Preliminary Technical Program

The Executive Committee reserves the right to amend the program if necessary.
Sunday, 27 October

08:30 Workshop Registration

09:00 - 12:00 Morning Workshops

Workshop 1
DESIGN TOOLS FOR MICROFLUIDIC DEVICES
Robert Wille¹, Jan Madsen², and Ulf Schlichtmann³
¹Johannes Kepler University, AUSTRIA, ²Technical University of Denmark, DENMARK, and ³Technische Universität München, GERMANY

Workshop 2
COMMERCIALIZATION OF MICROFLUIDIC DEVICES AND SYSTEMS
Holger Becker
microfluidic ChipShop GmbH, GERMANY

Workshop 3
CARING FOR CELLS IN MICROSYSTEMS: ENSURING CELL-SAFE DEVICE DESIGN AND OPERATION
Sarvesh Varma and Joel Voldman
Massachusetts Institute of Technology, USA

Workshop 4
AC ELECTROKINETICS IN MICROSYSTEMS FOR SINGLE-CELL CYTOMETRY, MANIPULATION AND SENSING
Nathan Swami¹ and Federica Caselli²
¹University of Virginia, USA and ²University of Rome Tor Vergata, ITALY

Workshop 5
SPICE UP YOUR CHIPS WITH ELECTRONIC GADGETS AND ARDUINO
Yuksel Temiz
IBM Research - Zürich, 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 Kaigala¹, Patrick Misun², and Tomaso Zambelli²
¹IBM Research – Zürich, SWITZERLAND and ²ETH Zürich, SWITZERLAND

Workshop 8
LIVE CELL IMAGING IN MICROFLUIDICS
Tom Lummen¹, Oliver Biehlmaier², and Gregor Schmidt¹
¹ETH Zürich, SWITZERLAND and ²University of Basel, SWITZERLAND

Workshop 9
3D PRINTING TOOLS
Michael Breadmore¹, Rosanne Guijt², Greg Nordin³, and Egan Doeven²
¹University of Tasmania, AUSTRALIA, ²Deakin University, AUSTRALIA, and ³Brigham Young University, USA

Workshop 10
ORGAN-ON-A-CHIP: MERGING MICROFABRICATION WITH TISSUE ENGINEERING
Peter Loskill¹, Olivier Guenat², and Olivier Frey³
¹Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, GERMANY, ²University of Bern, SWITZERLAND, and ³InSphero AG, SWITZERLAND

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

17:00 - 19:00 Wine & Cheese Welcome Reception
Monday, 28 October

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

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

Plenary Presentation I
San Francisco Room

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

09:15 Transition

Session 1A1 - Exosomes Trapping and Isolation
San Francisco Room

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

09:50 DIRECT AND SCALABLE ISOLATION OF CIRCULATING EXOSOMES FROM WHOLE BLOOD USING CENTRIFUGAL FORCES
Hui Min Tay\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{1,3}, and Han Wei Hou\textsuperscript{1}
\textsuperscript{1}Nanyang Technological University, SINGAPORE, \textsuperscript{2}Tan Tock Seng Hospital, SINGAPORE, and \textsuperscript{3}Massachusetts Institute of Technology, USA

10:10 SEPARATION OF SINGLE EXOSOMES UTILIZING A COMPOSITE NANOFLOWDIDIC 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), JAPAN
## Session 1B1 - Particle Separation

### Singapore Room

**09:30** MINIATURIZATION OF HYDROCYCLONES: 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, SWITZERLAND

## Session 1C1 - Synthetic Biology Using Droplets

### Sydney Room

**09:30** DROPLET-BASED MICROFLUIDICS FOR BOTTOM-UP SYNTHETIC BIOLOGY
Thomas Beneyton¹, Dorothee Krafft², Celina Love³, Mathias Girault¹, Claudia Bednarz², Christin Kleineberg², Christian Woefler², Ivan Ivanov², Tanja Vidakovic-Koch², Kai Sundmacher², T.-Y. Dora Tang³, 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 Iwai¹,², Maren Wehrs³, Peter W. Kim¹,², Jess Sustarich¹,², Trent R. Northen¹,³,⁴, Hector Garcia Martin¹,³, Paul D. Adams¹,³,⁵, and Anup K. Singh¹,²  
¹Joint BioEnergy Institute, USA, ²Sandia National Laboratories, USA, ³Lawrence Berkeley National Laboratory, USA, ⁴DOE Joint Genome Institute, USA, and ⁵Univeristy of California, Berkeley, USA

**10:30** Break: Exhibit and Poster Inspection
**Session 1A2 - Single Cell Analysis (Secretion)**

**San Francisco Room**

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<tr>
<td>11:00</td>
<td><strong>PRESCIENT: A PLATFORM FOR THE RAPID EVALUATION OF SINGLE CELL PRODUCED ANTIBODY SUCCESS USING INTEGRATED MICROFLUIDIC-ENABLED TECHNOLOGY</strong></td>
<td>Jose A. Wippold(^1), Han Wang(^1,2), Joseph Tingling(^2), Julian Leibowitz(^2), Paul Defigueiredo(^2), and Arum Han(^1)</td>
<td>(^1)Texas A&amp;M University, USA and (^2)Tsinghua University, CHINA</td>
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<td>11:20</td>
<td><strong>METABOLIC CHARACTERIZATION OF INDIVIDUAL IGG-SECRETING CELLS</strong></td>
<td>Mira ElKhoury(^1), Guilhem Chenon(^1), Andrew D. Griffiths(^1), Jean Baudry(^1), and Klaus Eyer(^1,2)</td>
<td>(^1)École Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and (^2)ETH Zürich, SWITZERLAND</td>
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<td>11:40</td>
<td><strong>SYNCHRONIZED DROP-SCREENING/SORTING FOR SINGLE CELL SECRETION MEASUREMENTS</strong></td>
<td>Guoyun Sun, Ming Wang, and Chia-Hung Chen</td>
<td>National University of Singapore, SINGAPORE</td>
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<td>12:00</td>
<td><strong>DEMOCRATIZED HIGH-THROUGHPUT SINGLE-CELL SECRETION SCREENING USING DROPLETS FORMED BY STRUCTURED MICROPARTICLES</strong></td>
<td>Joseph de Rutte, Robert Dimatteo, Mark van Zee, Robert Damoiseaux, and Dino Di Carlo</td>
<td>University of California, Los Angeles, USA</td>
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**Session 1B2 - Reconfigurable and Self-Powered Devices**

**Singapore Room**

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<tr>
<td>11:00</td>
<td><strong>RECONFIGURABLE MICROFLUIDICS: REAL-TIME SHAPING OF VIRTUAL CHANNELS THROUGH HYDRODYNAMIC FORCES</strong></td>
<td>David Taylor(^1,2) and Govind Kaigala(^2)</td>
<td>(^1)École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and (^2)IBM Research - Zürich, SWITZERLAND</td>
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<tr>
<td>11:20</td>
<td><strong>LIQUID CIRCUITS IMPLEMENTED USING SMARTPHONE-CONTROLLED VALVES AND SELF-VENTED CHANNELS</strong></td>
<td>Yuksel Temiz, Yulieth Arango, Onur Gökçê, and Emmanuel Delamarche</td>
<td>IBM Research - Zürich, SWITZERLAND</td>
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<tr>
<td>11:40</td>
<td><strong>DNA-ONLY BIOASSAY FOR SIMULTANEOUS DETECTION OF PROTEIN AND NUCLEIC ACID TARGETS ON THE SELF-POWERED ISIMPLE CHIP</strong></td>
<td>Aida Montserrat, Saba Safdar, Karen Ven, Francesco Dal Dosso, Jeroen Lammertyn, and Dragana Spasic</td>
<td>KU Leuven, BELGIUM</td>
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</table>
12:00  SINGLE LAYER DOMINO CAPILLARICS FOR PERFORMING ADVANCED AUTONOMOUS BIOASSAYS
Mohamed Yafia, Andy Ng, Oriol Ymbern, and David Juncker
McGill University, CANADA

Session 1C2 - Separation and Assays in Droplets
Sydney Room

11:00  DROPLET-BASED SINGLE EXTRACELLULAR VESICLE PROTEIN PROFILING FOR THE IMPROVEMENT OF IMMUNOTHERAPY
Jina Ko¹, Yongcheng Wang², Angela Marquad¹, Jonathan Carison¹, David Weitz², and Ralph Weissleder¹
¹Massachusetts General Hospital, USA and ²Harvard University, USA

11:20  DROPLET-BASED INVESTIGATION OF A BIOCHEMICAL BISTABLE CIRCUIT FOR SENSITIVE AND NOISE-FREE DETECTION OF NUCLEIC ACIDS
Robin Deteix¹, Nicolas Lobato-Dauzier¹, Elia Henry², Shu Okumura¹, Guillaume Gines³, Yannick Rondelez³, Teruo Fujii¹, and Anthony J. Genot⁴
¹University of Tokyo, JAPAN, ²Francois Jacob Institute of Biology-INSERM/CEA, FRANCE, ³PSL Research University, FRANCE, and ⁴LIMMS-IIS/CNRS, JAPAN

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

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

12:20  Grab 'n Go Lunch

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

Plenary Presentation II
San Francisco Room

13:15  INTELLIGENT IMAGE-ACTIVATED CELL SORTING & BEYOND
Keisuke Goda¹,²,³
¹University of Tokyo, Tokyo, JAPAN, ²Wuhan University, CHINA, and ³University of California, Los Angeles, USA
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<td>14:00</td>
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<tr>
<td>16:00</td>
<td>Break</td>
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### Session 1A3 - Single-Cell Manipulation and Analysis

**San Francisco Room**

**16:30**  
**Keynote Presentation**  
**CHARACTERIZATION OF OPTIMAL CULTURE CONDITIONS FOR MICROFLUIDIC 3D VASCULATURE-ON-CHIP**  
Sin Yen Tan and Angela R. Wu  
*Hong Kong University of Science and Technology, HONG KONG*

**17:00**  
**MICROFLUIDIC MONITORING HOST-VIRAL INTERACTION AT THE SINGLE-CELL LEVEL**  
Reya Ganguly\(^1\), Solib Kang\(^1\), Byungjin Lee\(^1\), Si Hyung Jin\(^1\), Yohei Yamuchi\(^2\), Jaeseong Kim\(^1\), and Chang-Soo Lee\(^1\)  
\(^1\)Chungnam National University, KOREA and \(^2\)University of Bristol, UK

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

**17:40**  
**ISOLATION OF CIRCULATING FETAL TROPHOBLAST USING FETAL-CHIP FOR NON-INVASIVE PRENATAL DIAGNOSIS**  
Huimin Zhang\(^1\), Yuanyuan Yang\(^2\), Zhi Zhu\(^2\), and Chaoyong Yang\(^1,2\)  
\(^1\)Shanghai Jiao Tong University School of Medicine, CHINA and \(^2\)Xiamen University, CHINA

### Session 1B3 – Organs on Chip

**Singapore Room**

**16:30**  
**Keynote Presentation**  
**ADVANCED CELL MODELS, ORGANS ON CHIPS & MICROPHYSIOLOGICAL SYSTEMS AS INNOVATIVE TOOLS TO SUPPORT DRUG DEVELOPMENT**  
Adian Roth  
*Roche Innovation Center, Basel, SWITZERLAND*
17:00  ASSESSING GUT MICROBIOME-LIVER CROSSTALK WITH A MODULAR MICROFLUIDIC PLATFORM
Hsih-Yin Tan, Louis Jun Ye Ong, Chak Ming Leung, Lor Huai Chong, and Yi-Chin Toh
National University of Singapore, SINGAPORE

17:20  NANOFABRICATED BONE-ON-CHIP: TOWARDS A BONE REGENERATION MODEL
Víctor P. Galván1, 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 METABOLICMICS
Bishnubrata Patra1, Manvendra Sharma1, Ruby Karsten2, Maciej Grajewski2,
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
TRANSCRIPTIONAL RECORDING BY CRISPR SPACER ACQUISITION FROM RNA
Randall J. Platt, Michal Okoniewski, Tanmay Tanna, Mariia Y. Cherepkoka,
and Florian Schmidt
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

Plenary Presentation III
San Francisco Room

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

09:15 Transition

Session 2A1 - Exosomes and Extracellular Vesicles
San Francisco Room

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

09:50 PLATELET MEMBRANE CLOCKED SURFACE FOR PLASMONIC SWITCH ON BINDING OF CANCER THREATS
Sumit Kumar, Jae-A Han, Issac J. Michael, and Yoon-Kyoung Cho
Ulsan National Institute of Science and Technology (UNIST), KOREA

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

10:30 HIGHLY SENSITIVE DETECTION OF TUMOR-DERIVED EXTRACELLULAR VESICLES USING AN ENZYMATIC ASSAY AND REDOX CYCLING
Dilu G. Mathew\textsuperscript{1}, Pepijn Beekman\textsuperscript{1,2}, Serge G. Lemay\textsuperscript{1}, Séverine Le Gac\textsuperscript{1}, and Wilfred G. van der Wiel\textsuperscript{1}
\textsuperscript{1}University of Twente, THE NETHERLANDS
\textsuperscript{2}Wageningen University, THE NETHERLANDS
Session 2B1 - Paper Microfluidics and Devices
Singapore Room

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

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

10:10  AN ALL-IN-ONE PAPER-BASED MICROFLUIDIC DEVICE FOR MULTIPLEXED DETECTION OF CARDIAC PROTEIN MARKERS
Hao Fu1,2, Xiao Li2,3, Zhen Qin1, and Xinyu Liu1,2
1University of Toronto, CANADA, 2McGill University, CANADA, and 3Stanford University, USA

10:30  MICRO TOTAL ANALYSIS SYSTEM FOR DETERMINATION OF LITHIUM ION IN HUMAN WHOLE BLOOD WITH HYBRID DEVICE OF DMF AND TINY PAPER SENSORS
Takeshi Komatsu1, Manabu Tokeshi1, and Shih-Kang Fan2
1Hokkaido University, JAPAN and 2National Taiwan University, TAIWAN

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

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

09:50  INTEGRATED MICROFLUIDIC CHIP WITH FLOWING UPSTREAM SPERM SORTING AND ZP REMOVED OOCYTE INCUBATION FOR IN-VITRO FERTILIZATION
Suei-Shen Wang1, Yung-Chin Tzeng1, Yueh-Jen Chen1, Li-Chen Pan2, and Fan-Gang Tseng1,3
1National Tsing Hua University, TAIWAN, 2Taipei Medical University, TAIWAN, and 3Research Center for Applied Sciences, TAIWAN

10:10  DROPLET LIQUID EXCHANGER FOR CHEMICAL SCREENS IN CAENORHABDITIS ELEGANS
Guillaume Aubry, Marija Milisavljevic, and Hang Lu
Georgia Institute of Technology, USA
10:30 NOVEL MICRO-FLUIDIC CIRCUIT MODEL OF PLANT VASCULAR SYSTEM FOR THE GROWTH NAVIGATION
Ryo Miyake\textsuperscript{1}, Toshihiro Kasama\textsuperscript{1}, Maia Godonoga\textsuperscript{1}, Yoshishige Endo\textsuperscript{1}, Takumi Okamoto\textsuperscript{2}, Tetsushi Koide\textsuperscript{2}, Chiharu Sone\textsuperscript{3}, Masashi Komine\textsuperscript{3}, Yukio Yaji\textsuperscript{3}, Yoshihiro Kaneta\textsuperscript{3}, and Atsushi Ogawa\textsuperscript{3}
\textsuperscript{1}University of Tokyo, JAPAN, \textsuperscript{2}Hirosima University, JAPAN, and \textsuperscript{3}Akita Prefectural University, JAPAN

10:50 Break: Exhibit and Poster Inspection

Industrial Forum Session
San Francisco Room

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

Moderator Holger Becker, microfluidic ChipShop GmbH, GERMANY

Panel Vincent Linder, BioMedical Consultant, PORTUGAL
Martin Kopp, Roche Diagnostics, 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 2A3 - 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 Medical Center of Montpellier, FRANCE_

17:00  **MICROFLUIDIC 3D CELL SIEVING FOR CLOGGING-FREE RARE CELL ENRICHMENT WITH HIGH-THROUGHPUT AND LARGE VOLUME**

Jie Cheng¹,², Yiran Zhang³, Yifei Ye¹,², Xizhao Sui⁴, Mingxiao Li², Wenjie Zhao¹,², Xinyu Wei², Hongyan Guo³, Yang Zhao², and Chengjun Huang¹,²

¹Chinese Academy of Sciences, CHINA, ²National Engineering Research Center for Beijing Biochip Technology, CHINA, and ³Peking University People’s Hospital, CHINA

17:20  **MICROFLUIDIC ISOLATION OF METABOLICALLY ACTIVE CIRCULATING TUMOR CELLS AND CIRCULATING STROMAL CELLS**

Kinga Matula¹, Francesca Rivello¹, Aigars Piruska¹, Minke Smits², Niven Mehra², and Wilhelm T.S. Huck¹

¹Radboud University, THE NETHERLANDS and ²Radboud Institute of Molecular Life Sciences, THE NETHERLANDS

17:40  **AUTOMATION & INTEGRATION OF COMPUTER VISION ANALYSIS FOR IMMUNOTHERAPY RESEARCH WITH ON-CHIP CELL TRAPPING**

Chris Tostado¹, Joel Heng², Lucas Ong¹, Joel Voldman³, Ramanuj DasGupta², and Yi-Chin Toh¹

¹National University of Singapore, SINGAPORE, ²Genomic Institute of Singapore, SINGAPORE, and ³Massachusetts Institute of Technology, USA
### Session 2B3 - Immunoassays and Point-of Care Devices
#### Singapore Room

**16:30 Keynote Presentation**

**A POINT-OF-CARE IMMUNOASSAY PLATFORM FOR THYROID FUNCTION BASED ON HYDROGEL SENSORS EMBEDDED INSIDE A MICROFLUIDIC DEVICE**

Jayeeta Pai, Mithila Azad, Bhavna Goyal, Rajiv Nair, Rakesh Sharma and **Dhananjaya Dendukuri**

*Achira Labs, 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

*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 2C3 - 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 Yamamoto¹, Kyojiro Morikawa¹, Koreyoshi Imamura², Hiroyuki Imanaka², and Takehiko Kitamori¹

¹University of Tokyo, JAPAN and ²Okayama University, JAPAN

**17:20 A NANOFLUIDIC MEMRISTOR BASED ON ION CONCENTRATION POLARIZATION**

Yang Bu, Zisun Ahmed, and Levent Yobas

*Hong Kong University of Science and Technology, HONG KONG*
17:40  NANOFLOWDIC FABRICATION AND MANIPULATION OF ATTOLITER DROPLETS
Hiroto Kawagishi\textsuperscript{1}, Shuichi Kawamata\textsuperscript{1}, and Yan Xu\textsuperscript{1,2}
\textsuperscript{1}Osaka Prefecture University, JAPAN and
\textsuperscript{2}Japan Science and Technology Agency (JST), JAPAN

18:00  Adjourn for the Day
Wednesday, 30 October

08:15 Announcements

Plenary Presentation IV
San Francisco Room

08:30 ENGINEERING DNA DEVICES TO ADVANCE BIOIMAGING AND BIOSENSING
Peng Yin
Harvard University, Boston, USA

09:15 Transition

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

09:30 MULTIPLEX DROPLET PLATFORM FOR RAPID SINGLE-CELL ANTIBIOTIC SUSCEPTIBILITY TESTING
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 E. Anderson, Lex Ball, Anna Astashkina, Jim McDermott, 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
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 Kazuhiro 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
Michał Krysztof, Marcin Biaas, and Anna Górecka-Drzazga
Wrocław University of Science and Technology, POLAND

09:30  PIXELATED CHEMICAL DISPLAY: TOWARDS MASSIVELY PARALLEL DYNAMIC SURFACE PROCESSING
Pierre-Alexandre Goyette1, Dina Dorrigiv1,2, Maude Tremblay1, Kayla Simeone2,3, and Thomas Gervais1,2
1Polytechnique Montréal, CANADA, 2Institut du Cancer de Montréal, CANADA, and 3Université 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 Rofman1, Moran Bercovici1, and Govind V. Kaigala2
1IBM Research - Zürich, 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\(^1,2\), Kerryn Matthews\(^1\), Quan Guo\(^1\), Aline T. Santoso\(^1\), Mark D. Scott\(^1,2\), and Hongshen Ma\(^1,3\)  
\(^1\)University of British Columbia, CANADA, \(^2\)Canadian Blood Services, CANADA, and \(^3\)Vancouver General Hospital, CANADA

