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, Linz, 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\(^1\) and Joel Voldman\(^1\)
\(^1\)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\textsuperscript{1}, Patrick Misun\textsuperscript{2}, and Tomaso Zambelli\textsuperscript{2}
\textsuperscript{1}IBM Research Zürich, SWITZERLAND and \textsuperscript{2}ETH Zürich, SWITZERLAND

Workshop 8
LIFE CELL IMAGING IN MICROFLUIDICS
Tom Lummen\textsuperscript{1}, Oliver Biehlmayer\textsuperscript{2}, and Gregor Schmidt\textsuperscript{1}
\textsuperscript{1}ETH Zürich, Basel, SWITZERLAND and \textsuperscript{2}University Basel, SWITZERLAND

Workshop 9
3D PRINTING TOOLS
Michael Breadmore\textsuperscript{1}, Rosanne Guijt\textsuperscript{2}, Greg Nordin\textsuperscript{3}, and Egan Doeven\textsuperscript{2}
\textsuperscript{1}University of Tasmania, AUSTRALIA, \textsuperscript{2}Deakin University, AUSTRALIA, and \textsuperscript{3}Brigham Young University, USA

Workshop 10
ORGAN-ON-A-CHIP: MERGING MICROFABRICATION WITH TISSUE ENGINEERING
Peter Loskill\textsuperscript{1}, Olivier Guenat\textsuperscript{2}, and Olivier Frey\textsuperscript{3}
\textsuperscript{1}Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, Stuttgart, GERMANY, \textsuperscript{2}University of Bern, SWITZERLAND, and \textsuperscript{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

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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

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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\textsuperscript{1}, Sheng Yuan Leong\textsuperscript{1}, Megha Upadya\textsuperscript{1}, Fang Kong\textsuperscript{1}, Hong Kit Lim\textsuperscript{1}, Rinkoo Dalan\textsuperscript{2}, Chor Yong Dalton Tay\textsuperscript{1}, Ming Dao\textsuperscript{1}, and Han Wei Hou\textsuperscript{1}
\textsuperscript{1}Nanyang Technological University, SINGAPORE and
\textsuperscript{2}Tan Tock Seng Hospital, SINGAPORE

10:10 SEPARATION OF SINGLE EXOSOMES UTILIZING A COMPOSITE NANOF uidIC STRUCTURE
Haruka Ishibashi\textsuperscript{1}, Osamu Ishibashi\textsuperscript{1}, Aya Horikawa\textsuperscript{1}, Mika Hayashi\textsuperscript{1}, and Yan Xu\textsuperscript{1,2}
\textsuperscript{1}Osaka Prefecture University, JAPAN and \textsuperscript{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. Beech¹, Kevin Keim², Bao Dang Ho¹, Carlotta Guiducci², and Jonas O. Tegenfeldt¹
            ¹Lund University, SWEDEN and
            ²École Polytechnique Fédérale de Lausanne, (EPFL) SWITZERLAND

10:10       SIZE-BASED BIOMOLECULAR SEPARATION ENABLED BY FIELD-EFFECT ELECTROOSMOSIS
            Vesna Bacheva¹,², Federico Paratore¹,², Shimon Rubin¹, Govind V. Kaigala², and Moran Bercovici¹
            ¹Technion - Israel Institute of Technology, ISRAEL and ²IBM Research – Zürich,

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Session 1C1 - Synthetic Biology Using Droplets
Sydney Room

09:30       DROPLET-BASED MICROFLUIDICS FOR BOTTOM-UP SYNTHETIC BIOLOGY
            Thomas Beneyton¹, Dorothee Krafft², Celina Love², Mathias Girault¹, Claudia Bednarz²,
            Christin Kleineberg², Christian Woelfer², Ivan Ivanov², Tanja Vidakovic-Koch²,
            Kai Sundmacher², T.-Y. Dora Tang², and Jean-Christophe Baret¹
            ¹University of Bordeaux, FRANCE and ²Max 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 Iwai¹, Maren Wehrs², Peter W. Kim¹, Jess Sustarich¹, Trent R. Northen²,
            Hector Garcia Martin², Paul D. Adams³, and Anup K. Singh¹
            ¹Sandia National Laboratories, USA, ²Lawrence Berkeley National Laboratory, USA, and
            ³University 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 Wippold¹, Han Wang¹,², Joseph Tingling¹, Julian Leibowitz¹, Paul J. de Figueiredo¹, and Arum Han¹
¹Texas A&M University, USA and ²Tsinghua University, USA

11:20 METABOLIC CHARACTERIZATION OF INDIVIDUAL IGG-SECRETING CELLS
Mira ElKhoury¹, Guilhem Chenon¹, Andrew Griffiths¹, Jean Baudry¹, and Klaus Eyer¹,²
¹École Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and ²ETH 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 Danoiseaux, 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 Taylor¹,² and Govind Kaigala²
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and ²IBM 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
AidaMontserrat Pagès, Saba Safdar, Karen Ven, Francesco Dal Dosso, Jeroen Lammertyn, and Dragana Spasic
KU Leuven, BELGIUM
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<th>Time</th>
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<th>Location</th>
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<tr>
<td>12:00</td>
<td>SINGLE LAYER DOMINO CAPILLARICS FOR PERFORMING ADVANCED AUTONOMOUS BIOASSAYS</td>
<td>Mohamed Yafia, Oriol Ymbern, Andy Ng, and David Juncker</td>
<td>Canada</td>
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<td>11:00</td>
<td>DROPLET-BASED SINGLE EXTRACELLULAR VESICLE PROTEIN PROFILING FOR THE IMPROVEMENT OF IMMUNOTHERAPY</td>
<td>Jina Ko, Yongcheng Wang, David Weitz, and Ralph Weissleder</td>
<td>Australia</td>
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<tr>
<td>11:20</td>
<td>DROPLET-BASED INVESTIGATION OF A BIOCHEMICAL BISTABLE CIRCUIT FOR SENSITIVE AND NOISE-FREE DETECTION OF NUCLEIC ACIDS</td>
<td>Robin Deteix¹, Nicolas Lobato-Dauzier¹, Elia Henry², Shu Okumura¹, Guillaume Gines³, Yannick Rondelez³, Teruo Fujii¹, and Anthony J. Genot⁴</td>
<td>Japan, France</td>
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<tr>
<td>11:40</td>
<td>IN-DROPLET ELECTROPHORETIC SEPARATION OF PROTEINS AND NUCLEIC ACIDS</td>
<td>Mario A. Saucedo-Espinosa, Elisabeth F. Hirth, and Petra S. Dittrich</td>
<td>Switzerland</td>
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<tr>
<td>12:00</td>
<td>ELECTROPHYSIOLOGICAL ANALYSIS OF Aβ42 IN PLANAR LIPID BILAYER IMITATING NERVOUS CELL-MEMBRANE</td>
<td>Yuri Numaguchi, Keisuke Shimizu, Kaori Tsukakoshi, Kazunori Ikebukuro, and Ryuji Kawano</td>
<td>Japan</td>
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<tr>
<td>12:20</td>
<td>Grab 'n Go Lunch</td>
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<tr>
<td>13:10</td>
<td>Analytical Chemistry – Young Innovator Award Presentation</td>
<td>Keisuke Goda</td>
<td>Japan</td>
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**Plenary Presentation II**

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<th>Time</th>
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<th>Authors</th>
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<tr>
<td>13:15</td>
<td>INTELLIGENT IMAGE-ACTIVATED CELL SORTING &amp; BEYOND</td>
<td>Keisuke Goda</td>
<td>Japan</td>
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</tbody>
</table>
14:00 Presentations are listed by topic category with their assigned number starting on page 26.

16:00 Break

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**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 Ganguly¹, Solib Kang¹, Byungjin Lee¹, Si H. JIn¹, Yohei Yamuchi², Jaeseong Kim¹, and Chang S. Lee¹
¹Chungnam 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 PREGNATAL 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, SWITZERLAND

17:00 ASSESSING GUT MICROBIOIME-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 NANOFA Bracted BONE-ON-CHIP: TOWARDS A BONE REGENERATION MODEL
Víctor P. Galván Chacón¹, David Barata¹, Athanasia Zampouka¹, Jiaping Li¹,
Bernhard Hesse², Marc Bohner³, and Pamela Habibovic¹
¹Maastricht University, THE NETHERLANDS, ²European Synchrotron Radiation Facility, FRANCE, and ³RMS Foundation, SWITZERLAND

17:40 INTEGRATION OF EX-VIVO PRECISION-CUT LIVER SLICE (PCLS) CULTURE WITH MICROFLUIDIC NMR METABOLOMICS
Bishnubrata Patra¹, Manvendra Sharma¹, Ruby Karsten², Maciej Grajewski,
Sabeth Verpoorte², and Marcel Utz¹
¹University of Southampton, UK and ²University 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. Nagarajan¹, Augusto M. Tentori¹, Wen Cai Zhang², Frank J. Slack², and Patrick S. Doyle¹
¹Massachusetts Institute of Technology, USA and ²Beth 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 -  Student Mixer
19:30

18:00 -  Women’s Faculty Night Out
19:30
Tuesday, 29 October

08:15  Announcements

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<tr>
<th>Time</th>
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<tr>
<td>08:30</td>
<td><strong>Plenary Presentation III</strong></td>
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<td>San Francisco Room</td>
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<tr>
<td>08:30</td>
<td><strong>MULTI-OMIC SINGLE CELL METHODS</strong></td>
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<td></td>
<td>James R. Heath</td>
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<td>Institute for Systems Biology, USA</td>
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<td>09:15</td>
<td>Transition</td>
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<th>Time</th>
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<tr>
<td>09:30</td>
<td><strong>Session 2A1 - Exosomes and Extracellular Vesicles</strong></td>
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<td>San Francisco Room</td>
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<td>09:30</td>
<td><strong>IDENTIFYING EXTRACELLULAR-VESICLE POPULATIONS FROM LONG-TERM CULTURED SINGLE CELLS USING MULTI-COLOR TIRFM</strong></td>
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<td>Jonas Nikoloff, Lucas Armbrecht, André Kling, and Petra S. Dittrich</td>
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<td>ETH Zürich, SWITZERLAND</td>
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<td>09:50</td>
<td><strong>PLATELET MEMBRANE Clocked Surface for Plasmonic Switch on Binding of Cancer Threats</strong></td>
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<td>Sumit Kumar</td>
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<td>Ulsan National Institute of Science and Technology (UNIST), KOREA</td>
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<td>10:10</td>
<td><strong>NODE-PORE SENSING DEVICE TO DETECT TUMOR-DERIVED EXTRACELLULAR VESICLES</strong></td>
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<td>Thomas R. Carey, Jennifer Hall, and Lydia L. Sohn</td>
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<td>University of California, Berkeley, USA</td>
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<td>10:30</td>
<td><strong>HIGHLY SENSITIVE DETECTION OF TUMOR-DERIVED EXTRACELLULAR VESICLES USING AN ENZYMATIC ASSAY AND REDOX CYCLING</strong></td>
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<td>Dilu G. Mathew(^1), Pepijn Beekman(^2), Serge G. Lemay(^1), Séverine Le Gac(^1), and Wilfred G. van der Wiel(^1)</td>
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<td>(^1)University of Twente, THE NETHERLANDS and</td>
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<td>(^2)Wageningen University, THE NETHERLANDS</td>
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### Session 2B1 - Paper Microfluidics and Devices

**Singapore Room**

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<tr>
<td>09:30</td>
<td><strong>CITIZEN LED SAMPLING TO MONITOR PHOSPHATES IN RIVER WATER USING SIMPLE PAPER MICROFLUIDIC DEVICES</strong></td>
<td>Samantha Richardson, Alexander Iles, Jeanette M. Rotchell, Mark Lorch, and Nicole Pamme, <em>University of Hull, UK</em></td>
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<tr>
<td>09:50</td>
<td><strong>VERSATILE PRINTED MICROHEATERS TO ENABLE LOW-POWER THERMAL CONTROL IN PAPER DIAGNOSTICS</strong></td>
<td>Kristin M. Byers, Li-Kai Lin, Taylor J. Moehling, Lia Stanciu, and Jacqueline C. Linnes, <em>Purdue University, USA</em></td>
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<tr>
<td>10:10</td>
<td><strong>AN ALL-IN-ONE PAPER-BASED MICROFLUIDIC DEVICE FOR MULTIPLEXED DETECTION OF CARDIAC PROTEIN MARKERS</strong></td>
<td>Hao Fu, Xiao Li, Zhen Qin, and Xinyu Liu, <em>University of Toronto, CANADA</em></td>
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<tr>
<td>10:30</td>
<td><strong>MICRO TOTAL ANALYSIS SYSTEM FOR DETERMINATION OF LITHIUM ION IN HUMAN WHOLE BLOOD WITH HYBRID DEVICE OF DMF AND TINY PAPER SENSORS</strong></td>
<td>Takeshi Komatsu¹, Manabu Tokeshi¹, and Shih-Kang Fan², ¹Hokkaido University, JAPAN and ²National Taiwan University, TAIWAN</td>
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### Session 2C1 - Microfluidic Culture for Cells, Organisms and Plants

**Sydney Room**

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<th>Time</th>
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<tr>
<td>09:30</td>
<td><strong>STANDARDIZED, MODULAR MICROFLUIDIC BUILDING BLOCKS FOR AUTOMATED CELL CULTURING SYSTEMS</strong></td>
<td>Anke Vollertsen, Elsbeth Bossink, Dean de Boer, Jet Spalink, Robert Passier, Albert van den Berg, Loes Segerink, Andries van der Meer, and Mathieu Odijk, <em>University of Twente, THE NETHERLANDS</em></td>
</tr>
<tr>
<td>09:50</td>
<td><strong>INTEGRATED MICROFLUIDIC CHIP WITH FLOWING UPSTREAM SPERM SORTING AND ZP REMOVED OOCYTE INCUBATION FOR IN-VITRO FERTILIZATION</strong></td>
<td>Suei-Shen Wang¹, Yung-Chin Tzeng¹, Yueh-Jen Chen¹, Li-Chen Pan², and Fan-Gang Tseng¹, ¹National Tsing Hua University, TAIWAN and ²Taipei Medical University, TAIWAN</td>
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<td>10:10</td>
<td><strong>DROPLET LIQUID EXCHANGER FOR CHEMICAL SCREENS IN CAENORHABDITIS ELEGANS</strong></td>
<td>Guillaume Aubry, Marija Milisavljevic, and Hang Lu, <em>Georgia Institute of Technology, USA</em></td>
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NOVEL MICRO-FLUIDIC CIRCUIT MODEL OF PLANT VASCULAR SYSTEM FOR THE GROWTH NAVIGATION
Ryo Miyake¹, Toshihiro Kasama¹, Maia Godonoga¹, Yoshishige Endo¹, Takumi Okamoto², Tetsushi Koide², Chiharu Sone³, Masahiro Komine³, Yukio Yaji³, Yoshihiro Kaneta¹, and Atsushi Ogawa³
¹University of Tokyo, JAPAN, ²Hiroshima University, JAPAN, and ³Akita 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, SWITZERLAND
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 VALYRIHA 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)
14:00  Presentations are listed by topic category with their assigned number starting on page 26.

16:00  Break

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**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. Tostado¹, Joel W.J. Heng², Lucas X.D. Ong¹, Ramanuj DasGupta², Joel Voldman³, and Yi-Chin Toh¹  
¹*National University of Singapore, SINGAPORE, ²Genomic Institute of Singapore, SINGAPORE, and ³Massachusetts 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, CHINA

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 ENGINEERED GENE CIRCUITS: FROM CLOCKS TO SYNCHRONIZED DELIVERY
Jeff M. Hasty
*University of California, San Diego, USA*

09:15 Transition

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

09:30 MULTIPLEX DROPLET PLATFORM FOR RAPID SINGLE-CELL ANTIBIOTIC RESISTANCE PROFILES
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 Ono1, Yasushi Kanai1, Koichi Inoue1, Yohei Watanabe2, Shin-ichi Nakakita3, Toshio Kawahara4, Yasuo Suzuki4, and Kazuhiko Matsumoto1
1Osaka University, JAPAN, 2Kyoto Prefectural University of Medicine, JAPAN, 3Kagawa University, JAPAN, and 4Chubu University, JAPAN
09:50 MINIMAL INSTRUMENT IMMUNOASSAY SYSTEM BY CARTRIDGE-INTEGRATED INKJET PRINTED OPTICAL DETECTION SYSTEM
Sebastian Schattschneider¹, Falk Kemper², Erik Beckert², Peter Miethe³, Andreas Willems⁴, Holger Becker¹, and Claudia Gärtner¹
¹Microfluidic ChipShop, GERMANY, ²Fraunhofer IOF, GERMANY, ³fzmb GmbH, GERMANY, and ⁴inno-train Diagnostik GmbH, GERMANY

10:10 MICROFLUIDIC DEVICE FOR BIOLOGICAL SAMPLES IMAGING WITH USE OF A MINIATURE MEMS TRANSMISSION ELECTRON MICROSCOPE
Micha Krysztof, Marcin Biass, 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 Goyette¹, Dina Dorrigiv¹, Maude Tremblay¹, Simeone Kayla², and Thomas Gervais¹
¹Polytechnique Montréal, CANADA and ²Université 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 Ostromohov¹,², Baruch Rofman², Moran Bercovici², and Govind V. Kaigala¹
¹IBM Research - Zurich, SWITZERLAND and ²Technion-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. Santosso, 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, Anke Urbansky, Pelle Ohlsson, Klara Petersson, Erling Nielsen, Agnes Michanek, and Per Augustsson
AcouSort AB, SWEDEN and 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 REPLICAUS USING BACKSIDE LITHOGRAPHY FOR BLOOD FLOW ANALYSIS
Marianne Fenech, Vincent Girod, Viviana Claveria, Sebastien Meance, Manouk Abkarian, and Benoit Charlot
University of Ottawa, CANADA and University of Montpellier, FRANCE

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11:00  DIRECT LASER WRITING OF THREE-DIMENSIONAL GRAPHENE-LADEN MICROSTRUCTURES INSIDE ENCLOSED MICROFLUIDIC CHANNELS
Michael A. Restaino, Noah J. Eckman, Abdullah T. Alsharhan, Andrew C. Lamont, Asha J. Hall, and Ryan D. Sochol
University of Maryland, USA and 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, and Michael Heymann
CFEL, GERMANY and MPI of Biochemistry, GERMANY

12:00  NEW 4D PRINTING USING DRY-ERASE MARKER
Seo Woo Song, Sumin Lee, Junkyu Choe, Junwon Kang, Jiyun Kim, and Sungmoon Kwon
Seoul National University, KOREA and Ulsan National Institute of Science and Technology, KOREA
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 Zhang¹, Erica Scott¹, Nika Shakiba¹, Peter W. Zandstra², and Aaron R. Wheeler¹
¹University of Toronto, CANADA and ²University 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  
Hang Lu  
*Georgia Tech, USA*

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**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.

16:16  Break

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**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 Okada¹, Yoshikazu Kameda¹, Kensuke Yabuuchi², Toshikazu Araoka¹, Jun K. Yamashita³, Tatsuji Enoki³, Minoru Takasato², Kenji Osafune¹, and Ryuji Yokokawa¹  
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. Richardson¹, Luke A. Schwerdtfeger¹, Diana Eaton², Stuart A. Tobet¹, and Charles S. Henry¹  
¹*Colorado State University, USA* and ²*Applied Medical, USA*
### Session 3B3 - Manipulation of Cells

**Singapore Room**

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<tr>
<td>16:45</td>
<td>Keynote Presentation</td>
<td>Cullen Buie</td>
<td><em>Massachusetts Institute of Technology, USA</em></td>
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<td></td>
<td>AUTOMATED MICROFLUIDIC GENETIC MANIPULATION FOR HIGH THROUGHPUT BIOLOGY</td>
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<td>17:15</td>
<td>INTRACELLULAR DELIVERY OF ACTIVE BIOMOLECULES THROUGH VORTEX-INDUCED CELL DEFORMATION</td>
<td>Jeongsoo Hur and Aram J. Chung</td>
<td><em>Korea University, KOREA</em></td>
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<td>17:35</td>
<td>DIELECTROPHORESIS REVEALS THAT BACTERIAL ELECTROPORATION CORRELATES WITH CELL POLARIZABILITY</td>
<td>Qianru Wang¹, Sijie Chen², and Cullen R. Buie²</td>
<td>*Stanford University, USA and <em>Massachusetts Institute of Technology (MIT), USA</em></td>
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<td>17:55</td>
<td>VERSATILE ENGINEERING OF LYSINS: ONE DROP TO KILL</td>
<td>Hans Gerstmans¹,², Fabrice Gielen³, Lorenz Van Hileghem², Rob Lavigne², Florian Hollfelder⁴, Jeroen Lammertyn², and Yves Briers¹</td>
<td><em>Ghent University</em>²*KU Leuven, BELGIUM, *³University of Exeter, UK, and <em>⁴University of Cambridge, BELGIUM</em></td>
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### Session 3C3 - Nanopores and Nanochannels

**Sydney Room**

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<tr>
<td>16:45</td>
<td>Keynote Presentation</td>
<td>Sumita Pennathur</td>
<td><em>University of California, Santa Barbara, USA</em></td>
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<td>BIPOLAR ELECTRODES FOR MICROFLUIDIC PUMPING</td>
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<td>17:15</td>
<td>CONTROLLING DNA FLOW IN NANOCHANNELS USING TOPOGRAPHY</td>
<td>Franziska M. Esmek and Irene Fernandez-Cuesta</td>
<td><em>Hamburg University, GERMANY</em></td>
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<td>17:35</td>
<td>NANOPORING DECODING FOR MICRORNA PATTERN OF CANCER WITH DNA COMPUTATION</td>
<td>Nanami Takeuchi, Moe Hiritani, Asuka Tada, and Ryuji Kawano</td>
<td><em>Tokyo University of Agriculture and Technology, JAPAN</em></td>
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<td>17:55</td>
<td>SINGLE MOLECULE ELECTRICAL IDENTIFICATION OF EPGENETIC VARIATIONS BY NANOFUID INTEGRATED NANOGAP DEVICES</td>
<td>Takahito Ohshiro, Yuuki Komoto, Masamitsu Konno, Jun Koseki, Ayumu Koseki, Hideshi Ishii, and Masateru Taniguchi</td>
<td><em>Osaka University, JAPAN</em></td>
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</table>
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**  
Detlev Belder  
*University of Leipzig, GERMANY*

