Preliminary Technical Program

The Executive Committee reserves the right to amend the program if necessary.

Sunday, 27 October

08:30 Workshop Registration

09:00 - 12:00 Morning Workshops

Workshop 1

DESIGN TOOLS FOR MICROFLUIDIC DEVICES

Robert Wille[1], Jan Madsen[2], and Ulf Schlichtmann[3]

[1]Johannes Kepler University, AUSTRIA, [2]Technical University of Denmark, DENMARK, and [3]Technische Universität München, GERMANY

Workshop 2

COMMERCIALIZATION OF MICROFLUIDIC DEVICES AND SYSTEMS

Holger Becker

microfluidic ChipShop GmbH, GERMANY

Workshop 3

CARING FOR CELLS IN MICROSYSTEMS: ENSURING CELL-SAFE DEVICE DESIGN AND OPERATION

Sarvesh Varma and Joel Voldman

Massachusetts Institute of Technology, USA

Workshop 4

AC ELECTROKINETICS IN MICROSYSTEMS FOR SINGLE-CELL CYTOMETRY, MANIPULATION AND SENSING

Nathan Swami[1] and Federica Caselli[2]

[1]University of Virginia, USA and [2]University of Rome Tor Vergata, ITALY

Workshop 5

SPICE UP YOUR CHIPS WITH ELECTRONIC GADGETS AND ARDUINO

Yuksel Temiz

IBM Research - Zurich, SWITZERLAND

14:00 - 17:00 Afternoon Workshops

Workshop 6

INCORPORATING THE NEEDS OF USERS INTO POINT-OF-CARE DIAGNOSTICS

Jaqueline Linnes

Purdue University, USA

Workshop 7

OPEN-SPACE MICROFLUIDICS: CONCEPTS, IMPLEMENTATIONS AND APPLICATIONS

Govind Kaigala[1], Patrick Misun[2], and Tomaso Zambelli[2]

[1]IBM Research Zürich, SWITZERLAND and [2]ETH Zürich, SWITZERLAND

Workshop 8

LIFE CELL IMAGING IN MICROFLUIDICS

Tom Lummen[1], Oliver Biehlmayer[2], and Gregor Schmidt[1]

[1]ETH Zürich, SWITRLAND and [2]University Basel, SWITZERLAND

Workshop 9

3D PRINTING TOOLS

Michael Breadmore[1], Rosanne Guijt[2], Greg Nordin[3], and Egan Doeven[2]

[1]University of Tasmania, AUSTRALIA, [2]Deakin University, AUSTRALIA, and [3]Brigham Young University, USA

Workshop 10

ORGAN-ON-A-CHIP: MERGING MICROFABRICATION WITH TISSUE ENGINEERING

Peter Loskill[1], Olivier Guenat[2], and Olivier Frey[3]

[1]Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, GERMANY, [2]University of Bern, SWITZERLAND, and [3]InSphero AG, SWITZERLAND

17:00 - 19:00 Conference Registration and Check-In

17:00 - 19:00 Wine & Cheese Welcome Reception

Monday, 28 October

08:15 **Opening Remarks**
CBMS President
Teruo Fujii, *University of Tokyo, JAPAN*

MicroTAS 2019 Conference Chairs
Petra Dittrich, *ETH Zürich, SWITZERLAND*
Andreas Hierlemann, *ETH Zürich, SWITZERLAND*
Emmanuel Delamarche, *IBM Research - Zürich, SWITZERLAND*

Plenary Presentation I
San Francisco Room

08:30 **MINFLUX NANOSCOPY: SUPERRESOLUTION POST NOBEL**
Stefan W. Hell
Max Planck Institute for Biophysical Chemistry, GERMANY

09:15 **Transition**

Session 1A1 - Exosomes Trapping and Isolation
San Francisco Room

09:30 **MULTINODAL HIGH THROUGHPUT ACOUSTIC TRAPPING OF EXOSOMES FROM URINE SAMPLES**
Axel Broman, Andreas Lenshof, Mikael Evander, Anson Ku, Yvonne Ceder, and Thomas Laurell
Lund University, SWEDEN

09:50 **DIRECT AND SCALABLE ISOLATION OF CIRCULATING EXOSOMES FROM WHOLE BLOOD USING CENTRIFUGAL FORCES**
Hui Min Tay[1], Sheng Yuan Leong[1], Megha Upadya[1], Fang Kong[1], Hong Kit Lim[1], Rinkoo Dalan[2], Chor Yong Dalton Tay[1], Ming Dao[1], and Han Wei Hou[1]
[1]Nanyang Technological University, SINGAPORE and
[2]Tan Tock Seng Hospital, SINGAPORE

10:10 **SEPARATION OF SINGLE EXOSOMES UTILIZING A COMPOSITE NANOFLUIDIC STRUCTURE**
Haruka Ishibashi[1], Osamu Ishibashi[1], Aya Horikawa[1], Mika Hayashi[1], and Yan Xu[1,2]
[1]Osaka Prefecture University, JAPAN and [2]Japan Science and Technology Agency (JST)

Session 1B1 - Particle Separation
Singapore Room

09:30 **MINIATURIZATION OF HYDROCYCLONE: THEORETICAL AND EXPERIMENTAL EXPLORATION**
Jung Y. Han, Beqir Krasniqi, Jung Kim, Melissa Keckley, and Don L. DeVoe
University of Maryland, USA

09:50 **THE SEPARATION OF NANO-SIZED PARTICLES IN MICRO-SCALED POST ARRAYS**
Jason P. Beech[1], Kevin Keim[2], Bao Dang Ho[1], Carlotta Guiducci[2], and Jonas O. Tegenfeldt[1]
[1]Lund University, SWEDEN and
[2]École Polytechnique Fédérale de Lausanne, (EPFL) SWITZERLAND

10:10 **SIZE-BASED BIOMOLECULAR SEPARATION ENABLED BY FIELD-EFFECT ELECTROOSMOSIS**
Vesna Bacheva[1,2], Federico Paratore[1,2], Shimon Rubin[1], Govind V. Kaigala[2], and Moran Bercovici[1]
[1]Technion - Israel Institute of Technology, ISRAEL and [2]IBM Research – Zürich,

Session 1C1 - Synthetic Biology Using Droplets
Sydney Room

09:30 **DROPLET-BASED MICROFLUIDICS FOR BOTTOM-UP SYNTHETIC BIOLOGY**
Thomas Beneyton[1], Dorothee Krafft[2], Celina Love[2], Mathias Girault[1], Claudia Bednarz[2], Christin Kleineberg[2], Christian Woelfer[2], Ivan Ivanov[2], Tanja Vidakovic-Koch[2], Kai Sundmacher[2], T.-Y. Dora Tang[2], and Jean-Christophe Baret[1]
[1]University of Bordeaux, FRANCE and [2]Max Planck Institute, GERMANY

09:50 **CREATION OF DNA MICRODROPLETS BASED ON PHASE TRANSITION AND SEQUENCE DESIGN**
Yusuke Sato, Tetsuro Sakamoto, and Masahiro Takinoue
Tokyo Institute of Technology, JAPAN

10:10 **A VERSATILE AND ROBUST DROPLET-BASED MICROFLUIDIC AUTOMATION SYSTEM FOR HIGH-THROUGHPUT OPTIMIZATION OF BIOSYNTHETIC PATHWAYS**
Kosuke Iwai[1], Maren Wehrs[2], Peter W. Kim[1], Jess Sustarich[1], Trent R. Northen[2], Hector Garcia Martin[2], Paul D. Adams[3], and Anup K. Singh[1]
[1]Sandia National Laboratories, USA, [2]Lawrence Berkeley National Laboratory, USA, and [3]Univeristy of California, Berkeley, USA

10:30 **Break: Exhibit and Poster Inspection**

Session 1A2 - Single Cell Analysis (Secretion)
San Francisco Room

11:00 **PRESCIENT: A PLATFORM FOR THE RAPID EVALUATION OF SINGLE-CELL PRODUCED ANTIBODY SUCCESS USING INTEGRATED MICROFLUIDIC-ENABLED TECHNOLOGY**
Jose A Wippold[1], Han Wang[1,2], Joseph Tingling[1], Julian Leibowitz[1], Paul J. de Figueiredo[1], and Arum Han[1]
[1]Texas A&M University, USA and [2]Tsinghua University, USA

11:20 **METABOLIC CHARACTERIZATION OF INDIVIDUAL IGG-SECRETING CELLS**
Mira ElKhoury[1], Guilhem Chenon[1], Andrew Griffiths[1], Jean Baudry[1], and Klaus Eyer[1,2]
[1]Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and [2]ETH Zürich, SWITZERLAND

11:40 **SYNCHRONIZED DROP-SCREENING/SORTING FOR SINGLE CELL SECRETION MEASUREMENTS**
Guoyun Sun, Ming Wang, and Chia-Hung Chen
National University of Singapore, SINGAPORE

12:00 **DEMOCRATIZED HIGH-THROUGHPUT SINGLE-CELL SECRETION SCREENING USING DROPLETS FORMED BY STRUCTURED MICROPARTICLES**
Joseph de Rutte, Robert Dimatteo, Mark van Zee, Robert Damoiseaux, and Dino Di Carlo
University of California, Los Angeles, USA

Session 1B2 - Reconfigurable and Self-Powered Devices
Singapore Room

11:00 **RECONFIGURABLE MICROFLUIDICS: REAL-TIME SHAPING OF VIRTUAL CHANNELS THROUGH HYDRODYNAMIC FORCES**
David Taylor[1,2] and Govind Kaigala[2]
[1]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and [2]IBM Research, SWITZERLAND

11:20 **PROGRAMMABLE LIQUID CIRCUITS USING SMARTPHONE-CONTROLLED VALVES AND SELF-VENTED CHANNELS**
Yuksel Temiz, Yulieth Arango, Onur Gökçe, and Emmanuel Delamarche
IBM Research - Zurich, SWITZERLAND

11:40 **DNA-ONLY BIOASSAY FOR SIMULTANEOUS DETECTION OF PROTEIN AND NUCLEIC ACID TARGETS ON THE SELF-POWERED ISIMPLE CHIP**
Aida Montserrat Pagès, Saba Safdar, Karen Ven, Francesco Dal Dosso, Jeroen Lammertyn, and Dragana Spasic
KU Leuven, BELGIUM

12:00 **SINGLE LAYER DOMINO CAPILLARICS FOR PERFORMING ADVANCED AUTONOMOUS BIOASSAYS**
Mohamed Yafia, Oriol Ymbern, Andy Ng, and David Juncker
McGill University, CANADA

Session 1C2 - Separation and Assays in Droplets
Sydney Room

11:00 **DROPLET-BASED SINGLE EXTRACELLULAR VESICLE PROTEIN PROFILING FOR THE IMPROVEMENT OF IMMUNOTHERAPY**
Jina Ko, Yongcheng Wang, David Weitz, and Ralph Weissleder
Harvard University, USA

11:20 **DROPLET-BASED INVESTIGATION OF A BIOCHEMICAL BISTABLE CIRCUIT FOR SENSITIVE AND NOISE-FREE DETECTION OF NUCLEIC ACIDS**
Robin Deteix[1], Nicolas Lobato-Dauzier[1], Elia Henry[2], Shu Okumura[1], Guillaume Gines[3], Yannick Rondelez[3], Teruo Fujii[1], and Anthony J. Genot[4]
[1]University of Tokyo, JAPAN, [2]François Jacob Institute of Biology-INSERM/CEA, FRANCE, [3]PSL Research University, FRANCE, and [4]LIMMS-IIS/CNRS, JAPAN

11:40 **IN-DROPLET ELECTROPHORETIC SEPARATION OF PROTEINS AND NUCLEIC ACIDS**
Mario A. Saucedo-Espinosa, Elisabeth F. Hirth, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

12:00 **ELECTROPHYSIOLOGICAL ANALYSIS OF Aß42 IN PLANAR LIPID BILAYER IMITATING NERVOUS CELL-MEMBRANE**
Yuri Numaguchi, Keisuke Shimizu, Kaori Tsukakoshi, Kazunori Ikebukuro, and Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN

12:20 **Grab 'n Go Lunch**

13:10 **Analytical Chemistry – Young Innovator Award Presentation**
Award Receipient: Keisuke Goda, University of Tokyo, JAPAN

Plenary Presentation II
San Francisco Room

13:15 **INTELLIGENT IMAGE-ACTIVATED CELL SORTING & BEYOND**
Keisuke Goda
University of Tokyo, JAPAN

Poster Session 1
Hall 4.0 - Ground Floor and Hall 4.1 - First Floor

14:00 Presentations are listed by topic category with their assigned number starting on page 26.

16:00 **Break**

Session 1A3 - Single-Cell Manipulation and Analysis
San Francisco Room

16:30 **Keynote Presentation**
ENGINEERING FOR SCIENCE: MICROFLUIDICS AS A PLATFORM TECHNOLOGY FOR BASIC BIOLOGY RESEARCH
Angela Wu
Hong Kong University of Science and Technology, HONG KONG

17:00 **MICROFLUIDIC MONITORING HOST-VIRAL INTERACTION AT THE SINGLE-CELL LEVEL**
Reya Ganguly[1], Solib Kang[1], Byungjin Lee[1], Si H. JIn[1], Yohei Yamuchi[2], Jaeseong Kim[1], and Chang S. Lee[1]
[1]Chungnam National University

17:20 **ONE CELL, ONE DROP, ONE CLICK: HYBRID MICROFLUIDIC MAMMALIAN SINGLE-CELL ENGINEERING**
Kenza Samlali, Fatemeh Ahmadi, Angela B.V. Quach, Guy Soffer, and Steve C.C. Shih
Concordia University, CANADA

17:40 **ISOLATION OF CIRCULATING FETAL TROPHOBLAST USING FETAL-CHIP FOR NON-INVASIVE PRENATAL DIAGNOSIS**
Huimin Zhang
Shanghai Jiao Tong University School of Medicine, CHINA

Session 1B3 - Organ-On-Chip
Singapore Room

16:30 **Keynote Presentation**
ADVANCED CELL MODELS, ORGANS ON CHIPS & MICROPHYSICAL SYSTEMS AS INNOVATIVE TOOLS TO SUPPORT DRUG DEVELOPMENT
Adian Roth
Roche Innovation Center, Basel, SWITZERLAND

17:00 **ASSESSING GUT MICROBIOME-LIVER CROSSTALK WITH A MODULAR MICROFLUIDIC PLATFORM**
Hsih-Yin Tan, Louis J.Y. Ong, Chak-Ming Leung, Lor-Huai Chong, and Yi-Chin Toh
National University of Singapore, SINGAPORE

17:20 **NANOFABRICATED BONE-ON-CHIP: TOWARDS A BONE REGENERATION MODEL**
Víctor P. Galván Chacón[1], David Barata[1], Athanasia Zampouka[1], Jiaping Li[1], Bernhard Hesse[2], Marc Bohner[3], and Pamela Habibovic[1]
[1]Maastricht University, THE NETHERLANDS, [2]European Synchrotron Radiation Facility, FRANCE, and [3]RMS Foundation, SWITZERLAND

17:40 **INTEGRATION OF EX-VIVO PRECISION-CUT LIVER SLICE (PCLS) CULTURE WITH MICROFLUIDIC NMR METABOLOMICS**
Bishnubrata Patra[1], Manvendra Sharma[1], Ruby Karsten[2], Maciej [2]Grajewski, Sabeth Verpoorte[2], and Marcel Utz[1]
[1]University of Southampton, UK and [2]University of Groningen, THE NETHERLANDS

Session 1C3 - Genetic Engineering
Sydney Room

16:30 **Keynote Presentation**
GENE EDITING AND DNA WRITING WITH CRISPR SYSTEMS
Randall J. Platt
ETH Zürich, SWITZERLAND

17:00 **SPATIALLY-RESOLVED AND MULTIPLEX MICRORNA QUANTIFICATION FROM FORMALIN-FIXED, PARAFFIN-EMBEDDED TISSUE USING NANOLITER WELL ARRAYS**
Maxwell B. Nagarajan[1], Augusto M. Tentori[1], Wen Cai Zhang[2], Frank J. Slack[2], and Patrick S. Doyle[1]
[1]Massachusetts Institute of Technology, USA and
[2]Beth Israel Deaconess Medical Center, USA

17:20 **MICRORNA DIAGNOSTICS ON AN ELECTROCHEMICAL BIOSENSOR VIA CRISPR/CAS13A TECHNOLOGY**
Richard Bruch, Julia Baaske, Claire Chatelle, Wilfried Weber, Gerald A. Urban, and Can Dincer
University of Freiburg, GERMANY

17:40 **GENE EXPRESSION BASED DRUG SCREENING PLATFORM**
Sumin Lee, Seo Woo Song, Junhoi Kim, and Sunghoon Kwon
Seoul National University, KOREA

18:00 - 19:30 **Student Mixer**

18:00 - 19:30 **Women's Faculty Night Out**

Tuesday, 29 October

08:15 **Announcements**

Plenary Presentation III
San Francisco Room

08:30 **ENGINEERED TOOLS FOR IMMUNOTHERAPIES**
James R. Heath
Institute for Systems Biology, USA

09:15 **Transition**

Session 2A1 - Exosomes and Extracellular Vesicles
San Francisco Room

09:30 **IDENTIFYING EXTRACELLULAR-VESICLE POPULATIONS FROM LONG-TERM CULTURED SINGLE CELLS USING MULTI-COLOR TIRFM**
Jonas Nikoloff, Lucas Armbrecht, André Kling, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

09:50 **PLATELET MEMBRANE CLOCKED SURFACE FOR PLASMONIC SWITCH ON BINDING OF CANCER THREATS**
Sumit Kumar
Ulsan National Institute of Science and Technology (UNIST), KOREA

10:10 **NODE-PORE SENSING DEVICE TO DETECT TUMOR-DERIVED EXTRACELLULAR VESICLES**
Thomas R. Carey, Jennifer Hall, and Lydia L. Sohn
University of California, Berkeley, USA

10:30 **HIGHLY SENSITIVE DETECTION OF TUMOR-DERIVED EXTRACELLULAR VESICLES USING AN ENZYMATIC ASSAY AND REDOX CYCLING**
Dilu G. Mathew[1], Pepijn Beekman[2], Serge G. Lemay[1], Séverine Le Gac[1], and Wilfred G. van der Wiel[1]
[1]*University of Twente, THE NETHERLANDS and*
[2]*Wageningen University, THE NETHERLANDS*

Session 2B1 - Paper Microfluidics and Devices

Singapore Room

09:30 **CITIZEN LED SAMPLING TO MONITOR PHOSPHATES IN RIVER WATER USING SIMPLE PAPER MICROFLUIDIC DEVICES**
Samantha Richardson, Alexander Iles, Jeanette M. Rotchell, Mark Lorch, and Nicole Pamme
University of Hull, UK

09:50 **VERSATILE PRINTED MICROHEATERS TO ENABLE LOW-POWER THERMAL CONTROL IN PAPER DIAGNOSTICS**
Kristin M. Byers, Li-Kai Lin, Taylor J. Moehling, Lia Stanciu, and Jacqueline C. Linnes
Purdue University, USA

10:10 **AN ALL-IN-ONE PAPER-BASED MICROFLUIDIC DEVICE FOR MULTIPLEXED DETECTION OF CARDIAC PROTEIN MARKERS**
Hao Fu, Xiao Li, Zhen Qin, and Xinyu Liu
University of Toronto, CANADA

10:30 **MICRO TOTAL ANALYSIS SYSTEM FOR DETERMINATION OF LITHIUM ION IN HUMAN WHOLE BLOOD WITH HYBRID DEVICE OF DMF AND TINY PAPER SENSORS**
Takeshi Komatsu[1], Manabu Tokeshi[1], and Shih-Kang Fan[2]
[1]Hokkaido University, JAPAN and [2]National Taiwan University, TAIWAN

Session 2C1 - Microfluidic Culture for Cells, Organisms and Plants

Sydney Room

09:30 **STANDARDIZED, MODULAR MICROFLUIDIC BUILDING BLOCKS FOR AUTOMATED CELL CULTURING SYSTEMS**
Anke Vollertsen, Elsbeth Bossink, Dean de Boer, Jet Spalink, Robert Passier, Albert van den Berg, Loes Segerink, Andries van der Meer, and Mathieu Odijk
University of Twente, THE NETHERLANDS

09:50 **INTEGRATED MICROFLUIDIC CHIP WITH FLOWING UPSTREAM SPERM SORTING AND ZP REMOVED OOCYTE INCUBATION FOR IN-VITRO FERTILIZATION**
Suei-Shen Wang[1], Yung-Chin Tzeng[1], Yueh-Jen Chen[1], Li-Chen Pan[2], and Fan-Gang Tseng[1]
[1]National Tsing Hua University, TAIWAN and [2]Taipei Medical University, TAIWAN

10:10 **DROPLET LIQUID EXCHANGER FOR CHEMICAL SCREENS IN CAENORHABDITIS ELEGANS**
Guillaume Aubry, Marija Milisavljevic, and Hang Lu
Georgia Institute of Technology, USA

10:30 **NOVEL MICRO-FLUIDIC CIRCUIT MODEL OF PLANT VASCULAR SYSTEM FOR THE GROWTH NAVIGATION**
Ryo Miyake[1], Toshihiro Kasama[1], Maia Godonoga[1], Yoshishige Endo[1], Takumi Okamoto[2], Tetsushi Koide[2], Chiharu Sone[3], Masahiro Komine[3], Yukio Yaji[3], Yoshihiro Kaneta[3], and Atsushi Ogawa[3]
[1]University of Tokyo, JAPAN, [2]Hiroshima University, JAPAN, and [3]Akita Prefectural University, JAPAN

10:50 **Break: Exhibit and Poster Inspection**

Industrial Forum Session
San Francisco Room

11:20 **HOW TO BRING RESEARCH FROM THE BENCH TO THE BEDSIDE, AND ALSO TO UNDERSTAND PITFALLS AND HOW TECHNOLOGY NEEDS TO MAP INTO THE REALITY**

Moderator Holger Becker, *microfluidic ChipShop GmbH, GERMANY*

Panel Vincent Linder, *BioMedical Consultant, PORTUGAL*
Martin Kopp, *Roche Diagnostics, SWITZERLA*ND
Oliver Nolte, *Center for Laboratory Medicine, SWITZERLAND*
Xavier Ding, *FIND, SWITZERLAND*

12:20 **MicroTAS 2020 Announcement**

12:35 **Grab 'n Go Lunch**

Industrial Stage 1
Singapore Room

12:40 **Industrial Stage 1a**
Fluigent, FRANCE

13:00 **Industrial Stage 1b**
SE ROLE HEN VALYRĪHA KORZION ISSE MICROFLUIDICS - THE USEFULNESS OF VALYRIAN STEEL FOR MICROFLUIDICS
microfluidic ChipShop GmbH, GERMANY

13:20 **Industrial Stage 1c**
THE TASTE OF PRECISION
CETONI GmbH, GERMANY

13:40 **Industrial Stage 1d**
EVG Group (EVG)

Poster Session 2
Hall 4.0 - Ground Floor and Hall 4.1 - First Floor

14:00 Presentations are listed by topic category with their assigned number starting on page 26.

16:00 **Break**

Session 2A2 - Circulating Tumor Cells and Cancer Therapy
San Francisco Room

16:30 **Keynote Presentation**
CIRCULATING TUMOR CELLS AS LIQUID BIOPSY: FINDING RARE EVENTS FOR A HUGE KNOWLEDGE OF CANCER DISSEMINATION
Catherine Alix-Panabieres
University of Montpellier, FRANCE

17:00 **MICROFLUIDIC 3D CELL SIEVING FOR CLOGGING-FREE RARE CELL ENRICHMENT WITH HIGH-THROUGHPUT AND LARGE VOLUME**
Jie Cheng, Yiran Zhang, Yifei Ye, Xizhao Sui, Mingxiao Li, Wenjie Zhao, Xinyu Wei, Hongyan Guo, Yang Zhao, and Chengjun Huang
Chinese Academy of Sciences, CHINA

17:20 **MICROFLUIDIC ISOLATION OF METABOLICALLY ACTIVE CIRCULATING TUMOR CELLS AND CIRCULATING STROMAL CELLS**
Kinga Matula, Francesca Rivello, Aigars Piruska, Minke Smits, Niven Mehra, and Wilhelm T.S. Huck
Radboud University, THE NETHERLANDS

17:40 **AUTOMATION AND INTEGRATION OF COMPUTER VISION IMAGE ANALYSIS FOR CANCER IMMUNOTHERAPY RESEARCH WITH ON-CHIP CELL TRAPPING**
Chris P. Tostado[1], Joel W.J. Heng[2], Lucas X.D. Ong[1], Ramanuj DasGupta[2], Joel Voldman[3], and Yi-Chin Toh[1]
[1]National University of Singapore, SINGAPORE, [2]Genomic Institute of Singapore, SINGAPORE, and [3]Massachusetts Institute of Technology, USA

Session 2B2 - Immunoassays and Point-of Care Devices

Singapore Room

16:30 **Keynote Presentation**
COMMERCIALIZATION OF INNOVATIVE MICROFLUIDICS TECHNOLOGY IN AN EMERGING MARKET CONTEXT: PERSPECTIVES FROM ACHIRA LABS EXPERIENCE ON MARKET, REGULATORY AND SCALE-UP CHALLENGES
Dhananjaya Dendukuri
Achira Labs, Pvt. Ltd., INDIA

17:00 **MICROGEL TEMPLATED DROPLET ELISA**
Vishwesh Shah, Yilian Wang, Joseph de Rutte, Chueh-Yu Wu, and Dino Di Carlo
University of California, Los Angeles, USA

17:20 **HIGHLY MULTIPLEXED DIGITAL ASSAYS VIA PHASE-CHANGING HYDROGEL BARCODE PARTICLES**
Luis F. Alonzo, Samantha A. Byrnes, Priscilla Delgado, Toan Huynh, Bernhard H. Weigl, and Kevin P. Nichols
Global Good / Intellectual Ventures Lab, USA

17:40 **A LABEL-FREE PLASMO-FLUIDIC BIOSENSOR FOR ULTRASENSITIVE DETECTION OF VIRAL DISEASES**
Xiangchao Zhu, Mustafa Mutlu, and Ahmet Ali Yanik
University of California, Santa Cruz, USA

Session 2C2 - Nanochannels

Sydney Room

16:30 **Keynote Presentation**
NANOFLUIDICS FOR ENERGY AND ENVIRONMENTAL APPLICATIONS
David Sinton
University of Toronto, CANADA

17:00 **NANOFLUIDIC ENZYME REACTOR EXCEEDING LIMIT OF BULK REACTION RATE**
Koki Yamamoto, Kyojiro Morikawa, Koreyoshi Imamura, Hiroyuki Imanaka, and Takehiko Kitamori
University of Tokyo, JAPAN

17:20 **A NANOFLUIDIC MEMRISTOR BASED ON ION CONCENTRATION POLARIZATION**
Yang Bu, Zisun Ahmed, and Levent Yobas
Hong Kong University of Science and Technology, HONG KONG

17:40 **NANOFLUIDIC FABRICATION AND MANIPULATION OF ATTOLITER DROPLETS**
Hiroto Kawagishi, Shuichi Kawamata, and Yan Xu
Osaka Prefecture University, JAPAN

18:00 Adjourn for the Day

Wednesday, 30 October

08:15 **Announcements**

Plenary Presentation IV
San Francisco Room

08:30 **To Be Determined**

09:15 **Transition**

Session 3A1 - Detection and Analysis of Pathogens
San Francisco Room

09:30 **MULTIPLEX DROPLET PLATFORM FOR RAPID SINGLE-CELL ANTIBIOGRAM**
Pengfei Zhang, Aniruddha Kaushik, Kuangwen Hsieh, and Tza-Huei Wang
Johns Hopkins University, USA

09:50 **EMBRACING CHAOS – A SIMPLIFIED PLATFORM FOR MULTIPLEXING DIGITAL ASSAYS IN POLYDISPERSE DROPLETS**
Samantha A. Byrnes, Tim Chang, Toan Huynh, Luis Alonzo, Caitlin Anderson, Anna Astashkina, Jim McDermott, Lex Ball, John Connelly, Bernhard H. Weigl, and Kevin P. Nichols
Intellectual Ventures Laboratory, USA

10:10 **MICROFLUIDIC PCR-BASED DETECTION OF SUB-ATTOMOLAR PATHOGENIC DNA IN URINE USING HIERARCHICAL SELECTIVE ELECTROKINETIC PRECONCENTRATION**
Wei Ouyang and Jongyoon Han
Massachusetts Institute of Technology, USA

Session 3B1 - Devices for Detection and Imaging
Singapore Room

09:30 **ELECTRICAL DETECTION OF PATHOGENS BEYOND THE LIMITATION OF DEBYE SCREENING USING GRAPHENE FIELD-EFFECT TRANSISTORS IN MICRODROPLETS**
Takao Ono[1], Yasushi Kanai[1], Koichi Inoue[1], Yohei Watanabe[2], Shin-ichi Nakakita[3], Toshio Kawahara[4], Yasuo Suzuki[4], and Kazuhiko Matsumoto[1]
[1]Osaka University, JAPAN, [2]Kyoto Prefectural University of Medicine, JAPAN, [3]Kagawa University, JAPAN, and [4]Chubu University, JAPAN

09:50 **MINIMAL INSTRUMENT IMMUNOASSAY SYSTEM BY CARTRIDGE-INTEGRATED INKJET PRINTED OPTICAL DETECTION SYSTEM**
Sebastian Schattschneider[1], Falk Kemper[2], Erik Beckert[2], Peter Miethe[3], Andreas Willems[4], Holger Becker[1], and Claudia Gärtner[1]
[1]Microfluidic ChipShop, GERMANY, [2]Fraunhofer IOF, GERMANY,
[3]fzmb GmbH, GERMANY, and [4]inno-train Diagnostik GmbH, GERMANY

10:10 **MICROFLUIDIC DEVICE FOR BIOLOGICAL SAMPLES IMAGING WITH USE OF A MINIATURE MEMS TRANSMISSION ELECTRON MICROSCOPE**
Micha Krysztof, Marcin Biaas, and Anna Górecka-Drzazga
Wroclaw University of Science and Technology, POLAND

Session 3C1 - Surface Patterning
Sydney Room

09:30 **PIXELATED CHEMICAL DISPLAY: TOWARDS MASSIVELY PARALLEL DYNAMIC SURFACE PROCESSING**
Pierre-Alexandre Goyette[1], Dina Dorrigiv[1], Maude Tremblay[1], Simeone Kayla[2], and Thomas Gervais[1]
[1]Polytechnique Montréal, CANADA and [2]Université de Montréal, CANADA

09:50 **FACILE ASSEMBLY OF LARGE AREA CELL ARRAYS USING PATTERNED ELASTOMERIC SURFACES**
Karla Perez-Toralla, Angel Olivera-Torres, Mark Rose, Ruiguo Yang, and Stephen Morin
University of Nebraska, USA

10:10 **ELECTROKINETIC SCANNING PROBE FOR LOCALIZED SURFACE PATTERNING AND ANALYSIS**
Nadya Ostromohov[1,2], Baruch Rofman[2], Moran Bercovici[2], and Govind V. Kaigala[1]
[1]IBM Research - Zurich, SWITZERLAND and
[2]Technion-Israel Institute of Technology, ISRAEL

10:30 **Break: Exhibit and Poster Inspection**

Session 3A2 - Blood Cell and Blood Flow Analysis
San Francisco Room

11:00 **DEFORMABILITY BASED CELL SORTING ENABLING QUALITY CONTROL OF STORED RED BLOOD CELLS**
Emel Islamzada, Kerryn Matthews, Quan Guo, Aline T. Santoso, Mark D. Scott, and Hongshen Ma
University of British Columbia, CANADA

11:20 **PLASMA GENERATION AND LABEL-FREE MONONUCLEAR CELL SEPARATION FROM WHOLE BLOOD BY ONE-STEP ACOUSTIC FOCUSING**
Julia Alsved[1], Anke Urbansky[2], Pelle Ohlsson[1], Klara Petersson[1], Erling Nielsen[1], Agnes Michanek[1], and Per Augustsson[2]
[1]AcouSort AB, SWEDEN and [2]Lund University, SWEDEN

11:40 **FULLY AUTOMATED LAB-ON-A-DISC FOR LABEL-FREE ENRICHMENT OF HIGHLY PURE PLATELETS FROM WHOLE BLOOD**
Chi-Ju Kim, Dong Yeob Ki, Juhee Park, Vijaya Sunkara, and Yoon-Kyoung Cho
Ulsan National Institute of Science and Technology (UNIST), KOREA

12:00 **ARTIFICIAL MICROCIRCULATION REPLICAS USING BACKSIDE LITHOGRAPHY FOR BLOOD FLOW ANALYSIS**
Marianne Fenech[1], Vincent Girod[2], VIviana Claveria[2], Sebastien Meance[2], Manouk Abkarian[2], and Benoit Charlot[2]
[1]University of Ottawa, CANADA and [2]University of Montpellier, FRANCE

Session 3B2 - 3D Writing and Printing
Singapore Room

11:00 **DIRECT LASER WRITING OF THREE-DIMENSIONAL GRAPHENE-LADEN MICROSTRUCTURES INSIDE ENCLOSED MICROFLUIDIC CHANNELS**
Michael A. Restaino[1], Noah J. Eckman[1], Abdullah T. Alsharhan[1], Andrew C. Lamont[1], Asha J. Hall[2], and Ryan D. Sochol[1]
[1]University of Maryland, USA and [2]Army Research Laboratory, USA

11:20 **OPTO-FLUIDIC 3D PRINTING PLATFORM FOR CELL MICRO-ENVIRONMENT AND TISSUE ENGINEERING**
Sandrine Assié-Souleille, Julie Foncy, Victor Fournié, Godefroi Saint Martin, Rémi Courson, Louisa Boyer, Justine Creff, Arnaud Besson, Xavier Dollat, Julien Roul, Emmanuelle Trévisiol, and Laurent Malaquin
Université de Toulouse, FRANCE

11:40 **MICRO-3D PRINTED MICROFLUIDIC NOZZLES AND MIXERS FOR TIME-RESOLVED STRUCTURAL BIOLOGY**
Juraj Knoska[1], and Michael Heymann[2]
[1]CFEL, GERMANY and [2]MPI of Biochemistry, GERMANY

12:00 **NEW 4D PRINTING USING DRY-ERASE MARKER**
Seo Woo Song[1], Sumin Lee[1], Junkyu Choe[2], Junwon Kang[1], Jiyun Kim[2], and Sunghoon Kwon[1]
[1]Seoul National University, KOREA and
[2]Ulsan National Institute of Science and Technology, KOREA

Session 3C2 - Active Particles and Particle Assemblies
Sydney Room

11:00 **MICROFLUIDIC ASSISTED FABRICATION OF HIERARCHICAL PHOTONIC CRYSTAL MICROSPHERES AND THEIR APPLICATIONS**
Juan Wang
University of Twente, THE NETHERLANDS

11:20 **FABRICATION OF A POROUS MICROPARTICLE WHOSE TRANSPARENCY CHANGE ACCORDING TO THE SURROUNDING ENVIRONMENT**
Kibeom Kim and Wook Park
Kyung Hee University, KOREA

11:40 **ACTIVE PARTICLES AS MOBILE MICROELECTRODES FOR UNIFIED, DIRECTED AND LABEL-FREE CARGO TRANSPORT AND DELIVERY**
Xiaoye Huo, Yue Wu, Sinwook Park, Alicia Boymelgreen, and Gilad Yossifon
Technion - Israel Institute of Technology, ISRAEL

12:00 **LIGHT-DRIVEN MICRO-ROBOT FOR MICRO-PARTICLE AND CELL MANIPULATION**
Shuailong Zhang[1], Erica Scott[1], Nika Shakiba[1], Peter W. Zandstra[2], and Aaron R. Wheeler[1]
[1]University of Toronto, CANADA and [2]University of British Columbia, CANADA

12:20 **Grab 'n Go Lunch**

Industrial Stage 2
Singapore Room

12:25 **Industrial Stage 2a**
SCHOTT Technical Glass Solutions GmbH, GERMANY

12:45 **Industrial Stage 2b**
PreSens Precision Sensing GmbH, GERMANY

Plenary Presentation V
San Francisco Room

13:10 **CURRENT CHALLENGES IN MATERNAL AND NEWBORN HEALTH GLOBALLY: THE ROLE OF APPROPRIATE TECHNOLOGY**
Zulfiqar A. Bhutta
Hospital for Sick Children, CANADA

13:55 **Lab on a Chip and Dolomite – Pioneers of Miniaturization Lectureship Prize and Presentation**
Prize Receipient: Hang Lu, *Georgia Institute of Technology, USA*

Poster Session 3
Hall 4.0 - Ground Floor and Hall 4.1 - First Floor

14:15 Presentations are listed by topic category with their assigned number starting on page 26.