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

**11:40**  
**FULLY AUTOMATED LAB-ON-A-DISC FOR LABEL-FREE ENRICHMENT OF HIGHLY PURE PLATELETS FROM WHOLE BLOOD**  
Chi-Ju Kim\(^1,2\), Dong Yeob Ki\(^2\), Juhee Park\(^2\), Vijaya Sunkara\(^2\), and Yoon-Kyoung Cho\(^1,2\)  
\(^1\)Ulsan National Institute of Science and Technology (UNIST), KOREA, and \(^2\)Institute for Basic Science (IBS), KOREA

**12:00**  
**ARTIFICIAL MICROCIRCULATION REPLICA USING BACKSIDE LITHOGRAPHY FOR BLOOD FLOW ANALYSIS**  
Marianne Fenech\(^1,3\), Vincent Girod\(^2\), Viviana Claveria\(^3\), Sebastien Meance\(^2\), Manouk Abkarian\(^3\), and Benoit Charlot\(^2\)  
\(^1\)University of Ottawa, CANADA and \(^2\)University of Montpellier, FRANCE

### Session 3B2 - 3D Writing and Printing
Singapore Room

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

**11:20**  
**OPTO-FLUIDIC 3D PRINTING PLATFORM FOR CELL MICRO-ENVIRONMENT AND TISSUE ENGINEERING**  
Sandrine Assié-Souleille, Julie Foney, 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*
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<th>Time</th>
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<tr>
<td>11:40</td>
<td>MICRO-3D PRINTED NOZZLES AND MIXERS FOR TIME-RESOLVED STRUCTURAL BIOLOGY</td>
<td>Juraj Knoska, Michael Heymann&lt;br&gt;1 CFEL, GERMANY and 2 MPI of Biochemistry, GERMANY</td>
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<td>12:00</td>
<td>NEW 4D PRINTING USING DRY-ERASE MARKER</td>
<td>Seo Woo Song, Sumin Lee, Jun Kyu Choe, Junwon Kang, Jiyun Kim, Sunghoon Kwon&lt;br&gt;1 Seoul National University, KOREA and 2 Ulsan National Institute of Science and Technology (UNIST), KOREA</td>
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### Session 3C2 - Active Particles and Particle Assemblies

**Sydney Room**

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<tr>
<td>11:00</td>
<td>MICROFLUIDIC FABRICATION OF HIERARCHICAL PHOTONIC CRYSTAL MICROSPHERES AND THEIR APPLICATIONS</td>
<td>Juan Wang, Hai Le-The, Lingling Shui, Johan G. Bomer, Loes I. Segerink, Jan Eijkel&lt;br&gt;1 South China Normal University, CHINA and 2 University of Twente, THE NETHERLANDS</td>
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<td>11:20</td>
<td>FABRICATION OF A POROUS MICROPARTICLE WHOSE TRANSPARENCY CHANGE ACCORDING TO THE SURROUNDING ENVIRONMENT</td>
<td>Kibeom Kim and Wook Park&lt;br&gt;Kyung Hee University, KOREA</td>
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<td>11:40</td>
<td>ACTIVE PARTICLES AS MOBILE MICROELECTRODES FOR UNIFIED, DIRECTED AND LABEL-FREE CARGO TRANSPORT AND DELIVERY</td>
<td>Xiaoye Huo, Yue Wu, Sinwook Park, Alicia Boymelgreen, Gilad Yossifon&lt;br&gt;Technion - Israel Institute of Technology, ISRAEL</td>
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<td>12:00</td>
<td>LIGHT-DRIVEN MICRO-ROBOT FOR MICRO-PARTICLE AND CELL MANIPULATION</td>
<td>Shuailong Zhang, Erica Scott, Nika Shakiba, Peter W. Zandstra, Aaron R. Wheeler&lt;br&gt;1 University of Toronto, CANADA and 2 University of British Columbia, CANADA</td>
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<td>12:20</td>
<td>Grab 'n Go Lunch</td>
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12:25  Industrial Stage 2a  
SCHOTT Technical Glass Solutions GmbH, GERMANY

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

13:10  Plenary Presentation V  
ADDRESSING NEWBORN SURVIVAL GLOBALLY: THE ROLE OF INNOVATIONS IN MOVING FROM POLICY TO ACTION  
Zulfiqar A. Bhutta¹,²  
¹Hospital for Sick Children, Toronto, CANADA and ²Aga Khan University, PAKISTAN

13:55  Lab on a Chip and Dolomite – Pioneers of Miniaturization Lectureship Prize and Presentation  
AN ENGINEERING APPROACH TO SYSTEMS BIOLOGY - MICROFLUIDICS, AUTOMATION, BIG-DATA, AND BEYOND  
Hang Lu  
Georgia Institute of Technology, USA

14:15  Poster Session 3  
Presentations are listed by topic category with their assigned number starting on page 26.

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

16:15  Break
### Session 3A3 - Spheroids and Organoids

**San Francisco Room**

**16:45**  
**Keynote Presentation**  
**ORGANODS-ON-CHIPS TO ADVANCE HEALTH SCIENCE**  
*Jianhua Qin*  
*Dalian Institute of Chemical Physics, 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 Araoka³, Jun K. Yamashita⁴, Tatsuji Enoki⁵, Minoru Takasato², Kenji Osafune³, and Ryuji Yokokawa¹*  
¹Kyoto University, JAPAN, ²RIKEN, JAPAN, and ³Takara Bio Inc., JAPAN

**17:55**  
**BRIDGING THE GAP: A MICROFLUIDIC DEVICE FOR STUDYING ORGANOPTIC BARRIER TISSUES**  
*Alec E. Richardson¹, Luke A. Schwerdtfeger¹, Diana Eaton², Stuart A. Tobet¹, and Charles S. Henry¹*  
¹Colorado State University, USA and ²Applied Medical, USA

### Session 3B3 - Manipulation of Cells

**Singapore Room**

**16:45**  
**Keynote Presentation**  
**AUTOMATED MICROFLUIDIC GENETIC MANIPULATION FOR HIGH THROUGHPUT BIOLOGY**  
*Po-Hsun Huang, Sijie Chen, and Cullen R. Buie*  
*Massachusetts Institute of Technology, USA*

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

**17:35**  
**DIELECTROPHORESIS REVEALS THAT BACTERIAL ELECTROPORATION CORRELATES WITH CELL POLARIZABILITY**  
*Qianru Wang¹,², Sijie Chen¹, and Cullen R. Buie¹*  
¹Stanford University, USA and ²Massachusetts Institute of Technology (MIT), USA
17:55 VERSATILE ENGINEERING OF LYSINS: ONE DROP TO KILL
Hans Gerstmans\textsuperscript{1,2,3}, Fabrice Gielen\textsuperscript{4,5}, Lorenz Van Hileghem\textsuperscript{2}, Rob Lavigne\textsuperscript{3}, Florian Hollfelder\textsuperscript{4}, Jeroen Lammertyn\textsuperscript{2}, and Yves Briers\textsuperscript{1}
\textsuperscript{1}Ghent University, BELGIUM, \textsuperscript{2}KU Leuven, BELGIUM, \textsuperscript{3}University of Exeter, UK, and \textsuperscript{4}University of Cambridge, UK

**Session 3C3 - Nanopores and Nanochannels**

**Sydney Room**

16:45 Keynote Presentation
**BIPOLAR ELECTRODES FOR MICROFLUIDIC PUMPING**
Alexander Eden, Farnaz Lorestani, Sean MacKenzie, Rena Yang, David Huber, Carl D. Meinhart, and Sumita Pennathur
*University of California, Santa Barbara, USA*

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

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

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

18:15 Adjourn for the Day

19:00 Conference Banquet
Thursday, 31 October

Session 4A1 – Droplet Microfluidics Interfaced with Mass Spectrometry
San Francisco Room

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

09:15 HIGH-THROUGHPUT X-RAY CRYSTALLOGRAPHY BASED ON THE PROTEIN CRYSTAL ARRAY
Reo Takeda¹, Masatoshi Maeki¹,², Sho Ito²,³, Go Ueno², Kunio Hirata², Akihiko Ishida¹, Hirofumi Tani¹, Masaki Yamamoto², and Manabu Tokeshi¹
¹Hokkaido University, JAPAN, ²RIKEN, JAPAN, and ³University of Hyogo, JAPAN

09:35 MASSIVE SCREENING OF METABOLITES USING PICOLITER DROPLET ARRAY WITH NANOSTRUCTURE-INITIATOR MASS SPECTROMETRY
Noel S. Ha¹,², Markus de Raad¹, Fangchao Song¹, Kai Deng²,³, Nicole Ing²,⁴, Anup K. Singh²,³, and Trent R. Northen¹,²,³
¹Lawrence Berkeley National Laboratory, USA, ²US Department of Energy Joint BioEnergy Institute, USA, ³US Department of Energy Joint Genome Institute, USA, and ⁴Sandia 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
Laurent Dejace, Arthur Hirsh, and 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
MICROSYSTEMS FOR SINGLE MOLECULE ANALYSIS OF MEMBRANE PROTEINS
Rikiya Watanabe
RIKEN, JAPAN

09:15 INFLUENCE OF TOPOLOGICAL CONSTRAINTS ON DIFFERENTIATION AND ALIGNMENT OF MULTINUCLEATED MYOTUBES
Ki-Young Song¹,², Jorge Correia², Gorge L. Ruas², and Ana I. Teixeira²
¹Beijing Institute of Technology, CHINA and ²Karolinska Institutet, SWEDEN

09:35 ASSEMBLY OF ACTOMYOSIN BUNDLES IN MICROFLUIDIC CHANNEL
Shusei Kawara¹, Yuichi Hiratsuka², and Hiroaki Onoe¹
¹Keio University, JAPAN and
²Japan Advanced Institute Science Technology (JAIST), JAPAN

09:55 INVESTIGATING FIBROBLAST-INDUCED COLLAGEN GEL CONTRACTION USING A DYNAMIC MICROSCALE PLATFORM
Tianzi Zhang¹, John H. Day¹, Xiaojing Su¹, Arturo G. Guadarrama², Nathan K. Sandbo², Stephane Esnault², Loren C. Denlinger², Erwin Berthier¹, and Ashleigh B. Theberge¹,³
¹University of Washington, USA, ²University of Wisconsin, USA, and
³University of Washington School of Medicine, USA

10:15 Break: Exhibit and Poster Inspection
### Session 4A2 - Analysis of Neutrophils for Diagnosis of Sepsis and Inflammation
San Francisco Room

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

**11:05**  
EARLY SEPSIS DIAGNOSIS BY MEASURING NEUTROPHIL SPONTANEOUS MIGRATION AND RESIDUAL-PHAGOCYTOSIS USING MICROFLUIDICS  
Sinan Muldur\(^1\), Anika Marand\(^1\), Andreu Cullere\(^1\), Jarone Lee\(^2\), Michael Filbin\(^3\), Felix Ellett\(^1\), and Daniel Irimia\(^1\)  
\(^1\)Massachusetts General Hospital, USA, \(^2\)Harvard Medical School, USA, and \(^3\)Shriners Burns Hospital, USA

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

### Session 4B2 - Centrifugal Platforms
Singapore Room

**10:45**  
MINIATURIZED ALL-IN-ONE POWERED LAB ON A DISC PLATFORM  
Edwin En-Te Hwu, Marlitt Viehrig, Sriram Thoppe Rajendran, Laura Serioli, Kinga Zór, and Anja Boisen  
Technical University of Denmark, DENMARK

**11:05**  
AUTOMATING PROTEIN IMMUNOPRECIPITATION IN CENTRIFUGAL MICROFLUIDICS  
Daniel Brassard\(^1\), Jamal Daoud\(^1\), Liviu Clime\(^1\), Matthias Geissler\(^1\), Lidija Malic\(^1\), Denis Charlebois\(^2\), and Teodor Veres\(^1\)  
\(^1\)National Research Council, CANADA and \(^2\)Canadian Space Agency, CANADA

**11:25**  
AUTOMATION AND INTEGRATION OF A CENTRIFUGAL MICRODEVICE FOR DNA PURIFICATION USING DYNAMIC SOLID PHASE EXTRACTION AND NOVEL LASER-ACTUATED VALVING  
Leah M. Dignan\(^1\), Kimberly R. Jackson\(^1\), M. Shane Woolf\(^1\), Christopher J. Tomley\(^1\), and James P. Landers\(^1,2\)  
\(^1\)University of Virginia, USA and \(^2\)MicroLab Inc., USA
10:45 INVESTIGATION OF DRUG METABOLISM WITH LIVER ZONATION MODEL USING OXYGEN GRADIENT IN A MICROFLUIDIC DEVICE
Satomi Matsumoto1, Eric Leclerc2, Astia Riziki Safitri1, Mathieu Danoy3, Toshio Maekawa1, Haruyuki Kinoshita1, Marie Shinohara3, Kikuo Komori3, Yasuyuki Sakai3, and Teruo Fujii1
1University of Tokyo, JAPAN and 2LIMMS/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 V. Denis2, Peter S. 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
Michael Graf, Martina Lihter, Michal Macha, Sanjin Marion, and Aleksandra Radenovic
École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, SWITZERLAND

12:35 CHEMINAS - Young Researcher Poster Awards

12:45 Lab on a Chip - Widmer Poster Award

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

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

13:15 Closing Remarks - Conference Adjourns
Poster Presentations
M – Monday, 28 October (14:00 - 16:30)  T – Tuesday, 29 October (14:00 - 16:30)
W – Wednesday, 30 October (14:15 - 16:45)

Classification Chart
(last character of poster number)

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

a - Cells, Organisms and Organs on a Chip

Bioinspired, Biomimetic & Biohybrid Devices

M001.a ANTI-FOULING SURFACES FEATURED WITH MAGNETIC ARTIFICIAL CILIA
Shuaizhong 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 Boul¹², Satomi Matsumoto³, Marie Shinohara³, Yasuyuki Sakai³, Teruo Fujii³, Anne Dubart-Kupperschmitt³, 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 ANHYDROBIOIC CHIRONOMID FOR SPACE EXPRORING
Yo Tanaka¹, Satoshi Amaya¹, Doudou Ma¹, Yigang Shen¹, Oleg Gusev²,³, Takahiro Kikawada⁴, and Yaxiaer Yalikun¹
¹RIKEN, JAPAN, ²NARO, JAPAN, and ³Kazan Federal University, RUSSIA

**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) Ching¹,², Toh Yi-Chin², 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 Nangaku¹, and Teruo Fujii¹
¹University of Tokyo, JAPAN and ²Tokai University, JAPAN

**W002.a** MICROFLUIDICS- ENABLED EXTRUSION OF PROTEIN-BASED TUBULAR BIOMATERIALS AND TISSUES
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 CYTOMETEER FOR ENUMERATION OF RESIDUAL WHITE BLOOD CELLS
Byeongyeon Kim, Suyeon Shin, and Sungyoung Choi
Kyung Hee University, KOREA

**M005.a** DIELECTROPHORETIC CANCER-TYPE SORTING CHIP AS ADVANCED LIQUID BIOPSY
Yuto Sasaki, Mio Mizoguchi, Ken Yamamoto, and Masahiro Motosuke
Tokyo University of Science, JAPAN
M006.a MICROFLUIDIC CHIP FOR T CELL-ANTIGEN PRESENTING CELL INTERACTION CHARACTERIZATION
Margaux Duchamp1, Marion Arnaud2,3, Clarisse Vaillier1, Sara Bobisse2,3, George Coukos2,3, Alexandre Harari2, and Philippe Renaud1
1École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, 2Centre Hospitalier Universitaire Vaudois, SWITZERLAND, and 3Université de Lausanne, SWITZERLAND

M007.a PARALLEL ELECTROPOLARIZATION AND SINGLE CELLS HANDLING IN INDIVIDUAL DIELECTRIC MICROCELLS
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 Yan, Jose Wippold, 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 G. Chavez-Pineda, Diana F. Cedillo-Alcantar, and Jose L. 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-Ahmado, and A. Fatih Sarioglu
Georgia Institute of Technology, USA
A CIRCULATING FILTRATION SYSTEM FOR CELL RECOVERY
Tingting Hu1, Yaoping Liu1, and Wei Wang1,2
1Peking University, CHINA and 2National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA

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

TOWARDS CENTRIFUGATION-ASSISTED CELL TRAPPING AND ISOLATION IN A TWO-PHASE LIQUID
Wilfred 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)

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

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

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

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

FABRICATION OF SPATIALLY-CONTROLLED 3D LIVER TISSUE VIA LAYERING CELL-LADEN COLLAGEN SHEETS
Jaeyoung Son and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA
M01.a GENERATION OF HIGH ASPECT-RATIO PDMS MICROFIBERS FOR 3D MYELINATION CULTURE OF SCHWANN CELLS
Hui-Ying Lin¹,², Ing Ming Chiu², Horng-Dar Wang¹, and Chia-Hsien Hsu²
¹National Tsing Hua University, TAIWAN and
²National Health Research Institutes, TAIWAN

M014.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

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

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

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

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

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 OSTEOSTIGHT-OSTEOSITY INTERACTIONS BY MICROPATTERNING TO STUDY BONE CELL MECHANOBIOLOGY
Charlotte Yvanoff¹, Gintare Garbenciute², Vytautas Navikas², Ramunas Valiokas², and Ronnie Willaert¹
¹Vrije Universiteit Brussel, BELGIUM and
²Center for Physical Sciences and Technology, LITHUANIA
T012.a  EVALUATION OF NEURONAL ACTIVITY IN A NEURON-ASTROCYTE CO-CULTURE SYSTEM USING A MICROPOROUS SIN MEMBRANE
Ayaka Nakama and Takashi Yasuda
Kyushu Institute of Technology, JAPAN

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

T014.a  HANGING DROP ARRAY CHIP FOR SPHEROID CULTURE WITH FINGER-ACTUATED MICROFLUIDIC MEDIUM EXCHANGE
Juhwan Park, Hweso 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, Juuyeol Bae, and Taesung Kim
Ulsan National Institute of Science and Technology (UNIST), KOREA

T016.a  SPATIALLY CONFINED ENDOETHIAL CELL MONOLAYERS CONSISTENTLY ALIGN PERPENDICULAR TO FLOW
Andrew 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 Park¹, Ziyi Song¹, Huixue Song¹, Junyi Yao¹, Yoon-e Choi², Hyunsoo Kim³, and Yunhwan Park²
¹Southern University of Science and Technology, CHINA, ²Korea University, KOREA, and ³Korea Institute of Machinery and Materials (KIMM), KOREA

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 ANTI-CANCER DRUG ANALYSIS
Magdalena Flont, Zuzanna Mackiewicz, Elżbieta Jastrzebska, and Zbigniew Brzozka
Warsaw University of Technology, POLAND

W016.a  RAPID AND SPATIALLY SEPERATED HETEREOGENOUS 3D CELLULAR PATTERNING USING ELECTROHYDRODYNAMICS
Anoop Menachery¹, Abishek Vembadi¹, Pavithra Sukumar¹, Rachid Rezgui¹, and Mohammad A. Qasaimeh¹,²
¹New York University, Abu Dhabi, UAE and ²New York University, USA

W017.a  SURFACE MODIFICATION OF PDMS MICROFLUIDIC DEVICES FOR STABLE ENDOTHELIAL GROWTH UNDER HIGH SHEAR STRESS
Asma Siddique and Robert W. Stark
Technical University Darmstadt, GERMANY
M018.a  A SINGLE MOLECULE BARCODE NANOBIOSENSOR FOR DYNAMIC MULTIGENE ANALYSIS IN LIVE CELLS DURING TISSUE MORPHOGENESIS AND WOUND HEALING
Yi Lu and Pak Kin Wong
Pennsylvania State University, USA

M019.a  IN VITRO-IN SILICO INTERFACE PLATFORM: BRIDGING THE GAP BETWEEN EXPERIMENT AND THEORY BY INFORMATION SYSTEM TO ELUCIDATE CELLULAR BEHAVIOR SYSTEM
Asuka Yamaguchi¹, Masakazu Akiyama², Ikuhiko Nakase¹, and Masaya Hagiwara¹,³
¹Osaka Prefecture University, JAPAN, ²Meiji University, JAPAN, and ³RIKEN, JAPAN

