



Preliminary Program

All indicated times are Central Eastern Time (ET)
The Executive Committee reserves the right to amend the program if necessary.

Sunday, 13 October

All indicated times are Central Eastern Time (ET)

Morning Workshops

09:00 – 12:00

Registration/Check-In will be open from 08:15 – 09:15

Workshop 1: 3D PRINTING & BIO-PRINTING FOR MICROFLUIDICS

Workshop 2: FRUGAL DIAGNOSTICS NETWORK FOR GLOBAL HEALTH

**Workshop 3: ADVANCING MICROELECTRONICS AND FUTURE BIOSENSOR
FABRICATION TECHNOLOGIES**

Workshop 4: MICROFLUIDICS FOR NEUROSCIENCE

Workshop 5: MICROFLUIDICS STANDARDIZATION & REGULATION

Workshop 6: ON-CHIP SENSING FOR ORGAN-ON-CHIP SYSTEMS

Afternoon Workshops

14:00 – 17:00

Registration/Check-In will be open from 13:45 - 14:15

Workshop 7: GLOBAL HEALTH DIAGNOSTICS – AN END USERS PERSPECTIVE

**Workshop 8: TUMOR MICROENVIRONMENTS ON CHIPS: FROM IN VITRO 3D
CULTURES TO EX VIVO PATIENT EXPLANTS**

**Workshop 9: AI-ENHANCED SINGLE-CELL DATA ANALYTICS FOR
LABEL-FREE CYTOMETRY**

Workshop10: SMART MATERIALS AND ADAPTIVE SURFACES FOR MICROFLUIDICS

Workshop11: HANDS-ON 3D PRINTING

Workshop12: EXOSOME DIAGNOSTICS AND THERAPEUTICS

**Workshop13: MICROFLUIDIC LAB-ON-A-CHIP SYSTEMS FOR
FOOD SAFETY AND QUALITY EVALUATION**

17:00 - 19:00

Conference Registration and Check-In

Wine and Cheese Reception

17:00 - 19:00

Exhibit Hall

Monday, 14 October

All indicated times are Central Eastern Time (ET)

Opening Remarks

08:30 - 09:00

MicroTAS 2024 Conference Chairs

David Juncker, *McGill University, CANADA*

Aaron Wheeler, *University of Toronto, CANADA*

Plenary Presentation I

08:30

MICROFLUIDIC TOTAL ANALYSIS SYSTEMS FOR THE SKIN

John A. Rogers

Northwestern University, USA

09:15 - 09:30

Transition

Session 1A1 - Liquid Biopsies and CTCs

09:30

COMPREHENSIVE TUMOR CELL-BASED LIQUID BIOPSY USING HIGH-THROUGHPUT MICROFLUIDIC ENRICHMENT OF LEUKAPHERESIS PRODUCTS

Avanish Mishra¹, Shih-Bo Huang¹, Jon F. Edd¹, Ben S. Wittner¹, Shyamala Maheswaran¹, David T. Miyamoto¹, Daniel A. Haber^{1,2}, Mehmet Toner^{1,3}

¹Harvard Medical School, USA, ²Howard Hughes Medical Institute, USA, and

³Shriners Children's Boston, USA

09:50

BRAIN-DERIVED EXTRACELLULAR VESICLE MICRORNAS AND PLASMA PROTEINS AS BLOOD-BASED BIOMARKERS FOR THE DIFFERENTIAL DIAGNOSIS OF NEURODEGENERATIVE DEMENTIA

Stephanie Yang¹, Andrew Lin¹, Hanfei Shen¹, Jean Rosario¹, Leah K. Forsberg², Bradley F. Boeve², Owen A. Ross², Pamela J. McLean², David Issadore¹

¹University of Pennsylvania, USA and ²Mayo Clinic, USA

10:10

BIOMECHANICS OF CIRCULATING CANCER CELLS: FOCUS ON THE ROLE OF VIMENTIN

Emile Gasser^{1,2}, Arthur Salles^{2,3}, Kyohei Terao⁴, Emilie Su², Nassiba Abbade^{1,2}, Kotryna Vaidžiulytė¹, Jean-Baptiste Manneville², Matthieu Piel¹, Jean-Yves Pierga^{1,2}, Catherine Villard²

¹Institut Curie, FRANCE, ²Université Paris Cité, FRANCE, ³Fluigent SA, FRANCE, and

⁴Kagawa University, JAPAN

Session 1B1 - Micromotors and Microswimmers

09:30

THIN-STRUCTURE LIGHT-TRIGGERED SILICA-PARTICLE DRIVING SYSTEM FOR THE ELIMINATION OF THERMAL CONVECTION AIMED FOR LONG-TIME TRANSPORTATION

Natsumi Watanabe, Hiroaki Onoe

Keio University, JAPAN

09:50

NANO-KIRIGAMI MICROROTORS CONTROLLED BY OPTOELECTRONIC TWEEZERS

Bingrui Xu, Xiaorong Hong, Jiafang Li, Rongxin Fu, Hang Li, Shuailong Zhang

Beijing Institute of Technology, CHINA

- 10:10 DNA DROPLETS WITH CELL-RECOGNITION FUNCTIONS TOWARD IMMUNE CELL-LIKE MOLECULAR ROBOTS**
 Ryoya Hasegawa¹, Jing Gong¹, Kei Goraku¹, Shin-Ichiro M. Nomura², Masahiro Takinoue¹
¹Institute of Science Tokyo, JAPAN and ²Tohoku University, JAPAN

Session 1C1 - Blood Collection, Processing, and Analysis

- 09:30 MICROFLUIDIC PASSIVE DEVICE FOR PLASMA ENRICHED IN PLATELETS SEPARATION FROM WHOLE BLOOD MADE OF ACRYLIC AND TAPE**
 Pablo E. Guevara-Pantoja¹, Yara Alvarez-Braña¹, Jon Mercader-Ruiz^{1,2},
 Fernando Benito-Lopez¹, Lourdes Basabe-Desmonts^{1,3}
¹University of the Basque Country, SPAIN, ²Hospital Vithas, SPAIN, and
³Basque Foundation of Science, SPAIN
- 09:50 HEMORHEOLOGY USING TWO FOCI FLUORESCENCE CORRELATION SPECTROSCOPY**
 Andy V. Le^{1,2}, Maya Salame², Muriel Giansily Blaizot³, Viviana Clavería¹, Emmanuel Margeat¹,
 Marianne Fenech², Manouk Abkarian¹
¹Centre de Biologie Structurale, FRANCE, ²University of Ottawa, CANADA, and ³CHU Saint Eloi, FRANCE
- 10:10 INTEGRATED PLASMAPHERESIS SYSTEM FOR BLOOD SAMPLING IN NEONATAL CARE**
 Amal Nath¹, Wei Qiu¹, Thierry Baasch¹, Andreas Lenshof¹, Marie Larsson^{2,3}, Linda Nilsson³,
 Magnus Gram³, David Ley³, Thomas Laurell¹
¹Lund University, SWEDEN, ²Hospitals of Halland, SWEDEN, and ³Skåne University Hospital, SWEDEN

10:30 - 11:00 Break: Exhibit and Poster Inspection

Session 1A2 - Organ-on-a-Chip 1

- 11:00 TUMOR SHAPE MATTERS: A MICROFLUIDIC PLATFORM FOR GROWTH AND RELEASE OF PATIENT-DERIVED CANCER ORGANOID**
 Sina Kheiri^{1,2}, Ilya Yakavets¹, Jennifer Cruickshank^{1,3}, Fatemeh Ahmadi¹, David W. Cescon^{1,3},
 Edmond W.K. Young¹, Eugenia Kumacheva¹
¹Massachusetts Institute of Technology, USA, ²University of Toronto, CANADA, and
³University Health Network, CANADA
- 11:20 A BIOENGINEERED MODEL OF HUMAN PLACENTAL EXPOSURE TO HEAVY METALS DURING PREGNANCY**
 Pouria Fattahi¹, Mousa Younesi¹, Won Dong Lee², Joshua D. Rabinowitz², Lauren M. Aleksunes³, Dan D. Huh¹
¹University of Pennsylvania, USA, ²Princeton University, USA, and ³Rutgers University, USA
- 11:40 FLOW IN A VASCULARIZED HEART-ON-A-CHIP MODEL**
 Adriana Blazeski^{1,2}, Jules Allbritton-King¹, Marie A. Floryan², Roger D. Kamm², Guillermo García-Cardena¹
¹Brigham and Women's Hospital / Harvard Medical School, USA and
²Massachusetts Institute of Technology, USA
- 12:00 STEM CELL-DERIVED VESSELS-ON-CHIP FOR CARDIOVASCULAR DISEASE MODELING**
 Caroline Remmert¹, Maren Marder¹, Julius A. Perschel¹, Munkhtur Otgonbayar¹, Christine von Toerne¹,
 Stefanie Hauck¹, Judith Bushe¹, Annette Feuchtinger¹, Bilal Sheikh^{1,2}, Michel Moussus¹, Matthias Meier^{1,2}
¹Helmholtz Center Munich, GERMANY and ²University of Leipzig, GERMANY

Session 1B2 - Liquid Control and Routing

- 11:00 A COMPACT HYDRAULIC HEAD AUTO-REGULATING MODULE (CHARM) FOR LONG-TERM CONSTANT GRAVITY-DRIVEN FLOW MICROFLUIDICS**
Fan Xue, Ulri N. Lee, Joel Voldman
Massachusetts Institute of Technology, USA
- 11:20 A MICROFLUIDIC TRANSISTOR FOR AUTOMATIC CONTROL OF LIQUIDS**
Kaustav A. Gopinathan, Avanish Mishra, Baris R. Mutlu, Jon F. Edd, Mehmet Toner
Massachusetts General Hospital, USA
- 11:40 INERTIAL BALLISTIC MICROFLUIDICS AS A PLATFORM FOR BIOMEDICAL AND CHEMICAL ENGINEERING APPLICATIONS**
David Fernandez Rivas^{1,2}, Ulisses J. Gutierrez Hernandez¹, Jelle J. Schoppink¹, Diana van der Ven¹, Keerthana Mohan¹, Ruchi Bansal¹, Carlos Cuartas Velez¹, Nienke Bosschaart¹, Akash Raman¹, Arturo Susarrey Arce¹, Ian Hunter², Gareth H. McKinley², Andrew Keith Dickerson¹, Christophe Moser¹, Miguel Ángel Quetzeri¹
¹University of Twente, NETHERLANDS, ²Massachusetts Institute of Technology, USA, ³University of Tennessee, USA, ⁴École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, and ⁵Universidad Nacional Autónoma de México, MEXICO
- 12:00 HIGHLY EFFICIENT ONE-TO-ONE CO-ENCAPSULATION OF TWO DISTINCT PARTICLE TYPES INTO DROPLETS THROUGH AN ON-CHIP “VIRTUAL PARTICLE VALVE”**
Yuma Kadomura, Naotomo Tottori, Shinya Sakuma, Yoko Yamanishi
Kyushu university, JAPAN

Session 1C2 - New Fabrication Techniques

- 11:00 MICRO-PATTERNING WETTABILITY IN PARALLELIZED SI/GLASS MICROFLUIDIC CHIP FOR DOUBLE EMULSION GENERATION**
Yoon-Ho Hwang, Jingyu Wu, Sagar Yadavali, Daeyeon Lee, David Issadore
University of Pennsylvania, USA
- 11:20 FABRICATION AND THERMAL MODELING OF ELECTROTHERMAL ORIGAMI MEMS FOR DRY AND AQUEOUS ENVIRONMENTS**
Anan Ghayeb, Kenn Oldham, Evgueni T. Filipov
University of Michigan, USA
- 11:40 LASER-INDUCED GRAPHENE BASED DIGITAL MICROFLUIDICS (GDMF): A SUB-ONE-DOLLAR PLATFORM FOR POCT APPLICATIONS**
Ke Liu, Yu He, Zefan Lu, Qiudi Xu, Lan Wang, Zhongxuan Liu, Jeremy Khou, Ying Mu, Wei Jin, Tao Zhang
Zhejiang University, CHINA
- 12:00 VERTICAL DEEP ETCHING TECHNIQUE FOR SILICA GLASS USING A CATALYST AND FABRICATION OF MICROWELL CHIPS FOR DIGITAL BIOSENSING**
Yoshitaka Ono, Ko-hei Sano, Yasuo Hayashi
AGC Inc., JAPAN

12:20 - 13:50 Lunch

Early Career Networking Lunch

12:25 - 13:45

Industrial Stage 1

- 12:25 **1a - HiComp Microtech, USA**
- 12:45 **1b – Fluigent, FRANCE**
- 13:05 **1c – MICRO 3D PRINTING APPLICATIONS IN MICROFLUIDICS**
Dan Tucker
Boston MicroFabrication (BMF), USA
- 13:25 **1d - X-FAB MEMS Foundry GmbH, GERMANY**

Plenary Presentation II

- 13:50 **ORGANIC NANOPARTICLES FOR BIOMEDICAL APPLICATIONS**
Bin Liu
National University of Singapore, SINGAPORE

Poster Session1 and Exhibit Inspection

- 14:35 - 16:35 Presentations are listed by topic category with their assigned number starting on page 21.
- 16:05 - 16:35 Break

Session 1A4 - Organ-on-a-Chip 2

- 16:35 **HOT TOPIC KEYNOTE - MODELING NEUROLOGICAL DISEASE: UNDERSTANDING THE TRANSPORT MECHANISMS AND PATHWAYS FOR THE CLEARANCE OF AMYLOID BETA FROM THE BRAIN**
Roger D. Kamm
Massachusetts Institute of Technology, USA
- 17:05 **ELUCIDATING THE INFLUENCE OF FIBROBLAST-MACROPHAGE INTERACTIONS ON TRANSCRIPTOMIC ALTERATIONS OF TRIPLE-NEGATIVE BREAST CANCER CELLS USING A TUMOR-ON-A-CHIP MODEL INTEGRATED WITH SINGLE-CELL RESOLUTION STUDIES**
Kalpana Ravi¹, Yining Zhang¹, Lydia Sakala¹, Twinkle Jina M. Manoharan¹, Barbara Pockaj², Joshua LaBaer¹, Jin Park¹, Mehdi Nikkhah¹
¹Arizona State University, USA and ²Mayo Clinic, USA
- 17:25 **HUMAN GUT-BLOOD-BRAIN AXIS MICROPHYSIOLOGICAL SYSTEM FOR STUDIES OF GUT-NEUROPATHOGENESIS**
Minh Tran¹, Chaeyeon Been¹, Van Thi Ai Tran¹, Luke P. Lee², Hansang Cho¹
¹Sungkyunkwan University, KOREA and ²Harvard University, USA
- 17:45 **A HUMAN NEURAL TUBE-ON-A-CHIP SYSTEM FOR UNDERSTANDING HUMAN NEURAL DEVELOPMENT AND DISEASES**
Xufeng Xue^{1,2}, Yung Su Kim², Yiwen Zhai², Donna M. Martin², Orly Reiner³, Jianping Fu²
¹Cincinnati Children's Hospital Medical Center, USA, ²University of Michigan, USA, and ³Weizmann Institute of Science, ISRAEL

Session 1B4 - Artificial Intelligence in Microfluidics 1

- 16:35** **HOT TOPIC KEYNOTE - VIRTUAL STAINING OF LABEL-FREE TISSUE USING DEEP LEARNING**
Aydogan Ozcan
University of California, Los Angeles, USA
- 17:05** **MICROFLUIDIC PLATFORM FOR COMPREHENSIVE COMBINATION SCREENING OF TRANSCRIPTOMIC RESPONSES IN INDIVIDUAL CELLS**
Jonathan Matthews, Baylee Heiden, Suhail Peer, Bijentimala Keisham, Savas Tay
University of Chicago, USA
- 17:25** **FAST, PRECISE, AND EASY-TO-USE METHOD FOR DETECTING CELLS ON CHIP USING FASTER R-CNN**
Guillaume Aubry¹, Yanjun Zhao², Erin Shappell¹, Jacob Wheelock¹, Hang Lu¹
¹Georgia Institute of Technology, USA and ²Troy University, USA
- 17:45** **SHAPE CLASSIFICATION-BASED FLUORESCENCE ANALYSIS IN HYDROGELS ENCAPSULATING ODORANT SENSOR CELLS**
Sho Takamori¹, Taisei Kawakami^{1,2}, Hisatoshi Mimura¹, Toshihisa Osaki¹, Norihisa Miki^{1,2}, Shoji Takeuchi^{1,3}
¹Kanagawa Institute of Industrial Science and Technology, JAPAN, ²Keio University, JAPAN, and ³University of Tokyo, JAPAN

