



CONFERENCE PROGRAMME

Sunday, 19th May 2024

16:30 – 18:30 Registration

18:30 – 18:45 Opening ceremony

18:45 – 19:45

Opening lecture

Linkage of biocatalyst development with reaction engineering

Andreas Bommarius, Georgia Institute of Technology, USA

Chairs: **Polona Žnidaršič Plazl**, University of Ljubljana, Slovenia

Bruno Zelić, University of Zagreb, Croatia

20:00 Welcome party

Monday, 20th May 2024

8:00 – 9:00 Registration

9:00 – 9:55

Plenary talk

Droplet Microreactors for Ultrahigh Throughput Enzyme Discovery

Florian Hollfelder, University of Cambridge, UK

Chair: **László Poppe**, Budapest University of Technology and Economics, Hungary

Session ENZYMATIC MICROREACTORS

Chairs **Roland Wohlgenuth**, Łódź University, Poland

Jennifer Littlechild, University of Exeter, UK

10:00 – 10:30

Keynote lecture

Identification of opportunities and challenges of immobilized-enzyme miniaturized reactors for reaction intensification

Juan M. Bolivar, Complutense University of Madrid, Spain

10:30 – 10:50

3D-printed microreactors for enzyme immobilization: A paradigm towards customized microfluidic screening platforms

Elena Gkantzou, David Schönauer, Hannah Brass, Selin Kara
Institute of Technical Chemistry, Germany

10:50 – 11:20 Coffee break

11:20 – 11:40

U Can Load (UCL): a Universal Microreactor for Flow Biocatalysis

Marijan Bajić, Sansanee Khiawjan, Stephen T. Hilton, Gary J. Lye, Marco P.C. Marques,
Nicolas Szita

University College London, UK

11:40 – 12:00

Redesigning a 3D-printed micro bubble column reactor for biocatalytic

Gábor Schultz, Leonie Schumann, Ebrahim TaediNejad, Florian Kelsch, Detlev Rasch,
Andreas Dietzel, Janina Bahnemann, Ulrich Krühne, Andreas Liese, Rainer Krull

TU Braunschweig, Germany

12:00 – 12:20

Optimized Spatial Configuration of Heterogeneous Biocatalysts Intensifies flow

Javier Santiago-Arcos, Susana Velasco-Lozano, Eleftheria Diamanti, Ana I. BenítezMateos,
Daniel A. Grajales, Francesca Paradisi, Fernando López-Gallego

CIC biomaGUNE, Spain

12:20 – 12:40

Enzymatic Acetophenone Reduction in Deep Eutectic Solvent: Transitioning from Batch to Continuous System

Mia Radović, Tadej Menegatti, Borut Šketa, Marko Božinović, Marina Cvjetko Bubalo, Igor Plazl, Polona Žnidaršič-Plazl
University of Zagreb, Croatia

12:40 – 13:00

Polymerization of apigenin catalysed by horseradish peroxidase in a microreactor

Anita Šalić, Ana Boltek, Bruno Zelić Dunja Šamec

University of Zagreb, Croatia

13:00 – 14:30

Lunch

Session

CELLS WITHIN MICRODEVICES

Chairs

Kersten Rabe, Karlsruhe Institute of Technology, Germany

Nicolas Szita, University College London, UK

14:30 – 15:00

Keynote lecture

Engineering microdevices to recapitulate complex diseases using induced pluripotent stem cells

Ozlem Yesil-Celiktas, Ege University, Turkey

15:00 – 15:20

Automation of a capillary-wave microreactor for conducting viability studies

Ika Knoke, Kevin Viebrock, Detlev Rasch, Andreas Dietzel, Rainer Krull

TU Braunschweig, Germany

15:20 – 15:40

Probing bacteria-phage interactions at the single cell level using droplet microfluidics

Anuj Tiwari, Nela Nikolica, Robyn Manley, Vasileios Anagnostidis, **Fabrice Gielen**