M020.a  MICROFLUIDIC MONITORING OF CELL RESPONSE IN COMPRESSIVE 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 Devan⁴, Gennaro De Libero⁵, Andreas Hierlemann¹, and Kasper Renggli¹
¹ETH Zürich, SWITZERLAND, ²Hoffmann-La Roche, SWITZERLAND, ³InSphero AG, SWITZERLAND, and ⁴University of Basel, SWITZERLAND

T021.a  OPEN MICROFLUIDIC COCULTURE FACILITATES BIDIRECTIONAL SIGNALING BETWEEN KIDNEY EPITHELIAL AND ENDOTHELIAL CELLS
Tianzi Zhang, Daniel Lih, Ryan J. Nagao, Jun Xue, Erwin Berthier, Jonathan Himmelfarb, Ying Zheng, and Ashleigh B. 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 P. 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 Mutel²,³, Laurence Desrues²,³,⁴, Dominique Collard⁵, and Hélène Castel²,³,⁴
¹IEMN UMR-8520, FRANCE, ²UNIROUEN, INSERM, DC2N, FRANCE, ³LIMMS/CNRS-IIS, JAPAN, ⁴Institute for Research and Innovation in Biomedicine (IRIB), FRANCE, and ⁵Ligue Nationale Contre le Cancer, FRANCE

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

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

#### Liposomes/Membranes

**M021.a**  AUTOMATED OBSERVATION OF CELL-SIZED LIPOSOme WITH FEEDBACK CONTROL OF THE OUTER ENVIRONMENT
Hironori Sugiyama¹, Toshihisa Osaki¹,², Shoji Takeuchi¹, and Taro Toyota¹
¹University of Tokyo, JAPAN and ²KRISTEC, JAPAN

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

**M023.a**  RAPID FORMATION OF LIPID BILAYER MEMBRANES IN PARYLENE-C COATED CHIPS BY PSEUDO-PAINTING OF AN AIR BUBBLE FOR THE FUSION AND DETECTION OF OUTER MEMBRANE VESICLES (OMVS)
Tanzir Ahmed¹, Jayesh A. Bafna², Sander van den Driesche¹, Martin Oellers¹, Roland Hemmler³, Karsten Gall³, Richard Wagner², Mathias Winterhalter², and Michael J. Vellekoop¹
¹University of Bremen, GERMANY, ²Jacobs University, GERMANY, and ³Ionovation GmbH, GERMANY

**T022.a**  DESIGNING PDMS-BASED MICROFLUIDICS FOR THE PRODUCTION OF SURFACTANT-FREE GIANT LIPOPExpired 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 Magnani¹,²,³, Adrien Dutoya¹, 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 Jusková, Yannick R.F. Schmid, Steven Schmitt, Martin Held, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

Multi-Organ Arrangements and Body on a Chip

M024.a CUBE IN A CHIP: ONE TOUCH 3D TISSUE INTEGRATION AND REMOVAL SYSTEM FOR BODY ON A CHIP PLATFORM
Masaya Hagiwara1,2
1RIKEN, JAPAN and 2Oaka Prefecture University, 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 Haan1,2, Milou J.C. Santbergen2,3, Meike van der Zande4, Hans Bouwmeester3, Michel W.F. Nielen3,4, and Elisabeth Verpoorte1
W025.a MICROPHYSIOLOGICAL NETWORK AND COCULTURE OF FIVE MICRO ORGS (CORTICAL AND HIPPOCAMPAL BRAIN, CARDIAC, LIVER, AND TUMOR 3D MICROTISSUES) ON 96WELL FORMAT BASED BODY ON A CHIP
Chaewon Jin, Hongsoo Choi, and Jin-young Kim
Daegu Gyeongbuk Institute of Science and Technology (DGIST), KOREA

M025.a 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

M026.a HIGH-THROUGHPUT MECHANICAL PHENOTYPING OF C. ELEGANS DIABETES MODELS USING ELASTOMERIC MICROPILLAR ARRAYS
Samuel Sofela1,2, Sarah Sahloul1, Christopher Stubbs2, Ajymurat Orozaliev1, and Yong-Ak Song1,2
1New York University, USA and 2New York University, Abu Dhabi, UAE

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

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

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

T028.a ON-DEMAND ELECTRIC FIELD INDUCED EGG LAYING OF CAENORHABDITIS ELEGANS
Khaled 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 Wan¹, Gongchen Sun², and Hang Lu²
¹Georgia Institute of Technology, USA and ²Emory 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 Rezai
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 MICROVASCULATURE-ON-CHIP: CYCLIC STRETCH AND VASCULAR REMODELING
Soheila Zeinali¹, Merve Bulut¹, Emily K. Thompson¹, Thomas Geiser¹,², and Olivier T. Guenat¹,²
¹University of Bern, SWITZERLAND and ²University Hospital of Bern, SWITZERLAND

3D MICROENGINEERED VASCULARIZED TUMOR SPHEROID FOR DRUG DELIVERY AND EFFICACY TESTING
Jungseub Lee, Jungho Ahn, and Noo Li Jeon
Seoul National University, KOREA

A GLOMERULUS-ON-A-CHIP UTILIZING HIPSC-DERIVED PODOCYTES WITH 3D GLOMERULAR STRUCTURE
Yang Liu¹, Ramin Banan Sadeghian¹, Yoshiki Sahara², Junichi Taniguchi², Kensuke Yabuuchi², Toshikazu Araoka³, Kenji Osafune³, Minoru Takasato², and Ryuji Yokokawa¹
¹Kyoto University, JAPAN, ²RIKEN, JAPAN, and ³Center for iPS Cell Research and Application, 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
M03.a  EFFICIENT FABRICATION OF A PRE-INVASIVE BREAST CANCER MODEL VIA DOUBLE EMULSIFICATION OF MATRIGEL
Jelle J.F. Sleebboom1, Cecilia M. Sahlgren1,2, and Jaap M.J. den Toonder1
1Eindhoven University of Technology, THE NETHERLANDS and
2Åbo Akademi University, FINLAND

M033.a  HIGH-THROUGHPUT MICROFLUIDIC PLATFORM FOR VASCULARIZATION OF 3D TISSUES: THE MISSING LINK IN TISSUE CULTURE
Arnaud Nicolas1,2, Sara Previdi1,3, Dorota Kurek1, Frederik Schavemaker1, Sebastiaan Trietsch1, Henriette Lanz1, and Paul Vulto1
1Mimetas B.V., THE NETHERLANDS, 2LACDR, THE NETHERLANDS and
3LUMC, THE NETHERLANDS

M034.a  MICROFLUIDIC MODEL OF THE BLOOD-RETINAL-BARRIER FOR PERMEABILITY TESTS
Jaewon Park1, Sihan Liu1,2, Yau Kei Chan2, and Ho Cheung Shum2
1Southern University of Science and Technology, CHINA and
2University of Hong Kong, CHINA

M035.a  NEW GENERATION OF AIR-BLOOD BARRIER MODEL: A LUNG-ON-CHIP WITH A STRETCHABLE BIOLOGICAL MEMBRANE
Pauline Zamprogno1, Simon Wuehrich1, Sven Achenbach1, Janick D. Stucki1, Nina Hobi1, Nicole Schneider-Daum1,2, Claus-Michael Lehr1, Hanno Huwer3, Ralph A. Schmid4, and Olivier T. Guenat1,4
1University of Bern, SWITZERLAND, 2Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS), GERMANY, 3Völklingen Heart Center, GERMANY, and
4University Hospital of Bern, SWITZERLAND

M036.a  RESPONSE OF TUBULAR CELLS BY EXPOSING CONTROLLED SHEAR STRESS TO PRIMARY CILIA AFTER OXIDATIVE STRESS
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¹Institute for Biomedical Engineering, Science and Technology (IBEST), CANADA and ²Ryerson University, CANADA
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¹Dankook University, KOREA, ²Hanbat National University, KOREA, ³Seoul National University, KOREA, and ⁴Korea Institute of Machinery and Materials (KIMM), KOREA

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¹Daegu Gyeongbuk Institute of Science and Technolog (DIGIST), KOREA and ²Transitional Responsive Medicine Center (TRMC), KOREA

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¹Waseda University, JAPAN, ²Canon Medical Systems Corp., JAPAN, and ³Tokyo University of Science, JAPAN

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

M056.b TOWARDS USB POWERED µPADS: 5 VOLT PAPER ISOTACHOPHORESIS
Federico Schaumburg¹, Pablo A. Kler¹, Claudio L.A. Berli¹, and Charles S. Henry²
¹Universidad Nacional del Litoral-CONICET, ARGENTINA and
²Colorado State University, USA

T053.b CONTINUOUS BINARY PROTEIN SEPARATION IN A MICROFABRICATED ELECTRICAL SPLITT DEVICE
Andrea Capuano¹,², Andrea Adami¹, Viviana Mulloni¹, and Leandro Lorenzelli¹
¹University of Trento, ITALY and ²Fondazione Bruno Kessler, ITALY

T054.b DEVELOPMENT OF ON-LINE DESALTING DEVICE BY MEMBRANE INTEGRATION INTO NANOFLOWDUCIC DEVICE
Kyojiro Morikawa, Yutaka Kazoe, Hisashi Shimizu, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

T055.b SINGLE STEP SEPARATION AND CONCENTRATION OF BIOMARKER PROTEINS USING AGAROSE BASED MINIATURIZED ISOELECTRIC GATES FOR BEDSIDE DIAGNOSTICS
Sreekant Damodara¹, Alison E. Fox-Robichaud¹,², Dhruva J. Dwivedi¹,², Patricia C. Liaw¹,², and P. Ravi Selvaganapathy¹
¹McMaster University, CANADA and
²Thrombosis and Atherosclerosis Research Institute, CANADA
W054.b CONTINUOUS LITHIUM EXTRACTION FROM HIGH MG2+/LI+ RATIO BRINE BASED ON ION CONCENTRATION POLARIZATION
Minsoo Lee¹, Hyukjin J. Kwon², Woochul Jung³, and Geunbae Lim¹
¹Pohang University of Science and Technology, KOREA, ²Massachusetts Institute of Technology, USA, and ³Research Institute of Industrial Science and Technology, KOREA

W055.b MICROSCALE FORMATION OF IMMOBILIZED PH GRADIENT IN SIMPLE STRAIGHT CHANNEL
Sukyo Joung¹, Dohyun Kim², Jintae Kim³, and Minsub Chung¹
¹Hongik University, KOREA, ²Myongji University, KOREA, and ³Konkuk University, KOREA

W056.b SMALL RNA EXTRACTION FROM CELL-LYSATE USING ISOTACHOPHORESIS
Ruba Khnouf¹, Crystal Han², and Sarah Munro³
¹Jordan University of Science and Technology, JORDAN, ²San Jose State University, USA, and ³University of Minnesota, USA

b - Chemical Applications: Separations, Mixers and Reactions
Micromixers & Microreactors

M057.b EVALUATION OF MIXING PERFORMANCE OF ON-CHIP MICROMIXER WITH LOW DEAD VOLUME BASED ON VIBRATION-INDUCED FLOW
Toshiyuki Matsui, Hiroaki Suzuki, and Takeshi Hayakawa
Chuo University, JAPAN

M058.b ORGANIC CHEMICAL REACTION ON AN ELECTROWETTING-ON-DIELECTRIC (EWOD) DIGITAL MICROFLUIDIC DEVICE
Matin Torabinia, Parham Asgari, Junha Jeon, and Hyejin Moon
University of Texas, Arlington, USA

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

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

T057.b DRUG MICRONIZATION USING HIGH PRESSURE MICROFLUIDICS
Deepali Arora¹, Rossen Svedev¹,², Craig Priest³, Chau Chun Beh¹, and Neil Foster¹
¹Curtin University, AUSTRALIA and ²University of South Australia, AUSTRALIA
PILOT-SCALE SOLVENT EXTRACTION OF HIGH-VALUE METALS
Die Yang, Moein N. Kashani, and Craig Priest
University of South Australia, AUSTRALIA

VERSATILE MICROFLUIDIC PLATFORM FOR PROTOCOLS ON A CHIP VIA CAPACITIVE SENSING FOR SAMPLE DISPENSING AND SURFACE ACOUSTIC WAVE (SAW) DRIVEN MIXING
Yaqi Zhang¹, Citsabehsan Devendran¹, Alex de Marco¹,², and Adrian Neild¹
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²ARC Centre of Excellence for Advanced Molecular Imaging, AUSTRALIA

AN ULTRA-RAPID ACOUSTIC MIXER 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, Kaba Abdi Mirgissa, 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 H. 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 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, Hans L. de Boer¹, Yannick P. Klein¹, Wouter Olthuis¹, Leon Abelmann², and Albert van den Berg¹
¹University of Twente, THE NETHERLANDS, and
²Saarland University, THE NETHERLANDS
M063.b VIABLE/NON-VIABLE CELL ASSAY USING ELECTROKINETIC DETERMINISTIC LATERAL DISPLACEMENT
Bao D. Ho, Jason P. Beech, and Jonas O. Tegenfeldt
Lund University, SWEDEN

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

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

T062.b THE SEPARATION AND IDENTIFICATION OF PARASITE EGGS FROM HORSE FECES
Jason P. 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 Fardjahromi¹-³, Lin Ding¹, Sajad Razavi Bazaz¹, Graham Vesey², Mohsen Asadnia³, and Majid Ebrahimi Warkiani¹
¹University of Technology Sydney, AUSTRALIA, ²Regeneus Pty Ltd, AUSTRALIA, and ³Macquarie University, AUSTRALIA

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

W062.b VERTICAL SLIT-FRACTIONATION: HIGH-THROUGHPUT PARTICLE/CELL SEPARATION
Naotaka Jin¹, Jumpei Yamamoto¹, Masumi Yamada¹, Kazuki Iijima², Koji Katayama², and Minoru Seki¹
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b - Chemical Applications: Separations, Mixers and Reactions
Other Applications in Chemistry

M064.b MICROFLUIDIC DEVICE FOR DIRECT MEASUREMENT OF INITIAL RATE OF ENZYME REACTION BY ELECTROPHORETIC FILTRATION
Junku Takao, Tatsuro Endo, Hideaki Hisamoto, and Kenji Sueyoshi
Osaka Prefecture University, JAPAN
M065.b SCREENING OF RARE EARTH EXTRACTION: DIRECT ANALYSIS OF RATE AND PHASE BEHAVIOR IN A MICROPILLAR ARRAY
Claudia Binder¹, Benjamin Lageder¹, Bronwyn Bradshaw-Hajek¹, Barbara Breeze², Emma Schofield², Stephen Woollam³, and Craig Priest¹
¹University of South Australia, AUSTRALIA, ²Johnson Matthey Technology Centre, UK, and ³Anglo American’s Technical Solutions, SOUTH AFRICA

T063.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

T064.b MICROFLUIDIC METHOD FOR INVESTIGATING KINETICS OF EMULSION DESTABILIZATION
Marcin Dudek¹, Diana Fernandes², Eirik H. Hero¹, and Gisle Øye¹
¹Norwegian University of Science and Technology, NORWAY and ²Polytechnic Institute of Porto, PORTUGAL

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

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

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

**Cancer Research, Capture & Analysis of Circulating Tumor Cells**

M066.c A MICROFLUIDIC PLATFORM FOR DIAGNOSIS OF OVARIAN CLEAR CELL CARCINOMA VIA QUANTIFICATION OF FXYD2 GENE
Ting-Hang Liu¹, Chang-Ni Lin²,³, Keng-Fu Hsu²,³, and Gwo-Bin Lee¹
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M067.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
M068.c DEVELOPING AN OPTICAL DNA MAPPING TOOLBOX TO IDENTIFY CHROMOSOMAL TRANSLOCATIONS IN ACUTE MYELOID LEUKEMIA
Miriam Hitz\textsuperscript{1,2}, Gaurav Goyal\textsuperscript{2}, Vilhelm Müller\textsuperscript{2}, Linda Fogelstrand\textsuperscript{3}, and Fredrik Westerlund\textsuperscript{2}
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M069.c RAPID AND VIABLE ISOLATION OF HETEROGENEOUS CIRCULATING TUMOR CELLS USING HIGH-DENSITY TAPERED-SLIT FILTERS
Jae-Eul Shim\textsuperscript{1}, Jiyoon Bu\textsuperscript{1}, Mi-Kyung Lee\textsuperscript{1}, Young-Ho Cho\textsuperscript{1}, Tae-Ha Kim\textsuperscript{2}, Jong-Uk Bu\textsuperscript{2}, and Sae-Won Han\textsuperscript{3}
\textsuperscript{1}Korea Advanced Institute of Science and Technology (KAIST), KOREA,\textsuperscript{2}SenPlus, Ltd., KOREA, and \textsuperscript{3}Seoul National University Hospital, KOREA

T065.c A HERRINGBONE MICROFLUIDIC PROBE FOR AFFINITY SEPARATION OF CELLS
Ayoub Glia\textsuperscript{1,2}, Pavithra Sukumar\textsuperscript{1}, Muhammedin Deliorman\textsuperscript{1}, and Mohammad Qasaimeh\textsuperscript{1,2}
\textsuperscript{1}New York University, Abu Dhabi, UAE and \textsuperscript{2}New York University, NY, USA

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

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

T068.c MONITORING IMMUNOLOGICAL SYNAPSES AT SINGLE CELL LEVEL IN A MICROFLUIDIC DEVICE
Faruk A. Shaik\textsuperscript{1}, Clara Lewuillon\textsuperscript{1,2}, Yasmine Touil\textsuperscript{1,2}, Aurélie Guillemette\textsuperscript{1,2}, Bruno Quesnel\textsuperscript{1,2}, Carine Brinster\textsuperscript{1,2}, Loïc Lemonnier\textsuperscript{3}, Dominique Collard\textsuperscript{1}, and Mehmet C. Tarhan\textsuperscript{5}
\textsuperscript{1}University of Lille, FRANCE, \textsuperscript{2}INSERM UMRS-1172, FRANCE, \textsuperscript{3}INSERM U1003, FRANCE, \textsuperscript{4}University of Tokyo, JAPAN, and \textsuperscript{5}IEMN UMR-8520, FRANCE

T069.c SEPARATION/CAPTURE OF CANCER CELLS IN BLOOD USING A NUCLEIC-ACID APTAMER MODIFIED DYNAMIC DEFORMABLE MICROFILTER
Yuta Nakashima\textsuperscript{1}, Soichiro Fukuyama\textsuperscript{1}, Seitaro Kumamoto\textsuperscript{1}, Keiichiro Yasuda\textsuperscript{2}, Yusuke Kitamura\textsuperscript{1}, Masaaki Iwatsuki\textsuperscript{1}, Hideo Baba\textsuperscript{1}, Toshihiro Ihara\textsuperscript{1}, and Yoshitaka Nakanishi\textsuperscript{1}
\textsuperscript{1}Kumamoto University, JAPAN and \textsuperscript{2}Ogic Technologies, JAPAN
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

APPLICATION OF DNA-DIRECTED PATTERNING TO FABRICATE AN IN VITRO BONE MARROW MICROENVIRONMENT FOR THE HIGH-THROUGHPUT STUDY OF PROSTATE CANCER DORMANCY
Molly Kozminsky and Lydia Sohn
University of California, Berkeley, USA

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 Yeh¹, Venkanagouda S. Goudar¹, Hsin-Yao Wu¹, Hsueh-Yao Chu¹, and Fan-Gang Tseng¹²
¹National Tsing Hua University, TAIWAN and ²Academica Sinica, TAIWAN

IN SITU TOTAL ANALYSIS SYSTEM OF CLINICALLY ACTIONABLE GENETIC ABERRATIONS OF SINGLE CIRCULATING TUMOR CELLS ON CHIP
Amos Chungwon Lee¹, Jessica Svedlund², Evangelia Darai², Yongju Lee¹, Ahyoun Choi¹, Sumin Lee¹, Seo Woo Song¹, Daewon Lee¹, Yeongjae Choi¹, Yunjin Jeong¹, Narayanan Madaboosi², Mats Nilsson², and Sunghoon Kwon¹
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A CMOS-BASED LAB-ON-CHIP DIAGNOSTIC SYSTEM FOR RAPID DETECTION AND WORLDWIDE MONITORING OF AZOLE-RESISTANT ASPERGILLUS FUMIGATUS
Imperial College London, UK
M071.c  A MICRONEEDLE-BASED LATERAL FLOW IMMUNOASSAY FOR RAPID PROTEIN DETECTION
Xue Jiang and Peter B. Lillehoj
Michigan State University, USA