14:30 **NIST and Lab on a Chip - Art in Science Award (in Royal Society of Chemistry Booth)**

16:16 **Break**

Session 3A3 - Spheroids and Organoids
San Francisco Room

16:45 **Keynote Presentation**
HUMAN ORGANODS-ON-CHIPS TO ADVANCE HEALTH SCIENCE
Jianhua Qin
Chinese Academy of Sciences, CHINA

17:15 **MULTI-STEP IMMUNOSTAINING TOOL FOR SPHEROID ARRAY USING DROPLET CONTACT-BASED SPHEROID TRANSFER**
Hwisoo Kim, Hyewon Roh, Chang Hyun Cho, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

17:35 **OPTIMIZING CO-CULTURE MEDIUM CONDITION FOR THE INTEGRATION OF KIDNEY ORGANOID AND VASCULAR BED**
Ryu Okada[1], Yoshikazu Kameda[1], Kensuke Yabuuchi[2], Toshikazu Araoka[1], Jun K. Yamashita[1], Tatsuji Enoki[3], Minoru Takasato[2], Kenji Osafune[1], and Ryuji Yokokawa[1]
[1]Kyoto University, JAPAN, [2]RIKEN, JAPAN, and [3]Takara Bio Inc., JAPAN

17:55 **BRIDGING THE GAP: A MICROFLUIDIC DEVICE FOR STUDYING ORGANOTYPIC BARRIER TISSUES**
Alec E. Richardson[1], Luke A. Schwerdtfeger[1], Diana Eaton[2], Stuart A. Tobet[1], and Charles S. Henry[1]
[1]Colorado State University, USA and [2]Applied Medical, USA

Session 3B3 - Manipulation of Cells

Singapore Room

16:45 **Keynote Presentation**
AUTOMATED MICROFLUIDIC GENETIC MANIPULATION FOR HIGH THROUGHPUT BIOLOGY
Cullen Buie
Massachusetts Institute of Technology, USA

17:15 **INTRACELLULAR DELIVERY OF ACTIVE BIOMOLECULES THROUGH VORTEX-INDUCED CELL DEFORMATION**
Jeongsoo Hur and Aram J. Chung
Korea University, KOREA

17:35 **DIELECTROPHORESIS REVEALS THAT BACTERIAL ELECTROPORATION CORRELATES WITH CELL POLARIZABILITY**
Qianru Wang[1], Sijie Chen[2], and Cullen R. Buie[2]
[1]Stanford University, USA and [2]Massachusetts Institute of Technology (MIT), USA

17:55 **VERSATILE ENGINEERING OF LYSINS: ONE DROP TO KILL**
Hans Gerstmans[1,2], Fabrice Gielen[3], Lorenz Van Hileghem[2], Rob Lavigne[2], Florian Hollfelder[4], Jeroen Lammertyn[2], and Yves Briers[1]
[1]Ghent University[2]KU Leuven, BELGIUM, [3]University of Exeter, UK, and [4]University of Cambridge, BELGIUM

Session 3C3 - Nanopores and Nanochannels

Sydney Room

16:45 **Keynote Presentation**
BIPOLAR ELECTRODES FOR MICROFLUIDIC PUMPING
Sumita Pennathur
University of California, Santa Barbara, USA

17:15 **CONTROLLING DNA FLOW IN NANOCHANNELS USING TOPOGRAPHY**
Franziska M. Esmek and Irene Fernandez-Cuesta
Hamburg University, GERMANY

17:35 **NANOPORE DECODING FOR MICRORNA PATTERN OF CANCER WITH DNA COMPUTATION**
Nanami Takeuchi, Moe Hiratani, Asuka Tada, and Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN

17:55 **SINGLE MOLECULE ELECTRICAL IDENTIFICATION OF EPIGENETIC VARIATIONS BY NANOFLUID INTEGRATED NANOGAP DEVICES**
Takahito Ohshiro, Yuuki Komoto, Masamitsu Konno, Jun Koseki, Ayumu Koseki, Hideshi Ishii, and Masateru Taniguchi
Osaka University, JAPAN

18:15 Adjourn for the Day

19:00 Conference Banquet

Thursday, 31 October

Session 4A1 - Droplets, Mass Spectrometry or OMICS
San Francisco Room

08:45 **Keynote Presentation**
INTERFACING DROPLET CHIPS TO MASS SPECTROMETRY
Detlev Belder
University of Leipzig, GERMANY

09:15 **HIGH-THROUGHPUT X-RAY CRYSTALLOGRAPHY BASED ON THE PROTEIN CRYSTAL ARRAY**
Reo Takeda[1], Masatoshi Maeki[1,3], Sho Ito[2,3], Go Ueno[3], Kunio Hirata[3], Akihiko Ishida[1], Hirobumi Tani[1], Masaki Yamamoto[3], and Manabu Tokeshi[1]
[1]Hokkaido University, JAPAN, [2]University of Hyogo, JAPAN, and [3]RIKEN, JAPAN

09:35 **MASSIVE SCREENING OF METABOLITES USING PICOLITER DROPLET ARRAY WITH NANOSTRUCTURE-INITIATOR MASS SPECTROMETRY**
Noel S. Ha[1], Markus de Raad[1], Fangchao Song[1], Kai Deng[2], Nicole Ing[2], Anup K. Singh[2], and Trent R. Northen[1]
[1]Lawrence Berkeley National Laboratory, USA and [2]Sandia National Laboratories, USA

09:55 **MULTI-OMIC DIGITAL MICROFLUIDIC APPROACH TO CHARACTERIZATION OF THE NEURAL STEM CELL ENVIRONMENT**
Erica Y. Scott, Calvin Chan, Betty Li, Harrison Edwards, Julian Lamanna, Filip Stojic, Cindi Morshead, and Aaron Wheeler
University of Toronto, CANADA

Session 4B1 - Wearables
Singapore Room

08:45 **Keynote Presentation**
SKIN-LIKE, MICROFABRICATED GALLIUM-BASED SENSORS FOR MOTION CAPTURE
Stéphanie P. Lacour
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

09:15 **ORGANIC TRANSDERMAL IONTOPHORESIS PATCH POWERED BY SERIALIZED LAYER-BUILT BIOFUEL CELLS**
Takaya Mizuno, Kaito Sato, Shinya Kusama, Shotaro Yoshida, and Matsuhiko Nishizawa
Tohoku University, JAPAN

09:35 **METAL WIRING ON FLEXIBLE ORIGAMI STRUCTURE FOR STABLE RESISTANCE VALUE AGAINST DEFORMATION**
Takuya Uchida[1], Hiroki Yasuga[2], Eiji Iwase[2], and Hiroaki Onoe[1]
[1]Keio University, JAPAN and [2]Waseda University, JAPAN

09:55 **MEDIATOR-FREE WEARABLE ENZYMATIC SENSING TO MITIGATE IONIC AND ELECTROACTIVE INTERFERENCE FOR RELIABLE OPERATION IN COMPLEX BIOFLUID**
Bo Wang, Yichao Zhao, Hannaneh Hojaiji, Minsoo Kim, and Sam Emaminejad
University of California, Los Angeles, USA

Session 4C1 - Biofibers Dynamics and Assemblies at the Microscale
Sydney Room

08:45 **Keynote Presentation**
MICROSYSTEMS FOR SINGLE MOLECULE ANALYSIS OF MEMBRANE PROTEINS
Rikiya Watanabe
RIKEN, JAPAN

09:15 **INFLUENCE OF TOPOLOGICAL CONSTRAINTS ON DIFFERENTIATION AND ALIGNMENT OF MULTINUCLEATED MYOTUBES**
Ki-Young Song[1], Jorge Correia[2], Gorge L. Ruas[2], and Ana I. Teixeira[2]
[1]Beijing Institute of Technology, CHINA and [2]Karolinska Institutet, SWEDEN

09:35 **ASSEMBLY OF ACTOMYOSIN BUNDLES IN MICROFLUIDIC CHANNEL**
Shusei Kawara[1], Yuichi Hiratsuka[2], and Hiroaki Onoe[1]
[1]Keio University, JAPAN and
[2]Japan Advanced Institute Science Technology (JAIST), JAPAN

09:55 **INVESTIGATING FIBROBLAST-INDUCED COLLAGEN GEL CONTRACTION USING A DYNAMIC MICROSCALE PLATFORM**
Tianzi Zhang[1], John H. Day[1], Xiaojing Su[1], Arturo G. Guadarrama[2], Nathan K. Sandbo[2], Stephane Esnault[2], Loren C. Denlinger[2], Erwin Berthier[1], and Ashleigh B. Theberge[1]
[1]University of Washington, USA and
[2]University of Wisconsin School of Medicine and Public Health, USA

10:15 **Break: Exhibit and Poster Inspection**

Session 4A2 - Analysis of Neutrophils for Diagnosis of Sepsis and Inflammation
San Francisco Room

10:45 **RAPID MONITORING OF SEPSIS BY INTEGRATION OF SPIRAL INERTIAL MICROFLUIDICS AND ISODIELECTRIC SEPARATION**
Do-Hyun Lee[1], Hyungkook Jeon[1], Bakr Jundi[2], Rebecca M. Baron[2], Bruce D. Levy[2], Jongyoon Han[1], and Joel Voldman[1]
[1]Massachusetts Institute of Technology, USA and [2]Harvard Medical School, USA

11:05 **EARLY SEPSIS DIAGNOSIS BY MEASURING NEUTROPHIL SPONTANEOUS MIGRATION AND RESIDUAL-PHAGOCYTOSIS USING MICROFLUIDICS**

Sinan Muldur[1,2,3], Anika Marand[1,2,3], Andreu Cullere[1,2,3], Jarone Lee[1,2,3], Michael Filbin[1], Felix Ellett[1], and Daniel Irimia[1,2,3]

[1]Massachusetts General Hospital, USA, [2]Harvard Medical School, USA, and [3]Shriners Burns Hospital, USA

11:25 **LABEL-FREE IMPEDANCE MAPPING OF NEUTROPHIL DYNAMIC IMMUNE RESPONSES FOR RAPID MULTI-PARAMETRIC INFLAMMATORY PROFILING**

Chayakorn Petchakup[1], Sheng Yuan Leong[1], Hui Min Tay[1], Rinkoo Dalan[2], King Ho Holden Li[1], and Han Wei Hou[1]

[1]Nanyang Technological University, SINGAPORE and [2]Tan Tock Seng Hospital, SINGAPORE

Session 4B2 - Centrifugal Platforms

Singapore Room

10:45 **MINIATURIZED ALL-IN-ONE POWERED LAB ON A DISC PLATFORM**

Edwin En-Te Hwu, Marlitt Viehrig, Sriram Thoppe Rajendran, Laura Serioli, Kinga Zór, and Anja Boisen

Technical University of Denmark, DENMARK

11:05 **AUTOMATING PROTEIN IMMUNOPRECIPITATION IN CENTRIFUGAL MICROFLUIDICS**

Daniel Brassard[1], Jamal Daoud[1], Liviu Clime[1], Matthias Geissler[1], Lidija Malic[1], Denis Charlebois[2], and Teodor Veres[1]

[1]National Research Council, CANADA and [2]Canadian Space Agency, CANADA

11:25 **AUTOMATION AND INTEGRATION OF A CENTRIFUGAL MICRODEVICE FOR DNA PURIFICATION USING DYNAMIC SOLID PHASE EXTRACTION AND NOVEL LASER-ACTUATED VALVING**

Leah M. Dignan, Kimberly R. Jackson, M. Shane Woolf, Christopher J. Tomley, and James P. Landers

University of Virginia, USA

Session 4C2 - Gas Control for Cells

Sydney Room

10:45 **INVESTIGATION OF DRUG METABOLISM WITH LIVER ZONATION MODEL USING OXYGEN GRADIENT IN A MICROFLUIDIC DEVICE**

Satomi Matsumoto[1], Eric Leclerc[2], Astia R. Safitri[1], Mathieu Danoy[1], Toshiro Maekawa[1], Haruyuki Kinoshita[1], Marie Shinohara[1], Kikuo Komori[1], Yasuyuki Sakai[1], and Teruo Fujii[1]

[1]University of Tokyo, JAPAN and [2]LIMMS/CNRS-IIS, JAPAN

11:05 **A MICROFLUIDIC OXYGENATOR WITH LARGE GAS EXCHANGE SURFACE**
Julie Lachaux[1], Gilgueng Hwang[1], Caterina Casari[2], Nassim Arouche[2], Valeria Lotito[1], Alisier Paris[1], Cécile Denis[2], Peter Lenting[2], Georges Uzan[2], Pierre Molinie[3], Olaf Mercier[3], and Anne-Marie Haghiri-Gosnet[1]
[1]C2N CNRS, FRANCE, [2]Institut National de la Santé et de la Recherche Médicale (INSERM), FRANCE, and [3]HML, FRANCE

11:25 **3D PRINTED DEVICES FOR 96-WELL GAS CONTROL**
Adam Szmelter, Jason Jacob, and David T. Eddington
University of Illinois, Chicago, USA

11:45 **Transition**

Plenary Presentation VI
San Francisco Room

11:50 **A TALE OF SINGLE PORE IN QUASI 2D MEMBRANES**
Aleksandra Radenovic
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

12:35 **CHEMINAS - Young Researcher Poster Awards**

12:45 **Lab on a Chip - Widmer Poster Award**

12:55 **IMT Masken und Teilungen AG - Microfluidics on Glass Poster Award**

13:05 **Sensors (MDPI) - Outstanding Sensors and Actuators, Detection Technologies Poster Award**

13:15 **Closing Remarks - Conference Adjourns**

Poster Presentations

M – Monday, 28 October (14:00 - 16:30) **T** – Tuesday, 29 October (14:00 - 16:30)
W – Wednesday, 30 October (14:15 - 16:45)

Classification Chart

(last character of poster number)

a	**Cells, Organisms and Organs on a Chip**
b	**Chemical Applications: Separations, Mixers and Reactions**
c	**Diagnostics, Drug Testing & Personalized Medicine**
d	**Fundamentals in Microfluidics and Nanofluidics**
e	**Micro- and Nanoengineering**
f	**Sensors and Detection Technologies**
g	**Other Applications of Microfluidics**
k	**Late News**

a - Cells, Organisms and Organs on a Chip
Bioinspired, Biomimetic & Biohybrid Devices

M001.a **ANTI-FOULING SURFACES FEATURED WITH MAGNETIC ARTIFICIAL CILIA**
Shuaizhong Zhang[1], Ye Wang[1], Patrick R. Onck[2], and Jaap M.J. den Toonder[1]
[1]Eindhoven University of Technology, THE NETHERLANDS and
[2]University of Groningen, THE NETHERLANDS

M002.a **BIOMECHANICALLY TUNED LUNG-ON-CHIP: TUNING INTRINSIC STIFFNESS OF THE AIR-LIQUID INTERFACE AND ON-CHIP ORIENTATION OF MEMBRANE STRAIN**
Lisa D. Muiznieks, Jessica Ayache, Sasha Cai Lesher-Perez, and Guilhem Velvé Casquillas
Elvesys, FRANCE

M003.a **SENSING OF OXYGEN CONCENTRATION IN A MICROFLUIDIC DEVICE MIMICKING LIVER 3D MICROARCHITECTURE**
Manon Boul[1,2], Satomi Matsumoto[3], Marie Shinohara[3], Yasuyuki Sakai[3], Teruo Fujii[3], Anne Dubart Kupperschmitt[2], Eric Leclerc[3], and Bruno Le Pioufle[1]
[1]ENS Paris Saclay, FRANCE, [2]Université Paris-Saclay, FRANCE, and
[3]Tokyo University, JAPAN

T001.a **BIOSENSING AND POWER GENERATION ROBOTS USING ANHYDROBIOSIS OF CHIRONOMID FOR SPACE EXPRORING**
Yo Tanaka[1], Satoshi Amaya[1], Doudou Ma[1], Yigang Shen[1], Oleg Gusev[1], Takahiro Kikawada[2], and Yaxiaer Yalikun[1]
[1]RIKEN, JAPAN and [2]NARO, JAPAN

T002.a **MICROFLUIDIC FABRICATION OF BIO-ACTUATORS DRIVEN BY ARTIFICIAL MUSCLES MADE FROM MOLECULAR MOTORS**
Yingzhe Wang[1], Yuichi Hiratsuka[2], Takahiro Nitta[3], Kaoru Uesugi[1], and Keisuke Morishima[1]
[1]Osaka University, JAPAN, [2]Japan Advanced Institute of Science and Technology (JAIST), JAPAN, and [3]Gifu University, JAPAN

T003.a **STEREOLITHOGRAPHY (SLA) 3D PRINTED TEMPLATES FOR ENGINEERING PERFUSABLE BIOMIMETIC VASCULATURES IN ALGINATE HYDROGEL**
Terry (Tsz Him) Ching[1], Yi-Chin Toh[2], and Michinao Hashimoto[1]
[1]Singapore University of Technology and Design, SINGAPORE and [2]National University of Singapore, SINGAPORE

W001.a **BASOLATERAL COMPARTMENT PRESSURE MEASUREMENT IN THE CULTURE DEVICE WITH FILTRATION FOR THE EVALUATION OF CELL LAYER CONDITION**
Kotaro Doi[1], Hiroshi Kimura[2], Masaomi Nangaku[3], and Teruo Fujii[1]
[1]Fujii Laboratory, JAPAN, [2]Kimura Laboratory, JAPAN, and [3]University of Tokyo, JAPAN

W002.a **PROTEIN BASED TUBULAR STRUCTURE MICROFLUIDIC BIOPRINTER**
Wuyang Gao, Nima Vaezzadeh, Kelvin Chow, and Axel Guenther
University of Toronto, CANADA

a - Cells, Organisms and Organs on a Chip

Cell Capture, Counting, & Sorting

M004.a **A HANDHELD MICROFLOW CYTOMETER FOR ENUMERATION OF RESIDUAL WHITE BLOOD CELLS**
Byeongyeon Kim, Suyeon Shin, and Sungyoung Choi
Kyung Hee University, KOREA

M005.a **DIELECTROPHORETIC CANCER-TYPE SORTING CHIP AS ADVANCED LIQUID BIOPSY**
Yuto Sasaki, Mio Mizoguchi, Ken Yamamoto, and Masahiro Motosuke
Tokyo University of Science, JAPAN

M006.a MICROFLUIDIC CHIP FOR T CELL-ANTIGEN PRESENTING CELL INTERACTION CHARACTERIZATION.
Margaux Duchamp[1], Marion Arnaud[2], Clarisse Vaillier[1], Sara Bobisse[2], George Coukos[2], Alexandre Harari[2], and Philippe Renaud[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and [2]Université de Lausanne, SWITZERLAND

M007.a PARALLELIZED ELECTROROTATION IN SINGLE CELL DEP MICRO CAGES
Kevin Keim, Mohamed Z. Rashed, and Carlotta Guiducci
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T004.a AN OPTICAL TWEEZERS INTEGRATED MICROFLUIDIC PLATFORM FOR THE IDENTIFICATION AND RETRIEVAL OF ANTIGEN-SPECIFIC B CELLS
Jolien Breukers, Sara Horta, Nick Geukens, Karen Vanhoorelbeke, and Jeroen Lammertyn
KU Leuven, BELGIUM

T005.a GROWTH PHENOTYPE BASED REPORTER-FREE SCREENING OF FILAMENTOUS FUNGI IN MICROFLUIDIC DROPLETS
Jing Dai, Huijuan Yang, Won-Bo Shim, and Arum Han
Texas A&M University, USA

T006.a INERTIAL MICROFLUIDICS-BASED SEPARATION OF MICROALGAE USING A CONTRACTION–EXPANSION ARRAY MICROCHANNEL
Ga-Yeong Kim, Jaejung Son, Jong-In Han, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

T007.a ONE-STEP SEPARATION AND TRAPPING OF SINGLE LEUKOCYTES FROM WHOLE BLOOD IN A MICROFLUIDIC DEVICE
Oriana Gerallin Chavez Pineda, Diana Fabiola Cedillo Alcantar, and Jose Luis Garcia Cordero
Unidad Monterrey, MEXICO

T008.a VISCOELASTIC PARTICLE FOCUSING BASED IMAGING FLOW CYTOMETRY: AN APPLICATION TO YEAST CELLS
Sun Ok Hong[1], Bo-Hyun Choi[1], Pyung Cheon Lee[1], Sung Sik Lee[2], and Ju Min Kim[1]
[1]Ajou University, KOREA and [2]ETH Zürich, SWITZERLAND

W003.a A FULLY-AUTOMATED MICROFLUIDIC ROBOT FOR CIRCULATING ENDOTHELIAL PROGENITOR CELL SORTING AND ANALYSIS
Yu Wang[1], Dong-Fei Wang[2], Hui-Feng Wang[1], Bei-Bei Sun[1], Jian-Wei Wang[1], Xiao-Gang Guo[2], and Qun Fang[1]
[1]Zhejiang University, CHINA and [2]Zhejiang University School of Medicine, CHINA

W004.a CTC ENRICHMENT USING A 3D PRINTED DEVICE COMBINING IMMUNOAFFINITY AND FILTRATION
Chia-Heng Chu, Ruxiu Liu, Tevhide Ozkaya-Ahmadov, and Ali Fatih Sarioglu
Georgia Institute of Technology, USA

W005.a **A CIRCULATING FILTRATION SYSTEM FOR CELL RECOVERY**
Tingting Hun, Yaoping Liu, and Wei Wang
Peking University, CHINA

W006.a **MICRO-ELECTRO-FLUIDIC-PROBE FOR SEQUENTIAL CELL SORTING AND PATTERNING**
Ayoola Brimmo, Anoop Menachery, and Mohammad Qasaimeh
New York University, USA

W007.a **TOWARDS CENTRIFUGATION-ASSISTED CELL TRAPPING AND ISOLATION IN A TWO-PHASE LIQUID**
Wilfred V. Espulgar, Yuga Okui, Masato Saito, Shohei Koyama, Atsushi Kumanogoh, Hyota Takamatsu, and Eiichi Tamiya
Osaka University, JAPAN

a - Cells, Organisms and Organs on a Chip

Cell-Culturing & Perfusion (2D & 3D)

M008.a **A PERFUSABLE 3D IN VITRO ARTERY MODEL INCORPORATING HUMAN VASCULAR SMOOTH MUSCLE CELLS AND ENDOTHELIAL CELLS IN WRINKLED PDMS CHANNELS**
Minkyung Cho and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

M009.a **CELL BEADS TECHNOLOGY USING MICROFLUIDIC DEVICE AS A NEW PLATFORM FOR VASCULARIZED ORGANOID FORMATION**
Shogo Nagata and Shoji Takeuchi
University of Tokyo, JAPAN

M010.a **COMPOSITE PDMS-BASED IN SITU PATTERNING OF COLLAGEN MICROGELS FOR PERFUSION CELL CULTURE MICROSYSTEMS**
Misaki Kato, Mayu Fukushi, Masumi Yamada, Rie Utoh, and Minoru Seki
Chiba University, JAPAN

M011.a **DEVELOPMENT OF A HYDROGEL-ASSISTED MACRO-PATTERNED PLATFORM FOR MIMICKING THE NATIVE MYOCARDIUM**
Tae Hoon Shin, Da Jung Jung, and Gi Seok Jeong
Asan Medical Center, KOREA

M012.a **FABRICATION OF SPATIALLY-CONTROLLED 3D LIVER TISSUE VIA LAYERING CELL-LADEN COLLAGEN SHEETS**
Jaejung Son and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

M013.a **GENERATION OF HIGH ASPECT-RATIO PDMS MICROFIBERS FOR 3D MYELINATION CULTURE OF SCHWANN CELLS**
Hui-Ying Lin, Ing Ming Chiu, Horng-Dar Wang, and Chia-Hsien Hsu
National Tsing Hua University, TAIWAN

M014.a **MODULATING THE CELL ADHESION MICROENVIRONMENT TO MECHANICALLY DRIVE TROPHECTODERM-LIKE ORGANOID FORMATION FROM HUMAN IPS CELLS**
Kennedy O. Okeyo[1], Osamu Kurosawa[2], Hidehiro Oana[3], and Masao Washizu[3]
[1]Kyoto University, JAPAN, [2]RIKEN, JAPAN, and [3]University of Tokyo, JAPAN

M015.a **PARALLEL FORMATION OF CELL SPHEROIDS BASED ON VIBRATION-INDUCED FLOW**
Nanami Minoshima and Takeshi Hayakawa
Chuo University, JAPAN

M016.a **STUDY OF SYNERGISTIC EFFECT OF PHOTO-CHEMOTHERAPY ON A NEW 3D BREAST CANCER MODEL UNDER MICROFLUIDIC CONDITIONS**
Magdalena Flont, Elzbieta Jastrzebska, and Zbigniew Brzozka
Warsaw University of Technology, POLAND

M017.a **TUBING-FREE MICROFLUIDIC PLATFORM FOR CO-CULTURING OF 2D ADHERENT CELLS AND 3D MICROTISSUE SPHEROIDS**
Furkan Gökçe, Andreas Hierlemann, and Mario M. Modena
ETH Zürich, SWITZERLAND

T009.a **ALGINATE TUBE PROVIDES WITH FIBROBLAST GROWTH ORIENTATION BY THE SUB-MICROSTRUCTURES GENERATED DURING LIQUID ROPE-COILING PROCESS APPLIED TO CONSTRUCT TUBULAR CARDIAC TISSUE**
Bo-Heng (Henry) Liu and Fan-Gang Tseng
National Tsing Hua University, TAIWAN

T010.a **CELL ORIENTATION CONTROL BASED ON GEOMETRY SENSING IN SELF-ORGANIZED CELL SHEET FORMATION UNDER LIMITED ADHESION CONDITION**
Yoshikiyo Kibe, Kennedy O. Okeyo, and Taiji Adachi
Kyoto University, JAPAN

T011.a **CONTROLLING THE FORMATION OF OSTEOBLAST-OSTEOCYTE INTERACTIONS BY MICROPATTERNING TO STUDY BONE CELL MECHANOBIOLOGY**
Charlotte Yvanoff[1], Gintare Garbenciute[2], Vytautas Navikas[3], Ramunas Valiokas[2], and Ronnie Willaert[1]
[1]Vrije Universiteit Brussel, BELGIUM, [2]Center for Physical Sciences and Technology, LITHUANIA, and [3]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T012.a **EVALUATION OF NEURONAL ACTIVITY IN A NEURON-ASTROCYTE CO-CULTURE SYSTEM USING A MICROPOROUS SIN MEMBRANE**
Ayaka Nakama and Takashi Yasuda
Kyushu Institute of Technology, JAPAN

T013.a **FAST, INEXPENSIVE, AND BIOCOMPATIBLE FABRICATION PROTOCOL OF 3D ENDOTHELIUM-ON-CHIP USING SOFT THERMOPLASTIC ELASTOMER AND WIRE MOLDS**
Nicolas Distasio, Hugo Salmon, Mohammadreza Rasouli, and Maryam Tabrizian
McGill University, CANADA

T014.a **HANGING DROP ARRAY CHIP FOR SPHEROID CULTURE WITH FINGER-ACTUATED MICROFLUIDIC MEDIUM EXCHANGE**
Juhwan Park, Hwisoo Kim, Jieun Han, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

T015.a **MICROFLUIDIC BIOREACTOR ARRAY FOR HIGH-THROUGHPUT SCREENING AND HATCH-LIKE EXTRACTION OF MUTANT LIBRARIES**
Janghyun Ju, Juyeol Bae, and Taesung Kim
Ulsan National Institute of Science and Technology (UNIST), KOREA

T016.a **PATTERN-CONFINED ENDOTHELIAL CELL MONOLAYERS CONSISTENTLY ALIGN PERPENDICULAR TO FLOW**
Andrew J.A. Kuo, Craig A. Simmons, and Edmond W.K. Young
University of Toronto, CANADA

T017.a **STRETCHING MOTION-DRIVEN ECM-BASED PULSATILE FLOW GENERATOR FOR MIMICKING VENOUS BLOOD FLOW IN VIVO**
Azusa Shimizu[1], Wei Huang Goh[2], Shun Itai[1], Michinao Hashimoto[2], Shigenori Miura[3], and Hiroaki Onoe[1]
[1]Keio University, JAPAN, [2]Singapore University of Technology and Design, SINGAPORE, and [3]University of Tokyo, JAPAN

T018.a **UNDERSTANDING CELL PROLIFERATION AND MATERIAL-INDUCED CELL DEATH ON MICROFLUIDIC DEVICES MADE OF OFF-STOICHIOMETRIC THIOL-ENES**
Kati J. Piironen, Päivi P. Järvinen, Iiro M. Kiiski, and Tiina M. Sikanen
University of Helsinki, FINLAND

W008.a **A FULLY AUTOMATED BIOREACTOR SYSTEM FOR PRECISE CONTROL OF STEM CELL PROLIFERATION AND DIFFERENTIATION**
Ki-Taek Lim
Kangwon National University, KOREA

W009.a **AN AIR-DRIVEN MICRODEVICE TO TUNE THE ANISOTROPIC CURVATURE OF CELL ADHESION PLANE TO PURSE THE MECHANOBIOLOGY OF CURVED SURFACE**
Tadahiro Yamashita, Ichiro Matsushita, and Ryo Sudo
Keio University, JAPAN

W010.a **CENTIMETER-SIZED TISSUE WITH PERFUSABLE CHANNELS TOWARD CULTURED STEAK**
Yasuaki Ishii, Yusuke Hirata, Yuya Morimoto, Ai Shima, and Shoji Takeuchi
University of Tokyo, JAPAN

W011.a **ELECTRICAL STIMULATION INDUCED MICROALGAE GROWTH AND ASTAXANTHIN PRODUCTION ON A MICROFLUIDIC CHIP**
Jaewon Park, Ziyi Song, Huixue Song, Junyi Yao, Yoon-e Choi, Hyunsoo Kim, and Yunhwan Park
Southern University of Science and Technology, CHINA

W012.a **FABRICATION OF CONTINUOUS MICROPORES IN CELL-ENCAPSULATING HYDROGELS USING DENSELY-PACKED MICROENGINEERED FIBERS**
Yoshimasa Minoda, Aruto Hori, Rie Utoh, Masumi Yamada, and Minoru Seki
Chiba University, JAPAN

W013.a **GENERATION AND CHARACTERIZATION OF CYCLIC OXYGEN GRADIENTS IN MICROFLUIDIC DEVICE FOR CELL CULTURE**
Dao-Ming Chang and Yi-Chung Tung
Academia Sinica, TAIWAN

W014.a **JELLY-FILLED DONUTS: PARALLEL HYDROGEL PLUGS WITH ISOLATION VALVES TO STUDY GROWTH EFFECTS OF TRANSIENT ANTIBIOTIC ADMINISTRATION**
Darius G. Rackus, Petra Jusková, Lucas Armbrecht, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

W015.a **NEW MICROSYSTEM INTEGRATED WITH POROUS POLY(ETHYLENE TEREPHTHALATE) (PET) MEMBRANE FOR ANTICANCER DRUG ANALYSIS**
Magdalena Flont, Zuzanna Mackiewicz, Elzbieta Jastrzebska, and Zbigniew Brzozka
Warsaw University of Technology, POLAND

W016.a **RAPID AND SPATIALLY SEPERATED HETEREOGENOUS 3D CELLULAR PATTERNING USING ELECTROHYDRODYNAMICS**
Anoop Menachery and Abishek Vembadi
New York University, Abu Dhabi, UAE

W017.a **SURFACE MODIFICATION OF PDMS MICROFLUIDIC DEVICES FOR STABLE ENDOTHELIAL GROWTH UNDER HIGH SHEAR STRESS**
Asma Siddique[1] and Robert W. Stark[2]
Technical University Darmstadt, GERMANY

a - Cells, Organisms and Organs on a Chip

Inter-& Intracellular Signaling, Cell Migration

M018.a **A SINGLE MOLECULE BARCODE NANOBIOSENSOR FOR DYNAMIC MULTIGENE ANALYSIS IN LIVE CELLS DURING TISSUE MORPHOGENESIS AND WOUND HEALING**
Yi Lu and Pak Kin Wong
Penn State University, USA

M019.a IN VITRO-IN SILICO INTERFACE PLATFORM: BRIDGING THE GAP BETWEEN EXPERIMENT AND THEORY BY INFORMATION SYSTEM TO ELUCIDATE CELLULAR BEHAVIOR SYSTEM
Asuka Yamaguchi[1], Masakazu Akiyama[2], Ikuhiko Nakase[1], and Masaya Hagiwara[3]
[1]Osaka Prefecture University, JAPAN, [2]Meiji University, JAPAN, and [3]RIKEN, JAPAN

M020.a MICROFLUIDIC MONITORING OF CELL RESPONSE IN COMPRESSIVE MECHANICAL STRESS
Ranjan Mishra, Nevena Srejic, Frank van Drogen, Reinhdard Dechant, Sung Sik Lee, and Matthias Peter
ETH Zürich, SWITZERLAND

T019.a DETERMINING MECHANICAL STIMULATION RESPONSES OF PRIMARY CILIA WITH AN INTEGRATED MICROFLUIDICS PLATFORM
Sheng-Han Chu and Nien-Tsu Huang
National Taiwan University, TAIWAN

T020.a INVESTIGATING THE INTERCELLULAR INTERACTION BETWEEN 3D GUT EPITHELIAL MICROTISSUES AND CIRCULATING MAIT CELLS USING A MICROFLUIDIC TILTING PLATFORM
Oanh T.P. Nguyen[1], Patrick M. Misun[1], Christian Lohasz[1], Ramona Nudischer[2], Olivier Frey[3], Jan Devan[3], Gennaro De Libero[3], Andreas Hierlemann[1], and Kasper F. Renggli[1]
[1]ETH Zürich, SWITZERLAND, [2]Hoffmann-La Roche, SWITZERLAND, [3]InSphero AG, SWITZERLAND, and [4]University of Basel, SWITZERLAND

T021.a OPEN MICROFLUIDIC COCULTURE FACILITATES BIDIRECTIONAL SIGNALING BETWEEN ENDOTHELIAL AND EPITHELIAL CELLS
Tianzi Zhang, Daniel Lih, Ryan Nagao, Jun Xue, Erwin Berthier, Jonathan Himmelfarb, Ying Zheng, and Ashleigh Theberge
University of Washington, USA

W018.a A MULTIMODAL TRANSFECTION DEVICE FOR HIGH EFFICIENCY, INTRACELLULAR DELIVERY OF BIOMOLECULES
Mohammad Aghaamoo, Neha Garg, Xuan Li, and Abraham Lee
University of California, Irvine, USA

W019.a GLIOBLASTOMA MIGRATION ALONG CONSTRAINTS WITH DIFFERENT GEOMETRIES: HOW TO MIMICK BRAIN PARENCHYMA INVASION?
Mehmet C. Tarhan[1], Alexandre Mutel[2], Laurence Desrues[2], Dominique Collard[3], and Hélène Castel[2]
[1]IEMN UMR-8520, FRANCE, [2]UNIROUEN, INSERM, DC2N, FRANCE, and [3]LIMMS/CNRS-IIS, FRANCE

W020.a **MICROFLUIDIC DEVICE FOR ELECTRICAL MEASUREMENT OF GAP JUNCTION MEDIATED INTERCELLULAR COMMUNICATION WITH INTEGRATED CALIBRATION**
Joel H. Dungan, Juanita Mathews, Michael Levin, and Valencia J. Koomson
Tufts University, USA

a - Cells, Organisms and Organs on a Chip

Liposomes/Membranes

M021.a **AUTOMATED OBSERVATION OF CELL-SIZED LIPOSOME WITH FEEDBACK CONTROL OF OUTER ENVIRONMENT**
Hironori Sugiyama, Toshihisa Osaki, Shoji Takeuchi, and Taro Toyota
University of Tokyo, JAPAN

M022.a **EJECTION OF LARGE PARTICULATE MATERIALS FROM GIANT UNILAMELLAR VESICLES**
Shota Katsuta, Taiji Okano, and Hiroaki Suzuki
Chuo University, JAPAN

M023.a **RAPID FORMATION OF LIPID BILAYER MEMBRANES IN PARYLENE-C COATED CHIPS BY PSEUDO-PAINTING OF AN AIR BUBBLE FOR THE FUSION AND DETECTION OF OUTER MEMBRANE VESICLES (OMVS)**
Tanzir Ahmed[1], Jayesh A. Bafna[2], Sander van den Driesche[1], Martin Oellers[1], Roland Hemmler[3], Karsten Gall[3], Richard Wagner[2], Mathias Winterhalter[2], and Michael J. Vellekoop[1]
[1]University of Bremen, GERMANY, [2]Jacobs University, GERMANY, and [2]Ionovation GmbH, GERMANY

T022.a **DESIGNING PDMS-BASED MICROFLUIDICS FOR THE PRODUCTION OF SURFACTANT-FREE GIANT LIPID VESICLES**
Naresh Yandrapalli and Tom Robinson
Max Planck Institute, GERMANY

T023.a **MICROFLUIDIC TRAPS TO PROBE THE MECHANICS OF BIOMIMETIC VESICLES AND THEIR INTERACTION WITH NANO-OBJECTS**
Pierre Joseph[1], Costanza Montis[2], Chiara Magnani[1,2], Adrien Dutoya[1,3], Fabien Mesnilgrente[1], Barbara Lonetti[3], Debora Berti[2], and Marianne Elias[1]
[1]LAAS-CNRS, FRANCE, [2]University of Florence, ITALY, and [3]Université de Toulouse, FRANCE

W021.a **ASSESSMENT OF THE FACTORS INFLUENCING LIPOSOME SIZE IN DEAN-FORCES BASED μMIXERS**
Rubén R. López Salazar[1], Ixchel Ocampo[2], Karl F. Bergeron[3], Anas Alazzam[4], Catherine Mounier[3], Ion Stiharu[5], and Vahé Nerguizian[1]
[1]École de Technologie Supérieure, CANADA, [2]Tecnológico de Monterrey, MEXICO, [3]Université du Québec à Montréal, CANADA, [4]Khalifa University, UAE, and [5]Concordia University, CANADA

W022.a **DEVELOPMENT OF A THREE-DIMENSIONAL MICROMIXER DEVICE FOR PRODUCTION OF VARIOUS LIPID-BASED NUCLEIC ACID NANOCARRIERS**
Niko Kimura, Masatoshi Maeki, Yusuke Sato, Kosuke Sasaki, Akihiko Ishida, Hirofumi Tani, Hideyoshi Harashima, and Manabu Tokeshi
Hokkaido University, JAPAN

W023.a **LIVING IN A BUBBLE: ON CHIP MONITORING OF MICROBIAL PRODUCTION IN LIPID VESICLES**
Petra Juskova, Yannick R.F. Schmid, Steven Schmitt, Martin Held, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

a - Cells, Organisms and Organs on a Chip

Multi-Organ Arrangements and Body on a Chip

M024.a **CUBE IN A CHIP: ONE TOUCH 3D TISSUE INTEGRATION AND REMOVAL SYSTEM FOR BODY ON A CHIP PLATFORM**
Masaya Hagiwara
RIKEN, JAPAN

T024.a **A LIVER-TUMOR CO-CULTURE SYSTEM TO ASSESS METABOLISM-RELATED DRUG-DRUG-INTERACTIONS**
Christian Lohasz[1], Flavio Bonanini[1], Kasper Renggli[1], Olivier Frey[2], and Andreas Hierlemann[1]
[1]ETH Zürich, SWITZERLAND and [2]InSphero AG, SWITZERLAND

T025.a **INTEGRATED GUT-LIVER ON A CHIP FOR MODELLING NON-ALCOHOLIC FATTY LIVER DISEASE IN VITRO**
Jiandong Yang, Yoshikazu Hirai, Ken-ichiro Kamei, Toshiyuki Tsuchiya, and Osamu Tabata
Kyoto University, JAPAN

W024.a **A MULTI-MODULE MICROFLUIDIC GASTROINTESTINAL TRACT FOR TESTING FOOD AND DRUGS**
Pim de Haan[1], Milou J.C. Santbergen[2], Meike van der Zande[2], Hans Bouwmeester[2], Michel W.F. Nielen[2], and Elisabeth Verpoorte[1]
[1]University of Groningen, THE NETHERLANDS and
[2]Wageningen University, THE NETHERLANDS

W025.a **MICROPHYSIOLOGICAL NETWORK AND CO-CULTURE OF FIVE MICRO-ORGANS (HIPPOCAMPAL AND CORTICAL BRAIN, CARDIAC, LIVER, AND TUMOR 3D MICROTISSUES) ON 96-WELL FORMAT-BASED BODY ON A CHIP**
Chae-won Jin, Hongsoo Choi, and Jin-young Kim
Daegu Gyeongbuk Institute of Science and Technology, KOREA

a - Cells, Organisms and Organs on a Chip

Organisms on Chip (C. elegans, Zebrafish, Arabidopsis, etc.)

