



CONFERENCE PROGRAMME

Sunday, 23rd April 2017

- 16:30 – 18:30 Registration
- 18:30 – 18:45 Opening ceremony
- 18:45 – 19:45 **Opening lecture**
Engineering Platforms of Micro- and Extended Nano-fluidics
Takehiko Kitamori
The University of Tokyo, Japan
- Chair
Polona Žnidaršič Plazl, University of Ljubljana, Slovenia
Bruno Zelić, University of Zagreb, Croatia
- 20:00 Welcome party

Monday, 24th April 2017

- 8:00 – 9:00 Registration
- 9:00 – 9:55 **Plenary talk**
Flow Chemistry @ the Chemistry & Biology Interface
Marko Mihovilovic
Technical University Vienna, Austria
- Chair
László Poppe, Budapest University of Technology and Economics, Hungary

Session ENZYMATIC MICROREACTORS

- Chair **Roland Wohlgemuth**, Sigma–Aldrich, Switzerland
Stefano Servi, Politecnico di Milano, Italy
- 10:00 – 10:30 **Keynote lecture**
Thermophilic proteins and their applications in microreactors for Industrial Biocatalysis
Jennifer Littlechild
University of Exeter, United Kingdom
- 10:30 – 10:50 *Reaction design for the compartmented combination of heterogeneous and enzyme catalysis*
Josef M. Sperl, Jörg M. Carsten, Jan-Karl Guterl, Petra Lommes, **Volker Sieber**
Technical University of Munich, Germany; TUM Catalysis Research Center, Germany

10:50 – 11:20	Coffee break
11:20 – 11:40	<i>Continuous-flow dynamic kinetic resolution of amines and amino acids in microreactor setups</i> Márk Oláh, Attila J. Földi, Gábor Hornyánszky, László Poppe Budapest University of Technology and Economics, Hungary; SynBiocat LLC, Hungary; Babeş-Bolyai University of Cluj-Napoca, Romania
11:40 – 12:00	<i>Overcoming the challenges of cascading enzymatic microreactors</i> Pia Gruber , Marco P.C. Marques, Roland Wohlgemuth, Torsten Mayr, Frank Baganz, Nicolas Szita University College London, United Kingdom; Graz University of Technology, Austria; Sigma–Aldrich, Switzerland
12:00 – 12:20	<i>Characterization of single-microbeads as isolated microreactors for heterogeneous biocatalysis</i> Ana I. Benítez-Mateos, Susana Velasco-Lozano, Juan M. Bolivar, Fernando López-Gallego CIC biomaGUNE, Spain; Graz University of Technology, Austria; Ikerbasque - Basque Foundation for Science, Spain
12:20 – 12:40	<i>Wall-coated biocatalytic microreactors for bioprocess intensification: opportunities and challenges</i> Juan M. Bolivar , Donya Valikhani, Marco A. Tribulato, Sabine Schelch, Bernd Nidetzky Graz University of Technology, Austria
12:40 – 13:00	<i>Theoretical and experimental study of surface enzyme kinetics in the microreactor system with immobilized ω-transaminase</i> Nataša Miložič, Martin Lubej , Mitja Lakner, Polona Žnidaršič Plazl, Igor Plazl University of Ljubljana, Slovenia
13:00 – 14:30	Lunch

Session	CELLS WITHIN MICRODEVICES
Chair	Frank Baganz , University College London, United Kingdom Rainer Krull , Technical University Braunschweig, Germany
14:30 – 15:00	Keynote lecture <i>Parallel shaken bioreactor systems with advanced on-line measuring techniques partially replace lab-scale stirred tank bioreactors</i> Jochen Büchs RWTH Aachen University, Germany
15:00 – 15:20	<i>Microbial single-cell analysis inside picoliter batch-cultivation chambers</i> Eugen Kaganovitch , Xenia Steurer, Christopher Probst, Wolfgang Wiechert, Dietrich Kohlheyer Research Center Jülich, Germany; RWTH Aachen University, Germany
15:20 – 15:40	<i>Influence of scaffold microtexturing on cell cultures</i> Elisabetta Dattola , Tania Limongi, Patrizio Candeloro, Maria Laura Coluccio, Ernesto Lamanna, Enzo Di Fabrizio, Gerardo Perozziello University of Magna Graecia, Italy; King Abdullah University of Science and Technology, Saudi Arabia

