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International thematic conference

IMPLEMENTATION OF MICROREACTOR TECHNOLOGY INTO BIOTECHNOLOGY

Programme

- 8:00-10:00 REGISTRATION
- 10:00-10:10 OPENING OF THE CONFERENCE
P. Žnidaršič Plazl, Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
B. Zelić, Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia
- 10:10-10:40 OPENING LECTURE
(Chairpersons: P. Žnidaršič Plazl and B. Zelić)
- Microfluidics and applications in chemistry, biology and bioengineering**
X. Zhang
Bioengineering Science Research Group, School of Engineering Sciences, University of Southampton, Great Britain
- 10:40-12:00 MORNING SESSION
MANUFACTURING OF MICROSTRUCTURED DEVICES
(Chairpersons: M. Junkar and S. Amon)
- 10:40-11:00 **Micro and precision manufacturing**
G. Bissacco
Department of Innovation in Mechanics and Management, University of Padua, Italy
- 11:00-11:20 **Staggered Herringbone Mixer designed for micro EDM milling**
I. Sabotin¹, G. Tristo², G. Bissacco², M. Junkar¹, J. Valentinčič¹
¹ Department of Manufacturing Technologies and Systems, Faculty of Mechanical Engineering, University of Ljubljana, Slovenia
² Department of Innovation in Mechanics and Management (DIMEG), University of Padua, Italy
- 11:20-11:40 **Manufacturing of microreactors**
S. Amon, D. Vrtačnik, D. Resnik, M. Možek, U. Aljančič, B. Pečar
Laboratory of Microsensor Structures and Electronics, Faculty of Electrical Engineering, University of Ljubljana, Slovenia

- 11:40-12:00 **Fabrication of micro- and nanostructured medical devices by plasma treatment**
I. Junkar¹, A. Vesel¹, U. Cvelbar¹, M. Mozetič¹, M. Krašna², D. Domanovič²
¹ Institute Jožef Stefan, Slovenia
² Blood Transfusion Centre of Slovenia, Slovenia
- 12:00-14:00 Lunch break
- 14:00-15:40 AFTERNOON SESSION
ENZYMATIC MICROREACTORS
(Chairpersons: P. Fernandes and J. Vorkapić-Furač)
- 14:00-14:20 **Miniaturization in biocatalysis**
P. Fernandes
Institute for Biotechnology and Bioengineering, Technical University of Lisbon, Portugal
- 14:20-14:40 **Biocatalyzed oxidation of phenolic compounds in a microreactor**
M. Tišma¹, B. Zelić², Đ. Vasić-Rački², P. Žnidaršič Plazl³, I. Plazl³
¹ Faculty of Food Technology, J.J.Strossmayer University of Osijek, Croatia
² Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia
³ Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
- 14:40-15:00 **Steroid biotransformation and *in situ* separation within microchannel system**
M. Marques¹, P. Fernandes¹, J.M.S. Cabral¹, P. Žnidaršič Plazl², I. Plazl²
¹ Institute for Biotechnology and Bioengineering, Technical University of Lisbon, Portugal
² Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
- 15:00-15:20 **Synthesis of ionic liquids and their use as solvents for biocatalysis in microreactors**
M. Cvjetko¹, J. Vorkapić-Furač¹, A. Pohar², P. Žnidaršič Plazl²
¹ Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia
² Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
- 15:20-15:40 **Laccase – catalyzed phenol oxidation in microreactor**
A. Šalić, B. Zelić
Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia
- 15:40-16:10 Coffee break

- 16:10-17:40 **WHOLE CELL MICROBIOREACTORS**
(Chairpersons: E. Franco-Lara and K.V. Gernaey)
- 16:10-16:30 **Microbioreactors for bioprocess development – practical aspects and limitations**
D. Schäpper^{1,2}, M. N. H. Z. Alam¹, A. Bolic¹, A. Eliasson Lantz², K. V. Gernaey¹
¹ Department of Chemical and Biochemical Engineering, Technical University of Denmark, Denmark
² Department of Systems Biology, Technical University of Denmark, Denmark
- 16:30-16:50 **Whole-cell biocatalysis within microchannels**
G. Stojkovič, P. Žnidaršič Plazl
Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
- 16:50-17:10 **Estimation of microbial kinetics at macro- and microscale: a comparative study**
E. Franco-Lara, G. Peterat, A. Edlich, R. Krull
Institute of Biochemical Engineering, Technical University of Braunschweig, Germany
- 17:10-17:30 SPONSORS' PRESENTATIONS

Thursday, September 30, 2010

- 8:00-9:00 REGISTRATION
- 9:00-11:00 MORNING SESSION
ANALYSIS WITHIN MICROSTRUCTURED DEVICES
(Chairpersons: N. Gros and T. Mayr)
- 9:00-9:20 **Optical sensors for microfluidic devices**
T. Mayr, B. Ungerböck, T. Abel, K. Koren, G. Mistlberger
Institute of Analytical Chemistry and Food Chemistry, Technical University of Graz, Austria
- 9:20-9:40 **Microsensors for microreactors**
M. Možek, D. Resnik, D. Vrtačnik, U. Aljančič, B. Pečar, and S. Amon
Laboratory of Microsensor Structures and Electronics, Faculty of Electrical Engineering,
University of Ljubljana, Slovenia
- 9:40-10:00 **Small-scale analytical devices for at-line monitoring of biotechnological processes**
N. Gros
Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia

- 10:00-10:20 **Biosensors at nano- and micro-scale**
L. Fonseca¹, V.C.B. Martins², P. Freitas²
¹ Institute for Biotechnology and Bioengineering, Technical University of Lisbon, Portugal
² Instituto de Engenharia de Sistemas e Computadores -Microsistemas e Nanotecnologias, Lisbon, Portugal
- 10:20-10:40 **Dielectrophoretic separation of mammalian cells with different membrane conductivities**
J. Čemažar, T. Kotnik
Laboratory of Biocybernetics, Faculty of Electrical Engineering, University of Ljubljana, Slovenia
- 10:40-11:00 **Analysis of drug response by DNA microarrays**
D. Rozman, P. Juvan, M. Hafner, T. Režen
Centre for Functional Genomics and Bio-Chips, Institute of Biochemistry, Faculty of Medicine, University of Ljubljana, Slovenia
- 11:00-11:30 Coffee break
- 11:30-13:10 AFTERNOON SESSION
MODELLING AND INTEGRATION OF BIOPROCESSES AT THE MICROREACTOR SCALE
(Chairpersons: Ž. Kurtanjek and M. Krajnc)
- 11:30-11:50 **Reaction-diffusion dynamics in microreactors: modelling and experiments**
I. Plazl, P. Žnidaršič Plazl
Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
- 11:50-12:10 **Modelling of non-stationary hydrodynamics in microreactors**
A. Tušek, Ž. Kurtanjek
Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia
- 12:10-12:30 **Downstream processing within microstructured devices**
B. Zelić
Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia
- 12:30-12:50 **Integrated process of transesterification within a microchannel system**
A. Pohar, P. Žnidaršič Plazl, I. Plazl
Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia
- 12:50-13:10 **Applied biocatalysis in microreactors: promises and reality**
B. Nidetzky
Institute of Biotechnology and Biochemical Engineering, Technical University of Graz, Austria
- 13:10 Closing of the conference