M025.a **A MICROFLUIDIC DEVICE TO ENHANCE THE THROUGHPUT OF ELECTROTAXIS SCREENING WITH CAENORHABDITIS ELEGANS MODELS OF PARKINSON'S DISEASE**
Khaled Youssef[1], Daphne Archonta[1], Terry Kubiseski[1], Anurag Tandon[2], and Pouya Rezai[1]
[1]York University, CANADA and [2]University of Toronto, CANADA

M026.a **HIGH-THROUGHPUT MECHANICAL PHENOTYPING OF C. ELEGANS DIABETES MODELS USING ELASTOMERIC MICROPILLAR ARRAYS**
Samuel Sofela[1], Sarah Sahloul[2], Christopher Stubbs[1], Ajymurat Orozaliev[2], and Yong-Ak Song[2]
[1]New York University, USA and [2]New York University, Abu Dhabi, UAE

M027.a **MULTI-PHENOTYPIC MOVEMENT AND CARDIAC SCREENING OF ZEBRAFISH LARVAE USING BIDIRECTIONAL IMAGING IN A MICROFLUIDIC DEVICE**
Arezoo Khalili, Ellen V. Wijngaarden, Georg Zoidl, and Pouya Rezai
York University, CANADA

T026.a **A MICROFLUIDIC SYSTEM FOR NEMATODE IMMOBILIZATION AND BACTERIAL COLONIZATION STUDIES IN C. ELEGANS**
Vittorio Viri, Maël Arveiler, Thomas Lehnert, and Martin A.M. Gijs
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T027.a **MICROFLUIDIC ARRAY FOR LARGE SCALE SMFISH TRANSCRIPTIONAL ANALYSIS OF CAENORHABDITIS ELEGANS EMBRYOS**
Seleipiri Charles, Guillaume Aubry, Han-Ting Chou, Annalise B. Paaby, and Hang Lu
Georgia Institute of Technology, USA

T028.a **ON-DEMAND ELECTRIC FIELD INDUCED EGG LAYING OF CAENORHABDITIS ELEGANS**
Khaled Youssef[1], Daphne Archonta[1], Terry Kubiseski[1], Anurag Tandon[2], and Pouya Rezai[1]
[1]York University, CANADA and [2]University of Toronto, CANADA

W026.a **A MICROFLUIDIC-BASED PIPELINE TO INVESTIGATE IN-SITU GENE EXPRESSION IN WHOLE ORGANISMS WITH CELLULAR AND INTER-INDIVIDUAL RESOLUTION**
Jason Wan[1,2], Gongchen Sun[1], and Hang Lu[1]
[1]Georgia Institute of Technology, USA and [2]Emory University, USA

W027.a **MICROFLUIDIC-BASED ANESTHETIC-FREE MICROINJECTION OF INTACT DROSOPHILA LARVA TO INVESTIGATE THE EFFECT OF SEROTONIN ON HEARTRATE**
Alireza Zabihihesari, Arthur J. Hilliker, and Pouya Rezai
York University, CANADA

W028.a **RAPID ASSEMBLY OF CAENORHABDITIS ELEGANS ARRAY ON AN OPEN SURFACE BY CONTACT LINE COMBING FOR IMAGE-BASED SCREENING**
Gongchen Sun, Ga Hyun Lee, Guillaume Aubry, and Hang Lu
Georgia Institute of Technology, USA

a - Cells, Organisms and Organs on a Chip

Organs on Chip

M028.a **3D DYNAMIC MICROVASCULATURE-ON-CHIP: CYCLIC STRETCH AND VASCULAR REMODELING**
Soheila Zeinali[1], Merve Bulut[1], Emily K. Thompson[1], Thomas Geiser[2], and Olivier T. Guenat[1]
[1]University of Bern, SWITZERLAND and [2]University Hospital of Bern, SWITZERLAND

M029.a **3D MICROENGINEERED VASCULARIZED TUMOR SPHEROID FOR DRUG DELIVERY AND EFFICACY TESTING**
Jungseub Lee[1], Jungho Ahn[1], Jungeun Lim[1], Noo Li Jeon[1], and YongTae Kim[2]
[1]Seoul National University, KOREA and [2]Georgia Institute of Technology, KOREA

M030.a **A GLOMERULUS-ON-A-CHIP UTILIZING HIPSC-DERIVED PODOCYTES WITH 3D GLOMERULAR STRUCTURE**
Yang Liu, Ramin Banan Sadeghian[1], Yoshiki Sahara[2], Junichi Taniguchi[2], Kensuke Yabuuchi[2], Toshikazu Araoka[3], Kenji Osafune[3], Minoru Takasato[2], and Ryuji Yokokawa[3]
[1]Kyoto University, JAPAN, [2]RIKEN, JAPAN, and [3]Kyoto University, JAPAN

M031.a **CARTILAGE-ON-CHIP: A PHYSIOLOGICALLY INSPIRED PLATFORM TO REPRODUCE ARTICULAR JOINT COMPRESSION AND SHEAR STRAIN**
Carlo Alberto Paggi, Bastien Venzac, Jeroen Leijten, Liliana Moreira-Teixeira Leijten, Marcel Karperien, and Séverine Le Gac
University of Twente, THE NETHERLANDS

M032.a **EFFICIENT FABRICATION OF A PRE-INVASIVE BREAST CANCER MODEL VIA DOUBLE EMULSIFICATION OF MATRIGEL**
Jelle J.F. Sleeboom[1], Cecilia M. Sahlgren[2], and Jaap M.J. den Toonder[1]
[1]Eindhoven University of Technology, THE NETHERLANDS and [2]Åbo Akademi University, FINLAND

M033.a **HIGH-THROUGHPUT MICROFLUIDIC PLATFORM FOR VASCULARIZATION OF 3D TISSUES: THE MISSING LINK IN TISSUE CULTURE.**
Arnaud Nicolas, Sara Previdi, Dorota Kurek, Frederik Schavemaker, Sebastiaan J. Trietsch, Henriette Lanz, and Paul Vulto
Mimetas B.V., THE NETHERLANDS

M034.a **MICROFLUIDIC MODEL OF THE BLOOD-RETINAL-BARRIER FOR PERMEABILITY TESTS**
Jaewon Park, Sihan Liu, Yau K. Chan, and Ho C. Shum
Southern University of Science and Technology, CHINA

M035.a **NEW GENERATION OF AIR-BLOOD BARRIER MODEL: A LUNG-ON-CHIP WITH A STRETCHABLE BIOLOGICAL MEMBRANE**
Pauline Zamprogno[1], Simon Wuethrich[1], Sven Achenbach[1], Janick D. Stucki[1], Nina Hobi[1], Nicole Schneider-Daum[2], Claus-Michael Lehr[2], Hanno Huwer[3], Ralph A. Schmid[4], and Olivier T. Guenat[1]
[1]University of Bern, SWITZERLAND, [2]Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS), GERMANY, [3]Völklingen Heart Center, Völklingen, Germany, GERMANY, and [4]University Hospital of Bern, Bern, Switzerland, SWITZERLAND

M036.a **RESPONSE OF TUBULAR CELLS BY EXPOSING CONTROLLED SHEAR STRESS TO PRIMARY CILIA AFTER OXIDATIVE STRESS**
Masatomo Chikamori[1], Hiroshi Kimura[2], Soo Hyeon Kim[1], Masaomi Nangaku[3], and Teruo Fujii[1]
[1]Institute of Industrial Science, JAPAN, [2]Tokai University, JAPAN, and [3]University of Tokyo, JAPAN

M037.a **TOWARD A BLOOD-BRAIN BARRIER MICROPHYSIOLOGICAL SYSTEM WITH IN-LINE MONITORING**
Ashlyn T. Young[1,2], Vladimir A. Pozdin[1], and Michael Daniele[1,2]
[1]North Carolina State University, USA and [2]University of North Carolina, Chapel Hill, USA

T029.a **3D IN VITRO HIGH THROUGHPUT SCREENING MODEL FOR ANALYSIS OF COLORECTAL CANCER ORGANOID BY RADIOTHERAPY AND CHEMOTHERAPY FOR PRECISION MEDICINE**
Dong-Hee Choi, Yong Hun Jung, Seung-Chul Shin, Ji Hun Yang, and Seok Chung
Korea University, KOREA

T030.a **ASSESSING BARRIER PROPERTIES USING IMPEDANCE SPECTROSCOPY IN A SEMI-CIRCULAR, BLOOD-BRAIN BARRIER ON-CHIP**
Fotios Avgidis, Martijn Tibbe, Anne Leferink, and Loes Segerink
University of Twente, THE NETHERLANDS

T031.a **A CELL SHEET-BASED APPROACH FOR RECONSTITUTING IN VITRO BLOOD-BRAIN BARRIER MODEL PERMITING DIRECT PHYSICAL INTERACTION BETWEEN ENDOTHELIAL CELLS AND NEURAL CELLS**
Kennedy Omondi Okeyo, Saki Kouno, and Taiji Adachi
Kyoto University, JAPAN

T032.a **CELLS NEVER DRY: MOTILE MICROORGANISMS IN A MICROBIOSPHERE REALIZED WITH A HIGH-SPEED DROP BY DROP CONTROL**
Hironobu Maeda and Tomohiro Kawahara
Kyushu Institute of Technology, JAPAN

T033.a **ENGINEERED CORTICAL ORGANOIDS TO MODEL VALPROIC ACID EXPOSURE**
Kang L. Cui, Ya Q. Wang, Yu J. Zhu, Ya Q. Guo, Fang C. Yin, and Jian H. Qin
Dalian Insititute of Chemistry Physics, CHINA

T034.a **LIVING SKIN-SECTION ON A CHIP**
Minghao Nie and Shoji Takeuchi
University of Tokyo, JAPAN

T035.a **MULTIPLEXED ORGAN-ON-CHIP DEVICE FOR INCREASED THROUGHPUT ANALYSIS OF THE TISSUE BARRIER FUNCTION**
Mariia Zakharova, Marinke van der Helm, Marciano Palma do Carmo, Hai Le-The, Martijn Tibbe, Andries van der Meer, Kerensa Broersen, Jan Eijkel, and Loes Segerink
University of Twente, THE NETHERLANDS

T036.a **PUMP-FREE MICROFLUIDIC SYSTEM FOR CELL CULTURE UNDER FLOW**
Mohammad Paknahad, Morvarid Farhang Ghahremani, Caleb Horst, and Craig Simmons
University of Toronto, CANADA

T037.a **THE ORGANOTEER: A SENSITIVE TEER MEASUREMENT PLATFORM FOR HIGH THROUGHPUT SCREENING OF ORGANS-ON-CHIPS**
Arnaud Nicolas[1], Frederik Schavemaker[1], Sebastiaan J. Trietsch[1], Henriette Lanz[1], Thomas Hankemeier[2], and Paul Vulto[1]
[1]Mimetas B.V., THE NETHERLANDS and [2]Leiden University, THE NETHERLANDS

T038.a **TRICULTURE-BASED IN VITRO SYSTEM OF HUMAN BLOOD-BRAIN BARRIER WITH HIGH IN VIVO RELEVANCE AND ITS APPLICATION AS A DISEASE MODEL FOR DRUG SCREENING**
Suyeong Seo[1], Hyewhon Rhim[1], Kangwon Lee[2], Nakwon Choi[1], and Hong Nam Kim[1]
[1]Korea Institute of Science and Technology (KIST)

W029.a **3D LIVER TISSUE ENHANCED WITH PERFUSABLE VASCULAR CHANNEL AND SINUSOID-LIKE STRUCTURES**
Nobuhito Mori, Yuzo Takayama, and Yasuyuki S. Kida
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

W030.a **A BIOMIMETIC PROXIMAL TUBULE-ON-A-CHIP TO ASSESS PROXIMAL TUBULE CELLS HARVESTED FROM HPSC-DERIVED KIDNEY ORGANOIDS AS A SUBSTITUTE FOR THE IMMORTALIZED CELL COUNTERPART**
Ramin Banan Sadeghian[1], Yang Liu[1], Ryohei Ueno[1], Toshikazu Araoka[1], Jun Yamashita[1], Tatsuji Enoki[2], Minoru Takasato[3], and Ryuji Yokokawa[1]
[1]Kyoto University, JAPAN, [2]Takara Bio, JAPAN, and [3]RIKEN, JAPAN

W031.a **A MICROFLUIDIC FLOW CELL FOR MAINTENANCE AND ANALYSIS OF HUMAN SKIN SAMPLES**
Kamil Talar[1], Alexander Iles[1], Matthew J. Hardman[2], and Nicole Pamme[1]
[1]University of Hull, UK and [2]Hull York Medical School, UK

W032.a **EFFECTS OF BONE MARROW-DERIVED OP9 STROMAL CELLS STIMULATED IN A CELL STRETCHING DEVICE**
Momoko Maeda[1], Eriko Kamata[1], Kenji Kitajima[2], Takahiko Hara[2], and Kae Sato[1]
[1]Japan Women's University, JAPAN and
[2]Tokyo Metroplitan Institute of Medical Science, JAPAN

W033.a **ENGINEERING A NOVEL MICROPHYSIOLOGICAL SYSTEM TO RECAPITULATE BIOLOGIC BARRIER FUNCTIONS**
Matthew Ishahak[1], Quratulain Amin[1], Jordan Hill[1], Adiel Hernandez[1], Laura Wubker[1], Siddarth Rawal[1], Alessia Fornoni[2], and Ashutosh Agarwal[1]
[1]University of Miami, USA and [2]University of Miami Miller School of Medicine, USA

W034.a **MODELING NEURAL CIRCUIT, BLOOD-BRAIN BARRIER, AND MYELINATION ON A MICROFLUIDIC 96 WELL PLATE**
Seung-Ryeol Lee, Sujin Hyung, Seokyoung Bang, and Noo Li Jeon
Seoul National University, KOREA

W035.a **MUSCLE-ON-CHIP WITH A MECHANICALLY TUNABLE 3D MICROENVIRONMENT**
Chak Ming Leung, Hsih Yin Tan, Louis Jun Ye Ong, and Yi-Chin Toh
National University of Singapore, SINGAPORE

W036.a **REAL-TIME MONITORING OF OXYGEN CONSUMPTION IN PRECISION-CUT LIVER SLICES**
Maciej Grajewski, Ruby E.H. Karsten, and Elisabeth M.J. Verpoorte
University of Groningen, THE NETHERLANDS

W037.a **SEGREGATED TEER MEASUREMENT ON A DOUBLE TUBULAR RECAPITULATION OF THE BLOOD/KIDNEY BARRIER**
Todd P Burton[1], Kelly Klaassen[1,2], Arnaud Nicholas[1], Linda Gijzen[1], Marianne Vormann[1], Bob Ronden[1], Karel Domansky[1], Sebastiaan Trietsch[1], and Paul Vulto[1]
[1]Mimetas B.V., THE NETHERLANDS and
[2]Saxion University of Applied Sciences, THE NETHERLANDS

a - Cells, Organisms and Organs on a Chip

Single-Cell Analysis

M038.a **ASYMMETRICAL CONSTRICTION CHANNEL BASED MICROFLUIDIC IMPEDANCE FLOW CYTOMETRY ENABLING THE QUANTIFICATION OF SPECIFIC MEMBRANE CAPACITANCE, CYTOPLASM CONDUCTIVITY AND CELLULAR DIAMETER FROM 100,000 SINGLE CELLS**
Yi Zhang[1], Hongyan Liang[1], Deyong Chen[1], Junbo Wang[1], Ying Xu[2], and Jian Chen[1]
[1]Chinese Academy of Sciences, CHINA and
[2]Shanghai Jiao-Tong University School of Medicine, CHINA

M039.a **CO-CAPTURE OF MAGNETIC BEADS AND CELLS FOR SINGLE-CELL ANALYSIS IN MICROFLUIDIC CHAMBERS**
Lucas Armbrecht, Claudius Dietsche, Rafael S. Müller, Jonas Nikoloff, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

M040.a **DROPLET-ENHANCED ON-CELL ENCODING OF SINGLE CELL SECRETORY FUNCTION**
Robert Dimatteo and Dino Di Carlo
University of California, Los Angeles, USA

M041.a **HIGH-THROUGHPUT FORMATION OF CELL-MICROBEAD PAIRS FOR SINGLE CELL CYTOKINE SECRETION ANALYSIS**
Diana F. Cedillo-Alcantar, Roberto Rodriguez-Moncayo, Alberto M. Solís-Serrano, and Jose L. García-Cordero
Centro de Investigación y de Estudios Avanzados del IPN, MEXICO

M042.a **LINKING PHYSICAL PHENOTYPE TO DRUG RESISTANCE: SINGLE-CELL MECHANICAL MEASUREMENTS OF ACUTE PROMYELOCYTIC LEUKEMIA**
Brian Li, Annie Maslan, Aaron M. Streets, and Lydia L. Sohn
University of California, Berkeley, USA

M043.a **MICROFLUIDIC SYSTEM FOR CULTIVATION AND MONITORING OF INDIVIDUAL RIBOFLAVIN OVERPRODUCING ESCHERICHIA COLI CELLS**
Petra Juskova, Lucas Armbrecht, Steven Schmitt, Martin Held, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

M044.a **ON-LINE IMPEDIMETRIC MONITORING OF SINGLE CELL ELECTRICAL LYSIS IN A MICROFLUIDIC DEVICE**
Sertan Sukas, Albert van den Berg, Leon Terstappen, and Séverine Le Gac
University of Twente, THE NETHERLANDS

M045.a **SINGLE CELL FLUOROMETRIC GRANZYME B PROFILING OF IMMUNOLOGICAL CELLS AS EARLY IMMUNOTHERAPY RESPONSE PREDICTOR**
Jonathan Briones, Wilfred Espulgar, Hiroyuki Yoshikawa, Masato Saito, Shohei Koyama, Atsushi Kumanogoh, Hyouta Takamatsu, and Eiichi Tamiya
Osaka University, JAPAN

M046.a **ULTRA-SIMPLE MULTIPLEX SINGLE-CELL MICROFLUIDICS**
Mohammed Abdullah and Jun Wang
State University of New York, USA

T039.a **ADHERED CELL DROP-SCREEN: ULTRAHIGH THROUGHPUT QUANTITATIVE MORPHOLOGICAL PROFILING OF ADHERED SINGLE CELLS IN RESPONSE TO MECHANICAL CUES**
Ming Wang, Hwa Liang Leo, Chwee Teck Lim, and Chia-Hung Chen
National University of Singapore, SINGAPORE

T040.a **DROPLET BASED MICROFLUIDIC FLOW CYTOMETRY CAPABLE OF QUANTIFYING COPY NUMBERS OF SPECIFIC SINGLE-CELL PROTEINS**
Yuanchen Wei, Beiyuan Fan, Lixing Liu, Hongyu Yang, Deyong Chen, Junbo Wang, and Jian Chen
Chinese Academy of Sciences, CHINA

T041.a **IN VITRO SINGLE-CELL VISUALLIZATION AND PROFILING OF T CELL–ANTIGEN PRESENTING CELL (APC) INTERACTION**
Hiroki Ide, Wilfred V. Espulgar, Masato Saito, Taiki Aoshi, and Eiichi Tamiya
Osaka University, JAPAN

T042.a **MICHAELIS-MENTEN CYTOMETRY FOR THE EVALUATION OF CHRONIC MYELOGENOUS LEUKEMIA (CML) AT SINGLE-CELL RESOLUTION**
Jinzhu Yu, Botond Antal, Ki Oh, Sitapriya Moorthi, Ling Li, Chiara Luberto, Helmut Strey, Phuong-Lan Quan, and Eric Brouzes
Stony Brook University, USA

T043.a **MICROVASCULAR IN VITRO CONSTRICTION MODEL FOR IMAGING CANCER CELL DAMAGE AND RECOVERY**
Kyohei Terao[1], Hamizah Cognart[2], Jean-Louis Viovy[3], and Catherine Villard[3]
[1]Kagawa University, JAPAN, [2]National University of Singapore, SINGAPORE, and [3]Institut Curie, FRANCE

T044.a **REVEALING MICRORNA NEUCLEO-CYTOPLASMIC HETEROGENEITY VIA NANO-PLASMONIC SINGLE-CELL DROPLET SCREENING**
Ri Lu, Jia Liu, Guoyun Sun, Shih-Chung Wei, Song Guo, and Chia-Hung Chen
National University of Singapore, SINGAPORE

T045.a **SINGLE TO COUNTABE-MOLECULE ELISA BY DEVELOPING NANOFLUIDIC DEVICE**
Ryoichi Ohta, Kazuma Mawatari, Emi Mori, and Takehiko Kitamori
University of Tokyo, JAPAN

T046.a **USING ELECTRICAL IMPEDANCE SPECTROSCOPY TO MONITOR THE DISSECTION EVENTS OF SINGLE BUDDING YEAST CELLS IN A MICROFLUIDIC DEVICE**
Yangye Geng[1], Haoxi Wang[1], Yingying Wang[1], Shuiping Ouyang[2], Zixin Wang[3], Dejing Pan[4], and Zhen Zhu[1]
[1]Southeast University, CHINA, [2]Nanjing Forestry University, CHINA, [3]Sun Yat-Sen University, CHINA, and [4]Soochow University, CHINA

W038.a **A LIQUID BIOPSY APPROACH TO EARLY DETECTION OF BONE MARROW FIBROSIS VIA SINGLE-CELL FUNCTIONAL PROTEOMICS**
Dongjoo Kim[1,2], Jonathan Chen[1], Zhuo Chen[1,2], Maria Kleppe[3], Ross L. Levine[3], and Rong Fan[1,2]
[1]Yale University, USA, [2]Yale Cancer Center and Yale Stem Cell Center, USA, and [3]Memorial Sloan Kettering Cancer Center, USA

W039.a **CELLULAR KINEMATIC ANALYSIS OF IMMOBILIZED SINGLE BUDDING YEAST CELLS IN CONTROLLED HYDRODYNAMIC MICROENVIRONMENT**
Yingying Wang[1], Xingyu Xu[1], Shuiping Ouyang[2], Qing-an Huang[1], and Zhen Zhu[1]
[1]Southeast University, CHINA and [2]Nanjing Forestry University, CHINA

W040.a **COMPARTMENTALIZED HYDROGEL MICROPARTICLE BASED DROP-SCREEN FOR MULTIMODAL SINGLE-CELL ASSAY**
Myat Noe Hsu[1], Ri Lu[2], Sophie W.M. Lian[2], and Chia-Hung Chen[2]
[1]Singapore-MIT Alliance for Research and Technology, SINGAPORE and [2]National University of Singapore, SINGAPORE

W041.a **HIGH-THROUGHPUT SINGLE-CELL IMPEDANCE PHASE CONTRAST CYTOMETRY OF PATIENT DERIVED PANCREATIC TUMOR XENOGRAFTS TO STRATIFY TUMORIGINICITY**
Nathan Swami
University of Virginia, USA

W042.a **INDROP RAID: SINGLE CELL TRANSCRIPTOMICS COMBINED WITH INTRACELLULAR (PHOSPHO)PROTEINS QUANTIFICATION**
Francesca Rivello, Erik van Buijtenen, Kinga Matula, and Klaas Mulder
Radboud University, THE NETHERLANDS

W043.a **MAGNETIC RATCHETING OF HYDROGEL DROPS FOR SELECTION OF HIGH MAGNETIC BIOMASS PRODUCING BACTERIA**
Hiromi Miwa, Haylay McCausland, Coleman Murray, Arash Komeili, and Dino Di Carlo
University of California, Los Angeles, USA

W044.a **MICROSTREAMING FLOW ARISING FROM CELLS EXCITED BY SURFACE ACOUSTIC WAVES**
Alinaghi Salari, Appak-Baskoy, Michael Kolios, and Scott Tsai
Ryerson University, CANADA

W045.a **NANO-FOCUSED ELECTRIC FIELD FOR NANO-LOCALIZED SIGLE CELL ELECTROPORATION USING ITO NANO-ELECTRODE CHIP**
Tuhin S. Santra[1], Srabani Kar[2], and Fan-G. Tseng[3]
[1]Indian Institute of Technology (IITM), INDIA, [2]University of Cambridge, UK, and [3]National Tsing Hua University, TAIWAN

W046.a **SINGLE-CELL MICROFLUIDIC PLATFORM TO STUDY ANAEROBIC BACTERIA**
Yanqing Song[1], Andrew Glidle[1], Christopher Quince[2], Gavin Collins[3], William Sloan[1], and Huabing Yin[1]
[1]University of Glasgow, UK, [2]University of Warwick, UK, and [3]National University of Ireland, Galway, IRELAND

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Synthetic Biology

M047.a **A MULTIPLEXED CELL-FREE ASSAY TO SCREEN FOR MEMBRANE INTERACTING PEPTIDES IN DOUBLE EMULSION DROPLETS**
Nicola Nuti, Philipp Rottmann, Ariane Stucki, Sven Krähenbühl, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

M048.a **SELF-ASSEMBLED MONOLAYER ON CYTOP SURFACE ALLOWS ENCAPSULATION OF DYNAMIC PROTEIN SYSTEMS IN PATTERNED CHAMBERS**
Hiromune Eto[1], Naoki Soga[2], Henri G. Franquelim[1], Alena Khmelinskaia[1], Lei Kai[1], Michael Heymann[1], Hiroyuki Noji[2], and Petra Schwille[1]
[1]Max Planck Institute, GERMANY and [2]University of Tokyo, JAPAN

T047.a **HIGH-THROUGHPUT ERROR-FREE DNA PURIFICATION THROUGH MICRO-PILLAR CHIP AND LASER RETRIEVAL SYSTEM**
Huiran Yeom, Namphil Kim, Seo Woo Song, Sumin Lee, and Sunghoon Kwon
Seoul National University, KOREA

W047.a **A GENERALIZED KINETIC FRAMEWORK APPLIED TO WHOLE-CELL ELECTROCATALYSIS IN BIOFILM FLOW REACTORS CLARIFIES PERFORMANCE ENHANCEMENTS**
Mirpouyan Zarabadi, Manon Couture, Steve J. Charette, and Jesse Greener
Université Laval, CANADA

W048.a **QUORUM SENSING LIPOSOMES: LIPOSOME-BASED ARTIFICIAL CELLS THAT SENSE THEIR POPULATION DENSITY**
Taishi Tonooka[1], Lev Tsimring[2], and Jeff Hasty[2]
[1]Kyoto Institute of Technology, JAPAN and [2]University of California, San Diego, USA

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Vascularization

M049.a **ENHANCE CELL CONFLUENCE USING GRADUALLY-DEGRADED ALGINATE-COLLAGEN MATERIAL FOR TUNICA INTERMEDIA FORMATION**
Seok Oh[1], Van Thuy Duong[1], Huu Lam Phan[1], HyeWon Son[1], Trung Nguyen[1], Hang Phuong Nguyen[1], Thi Huong Le[1], Suwon Lee[1], HyoSeok Lee[1], Chang Ho Hwang[2], and Kyo-in Koo[1]
[1]University of Ulsan, KOREA and [2]University of Ulsan College of Medicine, KOREA

T048.a **"ON–CHIP VASCULAR BED" ENABLES INTEGRATION OF A SPHEROID AND PERFUSABLE VASCULATURE**
Yoshikazu Kameda[1], Ryu Okada[1], Kensuke Yabuuchi[2], Toshikazu Araoka[1], Jun K. Yamashita[1], Tatsuji Enoki[3], Minoru Takasato[2], and Ryuji Yokokawa[1]
[1]Kyoto University, JAPAN, [2]Riken, JAPAN, and [3]Takara Bio Inc., JAPAN

T049.a **OVER-FIVE-MILLIMETER DIAMETER ALGINATE-COLLAGEN ENDOTHELIALIZED TUBULAR SCAFFOLD FORMATION**
Van Thuy Duong[1], Seok Oh[1], Huu Lam Phan[1], HyeWon Son[1], Trung Nguyen[1], Hang Phuong Nguyen[1], Thi Huong Le[1], Suwon Lee[1], HyoSeok Lee[1], Chang Ho Hwang[2], and Kyo-in Koo[1]
[1]University of Ulsan, KOREA and [2]University of Ulsan College of Medicine, KOREA

W049.a **DEVELOPMENT OF A MICROFLUIDIC DEVICE CAPABLE OF GENERATING OXYGEN GRADIENTS FOR THREE-DIMENSIONAL CELL CULTURE IN HYDROGEL**
Heng Hua Hsu[1], Ping Liang Ko[2], Hsiao Mei Wu[2], Tse Ang Lee[2], Hsi Chieh Lin[2], and Yi Chung Tung[2]
[1]National Tsing Hua University, TAIWAN and [2]Academia Sinica, TAIWAN

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Other Applications in Biology

M050.a **CULTIVATION OF 'UNCULTIVABLE' MARINE SEDIMENT BACTERIA USING A MICROBIAL DOMESTICATION POD (MD POD)**
Tartela Alkayyali, Emily Pope, Bradley Haltli, Russell G. Kerr, and Ali Ahmadi
University of Prince Edward Island, CANADA

M051.a **ON-CHIP DEFORMABILITY MEASUREMENT OF EUKARYOTIC CELLS: COMPARISON TO ANUCLEATE CELLS**
Hiroaki Ito[1], Kohei Fujimoto[2], and Makoto Kaneko[3]
[1]Chiba University, JAPAN, [2]Osaka Univeristy, JAPAN, and [3]Meijo University, JAPAN

T050.a **GLASS MICROFLUIDIC HIGH THROUGHPUT HYPOXIA SCREENING SYSTEM FOR OXIDATIVE STRESS ON OCULAR SURFACE CELLS**
Jeongyun Kim[1], Chiwan Koo[2], Won Choi[3], Eunjin Lee[3], Kyongjin Cho[1], Jongil Ju[1], and Jiyeon Choi[4]
[1]Dankook University, KOREA, [2]Hanbat National University, KOREA, [3]Seoul National University, KOREA, and [4]Korea Institute of Machinery and Materials, KOREA

W050.a **A HIGH THROUGHPUT SCREENING PLATFORM TO REJUVENATE SKELETAL MUSCLE FUNCTION VIA ELECTRICAL STIMULATION**
Min Young Kim, Hyun Young Shin, Seung Joon Lee, and Minseok S. Kim
Daegu Gyeongbuk Institute of Science and Technology, KOREA

W051.a **MICROFLUIDIC INVESTIGATION OF RED BLOOD CELL PHASE SEPARATION IN COMPLEX MICROCHANNEL NETWORKS**
Alberto Mantegazza, Francesco Clavica, and Dominik Obrist
University of Bern, SWITZERLAND

b - Chemical Applications: Separations, Mixers and Reactions

Chemical & Particle Synthesis

M052.b **ESTABLISHMENT OF LABO-IN-A-MICRODROPLET FOR AZO COMPOUND SYNTHESIS**
Daiki Tanaka[1], Shunsuke Sawai[1], Takuo Sugaya[1], Yoshito Nozaki[1], Dong H. Yoon[1], Taisuke Isano[2], Hitoshi Yamagata[2], Hiroyuki Fujita[2], Tetsushi Sekiguchi[1], Takashiro Akitsu[3], and Shuichi Shoji[1]
[1]Waseda University, JAPAN, [2]Canon Medical Systems Corp., JAPAN, and [3]Tokyo University of Science, JAPAN

M053.b **SYNTHESIS OF AU@AG NANOPARTICLES AT A LOW-COST FDM-BASED 3D-PRINTED MICROFLUIDIC DEVICE**
Lucas P. Bressan, Taíssa M.S. Lima, Géssica D. da Silveira, and José A.F. da Silva
State University of Campinas, BRAZIL

T051.b **AUTOMATED CAPILLARY, DROPLET REACTOR FOR THE SYNTHESIS OF IRON OXIDE – GOLD CORE-SHELL NANOPARTICLES**
Christian D. Ahrberg, Ji Wook Choi, and Bong Geun Chung
Sogang University, KOREA

T052.b **ON-CHIP SYNTHESIS OF AU NANOPARTICLES BY MICROWAVE-INDUCED REACTION IN MICROCHANNEL EMBEDDED IN THE POST-WALL WAVEGUIDE**
Akinobu Yamaguchi[1], Mitsuyoshi Kishihara[2], Takao Fukuoka[1], Masaya Takeuchi[1], and Yuichi Utsumi[1]
[1]University of Hyogo, JAPAN and [2]Okayama Prefectural University, JAPAN

W052.b **COFFEE CUP-SIZED MICRODROPLET RADIOSYNTHESIZER**
Jia Wang, Philip H. Chao, and R. Michael van Dam
University of California, Los Angeles, USA

W053.b **PARTICLE ENCAPSULATION IN MICROFLUIDIC DROPLETS WITH MASS-SPECTROMETRIC INVESTIGATION OF HETEROGENEOUS REACTIONS**
Monique Kretzschmar and Detlev Belder
Universität Leipzig, GERMANY

b - Chemical Applications: Separations, Mixers and Reactions

Electrophoretic & Chromatographic Separation

M054.b **COUPLING ON-CHIP SEPARATIONS TO ION MOBILITY SPECTROMETRY**
Nora T. Hartner, Sebastian K. Piendl, Christian-Robert Raddatz, Christian Thoben, Rico Warias, Stefan Zimmermann, and Detlev Belder
Leipzig University, GERMANY

M055.b **PAPER MICROFLUIDIC CASSETTE INTEGRATED WITH PINCHING ELECTRODES FOR SPRAY PLUM FOCUSING AND HIGH PERFORMANCE MS DETECTIONS**
Yi-Chieh Li and Che-Hsin Lin
National Sun Yat-sen University, TAIWAN