**09:15**  
**NANODROPLET SAMPLE PROCESSING ENABLED HIGH-RESOLUTION MASS SPECTROMETRY IMAGING OF OVER 2000 PROTEINS ACROSS THIN TISSUE SECTIONS**  
Ying Zhu¹, Paul D. Piehowski¹, Lisa M. Bramer¹, Kelly G. Stratton¹, Rui Zhao¹, Ronald J. Moore¹, Jia Yuan², Hugh D. Mitchell¹, Bobbie-Jo M. Webb-Robertson¹, Sudhansu K. Dey², Richard D. Smith¹, Ryan T. Kelly¹, and Kristin E. Burnum-Johnson¹  
¹Pacific Northwest National Laboratory, USA and ²Cincinnati Children's Hospital, USA

**09:35**  
**MASSIVE SCREENING OF METABOLITES USING PICOLITER DROPLET ARRAY WITH NANOSTRUCTURE-INITIATOR MASS SPECTROMETRY**  
Noel S. Ha¹, Markus de Raad¹, Fangchao Song¹, Kai Deng², Nicole Ing², Anup K. Singh², and Trent R. Northen¹  
¹Lawrence Berkeley National Laboratory, USA and ²Sandia 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 Uchida¹, Hiroki Yasuga², Eiji Iwase², and Hiroaki Onoe¹  
¹Keio University, JAPAN and ²Waseda 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
MICROSYSYTEM 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\textsuperscript{1,2,3}, Anika Marand\textsuperscript{1,2,3}, Andreu Cullere\textsuperscript{1,2,3}, Jarone Lee\textsuperscript{1,2,3}, Michael Filbin\textsuperscript{1}, Felix Ellett\textsuperscript{1}, and Daniel Irimia\textsuperscript{1,2,3}
\textsuperscript{1}Massachusetts General Hospital, USA, \textsuperscript{2}Harvard Medical School, USA, and \textsuperscript{3}Shriners Burns Hospital, USA

11:25  LABEL-FREE IMPEDANCE MAPPING OF NEUTROPHIL DYNAMIC IMMUNE RESPONSES FOR RAPID MULTI-PARAMETRIC INFLAMMATORY PROFILING
Chayakorn Petchakup\textsuperscript{1}, Sheng Yuan Leong\textsuperscript{1}, Hui Min Tay\textsuperscript{1}, Rinkoo Dalan\textsuperscript{2}, King Ho Holden Li\textsuperscript{1}, and Han Wei Hou\textsuperscript{1}
\textsuperscript{1}Nanyang Technological University, SINGAPORE and \textsuperscript{2}Tan Tock Seng Hospital, SINGAPORE

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**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\textsuperscript{1}, Jamal Daoud\textsuperscript{1}, Liviu Clime\textsuperscript{1}, Matthias Geissler\textsuperscript{1}, Lidija Malic\textsuperscript{1}, Denis Charlebois\textsuperscript{2}, and Teodor Veres\textsuperscript{1}
\textsuperscript{1}National Research Council, CANADA and \textsuperscript{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*

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**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\textsuperscript{1}, Eric Leclerc\textsuperscript{2}, Astia R. Safitri\textsuperscript{1}, Mathieu Danoy\textsuperscript{1}, Toshiro Maekawa\textsuperscript{1}, Haruyuki Kinoshita\textsuperscript{1}, Marie Shinohara\textsuperscript{1}, Kikuo Komori\textsuperscript{1}, Yasuyuki Sakai\textsuperscript{1}, and Teruo Fujii\textsuperscript{1}
\textsuperscript{1}University of Tokyo, JAPAN and \textsuperscript{2}LIMMS/CNRS-IIS, JAPAN
11:05  A MICROFLUIDIC OXYGENATOR WITH LARGE GAS EXCHANGE SURFACE
Julie Lachaux¹, Gilgueng Hwang¹, Caterina Casari², Nassim Arouche², Valeria Lotito¹, Alisier Paris¹, Cécile Denis², Peter Lenting², Georges Uzan², Pierre Molinie³, Olaf Mercier³, and Anne-Marie Haghiri-Gosnet¹
¹C2N CNRS, FRANCE, ²Institut National de la Santé et de la Recherche Médicale (INSERM), FRANCE, and ³HML, 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

12:40  Lab on a Chip - Widmer Poster Award

12:50  NIST and Lab on a Chip - Art in Science Award

13:00  IMT Masken und Teilungen AG - Microfluidics on Glass Poster Award

13:10  Sensors (MDPI) - Outstanding Sensors and Actuators, Detection Technologies Poster Award

13:20  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)

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<thead>
<tr>
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<tbody>
<tr>
<td>a</td>
<td>Cells, Organisms and Organs on a Chip</td>
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<tr>
<td>b</td>
<td>Chemical Applications: Separations, Mixers and Reactions</td>
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<td>c</td>
<td>Diagnostics, Drug Testing &amp; Personalized Medicine</td>
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<td>d</td>
<td>Fundamentals in Microfluidics and Nanofluidics</td>
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<td>Sensors and Detection Technologies</td>
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<td>Other Applications of Microfluidics</td>
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<td>Late News</td>
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<td>Bioinspired, Biomimetic &amp; Biohybrid Devices</td>
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**M001.a**  
ANTI-FOULING SURFACES FEATURED WITH MAGNETIC ARTIFICIAL CILIA  
Shuaizhong Zhang¹, Ye Wang¹, Patrick R. Onck², and Jaap M.J. den Toonder¹  
¹Eindhoven University of Technology, THE NETHERLANDS and  
²University 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 Boul¹,², Satomi Matsumoto³, Marie Shinohara³, Yasuyuki Sakai³, Teruo Fujii³,  
Anne Dubart Kupperschmitt², Eric Leclerc³, and Bruno Le Pioufle¹  
¹ENS Paris Saclay, FRANCE, ²Université Paris-Saclay, FRANCE, and  
³Tokyo University, JAPAN
**T001.a** BIOSENSING AND POWER GENERATION ROBOTS USING ANHYDROBIOISIS OF CHIRONOMID FOR SPACE EXPLORING
Yo Tanaka¹, Satoshi Amaya¹, Doudou Ma¹, Yigang Shen¹, Oleg Gusev¹, Takahiro Kikawada², and Yaxiaer Yalikun¹
¹RIKEN, JAPAN and ²NARO, JAPAN

**T002.a** MICROFLUIDIC FABRICATION OF BIO-ACTUATORS DRIVEN BY ARTIFICIAL MUSCLES MADE FROM MOLECULAR MOTORS
Yingzhe Wang¹, Yuichi Hiratsuka², Takahiro Nitta³, Kaoru Uesugi¹, and Keisuke Morishima¹
¹Osaka University, JAPAN, ²Japan Advanced Institute of Science and Technology (JAIST), JAPAN, and ³Gifu University, JAPAN

**T003.a** STEREOLITHOGRAPHY (SLA) 3D PRINTED TEMPLATES FOR ENGINEERING PERFUSABLE BIOMIMETIC VASCULATURES IN ALGINATE HYDROGEL
Terry (Tsz Him) Ching¹, Yi-Chin Toh², and Michinao Hashimoto¹
¹Singapore University of Technology and Design, SINGAPORE and ²National University of Singapore, SINGAPORE

**W001.a** BASOLATERAL COMPARTMENT PRESSURE MEASUREMENT IN THE CULTURE DEVICE WITH FILTRATION FOR THE EVALUATION OF CELL LAYER CONDITION
Kotaro Doi¹, Hiroshi Kimura², Masaomi Nangaku³, and Teruo Fujii¹
¹Fujii Laboratory, JAPAN, ²Kimura Laboratory, JAPAN, and ³University of Tokyo, JAPAN

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

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**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** HIGH-THROUGHPUT DETECTION OF SECRETED PROTEINS IN MICROFLUIDIC PICOLITER REACTORS
Marta Napiorkowska, Steven Schmitt, Martin Held, and Sven Panke
ETH Zürich, SWITZERLAND
M007.a MICROFLUIDIC CHIP FOR T CELL-ANTIGEN PRESENTING CELL INTERACTION CHARACTERIZATION.
Margaux Duchamp¹, Marion Arnaud², Clarisse Vaillier¹, Sara Bobisse², George Coukos², Alexandre Hararr¹, and Philippe Renaud¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and
²Université de Lausanne, SWITZERLAND

M008.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 Hong¹, Bo-Hyun Choi¹, Pyung Cheon Lee¹, Sung Sik Lee², and Ju Min Kim¹
¹Ajou University, KOREA and ²ETH Zürich, SWITZERLAND

W003.a A FULLY-AUTOMATED MICROFLUIDIC ROBOT FOR CIRCULATING ENDOTHELIAL PROGENITOR CELL SORTING AND ANALYSIS
Yu Wang¹, Dong-Fei Wang², Hui-Feng Wang¹, Bei-Bei Sun¹, Jian-Wei Wang¹, Xiao-Gang Guo², and Qun Fang¹
¹Zhejiang University, CHINA and ²Zhejiang 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

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**a - Cells, Organisms and Organs on a Chip**  
**Cell-Culturing & Perfusion (2D & 3D)**

**M009.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

**M010.a**  CELL BEADS TECHNOLOGY USING MICROFLUIDIC DEVICE AS A NEW PLATFORM FOR VASCULARIZED ORGANOID FORMATION  
Shogo Nagata and Shoji Takeuchi  
University of Tokyo, JAPAN

**M011.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

**M012.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

**M013.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
M014.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

M015.a MODULATING THE CELL ADHESION MICROENVIRONMENT TO MECHANICALLY DRIVE TROPHECTODERM-LIKE ORGANOID FORMATION FROM HUMAN IPS CELLS
Kennedy O. Okeyo¹, Osamu Kurosawa², Hidehiro Oana³, and Masao Washizu³
¹Kyoto University, JAPAN, ²RIKEN, JAPAN, and ³University of Tokyo, JAPAN

M016.a PARALLEL FORMATION OF CELL SPHEROIDS BASED ON VIBRATION-INDUCED FLOW
Nanami Minoshima and Takeshi Hayakawa
Chuo University, JAPAN

M017.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

M018.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 Yvanoff¹, Gintare Garbenciute², Vytautas Navikas³, Ramunas Valiokas², and Ronnie Willaert¹
¹Vrije Universiteit Brussel, BELGIUM, ²Center for Physical Sciences and Technology, LITHUANIA, and ³École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
T012.a EVALUATION OF NEURONAL ACTIVITY IN A NEURON-ASTRÓCYTE 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 ENDOTHELIMUM-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 Shimizu¹, Wei Huang Goh², Shun Itai¹, Michinao Hashimoto², Shigenori Miura³, and Hiroaki Onoe¹
¹Keio University, JAPAN, ²Singapore University of Technology and Design, SINGAPORE, and ³University 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 HETEROGENOUS 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 Siddique¹ and Robert W. Stark²
Technical University Darmstadt, GERMANY
M019.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*

M020.a  IN VITRO-IN SILICO INTERFACE PLATFORM: BRIDGING THE GAP BETWEEN EXPERIMENT AND THEORY BY INFORMATION SYSTEM TO ELUCIDATE CELLULAR BEHAVIOR SYSTEM  
Asuka Yamaguchi¹, Masakazu Akiyama², Ikuhiko Nakase¹, and Masaya Hagiwara³  
¹*Osaka Prefecture University, JAPAN,²*Meiji University, JAPAN, and ³*RIKEN, JAPAN*

M021.a  MICROFLUIDIC MONITORING OF CELL RESPONSE IN COMPRESSION MECHANICAL STRESS  
Ranjan Mishra, Nevena Srejic, Frank van Drogen, Reinhard 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. Nguyen¹, Patrick M. Misun¹, Christian Lohasz¹, Ramona Nudischer², Olivier Frey³, Jan Devan³, Gennaro De Libero³, Andreas Hierlemann¹, and Kasper F. Renggli¹  
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. Tarhan¹, Alexandre Mutel², Laurence Desrues², Dominique Collard³, and Hélène Castel²
¹University of Lille, FRANCE, ²IBM Normandie University, FRANCE, and ³University of Tokyo, JAPAN

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

M022.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

M023.a  EJECTION OF LARGE PARTICULATE MATERIALS FROM GIANT UNILAMELLAR VESICLES
Shota Katsuta, Taiji Okano, and Hiroaki Suzuki
Chuo University, JAPAN

M024.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 Ahmed¹, Sander van den Driesche¹, Martin Oellers¹, Jayesh A. Bafna¹, Richard Wagner¹, Mathias Winterhalter¹, Roland Hemmler², Karsten Gall², and Michael J. Vellekoop¹
¹University of Bremen, GERMANY and ²Ionovation 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 Joseph¹, Costanza Montis², Chiara Magnani¹,², Adrien Dutoya¹,³, Fabien Mesnilgrente¹, Barbara Lonetti², Debora Berti², and Marianne Elias¹
¹LAAS-CNRS, FRANCE, ²University of Florence, ITALY, and ³Université de Toulouse, FRANCE
**W021.a** ASSESSMENT OF THE FACTORS INFLUENCING LIPOSOME SIZE IN DEAN-FORCES BASED µMIXERS
Rubén R. López Salazar¹, Ixchel Ocampo², Karl F. Bergeron³, Anas Alazzam⁴, Catherine Mounier³, Ion Stiharu⁵, and Vahé Nerguizian¹
¹École de Technologie Supérieure, CANADA, ²Tecnológico de Monterrey, MEXICO, ³Université du Québec à Montréal, CANADA, ⁴Khalifa University, UAE, and ⁵Concordia 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

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**- Cells, Organisms and Organs on a Chip**

**Multi-Organ Arrangements and Body on a Chip**

**M025.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 Lohasz¹, Flavio Bonanini¹, Kasper Renggli¹, Olivier Frey², and Andreas Hierlemann¹
¹ETH Zürich, SWITZERLAND and ²Insphero 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 Haan¹, Milou J.C. Santbergen², Meike van der Zande², Hans Bouwmeester², Michel W.F. Nielen², and Elisabeth Verpoorte¹
¹University of Groningen, THE NETHERLANDS and ²Wageningen University, THE NETHERLANDS
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 MICROFLUIDIC DEVICE TO ENHANCE THE THROUGHPUT OF ELECTROTAXIS SCREENING WITH CAENORHABDITIS ELEGANS MODELS OF PARKINSON'S DISEASE
Khaled Youssef¹, Daphne Archonta¹, Terry Kubiseski¹, Anurag Tandon², and Pouya Rezai¹
¹York University, CANADA and ²University of Toronto, CANADA

HIGH-THROUGHPUT MECHANICAL PHENOTYPING OF C. ELEGANS DIABETES MODELS USING ELASTOMERIC MICROPILLAR ARRAYS
Samuel Sofela¹, Sarah Sahloul², Christopher Stubbs¹, Ajymurat Orozaliev², and Yong-Ak Song²
¹New York University, USA and ²New York University, Abu Dhabi, UAE

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

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

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

ON-DEMAND ELECTRIC FIELD INDUCED EGG LAYING OF CAENORHABDITIS ELEGANS
Khaled Youssef¹, Daphne Archonta¹, Terry Kubiseski¹, Anurag Tandon², and Pouya Rezai¹
¹York University, CANADA and ²University of Toronto, CANADA
A MICROFLUIDIC-BASED PIPELINE TO INVESTIGATE IN-SITU GENE EXPRESSION IN WHOLE ORGANISMS WITH CELLULAR AND INTER-INDIVIDUAL RESOLUTION
Jason Wan\textsuperscript{1,2}, Gongchen Sun\textsuperscript{1}, and Hang Lu\textsuperscript{1}
\textsuperscript{1}Georgia Institute of Technology, USA and \textsuperscript{2}Emory University, USA

MICROFLUIDIC-BASED ANESTHETIC-FREE MICROINJECTION OF INTACT DROSOPHILA LARVA TO INVESTIGATE THE EFFECT OF SEROTONIN ON HEART RATE
Alireza Zabihihesari, Arthur J. Hilliker, and Pouya Reza
York University, CANADA

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

3D DYNAMIC MICROVASCULARITY-ON-CHIP: CYCLIC STRETCH AND VASCULAR REMODELING
Soheila Zeinali\textsuperscript{1}, Merve Bulut\textsuperscript{1}, Emily K. Thompson\textsuperscript{1}, Thomas Geiser\textsuperscript{2}, and Olivier T. Guenat\textsuperscript{1}
\textsuperscript{1}University of Bern, SWITZERLAND and \textsuperscript{2}University Hospital of Bern, SWITZERLAND

3D MICROENGINEERED VASCULARIZED TUMOR SPHEROID FOR DRUG DELIVERY AND EFFICACY TESTING
Jungseub Lee\textsuperscript{1}, Jungho Ahn\textsuperscript{1}, Jungeun Lim\textsuperscript{1}, Noo Li Jeon\textsuperscript{1}, and YongTae Kim\textsuperscript{2}
\textsuperscript{1}Seoul National University, KOREA and \textsuperscript{2}Georgia Institute of Technology, KOREA

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

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
M033.a  EFFICIENT FABRICATION OF A PRE-INVASIVE BREAST CANCER MODEL VIA DOUBLE EMULSIFICATION OF MATRIGEL  
Jelle J.F. Sleeboom1, Cecilia M. Sahlgren2, and Jaap M.J. den Toonder1  
1Eindhoven University of Technology, THE NETHERLANDS and  
2Åbo Akademi University, FINLAND

M034.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

M035.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

M036.a  NEW GENERATION OF AIR-BLOOD BARRIER MODEL: A LUNG-ON-CHIP WITH A STRETCHABLE BIOLOGICAL MEMBRANE  
Pauline Zamprogno1, Simon Wuethrich1, Sven Achenbach1, Janick D. Stucki1, Nina Hobi1, Nicole Schneider-Daum2, Claus-Michael Lehr2, Hanno Huwer3, Ralph A. Schmid4, and Olivier T. Guenat1  
1University of Bern, SWITZERLAND, 2Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS), GERMANY, 3Völklingen Heart Center, Völklingen, Germany, GERMANY, and 4University Hospital of Bern, Bern, Switzerland, SWITZERLAND

M037.a  RESPONSE OF TUBULAR CELLS BY EXPOSING CONTROLLED SHEAR STRESS TO PRIMARY CILIA AFTER OXIDATIVE STRESS  
Masatomo Chikamori1, Hiroshi Kimura2, Soo Hyeon Kim1, Masaomi Nangaku3, and Teruo Fujii1  
1Institute of Industrial Science, JAPAN, 2Tokai University, JAPAN, and 3University of Tokyo, JAPAN

M038.a  TOWARD A BLOOD-BRAIN BARRIER MICROPHYSIOLOGICAL SYSTEM WITH IN-LINE MONITORING  
Ashlyn T. Young1,2, Vladimir A. Pozdin1, and Michael Daniele1,2  
1North Carolina State University, USA and 2University 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
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

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

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 Institute of Chemistry Physics, CHINA

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

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

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

THE ORGANOTEER: A SENSITIVE TEER MEASUREMENT PLATFORM FOR HIGH THROUGHPUT SCREENING OF ORGANS-ON-CHIPS
Arnaud Nicolas¹, Frederik Schavemaker¹, Sebastiaan J. Trietsch¹, Henriette Lanz¹, Thomas Hankemeier², and Paul Vulto¹
¹Mimetas B.V., THE NETHERLANDS and ²Leiden University, THE NETHERLANDS

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 Seo¹, Hyewhon Rhim¹, Kangwon Lee², Nakwon Choi¹, and Hong Nam Kim¹
¹Korea Institute of Science and Technology (KIST)

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
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 Sadeghian1, Yang Liu1, Ryohei Ueno1, Toshikazu Araoka1, Jun Yamashita1, Tatsuji Enoki2, Minoru Takasato3, and Ryuji Yokokawa1
1Kyoto University, JAPAN, 2Takara Bio, JAPAN, and 3RIKEN, JAPAN

A MICROFLUIDIC FLOW CELL FOR MAINTENANCE AND ANALYSIS OF HUMAN SKIN SAMPLES
Kamil Talar1, Alexander Illes1, Matthew J. Hardman2, and Nicole Pamme1
1University of Hull, UK and 2Hull York Medical School, UK

EFFECTS OF BONE MARROW-DERIVED OP9 STROMAL CELLS STIMULATED IN A CELL STRETCHING DEVICE
Momoko Maeda1, Eriko Kamata1, Kenji Kitajima2, Takahiko Hara2, and Kae Sato1
1Japan Women’s University, JAPAN and 2Tokyo Metropolitan Institute of Medical Science, JAPAN

ENGINEERING A NOVEL MICROPHYSIOLOGICAL SYSTEM TO RECAPITULATE BIOLOGIC BARRIER FUNCTIONS
Matthew Ishahak1, Quratulain Amin1, Jordan Hill1, Adiel Hernandez1, Laura Wubker1, Siddarth Rawal1, Alessia Fornoni2, and Ashutosh Agarwal1
1University of Miami, USA and 2University of Miami Miller School of Medicine, USA

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

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

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

SEGREGATED TEER MEASUREMENT ON A DOUBLE TUBULAR RECAPITULATION OF THE BLOOD/KIDNEY BARRIER
Todd P Burton1, Kelly Klaassen1,2, Arnaud Nicholas1, Linda Giijzen1, Marianne Vormann1, Bob Ronden1, Karel Domansky1, Sebastiaan Trietsch1, and Paul Vulto1
1Mimetas B.V., THE NETHERLANDS and 2Saxion University of Applied Sciences, THE NETHERLANDS
M039.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 Zhang¹, Hongyan Liang¹, Deyong Chen¹, Junbo Wang¹, Ying Xu², and Jian Chen¹
¹Chinese Academy of Sciences, CHINA and
²Shanghai Jiao-Tong University School of Medicine, CHINA

M040.a  CO-CAPTURE OF MAGNETIC BEADS AND CELLS FOR SINGLE-CELL ANALYSIS IN MICROFLUIDIC CHAMBERS
Lucas Armbrrecht, Claudius Dietsche, Rafael S. Müller, Jonas Nikoloff, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

M041.a  DROPLET-ENHANCED ON-CELL ENCODING OF SINGLE CELL SECRETORY FUNCTION
Robert Dimatteo and Dino Di Carlo
University of California, Los Angeles, USA

M042.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

M043.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

M044.a  MICROFLUIDIC SYSTEM FOR CULTIVATION AND MONITORING OF INDIVIDUAL RIBOFLAVIN OVERPRODUCING ESCHERICHIA COLI CELLS
Petra Juskova, Lucas Armbrrecht, Steven Schmitt, Martin Held, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

M045.a  ON-LINE IMPEDIMETRIC MONITORING OF SINGLE CELL ELECTRICAL LYSIS IN A MICROFLUIDIC DEVICE
Sertan Sukas, Albert van den Berg, Leon Terstappan, and Séverine Le Gac
University of Twente, THE NETHERLANDS