Session 1C4 - Digital and Ultrasensitive Assays

- 16:35** **KEYNOTE - DIGITAL PROTEIN DETECTION: HISTORY, IMPACT, AND FUTURE**
David Duffy
Quanterix Corporation, USA
- 17:05** **ULTRASENSITIVE AND ULTRAFAST PROTEIN CAPTURE IN BROWNIAN AFFINITY TRAP ARRAYS —10- 19 M LIMIT OF DETECTION WITH 30 S INCUBATION**
Geunyoung Kim, Molly L. Shen, Felix Lussier, Andy Ng, David Juncker
McGill University, CANADA
- 17:25** **STRATOLAMP: LABEL-FREE, MULTIPLEX DIGITAL LOOP-MEDIATED ISOTHERMAL AMPLIFICATION BASED ON VISUAL STRATIFICATION OF PRECIPITATE**
Zida Li, Meichi Jin, Jingyi Ding
Shenzhen University, CHINA
- 17:45** **EXCESS PROBE-BASED NANOPORE DEVICE FOR AMPLIFICATION-FREE NUCLEIC ACID DETECTION**
Nanami Takeuchi, Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN
- 18:05** **Adjourn for the Day**

MicroTAS Student Mixer

18:20 – 20:00

Women in Microfluidics Event

18:20 - 20:00

Tuesday, 15 October

All indicated times are Central Eastern Time (ET)

08:15 - 08:30

Announcements

Plenary Presentation III

08:30

TOOLS TO ANALYZE VERY FEW, AND VERY MANY MOLECULES

Ulf Landegren

Uppsala Universitet, SWEDEN

**Lab on a Chip and Dolomite - Pioneers of Miniaturization
Lectureship Prize and Presentation**

09:15

To Be Announced

09:35 - 10:05

Break: Exhibit and Poster Inspection

Session 2A1 - Organ-on-a-Chip 3

10:05

HOT TOPIC KEYNOTE - MICROENGINEERED BIOMIMICRY OF HUMAN PHYSIOLOGICAL SYSTEMS

Dongeun (Dan) Huh

University of Pennsylvania, USA

10:35

HIGH-THROUGHPUT PRECLINICAL MODEL OF BREATHING HUMAN ALVEOLI

Kimia Asadi Jozani, Shravanthi Rajasekar, Andrew Hollinger, Nicky Anvari, Abeka Selliah, Boyang Zhang

McMaster University, CANADA

10:55

PULSEPLATE: INTEGRATED CULTURE OF ORGANOIDs WITH PULSED HYDRODYNAMICS

Iago Pereiro, Eylul Ceylan, Hannah Kronabitter, Eléonore Cauquil, Julien Aubert, Mehmet Girgin, Jyoti Rao, Giuliana Rossi, Matthias Lutolf, Jose Garcia-Cordero

Roche Institute of Human Biology, SWITZERLAND

11:15

MODELING THE EARLY RESPONSE TO VACCINATION IN 3D PRINTED MULTI-ORGAN-ON-CHIP DEVICES

Sophie R. Cook, Alexander G. Ball, Rebecca R. Pompano

University of Virginia, USA

11:35

CELL MIGRATION AND PHENOTYPIC SHIFT IN A COMPARTMENTALIZED TRIPLE CO-CULTURE SYNOVIUM-ON-CHIP MODEL INCLUDING AN IMMUNE CELL COMPONENT

Laurens R. Spoelstra¹, Nuno Araújo Gomes¹, Mariia Zakharova¹, Daniël Wijnperle¹, Jan Hendriks¹, Tim Welting², Marcel Karperien¹, Loes I. Segerink¹, Séverine Le Gac¹

¹University of Twente, NETHERLANDS and ²Maastricht University Medical Center, NETHERLANDS

Session 2B1 - Artificial Intelligence in Microfluidics 2

- 10:05** **HOT TOPIC KEYNOTE - TOWARD PETABYTE-SCALE OPTOFLUIDIC IMAGING CYTOMETRY**
Kevin Tsia
University of Hong Kong, HONG KONG
- 10:35** **A HIGH-DENSITY MICROCHAMBER ARRAY FOR THE ANALYSIS OF EXTRACELLULAR VESICLES DERIVED FROM SINGLE CANCER CELLS.**
Lucien R. Stöcklin, Claudius L. Dietsche, Petra S. Dittrich
ETH Zürich, SWITZERLAND
- 10:55** **EXPEDITING EMERGENCY TRANSFUSION WITH T-BOT: AI-ENABLED DIGITAL MICROFLUIDICS PLATFORM FOR RAPID BLOOD TYPING**
Anthony K.C. Yong¹, Alexandros A. Sklavounos^{1,2}, Omar I. Hajja^{3,4}, Chantal Armali³, Julian Lamanna¹, Lenny Chen¹, Dimpy Modi^{3,5}, Jeannie L. Callum^{3,4}, Aaron R. Wheeler¹
¹University of Toronto, CANADA, ²Blue Ocean Technologies Inc., CANADA, ³Sunnybrook Health Sciences Centre, CANADA, ⁴Queen's University, CANADA, and ⁵McMaster University, CANADA
- 11:15** **HIGH-THROUGHPUT SINGLE-CELL MIGRATION ANALYSIS WITH MICROFLUIDICS, ROBOTICS, AND COMPUTER VISION FOR DECIPHERING THE INFLUENCE OF EXTRACELLULAR MATRIX**
Mengli Zhou^{1,2}, Yushu Ma^{1,2}, Edwin C. Rock¹, Jinxiong Cheng^{1,2}, Yu-Chih Chen^{1,2,3}
¹University of Pittsburgh, USA, ²UPMC Hillman Cancer Center, USA, and ³Carnegie Mellon University, USA
- 11:35** **STAIN-FREE DRUG SCREENING USING NANOWELL-IN-MICROWELL PLATE**
Pan Deng, Deasung Jang, Samuel G. Berryman, Kerry Matthews, Simon Duffy, Hongshen Ma
University of British Columbia, CANADA

Session 2C1 - microTASs for Diagnostics

- 10:05** **KEYNOTE - TBD**
Sara Mahshid
McGill University, CANADA
- 10:35** **HIV TESTING AT POINT-OF-CARE BY INTEGRATING A SAMPLE PREPARATION DEVICE WITH A PORTABLE REAL-TIME DETECTOR**
George Adedokun, Gurjit Sidhu, Morteza Alipanah, Gary P. Wang, Z. Hugh Fan
University of Florida, USA
- 10:55** **MULTIPLE NUCLEIC ACIDS TESTING ON A LOW-COST DIGITAL MICROFLUIDIC PLATFORM FOR RESPIRATORY BACTERIA (MNAT-DMF)**
Ruibin Xie, Jienan Shen, Hui Yang
Chinese Academy of Sciences, CHINA
- 11:15** **VIRAL MOLECULAR IDENTIFICATION SYSTEM FOR SAMPLE-TO-ANSWER QUANTITATION OF VIRAL INFECTION: SARS-COV-2 CASE**
Lidija Malic¹, Liviu Clime¹, Byeong-Ui Moon¹, Christina Nassif¹, Dillon Da Fonte¹, Daniel Brassard¹, Ljuboje Lukic¹, Matthias Geissler¹, Keith Morton¹, Denis Charlebois², Teodor Veres¹
¹National Research Council of Canada, CANADA and ²Canadian Space Agency, CANADA
- 11:35** **MULTIPLEX SERODETECTION OF TWO ROGUE ANTI-CYTOKINE AUTOANTIBODIES WITH A 3D-PRINTED CAPILLARIC ELISA-CHIP**
Houda Shafique¹, Stéphane Bernier², Andy Ng¹, Lucie Roussel², Donald C. Vinh², David Juncker¹
¹McGill University, CANADA and ²McGill University Health Centre, CANADA

Industrial Stage 2

- 12:00** **2a – HOW MICRONIT EMPOWERS CLIENTS TO INNOVATE WITH MICROFLUIDICS, FROM CONCEPT TO PRODUCTION**
Marko Blom
Micronit, NETHERLANDS
- 12:20** **2b - Blue Ocean Technologies Inc., USA**
- 12:40** **2c - Vital Biosciences Inc., CANADA**

Session 2A3 - Organ-on-a-Chip 4

- 13:10** **MICROENGINEERED TRANSPLANTATION OF HUMAN SOLID TUMORS FOR IN VITRO STUDIES OF CAR T IMMUNOTHERAPY**
Haijiao Liu¹, Estela Noguera-Ortega¹, Won Dong Lee², Maria Liouisia¹, Zeyu Chen¹, Xuanqi Dong¹, Anni Wang¹, Juyoung Park¹, Aidi Liu¹, Marina Martinez¹, Joshua Brotman¹, Soyeon Kim¹, Scott Worthen¹, Ellen Pure¹, Joshua Rabinowitz¹, E. John Wherry¹, Edmund Moon¹, Steven Albelda¹, and Dongeun Huh¹
¹University of Pennsylvania, USA, ²Princeton University, USA, and ³Children's Hospital of Philadelphia, USA
- 13:30** **EVALUATION OF A BIOPRINTED GUT-ASSOCIATED LYMPHOID TISSUE MIMICKING PEYER'S PATCH IN THE INTESTINAL MICROENVIRONMENT**
Jongho Park, Gihyun Lee, Je-Kyun Park
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- 13:50** **AN INTEGRATED MICROPHYSIOLOGICAL SYSTEM FOR MULTI-EPITHELIAL BARRIERS: APPLICATION TO INTESTINAL AND EPIDERMAL BARRIERS**
Qasem Ramadan
Alfaisal University, SAUDI ARABIA
- 14:10** **FABRICATION OF AN ENVIRONMENTAL-CONTROLLED HUMAN COLON-ON-CHIP**
Duvan Andres Rojas Garcia^{1,2}, Dimitri Hamel^{1,2}, Julie Foncy², Laurent Malaquin², Audrey Ferrand¹
¹IRSD-INSERM, FRANCE and ²LAAS-CNRS, FRANCE

Session 2B3 - Single Cell Omics

- 13:10** **SPATIALCELLOMICS: HIGH-RESOLUTION SPATIAL SAMPLING WORKFLOW COUPLED WITH GENE EXPRESSION AND MASS SPECTROMETRIC ANALYSIS FOR MULTI-OMIC PROFILING**
Sharvari Somayaji^{1,2}, Sofia Arshavsky Graham¹, May Dang-Lawson¹, Farah Jayousi², Philipp Lange², Govind Kaigala^{1, 3}
¹University of British Columbia, CANADA, ²BC Children's Hospital Research Institute, CANADA, and ³Vancouver Prostate Centre, CANADA
- 13:30** **SCBLOT-SEQ: A MULTI-MODAL, SAME-CELL ASSAY FOR CHROMATIN ACCESSIBILITY AND PROTEIN IMMUNOBLOTTING**
Trinh Lam¹, Anna Fomitcheva Khartchenko¹, Alison Su¹, Amy E. Herr^{1,2}
¹University of California, Berkeley, USA and ²Chan Zuckerberg Biohub, USA

- 13:50** **INTEGRATING SCATAC-SEQ WITH IMAGING MODALITIES VIA MAGNETIC-BASED DETERMINISTIC BARCODING**
 Anna Fomitcheva Khartchenko¹, Trinh Lam¹, Amy E. Herr^{1,2}
¹University of California, Berkeley, USA and ²Chan Zuckerberg Biohub, USA
- 14:10** **SCBIOPSY-SEQ: AN OPEN PLATFORM FOR TEMPORAL SINGLE-CELL RNA-SEQ ANALYSIS WITH WELL-CONTROLLED EXTRACTION VOLUME AND GENOME-WIDE COVERAGE**
 Xing Xu
 Xiamen University, CHINA

Session 2C3 - Cell Motility and Migration

- 13:10** **CTC-RACE: SINGLE-CELL MOTILITY ASSAY OF CIRCULATING TUMOR CELLS FROM METASTATIC LUNG CANCER PATIENTS**
 Yang Liu, Leidong Mao
 University of Georgia, USA
- 13:30** **LAMELLIPODIA-MEDIATED OSTEOBLAST HAPTOTAXIS GUIDED BY FIBRONECTIN LIGAND CONCENTRATIONS ON A MULTIPLEX CHIP**
 Chao Liu, Xiaotian Feng, Seoyoung Jeong, Melissa L. Carr, Yiwen Gao, Radhika P. Atit, Samuel E. Senyo
 Case Western Reserve University, USA
- 13:50** **SKETCH AND ETCH: SPATIOTEMPORAL INVESTIGATIONS INTO RARE CELL POPULATIONS DRIVING COLLECTIVE CANCER MIGRATION**
 Sofia Arshavsky Graham¹, Sharvari Somayaji¹, Yara Nasrallah¹, Aditya Kashyap^{1,2}, May Dang-Lawson¹, Pamela M. Austin Dean¹, Calvin D. Roskelley¹, Govind V. Kaigala^{1,2}
¹University of British Columbia, CANADA and ²Vancouver Prostate Centre, CANADA
- 14:10** **3D MICRO-/NANOFLUIDIC CELL CULTURE PLATFORM GENERATING FULL-COMBINATORIAL CONCENTRATION GRADIENTS**
 Juyeol Bae^{1,2}, Hwisu Jeon¹, Yookyung Park³, Taesung Kim^{1,3}
¹Ulsan National Institute of Science and Technology (UNIST), KOREA,
²Chonnam National University, KOREA, and ³TK Medical Solution Inc., KOREA

Poster Session 2 and Exhibit Inspection

- 14:30 - 16:30** Presentations are listed by topic category with their assigned number starting on page 21.
- 16:00- 16:30** Break

Session 2A4 - Environment and Energy 1

- 16:30** **HOT TOPIC KEYNOTE - CAN MICROFLUIDICS ADDRESS KEY ISSUES IN THE ENVIRONMENT, ENERGY, AND AGRICULTURE?**
 Chuck Henry
 Colorado State University, USA

- 17:00 INTEGRATED PLATFORM FOR ON-SITE SIMULTANEOUS MICROFLUIDIC QPCR AND ELISA ANALYSIS: FOOD ALLERGEN DETECTION FROM SAMPLE TO RESULTS**
Anne-Gaëlle Bourdat, Remco den Dulk, Bastien Serrano, François Boizot, Gervais Clarebout, Xavier Mermet, Raymond Charles, Jean Porcherot, Armelle Keiser, Manuel Alessio, Patricia Laurent, Charlotte Parent, Nicolas Sarrut-Rio and Myriam Cubizolles
University Grenoble, Alpes, FRANCE
- 17:20 ENVIRONMENTALLY DISPERSIBLE AND FULLY BIODEGRADABLE WIRELESS UREA SENSOR FOR SOIL MONITORING**
Yu Tanaami¹, Ken Sakabe¹, Tetsuo Kan², Hiroaki Onoe¹
¹Keio University, JAPAN and ²University of Electro-Communications, JAPAN
- 17:40 ECHOBEAM: ACOUSTOFLUIDIC CLUSTER ANALYSIS FOR MICRO AND NANOPLASTIC IDENTIFICATION USING FLUORESCENCE AND RAMAN SPECTROSCOPY**
Martim Costa¹, Mehrdad L. Choobbari², Björn Hammarström¹, Selim Tanriverdi¹, Haakan Joensson¹, Martin Wiklund¹, Heidi Ottevaere², Aman Russom¹
¹KTH Royal Institute of Technology, SWEDEN and ²Vrije Universiteit Brussel, BELGIUM