M056.b **TOWARDS USB POWERED µPADS: 5 VOLT PAPER ISOTACHOPHORESIS**
Federico Schaumburg[1], Pablo A. Kler[1], Claudio L.A. Berli[1], and Charles S. Henry[2]
[1]Universidad Nacional del Litoral-CONICET, ARGENTINA and
[2]Colorado State University, USA

T053.b **CONTINUOUS BINARY PROTEIN SEPARATION IN A MICROFABRICATED ELECTRICAL SPLIT-FLOW THIN FRACTIONATION (SPLITT) DEVICE**
Andrea Capuano[1,2], Andrea Adami[2], Viviana Mulloni[2], and Leandro Lorenzelli[2]
[1]University of Trento, ITALY and [2]Fondazione Bruno Kessler, ITALY

T054.b **DEVELOPMENT OF ON-LINE DESALTING DEVICE BY MEMBRANE INTEGRATION INTO NANOFLUIDIC DEVICE**

Kyojiro Morikawa, Yutaka Kazoe, Hisashi Shimizu, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

T055.b **SINGLE STEP SEPARATION AND CONCENTRATION OF BIOMARKER PROTEINS USING AGAROSE BASED MINIATURIZED ISOELECTRIC GATES FOR BEDSIDE DIAGNOSTICS**

Sreekant Damodara[1,3], Alison E. Fox-Robichaud[1,2,3], Dhruva J. Dwivedi[1,2,3], Patricia C. Liaw[1,2,3], and P. Ravi Selvaganapathy[1,3]
[1]McMaster University, CANADA, [2]Thrombosis and Atherosclerosis Research Institute, CANADA, and [3]Canadian Critical Care Translational Biology Group, CANADA

W054.b **CONTINUOUS LITHIUM EXTRACTION FROM HIGH MG2+/LI+ RATIO BRINE BASED ON ION CONCENTRATION POLARIZATION**

Minsoo Lee[1], Hyukjin J. Kwon[2], Woochul Jung[3], and Geunbae Lim[1]
[1]Pohang University of Science and Technology, KOREA, [2]Massachusetts Institute of Technology, USA, and [3]Research Institute of Industrial Science and Technology, KOREA

W055.b **MICROSCALE FORMATION OF IMMOBILIZED PH GRADIENT IN SIMPLE STRAIGHT CHANNEL**

Sukyo Joung[1], Dohyun Kim[2], Jintae Kim[3], and Minsub Chung[1]
[1]Hongik University, KOREA, [2]Myongji University, KOREA, and [3]Konkuk University, KOREA

W056.b **SMALL RNA EXTRACTION FROM CELL-LYSATE USING ISOTACHOPHORESIS**

Ruba Khnouf[l], Crystal Han[2], and Sarah Munro[3]
[1]Jordan University of Science and Technology, JORDAN,
[2]San Jose State University, USA, and [3]University of Minnesota, USA

b - Chemical Applications: Separations, Mixers and Reactions

Micromixers & Microreactors

M057.b **EVALUATION OF MIXING PERFORMANCE OF ON-CHIP MICROMIXER WITH LOW DEAD VOLUME BASED ON VIBRATION-INDUCED FLOW**

Toshiyuki Matsui, Hiroaki Suzuki, and Takeshi Hayakawa
Chuo University, JAPAN

M058.b **ORGANIC CHEMICAL REACTION ON AN ELECTROWETTING-ON-DIELECTRIC (EWOD) DIGITAL MICROFLUIDIC DEVICE**

Matin Torabinia, Parham Asgari, Junha Jeon, and Hyejin Moon
University of Texas, Arlington, USA

M059.b **THREE-DIMENSIONAL LAMINAR-FLOW MICROMIXER FOR KINETIC STUDIES OF INCREASED ACCURACY THROUGH A PRE-FOCUSED STREAM INJECTION**
Sheng Ni and Levent Yobas
Hong Kong University of Science and Technology, HONG KONG

T056.b **3D HELICAL MICROMIXER BY LOST WAX CASTING**
Daiki Tachibana, Ken Matsubara, Yoshimi Tanaka, Hiroki Ota, and Ohmi Fuchiwaki
Yokohama National University, JAPAN

T057.b **HIGH-PRESSURE MULTIPHASE MICROFLUIDICS FOR GREENER MANUFACTURING OF ACTIVE PHARMACEUTICAL INGREDIENTS**
Deepali Arora[1], Rossen Sedev[1], Craig Priest[2], Jane Beh[1], and Neil Foster[1]
[1]Curtin University, AUSTRALIA and [2]University of South Australia, AUSTRALIA

T058.b **PILOT-SCALE SOLVENT EXTRACTION OF HIGH-VALUE METALS**
Die Yang, Moein N. Kashani, and Craig Priest
University of South Australia, AUSTRALIA

T059.b **VERSATILE MICROFLUIDIC PLATFORM FOR PROTOCOLS ON A CHIP VIA THE UTILIZATION CAPACITIVE SENSING FOR SAMPLE DISPENSING AND SURFACE ACOUSTIC WAVE (SAW) DRIVEN MIXING**
Yaqi Zhang, Citsabehsan Devendran, Alex de Marco, and Adrian Neild
Monash University, AUSTRALIA

W057.b **AN ULTRA-RAPID ACOUSTIC MICROMIXER BY BOUNDARY-DRIVEN MICROSTREAMING OF INTEGRATED SHARP-EDGES AND BUBBLES**
Mohammadreza Rasouli and Maryam Tabrizian
McGill University, CANADA

W058.b **IMPEDANCE-BASED EXCITATION-FREQUENCY OPTIMIZATION FOR A TRANSFER-TAPE-SUPPORTED LASER-MICROMACHINED CAVITATION-MICROSTREAMING MICROMIXER**
Hyunjin Jeon, Abdi Mirgissa Kaba, Kyehan Rhee, and Dohyun Kin
Myongji University, KOREA

W059.b **THE EFFECT OF MICROREACTOR STRUCTURE ON QUANTITATIVE ANALYSIS OF TRACE VOLATILE ORGANIC COMPOUNDS**
Qi Li, Zhenzhen Xie, Michael Nantz, and Xiao-An Fu
University of Louisville, USA

b - Chemical Applications: Separations, Mixers and Reactions

Particle Separation

M060.b HIGH THROUGHPUT SEPARATION OF BACTERIA FROM BLOOD FOR SEPSIS DIAGNOSTICS USING EXTENDED ELASTO-INERTIAL MICROFLUIDICS
Sharath Tippur Narayana Iyengar, Tharagan Kumar, Gustaf Mårtensson, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

M061.b PDMS-BASED MICROPOROUS SIEVING MATRICES FOR SIZE-SELECTIVE FILTRATION OF SUBMICROMETER-SIZED PARTICLES
Takatomo Ouchi, Yurika Sakurai, Kayo Nakada, Masumi Yamada, and Minoru Seki
Chiba University, JAPAN

M062.b THE MAGNUS FORCE ON SPINNING MICROPARTICLES
Miguel Solsona[1], Hans Keizer[1], Yannic Klein[2], Hans L. de Boer[1], Wouter Olthuis[1], Leon Abelmann[3], and Albert van den Berg[1]
[1]University of Twente, THE NETHERLANDS,
[2]Mesoscale Chemical Systems, THE NETHERLANDS, and
[3]Korea Institute of Science and Technology (KIST), Europe, THE NETHERLANDS

M063.b VIABLE/NON-VIABLE CELL ASSAY USING ELECTROKINETIC DETERMINISTIC LATERAL DISPLACEMENT
Bao D. Ho, Jason P. Beech, and Jonas O. Tegenfeldt
Lund University, SWEDEN

T060.b INERTIAL FOCUSING OF DEFORMABLE PARTICLES IN TRIANGULAR CHANNELS
Yo Han Choi, Jeong-ah Kim, and Wonhee Lee
Korea Advanced Institute of Science and Technology (KAIST), KOREA

T061.b SIZE BASED SEPARATION OF PARTICLES WITH MICROFLUIDIC VORTEX TRAPPING INCORPORATING AN ORTHOGONAL TURN
Navya Rastogi, Pranjal Seth, Ramray Bhat, and Prosenjit Sen
Indian Institute of Science, INDIA

T062.b THE SEPARATION AND IDENTIFICATION OF PARASITE EGGS FROM HORSE FECES
Jason P. Beech[1], Kushagr Punyani[1], Eva Tydén[2], and Jonas O. Tegenfeldt[1]
[1]Lund University, SWEDEN and [2]Swedish University of Agricultural Sciences, SWEDEN

W060.b A 3D PRINTED MODULAR MICROFLUIDIC DEVICE FOR LARGE SCALE CELL HARVESTING FROM BIOREACTORS
Mahsa Asadniaye Fard Jahromi[1], Lin Ding[2], Sajad Razavi Bazaz[3], Graham Vesey[3], Mohsen Asadnia[1], and Majid Ebrahimi Warkiani[2]
[1]Macquarie University, AUSTRALIA, [2]University of Technology Sydney, AUSTRALIA, and [3]Regeneus Pty Ltd, AUSTRALIA

W061.b **MULTIPLE SIZE SEPARATION OF MICROPARTICLES WITH LOW DEAD VOLUME BASED ON GRAVITY-AIDED VIBRATION-INDUCED FLOW**
Naoki Kitada and Takeshi Hayakawa
Chuo University, JAPAN

W062.b **VERTICAL SLIT-FRACTIONATION: HIGH-THROUGHPUT PARTICLE/CELL SEPARATION**
Naotaka Jin[1], Jumpei Yamamoto[1], Masumi Yamada[1], Kazuki Iijima[2], Koji Katayama[2], and Minoru Seki[1]
[1]Chiba University, JAPAN and [2]Tosoh Corporation, JAPAN

b - Chemical Applications: Separations, Mixers and Reactions

Other Applications in Chemistry

M064.b **MICROFLUIDIC DEVICE FOR DIRECT MEASUREMENT OF INITIAL RATE OF ENZYME REACTION BY ELECTROPHORETIC FILTRATION**
Junku Takao, Tatsuro Endo, Hideaki Hisamoto, and Kenji Sueyoshi
Osaka Prefecture University, JAPAN

M065.b **RAPID SCREENING OF RARE EARTH EXTRACTION: DIRECT ANALYSIS OF RATE AND PHASE BEHAVIOR IN A MICROPILLAR ARRAY**
Claudia Binder[1], Benjamin Lageder[1], Bronwyn Bradshaw-Hajek[1], Barbara Breeze[2], Emma Schofield[2], Stephen Woollam[3], and Craig Priest[1]
[1]University of South Australia, AUSTRALIA, [2]Johnson Matthey Technology Centre, UK, and [3]Anglo American's Technical Solutions, SOUTH AFRICA

T063.b **AN INTEGRATED CHIP-APPROACH TO STUDY ENANTIOSELECTIVE HETEROGENEOUS CATALYSTS AT THE MICROSCALE**
Rico Warias[1], Hannes Westphal[1], Daniele Ragno[2], Alessandro Massi[2], and Detlev Belder[1]
[1]Leipzig University, GERMANY and [2]University of Ferrara, ITALY

T064.b **MICROFLUIDIC METHOD FOR INVESTIGATING KINETICS OF EMULSION DESTABILIZATION**
Marcin Dudek[1], Diana Fernandes[2], Eirik H. Herø[1], and Gisle Øye[1]
[1]Norwegian University of Science and Technology, NORWAY and [2]Polytechnic Institute of Porto, PORTUGAL

W063.b **FEMTO-LITER PROTEIN PURIFICATION BY PARALLEL TWO-PHASE NANOFLUIDICS**
Shu Matsuura, Yutaka Kazoe, and Takehiko Kitamori
University of Tokyo, JAPAN

W064.b **OPTIMIZATION OF PROTEIN CONJUGATION ON A USER-FRIENDLY MICROFLUIDIC CHIP**
Andrew W.L. Kinman and Rebecca R. Pompano
University of Virginia, USA

c - Diagnostics, Drug Testing & Personalized Medicine
Cancer Research, Capture & Analysis of Circulating Tumor Cells

M066.c **A MICROFLUIDIC PLATFORM FOR DIAGNOSIS OF OVARIAN CLEAR CELL CARCINOMA VIA QUANTIFICATION OF FXYD2 GENE**
Ting-Hang Liu[1], Chang-Ni Lin[2,3], Keng-Fu Hsu[2,3], and Gwo-Bin Lee[1]
[1]National Tsing Hua University, TAIWAN, [2]National Cheng Kung University Hospital, TAIWAN, and [3]National Cheng Kung University, TAIWAN

M067.c **ARRAY OF MICRO-MAGNETS FOR CTC SORTING IN LAB-ON-A CHIP DEVICES**
Lucie Descamps[1], Samir Mekkaoui[1], Emmanuelle Laurenceau[1], Marie-Charlotte Audry[1], Jessica Garcia[2], Léa Payen[2], Damien Le Roy[3], and Anne-Laure Deman[1]
[1]Lyon Institute of Nanotechnology, FRANCE, [2]Hospices Civils de Lyon, FRANCE, and [3]Institut Lumière Matière, FRANCE

M068.c **DEVELOPING AN OPTICAL DNA MAPPING TOOLBOX TO IDENTIFY CHROMOSOMAL TRANSLOCATIONS IN ACUTE MYELOID LEUKEMIA**
Miriam Hitz[1], Gaurav Goyal[2], Vilhelm Müller[2], Linda Fogelstrand[3], and Fredrik Westerlund[1]
[1]University of Applied Sciences, Aachen, GERMANY, [2]Chalmers University of Technology, SWEDEN, and [3]Sahlgrenska University Hospital, SWEDEN

M069.c **RAPID AND VIABLE ISOLATION OF HETEROGENEOUS CIRCULATING TUMOR CELLS USING HIGH-DENSITY TAPERED-SLIT FILTERS**
Jae-Eul Shim[1], Jiyoon Bu[1], Mi-Kyung Lee[1], Jong-Uk Bu[2], Tae-Ha Kim[2], and Young-Ho Cho[1]
[1]Korea Advanced Institute of Science and Technology (KAIST), KOREA and [2]SenPlus, Ltd., KOREA

T065.c **A HERRINGBONE MICROFLUIDIC PROBE FOR AFFINITY SEPARATION OF CELLS**
Ayoub Glia, Muhammedin Deliorman, Pavithra Sukumar, and Mohammad Qasaimeh
New York University, Abu Dhabi, UAE

T066.c **AN INTEGRATED MICROFLUIDIC PLATFORM TO DETECT TUMOR CELLS FROM BILE JUICE OF CHOLANGIOCARCINOMA PATIENTS BY USING NOVEL AFFINITY REAGENTS**
Wen-Yen Huang[1], Nai-Jung Chiang[2], Cheng-Hsiu Chang[3], Priya Gopinathan[1], Terry D. Juang[1], Hsiu-Chi Tu[2], Yen-Shen Shan[2], Shang-Cheng Hung[3], and Gwo-Bin Lee[1]
[1]National Tsing Hua University, TAIWAN, [2]National Cheng Kung University Hospital, TAIWAN, and [3]Academia Sinica, TAIWAN

T067.c **BIOPHYSICS OF CIRCULATING TUMOR CELL CLUSTERS**
Baris Ragip Mutlu[1,2], Taronish Dubash[1,2], Claudius Dietsche[1,2], Avanish Mishra[1,2], Kevin Keim[3], Jon Edd[1,2], Daniel Haber[1,2], Shyamala Maheswaran[1,2], and Mehmet Toner[1,2]
[1]Massachusetts General Hospital, USA, [2]Harvard Medical School, USA, and [3]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T068.c **MONITORING IMMUNOLOGICAL SYNAPSES AT SINGLE CELL LEVEL IN A MICROFLUIDIC DEVICE**

Faruk A. Shaik[1], Clara Lewuillon[2], Yasmine Touil[2], Aurélie Guillemette[2], Bruno Quesnel[2], Carine Brinster[2], Loïc Lemonnier[3], Dominique Collard[4], and Mehmet C. Tarhan[5]
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T069.c **SEPARATION/CAPTURE OF CANCER CELLS IN BLOOD USING A NUCLEIC-ACID APTAMER MODIFIED DYNAMIC DEFORMABLE MICROFILTER**

Yuta Nakashima[1], Soichiro Fukuyama[1], Seitaro Kumamoto[1], Keiichiro Yasuda[2], Yusuke Kitamura[1], Masaaki Iwatsuki[1], Hideo Baba[1], Toshihiro Ihara[1], and Yoshitaka Nakanishi[1]
[1]Kumamoto University, JAPAN and [2]Ogic Technologies, JAPAN

W065.c **A MICROFLUIDIC PLATFORM FOR APPLYING LOCALIZED AND DYNAMICALLY-CONTROLLED COMPRESSION ON CANCER CELLS**

Sevgi Onal, Maan M. Alkaisi, and Volker Nock
University of Canterbury, NEW ZEALAND

W066.c **APPLICATION OF DNA-DIRECTED PATTERNING TO FABRICATE AN IN VITRO BONE MARROW MICROENVIRONMENT FOR THE HIGH-THROUGHPUT STUDY OF PROSTATE CANCER DORMANCY**

Molly Kozminsky and Lydia Sohn
University of California, Berkeley, USA

W067.c **FOCUSING AND SORTING OF TUMOR CELL CLUSTERS IN AN INERTIAL MICROCHANNEL**

Jian Zhou, Qiyue Luan, and Ian Papautsky
University of Illinois, Chicago, USA

W068.c **PICKING OF CIRCULATORY TUMOR CELLS (CTC'S) USING A MICRO FABRICATED GLASS PIPETTE INTEGRATED WITH SACA CHIP BASED DIGITIZED IMAGING SYSTEM (DIGI-SACA)**

Ping-Hao Yeh, Venkanagouda S. Goudar, Hsin-Yao Wu, Hsueh-Yao Chu, and Fan-Gang Tseng
National Tsing Hua University, TAIWAN

c - Diagnostics, Drug Testing & Personalized Medicine

Clinical Chemistry

W069.c **IN SITU PROFILING OF DNA SINGLE NUCLEOTIDE VARIATIONS AND RNA EXPRESSIONS OF CLINICALLY ACTIONABLE GENES SIMULTANEOUSLY FROM SINGLE CIRCULATING TUMOR CELLS ON A MICROFLUIDIC CHIP.**

Amos Lee[1], Jessica Svedlund[2], Evangelia Darai[2], Yongju Lee[1], Daewon Lee[1], Han-Byoel Lee[3], Sung-Min Kim[3], Okju Kim[1], Hyung Jong Bae[4], Ahyoun Choi[1], Sumin Lee[1], Seo Woo Song[1], Yeongjae Choi[1], Huiran Yeom[1], Caleb Sangchul Lee[5], Wonshik Han[1], Dong Soon Lee[3], Jin-Young Jang[3], Narayanan Madaboosi[2], Mats Nilsson[2], Sunghoon Kwon[1], Yunjin Jeong[1], Seo Woo Song[1], Yeongjae Choi[1], Huiran Yeom[1], Caleb Sangchul[5], Lee Wonshik Han[3], Dong Soon Lee[3], Jin-Young Jang[3], Narayanan Madaboosi[2], Mats Nilsson[2], and Sunghoon Kwon[1]
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c - Diagnostics, Drug Testing & Personalized Medicine

Diagnostic Devices

M070.c **A CMOS-BASED LAB-ON-CHIP DIAGNOSTIC SYSTEM FOR RAPID DETECTION AND WORLDWIDE MONITORING OF AZOLE-RESISTANT ASPERGILLUS FUMIGATUS**

Ling-Shan Yu, Jesus Rodriguez-Manzano, Nicolas Moser, Kenny Malpartida-Cardenas, Thomas Sewell, Matthew C. Fisher, and Pantelis Georgiou
Imperial College London, UK

M071.c **A MICRONEEDLE-BASED LATERAL FLOW IMMUNOASSAY FOR RAPID PROTEIN DETECTION**

Xue Jiang and Peter B. Lillehoj
Michigan State University, USA

M072.c **A SIMPLE POINT-OF-CARE TEST FOR DRUG MONITORING IN WHOLE BLOOD OF PATIENTS WITH AUTOIMMUNE DISEASES**

Henry Ordutowski, Francesco Dal Dosso, Séverine Vermeire, Ann Gils, Jeroen Lammertyn, and Dragana Spasic
KU Leuven, BELGIUM

M073.c **CAPILLARY DRIVEN POROUS PDMS MICRONEEDLE FOR NAKED-EYE GLUCOSE SENSOR**

Hakjae Lee, Kai Takeuchi, Yui Sasaki, Nobuyuki Takama, Tsuyoshi Minami, and Beomjoon Kim
University of Tokyo, JAPAN

M074.c DEVELOPMENT AND CLINICAL TESTING OF A MICROFLUIDIC IMMUNOAFFINITY BASOPHIL ACTIVATION TEST FOR POINT-OF-CARE ALLERGY DIAGNOSIS

Frida Kalm[1,2], Zenib Aljadi[1], Harisha Ramachandraiah[1], Caroline Nilsson[2,3], Ola Winqvist[4], Joachim Lundahl[2], Anna Nopp[2], and Aman Russom[1]
[1]KTH Royal Institute of Technology, SWEDEN, [2]Karolinska Institutet and, SWEDEN, [3]Sachs´ Children and Youth Hospital, SWEDEN, and [4]Karolinska University Hospital, SWEDEN

M075.c FLOW VISUALIZATION IN A CORONARY NETWORK WITH MICROVASCULAR OBSTRUCTION (MVO) USING A MULTISCALE IN-VITRO BENCHTOP MODEL

Mirunalini Thirugnanasambandam[1], Christian Wüthrich[1], Sabrina Frey[1], Peter Heeb[2], Cornelia Nef[2], André Bernard[2], and Dominik Obrist[1]
[1]University of Bern, SWITZERLAND and [2]University of Applied Sciences Buchs NTB, SWITZERLAND

M076.c FULLY-INTEGRATED CARTRIDGE FOR FAST POINT-OF-CARE DIAGNOSIS OF PERIODONTAL DISEASE

Katherine E. Boehle, J. Jacob Carrano, and John C. Carrrano
Paratus Diagnostics, LLC, USA

M077.c IOT PCR SYSTEM FOR DISEASE DETECTION AND SPREAD MONITORING

Hanliang Zhu[1], Pavel Podesva[1], Xiaocheng Liu[1], Haoqing Zhang[1], Tomas Teply[2], Ying Xu[1], Honglong Chang[1], Airong Qian[1], and Pavel Neuzil[1]
[1]Northwestern Polytechnical University, CHINA and [2]Czech Technical University, CZECH REPUBLIC

M078.c NANOFLUIDIC BARCODES FOR QUANTIFICATION/IDENTIFICATION OF BIOMARKERS

Sokhna M. Ngom[1], Francois D. Delapierre[2], Fatima Flores-Galicia[1], Stephane Guilet[1], Edmond Cambril[1], Jean Gamby[1], Antoine Pallandre[3], Isabelle Le Potier[1], and Anne-Marie Haghiri-Gosnet[1]
[1]C2N-CNRS, FRANCE, [2]SPEC-CEA, FRANCE, and [3]LCP-CNRS, FRANCE

M079.c OPTIMIZING ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY BASED IMMUNOASSAYS ON ZINC-OXIDE-NANOWIRE PAPER-BASED ELECTRODES

Xiao Li[1], Hao Fu[1], Ted Li[2], and Xinyu Liu[1]
[1]University of Toronto, CANADA and [2]McGill University, CANADA

M080.c POINT-OF-CARE HIV NUCLEIC ACID SCREENING ON A MAGNETOFLUIDIC ASSAY CARTRIDGE

Alexander Y. Trick, Fan-En Chen, Liben Chen, and Tza-Huei Wang
Johns Hopkins University, USA

M081.c RAPID SEPSIS DIAGNOSIS BY PHAGOCYTIC ACTIVITY OF IMMUNE CELLS

Seyong Kwon, Min Seok Lee, and Joo H. Kang
Ulsan National Institute of Science and Technology (UNIST), KOREA

M082.c SELF-CONTAINED DIAGNOSTIC PLATFORM FOR PATHOGEN AND ANTIBIOTIC RESISTANCE DETECTION FOR DIABETIC FOOT ULCERS

Joerg Nestler[1], Cornelia Stiehl[1], Jenny Graunitz[1], Sascha Geidel[1], Andreas Morschhauser[2], Thomas Otto[2], Martina Schneemann[2], Apoorva Jnana[3], Sreepathy T. Murali[3], Kapaettu Satyamoorthy[3], Dhananjaya Dendukuri[4], Harald Peter[5], Sakthi Uma Maheswari[4], Siddharth Ramakrishnan[4], Purbasha Halder[4], and Frank F. Bier[6]
[1]BiFlow Systems GmbH, GERMANY, [2]Fraunhofer ENAS, GERMANY, [3]Manipal Academy of Higher Education, INDIA, [4]Achira Labs Pvt. Ltd., INDIA, [5]Fraunhofer IZI-BB, GERMANY, and [6]Potsdam University, GERMANY

M083.c THIN POLYMERIC SHEET-BASED IMMUNOASSAY PLATFORMS INTEGRATED WITH MICRO/NANO-IMPRINTED MULTISCALE ARCHITECTURES

Shuhei Aoyama[1,2], Yuto Akiyama[2], Kenji Monden[2], Masumi Yamada[1], and Minoru Seki[1]
[1]Chiba University, JAPAN and [2]Denka Co., Ltd., JAPAN

M084.c WORLD-TO-CHIP INTERFACE FOR BLOOD-PLASMA SEPARATION ON A DIGITAL MICROFLUIDIC DEVICE

Christopher Dixon, Julian Lamanna, and Aaron R. Wheeler
University of Toronto, CANADA

T070.c A LAB-ON-A-DISK DEVICE FOR ISOLATION AND IDENTIFICATION OF PARASITE EGGS IN STOOL

Sertan Sukas[1], Bieke Van Dorst[2], Agata Kryj[1], Ole Lagatie[2], Wim De Malsche[1], and Lieven Stuyver[2]
[1]Vrije Universiteit Brussel, BELGIUM and [2]Janssen Diagnostics, BELGIUM

T071.c A NOVEL DIAGNOSTIC DEVICE FOR RAPID TESTING OF ANTIBIOTIC ALLERGIES: FOCUS ON FLUIDIC DESIGN AND MANUFACTURING OF DISPOSABLE DISCS

Elizaveta Vereshchagina[1], Sergi Morais[2], Luis A. Tortajada-Genaro[2], Angel Maquieira[2], Estrella Fernandez[2], Teresa Molina[2], Veaceslav Linte[3], Brindus Comanescu[3], Michal M. Mielnik[1], Erik Andreassen[1], Anna Franquesa-Vazquez[4], Werner Balika[4], and Alfredo Sáez[5]
[1]SINTEF Digital, NORWAY, [2]Universitat Politècnica de València, SPAIN, [3]Optoelectronica, ROMANIA, [4]STRATEC Consumables GmbH, AUSTRIA, and [5]Sergio Peransi Llopis Lumensia Sensors, SPAIN

T072.c AN INTEGRATED MICROFLUIDIC DEVICE FOR BLOOD PLASMA SEPARATION AND IMMUNOASSAY DETECTION

Stanley C. Liu and Suraiya Rasheed
University of Southern California, USA

T073.c CHIP-AND-DIP: CAPILLARY-DRIVEN FLOW DEVICES FOR POINT-OF-CARE DIAGNOSTICS

Sammer-ul Hassan and Xunli Zhang
University of Southampton, UK

T074.c **DEVELOPMENT OF AN AFFORDABLE AND SENSITIVE DIAGNOSTIC TEST FOR DENGUE DISEASE USING MICROFLUIDICS AND SMARTPHONES.**
Sophie M. Jegouic[1] and Alexander D. Edwards[1,2]
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T075.c **FLUORESCENCE SIGNAL AMPLIFICATION FOR SENSITIVE ENZYME IMMUNOASSAY UTILIZING AN IMMUNO-WALL**
Keine Nishiyama[1], Toshihiro Kasama[2], Masatoshi Maeki[1], Akihiko Ishida[1], Hirofumi Tani[1], and Manabu Tokeshi[1]
[1]Hokkaido University, JAPAN and [2]University of Tokyo, JAPAN

T076.c **HEMORHEOMETER-ON-A-CHIP: ANALYSIS OF BLOOD BIOPHYSICAL PARAMETERS IN A MICROCHANNEL**
Ziya Isiksacan, Murat Serhatlioglu, and Caglar Elbuken
Bilkent University, TURKEY

T077.c **LAB-ON-CHIP PLATFORM WITH FULLY INTEGRATED SAMPLE PREPARATION MODULE COUPLED WITH A HYBRIDIZATION-FREE SURFACE ACOUSTIC WAVE SENSOR FOR RAPID FOODBORNE PATHOGEN DETECTION**
Katerina Tsougeni[1], Georgia Kaprou[1], C.M. Loukas[1], Audrey Hamiot[2], George Papadakis[3], Bruno Dupuy[2], Michael Eck[4], David Rabus[5], George Kokkoris[1], Electra Gizeli[3], Angeliki Tserepi[1], Evangelos
[1]NCSR-Demokritos, GREECE, [2]Institute Pasteur, FRANCE, [3]Foundation for Research & Technology - Hellas, GREECE, [4]Jobst Technologies GmbH, GERMANY, and [5]SENSeOR SAS, FRANCE

T078.c **NANOPLASMO-FLUIDIC PCR CHIP WITH MICROLITER VOLUME FOR RAPID DIAGNOSTICS**
Byoung-Hoon Kang[1], Youngseop Lee[2], and Ki-Hun Jeong[1]
[1]Korea Advanced Institute of Science and Technology (KAIST), KOREA and [2]University of California, Berkeley, USA

T079.c **PAPER-BASED DEVICE WITH INTEGRATED ION-SELECTIVE OPTODES FOR COLORIMETRIC QUANTIFICATION OF SALIVARY METAL IONS**
Yasuhiro Suenaga, Hiroyuki Shibata, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

T0801.c **POROUS MICRONEEDLE ELECTRODES FOR THE ELECTROCHEMICAL SENSING ON SKIN**
Hiroyuki Kai
Tohoku University, JAPAN

T081.c **REUSABLE MICROFLUIDIC DEVICE FOR COMPLETE BLOOD COUNT APPLICATIONS**
Damien Isebe[1], Amin Amirouche[2], Jean L. Papilleau[1], Philippe Piedcoq[1], Nicolas Verplanck[2], Pierre Blandin[2], Anais Ali-Cherif[1], and Yves Fouillet[2]
[1]HORIBA Medical, FRANCE and [2]CEA, LETI-Health, FRANCE

T082.c SINGLE-STEP BIOLUMINESCENCE LATERAL FLOW IMMUNOASSAYS FOR DIAGNOSTICS
Riho Shimazu[1], Junnosuke Kawahara[1], Kosuke Tomimuro[1], Kazushi Misawa[1], Yan Ni[2], Yuki Hiruta[1], Maarten Merkx[2], and Daniel Citterio[1]
[1]Keio University, JAPAN and [2]Eindhoven University of Technology, THE NETHERLANDS

T083.c TOWARDS INTEGRATED, AUTONOMOUS AND LOW-COST DIAGNOSTICS AT THE POINT-OF-CARE FROM WHOLE BLOOD TO ANSWER
Amin Kazemzadeh, Ruben Soares, Noa Lapins, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

W070.c A LARGE-VOLUME SPUTUM COLLECTION AND DRY-STORAGE DEVICE FOR TUBERCULOSIS MOLECULAR DIAGNOSTIC TESTING
Bhushan J. Toley, Andrea Dsouza, and Saylee Jangam
Indian Institute of Science, INDIA

W071.c A PORTABLE AND FULLY AUTOMATED SYSTEM FOR RAPID DETECTION OF PROTEIN BIOMARKERS IN PERIPHERAL BLOOD
Minjie Shen, Nan Li, and Youchun Xu
Tsinghua University, CHINA

W072.c AUTOMATED PORTABLE DEVICE FOR ANTIMICROBIAL SUSCEPTIBILITY TEST OF ANTIBIOTICS COMBINATION
Kuo-Wei Hsu[1], Wen-Bin Lee[1], Huey-Ling You[2], Mel S Lee[2], and Gwo-Bin Lee[1]
[1]National Tsing Hua University, TAIWAN and
[2]Kaohsiung Chang Gung Memorial Hospital, TAIWAN

W073.c DESIGNING, MANUFACTURING, AND VERIFICATION OF RAPID DIAGNOSIS KIT CARTRIDGES FOR UNDILUTED WHOLE BLOOD APPLICATIONS
Yo Han Choi and Kwang Hyo Chung
Electronics and Telecommunications Research Institute, KOREA

W074.c DISTANCE READOUT-BASED PAPER DEVICES FOR MULTIPLEXED URINALYSIS
Rika Sawano, Hiyoyuki Shibata, Kento Maejima, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

W075.c FULLY-AUTOMATED SENSITIVE BLOOD-TYPING CHIP
Ken Yamamoto, Ryosuke Sakurai, and Masahiro Motosuke
Tokyo University of Science, JAPAN

W076.c HYBRIDIZATION-BASED DNA ANALYSIS BY SELF-HEATING NANOWIRE MICROFLUIDIC DEVICES
Hiromi Takahashi[1], Takao Yasui[1], Keiko Shinjo[1], Quanli Liu[1], Taisuke Shimada[1], Noritada Kaji[2], Hiromu Kashida[1], and Yoshinobu Baba[1]
[1]Nagoya University, JAPAN and [2]Kyushu University, JAPAN

W077.c LAB-ON-PCB PLATFORM FOR THE SENSITIVE AND RAPID DETECTION OF URINARY TRACT INFECTIONS

Georgia Kaprou, Myrto Fillipidou, Sotiris Ntouskas, George Kokkoris, Panagiota Petrou, Dimitris Mastellos, Stavros Chatzandroulis, and Angeliki Tserepi
National Center for Scientific Research 'Demokritos', GREECE

W078.c ONE-TOUCH RAPID SALIVA SAMPLING AND DIAGNOSTIC LAB-ON-A-CHIP FOR POINT-OF-CARE TESTING (POCT) OF UNBOUND PARA THYROID HORMONE (PTH)

Vinitha Thiyagarajan Upaassana, Sthitodhi Ghosh, Alexander Milleman, Thinh Nguyen, and Chong H. Ahn
University of Cincinnati, USA

W079.c PHASE CHANGE MATERIALS AS AN ENABLER FOR MALARIA DETECTION IN LOW-RESOURCE SETTINGS

Dries Vloemans[1], Francesco Dal Dosso[1], Carlos L. Orero[1], Joanne Macdonald[2], and Jeroen Lammertyn[1]
[1]KU Leuven, BELGIUM and [2]University of the Sunshine Coast, AUSTRALIA

W080.c PRODUCT DEVELOPMENT OF A PORTABLE MICROFLUIDIC DEVICE FOR THE DETECTION OF BACTERIAL CONTAMINATION IN ENVIRONMENTAL LIQUID SAMPLES

Luis F. Alonzo[1], Andrew Miller[1], Troy Hinkley[1], Anne-Laure Le Ny[1], Sam R. Nugen[2], and Kevin P. Nichols[1]
[1]Global Good/Intellectual Ventures Lab, USA and [2]Cornell University, USA

W081.c SEGMENTED MICROFLUIDICS ASSISTED BACTERIAL ISOLATION FOR SEPSIS DIAGNOSIS FROM LARGE VOLUME OF BLOOD

Suhanya Duraiswamy[1], Ruige Wu[2], and Zhiping Wang[2]
[1]Indian Institute of Technology Hyderabad, INDIA and [2]SIMTech, SINGAPORE

W082.c SLμRP: A MODULAR SCALABLE AUTOMATED MICROFLUIDIC SYSTEM FOR DIAGNOSTIC ASSAY OPTIMIZATION AND CARTRIDGE PROTOTYPING

Carlos F. Ng[1], David P. Kalish[1], Anne V. Cheng[1], Richie E. Kohman[1,2], Jenny M. Tam[2], Richard Novak[1], George M. Church[1,2], and Donald E. Ingber[1,2,3]
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W083.c TOWARDS POINT-OF-CARE HIV DIAGNOSTICS USING DUAL-LABELLED ROLLING CIRCLE PRODUCTS FOR EFFICIENT CAPTURE AND DETECTION IN A MICROFLUIDIC DEVICE

Ruben R.G. Soares[1], João C. Varela[2], Ujjwal Neogi[3], Mats Nilsson[2], Narayanan Madaboosi[2], and Aman Russom[1]
[1]KTH Royal Institute of Technology, SWEDEN, [2]Stockholm University, SWEDEN, and [3]Karolinska Institutet, SWEDEN

c - Diagnostics, Drug Testing & Personalized Medicine

Drug Development, Screening & Drug Delivery

M085.c **FABRICATION OF 3D IN VITRO MICRO-PHYSIOLOGICAL SYSTEM CAPABLE TO STUDY THE SYSTEMIC DELIVERY OF ONCOLYTIC VIRUS**
Sang Woo Lee[1], Kyoung Jin Lee[2], Soo Yeon Jeong[1], Heuiran Lee[2], and Gi Seok Jeong[1]
[1]Asan Medical Center, KOREA and [2]University of Ulsan College of Medicine, KOREA