M046.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
M047.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  HIGH THROUGHPUT SINGLE-CELL RNA SEQUENCING ENABLE BY A
SINGLE-MICROPARTICLE DISPENSER
Yanling Song
Shanghai Jiao Tong University, CHINA

T042.a  IN VITRO SINGLE-CELL VISUALIZATION 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

T043.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

T044.a  MICROVASCULAR IN VITRO CONSTRICTION MODEL FOR IMAGING
CANCER CELL DAMAGE AND RECOVERY
Kyohei Terao¹, Hamizah Cognart², Jean-Louis Viovy³, and Catherine Villard³
¹Kagawa University, JAPAN, ²National University of Singapore, SINGAPORE, and
³Institut Curie, FRANCE

T045.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

T046.a  SINGLE TO COUNTABLE-MOLECULE ELISA BY DEVELOPING NANFLUIDIC
DEVICE
Ryoichi Ohta, Kazuma Mawatari, Emi Mori, and Takehiko Kitamori
University of Tokyo, JAPAN
T047.a USING ELECTRICAL IMPEDANCE SPECTROSCOPY TO MONITOR THE DISSECTION EVENTS OF SINGLE BUDDING YEAST CELLS IN A MICROFLUIDIC DEVICE
Yangye Geng¹, Haoxi Wang¹, Yingying Wang¹, Shuiping Ouyang², Zixin Wang³, Dejing Pan⁴, and Zhen Zhu¹
¹Southeast University, CHINA, ²Nanjing Forestry University, CHINA, ³Sun Yat-Sen University, CHINA, and ⁴Soochow University, CHINA

W038.a A LIQUID BIOPSY APPROACH TO EARLY DETECTION OF BONE MARROW FIBROSIS ENABLED BY SINGLE-CELL FUNCTIONAL PROTEOMICS
Rong Fan
Yale University, USA

W039.a CELLULAR KINEMATIC ANALYSIS OF IMMOBILIZED SINGLE BUDDING YEAST CELLS IN CONTROLLED HYDRODYNAMIC MICROENVIRONMENT
Yingying Wang¹, Xingyu Xu², Shuiping OuYang³, Qingan Huang¹, and Zhen Zhu¹
¹Southeast University, CHINA, ²Xian Jiaotong University, CHINA, and ³Nanjing Forestry University, CHINA

W040.a COMPARTMENTALIZED HYDROGEL MICROPARTICLE BASED DROP-SCREEN FOR MULTIMODAL SINGLE-CELL ASSAY
Myat Noe Hsu¹, Ri Lu², Sophie W.M. Lian², and Chia-Hung Chen²
¹Singapore-MIT Alliance for Research and Technology, SINGAPORE and ²National 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. Santra¹, Srabani Kar², and Fan-G. Tseng³
¹Indian Institute of Technology (IITM), INDIA, ²University of Cambridge, UK, and
³National Tsing Hua University, TAIWAN

W046.a  SINGLE-CELL MICROFLUIDIC PLATFORM TO STUDY ANAEROBIC BACTERIA
Yanqing Song¹, Andrew Glidle¹, Christopher Quince², Gavin Collins³, William Sloan¹, and Huabing Yin¹
¹University of Glasgow, UK, ²University of Warwick, UK, and
³National University of Ireland, Galway, IRELAND

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**a - Cells, Organisms and Organs on a Chip**

Synthetic Biology

M048.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

M049.a  SELF-ASSEMBLED MONOLAYER ON CYTOP SURFACE ALLOWS ENCAPSULATION OF DYNAMIC PROTEIN SYSTEMS IN PATTERNED CHAMBERS
Hiromune Eto¹, Naoki Soga², Henri G. Franquelim¹, Alena Khmelinskaia¹, Lei Kai¹, Michael Heymann¹, Hiroyuki Noji², and Petra Schwille¹
¹Max Planck Institute, GERMANY and ²University of Tokyo, JAPAN

T048.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 Tonooka¹, Lev Tsimring², and Jeff Hasty²
¹Kyoto Institute of Technology, JAPAN and ²University of California, San Diego, USA
### Vascularization

**M050.a** ENHANCE CELL CONFLUENCE USING GRADUALLY-DEGRADED ALGINATE-COLLAGEN MATERIAL FOR TUNICA INTERMEDIA FORMATION  
Seok Oh¹, Van Thuy Duong¹, Huu Lam Phan¹, HyeWon Son¹, Trung Nguyen¹, Hang Phuong Nguyen¹, Thi Huong Le¹, Suwon Lee¹, HyoSeok Lee¹, Chang Ho Hwang², and Kyo-in Koo¹  
¹University of Ulsan, KOREA and ²University of Ulsan College of Medicine, KOREA

**T049.a** "ON–CHIP VASCULAR BED" ENABLES INTEGRATION OF A SPHEROID AND PERFUSABLE VASCULATURE  
Yoshikazu Kameda¹, Ryu Okada¹, Kensuke Yabuuchi², Toshikazu Araoka¹, Jun K. Yamashita¹, Tatsuji Enoki³, Minoru Takasato², and Ryuji Yokokawa¹  
¹Kyoto University, JAPAN, ²Riken, JAPAN, and ³Takara Bio Inc., JAPAN

**T050.a** OVER-FIVE-MILLIMETER DIAMETER ALGINATE-COLLAGEN ENDOTHelialized TUBULAR SCAFFOLD FORMATION  
Van Thuy Duong¹, Seok Oh¹, Huu Lam Phan¹, HyeWon Son¹, Trung Nguyen¹, Hang Phuong Nguyen¹, Thi Huong Le¹, Suwon Lee¹, HyoSeok Lee¹, Chang Ho Hwang², and Kyo-in Koo¹  
¹University of Ulsan, KOREA and ²University 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 Hsu¹, Ping Liang Ko², Hsiao Mei Wu², Tse Ang Lee², Hsi Chieh Lin², and Yi Chung Tung²  
¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN

### Other Applications in Biology

**M051.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

**M052.a** ON-CHIP DEFORMABILITY MEASUREMENT OF EUKARYOTIC CELLS: COMPARISON TO ANUCLEATE CELLS  
Hiroaki Ito¹, Kohei Fujimoto², and Makoto Kaneko³  
¹Chiba University, JAPAN, ²Osaka University, JAPAN, and ³Meijo University, JAPAN
GLASS MICROFLUIDIC HIGH THROUGHPUT HYPOXIA SCREENING SYSTEM FOR OXIDATIVE STRESS ON OCULAR SURFACE CELLS
Jeongyun Kim\textsuperscript{1}, Chiwan Koo\textsuperscript{2}, Won Choi\textsuperscript{3}, Eunjin Lee\textsuperscript{3}, Kyongjin Cho\textsuperscript{1}, Jongil Ju\textsuperscript{1}, and Jiyeon Choi\textsuperscript{4}
\textsuperscript{1}Dankook University, KOREA, \textsuperscript{2}Hanbat National University, KOREA, \textsuperscript{3}Seoul National University, KOREA, and \textsuperscript{4}Korea Institute of Machinery and Materials, KOREA

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

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

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

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

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

ON-CHIP SYNTHESIS OF AU NANOPARTICLES BY MICROWAVE-INDUCED REACTION IN MICROCHANNEL EMBEDDED IN THE POST-WALL WAVEGUIDE
Akinobu Yamaguchi\textsuperscript{1}, Mitsuyoshi Kishihara\textsuperscript{2}, Takao Fukuoka\textsuperscript{1}, Masaya Takeuchi\textsuperscript{1}, and Yuichi Utsumi\textsuperscript{1}
\textsuperscript{1}University of Hyogo, JAPAN and \textsuperscript{2}Okayama Prefectural University, JAPAN
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>COFFEE CUP-SIZED MICRODROPLET RADIOSYNTHESIZER</td>
<td>Jia Wang, Philip H. Chao, and R. Michael van Dam</td>
<td>University of California, Los Angeles, USA</td>
</tr>
<tr>
<td></td>
<td>Particles Encapsulation in Microfluidic Droplets with Mass-Spectrometric Investigation of Heterogeneous Reactions</td>
<td>Monique Kretzschmar and Detlev Belder</td>
<td>Universität Leipzig, Germany</td>
</tr>
<tr>
<td>M055.b</td>
<td>COUPLING ON-CHIP SEPARATIONS TO ION MOBILITY SPECTROMETRY</td>
<td>Nora T. Hartner, Sebastian K. Piendl, Christian-Robert Raddatz, Christian Thoben, Rico Warias, Stefan Zimmermann, and Detlev Belder</td>
<td>Leipzig University, Germany</td>
</tr>
<tr>
<td>M056.b</td>
<td>PAPER MICROFLUIDIC CASSETTE INTEGRATED WITH PINCHING ELECTRODES FOR SPRAY PLUM FOCUSING AND HIGH PERFORMANCE MS DETECTIONS</td>
<td>Yi-Chieh Li and Che-Hsin Lin</td>
<td>National Sun Yat-sen University, Taiwan</td>
</tr>
<tr>
<td>M057.b</td>
<td>TOWARDS USB POWERED µPADS: 5 VOLT PAPER ISOTACHOPHORESIS</td>
<td>Federico Schaumburg¹, Pablo A. Kler¹, Claudio L.A. Berli¹, and Charles S. Henry²</td>
<td>¹Universidad Nacional del Litoral-CONICET, Argentina and ²Colorado State University, USA</td>
</tr>
<tr>
<td>T054.b</td>
<td>CONTINUOUS BINARY PROTEIN SEPARATION IN A MICROFABRICATED ELECTRICAL SPLIT-FLOW THIN FRACTIONATION (SPLITT) DEVICE</td>
<td>Andrea Capuano¹², Andrea Adami², Viviana Mulloni², and Leandro Lorenzelli²</td>
<td>¹University of Trento, Italy and ²Fondazione Bruno Kessler, Italy</td>
</tr>
<tr>
<td>T055.b</td>
<td>DEVELOPMENT OF ON-LINE DESALTING DEVICE BY MEMBRANE INTEGRATION INTO NANOFLOWIDIC DEVICE</td>
<td>Kyojiro Morikawa, Yutaka Kazoe, Hisashi Shimizu, Kazuma Mawatari, and Takehiko Kitamori</td>
<td>University of Tokyo, Japan</td>
</tr>
<tr>
<td>T056.b</td>
<td>SINGLE STEP SEPARATION AND CONCENTRATION OF BIOMARKER PROTEINS USING AGAROSE BASED MINIATURIZED ISOELECTRIC GATES FOR BEDSIDE DIAGNOSTICS</td>
<td>Sreekant Damodara¹³, Alison E. Fox-Robichaud¹²³, Dhruva J. Dwivedi¹²³, Patricia C. Liaw¹²³, and P. Ravi Selvaganapathy¹³</td>
<td>¹McMaster University, Canada, ²Thrombosis and Atherosclerosis Research Institute, Canada, and ³Canadian Critical Care Translational Biology Group, Canada</td>
</tr>
</tbody>
</table>
### Chemical Applications: Separations, Mixers and Reactions

#### Micromixers & Microreactors

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>W054.b</td>
<td>CONTINUOUS LITHIUM EXTRACTION FROM HIGH MG2+/LI+ RATIO BRINE BASED ON ION CONCENTRATION POLARIZATION</td>
<td>Minsoo Lee(^1), Hyukjin J. Kwon(^2), Woohul Jung(^3), and Geunbae Lim(^1)</td>
<td>(^1)Pohang University of Science and Technology, KOREA, (^2)Massachusetts Institute of Technology, USA, and (^3)Research Institute of Industrial Science and Technology, KOREA</td>
</tr>
<tr>
<td>W055.b</td>
<td>MICROSCALE FORMATION OF IMMOBILIZED PH GRADIENT IN SIMPLE STRAIGHT CHANNEL</td>
<td>Sukyo Joung(^1), Dohyun Kim(^2), Jintae Kim(^3), and Minsub Chung(^1)</td>
<td>(^1)Hongik University, KOREA, (^2)Myongji University, KOREA, and (^3)Konkuk University, KOREA</td>
</tr>
<tr>
<td>W056.b</td>
<td>SMALL RNA EXTRACTION FROM CELL-LYSATE USING ISOTACHOPHORESIS</td>
<td>Ruba Khnouf(^1), Crystal Han(^2), and Sarah Munro(^3)</td>
<td>(^1)Jordan University of Science and Technology, JORDAN, (^2)San Jose State University, USA, and (^3)University of Minnesota, USA</td>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>M058.b</td>
<td>EVALUATION OF MIXING PERFORMANCE OF ON-CHIP MICROMIXER WITH LOW DEAD VOLUME BASED ON VIBRATION-INDUCED FLOW</td>
<td>Toshiyuki Matsui, Hiroaki Suzuki, and Takeshi Hayakawa</td>
<td>Chuo University, JAPAN</td>
</tr>
<tr>
<td>M059.b</td>
<td>ORGANIC CHEMICAL REACTION ON AN ELECTROWETTING-ON-DIELECTRIC (EWOD) DIGITAL MICROFLUIDIC DEVICE</td>
<td>Matin Torabinia, Parham Asgari, Junha Jeon, and Hyejin Moon</td>
<td>University of Texas, Arlington, USA</td>
</tr>
<tr>
<td>M060.b</td>
<td>THREE-DIMENSIONAL LAMINAR-FLOW MICROMIXER FOR KINETIC STUDIES OF INCREASED ACCURACY THROUGH A PRE-FOCUSED STREAM INJECTION</td>
<td>Sheng Ni and Levent Yobas</td>
<td>Hong Kong University of Science and Technology, HONG KONG</td>
</tr>
<tr>
<td>T057.b</td>
<td>3D HELICAL MICROMIXER BY LOST WAX CASTING</td>
<td>Daiki Tachibana, Ken Matsubara, Yoshimi Tanaka, Hiroki Ota, and Ohmi Fuchiwaki</td>
<td>Yokohama National University, JAPAN</td>
</tr>
<tr>
<td>T058.b</td>
<td>HIGH-PRESSURE MULTIPHASE MICROFLUIDICS FOR GREENER MANUFACTURING OF ACTIVE PHARMACEUTICAL INGREDIENTS</td>
<td>Deepali Arora(^1), Rossen Sedev(^1), Craig Priest(^2), Jane Beh(^1), and Neil Foster(^1)</td>
<td>(^1)Curtin University, AUSTRALIA and (^2)University of South Australia, AUSTRALIA</td>
</tr>
<tr>
<td>T059.b</td>
<td>PILOT-SCALE SOLVENT EXTRACTION OF HIGH-VALUE METALS</td>
<td>Die Yang, Moein N. Kashani, and Craig Priest</td>
<td>University of South Australia, AUSTRALIA</td>
</tr>
</tbody>
</table>
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

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

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

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

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

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

THE MAGNUS FORCE ON SPINNING MICROPARTICLES
Miguel Solsona¹, Hans Keizer¹, Yannic Klein², Hans L. de Boer¹, Wouter Olthuis¹, Leon Abelmann³, and Albert van den Berg¹
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²Mesoscale Chemical Systems, THE NETHERLANDS, and
³Korea Institute of Science and Technology (KIST), Europe, THE NETHERLANDS

VIABLE/NON-VIABLE CELL ASSAY USING ELECTROKINETIC DETERMINISTIC LATERAL DISPLACEMENT
Bao D. Ho, Jason P. Beech, and Jonas O. Tegenfeldt
Lund University, SWEDEN
T061.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

T062.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

T063.b  THE SEPARATION AND IDENTIFICATION OF PARASITE EGGS FROM HORSE FECES
Jason P. Beech¹, Kushagr Punyani¹, Eva Tydén², and Jonas O. Tegenfeldt¹
¹Lund University, SWEDEN and ²Swedish University of Agricultural Sciences, SWEDEN

W060.b  A 3D PRINTED MODULAR MICROFLUIDIC DEVICE FOR LARGE SCALE CELL HARVESTING FROM BIOREACTORS
Mahsa Asadniaye Fard Jahromi¹, Lin Ding², Sajad Razavi Bazaz³, Graham Vesey³, Mohsen Asadnia¹, and Majid Ebrahimi Warkiani²
¹Macquarie University, AUSTRALIA, ²University of Technology Sydney, AUSTRALIA, and ³Regeneus 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  TAILORED SUPERABSORBENT POLYMER BEADS FOR ENVIRONMENTAL MICROBIAL PATHOGEN CONCENTRATION IN LOW-RESOURCE SETTINGS
Xunyi Wu, Xiao Huang, Jing Li, Yanzhe Zhu, and Michael R. Hoffmann
California Institute of Technology, USA

W063.b  VERTICAL SLIT-FRACTIONATION: HIGH-THROUGHPUT PARTICLE/CELL SEPARATION
Naotaka Jin¹, Jumpei Yamamoto¹, Masumi Yamada¹, Kazuki Iijima², Koji Katayama², and Minoru Seki¹
¹Chiba University, JAPAN and ²Tosoh Corporation, JAPAN

b - Chemical Applications: Separations, Mixers and Reactions
Other Applications in Chemistry

M065.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
M066.b  RAPID SCREENING OF RARE EARTH EXTRACTION: DIRECT ANALYSIS OF RATE AND PHASE BEHAVIOR IN A MICROPILLAR ARRAY
Claudia Binder, Benjamin Lageder, Bronwyn Bradshaw-Hajek, and Craig Priest
University of South Australia, AUSTRALIA

T064.b  AN INTEGRATED CHIP-APPROACH TO STUDY ENANTIOSELECTIVE HETEROGENEOUS CATALYSTS AT THE MICROSCALE
Rico Warias¹, Hannes Westphal¹, Daniele Ragno², Alessandro Massi², and Detlev Belder¹
¹Leipzig University, GERMANY and ²University of Ferrara, ITALY

T065.b  MICROFLUIDIC METHOD FOR INVESTIGATING KINETICS OF EMULSION DESTABILIZATION
Marcin Dudek¹, Diana Fernandes², Eirik H. Herø¹, and Gisle Øye¹
¹Norwegian University of Science and Technology, NORWAY and ²Polytechnic Institute of Porto, PORTUGAL

W064.b  FEMTO-LITER PROTEIN PURIFICATION BY PARALLEL TWO-PHASE NANOFLUIDICS
Shu Matsuura, Yutaka Kazoe, and Takehiko Kitamori
University of Tokyo, JAPAN

W065.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

M067.c  A MICROFLUIDIC PLATFORM FOR DIAGNOSIS OF OVARIAN CLEAR CELL CARCINOMA VIA QUANTIFICATION OF FXYD2 GENE
Ting-Hang Liu¹, Chang-Ni Lin²,³, Keng-Fu Hsu²,³, and Gwo-Bin Lee¹
¹National Tsing Hua University, TAIWAN, ²National Cheng Kung University Hospital, TAIWAN, and ³National Cheng Kung University, TAIWAN

M068.c  ARRAY OF MICRO-MAGNETS FOR CTC SORTING IN LAB-ON-A CHIP DEVICES
Lucie Descamps¹, Samir Mekkaoui¹, Emmanuelle Laurenceau¹, Marie-Charlotte Audry¹, Jessica Garcia², Léa Payen², Damien Le Roy³, and Anne-Laure Deman¹
¹Lyon Institute of Nanotechnology, FRANCE, ²Hospices Civils de Lyon, FRANCE, and ³Institut Lumière Matière, FRANCE

M069.c  DEVELOPING AN OPTICAL DNA MAPPING TOOLBOX TO IDENTIFY CHROMOSOMAL TRANSLOCATIONS IN ACUTE MYELOID LEUKEMIA
Miriam Hitz¹, Gaurav Goyal², Vilhelm Müller², Linda Fogelstrand³, and Fredrik Westerlund¹
¹University of Applied Sciences, Aachen, GERMANY, ²Chalmers University of Technology, SWEDEN, and ³Sahlgrenska University Hospital, SWEDEN
M070.c RAPID AND VIABLE ISOLATION OF HETERogeneous CIRCULATING TUMOR CELLS USING HIGH-DENSITY TAPERED-SLIT FILTERS
Jae-Eul Shim1, Jiyoon Bu1, Mi-Kyung Lee1, Jong-Uk Bu2, Tae-Ha Kim2, and Young-Ho Cho1
1Korea Advanced Institute of Science and Technology (KAIST), KOREA and 2SenPlus, Ltd., KOREA

T066.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

T067.c AN INTEGRATED MICROFLUIDIC PLATFORM TO DETECT TUMOR CELLS FROM BILE JUICE OF CHOLANGIOCARCINOMA PATIENTS BY USING NOVEL AFFINITY REAGENTS
Wen-Yen Huang1, Nai-Jung Chiang2, Cheng-Hsiu Chang3, Priya Gopinathan1, Terry D. Juang1, Hsiu-Chi Tu2, Yen-Shen Shan2, Shang-Cheng Hung3, and Gwo-Bin Lee1
1National Tsing Hua University, TAIWAN, 2National Cheng Kung University Hospital, TAIWAN, and 3Academia Sinica, TAIWAN

T068.c BIOPHYSICS OF CIRCULATING TUMOR CELL CLUSTERS
Baris Ragip Mutlu1,2, Taronish Dubash1,2, Claudius Dietsche1,2, Avanish Mishra1,2, Kevin Keim3, Jon Edd1,2, Daniel Haber1,2, Shyamala Maheswaran1,2, and Mehmet Toner1,2
1Massachusetts General Hospital, USA, 2Harvard Medical School, USA, and 3École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T069.c MONITORING IMMUNOLOGICAL SYNAPSES AT SINGLE CELL LEVEL IN A MICROFLUIDIC DEVICE
Faruk A. Shaik1, Clara Lewuillon1, Yasmine Touil1, Aurélie Guillemette1, Bruno Quesnel1, Carine Brinster1, Loïc Lemonnier1, Dominique Collard2, and Mehmet C. Tarhan1
1University of Lille, FRANCE and 2University of Tokyo, JAPAN

T070.c SEPARATION/CAPTURE OF CANCER CELLS IN BLOOD USING A NUCLEIC-ACID APTAMER MODIFIED DYNAMIC DEFORMABLE MICROFILTER
Yuta Nakashima1, Soichiro Fukuyama1, Seitaro Kumamoto1, Keiichiro Yasuda2, Yusuke Kitamura1, Masaaki Iwatsuki1, Hideo Baba1, Toshihiro Ihara1, and Yoshitaka Nakanishi1
1Kumamoto University, JAPAN and 2Ogic Technologies, JAPAN