M072.c  A SIMPLE POINT-OF-CARE TEST FOR DRUG MONITORING IN WHOLE BLOOD OF PATIENTS WITH AUTOIMMUNE DISEASES
Henry Orduitowski, Francesco Dal Dosso, Séverine Vermeire, Ann Gils, Jeroen Lammertyn, and Dragana Spasic
KU Leuven, BELGIUM

M073.c  CAPILLARY DRIVEN POROUS PDMS MICRONEEDLE FOR NAKED-EYE GLUCOSE SENSOR
Hakjae Lee, Kai Takeuchi, Yui Sasaki, Nobuyuki Takama, Tsuyoshi Minami, and Beomjoon Kim
University of Tokyo, JAPAN

M074.c  DEVELOPMENT AND CLINICAL TESTING OF A MICROFLUIDIC IMMUNOAFFINITY BASOPHIL ACTIVATION TEST FOR POINT-OF-CARE ALLERGY DIAGNOSIS
Frida Kalm1,2, Zenib Aljadi1,2, Harisha Ramachandraiah2, Caroline Nilsson1,3, Ola Winqvist4, Joachim Lundahl1,2, Anna Nopp1,2, and Aman Russom2
1Karolinska Institutet and, SWEDEN, 2KTH Royal Institute of Technology, SWEDEN, 3Sachs’ Children and Youth Hospital, SWEDEN, and 4Karolinska University Hospital, SWEDEN

M075.c  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 Nef3, André Bernard2, and Dominik Obrist1
1University of Bern, SWITZERLAND and 2University of Applied Sciences Buchs NTB, SWITZERLAND

M076.c  FULLY-INTEGRATED CARTRIDGE FOR FAST POINT-OF-CARE DIAGNOSIS OF PERIODONTAL DISEASE
Katherine E. Boehle, J. Jacob Carrano, and John C. Carrrano
Paratus Diagnostics, LLC, USA

M077.c  IOT PCR SYSTEM FOR DISEASE DETECTION AND SPREAD MONITORING
Hanliang 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
M078.c  NANOFUIDIC BARCODES FOR QUANTIFICATION/IDENTIFICATION OF BIOMARKERS
Sokhna M. Ngom1, François-Damien Delapierre2, Fatima Flores-Galicia1, Stéphane Guilet1, Edmond Cambril1, Jean Gamby1, Antoine Pallandre3, Isabelle Le Potier1, and Anne-Marie Haghir-Gosnet1
1C2N-CNRS, FRANCE, 2SPEC-CEA, FRANCE, and 3LCP-CNRS, FRANCE

M079.c  OPTIMIZING ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY BASED IMMUNOASSAYS ON ZINC-OXIDE-NANOWIRE PAPER-BASED ELECTRODES
Xiao Li1,2,3, Hao Fu1,2, Ted Li2, and Xinyu Liu1,2
1University of Toronto, CANADA, 2McGill University, CANADA and 3Stanford University, USA

M080.c  POINT-OF-CARE HIV NUCLEIC ACID SCREENING WITH A MAGNETOFUIDIC ON-DEMAND ASSAY CARTRIDGE
Alexander Y. Trick, Fan-En Chen, Liben Che, and Tza-Huei Wang
Johns Hopkins University, USA

M081.c  RAPID SEPSIS DIAGNOSIS BY PHAGOCYTIC ACTIVITY OF IMMUNE CELLS
Seyong Kwon, Min Seok Lee, and Joo H. Kang
Ulsan National Institute of Science and Technology (UNIST), KOREA

M082.c  SELF-CONTAINED DIAGNOSTIC PLATFORM FOR PATHOGEN AND ANTIBIOTIC RESISTANCE DETECTION FOR DIABETIC FOOT ULCERS
Joerg Nestler1, Cornelia Stiehl1, Jenny Graunitz1,5, Sascha Geidel1,2, Andreas Morschhauser2, Thomas Otto2, Martina Schneemann2,6, Apoorva Jnana3, Thokur Streepathy Murali3, Kapaettu Satyamoorthy3, Sakthi U. Maheswari4, Siddharth Ramakrishnan4, Purbasha Halder4, Dhananjaya Dendukuri4, Frank F. Bier5, and Harald Peter6
1BiFlow Systems GmbH, GERMANY, 2Fraunhofer ENAS, GERMANY, 3Manipal Academy of Higher Education, INDIA, 4Achira Laboratories Pvt. Ltd., INDIA, 5Potsdam University, GERMANY, and 6Fraunhofer IZI-BB, GERMANY

M083.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

M084.c  WORLD-TO-CHIP INTERFACE FOR BLOOD-PLASMA SEPARATION ON A DIGITAL MICROFLUIDIC DEVICE
Christopher Dixon, Julian Lamanna, and Aaron R. Wheeler
University of Toronto, CANADA

T070.c  A LAB-ON-A-DISK DEVICE FOR ISOLATION AND IDENTIFICATION OF PARASITE EGGS IN STOOL
Sertan Sukas1, Bieke Van Dorst2, Agata Kryj1, Ole Lagatie2, Wim De Malsche1, and Lieven Stuyver2
1Vrije Universiteit Brussel, BELGIUM and 2Janssen Diagnostics, BELGIUM
T071.c 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 Molina³, Veaceslav Linte³, Brindus Comanescu³, Michal M. Mielenk¹, Erik Andreassen⁴, Anna Franquesa-Vazquez⁵, Werner Balika⁵, Alfredo Sáez⁵, and Sergio Peransi Llopis⁶
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T072.c AN INTEGRATED MICROFLUIDIC DEVICE FOR BLOOD PLASMA SEPARATION AND IMMUNOASSAY DETECTION
Stanley C. Liu¹, Suraiya Rasheed², Neha Garg³, Paul Yoo³, Mohammad Aghaamoo³, and Abraham Lee³
¹Arcadia High School, USA, ²University of Southern California, USA, and ³University of California, Irvine, USA

T073.c CHIP-AND-DIP: CAPILLARY-DRIVEN FLOW DEVICES FOR POINT-OF-CARE DIAGNOSTICS
Sammer-ul Hassan and Xunli Zhang
University of Southampton, UK

T074.c DEVELOPMENT OF AN AFFORDABLE AND SENSITIVE DIAGNOSTIC TEST FOR DENGUE DISEASE USING MICROFLUIDICS AND SMARTPHONES
Sophie M. Jégouic¹ and Alexander D. Edwards¹,²
¹University of Reading, UK and ²Capillary Firm Technology Ltd, UK

T075.c FLUORESCENCE SIGNAL AMPLIFICATION FOR SENSITIVE ENZYME IMMUNOASSAY UTILIZING AN IMMUNO-WALL
Keine Nishiyama¹, Toshihiro Kasama², Masatoshi Maeki¹, Akihiko Ishida¹, Hirofumi Tani¹, Yoshinobu Baba³, and Manabu Tokeshi¹
¹Hokkaido University, JAPAN, ²University of Tokyo, JAPAN, and ³Nagoya University, JAPAN

T076.c HEMORHEOMETER-ON-A-CHIP: ANALYSIS OF BLOOD BIOPHYSICAL PARAMETERS IN A MICROCHANNEL
Ziya Isiksacan, Murat Serhatlioglu, and Caglar Elbuen
Bilkent University, TURKEY
T077.c  LAB-ON-CHIP PLATFORM WITH FULLY INTEGRATED SAMPLE PREPARATION MODULE COUPLED WITH A HYBRIDIZATION-FREE SURFACE ACOUSTIC WAVE SENSOR FOR RAPID FOODBORNE PATHOGEN DETECTION
Katerina Tsougeni¹, Georgia Kaprou¹,², Christos-Mortiz Loukas¹, George Papadakis³, Audrey Hamiot⁴, Michael Eck⁵, David Rabus⁶, George Kokkoris¹, Vasileios Papadopoulos¹, Bruno Dupuy⁷, Gerhard Jobbst³, Electra Gizeli²,³, Angeliki Tserpe¹,², and Evangelos Gogolides¹,²
¹NCSR-Demokritos, GREECE, ²University of Crete, GREECE, ³Institute of Molecular Biology and Biotechnology-FORTH, GREECE, ⁴Institute Pasteur, FRANCE, ⁵Jobst Technologies GmbH, GERMANY, and ⁶SENSeOR SAS, FRANCE

T078.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

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

T080.c  POROUS MICRONEEDLE ELECTRODES FOR THE ELECTROCHEMICAL SENSING ON SKIN
Hiroyuki Kai
Tohoku University, JAPAN

T081.c  REUSABLE MICROFLUIDIC DEVICE FOR COMPLETE BLOOD COUNT APPLICATIONS
Damien Isebe¹, Amin Amirouche², Jean L. Papilleau¹, Philippe Piedcoq¹, Manuel Alessio², Nicolas Verplanck², Pierre Blandin², Anaïs Ali-Cherif³, and Yves Fouillet²
¹HORIBA Medical, FRANCE and ²CEA, LETI-Health, FRANCE

T082.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

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Amin Kazemzadeh, Ruben R.G Soares, Noa Lapins, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

W070.c  A LARGE-VOLUME SPUTUM COLLECTION AND DRY-STORAGE DEVICE FOR TUBERCULOSIS MOLECULAR DIAGNOSTIC TESTING
Bhushan J. Toley, Andrea Dsouza, and Saylee Jangam
Indian Institute of Science, INDIA
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Minjie Shen¹, Nan Li¹, and Youchun Xu¹,²
¹Tsinghua University, CHINA and
²National Engineering Research Center for Beijing Biochip Technology, CHINA

W072.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

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

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Rika Sawano, Hiroyuki Shibata, Kento Maejima, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

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Ken Yamamoto, Ryouuke Sakurai, and Masahiro Motosuke
Tokyo University of Science, JAPAN

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Hiromi Takahashi¹, Takao Yasui¹,², Keiko Shinjo¹, Quanli Liu¹, Taisuke Shimada¹, Noritada Kaji³, Hiromu Kashida¹, and Yoshinobu Baba¹,⁴
¹Nagoya University, JAPAN, ²Japan Science and Technology Agency (JST), JAPAN
³Kyushu University, JAPAN, and
⁴National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

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

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Vinitha TU, Sthitodhi Ghosh, Alexander Millemann, Thinh H. Nguyen, and Chong H. Ahn
University of Cincinnati, USA
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Dries Vloemans¹, Francesco Dal Dosso¹, Carlos L. Orero¹, Joanne Macdonald²,³, and Jeroen Lammertyn¹
¹KU Leuven, BELGIUM, ²University of the Sunshine Coast, AUSTRALIA, and ³Columbia University, USA

W080.c PRODUCT DEVELOPMENT OF A PORTABLE MICROFLUIDIC DEVICE FOR THE DETECTION OF BACTERIAL CONTAMINATION IN ENVIRONMENTAL LIQUID SAMPLES
Luis F. Alonzo¹, Andrew Miller¹, Troy Hinkley¹, Anne-Laure M. Le Ny¹, Sam R. Nugen², and Kevin P. Nichols¹
¹Intellectual Ventures Lab, USA and ²Cornell University, USA

W081.c SEGMENTED MICROFLUIDICS ASSISTED BACTERIAL ISOLATION FOR SEPSIS DIAGNOSIS FROM LARGE VOLUME OF BLOOD
Suhanya Duraiswamy¹,², Wu Ruige¹, and Wang Zhiping¹
¹SIMTech, SINGAPORE and ²Indian Institute of Technology Hyderabad, INDIA

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Carlos F. Ng¹, David P. Kalish¹, Anne V. Cheng¹, Richie E. Kohman¹,², Jenny M. Tam¹,², George M. Church¹,², Richard Novak¹, and Donald E. Ingber¹,²,³
¹Harvard University, USA, ²Harvard Medical School, USA, and ³Boston Children's Hospital, USA

W083.c TOWARDS POINT-OF-CARE HIV DIAGNOSTICS USING DUAL-LABELLED ROLLING CIRCLE PRODUCTS FOR EFFICIENT CAPTURE AND DETECTION IN A MICROFLUIDIC DEVICE
Ruben R.G. Soares¹, Sibel Ciftci², João C. Varela², Ashokkumar Manickam³, Ujjwal Neogi³,⁴, Mats Nilsson², Narayanan Madaboosi², and Aman Russom¹
¹KTH Royal Institute of Technology, SWEDEN, ²Stockholm University, SWEDEN, ³Karolinska Institutet, SWEDEN and ⁴University of Missouri, USA

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

**Drug Development, Screening & Drug Delivery**

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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

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Midori Kato-Negishi¹,², Jun Sawayama¹, and Shoji Takeuchi¹
¹University of Tokyo, JAPAN and ²Musashino University, JAPAN
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Warsaw University of Technology, POLAND

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University of Macau, CHINA

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¹University of Helsinki, FINLAND and ²Aalto University, FINLAND

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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

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¹Toyo University, JAPAN and ²Kyushu University, JAPAN

W085.c  INJECTABLE WIRELESS MICRO-DEVICE INTEGRATED WITH PHOTODEGRADABLE HYDROGEL FOR DEEP TISSUE THERAPEUTICS
Sophie Lian¹, Yi Liu¹, Rongzhou Lin¹², John.S. Ho¹², and Chia-Hung Chen¹²
¹National University of Singapore, SINGAPORE and ²Institute for Health Innovation and Technology (iHealthtech), SINGAPORE

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¹University of Helsinki, FINLAND and ²Aalto University, FINLAND
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Takeshi Kubota¹, Yuta Kurashina¹,², and Hiroaki Onoe¹
¹Keio University, JAPAN and ²Tokyo Institute of Technology, JAPAN

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

**Liquid Biopsy and Sample Preparation**

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Lingling Wu¹, Xin Qu¹, Yanling Song¹, and Chaoyong Yang¹,²
¹Shanghai Jiao Tong University School of Medicine, CHINA and ²Xiamen University, CHINA

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Ruige Wu, Pinhui Lee, Ke Gan, Wei Hua, and Zhiping Wang
Singapore Institute of Manufacturing Technology (A*Star), SINGAPORE

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Wenwen Chen¹, Wentao Su¹, Hongjing Li², and Jianhua Qin¹
¹Chinese Academy of Sciences, CHINA and ²First Affiliated Hospital of Dalian Medical University, CHINA

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Giulia Deiana¹, Alvaro J. Conde¹,², Conni McCarthy¹,², James Dear¹, Stewart Smith¹, and Maïwenn Kersaudy-Kerhoas¹,²
¹University of Edinburgh, UK and ²Heriot-Watt University, UK

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Katherine Donovan, Haidy Metwally, Prashant Agrawal, David Simon, David Berman, and Richard Oleschuk
Queen's University, CANADA

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Hiroaki Takehara¹,², Hiromi Kishita¹, Shusuke Sato², and Takanori Ichiki¹,²
¹University of Tokyo, JAPAN and ²Innovation Center of NanoMedicine (iCONM), JAPAN
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Benediktus N. Hapsianto1, Naoshi Kojima2, Ryoji Kurita2, Hitoshi Yamagata2, Hiroyuki Fujita3, Teruo Fujii1, and Soo Hyeon Kim1
1University of Tokyo, JAPAN, 2National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, and 3Canon Medical Systems Corporation, JAPAN

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Dongyoung Kim1, Hyun-Kyung Woo1,2, Chaeun Lee1,2, Yoohong Min1, and Yoon-Kyoung Cho1,2
1Institute for Basic Science (IBS), KOREA and 2Ulsan National Institute of Science & Technology, KOREA

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Fengyi Zheng1, Jiasheng Huang1, Xiaoyi Shi1, Fei Pei2, and Zhihong Li1
1Peking University, CHINA and 2Peking University Health Science Center, CHINA

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University of Texas, Arlington, USA

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Tingyu Li1, Yaoping Liu1, and Wei Wang1,2
1Peking University, CHINA and 2National Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA

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Kyushu Institute of Technology, JAPAN
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Jaehyun Kim1, Jong Seung Lee2, Soyeon Noh3, Nurée 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

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Jelena Stevanović1,2, Kathrin Zobel1, Bernhard Wolfrum1, and Andreas Offenhäusser1
1Forschungszentrum Jülich GmbH, GERMANY and 2RWTH Aachen University

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Miroculus, USA

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Chih-Hung Wang and Gwo-Bin Lee
National Tsing Hua University, TAIWAN

HAIRPIN-STRUCTURED PCR ENHANCER FOR MICROFLUIDIC PLATFORMS
Ren Shen1, Yanwei Jia1, Pui-In Mak1, and Rui P. Martins1,2
1University of Macau, CHINA and 2Universidade de Lisboa, PORTUGAL

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KU Leuven, BELGIUM
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University of Washington, USA

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Jenny Graunitz1,2, Sandra Kuhn3, Cornelia Stiehl1, Martina Schneemann4,5, Andreas Morschhauser4, Harald Peter3, Frank Bier1, and Joerg Nestler2
1University of Potsdam, GERMANY, 2BiFlow Systems GmbH, GERMANY, 3Mittweida University of Applied Sciences, GERMANY, 4Fraunhofer Institute for Electronic Nano Systems ENAS, GERMANY and 5Fraunhofer Institute for Cell Therapy and Immunology, GERMANY

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

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1Chalmers University of Technology, SWEDEN, 2Linköping University, SWEDEN, 3Karolinska Institute, SWEDEN, and 4Vietnam National Children's Hospital, VIETNAM

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1University of Macau, CHINA and 2Universidade de Lisboa, PORTUGAL

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1Central European Institute of Technology, CZECH REPUBLIC and 2Northwestern Polytechnical University, CHINA
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Franziska M. Esmek¹, Marlin Therre², Manja Czech-Sioli², Nicole Fischer², Thomas Guenther³, Adam Grundhoff³, and Irene Fernandez-Cuesta¹
¹Universität Hamburg, GERMANY, ²Institute for Medical Microbiology, GERMANY, and ³Henrich-Pette-Institut, GERMANY

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Robert W. Baber¹, Marco Donolato², Mikkel F. Hansen¹, and Jeppe Fock²
¹Technical University of Denmark, DENMARK and ²Blusense Diagnostics ApS, DENMARK

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3D PRINTED RASPBERRY PI MICROSCOPY FOR LOW COST MICROFLUIDIC BACTERIAL MOTILITY ANALYSIS
Tai The Diep and Alexander Daniel Edwards
University of Reading, UK

A MICROFLUIDIC MODULE FOR INTEGRATED LYSIS AND GENETIC MATERIAL DETECTION OF GRAM-POSITIVE AND GRAM-NEGATIVE BACTERIA
Catarina R.F. Caneira¹, Sílvia Monteiro², Ricardo Santos², Virginia Chu¹, and João P. Conde¹,²
¹INESC-MN, PORTUGAL and ²Universidade de Lisboa, PORTUGAL

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My Nyblom¹, Vilhelm Müller¹, Anna Johhning¹,²,³, Marie Wrande⁴, Albertas Dvirnas⁵, Sriram KK¹, Christian G. Giske⁶,⁷, Tobias Ambjörnsson⁵, Linus Sandegren⁴, Erik Kristiansson³, and Fredrik Westerlund¹
¹Chalmers University of Technology, SWEDEN, ²Fraunhofer-Chalmers Centre, SWEDEN, ³University of Gothenburg, SWEDEN, ⁴Uppsala University, SWEDEN, ⁵Lund University, SWEDEN, ⁶Karolinska Institute, SWEDEN, and ⁷Karolinska University Hospital, SWEDEN
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Yang Liu, Thomas Lehnert, Terry P.N. Baltus, and Martinus A.M. Gijs
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

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University of Reading, UK

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Wenbo Zhou1, Yaoping Liu1, Shuangling Li2, Meng Xiao3, Jie Gong4, Hang Li2, and Wei Wang4,5
1Peking University, CHINA, 2Peking University First Hospital, CHINA,
3Peking Union Medical College Hospital, CHINA, 4Chinese Center for Disease Control and Prevention, CHINA, and 5National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA

M105.c USE OF MINIATURIZED DEVICES AND ISOTHERMAL AMPLIFICATION FOR PATHOGEN DETECTION IN THE FIELD
Carlos Manzanas, Xiao Jiang, Julia C. Loeb, John A. Lednicky, and Z. Hugh Fan
University of Florida, USA

T097.c A DROPLET MICROFLUIDICS PLATFORM FOR SCALABLE AND HIGH-THROUGHPUT ISOLATION OF ANTIBIOTIC-PRODUCING MICROBES
Pieter Berden1,2,3, Camila D. Campos1,2, Rodrigo S. Wiederkehr1, Liesbet Lagae1,2, Tim Stakenborg1, Jan Michiels2,3, and Maarten Fauvart1,2,3
1Imec, BELGIUM, 2KU Leuven, BELGIUM and 3VIB, BELGIUM

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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 A. 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 Illes¹, and Nicole Pamme¹
¹University of Hull, UK, ²University of Porto, PORTUGAL, ³National Institute for Agricultural and Veterinary Research, PORTUGAL, and ⁴Biomode SA, PORTUGAL

MICRO-SCALE IMMUNOMAGNETIC BACTERIAL ENRICHMENT COUPLED TO NANOPLASMONIC SENSING FOR RAPID DETECTION OF PATHOGENS IN WHOLE BLOOD
Alison Burklund¹, Amogha Tadimety¹, and John X.J. Zhang¹,²
¹Dartmouth College, USA and ²Dartmouth-Hitchcock Medical Center, USA

MOLECULAR DIAGNOSIS OF INFECTIOUS DISEASES FOR POINT-OF-CARE USING DNA HYDROGEL BASED REPID KIT
Hwang-soo Kim, Ho Yoon Lee, Chan Hee Park, Hynsung Kim, Young Joon Kim, Jin A. Choi, and Sehyun Shin
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Johns Hopkins University, USA

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

A SELF-CONTAINED INTEGRATED NUCLEIC ACID ANALYSIS CASSETTE FOR MULTIPEXED BACTERIA DETECTION
Nan Li¹, Minjie Shen¹, and Youchun Xu¹,²
¹Tsinghua University, CHINA and ²National Engineering Research Center for Beijing Biochip Technology, CHINA
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 Yanagida²,³, Kazuki Nagashima³, Takashi Washio², Tomoji Kawai², and Yoshinobu Baba¹,⁴
¹Nagoya University, JAPAN, ²Osaka University, JAPAN, ³Kyushu University, JAPAN and ⁴National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

FULL INTEGRATION OF SAMPLE PREPARATION AND DNA ANALYSIS FOR FAST MULTIPLEX FIELD-IDENTIFICATION OF BACTERIA
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¹CEA-Leti, FRANCE, ²CEA-DRF, FRANCE, and ³SDMIS, FRANCE

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Sriram KK¹, Yii-Lih Lin¹, Tsegaye Sewunet²,³, Shoeib Nematzadeh³, Christian G. Giske³,⁴, and Fredrik Westerlund¹
¹Chalmers University of Technology, SWEDEN, ²Jimma University, ETHIOPIA, ³Karolinska Institutet, SWEDEN, and ⁴Karolinska University Hospital, SWEDEN

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Johns Hopkins University, USA

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¹Purdue University, USA and ²OmniVis LLC, USA

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1Massachusetts General Hospital, USA and 2Harvard University, USA

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1University of North Carolina, USA, 2University of North Carolina School of Medicine, USA, and 3North Carolina State University, USA

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University of Helsinki, FINLAND

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1Innovation Center of NanoMedicine, JAPAN and 2University of Tokyo, JAPAN

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University Grenoble Alps, FRANCE

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1ESPCI-Paris, FRANCE and 2Hospital Robert-Debré, FRANCE

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Sander Stroobants1, Marzena Krzek1, Pierre Gelin1, Iwona Ziemecka1, James F. Lutsko2, Wim De Malsche1, and Dominique Maes1
1Vrije Universiteit Brussel, BELGIUM and 2Université Libre de Bruxelles, BELGIUM
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¹University of Toronto, CANADA, ²Harvard University, USA, and ³Beth Israel Deaconess Medical Center, USA

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¹Keio University, JAPAN and ²Tokyo Institute of Technology, JAPAN

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Akiho Hirao¹, Keiko Miwa¹, Yasuhiro Morizumi², and Yoko Yamanishi¹
¹Kyusyu University, JAPAN and ²BEX Co., Ltd., JAPAN

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¹University of California, Los Angeles, USA, ²University of Virginia, USA, ³Rutgers –New Jersey Medical School, USA, ⁴Duke University, USA and ⁵VA Greater Los Angeles Healthcare System, USA

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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
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<td>¹Inserm, FRANCE, ²LIMMS/CNRS-IIS, FRANCE, ³Kyushu Institute of Technology, JAPAN, ⁴Centre Oscar Lambret, FRANCE, and ⁵University Lille, FRANCE</td>
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**d - Fundamentals in Microfluidics and Nanofluidics**  
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University of Glasgow, UK

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Xi King1, Elijah Nazarzadeh1, Manlio Tassieri1, Julien Reboud1, Jenny K.W. Lam2, and Jonathan M. Cooper1
1University of Glasgow, UK and 2University of Hong Kong, CHINA

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**Centrifugal Microfluidics**

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Yuting Hou1, Rohit Mishra2, Menglian Wei1, Nicholas Balasuriya1, Jens Ducrée2, Michael J. Serpe1, and Jed Harrison1
1University of Alberta, CANADA and 2Dublin City University, IRELAND

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1Technical University of Denmark, DENMARK and 2Dublin City University, IRELAND
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¹Karlsruhe Institute of Technology, GERMANY and ²MEMETIS GmbH, GERMANY

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¹University of Yamanashi, JAPAN and ²JSPS Research Fellow, JAPAN

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¹University of Ulsan, KOREA and ²University of Ulsan College of Medicine, KOREA

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¹CEA Grenoble, FRANCE and ²Aix-Marseille Université, FRANCE
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¹University of Texas, Dallas, USA and ²University of Texas Southwestern Medical Center, USA

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¹University of Macau, CHINA and ²Universidade de Lisboa, Portugal

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¹Auburn University, USA and ²Scripps Research, USA
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\textsuperscript{1}Institute for Biomedical Engineering, Science and Technology (iBEST), CANADA and
\textsuperscript{2}Ryerson University, CANADA

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\textsuperscript{1}University of Exeter, UK and \textsuperscript{2}University of Cambridge, UK

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Younghak Cho\textsuperscript{2}, and Jaewon Park\textsuperscript{3}
\textsuperscript{1}Korea Institute of Machinery and Materials (KIMM), KOREA,
\textsuperscript{2}Seoul National University of Science and Technology, KOREA, and
\textsuperscript{3}Southern University of Science and Technology, KOREA

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and G. Alexander Groß\textsuperscript{1}
\textsuperscript{1}Ilmenau University of Technology, GERMANY and
\textsuperscript{2}Leibnitz Institute for Photonic Technology, GERMANY

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\textsuperscript{1}Monash University, AUSTRALIA and \textsuperscript{2}Indian Institute of Technology, Bombay, INDIA
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\textsuperscript{1}Waseda University, JAPAN and \textsuperscript{2}Canon Medical Systems Corp., JAPAN

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\textsuperscript{1}Université de Bordeaux, FRANCE and \textsuperscript{2}Institut Universitaire de France, FRANCE

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\textsuperscript{1}Ryerson University, CANADA, \textsuperscript{2}St. Michael’s Hospital, CANADA, and \textsuperscript{3}Institute for Biomedical Engineering Science, and Technology (iBEST), CANADA

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\textsuperscript{1}National University of Singapore, SINGAPORE, \textsuperscript{2}Institute for Health Innovation & Technology (iHealthtech), SINGAPORE, \textsuperscript{3}Singapore Immunology Network (SIgN), SINGAPORE and \textsuperscript{4}NUS Graduate School for Integrated Sciences and Engineering, SINGAPORE

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\textsuperscript{1}Institut Curie, FRANCE and \textsuperscript{2}Università di Padova, ITALY

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1Ryerson University, Canada, 2St. Michael’s Hospital, Canada, and 3Institute for Biomedical Engineering, Science and Technology (iBEST), Canada

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1National Institutes of Health (NIH), USA and 2University of Maryland, USA

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1King Mongkut's Institute of Technology Ladkrabang, Thailand and 2National Nanotechnology Center (NANOTEC), Thailand

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Rahul Bhardwaj, Phan T. Tue, Shinsuke Ishigaki, Hidetaka Uno, Zhi-Hong Wang, Yoshiaki Ukit, Sadahiro Iwabuchi, Shinichi Hashimoto, Takehiko Oka, Kozo Kawahara, Gen. Sobue, Tsuneo Urisu, Daisuke Hirose, and Yuzuru Takamura
1Japan Advanced Institute of Science and Technology (JAIST), JAPAN, 2Tokyo Institute of Technology, JAPAN, 3Nagoya University Grad School of Medicine, JAPAN, 4Nagoya University Institute of Innovation for Future Society, JAPAN 5University of Yamanashi, JAPAN, 6Kanazawa University, JAPAN and 7World Fusion Inc., JAPAN

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

HIGH-VOLUME FABRICATION OF SYLGARD 184 DEVICES FOR SINGLE CELL ANALYTICS
Christina Liedert, Benedek Poor, Olli-Heikki Huttunen, Johanna Hiitola-Keinänen, Sanna Aikio, Heli Pessa, Pinja Elomaa, Jussi Hiltunen, Päivi Saavalainen, and Leena Hakalahti
1VTT Technical Research Centre of Finland, FINLAND and 2University of Helsinki, FINLAND

LOW-COST, LARGE-SCALE, CONTINUOUS PRODUCT OF GIANT MAGNETIC MICROPARTICLES, AND CUSTOMIZED FUNCTIONALIZATION
Suk-Heung Song, Sujeong Lim, Hye Yeon Choi, Gyu Dong Kim, Joo Ho Kim, Yong-Gyun Jung and Wook Park
1Kyung Hee University, KOREA and 2Ezdiatech Inc., KOREA
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
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SELF-PROPELLING MICRO SWIMMER WITH CONTROLLABLE MOTION
Cheolheon Park¹, Yeongjae Choi², Hansol Choi², Seo Woo Song², Sunghoon Kwon², and Wook Park¹
¹Kyung Hee University, KOREA and ²Seoul National University, KOREA

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Mohammadhossein Dabaghi¹, Neda Saraei¹, Gerhard Fusch¹, Niels Rochow¹, John L. Brash¹, Christoph Fusch¹,², and P. Ravi Selvaganapathy¹
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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 Aishan¹,², Yaxiaer Yalikun¹, Satoshi Amaya¹, Yigang Shen¹,², and Yo Tanaka¹,²
¹Biosystems Dynamics Research (BDR), JAPAN and ²Osaka University, JAPAN

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¹Maastricht University, THE NETHERLANDS and ²University of Twente, THE NETHERLANDS
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Tatsuhiro Fukuba\textsuperscript{1} and Yuki Sano\textsuperscript{2}
\textsuperscript{1}Japan Agency for Marine-Earth Science and Technology, JAPAN and \textsuperscript{2}Yokohama City University, JAPAN

BIOMIMETIC UNDULATED MICROWRINKLES CONSTRUCTION BY ORIENTING MICROPARTICLES IN RESPONSIVE HYDROGEL SHEETS VIA DIELECTROPHORESIS
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National Chiao Tung University, TAIWAN

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Liang Huang, Fei Liang, Peng Zhao, Yongxiang Feng, and Wenhui Wang
Tsinghua University, CHINA

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Soo Yeon Jeong, Sang Woo Lee, Tae Hoon Shin, and Gi Seok Jeong
Asan Medical Center, KOREA

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\textsuperscript{1}Peking University, CHINA, \textsuperscript{2}Peking University Shenzhen Graduate School, CHINA, \textsuperscript{3}Peking University First Hospital, CHINA, \textsuperscript{4}National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA

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\textsuperscript{1}Chuo University, JAPAN and \textsuperscript{2}Toyama Industrial Technology Research and Development Center, JAPAN

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Prashant Agrawal, Audrey K. Gruneberg, Laurie A. Graham, Peter L. Davies, and Richard D. Oleschuk
Queen's University, CANADA

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Sotirios Papamatthaiou, Pedro Estrela, and Despina Moschou
University of Bath, UK
W154.e  PDMS MICROFLUIDIC DEVICES FABRICATION BY A CYCLIC BIOMACHINING PROCESS
Arrate Santaolalla¹, Yara Alvarez-Braña¹, Gorka Gallastegui¹, Lourdes Basabe-Desmonts¹,², Naïara Rojo¹, and Fernando Benito-Lopez¹
¹University of the Basque Country, SPAIN and ²Basque Foundation of Science, SPAIN

W155.e  SACRIFICIAL TEMPLATE REPLICATION-FABRICATION OF SUSPENDED ARBITRARY THREE-DIMENSIONAL MICROCHANNELS IN FUSED SILICA GLASS
Frederik Kotz¹, Patrick Risch¹, Michael Thiel², Alexander Quick², Semih Sevim³, Joseph Puigmarti-Luis³, Dorothea Helmer¹, and Bastian E. Rapp¹
¹University of Freiburg, GERMANY, ²Nanoscribe GmbH, GERMANY and ³ETH Zürich, SWITZERLAND

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

W157.e  THE ENCELADUS ORGANIC ANALYZER: INSTRUMENTATION AND METHODS FOR DETECTING TRACE ORGANIC MOLECULES IN OUR SOLAR SYSTEM
Zachary Estlack¹, Md Enayet Razu², Beau Compton², Zachary Duca³, Amanda Stockton³, Matin Golozar⁴, Anna Butterworth⁴, Jeremy McCauley⁴, James New⁵, Jungkyu Kim¹, and Richard A. Mathies⁴
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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W158.e  FABRICATION AND EVALUATION OF FLEXIBLE NANOVALVES IN 2D-NANOCHANNELS
Hiroto Kawagishi¹, Shunichi Funano², Yo Tanaka², Shuichi Kawamata¹, and Yan Xu¹,³
¹Osaka Prefecture University, JAPAN, ²RIKEN, JAPAN, and ³Japan Science and Technology Agency (JST), JAPAN

W159.e  FABRICATION OF NANOCHANNELS WITH EMBEDDED METAL ELECTRODES FOR ACTIVE CONTROL OF ZETA POTENTIAL
KuangHua Chou, Alexander Eden, David Huber, and Sumita Pennathur
University of California, Santa Barbara, USA
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Masahiko Karube and Hiroaki Onoe
Keio University, JAPAN

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Lucas J. Kooijman, Yasser Pordeli, Bernard Y. van der Wel, Erwin W. Berenschot, Jan C.T. Eijkel, and Niels R. Tas
University of Twente, THE NETHERLANDS

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Yaoping Liu¹, Jingquan Liu²,³, and Wei Wang¹,²
¹Peking University, CHINA, ²National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA, and ³Shanghai Jiao Tong University, CHINA

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Benoît X.E. Desbiolles, Arnaud Bertsch, and Philippe Renaud
École Polytechnique Fédérale de Lausanne, SWITZERLAND

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

W160.e  INTEGRATING A NANOPORE INTO A MICRO-CHANNELED AFM CANTILEVER FOR THE LOCALIZED DETECTION OF IONS AND BIOMOLECULES
Tilman Schlotter¹, Morteza Aramesh¹, Csaba Forró¹, Livie Drowling-Carter¹, Ines Lüchtefeld¹, Stephan J. Ihle¹, Ivan Shorubalko², Vahid Hosseini¹, Dmitry Momotenko¹, Tomas Zambelli¹, Enrico Klotzsch¹,³, and Janos Vörös¹
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**Novel, Smart, and Responsive Materials**

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Alexander H. McMillan¹,², Emma K. Thomée¹,³, Alessandra Dellaquila¹,⁴, and Sasha Cai Lesher-Pérez¹
¹Elvesys Microfluidic Innovation Center, FRANCE, ²KU Leuven, BELGIUM, ³University of Strasbourg, FRANCE, and ⁴University of Bielefeld, GERMANY
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National Tsing Hua University, TAIWAN

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Marta Broto¹, Brian 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

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Tohoku University, JAPAN

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**M162.e** ANALYZING PEPTIDE ADSORPTION STATES VIA NANOWIRE-EMPLOYED INFRARED SPECTROMETRY
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**M163.e** NANOFORESTS GROWN ON MICROPILLARS FOR CARBONYL COMPOUNDS PRECONCENTRATION AND SERS DETECTION
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Chinese Academy of Sciences, CHINA

**T162.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

**T163.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 (KAIST), KOREA
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Yuta Kuwahata¹, Hiroaki Takehara¹,², and Takanori Ichiki¹,²
¹University of Tokyo, JAPAN and ²Innovation Center of NanoMedicine (iCONM), JAPAN

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Laura Barillas¹, Ekaterina Makhneva¹, Ihsan Amin¹, Klaus-Dieter Weltmann¹, Hermann Seitz², and Katja Fricke¹
¹Leibniz Institute for Plasma Science and Technology (INP), GERMANY and ²University of Rostock, GERMANY

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M164.e PRODUCING PERIODIC SEQUENTIAL FLOW BY GRAVITY-DRIVEN MICROFLUIDIC ACTUATORS
Zhenglin Li and Sung-Jin Kim
Kokkuk University, KOREA

T164.e SURFACE TENSION DRIVEN SWARM ROBOTS FOR EMERGING COORDINATING MOTIONS
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Keio University, JAPAN

W164.e BUBBLE-ASSISTED MICRO / NANOFLUIDICS: DEMONSTRATION OF BUBBLE GENERATION AND VALVE FUNCTION
Shun Furukawa, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

f - Sensors and Detection Technologies

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Yongxiang Feng, Peng Zhao, Fei Liang, Liang Huang, and Wenhui Wang
Tsinghua University, CHINA

M166.f AN "ENZYME-RESPONSIVE IONIC LIQUID" TOWARD CAPILLARY ARRAY-BASED IMMUNOASSAY MICRODEVICES
Ryoutarou Oishi, Tatsumi Mizuta, Kenji Sueyoshi, Tatsuro Endo, and Hideaki Hisamoto
Osaka Prefecture University, JAPAN
M167.f ANALYTE CAPTURE IN AN ARRAY OF FUNCTIONALIZED DROPLETS FOR A REGENERABLE BIOSENSOR
Charles-Louis Azzopardi, Franck Chollet, Jean-François Manceau, and Wilfrid Boireau
University Bourgogne Franche-Comté, FRANCE

M168.f CENTRIFUGAL MICROFLUIDIC PLATFORM COMPRISING AN ARRAY OF BEAD MICROCOLUMNS FOR THE MULTIPLEXED COLORIMETRIC QUANTIFICATION OF INFLAMMATORY BIOMARKERS AT THE POINT-OF-CARE
Ahmad S. Akhtar, Inês F. Pinto, Ruben R.G. Soares, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

M169.f DEVELOPING INTEGRATED CENTRIFUGAL CONVECTIVE PCR DEVICE FOR DETECTION OF DRUG-RESISTANT GENE
Sakiko Ushiro, Masato Saito, Wilfred V. Espulgar, and Eiichi Tamiya
Osaka University, JAPAN

M170.f ELECTRICAL DETECTION OF DEOXYRIBONUCLEASE USING DNA MOLECULES IMMobilized BETWEEN MICROELECTRODES
Takahiro Himuro, Shota Tsukamoto, and Yoji Saito
Seikei University, JAPAN

M171.f ENHANCING THE SENSING PERFORMANCE OF APTAMERIC GFETs FOR INTERLEUKIN-6 DETECTION USING NEGATIVE ELECTRIC FIELD
Zhuang Hao, Yunlu Pan, Cong Huang, and Xuezeng Zhao
Harbin Institute of Technology, CHINA

M172.f IDENTIFYING MULTIPLE VIRAL SPECIES AT A SINGLE PARTICLE LEVEL USING A COMBINATION OF NANOPORES AND MACHINE LEARNING APPROACH
Akihide Arima1, Makusu Tsutsui2, Yoshida Takeshi2, Kazumichi Yokota2, Wataru Tonomura2, Takao Yasui1, Taisuke Shimada1, Tomoko Yamazaki2, Kenji Tatematsu2, Shun'ichi Kuroda2, Masateru Taniguchi2, Takashi Washio2, Tomoji Kawai2, and Yoshinobu Baba1
1Nagoya University, JAPAN and 2Osaka University, JAPAN