M086.c **FIBER-SHAPED 3D TISSUE IN A 96 WELL PLATE FOR HIGH-THROUGHPUT DRUG SCREENING**
Midori Kato-Negishi, Jun Sawayama, and Shoji Takeuchi
University of Tokyo, JAPAN

M087.c **TOWARDS EFFICIENT DRUG CARRIERS - FUNCTIONALIZED GRAPHENE OXIDE STUDY ON 2D-MONOLAYER AND 3D-SPHEROID BREAST CANCER MODELS**
Agnieszka Zuchowska, Artur Kasprzak, Kamil Zukowski, Marta Mazurkiewicz-Pawlicka, Artur Malolepszy, Elzbieta Jastrzebska, Magdalana Poplawska, and Zbigniew Brzozka
Warsaw University of Technology, POLAND

T084.c **DIGITAL MICROFLUIDIC DRUG SCREENING ON BIOPSIES FROM XENOGRAFT MOUSE BREAST CANCER**
Jiao Zhai, Yanwei Jia, Pui-in Mak, and Rui P. Martins
University of Macau, CHINA

T085.c **MICROFLUIDIC IMMOBILIZED ENZYME REACTORS FOR PREDICTION OF DRUG CLEARANCE IN VIVO**
Iiro Kiiski[1], Sanna Artes[1], Ville Jokinen[2], Päivi Järvinen[1], and Tiina Sikanen[1]
[1]University of Helsinki, FINLAND and [2]Aalto University, FINLAND

T086.c **MICROSYSTEM FOR EVALUATION THE EFFECTIVENESS OF THERAPEUTIC PROCEDURES (CT AND ECT)**
Sandra Skorupska, Ilona Grabowska-Jadach, Artur Dybko, and Zbigniew Brzózka
Warsaw University of Technology, POLAND

T087.c **ULTRA-HIGH-THROUGHPUT SCREENING OF BACTERIAL LIBRARIES TO IDENTIFY NOVEL METABOLITES THAT INDUCE MITOCHONDRIAL BIOGENESIS AND FUNCTION**
Anna Desalvo[1], Catherine Klapholz[1], Gareth Ettridge[2], Christina Kahramanoglou[1], Kamila Bienkowska[1], Robert Lightowlers[2], Doug Turnbull[2], and Stuart Wood[1]
[1]Nanna Therapeutics Ltd, UK and [2]Wellcome Centre for Mitochondrial Research, UK

W084.c **EXTRAVASATION OF SOFT NANOPARTICLES SIMULATED ON AN EASY-TO-OBSERVE MEMBRANE-INTEGRATED MICROFLUIDIC DEVICE**
Mayu Watanabe[1], Yumi Moriya[1], Hiroaki Matsuba[2], Akihiro Kishimura[2], Yoshiki Katayama[2], and Naoki Sasaki[1]
[1]Toyo University, JAPAN and [2]Kyushu University, JAPAN

W085.c **INJECTABLE WIRELESS MICRO-DEVICE INTEGRATED WITH PHOTODEGRADABLE HYDROGEL FOR DEEP TISSUE THERAPEUTICS**
Sophie Lian, Yi Liu, Rongzhou Lin, John.S. Ho, Chia-Hung Chen, and Ri Lu
National University of Singapore, SINGAPORE

W086.c **SIDE-BY-SIDE 2D AND 3D CELL CULTURING MICRODEVICES FOR DRUG TOXICITY SCREENING**
Päivi Järvinen[1], Ashkan Bonabi[1], Ville Jokinen[2], and Tiina Sikanen[1]
[1]University of Helsinki, FINLAND and [2]Aalto University, FINLAND

W087.c **ULTRASOUND-TRIGGERED CONTROLLED RELEASE OF NANOPARTICLES FROM HYDROGEL MICROBEADS BY RELEASE-PROMOTING PARTICLES**
Takeshi Kubota[1], Yuta Kurashina[1], and Hiroaki Onoe[1]
[1]Keio university, JAPAN and [2]Tokyo Institute of Technology, JAPAN

c - Diagnostics, Drug Testing & Personalized Medicine

Liquid Biopsy and Sample Preparation

M088.c **BIOMIMETIC MEMBRANE ENABLED MULTIVALENT MICROFLUIDIC CHIP FOR HIGHLY EFFICIENT ENRICHMENT OF CIRCULATING TUMOR CELLS**
Ling L. Wu, Xin Qu, Yan L. Song, and Chao Y. Yang
Shanghai Jiao Tong University School of Medicine, CHINA

M089.c **HANDHELD DEVICE FOR CENTRIFUGATION-FREE NUCLEIC ACID EXTRACTION**
Ruige Wu, Pinhui Lee, Ke Gan, Wei Hua, and Zhiping Wang
*Singapore Institute of Manufacturing Technology (A*Star), SINGAPORE*

M090.c **INTEGRATED MICROFLUIDIC DEVICE FOR CIRCULATING EXOSOMES DETECTION TOWARDS BREAST CANCER DIAGNOSIS**
Wenwen Chen[1], Wentao Su[1], Jianhua Qin[1], and Hongjing Li[2]
[1]Chinese Academy of Sciences, CHINA and
[2]First Affiliated Hospital of Dalian Medical University, CHINA

M091.c **MICROFLUIDIC DEVICE FOR THE SEPARATION OF BLOOD PLASMA FROM CAPILLARY SAMPLES**
Giulia Deiana[1], Alvaro J. Conde[2], Conni McCarthy[2], James Dear[1], Stewart Smith[1], and Maïwenn Kersaudy-Kerhoas[2]
[1]University of Edinburgh, UK and [2]Heriot-Watt University, UK

T088.c **CREATING A MAP FOR SURGEONS: DIRECT BLOTTING ASSISTED STAMPING OF TISSUE FOR MALDI IMAGING MASS SPECTROMETRY**
Katherine E. Donovan, Haidy S. Metwally, Prashant Agrawal, David J. Simon, David Berman, and Richard D. Oleschuk
Queen's University, CANADA

T089.c HIGH-THROUGHPUT SEPARATION AND COLLECTION OF EXOSOMES BASED ON SURFACE ZETA POTENTIAL TOWARD EXOSOMAL DIAGNOSTICS AND THERAPY
Hiroaki Takehara, Hiromi Kishita, Shusuke Sato, and Takanori Ichiki
University of Tokyo, JAPAN

T090.c LONG DNA ISOLATION USING LATERAL DISPLACEMENT ARRAYS INTEGRATED WITH DNA COMBING
Oskar E. Ström, Jason P. Beech, and Jonas O. Tegenfeldt
Lund University, SWEDEN

T091.c NITROGEN-MUSTARD COATED MAGNETIC BEADS FOR HYBRIDIZATION AND ELUTION-FREE CIRCULATING TUMOR DNA DETECTION
Benediktus N. Hapsianto[1], Naoshi Kojima[2], Ryoji Kurita[2], Hitoshi Yamagata[3], Hiroyuki Fujita[3], Teruo Fujii[1], and Soo Hyeon Kim[1]
[1]University of Tokyo, JAPAN, [2]National Institute of Advanced Industrial Science (AIST), JAPAN, and [3]Canon Medical Systems Corporation, JAPAN

W088.c SEARCHING CANCER-SPECIFIC EXTRACELLULAR VESICLE USING SIZE FRACTION AND SINGLE VESICLE ANALYSIS
Dongyoung Kim[1], Hyun-Kyung Woo[2], Chaeeun Lee[2], Yoohong Min[2], and Yoon-Kyoung Cho[2]
[1]Center for Soft and Living Matter, Institute for Basic Science, KOREA and [2]Ulsan National Institute of Science & Technology, KOREA

W089.c INKJET-PRINTING BASED INTEGRATION OF MICROFLUIDICS ON FROZEN SECTION FOR SPATIALLY STAINING
Fengyi Zheng[1], Jiasheng Huang[1], Xiaoyi Shi[1], Fei Pei[2], and Zhihong Li[1]
[1]Peking University, CHINA and [2]Peking University Health Science Center, CHINA

W090.c MAGNETIC BEAD FREE DNA EXTRACTION ENABLED BY EWOD DIGITAL MICROFLUIDICS
Shubhodeep Paul and Hyejin Moon
University of Texas, Arlington, USA

W091.c POLYVINYL ALCOHOL (PVA)-FUNCTIONALIZED FILTER FOR EFFECTIVE CELL CAPTURE AND RELEASE
Tingyu Li, Yaoping Liu, and Wei Wang
Peking University, CHINA

c - Diagnostics, Drug Testing & Personalized Medicine

Neurobiology/Neuroscience

M092.c **BACK-TO-BACK CO-CULTURE OF NEURONS/ASTROCYTES ON A MICROPOROUS SIN MEMBRANE AND MULTICHANNEL MEASUREMENT OF NEURONAL POTENTIAL USING A MICROELECTRODE ARRAY**
Satoshi Yoshida and Takashi Yasuda
Kyushu Institute of Technology, JAPAN

M093.c **ON-LINE MICRODIALYSIS-MICROCHIP ELECTROPHORESIS WITH ELECTROCHEMICAL DETECTION FOR CONTINUOUS IN VIVO MONITORING OF CATECHOLAMINES**
Susan Lunte, Shamal Gunawardhana, Galina Bulgakova, and Sara Thomas
University of Kansas, USA

T092.c **CHARACTERIZATION OF NEURON SIGNALING USING MICROELECTRODE ARRAY COMBINED WITH FAST AND PRECISE COOLING DEVICE FOR CRYOANESTHESIA**
Jaehyun Kim[1], Jong Seung Lee[2], Soyeon Noh[3], Nuree Lee[1], Jungchul Lee[4], Taesung Kim[3], Gunho Kim[3], Seung-Woo Cho[2], and Jungyul Park[1]
[1]Sogang University, KOREA, [2]Yunsei University, KOREA,
[3]Ulsan National Institute of Science and Technology(UNIST), KOREA, and
[4]Korea Advanced Institute of Science and Technology(KAIST), KOREA

W092.c **ELECTROPHYSIOLOGICAL RECORDINGS OF CORTICO-STRIATAL NETWORK ACTIVITY IN MICROFLUIDIC-MEA-HYBRID SYSTEM**
Jelena Stevanovic, Kathrin Zobel, Bernhard Wolfrum, and Andreas Offenhäusser
Forschungszentrum Jülich GmbH, GERMANY

c - Diagnostics, Drug Testing & Personalized Medicine

Nucleic-Acid Analysis

M094.c **A VERSATILE MICROFLUIDIC PLATFORM FOR AUTOMATING COMPLEX BIOLOGICAL AND CHEMICAL PROTOCOLS**
Mais J. Jebrail, Eugenia Carvajal, Eduardo Cervantes, Poornasree Kumar, Winnie Chow, Yu-Hung Chen, and Foteini Christodoulou
Miroculus, USA

M095.c **DIAGNOSIS OF METHYLATED DNA FRAGMENTS OF TUMOR SUPPRESSOR GENES IN BLOOD BY UTILIZING METHYLATION- SPECIFIC APTAMERS ON A MICROFLUIDIC SYSTEM**
Chih-Hung Wang and Gwo-Bin Lee
National Tsing Hua University, TAIWAN

M096.c **HAIRPIN-STRUCTURED PCR ENHANCER FOR MICROFLUIDIC PLATFORMS**
Ren Shen, Yanwei Jia, Pui-In Mak, and Rui P. Martins
University of Macau, CHINA

M097.c MICROWELL ARRAY BASED NAZYME BIOASSAY FOR MUTANT & MULTIPLEXED TARGET DETECTION

Saba Safdar, Karen Ven, Julie van Lent, Jeroen Lammertyn, and Dragana Spasic
KU Leuven, BELGIUM

T093.c AN ULTRASENSITIVE, SEMI-QUANTITATIVE MEASUREMENT OF HIV NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS (NRTI) WITH RT-RECOMBINASE POLYMERASE AMPLIFICATION (RPA) FOR RAPID PREP ADHERENCE TESTING

Jane Zhang, Ayokunle Olanrewaju, Andrew Bender, Yu Zhang, Paul Drain, and Jonathan Posner
University of Washington, USA

T094.c DNA DIGESTION USING IMMOBILIZED DNASE TYPE I IN A MICROFLUIDIC CARTRIDGE

Jenny Graunitz[1], Sandra Kuhn[2], Cornelia Stiehl[3], Martina Schneemann[4], Andreas Morschhauser[4], Harald Peter[4], Frank Bier[1], and Jörg Nestler[3]
[1]University of Potsdam, GERMANY,
[2]Mittweida University of Applied Sciences, GERMANY, [3]BiFlow Systems GmbH, GERMANY, and [4]Fraunhofer Institute for Electronic Nano Systems ENAS, GERMANY

T095.c HIGH THROUGHPUT SAMPLE DISCRETIZATION, REAGENT INTEGRATION, AND CONTROLLED RELEASE FOR MULTIPLEXED LOOP-MEDIATED ISOTHERMAL AMPLIFICATION IN DISPOSABLE THERMOPLASTIC 2D MICROWELL ARRAYS

Supriya Padmanabhan, Imaly Nanayankkara, Ian White, and Don L. DeVoe
University of Maryland, USA

T096.c OPTICAL DNA MAPPING USING NANOCHANNELS FOR IDENTIFICATION OF PLASMIDS CARRYING CARBAPENEMASE BLANDM-1 GENE FROM PATIENTS ADMITTED TO A VIETNAMESE HOSPITAL

Sriram Kesarimangalam[1] Kalyanavenkatramanan[1], Maud Nilsson[2], Bjorn Berglund[2], Linus Olson[3], Hoang-Bich Ngoc[4], Tran-Minh Dien[4], Mattias Larsson[3], Håkan Hanberger[2], Christian G. Giske[3], and Fredrik Westerlund[1]
[1]Chalmers University of Technology, SWEDEN,
[2]Linköping University, Linköping, SWEDEN, [3]Karolinska Institute, Stockholm, SWEDEN, and [4]Vietnam National Children's Hospital, Hanoi, VIETNAM

W093.c A DUAL-HEATER DIGITAL MICROFLUIDIC SYSTEM FOR FAST POLYMERASE CHAIN REACTION WITH SLOPPY TEMPERATURE CONTROL

Liang Wan, Tianlan Chen, Haoran Li, Cheng Dong, Yanwei Jia, Pui-In Mak, and Rui P. Martins
University of Macau, CHINA

W094.c **BURIED MICROFLUIDIC CHANNELS WITH OBSERVATION WINDOW FOR A HEAT TRANSFER DETERMINATION BASED ON DNA MELTING CURVE ANALYSIS**

Zdenka Fohlerova[1], Hanliang Zhu[2], Imrich Gablech[1], and Pavel Neuzil[1]
[1]Central European Institute of Technology, CZECH REPUBLIC and
[2]Northwestern Polytechnical University, CHINA

W095.c **DNA OPTICAL MAPPING IN REAL TIME**

Franziska M. Esmek, Thomas Guenther, Marlin Therre, Manja Czech-Sioli,
Adam Grundhoff, Nicole Fischer, and Irene Fernandez-Cuesta
University of Hamburg, GERMANY

W096.c **INTEGRATION OF ISOTHERMAL MOLECULAR AMPLIFICATION WITH CENTRIFUGAL MICROFLUIDIC PLATFORM AND NANOPARTICLE BASED OPTOMAGNETIC READOUT FOR DETECTION OF E. COLI**

Robert W. Baber[1], Marco Donolato[2], Mikkel F. Hansen[1], and Jeppe Fock[2]
[1]Technical University of Denmark, DENMARK and [2]BluSense Diagnostics, DENMARK

W097.c **POINT-OF-CARE NUCLEIC ACID SENSORS VIA PAPER-BASED OLIGONUCLEOTIDE-TEMPLATED REACTIONS**

Robert B. Channon[1], Suraj Pavagada[2], Jason Y.H. Chang[3], Sung H. Kim[1], David MacIntyre[1],
Phillip R. Bennett[1], Vasso Terzidou[1], Danny O'Hare[1], and Sylvain Ladame[1]
[1]Imperial College London, UK, [2]University of Cambridge, UK, and
[3]Massachusetts Institute of Technology, USA

c - Diagnostics, Drug Testing & Personalized Medicine

Pathogen Detection & Antibiotics

M098.c **3D PRINTED RASPBERRY PI MICROSCOPY FOR LOW COST MICROFLUIDIC BACTERIAL MOTILITY ANALYSIS**

Tai The Diep and Alexander Daniel Edwards
University of Reading, UK

M099.c **A MICROFLUIDIC MODULE FOR INTEGRATED LYSIS AND GENETIC MATERIAL DETECTION OF GRAM-POSITIVE AND GRAM-NEGATIVE BACTERIA**

Catarina R.F. Caneira[1], Sílvia Monteiro[2], Ricardo Santos[2], Virginia Chu[1], and João P. Conde[1]
[1]INESC-MN, PORTUGAL and [2]LAIST, PORTUGAL

M100.c **BACTERIAL IDENTIFICATION BY OPTICAL MAPPING OF GENOMIC DNA IN NANOFLUIDIC CHANNELS**

Vilhelm Müller[1], My Nyblom[1], Anna Johhning[1,2], Marie Wrande[3], Albertas Dvirnas[4],
Sriram KK[1], Christian G. Giske[5], Tobias Ambjörnsson[4], Linus Sandegren[3],
Erik Kristiansson[1,2], and Fredrik Westerlund[1]
[1]Chalmers University of Technology, SWEDEN, [2]University of Gothenburg, SWEDEN,
[3]Uppsala University, SWEDEN, [4]Lund University, SWEDEN, and
[5]Karolinska University Hospital, SWEDEN

M101.c FAST ANTIMICROBIAL SUSCEPTIBILITY TESTING OF E. COLI BY OXYGEN CONSUMPTION MEASUREMENTS IN AN ISOTHERMAL MICRO-INCUBATOR PLATFORM

Yang Liu, Thomas Lehnert, Terry P.N. Baltus, and Martinus Gijs
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

M102.c LABEL-FREE BACTERIAL SMARTPHONE DETECTION IN MICRO CAPILLARY FILM ALLOWS RAPID TESTING OF THERAPEUTIC BACTERIOPHAGE SPECIFICITY

Sultan Ilayda Dönmez and Alexander Edwards
University of Reading, UK

M103.c MICROFLUIDICS COUPLED MASS SPECTROMETRY REVEALS METABOLOMIC VARIATIONS DURING MORPHOLOGICAL CHANGES OF BACTERIA UNDER THE IMPACT OF ANTIBIOTICS

Dongxue Zhang and Liang Qiao
Fudan University, CHINA

M104.c RAPID SEPARATION AND DETECTION OF RARE FUNGI SPORES FROM WHOLE BLOOD BASED ON A DUAL-LAYER MICROPORE ARRAY FILTRATION

Wenbo Zhou[1], Yaoping Liu[1], Shuangling Li[2], Meng Xiao[3], Jie Gong[4], Haichao Li[2], and Wei Wang[1]
[1]Peking University, CHINA, [2]Peking University First Hospital, CHINA, [3]Peking Union Medical College Hospital, CHINA, and [4]Chinese Center for Disease Control and Prevention, CHINA

M105.c USE OF MINIATURIZED DEVICES AND ISOTHERMAL AMPLIFICATION FOR PATHOGEN DETECTION IN THE FIELD

Carlos Manzanas, Xiao Jiang, Julia C. Loeb, John A. Lednicky, and Z. Hugh Fan
University of Florida, USA

T097.c A DROPLET MICROFLUIDICS PLATFORM FOR SCALABLE AND HIGH-THROUGHPUT ISOLATION OF ANTIBIOTIC-PRODUCING MICROBES

Pieter Berden[1,2], Camila D. Campos[1,2], Rodrigo S. Wiederkehr[1], Liesbet Lagae[1,2], Tim Stakenborg[1], Jan Michiels[2], and Maarten Fauvart[1,2]
[1]Imec, BELGIUM and [2]KU Leuven, BELGIUM

T098.c A MULTIPLEXED ASSAY SYSTEM FOR PATHOGEN DETECTION BASED ON ENCODED MAGNETIC MICROPARTICLES

Young Ki Hahn[1], Ji Hyun Kim[2], and Honggu Chun[2]
[1]Kyungpook National University, KOREA and [2]Korea University, KOREA

T099.c BACTERIAL PATHOGENS DETECTION AND ANTIMICROBIAL RESISTANCE TESTING USING PAPER-BASED DEVICES FOR URINARY TRACT INFECTIONS (UTIS)

Peijun J.W. He[1], Ioannis N. Katis[1], Anto J.U. Kumar[1], Catherine Bryant[1], Charles W. Keevil[1], Bhaskar K. Somani[2], Nitin Mahobia[2], Robert W. Eason[1], and Collin L. Sones[1]
[1]University of Southampton, UK and [2]University Hospital Southampton NHS Trust, UK

T100.c FISH AND CHIPS: IFAST MICROFLUIDIC DEVICE FOR E. COLI O157:H7 CAPTURE AND DETECTION VIA ON-CHIP FISH ASSAY

Pablo Rodriguez-Mateos[1], Celia F. Rodrigues[2], Nuno F. Azevedo[2], Carina Almeida[3], Charlotte E. Dyer[1], Alex Iles[1], and Nicole Pamme[1]
[1]University of Hull, UK, [2]University of Porto, PORTUGAL, and [3]National Institute for Agricultural and Veterinary Research, PORTUGAL

T101.c MICRO-SCALE IMMUNOMAGNETIC BACTERIAL ENRICHMENT COUPLED TO NANOPLASMONIC SENSING FOR RAPID DETECTION OF PATHOGENS IN WHOLE BLOOD

Alison Burklund, Amogha Tadimety, and John X.J. Zhang
Dartmouth College, USA

T102.c MOLECULAR DIAGNOSIS OF INFECTIOUS DISEASES FOR POINT-OF-CARE USING DNA HYDROGEL BASED RAPID KIT

Hwangsoo Kim, Wonhwi Na, Hynsung Kim, and Sehyun Shin
Korea University, KOREA

T103.c RATIOMETRIC MULTIPLEXED DIGITAL PCR PLATFORM FOR BACTERIAL IDENTIFICATION AND PHENOTYPIC AST OF POLYMICROBIAL SAMPLES

Fan-En Chen, Alexander Y. Trick, Liben Chen, Joon Soo Park, and Jeff Tza-Huei Wang
Johns Hopkins University, USA

W098.c A MICROFLUIDIC SYSTEM INTEGRATING MEMBRANE FILTRATION AND SURFACE-ENHANCED RAMAN SCATTERING FOR RAPID ANTIBIOTIC SUSCEPTIBILITY TEST

Kai-Wei Chang and Nien-Tsu Huang
National Taiwan University, TAIWAN

W099.c A SELF-CONTAINED INTEGRATED NUCLEIC ACID ANALYSIS CASSETTE FOR MULTIPLEXED BACTERIA DETECTION

Nan Li, Minjie Shen, and Youchun Xu
Tsinghua University, CHINA

W100.c DISCRIMINATING DRUG-RESISTANT BACTERIA USING AI ANALYSIS ON FINE CURRENT CHANGES FROM INNER ION LEAKAGES

Aomi Yoshikawa[1], Takao Yasui[1], Taisuke Shimada[1], Seiji Yamasaki[2], Kunihiko Nishino[2], Takeshi Yanagida[3], Kazuki Nagashima[3], Takashi Washio[3], Tomoji Kawai[3], and Yoshinobu Baba[1]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and [3]Kyushu University, JAPAN

W101.c **FULL INTEGRATION OF SAMPLE PREPARATION AND DNA ANALYSIS FOR FAST MULTIPLEX FIELD-IDENTIFICATION OF BACTERIA**
Remco den Dulk[1], Camille Echampard[1], Perrine Viargues[1], Fabienne Gas[2], Florent Decugis[2], Mélissa Baqué[1], Anne-Gaëlle Bourdat[1], Manuel Alessio[1], Sandrine Alais[3], Jehanne Oudot[3], Olivier Riffard[3], Cédric Pasquier[3], Gregory Wenisch[3], and Jean-Maxime Roux[1]
[1]CEA-Leti, FRANCE, [2]CEA-DRF, FRANCE, and [3]SDMIS, FRANCE

W102.c **MULTIPLEXED OPTICAL DNA MAPPING TO IDENTIFY PLASMIDS AND THEIR RESISTANCE GENES IN FECAL SAMPLES**
Sriram Kesarimangalam Kalyanavenkatramanan[1], Yii-Lih Lin[1], Tsegaye Sewunet[2], Shoeib Nematzadeh[3], Christian G. Giske[3], and Fredrik Westerlund[1]
[1]Chalmers University of Technology, SWEDEN, [2]Jimma University, ETHIOPIA, and [3]Karolinska Institutet, SWEDEN

W103.c **PALM-SIZED MAGNETOFLUIDIC PLATFORM FOR BACTERIAL IDENTFICATION AND ANTIMICROBIAL SUSCEPTIBILITY TESTING OF INFECTED WOUNDS**
Pei-Wei Lee, Liben Chen, Alexander Y. Trick, Pornpat Athamanolap, and Fan-En Chen
Johns Hopkins University, USA

W104.c **SMARTPHONE-BASED DETECTION OF VIBRIO CHOLERAE IN ENVIRONMENTAL WATER SAMPLES USING PARTICLE DIFFUSOMETRY**
Taylor J. Moehling[1], Dong Hoon Lee[1], Katherine N. Clayton[2], Steven T. Wereley[1], Tamara L. Kinzer-Ursem[1], and Jacqueline C. Linnes[1]
[1]Purdue University, USA and [2]OmniVis LLC, USA

c - Diagnostics, Drug Testing & Personalized Medicine

Personalized Medicine

M106.c **MICROFLUIDIC PLATFORM FOR TARGETED PHAGE SELECTION: IN PURSUIT OF PERSONALIZED COLORECTAL CANCER TREATMENTS**
Eduardo J.S. Brás, Pedro G.M. Condelipes, Pedro M. Fontes, Ricardo F. Serrão, Vanda Marques, Marta B. Afonso, Cecília M.P. Rodrigues, Virginia Chu, João Gonçalves, and João P. Conde
Universidade de Lisboa, PORTUGAL

T104.c **DROPLET-BASED SINGLE EXTRACELLULAR VESICLE SEQUENCING FOR RARE IMMUNE SUBTYPE DISCOVERY**
Jina Ko, Yongcheng Wang, David Weitz, and Ralph Weissleder
Harvard University, USA

T105.c **QUAD MICRORAFT ARRAYS AS A PLATFORM FOR GENERATING AND SELECTING HUMAN INDUCED PLURIPOTENT STEM CELLS FROM PERIPHERAL BLOOD**
Nicole M. Smiddy[1], Adriana S. Beltran[1], and Nancy L. Allbritton[1,2]
[1]University of North Carolina, USA and [2]North Carolina State Univeristy, USA

W105.c **DRUG METABOLISM-IN-A-DROPLET: A DIGITAL MICROFLUIDIC APPROACH TOWARD PRECISION MEDICINE**

Gowtham Sathyanarayanan, Markus Haapala, and Tiina Sikanen
University of Helsinki, FINLAND

c - Diagnostics, Drug Testing & Personalized Medicine

Protein Analysis & Characterization (e.g., Proteomics)

M107.c **TRANSPEPTIDASE-MEDIATED IN-SITU COVALENT IMMOBILIZATION OF CELL-FREE SYNTHESIZED ENZYME FOR ON-CHIP DIRECTED EVOLUTION**

Shingo Ueno[1], Yui Shirakata[2], Mika Shioya[1], Shusuke Sato[1], Shoichi Tsuchiya[1], and Takanori Ichiki[2]
[1]Innovation Center of NanoMedicine, JAPAN and [2]University of Tokyo, JAPAN

T106.c **INTEGRATED AND AUTOMATED MICROFLUIDIC PORTABLE INSTRUMENTATION FOR WHOLE BLOOD SAMPLE PREPARATION IN PROTEOMICS ANALYSIS**

Myriam Cubizolles, Remco Den Dulk, Benoit Gilquin, Frédéric Revol-Cavalier, Manuel Alessio, Charles-Elie Goujon, Camille Echampard, Gorka Arrizabalaga, Yohann Couté, Annie Adrait, Mathilde Louwagie, Patricia Laurent, Fabrice Navarro, and Marie-Line
University Grenolble Alps, FRANCE

W106.c **DRIED BLOOD SPOT RECOVERY: A MICROFLUIDIC TECHNIQUE FOR FAST ELUTION WITHOUT DILUTION.**

Etienne Coz[1], Pierre Garneret[1], Didier Chevenne[2], Jean-François Benoist[2], Fabrice Monti[1], and Patrick Tabeling[1]
[1]Institut Pierre-Gilles de Gennes, FRANCE and [2]Hospital Robert-Debré, FRANCE

W107.c **THE INFLUENCE OF SHEAR ON PROTEIN CRYSTALLIZATION UNDER CONSTANT SHEAR CONDITIONS**

Sander Stroobants[1], Manly Callewaert[1], Marzena Krzek[1], Sudha Chinnu[1], Pierre Gelin[1], Iwona Ziemecka[1], James F. Lutsko[2], Wim De Malsche[1], and Dominique Maes[1]
[1]Vrije Universiteit Brussel, BELGIUM and [2]Université Libre de Bruxelles, BELGIUM

c - Diagnostics, Drug Testing & Personalized Medicine

Regenerative Medicine & Tissue Engineering

M108.c **HIERARCHICAL ASSEMBLY OF COLLAGEN MOLECULES INTO TISSUE-ENGINEERED ARTERIAL CONSTRUCTS**

Shashi Malladi[1], David M. Nieves[2], Carloyn Haller[3], Elliot L. Chaikof[3,4], and Axel Guenther[1]
[1]University of Toronto, CANADA,
[2]Harvard-MIT Division of Health Science and Technology, USA, [3]Harvard University, USA, and [4]Beth Israel Deaconess Medical Center, USA

T107.c **CELL-ENCAPSULATING CHITOSAN-COLLAGEN HYBRID HYDROGEL CONDUIT FOR PERIPHERAL NERVE REGENERATION**

Shun Itai[1], Karin Suzuki[1], Yuta Kurashina[2], Hiroo Kimura[1], Tsuyoshi Amemiya[1], Kazuki Sato[1], Masaya Nakamura[1], and Hiroaki Onoe[1]
[1]Keio University, JAPAN and [2]Tokyo Institute of Technology, JAPAN

T108.c **SYNERGISTIC ELECTRO-MECHANICAL TRANSFECTION FOR IN-VIVO REGENERATIVE THERAPY USING ELECTRICALLY-INDUCED MICROBUBBLES**

Akiho Hirao[1], Keiko Miwa[1], Yasuhiro Moriizumi[2], and Yoko Yamanishi[1]
[1]Kyushu University, JAPAN and [2]BEX Co., Ltd., JAPAN

W108.c **ENGINEERED ADAPTIVE IMMUNE RESPONSE USING A MICROFLUIDICALLY-FABRICATED HYDROGEL SCAFFOLD IMPARTS REGENERATIVE WOUND HEALING**

Maani M Archang[1], Donald R Griffin[2], Westbrook M Weaver[1], Jason S Weinstein[3], Amber Ruccia[1], An Chieh Feng[1], Elias Sideris[1], Jaekyung Koh[1], Dino Di Carlo[1], Tatiana Segura[4], and Philip O Scumpia[1]
[1]University of California, Los Angeles, USA, [2]University of Virginia, USA, [3]Rutgers –New Jersey Medical School, USA, and [4]Duke University, USA

W109.c **VERTICAL NANOSTRUCTURED FLEXIBLE ANTI-PATHOGENIC SCAFFOLDS FOR STEM CELL AND TISSUE ENGINEERING**

Sunho Park[1], Hyun-Ha Park[2], Kahyun Sun[2], Minho Seong[2], Sujin Kim[1], Hoon Eui Jeong[2], and Jangho Kim[1]
[1]Chonnam National University, KOREA and
[2]Ulsan National Institute of Science and Technology (UNIST), KOREA

c - Diagnostics, Drug Testing & Personalized Medicine

Others

M109.c **A CONVERSATIONAL ROBOTIC LAB ASSISTANT FOR AUTOMATED MICROFLUIDIC 3D MICROTISSUE PRODUCTION**

Krzysztof Langer[1], Sandra Jernström[2], Piia Mikkonen[3], Päivi Östling[2], Brinton Seashore-Ludlow[2], and Haakan N. Joensson[1]
[1]KTH Royal Institute of Technology, SWEDEN, [2]Karolinska Institutet, SWEDEN, and [3]University of Helsinki, FINLAND

M110.c **A RAPID ENZYMATIC ASSAY FOR NEAR-PATIENT MEASUREMENT OF ADHERENCE TO HIV PRE-EXPOSURE PROPHYLAXIS**

Ayokunle O. Olanrewaju[1], Benjamin Sullivan[1], Jane Y. Zhang[1], Andrew T. Bender[1], Tiffany J. Lo[1], Derin Sevenler[2], Marta Fernandez-Suarez[3], Paul K. Drain[1], and Jonathan D. Posner[1]
[1]University of Washington, USA, [2]Harvard Medical School, USA, and [3]Independent Consultant, USA

T109.c **REAL-TIME MEASUREMENT OF THE PHYSICAL PROPERTIES OF DNA-LIGAND COMPLEXES**

Deniz Pekin[1], Grégoire Perret[2], Momoko Kumemura[3], Laurent Jalabert[2], Samuel Meignan[4], Hiroyuki Fujita[2], Dominique Collard[2], and Mehmet C. Tarhan[5]
[1]Inserm, FRANCE, [2]LIMMS/CNRS-IIS, FRANCE, [3]Kyushu Institute of Technology, JAPAN, [4]Centre Oscar Lambret, FRANCE, and [5]University Lille, FRANCE

T110.c **SALIVARY MICRORNA CORECTION AND ANALYSIS USING NANOCELLULOSE FOR DOMICILIARY CANCER DIAGNOSIS**

Naoya Misukami[1], Takao Yasui[1], and Hironao Koga[2]
[1]Nagoya University, JAPAN and [2]Osaka University, JAPAN

W110.c **RAPID AND PORTABLE PRESUMPTIVE TESTING OF NEW PSYCHOACTIVE SUBSTANCES**

Lauren F. McNeill, Marios Savvos, Oliver B. Sutcliffe, Kirsty J. Shaw, David P. Megson, and Patricia E. Linton
Manchester Metropolitan University, UK

d - Fundamentals in Microfluidics and Nanofluidics
Acousto- and Magnetofluidics

M111.d **LABEL-FREE SURFACE ACOUSTIC WAVE-BASED EMBEDDED FLOW SENSOR**

Aurore Quelennec, Jason J. Gorman, and Darwin R. Reyes
National Institute of Standards and Technology (NIST), USA

T111.d **NEW UNDERSTANDING OF ACOUSTOFLUIDIC DROP DISPENSING FOR DIGITAL MICROFLUIDICS USING SURFACE ACOUSTIC WAVES**

Elijah Nazarzadeh, Christian Witte, Julien Reboud, and Jonathan. M. Cooper
University of Glasgow, UK

W111.d **HIGH THROUGHPUT CONTINUOUS CELL SECRETOME SEPARATION INSIDE MICROSCALE DROPLETS BY MEANS OF ACOUSTOPHORESIS**

Michael Gerlt, Dominik Haidas, Alexandre Ratschat, Philipp Suter, Petra Dittrich, and Juerg Dual
ETH Zürich, SWITZERLAND

W112.d **SURFACE ACOUSTIC WAVES PLATFORM FOR TARGETED DELIVERY OF LIPOSOMAL SIRNA AND DNA PLASMID**

Xi King[1], Elijah Nazarzadeh[1], Manlio Tassieri[1], Julien Reboud[1], Jenny K.W. Lam[2], and Jonathan M. Cooper[1]
[1]University of Glasgow, UK and [2]University of Hong Kong, CHINA

d - Fundamentals in Microfluidics and Nanofluidics
Centrifugal Microfluidics

M112.d **AN AUTOMATED CENTRIFUGAL MICROFLUIDIC SYSTEM INTEGRATED WITH ETALON SENSOR FILMS FOR RAPID IMAGE ANALYSIS BASED DETECTION OF HORMONES IN MILK.**
Yuting Hou[1], Rohit Mishra[2], Menglian Wei[1], Nicholas Balasuriya[1], Jens Ducrée[2], Michael J. Serpe[1], and Jed Harrison[1]
[1]University of Alberta, CANADA and [2]Dublin City University, IRELAND

M113.d **EMBEDDED GLASS FIBERS FOR THE CHROMOGENIC DETECTION OF MIXED ILLICIT DRUG SAMPLES FOR POINT-OF-INTERDICTION TESTING**
Killian C. O'Connell, M. Shane Woolf, and James P. Landers
University of Virginia, USA