15:40 – 16:00	<p><i>Novel electrospun magnetized 3D nanofibers in microbioreactors: application to cell-based therapy</i> Maria H. Ribeiro, Mónica Guerra, Samuel Martins; Fábio Garrudo Universidade de Lisboa, Portugal</p>
16:00 – 16:30	Coffee break
16:30 – 16:50	<p><i>Multiphase microreactors with intensification of oxygen mass transfer rate and mixing performance for bioprocess development</i> Susanna Lladó Maldonado, Jana Krull, Detlev Rasch, Alice Kasjanow, Dominique Bouwes, Ulrich Krühne, Rainer Krull Technical University Braunschweig, Germany; Micronit GmbH, Germany; Technical University of Denmark, Denmark</p>
16:50 – 17:10	<p><i>Guiding efficient bioprocess development: one-step microbial synthesis of ϵ-caprolactone from cyclohexane</i> Rohan Karande, Andreas Schmid, Katja Buehler Helmholtz-Centre for Environmental Research, Germany</p>
17:10 – 17:30	<p><i>Miniaturized microbial fuel cell utilizing carbohydrate substrates</i> Pavel Hasal, Zuzana Nováková, Michal Opletal, Walter Schrott, Michal Přibyl University of Chemistry and Technology, Prague, Czech Republic</p>
Poster spotlights	
Chair	<p>Adama Marie Sesay, University of Oulu, Finland Ulrich Krühne, Technical University of Denmark, Denmark</p>
17:30 – 17:35	<p><i>Shaping of lipid membranes in a microfluidic diffusion chamber</i> Mojca Mally, Saša Vrhovec, Bojan Božič, Saša Svetina, Jure Derganc University of Ljubljana, Slovenia; Jožef Stefan Institute, Slovenia</p>
17:35 – 17:40	<p><i>The development of easy-to-make continuous flow micro-reactors for biological and chemical purposes</i> Domenico Andrea Cristaldi, Pablo García-Manrique, Eugen Stulz, Xunli Zhang University of Southampton, United Kingdom; University of Oviedo, Spain</p>
17:40 – 17:45	<p><i>Multivalency effects on the immobilization of sucrose phosphorylase in flow microchannels for the development of a high-performance biocatalytic microreactor</i> Donya Valikhani, Juan M. Bolivar, Martin Pfeiffer, Bernd Nidetzky Graz University of Technology, Austria</p>
17:45 – 17:50	<p><i>Experimental and theoretical evaluation of residence time distribution in miniaturized packed bed reactors with Novozym® 435</i> Filip Strniša, Marijan Bajić, Peter Panjan, Tomaž Urbič, Polona Žnidaršič Plazl, Adama Marie Sesay, Igor Plazl University of Ljubljana, Slovenia; University of Oulu, Finland</p>
17:50 – 17:55	<p><i>Biodiesel purification in a microseparator: deep eutectic solvents vs water</i> Anita Šalić, Ana Jurinjak Tušek, Bruno Zelić University of Zagreb, Croatia</p>
17:55 – 18:00	<p><i>Implementation of aqueous micellar two-phase systems within a microfluidic device for protein purification</i> Filipa A. Vicente, Živa Brečko, Mojca Seručnik, João A. P. Coutinho, Sónia P. M. Ventura, Polona Žnidaršič Plazl Universidade de Aveiro, Portugal; University of Ljubljana, Slovenia</p>

18:00 – 20:00 **Poster session**

Tuesday, 25th April 2017

- 9:00 – 9:55 **Plenary talk**
Microfluidic droplets as tools for high-throughput biology: enzyme evolution, recruitment and discovery based on catalytic promiscuity
Florian Hollfelder
University of Cambridge, United Kingdom
- Chair
Takehiko Kitamori, The University of Tokyo, Japan
- Session ANALYTICAL MICRODEVICES**
- Chair
Torsten Mayr, Graz University of Technology, Austria
Gerardo Perozziello, University of Magna Graecia, Italy
- 10:00 – 10:30 **Keynote lecture**
A new platform “immuno-wall device” as a rapid diagnostics tool
Manabu Tokeshi
Hokkaido University, Japan
- 10:30 – 10:50
Development of a microfluidic platform mimicking cascading liver metabolic reactions
Gulsim Kulsharova, Peter Panjan, Tiina Tolonen, Adama M. Sesay, Frank Baganz, Nicolas Szita
University College London, United Kingdom; University of Oulu, Finland
- 10:50 – 11:20 Coffee break
- 11:20 – 11:40
Real-time determination of oxygen concentration and pH in droplet microfluidic culturing systems using optical sensor nanoparticles
Shiwen Sun, Michał Horka, Miguel Tovar, Lisa Mahler, Artur Ruszczak, Josef Ehgartner, Martin Roth, Piotr Garstecki, Torsten Mayr
Graz University of Technology, Austria; Polish Academy of Sciences, Poland; Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute, Germany
- 11:40 – 12:00
Multifunctional membranes based on co-electrospinning: new material for the development of microbioreactors and biosensors
Teresa Ramon-Marquez, Antonio L. Medina-Castillo, Alberto Fernandez-Gutierrez,
Jorge F. Fernandez-Sanchez
University of Granada, Spain; NanoMyP®, Spain
- 12:00 – 12:20
Integrated biosensors as tools for online microbioreactor analytics
Peter Panjan, Polona Žnidaršič Plazl, Jorge Fernandez-Sanchez, Vesa Virtanen, Adama Marie Sesay
University of Oulu, Finland; University of Ljubljana, Slovenia; University of Granada, Spain
- 12:20 – 12:40
Sensor integration in microbioreactor systems for high-throughput bioprocesses
Ana C. Fernandes, Daria Semenova, Josef Ehgartner, Torsten Mayr, Adama M. Sesay, Krist V. Gernaey, Ulrich Krühne
Technical University of Denmark, Denmark; Graz University of Technology, Austria; University of Oulu, Finland