Session 2B4 - Wearables and Continuous Sensing 1

- 16:30 HOT TOPIC KEYNOTE - WEARABLE RECONFIGURABLE METAMATERIALS AND ORIGAMI-INSPIRED IMPLANTABLE SENSORS FOR HUMAN-MACHINE INTERFACES**
Firat Güder
Imperial College London, UK
- 17:00 INTEGRATED MULTI-SENSING PLATFORM FOR ON-DEMAND QUANTITATIVE IN VITRO CELLULAR MODEL ANALYSIS AND MONITORING**
Silvia Demuru¹, Bradley Petkus¹, Adel Tekari², Esteban A. Seoane², Saskia Schmidt^{3,4}, Samuel Wenger², Frédéric Flahaut², Samantha Paoletti¹, Felix Kurth¹, Carine Gaiser⁴, Laura Suter-Dick^{4,5}, Jérôme Charmet^{2,6}, Alexandra Homsy², Loïc Burr¹
¹Swiss Center for Electronics and Microtechnology (CSEM), SWITZERLAND, ²University of Applied Sciences Western Switzerland (HES-SO), SWITZERLAND, ³University of Applied Sciences and Arts Northwestern Switzerland, SWITZERLAND, ⁴University of Basel, SWITZERLAND, ⁵Swiss Centre for Applied Human Toxicology, SWITZERLAND, and ⁶University of Bern, SWITZERLAND
- 17:20 ALL-FLEXIBLE EPIFLUIDIC NANOPLASMONIC SENSOR FOR LABEL-FREE CHRONOLOGICAL SWEAT PROFILING**
Jaehun Jeon, Ki-Hun Jeong
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- 17:40 USING IMPEDANCE PLETHYSMOGRAPHY TO DETECT THE FLOW STATUS OF THE RADIAL ARTERY BLOOD AND PERFORM CONTINUOUS MONITORING OF PULSE WAVE AND BLOOD PRESSURE**
Juncheng Fan¹, Shuangye Xu¹, Xiaoyu Huang¹, Jiaqi Liu¹, Yongchang Wang¹, Haoming Zhang¹, Xiaozhi Wang², Zhen Zhu¹
¹Southeast University, CHINA and ²First Affiliated Hospital of Nanjing Medical University, CHINA

Session 2C4 - Blood Vessels and Flow

- 16:30 KEYNOTE - NOVEL MICROFLUIDIC MODELS OF ATHEROSCLEROSIS AND ATHEROTHROMBOSIS**
Fahima Akther^{1,2}, Dimple Thomas¹, Huong D.N. Tran^{1,2}, Shebbrin Moonshi¹, Yuao Wu¹, Jun Zhang¹, Nam-Trung Nguyen¹, Hang T. Ta^{1,2}
¹Griffith University, AUSTRALIA and ²University of Queensland, AUSTRALIA

- 17:00** **HEMADYNE: CLINICAL HEMODYNAMICS AND ENDOTHELIAL RESPONSES RECREATED IN PRECLINICAL HUMAN BIOLOGY-MODELING MICROSYSTEMS**
Ankit Kumar, Rushangi Patel, Abhishek Jain
Texas A&M University, USA
- 17:20** **CIRCUMFERENTIAL STRETCH AND PERFUSION CULTURE OF A FLEXIBLE 3D VESSEL MODEL THROUGH ADJUSTABLE FLOW PROFILE**
Byeongwook Jo, Shoji Takeuchi
University of Tokyo, JAPAN
- 17:40** **AN IPSC-BLOOD VESSEL WITH SPIRALLY ORIENTED SMOOTH MUSCLE MIMIC AGING PHENOTYPES IN PHYSIOLOGICAL FUNCTION AND METABOLITES**
Shun Itai¹, Takafumi Toyohara¹, Hiroaki Onoe², Takaaki Abe¹
¹Tohoku University, JAPAN and ²Keio University, JAPAN
- 18:00** **Adjourn for the Day**

Laminar (Recruitment) Mixer

18:15 - 19:00

Wednesday, 16 October

All indicated times are Central Eastern Time (ET)

08:15 - 08:30

Announcements

Plenary Presentation IV

08:30

BUILDING VASCULARIZED KIDNEY TISSUES FOR DRUG TESTING, DISEASE MODELING, AND THERAPEUTIC USE

Jennifer A. Lewis

Harvard University, USA

09:15 - 09:30

Transition

Session 3A1 - Environment and Energy 2

09:30

HOT TOPIC KEYNOTE - MICROFLUIDICS AS A MODEL FOR ENERGY APPLICATIONS

David A. Weitz

Harvard University, USA

10:00

DROPLET-BASED MICROFLUIDICS SCREENING OF PLASTIC DEGRADING ENZYMES

Thomas Beneyton¹, Alexandre Gilles^{2,3}, Alexandra Tauzin^{2,3}, Nicolas Chabot³, Vincent Tournier³, Alain Marty³, Jean-Christophe Baret¹

¹Université de Bordeaux, FRANCE, ²Université de Toulouse, FRANCE, and ³Carbios, FRANCE

10:20

MICROFLUIDIC GAS DIFFUSION ELECTRODE FOR ELECTROWETTING MONITORING AND VISUALIZATION OF ELECTROCHEMICAL REACTIONS

Sebastian Brosch¹, Alexandra Decker¹, Eike Häger¹, John Linkhorst³, Matthias Wessling^{1,2}

¹RWTH Aachen University, GERMANY, ²DWI Leibniz Institute for Interactive Materials, GERMANY, and

³Technical University Darmstadt, GERMANY

Session 3B1 - Wearables and Continuous Sensing 2

09:30

HOT TOPIC KEYNOTE - WEARABLE SWEAT SENSORS - TOWARDS BIG DATA FOR HUMAN HEALTH

Ali Javey

University of California, Berkeley, USA

10:00

RETINAL TREATMENT EVALUATION AFTER TRANSCORNEAL ELECTRICAL STIMULATION BASED ON A WIRELESS CONTACT LENS DEVICE

Rui Luo, Ding Shen, Dahai Ren

Tsinghua University, CHINA

10:20

IMPLANTABLE ACTIVE-RESET PROTEIN SENSORS: A VERSATILE APPROACH FOR IN VIVO REAL-TIME INFLAMMATION MONITORING

Hossein Zargartalebi¹, Shana O. Kelley^{1,2}

¹Northwestern University, USA and ²Chan Zuckerberg Biohub, USA

Session 3C1 - Artificial Intelligence in Microfluidics 3

- 09:30 KEYNOTE - AUTONOMOUS FLUIDIC LAB FOR NANOPARTICLE SYNTHESIS**
Eugenia Kumacheva
University of Toronto, CANADA
- 10:00 TRANSFORMING LYME DISEASE DIAGNOSIS: USING A SINGLE-TIER MULTIPLEXED VERTICAL FLOW ASSAY EMPOWERED BY MACHINE LEARNING**
Rajesh Ghosh¹, Hyoun-Arm Joung¹, Artem Goncharov¹, Barath Palanisamy¹, Wesley Luk¹, Kevin Ngo¹, Elizabeth J. Horn², Paul M. Arnaboldi³, Raymond J. Dattwyler³, Omai B. Garner¹, Aydogan Ozcan¹, Dino Di Carlo¹
¹*University of California, Los Angeles, USA*, ²*Lyme Disease Biobank, USA*, and ³*New York Medical College, USA*
- 10:20 NEURAL NETWORK ENABLED MULTIPARAMETRIC IMPEDANCE SIGNAL TEMPLATING FOR HIGH THROUGHPUT SINGLE-CELL DEFORMABILITY CYTOMETRY**
Javad Jarmoshti¹, Federica Caselli², Nathan S. Swami¹
¹*University of Virginia, USA* and ²*University of Rome Tor Vergata, ITALY*

10:40 - 11:10 Break: Exhibit and Poster Inspection

Session 3A2 - Sample and Reagent Processing and Characterization

- 11:10 BASIC EVALUATION OF CRISPR/CAS12A SYSTEM STABILITY ON PAPER SUBSTRATES AND ITS APPLICATION TO MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICES**
Yohei Tanifuji, Guodong Tong, Yuki Hiruta, Daniel Citterio
Keio University, JAPAN
- 11:30 INTEGRATED MICROFLUIDIC ENZYME REACTOR FOR AUTOMATED SAMPLE PREPARATION AND UNAMBIGUOUS SEQUENCE CHARACTERIZATION OF MONOCLONAL ANTIBODIES VIA ELECTROSPRAY IONIZATION MASS SPECTROMETRY (ESI-MS)**
Junyi Yao, Killian O'Connell, Melissa R. Leyden, Maria C. Panepinto, Rob A. D'Ippolito, Donald F. Hunt, Jeffrey Shabanowitz, James P. Landers
University of Virginia, USA
- 11:50 INTEGRATED SAMPLE TREATMENT AND LAMP ASSAY ON A MICROFLUIDIC CHIP FOR RAPID ON SITE BACTERIA DETECTION IN SEAWATER**
Charlotte Parent, Hugo Benchetrit, Anne-Gaelle Bourdat, Yves Fouillet, Thomas Provent, Guillaume Daufouy, Xavier Mermet, Mahfod Benessalah, Manuel Alessio, François Boizot, Mélissa Baque, Thomas Alava
University Grenoble, Alpes, FRANCE

Session 3B2 - Mammalian Cell Culture and Analysis

- 11:10 A MULTIMODAL DIGITAL MICROFLUIDIC TESTING PLATFORM FOR ANTIBODY-PRODUCING CELL LINES**
Jeremy T. Lant¹, Jurgen Frasheri¹, Taehong Kwon², Camille M.N. Tsang¹, Samin Akbari², Aaron R. Wheeler¹
¹*University of Toronto, CANADA* and ²*Sartorius Stedim North America Inc., USA*
- 11:30 CO-CULTURE OF ANTIBODY-SECRETING AND IMMUNE CELLS: HIGH-THROUGHPUT FUNCTIONAL SCREENING USING CORE-SHELL HYDROGEL MICROPARTICLES**
Kazuki Nishimoto^{1,2}, Rajesh Ghosh¹, Mark van Zee¹, Darren Fang¹, Miyako Noguchi¹, Dino Di Carlo¹
¹*University of California, Los Angeles, USA* and ²*University of Tokyo, JAPAN*

- 11:50 ELUCIDATION OF UNEXPLORED CIRCULATING TROPHOBLASTS USING CONTINUOUS CENTRIFUGAL MICROFLUIDICS TOWARD PRECISE NON-INVASIVE PRENATAL DIAGNOSIS**
 Hyun Gyu Kang¹, Seung-Hoon Kim², Ji Hyae Lim³, Aseer Intisar¹, Sohae Yang¹, Jong Man Kim², Hyun Young Shin², Su Ji Yang³, Hyun Mee Ryu^{3,4}, Minseok S. Kim^{1,2,5,6}
¹Daegu Gyeongbuk Institute of Science & Technology (DGIST), KOREA, ²CTCELLS, KOREA, ³CHA Future Medicine Research Institute, KOREA, ⁴CHA University School of Medicine, KOREA, ⁵Translational Responsive Medicine Center (TRMC), KOREA, and ⁶New Biology Research Center (NBRC), KOREA

Session 3C2 - Microfluidic Horizons

- 11:10 BI-DIRECTIONAL DUAL-FLOW-ROOTCHIP TO STUDY CALCIUM AND ROS SIGNALLING IN RESPONSE TO FORCE AND OSMOTIC STRESS SENSING IN ROOTS**
 Claudia Allan, Yiling Sun, Haig Bishop, Claudia-Nicole Meisrimler, Volker Nock
 University of Canterbury, NEW ZEALAND
- 11:30 A PLATFORM FOR THE FORMATION OF COMPLEX AND UNIFORM DNA GEL USING VIBRATION-INDUCED LOCAL VORTICES**
 Zhitai Huang¹, Kanji Kaneko¹, Ryotaro Yoneyama¹, Takeshi Hayakawa¹, Tomoya Maruyama², Masahiro Takinoue², Hiroaki Suzuki¹
¹Chuo University, JAPAN and ²Tokyo Institute of Technology, JAPAN
- 11:50 A LOW-INPUT MICROFLUIDIC METHOD FOR STUDYING LNCRNA BINDING**
 Jenna Catalano¹, Zhengzhi Liu¹, Yuan-Pang Hsieh¹, Zhen Bouman Chen², Chang Lu¹
¹Virginia Tech, USA and ²City of Hope, USA

12:10 - 13:20 Lunch

Industrial Stage 3

- 12:15 Nano Dimension, USA**
- 12:35 GLASS MICROFLUIDICS – HARVESTING THE POWER OF WAFER LEVEL MANUFACTURING FROM PROTOTYPING TO LARGE VOLUME MANUFACTURING.**
 Tobias Bauert
 IMT Masken und Teilungen AG, SWITZERLAND
- 12:55 TBD**

Plenary Presentation V

- 13:20 NANOPHOTONIC LAB-ON-A-CHIP SYSTEMS FOR BIOMEDICAL APPLICATIONS**
 Hatice Altug
 École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

MicroTAS 2025 Announcement

14:05 - 14:15

2025 Conference Chairs

Michael Breadmore, *University of Tasmania, AUSTRALIA*

Rosanne Guijt, *Deakin University, AUSTRALIA*

Craig Priest, *University of South Australia, AUSTRALIA*

Poster Session 3 and Exhibit Inspection

14:15 - 16:15

Presentations are listed by topic category with their assigned number starting on page 21.

