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Wednesday, 4 May 2011

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C. Dalmay¹, L.M. Mir^{2,3}, E. Dufour-Gergam², and B. Le Pioufle¹
¹*Ecole Normale Supérieure de Cachan (ENS), FRANCE,*
²*University Paris-Sud, FRANCE, and* ³*Institut Gustave-Roussy, FRANCE*
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Y.-Y. Chiang, H. Hardelauf, and J. West
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H. Hardelauf¹, Y.-Y. Chiang¹, J.-P. Frimat¹, J.M. Peyrin², and J. West¹
¹*ISAS, GERMANY and*
²*University of Pittsburgh Medical Center (UPMC), FRANCE*

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R.G. Yamada
Institute of Physical and Chemical Research (RIKEN), JAPAN
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S. Terrettaz¹, S. Makohliso², and H. Vogel¹
¹*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and*
²*Ayanda Biosystems SA (EPFL), SWITZERLAND*
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N. Lopez¹, M. Bocchi^{1,2}, E. Franchi Scarselli¹, and R. Guerrieri¹
¹*University of Bologna, ITALY and* ²*Mindseeds Laboratories s.r.l., ITALY*
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¹*National Taiwan University, TAIWAN and*
²*Food Industry Research and Development Institute, TAIWAN*
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¹*University Hospital of Bern, SWITZERLAND,*
²*University of Bern, SWITZERLAND, and*
³*Centre Suisse d'Electronique et de Microtechnique SA (CSEM), SWITZERLAND*
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J. Snijder², H.H.A.J. Roosen², C. Edwards¹, and D.V. Nicolau¹
¹*University of Liverpool, UK and* ²*Philips Research Europe, THE NETHERLANDS*

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¹*Mebius Advanced Technology Ltd., JAPAN*, ²*Kyushu University, JAPAN*, ³*Tokyo Metropolitan University, JAPAN*, and ⁴*NTT Advanced Technology Corp., JAPAN*
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¹*University of Bern, SWITZERLAND*, ²*University of Bern, SWITZERLAND*, and ³*Centre Suisse d'Electronique et Microtechnique SA (CSEM), SWITZERLAND*
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H. Hardelauf¹, J. Sisnaiske², J.-P. Frimat¹, C. van Thriel², and J. West¹
¹*ISAS, GERMANY* and ²*University of Dortmund, GERMANY*
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E. Bianchi^{1,2}, E. Accastelli¹, A. Ferretti¹, G. Dubini², and C. Guiducci¹
¹*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND* and ²*Politecnico di Milano Milan, ITALY*

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¹Kagawa University, JAPAN,
²Japan Science and Technology Agency (JST), JAPAN,
³University of Tokyo, JAPAN, and ⁴Kyoto University, JAPAN
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Université Lille 1, FRANCE
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Y.-A. Chen¹, A.D. King², C.-Y. Wu¹, W.-H. Liao¹, and Y.-C. Tung¹
¹Academia Sinica, TAIWAN and ²University of Michigan, USA
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J. Wiene, S.F. Graf, and H.F. Knapp
Centre Suisse d'Electronique et de Microtechnique (CSEM), SWITZERLAND
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M. Binz¹, J. Hajne¹, A.P. Lee², C. Edwards¹, and D.V. Nicolau¹
¹University of Liverpool, UK and ²University of California, Irvine, USA
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C. Garcia¹, A.L. Schomacker², A. Cigoj³, A. Vrecko³, C. Harms², and W. Lang¹
¹University of Bremen, GERMANY, ²Technologies- Transfer- Zentrum (TTZ), GERMANY, and ³OPTOTEK d.o.o., SLOVENIA
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J.B. White¹ and S. Takayama^{1,2}
¹University of Michigan, USA and
²Ulsan National Institute of Science & Technology, SOUTH KOREA
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A. Hoshino¹, N. Miyanishi², N. Nishi³, F. Oohira³, and S. Kamitori³
¹Fushimi Pharmaceutical Co., Ltd., JAPAN, ²Toyo University, JAPAN, and
³Kagawa University, JAPAN

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I. González¹, L.J. Fernández², N. López⁴, J. Berganzo², A. Martín³, T. Gómez¹, M. Bouali³, J.L. Soto⁴, and A. Carrato⁵
¹Consejo Superior de Investigaciones Científicas (CSIC), SPAIN, ²Ikerlan S. Coop, SPAIN, ³Universidad de Mondragón, SPAIN, ⁴Hospital General Universitario Elche, SPAIN, and ⁵Hospital Ramón y Cajal de Madrid, SPAIN

11:30 **W2P - Poster Session I**

13:00 **Lunch**

14:15 **Flash Poster Session 2 - Biotechnology Applications & Cell/Molecular Biology**
Session Chair:
Sylvain Martel, *École Polytechnique Montréal, CANADA*

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S. Spieth¹, A. Schumacher¹, S. Messner¹, T. Holtzman², P.D. Rich², J.W. Dalley², and R. Zengerle¹
¹Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY and ²University of Cambridge, UK

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L. Aranzeta-Ojeda, C. Moreno-García, A. Granados-Reyes, E. Lopez-Caudana, and R. Bustamante-Bello
Tecnologico de Monterrey, MEXICO

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A.D. Jakes¹, K.J. Shaw², G.M. Greenway², S.R. Killick³, S.W. Lindow³, and S.J. Haswell²
¹Hull York Medical School, UK, ²University of Hull, UK, and ³Hull Royal Infirmary, UK

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K. Yang, X. Liu, Q. Yuan, J. Wu, A. Wadhwa, and S. Eda
University of Tennessee, USA