M114.d **PHASE-SEPARATED CORE-SHELL HYDROGEL MICROBEADS FROM HOMOGENEOUS MIXED POLYMER SOLUTION BY SIMULTANEOUS GELATION**
Yuta Kurashina[1], Mio Tsuchiya[2], Keitaro Kasahara[2], and Hiroaki Onoe[2]
[1]Tokyo Institute of Technology, JAPAN and [2]Keio University,

T112.d **ARTIFICIAL GUT-ON-A-DISC PLATFORM TO EVALUATE PH SENSITIVE COATINGS OF ORAL DRUG DELIVERY DEVICES**
Sriram Thoppe Rajendran[1], Khorshid Kamguyan[1], David Kinahan[2], En-Te Hwu[1], Line Hagner Nielsen[1], Kinga Zór[1], and Anja Boisen[1]
[1]Technical University of Denmark, DENMARK and [2]Dublin City University, IRELAND

T113.d **ON-DISC DROPLET FUSION FOR CELL TRANSFECTION**
Yuye Wang, Shiyue Liu, SiuKai Kong, and Ho-Pui Ho
Chinese University of Hong Kong, HONG KONG

T114.d **REVERSIBLE VALVING SOLUTIONS FOR CENTRIFUGAL PLATFORMS WHILE SPINNING**
Sarai M. Torres Delgado[1], Moritz Huber[1], Bahman Moradi[2], Jan G. Korvink[1], Christof Megnin[2], and Dario Mager[1]
[1]Karlsruhe Institute of Technology, GERMANY and [2]MEMETIS GmbH, GERMANY

W113.d **AUTONOMOUS MULTIPLEXED CENTRIFUGAL DEVICE TO EXECUTE FULLY AUTOMATED SANDWICH ELISA WITH MINIMUM REAGENTS LOADING OPERATION**
Shunya Okamoto and Yoshiaki Ukita
University of Yamanashi, JAPAN

W114.d **HIGH THROUGHPUT GENERATION OF CALCIUM-ALGINATE MICRO-PARTICLES USING CENTRIFUGAL FORCE-BASED DEVICE FOR CELLS ENCAPSULATION**

Huong Le[1], Thuy Duong[1], Phan Lam[1], Nguyen Trung[1], Nguyen Phuong[1], Hyewon Son[1], Seok Oh[1], H. Soek[1], Suwon Lee[1], C.Ho Hwang[2], and Kyo-in Koo[1]
[1]University of Ulsan, KOREA and [2]University of Ulsan College of Medicine, KOREA

W115.d **THE CENTRIFUGO-PNEUMATIC LAB-ON-A-DISK PLATFORM: TOWARDS ROBUST FLOW CONTROL FOR LARGER-SCALE FUNCTIONAL INTEGRATION**

Lars H. von Deyn and Jens Ducrée
Dublin City University, IRELAND

d - Fundamentals in Microfluidics and Nanofluidics
Digital Microfluidics

M115.d **AN ELECTRONICALLY-CONTROLLED DIGITAL FERROFLUIDIC ARCHITECTURE FOR SCALABLE AND ADDRESSABLE BIOANALYTICAL OPERATIONS**

Wenzhuo Yu, Yilian Wang, Haisong Lin, Nathan Chen, Xu He, Kevin Sun, Dino Di Carlo, and Sam Emaminejad
University of California, Los Angeles, USA

M116.d **DROPLET EVAPORATION PROFILES IN DIAMAGNETIC LEVITATION**

Vincent Haguet[2], Sergey Semenov[1], Christian Jeandey[2], and Mickaël Antoni[1]
[1]Aix-Marseille Université, FRANCE and [2]CEA Grenoble, FRANCE

M117.d **POINT-OF-CARE DIAGNOSIS OF RESPIRATORY SYNCYTIAL VIRUS BY DIGITAL NANOBUBBLE DETECTION**

Yaning Liu[1], Haihang Ye[1], Ruth Levitz[2], HoangDinh Huynh[2], Jeffrey Kahn[2], and Zhenpeng Qin[1]
[1]University of Texas, Dallas, USA and
[2]University of Texas Southwestern Medical Center, USA

T115.d **PATHWAY ENGINEERING USING RAPID-PROTOTYPE DIGITAL MICROFLUIDICS**

James M. Perry, Guy Soffer, Ehsan Moazami, and Steve C.C. Shih
Concordia University, CANADA

T116.d **IMPROVED DYNAMICS FOR DROPLET ACTUATION BY STRATEGICALLY USING TRIANGULAR COPLANAR ELECTRODES IN DIGITAL MICROFLUIDIC SYSTEM**

Mainak Basu, Soumen Das, and Sunando DasGupta
Indian Institute of Technology Kharagpur, INDIA

T117.d **ULTRA-LOW-FREQUENCY INDUCED TINY DROPLET TRANSPORTATION WITH SMALL DROPLET-TO-ELECTRODE AREA RATIO IN DIGITAL MICROFLUIDIC PLATFORMS**
Mingzhong Li, Man-Kay Law, Pui-In Mak, and Rui P. Martins
University of Macau, CHINA

W116.d **DIELECTROPHORETIC TRAPPING OF NON-STATIONARY FLOATING LIQUID MARBLES**
Jing Jin, Chin H. Ooi, Kamalalayam R. Sreejith, Dzung V. Dao, and Nam-Trung Nguyen
Griffith University, AUSTRALIA

W117.d **INTEGRATED MAGNETOFLUIDIC NUCLEIC ACID PURIFICATION WITH DIGITAL PCR AND HIGH-RESOLUTION MELT FOR BACTERIAL IDENTIFICATION**
David Gaddes, Pornpat Athamanolap, Alex Trick, Christine O'Keefe, and Jeff Wang
Johns Hopkins University, USA

d - Fundamentals in Microfluidics and Nanofluidics
Droplet Microfluidics

M118.d **AUTOMATED DROPLET SAMPLING OF ENDOCRINE TISSUE WITH DOWNSTREAM MERGERS FOR COMBINATORIAL MIX-AND-READ ASSAYS**
Nan Shi, Juan Hu, and Christopher J. Easley
Auburn University, USA

M119.d **BUBBLE BREAKUP IN AN EXPANSION MEDIATED MICROFLUIDIC CHANNEL**
Alinaghi Salari, Jiang Xu, Michael Kolios, and Scott Tsai
Ryerson University, CANADA

M120.d **DEEP LEARNING GUIDED IMAGE-BASED DROPLET SORTING FOR BIOLOGICAL SCREENINGS**
Vasileios Anagnostidis[1], Benjamin E Sherlock[1], Jeremy Metz[1], Philip Mair[2], Florian Hollfelder[2], and Fabrice Gielen[1]
[1]University of Exeter, UK and [2]University of Cambridge, UK

M121.d **FEMTOLITER-DROPLET SHOOTING BY MICRO/NANO FLUIDICS FOR DIGITAL MASS SPECTROMETRY**
Yuto Takagi, Yutaka Kazoe, and Takehiko Kitamori
University of Tokyo, JAPAN

M122.d **LABEL-FREE DROPLET DETECTION THROUGH 3D ELECTRODE-BASED IMPEDANCE SPECTROSCOPY**
Hyun Soo Kim[1], Sunghyun Cho[1], Hyesoo Park[1], Kang-Ho Lee[1], Ohwon Kwon[1], Younghak Cho[2], and Jaewon Park[3]
[1]Korea Institute of Machinery and Materials, KOREA, [2]Seoul National University of Science and Technology, KOREA, and [3]Southern University of Science and Technology, KOREA

M123.d MICRO PERISTALTIC PUMP SYSTEM FOR THE GENERATION OF ARBITRARY DROPLET SEQUENCE AND MULTIPLE-STEP BIOCHEMICAL ASSAYS
Wahida Bhuiyan, Gareth Evans, and Xize Niu
University of Southampton, UK

M124.d NON-NEWTONIAN, HIGH VISCOSITY POLYMER BLENDS WITHIN DROPLET MICROFLUIDIC DEVICES
Polly Sanders, Solweig Chartier, Alexander Iles, Jia Min Chin, and Nicole Pamme
University of Hull, UK

M125.d PROVE OF PRINCIPLE: PARALLEL BACTERIAL ESTERASE ASSAY IN TRAPPED 35 NL-DROPLETS USING EMULSION TRANSPORT
Charmi Chande[1], Jialan Cao[1], Thomas Henkel[2], Marc Kielpinskie[2], Michael Köhler[1], and Alexander Groß[1]
[1]Technical University Ilmenau, GERMANY and
[2]Leibniz Institute for Photonic Technologies, GERMANY

M126.d SELECTIVE PARTITIONING OF MICRODROPLETS USING HORIZONTAL MICROVALVES
Mohammad Reza Raveshi[1], Sagar N. Agnihotri[2], Muhsincan Sesen[1], Rajneesh Bhardwaj[2], and Adrian Neild[1]
[1]Monash University, AUSTRALIA and [3]Indian Institute of Technology, Bombay, INDIA

M127.d SIMULTANEOUS MICRODROPLETS GENERSTION BY TAIL BREAKUP INDUCED WITH MULTI-BRANCH CHANNEL
Satsuki Kajiya[1], Dong Hyun Yoon[1], Yoshito Nozaki[1], Taisuke Isano[2], Hitoshi Yamagata[2], Hiroyuki Fujita[2], Tetsushi Sekiguchi[1], and Shuichi Shoji[1]
[1]Waseda University, JAPAN and [2]Canon Medical Systems Corp., JAPAN

M128.d TRYPANOFLUIDICS: VARIABILITY OF ENZYMATIC RESPONSE IN POPULATIONS OF TRYPANOSOMES
Simone H. Oldenburg, Deniz Pekin, Lionel Buisson, Thomas Beneyton, Jean-Christophe Baret, and Loïc Rivière
Université de Bordeaux, FRANCE

T118.d BIOCOMPATIBLE POLYELECTROLYTE MICROCAPSULES GENERATED WITH MAGNETIC WATER-IN-WATER DROPLET MICROFLUIDICS
Maryam Navi, Jennifer Kieda, Niki Abbasi, and Scott Tsai
Ryerson University, CANADA

T119.d CONTINUOUS FLOW CELL-CELL INTERACTION SCREENING VIA A SEQUENTAL INJECTOR
Weikang Nicholas Lin, Matthew Zirui Tay, Shih-Chung Wei, Ri Lu, and Chia-Hung Chen
National University of Singapore, SINGAPORE

T120.d DROP-QPCR: A DROPLET MICROFLUIDIC PLATFORM FOR FAST AND CONTINUOUS-FLOW QPCR ANALYSIS

Ismail Hajji[1], Mathilde Richerd[1], Simon Dumas[1], Charles Cavaniol[1], Lauriane Geremie[1], Marco Serra[1], Renaud Renault[1], Ivan Ferrante[1], Jean-Louis Viovy[1], Stéphanie Descroix[1], and Davide Ferraro[2]
[1]Institut Curie, FRANCE and [2]Università di Padova, ITALY

T121.d HIGH THROUGHPUT SCREENING PLASTIC-DEGRADATION STRAINS BASED ON MICROFLUIDIC FADS PLATFORM

Yuxin Qiao and Wenbin Du
Chinese Academy of Sciences, CHINA

T122.d MASSIVELY-PARALLELIZED PRODUCTION OF FEMTOLITER DROPLETS AND ITS APPLICATION TO SELF-ASSEMBLED NANOPARTICLE CLUSTERS FOR NOVEL METAMATERIALS.

Corentin B.M. Tregouet[1], Chris L. Kennedy[2], Ramakrishna Kotni[2], Sofie Kölling[3], Johan G. Bomer[3], Jasper J.A. Lozeman[3], Detlef Lohse[3], Albert van den Berg[3], Alfons van Blaaderen[2], and Mathieu Odijk[3]
[1]Université Rennes [1], FRANCE, [2]Utrecht University, THE NETHERLANDS, and [3]University of Twente, THE NETHERLANDS

T123.d MICRONEEDLE-ASSISTED MICROFLUIDIC FLOW FOCUSING FOR HIGH THROUGHPUT WATER-IN-WATER DROPLET GENERATION

Morteza Jeyhani, Vaskar Gnywali, Niki Abbasi, Dae Kun Hwang, and Scott S.H. Tsai
Ryerson University, CANADA

T124.d ON-CHIP SAMPLE AUTOMATED DISCRETIZATION, SELECTIVE RETRIEVAL AND CONTROLLABLE METERING UTILIZING MEMBRANE INTEGRATED TRAPS FOR SINGLE-CELL ENCAPSULATION AND SORTING

Hesam Babahosseini[1], Tom Misteli[2], and Don L. DeVoe[1]
[1]University of Maryland, USA and [2]National Institutes of Health (NIH), USA

T125.d ON-DEMAND DROPLET GENERATOR FOR EXTRACTION OF ELECTROKINETICALLY FOCUSED ANALYTES

Vasileios A. Papadimitriou, Stella A. Kruit, Loes I. Segerink, and Jan C.T. Eijkel
University of Twente, THE NETHERLANDS

T126.d SEQUENTIAL FORMATION OF DAUGHTER DROPLETS BY BREAKUP OF MICRODROPLETS INTO BYPASS CHANNEL

Shohei Hattori[1], Dong Hyun Yoon[1], Yoshito Nozaki1, Taisuke Isano[2], Hitoshi Yamagata[2], Hiroyuki Fujita[2], Tetsushi Sekiguchi[1], and Shuichi Shoji[1]
[1]Waseda University, JAPAN and [2]Canon Medical Systems Corp., JAPAN

T127.d SUPERPARAMAGNETIC NANOPARTICLE ENCAPSULATION VIA DROPLET-BASED MICROFLUIDICS FOR TARGETING DRUG DELIVERY SYSTEM

Sakon Rahong[1], Ratchanont Sukthai[1], Narin Paiboon[2], Kunat Suktham[2], Annop Klamchuen[2], and Suvimol Surassmo[2]
[1]King Mongkut's Institute of Technology Ladkrabang (KMITL), THAILAND and [2]National Nanotechnology Center (NANOTEC), THAILAND

T128.d WATER EVAPORATION BASED SELF-AQUEOUS TWO-PHASE SYSTEM DROPLET FORMATION
Byeong-Ui Moon, Lidija Malic, Keith Morton, Abdelrahman Elmanzalawy, and Teodor Veres
National Research Council Canada, CANADA

W118.d A PORTABLE DROPLET SORTING PLATFORM WITH INTEGRATED THERMOCAPILLARY SORTING AND CAPACITANCE DETECTING
Yigang Shen[1], Yaliku Yaxiaer[2], Yusufu Aishan[1], and Yo Tanaka[3]
[1]Osaka University, JAPAN, [2]Nara Institute of Science and Technology, JAPAN, and [3]RIKEN, JAPAN

W119.d CLIMBING DROPLETS DRIVEN BY MECHANOWETTING
Ye Wang[1], Edwin de Jong[2], Patrick R. Onck[2], and Jaap M.J. den Toonder[1]
[1]Eindhoven University of Technology, THE NETHERLANDS and [2]University of Groningen, THE NETHERLANDS

W120.d CONTROLLED RELEASE OF LIPOSOMAL CARGO IN DOUBLE EMULSIONS TO INDUCE GENE EXPRESSION IN BACTERIA
Ariane Stucki, Petra Jusková, Nicola Nuti, Steven Schmitt, Lucas Armbrecht, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

W121.d FABRICATION AND EVALUATION OF ATTOLITER DROPLETS
Risa Takane, Hiroto Kawagishi, Yasunori Matsui, Hiroshi Ikeda, and Yan Xu
Osaka Prefecture University, JAPAN

W122.d IMPROVING DNA LIBRARY PREPARATION FOR NEXT GENERATION SEQUENCING THANKS TO AN INNOVATIVE DROPLET MICROFLUIDIC DEVICE
Davide Ferraro[1], Marco Serra[2], Thanh Duc Mai[3], Almut Eisele[2], Leïla Périé[2], Jean-Louis Viovy[2], and Stephanie Descroix[2]
[1]University of Padova, ITALY, [2]Institut Curie, FRANCE, and [3]Institut Galien de Paris-Sud, FRANCE

W123.d MICRODROPLET ARRAY CONCENTRATION WITH SIZE-TRIGGERED RELEASE SYSTEM
Piangrawee Santivongskul, Mao Fukuyama, and Akihide Hibara
Tohoku University, JAPAN

W124.d MULTIPLEXING ANTIBIOTIC SCREENING IN DROPLET MICROFLUIDICS USING AN OPTOFLUIDIC PLATFORM
Sundar Hengoju, Lisa Mahler, Oksana Shvydkiv, Miguel Tovar, Miriam Rosenbaum, and Martin Roth
Hans Knöll Institute, GERMANY

W125.d PHOSPHOLIPID EXTRACTION AND PHASE SEPARATION USING DROPLET MICROFLUIDICS
David J. Rowe, Daniel J. Heath, Anthony D. Postle, James S. Wilkinson, and Goran Z. Mashanovich
University of Southampton, UK

W126.d RAYDROP, AN UNIVERSAL DROPLET GENERATOR BASED ON A NON EMBEDDED "CO-FLOW-FOCUSING"
Adrien Dewandre, Javier Rivero-Rodriguez, Youen Vitry, Benjamin Sobac, and Benoit Scheid
Université libre de Bruxelles, BELGIUM

W127.d SILICON CHAMBERS FOR ENHANCED-IMAGING OF DROPLET ARRAYS IN A GRADED TEMPERATURE FIELD
Nicolas Lobato-Dauzier[1], Robin Deteix[1], Matthieu Denoual[2], Soo Hyeon Kim[1], Hiroshi Toshiyoshi[1], Hiroyuki Fujita[3], Teruo Fujii[1], and Anthony J. Genot[4]
[1]University of Tokyo, JAPAN, [2]Greyc - ENSICAEN/CNRS, FRANCE, [3]Tokyo City University, JAPAN, and [4]LIMMS-IIS/CNRS, FRANCE

W128.d TOWARDS DEVELOPMENT OF DROPLET MICRO-REACTOR FOR INDUSTRIAL RELEVANT SCREENING IN BIOTECHNOLOGY
Kartik Totlani, Thorben de Riese, Maxime Bisschops, Walter van Gulik, Michiel Kreutzer, and Volkert van Steijn
Technical University Delft, THE NETHERLANDS

d - Fundamentals in Microfluidics and Nanofluidics
Electrokinetic Phenomena

M129.d TUNING DETERMINISTIC LATERAL DISPLACEMENT SEPARATION WITH AC ELECTROKINETICS
Victor Calero Martin[1], Pablo Garcia-Sanchez[2], Antonio Ramos[2], and Hywel Morgan[1]
[1]University of Southampton, UK and [2]Universidad de Sevilla, SPAIN

M130.d ION CONCENTRATION POLARISATION FOR PARTICLE MESOPOROSITY DIFFERENTIATION
Vasileios A. Papadimitriou, Miguel Solsona, Wouter Olthuis, Albert van den Berg, and Jan C.T. Eijkel
University of Twente, THE NETHERLANDS

T129.d OBSERVATION OF MEMBRANE CHANGES AND VIABILITY OF CELLS IN A PARALLELIZED ELECTROROTATION PLATFORM
Kevin Keim, Mohamed Z. Rashed, and Carlotta Guiducci
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W129.d **DIELECTROPHORETIC ANALYSIS: A TOOL FOR STUDYING THE IMPACT OF ORGANIC SOLVENTS ON WHOLE-CELL BIOCATALYSTS**
Miriam S. Epping, Armin Grundmann, Harald Groeger, and Martina Viefhues
Bielefeld University, GERMANY

W130.d **"TUNABLE NANOGATE" DEVICE FOR SIZE-SORTING OF NANOPARTICLES**
Satoko Fujiwara, Tatsuro Endo, Hideaki Hisamoto, and Kenji Sueyoshi
Osaka Prefecture University, JAPAN

d - Fundamentals in Microfluidics and Nanofluidics
Modeling/Numerical Simulation

M131.d **SIMULATION OF THE MIGRATION OF RIGID NON-SPHERICAL PARTICLES IN CURVED MICRO CHANNELS**
Thomas E. Hafemann and Jochen Fröhlich
Technical University Dresden, GERMANY

T130.d **A TRANSPORT-REACTION MODEL FOR EXPANDING THE DYNAMIC RANGE OF LATERAL FLOW IMMUNOASSAYS USING REAL-TIME IMAGING**
Sathishkumar Narayanaswamy and Bhushan J. Toley
Indian Institute of Science, INDIA

T131.d **UNRAVEL THE PHYSICS OF PARTICLE FOCUSING MECHANISM IN MICROCHANNELS**
Marzieh Chaharlang and Brady Goenner
University of Utah, USA

W131.d **OPTIMIZING RESIDENCE TIME DISTRIBUTION IN CAPILLARY-BASED SYSTEMS USING COMPUTATIONAL FLUID DYNAMIC SIMULATIONS**
Kirandeep K. Gill[1], Deema A. Masoudi[1], Sughan Narayanasamy[1], Patrick Hester[2], Pedro Estrela[1], and Nuno M. Reis[1]
[1]University of Bath, UK and [2]Lamina Dielectrics Ltd, UK

d - Fundamentals in Microfluidics and Nanofluidics
Nanofluidics/Nanofluidic Phenomena

M132.d **NANO X-RAY DIFFRACTOMETRY DEVICE TO INVESTIGATE STRUCTURE OF WATER IN NANOCHANNELS**
Kazuma Mawatari[1], Jun Shirai[1], Koji Ohara[2], Shinji Kohara[3], Toshio Yamaguchi[4], Koji Yoshida[4], and Takehiko Kitamori[1]
[1]University of Tokyo, JAPAN, [2]Japan Synchrotron Radiation Research Institute, JAPAN, [3]National Institute for Materials Science, JAPAN, and [4]Fukuoka University, JAPAN

M133.d **UNRAVELING THE UNEXPECTED CHANNEL-LENGTH-DEPENDENT NANOFLUIDIC SALINITY GRADIENT POWER: EXPERIMENTS AND MODELING**
Li-Hsien Yeh and Po-Hsien Peng
National Taiwan University of Science and Technology, TAIWAN

T132.d **THERMAL DIFFUSIVITY MEASUREMENT IN NANOCHANEL BY PHOTOTHERMAL OPTICAL PHASESHIFT SPECTROSCOPY**
Kazuma Mawatari, Tokio Sato, and Takehiko Kitamori
University of Tokyo, JAPAN

W132.d **EFFECT OF PORE SIZE ON SLIP FLOW IN MICRO- AND NANO-POROUS MEDIA**
Md Minhajul Islam and D. Jed Harrison
University of Alberta, CANADA

W133.d **THERMAL AND ELECTROKINETIC EFFECT ON DIFFUSIOOSMOSIS-DRIVEN IONIC TRANSPORT THROUGH NANOPORES**
Jongwan Lee[1], Kyunghun Lee[1], Cong Wang[2], Dogyeong Ha[1], Jungyul Park[2], and Taesung Kim[1]
[1]Ulsan National Institute of Science and Technology (UNIST), KOREA and [2]Sogang University, KOREA

d - Fundamentals in Microfluidics and Nanofluidics
Platforms Based on Capillary Forces

M134.d **A HYDROGEL MICRONEEDLE PATCH FOR CONTINUOUS MONITORING OF GLUCOSE FROM INTERSTITIAL FLUID**
Somayeh Ramezanian and Jacqueline C. Linnes
Purdue University, USA

M135.d **ENABLING RHEOLOGICAL ANALYSIS OF COMPLEX FLUIDS AT THE POINT-OF-NEED**
Jose C. Contreras-Naranjo and Victor M. Ugaz
Texas A&M University, USA

M136.d **POINT-OF-CARE 2DPN ELISA WITH AUTOMATED ENHANCED DETECTION OF AMPLIFIED NUCLEIC ACIDS**
Kristin M. Byers[1], Anna R. Bird[1], Hyndae Cho[2], and Jacqueline Linnes[1]
[1]Purdue University, USA and [2]Crosslife Technologies Inc., USA

T133.d **3D PRINTED DOMINO CAPILLARIC CIRCUITS WITH INTEGRATED REAGENTS AND SAMPLE AUTONOMOUS ALIQUOTING FOR DIAGNOSTICS**
Oriol Ymbern, Arya Tavakoli, Mohamed Yafia, Andy Ng, and David Juncker
McGill University, CANADA

T134.d **ADVANCES IN FLUID CONTROL TECHNIQUES FOR PAPER BASED MICROFLUIDIC DEVICES (MICROPADS)**

Aditya R. Jangid, E. Brandon Strong, Carsten Knutsen, Jay T. Wells, Megan L. Mitchell, Brittany Lore, Nick Tod, Emiliano Escamilla, Andres W. Martinez, and Nathaniel W. Martinez
California Polytechnic State University, USA

T135.d **EVAPORATION FLOW: ANALYSIS THAT IS INDEPENDENT OF HUMIDTY AND TEMPERATURE**

Marta K. Orlowska[1], Bin Guan[1], Rossen Sedev[1,2], and Craig Priest[1]
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T136.d **PORTABLE UV ADSORPTION BASED HIGHLY SENSITIVE DETECTION OF HAEMOGLOBIN ON PLASTIC MICROFLUIDIC CHIP**

Wei Wang, Khine Maw Kay, and WeiDong Zhou
*Singapore Institute of Manufacturing Technology (A*Star), SINGAPORE*

W134.d **3D-PRINTED PASSIVE GRADIENT GENERATORS**

Cesar Parra, Hans Van Cauteren, Ruben Dochy, Clement Achille, and Rob Ameloot
KU Leuven, BELGIUM

W135.d **DEVELOPMENT OF LASER-CUT MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICE WITH SUCROSE VALVE FOR AUTOMATED COMPETITIVE ELISA OF AFLATOXIN B1**

Sumamal Charernchai[1], Miyuki Chikae[1], Wanida Wonsawat[2], Daisuke Hirose[1], Phan T. Tue[3], and Yuzuru Takamura[1]
[1]Japan Advanced Institute of Science and Technology (JAIST), JAPAN, [2]Suan Sunandha Rajabhat University, THAILAND, and [3]Tokyo Institute of Technology, JAPAN

W136.d **MERGING 3D PRINTING WITH PAPER-BASED MICROFLUIDIC DEVICES (MICROPADS)**

E. Brandon Strong, Aditya R. Jangid, Siddharth Prabhu, Megan L. Mitchell, Jonah Holbrook, Jacqueline Chuang, Oscar Mercado, Bo Liu, Andres W. Martinez, and Nathaniel W. Martinez
California Polytechnic State University, USA

W137.d **SYNTHETIC MICROFLUIDIC PAPER WITH SUPERIOR FLUORESCENT SIGNAL READOUT**

Weijin Guo, Jonas Hansson, and Wouter van der Wijngaart
KTH Royal Institute of Technology, SWEDEN

d - Fundamentals in Microfluidics and Nanofluidics
Others

M137.d **BOUNDARY LAYER MODIFICATION FOR A MICROTESLA ROTOR PUMPING OF NON-NEWTONIAN FLUIDS**
Jessica Hallgath and Joe Fujiou Lo
University of Michigan, USA

M138.d **DIRECT IMAGING OF CHANNEL CROSS-SECTION FOR INVESTIGATING INERTIAL FOCUSING DYNAMICS IN A CURVED CHANNEL**
Jian Zhou and Ian Papautsky
University of Illinois, Chicago, USA

T137.d **A FACILE AND ROBUST METHOD FOR THE PREPARATION OF QUASI-DOUBLE EMULSIONS USING A HIGH-DENSITY MICROWELL ARRAY**
Yin Wu, Xu Cui, Zongwei Zhang, and Gang Li
Chongqing University, CHINA

T138.d **LATERAL FOCUSING IN VISCOELASTIC FLOW IN SPIRAL CHANNELS**
Hua Gao, Jian Zhou, and Ian Papautsky
University of Illinois, Chicago, USA

W138.d **INVESTIGATING VON WILLEBRAND FACTOR (VWF) PROTEOLYSIS BY ADAMTS13 ON-A-CHIP**
Amid Shakeri and Tohid F. Didar
McMaster University, CANADA

W139.d **SPATIOTEMPORALLY GENERATED MICROFLUIDS WITH THE AID OF HIGH-SPEED FLOW CONTROL**
Yusuke Kasai, Makoto Saito, Shinya Sakuma, and Fumihito Arai
Nagoya University, JAPAN

e - Micro- and Nanoengineering
Bonding, Sealing & Interfacing Technologies

M139.e **CUSTOMIZABLE WORLD-TO-CHIP INTERFACE IN COMBINATION WITH MULTIPHASE MICROFLUIDICS EXPANDING THE APPLICATION RANGE OF A LAB-ON-CHIP PLATFORM**
Hannah Bott, Franz Lärmer, and Jochen Hoffmann
Robert Bosch GmbH, GERMANY

M140.e **HIGH-YIELD PARALLEL ASSEMBLY OF SINGLE SPHERE ON GEOMETRICALLY DESIGNED ADHESIVE POLYMER-POST**
Junghyun Bae, Seojoo Kim, and Wook Park
Kyung Hee University, KOREA

M141.e **POST-PROCESSING COMPATIBLE PACKAGING METHOD FOR CMOS OPTO-NANOFLUIDIC CHIP**
Jaehwan Kim, Huaiyu Meng, and Rajeev J. Ram
Massachusetts Institute of Technology, USA

T139.e **ENABLING COST-EFFECTIVE GLASS MICROFLUIDICS FOR LIFE SCIENCES: THE EXAMPLE OF A COMPLETE SEQUENCING DEVICE FABRICATED AT WAFER SCALE**
Sarah Heub[1], Rita Smajda[1], Guy Voirin[1], Gilles Weder[2], Anke Sanz-Velasco[2], Tobias Bauert[2], Alexios Tzannis[2], Raphaël Pugin[1], and Michel Despont[1]
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T140.e **INTEGRATION OF POROUS SILICON-BASED OPTICAL APTASENSORS IN A 3D-PRINTED MICROFLUIDIC PLATFORM FOR PROTEIN DETECTION**
Sofia Arshavsky-Graham[1,2], Niklas-Maximilian Epping[2], Anton Enders[2], Thomas Scheper[2], Janina Bahnemann[2], and Ester Segal[1]
[1]Technion – Israel Institute of Technology, ISRAEL and
[2]Leibniz Universität Hannover, GERMANY

T141.e **RAPID PDMS-GLASS BONDING USING ARGON PLASMA JET TOWARDS AUTOMATIC CHIP FABRICATION**
Shih-Chi Chuang and Chia-Hung Dylan Tsai
National Chiao Tung University, TAIWAN

W140.e **FABRICATION OF PMMA MICROFLUIDIC DEVICES INTEGRATED WITH POROUS PETE MEMBRANES FOR RELIABLE CYTOTOXICITY TESTS OF DRUGS**
Thao Nguyen[1], Su Hyun Jung[1], Min Seok Lee[1], Tae-Eun Park[1], Suk-kyun Ahn[2], and Joo H. Kang[1]
[1]Ulsan National Institute of Science and Technology (UNIST), KOREA and
[2]Pusan National University, KOREA

W141.e **PDMS BONDING WITHOUT O2 PLASMA TREATMENT**
Haruka Oda and Shoji Takeuchi
University of Tokyo, JAPAN

e - Micro- and Nanoengineering
Micropumps, Valves, and Dispensers

M142.e **3D FABRICATED PNEUMATIC GAIN VALVES FOR INTEGRATED LOGIC CONTROLLERS**
Hsiang-Chih Yang, Liang-Yen Liu, and Yu-Chuan Su
National Tsing Hua University, TAIWAN

M143.e **STAINLESS MICROFLUIDIC PROBE WITH 2D-ARRAY APPERTURES**
Shogo Kamiya, Koki Takahashi, Hidekuni Takao, Fusao Shimokawa, and Kyohei Terao
Kagawa University, JAPAN

T142.e **HIGH-THROUGHPUT, LARGE-SCALE AND ULTRA-LOW PROTEIN CONSUMPTION: A NOVEL DROPLET-BASED PROTEIN CRYSTALLIZATION METHOD**

Huifeng Wang[1], Jianbo Chen[2], Sheng Ye[1], and Qun Fang[1]
[1]Zhejiang University, CHINA and [2]Hangzhou Jiejing Biotechnolgy Co., Ltd, CHINA

T143.e **VALVES AND PUMPS USING COLLAGEN-BASED TUBULAR CONSTRUCTS**

Kelvin Chow, Nima Vaezzadeh, and Axel Günther
University of Toronto, CANADA

W142.e **FROM 'DIGITAL' TO 'ANALOGUE' PUMPING: COMPLEMENTING AN EXISTING LAB-ON-CHIP ARCHITECTURE WITH NOVEL MICROFLUIDIC PUMPING METHODS**

Hannah Bott[1], Franz Lärmer[1], Roland Zengerle[2], and Jochen Hoffmann[1]
[1]Robert Bosch GmbH, GERMANY and [2]University of Freiburg, GERMANY

W143.e **MULTIFUNCTIONAL FEMTO PIPETTE IN OPEN MICROFLUIDICS**

Eleonoor Verlinden[1], Masoud Madadelahi[1], Edin Sarajlic[2], Amir Shamloo[3], Andreas E. Engel[1], Urs Staufer[1], and Murali K. Ghatkesar[1]
[1]Delft University of Technology, THE NETHERLANDS, [2]SmartTip B.V., THE NETHERLANDS, and [3]Sharif University of Technology, IRAN

e - Micro- and Nanoengineering
Microscale Fabrication, Patterning, and Integration

M144.e **A FLEXIBLE PLATFORM WITH INKJET-PRINTED ORGANIC ELECTROCHEMICAL TRANSISTORS INTEGRATED IN MICROFLUIDICS FOR SELECTIVE ION DETECTION**

Silvia Demuru, Brince P. Kunnel, and Danick Briand
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

M145.e **ADDITIVE MANUFACTURING OF MULTILAYERED MICROFLUIDIC DEVICES WITH DENSELY PACKED MICROSCALE FEATURES**

Chia-Heng Chu, Enerelt Burentugs, Jacob M. Owens, Ruxiu Liu, Dohwan Lee, and Ali Fatih Sarioglu
Georgia Institute of Technology, USA

M146.e **ARRAY OF SOFT OR HARD MAGNETIC MICROTRAPS BASED ON COMPOSITE POLYMER NOVEL TECHNOLOGY**

Lucie Descamps[1], Samir Mekkaoui[1], Emmanuelle Laurenceau[1], Marie-Charlotte Audry[1], Jessica Garcia[2], Léa Payen[2], Damien Le Roy[3], and Anne-Laure Deman[1]
[1]Lyon Institute of Nanotechnology, FRANCE, [2]Hospices Civils de Lyon, FRANCE, and [3]Institut Lumière Matière, FRANCE

M147.e BULK SYNTHESIS OF HYDROGEL ANISOTROPIC MICROPARTICLES WITH DEGASSED REPLICA MOLDING LITHOGRAPHY
Hyeon Ung Kim, Yong Jun Lee, Hyun Jee Lee, Nak Jun Lee, and Ki Wan Bong
Korea University, KOREA

M148.e DEVELOPMENT OF A LARGE-AREA TALL MICRONEEDLE ARRAY SKIN PATCH WITH RADIATION: A NEW DESIGN AND ITS ASSESSEMENT FOR A LONG-TERM TRANSDERMAL DRUG DELIVERY
Ki-Hwan Nam
Korea Basic Science Institute, KOREA

M149.e FLEXIBLE, TRANSPARENT, SUB-100 μM MICROFLUIDIC CHANNELS WITH FDM 3D-PRINTED THERMOPLASTIC POLYURETHANE
Matt D. Nelson, Nirupama Ramkumar, and Bruce K. Gale
University of Utah, USA

M150.e GRAPHENE-MEDIATED MICRO-PATTERNING OF CONDUCTIVE POLYMERS TOWARD IMPLANTABLE ELECTRODES
Tetsuhiko Teshima[1], Koji Sakai[1], Yoshiaki Kashimura[1], Hiroki Miyazako[1], Hiroshi Nakashima[1], Shingo Tsukada[1], Yuko Ueno[1], Toshihisa Osaki[2], and Shoji Takeuchi[2]
[1]Nippon Telegraph and Telephone Corporation, JAPAN and [2]University of Tokyo, JAPAN

M151.e LOW-COST AND 3D-PRINTED HOLLOW MICRONEEDLE ARRAYS WITH COMPLEX DESIGNS FOR TRANSDERMAL DRUG DELIVERY APPLICATIONS
Christopher Yeung, Haisong Lin, Shawnus A. Chen, Kimber King, Brian King, Farooq Akhtar, and Sam Emaminejad
University of California, Los Angeles, USA

M152.e MINIATURIZED WRINKLED ELECTRODE WITH 30-FOLD ENHANCEMENT IN ELECTROCHEMICAL SIGNAL
Amanda H. Imamura[1], Julia Zakashansky[2], Emanuel Carrilho[1], and Michelle Khine[2]
[1]University of São Paulo, BRAZIL and [2]University of California, USA

M153.e PDMS CURING INHIBITION BY 3D-PRINTED TEMPLATES. WHY? AND HOW TO AVOID IT?
Bastien Venzac, Shanliang Deng, Shuhan Yang, Aufried Lenferink, Cees Otto, and Séverine Le Gac
University of Twente, THE NETHERLANDS