15:45 - 16:15

Break

Session 3A4 - Multiphase Droplets and Particles

16:15

KEYNOTE - FUNCTIONALIZATION OF MICROFLUIDICS VIA BOTTOM-UP INTEGRATION FOR UPGRADING DROPLET FORMATION AND BIOLOGICAL APPLICATIONS

Masumi Yamada

Chiba University, JAPAN

16:45

TUNABLE DROPICLE FORMATION USING AMPHIPHILIC MICROPARTICLES WITH FOUR DISCRETE HYDROPHILIC PATCHES

Xinpei Song¹, Shreya Udani², Mengxing Ouyang², Dino D. Carlo², Ghulam Destgeer¹

¹*Technical University of Munich, GERMANY* and ²*University of California, Los Angeles, USA*

17:05

MULTICOMPARTMENT ROD SHAPE MICROGELS FABRICATED BY 3D PRINTED MICROFLUIDIC DEVICES FOR CELL CULTURE AND TISSUE ENGINEERING APPLICATIONS

Esfandiyar Askari, Mohsen Akbari

University of Victoria, CANADA

17:25

QUAD-CORE AMPHIPHILIC PARTICLES FOR MULTIPLEXED AMPLIFIED IMMUNOASSAY

Muhammad Usman Akhtar, Ghulam Destgeer

Technical University of Munich, GERMANY

17:45

MICROFLUIDIC BASED CELL-MIMETIC COACERVATE-CORE-DROPLET FOR MOLECULES SEQUESTRATION

Yuhao Geng, Jing Yu

Nanyang Technological University, SINGAPORE

Session 3B4 - Microbial Culture and Analysis

16:15

KEYNOTE - TBD

16:45

SPATIOTEMPORALLY RESOLVED MICROBIAL BEHAVIORAL ANALYSIS WITH A CLEAR CORRELATION TO RAPID OXYGEN FLUCTUATIONS

Keitaro Kasahara^{1,2}, Johannes Seiffarth^{1,2}, Katharina Nöh¹, Dietrich Kohlheyer¹

¹*Forschungszentrum Jülich, GERMANY* and ²*RWTH Aachen University, GERMANY*

- 17:05 PASSIVE DROPLET MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT SCREENING OF MICROBIAL PROTEOLYTIC ACTIVITY.**
Luca Potenza, Tomasz Kaminski
University of Warsaw, POLAND
- 17:25 ULTRAHIGH-THROUGHPUT SCREENING OF ENZYME VARIANTS IN DROPLET-BASED MICROFLUIDICS USING A NOVEL CONFOCAL ABSORBANCE-MEASUREMENT SETUP**
Abdi Mirgissa Kaba, Sébastien Gounel, Thomas Beneyton, Lionel Buisson, Nicolas Mano, Jean-Christophe Baret
Centre de Recherche Paul Pascal (CNRS), FRANCE
- 17:45 UNRAVELING DEEP SEA MICROBIAL DARK MATTER: A DROPLET BASED SINGLE CELL CULTURE METHOD UNDER HIGH HYDROSTATIC PRESSURE**
Zhiyi Wang¹, Tong Yu², Linfeng Gong², Zongze Shao², Hongliang Wang³, Wenbin Du¹
¹Chinese Academy of Sciences, CHINA, ²Third Institute of Oceanography, Ministry of Natural Resources, CHINA, and ³National Deep Sea Center, Ministry of Natural Resources, CHINA

Session 3C4 - Neural Microenvironment

- 16:15 KEYNOTE - 3D BIOPRINTING COMPLEX TISSUES**
Stephanie Willerth
University of Victoria, CANADA
- 16:45 HUMAN NEURON MICROENVIRONMENTS CONFINED WITHIN FLUID-WALLED**
Edmond J. Walsh¹, Federico Nebuloni¹, Ricardo Marquez-Gomez¹, Quyen B. Do², Joseph A. Morgan¹, Richard Wade-Martins¹
¹University of Oxford, UK and ²Agency for Science, Technology and Research (A*STAR), SINGAPORE
- 17:05 BIOFABRICATION OF MULTILAYERED AND HETEROGENEOUS NEURAL CONSTRUCTS**
Soo Jee Kim, Dongjo Yoon, Yejin Choi, Gihyun Lee, Yoonkey Nam, Je-Kyun Park
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- 17:25 VENTURI-BASED MICROFLUIDIC DEVICE FOR SIMULTANEOUS IMAGING OF NEURAL ACTIVITY AND BEHAVIOR IN HEAD-FIXED C. ELEGANS**
Hyun Jee Lee, Julia Vallier, Hang Lu
Georgia Institute of Technology, USA
- 17:45 ENGINEERING OF ENDOTHELIALIZED AND INNERVATED MUSCLE TISSUE ON-CHIP TO INVESTIGATE METABOLIC RESPONSES TO EXTERNAL STIMULATION**
Jinchul Ahn¹, Min-seop Kim¹, Dain Lee¹, Hui-Wen Liu¹, Seung-cheol Shin¹, Seok-Hyeon Kang¹, Hyunsoo Kim¹, Kyungwon Park¹, Yeju Jeong¹, Oak-Kee Hong², Jang-Won Son³, Seok Chung¹
¹Korea University, KOREA, ²Catholic University of Korea, KOREA, and ³Bucheon St. Mary's Hospital, KOREA
- 18:05 Adjourn for the Day**

Conference Banquet

19:00 - 22:00

Thursday, 17 October

All indicated times are Central Eastern Time (ET)

08:25 - 08:30

Announcements

Plenary Presentation VI

08:30

**NONINVASIVE PRENATAL AND CANCER DETECTION BY PLASMA DNA ANALYSIS:
FROM DREAM TO REALITY**

Yuk Ming "Dennis" Lo

Chinese University of Hong Kong, HONG KONG

**Microsystems & Nanoengineering/Springer Nature
Test of Time Award**

09:15

To Be Announced

09:35

Transition

Session 4A1 - Extracellular Vesicles

09:50

**KEYNOTE - SEVEN O'CLOCK: TIME FOR A NEW METHOD TO CHARACTERIZE INDIVIDUAL
EXTRACELLULAR VESICLES AND NON-VESICULAR NANOPARTICLES**

Andras Saftics¹, Sarah Abuelreich¹, Nan Jiang¹, Benjamin Purnell¹, Balint Beres¹, Carinna Lima¹,
Marta Garcia Contreras², S. Thompson¹, Eugenia Romano¹, Ima Ghaeli¹, Alex Spark³, Alexandre Kitching³,
Victoria L. Seewaldt¹, Kendall Van Keuren-Jensen⁴, Saumya Das², **Tijana Jovanovic-Talisman¹**

¹City of Hope, USA, ²Massachusetts General Hospital, Harvard Medical School, USA,

³Nanometrix Ltd, UK, and ⁴National Institutes of Health, USA

10:20

**MONITORING OF ACTIONABLE MUTATIONS VIA DIGITAL PROFILING OF BLOOD
EXTRACELLULAR VESICLES FROM PATIENTS WITH NON-SMALL CELL LUNG CANCER**

Elizabeth Maria Clarissa^{1,2}, Sumit Kumar^{1,2}, Yoon-Kyoung Cho^{1,2}

¹Ulsan National Institute of Science and Technology (UNIST), KOREA and

²Institute of Basic Science (IBS), KOREA

10:40

**V-DISK: A CENTRIFUGAL MICROFLUIDIC CARTRIDGE FOR PURIFICATION OF
EXTRACELLULAR VESICLES FROM BLOOD OR PLASMA SAMPLES**

Ehsan Mahmodiarjmand^{1,2}, Gustav Grether¹, Nils Paust^{1,2}, Jan Lueddecke^{1,2}

¹Hahn-Schickard, GERMANY and ²University of Freiburg, GERMANY

11:00

**SEPARATION OF EXTRACELLULAR VESICLES WITH DIFFERENT SIZES IN CULTURE
MEDIUM USING OPTICALLY-INDUCED DIELECTROPHORESIS ON A MULTI-CHANNEL
MICROFLUIDIC CHIP**

Cheng-Hsuan Chung, Chih-Hung Wang, Wei-Jen Soong, Gwo-Bin Lee

National Tsing Hua University, TAIWAN

Session 4B1 - Liposomes and Artificial Cells

- 09:50** **KEYNOTE - MICROFLUIDIC SYNTHESIS OF POLYMERSOMES FOR PROGRAMMING ENZYMATIC REACTION NETWORK**
Hyomin Lee
Pohang University of Science and Technology (POSTECH), KOREA
- 10:20** **PREPARATION OF CELL-SIZED LIPOSOMES USING BUDDING IN MICROFLUIDIC DEVICE**
Jiajue Ji, Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN
- 10:40** **CONSTRUCTION OF A SYNTHETIC CELL WITH A CYTOSKELETON USING 2-PHOTON POLYMERIZATION AND MICROFLUIDIC METHODS**
Myra Kurosu Jalil, Saisneha Koppaka, Sindy K.Y. Tang
Stanford University, USA
- 11:00** **UNVEILING MECHANISMS IN MICROFLUIDICS-ENHANCED LIPID NANOPARTICLE DIALYSIS VIA SINGLE-PARTICLE CYLINDRICAL ILLUMINATION CONFOCAL SPECTROSCOPY**
Fangchi Shao, Xiang Liu, Sixuan Li, Arman Mirmiran, Jinghan Lin, Kuangwen Hsieh, Lai Wei, Jiumei Hu, Hai-Quan Mao, Tza-Huei Wang
Johns Hopkins University, USA

Session 4C1 - High Throughput Screening

- 09:50** **KEYNOTE - HIGH-THROUGHPUT SCREENING OF BIOMOLECULES AND SINGLE CELLS BY NOVEL BIOCHIPS**
Lin Han
Shandong University, CHINA
- 10:20** **AUTOMATED SYSTEM FOR STUDY OF CELLULAR COMMUNICATION IN HYDROGEL-BASED DYNAMIC MICROENVIRONMENTS**
Yoon Jeong, Gabriel Mercado, Abinash Padhi, Yiyu Deng, Madhumita Prakash, Savas Tay
University of Chicago, USA
- 10:40** **INTEGRATED OPTOFLUIDIC PLATFORM FOR HIGH THROUGHPUT OPTICAL SPECTROSCOPY IN PL DROPLETS**
Marc Sulliger¹, Annina Stuber^{1,2}, Nako Nakatsuka², Jaime Ortega Arroyo¹, Romain Quidant¹
¹ETH Zürich, SWITZERLAND and ²École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- 11:00** **A NOVEL DROPLET MICROFLUIDIC SCREENING SYSTEM FOR DISCOVERING SLOW-GROWING MICROBES FROM THE ENVIRONMENT**
Byeolnim Oh¹, Mingyeong Kang², So-Ra Ko², Jaewon Park³, Chi-Yong Ahn², Hyun Soo Kim¹
¹Kwangju University, KOREA, ²Korea Research Institute of Bioscience and Biotechnology (KRIBB), KOREA, and ³Konkuk University, KOREA
- 11:20** **Break: Exhibit and Poster Inspection**

Awards Ceremony and Closing Remarks

- 11:50 Award Ceremony**
- CHEMINAS – Young Researcher Poster Awards
 - Royal Society of Chemistry/Lab on a Chip – Widmer Poster Award
 - Sensors (MDPI) – Outstanding Sensors and Actuators, Detection Technologies Poster Award
 - IMT Masken und Teilungen AG – Microfluidics on Glass Poster Award
 - NIST and Lab on a Chip – Art in Science Award
 - Biomicrofluidics (AIP) – Best Paper Awards
 - Elsevier Sensors and Actuators B. Chemical – Best Paper Award
 - Microsystems & Nanoengineering/Springer Nature – Best Talk Award
- 12:30 Closing Remarks**
- MicroTAS 2024 Conference Chairs
David Juncker, *McGill University, CANADA*
Aaron Wheeler, *University of Toronto, CANADA*
- 12:45 Conference Adjourns**

Poster Sessions

All indicated times are Central Eastern Time (ET)

M – Monday, 14 October (14:35 - 16:35)

T – Tuesday, 15 October (14:30 - 16:30)

W – Wednesday, 16 October (14:15 - 16:15)

Classification Chart

(last character of poster number)

a	Biology, Medicine and Diseases
b	Cells, Artificial Cells and Soft Nanoparticles
c	Environment, Energy, Agriculture, and Food
d	Fundamentals In Microfluidics and Nanofluidics
e	Integrated Microfluidic Platforms
f	Microfabrication, Manufacturing and Rapid Prototyping
g	Sensors, Actuators and Detection Technologies
h	Tissue Engineering, Organs on a Chip and Organisms
i	Wearables and Continuous Biosensing
j	μTAS and Diagnostics
k	Other Microfluidics and μTAS

a - Biology, Medicine and Diseases

Antimicrobial Resistance (AMR)

M001.a DETECTION OF ANTIBIOTIC RESISTANCE IN UROPATHOGENIC BACTERIA USING A MICROFLUIDIC POINT-OF-CARE SYSTEM FOR A FAST AND KNOWLEDGE-BASED ANTIBIOTIC THERAPY

Nicole Isserstedt-John¹, Luise Schuchardt¹, Susanne Ackermann², Claudia Gärtner¹, Ralf Mrowka²
¹microfluidic ChipShop, GERMANY and ²University Hospital Jena, GERMANY

M002.a MULTISTEP SLIPCHIP FOR RAPID PHENOTYPIC ANTIMICROBIAL SUSCEPTIBILITY TESTING

Qi Wang, Xiang Li, Yanan Ren, Feng Shen, Meifeng Tao
 Shanghai Jiao Tong University, CHINA

- T001.a DEVELOPMENT IN MULTIPLEX-CRRNA CRISPR/CAS12A-BASED DIAGNOSTIC PLATFORM FOR IDENTIFYING ANTIBIOTIC-RESISTANCE GENES AND DISCRIMINATING VIRAL FROM BACTERIAL INFECTIONS USING HOST-RNA SIGNATURES**
Hsuan-Wen Huang, Wen-Yu Kang, Hsin-Ying Ho, Wen-Hung Wang, Ling-Shan Yu
National Sun Yat-sen University, TAIWAN
- T002.a SIMPLIFIED ANTIMICROBIAL RESISTANCE DETECTION IN BACTEREMIA BY ON-CHIP MULTIPLEXED ISOTHERMAL PCR**
Capucine Treille, Karla Perez-Toralla, Lilas Pommies, Stéphanie Simon, Hervé Volland, Hervé Boutal
Université Paris Saclay, FRANCE
- W001.a LAB-IN-A-TABLET: PHAGE TABLETS ENABLE HIGH-THROUGHPUT SCREENING FOR RAPID IDENTIFICATION OF PERSONALIZED THERAPEUTIC BACTERIOPHAGES**
Fereshteh Bayat¹, Arwa Hilal¹, Mathura Thirugnanasampanthar¹, Denise Tremblay², Carlos D.M. Filipe¹, Sylvain Moineau², Tohid F. Didar¹, Zeinab Hosseinidoust¹
¹McMaster University, CANADA and ²Université Laval, CANADA

a - Biology, Medicine and Diseases

Cancer

- M003.a ANTI-CANCER THERAPEUTIC SCREENING: QUANTIFYING IMMUNO-ONCOLOGICAL INTERACTIONS FROM CONCEPT TO PRACTICE**
Ada H. Wong, Edward Seto
George Washington University, USA
- T003.a 3D ENGINEERED MICROFLUIDIC TUMOR PLATFORM TO INVESTIGATE MONOCYTE COATED NANOPARTICLE DRUG DELIVERY STRATEGY TARGETING GLIOBLASTOMA MULTIFORME**
Twinkle Jina Minette Manoharan, Ting-Yun Wang, Shivani Mantri, Hanan Alarnous, Kuei-Chun Wang, Mehdi Nikkhah
Arizona State University, USA
- W002.a MODULATION OF SIALYLATION OF N-GLYCAN BY SELECTIVE SIALYLTRANSFERASE INHIBITORS: A NEW APPROACH TO ANTITUMOR AND ANTI-SARS-COV-2 AGENTS**
Wen-Shan Li¹, Ser John L. Perez², Tzu-Ting Chang¹, Chia-Ling Chen¹, Shih-Han Wang¹, Chia-Wei Li¹
¹Academia Sinica, TAIWAN and ²National Yang Ming Chiao Tung University, TAIWAN
- W003.a POLYPLOIDY OF MDA-MB-231 BREAST CANCER CELLS PREDICTS INCREASED EXTRAVASATION**
Satomi Hirose, Tatsuya Osaki, Roger D. Kamm
Massachusetts Institute of Technology, USA

a - Biology, Medicine and Diseases

Drug Delivery

- M004.a A NOVEL DEVICE FOR SELF-POWERED LYOPHILIZED VACCINE RECONSTITUTION AND INTRADERMAL DELIVERY**
Wannes Verbist, Elias Broeckhoven, Pieter De Wever, Lorenz Van Hileghem, Dries Vloemans, Lotte Coelmont, Francesco Dal Dosso, Pedro Fardim, Kai Dallmeier, Jeroen Lammertyn
KU Leuven, BELGIUM

- M005.a LABEL-FREE TARGETED DELIVERY USING FEEDBACK-CONTROLLED SINGLE CELL MICRO-ELECTROPORATION IN FOCUSED ELECTRIC FIELDS**
Josiah Rudge, Yuvraj Rallapalli, Madeline Hoyle, Aniruddh Sarkar
Georgia Institute of Technology, USA
- M006.a THE INCREASED EFFECT OF MICROBUBBLE-ASSISTED GEMCITABINE DELIVERY WITH REPEATED ULTRASOUND EXPOSURE IN A PANCREATIC CANCER-ON-A-CHIP MODEL**
Delanyo Kpeglo¹, Magaret A. Knowles¹, Malcolm Haddrick², Stephen D. Evans¹, Sally A. Peyman³
¹University of Leeds, UK, ²Medicines Discovery Catapult, UK, and ³Heriot-Watt University, UK
- T004.a CAVITY ACOUSTIC TRANSDUCERS FOR RAPID AND EFFICIENT VIRAL TRANSDUCTION**
Mohammad Aghaamoo, Abraham Lee
University of California, Irvine, USA
- T005.a LED PLASMONIC OPTOPORATION FOR HIGH-THROUGHPUT AND SIMPLE INTRACELLULAR DELIVERY IN SUSPENSION CELLS**
Hamin Na, Eun-Sil Yu, Hyejeong Jeong, Junhee Han, Ji-Ho Park, Ki-Hun Jeong
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- W004.a GASTROINTESTINAL RATE-CONTROLLABLE DRUG RELEASE FROM A DIFFUSIONAL INJECTION SYSTEM**
Joshua A. Levy, Jude A.C. Stephen, Michael A. Straker, Reza Ghodssi
University of Maryland, USA
- W005.a MICROFLUIDIC DROPLET-BASED SYNTHESIS OF NANOGEL FOR DRUG DELIVERY IN OVARIAN CANCER: A DESIGN OF EXPERIMENT STUDY**
Emanuele Limiti¹, Eleonora D'Alessandro¹, Alessio Bucciarelli², Sofia Raniolo¹, Elisa De Luca³, Pamela Mozetic³, Filippo Rossi⁴, Marcella Trombetta¹, Sara M. Giannitelli¹, Alberto Rainer^{1,3}
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a - Biology, Medicine and Diseases