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D. Maurer¹, L. Radlinger¹, H. Luginbuehl¹, C. Lehmann-Stuedler², A. Kuhn², and V.M. Koch¹
¹Bern University of Applied Sciences, SWITZERLAND and ²University Hospital Bern, SWITZERLAND

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J.-U. Shim, H. Li, S. Ibrahim, R. Ranasinghe, G. Blaser, S. Jackson, W.T.S. Huck, A. Martinez-Arias, C. Abell, and D. Klenerman
University of Cambridge, UK
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Y. Hosokawa, T. Nakahara, K. Terao, H. Takao, F. Shimokawa, F. Oohira, and T. Suzuki
Kagawa University, JAPAN
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D. Choudhury^{1,2}, D. van Noort², and H. Yu^{1,2}
¹The Nanos, SINGAPORE and ²National University of Singapore, SINGAPORE
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P.D. van der Wal¹, P. Hadvary², H.-J. Tschirky², and N.F. de Rooij¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and ²PharmaSens AG, SWITZERLAND
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K. Kaiser¹, A. Born¹, F. Gast¹, T. Zehlicke², and J. Müller¹
¹Technische Universität Hamburg-Harburg, GERMANY and ²Bundeswehrkrankenhaus Hamburg, GERMANY
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A. Pfenniger^{1,2}, V.M. Koch², and R. Vogel¹
¹University of Bern, SWITZERLAND and ²Bern University of Applied Sciences, SWITZERLAND
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O. Felfoul, M. Mohammadi, and S. Martel
École Polytechnique de Montréal, CANADA
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University of Wisconsin, USA

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V. Kalashnikov¹, V. Koledov¹, V. Afonina¹, A. Mashirov¹, P. Lega¹,
D. Zakharov², A. Irzhak², A. Shelyakov³, and S. Von Gratovsky²
¹*Russian Academy of Sciences (RAS), RUSSIA,*
²*National University of Science and Technology (MISIS), RUSSIA, and*
³*National Research Nuclear University MIPhI, RUSSIA*
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A. Matsumoto¹, K. Kataoka¹, and Y. Miyahara²
¹*Tokyo Medical and Dental University, JAPAN and*
²*University of Tokyo, JAPAN*
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A. Altuna¹, G. Gabriel^{2,3}, L. Menéndez de la Prida⁴,
A. Guimerá^{2,3}, J. Berganzo¹, R. Villa^{2,3}, and L.J. Fernández^{3,5}
¹*Ikerlan S. Coop, SPAIN,* ²*Instituto de Microelectrónica de Barcelona, SPAIN,*
³*Centro de Investigación Biomédica en Red (CIBER), SPAIN,*
⁴*Instituto Cajal, SPAIN, and* ⁵*Universidad de Zaragoza, SPAIN*
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M.L.P. Langelaan, J. Emmelkamp, M.J.A. Segers, and H.B.M. Lenting
Netherlands Organization for Applied Scientific Research (TNO), THE NETHERLANDS
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D. Petti¹, M. Donolato¹, B.T. Dalslet², M. Cantoni¹, J. Cao³, F. Cardoso³,
S. Cardoso³, P.P. Freitas³, M.F. Hansen², and R. Bertacco¹
¹*Politecnico di Milano, ITALY,* ²*Technical University of Denmark, DENMARK, and*
³*INESC MN, PORTUGAL*
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B. Schyrr^{1,2}, S. Pasche¹, R. Ischer¹, E. Scolan¹, Y. Simon²,
Ch. Weder², and G. Voirin¹
¹*Centre Suisse d'Electronique et de Microtechnique (CSEM), SWITZERLAND and*
²*University of Fribourg, SWITZERLAND*
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H. Deschout, F. Strubbe, H. Azarinia, K. Neyts, and K. Braeckmans
Ghent University, BELGIUM

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M.A. Swiderska^{1,2}, K. Mondon^{1,2}, M.F. Zuluaga^{1,2}, M. Möller^{1,2},
H.E. van den Bergh³, and N. Lange^{1,2}
¹University of Geneva, SWITZERLAND, ²University of Lausanne, SWITZERLAND,
and ³École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
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D. Ruh, P. Bingger, J. Fiala, H. Zappe, and A. Seifert
University of Freiburg - IMTEK, GERMANY
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Y.-C. Chang¹, V. Paeder¹, J.M. Hartmann², P. Wägli¹,
A. Homsy¹, L. Hvozdar¹, and H.P. Herzig¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and
²CEA-LETI - Minatec, FRANCE
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M. Sato¹, Y. Saiki¹, K. Nishiyachi¹, T. Matsunaga¹, H. Nagai²,
M. Esashi,¹ and Y. Haga¹
¹Tohoku University, JAPAN and ²NGI Laboratory, JAPAN
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A. Homsy¹, P. van der Wal¹, W. Doll², R. Schaller³, S. Korsatko²,
M. Ratzer³, M. Ellmerer², T.R. Pieber^{2,3}, A. Nicol⁴, and N.F. de Rooij¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, ²Medical
University of Graz, AUSTRIA, ³Joanneum Research Forschungsgesellschaft mbH,
AUSTRIA, and ⁴Bayer Technology Services GmbH, GERMANY
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M.G. Kim, A.Y. Kim, A. Zhanov, and S. Yang
Gwangju Institute of Science and Technology (GIST), SOUTH KOREA
- W3P.27 **SU-8 SPIKE ELECTRODES FOR NEURAL SIGNALS**
J.F. Ribeiro¹, M.F. Silva¹, V.F. Cardoso¹, N.S. Dias^{1,2}, L.R. Jacinto¹,
J.P. Carmo¹, G. Minas¹, and J.H. Correia¹
¹University of Minho, PORTUGAL and
²Polytechnic Institute of Cavado and Ave, PORTUGAL
- W3P.28 **SURFACE MORPHOLOGICAL CHANGES AS BIOMARKERS FOR DETECTING MALARIA INFECTED AVIAN ERYTHROCYTES**
Y.-H. Hsu, J.L. Coleman, and W.C. Tang
University of California, Irvine, USA