University of Exeter, UK

15:40 – 16:00

Automation of a capillary-wave microreactor for conducting viability studies

Jialan Cao, Paulina Roza Marczakiewicz-Perera, G. Alexander Groß, Ralf Welsch, Oleksandr

Dovzhenko, Klaus Palme, Traud Winkelmann and J. Michael Köhler

Technische Universität Ilmenau, Germany

16:00 – 16:30

Coffee break

16:30 – 16:50

Microfluidic cultivation and mechanical testing of fungal hyphae enabled by two photon polymerization

Steffen Brinkmann, Arno Kwade, Ingo Kampen, Andreas Dietzel

Technische Universität Ilmenau; Germany

16:50 – 17:10

Characterization of different biocatalyst formats for BVMO-catalyzed cyclohexanone oxidation

Bruno Bühler, Lisa Bretschneider, Ingeborg Heuschkel, Afaq Ahmed, Katja Bühler, Rohan Karande

Helmholtz-Centre for Environmental Research-UFZ, Germany

17:10 – 17:30

Optimization of continuous L-malic acid production in a microreactor through mathematical modeling

Tadej Menegatti, Igor Plazl, Polona Žnidaršič Plazl

University of Ljubljana, Slovenia

Session

Poster spotlights

Chair

Michal Příbyl, University of Chemistry and Technology Prague, Czech Republic

17:30 – 17:35

Diamin-alkyl derivative functionalized Immobead T2-150 as enzyme carrier for biocatalysis in continuous flow microfluidic system

Matild Pap, Csaba Paizs, Gabriel Katona

Babeş-Bolyai University of Cluj-Napoca, Romania

17:35 – 17:40

Enhanced Enzyme Immobilization in Agarose-based Hydrogels

Martin Peng, Christof M. Niemeyer, Kersten S. Rabe,

Karlsruhe Institute of Technology, Germany

17:40 – 17:45

Microfluidic devices for scaling-down biocatalysis and enzyme stability studies

Maria Rodriguez-Torres, Elif Erdem, Ulrich Krühne and John M. Woodley

Technical University of Denmark, Denmark



IMPLEMENTATION OF
MICROREACTOR TECHNOLOGY
IN BIOTECHNOLOGY

7TH INTERNATIONAL
CONFERENCE
19-22 MAY · 2024
ZADAR · CROATIA

17:45 – 17:50	<i>Novel magnetic nanoparticle-based flow reactors for biocatalytic production of enantiopure alcohols and amines</i> Fausto Macgyver Wanderley Gouveia Silva , Ali Obaid Omarah, József Szemes, László Tuba, Orsolya Takács, Ágnes Malta-Lakó, Evelin Santa-Bell, Akan Mustashev, Naran Bataa, Balázs Decsi, Diána Balogh-Weiser, László Poppe Budapest University of Technology and Economics, Hungary
17:50 – 17:55	<i>Application of cross-linked enzyme crystals of halohydrin dehalogenase HheG D114C in microfluidics</i> Lina Ahlborn , Lanting Xiang, Iordania Constantinou, Anett Schallmeyer TU Braunschweig, Germany
17:55 – 18:00	<i>Microfluidics-based generation of crosslinked horseradish peroxidase nanoaggregates and pallidol synthesis from resveratrol</i> Marko Božinović , Francesca Annunziata, Sabrina Dallavalle, Polona Žnidaršič Plazl University of Ljubljana, Slovenia
18:00 – 20:00	Poster session