Global Health

- M007.a MANUFACTURING ON THE GO (MANGO): A DEVICE FOR LOW-COST AND PORTABLE CELL-FREE PROTEIN MANUFACTURING**
Quinn Matthews¹, Severino J.R. da Silva¹, Mohammad Simchi¹, Pouriya Bayat¹, Idorenyin Iwe¹, Lauren Cranmer¹, Andy Wu¹, Fahim Masum¹, Justin Vigar¹, Barbara Santos², Ryan Fobel¹, Yuxiu Guo¹, Serena Singh¹, Seray Cicek¹, Aidan Tinagar¹, David Sinton¹, Lindomar Pena², Keith Pardee¹
¹University of Toronto, CANADA and ²Fiocruz Pernambuco, BRAZIL
- T006.a EMPLOYING CANDYCOLLECT, A LOLLIPOP-INSPIRED SALIVA SAMPLING DEVICE, IN REMOTE RESPIRATORY PATHOGEN SAMPLING OF PARENT-CHILD DYADS NATIONWIDE**
D.B. Hatchett¹, Wan-chen Tu¹, Ingrid Jeacopello¹, Xiaojing Su¹, Sarah Ho¹, Albert Shin¹, Keila Uchimura¹, Sharon Oh¹, Perla Antunez¹, Anna Korolova¹, Sanitta Thongpang^{1,2}, Ashleigh B. Theberge¹, Ellen R. Wald³, Greg P. DeMuri³
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- W006.a HIGH-THROUGHPUT CHARACTERIZATION OF YOUNG'S MODULUS, SHAPE AND ADHESION OF SINGLE RED BLOOD CELLS FROM SICKLE CELL DISEASE AND TRAIT BLOOD SAMPLES**
Savita Kumari¹, Oshin Sharma¹, Dhruvbaditya Mitra^{2,3}, Debjani Paul¹
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a - Biology, Medicine and Diseases
High Throughput Screening

- M008.a HIGH-THROUGHPUT DETECTION OF MICROBIAL GROWTH AND ANTIBIOTIC SUSCEPTIBILITY IN DROPLETS USING ANGLE-RESOLVED SCATTERED LIGHT IMAGING AND CONVOLUTIONAL NEURAL NETWORKS**
Martina Graf^{1,2}, Arjun Sarkar^{1,2}, Carl M. Svensson¹, Anne S. Munser³, Sven Schröder³, Sundar Hengoju¹, Miriam A. Rosenbaum^{1,2}, Marc T. Figge^{1,2}
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- T007.a FULLY AUTOMATED MICROFLUIDIC 96-CHANNEL ELECTROPORATION SYSTEM ENABLES RAPID, PARALLEL SCREENING OF ELECTROPORATION CONDITIONS OF MICROORGANISMS**
Po-Hsun Huang¹, Owen T. Porth¹, Lei Wei², Maria Marco², K. Dane Wittrup¹, Kerwyn Casey Huang³, Cullen R. Buie¹
¹Massachusetts Institute of Technology, USA, ²University of California, Davis, USA, and ³Stanford University, USA
- T008.a HIGH-THROUGHPUT DROPLET-MICROFLUIDIC PLATFORM FOR CELL-FREE SYNTHETIC BIOLOGY-DRIVEN FUNCTIONAL METAGENOMICS**
Eunhee Cho, Sandrine Kammerecker, Shinichi Suagawa, Stavros Stavrakis, Andrew deMello
ETH Zürich, SWITZERLAND
- W007.a FUNCTION-FIRST SELECTION OF A PROTEIN BIOSENSOR BY SCREENING OF COLONIES IN CORE-SHELL MICROPARTICLES**
Rajesh Ghosh¹, Shosei Imai², William Vo¹, Wesley Luk¹, Darren Fang¹, Timothy Vernon¹, Mark van Zee¹, Issei Yamaguchi², Cayden Williamson¹, Takuya Terai², Robert E. Campbell², Dino Di Carlo¹
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a - Biology, Medicine and Diseases
Immune Cells and Immunity

- M009.a DROPLET MICROFLUIDIC BASED CD3 DIMERIZATION FOR T-CELL PRECISION ACTIVATION**
Huang Lai, Wen Yin, Yi Liu, Xiaozhe Zhang, Guojie Luo, Xiaodong Lin, Mo Yang
Hong Kong Polytechnic University, HONG KONG
- M010.a HIGHLY EFFICIENT HUMAN PRIMARY T CELL ENGINEERING VIA DROPLET CELL PINCHER PLATFORM**
You-Jeong Kim, Da Young Yun, Sungwon Bang, Cheulhee Jung, Aram J. Chung
Korea University, KOREA
- T009.a ENGINEERING IMMUNE CELL INTERACTIONS SPATIALLY TO STUDY THEIR RESPONSES TO DRUGS AND CYTOKINES WITHIN THE TUMOR MICROENVIRONMENT**
Megha Srinivas¹, Aditya Kashyap^{1,2}, Michael Gold¹, Govind Kaigala^{1,2}
¹University of British Columbia, CANADA and ²Vancouver Prostate Centre, CANADA
- T010.a MICROFLUIDIC TUMOR MODEL WITH OXYGEN MODULATION FOR HYPOXIA-TARGETED DRUG SCREENING**
Tsai-Yu Shih¹, Wei-Yu Huang¹, Kang-Yun Lee², Wei-Lun Sun³, Cheng-Hsien Liu¹
¹National Tsing Hua University, TAIWAN, ²Taipei Medical University, TAIWAN, and ³Pythia Biotech Ltd, TAIWAN³Pythia Biotech Ltd

- W008.a CAR-T MANUFACTURING ON AN INTEGRATED MICROFLUIDIC DEVICE**
Tugce Pasa, Allan Dietz, Kevin Loutherbak
Mayo Clinic, USA
- W009.a ENHANCING NATURAL KILLER CELL CYTOTOXICITY ASSESSMENT THROUGH DROPLET-BASED MICROFLUIDICS: IMPLICATIONS FOR IMMUNOTHERAPY**
Rana Ozcan, Fatemeh Vahedi, Ali Ashkar, Tohid Didar
McMaster University, CANADA
- W010.a MICROFLUIDIC-ENHANCED ISOLATION OF ANTI-TUMOR T-CELLS USING AC ELECTROTHERMAL FLOW**
Desh Deepak Dixit¹, Kavya L. Singamapalli³, Amanda Montoya², Alexandre Reuben², Peter B. Lillehoj¹
¹Rice University, USA, ²M.D. Anderson Cancer Center, USA, and ³Baylor College of Medicine, USA

a - Biology, Medicine and Diseases

Infectious Diseases

- M011.a CELL-FREE DNA METAGENOMIC APPROACH TO THE IDENTIFICATION OF CIRCULATING PATHOGENS: NEW CLINICAL CASE STUDY**
Maiwenn Kersaudy-Kerhoas¹, Linda Marriott¹, Ana Martinez-Lopez², Nicholas Leslie¹, Katharina Hoeter³, Stephanie Wiemann³, Marc Bodenstein³, Michael Schäfer³
¹Heriot-Watt University, UK, ²University of Edinburgh, UK, and ³Universitätsmedizin Mainz, GERMANY
- M012.a ENGINEERING A SAMPLE-TO-ANSWER SYSTEM TO IDENTIFY CIRCULATING CELL-FREE DNA FROM M. TUBERCULOSIS IN WHOLE BLOOD**
Rachel Warren, David Boegner, John Rzasa, Ian White
University of Maryland, USA
- M013.a HIGHLY-EFFICIENT PLASMONIC NANOCAVITY THERMOCYCLER FOR ULTRAFAST REAL-TIME POLYMERASE CHAIN REACTION**
Hyejeong Jeong, Jae-Myeong Kwon, Eun-Sil Yu, Jaehyeok Park, Ki-Hun Jeong
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- M014.a SEPSI CHIP: A TOOLKIT FOR THE RAPID PATHOGEN ISOLATION AND DETECTION FROM WHOLE BLOOD**
Sushma Agarwalla, Suhanya Duraiswamy
Indian Institute of Technology, Hyderabad, INDIA
- T011.a CLINIC-COMPATIBLE COLORIMETRIC MICROFLUIDIC DEVICE FOR DETECTION OF CARBAPENEMASE PRODUCING ORGANISMS**
Anjana Dissanayaka Dissanayaka^{1,2}, Ali Haider¹, Jesse J. Waggoner¹, David R. Myers^{1,2}
¹Emory University, USA and ²Georgia Institute of Technology, USA
- T012.a ENHANCED BACTERIAL SEPARATION FROM BLOOD THROUGH AUTOMATED REPEATED FILTRATION IN A CENTRIFUGE**
Aoi Tanaka^{1,2}, Mohammad Osaid¹, Wouter van der Wijngaart¹
¹KTH Royal Institute of Technology, SWEDEN and ²Keio University, JAPAN
- T013.a MICROFLUIDIC DIGITAL FOCUS ASSAY FOR THE QUANTIFICATION OF INFECTIOUS INFLUENZA VIRUS**
Siddharth Raghu Srimathi, Maxinne A. Ignacio, Sheldon Tai, Donald K. Milton, Margaret A. Scull, Don L. DeVoe
University of Maryland, USA

- T014.a NANOPARTICLE-SUPPORTED, RAPID, DIGITAL SARS-COV2 NEUTRALIZING ASSAY**
Seyedsina Mirjalili¹, Md Ashif Ikbal¹, Ching-Wen Hou¹, Yeji Choi¹, Mazyar Kalatehmohammdi¹, Laura A. VanBlargan², Laimonas Kelbauskas¹, Neal Woodbury¹, Vel Murugan¹, Brenda Hogue¹, Michael S. Diamond³, Chao Wang¹
¹Arizona State University, USA, ²National Institutes of Health, USA, and ³Washington University School of Medicine, USA
- W011.a CULTURE-FREE RAPID ISOLATION AND DETECTION OF BACTERIA FROM WHOLE BLOOD AT CLINICALLY RELEVANT CONCENTRATIONS**
María Henar Marino Miguélez^{1,2}, Mohammad Osaid¹, Vinodh Kandavalli², Jimmy Larsson², Johan Elf², Wouter M. van der Wijngaart¹
¹KTH Royal Institute of Technology, SWEDEN and ²Uppsala University, SWEDEN
- W012.a ENHANCED FLUORESCENCE GOLD NANOPARTICLE CRISPR/CAS12A-BASED PLATFORM FOR RAPID AND SENSITIVE DETECTION OF HUMAN PAPILLOMAVIRUS TYPES16 AND18**
Hsin-Ying Ho¹, Fang-Ying Lai¹, Yan-Bo Chen², Ling-Shan Yu¹
¹National Sun Yat-sen University, TAIWAN and ²Kaohsiung Armed Forces General Hospital, TAIWAN
- W013.a MULTI-DIMENSIONAL LASER INDUCED MICROFLUIDIC VALVE SYSTEM BASED COMBINATIONAL ANTIBIOTICS SUSCEPTIBILITY SCREENING AND SUB-5 MINUTE PATHOGEN IDENTIFICATION**
Lai Wei, Sayuni Dharmasena, Fangchi Shao, Sixuan Li, Jiyuan Yang, Arman Mirmiran, Kuangwen Hsieh, Jeff Tza-Huei Wang
Johns Hopkins University, USA
- W014.a NANOPARTICLE-SUPPORTED, RAPID, DIGITAL DETECTION OF AFRICAN SWINE FEVER**
Seyedsina Mirjalili¹, Yeji Choi¹, Carmina Gallardo², Marisa Arias Neira², Chao Wang¹
¹Arizona State University, USA and ²Spanish National Research Council (CSIC), SPAIN

a - Biology, Medicine and Diseases

Neurobiology and Neuroscience

- M015.a A MICROFLUIDIC CHIP FOR SUSTAINED OXYGEN GRADIENT FORMATION IN THE INTESTINE**
Colby E. Witt, Ashley E. Ross
University of Cincinnati, USA

a - Biology, Medicine and Diseases

Precision Medicine and Biomarkers

- M016.a RAPID DETECTION OF ISLET AUTOANTIBODIES USING PAPER-BASED VERTICAL FLOW ASSAY**
Barath Palanisamy¹, Rajesh Ghosh¹, Cristian M. Santos¹, Nathan Ou¹, Dahlia Liu¹, Abheerava G. Koka¹, Alejandro F. Siller², Maria J. Redondo², Aydogan Ozcan¹, Dino Di Carlo¹
¹University of California, Los Angeles, USA and ²Baylor College of Medicine, USA
- T015.a A MULTIMODAL BIOSENSOR PLATFORM FOR RAPID CHARACTERIZATION OF GUT MICROBIOTA**
Jyong-Huei Lee¹, Chriss Chin¹, Dennis C. Chan¹, Joseph C. Liao², Sam Yang², Nanying Zhang¹, Pak Kin K. Wong¹
¹Pennsylvania State University, USA and ²Stanford University, USA

- W015.a DRUG-DISCOVERY-ON-CHIP: DISCOVERY AND VALIDATION OF TARGETS IN PANCREATIC CANCER USING MICROFLUIDIC PANCREATIC CANCER-ASSOCIATED COAGULATION MODELS**
 Sae Rome Choi^{1,2}, Hye-ran Moon², Natalia Ospina Munoz^{1,2}, Yun Chang², Xiaoping Bao², Bennett D. Elzey², Melissa Fishel³, Matthew J. Flick⁴, Bumsoo Han^{1,2}
¹University of Illinois, Urbana-Champaign, USA, ²Purdue University, USA, ³Indiana University, USA, and ⁴University of North Carolina, Chapel Hill, USA

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Virus, Bacteria, and Parasite