W066.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

W067.c APPLICATION OF DNA-DIRECTED PATTERNING TO FABRICATE AN IN VITRO BONE MARROW MICROENVIRONMENT FOR THE HIGH-THROUGHPUT STUDY OF PROSTATE CANCER DORMANCY
Molly Kozminska and Lydia Sohn
University of California, Berkeley, USA
FOCUSING AND SORTING OF TUMOR CELL CLUSTERS IN AN INERTIAL MICROCHANNEL
Jian Zhou, Qiyue Luan, and Ian Papautsky
University of Illinois, Chicago, USA

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

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 Lee1, Jessica Svedlund2, Evangelia Darai2, Yongju Lee1, Daewon Lee1, Han-Byoel Lee3, Sung-Min Kim3, Okju Kim1, Hyung Jong Bae4, Ahyoun Choi1, Sumin Lee1, Seo Woo Song1, Yeongiae Choi1, Huiran Yeom1, Caleb Sangchul Lee5, Wonshik Han1, Dong Soon Lee6, Jin-Young Jang3, Narayanan Madaboosi2, Mats Nilsson2, Sunghoon Kwon1, Yunjin Jeong1, Seo Woo Song1, Yeongiae Choi1, Huiran Yeom1, Caleb Sangchul5, Lee Wonshik Han3, Dong Soon Lee3, Jin-Young Jang3, Narayanan Madaboosi2, Mats Nilsson2, and Sunghoon Kwon1
1Seoul National University, KOREA, 2Science for Life Laboratory, SWEDEN, 3Seoul National University Hospital, KOREA, 4University of Illinois, Urbana-Champaign, USA, and 5University of California, Berkeley, USA

A CMOS-BASED LAB-ON-CHIP DIAGNOSTIC SYSTEM FOR RAPID DETECTION AND WORLDWIDE MONITORING OF AZOLE-RESISTANT ASPERGILLUS FUMIGATUS
Imperial College London, UK

A MICRONEEDLE-BASED LATERAL FLOW IMMUNOASSAY FOR RAPID PROTEIN DETECTION
Xue Jiang and Peter B. Lillehoj
Michigan State University, USA
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

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

DEVELOPMENT AND CLINICAL TESTING OF A MICROFLUIDIC IMMUNOAFFINITY BASOPHIL ACTIVATION TEST FOR POINT-OF-CARE ALLERGY DIAGNOSIS
Frida Kalm1,2, Zenib Aljadi1, Harisha Ramachandraiah1, Caroline Nilsson2,3, Ola Winqvist4, Joachim Lundahl2, Anna Nopp2, and Aman Russom1
1KTH Royal Institute of Technology, SWEDEN, 2Karolinska Institutet and, SWEDEN, 3Sachs’ Children and Youth Hospital, SWEDEN, and 4Karolinska University Hospital, SWEDEN

FLOW VISUALIZATION IN A CORONARY NETWORK WITH MICROVASCULAR OBSTRUCTION (MVO) USING A MULTISCALE IN-VITRO BENCHTOP MODEL
Mirunalini Thirugnanasambandam1, Christian Wüthrich1, Sabrina Frey1, Peter Heeb2, Cornelia Nef2, André Bernard2, and Dominik Obrist1
1University of Bern, SWITZERLAND and 2University of Applied Sciences Buchs NTB, SWITZERLAND

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

IOT PCR SYSTEM FOR DISEASE DETECTION AND SPREAD MONITORING
Hanliang Zhu1, Pavel Podesva1, Xiaocheng Liu1, Haoqing Zhang1, Tomas Teply2, Ying Xu1, Honglong Chang1, Airong Qian1, and Pavel Neuzil1
1Northwestern Polytechnical University, CHINA and 2Czech Technical University, CZECH REPUBLIC

NANOFLUIDIC BARCODES FOR QUANTIFICATION/IDENTIFICATION OF BIOMARKERS
Sokhna M. Ngom1, Francois D. Delapierre2, Fatima Flores-Galicia1, Stephane Guilet1, Edmond Cambril1, Jean Gamby1, Antoine Pallandre3, Isabelle Le Potier1, and Anne-Marie Haghiri-Gosnet1
1C2N-CNRS, FRANCE, 2SPEC-CEA, FRANCE, and 3LCP-CNRS, FRANCE
M080.c  OPTIMIZING ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY BASED IMMUNOASSAYS ON ZINC-OXIDE-NANOWIRE PAPER-BASED ELECTRODES
Xiao Li¹, Hao Fu¹, Ted Li², and Xinyu Liu¹
¹University of Toronto, CANADA and ²McGill University, CANADA

M081.c  POINT-OF-CARE HIV NUCLEIC ACID SCREENING ON A MAGNETOFLUIDIC ASSAY CARTRIDGE
Johns Hopkins University, USA

M082.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

M083.c  SELF-CONTAINED DIAGNOSTIC PLATFORM FOR PATHOGEN AND ANTIBIOTIC RESISTANCE DETECTION FOR DIABETIC FOOT ULCERS
Joerg Nestler¹, Cornelia Stiehl¹, Jenny Graunitz¹, Sascha Geidel¹, Andreas Morschhauser², Thomas Otto², Martina Schneemann², Apoorva Jnana³, Sreepathy T. Murali³, Kapaettu Satyamoorthy³, Dhananjaya Dendukuri⁴, Harald Peter⁵, Sakthi Uma Maheswari⁴, Siddharth Ramakrishnan⁴, Purbasha Halder⁴, and Frank F. Bier⁶
¹BiFlow Systems GmbH, GERMANY, ²Fraunhofer ENAS, GERMANY, ³Manipal Academy of Higher Education, INDIA, ⁴Achira Labs Pvt. Ltd., INDIA, ⁵Fraunhofer IZI-BB, GERMANY, and ⁶Potsdam University, GERMANY

M084.c  THIN POLYMERIC SHEET-BASED IMMUNOASSAY PLATFORMS INTEGRATED WITH MICRO/NANO-IMPRINTED MULTISCALE ARCHITECTURES
Shuhei Aoyama¹,², Yuto Akiyama², Kenji Monden², Masumi Yamada¹, and Minoru Seki¹
¹Chiba University, JAPAN and ²Denka Co., Ltd., JAPAN

M085.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

T071.c  A LAB-ON-A-DISK DEVICE FOR ISOLATION AND IDENTIFICATION OF PARASITE EGGS IN STOOL
Sertan Sukas¹, Bieke Van Dorst², Agata Kryj¹, Ole Lagatie³, Wim De Malsche¹, and Lieven Stuyver²
¹Vrije Universiteit Brussel, BELGIUM and ²Janssen Diagnostics, BELGIUM
A NOVEL DIAGNOSTIC DEVICE FOR RAPID TESTING OF ANTIBIOTIC ALLERGIES: FOCUS ON FLUIDIC DESIGN AND MANUFACTURING OF DISPOSABLE DISCS

Elizaveta Vereshchagina1, Sergi Morais2, Luis A. Tortajada-Genaro2, Angel Maquieira2, Estrella Fernandez2, Teresa Molina2, Veaceslav Linte3, Brindus Comanescu3, Michal M. Mielenk1,1, Erik Andreassen1, Anna Franquesa-Vazquez4, Werner Balika4, and Alfredo Sáez5
1SINTEF Digital, NORWAY, 2Universitat Politècnica de València, SPAIN, 3Optoelectronica, ROMANIA, 4STRATEC Consumables GmbH, AUSTRIA, and 5Sergio Peransi Llopis Lumensia Sensors, SPAIN

AN INTEGRATED MICROFLUIDIC DEVICE FOR BLOOD PLASMA SEPARATION AND IMMUNOASSAY DETECTION

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

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

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

DEVELOPMENT OF AN AFFORDABLE AND SENSITIVE DIAGNOSTIC TEST FOR DENGUE DISEASE USING MICROFLUIDICS AND SMARTPHONES.

Sophie M. Jegouic1 and Alexander D. Edwards1,2
1University of Reading, UK and 2Capillary Firm Technology Ltd, UK

FLUORESCENCE SIGNAL AMPLIFICATION FOR SENSITIVE ENZYME IMMUNOASSAY UTILIZING AN IMMUNO-WALL

Keine Nishiyama1, Toshihiro Kasama2, Masatoshi Maeki1, Akihiko Ishida1, Hirofumi Tani1, and Manabu Tokeshi1
1Hokkaido University, JAPAN and 2University of Tokyo, JAPAN

HEMORHEOMETER-ON-A-CHIP: ANALYSIS OF BLOOD BIOPHYSICAL PARAMETERS IN A MICROCHANNEL

Ziya Isiksacan, Murat Serhatlioglu, and Caglar Elbuken
Bilkent University, TURKEY

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 Tsougeni1, Georgia Kaprou1, C.M. Loukas1, Audrey Hamiot2, George Papadakis3, Bruno Dupuy2, Michael Eck4, David Rabus5, George Kokkoris1, Electra Gizeli3, Angeliki Tserepi1, Evangelos
1NCSR-Demokritos, GREECE, 2Institute Pasteur, FRANCE, 3Foundation for Research & Technology - Hellas, GREECE, 4Jobst Technologies GmbH, GERMANY, and 5SENSeOR SAS, FRANCE
T079.c  NANOPLASMO-FLUIDIC PCR CHIP WITH MICROLITER VOLUME FOR RAPID DIAGNOSTICS
Byoung-Hoon Kang¹, Youngseop Lee², and Ki-Hun Jeong¹
¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and
²University of California, Berkeley, USA

T080.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

T081.c  POROUS MICRONEEDLE ELECTRODES FOR THE ELECTROCHEMICAL SENSING ON SKIN
Hiroyuki Kai
Tohoku University, JAPAN

T082.c  REUSABLE MICROFLUIDIC DEVICE FOR COMPLETE BLOOD COUNT APPLICATIONS
Damien Isebe¹, Amin Amirouche², Jean L. Papilleau¹, Philippe Piedcoq¹,
Nicolas Verplanck², Pierre Blandin², Anais Ali-Cherif¹, and Yves Fouillet²
¹HORIBA Medical, FRANCE and ²CEA, LETI-Health, FRANCE

T083.c  SINGLE-STEP BIOLUMINESCENCE LATERAL FLOW IMMUNOASSAYS FOR DIAGNOSTICS
Riho Shimazu¹, Junnosuke Kawahara¹, Kosuke Tomimuro¹, Kazushi Misawa¹,
Yan Ni², Yuki Hiruta¹, Maarten Merkx², and Daniel Citterio¹
¹Keio University, JAPAN and ²Eindhoven University of Technology, THE NETHERLANDS

T084.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

W071.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

W072.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

W073.c  AUTOMATED PORTABLE DEVICE FOR ANTIMICROBIAL SUSCEPTIBILITY TEST OF ANTIBIOTICS COMBINATION
Kuo-Wei Hsu¹, Wen-Bin Lee¹, Huey-Ling You², Mel S Lee², and Gwo-Bin Lee¹
¹National Tsing Hua University, TAIWAN and
²Kaohsiung Chang Gung Memorial Hospital, TAIWAN
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

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

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

HYBRIDIZATION-BASED DNA ANALYSIS BY SELF-HEATING NANOWIRE MICROFLUIDIC DEVICES
Hiromi Takahashi¹, Takao Yasui¹, Keiko Shinjo¹, Quanli Liu¹, Taisuke Shimada¹, Noritada Kaji², Hiromu Kashida¹, and Yoshinobu Baba¹
¹Nagoya University, JAPAN and ²Kyushu University, JAPAN

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

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

PHASE CHANGE MATERIALS AS AN ENABLER FOR MALARIA DETECTION IN LOW-RESOURCE SETTINGS
Dries Vloemans¹, Francesco Dal Dosso¹, Carlos L. Orero¹, Joanne Macdonald², and Jeroen Lammertyn¹
¹KU Leuven, BELGIUM and ²University of the Sunshine Coast, AUSTRALIA

PRODUCT DEVELOPMENT OF A PORTABLE MICROFLUIDIC DEVICE FOR THE DETECTION OF BACTERIAL CONTAMINATION IN ENVIRONMENTAL LIQUID SAMPLES
Luís F. Alonzo¹, Andrew Miller¹, Troy Hinkley¹, Anne-Laure Le Ny¹, Sam R. Nugen², and Kevin P. Nichols¹
¹Global Good/Intellectual Ventures Lab, USA and ²Cornell University, USA
SEGMENTED MICROFLUIDICS ASSISTED BACTERIAL ISOLATION FOR SEPSIS DIAGNOSIS FROM LARGE VOLUME OF BLOOD
Suhanya Duraiswamy¹, Ruige Wu², and Zhiping Wang²
¹Indian Institute of Technology Hyderabad, INDIA and ²SIMTech, SINGAPORE

SLµRP: A MODULAR SCALABLE AUTOMATED MICROFLUIDIC SYSTEM FOR DIAGNOSTIC ASSAY OPTIMIZATION AND CARTRIDGE PROTOTYPING
Carlos F. Ng¹, David P. Kalish¹, Anne V. Cheng¹, Richie E. Kohman¹², Jenny M. Tam², Richard Novak¹, George M. Church¹², and Donald E. Ingber¹²,³
¹Harvard University, USA, ²Harvard Medical School, USA, and ³Boston Children's Hospital, USA

TOWARDS POINT-OF-CARE HIV DIAGNOSTICS USING DUAL-LABELLED ROLLING CIRCLE PRODUCTS FOR EFFICIENT CAPTURE AND DETECTION IN A MICROFLUIDIC DEVICE
Ruben R.G. Soares¹, João C. Varela², Ujjwal Neogi³, Mats Nilsson², Narayanan Madaboosi², and Aman Russom¹
¹KTH Royal Institute of Technology, SWEDEN, ²Stockholm University, SWEDEN, and ³Karolinska Institutet, SWEDEN

FABRICATION OF 3D IN VITRO MICRO-PHYSIOLOGICAL SYSTEM CAPABLE TO STUDY THE SYSTEMIC DELIVERY OF ONCOLYTIC VIRUS
Sang Woo Lee¹, Kyoung Jin Lee², Soo Yeon Jeong¹, Heuiran Lee², and Gi Seok Jeong¹
¹Asan Medical Center, KOREA and ²University of Ulsan College of Medicine, KOREA

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

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

DIGITAL MICROFLUIDIC DRUG SCREENING ON BIOPSIES FROM XENOGRRAFT MOUSE BREAST CANCER
Jiao Zhai, Yanwei Jia, Pui-in Mak, and Rui P. Martins
University of Macau, CHINA
T086.c  MICROFLUIDIC IMMOBILIZED ENZYME REACTORS FOR PREDICTION OF DRUG CLEARANCE IN VIVO
Iiro Kiiski¹, Sanna Artes¹, Ville Jokinen², Päivi Järvinen¹, and Tiina Sikanen¹
¹University of Helsinki, FINLAND and ²Aalto University, FINLAND

T087.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

T088.c  ULTRA-HIGH-THROUGHPUT SCREENING OF BACTERIAL LIBRARIES TO IDENTIFY NOVEL METABOLITES THAT INDUCE MITOCHONDRIAL BIOGENESIS AND FUNCTION
Anna Desalvo¹, Catherine Klapholz¹, Gareth Ettridge², Christina Kahramanoglou¹, Kamila Bienkowska¹, Robert Lightowlers², Doug Turnbull², and Stuart Wood¹
¹Nanna Therapeutics Ltd, UK and ²Wellcome Centre for Mitochondrial Research, UK

W085.c  EXTRAVASATION OF SOFT NANOPARTICLES SIMULATED ON AN EASY-TO-OBSERVE MEMBRANE-INTEGRATED MICROFLUIDIC DEVICE
Mayu Watanabe¹, Yumi Moriya¹, Hiroaki Matsuba², Akihiro Kishimura², Yoshiki Katayama², and Naoki Sasaki¹
¹Toyo University, JAPAN and ²Kyushu University, JAPAN

W086.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

W087.c  SIDE-BY-SIDE 2D AND 3D CELL CULTURING MICRODEVICES FOR DRUG TOXICITY SCREENING
Päivi Järvinen¹, Ashkan Bonabi¹, Ville Jokinen², and Tiina Sikanen¹
¹University of Helsinki, FINLAND and ²Aalto University, FINLAND

W088.c  ULTRASOUND-TRIGGERED CONTROLLED RELEASE OF NANOPARTICLES FROM HYDROGEL MICROBEADS BY RELEASE-PROMOTING PARTICLES
Takeshi Kubota¹, Yuta Kurashina¹, and Hiroaki Onoe¹
¹Keio university, JAPAN and ²Tokyo Institute of Technology, JAPAN

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**c - Diagnostics, Drug Testing & Personalized Medicine**

Liquid Biopsy and Sample Preparation

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M089.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
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

INTEGRATED MICROFLUIDIC DEVICE FOR CIRCULATING EXOSOMES DETECTION TOWARDS BREAST CANCER DIAGNOSIS
Wenwen Chen¹, Wentao Su¹, Jianhua Qin¹, and Hongjing Li²
¹Chinese Academy of Sciences, CHINA and
²First Affiliated Hospital of Dalian Medical University, CHINA

MICROFLUIDIC DEVICE FOR THE SEPARATION OF BLOOD PLASMA FROM CAPILLARY SAMPLES
Giulia Deiana¹, Alvaro J. Conde², Conni McCarthy², James Dear¹, Stewart Smith¹, and Maïwenn Kersaudy-Kerhoas²
¹University of Edinburgh, UK and ²Heriot-Watt University, UK

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

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

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

NITROGEN-MUSTARD COATED MAGNETIC BEADS FOR HYBRIDIZATION AND ELUTION-FREE CIRCULATING TUMOR DNA DETECTION
Benediktus N. Hapsianto¹, Naoshi Kojima², Ryoji Kurita², Hitoshi Yamagata³, Hiroyuki Fujita³, Teruo Fujii¹, and Soo Hyeon Kim¹
¹University of Tokyo, JAPAN, ²National Institute of Advanced Industrial Science (AIST), JAPAN, and ³Canon Medical Systems Corporation, JAPAN

SEARCHING CANCER-SPECIFIC EXTRACELLULAR VESICLE USING SIZE FRACTION AND SINGLE VESICLE ANALYSIS
Dongyoung Kim¹, Hyun-Kyung Woo², Chaeeun Lee², Yoohong Min², and Yoon-Kyong Cho²
¹Center for Soft and Living Matter, Institute for Basic Science, KOREA and
²Ulsan National Institute of Science & Technology, KOREA
**W090.c** INKJET-PRINTING BASED INTEGRATION OF MICROFLUIDICS ON FROZEN SECTION FOR SPATIALLY STAINING  
Fengyi Zheng¹, Jiasheng Huang¹, Xiaoyi Shi¹, Fei Pei², and Zhihong Li¹  
¹Peking University, CHINA and ²Peking University Health Science Center, CHINA

**W091.c** MAGNETIC BEAD FREE DNA EXTRACTION ENABLED BY EWOD DIGITAL MICROFLUIDICS  
Shubhodeep Paul and Hyejin Moon  
University of Texas, Arlington, USA

**W092.c** POLYVINYL ALCOHOL (PVA)-FUNCTIONALIZED FILTER FOR EFFECTIVE CELL CAPTURE AND RELEASE  
Tingyu Li, Yaoping Liu, and Wei Wang  
Peking University, CHINA

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**c - Diagnostics, Drug Testing & Personalized Medicine**

*Neurobiology/Neuroscience*

**M093.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

**M094.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

**T093.c** CHARACTERIZATION OF NEURON SIGNALING USING MICROELECTRODE ARRAY COMBINED WITH FAST AND PRECISE COOLING DEVICE FOR CRYOANESTHESIA  
Jaehyun Kim¹, Jong Seung Lee², Soyeon Noh³, Nuree Lee¹, Jungchul Lee⁴, Taesung Kim³, Gunho Kim³, Seung-Woo Cho², and Jungyul Park¹  
¹Sogang University, KOREA, ²Yunsei University, KOREA, ³Ulsan National Institute of Science and Technology(UNIST), KOREA, and ⁴Korea Advanced Institute of Science and Technology(KAIST), KOREA

**T094.c** THE EMERGING ROLES OF ERYTHROCYTES IN THE REGULATION OF CEREBRAL MICROCIRCULATION  
Jiandi Wan  
University of California, Davis, USA
W093.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

M095.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

M096.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

M097.c HAIRPIN-STRUCTURED PCR ENHANCER FOR MICROFLUIDIC PLATFORMS
Ren Shen, Yanwei Jia, Pui-In Mak, and Rui P. Martins
University of Macau, CHINA

M098.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

T095.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

T096.c DNA DIGESTION USING IMMOBILIZED DNASE TYPE I IN A MICROFLUIDIC CARTRIDGE
Jenny Graunitz1, Sandra Kuhn2, Cornelia Stiehl3, Martina Schneemann4, Andreas Morschhauser4, Harald Peter4, Frank Bier1, and Jörg Nestler3
1University of Potsdam, GERMANY, 2Mittweida University of Applied Sciences, GERMANY, 3BiFlow Systems GmbH, GERMANY, and 4Fraunhofer Institute for Electronic Nano Systems ENAS, GERMANY
T097.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

T098.c  OPTICAL DNA MAPPING USING NANOCHANNELS FOR IDENTIFICATION OF PLASMIDS CARRYING CARBAPENEMASE BLaNDM-1 GENE FROM PATIENTS ADMITTED TO A VIETNAMESE HOSPITAL
Sriram Kesarimangalam¹ Kalyanavenkatramanan¹, Maud Nilsson², Bjorn Berglund², Linus Olson³, Hoang-Bich Ngoc⁴, Tran-Minh Dien⁴, Mattias Larsson³, Håkan Hanberger², Christian G. Giske³, and Fredrik Westerlund¹
¹Chalmers University of Technology, SWEDEN, ²Linköping University, Linköping, SWEDEN, ³Karolinska Institute, Stockholm, SWEDEN, and ⁴Vietnam National Children's Hospital, Hanoi, VIETNAM

W094.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

W095.c  BURRED MICROFLUIDIC CHANNELS WITH OBSERVATION WINDOW FOR A HEAT TRANSFER DETERMINATION BASED ON DNA MELTING CURVE ANALYSIS
Zdenka Fohlerova¹, Hanliang Zhu², Imrich Gablech¹, and Pavel Neužil¹
¹Central European Institute of Technology, CZECH REPUBLIC and ²Northwestern Polytechnical University, CHINA

W096.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

W097.c  INTEGRATION OF ISOTHERMAL MOLECULAR AMPLIFICATION WITH CENTRIFUGAL MICROFLUIDIC PLATFORM AND NANOPARTICLE BASED OPTOMAGNETIC READOUT FOR DETECTION OF E. COLI
Robert W. Baber¹, Marco Donolato², Mikkel F. Hansen¹, and Jeppe Fock²
¹Technical University of Denmark, DENMARK and ²BluSense Diagnostics, DENMARK