W3P.29 **THE ROS EFFECT OF ATMOSPHERIC-PRESSURE
PLASMA JET ON CANCER CELL**
K. Kim, J.J. Ahn, G. Kim, J.-S. Lee, and S.S. Yang
Ajou University, SOUTH KOREA

15:00 W3P - Poster Session 2

16:30 Keynote Speaker II
Session Chair:
Teruo Fujii, *University of Tokyo, JAPAN*

W4K.2 **ARTIFICIAL BIOMOLECULES FOR NANO- AND
MICRO-TECHNOLOGIES**
K. Shiba
Japanese Foundation for Cancer Research, JAPAN

17:30 Wine & Cheese Reception (Wednesday Award Ceremony)

Thursday, 5 May 2011

08:30 Keynote Speaker III

Session Chair:

Shuichi Takayama, *University of Michigan, USA*

T1K.3 TUMOR-ASSOCIATED AND MATCHED NORMAL FIBROBLAST-DERIVED 3D CULTURES – A STUDY OF MATRIX-INDUCED STROMA DEVELOPMENT AND TUMOR PROGRESSION

E. Cukierman, V. Gupta, J. Franco-Barraza, and S. Goldston
Fox Chase Cancer Center, USA

09:20 Keynote Speaker IV

Session Chair:

Benjamin Gantenbein-Ritter, *University of Bern, SWITZERLAND*

T1K.4 AQUEOUS POLYMER PHASE SYSTEMS PROPERTIES AND APPLICATIONS

P.-Å. Albertsson
Lund University, SWEDEN

10:10 Break

10:40 Flash Poster Session 3 - MicroTechnology Advances & Biotechnology Applications & Tissue Engineering Applications

Session Chair:

Yves-Alain Peter, *École Polytechnique Montréal, CANADA*

T2P.1 3D CULTURE OF PANCREATIC STEM CELLS USING TAPERED STENCIL FOR CLUSTER CULTURE (TASCL)

M. Ikeuchi^{1,2}, K. Oishi³, H. Noguchi⁴, S. Hayashi³, and K. Ikuta¹
¹*University of Tokyo, JAPAN*, ²*Japan Science and Technology Agency, JAPAN*,
³*Nagoya University, JAPAN*, and ⁴*Baylor Research Institute, USA*

T2P.2 A HAND-HELD DEVICE TO COPY DNA TO PROTEIN MICROARRAYS

J. Burger¹, D. Lämmle¹, F. von Stetten², O. Stoevesandt³, M.J. Taussig³,
R. Zengerle^{1,2}, and G. Roth^{1,2}
¹*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY*,
²*University of Freiburg – IMTEK, GERMANY*, and ³*Babraham Bioscience Technologies, UK*

T2P.3 ACETYLCHOLINESTERASE-BASED BIOSENSING DEVICE FOR DRUG SCREENING AND ENVIRONMENTAL MONITORING

M. Bartolini¹, M. Naldi¹, D.V. Nicolau², F.C.M.J.M. van Delft³,
J. van Zijl³, J. Snijder³, F.C. van den Heuvel³, and V. Andrisano¹
¹*University of Bologna, ITALY*, ²*University of Liverpool, UK*, and
³*MiPlaza - Philips Research, THE NETHERLANDS*

- T2P.4 **AMYLOID-BETA PEPTIDES SELF-ASSEMBLY ON FLAT AND NANO-PATTERNED SURFACES IN STATIC AND MICROFLUIDIC SYSTEMS: TOWARDS THE CONSTRUCTION OF A SENSING DEVICE**
M. Bartolini¹, M. Naldi¹, M. Pistolozzi¹, V. Andrisano¹, S. Dobroiu², D.V. Nicolau², and F.C.M.J.M. van Delft³
¹University of Bologna, ITALY, ²University of Liverpool, UK, and ³MiPlaza - Philips Research, THE NETHERLANDS
- T2P.5 **DEVELOPMENT OF POLYMER- BASED 3D CELL CULTURE EQUIPMENT AND EVALUATION OF APPROPRIATE CULTIVATION CONDITIONS FOR HEPG2 CELLS**
U. Fernekorn, J. Hampl, F. Weise, M. Klett, A. Laeffert, and A. Schober
Technische Universität Ilmenau, GERMANY
- T2P.6 **DROPLET MICROFLUIDIC TECHNOLOGY FOR HIGH-THROUGHPUT ANALYSIS**
K. Churski, T. Kamiński, S. Jakiela, and P. Garstecki
Polish Academy of Sciences, POLAND
- T2P.7 **DYNAMIC AQUEOUS TWO PHASE SYSTEM (ATPS) MICROPATTERNING**
C.K. Byun¹, H. Hwang¹, J. Park¹, Y.-K. Cho¹, and S. Takayama^{1,2}
¹Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA and ²University of Michigan, USA
- T2P.8 **HIGH-FREQUENCY DIELECTRIC CELL RESPONSE IN HIGHLY CONDUCTIVE BUFFERS**
F. Gielen and J.B. Edel
Imperial College London, UK
- T2P.9 **INFLUENCE OF THE DYNAMIC MICROENVIRONMENT ON LIVER CELLS FUNCTIONALITY: A TRANSCRIPTOMIC STUDY**
J.M. Prot¹, C. Aninat², R. Baudoin¹, L. Griscom³, C. Legallais¹, A. Corlu², and E. Leclerc¹
¹Université de Technologie de Compiègne, FRANCE, ²Université de Rennes, FRANCE, and ³Ecole Normale Supérieure de Cachan, FRANCE
- T2P.10 **LAB-ON-A-CHIP IMPLEMENTING SAMPLE PREPARATION FOR ELISA**
S. Brunklaus¹, V. Stein¹, M. Jakubowski^{1,2}, K. Welzel¹, I. Frese¹, M. Ritzi-Lehnert¹, K.S. Drese¹, R. Colasanto³, and P. Poletti³
¹Institut für Mikrotechnik Mainz (IMM), GERMANY, ²Fachhochschule Bingen, GERMANY, and ³Agrolabo, ITALY
- T2P.11 **MECHANISM OF THE SPATIAL COORDINATION BETWEEN CELL AND NUCLEAR SHAPE**
M. Versaevel, T. Grevesse, and S. Gabriele
University of Mons, BELGIUM
- T2P.12 **MEMBRANE PERMEATION KINETICS OF EUROPIUM COMPLEXING DRUGS STUDIED ON A MICROFLUIDIC CHIP**
K. Eyer, P. Kuhn, S. Allner, D. Lombardi, and P.S. Dittrich
ETH Zürich, SWITZERLAND

