## CONFERENCE PROGRAMME

### Sunday, 23rd April 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>16:30</td>
<td>Registration</td>
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<tr>
<td>18:30</td>
<td>Opening ceremony</td>
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<tr>
<td>18:45</td>
<td><strong>Opening lecture</strong></td>
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<td></td>
<td><strong>Engineering Platforms of Micro- and Extended Nano-fluidics</strong></td>
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<td></td>
<td><strong>Takehiko Kitamori</strong></td>
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<td>The University of Tokyo, Japan</td>
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<td></td>
<td>Chair</td>
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<td><strong>Polona Žnidaršič Plazl</strong>, University of Ljubljana, Slovenia</td>
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<td><strong>Bruno Zelić</strong>, University of Zagreb, Croatia</td>
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<tr>
<td>20:00</td>
<td>Welcome party</td>
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### Monday, 24th April 2017

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Registration</td>
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<tr>
<td>9:00</td>
<td><strong>Plenary talk</strong></td>
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<td></td>
<td><strong>Flow Chemistry @ the Chemistry &amp; Biology Interface</strong></td>
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<td></td>
<td><strong>Marko Mihovilovic</strong></td>
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<td>Technical University Vienna, Austria</td>
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<td>Chair</td>
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<td><strong>László Poppe</strong>, Budapest University of Technology and Economics, Hungary</td>
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<td></td>
<td><strong>Session</strong></td>
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<td><strong>ENZYMATIC MICROREACTORS</strong></td>
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<td>Chair</td>
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<td><strong>Roland Wohlgemuth</strong>, Sigma–Aldrich, Switzerland</td>
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<td><strong>Stefano Servi</strong>, Politecnico di Milano, Italy</td>
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<tr>
<td>10:00</td>
<td><strong>Keynote lecture</strong></td>
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<td><strong>Thermophilic proteins and their applications in microreactors for Industrial Biocatalysis</strong></td>
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<td><strong>Jennifer Littlechild</strong></td>
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<td>University of Exeter, United Kingdom</td>
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<td>10:30</td>
<td><strong>Reaction design for the compartmented combination of heterogeneous and enzyme catalysis</strong></td>
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<td><strong>Josef M. Sperl</strong>, <strong>Jörg M. Carsten</strong>, <strong>Jan-Karl Guterl</strong>, <strong>Petra Lommes</strong>, <strong>Volker Sieber</strong></td>
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<td>Technical University of Munich, Germany; TUM Catalysis Research Center, Germany</td>
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10:50 – 11:20 Coffee break

11:20 – 11:40 Continuous-flow dynamic kinetic resolution of amines and amino acids in microreactor setups
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 Overcoming the challenges of cascading enzymatic microreactors
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 Characterization of single-microbeads as isolated microreactors for heterogeneous biocatalysis
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 Wall-coated biocatalytic microreactors for bioprocess intensification: opportunities and challenges
Juan M. Bolivar, Donya Valikhani, Marco A. Tribulato, Sabine Schelch, Bernd Nidetzky
Graz University of Technology, Austria

12:40 – 13:00 Theoretical and experimental study of surface enzyme kinetics in the microreactor system with immobilized ω-transaminase
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
Parallel shaken bioreactor systems with advanced on-line measuring techniques partially replace lab-scale stirred tank bioreactors
Jochen Büchs
RWTH Aachen University, Germany

15:00 – 15:20 Microbial single-cell analysis inside picoliter batch-cultivation chambers
Eugen Kaganovitch, Xenia Steurer, Christopher Probst, Wolfgang Wiechert, Dietrich Kohlheyer
Research Center Jülich, Germany; RWTH Aachen University, Germany

15:20 – 15:40 Influence of scaffold microtexturing on cell cultures
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  
**Novel electrospun magnetized 3D nanofibers in microbioreactors: application to cell-based therapy**  
Maria H. Ribeiro, Mónica Guerra, Samuel Martins; Fábio Garrudo  
Universidade de Lisboa, Portugal

16:00 – 16:30  
Coffee break

16:30 – 16:50  
**Multiphase microreactors with intensification of oxygen mass transfer rate and mixing performance for bioprocess development**  
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

16:50 – 17:10  
**Guiding efficient bioprocess development: one-step microbial synthesis of ε-caprolactone from cyclohexane**  
Rohan Karande, Andreas Schmid, Katja Buehler  
Helmholtz-Centre for Environmental Research, Germany

17:10 – 17:30  
**Miniaturized microbial fuel cell utilizing carbohydrate substrates**  
Pavel Hasal, Zuzana Nováková, Michal Opletal, Walter Schrott, Michal Přibyl  
University of Chemistry and Technology, Prague, Czech Republic

**Poster spotlights**

**Chair**  
Adama Marie Sesay, University of Oulu, Finland  
Ulrich Krühne, Technical University of Denmark, Denmark

17:30 – 17:35  
**Shaping of lipid membranes in a microfluidic diffusion chamber**  
Mojca Mally, Saša Vrhovec, Bojan Božič, Saša Svetina, Jure Derganc  
University of Ljubljana, Slovenia; Jožef Stefan Institute, Slovenia

17:35 – 17:40  
**The development of easy-to-make continuous flow micro-reactors for biological and chemical purposes**  
Domenico Andrea Cristaldi, Pablo García-Manrique, Eugen Stulz, Xunli Zhang  
University of Southampton, United Kingdom; University of Oviedo, Spain

17:40 – 17:45  
**Multivalency effects on the immobilization of sucrose phosphorylase in flow microchannels for the development of a high-performance biocatalytic microreactor**  
Donya Valikhani, Juan M. Bolivar, Martin Pfeiffer, Bernd Nidetzky  
Graz University of Technology, Austria

17:45 – 17:50  
**Experimental and theoretical evaluation of residence time distribution in miniaturized packed bed reactors with Novozym® 435**  
Filip Strniša, Marijan Bajić, Peter Panjan, Tomaž Urbič, Polona Žnidaršič Plazl, Adama Marie Sesay, Igor Plazl  
University of Ljubljana, Slovenia; University of Oulu, Finland

17:50 – 17:55  
**Biodiesel purification in a microseparator: deep eutectic solvents vs water**  
Anita Šalić, Ana Jurinjak Tušek, Bruno Zelić  
University of Zagreb, Croatia

17:55 – 18:00  
**Implementation of aqueous micellar two-phase systems within a microfluidic device for protein purification**  
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
**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 Ehrgartner, 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  
Miniaturized high throughput ecotoxicity test for microorganisms growth  
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

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**Wednesday, 26th April 2017**

9:00 – 9:55  
**Plenary talk**  
*Slug-flow microfluidic bioreactors for production of special chemicals*  
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**  
*Manufacturing development strategies for bio-lamina-plate technology and other process intensification technologies*  
Brian K. Paul, Kijoon Lee, Matthew Coblyn and Goran Jovanovic  
Oregon State University, USA

10:30 – 10:50  
*Sustainability of process options for enzymatic packed bed flow reactors at relevant scale and future role of ‘spaciants’*  
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  
*Continuous lipase B-catalysed isoamyl acetate synthesis in a two-liquid phase system using Corning® AFR™: optimization and scale-up*  
Daniela Lavric, Uroš Novak, Polona Žnidaršič Plazl  
Corning S.A.S, France; University of Ljubljana, Slovenia

11:40 – 12:00  
*Development of a microbioreactor system for biopharmaceutical applications and analysis of scale down effects*  
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 Zoebelein, 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