capillary-wave micro-bioreactor for cell-based assays and cell analysis</i> Kevin Viebrock , Paul Wunder, Kaya Lange, Daniel Jentzsch, Lasse Jannis Frey, Dominik Rabl, Detlev Rasch, Sven Meinen, Andreas Dietzel, Torsten Mayr, Rainer Krull Technical University Braunschweig, Germany; Graz University of Technology, Austria
16:00 – 16:30	Coffee break
16:30 – 16:50	<i>Monitoring biotransformations at the single-cell level in droplets via mass</i> Marie van der Loh , Konstantin Wink, Nora Hartner, Matthias Polack, Detlev Belder University of Leipzig, Germany
16:50 – 17:10	<i>Bacillus subtilis growth and quorum sensing in 2D microfluidic devices</i> Katarina Šimunović , Lana Mušič, Iztok Dogša, Heiko Steinhoff, Alexander Grünberger, Polona Žnidaršič Plazl, Ines Mandić Mulec University of Ljubljana, Slovenia; Bielefeld University, Germany
17:10 – 17:30	<i>Continuous bioproduction of functional glucosides using immobilized whole-cells (co-)expressing up to three phosphorylases</i> Katharina Schwaiger , Andreas Kruschitz, Bernd Nidetzky Austrian Center of Industrial Biotechnology, Austria

Session Poster spotlights

Chair:	Iordania Constantinou , Technical University Braunschweig, Germany
17:30 – 17:35	<i>Oxygen, pH and intrinsic fluorescence monitoring of the green algae Chlorella sorokiniana microfluidic culturing</i> Dominik Rabl , Stefanie Fuchs, Anders Ø. Tjell, Torsten Mayr Graz University of Technology, Austria
17:35 – 17:40	<i>Continuous flow redox biocatalysis for the sustainable production of biologically active compounds</i> Lucia Tamborini , Francesca Annunziata, Martina L. Contente, Raffaella Gandolfi, Paola Conti, Andrea Pinto University of Milan, Italy



- 17:40 – 17:45 *Continuous transamination in microreactors with His-tagged enzymes immobilized on functionalized nonwoven nanofiber membranes*
Borut Šketa, James L. Galman, Marina Klemenčič, Nicholas J. Turner, Polona Žnidaršič Plazl
University of Ljubljana, Slovenia; University of Manchester, United Kingdom
- 17:45 – 17:50 *3D-printed micro bubble column reactor with integrated microsensors for cultivation and biocatalytic applications*
Gábor Schultz, Lasse Jannis Frey, David Vorländer, Detlev Rasch, Torsten Mayr, Janina Bahnemann, Rainer Krull
Technical University Braunschweig, Germany; Graz University of Technology, Austria; Leibniz University Hannover, Germany
- 17:50 – 17:55 *Announcement of Microfluidics workshop and Summer school at University of Ljubljana*
Tadej Kokalj, University of Ljubljana, Slovenia
- 18:00 – 20:00 Poster session

Tuesday, 7th June 2022

- 9:00 – 9:55 **Plenary talk**
Microfluidic technologies for human disease diagnosis and therapy
Yoshinobu Baba, Nagoya University, Japan
Chair: **Takehiko Kitamori**, National Tsing Hua University, Taiwan and the University of Tokyo, Japan
- Session ANALYTICAL AND MEDICAL MICRODEVICES**
Chairs: **Andreas Dietzel**, Technical University Braunschweig, Germany
Torsten Mayr, Graz University of Technology, Austria
- 10:00 – 10:30 **Keynote lecture**
Microfluidic test systems for medical and pharmaceutical applications
Andreas Dietzel, Technical University Braunschweig, Germany
- 10:30 – 10:50 *iCore – A microscale-based platform for ex-vivo blood processing; enzymatic conversion of uric acid in the treatment of gout disease*
Jaturavit Pantakitcharoenkul, Matthew Coblyn, Jad Touma, **Goran Jovanović**
Oregon State University, USA
- 10:50 – 11:20 Coffee break
- 11:20 – 11:40 *Microfluidic GMP-in-a-box systems for cell therapy manufacture*
Aranda Hernande Jorge, Nicolas Szita
University College London, United Kingdom
- 11:40 – 12:00 *Flow chemistry monitoring with in-situ React-IR 702L system*
Kimmo Leppänen, Keith Racman
Mettler Toledo AutoChem, Switzerland
- 12:00 – 12:20 *Optical hydrogen peroxide sensor for application in microfluidics*
Anders Ø. Tjell, Torsten Mayr
Graz University of Technology, Austria
- 12:20 – 12:40 *Metabolic monitoring of hiPSCs in a microfluidic chip*
Stefanie Fuchs, Ruben W. J. van Helden, Maury Wiendels, Mees N. S. de Graaf, Berend J. van Meer, Valeria V. Orlov, Christine L. Mummery, Torsten Mayr
Graz University of Technology, Austria
- 12:40 – 13:00 *Online (FLIM) imaging of metabolites in microfluidic systems employing non-invasive FRET-based-biosensors*
Matthias Rieb, Martina Pohl, Wolfgang Wiechert, Dietrich Kohlheyer
Forschungszentrum Jülich GmbH, Germany

13:00 – 14:30 Lunch

16:00 – 19:30 Excursion
20:00 Gala dinner

Wednesday, 8th June 2022

- 9:00 – 9:55 **Plenary talk**
Large-scale multi-device microfluidics system
Takehiko Kitamori, National Tsing Hua University, Taiwan and the University of Tokyo, Japan,
Andrew J. deMello, ETH Zürich, Switzerland
Chair:
- Session BIOPROCESS INTENSIFICATION AND INTEGRATION**
Chairs: **Goran N. Jovanović**, Oregon State University, USA
Igor Plazl, University of Ljubljana, Slovenia
- 10:00 – 10:30 **Keynote lecture**
AI-assisted process development – process intensification
Alexei Lapkin, University of Cambridge, United Kingdom
- 10:30 – 10:50 *Mathematical model of orthogonal electrochromatography for continuous separation of enantiomers*
Michal Přebyl
University of Chemistry and Technology Prague, Czech Republic
- 10:50 – 11:20 Coffee break
- 11:20 – 11:40 *An experimental and modeling approach for the assessment of reaction, diffusion and dispersion in continuous flow fixed-bed enzyme reactors*
Celia Alvarez-Gonzalez, Miguel Ladero, **Juan M. Bolivar**
Complutense University of Madrid, Spain
- 11:40 – 12:00 *Hybrid kinetic modelling: lifting the optimization of α -D-glucosyl-glycerol biosynthesis to an industrial level*
Alexander Sigg, Mario Klimacek, Bernd Nidetzky
Graz University of Technology, Austrian Centre of Industrial Biotechnology (acib), Austria
- 12:00 – 12:20 *Modular miniaturized enzymatic reactors for continuous biocatalysis: Development and characterization*
Marijan Bajić, Stephen T. Hilton, Gary Lye, Marco P. C. Marques, Nicolas Szita
University College London, United Kingdom
- 12:20 – 12:40 *Using advanced microreactor technology for antimicrobial environment formed on-demand: application and process intensification*
Rok Ambrožič, Igor Plazl
University of Ljubljana, Slovenia
- 12:40 – 13:00 *From waste edible oil to biofuel: Development of integrated microsystem for enzymatic production of biodiesel*
Martin Gojun, Anita Šalić, Ana Jurinjak Tušek, Bruno Zelić
University of Zagreb, Croatia
- 13:00 – 13:15 Closing ceremony