M173.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

M174.f MULTIPLEXED DETECTION OF PLANT HEALTH BIOMARKERS
Eduardo J.S. Brás1,2, Ana M. Fortes2, Virginia Chu1, Pedro Fernandes2, and João P. Conde1,2
1Institute of Nanoscience and Nanotechnology, PORTUGAL and 2Universidade de Lisboa, PORTUGAL
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Aleksandr Oseev1, Fabien Remy-Martin1, Thomas Lecompte2, Alain Rouleau1, Guillaume Mourey1,3,4, Jean-François Manceau1, Céline Élie-Caille1, Wilfrid Boireau1, Emmanuel de Maistre5, and Thérèse Leblois1
1Université de Bourgogne Franche-Comté, FRANCE, 2Geneva University, SWITZERLAND, 3University Hospital of Besançon, FRANCE, 4Laboratoire de Biologie Médicale et de Greffe, FRANCE, and 5Centre Hospitalier Universitaire de Dijon, FRANCE

M176.f RETROREFLECTIVE OPTICAL IMMUNOSENSING BASED ON THE BIOSPECIFIC PARTICLE MOVEMENT AND TIME-LAPSE IMAGING IN MICROCHANNEL
Kyung Won Lee, Kwan Young Jeong, Ka Ram Kim, Hyeong Jin Chun, and Hyun C. Yoon
Ajou University, KOREA

M177.f SMARTPHONE-INTEGRATED IMMUNOSENSING BASED ON THE WAVELENGTH FILTERING FROM CHROMOGENIC ENZYMATIC REACTION
Kwan Young Jeong, Saemi Kim, Kyung Won Lee, Ka Ram Kim, Hyeong Jin Chun, and Hyun C. Yoon
Ajou University, KOREA

M178.f SWEAT LACTIC ACID MONITORING SYSTEM USING PLASTER-BASED SAMPLING DEVICE FOR APPLICATION IN INTENSIVE CARE UNIT
Yusuke Suzuki1, Akiko Hosoyama2, Kenichiro Morisawa2, Yasuhiko Taira2 and Hiroyuki Kudo1
1Meiji University, JAPAN and 2St. Marianna University School of Medicine, JAPAN

M179.f USE OF A GLASS FIBRE MEMBRANE (GF/DVA) TOWARDS THE DEVELOPMENT OF A LATERAL FLOW ASSAY FOR DETECTION OF TRICLOSAN IN RIVER WATER
Samantha Richardson, Alexander Iles, Jeanette M. Rotchell, Mark Lorch, and Nicole Pamme
University of Hull, UK

T165.f A DNA NANOTECHNOLOGY TOOLBOX FOR MIX-AND-MATCH BIOSENSOR DESIGN
Iene Rutten, Saba Safdar, Karen Ven, Devin Daems, Dragana Spasic, and Jeroen Lammertyn
KU Leuven, BELGIUM

T166.f AN ON-DEMAND HIGH-INTEGRATED MICROFLUIDIC DROPLET PLATFORM FOR SENSITIVE AND RAPID SERS DETECTION OF EPSTEIN-BARR VIRUS DNA
Wen Wu, Ya-Ning Wang, Wen-Shu Zhang, Wen-Qi Ye, Yue Wang, and Zhang-Run Xu
Northeastern University, CHINA

T167.f ANGULAR-BASED MEASUREMENT IN 3D PAPER-BASED ANALYTICAL DEVICES
Dong-Ho Kim, Seong-Geun Jeong, Byungjin Lee, Jaeseong Kim and Chang-Soo Lee
Chungnam National University, KOREA
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

SLIPSZYMES: LUBRICANT-INFUSED DNAZYME SURFACES FOR DETECTION OF PATHOGENIC BACTERIA IN COMPLEX FLUIDS
Hanie Yousefi¹, Sahar E. Samani², Akansha Prasad², Amid Shakeri², Hsuan-Ming Su², Carlos D.M. Filipe², and Tohid F. Didar²
¹University of Toronto, CANADA and ²McMaster University, CANADA

ELECTRICAL DETECTION OF THE MECHANICAL ALTERATION OF SICKLING RED BLOOD CELLS WITHIN A MICROFLUIDIC CAPILLARY NETWORK
Xu Tieying¹, Maria Lizarralde², Jean Roman¹, Wassim El Nemer², Bruno Le Pioufle¹, and Olivier Français¹,³
¹ENS Paris-Saclay, FRANCE, ²INTS, FRANCE and ³ESYCOM, FRANCE

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

IMMUNOASSAYS BASED ON HOT ELECTRON INDUCED ELECTROCHEMILUMINESCENCE ON DISPOSABLE CELL CHIPS WITH PRINTED ELECTRODES
Nur-E-Habiba¹,², Kalle Salminen², Päivi Grönroos², Esko Kauppinen¹, Veikko Sariola¹, and Sakari Kulmala²
¹Tampere University, FINLAND and ²Aalto University, FINLAND

ISOTHERMAL NANOPORE DNA SENSING USING DIFFUSION CURRENT
Wei-Lun Hsu¹, Soumyadeep Paul¹, Zhen Gu², Ya-Lun Ho¹, Jean-Jacques Delaunay¹, Yi-Lun Ying², Yi-Tao Long²,³, and Hirofumi Daiguji¹
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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 C. Yoon
Ajou University, KOREA

QUANTUM-LIMITED 2D SENSORS FOR PH AND BIOSENSING
Arvind Balijepalli¹, Son T. Le¹,², Harish C. Pant³, and Curt A. Richter¹
¹National Institute of Standards and Technology (NIST), USA, ²Theiss Research, USA, and ³National Institutes of Health (NIH), USA
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Bo Wu, Ye Liu, Yi-Chieh Wang, and Li-Jing Larry Cheng
Oregon State University, USA

T177.f  SURFACE ENHANCED RAMAN SCATTERING ACTIVE CHIPS FOR MYCOTOXIN DETECTION IN FOOD MATRICES
Alessandro Chiadò, Chiara Novara, Niccolò Paccotti, Paola Rivolo, Francesco Geobaldo, and Fabrizio Giorgis
Politecnico di Torino, ITALY

T178.f  THREE-DIMENSIONAL PAPER-BASED DEVICE WITH INTEGRATED TIMER FUNCTION FOR PERSONAL IMMUNOASSAY APPLICATIONS
Chung-An Chen, Chiao-Wen Chen, Shi-Jia Chen, Chin-Chou Chu, and Chien-Fu Chen
National Taiwan University, TAIWAN

T179.f  UTILIZING A LIGHT IMAGE ARRAY WITH VARYING LIGHT INTENSITIES IN OPTICALLY-INDUCED DIELECTROPHORESIS (ODEP)-BASED MICROFLUIDIC SYSTEM FOR A CULTURE-FREE SCREEN OF BACTERIA WITH DIFFERENT RESPONSES TO ANTIBIOTICS TREATMENT
Po-Yu Chu, Chih-Yu Chen, and Min-Hsien Wu
1Chang Gung University, TAIWAN and 2Chang Gung Memorial Hospital, TAIWAN

W165.f  A NOVEL HANDHELD MICRO-CAPILLARY BIOSENSOR FOR SALIVARY CORTISOL
Young J. Kim, Wan J. Kim, and Bongjin Jeong
Electronics and Telecommunications Research Institute, KOREA

W166.f  A NOVEL OXYGEN NANOSENSOR FOR IN VITRO MICROENVIRONMENT MONITORING IN MESENCHYMAL STEM CELL CULTURE
Yunjie Hao, Manohar Prasad Koduri, Fan Gang Tseng, James Henstock, John A. Hunt, and Judy Curran
1National Tsing Hua University, TAIWAN, 2University of Liverpool, UK, 3Academia Sinica, TAIWAN, and 4Nottingham Trent University, UK

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1Texas Tech University, USA, 2Vienna University of Technology, AUSTRIA, and 3University of Utah, USA

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1University of the Basque Country, SPAIN and 2Basque Foundation of Science, SPAIN

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1Academy of Scientific and Innovative Research, INDIA, 2Central Scientific Instruments Organization, INDIA, and 3University of Hull, UK

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1Ben-Gurion University, ISRAEL and 2University of Maryland School of Medicine, USA

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1Kanagawa Institute of Industrial Science and Technology, JAPAN and
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1University of Southampton, UK and 2SouthWestSensor Ltd, UK

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University of California, Los Angeles, USA
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¹ETH Zürich, SWITZERLAND and ²University of Basel, SWITZERLAND

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¹University of Rome Tor Vergata, ITALY and ²CNR Institute for Photonics and Nanotechnologies, ITALY

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¹University of Virginia, USA and ²Virginia Tech, USA
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¹Middle East Technical University, TURKEY, ²Mikro Biyosistemler Electronics Inc., TURKEY, ³METU MEMS Center, TURKEY, and ⁴Çankaya University, TURKEY

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¹Leibnitz IFW Dresden, GERMANY, ²Universitätsklinikum Carl Gustav Carus an der Technischen Universität Dresden, GERMANY, and ³Chemnitz University of Technology, GERMANY

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¹Kyoto University, JAPAN and ²Panasonic Corporation, JAPAN

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Alexander Mendl¹, Michael Köhler², and Dušan Boskovic¹
¹Fraunhofer ICT, GERMANY and ²TU Ilmenau, GERMANY

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¹Academia Sinica, TAIWAN, ²National Tsing Hua University, TAIWAN,
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⁵National Cheng-Kung University, TAIWAN

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f - Sensors and Detection Technologies
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¹Nanyang Technological University, SINGAPORE and ²Peking University, BEIJING

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¹University of Cincinnati, USA and ²CDC-NIOSH, USA

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1University of Tokyo, JAPAN and 2RIKEN, JAPAN

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1Hokkaido University, JAPAN, 2Tianma Japan, Ltd., JAPAN, 3Hokkaido Institute of Public Health, JAPAN, and 4Tohoku University, JAPAN

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1Hitachi, Ltd., JAPAN and 2Hitachi High-Technologies Corporation, JAPAN

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1Korea University, KOREA and 2Korea Research Institute of Ships & Ocean Engineering, KOREA

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¹Tokyo University of Pharmacy and Life Sciences, JAPAN, ²Tokyo Metropolitan University, JAPAN, ³Mebius Advanced Technology Ltd., JAPAN, and ⁴Aichi Institute of Technology, JAPAN

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¹Hong Kong University of Science and Technology, HONG KONG and ²City University of Hong Kong, HONG KONG

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¹Chalmers University of Technology, SWEDEN, ²Freie Universität Berlin, GERMANY, and ³Umeå University, SWEDEN

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¹University of Split, CROATIA and ²Bedalov d.o.o for Research, Development, Innovation and Consulting, CROATIA

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¹University of Tasmania, AUSTRALIA and ²Skidmore College, USA

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1École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and 2ETH Zürich, SWITZERLAND

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1Nara Institute of Science and Technology, JAPAN, 2RIKEN, JAPAN and 3Osaka University, JAPAN

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1Queen's University, CANADA and 2CMC Microsystems, CANADA

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1Maastricht University, THE NETHERLANDS and 2Hasselt University, BELGIUM

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1Chonnam National University, KOREA and 2Gwangju University, KOREA

W200.f  LIQUID METAL-EMBEDDED MICROFLUIDIC PRESSURE SENSOR FOR REAL-TIME MONITORING
Kelu Peng1, Sunghyun Cho2, Junyi Yao1, Younghak Cho3, Hyunsoo Kim2 and Jaewon Park1
1Southern University of Science and Technology, CHINA, 2Korea Institute of Machinery and Materials (KIMM), KOREA, and 3Seoul National University of Science and Technology, KOREA
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

SINGLE BACTERIA DETECTION VIA PIEZOELECTRIC SUSPENDED MICROCHANNEL RESONATORS
Annalisa De Pastina¹,², Damien Maillard¹, Birge Özel Duygan³, Jan Roelof Van Der Meer³, and Luis Guillermo Villanueva¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
²Trinity College Dublin, IRELAND, and ³University of Lausanne, SWITZERLAND

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

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

DISPOSABLE MULTI-SENSORS FOR DIRECT DETECTING PH, CONDUCTIVITY AND TEMPERATURE OF SALIVA IN MOUTH
Wei-Sin Kao, Wei-Hsing Yen, Yu-Wen Hung, and Che-Hsin Lin
National Sun Yat-sen University, TAIWAN

PATTERN CLASSIFICATION AND SEGMENTATION IN MULTIDIMENSIONAL DNA CONCENTRATION SPACES BY SYNTHETIC CHEMICAL REACTION NETWORK
Shu Okumura¹, Guillaume Gines², Yannick Rondelez², Teruo Fujii¹, and Anthony Genot¹
¹University of Tokyo, JAPAN and ²PSL Research University, FRANCE
**Artificial Intelligence and microfluidics**

**M204.g**  
DEEP CONVOLUTIONAL NEURAL NETWORKS FOR VIABILITY ANALYSIS DIRECTLY FROM CELL HOLOGRAMS CAPTURED USING LENSSLESS HOLOGRAPHIC MICROSCOPY  
Kerem Delikoyun, Ersin Cine, Muge Anil-Inevi, Engin Ozcivici, Mustafa Ozuysal, and H. Cumhur Tekin  
*Izmir Institute of Technology, TURKEY*

**T204.g**  
DEEP LEARNING ANALYSIS OF NEUTROPHIL NUCLEAR MORPHOLOGY DURING NETOSIS USING A MICROFLUIDIC DEVICE  
Alan M. Gonzalez-Suarez, Roberto Rodriguez-Moncayo, Jose A. Hernandez-Ortiz, and Jose L. Garcia-Cordero  
*Centro de Investigacion y de Estudios Avanzados del IPN, MEXICO*

**Fuel Cells**

**M205.g**  
DRYING CAPABILITY OF RMFC MICO-CHANNEL EVAPORATOR WITH IMPROVED FLOW DISTRIBUTION, GAS VENTING MANIFOLD AND ARTIFICIAL CAVITIES  
Hung-Yu Chen¹, Fan-Gang Tseng¹,², and Chin Pan³  
¹National Tsing Hua University, TAIWAN, ²Academia Sinica, TAIWAN, and ³City University of Hong Kong, HONG KONG

**W205.g**  
A HIGH HYDROGEN CONVERSION AND HIGH-TEMPERATURE CATALYTIC HYDROGEN MICRO-CHIP COMBUSTOR APPLIED TO THERMAL MANAGEMENT FOR METHANOL REFORMER  
Ming-Jyun Li¹, Shang-Yun Huang¹, and Fan-Gang Tseng¹,²  
¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN

**Microfluidics for X-Ray and e-Beam Applications**

**M206.g**  
DROPLET TRIGGERING FOR SERIAL FEMTOSECOND CRYSTALLOGRAPHY USING 3D-PRINTED MICROFLUIDICS  
Daihyun Kim, Austin Echelmeier, Jorvani Cruz Villarreal, Sahir Gandhi, Sebastian Quintana, Ana Egatz-Gomez, and Alexandra Ros  
*Arizona State University, USA*
M207.g TRACKING TRANSIENT CHANGES ON THE MILLI-SECOND TIME-SCALE: X-RAY SPECTROSCOPY AND MICROFLUIDIC MIXING
Thomas Kroll1, Leland B. Gec2, Diego A. Huyke2, Augustin Braun2, Michael Mara2, Matthew James2, Ashwin Ramachandran2, Dimosthenis Sokaras1, Uwe Bergmann1, Edward I. Solomon2, Daniel P. DePonte1, and Juan G. Santiago2
1SLAC National Accelerator Laboratory, USA and 2Stanford University, USA

T205.g A THREE-DIMENSIONAL MICROFLUIDIC MIXER WITH INDEPENDENTLY ADJUSTABLE MIXING AND PROBING REGIONS
Diego A. Huyke1, Ashwin Ramachandran1, Thomas Kroll2, Daniel P. DePonte2, and Juan G. Santiago1
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T206.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 Thiffault1, Jesse D. Coe1, Gerrit Brehm2, Caleb Madsen1, Sebastian Quintana1, Saša Bajt4, Marc Messerschmidt13, Jose Domingo Meza-Aguilar1, Dominik Oberthüer4, Max O. Wiedorn4, Holger Fleckenstein4, Sabine Botha1, Derek Mendez1, Juraj Knoska4, Jose Martin Garcia1, Hao Hu1, Stella Lisova1, Aschkan Allah Gholi4, Yaroslav Gevorkov4, Kartik Ayyer4, Steve J. Aplin4, Helen M. Ginn5, Heinz Graafsma4, Andrew J. Morgan4, Dominic Greiffenberg6, Alexander Klugev4, Torsten Laurus4, Jennifer Poehlsen4, Ulrich Trunk4, Filipe R.N.C. Maia7, Davide Mezza6, Raimund Fromme1, Britta Weinhausen3, Grant Mills3, PatrikVagovic1, Yoonhee Kim3, Joachim Schulz3, Katerina Döerner3, Jolanta Sztuk-Dambietz3, Manuela Kuhn4, Thomas D. Grant8, Thomas A. White4, Britta Weinhausen3, Nadia A. Zatsepin1, Petra Fromme1, Richard A. Kirian1, and Valerio Mariani4
1Arizona State University, USA, 2Göttingen University, GERMANY, 3European XFEL, GERMANY, 4Deutsches Elektronen-Synchrotron (DESY), GERMANY, 5University of Oxford, UK, 6Paul Scherrer Institute, SWITZERLAND, 7University of Uppsala, SWEDEN, and 8University of Buffalo, USA

T207.g UNDERSTANDING THE LIPID NANOPARTICLES STRUCTURE DYNAMICS USING A TIME-RESOLVED SAXS MEASUREMENT
Masatoshi Maeki1, Niko Kimura1, Kazuki Shimizu2, Kento Yonezawa2, Nobutaka Shimizu2, Akihiko Ishida1, Hirofumi Tani1, and Manabu Tokeshi1
1Hokkaido University, JAPAN and 2High Energy Accelerator Reseaerch Organization, JAPAN

W206.g CRYO-MICROFLUIDIC DEVICES ENABLE MILLISECOND TIME-CORRELATION BETWEEN LIVE-IMAGING AND CRYO-ELECTRON MICROSCOPY IN CAENORHABDITIS ELEGANS
Marie Fuest1, Miroslava Schaffer2, Giovanni Marco Nocera1, Rodrigo I. Galilea-Kleinsteuber1, Michael Heymann2, Jürgen M. Plitzko2, and Thomas P. Burg13
1Max Planck Institute for Biophysical Chemistry, GERMANY, 2Max Planck Institute of Biochemistry, GERMANY, and 3Technische Universität Darmstadt, GERMANY
**W207.g**  
**TIME-RESOLVED STRUCTURE DETERMINATION VIA RAPID MIXING MICROFLUIDICS**  
Martin Trebbin¹ ² and Diana C.F. Monteiro¹  
¹State University of New York, Buffalo, USA and  
²Hauptman-Woodward Medical Research Institute, USA

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**g - Other Applications of Microfluidics**  
**Power Devices**

**W208.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

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**g - Other Applications of Microfluidics**  
**Others**

**M208.g**  
**A MICRO-FLUIDIC DEVICE TO MEASURE ANTIOXIDATIVE CAPACITY OF TEA CATECHINS**  
Alexandra Homsy¹, Laure Jeandueux¹, Marzena Walaszczyk¹, Claudio Prieur¹,  
Frédéric Truffer¹, Martial Geiser¹, Isabelle Udrisard¹, Agnieszka Kosinska Cagnazzo¹,  
Wilfried Andlauer¹, and Harry J. Whitlow²  
¹HES-SO, SWITZERLAND and ²University of Louisiana, USA