W098.c  POINT-OF-CARE NUCLEIC ACID SENSORS VIA PAPER-BASED OLIGONUCLEOTIDE-TEMPLATED REACTIONS
Robert B. Channon¹, Suraj Pavagada², Jason Y.H. Chang³, Sung H. Kim¹, David MacIntyre¹, Phillip R. Bennett¹, Vasso Terzidou¹, Danny O'Hare¹, and Sylvain Ladame¹
¹Imperial College London, UK, ²University of Cambridge, UK, and ³Massachusetts Institute of Technology, USA
M099.c 3D PRINTED RASPBERRY PI MICROSCOPY FOR LOW COST MICROFLUIDIC BACTERIAL MOTILITY ANALYSIS  
Tai The Diep and Alexander Daniel Edwards  
*University of Reading, UK*

M100.c A MICROFLUIDIC MODULE FOR INTEGRATED LYSIS AND GENETIC MATERIAL DETECTION OF GRAM-POSITIVE AND GRAM-NEGATIVE BACTERIA  
Catarina R.F. Caneira¹, Silvia Monteiro², Ricardo Santos², Virginia Chu¹, and João P. Conde¹  
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M101.c BACTERIAL IDENTIFICATION BY OPTICAL MAPPING OF GENOMIC DNA IN NANOFIUIDIC CHANNELS  
Vilhelm Müller¹, My Nyblom¹, Anna Johhning¹,², Marie Wrände³, Albertas Dvirnas⁴, Sriram KK¹, Christian G. Giske⁵, Tobias Ambjörnsson⁴, Linus Sandegren³, Erik Kristiansson¹,², and Fredrik Westerlund¹  
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M102.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*

M103.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*

M104.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*

M105.c RAPID SEPARATION AND DETECTION OF RARE FUNGI SPORES FROM WHOLE BLOOD BASED ON A DUAL-LAYER MICROPORSE ARRAY FILTRATION  
Wenbo Zhou¹, Yaoping Liu¹, Shuangling Li², Meng Xiao³, Jie Gong⁴, Haichao Li², and Wei Wang¹  
¹Peking University, CHINA, ²Peking University First Hospital, CHINA, ³Peking Union Medical College Hospital, CHINA, and ⁴Chinese Center for Disease Control and Prevention, CHINA
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

A DROPLET MICROFLUIDICS PLATFORM FOR SCALABLE AND HIGH-THROUGHPUT ISOLATION OF ANTIBIOTIC-PRODUCING MICROBES
Pieter Berden1,2, Camila D. Campos1,2, Rodrigo S. Wiederkehr1, Liesbet Lagae1,2, Tim Stakenborg1, Jan Michiels2, and Maarten Fauvart1,2
1Imec, BELGIUM and 2KU Leuven, BELGIUM

A MULTIPLEXED ASSAY SYSTEM FOR PATHOGEN DETECTION BASED ON ENCODED MAGNETIC MICROPARTICLES
Young Ki Hahn1, Ji Hyun Kim2, and Honggu Chun2
1Kyungpook National University, KOREA and 2Korea University, KOREA

BACTERIAL PATHOGENS DETECTION AND ANTIMICROBIAL RESISTANCE TESTING USING PAPER-BASED DEVICES FOR URINARY TRACT INFECTIONS (UTIS)
Peijun J.W. He1, Ioannis N. Katis1, Anto J.U. Kumar1, Catherine Bryant1, Charles W. Keevil1, Bhaskar K. Somani2, Nitin Mahobia2, Robert W. Eason1, and Collin L. Sones1
1University of Southampton, UK and 2University Hospital Southampton NHS Trust, UK

FISH AND CHIPS: IFAST MICROFLUIDIC DEVICE FOR E. COLI O157:H7 CAPTURE AND DETECTION VIA ON-CHIP FISH ASSAY
Pablo Rodriguez-Mateos1, Celia F. Rodrigues2, Nuno F. Azevedo2, Carina Almeida3, Charlotte E. Dyer1, Alex Iles1, and Nicole Pamme1
1University of Hull, UK, 2University of Porto, PORTUGAL, and 3National Institute for Agricultural and Veterinary Research, PORTUGAL

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

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

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
W099.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

W100.c  A SELF-CONTAINED INTEGRATED NUCLEIC ACID ANALYSIS CASSETTE FOR MULTIPLEXED BACTERIA DETECTION
Nan Li, Minjie Shen, and Youchun Xu
Tsinghua University, CHINA

W101.c  DISCRIMINATING DRUG-RESISTANT BACTERIA USING AI ANALYSIS ON FINE CURRENT CHANGES FROM INNER ION LEAKAGES
Aomi Yoshikawa1, Takao Yasui1, Taisuke Shimada1, Seiji Yamasaki2, Kunihiko Nishino2, Takeshi Yanagida3, Kazuki Nagashima3, Takashi Washio3, Tomoji Kawai3, and Yoshinobu Baba1
1Nagoya University, JAPAN, 2Osaka University, JAPAN, and 3Kyushu University, JAPAN

W102.c  FULL INTEGRATION OF SAMPLE PREPARATION AND DNA ANALYSIS FOR FAST MULTIPLEX FIELD-IDENTIFICATION OF BACTERIA
Remco den Dulk1, Camille Echampard1, Perrine Viargues1, Fabienne Gas2, Florent Decugis2, Méliissa Baqué1, Anne-Gaëlle Bourdat1, Manuel Alessio1, Sandrine Alais3, Jehanne Oudot3, Olivier Riffard3, Cédric Pasquier3, Gregory Wenisch3, and Jean-Maxime Roux1
1CEA-Leti, FRANCE, 2CEA-DRF, FRANCE, and 3SDMIS, FRANCE

W103.c  MULTIPLEXED OPTICAL DNA MAPPING TO IDENTIFY PLASMIDS AND THEIR RESISTANCE GENES IN FECAL SAMPLES
Sriram Kesarimangalam Kalyanavenkatraman1, Yii-Lih Lin1, Tsegaye Sewunet2, Shoeib Nematzadeh3, Christian G. Giske3, and Fredrik Westerlund1
1Chalmers University of Technology, SWEDEN, 2Jimma University, ETHIOPIA, and 3Karolinska Institutet, SWEDEN

W104.c  PALM-SIZED MAGNETOFUIDIC PLATFORM FOR BACTERIAL IDENTIFICATION 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

W105.c  SMARTPHONE-BASED DETECTION OF VIBRIO CHOLERAE IN ENVIRONMENTAL WATER SAMPLES USING PARTICLE DIFFUSOMETRY
Taylor J. Moehling1, Dong Hoon Lee1, Katherine N. Clayton2, Steven T. Wereley1, Tamara L. Kinzer-Ursem1, and Jacqueline C. Linnes1
1Purdue University, USA and 2OmniVis LLC, USA
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>T106.c</td>
<td>DROPLET-BASED SINGLE EXTRACELLULAR VESICLE SEQUENCING FOR RARE IMMUNE SUBTYPE DISCOVERY</td>
<td>Jina Ko, Yongcheng Wang, David Weitz, and Ralph Weissleder</td>
<td>Harvard University, USA</td>
</tr>
<tr>
<td>T107.c</td>
<td>QUAD MICRORAFT ARRAYS AS A PLATFORM FOR GENERATING AND SELECTING HUMAN INDUCED PLURIPOTENT STEM CELLS FROM PERIPHERAL BLOOD</td>
<td>Nicole M. Smiddy¹, Adriana S. Beltran¹, and Nancy L. Allbritton¹,²</td>
<td>¹University of North Carolina, USA and ²North Carolina State University, USA</td>
</tr>
<tr>
<td>W106.c</td>
<td>DRUG METABOLISM-IN-A-DROPLET: A DIGITAL MICROFLUIDIC APPROACH TOWARD PRECISION MEDICINE</td>
<td>Gowtham Sathyanarayanan, Markus Haapala, and Tiina Sikanen</td>
<td>University of Helsinki, FINLAND</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>M108.c</td>
<td>HIGH-THROUGHPUT X-RAY CRYSTALLOGRAPHY BASED ON THE PROTEIN CRYSTAL ARRAY</td>
<td>Reo Takeda¹, Masatoshi Maeki¹,², Sho Ito²,³, Go Ueno³, Kunio Hirata³, Akihiko Ishida¹, Hirobumi Tani¹, Masaki Yamamoto³, and Manabu Tokeshi¹</td>
<td>¹Hokkaido University, JAPAN, ²University of Hyogo, JAPAN, and ³RIKEN, JAPAN</td>
</tr>
<tr>
<td>M109.c</td>
<td>TRANSPEPTIDASE-MEDIATED IN-SITU COVALENT IMMOBILIZATION OF CELL-FREE SYNTHESIZED ENZYME FOR ON-CHIP DIRECTED EVOLUTION</td>
<td>Shingo Ueno¹, Yui Shirakata², Mika Shioya¹, Shusuke Sato¹, Shoichi Tsuchiya¹, and Takanori Ichiki²</td>
<td>¹Innovation Center of NanoMedicine, JAPAN and ²University of Tokyo, JAPAN</td>
</tr>
</tbody>
</table>
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, Marie-Line
University Grenoble Alps, FRANCE

DRIED BLOOD SPOT RECOVERY: A MICROFLUIDIC TECHNIQUE FOR FAST ELUTION WITHOUT DILUTION.
Etienne Coz¹, Pierre Garneret¹, Didier Chevenne², Jean-François Benoist², and Fabrice Monti¹, Patrick Tabeling¹
¹Institut Pierre-Gilles de Gennes, FRANCE and ²Hospital Robert-Debré, FRANCE

THE INFLUENCE OF SHEAR ON PROTEIN CRYSTALLIZATION UNDER CONSTANT SHEAR CONDITIONS
Sander Stroobants¹, Manly Callewaert¹, Marzena Krzek¹, Sudha Chinnu¹, Pierre Gelin¹, Iwona Ziemecka¹, James F. Lutsko², Wim De Malsche¹, and Dominique Maes¹
¹Vrije Universiteit Brussel, BELGIUM and ²Université Libre de Bruxelles, BELGIUM

HIERARCHICAL ASSEMBLY OF COLLAGEN MOLECULES INTO TISSUE-ENGINEERED ARTERIAL CONSTRUCTS
Shashi Malladi¹, David M. Nieves², Carloyln Haller³, Elliot L. Chaikof³,⁴, and Axel Guenther¹
¹University of Toronto, CANADA, ²Harvard-MIT Division of Health Science and Technology, USA, ³Harvard University, USA, and ⁴Beth Israel Deaconess Medical Center, USA

CELL-ENCAPSULATING CHITOSAN-COLLAGEN HYBRID HYDROGEL CONDUIT FOR PERIPHERAL NERVE REGENERATION
Shun Itai¹, Karin Suzuki¹, Yuta Kurashina², Hiroyo Kimura¹, Tsuyoshi Amemiya¹, Kazuki Sato¹, Masaya Nakamura¹, and Hiroaki Onoe¹
¹Keio University, JAPAN and ²Tokyo Institute of Technology, JAPAN

SYNERGISTIC ELECTRO-MECHANICAL TRANSFECTION FOR IN-VIVO REGENERATIVE THERAPY USING ELECTRICALLY-INDUCED MICROBUBBLES
Akiho Hirao¹, Keiko Miwa¹, Yasuhiro Morizumi², and Yoko Yamanishi¹
¹Kyushu University, JAPAN and ²BEX Co., Ltd., JAPAN
ENGINERRED ADAPTIVE IMMUNE RESPONSE USING A MICROFLUIDICALLY-FABRICATED HYDROGEL SCAFFOLD IMPARTS REGENERATIVE WOUND HEALING

Maani M Archang1, Donald R Griffin2, Westbrook M Weaver1, Jason S Weinstein3, Amber Ruccia1, An Chieh Feng1, Elias Sideris1, Jaekyung Koh1, Dino Di Carlo1, Tatiana Segura4, and Philip O Scumpia1
1University of California, Los Angeles, USA, 2University of Virginia, USA, 3Rutgers –New Jersey Medical School, USA, and 4Duke University, USA

VERTICAL NANOSTRUCTURED FLEXIBLE ANTI-PATHOGENIC SCAFFOLDS FOR STEM CELL AND TISSUE ENGINEERING

Sunho Park1, Hyun-Ha Park2, Kahyun Sun2, Minho Seong2, Sujin Kim1, Hoon Eui Jeong2, and Jangho Kim1
1Chonnam National University, KOREA and 2Ulsan National Institute of Science and Technology (UNIST), KOREA

A CONVERSATIONAL ROBOTIC LAB ASSISTANT FOR AUTOMATED MICROFLUIDIC 3D MICROTISSUE PRODUCTION

Krzysztof Langer1, Sandra Jernström2, Piaa Mikkonen3, Päivi Östling2, Brinton Seashore-Ludlow2, and Haakan N. Joensson1
1KTH Royal Institute of Technology, SWEDEN, 2Karolinska Institutet, SWEDEN, and 3University of Helsinki, FINLAND

REAL-TIME MEASUREMENT OF THE PHYSICAL PROPERTIES OF DNA-LIGAND COMPLEXES

Deniz Pekin1, Grégoire Perret2, Momoko Kumemura3, Laurent Jalabert2, Samuel Meignan4, Hiroyuki Fujita2, Dominique Collard2, and Mehmet C. Tarhan5
1Inserm, FRANCE, 2LIMMS/CNRS-IIS, FRANCE, 3Kyushu Institute of Technology, JAPAN, 4Centre Oscar Lambret, FRANCE, and 5University Lille, FRANCE

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

Ayokunle O. Olanrewaju1, Benjamin Sullivan1, Jane Y. Zhang1, Andrew T. Bender1, Tiffany J. Lo1, Derin Sevenler2, Marta Fernandez-Suarez3, Paul K. Drain1, and Jonathan D. Posner1
1University of Washington, USA, 2Harvard Medical School, USA, and 3Independent Consultant, USA

SALIVARY MICRORNA CORECTION AND ANALYSIS USING NANOCELLULOSE FOR DOMICILIARY CANCER DIAGNOSIS

Naoya Misukami1, Takao Yasui1, and Hironao Koga2
1Nagoya University, JAPAN and 2Osaka University, JAPAN
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**

**M113.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*

**T113.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*

**W112.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*

**W113.d** SURFACE ACOUSTIC WAVES PLATFORM FOR TARGETED DELIVERY OF LIPOSOMAL SIRNA AND DNA PLASMID
Xi King, Elijah Nazarzadeh, Manlio Tassieri, Julien Reboud, and Jonathan M. Cooper
*University of Glasgow, UK*

**d - Fundamentals in Microfluidics and Nanofluidics**

**Centrifugal Microfluidics**

**M114.d** AN AUTOMATED CENTRIFUGAL MICROFLUIDIC SYSTEM INTEGRATED WITH ETALON SENSOR FILMS FOR RAPID IMAGE ANALYSIS BASED DETECTION OF HORMONES IN MILK.
Yuting Hou¹, Rohit Mishra², Menglian Wei¹, Nicholas Balasuriya¹, Jens Ducrée², Michael J. Serpe¹, and Jed Harrison¹
¹*University of Alberta, CANADA* and ²*Dublin City University, IRELAND*

**M115.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*
M116.d PHASE-SEPARATED CORE-SHELL HYDROGEL MICROBEADS FROM HOMOGENEOUS MIXED POLYMER SOLUTION BY SIMULTANEOUS GELATION
Yuta Kurashina¹, Mio Tsuchiya², Keitaro Kasahara², and Hiroaki Onoe²
¹Tokyo Institute of Technology, JAPAN and ²Keio University,

T114.d ARTIFICIAL GUT-ON-A-DISC PLATFORM TO EVALUATE PH SENSITIVE COATINGS OF ORAL DRUG DELIVERY DEVICES
Sriram Thoppe Rajendran¹, Khorshid Kamguyan¹, David Kinahan², En-Te Hwu¹,
Line Hagner Nielsen¹, Kinga Zór¹, and Anja Boisen¹
¹Technical University of Denmark, DENMARK and ²Dublin City University, IRELAND

T115.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

T116.d REVERSIBLE VALVING SOLUTIONS FOR CENTRIFUGAL PLATFORMS WHILE SPINNING
Sarai M. Torres Delgado¹, Moritz Huber¹, Bahman Moradi², Jan G. Korvink¹,
Christof Megnin², and Dario Mager¹
¹Karlsruhe Institute of Technology, GERMANY and ²MEMETIS GmbH, GERMANY

W114.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

W115.d HIGH THROUGHPUT GENERATION OF CALCIUM-ALGINATE MICROPARTICLES USING CENTRIFUGAL FORCE-BASED DEVICE FOR CELLS ENCAPSULATION
Huong Le¹, Thuy Duong¹, Phan Lam¹, Nguyen Trung¹, Nguyen Phuong¹, Hyewon Son¹,
Seok Oh¹, H. Soek¹, Suwon Lee¹, C.Ho Hwang², and Kyo-in Koo¹
¹University of Ulsan, KOREA and ²University of Ulsan College of Medicine, KOREA

W116.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
M117.d  AN ELECTRONICALLY-CONTROLLED DIGITAL FERROFLUIDIC ARCHITECTURE FOR SCALABLE AND ADDRESSABLE BIOANALYTICAL OPERATIONS
Wenzhuo Yu, Yilian Wang, Haisong Lin, Nathan Chen, Xu He, and Kevin Sun
University of California, Los Angeles, USA

M118.d  DROPLET EVAPORATION PROFILES IN DIAMAGNETIC LEVITATION
Vincent Haguet\textsuperscript{2}, Sergey Semenov\textsuperscript{1}, Christian Jeandey\textsuperscript{2}, and Mickaël Antoni\textsuperscript{1}
\textsuperscript{1}Aix-Marseille Université, FRANCE and \textsuperscript{2}CEA Grenoble, FRANCE

M119.d  POINT-OF-CARE DIAGNOSIS OF RESPIRATORY SYNCYTIAL VIRUS BY DIGITAL NANOBUBBLE DETECTION
Yaning Liu\textsuperscript{1}, Haihang Ye\textsuperscript{1}, Ruth Levitz\textsuperscript{2}, HoangDinh Huynh\textsuperscript{2}, Jeffrey Kahn\textsuperscript{2}, and Zhenpeng Qin\textsuperscript{1}
\textsuperscript{1}University of Texas, Dallas, USA and \textsuperscript{2}University of Texas Southwestern Medical Center, USA

T117.d  PATHWAY ENGINEERING USING RAPID-PROTOTYPE DIGITAL MICROFLUIDICS
James M. Perry, Guy Soffer, Ehsan Moazami, and Steve C.C. Shih
Concordia University, CANADA

T118.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

T119.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

W117.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

W118.d  INTEGRATED MAGNETOFUIDIC 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
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M120.d</td>
<td>AUTOMATED DROPLET SAMPLING OF ENDOCRINE TISSUE WITH DOWNSTREAM MERGERS FOR COMBINATORIAL MIX-AND-READ ASSAYS</td>
<td>Nan Shi, Juan Hu, and Christopher J. Easley</td>
<td>Auburn University, USA</td>
</tr>
<tr>
<td>M121.d</td>
<td>BUBBLE BREAKUP IN AN EXPANSION MEDIATED MICROFLUIDIC CHANNEL</td>
<td>Alinaghi Salari, Jiang Xu, Michael Kolios, and Scott Tsai</td>
<td>Ryerson University, CANADA</td>
</tr>
<tr>
<td>M122.d</td>
<td>DEEP LEARNING GUIDED IMAGE-BASED DROPLET SORTING FOR BIOLOGICAL SCREENINGS</td>
<td>Vasileios Anagnostidis, Benjamin E Sherlock, Jeremy Metz, Philip Mair, Florian Hollfelder, and Fabrice Gielen</td>
<td>University of Exeter, UK and University of Cambridge, UK</td>
</tr>
<tr>
<td>M123.d</td>
<td>FEMTOLITER-DROPLET SHOOTING BY MICRO/NANO FLUIDICS FOR DIGITAL MASS SPECTROMETRY</td>
<td>Yuto Takagi, Yutaka Kazoe, and Takehiko Kitamori</td>
<td>University of Tokyo, JAPAN</td>
</tr>
<tr>
<td>M124.d</td>
<td>LABEL-FREE DROPLET DETECTION THROUGH 3D ELECTRODE-BASED IMPEDANCE SPECTROSCOPY</td>
<td>Hyun Soo Kim, Sunghyun Cho, Hyesoo Park, Kang-Ho Lee, Ohwon Kwon, Younghak Cho, and Jaewon Park</td>
<td>Korea Institute of Machinery and Materials, KOREA, Seoul National University of Science and Technology, KOREA, and Southern University of Science and Technology, KOREA</td>
</tr>
<tr>
<td>M125.d</td>
<td>MICRO PERISTALTIC PUMP SYSTEM FOR THE GENERATION OF ARBITRARY DROPLET SEQUENCE AND MULTIPLE-STEP BIOCHEMICAL ASSAYS</td>
<td>Wahida Bhuiyan, Gareth Evans, and Xize Niu</td>
<td>University of Southampton, UK</td>
</tr>
<tr>
<td>M126.d</td>
<td>NON-NEWTONIAN, HIGH VISCOSITY POLYMER BLENDS WITHIN DROPLET MICROFLUIDIC DEVICES</td>
<td>Polly Sanders, Solweig Chartier, Alexander Iles, Jia Min Chin, and Nicole Pamme</td>
<td>University of Hull, UK</td>
</tr>
<tr>
<td>M127.d</td>
<td>PROVE OF PRINCIPLE: PARALLEL BACTERIAL ESTERASE ASSAY IN TRAPPED 35 NL-DROPLETS USING EMULSION TRANSPORT</td>
<td>Charmi Chande, Jialan Cao, Thomas Henkel, Marc Kielpinskie, Michael Köhler, and Alexander Groß</td>
<td>Technical University Ilmenau, GERMANY and Leibniz Institute for Photonic Technologies, GERMANY</td>
</tr>
</tbody>
</table>
M128.d  SELECTIVE PARTITIONING OF MICRODROPLETS USING HORIZONTAL MICROVALVES
Mohammad Reza Raveshi¹, Sagar N. Agnihotri², Muhsincan Sesen¹, Rajneesh Bhardwaj², and Adrian Neild¹
¹Monash University, AUSTRALIA and ²Indian Institute of Technology, Bombay, INDIA