- M017.a AUTOMATED DIGITAL MICROFLUIDIC PHAGE SUSCEPTIBILITY TESTING**
 Michael D.M. Dryden^{1,2,3}, Bernadette Ng^{1,3}, Danielle L. Peters^{1,2}, Jonathan D. Cook^{1,3,4}, Wangxue Chen^{1,2}, Aaron R. Wheeler^{1,3}, Teodor Veres^{1,2}, Greg J. German^{1,3,4}
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- M018.a FAST AND SENSITIVE DETECTION OF VIABLE BACTERIAL USING MICROWELL CONFINED AND PROPIDIUM MONOAZIDE ASSISTED DIGITAL CRISPR ASSAY**
 Weihong Yin, Kai Hu, Haohua Mei, Wei Jin, Ying Mu
 Zhejiang University, CHINA
- T016.a A FAST ASSAY OF BACTERIA CELL PERMEABILITY FOR GENETIC TRANSFORMATION**
 Charmaine Nieves, Po-Hsun Huang, Cullen R. Buie
 Massachusetts Institute of Technology, USA
- T017.a CANDYCOLLECT OPEN TO CLOSED (O2C) MICROFLUIDIC SYSTEM FOR RAPID AND USER-CENTRIC DETECTION OF GROUP A STREPTOCOCCUS**
 Kelsey M. Leong¹, J. Carlos Sanchez¹, Cosette Craig¹, John A. Tatka¹, Rene R. Arvizu¹, Ingrid Jeacopello¹, Victoria A. Shinkawa¹, Timothy R. Robinson¹, Megan M. Chang¹, Xiaojing Su¹, Sanitta Thongpang^{1,2}, Ashleigh B. Theberge¹, Erwin Berthier¹, Ayokunle Olanrewaju¹
¹University of Washington, USA and ²Mahidol University, THAILAND
- W016.a A GUT FEELING: UNDERSTANDING THE GUT MICROBIOTA THROUGH MICROENCAPSULATION**
 Sydney K. Wheatley^{1,2}, Hanna Hamoud-Michel^{1,2}, Claire Phan^{1,2}, Sophie Lerouge^{1,2,3}, Corinne F. Maurice⁴, Ali Ahmadi^{1,2}
¹École de Technologie Supérieure, CANADA, ²University of Montreal Hospital Research Centre, CANADA, ³University of Montreal, CANADA, and ⁴McGill University, CANADA
- W017.a CHARACTERIZATION OF THE BIOPHYSICAL PROPERTIES OF HUMAN PAPILLOMAVIRUS-LIKE PARTICLES WITH IN-PLANE NANOFLUIDIC DEVICES**
 MacRyan P. Biever, Angela J. Patterson, Kim Young, Shelby M. Klein, Martin F. Jarrold, Adam Zlotnick, Stephen C. Jacobson
 Indiana University, USA

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Late News

- M501.a A MICROFLUIDIC CHIP FOR GROWING MICROBIAL BIOFILMS IN A DYNAMIC SYSTEM WITH INTEGRATED REAL-TIME SENSING**
 Adei Abouhagger, Eivydass Andriukonis, Kamile Kasperavičiute, Arunas Stirke, Wanessa Melo
 Nacionalinis Fizinių ir Technologijos Mokslų Centras (NFTMC), LITHUANIA

- M502.a ANALYSIS OF CELL MECHANOPORATION WITH USE OF HYALURONIC ACID**
Lija Fajdiga¹, Spela Zemljic-Jokhadar¹, Spela Malensek², Roman Jerala², Tadej Kokalj³, Jure Derganc¹
¹University of Ljubljana, SLOVENIA, ²National Institute of Chemistry, SLOVENIA, and
³Institute of Metals and Technology, SLOVENIA
- M503.a ONE-STEP SCREENING OF A MAGNETIC NANOPARTICLE APTAMER LIBRARY WITH MULTIPLEX MICROFLUIDIC SURFACE PLASMON RESONANCE BIOSENSOR**
John V. L. Nguyen¹, Lidiya Malic^{1,2}, Maryam Tabrizian¹
¹McGill University, CANADA and ²National Research Council Canada, CANADA
- M504.a RAPID, DYNAMIC AND SUSTAINABLE TRACTION FORCE GENERATION OF BCR REGULATED IMMUNE B CELL**
Merem Omer Mohammed, Sujin Lee, Abdurazak Aman Ketebo, Taejin Kim, Sungsu Park
Sungkyunkwan University, KOREA
- M505.a THE CLOCK IN GROWING HYPHAE AND THEIR SYNCHRONIZATION IN NEUROSPORA CRASSA**
Jia Hwei Cheong, Xiao Qiu, Yang Liu, Heinz-Bernd Schuttler, Jonathan Arnold, Leidong Mao
University of Georgia, USA
- T501.a A TACROLIMUS-ELUTING NERVE GUIDANCE CONDUIT ENHANCES REGENERATION IN CRITICAL-SIZED PERIPHERAL NERVE INJURY RAT MODEL**
Azur Azapagic, Jayant P. Agarwal, Bruce K. Gale, Jill E. Shea, Susan Wojtalewicz, Himanshu J. Sant
University of Utah, USA
- T502.a HIGHLY INTEGRATED TUMOR MICROENVIRONMENT 3D MICROFLUIDIC DEVICE FOR STUDYING CANCER ASSOCIATED FIBROBLAST PROMOTE HCC SORAFENIB RESISTANCE**
Zihan Yang, Yuanyuan Jiang, Tongxu Si, Zesheng Wang, Zhengdong Zhou, Zhihang Zhou, Mengsu Yang
City University of Hong Kong, HONG KONG
- T503.a OPTIMIZING SHOCK WAVE-MEDIATED TRANSFECTION: A PARAMETRIC STUDY**
Mahyar Malekidelarestaqi, Martin Brouillette, Viktor Steimle, Alexandre Maréchal
Université de Sherbrooke, CANADA
- T504.a SYNTHESIS OF CDS@ZIF67 PRECISION NANOZYME FOR POINT-OF-CARE APPLICATIONS**
Anna Anandita, Premveer Singh, Dharitri Rath
Indian Institute of Technology, Jammu, INDIA
- T505.a THYROSENSE - A SENSING DEVICE FOR HOME MONITORING OF THYROID-STIMULATING HORMONE**
Winnie E. Svendsen¹, Pulkit Saluja¹, Fabien Abeille², Jelle Bannink², Bianka Fabinyi², Marko Blom², Alemnew Mekonnen³, Kumaravel Shanmugavel³, Jaime I. Castillo-León³
¹Technical University of Denmark, DENMARK, ²Micronit B V., NETHERLANDS, and
³HEI Therapeutics, DENMARK
- W501.a AN ELECTRONIC-FREE DEVICE FOR THE TARGETED SAMPLING OF MICROBIOTA WITHIN THE GASTROINTESTINAL TRACT**
Hanna Hamoud-Michel^{1,2}, Sydney K. Wheatley^{1,2}, Claire Phan^{1,2}, Irah King^{3,4}, Corinne Maurice³, Ali Ahmadi^{1,2}
¹École de Technologie Supérieure, CANADA, ²University of Montreal Research Center, CANADA,
³McGill University, CANADA, and ⁴McGill University Health Centre Research Institute, CANADA
- W502.a LOCAL DRUG DELIVERY AS BREAST CANCER TREATMENT: MINIATURE IMPLANTABLE OSMOGENECALLY DRIVEN PUMP**
Jade Bookwalter, Bruce K. Gale, Jayant P. Agarwal, Jill E. Shea, Azur Azapagic, Himanshu J. Sant
University of Utah, USA

- W503.a** **PROTOCOL OPTIMIZATION FOR THE ISOLATION AND SINGLE-CELL CHARACTERIZATION OF CIRCULATING TUMOR CELLS**
 Anna Terrazzan^{1,2}, Francesca P. Carbone¹, Stefano Volinia^{1,2}, Tomasz Kamiski²
¹University of Ferrara, ITALY and ²University of Warsaw, POLAND
- W504.a** **TARGETED SELECTION AND B CELL FUSION ON CHIP FOR THE GENERATION OF MONOCLONAL ANTIBODIES**
 Fanny Rousseau¹, Séverine Tarpau¹, Alexandre Chargueraud³, Stéphanie Simon¹, Bruno Le Pioufle², Jacques Fattaccioli³, Anne Wijkhuisen¹, Karla Perez-Toralla¹
¹CEA, FRANCE, ²ENS, FRANCE, and ³PASTEUR, FRANCE
- W505.a** **VIBRATION MIXING FOR ENHANCED PAPER-BASED RECOMBINASE POLYMERASE AMPLIFICATION**
 Kelli N. Shimazu, Andrew T. Bender, Per G. Reinhall, Jonathan D. Posner
 University of Washington, USA

b - Cells, Artificial Cells and Soft Nanoparticles

Bioinspired, Biomimetic & Biohybrid Devices

- M019.b** **ACOUSTICALLY DRIVEN CELL-MIMETIC MICROSTRUCTURES: TOWARDS HIGH THROUGHPUT CELLULAR ELASTOGRAPHY**
 Alinaghi Salari, Aaron R. Wheeler
 University of Toronto, CANADA
- M020.b** **GAS-PHASE-CULTURED CELL-BASED ODORANT SENSOR WITH HYDROGEL MICROWELLS**
 Shino Fujioka¹, Chisaki Yamagata¹, Koji Sato², Hiroaki Onoe¹
¹Keio University, JAPAN and ²University of Tokyo, JAPAN
- T018.b** **BIOMIMETIC SOFT FUNCTIONAL IONIC GEL FIBER FOR SMART WEARABLE STRAIN SENSOR HUMAN-MACHINE INTERFACE APPLICATIONS**
 Animesh Sinha, Junho Kim, Sangyeun Park, Doheon Koo, Hongyun So
 Hanyang University, KOREA
- T019.b** **CELLS DETECT AIRBORNE CHEMICALS: A 3D-PRINTED MICROFLUIDIC DEVICE FOR GAS-TO-LIQUID TRANSFER IN A CELL-BASED SENSOR**
 Kao Ikeda, Haruka Oda, Minghao Nie, Shoji Takeuchi
 University of Tokyo, JAPAN
- T020.b** **STABLE FORMATION OF LIPID BILAYER IN PARALLEL MICROFLUIDIC CHANNELS UTILIZING OPERATION OF AQUEOUS/ORGANIC TWO-PHASE FLOW**
 Masaya Ohba¹, Xin Jiang^{1,2}, Yutaka Kazoe¹
¹Keio University, JAPAN and ²Kanagawa Institute of Industrial Science and Technology, JAPAN
- W018.b** **ALGAE-DRIVEN BIOHYBRID MICRO-ROTOR WITH STABILIZED ROTATION**
 Haruki Kawakami, Haruka Oda, Minghao Nie, Shoji Takeuchi
 University of Tokyo, JAPAN
- W019.b** **GAS-BASED SWITCHING OF IONIC DIODE FOR PROGRAMMABLE CONTROLABILITY OF IONIC CIRCUIT**
 Sangjin Seo, Taesung Kim
 Ulsan National Institute of Science and Technology (UNIST), KOREA

b - Cells, Artificial Cells and Soft Nanoparticles
Cell Capture, Counting, and Sorting

- M021.b AUTOMATED DROPLET-ON-DEMAND OPTOFLUIDIC PLATFORM FOR SINGLE CELL CAPTURE, ISOLATION AND COLLECTION**
William Mills¹, Ruifeng Zheng¹, Hongyu Zhao¹, Yecang Chen¹, Andrew Glidle¹, Peng Liang², Hing Leung¹, Huabing Yin¹
¹University of Glasgow, UK and ²Hooke Instruments Ltd, CHINA
- M022.b CHARACTERISING THE ROLE OF CELL SHAPE IN INERTIAL MICROFLUIDIC SORTING USING PARASITES AS MODEL PARTICLES**
Jessie Howell^{1,2}, Nicole Hall², Sulochana Omwenga¹, Tansy Hammarton¹, Melanie Jimenez²
¹University of Glasgow, UK and ²University of Strathclyde, UK
- M023.b GLYCORNA-SPECIFIC CELL SUBPOPULATIONS PROFILING BY DNA PROXIMITY-MEDIATED MAGNETIC SORTING**
Haotian Li, Feng Chen, Ningfeng Luo, Yongxi Zhao
Xi'an Jiaotong University, CHINA
- M024.b HONEYCOMB FILM-INTEGRATED INTERDIGITATED MICROCHANNELS FOR SELECTIVE CAPTURE AND DETECTION OF RARE CELLS**
Yuheng Cheng, Jiwen Jiang, Yuhei Saito, Masumi Yamada
Chiba University, JAPAN
- M025.b INERTIAL MICROFLUIDICS FOR THE SEPARATION OF SPERMATOGENIC CELL PHASES TO ASSIST IN-VITRO HUMAN SPERMATOGENESIS**
Sabin Nepal¹, Alex Jafek², Joey Casalini², Bruce Gale^{1,2}
¹University of Utah, USA and ²Paterna Biosciences, USA
- M026.b MICROFLUIDIC INTRACYTOPLASMIC SPERM INJECTION (MICS)**
Majid Ebrahimi Warkiani
University of Technology Sydney, AUSTRALIA
- M027.b THERMO-RESPONSIVE DETERMINISTIC LATERAL DISPLACEMENT FOR CELL SEPARATION**
Ze Jiang, Yusuke Kanno, Takasi Nisisako
Tokyo Institute of Technology, JAPAN
- T021.b CELL SPHEROID SEPARATION IN A 3D-PRINTED MICROPILLAR ARRAY DEVICE**
Yeyi Tang, Yusuke Kanno, Takasi Nisisako
Tokyo Institute of Technology, JAPAN
- T022.b DOUBLE DIP: STEPWISE ISOLATION OF DIVERSE METABOLIC POPULATIONS USING SORTING BY INTERFACIAL TENSION (SIFT)**
Matthew Shulman, Thomas Mathew, Aria Trivedi, Paul Abbyad
Santa Clara University, USA
- T023.b HIGH THROUGHPUT INTRACELLULAR DELIVERY BY VISCOELASTIC MECHANOPORATION**
Derin Sevenler¹, Mehmet Toner²
¹Carnegie Mellon University, USA and ²Massachusetts General Hospital, Harvard Medical School, and Shriners Children's Hospital, USA
- T024.b HYBRID 3D GRILL-STRUCTURED MICROFLUIDIC DEVICE FOR RAPID HIGH-THROUGHPUT WHOLE BLOOD CTC ENRICHMENT**
Lawrence Chen, Yehyun Choi, Euisik Yoon
University of Michigan, USA

- T025.b MARROWCELLDLD: A MICROFLUIDIC METHOD FOR LABEL-FREE RETRIEVAL OF FRAGILE BONE MARROW-DERIVED CELLS**
Gloria Porro
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- T026.b MICROFLUIDIC LEUKAPHERESIS IS SAFE AND EFFECTIVE IN A RAT MODEL**
Mubasher Iqbal¹, Alexandra L. McLennan^{2,3}, Anton Mukhamedshin¹, Mai T.P. Dinh¹, Qisheng Liu^{2,3}, Jacob J. Junco², Karen R. Rabin², Sean C. Gifford⁴, Sergey S. Shevkoplyas¹, Fong W. Lam^{2,3}
¹University of Houston, USA, ²Baylor College of Medicine, USA, ³Center for Translational Research on Inflammatory Diseases, USA, and ⁴Halcyon Biomedical Incorporated, USA
- W020.b ACTIVE MATTER AND ACOUSTOFLUIDICS: SELECTING SELF-PROPELLED JANUS PARTICLES AND SPERM CELLS BASED ON MOTILITY**
Vyacheslav R. Misko^{1,2}, Larysa Baraban³, Denys Makarov³, Tao Huang³, Pierre Gelin¹, Ileana Mateizel⁴, Koen Wouters⁴, Neelke De Munck⁴, Franco Nori^{2,5}, Wim De Malsche¹
¹Vrije Universiteit Brussel, BELGIUM, ²RIKEN Saitama, JAPAN, ³HZDR Dresden, GERMANY, ⁴Brussels IVF, BELGIUM, and ⁵University of Michigan, USA
- W021.b CELLTRAP: A MICROFLUIDIC PLATFORM ENABLING CELL-CELL INTERACTIONS**
Muhammad Zia Ullah Khan¹, Morteza Hasanzadeh Kafshgari¹, Ali Bashiri Dezfouli², Mehmet Akif Sahin¹, Gabriele Multhoff¹, Ghulam Destgeer¹
¹Technical University of Munich, GERMANY and ²Rechts der Isar Hospital, GERMANY
- W022.b DURABLE BUBBLE-JET SORTER FOR CONTINUOUS AND HIGH-PERFORMANT BIO SAMPLE ISOLATION**
Thomas Hopfes¹, Radin Tahvildari¹, Koen de Wijs¹, Chi Dang¹, Jelle Fondu¹, Liesbet Lagae^{1,2}, Sarah Libbrecht¹
¹imec, BELGIUM and ²KU Leuven, BELGIUM
- W023.b HIGH-THROUGHPUT SCREENING OF FILAMENTOUS FUNGI USING SOLID SUBSTRATES IN DROPLETS**
Chiara Leal Alves¹, Mari Valkonen², Adiphol Dilokpimol², Zhiyang Deng¹, Sarah Alkhaldi¹, Steve Shih¹
¹Concordia University, CANADA and ²VTT Technical Research Centre of Finland Ltd., FINLAND
- W024.b HYDROGEL-BASED, ULTRAHIGH-THROUGHPUT SCREENING PLATFORM FOR THE ACCELERATION OF SYNTHETIC BIOLOGY**
Cayden Williamson, Moriel Dror, Yi Tang, Dino DiCarlo
University of California, Los Angeles, USA
- W025.b MICROFLUIDIC CELL MANIPULATION BY BIOMOLECULAR ARTIFICIAL MUSCLE-DRIVEN MICROGRIPPERS**
Yingzhe Wang¹, Xiangli Zeng¹, Takahiro Nitta², Yuichi Hiratsuka³, Keisuke Morishima¹
¹Osaka University, JAPAN, ²Gifu University, JAPAN, and ³Japan Advanced Institute of Science and Technology (JAIST), JAPAN
- W026.b SURFACE TENSION TRAPS TO OBSERVE FRATRICIDE BETWEEN STREPTOCOCCUS PNEUMONIAE CELLS**
Anna Borowska, Donald A. Morrison, David T. Eddington
University of Illinois, Chicago, USA