**M209.g**  
**DEVELOPMENT OF CONTROLLED RELEASE TABLET REAGENTS EMBEDDED COMPACT NUTRIENT ANALYZER FOR CONTINUOUS MONITORING OF NUTRIENT CONTENT IN CROP BODY**  
Toshihiro Kasama¹ ² ³ ⁴, Naoki Hirohama¹ ² ³ ⁴, Yoshishige Endo¹ ² ³ ⁴, Takumi Okamoto² ³ ⁴,  
Tetsushi Koide² ³ ⁴, Chiharu Sone³ ⁴, Masashi Komine³ ⁴, Yukio Yaji³ ⁴, Atsushi Ogawa³ ⁴,  
and Ryo Miyake¹ ² ³ ⁴  
¹University Tokyo, JAPAN, ²Hiroshima University, JAPAN, ³Akita Prefectural University, JAPAN, and ⁴Japan Science and Technology Agency (JST), JAPAN

**T208.g**  
**ARTIFICIAL PHEROMONE EFFECT IMPOSED ON REAL LIVING MICROALGAE CELLS CONFINED IN A MICROCHIP WITH OPTICAL FEEDBACK SYSTEM**  
Kazunari Ozasa¹, June Won², Simon Song², and Mizuo Maeda¹  
¹RIKEN, JAPAN and ²Hanyang University, KOREA
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**THE UNIVERSAL LAB-ON-CHIP PLATFORM FOR BIO-NANOSATELLITE**
Agnieszka Podwin¹, Adrianna Graja¹,², Dawid Przystupski³, Danylo Lizanets¹,⁴, Jan A. Dziuban¹, and Rafal Walczak¹

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### W209.g

**CONTINUOUS FLOW ANALYSIS OF ATMOSPHERIC ICE-NUCLEATING PARTICLES IN THE EASTERN MEDITERRANEAN**
Mark D. Tarn¹, Sebastien N.F. Sikora¹, Grace C.E. Porter¹, Bethany V. Wyld¹, Naama Reicher², Matan Alayof², Alexander D. Harrison¹, Yinon Rudich², Jung-uk Shim¹, and Benjamin J. Murray¹

¹University of Leeds, UK and ²Weizmann Institute of Science, ISRAEL

### W210.g

**MEASURING THE NUCLEATION KINETICS OF ARAGONITE USING A SELF-DIGITIZATION MICROFLUIDIC CHIP**
Zongwei Zhang, Yuan Gao, Shunbo Li, and Gang Li
Chongqing University, CHINA

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**h – Late News**

### M210.h

**3D CULTURE STRATEGY TO ENHANCE HAIR INDUCTIVE POTENTIAL OF HUMAN HAIR FOLLICLE DERIVED DERMAL PAPILLA CELLS**
Seongkyun Choi, Jinchul Ahn, Ji Hun Yang, and Seok Chung
Korea University, KOREA

### M211.h

**CONTROLLED GIANT VESICLE ASSEMBLY AND MANIPULATION USING MEMBRANE DISPLACEMENT TRAPS**
Zhu Chen¹, Hesam Babahosseini¹,², Supriya Padmanabhan¹, Tom Misteli², and Don L. DeVoe¹

¹University of Maryland, College Park, USA and ²National Institutes of Health, USA

### M212.h

**DUAL-FLOW MICROFLUIDIC DEVICE FOR MODELLING BIOLOGICAL BARRIER SYSTEMS**
Lydia Baldwin, Alex Iles, John Greenman, Nicole Pamme, and Charlotte E. Dyer
University of Hull, UK

### M213.h

**HYDROGEL-BASED SEALED MICROCHAMBERS FOR SIMPLE AND COST-EFFECTIVE CELL CULTURE AND DRUG TESTING**
Shotaro Yoshida, Kensuke Sumomozawa, and Matsuhiko Nishizawa
Tohoku University, JAPAN
INTEGRATION OF ON-CHIP CLUSTER PURIFICATION AND COMPARTMENTALIZATION FOR RNA-SEQ ANALYSIS OF CLUSTERS
Hiroaki Saito¹, Soo Hyeon Kim¹, Issei Tsuchiya¹, Satoi Nagasawa¹, Masahide Seki¹, Yusuke Komazaki¹, Toru Torii², Yutaka Suzuki¹, and Teruo Fujii¹
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²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

REPEATED SINGLE CELL CYTOMETRY IN AN OPTOFLUIDIC CHIP
Gregory A. Cooksey¹, Paul N. Patrone¹, Nikita Podobedov², Stephen E. Meek³, and Jason A. Hsu⁴
¹National Institute of Standards and Technology (NIST), USA, ²Columbia University, USA, ³Montgomery College, USA, and ⁴Montgomery Blair High School, USA

WRINKLE TEXTURE GUIDED CELL GROWTH ORIENTATION
Bing-Cheng Jiang and Ya-Yu Chiang
National Chung-Hsing University, TAIWAN

A MICROFLUIDIC DEVICE FOR TESTING STATIC AND DYNAMIC, IN VIVO LIKE, DRUG CONCENTRATION EFFECTS ON CANCER CELLS
Job Komen¹, Eiko Y. Westerbeek¹,², Andries D. van der Meer¹, and Albert van den Berg¹
¹University of Twente, THE NETHERLANDS and ²Vrije Universiteit Brussel, BELGIUM

CIRCULATING TUMOR CELL ISOLATION FROM CLINICAL SAMPLES UTILIZING A LATERAL FILTER ARRAY MICROFLUIDIC DEVICE
Pablo J. Dopico¹, Kangfu Chen¹, Jose Varillas¹, Valber Pedrosa², Thomas J. George¹, and Z. Hugh Fan¹
¹University of Florida, USA and ²São Paulo State University, BRAZIL

DEVELOPMENT OF A MICROFLUIDIC PLATFORM FOR INDUCTION OF ANGIOGENESIS FROM A VASCULARIZED MICROTISSUE
Wen-Chih Yang, Che-Yu Lin, Wei-Wen Liu, Pai-Chi Li, and Yu-Hsiang Hsu
National Taiwan University, TAIWAN

ENGINEERED 3D VASCULARIZED NEUROSphere-DERIVED FROM INDUCED NEURAL STEM CELL IN AN INJECTION-MOLDED MICROFLUIDIC ARRAY
Youngtaek Kim, Nari Shin, Jihoon Ko, Jungho Ahn, Kyung-Sun Kang, and Noo Li Jeon
Seoul National University, KOREA

IN VITRO MICROFLUIDICS-BASED BLOOD-BRAIN BARRIER MODEL WITH IN-LINE TEER MEASUREMENT
Kai-Hong Tu and Ya-Yu Chiang
National Chung Hsing University, TAIWAN
**T215.h**  
**INTESTINE-ON-A-CHIP FOR ANTICANCER NANOPARTICLE TESTING**  
Oihané Mitxelenăr-Iribaren\textsuperscript{1,2}, Claudia Olaizola\textsuperscript{2}, Sergio Arana\textsuperscript{1,2}, and Maite Mujika\textsuperscript{1,2}  
\textsuperscript{1}CeiT, SPAIN and \textsuperscript{2}Universidad de Navarra, SPAIN

**T216.h**  
**ROBOTIC CAPTURE AND MANIPULATION OF CELLS USING MAGNETIC MICROWHEELS**  
Tonguç O. Tasci\textsuperscript{1}, Tao Yang\textsuperscript{2}, Avanish Mishra\textsuperscript{1}, Keith Neeves\textsuperscript{2}, David Marr\textsuperscript{2}, and Mehmet Toner\textsuperscript{1}  
\textsuperscript{1}Harvard Medical School, USA and \textsuperscript{2}Colorado School of Mines, USA

**W211.h**  
**A REUSABLE LAB-ON-A-CHIP FOR BACTERIA ENRICHMENT FROM LARGE VOLUMES**  
Matthias Hügle\textsuperscript{1,2}, Benedict Martens\textsuperscript{1}, Ole Behrmann\textsuperscript{1,2}, Frank T. Hufert\textsuperscript{2}, Gregory Dame\textsuperscript{2}, and Gerald A. Urban\textsuperscript{1}  
\textsuperscript{1}University of Freiburg, GERMANY and  
\textsuperscript{2}Brandenburg Medical School Theodor Fontane, GERMANY

**W212.h**  
**A VERSATILE MICROPATTERNING APPROACH FOR STUDYING LIVE CELL SIGNALING EVENTS**  
Peter Lanzterstorfer\textsuperscript{1}, Ulrike Müller\textsuperscript{1}, Roland Hager\textsuperscript{1}, Cindy Dirschler\textsuperscript{2}, Klavdiya Gordiyenko\textsuperscript{3}, Christof M. Niemeyer\textsuperscript{3}, Sebastian Springer\textsuperscript{2}, and Julian Weghuber\textsuperscript{1}  
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\textsuperscript{3}Karlsruhe Institute of Technology (KIT), GERMANY

**W213.h**  
**DIFFUSION FROM STEADY-STATE PROFILE (DSSP) FOR LOW COST, LOW CONCENTRATION MEASUREMENT OF DIFFUSION**  
Joshua T. Loessberg-Zahl\textsuperscript{1}, Marc R. Gillrie\textsuperscript{2}, Roger D. Kamm\textsuperscript{2}, Albert van den Berg\textsuperscript{1}, Andries van der Meer\textsuperscript{1}, and Jan C.T. Eijkel\textsuperscript{1}  
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\textsuperscript{2}Massachusetts Institute of Technology, USA

**W214.h**  
**EXPLORING THE BIOPHYSICAL FACTOR CAUSING BREAST CANCER CELL METASTASIZE WITH ORGANTYPIC NICHE-ON-A-CHIP**  
Chun-Jieh Hsu\textsuperscript{1}, Hsueh-Yao Chu\textsuperscript{1}, Yin-Ju Chen\textsuperscript{2}, Long-Sheng Lu\textsuperscript{2}, and Fan-Gang Tseng\textsuperscript{1,3}  
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\textsuperscript{3}Academia Sinica, TAIWAN

**W215.h**  
**INSERTION MEASUREMENT OMPLA PROTEIN INTO LIPID BILAYER USING ION CURRENT MEASUREMENT DEVICE**  
Seren Ohnishi and Koki Kamiya  
Gunma University, JAPAN

**W216.h**  
**MICROFLUIDIC PLATFORM FOR IMPLEMENTATION OF ORGANIC FIELD EFFECT TRANSISTOR BASED BIOSENSOR**  
Liubov Bakhchova and Ulrike Steinmann  
Otto-von-Guericke-University, GERMANY
THE ROLE OF INTERFACE CURVATURE ON SPERM BEHAVIOUR
Mohammad Reza Raveshi, Melati Abdul Halim, Adrian Neild, and Reza Nosrati
Monash University, AUSTRALIA

CELL-FREE HIGH-THROUGHPUT PROTEIN SYNTHESIS USING MESOSCALE DEVICES
Karim Mohamed¹, Champak Das², Shouguang Jin¹, and Z. Hugh Fan¹
¹University of Florida, USA and ²Dasfanh Bioscience LLC, USA

EFFECTIVE MIXING IN A MICRO REACTION CHAMBER USING MAGNETIC MICRO BEADS FOR INCREASED MOLECULAR SENSING READOUT TIME
Eriola-Sophia Shanko, Yoeri van de Burgt, and Jaap den Toonder
Technische Universiteit Eindhoven (TU/e), THE NETHERLANDS

SHAPE- AND SIZE-CONTROLLED MICROGEL PARTICLES
Daniel Debroy, John Oakey, and Katie Dongmei Li-Oakey
University of Wyoming, USA

A MICROCHIP ELECTROPHORESIS – ELECTROCHEMICAL DETECTION (ME-EC) SYSTEM TO MONITOR OXIDATIVE MODIFICATIONS OF PROTEIN-BOUND TYROSINE AND PHENYLALANINE AS IN VIVO BIOMARKERS FOR OXIDATIVE STRESS
Dhanushka B. Weerasekara and Susan M. Lunte
University of Kansas, USA

COMBINATIONAL DIFFUSIOPHORETIC AND ELECTROPHORETIC NANOPARTICLE SEPARATION
Kyunghun Lee¹, Jongwan Lee¹, Dogyeong Ha¹, Minseok Kim², and Taesung Kim¹
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HIGH-THROUGHPUT DROPLET MICROREACTOR FOR CATALYTIC ACTIVITY SCREENING OF SOLID CATALYST PARTICLES
Jeroen C. Vollenbroek¹, Anne-Eva Nieuwelink², Johan G. Bomer¹, Ronald M. Tiggelaar¹, Albert Van den Berg¹, Bert M. Weckhuysen², and Mathieu Odijk¹
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SYNTHESIS OF MONODISPERSE GOLD NANOPARTICLES IN FOUR PHASES MICROFLUIDICS BY CONTROLLING FLOW RATE DIFFERENCE
Yuanwei Wang, Hayato Ogawa, and Hiromasa Yagyu
Kanto Gakuin University, JAPAN
W218.h A REPULSIVE POINT-SOURCE DIFFUSIOPHORESIS DEVICE FOR NANOPARTICLE SEPARATION
Sangjin Seo, Dogyeong Ha, and Taesung Kim
Ulsan National Institute of Science and Technology (UNIST), KOREA

W219.h COMPARATIVE STUDY OF LIQUID-PHASE AUTOXIDATION OF INDAN IN MICROFLUIDIC REACTORS
Muhammad Siddiquee, Yucheng Wu, and Neda Nazemifard
University of Alberta, CANADA

W220.h PEO CAN IMPROVE THE RESOLUTION OF SIZE-BASED SEPARATIONS IN SPIRAL CHANNELS
Alex Jafek, Haidong Feng, Hayden Brady, Raheel Samuel, and Bruce Gale
University of Utah, USA

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M220.h A MICROFLUIDIC CAVITATION-MICROSTREAMING DNA EXTRACTOR
Abdi M. Kaba, Hyunjin Jeon, and Dohyun Kim
Myongji University, KOREA

M221.h DEVELOPMENT OF A SIMPLE LAB-ON-A-CHIP SYSTEM FOR THE SENSITIVE IMMUNOASSAY-BASED DETECTION OF BACTERIAL PATHOGENS FROM FOOD SAMPLES
Suk-Jung Choi and Hee-Jung Kim
Gangneung-Wonju National University, KOREA

M222.h GRAVITY-DRIVEN MICROFLUIDIC SPUTUM HOMOGENIZER
Korakot Boonyaphon and Sung-Jin Kim
Konkuk University, KOREA

M223.h MICROCHANNELS FOR PRECONCENTRATING SWEAT
Hirotada Hirma1, RyutarO Otahara2, and Masanori Hayase2
1National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and
2Tokyo University of Science, JAPAN

M224.h MITIGATION OF CHANNEL CLOGGING IN A DETERMINISTIC LATERAL DISPLACEMENT BLOOD PROCESSING DEVICE BY POLYAMINE INDUCED DNA FOLDING
Tatsuya Yoshizawa1, Yuki Jingu1, Yuki Oka1, Masaru Irita1, Toshihiro Suzuki2,3, Tetsuya Nakatsura3, Masato Kubo1, Ryushin Mizuta1, and Masanori Hayase1
1Tokyo University of Science, JAPAN, 2Teikyo University, JAPAN, and
3National Cancer Center Japan, JAPAN
M225.h ON CHIP PLATFORM FOR TAU PROTEIN AGGREGATION AND ALZHEIMER'S DRUG DOSE RESPONSE
Shubha Jain, Lopamudra Das, Sarpras Swain, Lopamudra Giri, and Harikrishnan Narayanan Unni
Indian Institute of Technology (IIT Hyderabad), INDIA

M226.h QUICK ISOLATION OF CIRCULATING TUMOR CELLS FROM HUMAN WHOLE BLOOD BY A NOVEL MICROFUIDIC DESIGN
Sung-Chi Tsai, Yi-Jen Chen, Wen-Yi Chang, Pyea-Yoo Kim, Yun-Chi Tsai, and Howard Doong
LifeCode Biotech Co., TAIWAN

M227.h A SINGLE TUBE ASSAY BASED ON DUAL-ELECTROSTATIC INTERACTION STRATEGY FOR RAPID AND ULTRASENSITIVE PATHOGENIC BACTERIA DETECTION
Feixiong Chen¹, Dao Thi Thuy Nguyen², Yong Shin², and Tae Yoon Lee¹
¹Chungnam National University, KOREA and
²University of Ulsan College of Medicine, KOREA

T221.h AMPHIPHILIC POLY(α)GLUTAMATE AS RNA INTERFERENCE NANCHARRIER TO BRAIN TUMORS
Adva Krivitsky, Eilam Yeini, Sabina Pozzi, Sapir Golan, Evgeni Pisarevsky, and Ronit Satchi-Fainaro
Tel-Aviv University, ISRAEL

T222.h CAPACITIVE SENSING OF TRIGLYCERIDE FILM REACTIONS TO DUODENAL CONTENTS
George E. Banis, Luke A. Beardslee, Justin M. Stine, and Reza Ghodssi
University of Maryland, USA

T223.h INTEGRATED PROTOTYPE FOR POINT-OF-CARE DIAGNOSIS OF CHLAMYDIA TRACHOMATIS INFECTIONS
Shivani Sathish, Kazumi Toda-Peters, and Amy Q. Shen
Okinawa Institute of Science and Technology (OIST), JAPAN

T224.h MICROFLUIDIC SYSTEM USING A HOMOBIFUNCTIONAL IMIDOESTER FOR SIMULTANEOUS BIOMOLECULES ISOLATION
Yoon Ok Jang¹, Choong Eun Jin¹, Bonhan Koo¹, Tae Yoon Lee², and Yong Shin¹
¹University of Ulsan College of Medicine, KOREA and
²Chungnam National University, KOREA

T225.h NEURONAL CULTURE AT SINGLE CELL LEVEL FOR CREATION OF BIOLOGICAL NEURONAL NETWORK
Stephany Mai Nishikawa¹, Soo Hyeon Kim¹, Yoshiho Ikeuchi¹, Timothée Levi¹², and Teruo Fujii¹
¹University of Tokyo, JAPAN and ²University of Bordeaux, FRANCE
T226.h PERFORMANCE OF USING DEFORMABILITY OF ENDOMETRIAL CELLS AS A DIAGNOSTIC TEST FOR ENDOMETRIOSIS
Ahmad Altayyeb1, Essam Othman2, Maha Khashbah2, Abdelhady Esmaeel2, Mohamed El-Mokhtar2, Cornelis Lambalk3, Velja Mijatovic3, and Mohamed Abdelgawad2,4
1Zewail City of Science and Technology, EGYPT, 2Assiut University, EGYPT, 3Amsterdam University Medical Center, THE NETHERLANDS, and 4American University of Sharjah, UAE

T227.h SIMULTANEOUS, TRIPLEX COLOURIMETRIC MEASUREMENT OF CARDIAC BIOMARKERS IN FLUOROPOLYMER MICROFLUIDIC STRIPS
Nuno Reis1,2,3, Ana Castanheira1,2, Filipa Pereira1, and Alexander Edwards1,4
1Capillary Film Technology Ltd., UK, 2Loughborough University, UK, 3University of Bath, UK, and 4University of Reading, UK

T228.h SYNTHESIS OF BORON-10 ENRICHED CHITOSAN COATED PVA/ALGINATE NANOPARTICLES (CHI/ALG-PVA-B NPS) BY ELECTROSPRAY Technique TO TREAT ORAL SQUAMOUS CELL CARCINOMA BY BORON NEUTRON CAPTURE THERAPY (BNCT)
Han-Lin Cho1, Venkanagouda S. Goudar1, Wei-Jen Chan1, and Fan-Gang Tseng1,2
1National Tsing Hua University, TAIWAN and 2Academia Sinica, TAIWAN

W221.h 3-DIMENSIONAL PAPER-BASED SAMPLE PREPARATION DEVICE FOR EXOSOME ISOLATION/PRECONCENTRATION
Hyerin Kim1, Kyu Hyoun Lee2, Sung Il Han3, Dongho Lee3, Yong Kyoung Yoo1, Cheonjung Kim1, Junwoo Lee1, Ganghyeon Kim1, Seok Chung4, Dohwan Lee1,5, and Jeong Hoon Lee1
1Kwangwoon University, KOREA, 2Yonsei University, KOREA, 3CALTH. Inc., KOREA, 4Korea University, KOREA, and 5Georgia Institute of Technology, USA

W222.h ASSESSMENT OF CHIMERIC ANTIGEN RECEPTOR T (CAR-T) CELL CYTOTOXICITY USING DROPLET MICROFLUIDICS
Haitao Wang1, Johnny Kuan-Un Wong1, Jingxuan Shi2,3, Yanwei Jia1, Chuxia Deng1, Lianmei Jiang4, Peng Li2, and Ada Hang-Heng Wong1
1University of Macau, MACAU, 2Chinese Academy of Science, CHINA, 3University of Chinese Academy of Sciences, CHINA, and 4Macquarie University, AUSTRALIA