M154.e RAPID FABRICATION OF A SLIPCHIP DEVICE FOR LOCAL STIMULATION USING DESKTOP SLA PRINTING
Megan A. Catterton and Rebecca R. Pompano
University of Virginia, USA

M155.e SELF-DRIVEN SURFACE-ENHANCED RAMAN SCATTERING MICROFLUIDIC DEVICES FABRICATED BY FEMTOSECOND LASER FOR HG2+ DETECTION
Zhi Yu[1], Xiuyun Li[1], and Chunlei Guo[2]
[1]Chinese Academy of Sciences, CHINA and [2]University of Rochester, USA

M156.e STREPTAVIDIN-FUNCTIONALIZED HYDROGEL MICROPARTICLES FOR CUSTOMIZABLE MULTIPLEX BIOMOLECULE DETECTION
Yoon Ho Roh, Hyun Jee Lee, and Ki Wan Bong
Korea University, KOREA

M157.e THREE DIMENSIONAL LIQUID PATTERING WITH MICROMESH STRUCTURE BY 3D PRINTING FABRICATION
Suryong Kim[1], Byungjun Lee[2], Jihoon Ko[1], Youngtaek Kim[1], and Noo Li Jeon[1]
[1]Seoul National University, KOREA and [2]Curiochip Inc., KOREA

T144.e A SANDWICH-STRUCTURED RATION DEVICE BASED ON POLYIMIDE-TRANSFERRED VOLUME SENSOR FOR FLEXIBLE MICROFLUIDIC SYSTEM
Zhihua Pu, Jiaming Ma, Wenwen Li, Xiaochen Lai, Xiao Su, Haixia Yu, and Dachao Li
Tianjin University, CHINA

T145.e A TWO-WAY MEMBRANE-INTEGRATED MICROFLUIDIC DEVICE FOR PERMEATION ASSAYS
Marika Sugimoto, Keisuke Yanagisawa, and Naoki Sasaki
Toyo University, JAPAN

T146.e BIOINSPIRED MICROMECHANICAL INTERLOCKING MICROSTRUCTURES FOR ENHANCED ADHERENCE BETWEEN SOFT ELASTOMERIC LAYERS
Navajit S. Baban[1,2], Ajymurat Orozaliev[2], Christopher. J. Stubbs[1], and Y. AK. Song[1,2]
[1]New York University, USA and [2]New York University, Abu Dhabi, UAE

T147.e DEVELOPMENT OF A LARGE-AREA AND SPHERICAL ARRAY OF POLYMERIC PHOTOVOLTAIC PIXELS FOR ARTIFICIAL VISION
Marta J.I. Airaghi Leccardi, Naïg A.L. Chenais, and Diego Ghezzi
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T148.e DEVELOPMENT OF PZT ACTUATOR ARRAY ON AN ACTIVE-MATRIX OXIDE TFTS FOR SINGLE CELL SPATIAL TRANSCRIPTOMIC AIMING NEUROGENERATIVE DISEASE
Rahul Bhardwaj[1], Phan T. Tue[2], Shinsuke Ishigaki[3], Hidetaka Uno[3], Zhi H. Wang[3], Yoshiaki Ukita[4], Sadahiro Iwabuchi[5], Shinichi Hashimoto[5], Takehiko Oka[6], Kozo Kawahara[6], Gen Sobue[3], Tsuneo Urisu[3], Daisuke Hirose[1], and Yuzuru Takamura[1]
[1]Japan Advanced Institute of Science and Technology (JAIST), JAPAN, [2]Tokyo Institute of Technology, JAPAN, [3]Nagoya University Grad School of Medicine, JAPAN, [4]University of Yamanashi, JAPAN, [5]Kanazawa University, JAPAN, and [6]World Fusion Inc., JAPAN

T149.e FLOW RATE DETERMINATION IN CAPILLARY-DRIVEN MICROFLUIDICS USING COMBINATORIAL SELECTION OF RESISTORS VIA ELECTROWETTING AND SMARTPHONE CONTROL
Marie L. Salva[1], Yuksel Temiz[1], Marco Rocca[2], Yulieth C. Arango[1], Christof M. Niemeyer[2], and Emmanuel Delamarche[1]
[1]IBM Research - Zurich, SWITZERLAND and
[2]Karlsruhe Institute of Technology, GERMANY

T150.e HIGH-VOLUME FABRICATION OF SYLGARD 184 DEVICES FOR SINGLE CELL ANALYTICS

Christina Liedert[1], Benedek Poor[2], Olli-Heikki Huttunen[1], Johanna Hiitola-Keinänen[1], Sanna Aikio[1], Heli Pessa[2], Pinja Elomaa[2], Jussi Hiltunen[1], Päivi Saavalainen[2], and Leena Hakalahti[1]
[1]VTT Technical Research Centre of Finland, FINLAND and
[2]University of Helsinki, FINLAND

T151.e LOW-COST, LARGE-SCALE, CONTINUOUS PRODUCT OF GIANT MAGNETIC MICROPARTICLES, AND CUSTOMIZED FUNCTIONALIZATION

Suk-Heung Song, Sujung Lim, and Wook Park
Kyung Hee University, KOREA

T152.e PARTICLE MANIPULATION ON MAGNETIC GRID PATTERN

Fujio Tsumori
Kyushu University, JAPAN

T153.e RAPID AND LOW-COST FABRICATION AND INTEGRATION OF COMPLEX 3D MICROFLUIDIC ARCHITECTURES FOR LAB-ON-BODY APPLICATIONS

Haisong Lin, Christopher Yeung, Yichao Zhao, Shuyu Lin, Bo Wang, Xuanbing Cheng, Zhaoqing Wang, Tianyou Cai, Wenzhuo Yu, and Sam Emaminejad
University of California, Los Angeles, USA

T154.e ROLL-TO-ROLL MANUFACTURING OF MICROFLUIDIC CHIPS FOR BIOANALYTICAL APPLICATIONS

Jan Hesse[1], Anja Haase[1], Dieter Nees[1], Stephan Ruttloff[1], Johannes Götz[1], Pelin Tören-Özgün[1], Markus Rumpler[1], Martin Smolka[1], Georgios Kokkinis[2], Günther Kriechhammer[2], Daniel Scheidl[2], Bianca Wilfing[2], Ingo Katzmayr[3], Max Sonnleitner[3], Mirko Lohse[4], and Manuel Thesen[4]
[1]Joanneum Research Forschungsgesellschaft mbH, AUSTRIA,
[2]Pessl Instruments GmbH, AUSTRIA, [3]GENSPEED Biotech GmbH, AUSTRIA, and
[4]micro resist technology GmbH, GERMANY

T155.e SELF-PROPELLING MICRO SWIMMER WITH CONTROLLABLE MOTION

Cheolheon Park[1], Y.J Choi[2], H.S Choi[2], S.W Song[2], S.H Kwon[2], and W Park[1]
[1]Kyung Hee University, KOREA and [2]Seoul National University, KOREA

T156.e THE DEVELOPMENT OF A MICROFLUIDIC BLOOD OXYGENATOR WITH FOUR-SIDED GAS TRANSFER CHANNELS

Mohammadhossein Dabaghi, Neda Saraei, Gerhard Fusch, Niels Rochow, John L. Brash, Christoph Fusch, and Ravi Selvaganapathy
McMaster University, CANADA

T157.e 3D PRINTING OF FLUORINATED POLYMERS TO MODULATE THE SURFACE WETTING BEHAVIOUR

Patrick Risch, Dorothea Helmer, Frederik Kotz, and Bastian E. Rapp
University of Freiburg, GERMANY

W144.e ULTRA-THIN GLASS MICRO DOME STRUCTURE (GMDS) FOR MULTIDIRECTIONAL CELL OBSERVATION
Yusufu Aishan, Yalikun Yaxiaer, Satoshi Amaya, Yigang Shen, and Yo Tanaka
Osaka University, JAPAN

W145.e A SIMPLE AND ROBUST FABRICATION METHOD FOR CREATING 3D TAPERED POLYDIMETHYLSILOXANE CHANNELS
Hoon Suk ho[1], Henk-Willem Veltkamp[2], Danielle Baptista[1], Séverine Le Gac[2], and Pamela Habibovi[1]
[1]Maastricht University, THE NETHERLANDS and
[2]University of Twente, THE NETHERLANDS

W146.e APPLICATION OF 3D-PRINTED MICROFLUIDIC DEVICE AND MINIATURE PHOTODETECTION TECHNOLOGY TOWARDS PHOTOMETRY-BASED BIOCHEMICAL ANALSYSIS IN DEEP-SEA
Tatsuhiro Fukuba[1] and Yuki Sano[2]
[1]Japan Agency for Marine-Earth Science and Technology, JAPAN and
[2]Yokohama City University, JAPAN

W147.e BIOMIMETIC UNDULATED MICROWRINKLES CONSTRUCTION BY ORIENTING MICROPARTICLES IN RESPONSIVE HYDROGEL SHEETS VIA DIELECTROPHORESIS
Min-Yu Chiang, Yu-Chih Lo, and San-Yuan Chen
National Chiao Tung University, TAIWAN

W148.e DUAL-FIBER OPTICAL STRETCHER CONFIGURED FOR SINGLE CELL ROTATIONAL MANIPULATION
Liang Huang, Fei Liang, Peng Zhao, Yongxiang Feng, and Wenhui Wang
Tsinghua University, CHINA

W149.e FABRICATION OF A CELL-LOSE-FREE (CLF) CONCAVE WELL ARRAY, AND THE SIZE-CONTROLLED MULTICELLULAR TUMOROID GENERATION
Soo Yeon Jeong, Sang Woo Lee, Tae Hoon Shin, and Gi Seok Jeong
Asan Medical Center, KOREA

W150.e KIRIGAMI-INSPIRED MESH FOR RARE CELL RECOVERY
Yaoping Liu[1], Meixuan Zhang[1], Han Xu[1], Xiaolong Rao[2], and Wei Wang[1]
[1]Peking University, CHINA and [2]Peking University First Hospital, CHINA

W151.e LIGHT DRIVEN MASSIVE INTEGRATE GEL ACTUATOR FOR SINGLE CELL MANIPULATION
Yuha Koike[1], Yoshiyuki Yokoyama[2], and Takeshi Hayakawa[1]
[1]Chuo University, JAPAN and
[2]Toyama Industrial Technology Research and Development Center, JAPAN

W152.e MICROFLUIDIC, HIGHER-THROUGHPUT ICE RECRYSTALLIZATION INHIBITION ASSAY
Prashant Agrawal, Audrey K. Gruneberg, Laurie A. Graham, Peter L. Davies, and Richard D. Oleschuk
Queen's University, CANADA

W153.e PCB-IMPLEMENTED GRAPHENE ELECTROLYTE-GATED FIELD-EFFECT TRANSISTORS FOR BIOSENSING APPLICATIONS
Sotirios Papamatthaiou, Pedro Estrela, and Despina Moschou
University of Bath, UK

W154.e PDMS MICROFLUIDIC DEVICES FABRICATION BY A CYCLIC BIOMACHINING PROCESS
Arrate Santaolalla, Yara Alvarez- Braña, Gorka Gallastegui, Lourdes Basabe-Desmonts, Naiara Rojo, and Fernando Benito-Lopez
University of the Basque Country, SPAIN

W155.e SACRIFICIAL TEMPLATE REPLICATION FABRIACTION OF ARBITRARY THREE-DIMENSIONAL MICROCHANNELS IN FUSED SILICA GLASS
Frederik Kotz, Patrick Risch, Michael Thiel, Alexander Quick, Semih Sevim, Joseph Puigmarti-Luis, Dorothea Helmer, and Bastian E. Rapp
University of Freiburg, GERMANY

W156.e STIMULI-RESPONSIVE HYDROGEL INSTRUMENT BASED ON FRAME TRANSFORMATION (SHIFT) BY UTILIZING DEFOCUSING PHOTOLITHOGRAPHY TECHNIQUE
Jinsik Yoon and Wook Park
Kyung Hee University, KOREA

W157.e THE ENCELADUS ORGANIC ANALYZER: INSTRUMENTATION AND METHODS FOR DETECTING TRACE ORGANIC MOLECULES IN OUR SOLAR SYSTEM
Zachary Estlack[1], Md E. Razu[2], Beau Compton[2], Zachary Duca[3], Amanda Stockton[3], Matin Golozar[4], Anna Butterworth[4], Jeremy McCauley[4], James New[5], Jungkyu Kim[1], and Richard A. Mathies[4]
[1]University of Utah, USA, [2]Texas Tech University, USA, [3]Georgia Tech, USA, [4]University of California, Berkeley, USA, and [5]Univeristy of Kent, UK

e - Micro- and Nanoengineering
Nanoscale Fabrication, Patterning, and Integration

M158.e FABRICATION AND EVALUATION OF FLEXIBLE NANOVALVES IN 2D NANOCHANNELS
Hiroto Kawagishi[1], Shunichi Funano[2], Yo Tanaka[2], Shuichi Kawamata[1], and Yan Xu[1]
[1]Osaka Prefecture University, JAPAN and [2]RIKEN, JAPAN

M159.e HIGH-PERFORMANCE CERAMIC EOF PUMP REALIZED BY MASSIVELY PARALLEL SACRIFICIAL SILICON NANO-PILLAR MOULDING
Lucas J. Kooijman, Yasser Pordeli, Bernard Y. van der Wel, Erwin W. Berenschot, Jan C.T. Eijkel, and Niels R. Tas
University of Twente, THE NETHERLANDS

M160.e RAPID STIMULI-RESPONSIVITY OF HYDROGEL MICROFIBER ACTUATOR WITH SURFACE POROUS STRUCTURE
Masahiko Karube and Hiroaki Onoe
Keio University, JAPAN

T158.e FABRICATION OF NANOCHANNELS WITH EMBEDDED METAL ELECTRODES FOR ACTIVE CONTROL OF ZETA POTENTIAL
Kuang-Hua Chou, Alex Eden, David Huber, and Sumita Pennathur
University of California, Santa Barbara, USA

T159.e LARGE-SCALE NANOPORE ARRAY BASED ON A COST-EFFECTIVE SHRINKAGE PROCESS FOR NANOSIZED TARGET SEPARATION
Y Liu, J Liu, and Wei Wang
Peking University, CHINA

W158.e A SIMPLE METHOD FOR 3D MULTIMATERIAL NANOSTRUCTURE MANUFACTURING
Benoît X.E. Desbiolles, Arnaud Bertsch, and Philippe Renaud
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W159.e FREESTANDING GRAPHENE CVD GROWTH ON INSULATING SUBSTRATE USING GA CATALYST
Tomoki Tsuji, Kenta Arima, Kazuya Yamamura, and Kentaro Kawai
Osaka University, JAPAN

W160.e INTEGRATING A NANOPORE INTO A MICRO-CHANNELED AFM CANTILEVER FOR THE LOCALIZED DETECTION OF IONS AND BIOMOLECULES
Tilman Schlotter[1], Morteza Aramesh[1], Csaba Forro[1], Lievie Drowling-Carter[1], Ines Lüchtefeld[1], Stephan J. Ihle[1], Ivan Shorubalko[2], Vahid Hosseini[1], Dmitry Momotenko[1], Tomaso Zambelli[1], Enrico Klotzsch[3], and Janos Vörös[1]
[1]ETH Zürich, SWITZERLAND, [2]EMPA Dübendorf, SWITZERLAND, and [3]Humboldt Universität zu Berlin, SWITZERLAND

e - Micro- and Nanoengineering
Novel, Smart, and Responsive Materials

M161.e **FABRICATION AND CHARACTERIZATION OF FLEXDYM–POLYCARBONATE DEVICES: IMPLEMENTING NEW MATERIALS FOR ORGAN-ON-CHIP TECHNOLOGIES**
Alexander H. McMillan[1,2], Emma K. Thomée[1,3], Alessandra Dellaquila[1,4], and Sasha Cai Lesher-Pérez[1]
[1]Elvesys, FRANCE, [2]KU Leuven, BELGIUM, [3]University of Strasbourg, FRANCE, and [4]University of Bielefeld, GERMANY

T160.e **3D DIFFUSION-INDUCED MICROFABRICATION OF MECHANICALLY HETEROGENEOUS HYDROGEL FOR BIOMEDICAL APPLICATION**
Chih-Chen Lin, Liang-Yen Liu, and Yu-Chuan Su
National Tsing Hua University, TAIWAN

T161.e **NANOZYME-AMPLIFIED LATERAL FLOW IMMUNOASSAY FOR MOLECULAR SIGNATURE DETECTION OF CARDIOVASCULAR DISEASES**
Marta Broto[1], Yiyun Chen[1], Michael R. Thomas[1], Chris S. Wood[1], Amrit S. Lota[2], Sanjay Prasad[2], and Molly M. Stevens[1]
[1]Imperial College London, UK and [2]Royal Brompton Hospital, UK

W161.e **ENGINEERED 3D ELECTROOSMOTIC MICROCHANNELS FOR RAPID AND MASS TRANSPORTATION OF BODY FLUIDS IN WEARABLE DEVICES**
Shinya Kusama, Kaito Sato, Yuya Matsui, Shotaro Yoshida, and Matsuhiko Nishizawa
Tohoku University, JAPAN

e - Micro- and Nanoengineering
Surface Modification

M162.e **ANALYZING PEPTIDE ADSORPTION STATES VIA NANOWIRE-EMPLOYED INFRARED SPECTROMETRY**
Hiroki Naito[1], Takao Yasui[1], Taisuke Shimada[1], Nobutaka Shioya[2], Takafumi Shimoaka[2], Masayoshi Tanaka[3], Kazuki Nagasima[4], Mina Okochi[3], Takeshi Yanagida[4], Takeshi Hasegawa[2], and Yoshinobu Baba[1]
[1]Nagoya University, JAPAN, [2]Kyoto University, JAPAN, [3]Tokyo Institute of Technology, JAPAN, and [4]Kyushu University, JAPAN

M163.e **NANOFORESTS GROWN ON MICROPILLARS FOR CARBONYL COMPOUNDS PRECONCENTRATION AND SERS DETECTION**
Jie Cheng, Yudong Yang, Haiyang Mao, Yifei Ye, Wenjie Zhao, Xinyu Wei, Yang Zhao, Mingxiao Li, and Chengjun Huang
Chinese Academy of Sciences, CHINA

T162.e **FABRICATION OF TIO2 MICRO-SPIKES AND MICRO-FLOWERS FOR MASSIVELY PARALLEL INTRACELLULAR DELIVERY**

Loganathan Mohan[1], Srabani Kar[2], Balasubramaniam Nandhini[1], Pallavi Gupta[1], Pallavi Shinde[1], Pallab Sinha Mahapatra[1], and Tuhin Subhra Santra[1]
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T163.e **STRETCHABLE AND TRANSPARENT SUPERHYDROPHOBIC AND OLEOPHOBIC PDMS THIN FILM WITH HIERARCHICAL STRUCTURES**

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[1]Chonnam National University, KOREA and
[2]Korea Advanced Institute of Science and Technology, KOREA

W162.e **ADDITIVE SURFACE MODIFICATION BY POLYMER THIN FILM FORMATION USING ELECTROSPRAY DEPOSITION APPARATUS WITH A TERNARY ELECTRODE**

Yuta Kuwahata, Hiroaki Takehara, and Takanori Ichiki
University of Tokyo, JAPAN

W163.e **MASKLESS SURFACE PATTERNING BY PLASMA POLYMERIZATION FOR MULTIBIOSENSING APPLICATIONS**

Laura Barillas[1], Ekaterina Makhneva[1], Ihsan Amin[1], Klaus-Dieter Weltmann[1], Hermann Seitz[2], and Katja Fricke[1]
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[2]University of Rostock, GERMANY

e - Micro- and Nanoengineering
Others

M164.e **PRODUCING PERIODIC SEQUENTIAL FLOW BY GRAVITY-DRIVEN MICROFLUIDIC ACTUATORS**

Zhenglin Li and Sung-Jin Kim
Konkuk university, CHINA

T164.e **SURFACE TENSION DRIVEN SWARM ROBOTS FOR EMERGING COORDINATING MOTIONS**

Koki Yoshida, Tomoki Hayashi, and Hiroaki Onoe
Keio University, JAPAN

W164.e **BUBBLE-ASSISTED MICRO / NANOFLUIDICS: DEMONSTRATION OF BUBBLE GENRATION AND VALVE FUNCTION**

Shun Furukawa, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

f - Sensors and Detection Technologies
Biosensors

M165.f **A MICROFLUIDIC CHIP INTEGRATING IMPEDANCE FLOW CYTOMETRY AND ELECTRIC IMPEDANCE SPECTROSCOPY FOR SINGLE-CELL ELECTRICAL PROPERTY MEASUREMENT**
Yongxiang Feng, Peng Zhao, Fei Liang, Liang Huang, and Wenhui Wang
Tsinghua University, CHINA

M166.f **AN "ENZYME-RESPONSIVE IONIC LIQUID" TOWARD CAPILLARY ARRAY-BASED IMMUNOASSAY MICRODEVICES**
Ryoutarou Oishi, Tatsumi Mizuta, Kenji Sueyoshi, Tatsuro Endo, and Hideaki Hisamoto
Osaka Prefecture University, JAPAN

M167.f **ANALYTE CAPTURE IN AN ARRAY OF FUNCTIONALIZED DROPLETS FOR A REGENERABLE BIOSENSOR**
Charles-Louis Azzopardi[1], Franck Chollet[1], Jean-François Manceau[1], and Wilfrid Boireau[2]
[1]Unviersity Bourgogne Franche-Comté, FRANCE and [2]CNRS, FRANCE

M168.f **CENTRIFUGAL MICROFLUIDIC PLATFORM COMPRISING AN ARRAY OF BEAD MICROCOLUMNS FOR THE MULTIPLEXED COLORIMETRIC QUANTIFICATION OF INFLAMMATORY BIOMARKERS AT THE POINT-OF-CARE**
Ahmad S. Akhtar, Inês F. Pinto, Ruben R.G. Soares, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

M169.f **DEVELOPING INTEGRATED CENTRIFUGAL CONVECTIVE PCR DEVICE FOR DETECTION OF DRUG-RESISTANT GENE**
Sakiko Ushiro, Masato Saito, Wilfred V. Espulgar, and Eiichi Tamiya
Osaka University, JAPAN

M170.f **ELECTRICAL DETECTION OF DEOXYRIBONUCLEASE USING DNA MOLECULES IMMOBILIZED BETWEEN MICROELECTRODES**
Takahiro Himuro, Shota Tsukamoto, and Yoji Saito
Seikei University, JAPAN

M171.f **ENHANCING THE SENSING PERFORMANCE OF APTAMERIC GFETs FOR INTERLEUKIN-6 DETECTION USING NEGATIVE ELECTRIC FIELD**
Zhuang Hao
Harbin Institute of Technology, CHINA

M172.f IDENTIFYING MULTIPLE VIRAL SPECIES AT A SINGLE PARTICLE LEVEL USING A COMBINATION OF NANOPORES AND MACHINE LEARNING APPROACH

Akihide Arima[1], Makusu Tsutsui[2], Takeshi Yoshida[2], Kazumichi Yokota[2], Wataru Tonomura[2], Takao Yasui[1], Taisuke Shimada[1], Tomoko Yamazaki[2], Kenji Tatematsu[2], Shun'ichi Kuroda[2], Masateru Taniguchi[2], Takashi Washio[2], Tomoji Kawai[2], and Yoshinobu Baba[1]
[1]Nagoya University, JAPAN and [2]Osaka University, JAPAN

M173.f INKJET-PRINTED SINGLE-STEP COMPETITIVE IMMUNOASSAY MICRODEVICE FOR THE DETECTION OF CRP

Yuko Kawai[1], Masaya Kakuta[2], Kenji Sueyoshi[1], Tatsuro Endo[1], and Hideaki Hisamoto[1]
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M174.f MULTIPLEXED DETECTION OF PLANT HEALTH BIOMARKERS

Eduardo J.S. Brás, Ana M. Fortes, Virginia Chu, Pedro Fernandes, and João P. Conde
Universidade de Lisboa, PORTUGAL

M175.f PRIMARY HAEMOSTASIS ASSESMENT BY DIRECT SENSING OF PLATELETS-COLLAGEN INTERACTION DYNAMICS IN A BROAD SHEAR RATE SPECTRUM WITH MICROACOUSTIC BIOSENSOR APPROACH

Aleksandr Oseev[1], Fabien Remy-Martin[1], Alain Rouleau[1], Thomas Pierre Lecompte[2], Guillaume Mourey[3], Jean-François Manceau[1], Céline Élie-Caille[1], Wilfrid Boireau[1], Emmanuel Demaistre[4], and Thérèse Leblois[1]
[1]Université de Bourgogne Franche-Comté, FRANCE, [2]Hôpitaux Universitaires de Genève, SWITZERLAND, [3]University Hospital of Besançon, FRANCE, and [4]Centre Hospitalier Universitaire de Dijon, FRANCE

M176.f RETROREFLECTIVE OPTICAL IMMUNOSENSING BASED ON THE BIOSPECIFIC PARTICLE MOVEMENT AND TIME-LAPSE IMAGING IN MICROCHANNEL

Kyung Won Lee, Kwan Young Jeong, Ka Ram Kim, Hyeong Jin Chun, and Hyun C. Yoon
Ajou University, KOREA

M177.f SMARTPHONE-INTEGRATED IMMUNOSENSING BASED ON THE WAVELENGTH FILTERING FROM CHROMOGENIC ENZYMATIC REACTION

Kwan Young Jeong, Saemi Kim, Kyung Won Lee, Ka Ram Kim, Hyeong Jin Chun, and Hyun C. Yoon
Ajou University, KOREA

M178.f SWEAT LACTIC ACID MONITORING SYSTEM USING PLASTER-BASED SAMPLING DEVICE FOR APPLICATION IN INTENSIVE CARE UNIT

Yusuke Suzuki[1], Hiroyuki Kudo[1], Akiko Hosoyama[2], Kenichiro Morisawa[2], and Yasuhiko Taira[2]
[1]Meiji University, JAPAN and [2]St. Marianna University School of Medicine, JAPAN

M179.f **USE OF A GLASS FIBRE MEMBRANE (GF/DVA) TOWARDS THE DEVELOPMENT OF A LATERAL FLOW ASSAY FOR DETECTION OF TRICLOSAN IN RIVER WATER**

Samantha Richardson, Alexander Iles, Jeanette M. Rotchell, Mark Lorch, and Nicole Pamme
University of Hull, UK

T165.f **A DNA NANOTECHNOLOGY TOOLBOX FOR MIX-AND-MATCH BIOSENSOR DESIGN**

Iene Rutten[1], Saba Safdar[1], Karen Ven[1], Devin Daems[2], Dragana Spasic[1], and Jeroen Lammertyn[1]
[1]KU Leuven, BELGIUM and [2]University of Antwerp, BELGIUM

T166.f **AN ON-DEMAND HIGH-INTEGRATED MICROFLUIDIC DROPLET PLATFORM FOR SENSITIVE AND RAPID SERS DETECTION OF EPSTEIN-BARR VIRUS DNA**

Wen Wu, Ya-Ning Wang, Wen-Shu Zhang, Wen-Qi Ye, Yue Wang, and Zhang-Run Xu
Northeastern University, CHINA

T167.f **ANGULAR-BASED MEASUREMENT IN 3D PAPER-BASED ANALYTICAL DEVICES**

Dong-Ho Kim, Seong-Geun Jeong, Byungjin Lee, and Jae-Seong Kim
Chungnam National University, KOREA

T168.f **CONTINUOUS TISSUE-SELEX UTILIZING A PRE-SCREENING PROCESS FOR MEMBRANE TARGETING APTAMERS ON AN INTEGRATED MICROFLUIDIC SYSTEM**

Yi-Cheng Tsai and Gwo-Bin Lee
National Tsing Hua University, TAIWAN

T169.f **SLIPSZYMES: LUBRICANT-INFUSED DNAZYME SURFACES FOR DETECTION OF PATHOGENIC BACTERIA IN COMPLEX FLUIDS**

Hanie Yousefi[1], Akansha Prasad[2], Amid Shakeri[2], Hsuan-Ming Su[2], Carlos D.M. Filipe[2], and Tohid F. Didar[2]
[1]University of Toronto, CANADA and [2]McMaster University, CANADA

T170.f **ELECTRICAL DETECTION OF THE MECHANICAL ALTERATION OF SICKLING RED BLOOD CELLS WITHIN A MICROFLUIDIC CAPILLARY NETWORK**

Tieying Xu, Maria Lizarralde, Jean Roman, Wassim El Nemer, Bruno Le Pioufle, and Olivier Français
ENS Paris-Saclay, FRANCE

T171.f **FLEXIBLE MICROFLUIDIC NETWORKS ENABLING RAPID PROTOTYPING OF NOVEL SURFACE CHEMISTRIES IN LAB-ON-CHIP SYSTEMS FOR BIOSENSING APPLICATIONS**

Francesca Costantini[1], Lorenzo Iannascoli[1], Nicola Lovecchio[1], Mara Mirasoli[2], Giampiero de Cesare[1], Domenico Caputo[1], and Augusto Nascetti[1]
[1]Sapienza University of Rome, ITALY and [2]Alma Mater University of Bologna, ITALY

T172.f **IMMUNOASSAYS BASED ON HOT ELECTRON INDUCED ELECTROCHEMILUMINESCENSE ON DISPOSABLE CELL CHIPS WITH PRINTED ELECTRODES**

Nur-E-Habiba[1], Kalle Salminen[2], Päivi Grönroos[2], Esko Kauppinen[2], Veikko Sariola[1], and Sakari Kulmala[2]
[1]Tampere University, FINLAND and [2]Aalto University, FINLAND

T173.f **ISOTHERMAL NANOPORE DNA SENSING USING DIFFUSION CURRENT**

Wei-Lun Hsu, Soumyadeep Paul, Zhen Gu, Ya-Lun Ho, Jean-Jacques Delaunay, Yi-Lun Ying, Yi-Tao Long, and Hirofumi Daiguji
University of Tokyo, JAPAN

T174.f **OPTICAL BIOSENSING ON A SMART HANDSET: NON-SPECTROSCOPIC SENSING PLATFORM BASED ON RETROREFLECTION**

Ka Ram Kim, Hyeong Jin Chun, Kyung Won Lee, Kwan Young Jeong, and Hyun Chul Yoon
Ajou University, KOREA

T175.f **QUANTUM-LIMITED 2D SENSORS FOR PH AND BIOSENSING**

Arvind Balijepalli[1], Son T. Le[1], Harish C. Pant[2], and Curt A. Richter[1]
[1]National Institute of Standards and Technology (NIST), USA and [2]National Institutes of Health (NIH), USA

T176.f **SENSITIVE REAGENT-FREE ELECTROCHEMICAL DETECTION OF HORMONE CORTISOL USING HYBRID NANOCOMPOSITE-BASED SENSORS**

Bo Wu, Ye Liu, Yi-Chieh Wang, and Li-Jing Larry Cheng
Oregon State University, USA

T177.f **SURFACE ENHANCED RAMAN SCATTERING ACTIVE CHIPS FOR MYCOTOXIN DETECTION IN FOOD MATRICES**

Alessandro Chiadò, Chiara Novara, Niccolò Paccotti, Paola Rivolo, Francesco Geobaldo, and Fabrizio Giorgis
Politecnico di Torino, ITALY

T178.f **THREE-DIMENSIONAL PAPER-BASED DEVICE WITH INTEGRATED TIMER FUNCTION FOR PERSONAL IMMUNOASSAY APPLICATIONS**

Chung-An Chen, Chiao-Wen Chen, Shi-Jia Chen, Chin-Chou Chu, and Chien-Fu Chen
National Taiwan University, TAIWAN

T179.f **UTILIZING A LIGHT IMAGE ARRAY WITH VARYING LIGHT INTENSITIES IN OPTICALLY-INDUCED DIELECTROPHORESIS (ODEP)-BASED MICROFLUIDIC SYSTEM FOR A CULTURE-FREE SCREEN OF BACTERIA WITH DIFFERENT RESPONSES TO ANTIBIOTICS TREATMENT**

Po-Yu Chu, Chih-Yu Chen, and Min-Hsien Wu
Chang Gung University, TAIWAN

W165.f A NOVEL HANDHELD MICRO-CAPILLARY BIOSENSOR FOR SALIVARY CORTISOL

Young J. Kim, Wan J. Kim, and Bong J. Jeong
Electronics and Telecommunications Research Institute, KOREA

W166.f A NOVEL OXYGEN NANOSENSOR FOR IN VITRO MICROENVIRONMENT MONITORING IN MESENCHYMAL STEM CELL CULTURE

Yunjie Hao[1,2], Manohar P. Koduri[1,2], Fangang Tseng[1], James Henstock[2], John A. Hunt[3], and Judy Curran[2]
[1]National Tsing Hua University, TAIWAN, [2]University of Liverpool, UK, and [3]Nottingham Trent University, UK

W167.f AN INTEGRATED CAPILLARY-DRIVEN IMPEDIMETRIC BIOSENSOR FOR MICROPARTICLE-LABELED IMMUNOASSAY

Ali Khodayari Bavil[1], Drago Sticker[2], Peter Ertl[2], and Jungkyu Kim[3]
[1]Texas Tech University, USA, [2]Vienna University of Technology, AUSTRIA, and [3]University of Utah, USA

W168.f ASSESSMENT OF CARDIOMYOCYTE MATURITY BY MEASURING CHANGES IN CONTRACTILE FORCE ACCORDING TO DRUG CONCENTRATION

Jong Yun Kim and Dong-Weon Lee
Chonnam National University, KOREA

W169.f CYTOTOXICITY ASSAYS WITH SINGLE CELL RESOLUTION BASED ON SINGLE CELL ADHESION DOT ARRAYS (SCADA)

Maite Garcia-Hernando, Alba Calatayud-Sanchez, Jaione Etxebarria-Elezgarai, Marian M. De Pancorbo, Fernando Benito-Lopez, and Lourdes Basabe-Desmonts
University of the Basque Country, SPAIN

W170.f DIGITAL PHOTOGRAPHY TECHNIQUES IN MICROFLUIDICS: EXPOSURE BRACKETING FOR HIGH DYNAMIC RANGE MAGNETOPHORETIC CYTOMETRY

Ozgun Civelekoglu, Ningquan Wang, Ruxiu Liu, Mert Boya, Tevhide Ozkaya-Ahmadov, and A. Fatih Sarioglu
Georgia Institute of Technology, USA

W171.f ENHANCED RAMAN AND FLUORESCENCE SIGNALS BY HIGH-ASPECT-RATIO NANOCORRUGATED PARTICLES FOR LIQUID-BIOPSY MIRNA DETECTION.