b - Cells, Artificial Cells and Soft Nanoparticles

Cell Migration

- M028.b ON-CHIP RECONSTRUCTION OF CLINICALLY RELEVANT TUMOR-MICROENVIRONMENT INTERACTIONS THAT DRIVE BREAST CANCER CELLS MIGRATION**
Simona Visan¹, Valentina Pilecki¹, Oana Baldasici¹, Olga Soritau¹, Andrei Roman¹, Carmen Lisencu¹, Daniel Cruceriu¹, Laura Maja¹, Bogdan Pop¹, Bogdan Fetica¹, Loredana Balacescu¹, Ovidiu Balacescu¹, Aman Russom², Oana Tudoran^{1,2}
¹*Oncology Institute, ROMANIA* and ²*KTH Royal Institute of Technology in Stockholm, SWEDEN*
- T027.b DIFFERENTIAL MIGRATORY RESPONSES OF CANCER CELL AND IMMUNE CELL TO WIRELESS ELECTRICAL STIMULATION**
Nicholas Palmerley¹, Yang Liu¹, Amanda Stefanson¹, Dumitru Tomsa¹, Amir H. Abolfathi¹, Xuehui Jiang², René Zahedi^{1,2,3}, John Wilkins^{1,2}, Ruey-Chyi Su^{1,4}, Francis Lin¹
¹*University of Manitoba, CANADA*, ²*Manitoba Centre for Proteomics and Systems Biology, CANADA*, ³*CancerCare Manitoba, CANADA*, and ⁴*National Microbiology Laboratory, CANADA*
- T028.b PSEUDOPODIA PROTEOME FOR COMPOSITIONAL CHARACTERIZATIONS OF MIGRATING T CELLS USING 3D PRINTED CELL PROTRUSION ISOLATION DEVICES**
Yang Liu, Dumitru Tomsa, Xuehui Jiang, Amir H. Abolfathi, Nicholas Palmerley, Rene Zahedi, John A. Wilkins, Francis Lin
University of Manitoba, CANADA
- W027.b EFFECTS OF ADHESION TO ROD-SHAPED PARTICLES ON CELL SHAPE AND MIGRATION**
Masayuki Hayakawa, Hiroaki Suzuki
Chuo University, JAPAN
- W028.b QUANTITATIVE MEASUREMENTS OF DICTYOSTELIUM DISCOIDEUM AMOEBA SHEAR STRESS-DEPENDENT CELL ADHESION ANALYSIS AND MOTION IN A MICROFLUIDIC DEVICE**
Sepideh Fakhari, Clemence Belleannee, Steve Charette, Jesse Greener
Université Laval, CANADA

b - Cells, Artificial Cells and Soft Nanoparticles

Inter- and Intracellular Signaling

- M029.b COMBINING MULTIPLEX CELL MICROPATTERNING AND MICROFLUIDICS TO STUDY CELL-CELL COMMUNICATION IN MELANOMA**
Francesca Pollet¹, Ada Nowosad², Anaïs Lescroart¹, Roselien Verboven¹, Jolien Breukers¹, Karen Ven¹, Chris Marine², Jeroen Lammertyn¹
¹*KU Leuven, BELGIUM* and ²*VIB-KU Leuven, BELGIUM*
- T029.b EXTRACELLULAR ADENOSINE TRIPHOSPHATE RELEASE KINETICS FOLLOWING MICROBUBBLE CAVITATION IN CULTURED HUMAN ENDOTHELIAL CELLS**
Marie Amate¹, Ju Jing Tan¹, Francis Boudreault¹, Ryszard Grygorczyk¹, Thomas Gervais², Francois Yu¹
¹*University of Montreal, CANADA* and ²*Ecole Polytechnique Montréal, CANADA*

b - Cells, Artificial Cells and Soft Nanoparticles
Liposomes, Lipid Nanoparticles, Engineered Vesicles and Aggregates

- M030.b DEVELOPMENT OF A SIZE-CONTROLLED HYBRID EXOSOME PRODUCTION METHOD FOR RNA DELIVERY USING A MICROFLUIDIC DEVICE.**
 Masatoshi Maeki^{1,2}, Shota Oyama¹, Mitsue Hibino¹, Akihiko Ishida¹, Manabu Tokeshi¹
¹Hokkaido University, JAPAN and ²High Energy Accelerator Research Organization, JAPAN
- M031.b MICROFLUIDIC-BASED PRODUCTION OF UNIFORM GIANT VESICLES WITH MEMBRANE PROTEINS BY DIRECT SYNTHESIS AND INSERTION**
 Satoshi Nanjo¹, Mamiko Tsugane¹, Tomoaki Matsuura², Hiroaki Suzuki¹
¹Chuo University, JAPAN and ²Tokyo Institute of Technology, JAPAN
- M032.b SINGLE-PARTICLE SPECTROSCOPIC HYDRODYNAMIC CHROMATOGRAPHY REVEALS HETEROGENEOUS RNA LOADING AND SIZE CORRELATIONS IN LIPID NANOPARTICLES**
 Sixuan Li, Fangchi Shao, Yizong Hu, Jinghan Lin, Kuangwen Hsieh, Lai Wei, Tine Curk, Hai-Quan Mao, Tza-Huei Wang
 Johns Hopkins University, USA
- T030.b FOULING-RESISTANT SI/GLASS MICROFLUIDIC CHIP FOR SCALABLE AND CONTINUOUS MANUFACTURING OF RNA LIPID NANOPARTICLES**
 Yoon-Ho Hwang, David Issadore, Daeyeon Lee
 University of Pennsylvania, USA
- T031.b NANOSCALE TOOLS FOR THE FORMATION OF COMPLEX GIANT UNILAMELLAR VESICLES**
 Jorik Waeterschoot, Willemien Gosselé, Hojjat Alizadeh Zeinabad, Jeroen Lammertyn, Erin Koos, Xavier Casadevall i Solvas
 KU Leuven, BELGIUM
- W029.b ASSEMBLY OF SINGLE DNA NANOPORE ON TARGETED LIPOSOMES USING DNA NANOPORE PROBE TECHNOLOGY**
 Taisei Morikawa, Shun Okada, Hiroki Koiwa, Yukihiro Izawa, Hiromu Akai, Kan Shoji
 Nagaoka University of Technology, JAPAN
- W030.b MAGNETICALLY-DRIVEN LIPOSOME ASSEMBLIES**
 Shun Okada, Kan Shoji
 Nagaoka University of Technology, JAPAN
- W031.b PREFERENCE MAPS FOR DESIGNING LIPID NANOPARTICLES: CELLULAR UPTAKE VS. PHYSICAL CHARACTERISTICS**
 Niko Kimura¹, Shinya Sakuma²
¹Tokyo University of Agriculture and Technology, JAPAN and ²Kyushu University, JAPAN

b - Cells, Artificial Cells and Soft Nanoparticles

Others

- T041.b INVESTIGATING THE EFFECTS OF PULSED ELECTRIC FIELDS (PEFS) ON HUMAN OSTEOSARCOMA CELLS FOR OPTIMIZING ELECTROCHEMOTHERAPIES**
 Thomas Nesmith
 Toronto Metropolitan University, CANADA

b - Cells, Artificial Cells and Soft Nanoparticles

Single-Cell Analysis

- M033.b DROPLET-BASED SINGLE-CELL FULL-LENGTH 16S rRNA SEQUENCING**
Jian Zhang, Yifan Liu
ShanghaiTech University, CHINA
- M034.b EXPANDING THE CAPACITY OF OPTO-COMBINATORIAL INDEXING FOR MULTIMODAL SINGLE-CELL ANALYSIS**
Arata Tsuchida¹, Taikopaul Kaneko², Kaori Nishikawa¹, Mayu Kawasaki¹, Hirofumi Shintaku^{1,2}
¹*Institute of Physical and Chemical Research (RIKEN), JAPAN* and ²*Kyoto University, JAPAN*
- M035.b HYDROGEL PARTICLE BI-FUNCTIONALIZATION PROMOTES SELECTIVE SECRETION CAPTURE AND ANTIBODY-SECRETING CELL PURITY**
Michael Mellody¹, Mihye Lee¹, Sevana Baghdasarian¹, Citra Soemardy¹, Richard James², Dino Di Carlo¹
¹*University of California, Los Angeles, USA* and ²*Seattle Children's Hospital, USA*
- M036.b MICROFLUIDIC CELL MEMBRANE BARCODING FOR SECRETION KINETICS AND IMMUNE ESCAPE ANALYSIS**
Ying Xu, Chia-Hung Chen
City University of Hong Kong, HONG KONG
- M037.b PHENOTYPING DIFFERENTIATED FIBROBLAST BY IMPEDANCE DEFORMABILITY CYTOMETRY**
Junyu Chen, Daniel Spencer, Yihua Wang, Donna Davies, Mark Jones, Zijian Xu, Liudi Yao, Siyuan Wang, Kun Zheng, Hywel Morgan
University of Southampton, UK
- M038.b SINGLE-CELL IMPEDANCE CYTOMETRY TO EVALUATE MODE OF ACTION OF COLISTIN**
Xiang Wang¹, Bethany Martin^{1,2}, Daniel Spencer¹, Mark Sutton², Hywel Morgan¹
¹*University of Southampton, UK* and ²*UK Health Security Agency, UK*
- M039.b TOWARDS PRECISION OPTOGENETIC CONTROL OF MAMMALIAN CELL SIGNALING PATHWAYS BASED ON MICROFLUIDICS**
Jialu Tian, Qianming Yan, Junwen Zhu, Ke A, Huichao Chai, Peng Zhao, Juncheng Wu, Xiaowo Wang, Wenhui Wang
Tsinghua University, CHINA
- T032.b AN OPTICAL-ELECTRICAL DEFORMABILITY CYTOMETER**
Xueping Zou, Daniel Spencer, Junyu Chen, Hywel Morgan
University of Southampton, UK
- T033.b DYNAMIC INVESTIGATION OF IMMUNE-CANCER CELL INTERACTIONS WITH A CONTROLLABLE CELL-PAIRING PLATFORM AND MASS SPECTROMETRY-BASED SINGLE-CELL PROTEOMICS ANALYSIS SYSTEM**
Qinqin Xu, Yirong Jiang, Yi Yang, Jianzhang Pan, Qun Fang
Zhejiang University, CHINA
- T034.b EXTENDING THE UTILITY OF A DIGITAL MICROFLUIDIC-BASED SINGLE-CELL -OMICS TOOL (TDISCO) TO TARGETED SPATIAL ASSAYS FOR GLIAL CELLS**
Savina R. Cammalleri^{1,2}, Erica Y. Scott¹, Jason Okpere¹, Maryam Faiz¹, Aaron R. Wheeler¹
¹*University of Toronto, CANADA* and ²*Max Planck Institute, GERMANY*

- T035.b HIGH-THROUGHPUT AND MULTIPLEX ANALYSIS OF SINGLE-CELL, SINGLE-MITOCHONDRIAL DNA MUTATION USING HYDROGEL DROPLET MICROFLUIDICS AND ROLLING CIRCLE AMPLIFICATION**
Juhwan Park, Michelle Feng, Parnika Kadam, Yasemin Atiyas, Bonirath Chhay, Andrew Tsourkas, James Eberwine, David Issadore
University of Pennsylvania, USA
- T036.b MICROFLUIDIC IMPEDANCE ANALYSIS OF CELL-LOADED NANOVIOLS**
Cristian Brandi¹, Adele De Ninno², Filippo Ruggiero², Emanuele Limiti³, Franca Abbruzzese³, Marcella Trombetta³, Alberto Rainer³, Paolo Bisegna¹, Federica Caselli¹
¹*University of Rome Tor Vergata, ITALY*, ²*Italian National Research Council, ITALY*, and ³*Università Campus Bio-Medico di Roma, ITALY*
- T037.b PIP-PLEX: A PARTICLE-IN-PARTICLE SYSTEM FOR MULTIPLEX QUANTIFICATION OF PROTEINS SECRETED BY SINGLE CELLS**
Felix Lussier¹, Byeong-Ui Moon², Mojra Janta-Polczynski², Fabian Svahn¹, Molly Shen¹, Lidija Malic², Teodor Veres², Andy Ng¹, David Juncker¹
¹*McGill University, CANADA* and ²*National Research Council of Canada, CANADA*
- T038.b SINGLE CELL ELECTRO-MECHANICAL PHENOTYPING WITH MICROFLUIDIC IMPEDANCE CYTOMETRY**
Junyu Chen, Daniel Spencer, Hywel Morgan
University of Southampton, UK
- T039.b VISCOELASTIC DEFORMABILITY CYTOMETRY: MECHANICAL PHENOTYPING IN LIQUID AND SOLID BIOPSIES**
Sarah Duclos Ivetich, Mohammad Asghari, Mahmut Kamil Aslan, Stavros Stavrakis, Andrew J. deMello
ETH Zürich, SWITZERLAND
- W032.b CELLULAR-IMAGING AND WELL-PLATE INDEXING (CIWI): A NEW PLATFORM FOR IMAGING AND SEQUENCING SINGLE CELLS**
Boden B. Eakins¹, Aaron M. Streets^{1,2}
¹*University of California, Berkeley, USA* and ²*Chan Zuckerberg Biohub SF, USA*
- W033.b EIS MONITORING OF SINGLE YEAST GROWTH AND DISSECTION ON A MEA-INTEGRATED MICROFLUIDIC DEVICE**
Haoran Wu¹, Yulu Geng¹, Yanze Shi¹, Zixin Wang², Yingying Wang¹, Zhen Zhu¹
¹*Southeast University, CHINA* and ²*Sun Yat-Sen University, CHINA*
- W034.b HIGH-THROUGHPUT AND HIGH-EFFICIENT SINGLE CELL-IN-DROPLET ENCAPSULATION BASED ON PARTICLE ORDERING BY VISCOELASTIC AND ACOUSTOPHORETIC FORCES**
Youngseo Cho¹, Sangwook Lee², Younghak Cho¹
¹*Seoul National University of Science and Technology, KOREA* and ²*PCL Inc., KOREA*
- W035.b IMPEDANCE-MASS DUAL FLOW CYTOMETRY FOR MULTI-MODAL SINGLE CELL ANALYSIS**
Junwen Zhu, Huichao Chai, Peng Zhao, Wenhui Wang
Tsinghua University, CHINA
- W036.b MICROFLUIDIC TOOLS FOR STUDYING SINGLE CELL SECRETIONS: A CASE STUDY ON HYBRIDOMA ANTIBODY SECRETION**
Julie Van Lent¹, Iene Rutten¹, Karen Ven¹, Jolien Breukers¹, Eleonore Verstraete¹, Katrien Van der Borgt², Julie Van Duyse², Kristina Fokias¹, Maya Imbrechts¹, Gert Van Isterdael², Karen Vanhoorelbeke¹, Nick Geukens¹, Jeroen Lammertyn¹
¹*KU Leuven, BELGIUM* and ²*VIB Flow Core, BELGIUM*