- T2P.13 **MESOSCOPIC FREE-STANDING CELLULAR HYDROGEL MICROARCHITECTURES FOR BIOARTIFICIAL 3D TISSUE GEOMETRY**
W. Lee, C.Y. Bae, J. Son, and J.-K. Park
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA
- T2P.14 **MICROENGINEERED TOOLS FOR STUDYING TRANSENDOTHELIAL TRANSPORT OF POLYCATIONIC PEPTOIDS IN VITRO**
I. Hebeiss, S. Giselbrecht, and U. Schepers
Karlsruhe Institute of Technology, GERMANY
- T2P.15 **MICROFLUIDIC AND TERAHERTZ INTEGRATED FUNCTIONS FOR BIOMOLECULE SPECTROSCOPY**
S. Laurette, A. Treizebré, A. Elagli, and B. Bocquet
Université Lille 1, FRANCE
- T2P.16 **MICROFLUIDIC PLATFORM FOR THE AUTOMATED CULTIVATION AND TIME-LAPSE IMAGING OF EMBRYONIC STEM CELLS**
M. Reichen, F.S. Veraitch, and N. Szita
University College London, UK
- T2P.17 **MONOLITHIC SILICON-BASED MICROFLUIDICS DEVICE MADE BY SINGLE STEP LITHOGRAPHY**
P. Neuzil^{1,2}, B.W. Soon¹, C. Fang¹, J. Reboud¹, C.C. Wong³, and L.T.-H. Kao¹
¹*Agency for Science, Technology and Research (A*STAR), SINGAPORE,*
²*Korea Institute of Science and Technology (KIST) - Europe, GERMANY, and*
³*Nanyang Technological University, SINGAPORE*
- T2P.18 **MULTICELLULAR TUMOR SPHEROID FORMATION INSIDE POLYMERIC MICROWELLS: A PROSPECTIVE SYSTEM FOR ANTICANCER DRUG SCREENING**
K. Ziólkowska, A. Dybko, and Z. Brzozka
Warsaw University of Technology, POLAND
- T2P.19 **NANOLITER-SIZED SUPERHEATED BIOREACTOR**
P. Neuzil^{1,2}, W.-S. Sun³, and C.-C. Wong¹
¹*Nanyang Technological University, SINGAPORE,*
²*Korea Institute of Science and Technology (KIST) - Europe, GERMANY, and*
³*Veeco Asia Pte Ltd., SINGAPORE*
- T2P.20 **NANOWALL ARRAYS FOR LABEL-FREE DETECTION**
T. Yasui¹, N. Kaji¹, Y. Okamoto¹, M. Tokeshi¹, Y. Horiike², and Y. Baba^{1,3}
¹*Nagoya University, JAPAN,*
²*National Institute for Materials Science, JAPAN, and*
³*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*
- T2P.21 **DETECTION OF BIOMOLECULES IN A MICROFLUIDIC CHIP: MANIPULATION OF ACTIVE MAGNETIC “PLUG”**
S. Tabnaoui¹, A. Ali-Cherif¹, V. Audonnet¹, A. Le Nel²,
L. Malaquin¹, and J.-L. Viovy¹
¹*Institut Curie, FRANCE and* ²*Fluigent, FRANCE*