M129.d  SIMULTANEOUS MICRODROPLETS GENERSTION BY TAIL BREAKUP INDUCED WITH MULTI-BRANCH CHANNEL
Satsuki Kajiya¹, Dong Hyun Yoon¹, Yoshito Nozaki¹, Taisuke Isano², Hitoshi Yamagata², Hiroyuki Fuji¹, Tetsushi Sekiguchi¹, and Shuichi Shoji¹
¹Waseda University, JAPAN and ²Canon Medical Systems Corp., JAPAN

M130.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

T120.d  BIOCOMPATIBLE POLYELECTROLYTE MICROCAPSULES GENERATED WITH MAGNETIC WATER-IN-WATER DROPLET MICROFLUIDICS
Maryam Navi, Jennifer Kieda, Niki Abbasi, and Scott Tsai
Ryerson University, CANADA

T121.d  CONTINUOUS FLOW CELL-CELL INTERACTION SCREENING VIA A SEQUENTIAL INJECTOR
Weikang Nicholas Lin, Matthew Ziprui Tay, Shih-Chung Wei, Ri Lu, and Chia-Hung Chen
National University of Singapore, SINGAPURE

T122.d  DROP-QPCR: A DROPLET MICROFLUIDIC PLATFORM FOR FAST AND CONTINUOUS-FLOW QPCR ANALYSIS
Ismail Hajji¹, Mathilde Richerd¹, Simon Dumas¹, Charles Cavaniol¹, Lauriane Geremie¹, Marco Serra¹, Renaud Renault¹, Ivan Ferrante¹, Jean-Louis Viovy¹, Stéphanie Descroix¹, and Davide Ferraro²
¹Institut Curie, FRANCE and ²Università di Padova, ITALY

T123.d  HIGH THROUGHPUT SCREENING PLASTIC-DEGRADATION STRAINS BASED ON MICROFLUIDIC FADS PLATFORM
Yuxin Qiao and Wenbin Du
Chinese Academy of Sciences, CHINA

T124.d  MASSIVELY-PARALLELIZED PRODUCTION OF FEMTOLITER DROPLETS AND ITS APPLICATION TO SELF-ASSEMBLED NANOPARTICLE CLUSTERS FOR NOVEL METAMATERIALS.
Corentin B.M. Tregouet¹, Chris L. Kennedy², Ramakrishna Kotni², Sofie Kölling³, Johan G. Bomer³, Jasper J.A. Lozeman³, Dertef Lohse³, Albert van den Berg³, Alfons van Blaaderen², and Mathieu Odijk³
¹Université Rennes ¹, FRANCE, ²Utrecht University, THE NETHERLANDS, and ³University of Twente, THE NETHERLANDS
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

ON-CHIP SAMPLE AUTOMATED DISCRETIZATION, SELECTIVE RETRIEVAL AND CONTROLLABLE METERING UTILIZING MEMBRANE INTEGRATED TRAPS FOR SINGLE-CELL ENCAPSULATION AND SORTING
Hesam Babahosseini¹, Tom Misteli², and Don L. DeVoe¹
¹University of Maryland, USA and ²National Institutes of Health (NIH), USA

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

SEQUENTIAL FORMATION OF DAUGHTER DROPLETS BY BREAKUP OF MICRODROPLETS INTO BYPASS CHANNEL
Shohei Hattori¹, Dong Hyun Yoon¹, Yoshito Nozaki¹, Taisuke Isano², Hitoshi Yamagata², Hiroyuki Fujita², Tetsushi Sekiguchi¹, and Shuichi Shoji¹
¹Waseda University, JAPAN and ²Canon Medical Systems Corp., JAPAN

SUPERPARAMAGNETIC NANOPARTICLE ENCAPSULATION VIA DROPLET-BASED MICROFLUIDICS FOR TARGETING DRUG DELIVERY SYSTEM
Sakon Rahong¹, Ratchanont Sukthai¹, Narin Paiboon², Kunat Suktham², Annop Klamchuen², and Suvimol Surassmo²
¹King Mongkut's Institute of Technology Ladkrabang (KMITL), THAILAND and ²National Nanotechnology Center (NANOTEC), THAILAND

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

A PORTABLE DROPLET SORTING PLATFORM WITH INTEGRATED THERMOCAPILLARY SORTING AND CAPACITANCE DETECTING
Yigang Shen¹, Yaliku Yaxiaer², Yusufu Aishan¹, and Yo Tanaka³
¹Osaka University, JAPAN, ²Nara Institute of Science and Technology, JAPAN, and ³RIKEN, JAPAN

CLIMBING DROPLETS DRIVEN BY MECHANOWETTING
Ye Wang¹, Edwin de Jong², Patrick R. Onck², and Jaap M.J. den Toonder¹
¹Eindhoven University of Technology, THE NETHERLANDS and ²University of Groningen, THE NETHERLANDS
W121.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

W122.d FABRICATION AND EVALUATION OF ATTOLITER DROPLETS
Risa Takane, Hiroto Kawagishi, Yasunori Matsui, Hiroshi Ikeda, and Yan Xu
Osaka Prefecture University, JAPAN

W123.d IMPROVING DNA LIBRARY PREPARATION FOR NEXT GENERATION SEQUENCING THANKS TO AN INNOVATIVE DROPLET MICROFLUIDIC DEVICE
Davide Ferraro¹, Marco Serra², Thanh Duc Mai³, Almut Eisele², Leïla Périé², Jean-Louis Viovy², and Stephanie Descroix²
¹University of Padova, ITALY, ²Institut Curie, FRANCE, and ³Institut Galien de Paris-Sud, FRANCE

W124.d MICRODROPLET ARRAY CONCENTRATION WITH SIZE-TRIGGERED RELEASE SYSTEM
Piangrawee Santivongskul, Mao Fukuyama, and Akihide Hibara
Tohoku University, JAPAN

W125.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

W126.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

W127.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

W128.d SILICON CHAMBERS FOR ENHANCED-IMAGING OF DROPLET ARRAYS IN A GRADED TEMPERATURE FIELD
Nicolas Lobato-Dauzier¹, Robin Deteix¹, Matthieu Denoual², Soo Hyeon Kim¹, Hiroshi Toshiyoshi¹, Hiroyuki Fujita³, Teruo Fujii¹, and Anthony J. Genot⁴
¹University of Tokyo, JAPAN, ²Greyc - ENSICAEN/CNRS, FRANCE, ³Tokyo City University, JAPAN, and ⁴LIMMS-IIS/CNRS, FRANCE
<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Authors</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W129.d</td>
<td>TOWARDS DEVELOPMENT OF DROPLET MICRO-REACTOR FOR INDUSTRIAL RELEVANT SCREENING IN BIOTECHNOLOGY</td>
<td>Kartik Totlani, Thorben de Riese, Maxime Bisschops, Walter van Gulik, Michiel Kreutzer, and Volkert van Steijn</td>
<td>Technical University Delft, THE NETHERLANDS</td>
</tr>
<tr>
<td>M131.d</td>
<td>TUNING DETERMINISTIC LATERAL DISPLACEMENT SEPARATION WITH AC ELECTROKINETICS</td>
<td>Victor Calero Martin¹, Pablo Garcia-Sanchez², Antonio Ramos², and Hywel Morgan¹</td>
<td>University of Southampton, UK and Universidad de Sevilla, SPAIN</td>
</tr>
<tr>
<td>M132.d</td>
<td>ION CONCENTRATION POLARISATION FOR PARTICLE MESOPOROSITY DIFFERENTIATION</td>
<td>Vasileios A. Papadimitriou, Miguel Solsona, Wouter Olthuis, Albert van den Berg, and Jan C.T. Eijkel</td>
<td>University of Twente, THE NETHERLANDS</td>
</tr>
<tr>
<td>T131.d</td>
<td>OBSERVATION OF MEMBRANE CHANGES AND VIABILITY OF CELLS IN A PARALLELIZED ELECTROROTATION PLATFORM</td>
<td>Kevin Keim, Mohamed Z. Rashed, and Carlotta Guiducci</td>
<td>École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND</td>
</tr>
<tr>
<td>W130.d</td>
<td>DIELECTROPHORETIC ANALYSIS: A TOOL FOR STUDYING THE IMPACT OF ORGANIC SOLVENTS ON WHOLE-CELL BIOCATALYSTS</td>
<td>Miriam S. Epping, Armin Grundmann, Harald Groeger, and Martina Viefhues</td>
<td>Bielefeld University, GERMANY</td>
</tr>
<tr>
<td>W131.d</td>
<td>&quot;TUNABLE NANOGATE&quot; DEVICE FOR SIZE-SORTING OF NANOPARTICLES</td>
<td>Satoko Fujiwara, Tatsuro Endo, Hideaki Hisamoto, and Kenji Sueyoshi</td>
<td>Osaka Prefecture University, JAPAN</td>
</tr>
<tr>
<td>M133.d</td>
<td>SIMULATION OF THE MIGRATION OF RIGID NON-SPHERICAL PARTICLES IN CURVED MICRO CHANNELS</td>
<td>Thomas E. Hafemann and Jochen Fröhlich</td>
<td>Technical University Dresden, GERMANY</td>
</tr>
<tr>
<td>Session</td>
<td>Title</td>
<td>Authors</td>
<td>Affiliations</td>
</tr>
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<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>T132.d</td>
<td>A TRANSPORT-REACTION MODEL FOR EXPANDING THE DYNAMIC RANGE OF LATERAL FLOW IMMUNOASSAYS USING REAL-TIME IMAGING</td>
<td>Sathishkumar Narayanaswamy and Bhushan J. Toley</td>
<td>Indian Institute of Science, INDIA</td>
</tr>
<tr>
<td>T133.d</td>
<td>UNRAVEL THE PHYSICS OF PARTICLE FOCUSING MECHANISM IN MICROCHANNELS</td>
<td>Marzieh Chaharlang and Brady Goenner</td>
<td>University of Utah, USA</td>
</tr>
<tr>
<td>W132.d</td>
<td>OPTIMIZING RESIDENCE TIME DISTRIBUTION IN CAPILLARY-BASED SYSTEMS USING COMPUTATIONAL FLUID DYNAMIC SIMULATIONS</td>
<td>Kirandeep K. Gill, Deema A. Masoudi, Sughan Narayanasamy, Patrick Hester, Pedro Estrela, and Nuno M. Reis</td>
<td>University of Bath, UK and Lamina Dielectrics Ltd, UK</td>
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<td>d - Fundamentals in Microfluidics and Nanofluidics</td>
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<td>Nanofluidics/Nanofluidic Phenomena</td>
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</tr>
<tr>
<td>M134.d</td>
<td>NANO X-RAY DIFFRACTOMETRY DEVICE TO INVESTIGATE STRUCTURE OF WATER IN NANOCHANNELS</td>
<td>Kazuma Mawatari, Jun Shirai, Koji Ohara, Shinji Kohara, Toshio Yamaguchi, Koji Yoshida, and Takehiko Kitamori</td>
<td>University of Tokyo, JAPAN, Japan Synchrotron Radiation Research Institute, JAPAN, National Institute for Materials Science, JAPAN, Fukuoka University, JAPAN</td>
</tr>
<tr>
<td>M135.d</td>
<td>UNRAVELING THE UNEXPECTED CHANNEL-LENGTH-DEPENDENT NANOFUIDIC SALINITY GRADIENT POWER: EXPERIMENTS AND MODELING</td>
<td>Li-Hsien Yeh and Po-Hsien Peng</td>
<td>National Taiwan University of Science and Technology, TAIWAN</td>
</tr>
<tr>
<td>T134.d</td>
<td>THERMAL DIFFUSIVITY MEASUREMENT IN NANOCHANNEL BY PHOTOTHERMAL OPTICAL PHASESHIFT SPECTROSCOPY</td>
<td>Kazuma Mawatari, Tokio Sato, and Takehiko Kitamori</td>
<td>University of Tokyo, JAPAN</td>
</tr>
<tr>
<td>W133.d</td>
<td>EFFECT OF PORE SIZE ON SLIP FLOW IN MICRO- AND NANO-POOROUS MEDIA</td>
<td>Md Minhajul Islam and D. Jed Harrison</td>
<td>University of Alberta, CANADA</td>
</tr>
</tbody>
</table>
d - Fundamentals in Microfluidics and Nanofluidics

Platforms Based on Capillary Forces

M136.d  A HYDROGEL MICRONEEDLE PATCH FOR CONTINUOUS MONITORING OF GLUCOSE FROM INTERSTITIAL FLUID
Somayeh Ramezanian and Jacqueline C. Linnes
Purdue University, USA

M137.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

M138.d  POINT-OF-CARE 2DPN ELISA WITH AUTOMATED ENHANCED DETECTION OF AMPLIFIED NUCLEIC ACIDS
Kristin M. Byers¹, Anna R. Bird¹, Hyndae Cho², and Jacqueline Linnes¹
¹Purdue University, USA and ²Crosslife Technologies Inc., USA

T135.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

T136.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

T137.d  EVAPORATION FLOW: ANALYSIS THAT IS INDEPENDENT OF HUMIDTY AND TEMPERATURE
Marta K. Orłowska¹, Bin Guan¹, Rossen Sedev¹,², and Craig Priest¹
¹University of South Australia, AUSTRALIA and ²Curtin University, AUSTRALIA

T138.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
W135.d  3D-PRINTED PASSIVE GRADIENT GENERATORS
Cesar Parra, Hans Van Cauteren, Ruben Dochy, Clement Achille, and Rob Ameloot
KU Leuven, BELGIUM

W136.d  DEVELOPMENT OF LASER-CUT MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICE WITH SUCROSE VALVE FOR AUTOMATED COMPETITIVE ELISA OF AFLATOxin B1
Sumamal Charernchai¹, Miyuki Chikae¹, Wanida Wonsawat², Daisuke Hirose¹, Phan T. Tue³, and Yuzuru Takamura¹
¹Japan Advanced Institute of Science and Technology (JAIST), JAPAN, ²Suan Sunandha Rajabhat University, THAILAND, and ³Tokyo Institute of Technology, JAPAN

W137.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

W138.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 |

M139.d  BOUNDARY LAYER MODIFICATION FOR A MICROTESLA ROTOR PUMPING OF NON-NEWTONIAN FLUIDS
Jessica Hallgath and Joe Fujiou Lo
University of Michigan, USA

M140.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

T139.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

T140.d  LATERAL FOCUSING IN VISCOELASTIC FLOW IN SPIRAL CHANNELS
Hua Gao, Jian Zhou, and Ian Papautsky
University of Illinois, Chicago, USA
INVESTIGATING VON WILLEBRAND FACTOR (VWF) PROTEOLYSIS BY ADAMTS13 ON-A-CHIP
Amid Shakeri and Tohid F. Didar
McMaster University, CANADA

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

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

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

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

ENABLING COST-EFFECTIVE GLASS MICROFLUIDICS FOR LIFE SCIENCES: THE EXAMPLE OF A COMPLETE SEQUENCING DEVICE FABRICATED AT WAFER SCALE
Sarah Heub1, Rita Smajda1, Guy Voirin1, Gilles Weder2, Anke Sanz-Velasco2, Tobias Bauert2, Alexios Tzannis2, Raphael Pugin3, and Michel Despont1
1CSEM, SWITZERLAND and 2IMT AG, SWITZERLAND

INTEGRATION OF POROUS SILICON-BASED OPTICAL APTASENSORS IN A 3D-PRINTED MICROFLUIDIC PLATFORM FOR PROTEIN DETECTION
Sofia Arshavsky-Graham1,2, Niklas-Maximilian Epping2, Anton Enders2, Thomas Schepers2, Janina Bahnemann2, and Ester Segal1
1Technion – Israel Institute of Technology, ISRAEL and 2Leibniz Universität Hannover, GERMANY

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
W141.e  FABRICATION OF PMMA MICROFLUIDIC DEVICES INTEGRATED WITH POROUS PET Membranes FOR RELIABLE CYTOTOXICITY TESTS OF DRUGS
Thao Nguyen¹, Su Hyun Jung¹, Min Seok Lee¹, Tae-Eun Park¹, Suk-kyun Ahn², and Joo H. Kang¹
¹Ulsan National Institute of Science and Technology (UNIST), KOREA and ²Pusan National University, KOREA

W142.e  PDMS BONDING WITHOUT O₂ PLASMA TREATMENT
Haruka Oda and Shoji Takeuchi
University of Tokyo, JAPAN

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M144.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

M145.e  STAINLESS MICROFLUIDIC PROBE WITH 2D-ARRAY APPERTURES
Shogo Kamiya, Koki Takahashi, Hidekuni Takao, Fusao Shimokawa, and Kyohei Terao
Kagawa University, JAPAN

T144.e  HIGH-THROUGHPUT, LARGE-SCALE AND ULTRA-LOW PROTEIN CONSUMPTION: A NOVEL DROPLET-BASED PROTEIN CRYSTALLIZATION METHOD
Huifeng Wang¹, Jianbo Chen², Sheng Ye¹, and Qun Fang¹
¹Zhejiang University, CHINA and ²Hangzhou Jiejing Biotechnolgy Co., Ltd, CHINA

T145.e  VALVES AND PUMPS USING COLLAGEN-BASED TUBULAR CONSTRUCTS
Kelvin Chow, Nima Vaezzadeh, and Axel Günther
University of Toronto, CANADA

W143.e  FROM 'DIGITAL' TO 'ANALOGUE' PUMPING: COMPLEMENTING AN EXISTING LAB-ON-CHIP ARCHITECTURE WITH NOVEL MICROFLUIDIC PUMPING METHODS
Hannah Bott¹, Franz Lärmer¹, Roland Zengerle², and Jochen Hoffmann¹
¹Robert Bosch GmbH, GERMANY and ²University of Freiburg, GERMANY

W144.e  MULTIFUNCTIONAL FEMTO PIPETTE IN OPEN MICROFLUIDICS
Eleonoor Verlinden¹, Masoud Madadelahi¹, Edin Sarajlic², Amir Shamloo³, Andreas E. Engel¹, Urs Stauffer¹, and Murali K. Ghatkesar¹
¹Delft University of Technology, THE NETHERLANDS, ²SmartTip B.V., THE NETHERLANDS, and ³Sharif University of Technology, IRAN
M146.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

M147.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

M148.e ARRAY OF SOFT OR HARD MAGNETIC MICROTRAPS BASED ON COMPOSITE POLYMER NOVEL TECHNOLOGY
Lucie Descamps, Samir Mekkaoui, Emmanuelle Laurenceau, Marie-Charlotte Audry, Jessica Garcia, Léa Payen, Damien Le Roy, and Anne-Laure Deman
Lyon Institute of Nanotechnology, FRANCE, Hospices Civils de Lyon, FRANCE, and Institut Lumière Matière, FRANCE

M149.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

M150.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

M151.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

M152.e GRAPHENE-MEDIATED MICRO-PATTERNING OF CONDUCTIVE POLYMERS TOWARD IMPLANTABLE ELECTRODES
Tetsuhiko Teshima, Koji Sakai, Yoshiaki Kashimura, Hiroki Miyazako, Hiroshi Nakashima, Shingo Tsukada, Yuko Ueno, Toshihisa Osaki, and Shoji Takeuchi
Nippon Telegraph and Telephone Corporation, JAPAN and University of Tokyo, JAPAN
M153.e  LOW-COST AND 3D-PRINTED HOLLOW MICRONEEDLE ARRAYS WITH COMPLEX DESIGNS FOR TRANSDERMAL DRUG DELIVERY APPLICATIONS  
Christopher Yeung, Haisong Lin, Shawnus Chen, Kimber King, Brian King, and Farooq Akhtar  
*University of California, Los Angeles, USA*

M154.e  MINIATURIZED WRINKLED ELECTRODE WITH 30-FOLD ENHANCEMENT IN ELECTROCHEMICAL SIGNAL  
Amanda H. Imamura¹, Julia Zakashansky², Emanuel Carrilho¹, and Michelle Khine²  
¹*University of São Paulo, BRAZIL* and ²*University of California, USA*

M155.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*

M156.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*

M157.e  SELF-DRIVEN SURFACE-ENHANCED RAMAN SCATTERING MICROFLUIDIC DEVICES FABRICATED BY FEMTOSECOND LASER FOR HG2+ DETECTION  
Zhi Yu¹, Xiuyun Li¹, and Chunlei Guo²  
¹*Chinese Academy of Sciences, CHINA* and ²*University of Rochester, USA*

M158.e  STREPTAVIDIN-FUNCTIONALIZED HYDROGEL MICROPARTICLES FOR CUSTOMIZABLE MULTIPLEX BIOMOLECULE DETECTION  
Yoon Ho Roh, Hyun Jee Lee, and Ki Wan Bong  
*Korea University, KOREA*

M159.e  THREE DIMENSIONAL LIQUID PATTERNING WITH MICROMESH STRUCTURE BY 3D PRINTING FABRICATION  
Suryong Kim¹, Byungjun Lee², Jihoon Ko¹, Youngtaek Kim¹, and Noo Li Jeon¹  
¹*Seoul National University, KOREA* and ²*Curiochip Inc., KOREA*

T146.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*

T147.e  A TWO-WAY MEMBRANE-INTEGRATED MICROFLUIDIC DEVICE FOR PERMEATION ASSAYS  
Marika Sugimoto, Keisuke Yanagisawa, and Naoki Sasaki  
*Toyo University, JAPAN*
**T148.e** BIOINSPIRED MICROMECHANICAL INTERLOCKING MICROSTRUCTURES FOR ENHANCED ADHHERENCE BETWEEN SOFT ELASTOMERIC LAYERS
Navajit S. Baban1,2, Ajymurat Orozaliev2, Christopher J. Stubbs1, and Y. AK. Song1,2
1New York University, USA and 2New York University, Abu Dhabi, UAE

**T149.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

**T150.e** DEVELOPMENT OF PZT ACTUATOR ARRAY ON AN ACTIVE-MATRIX OXIDE TFTS FOR SINGLE CELL SPATIAL TRANSCRIPTOMIC AIMING NEUROGENERATIVE DISEASE
Rahul Bhardwaj1, Phan T. Tue2, Shinsuke Ishigaki3, Hidetaka Uno3, Zhi H. Wang3, Yoshiaki Ukit4, Sadahiro Iwabuchi5, Shinichi Hashimoto5, Takehiko Oka6, Kozo Kawahara6, Gen Sobue3, Tsuneo Urisu3, Daisuke Hirose1, and Yuzu Takamura1
1Japan Advanced Institute of Science and Technology (JAIST), JAPAN, 2Tokyo Institute of Technology, JAPAN, 3Nagoya University Grad School of Medicine, JAPAN, 4University of Yamanashi, JAPAN, 5Kanazawa University, JAPAN, and 6World Fusion Inc., JAPAN