W223.h GUIDING 3D PODOCYTE CELLS CULTIVATION ON THE OUTER COAXIAL ALGINATE TUBES TO MAKE GLOMERULAR ON THE CHIP
Yin-Yun Chen1, Jyun-Wei Chen1, Jie-Sheng Chen1, Yi-Ching Ko2, Hsiang-Hao Hsu2, and Fan-Gang Tseng1,3
1National Tsing Hua University, TAIWAN, 2Kinkou Chang Gung Memorial Hospital, TAIWAN, and 3Academia Sinica, TAIWAN

W224.h MACROPHAGE ACCELERATES INFLAMMATION OF PANCREATIC β-CELL AGGREGATES
Marie Shinohara, Thalia Nghiem, Qiao You Lau, Fumiya Tokitou, and Yasuyuki Sakai
University of Tokyo, JAPAN
MINIATURIZED EXOSOME ISOLATION SYSTEM USING CATIONIC POLYMER AND SYRINGE FILTER
Chanhee Park, Jinhyun Kim, Hoyoon Lee, Jina Choi, Hyunsung Kim, and Sehyun Shin
Korea University, KOREA

OPTIMIZATION OF THE THIN-LAYERED ELISA AND STORAGE OF THE MICROCHIP
Adelina Smirnova, Ryoichi Ohta, Kazuma Mawatari, and Takehiko Kitamori
University of Tokyo, JAPAN

PAPER-BASED MINIATURIZED DEVICE FOR DETECTION OF BETA-LACTAM ANTIBIOTICS IN MILK
Sammer-ul Hassan¹, Prashant Goel², Naresh Kumar², and Xunli Zhang¹
¹University of Southampton, UK and ²National Dairy Research Institute, INDIA

SINGLE LASER-DETECTOR BASED MULTIPLEXED FLUORESCENCE MEASUREMENT IN DROPLET MICROFLUIDICS USING ON-CHIP FIBRE OPTICS
Ambili Mohan¹, Preksha Gupta², Taslimarif Saiyed², and Anil Prabhakar¹
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TOWARD A DROPLET-BASED FLUORESCENCE ASSAY FOR CRISPR-CAS9 ENGINEERING
Alexandre Baccouche, Kevin Montagne, Hiroshi Nishimasu, Nozomu Yachie, Osamu Nureki, Teruo Fujii, and Anthony J. Genot
University of Tokyo, JAPAN

ACOUSTOPHORESIS IN GEL-FILLED MICROCHANNELS TOWARDS IN VIVO-LIKE CELL MANIPULATION AND CELL MIGRATION STUDIES
Michael Heiss and Rune Barnkob
Technical University of Munich, GERMANY

AXIAL ELECTROKINETIC TRAPPING OF SINGLE PARTICLES AT KHZ FEEDBACK RATES
Filip Strubbe, Vincent De Clercq, and Yerzhan Y. Ussembayev
Ghent University, BELGIUM

COUPLING ELECTROTHERMAL ROLLS AND DIELECTROPHORESIS FOR CONTINUOUS-FLOW SEPARATION OF NANOPARTICLES
Stanley D.E. Kushigbor and Levent Yobas
Hong Kong University of Science and Technology, HONG KONG
M231.h DNA EXTRACTION FROM CULTURE MEDIUM BY USING EWOD SYSTEM
Chen-En Chiang¹, Tzu-Hui Wu², Pei-Shin Jiang², Chien-An Chen², and Da-Jenf Yao¹
¹National Tsinghua University, TAIWAN and
²Industrial Technology Research Institute (ITRI), TAIWAN

M232.h FERROHYDRODYNAMICS OF BACTERIAL SWARM CONTROL
Nima Mirkhani, Thuy Trinh Nguyen, Tinotenda Gwisai, Michael Christiansen, and Simone Schuerle
ETH Zürich, SWITZERLAND

M233.h HIGH EFFICIENT AND SELECTABLE CONCENTRATION OF BACTERIA AND SERS PARTICLES THROUGH THE SYNERGIC EFFECT OF ACEOF AND DEP FOR RAPID BACTERIAL DETECTION FROM WHOLE BLOOD
Kuan-Hung Chen¹, Shih-Han Lee¹, Tseren-Onolt Ishdorj², Chun-Wei Lee¹, and Fan-Gang Tseng¹,³
¹National Tsing Hua University, TAIWAN, ²Mongolian University of Science and Technology, MONGOLIA, and ³Academia Sinica, TAIWAN

M234.h MICRO-SWIMMER TRAP-AND-RELEASE USING STANDING SURFACE ACOUSTIC WAVES
Mingyang Cui¹, Minji Kim¹, Mathieu Bottier¹,², Philip V. Bayly¹, and J. Mark Meacham¹
¹Washington University, St. Louis, USA and
²Washington University School of Medicine, St. Louis, USA

M235.h SIMPLE AND PASSIVE MERGING-ON-DEMAND METHOD FOR REACTION ENGINEERING IN DROPLET MICROFLUIDICS
Medina Hamidović¹, Uli Marta², Helen Bridle², Gerold Fink¹, Robert Wille¹, Andreas Springer², and Werner Haselmayr¹
¹Johannes Kepler University Linz, AUSTRIA and ²Heriot-Watt University, UK

T229.h A FULLY INTEGRATED WEARABLE AC ELECTROTHERMAL ACTUATION PLATFORM FOR BIOFLUID MANIPULATION
Haisong Lin, Hannaneh Hojajii, Shuyu Lin, Christopher Yeung, Yichao Zhao, Bo Wang, Meghana Malige, Yibo Wang, Kimber King, Wenzhuo Yu, Jiawei Tan, Zhaoqing Wang, Xuanbing Cheng, and Sam Emaminejad
University of California, Los Angeles, USA

T230.h CAPILLARY FILLING OF COMPLEX FLUIDS IN MICROCHANNELS WITH ALTERED WETTABILITY
Kiarash Keshmiri¹, Haibo Huang², Abewab Jemere³, and Neda Nazemifard¹
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McGill University, CANADA
T232.h  DOUBLE EMULSION GENERATION USING CENTRIFUGAL MICROFLUIDIC PLATFORMS
Masoud Madadelahi¹, Marc J. Madou¹,², Yeganeh Dorri Nokoorani³, Amir Shamloo³, and Sergio O. Martinez-Chapa¹
¹Tecnologico de Monterrey, MEXICO, ²University of California, Irvine, and USA, ³Sharif University of Technology, IRAN

T233.h  FLUIDIZATION AND WALL SLIP OF SOFT GLASSY MATERIALS BY CONTROLLED SURFACE ROUGHNESS
Davide Ferraro¹, Daniele Filippi¹, Ladislav Derzsi¹,⁴, Piotr Garstecky⁴, Giampaolo Mistura¹, Matteo Lulli², Massimo Bernaschi³, Mauro Sbragaglia², and Matteo Pierno¹
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T234.h  IMAGING MICROFLUIDIC FLOWS WITH DNA MICROSCOPY
Hayato Onoue, Nicolas Lobato-Dauzier, Shu Okumura, Stephane Poulain, Soo Hyeon Kim, Teruo Fujii, and Anthony J. Genot
University of Tokyo, JAPAN

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Kiel University, GERMANY

T236.h  WIDE-FIELD IMAGING SYSTEM FOR DIGITAL CFU ASSAY THROUGH 10-MILLION DROPLET ANALYSIS
Sunghyun Ki, Juhwa Lee, Joel Sánchez Barea, and Dong-Ku Kang
Incheon National University, KOREA

W230.h  AUTOMATED PRE-ANALYTIC PROCESSING OF WHOLE SALIVA ON A CENTRIFUGAL MICROFLUIDIC PLATFORM FOR PROTEIN BIOMARKER ANALYSIS
Benita Johannsen¹, Lara Müller¹, Desirée Baumgartner¹,², Lena Karkossa¹, Susanna M. Früh¹,², Nagihan Bostanci³, Michal Karpišek⁴, Roland Zengerle¹,², Nils Paust¹,², and Konstantinos Mitsakakis¹,²
¹Hahn-Schickard, GERMANY, ²University Freiburg, GERMANY, ³Karolinska Institutet, SWEDEN, and ⁴BioVendor Laboratorni Medicina a.s., CZECH REPUBLIC

W231.h  CELLPROFILER IS A FIT TOOL FOR DROPLET DIGITAL IMAGE ANALYSIS
Simona Bartkova, Marko Vendelin, Pille Pata, and Ott Scheler,
Tallinn University of Technology, ESTONIA

W232.h  DIFFERENTIAL SECOND-DEGREE OF FREEDOM CENTRIFUGAL MICROFLUIDICS
Eimear Higgins¹, Cian Merne¹, Patrick Wogan¹, David Collins¹, Sarai M. Torres-Delgado², Dario Mager², and David J. Kinahan¹
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Tae Jae Lee1, Moon Keun Lee1, Nam Ho Bae1, Kyoung G. Lee1, Yoo Min Park1,
Yun Seok Heo2, and Seok Jae Lee1
1National NanoFab Center (NNFC), KOREA and 2Keimyung University, KOREA

W234.h  FLOW PROFILE THROUGH EXPOSED POROUS MEDIA IN CENTRIFUGAL
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Daniel M. Kainz1, Susanna M. Früh1,2, Tobias Hutzenlaub1,2, Roland Zengerle1,2,
and Nils Paust1,2
1University of Freiburg, GERMANY and 2Hahn-Schickard, GERMANY

W235.h  MAPPING COMPLEX PRESSURE FIELDS USING SWIMMING
MICROORGANISMS
Minji Kim, Philip V. Bayly, and J. Mark Meacham
Washington University, St. Louis, USA

W236.h  OIL/WATER PARTITIONING AND MICRODIALYSIS FOR CONTROLLED
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Michal Vasina1, Tomas Buryska1,2, Pavel Vanacek1,2, Fabrice Gielen3,4, Liisa V. Vliet4,
Zdenek Pilat2, Jan Jezek3, Pavel Zemanek3, Jiri Damborsky1,2, Florian Hollfelder4,
and Zbynek Prokop1,2
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REPUBLIC, 3University of Exeter, UK, 4University of Cambridge, UK, and
5Czech Academy of Sciences, CZECH REPUBLIC

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M236.h  3D PRINTING PROTEIN HYDROGEL CHIPS
Haiyang Jia and Petra Schwille
Max-Planck-Institute of Biochemistry, GERMANY

M237.h  LARGE-SCALE FABRICATION OF MICROFLUIDIC CHIPS WITH THREE-
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Trieu Nguyen, Vinayaka Aaydha Chidambara, Dang Duong Bang, and Anders Wolff
Technical University of Denmark, DENMARK

M238.h  WET SPINNING OF A LOW MOLECULAR WEIGHT HYDROGEL TOWARDS 3D
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Anaïs Chalard, Sandrine Assié-Souleille, Charline Blatché, Barbara Lonetti,
Nathalie Saffon-Merceron, Isabelle Loubinoux, Laurence Vaysse, Laurent Malaquin,
Juliette Fitremann, and Pierre Joseph
Université de Toulouse, FRANCE
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Satoko Sasaki and Kae Sato  
*Japan Women's University, JAPAN*

**T238.h**  MACRO VALVE AND PERISTALTIC PUMP WITH CLEANROOM-FREE FABRICATION FOR MULTIPLEXED ORGAN-ON-CHIP APPLICATIONS  
Elsbeth G.B.M. Bossink, Anke R. Vollertsen, Loes I. Segerink, and Mathieu Odijk  
*University of Twente, THE NETHERLANDS*

**T239.h**  RAPID FABRICATION OF PMMA/PET-E/PMMA FOR THERMOPLASTIC MICROFLUIDIC MEMBRANE DEVICES  
Henrik Persson\(^1,2,3\), Siwan Park\(^1\), Michael Mohan\(^1\), Edmond Young\(^1\), and Craig A. Simmons\(^1,3\)  
\(^1University of Toronto, CANADA, ^2Lund University, SWEDEN, and ^3Ted Roger’s Centre for Heart Research, CANADA*

**W237.h**  3D BIOPRINTING OF ALGINATE HYDROGEL SCAFFOLDS USING FINE CALCIUM CHLORIDE MIST DROPLETS  
Ben MacCallum, Emad Naseri, Wyatt MacNevin, and Ali Ahmadi  
*University of Prince Edward Island, CANADA*

**W238.h**  FABRICATION OF 3D-MICROSTRUCTURES USING A DMD-BASED TECHNOLOGY: PROOF OF CONCEPT AND APPLICATION  
Marie Camman\(^1,2\), Catherine Villard\(^2\), Audric Jan\(^2\), Guillaume Laffite\(^2\), Josselin Ruaudel\(^1\), Olivier Lesage\(^2\), and Matthieu Opitz\(^1\)  
\(^1Alvéole, FRANCE and ^2Université Paris Sciences et Lettres, FRANCE*

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Trieu Nguyen and Anders Wolff\(^1\)  
*Technical University of Denmark, DENMARK*

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**Other Applications of Microfluidics**

**M239.h**  SOFT ACTUATORS WITH PROGRAMMABLE MAGNETIC PARTICLES  
Heng-Yu Shen\(^1\), Chih-Cheng Cheng\(^2\), Tien-Kan Chung\(^2\), and Yen-Wen Lu\(^1\)  
\(^1National Taiwan University, TAIWAN and ^2National Chiao Tung University, TAIWAN*

**W240.h**  MICROFLUIDICS-BASED RANDOM NUMBER GENERATOR DRIVEN BY FINGER PUSH AND GRAVITY FORCE  
Korakot Boonyaphon\(^1\), Shuichi Takayama\(^2\), and Sung-Jin Kim\(^1\)  
\(^1Konkuk University, KOREA and ^2Georgia Institute of Technology, USA*
M240.h AN INTEGRATED GRAPHENE SENSOR FOR CLINICAL BIOMARKERS DETECTION IN A DIFFERENTIAL AND PORTABLE WAY
Yunlu Pan, Cong Huang, Wenwen Shao, and Zhuang Hao
Harbin Institute of Technology, CHINA

M241.h DEVELOPMENT OF AN RAPID DIAGNOSTIC TEST MICROFLUIDIC CHIP USING POLYCARBONATE FILM FOR MALARIA DETECTION
Yong Tae Kim, Jihye Choi, and Heungsop Shin
Korea Polytechnic University, KOREA

M242.h INTEGRATED SYSTEM USING A GAS PRECONCENTRATOR AND A COLORIMETRIC SENSOR ARRAY FOR EXHALED BREATH ANALYSIS
Hye-Lim Kang¹, Sumi Yoon¹, Dong-Ki Hong¹, Won-Hye Kim¹, Woo Kyeong Seong¹, Hana Cho¹, Dong-Sik Shin², and Kook-Nyung Lee¹
¹Korea Electronics Technology Institute, KOREA and
²Sookmyung Women’s University, KOREA

M243.h LIGHT-CONTROLLED COLLECTION-AND-RELEASE OF BIOMOLECULES BY AN ON-CHIP NANOSTRUCTURED DEVICE
Vadim Krivitsky, Ella Borberg, Marina Basovich, Omri Heifler, and Fernando Patolsky
Tel Aviv University, ISRAEL

M244.h MICROTITER PLATE VIABILITY ASSAY TO EXTEND RESULTS OF THERMAL SENSOR WITH DISINFECTANTS ETHANOL, PERACETIC ACID AND SODIUM HYPOCHLORITE
Tobias Wieland, Jan K. Kotthaus, Michael Bergmann, and Gerald A. Urban
University of Freiburg, GERMANY

M245.h MULTIPLEXED ELECTROCHEMICAL PLATFORM FOR SEPSIS DIAGNOSTICS
Uroš Zupančič¹, Pawan Jolly², Pedro Estrela¹, Despina Moschou¹, and Donald E. Ingber²,³
¹University of Bath, UK, ²Harvard University, USA, and
³Boston Children’s Hospital and Harvard Medical School, USA

M246.h PORTABLE FLOW CELL FOR DETECTION OF MULTIPLE MICROCHANNELS IN A SINGLE CHIP
Sammer-ul Hassan and Xunli Zhang
University of Southampton, UK

M247.h SPECIFIC DETECTION OF POINT-MUTATION-POSITION USING BIOLOGICAL NANOPORE
Ping Liu, Keisuke Shimizu, and Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN
3D NANOPOROUS CARBON MICROELECTRODES WITH SPONGE-LIKE EDGE STRUCTURES FOR HEAVY METAL SENSING
Jongmin Lee and Heungjoo Shin
Ulsan National Institute of Science and Technology (UNIST), KOREA

ANTIBODY-FREE ASSAY FOR ELECTROCHEMICAL β-LACTAM MONITORING
University of Freiburg, GERMANY

EFFECT OF ADDITIONAL THIN LAYER ON CHEMICAL SWELLING-INDUCED COLOR CHANGE IN COLLOIDAL CRYSTAL-PDMS COMPOSITE
Hyung-Kwan Chang, Hyojeong Kim, and Jungyul Park
Sogang University, KOREA

INTEGRATING APTAMERS WITH PAPER-BASED MICROSCALE ANALYTICAL DEVICES FOR BIOMEDICAL MONITORING
Meng Liu, Christy Liu, Yingfu Li, and John D. Brennan
McMaster University, CANADA

LIVE QUANTIFICATION OF CELL VIABILITY VIA NEUTRAL RED UPTAKE USING LENS-FREE IMAGING
Brian J. Nablo², Jung-Joon Ahn², Kiran Bhadriraju¹, Jong Muk Lee², and Darwin Reyes¹
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MICROWAVE RADARS FOR LABEL FREE SINGLE-CELL DETECTION IN REAL TIME SYNCHRONIZED WITH OPTICAL IMAGE
Arda Secme, Hadi S. Pisheh, H. Dilara Uslu, and Selim Hanay
Bilkent University, TURKEY

PASSIVE WIRELESS SENSING OF MICROTISSUE PROPERTIES
Lei Dong¹², Mario M. Modena¹, and Andreas Hierlemann¹
¹ETH Zürich, SWITZERLAND and ²Southeast University, CHINA

REAL-TIME AND MULTIPLEXED IMPEDANCE MONITORING OF ADIPOGENIC DIFFERENTIATION
Lianmei Jiang¹², Junjun Li¹, Jianmiao Liu³, and Yong Chen¹
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University of Maryland, USA

INLAID MICROFLUIDICS FOR NUTRIENT MONITORING
Sean C. Morgan, Edward A. Luy, and Vincent J. Sieben
Dalhousie University, CANADA

LABEL-FREE DISCRIMINATION FOR CARCINOMA CELLS THROUGH IONIC CURRENT SIGNALS
Kazumichi Yokota, Muneaki Hashimoto, Kazuaki Kajimoto, Masato Tanaka, and Masatoshi Kataoka
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

LOW-COST GLUCOSE SENSOR USING COMPACT DISC SUBSTRATES
Nityanand Kumawat¹, Priyamvada Venugopalan¹, and Sunil Kumar¹,²
¹New York University, Abu Dhabi, UAE and ²New York University, USA

MULTIPLEX, LABEL-FREE QUANTIFICATION OF miRNA BY REFLECTIVE PHANTOM INTERFACE
Giuliano Zanchetta, Thomas Carzaniga, Luka Vanjur, Luca Casiraghi, Tommaso Bellini, and Marco Buscaglia
Università degli Studi di Milano, ITALY

PLANT WATER POTENTIAL SENSOR USING NANO POROUS ANODIC ALUMINIUM OXIDE
Sanghoon Han, Tae Woong Yun, and Junghoon Lee
Seoul National University, KOREA

SENSITIVITY IMPROVEMENT OF ELECTROCHEMICAL IMMUNOASSAY USING MAGNETIC PARTICLES TO KEEP A BARE INDIUM TIN OXIDE (ITO) ELECTRODE
Sunga Song, Young Joo Kim, Hye-Lim Kang, Sumi Yoon, Dong-Ki Hong, Won-Hyo Kim, Woo Kyeong Seong, and Kook-Nyung Lee
Korea Electrics Technology Institute, KOREA