12:40 – 13:00	<i>Miniaturized high throughput ecotoxicity test for microorganisms growth</i> Cindy Hany , Flavie Sarrazin, Philippe Marchal, Jacques-Aurélien Sergent Laboratoire du Futur, Solvay-CNRS, France; Solvay Toxicological and Environmental Risk Assessment, Belgium
13:00 – 14:00	Lunch
14:00 – 15:00	COST Action “Systems Biocatalysis” meeting
14:00 – 15:30	Poster session
15:30 – 19:30	Excursion
20:00	Gala dinner

Wednesday, 26th April 2017

9:00 – 9:55	Plenary talk <i>Slug-flow microfluidic bioreactors for production of special chemicals</i> Michal Přibyl University of Chemistry and Technology, Prague, Czech Republic
	Chair Volker Hessel , Eindhoven University of Technology, The Netherlands

Session BIOPROCESS INTENSIFICATION AND INTEGRATION

Chair	Goran N. Jovanović , Oregon State University, USA Igor Plazl , University of Ljubljana, Slovenia
10:00 – 10:30	Keynote lecture <i>Manufacturing development strategies for bio-lamina-plate technology and other process intensification technologies</i> Brian K. Paul , Kijoon Lee, Matthew Coblyn and Goran Jovanovic Oregon State University, USA
10:30 – 10:50	<i>Sustainability of process options for enzymatic packed bed flow reactors at relevant scale and future role of ‘spaciants’</i> Volker Hessel , Smitha Sundaram, Sandra Budžaki, Goran Miljić, Marina Tišma Eindhoven University of Technology, The Netherlands; Josip Juraj Strossmayer University of Osijek, Croatia
10:50 – 11:20	Coffee break
11:20 – 11:40	<i>Continuous lipase B-catalysed isoamyl acetate synthesis in a two-liquid phase system using Corning® AFR™: optimization and scale-up</i> Daniela Lavric , Uroš Novak, Polona Žnidaršič Plazl Corning S.A.S, France; University of Ljubljana, Slovenia
11:40 – 12:00	<i>Development of a microbioreactor system for biopharmaceutical applications and analysis of scale down effects</i> Lasse Frey , Detlev Rasch, Susanna Lladó Maldonado, Sven Meinen, Andreas Dietzel, Rainer Krull Technical University of Braunschweig, Germany

- 12:00 – 12:20 *Mechanistic models in the development of microfluidic screening technologies*
Daria Semenova, Ana C. Fernandes, Barbara Vadot, Juan M. Bolivar, Torsten Mayr, Ulrich Krühne, Alexandr Zubov, Krist V. Gernaey
Technical University of Denmark, Denmark; INP - Ecole Nationale des Ingénieurs en Arts Chimiques et Technologiques, France; Graz University of Technology, Austria
- 12:20 – 12:40 *Multiphase separation in microscale-based systems using capillary pressure gradients*
Goran Jovanovic, Matthew Coblyn, Conor Zobelein, Mark Dolan
Oregon State University, USA
- 12:40 – 13:00 *Study on aqueous/organic two-phase flow in nanochannel for femto-liter solvent extraction*
Yutaka Kazoe, Hiroki Sano, Takuya Ugajin, Kazuma Mawatari, Takehiko Kitamori
The University of Tokyo, Japan
- 13:00 – 13:15 Closing ceremony