**T151.e** FLOW RATE DETERMINATION IN CAPILLARY-DRIVEN MICROFLUIDICS USING COMBINATORIAL SELECTION OF RESISTORS VIA ELECTROWETTING AND SMARTPHONE CONTROL
Marie L. Salva1, Yuksel Temiz1, Marco Rocca2, Yulieth C. Arango1, Christof M. Niemeyer2, and Emmanuel Delamarche1
1IBM Research - Zurich, SWITZERLAND and 2Karlsruhe Institute of Technology, GERMANY

**T152.e** HIGH-VOLUME FABRICATION OF SYLGARD 184 DEVICES FOR SINGLE CELL ANALYTICS
Christina Liedert1, Benedek Poo2, Olli-Heikki Huttunen1, Johanna Hiitola-Keinänen1, Sanna Aikio1, Heli Pessa2, Pinja Elomaa2, Jussi Hiltunen1, Päivi Saavalainen2, and Leena Hakalahti1
1VTT Technical Research Centre of Finland, FINLAND and 2University of Helsinki, FINLAND

**T153.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

**T154.e** PARTICLE MANIPULATION ON MAGNETIC GRID PATTERN
Fujio Tsumori
Kyushu University, JAPAN
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

ROLL-TO-ROLL MANUFACTURING OF MICROFLUIDIC CHIPS FOR BIOANALYTICAL APPLICATIONS
Jan Hesse¹, Anja Haase¹, Dieter Nees¹, Stephan Rutloff¹, Johannes Götz¹, Pelin Tören-Özgün¹, Markus Rumpler¹, Martin Smolka¹, Georgios Kokkinis², Günther Kriechhammer², Daniel Scheidl², Bianca Wilfing², Ingo Katzmayr³, Max Sonnleitner³, Mirko Lohse⁴, and Manuel Thesen⁴
¹Joanneum Research Forschungsgesellschaft mbH, AUSTRIA, ²Pessl Instruments GmbH, AUSTRIA, ³GENSPEED Biotech GmbH, AUSTRIA, and ⁴micro resist technology GmbH, GERMANY

SELF-PROPELLING MICRO SWIMMER WITH CONTROLLABLE MOTION
Cheolheon Park¹, Y.J Choi², H.S Choi², S.W Song², S.H Kwon², and W Park¹
¹Kyung Hee University, KOREA and ²Seoul National University, KOREA

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

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

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

A SIMPLE AND ROBUST FABRICATION METHOD FOR CREATING 3D TAPERED POLYDIMETHYLSILOXANE CHANNELS
Hoon Suk ho¹, Henk-Willem Veltkamp², Danielle Baptista¹, Séverine Le Gac², and Pamela Habibovi¹
¹Maastricht University, THE NETHERLANDS and ²University of Twente, THE NETHERLANDS

APPLICATION OF 3D-PRINTED MICROFLUIDIC DEVICE AND MINIATURE PHOTODETECTION TECHNOLOGY TOWARDS PHOTOMETRY-BASED BIOCHEMICAL ANALYSIS IN DEEP-SEA
Tatsuhiko Fukuba¹ and Yuki Sano²
¹Japan Agency for Marine-Earth Science and Technology, JAPAN and ²Yokohama City University, JAPAN
W148.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

W149.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

W150.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

W151.e  KIRIGAMI-INSPIRED MESH FOR TUNABLE FILTRATION
Yaoping Liu¹, Meixuan Zhang¹, Han Xu¹, Xiaolong Rao², and Wei Wang¹
¹Peking University, CHINA and ²Peking University First Hospital, CHINA

W152.e  LIGHT DRIVEN MASSIVE INTEGRATE GEL ACTUATOR FOR SINGLE CELL MANIPULATION
Yuha Koike¹, Yoshiyuki Yokoyama², and Takeshi Hayakawa¹
¹Chuo University, JAPAN and ²Toyama Industrial Technology Research and Development Center, JAPAN

W153.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

W154.e  PCB-IMPLEMENTED GRAPHENE ELECTROLYTE-GATED FIELD-EFFECT TRANSISTORS FOR BIOSENSING APPLICATIONS
Sotirios Papamatthaiou, Pedro Estrela, and Despina Moschou
University of Bath, UK

W155.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

W156.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
W157.e  STIMULI-RESPONSIVE HYDROGEL INSTRUMENT BASED ON FRAME TRANSFORMATION (SHIFT) BY UTILIZING DEFOCUSING PHOTOLITHOGRAPHY TECHNIQUE
Jinsik Yoon and Wook Park
Kyung Hee University, KOREA

W158.e  THE ENCELADUS ORGANIC ANALYZER: INSTRUMENTATION AND METHODS FOR DETECTING TRACE ORGANIC MOLECULES IN OUR SOLAR SYSTEM
1University of Utah, USA, 2Texas Tech University, USA, 3Georgia Tech, USA, 4University of California, Berkeley, USA, and 5University of Kent, UK

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<tr>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FABRICATION AND EVALUATION OF FLEXIBLE NANOVALVES IN 2D NANOCHANNELS</td>
<td>Hiroto Kawagishi, Shunichi Funano, Yo Tanaka, Shuichi Kawamata, and Yan Xu</td>
<td>1Osaka Prefecture University, JAPAN and 2RIKEN, JAPAN</td>
</tr>
<tr>
<td>HIGH-PERFORMANCE CERAMIC EOF PUMP REALIZED BY MASSIVELY PARALLEL SACRIFICAL SILICON NANO-PILLAR MOULDING</td>
<td>Lucas J. Kooijman, Yasser Pordeli, Bernard Y. van der Wel, Erwin W. Berenschot, Jan C.T. Eijkel, and Niels R. Tas</td>
<td>University of Twente, THE NETHERLANDS</td>
</tr>
<tr>
<td>RAPID STIMULI-RESPONSIVITY OF HYDROGEL MICROFIBER ACTUATOR WITH SURFACE POROUS STRUCTURE</td>
<td>Masahiko Karube and Hiroaki Onoe</td>
<td>Keio University, JAPAN</td>
</tr>
<tr>
<td>FABRICATION OF NANOCHANNELS WITH EMBEDDED METAL ELECTRODES FOR ACTIVE CONTROL OF ZETA POTENTIAL</td>
<td>Kuang-Hua Chou, Alex Eden, David Huber, and Sumita Pennathur</td>
<td>University of California, Santa Barbara, USA</td>
</tr>
<tr>
<td>LARGE-SCALE NANOPORE ARRAY BASED ON A COST-EFFECTIVE SHRINKAGE PROCESS FOR NANOSIZED TARGET SEPARATION</td>
<td>Y Liu, J Liu, and Wei Wang</td>
<td>Peking University, CHINA</td>
</tr>
</tbody>
</table>
A SIMPLE METHOD FOR 3D MULTIMATERIAL NANOSTRUCTURE MANUFACTURING
Benoît X.E. Desbiolles, Arnaud Bertsch, and Philippe Renaud
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

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

INTEGRATING A NANOPORE INTO A MICRO-CHANNELED AFM CANTILEVER FOR THE LOCALIZED DETECTION OF IONS AND BIOMOLECULES
Tilman Schlotter¹, Morteza Aramesh¹, Csaba Forro¹, Lievie Drowling-Carter¹,
Ines Lüchtefeld¹, Stephan J. Ihle¹, Ivan Shorubalko², Vahid Hosseini¹, Dmitry Momotenko¹,
Tomaso Zambelli¹, Enrico Klotzsch³, and Janos Vörös¹
¹ETH Zürich, SWITZERLAND, ²EMPA Dübendorf, SWITZERLAND, and
³Humboldt Universität zu Berlin, SWITZERLAND

FABRICATION AND CHARACTERIZATION OF FLEXDYM–POLYCARBONATE DEVICES: IMPLEMENTING NEW MATERIALS FOR ORGAN-ON-CHIP TECHNOLOGIES
Alexander H. McMillan¹,², Emma K. Thomée¹,³, Alessandra Dellaquila¹,⁴, and Sasha Cai Lesher-Pérez¹
¹Elvesys, FRANCE, ²KU Leuven, BELGIUM, ³University of Strasbourg, FRANCE, and
⁴University of Bielefeld, GERMANY

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

NANOZYME-AMPLIFIED LATERAL FLOW IMMUNOASSAY FOR MOLECULAR SIGNATURE DETECTION OF CARDIOVASCULAR DISEASES
Marta Broto¹, Yiyun Chen¹, Michael R. Thomas¹, Chris S. Wood¹, Amrit S. Lota²,
Sanjay Prasad², and Molly M. Stevens¹
¹Imperial College London, UK and ²Royal Brompton Hospital, UK

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
**M164.e** ANALYZING PEPTIDE ADSORPTION STATES VIA NANOWIRE-EMPLOYED INFRARED SPECTROMETRY
Hiroki Naito¹, Takao Yasui¹, Taisuke Shimada¹, Nobutaka Shioya², Takafumi Shimoaka², Masayoshi Tanaka³, Kazuki Nagasima⁴, Mina Okochi³, Takeshi Yanagida⁴, Takeshi Hasegawa², and Yoshinobu Baba¹
¹Nagoya University, JAPAN, ²Kyoto University, JAPAN, ³Tokyo Institute of Technology, JAPAN, and ⁴Kyushu University, JAPAN

**M165.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

**T164.e** FABRICATION OF TIO2 MICRO-SPIKES AND MICRO-FLOWERS FOR MASSIVELY PARALLEL INTRACELLULAR DELIVERY
Loganathan Mohan¹, Srabani Kar², Balasubramaniam Nandhini¹, Pallavi Gupta¹, Pallavi Shinde¹, Pallab Sinha Mahapatra¹, and Tuhin Subhra Santra¹
¹Indian Institute of Technology, Madras (IITM), INDIA and ²University of Cambridge, London, UK

**T165.e** STRETCHABLE AND TRANSPARENT SUPERHYDROPHOBIC AND OLEOPHOBIC PDMS THIN FILM WITH HIERARCHICAL STRUCTURES
Chaerin Yu¹, Eungjun Lee², Do Hyun Kim², and Dong-Weon Lee¹
¹Chonnam National University, KOREA and ²Korea Advanced Institute of Science and Technology, KOREA

**W163.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

**W164.e** MASKLESS SURFACE PATTERNING BY PLASMA POLYMERIZATION FOR MULTIBIOSENSING APPLICATIONS
Laura Barillas¹, Ekaterina Makhneva¹, Ilhsan Amin¹, Klaus-Dieter Weltmann¹, Hermann Seitz², and Katja Fricke¹
¹Leibniz Institute for Plasma Science and Technology (INP), GERMANY and ²University of Rostock, GERMANY
### e - Micro- and Nanoengineering

#### Others

<table>
<thead>
<tr>
<th>Presentation ID</th>
<th>Presentation Title</th>
<th>Authors and Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>M166.e</td>
<td>PRODUCING PERIODIC SEQUENTIAL FLOW BY GRAVITY-DRIVEN MICROFLUIDIC ACTUATORS</td>
<td>Zhenglin Li and Sung-Jin Kim, Konkuk University, CHINA</td>
</tr>
<tr>
<td>T166.e</td>
<td>SURFACE TENSION DRIVEN SWARM ROBOTS FOR EMERGING COORDINATING MOTIONS</td>
<td>Koki Yoshida, Tomoki Hayashi, and Hiroaki Onoe, Keio University, JAPAN</td>
</tr>
<tr>
<td>W165.e</td>
<td>BUBBLE-ASSISTED MICRO / NANOFUIDICS: DEMONSTRATION OF BUBBLE GENERATION AND VALVE FUNCTION</td>
<td>Shun Furukawa, Kazuma Mawatari, and Takehiko Kitamori, University of Tokyo, JAPAN</td>
</tr>
</tbody>
</table>

### f - Sensors and Detection Technologies

#### Biosensors

<table>
<thead>
<tr>
<th>Presentation ID</th>
<th>Presentation Title</th>
<th>Authors and Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>M167.f</td>
<td>A MICROFLUIDIC CHIP INTEGRATING IMPEDANCE FLOW CYTOMETRY AND ELECTRIC IMPEDANCE SPECTROSCOPY FOR SINGLE-CELL ELECTRICAL PROPERTY MEASUREMENT</td>
<td>Yongxiang Feng, Peng Zhao, Fei Liang, Liang Huang, and Wenhui Wang, Tsinghua University, CHINA</td>
</tr>
<tr>
<td>M168.f</td>
<td>AN &quot;ENZYME-RESPONSIVE IONIC LIQUID&quot; TOWARD CAPILLARY ARRAY-BASED IMMUNOASSAY MICRODEVICES</td>
<td>Ryoutarou Oishi, Tatsumi Mizuta, Kenji Sueyoshi, Tatsuro Endo, and Hideaki Hisamoto, Osaka Prefecture University, JAPAN</td>
</tr>
<tr>
<td>M169.f</td>
<td>ANALYTE CAPTURE IN AN ARRAY OF FUNCTIONALIZED DROPLETS FOR A REGENERABLE BIOSENSOR</td>
<td>Charles-Louis Azzopardi¹, Franck Chollet¹, Jean-François Manceau¹, and Wilfrid Boireau², ¹University Bourgogne Franche-Comté, FRANCE and ²CNRS, FRANCE</td>
</tr>
<tr>
<td>M170.f</td>
<td>CENTRIFUGAL MICROFLUIDIC PLATFORM COMPRISING AN ARRAY OF BEAD MICROCOLUMNS FOR THE MULTIPLEXED COLORIMETRIC QUANTIFICATION OF INFLAMMATORY BIOMARKERS AT THE POINT-OF-CARE</td>
<td>Ahmad S. Akhtar, Inês F. Pinto, Ruben R.G. Soares, and Aman Russom, KTH Royal Institute of Technology, SWEDEN</td>
</tr>
</tbody>
</table>
M171.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

M172.f ELECTRICAL DETECTION OF DEOXYRIBONUCLEASE USING DNA MOLECULES IMMOBILIZED BETWEEN MICROELECTRODES
Takahiro Himuro, Shota Tsukamoto, and Yoji Saito
Seikei University, JAPAN

M173.f ENHANCING THE SENSING PERFORMANCE OF APTAMERIC GFETs FOR INTERLEUKIN-6 DETECTION USING NEGATIVE ELECTRIC FIELD
Zhuang Hao
Harbin Institute of Technology, CHINA

M174.f IDENTIFYING MULTIPLE VIRAL SPECIES AT A SINGLE PARTICLE LEVEL USING A COMBINATION OF NANOPORES AND MACHINE LEARNING APPROACH
Akihide Arima¹, Makusu Tsutsui², Takeshi Yoshida², Kazumichi Yokota², Wataru Tonomura², Takao Yasui¹, Taisuke Shimada¹, Tomoko Yamazaki², Kenji Tatamatsu², Shun'ichi Kuroda², Masateru Taniguchi², Takashi Washio², Tomoji Kawai², and Yoshinobu Baba¹
¹Nagoya University, JAPAN and ²Osaka University, JAPAN

M175.f INKJET-PRINTED SINGLE-STEP COMPETITIVE IMMUNOASSAY MICRODEVICE FOR THE DETECTION OF CRP
Yuko Kawai¹, Masaya Kakuta², Kenji Sueyoshi¹, Tatsuro Endo¹, and Hideaki Hisamoto¹
¹Osaka Prefecture University, JAPAN and ²Sysmex Corporation, JAPAN

M176.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

M177.f PRIMARY HAEMOSTASIS ASSESSMENT BY DIRECT SENSING OF PLATELETS-COLLAGEN INTERACTION DYNAMICS IN A BROAD SHEAR RATE SPECTRUM WITH MICROACOUSTIC BIOSENSOR APPROACH
Aleksandr Oseev¹, Fabien Remy-Martin¹, Alain Rouleau¹, Thomas Pierre Lecompte², Guillaume Mourey³, Jean-François Manceau¹, Céline Élie-Caille¹, Wilfrid Boireau¹, Emmanuel Demaistre⁴, and Thérèse Leblois¹
¹Université de Bourgogne Franche-Comté, FRANCE, ²Hôpitaux Universitaires de Genève, SWITZERLAND, ³University Hospital of Besançon, FRANCE, and ⁴Centre Hospitalier Universitaire de Dijon, FRANCE

M178.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
M179.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

M180.f SWEAT LACTIC ACID MONITORING SYSTEM USING PLASTER-BASED SAMPLING DEVICE FOR APPLICATION IN INTENSIVE CARE UNIT
Yusuke Suzuki¹, Hiroyuki Kudo¹, Akiko Hosoyama², Kenichiro Morisawa², and Yasuhiko Taira²
¹Meiji University, JAPAN and ²St. Marianna University School of Medicine, JAPAN

M181.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

T167.f A DNA NANOTECHNOLOGY TOOLBOX FOR MIX-AND-MATCH BIOSENSOR DESIGN
Iene Rutten¹, Saba Safdar¹, Karen Ven¹, Devin Daems², Dragana Spasic¹, and Jeroen Lammertyn¹
¹KU Leuven, BELGIUM and ²University of Antwerp, BELGIUM

T168.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

T169.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

T170.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

T171.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
T172.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

T173.f FLEXIBLE MICROFLUIDIC NETWORKS ENABLING RAPID PROTOTYPING OF NOVEL SURFACE CHEMISTRIES IN LAB-ON-CHIP SYSTEMS FOR BIOSENSING APPLICATIONS
Francesca Costantini¹, Lorenzo Iannascoli¹, Nicola Lovecchio¹, Mara Mirasoli², Giampiero de Cesare¹, Domenico Caputo¹, and Augusto Nascetti¹
¹Sapienza University of Rome, ITALY and ²Alma Mater University of Bologna, ITALY

T174.f IMMUNOASSAYS BASED ON HOT ELECTRON INDUCED ELECTROCHEMILUMINESCENCE ON DISPOSABLE CELL CHIPS WITH PRINTED ELECTRODES
Nur-E-Habiba¹, Kalle Salminen², Päivi Grönroos², Esko Kauppinnen², Veikko Sariola¹, and Sakari Kulmala²
¹Tampere University, FINLAND and ²Aalto University, FINLAND

T175.f ISOOTHERMAL 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

T176.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

T177.f QUANTUM-LIMITED 2D SENSORS FOR pH AND BIOSENSING
Arvind Balijepalli¹, Son T. Le¹, Harish C. Pant², and Curt A. Richter¹
¹National Institute of Standards and Technology (NIST), USA and ²National Institutes of Health (NIH), USA

T178.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

T179.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
T180.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

T181.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

W166.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

W167.f   A NOVEL OXYGEN NANOSENSOR FOR IN VITRO MICROENVIRONMENT MONITORING IN MESENCHYMAL STEM CELL CULTURE
Yunjie Hao1,2, Manohar P. Koduri1,2, Fangang Tseng1, James Henstock2, John A. Hunt3, and Judy Curran2
1National Tsing Hua University, TAIWAN, 2University of Liverpool, UK, and 3Nottingham Trent University, UK

W168.f   AN INTEGRATED CAPILLARY-DRIVEN IMPEDIMETRIC BIOSENSOR FOR MICROPARTICLE-LABELED IMMUNOASSAY
Ali Khodayari Bavil1, Drago Sticker2, Peter Ertl2, and Jungkyu Kim3
1Texas Tech University, USA, 2Vienna University of Technology, AUSTRIA, and 3University of Utah, USA

W169.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

W170.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

W171.f   DIGITAL PHOTOGRAPHY TECHNIQUES IN MICROFLUIDICS: EXPOSURE BRACKETING FOR HIGH DYNAMIC RANGE MAGNETOPHORETIC CYTOMETRY
Ozgun Civelekgolu, Ningquan Wang, Ruxiu Liu, Mert Boya, Tevhide Ozkaya-Ahmadov, and A. Fatih Sarioglu
Georgia Institute of Technology, USA
W172.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

W173.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

W174.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

W175.f LAB-ON-A-CHIP BASED ELECTROCHEMICAL DETECTION OF FERRITIN
Mayank Garg¹, Martin G. Christensen², Alexender Iles², Amit L. Sharma¹, Nicole Pamme², and Suman Singh¹
¹CSIR-CSIO, INDIA and ²University of Hull, UK

W176.f PRECIPITATION-BASED ENZYMATIC SIGNAL AMPLIFICATION IN HYDROGELS
Nidhi Juthani and Patrick S. Doyle
Massachusetts Institute of Technology, USA

W177.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

W178.f SLIPSZYMES: LUBRICANT-INFUSED DNAZYME SURFACES FOR DETECTION OF PATHOGENIC BACTERIA IN COMPLEX FLUIDS
Hanie Yousefi, Akansha Prasad, Sahar Samani, Amid Shakeri, Carlos Filipe, and Tohid Didar
University of Toronto, CANADA

W179.f SURFACE PLASMON RESONANCE IMAGING ENHANCED BY ACTIVE MASS TRANSPORT
Marion Costella¹, Marie Frénéa-Robin², Julien Marchalot³, Julien Moreau¹, Oleh Andreiev¹, Paul Charette¹, and Michael Canva¹
¹Université de Sherbrooke, FRANCE, ²Université Lyon ¹, FRANCE, and ³INSA Lyon, FRANCE
W180.f  ULTRASENSITIVE MIRNA DETECTION USING TARGET CYCLING AMPLIFICATION AND DIGITAL MICROFLUIDICS  
Bin Wang  
Tsinghua University, CHINA

W181.f  VERTICALLY SHEATHING LAMINAR FLOW-BASED IMMUNOASSAY USING SIMULTANEOUS DIFFUSION-DRIVEN IMMUNE REACTIONS  
Amanzhol Kurmashev¹, Seyong Kwon¹, Je-Kyun Park², and Joo. H Kang¹  
¹Ulsan National Institute of Science and Technology (UNIST), KOREA and  
²Korea Advanced Institute of Science and Technology (KAIST), KOREA

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f - Sensors and Detection Technologies  
Chemical & Electrochemical Sensors

M182.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

M183.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

M184.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

M185.f  LIGHT THERAPY DEVICE WITH TRANSEPIDERMAL POTENTIAL-BASED REAL-TIME MONITORING OF SKIN BARRIER RECOVERY  
Hajime Konno, Yuina Abe, Shotaro Yoshida, and Matsuhiro Nishizawa  
Tohoku University, JAPAN

M186.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

M187.f  VOLATILE ODORANT DETECTION BY OLFACTORY RECEPTORS FORMED IN A LIPID BILAYER MEMBRANE  
Tetsuya Yamada, Koki Kamiya, Toshihisa Osaki, and Shoji Takeuchi  
¹Kanagawa Institute of Industrial Science and Technology, JAPAN and  
²University of Tokyo, JAPAN
T182.f  A DROPLET MICROFLUIDIC-BASED SENSOR FOR MONITORING RIVER NITRATE/NITRITE CONCENTRATIONS
Adrian M. Nightingale¹, Sammer-ul Hassan¹, Brett M. Warren², Kyriacos Makris², 
Gareth W.H. Evans¹, Evarthia Papadopoulou², Sharon Coleman¹,², and Xize Niu¹,²
¹University of Southampton, UK and ²SouthWestSensor Ltd, UK