Kuan-Hung Chen, Meng-Ju Pan, and Fan-Gang Tseng
National Tsing Hua University, TAIWAN

W172.f HIGH-PERFORMANCE BIOELECTRONIC NOSE BASED ON OLFACTORY RECEPTOR-INCORPORATED NANODISC FOR THE DETECTION OF DEATH-ASSOCIATED ODOR

Hyun Seok Song
Korea Institute of Science and Technology (KIST), KOREA

W173.f INTEGRATED MICROFLUIDIC DEVICE FOR UNIVERSAL SECRETORY IMMUNOPHENOTYPING STUDIES FOR ADHERENT AND NON-ADHERENT CELLS

Roberto Rodríguez-Moncayo, Rocio J. Jimenez-Valdes, Alan M. González-Suárez, and Jose L. García-Cordero
Centro de Investigación y de Estudios Avanzados del IPN, MEXICO

W174.f LAB-ON-A-CHIP BASED ELECTROCHEMICAL DETECTION OF FERRITIN

Mayank Garg[1], Martin G. Christensen[2], Alexender Iles[2], Amit L. Sharma[1], Nicole Pamme[2], and Suman Singh[1]
[1]CSIR-CSIO, INDIA and [2]University of Hull, UK

W175.f PRECIPITATION-BASED ENZYMATIC SIGNAL AMPLIFICATION IN HYDROGELS

Nidhi Juthani and Patrick S. Doyle
Massachusetts Institute of Technology, USA

W176.f REAL-TIME PROCESSING OF CODE-MULTIPLEXED COULTER SIGNALS BASED ON A TWO-STAGE DEEP LEARNING STRUCTURE

Ningquan Wang, Ruxiu Liu, Norh Asmare, and A. Fatih Sarioglu
Georgia Institute of Technology, USA

W177.f DEVELOPMENT OF IN-AIR EIS SENSOR ENABLING TO DISTINGUISH IMPEDANCE OF CELL POPULATION AND TIGHT-JUNCTION FORMATION AT AIR-LIQUID INTERFACE

Seungbeom Noh and Hanseup Kim
University of Utah, USA

W178.f SURFACE PLASMON RESONANCE IMAGING ENHANCED BY ACTIVE MASS TRANSPORT

Marion Costella[1], Marie Frénéa-Robin[2], Julien Marchalot[3], Julien Moreau[1], Oleh Andreiev[1], Paul Charette[1], and Michael Canva[1]
[1]Université de Sherbrooke, FRANCE, [2]Université Lyon [1], FRANCE, and [3]INSA Lyon, FRANCE

W179.f ULTRASENSITIVE MIRNA DETECTION USING TARGET CYCLING AMPLIFICATION AND DIGITAL MICROFLUIDICS

Bin Wang
Tsinghua University, CHINA

W180.f VERTICALLY SHEATHING LAMINAR FLOW-BASED IMMUNOASSAY USING SIMULTANEOUS DIFFUSION-DRIVEN IMMUNE REACTIONS

Amanzhol Kurmashev[1], Seyong Kwon1, Je-Kyun Park[2], and Joo. H Kang[1]
[1]Ulsan National Institute of Science and Technology (UNIST), KOREA and [2]Korea Advanced Institute of Science and Technology (KAIST), KOREA

f - Sensors and Detection Technologies
Chemical & Electrochemical Sensors

M180.f **A DUAL-GATE ALGAN/GAN HEMT BASED PH SENSOR WITH TUNABLE SENSITIVITY**
Qi Cheng, Maojun Wang, Ming Tao, Ruiyuan Yin, Yue Li, Nana Yang, Chengchen Gao, Yilong Hao, Wenhua Xu, and Zhenchuan Yang
Peking University, CHINA

M181.f **AN ULTRASENSITIVE SENSOR AND ANALYTICAL FRAMEWORK FOR WEARABLE AND MULTIPLEXED DRUG MONITORING APPLICATIONS**
Shuyu Lin, Bo Wang, Wenzhuo Yu, and Sam Emaminejad
University of California, Los Angeles, USA

M182.f **"CALCIUM-RESPONSIVE IONIC LIQUID" FOR NAKED EYE-BASED MULTIPLEXED ION DETECTION ON A PDMS MICROCHANNEL ARRAY DEVICE**
Tatsumi Mizuta, Yusuke Niwa, Kenji Sueyoshi, Tatsuro Endo, and Hideaki Hisamoto
Osaka Prefecture University, JAPAN

M183.f **LIGHT THERAPY DEVICE WITH TRANSEPIDERMAL POTENTIAL-BASED REAL-TIME MONITORING OF SKIN BARRIER RECOVERY**
Hajime Konno, Yuina Abe, Shotaro Yoshida, and Matsuhiko Nishizawa
Tohoku University, JAPAN

M184.f **REDUCED GRAPHENE OXIDE-MODIFIED MICROELECTRODE FOR ANTIPSYCHOTIC CLOZAPINE DETECTION IN FINGER-PRICKED BLOOD**
Rajendra Prasad Shukla, Remi Cezelles, and Hadar Ben-Yoav
Ben-Gurion University, ISRAEL

M185.f **VOLATILE ODORANT DETECTION BY OLFACTORY RECEPTORS FORMED IN A LIPID BILAYER MEMBRANE**
Tetsuya Yamada, Koki Kamiya, Toshihisa Osaki, and Shoji Takeuchi
[1]Kanagawa Institute of Industrial Science and Technology, JAPAN and
[2]University of Tokyo, JAPAN

T180.f **A DROPLET MICROFLUIDIC-BASED SENSOR FOR MONITORING RIVER NITRATE/NITRITE CONCENTRATIONS**
Adrian M. Nightingale[1], Sammer-ul Hassan[1], Brett M. Warren[2], Kyriacos Makris[2], Gareth W.H. Evans[1], Evanthia Papadopoulou[2], Sharon Coleman[1,2], and Xize Niu[1,2]
[1]University of Southampton, UK and [2]SouthWestSensor Ltd, UK

T181.f **AN ULTRA-LOW POWER HIGHLY-SENSITIVE VAPOR SENSOR BASED ON QUANTUM TUNNELING**
Aishwaryadev Banerjee, Rugved Likhite, Hanseup Kim, and Carlos H. Mastrangelo
University of Utah, USA

T182.f DETECTION OF SWELL/SHRINK BEHAVIOR OF STIMULI-RESPONSIVE HYDROGEL BY SINGLE WALLED CARBON NANOTUBE STRAIN SENSOR
Erika Iyama[1], Daisuke Kiriya[2], and Hiroaki Onoe[1]
[1]Keio University, JAPAN and [2]Osaka Prefecture University, JAPAN

T183.f MICROFLUIDIC PARTICLE DAM FOR VISUAL AND QUANTITATIVE DETECTION OF LEAD IONS
Gaobo Wang, Lok Ting Chu, Hogi Hartanto, William B. Utomo, Reynard A. Pravasta, and Ting-Hsuan Chen
City University of Hong Kong, HONG KONG

T184.f RAPID ON-SITE DETERMINATION OF TOTAL NITROGEN IN WATER USING A PORTABLE ANALYTICAL SYSTEM
Chen Zhao[1], Longyan Chen[1], Guowei Zhong[2], Qiyang Wu[1], Jinxia Liu[2], and Xinyu Liu[1]
[1]University of Toronto, CANADA and [2]McGill University, CANADA

W181.f AN ELECTROENZYMATIC SENSOR WITH ENHANCED SENSITIVITY AND SELECTIVITY FOR WEARABLE NUTRIENT MONITORING APPLICATIONS
Xuanbing Cheng, Bo Wang, Yichao Zhao, and Sam Emaminejad
University of California, Los Angeles, USA

W182.f ANALYTICAL MICROSYSTEM FOR THE POTASSIUM MONITORING IN WINE MAKING PROCESSES
Antonio Calvo Lopez, Ernest Martinez Bassedas, Mar Puyol Bosh, and Julian Alonso Chamarro
Autonomous University of Barcelona, SPAIN

W183.f INELASTIC TUNNELING SPECTROSCOPY MICROMACHINED GAS SENSOR FOR ENVIRONMENTAL APPLICATIONS
Aishwaryadev Banerjee, Rugved Likhite, Hanseup Kim, and Carlos H. Mastrangelo
University of Utah, USA

W184.f MICROFLUIDICS UNDER THE SEA: A LAB-ON-CHIP SENSOR FOR IN-SITU MEASUREMENTS OF OCEAN ALKALINITY
Allison M. Schaap, Stathios Papadimitriou, Edward Mawji, Socratis Loucaides, and Matthew Mowlem
National Oceanography Centre, UK

W185.f THREE DIMENSIONAL CARBON MULTIELECTRODE ARRAYS FOR ELECTROCHEMICAL DETECTION OF DOPAMINE IN LOW CONCENTRATIONS
Joonas J. Heikkinen, Noora Isoaho, Ville Jokinen, and Sami Franssila
Aalto University, FINLAND

f - Sensors and Detection Technologies
Label-free Detection

M186.f ABSORBANCE SPECTRA-ACTIVATED DROPLET SORTING FOR HIGH-THROUGHPUT LABEL-FREE CHEMICAL IDENTIFICATION
Todd A Duncombe[1], Aaron Ponti[1], Alice Mauer[2], Florian Seebeck[2], and Petra S. Dittrich[1]
[1]ETH Zürich, SWITZERLAND and [2]University of Basel, SWITZERLAND

M187.f IMPEDANCE SPECTROSCOPY AND OPTICAL IMAGING FOR AUTOMATED MULTIMODAL PALYNOLOGY
Riccardo Reale[1], Adele De Ninno[2], Maria A. Brighetti[1], Luca Businaro[2], Alessandro Travaglini[1], Paolo Bisegna[1], and Federica Caselli[1]
[1]University of Rome Tor Vergata, ITALY and
[2]CNR Institute for Photonics and Nanotechnologies, ITALY

M188.f IMPEDANCE-BASED QUANTIFICATION OF PARASITIC VOLTAGE DROPS FOR OPTIMIZING AC ELECTROKINETIC TRAPPING IN MICROFLUIDIC DEVICES
Nathan Swami
University of Virginia, USA

M189.f SERS DETECTION OF Aß40 AND ZN2+-Aß40 PEPTIDES ON AN ELECTRODE NANOGAP ENABLED PLATFORM
Katrin H.P. Vu[1], Ming-Che Lee[2], Gerhard H. Blankenburg[2], Yun-Ru Chen[2], Andreas Erbe[3], Leonardo Lesser-Rojas[4], and Chia-Fu Chou[2]
[1]National Tsing Hua University, GERMANY, [2]Academia Sinica, TAIWAN,
[3]Norwegian University of Science and Technology, NORWAY, and
[4]University of Costa Rica, COSTA RICA

T185.f A HIGH THROUGHPUT ELECTRONIC CELL ANALYZER FOR CELL MECHANOPHENOTYPING
Norh Asmare, A K M Arifuzzman, Ningquan Wang, Mert Boya, Rixiu Liu, and A. Fatih Sarioglu
Georgia Institute of Technology, USA

T186.f DIELECTROPHORETIC DETECTION OF IMATINIB RESISTANCE IN K562 CELLS USING A LAB-ON-A-CHIP SYSTEM
Yagmur Demircan Yalcin[1], Taylan Berkin Toral[2], Sertan Sukas[2], Ender Yildirim[2], Ozge Zorlu[2], Ufuk Gunduz[1], and Haluk Kulah[1]
[1]Middle East Technical University, TURKEY and
[2]Mikro Biyosistemler Electronics Inc., TURKEY

T187.f LABEL-FREE ELECTRICAL IMPEDANCE SPECTROSCOPY BASED SENSOR-IN-A-TUBE FOR SINGLE CELLS ANALYSIS

Aleksandr Egunov[1], Mariana Medina-Sánchez[1], Dmitriy D. Karnaushenko[1], Nicole Kretschmann[2], Katja Akgün[2], Tjalf Ziemssen[2], Daniil Karnaushenko[1], and Oliver G. Schmidt[1,3]
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[3]Chemnitz University of Technology, GERMANY

T188.f NON-INVASIVE DETECTION OF NEPHROTOXICITY ON A PROXIMAL TUBULE ON-A-CHIP BY TRANS-EPITHELIAL/TRANS-ENDOTHELIAL ELECTRICAL RESISTANCE MEASUREMENTS

Ryohei Ueno[1], Ramin B. Sadeghian[1], Yuji Takata[1], Kiyotaka Tsuji[2], and Ryuji Yokokawa[1]
[1]Kyoto University, JAPAN and [2]Panasonic Corporation, JAPAN

T189.f TOWARDS REAL-TIME MULTIPARAMETRIC IMPEDANCE CYTOMETRY

John McGrath[1], Riccardo Reale[2], Carlos Honrado[1], Paolo Bisegna[2], Nathan Swami[1], and Federica Caselli[2]
[1]University of Virginia, USA and [2]University of Rome Tor Vergata, ITALY

W186.f DETECTION OF STEROID HORMONES VIA TARGET-INDUCED QUENCHING OF QUANTUM DOTS

Ye Liu, Bo Wu, Yi-Chieh Wang, and Li-Jing Larry Cheng
Oregon State University, USA

W187.f FAST REACTION SCREENING COMBINING SEGMENTED FLOW MICROFLUIDICS AND SURFACE ENHANCED RAMAN SPECTROSCOPY

Alexander Mendl[1], Michael Köhler[2], and Dusan Boskovic[1]
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W188.f LABEL-FREE NANOPARTICLE DETECTION IN 10^2 nm CHANNEL BY UTILIZING PHOTOTHERMAL OPTICAL DIFFRACTION

Yoshiyuki Tsuyama and Kazuma Mawatari
University of Tokyo, JAPAN

W189.f SEPARATION OF MITOCHONDRIAL DISEASED CELLS BASED ON ORGANELLE-LEVEL DIFFERENCE USING A DEP MICROFLUIDIC SYSTEM

Pei-Yin Chi[1,2], Ting-Wei Chuang[1], Tzu-Tsai Chu[1], Chia-Tzu Kuo[1], Yu-Ting Wu[3], Vahid Farmehini[4], Dar-Bin Shieh[5], Fan-Gang Tseng[2], Yau-Huei Wei[3], Nathan Swami[4], and Chia-Fu Chou[1]
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[3]Changhua Christian Hospital, TAIWAN, [4]University of Virginia, USA, and
[5]National Cheng-Kung University, TAIWAN

W190.f **SINGLE-CELL MICROSCOPIC RAMAN SPECTROSCOPY FOR RAPID MICROBIAL DETECTION**
Daisuke Onoshima, Kentaro Uchida, Hiroshi Yukawa, Kenji Ishikawa, Masaru Hori, and Yoshinobu Baba
Nagoya University, JAPAN

f - Sensors and Detection Technologies
Optical Detection & Imaging

M190.f **OPTOFLUIDIC CYTOMETRY FOR BACTERIA DETECTION**
Shi L. Feng, Patricia Y. Liu, Jing B. Zhang, Yi Zhang, Nguyen K. Truc, Yap P.H. Eric, Wee Ser, and Ai Q. Liu
Nanyang Technological University, SINGAPORE

M191.f **A NEW MICROFLUIDIC FLOW MONITORING METHOD USING INFRARED SENSOR UNIT**
Thinh H. Nguyen[1], Alex Milleman[1], Sthitodhi Ghosh[1], Vinitha TU, [1] Bon-Ki Ku[2] and Chong H. Ahn[1]
[1]University of Cincinnati, USA and [2]CDC-NIOSH, USA

M192.f **DEVELOPMENT OF A HIGH SPATIO-TEMPORAL RESOLUTION ELECTROCHEMICAL IMAGING SYSTEM USING A CLOSED BIPOLAR ELECTRODE ARRAY**
Tomoki Iwama, Kumi Y. Inoue, Hiroya Abe, Tomokazu Matuse, and Hitoshi Shiku
Tohoku University, JAPAN

M193.f **HIGH-THROUGHPUT OPTOFLUIDIC 3D CELL IMAGING**
Masashi Ugawa and Sadao Ota
University of Tokyo, JAPAN

M194.f **LENSFREE EARLY DETECTION OF BACTERIAL COLONIES**
Vincent Haguet[1], Dorothée Balle[1], and Gaëlle Saint-Auret[2]
[1]CEA Grenoble, FRANCE and [2]RIKEN, FRANCE

M195.f **OPEN SOURCE LAB AUTOMATION FOR HIGH THROUGHPUT MICROFLUIDIC MICROBIOLOGY**
Sarah H. Needs and Alexander D. Edwards
University of Reading, UK

M196.f **OPTICAL INJECTION OF FLUORESCENCE MICROSENSOR TO A SPECIFIC CELL BY OPTICAL TWEEZERS AND LOCAL HEATING**
Hisataka Maruyama, Ryota Yanagawa, and Fumihito Arai
Nagoya University, JAPAN

M197.f **PHOTOTHERMAL DETECTION PROBE USING OPTICAL FIBER**
Hisashi Shimizu and Shoji Takeuchi
University of Tokyo, JAPAN

M198.f PORTABLE FLUORESCENCE POLARIZATION ANALYZER FOR ON-SITE MULTISAMPLE IMMUNOASSAY

Ayano Nakamura[1], Osamu Wakao[1], Ken Satou[2], Mitsutoshi Aoyagi[3], Kazuhiko Nishimura[3], Chikaaki Mizokuchi[2], Ken Sumiyoshi[2], Masatoshi Maeki[1], Akihiko Ishida[1], Hirofumi Tani[1], Koji Shigemura[2], Akihide Hibara[4], and Manabu Tokeshi[1]
[1]Hokkaido University, JAPAN, [2]Tianma Japan, Ltd., JAPAN,
[3]Hokkaido Institute of Public Health, JAPAN, and [4]Tohoku University, JAPAN

M199.f ULTRA-SMALL FOUR-EMISSION-POINT SPECTRAL-DETECTION SYSTEM BY SEVEN-DICHROIC-MIRROR ARRAY

Takashi Anazawa[1] and Motohiro Yamazaki[2]
[1]Hitachi, Ltd., JAPAN and [2]Hitachi High-Technologies Corporation, JAPAN

T190.f A DEEP LEARNING ENABLED FIELD-PORTABLE CELL ANALYZER

Dongmin Seo[1], Sanghoon Shin[1], Haechang Yang[1], Seungmin Myeong[1], Euijin Han[1], Sangwoo Oh[2], Moonjin Lee[2], and Sungkyu Seo[1]
[1]Korea University, KOREA and
[2]Korea Research Institute of Ships & Ocean Engineering, KOREA

T191.f CONTINUOUS GLUCOSE MONITORING INSIDE SPHEROIDS BY MESOPOROUS FLUORESCENT MICROPARTICLES

Jun Sawayama and Shoji Takeuchi
University of Tokyo, JAPAN

T192.f HEAVY METALS MICROANALYSER FOR WATER QUALITY MONITORING BASED ON SELECTIVE CARBON DOTS FLUORESCENCE QUENCHING

Alex Pascual, Miguel Berenguel-Alonso, Julian Alonso-Chamarro, and Mar Puyol
Universitat Autònoma de Barcelona, SPAIN

T193.f IN-SITU MONITORING OF ESCHERICHIA COLI GROWTH ON DIGITAL MICROFLUIDICS BY OPTICAL CHEMOSENSORS FOR MICROBIAL CELL METABOLISM STUDIES

Wenting Qiu and Stefan Nagl
Hong Kong University of Science and Technology, HONG KONG

T194.f LAB-ON-A-CD CAPABLE OF CONTINUOUS FLUORESCENCE MEASUREMENT

Kazuhiro Morioka[1], Takuya Nojo[2], Akihide Hemmi[3], Norio Teshima[4], Tomonari Umemura[1], Shungo Kato[2], Katsumi Uchiyama[2], and Hizuru Nakajima[2]
[1]Tokyo University of Pharmacy and Life Sciences, JAPAN,
[2]Tokyo Metropolitan University, JAPAN, [3]Mebius Advanced Technology Ltd., JAPAN, and [4]Aichi Institute of Technology, JAPAN

T195.f NANOLITRE-SCALE CAPILLARY CELL WITH EXTENDED EFFECTIVE OPTICAL PATH AND REDUCED STRAY LIGHT FOR ABSORPTION PHOTOMETRIC DETECTION

Jozef Sestak, Josef Planeta, and Vladislav Kahle
Czech Academy of Sciences, CZECH REPUBLIC

T196.f **PEROVSKITE NANOCRYSTAL – HYFLON AD 60 OPTICAL THERMAL SENSORS FOR TEMPERATURE IMAGING IN DIGITAL MICROFLUIDICS**
Zhangdi Lu[1], Yanxiu Li[2], Wenting Qiu[1], Andrey L. Rogach[2], and Stefan Nagl[1]
[1]Hong Kong University of Science and Technology, HONG KONG and
[2]City University of Hong Kong, HONG KONG

T197.f **PLASMON-BASED DETECTION OF TOXICITY BIOMARKERS DERIVED FROM MICROPLASTICS-TREATED MODEL ANIMALS**
Seungki Lee, Tae Ho Kang, Jinhee Choi, and Inhee Choi
University of Seoul, KOREA

T198.f **SPATIALLY HOMOGENEOUS ILLUMINATION BY A COMPACT OPTICAL ARCHITECTURE**
Vincent Haguet and Bernard Sartor
CEA Grenoble, FRANCE

W191.f **A MICROFLUIDIC CHIP WITH AN INTEGRATED MICRO-HEATER AND LUMINESCENT TEMPERATURE SENSOR FOR SPATIALLY RESOLVED ANALYSIS OF DNA MELTING CURVES**
Xuyan Lin, Chenyu Cui, and Stefan Nagl
Hong Kong University of Science and Technology, HONG KONG

W192.f **COLLOIDAL PHOTONIC CRYSTAL ARRAY CHIP BASED ON NANOPARTICLE SELF-ASSEMBLY ON PATTERNED HYDROPHOBIC SURFACE FOR SIGNAL-ENHANCED FLUORESCENT ASSAY**
Rui Guo, Dan-Ni Wang, Yun-Yun Wei, Ying-Zhi Zhang, Chun-Guang Yang, and Zhang-Run Xu
Northeastern University, CHINA

W193.f **HIGH THROUGHPUT SIZE-DETERMINATION AND MULTIPLEXED FLUORESCENCE ANALYSIS OF SINGLE BIOLOGICAL PARTICLES IN A NANOFLUIDIC DEVICE**
Quenting Lubart[1], Sune Levin[1], Stephan Block[2], Silver Jõemetsa[1], Sriram KK[1], Fredrik Höök[1], Marta Bally[3], Elin K. Esbjörner[1], and Fredrik Westerlund[1]
[1]Chalmers University of Technology, SWEDEN, [2]Freie Universität Berlin, GERMANY, and [3]Umeå University, SWEDEN

W194.f **INTEGRATED GLASS MICROPRISMS' MATRIX FOR LIGHT COUPLING AND OPTICAL SENSING SYSTEMS IN LAB-ON-A-CHIP PLATFORMS**
Aleksandra Pokrzywnicka, Patrycja Sniadek, and Rafal Walczak
Wroclaw University of Science and Technology, POLAND

W195.f **MACHINE LEARNING BASED IMAGE ANALYSIS OF OPTICALLY DETECTED NEURONS CULTURED IN-VITRO ON HIGH-DENSITY MICRO-PILLAR SUBSTRATES AND CHIPS**
Ana Bedalov
University of Split, CROATIA

W196.f MAGNETIC LEVITATION-BASED PROTEIN DETECTION USING LENSLESS DIGITAL INLINE HOLOGRAPHIC MICROSCOPY
Sena Yaman, Kerem Delikoyun, and Hüseyin C. Tekin
Izmir Institute of Technology, TURKEY

W197.f PHOTO-THERMALLY ENHANCED LIGHT SCATTERING METHOD FOR NANO PARTICLE DETECTION
Dan Maeda, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

W198.f PORTABLE 3D PRINTED COLORIMETRIC SENSOR FOR REMOTE SOIL MEASUREMENT
Sepideh Keshan Balavandy[1], Fernando Maya[1], Ashley Townsend[1], Kimberley Frederick[2], and MichaelI C. Breadmore[1]
[1]University of Tasmania, AUSTRALIA and [2]Skidmore College, USA

W199.f REGULATION OF LIPID DROPLETS IN LIVE PREADIPOCYTES USING OPTICAL DIFFRACTION TOMOGRAPHY AND RAMAN SPECTROSCOPY
Yang Liu, C.M. Hsieh, Lip Ket Chin, Shi Lun Feng, JingBo Zhang, and Ser Wee
Nanyang Technological University, SINGAPORE

f - Sensors and Detection Technologies
Physical Sensors

M200.f BIOMECHANICAL STUDY OF LIVING CAENORHABDITIS ELEGANS EMBRYOS USING CELLULAR FORCE MICROSCOPY
Roger Krenger[1], Jan T. Burri[2], Thomas Lehnert1, Bradley J. Nelson[2], and Martin A.M. Gijs[1]
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[2]ETH Zürich, SWITZERLAND

M201.f ON-CHIP TRANSPARENT FLOW VELOCITY SENSOR MADE FROM ULTRA-THIN GLASS SHEET PROCESSED BY FEMTOSECOND LASER
Yaxiaer Yalikun[1], Kaigu Pan[1], Yo Tanaka[2], and Yoichiroh Hosokawa[1]
[1]Nara Institute of Science and Technology, JAPAN and [2]RIKEN, JAPAN

M202.f SURFACE-PATTERNED SILICON CANTILEVER INTEGRATED WITH STRAIN SENSOR TO EVALUATE CONTRACTILE BEHAVIORS IN REAL TIME
Mingming Dong, Nomin-Erdene Oyunbaatar, Dong-Su Kim, and Dong-Weon Lee
Chonnam National University, KOREA

T199.f A LIQUID-METAL ENCAPSULATED BAND-AID LIKE SENSOR FOR NON-INVASIVE MONITORING OF FONTANELLE PRESSURE OF INFANTS
Jaewon Park, Ziyi Huang, and Baoyue Zhang
Southern University of Science and Technology, CHINA

T200.f **LOW SAMPLE CONSUMING, PORTABLE VISCOMETER BASED ON LAPLACE-INDUCED-PUMPING AND REFRACTION FOR HEMORHEOLOGY**
Matthias Hermann[1], Kyle Bachus[1], Graham Gibson[2], and Richard Oleschuk[1]
[1]Queen's University, CANADA and [2]CMC Microsystems, CANADA

T201.f **REAL-TIME SENSING OF OSTEOCLAST ACTIVITY ON A MICROFLUIDIC CHIP BY ELECTRICAL IMPEDANCE**
Alexander P.M. Guttenplan[1], Marijn Lemmens[2], Gilles Oudebrouckx[2], Daniel Pereira[1], Hoon Suk Rho[1], Zeinab Tahmasebi Birgani[1], Stefan Giselbrecht[1], Roman K. Truckenmüller[1], Ronald Thoelen[2], and Pamela Habibovic[1]
[1]Maastricht University, THE NETHERLANDS and [2]Hasselt University, BELGIUM

T202.f **SURFACE-TEXTURED PHOTOSENSITIVE POLYMER THIN FILM AS NEW CRACK-BASED STRAIN SENSOR TO MONITOR HUMAN MOTION**
Jongsung Park[1], Dong-Su Kim[1], Ji-Kwan Kim[2], and Dong-Weon Lee[1]
[1]Chonnam National University, KOREA and [2]Gwangju University, KOREA

W200.f **LIQUID METAL-EMBEDDED MICROFLUIDIC PRESSURE SENSOR FOR REAL-TIME MONITORING**
Jaewon Park, Sunghyun Cho, Junyi Yao, Younghak Cho, Hyunsoo Kim, and Kelu Peng
Southern University of Science and Technology, CHINA

W201.f **MEASURING MAGNETIC SUSCEPTIBILITY OF PARAMAGNETIC SOLUTION USING DIAMAGNETIC REPULSION OF POLYMER MICROPARTICLES**
Bong Hwan Jang, Seyong Kwon, and Joo H. Kang
Ulsan National Institute of Science and Technology (UNIST), KOREA

W202.f **SINGLE BACTERIA DETECTION VIA PIEZOELECTRIC SUSPENDED MICROCHANNEL RESONATORS**
Annalisa De Pastina[1], Damien Maillard[1], Birge Özel Duygan[2], Jan Roelof van der Meer[2], and Luis Guillermo Villanueva[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and [2]University of Lausanne, SWITZERLAND

f - Sensors and Detection Technologies
Others

M203.f **FACILE FABRICATION OF FULLY INTEGRATED PAPER-BASED ORIGAMI MICRODEVICE FOR COLORIMETRIC DISCRIMINATION OF VIABLE PATHOGENS**
Phuoc Tung Trieu and Nae Yoon Lee
Gachon University, KOREA

T203.f **INKJET 3D-PRINTED MICROCANTILEVER NANOGRAM RESOLUTION MASS SENSOR**
Patrycja Sniadek, Bartosz Kawa, and Rafal Walczak
Wroclaw University of Science and Technology, POLAND

W203.f **DISPOSABLE MULTI-SENSORS FOR DIRECT DETECTING PH, CONDUCTIVITY AND TEMPERATURE OF SALIVA IN MOUTH**
Wei S. Kao, Wei H. Yen, Yu W. Hung, and Che H. Lin
National Sun Yat-sen University, TAIWAN

W204.f **PATTERN CLASSIFICATION AND SEGMENTATION IN MULTIDEMENSIONAL DNA CONCENTRATION SPACES BY SYNTHETIC CHEMICAL REACTION NETWORK**
Shu Okumura, Guillaume Gines, Yannick Rondelez, Teruo Fujii, and Anthony Genot
Institution of Industrial Science, JAPAN

g - Other Applications of Microfluidics
Artificial Intelligence and microfluidics

M204.g **DEEP CONVOLUTIONAL NEURAL NETWORKS FOR VIABILITY ANALYSIS DIRECTLY FROM CELL HOLOGRAMS CAPTURED USING LENSLESS HOLOGRAPHIC MICROSCOPY**
Kerem Delikoyun, Ersin Cine, Muge Anil-Inevi, Engin Ozcivici, Mustafa Ozuysal, and H. Cumhur Tekin
Izmir Institute of Technology, TURKEY

T204.g **DEEP LEARNING ANALYSIS OF NEUTROPHIL NUCLEAR MORPHOLOGY DURING NETOSIS USING A MICROFLUIDIC DEVICE**
Alan M. Gonzalez-Suarez, Roberto Rodriguez-Moncayo, Jose A. Hernandez-Ortiz, and Jose L. Garcia-Cordero
Centro de Investigacion y de Estudios Avanzados del IPN, MEXICO

g - Other Applications of Microfluidics
Fuel Cells

M205.g **DRYING CAPABILITY OF RMFC MICO-CHANNEL EVAPORATOR WITH IMPROVED FLOW DISTRIBUTION, GAS VENTING MANIFOLD AND ARTIFICIAL CAVITIES**
Hung-Yu Chen[1], Fan-Gang Tseng[1], and Chin Pan[2]
[1]National Tsing Hua University, TAIWAN and [2]City University of Hong Kong, HONG KONG

W205.g **A HIGH HYDROGEN CONVERSION AND HIGH-TEMPERATURE CATALYTIC HYDROGEN MICRO-CHIP COMBUSTOR APPLIED TO THERMAL MANAGEMENT FOR METHANOL REFORMER**
Ming-Jyun Li, Shang-Yun Huang, and Fan-Gang Tseng
National Tsing Hua University, TAIWAN

g - Other Applications of Microfluidics
Microfluidics for X-Ray and e-Beam Applications

M206.g **DROPLET TRIGGERING FOR SERIAL FEMTOSECOND CRYSTALLOGRAPHY USING 3D-PRINTED MICROFLUIDICS**

Dai Hyun Kim, Austin Echelmeier, Jorvani Cruz Villarreal, Sahir Gandhi, Sebastian Quintana, Ana Egatz-Gomez, and Alexandra Ros
Arizona State University, USA

M207.g **TRACKING TRANSIENT CHANGES ON THE MILLI-SECOND TIME-SCALE: X-RAY SPECTROSCOPY AND MICROFLUIDIC MIXING**

Thomas Kroll[1], Leland B. Gee[2], Diego A. Huyke[2], Augustin Braun[2], Michael Mara[2], Matthew D. James[2], Ashwin Ramachandran[2], Dimosthenis Sokaras[1], Uwe Bergmann[1], Edward I. Solomon[2], Daniel D. DePonte[1], and Juan G. Santiago[2]
[1]SLAC National Accelerator Laboratory, USA and [2]Stanford University, USA

T205.g **A THREE-DIMENSIONAL MICROFLUIDIC MIXER WITH INDEPENDENTLY ADJUSTABLE MIXING AND PROBING REGIONS**

Diego A. Huyke, Ashwin Ramachandran, Thomas Kroll, Daniel P. DePonte, and Juan G. Santiago
Stanford University, USA

T206.g **SAMPLE CONSUMPTION REDUCTION FOR SERIAL CRYSTALLOGRAPHY USING WATER-IN-OIL DROPLETS**

Austin Echelmeier[1], Jorvani Cruz Villarreal[1], Daihyun Kim[1], Sahir Gandhi[1], Ana Egatz-Gomez[1], Darren Thifault[1], Jesse D. Coe[1], Gerrit Brehm[2], Caleb Madsen[1], Sebastian Quintana[1], Sasa Bajt[3], Marc Messerschmidt[1,4], Jose Domingo[1], Dominik Oberthuer[3], Max O. Wiedorn[3], Holger Fleckenstein[3], Sabine Botha[1], Derek Mendez[1], Juraj Knoska[2], Jose Martin Garcia[1], Hao Hu[1], Stella Lisova[1], Aschkan Allahgholi[3], Yaroslav Gevorkov[3], Kartik Ayyer[3], Steve J. Aplin[3], Helen M. Ginn[5], Heinz Graafsma[3], Andrew J. Morgan[3], Dominic Greiffenberg[6], Alexander Klujev[3], Torsten Laurus[3], Jennifer Poehlsen[3], Ulrich Trunk[3], Filipe R.N.C. Maia[7], Davide Mezza[6], Raimund Fromme[1], Britta Weinhausen[4], Grant Mills[4], PatrikVagovic[4], Yoonhee Kim[4], Joachim Schulz[4], Katerina Doerner[4], Jolanta Sztuk-Dambietz[4], Manuela Kuhn[3], Thomas D. Grant[8], Thomas A. White[3], Valerio Mariani[3], Anton Barty[3], Adrian P. Mancuso[4], Uwe Weierstall[1], John C.H. Spence[1], Henry N. Chapman[3], Nadia A. Zatsepin[1], Petra Fromme[1], Richard A. Kirian[1], and Alexandra Ros[1]
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T207.g **UNDERSTANDING THE LIPID NANOPARTICLES STRUCTURE DYNAMICS USING A TIME-RESOLVED SAXS MEASUREMENT**

Masatoshi Maeki, Niko Kimura, Kazuki Shimizu, Kento Yonezawa, Nobutaka Shimizu, Akihiko Ishida, Hirofumi Tani, and Manabu Tokeshi
Hokkaido University, JAPAN

W206.g **CRYO-MICROFLUIDIC DEVICES ENABLE MILLISECOND TIME-CORRELATION BETWEEN LIVE-IMAGING AND CRYO-ELECTRON MICROSCOPY IN CAENORHABDITIS ELEGANS**

Marie Fuest[1], Miroslava Schaffer[1], Giovanni M. Nocera[1], Rodrigo I. Galilea-Kleinsteuber[1], Michael Heymann[1], Jürgen M. Plitzko[1], and Thomas P. Burg[2]
[1]Max Planck Institute for Biophysical Chemistry, GERMANY and
[2]TU Darmstadt, GERMANY

W207.g **TIME-RESOLVED STRUCTURE DETERMINATION VIA RAPID MIXING MICROFLUIDICS**

Martin Trebbin[1], Diana C.F. Monteiro[1], and Godfrey Beddard[2]
[1]University at Buffalo, USA and [2]University of Edinburgh, UK

g - Other Applications of Microfluidics
Power Devices

W208.g **ION BASED PRESSURE DRIVEN ELECTRIC POWER GENERATOR USING MICRO/NANO GLASS POROUS DEVICE**

Yo Tanaka[1], Satoshi Amaya[1], Wataru Nagafuchi[1], Norihiro Kamamichi[2], and Yaxiaer Yalikun[1]
[1]RIKEN, JAPAN and [2]Tokyo Denki University, JAPAN

g - Other Applications of Microfluidics
Others

M208.g **A MICRO-FLUIDIC DEVICE TO MEASURE ANTIOXIDATIVE CAPACITY OF TEA CATECHINS**

Alexandra Homsy[1], Laure Jeadupeux[1], Marzena Walaszczyk[1], Claudio Prieur[1], Frédéric Truffer[1], Martial Geiser[1], Isabelle Udrisard[1], Agnieszka Kosinska Cagnazzo[1], Wilfried Andlauer[1], and Harry J. Whitlow[2]
[1]University of Applied Sciences and Arts Western Switzerland, SWITZERLAND and
[2]University of Louisiana, USA

M209.g **DEVELOPMENT OF CONTROLLED RELEASE TABLET REAGENTS EMBEDDED COMPACT NUTRIENT ANALYZER FOR CONTINUOUS MONITORING OF NUTRIENT CONTENT IN CROP BODY**

Toshihiro Kasama[1], Naoki Hirohama[1], Yoshishige Endo[1], Takumi Okamoto[2], Tetsushi Koide[2], Chiharu Sone[3], Masashi Komine[3], Yukio Yaji[3], Atsushi Ogawa[3], and Ryo Miyake[1]
[1]University Tokyo, JAPAN, [2]Hiroshima University, JAPAN, and
[3]Akita Prefectural University, JAPAN

T208.g **ARTIFICIAL PHEROMONE EFFECT IMPOSED ON REAL LIVING MICROALGAE CELLS CONFINED IN A MICROCHIP WITH OPTICAL FEEDBACK SYSTEM**

Kazunari Ozasa[1], June Won[2], Simon Song[2], and Mizuo Maeda[1]
[1]RIKEN, JAPAN and [2]Hanyang University, KOREA

T209.g **THE UNIVERSAL LAB-ON-CHIP PLATFORM FOR BIO-NANOSATELLITE**

Agnieszka Podwin, Adrianna Graja, Dawid Przystupski, Danylo Lizanets, Jan A. Dziuban, and Rafal Walczak
Wroclaw University of Science and Technology, POLAND

W209.g **CONTINUOUS FLOW ANALYSIS OF ATMOSPHERIC ICE-NUCLEATING PARTICLES IN THE EASTERN MEDITERRANEAN**

Mark D. Tarn[1], Sebastien N.F. Sikora[1], Grace C.E. Porter[1], Bethany V. Wyld[1], Naama Reicher[2], Matan Alayof[2], Alexander D. Harrison[1], Yinon Rudich[2], Jung-uk Shim[1], and Benjamin J. Murray[1]
[1]University of Leeds, UK and [2]Weizmann Institute of Science, ISRAEL

W210.g **MEASURING THE NUCLEATION KINETICS OF ARAGONITE USING A SELF-DIGITIZATION MICROFLUIDIC CHIP**

Zongwei Zhang, Yuan Gao, Shunbo Li, and Gang Li
Chongqing University, CHINA