- T2P.22 **OPEN-ACCESS AND MULTI-DIRECTIONAL ELECTROSMOTIC FLOW CHIP: HANDLING SINGLE CELLS AND SINGLE DNA MOLECULES**
K. Terao^{1,2}, Y. Kitazawa^{2,3}, R. Yokokawa^{2,3}, M. Washizu^{2,4},
H. Kotera^{2,3}, and F. Oohira¹
¹*Kagawa University, JAPAN,*
²*Japan Science and Technology Agency (JST), JAPAN,*
³*Kyoto University, JAPAN, and* ⁴*University of Tokyo, JAPAN*
- T2P.23 **PALM-SIZED DETECTION READ-OUT SYSTEM FOR ARRAY OF ULTRA SENSITIVE NANOWIRE NANOSENSORS**
P. Neuzil^{1,2}, L. Novak³, J.S.-B. Woon¹, and Y.-J. Wee⁴
¹*Agency for Science, Technology and Research (A*STAR), SINGAPORE,*
²*Korea Institute of Science and Technology (KIST) - Europe, GERMANY,*
³*Czech Technical University, CZECH REPUBLIC, and*
⁴*Nanyang Technological University, SINGAPORE*
- T2P.24 **REUSABLE MICROFLUIDIC SLIDE-BIOREACTOR FOR 3D CELL CULTURE ON FILM-BASED CHIPS**
S. Giselbrecht¹, C. Nies¹, A. Gerwald¹, R. Truckenmueller², and E. Gottwald¹
¹*Karlsruhe Institute of Technology (KIT), GERMANY and*
²*University Twente, THE NETHERLANDS*
- T2P.25 **SPATIALLY AND METABOLICALLY STANDARDIZED TUMOUR SPHEROIDS FOR DRUG RESISTANCE PROFILING**
H. Hardelauf, J.-P. Frimat, Y.-Y. Chiang, and J. West
ISAS, GERMANY
- T2P.26 **SURFACE PLASMON RESONANCE SENSING BY ELECTRODEPOSITED AU NANOSTRUCTURES FOR SENSITIVITY ENHANCEMENT**
N. Nagase¹, K. Shimizu¹, N. Uchiyama², K. Tamai²,
K. Terao¹, T. Suzuki¹, and F. Oohira¹
¹*Kagawa University, JAPAN and* ²*Rexxam Co. Ltd., JAPAN*
- T2P.27 **SYNAPSE DISTRIBUTION IN A 2D-3D MICROPATTERNED NEURAL CELL CULTURE**
A. Kunze and Ph. Renaud
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- T2P.28 **SYNTHESIS OF BACILLUS SPORE ENCAPSULATED MICRODROPLET USING A MICROFLUIDIC CHIP FOR BIOLOGICAL APPLICATION**
K.G. Lee¹, T.J. Park², T.J. Lee¹, and S.J. Lee¹
¹*National Nanofab Center (NNFC), SOUTH KOREA and*
²*Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA*
- T2P.29 **TWO-DIMENSIONAL ELECTROPHORESIS IN THERMOPLASTIC DEVICES FOR PROTEIN ANALYSIS**
Z.H. Fan, K. Liu, P. Gu, and C. Das
University of Florida, USA

11:25 T2P - Poster Session 3

12:55 Lunch

14:10 Flash Poster Session 4 - MicroTechnology Advances & Biotechnology Applications

Session Chair:

Ellis Meng, *University of Southern California, USA*

**T3P.1 CONTINUOUS FLOW MICROFLUIDIC REACTOR AND
INLINE FILTRATION DEVICE FOR THE BIOCATALYSED
SYNTHESIS OF CHIRAL METABOLITES**

J. Lawrence¹, H. Al-Bahrani¹, B. O'Sullivan¹,
R. Wohlgemuth², H.C. Hailes¹, and N. Szita¹

¹*University College London, UK and* ²*Sigma-Aldrich, SWITZERLAND*

**T3P.2 A MICRO ARTIFICIAL MUSCLE
CONTROLLED BY IONIC FORCES**

B. Tondu and S. Mathé

University of Toulouse, FRANCE

**T3P.3 A MICROFLUIDIC DEVICE FOR REACTIVE
ASTROGLIOSIS MODEL**

Y.H. Kim, Y.E. Kim, S.H. Lee, and J.Y. Kang

Korea Institute of Science and Technology (KIST), SOUTH KOREA

**T3P.4 A MICROFLUIDIC MEMBRANE DEVICE TO MIMIC CRITICAL
COMPONENTS OF THE VASCULAR MICROENVIRONMENT**

S. Srigunapalan, C. Lam, A.R. Wheeler, and C.A. Simmons

University of Toronto, CANADA

**T3P.5 ACTUATOR DESIGN SPECIFICATION FOR MRI-BASED
TARGETING OF MAGNETIC MICRO-CARRIER**

G. Bringout, F.P. Gosselin, O. Felfoul, and S. Martel

École Polytechnique de Montréal, CANADA

**T3P.6 AN ARRAY OF ELECTROACTIVE POLYMER MICRO
ACTUATORS TO APPLY UNI-AXIAL STRESS TO SINGLE CELLS**

S. Akbari and H.R. Shea

École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T3P.7 CAPILLARY ASSEMBLY FOR BIOPATTERNING

F.-D. Delapierre, L. Malaquin, and J.-L. Viovy

Institut Curie, FRANCE

**T3P.8 CONTINUOUS MICROFLUIDIC DNA PURIFICATION FOR
ONLINE MONITORING AND PROCESS CONTROL**

M. Karle¹, G. Czilwik¹, J. Miwa², N. Paust^{1,2}, G. Roth^{1,2},
R. Zengerle^{1,2}, and F. von Stetten^{1,2}

¹*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY*
and ²*University of Freiburg – IMTEK, GERMANY*