T183.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

T184.f  DETECTION OF SWELL/SHRINK BEHAVIOR OF STIMULUS-RESPONSIVE HYDROGEL BY SINGLE WALL CARBON NANOTUBE STRAIN SENSOR
Erika Iyama¹, Daisuke Kiriya², and Hiroaki Onoe¹
¹Keio University, JAPAN and ²Osaka Prefecture University, JAPAN

T185.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

T186.f  RAPID ON-SITE DETERMINATION OF TOTAL NITROGEN IN WATER USING A PORTABLE ANALYTICAL SYSTEM
Chen Zhao¹, Longyan Chen¹, Guowei Zhong², Qiyang Wu¹, Jinxia Liu², and Xinyu Liu¹
¹University of Toronto, CANADA and ²McGill University, CANADA

W182.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

W183.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

W184.f  INELASTIC TUNNELING SPECTROSCOPY MICROMACHINED GAS SENSOR FOR ENVIRONMENTAL APPLICATIONS
Aishwaryadev Banerjee, Rugved Likhite, Hanseup Kim, and Carlos H. Mastrangelo
University of Utah, USA

W185.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
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**

**M188.f**
ABSORBANCE SPECTRA-ACTIVATED DROPLET SORTING FOR HIGH-THROUGHPUT LABEL-FREE CHEMICAL IDENTIFICATION
Todd A Duncombe¹, Aaron Ponti¹, Alice Mauer², Florian Seebeck², and Petra S. Dittrich¹
¹ETH Zürich, SWITZERLAND and ²University of Basel, SWITZERLAND

**M189.f**
IMPEDEANCE SPECTROSCOPY AND OPTICAL IMAGING FOR AUTOMATED MULTIMODAL PALYNOLOGY
Riccardo Reale¹, Adele De Ninno², Maria A. Brighetti¹, Luca Businaro², Alessandro Travaglini¹, Paolo Bisegna¹, and Federica Caselli¹
¹University of Rome Tor Vergata, ITALY and ²CNR Institute for Photonics and Nanotechnologies, ITALY

**M190.f**
IMPEDEANCE-BASED QUANTIFICATION OF PARASITIC VOLTAGE DROPS FOR OPTIMIZING AC ELECTROKINETIC TRAPPING IN MICROFLUIDIC DEVICES
Nathan Swami
University of Virginia, USA

**M191.f**
SERS DETECTION OF Aβ40 AND ZN2+-Aβ40 PEPTIDES ON AN ELECTRODE NANOGAP ENABLED PLATFORM
Katrin H.P. Vu¹, Ming-Che Lee², Gerhard H. Blankenburg², Yun-Ru Chen², Andreas Erbe³, Leonardo Lesser-Rojas⁴, and Chia-Fu Chou²
¹National Tsing Hua University, GERMANY, ²Academia Sinica, TAIWAN, ³Norwegian University of Science and Technology, NORWAY, and ⁴University of Costa Rica, COSTA RICA

**T187.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

**T188.f**
DIELECTROPHORETIC DETECTION OF IMATINIB RESISTANCE IN K562 CELLS USING A LAB-ON-A-CHIP SYSTEM
Yagmur Demircan Yalcin¹, Taylan Berkin Toral², Sertan Sukas², Ender Yildirim², Ozge Zorlu², Ufuk Gunduz¹, and Haluk Kulah¹
¹Middle East Technical University, TURKEY and ²Mikro Biyosistemler Electronics Inc., TURKEY
T189.f  LABEL-FREE ELECTRICAL IMPEDANCE SPECTROSCOPY BASED SENSOR-IN-A-TUBE FOR SINGLE CELLS ANALYSIS
Aleksandr Egunov¹, Mariana Medina-Sánchez¹, Dmitriy D. Karnaushenko¹, Nicole Kretschmann², Katja Akgün², Tjalf Ziemssen², Daniil Karnaushenko¹, and Oliver G. Schmidt¹,³
¹Leibnitz IFW Dresden, GERMANY, ²Universitätsklinikum Carl Gustav Carus an der Technischen Universität Dresden, GERMANY, and ³Chemnitz University of Technology, GERMANY

T190.f  NON-INVASIVE DETECTION OF NEPHROTOXICITY ON A PROXIMAL TUBULE ON-A-CHIP BY TRANS-EPITHELIAL/TRANS-ENDOTHELIAL ELECTRICAL RESISTANCE MEASUREMENTS
Ryohei Ueno¹, Ramin B. Sadeghian¹, Yuji Takata¹, Kiyotaka Tsuji², and Ryuji Yokokawa¹
¹Kyoto University, JAPAN and ²Panasonic Corporation, JAPAN

T191.f  TOWARDS REAL-TIME MULTIPARAMETRIC IMPEDANCE CYTOMETRY
John McGrath¹, Riccardo Reale², Carlos Honrado¹, Paolo Bisegna², Nathan Swami¹, and Federica Caselli²
¹University of Virginia, USA and ²University of Rome Tor Vergata, ITALY

W187.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

W188.f  FAST REACTION SCREENING COMBINING SEGMENTED FLOW MICROFLUIDICS AND SURFACE ENHANCED RAMAN SPECTROSCOPY
Alexander Mendl¹, Michael Köhler², and Dusan Boskovic¹
¹Fraunhofer Institute for Chemical Technology, GERMANY and ²Ilmenau University of Technology, GERMANY

W189.f  LABEL-FREE NANOPARTICLE DETECTION IN 10^2 nm CHANNEL BY UTILIZING PHOTOTHERMAL OPTICAL DIFFRACTION
Yoshiyuki Tsuyama and Kazuma Mawatari
University of Tokyo, JAPAN

W190.f  ORGANELLE-LEVEL COMPREHENSIVE STUDY ON DIFFERENTIABLE MITOCHONDRIAL DISEASED CELLS USING DEP MICROFLUIDIC SYSTEM
Pei-Yin Chi
National Tsing Hua University, TAIWAN

W191.f  SINGLE-CELL MICROSCOPIC RAMAN SPECTROSCOPY FOR RAPID MICROBIIAL DETECTION
Daisuke Onoshima, Kentaro Uchida, Hiroshi Yukawa, Kenji Ishikawa, Masaru Hori, and Yoshinobu Baba
Nagoya University, JAPAN
<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>M192.f</td>
<td>OPTOFLUIDIC CYTOMETRY FOR BACTERIA DETECTION</td>
<td>Shi L. Feng, Patricia Y. Liu, Jing B. Zhang, Yi Zhang, Nguyen K. Truc, Yap P.H. Eric, Wee Ser, and Ai Q. Liu</td>
<td>Nanyang Technological University, SINGAPORE</td>
</tr>
<tr>
<td>M193.f</td>
<td>A NEW MICROFLUIDIC FLOW MONITORING METHOD USING INFRARED SENSOR UNIT</td>
<td>Thinh H. Nguyen(^1), Alex Milleman(^1), Sthitodhi Ghosh(^1), Vinitha TU, (^1) Bon-Ki Ku(^2) and Chong H. Ahn(^1)</td>
<td>(^1)University of Cincinnati, USA and (^2)CDC-NIOSH, USA</td>
</tr>
<tr>
<td>M194.f</td>
<td>DEVELOPMENT OF A HIGH SPATIO-TEMPORAL RESOLUTION ELECTROCHEMICAL IMAGING SYSTEM USING A CLOSED BIPOLAR ELECTRODE ARRAY</td>
<td>Tomoki Iwama, Kumi Y. Inoue, Hiroya Abe, Tomokazu Matuse, and Hitoshi Shiku</td>
<td>Tohoku University, JAPAN</td>
</tr>
<tr>
<td>M195.f</td>
<td>HIGH-THROUGHPUT OPTOFLUIDIC 3D CELL IMAGING</td>
<td>Masashi Ugawa and Sadao Ota</td>
<td>University of Tokyo, JAPAN</td>
</tr>
<tr>
<td>M196.f</td>
<td>LENSFREE EARLY DETECTION OF BACTERIAL COLONIES</td>
<td>Vincent Haguet(^1), Dorothée Balle(^1), and Gaëlle Saint-Auret(^2)</td>
<td>(^1)CEA Grenoble, FRANCE and (^2)RIKEN, FRANCE</td>
</tr>
<tr>
<td>M197.f</td>
<td>MAGNETIC LEVITATION-BASED PROTEIN DETECTION USING LENSLESS DIGITAL INLINE HOLOGRAPHIC MICROSCOPY</td>
<td>Sena Yaman, Kerem Delikoyun, and Hüseyin C. Tekin</td>
<td>Izmir Institute of Technology, TURKEY</td>
</tr>
<tr>
<td>M198.f</td>
<td>OPTICAL INJECTION OF FLUORESCENCE MICROSENSOR TO A SPECIFIC CELL BY OPTICAL TWEETERS AND LOCAL HEATING</td>
<td>Hisataka Maruyama, Ryota Yanagawa, and Fumihito Arai</td>
<td>Nagoya University, JAPAN</td>
</tr>
<tr>
<td>M199.f</td>
<td>PHOTOTHERMAL DETECTION PROBE USING OPTICAL FIBER</td>
<td>Hisashi Shimizu and Shoji Takeuchi</td>
<td>University of Tokyo, JAPAN</td>
</tr>
<tr>
<td>M200.f</td>
<td>PORTABLE FLUORESCENCE POLARIZATION ANALYZER FOR ON-SITE MULTISAMPLE IMMUNOASSAY</td>
<td>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)</td>
<td>(^1)Hokkaido University, JAPAN, (^2)Tianma Japan, Ltd., JAPAN, (^3)Hokkaido Institute of Public Health, JAPAN, and (^4)Tohoku University, JAPAN</td>
</tr>
</tbody>
</table>
M201.f ULTRA-SMALL FOUR-EMISSION-POINT SPECTRAL-DETECTION SYSTEM BY SEVEN-DICHROIC-MIRROR ARRAY
Takashi Anazawa¹ and Motohiro Yamazaki²
¹Hitachi, Ltd., JAPAN and ²Hitachi High-Technologies Corporation, JAPAN

T192.f A DEEP LEARNING ENABLED FIELD-PORTABLE CELL ANALYZER
Dongmin Seo¹, Sanghoon Shin¹, Haechang Yang¹, Seungmin Myeong¹, Euijin Han¹, Sangwoo Oh², Moonjin Lee², and Sungkyu Seo¹
¹Korea University, KOREA and ²Korea Research Institute of Ships & Ocean Engineering, KOREA

T193.f CONTINUOUS GLUCOSE MONITORING INSIDE SPHEROIDS BY MESOPOROUS FLUORESCENT MICROPARTICLES
Jun Sawayama and Shoji Takeuchi
University of Tokyo, JAPAN

T194.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

T195.f IN-SITU MONITORING OF ESCHERICHIA COLI GROWTH ON DIGITAL MICROFLUIDICS BY OPTICAL CHEMOSCENORS FOR MICROBIAL CELL METABOLISM STUDIES
Wenting Qiu and Stefan Nagl
Hong Kong University of Science and Technology, HONG KONG

T196.f LAB-ON-A-CD CAPABLE OF CONTINUOUS FLUORESCENCE MEASUREMENT
Kazuhiro Morioka¹, Takuya Nojo², Akihide Hemmi³, Norio Teshima⁴, Tomonari Umemura¹, Shungo Kato², Katsumi Uchiyama², and Hizuru Nakajima²
¹Tokyo University of Pharmacy and Life Sciences, JAPAN, ²Tokyo Metropolitan University, JAPAN, ³Mebius Advanced Technology Ltd., JAPAN, and ⁴Aichi Institute of Technology, JAPAN

T197.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

T198.f PEROVSKITE NANOCRYSTAL – HYFLON AD 60 OPTICAL THERMAL SENSORS FOR TEMPERATURE IMAGING IN DIGITAL MICROFLUIDICS
Zhangdi Lu¹, Yanxiu Li², Wenting Qiu¹, Andrey L. Rogach², and Stefan Nagl¹
¹Hong Kong University of Science and Technology, HONG KONG and ²City University of Hong Kong, HONG KONG
T199.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

T200.f  SPATIALLY HOMOGENEOUS ILLUMINATION BY A COMPACT OPTICAL ARCHITECTURE
Vincent Haguet and Bernard Sartor
CEA Grenoble, FRANCE

W192.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

W193.f  COLLOIDAL PHOTONIC CRYSTAL ARRAY CHIP BASED ON NANO PARTICLE 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

W194.f  HIGH THROUGHPUT SIZE-DETERMINATION AND MULTIPLEXED FLUORESCENCE ANALYSIS OF SINGLE BIOLOGICAL PARTICLES IN A NANOFLUIDIC DEVICE
Quenting Lubart¹, Sune Levin¹, Stephan Block², Silver Jõemetsa¹, Sriram KK¹, Fredrik Höök¹, Marta Bally³, Elin K. Esbjörner¹, and Fredrik Westerlund¹
¹Chalmers University of Technology, SWEDEN, ²Freie Universität Berlin, GERMANY, and ³Umeå University, SWEDEN

W195.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

W196.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

W197.f  OPEN SOURCE LAB AUTOMATION FOR HIGH THROUGHPUT MICROFLUIDIC MICROBIOLOGY
Sarah H. Needs and Alexander D. Edwards
University of Reading, UK
PHOTO-THERMALLY ENHANCED LIGHT SCATTERING METHOD FOR NANO PARTICLE DETECTION
Dan Maeda, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

PORTABLE 3D PRINTED COLORIMETRIC SENSOR FOR REMOTE SOIL MEASUREMENT
Sepideh Keshan Balavandy¹, Fernando Maya¹, Ashley Townsend¹, Kimberley Frederick², and Michael C. Breadmore¹
¹University of Tasmania, AUSTRALIA and ²Skidmore College, USA

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

BIOMECHANICAL STUDY OF LIVING CAENORHABDITIS ELEGANS EMBRYOS USING CELLULAR FORCE MICROSCOPY
Roger Krenger¹, Jan T. Burri², Thomas Lehner³, Bradley J. Nelson², and Martin A.M. Gijs¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and ²ETH Zürich, SWITZERLAND

ON-CHIP TRANSPARENT FLOW VELOCITY SENSOR MADE FROM ULTRA-THIN GLASS SHEET PROCESSED BY FEMTOSECOND LASER
Yaxiaer Yalikun¹, Kaigu Pan¹, Yo Tanaka², and Yoichiroh Hosokawa¹
¹Nara Institute of Science and Technology, JAPAN and ²RIKEN, JAPAN

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

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

LOW SAMPLE CONSUMING, PORTABLE VISCOMETER BASED ON LAPLACE-INDUCED-PUMPING AND REFRACTION FOR HEMORHEOLOGY
Matthias Hermann¹, Kyle Bachus¹, Graham Gibson², and Richard Oleschuk¹
¹Queen's University, CANADA and ²CMC Microsystems, CANADA
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

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

W201.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

W202.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

W203.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

FACILE FABRICATION OF FULLY INTEGRATED PAPER-BASED ORIGAMI MICRODEVICE FOR COLORIMETRIC DISCRIMINATION OF VIVABLE PATHOGENS
Phuoc Tung Trieu and Nae Yoon Lee
Gachon University, KOREA

INKJET 3D-PRINTED MICROCANTILEVER NANOGRAM RESOLUTION MASS SENSOR
Patrycja Sniadek, Bartosz Kawa, and Rafal Walczak
Wroclaw University of Science and Technology, POLAND

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
W205.f  PATTERN CLASSIFICATION AND SEGMENTATION IN MULTIDIMENSIONAL DNA CONCENTRATION SPACES BY SYNTHETIC CHEMICAL REACTION NETWORK
Shu Okumura, Guillaume Gines, Yannick Rondelez, Teruo Fujii, and Anthony Genot
Institution of Industrial Science, JAPAN

M206.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

T206.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

M207.g  DRYING CAPABILITY OF RMFC MICO-CHANNEL EVAPORATOR WITH IMPROVED FLOW DISTRIBUTION, GAS VENTING MANIFOLD AND ARTIFICIAL CAVITIES
Hung-Yu Chen¹, Fan-Gang Tseng¹, and Chin Pan²
¹National Tsing Hua University, TAIWAN and ²City University of Hong Kong, HONG KONG

W206.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
M208.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

M209.g  TRACKING TRANSIENT CHANGES ON THE MILLI-SECOND TIME-SCALE: X-RAY SPECTROSCOPY AND MICROFLUIDIC MIXING
Thomas Kroll¹, Leland B. Gee², Diego A. Huyke³, Augustin Braun², Michael Mara², Matthew D. James², Ashwin Ramachandran², Dimosthenis Sokaras¹, Uwe Bergmann¹, Edward I. Solomon², Daniel D. DePonte¹, and Juan G. Santiago²
¹SLAC National Accelerator Laboratory, USA and ²Stanford University, USA

T207.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

T208.g  SAMPLE CONSUMPTION REDUCTION FOR SERIAL CRYSTALLOGRAPHY USING WATER-IN-OIL DROPLETS
Austin Echelmeier¹, Jorvani Cruz Villarreal¹, Daihyun Kim¹, Sahir Gandhi¹, Ana Egatz-Gomez¹, Darren Thifault¹, Jesse D. Coe¹, Gerrit Brehm², Caleb Madsen¹, Sebastian Quintana¹, Sasa Baji³, Marc Messerschmidt¹⁻⁴, Jose Domingo¹, Dominik Oberthuer¹, Max O. Wiedorn¹, Holger Fleckenstein³, Sabine Both¹, Derek Mendez¹, Juraj Knoska², Jose Martin Garcia¹, Hao Hu¹, Stella Lisova¹, Aschkan Allahgholi³, Yaroslav Gevorkov³, Kartik Ayyer³, Steve J. Aplin³, Helen M. Ginn³, Heinz Graafsma⁵, Andrew J. Morgan³, Dominic Greiffenberg⁶, Alexander Klujev³, Torsten Laurus³, Jennifer Poehlsen³, Ulrich Trunk³, Filipe R.N.C. Maia⁷, Davide Mezza⁶, Raimund Fromme¹, Britta Weinhausen⁴, Grant Mills⁴, PatrikVagovic⁶, Yoonhee Kim⁴, Joachim Schulz⁴, Katerina Doerner⁴, Jolanta Sztuk-Dambietz⁴, Manuela Kuhn³, Thomas D. Grant⁸, Thomas A. White³, Valerio Mariani³, Anton Barty³, Adrian P. Mancuso⁴, Uwe Weierstall¹, John C.H. Spence¹, Henry N. Chapman³, Nadia A. Zatsepin¹, Petra Fromme¹, Richard A. Kirian¹, and Alexandra Ros¹
¹Arizona State University, USA, ²Göttingen University, GERMANY, ³Deutsches Elektronen-­Synergie (DESY), GERMANY, ⁴European XFEL, GERMANY, ⁵University of Oxford, UK, ⁶Paul Scherrer Institute, SWITZERLAND, ⁷University of Uppsala, SWEDEN, and ⁸University of Buffalo, USA

T209.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
### W207.g
**CRYO-MICROFLUIDIC DEVICES ENABLE MILLISECOND TIME-CORRELATION BETWEEN LIVE-IMAGING AND CRYO-ELECTRON MICROSCOPY IN CAENORHABDITIS ELEGANS**
Marie Fuest¹, Miroslava Schaffer¹, Giovanni M. Nocera¹, Rodrigo I. Galilea-Kleinsteuber¹, Michael Heymann¹, Jürgen M. Plitzko¹, and Thomas P. Burg²  
¹Max Planck Institute for Biophysical Chemistry, GERMANY and ²TU Darmstadt, GERMANY

### W208.g
**TIME-RESOLVED STRUCTURE DETERMINATION VIA RAPID MIXING MICROFLUIDICS**
Martin Trebbin¹, Diana C.F. Monteiro¹, and Godfrey Beddard²  
¹University at Buffalo, USA and ²University of Edinburgh, UK

### g - Other Applications of Microfluidics

#### Power Devices

### W209.g
**ION BASED PRESSURE DRIVEN ELECTRIC POWER GENERATOR USING MICRO/NANO GLASS POROUS DEVICE**
Yo Tanaka¹, Satoshi Amaya¹, Wataru Nagafuchi¹, Norihiro Kamamichi², and Yaxiaer Yalikun¹  
¹RIKEN, JAPAN and ²Tokyo Denki University, JAPAN

### g - Other Applications of Microfluidics

#### Others

### M210.g
**A MICRO-FLUIDIC DEVICE TO MEASURE ANTIOXIDATIVE CAPACITY OF TEA CATECHINS**
Alexandra Homsy¹, Laure Jeadupeux¹, Marzena Walaszczyk¹, Claudio Prieur¹, Frédéric Truffer¹, Martial Geiser¹, Isabelle Udrisard¹, Agnieszka Kosinska Cagnazzo¹, Wilfried Andlauer¹, and Harry J. Whitlow²  
¹University of Applied Sciences and Arts Western Switzerland, SWITZERLAND and ²University of Louisiana, USA

### M211.g
**DEVELOPMENT OF CONTROLLED RELEASE TABLET REAGENTS EMBEDDED COMPACT NUTRIENT ANALYZER FOR CONTINUOUS MONITORING OF NUTRIENT CONTENT IN CROP BODY**
Toshihiro Kasama¹, Naoki Hirohama¹, Yoshihige Endo¹, Takumi Okamoto², Tetsushi Koide², Chiharu Sone³, Masashi Komine³, Yukio Yaji³, Atsushi Ogawa³, and Ryo Miyake¹  
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T210.g  ARTIFICIAL PHEROMONE EFFECT IMPOSED ON REAL LIVING MICROALGAE CELLS CONFINED IN A MICROCHIP WITH OPTICAL FEEDBACK SYSTEM
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T211.g  THE UNIVERSAL LAB-ON-CHIP PLATFORM FOR BIO-NANOSATELLITE
Agnieszka Podwin, Adrianna Graja, Dawid Przystupski, Danylo Lizanets, Jan A. Dziuban, and Rafal Walczak
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W210.g  CONTINUOUS FLOW ANALYSIS OF ATMOSPHERIC ICE-NUCLEATING PARTICLES IN THE EASTERN MEDITERRANEAN
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W211.g  MEASURING THE NUCLEATION KINETICS OF ARAGONITE USING A SELF-DIGITIZATION MICROFLUIDIC CHIP
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