Tuesday, 21st May 2024

9:00 – 9:55	Plenary talk <i>Shining Light on microreactors: Exploring the Power of Optical Sensing</i> Torsten Mayr , Graz University of Technology, Austria Chair: Takehiko Kitamori , The University of Tokyo, Japan
Session	ANALYTICAL AND MEDICAL MICRODEVICES
Chairs	Bruno Bühler , Helmholtz-Centre for Environmental Research, Leipzig, Germany Torsten Mayr , Graz University of Technology, Austria
10:00 – 10:30	Keynote lecture <i>HD-SACA System for Single CTCs/CTM Rapid Diagnosis/Prognosis and Tumor-organelle-on-a-Chip Drug Screening for AI-Precision Medicine</i> Fan-Gang Tseng , National Tsing Hua University, Taiwan
10:30 – 10:50	<i>Glucose and lactate optical biosensors for microfluidic cell culture monitoring</i> Iga Malicka , Stefanie Fuchs, Madalena Cipriano, Christiane Luley, Bernd Nidetzky, Peter Loskill, Torsten Mayr Graz University of Technology, Austria
10:50 – 11:20	Coffee break
11:20 – 11:40	<i>Development of an automated platform for the optimization of microfluidic reactors through multi-reactor integration and online (chip-)LC/MS-detection</i> Sanjay Lama , Hannes Westphal, Simon Schmidt, Rico Warias, Tanja Gulder, Detlev Belder University of Leipzig, Germany
11:40 – 12:00	<i>Towards rapid, high-throughput and cost-effective evaluation of viral vector efficacy</i> Daria Farcas , Charles Moore-Kelly, R. André Raposo, Marco Marques, Nicolas Szita University College London, UK
12:00 – 12:20	<i>A Novel Therapeutic Method for Eliminating Amyloid-β in Alzheimer's Disease: Utilizing the iCore Blood Processing Platform</i> Alireza Asgharpour Masouleh, Georgy Koromyslov, Jaturavit Pantakitcharoenkul, Jad George Touma, Isabella R Estrada, Matthew Coblyn, Goran Jovanovic Oregon State University, USA
12:20 – 12:40	<i>Microfluidic PAT for CAR T Cell Therapy Manufacturing</i> Aleksandra Nikoniuk , Michael Thomas, Koki Lilova, Nicolas Szita University College London, UK

12:40 – 13:00	<i>Flow chemistry monitoring with in-situ React-IR 702L and React-Raman 802L systems</i> Kimmo Leppänen , Keith Racman Mettler Toledo
13:00 – 15:00	Lunch
15:00 – 16:00	Free time
16:00 – 19:45	Excursion
20:00	Gala dinner

Wednesday, 22nd May 2024

9:00 – 9:55	Plenary talk <i>Lessons learned – Using capillary biofilm reactors in biotechnology</i> Katja Bühler , Rohan Karande, Helmholtz- Center for Environmental Research – UFZ, Germany Chair: Andreas Bommarius , Georgia Institute of Technology, USA
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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 <i>Self-Assembling Biocatalytic Materials and Additive Manufacturing for Flow Biocatalysis</i> Kersten S. Rabe , Karlsruhe Institute of Technology, Germany
10:30 – 10:50	<i>Bioprocess Microfluidics 2.0: Towards Standardisation for Bioprocess Microfluidics Applications</i> Nicolas Szita , Marco P.C. Marques University College London, UK
10:50 – 11:20	Coffee break
11:20 – 11:40	<i>Design and fabrication of a microfluidic device for in-line crosslinked enzyme aggregates purification</i> Borut Šketa , Ebrahim Taiedi Nejad, Andreas Dietzel, Polona Žnidaršič Plazl University of Ljubljana, Slovenia
11:40 – 12:00	<i>Lipase catalyzed synthesis of enantiomers and their continuous separation in an electric field</i> Michal Příbyl , Lukáš Sauer, Anna Kovářová, Zdeněk Slouka University of Chemistry and Technology, Czech Republic
12:00 – 12:20	<i>Advanced methods for continuous chiral separation in modular milli-fluidic systems</i> Lukáš Sauer , Adam Sklenář, Petr Šmejkal, Michal Příbyl University of Chemistry and Technology, Czech Republic
12:20 – 12:40	<i>Modeling and kinetic parameter estimation of glucose dehydrogenase-catalyzed glucose oxidation</i> Ana Jurinjak Tušek , Karla Čulo, Anita Šalić, Bruno Zelić University of Zagreb, Croatia
12:40 – 13:10	Closing keynote lecture TBA Chih-Chen Chen , National Tsing Hua University, Taiwan
13:10 – 13:30	Closing ceremony