- T3P.9 **CONTROLLED ISOLATION AND PATTERNING OF K562 LEUKEMIA CELLS USING ELECTRICALLY ACTIVATED MICROCHANNELS**
A. Faenza¹, E. Duqi¹, N. Pecorari¹, L. Rambelli¹, L. Giulianelli¹, N. Lopez¹, M. Bocchi^{1,2}, and R. Guerrieri¹
¹University of Bologna, ITALY and ²MindSeeds Laboratories s.r.l., ITALY
- T3P.10 **DESIGN OF A NEW GRIPPER FOR A ROBOTIC SURGICAL SYSTEM INTEGRATING FORCE SENSING CAPABILITIES IN 4DOF**
M. Stephan, A. Sengül, R. Beira, G. Rognini, and H. Bleuler
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- T3P.11 **DIFFERENTIATION OF HUMAN MESENCHYMAL STEM CELLS IN 3D HYDROGEL BY TGFβ1 OR rhGDF-5 IN A MICROFLUIDIC DEVICE**
A. Hofstetter^{1,2}, L. Barbe², O.T. Guenat^{1,2}, and B. Gantenbein-Ritter¹
¹University of Bern, SWITZERLAND and ²Centre Suisse d'Electronique et Microtechnique SA (CSEM), SWITZERLAND
- T3P.12 **ELECTROCHEMILUMINESCENCE DETECTION IN DROPLETS BASED MICROFLUIDIC SYSTEM**
A. Arora and A. Manz
Korea Institute of Science and Technology (KIST) - Europe, GERMANY
- T3P.13 **HIGH SENSITIVE MICROSENSOR FOR MAGNETIC NANOPARTICLE DETECTION IN BIOCHIP CHANNELS AND VASCULAR SYSTEM**
V.A. Skidanov, P.M. Vetoshko, and A.L. Stempkovskiy
Russian Academy of Sciences (RAS), RUSSIA
- T3P.14 **IMPLANTABLE MICROCOILS DEDICATED TO MAGNETIC RESONANCE IMAGING**
M. Couty^{1,2}, J.-C. Ginefri³, A. Rubin^{1,4}, M. Woytasik¹, L. Darrasse³, F. Boumezbeur⁴, F. Lethimonnier⁴, M. Tatoulian², and E. Dufour-Gergam¹
¹University of Paris-Sud, FRANCE, ²ENSCP, FRANCE, ³Université Paris, FRANCE, and ⁴CEA Saclay, FRANCE
- T3P.15 **INJECTION MOLDED POLYMER MICRO-CANTILEVERS FOR SENSING**
P. Urwyler^{1,2}, H. Schiff¹, J. Gobrecht^{1,3}, O. Häfeli³, F. Battiston⁴, and B. Müller²
¹Paul Scherrer Institut, SWITZERLAND, ²University of Basel, SWITZERLAND ³University of Applied Sciences, SWITZERLAND, and ⁴Concentris GmbH, SWITZERLAND
- T3P.16 **INKJET PRINTING OF BACTERIAL CELLS FOR SYNTHETIC MULTICELLULAR CELL-TO-CELL COMMUNICATION STUDY**
W.S. Choi, D. Ha, S. Park, and T. Kim
Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA

- T3P.17 **INVESTIGATION OF PROTEIN AGGREGATION WITH A BLOCH SURFACE WAVE SENSOR**
V. Paeder, S. Santi, V. Musi, and H.P. Herzig
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- T3P.18 **LOW-COST LOW-VOLTAGE MICROFLUIDIC BIOCHIP BASED ON ELECTROWETTING ACTUATION OF DROPLETS**
B. Bhattacharjee and H. Najjaran
University of British Columbia, CANADA
- T3P.19 **MASS FORMATION OF METAL NANOPARTICLES BY BIOGENIC COMPONENTS IN MICROFLUIDIC DROPLETS**
T.J. Park^{1,2}, K.G. Lee¹, T.J. Lee¹, D.H. Kim², S.Y. Lee², and S.J. Lee¹
¹National Nanofab Center, SOUTH KOREA and ²Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA
- T3P.20 **MEMS-BASED CHEMOEMITTER FOR BIOMIMETIC INSECT INFOCHEMICAL COMMUNICATION**
W. Bula¹, N. Dimov¹, L. Muñoz², G. Sans², A. Guerrero², and H. Gardeniers¹
¹University of Twente, THE NETHERLANDS and ²CSIC, SPAIN
- T3P.21 **MOLECULAR ISOLATION ON THE NANOSCALE**
G.A.T. Chansin, J. Hong, A.J. Demello, and J.B. Edel
Imperial College London, UK
- T3P.22 **NEW SHAPE MEMORY COMPOSITES ON MICRO AND NANOSCALE OF DIMENSIONS FOR MICROTكنولوجIES IN MEDICINE AND BIOLOGY**
V. Afonina¹, V. Kalashnikov¹, V. Koledov¹, A. Mashirov¹, S. Von Gratowski¹, D. Zakharov², A. Irzhak², P. Lega¹, and A. Shelyakov³
¹Russian Academy of Sciences (RAS), RUSSIA, ²National University of Science and Technology (MISIS), RUSSIA, and ³National Research Nuclear University MIPhI, RUSSIA
- T3P.23 **ON-CHIP INDIVIDUAL CELL MANIPULATION VIA MAGNETIC DOMAIN WALL CONDUITS**
R. Bertacco¹, M. Donolato¹, A. Torti¹, P. Vavassori^{2,3}, N. Kotesha⁴, M. Deryabina⁴, and M.F. Hansen⁴
¹Politecnico di Milano, ITALY, ²CIC nanoGUNE Consolider, SPAIN, ³Università di Ferrara, ITALY, and ⁴Danmarks Tekniske Universitet (DTU), DENMARK
- T3P.24 **OPTOTENSOMETRY – FROM THE DEFORMATION OF THE TYMPANIC MEMBRANE TO THE AUDITORY TUBE FUNCTION**
M. Stamer¹, T. Zehlicke², and J. Müller¹
¹Hamburg University of Technology, GERMANY and ²Military Hospital Hamburg, GERMANY

- T3P.25 **ORGANIC ELECTROCHEMICAL TRANSISTORS
APPLIED IN BIOSENSING**
G. Tarabella¹, F. Cicoira¹, N. Coppedè¹, C. Santato², Y.Y. Sang⁴,
R. Mosca¹, G.G. Malliaras³, and S. Iannotta¹
¹*Institute of Materials for Electronics and Magnetism (IMEM-CNR), ITALY,*
²*Ecole Polytechnique de Montreal, CANADA,* ³*Ecole Nationale Supérieure des Mines,*
FRANCE, and ⁴*University of Illinois, USA*
- T3P.26 **SILICON NANOTWEEZERS FOR MOLECULAR AND
CELLULAR BIOMECHANICAL ASSAYS**
N. Lafitte¹, M. Kumemura¹, D. Collard¹, R. Tourvielle²,
K. Montagne¹, S. Yoshizawa³, D. Fourmy³, L. Jalabert¹,
Y. Sakai¹, S. Takeuchi¹, T. Fujii¹, and H. Fujita¹
¹*University of Tokyo, JAPAN,* ²*École Polytechnique Fédérale de Lausanne (EPFL),*
FRANCE, and ³*CNRS-CGM, FRANCE*
- T3P.27 **SIMPLE READ-OUT SYSTEM FOR MULTIPLEXED 64
NANOWIRE-BASED BIOSENSORS**
P. Neuzil^{1,2}, J.S.-B. Woon¹, L. Novak³, C.-C. Wong⁴, and Y.-J. Wee⁴
¹*Institute of Microelectronics, SINGAPORE,* ²*Korea Institute of Science and*
Technology (KIST) - Europe, GERMANY, ³*Czech Technical University, CZECH*
REPUBLIC, and ⁴*Nanyang Technological University, SINGAPORE*
- T3P.28 **TOTALLY ORGANIC, FLEXIBLE, CONTRACTILE
MICROELECTRODES FOR ELECTRICAL STIMULATION
OF CONTRACTIVE MUSCLE TISSUES**
T. Miyake^{1,2}, Y. Ido¹, K. Nagamine^{1,2}, and M. Nishizawa^{1,2}
¹*Tohoku University, JAPAN* and ²*Japan Science and Technology (JST), JAPAN*

14:55 Poster Session 4

16:25 Keynote Speaker V

Session Chair:

Olivier T. Guenat, *University of Berne and CSEM SA, SWITZERLAND*

T4K.5 **MICROLIVER TECHNOLOGIES: DESIGN AND
APPLICATION OF METABOLIC PROGRAMMING**

M. Shulman¹, D. Kittsberg¹, and Y. Nahmias^{1,2}

¹*Hebrew University of Jerusalem, ISRAEL* and ²*Harvard Medical School, USA*

18:00 Banquet (Thursday Award Ceremony)

Friday, 6 May 2011

08:30 Keynote Speaker VI

Session Chair:

Jan Eijkel, *Universite of Twente, THE NETHERLANDS*

F1K.6 STEM CELL FATE CONTROL IN ENGINEERED STEM CELL-NICHES

P.W. Zandstra

University of Toronto, CANADA

09:20 Keynote Speaker VII

Session Chair:

Dan Nicolau, *University of Liverpool, UK*

F1K.7 TRANSLATION OF STEM CELLS: PROGRESS, PITFALLS, AND CONSTRAINTS

M. Csete

University of California, San Diego, USA

10:10 Break

10:40 Flash Poster Session 5 - MicroTechnology Advances & Cell/Molecular Biology & Late News

Session Chair:

Yuji Miyahara, *Tokyo Medical and Dental University, JAPAN*

F2P.1 A GLASS-BASED, HIGH DENSITY MICRO ELECTRODE ARRAY (MEA) WITH INTEGRATED CMOS AMPLIFICATION CIRCUIT

M. Moridi¹, U.A. Müller¹, S. Tanner¹, B. Henrich², S. Rohr³, and P.-A. Farine¹

¹*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND,*

²*Paul Scherrer Institut (PSI), SWITZERLAND, and*

³*University of Bern, SWITZERLAND*

F2P.2 A LABEL FREE BIOPHYSICAL MARKER TO TRACK STEM CELL DIFFERENTIATION

J. Lu¹, F.H. Labeed², M. Do¹, M.P. Hughes², A.P. Lee¹, and L.A. Flanagan¹

¹*University of California, Irvine, USA and* ²*University of Surrey, UK*

F2P.3 A MODULAR PACKAGING SYSTEM WITH A RAPID FABRICATION METHOD OF DISPOSABLE MICROFLUIDIC CHIPS

M. Reichen, B. O'Sullivan, T.V. Kirk, and N. Szita

University College London, UK

- F2P.4 **ALL-ORGANIC POLYMER TRANSDUCERS FOR NEUROPHYSIOLOGY: CONCEPTS AND PERFORMANCE**
A. Blau¹, A. Murr², S. Wolff³, E. Sernagor⁴, P. Medini¹, G. Iurilli¹,
C. Ziegler³, and F. Benfenati¹
¹Italian Institute of Technology (IIT), ITALY,
²Max Planck Institute for Polymer Research, GERMANY, ³University of Kaiserslautern, GERMANY, and ⁴Newcastle University Medical School, UK
- F2P.5 **ARRAY OF METALLIC SINGULARITIES FOR THE HIGH DENSITY CELL PLACEMENT ON A MICROFLUIDIC CHIP**
C. Dalmay, O. Français, and B. Le Pioufle
École Normale Supérieure (ENS), FRANCE
- F2P.6 **BENDING TRANSFORMATIVE ENDOSCOPE**
S. Suda, T. Matsunaga, and Y. Haga
Tohoku University, JAPAN
- F2P.7 **DESIGN AND SIMULATION OF SILICON ELECTRODES FOR COCHLEAR AUDITORY NERVE STIMULATION**
N.S. Lawand^{1,2}, P.J. French¹, J.J. Briare², and J.H.M. Frijns²
¹Delft University of Technology, THE NETHERLANDS and ²Leiden University Medical Center, THE NETHERLANDS
- F2P.8 **DEVELOPMENT OF A NEW METHOD FOR MICROFLUIDIC DEVICE FABRICATION AND APPLICATION TO SINGLE-CELL ENCAPSULATION**
H. Hirama, H. Moriguchi, and T. Torii
University of Tokyo, JAPAN
- F2P.9 **IMPEDANCE FLOW CYTOMETRY AS A TOOL TO GAUGE STEM CELL PROLIFERATIVE CAPACITY**
S. Unternährer¹, G. Schade-Kampmann², M. Hebeisen²,
M. Di Bernardino², and A. Franco-Obregón¹
¹ETH Zürich, SWITZERLAND and ²Leister Process Technologies, SWITZERLAND
- F2P.10 **NUMERICAL SIMULATION OF THE FLOW IN A MICROFLUIDIC BUBBLE DISPENSER**
D. Lakehal and S. Thomas
ASCOMP GmbH, SWITZERLAND
- F2P.11 **SIMULATION OF DROPLET TEAR-OFF AND MENISCUS FORMATION IN THE TOP-SPOT EXPERIMENT**
D. Lakehal and J. Panyasantisuk
ASCOMP GmbH, SWITZERLAND
- F2P.12 **SOLVENT BONDING OF POLYMER COMBINATIONS FOR MICROMEDICAL APPLICATIONS**
S. Herrlich, T. Lorenz, S. Spieth, S. Messner, and R. Zengerle
Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY

- F2P.13 **SURFACE HYDROPHILIZATION OF CYCLOOLEFIN POLYMER: CHARACTERIZATION OF A CORONA-DISCHARGE TREATED SURFACE WITH HYDROPHILIC DETERIORATION RESISTANCE**
S. Taniguchi
Hitachi, Ltd., JAPAN
- F2P.14 **THREE-DIMENSIONAL MICROFLUIDIC MIXERS IN A MONOLITHIC GLASS SUBSTRATE USING POWDER BLASTING**
A. Sayah, V.K. Parashar, and M.A.M. Gijs
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- F2P.15 **A CONTACT FREE, STERILIZABLE LIQUID JET DISPENSER BASED ON MICROPUMP TECHNOLOGY**
S. Dahms, U. Kampmeyer, and G. Bickenbach
Bartels Mikrotechnik GmbH, GERMANY
- F2P.16 **CARDIAC MICROWIRE: A MICROENGINEERED TISSUE-MIMETIC SYSTEM FOR STUDYING CARDIAC DEVELOPMENT AND DISEASE**
N. Thavandiran¹, S. Massé², K. Nanthakumar², M. Radisic¹, and P.W. Zandstra¹
¹*University of Toronto, CANADA and*
²*Toby Hull Cardiac Fibrillation Management Laboratory, CANADA*
- F2P.17 **CONTACT GUIDANCE OF CELLS USING THE MICROPATTERNS ON DIAMOND LIKE CARBON (DLC) THIN FILM COATED PDMS SURFACES**
S. Choi¹, Y. Hong¹, Y. Masumoto², T. Hirose², M. Ban², and S.M. Kim¹
¹*Inha University, SOUTH KOREA and* ¹*Nippon Institute of Technology, JAPAN*
- F2P.18 **DNA SEPARATION ACROSS LIQUID-LIQUID INTERFACES IN AQUEOUS TWO-PHASE SYSTEMS**
T. Hahn and S. Hardt
Technische Universität Darmstadt, GERMANY
- F2P.19 **LIVE IMAGING OF CHEMOTAXIS IN A LONG TERM-STABLE CONVECTION-FREE MOLECULAR GRADIENT**
E. Vu, C. Lamers, R. Uselman, S. Hayes, and I. Meyvantsson
Bellbrook Labs, USA
- F2P.20 **MEASUREMENT OF FLOWS IN MICRO-CHANNELS THROUGH SELF-MIXING EFFECT IN A LASER DIODE**
L. Campagnolo^{1,2}, J.C. Csont^{1,2}, M. Nikolic³, J. Perchoux^{1,2}, and T. Bosch^{1,2}
¹*LAAS-CNRS, FRANCE,* ²*Université of Toulouse, FRANCE, and*
³*University of Queensland, AUSTRALIA*

F2P.21

**NOVEL ENERGY-SAVING MICROVALVE
FOR MEDICAL APPLICATIONS**

A. Balck¹, M. Leester-Schädel¹, C. Kirsch², U. Schmid³,
H. Seidel², and S. Büttgenbach¹

¹*Technische Universität Braunschweig, GERMANY*, ²*Universität des Saarlandes, GERMANY*, and ³*Vienna University of Technology, AUSTRIA*

11:25 F2P - Poster Session 5

12:55 Award Ceremony

13:15 Conference Adjourns