W037.b RED BLOOD CELL LENGTH CHANGE PHENOMENON WITHIN THE CONSTRICTION
Mitsuhiro Horade¹, Kimihiro Sakamoto², Shuichi Murakami³
¹Setsunan University, JAPAN, ²National Defense Academy of Japan, JAPAN, and
³Osaka Research Institute of Industrial Science and Technology, JAPAN

W038.b SINGLE-CELL IMPEDANCE SPECTROSCOPY AND DOUBLE SHELL MODEL
Xueping Zou, Daniel Spencer, Junyu Chen, Hywel Morgan
University of Southampton, UK

b - Cells, Artificial Cells and Soft Nanoparticles

Synthetic Biology and Artificial Cells

M040.b LIVING META-SURFACE SENSOR TO SCREEN SINGLE-CELL SECRETIONS FOR BIO-FABRICATION
Wenxin Jiang, Chia-Hung Chen
City University of Hong Kong, HONG KONG

M041.b THE POWER OF A DROP IN SYNTHETIC BIOLOGY DNA ENTRAP: A DROPLET MICROFLUIDIC PLATFORM FOR ENHANCED DNA TRANSFER BETWEEN MICROBIAL SPECIES
Jose A. Wippold¹, Monica Chu¹, Rebecca Renberg¹, Yuwen Li², Bryn L. Adams¹, Arum Han²
¹Army Research Laboratory, USA, and ³Texas A&M University, USA

T040.b PH-MODULATING POLYMERIC MICROCAPSULES: PKA-DEPENDENT SELF-REGULATION AND ENZYMATIC PH CONTROL
Joshua Krehan, Andreas Walther
University of Mainz, GERMANY

W039.b INTEGRATION OF OPTOGENETICS AND MICROFLUIDICS FOR CONTROLLING GENE EXPRESSION
Aniket A. Kandalkar, James M. Perry, Joel Phillips, Samuel R. Little, Steve C.C. Shih
Concordia University, CANADA

W040.b PRESSURE DEPENDENCE OF IMPROVED PROTEIN RECONSTITUTION AND MECHANICAL STIMULATION FOR ELECTROPHYSIOLOGICAL RECORDING OF MECHANOSENSITIVE CHANNELS
Bong Kyu Kim^{1,2}, Dong-Hyun Kang¹, Seok Chung^{1,2}, Tae Song Kim¹
¹Korea Institute of Science and Technology (KIST), KOREA and ²Korea University, KOREA

b - Cells, Artificial Cells and Soft Nanoparticles

Late News

M506.b A MICROFLUIDIC PLATFORM FOR EXTRACTION AND ANALYSIS OF BACTERIAL CHROMOSOMES
Alex Joesaar, Martin Holub, Cees Dekker
Delft University of Technology, NETHERLANDS

M507.b IDENTIFYING TUMOR CELLS AT THE SINGLE-CELL LEVEL WITHOUT PREVIOUS KNOWLEDGE USING SCATTERING SNAPSHOTS
David Dannhauser¹, Paolo Antonio Netti^{1,2}, Filippo Causa¹
¹University of Naples, Federico II, ITALY and ²Istituto Italiano di Tecnologia, ITALY

- M508.b SINGLE-CELL SECRETED PROCOLLAGEN ASSAY USING FUNCTIONALIZED NANOVIALS**
Yuta Nakagawa, Michael Mellody, Dino Di Carlo
University of California, Los Angeles, USA
- T506.b A SIMPLE METHOD OF FORMING LIPOSOME BY USING HYDROPHILIC-HYDROPHOBIC COMPOSITE MICROFLUIDIC DEVICES**
Yiting Zhang, Naoki Sasaki
Rikkyo University, JAPAN
- T507.b INTEGRATING ELECTROCHEMICAL SENSING USING REDOX-LABELLED APTAMERS WITH DIELECTROPHORETIC SINGLE-CELL TRAPPING FOR CANCER CELL DETECTION**
Hanye Dai¹, Shuo Li¹, Akira Fujiwara², Nicolas Clément¹, Soo Hyeon Kim¹
¹University of Tokyo, JAPAN and ²NTT Basic Research Laboratories, JAPAN
- T508.b SURFACE ENGINEERING OF ARTIFICIAL CELLS TO INTERROGATE TISSUE MECHANOBIOLOGY: POLYACRYLAMIDE MICROGEL DROPLET SURFACE MODIFICATION WITH DIAZIRINE-BASED CROSSLINKERS**
Alejandro Forigua, Christina-Marie Boghdady, Christopher Moraes
McGill University, CANADA
- W506.b DIELECTROPHORETIC ISOLATION OF MELANOMA CELLS FOLLOWED BY SINGLE-CELL PROTEASE ACTIVITY TO EVALUATE INVASIVE POTENTIAL**
Benjamin T. Schelske, Ethan H. Leung, Joseph T. Banovetz, Jared L. Anderson, Robbyn K. Anand
Iowa State University, USA
- W507.b LEUKOCYTE DIFFERENTIAL BASED ON AN IMPEDANCE FLOW CYTOMETRY COUPLED WITH VIRTUAL CONSTRICTION MICROCHANNELS**
Xiao Chen^{1,2}, Minruihong Wang^{1,2}, Yimin Li^{1,2}, Xukun Huang^{1,2}, Yuan Wang¹, Junbo Wang^{1,2}, Xiaoye Huo^{1,2}, Jian Chen^{1,2}
¹Chinese Academy of Sciences, CHINA and ²University of Chinese Academy of Sciences, CHINA
- W508.b TOWARDS DESIGNER NANOBUBBLES: CONCENTRATING MONODISPERSE AND STABLE MICROFLUIDIC NANOBUBBLES WITH AQUEOUS TWO-PHASE SYSTEMS**
Steven B. H. Tran, Michael C. Kolios, Scott S. H. Tsai
Toronto Metropolitan University, CANADA

c - Environment, Energy, Agriculture, and Food

Agriculture and Plant Analysis

- M042.c INTEGRATED MICROFLUIDIC PLATFORM FOR ISOLATION AND IRRADIATION OF CHLOROPLASTS TOWARDS GENE EXPRESSION ANALYSIS**
Oriana G. Chavez¹, Pablo E. Guevara¹, Victor M. Marín², Luis D. Patiño², Gabriel A. Caballero¹, Clelia De la Peña², Daniel A. May³, Jose L. Garcia¹
¹Centro de Investigación y de Estudios Avanzados del IPN (CINVESTAV), MEXICO, ²Centro de Investigación Científica de Yucatán (CICY), MEXICO, and ³Centro de Investigaciones en óptica (CIO), MEXICO
- M043.c PLANT-DRIVEN ACTUATORS FOR PUMPING APPLICATIONS**
Ryosuke Tani, Minghao Nie, Shoji Takeuchi
University of Tokyo, JAPAN
- T042.c MICROFLUIDIC CHANNELS FOR PERFORMING ANTIMICROBIAL SUSCEPTIBILITY TEST OF NATURAL COMPOUNDS AGAINST XYLELLA FASTIDIOSA GROWTH**
Francesca Costantini¹, Nicola Lovecchio¹, Valeria Scala², Stefania Loreti², Nicoletta Pucci²
¹Sapienza University of Rome, ITALY and ²CREA-DC, ITALY

- W041.c AUTOMATED PLANT PATHOGEN DETECTION USING LAB-ON-A-DISC (LOAD) AND SECONDARY MOTION TECHNOLOGY**
Abrar Abdelsalam^{1,2}, Matthew Cavazzana¹, David J. Kinahan^{1,2}, Eadaoin Carthy^{1,2}
¹Dublin City University, IRELAND and ²RAPID Institute, IRELAND
- W042.c PAPER-BASED MICROFLUIDIC DETECTION AND QUANTIFICATION OF MICRORNA 408 AS AN INDICATOR OF STRESS RESPONSES IN CROPS**
F. Nicolas Nazar¹, Stefania Pellegrini¹, Enrique Azuaje-Hualde¹, Xabier Arciniega¹, Pablo E. Guevara-Pantoja¹, Lourdes Basabe-Desmonts^{1,2}, Fernando Benito López¹
¹Microfluidics Cluster UPV/EHU, SPAIN and ²Basque Foundation for Science, SPAIN

c - Environment, Energy, Agriculture, and Food

Artificial Meat

- M044.c STRETCHABLE AND PERFUSABLE 3D CULTURE SYSTEM TOWARD MATURED AND SCALE-UP CULTURED MEAT FORMATION**
Jung-Chun Sun, Byeongwook Jo, Shoji Takeuchi
University of Tokyo, JAPAN
- T043.c CULTURED MEAT CONSTRUCTED WITH CONTRACTIBLE CORE-SHELL FIBERS THROUGH BOVINE PLASMA-ALGINATE**
Asa Hasegawa, Kensei Okada, Byeongwook Jo, Shoji Takeuchi
University of Tokyo, JAPAN
- W043.c EDIBLE AND DEGRADABLE PLASMA-ALGINATE MICROCARRIERS FOR CULTURED MEAT**
Kensei Okada, Byeongwook Jo, Minghao Nie, Shoji Takeuchi
University of Tokyo, JAPAN

c - Environment, Energy, Agriculture, and Food

Food Sampling and Analysis

- M045.c GENETIC IDENTIFICATION OF THREE CITES-LISTED SHARKS USING A PAPER-BASED LAB ON A CHIP**
Guuske P. Tiktak¹, Alexandria GabB1, Margarita Brandt², Fernando R. Diz³, Karla Bravo-Vasquez⁴, César Peñaherrera-Palma⁵, Jonathan Valdiviezo-Rivera⁶, Aaron J. Carlisle⁷, Louise M. Melling¹, Bradley Cain¹, David Megson¹, Richard Preziosi¹, Kirsty J. Shaw¹
¹Manchester Metropolitan University, UK, ²Universidad San Francisco de Quito, ECUADOR, ³WWF Fisheries, ECUADOR, ⁴Viceministerio de Acuicultura y Pesca del Ecuador, ECUADOR, ⁵MigraMar, USA, ⁶Instituto Nacional de Biodiversidad, ECUADOR, and ⁷University of Delaware, USA
- T045.c NOVEL OIL-WATER SEPARATOR IN A THREAD-BASED MICROFLUIDIC PLATFORM FOR MASS SPECTROMETRY DETECTION OF OLEOPHILIC AND HYDROPHILIC SPECIES**
Chun-Chih Kao, Che-Hsin Lin
National Sun Yat-sen University, TAIWAN
- W044.c FOOD-SAFE, ENVIRONMENT-RESPONSIVE MICRONEEDLES FOR CONSUMER-LEVEL MONITORING OF SPOILAGE WITHIN PACKAGED FISH**
Shadman Khan, Akansha Prasad, Mahum Javed, Roderick MacLachlan, Carlos D.M. Filipe, Tohid F. Didar
McMaster University, CANADA
- W045.c IN SITU SALMONELLA CONTAMINATION DETECTION IN WHOLE CHICKEN WITH LAB-IN-A-PACKAGE**
Akansha Prasad, Shadman Khan, Jiuxing Li, Carlos Filipe, Yingfu Li, Tohid Didar
McMaster University, CANADA

c - Environment, Energy, Agriculture, and Food

Fuel Cells and Electrolyzers

- M046.c** **ALL-GRAPHITE MICROFLUIDIC MICROBIAL FUEL CELL: FROM CONCEPT TO STACKS**
 Linlin Liu¹, William Varroy¹, Marc-Antoine Bansept¹, Changhong Cao², Denis Boudreau¹, Jesse Greener¹
¹Université Laval, CANADA and ²McGill University, CANADA
- T046.c** **FUEL DELIVERY SYSTEM WITH SEQUENTIAL OPERATION OF STACKED CLOCKWORKS APPLICABLE TO FUEL CELL**
 Won Han, Thangavel Balamurugan, Joong Ho Shin
 Pukyong National University, KOREA
- W046.c** **ON-CHIP THERMALLY RECYCLED AMMONIA BATTERIES: BENCHMARKING AND HIGH ENERGY DENSITIES**
 Haleh Baghernavehshi¹, Linlin Liu¹, Derek M. Hall³, Jesse Greener¹
¹Université Laval, CANADA and ²Penn State University, USA

c - Environment, Energy, Agriculture, and Food

Hydrogen

- M047.c** **EVOLUTION OF TRAPPED BUBBLES IN UNDERGROUND HYDROGEN STORAGE**
 Mohammad Salehpour, Benzhong (Robin) Zhao
 McMaster University, CANADA

c - Environment, Energy, Agriculture, and Food

Integration and Autonomous

- T047.c** **SPERM CELL ORIENTATION IN HYDRODYNAMIC FOCUSING FOR SEMEN SEXING**
 Wujun Zhao, Mohammad Manshadi, Yuqian Zhang, Zheng Xia
 ABS Global Inc., USA

c - Environment, Energy, Agriculture, and Food

Microorganisms

- M048.c** **MORPHOLOGICAL IDENTIFICATION OF SOIL-BORNE PLANT PATHOGENS USING MICROFLUIDIC SOIL MODELS AND DEEP LEARNING IMAGE ANALYSIS**
 Erik Karlsson¹, Julia Forsbacka¹, Hanbang Zou¹, Pelle Ohlsson¹, Kristian Enkvist², Edith Hammer¹
¹Lund University, SWEDEN and ²Independent Researcher, SWEDEN
- T048.c** **SEAMLESS OSMOTIC STIMULATIONS TO FLOWING CELLS FOR OSMOADAPTATION-BASED CELL SEPARATION**
 Makoto Saito, Hiroki Fukunaga, Naotomo Tottori, Yoko Yamanishi, Shinya Sakuma
 Kyushu University, JAPAN
- W047.c** **MICROFABRICATED SYSTEMS TO OPTIMIZE MYCELIUM COLONIZATION OF FUNGAL BIOCOMPOSITE MATERIALS**
 Alexandre Leblond, Christopher Moraes
 McGill University, CANADA

c - Environment, Energy, Agriculture, and Food
Oil, Gas and Mining

- M049.c** **OPTIMIZING INTEGRATED MICROFLUIDIC BIODIESEL PRODUCTION: A GENETIC ALGORITHM AND NEURAL NETWORK APPROACH**
Chun-Yang Huang, Szu-I Yeh, Yi-Shiuan Tsai, Steven Iversen
National Cheng Kung University, TAIWAN
- W048.c** **MICROMIBA PROJECT: ANALYSIS OF BACTERIAL BIOMINING PROCESSES INSIDE MICROFLUIDIC CHIPS TOWARDS FUTURE EXPERIMENTS UNDER MICROGRAVITY CONDITIONS**
Marco Mairena-Salazar, Felipe Bustamante, Catalina Porras-Silesky, Arnoldo Castro, Leonardo Lesser-Rojas
University of Costa Rica, COSTA RICA

c - Environment, Energy, Agriculture, and Food
Others

- W050.c** **MICROFLUIDICS IS COMING FOR YOUR THERMOPHYSICAL FLUID PROPERTIES: NEW MEASUREMENT METHODS FOR AN ENERGY-INDUSTRY-PROVEN MICROFLUIDIC PLATFORM**
Mohammad Zargartalebi¹, Tom D. Haas², David Sinton¹
¹University of Toronto, CANADA and ²Interface Fluidics Ltd., CANADA

c - Environment, Energy, Agriculture, and Food
Pollution - Chemicals, Nanoparticles, Nanoplastics

- W049.c** **A MICROFLUIDIC PLATFORM FOR ENVIRONMENTAL NANOPLASTIC ANALYSIS**
Eric Johnston, Victor M. Ugaz
Texas A&M University, USA

c - Environment, Energy, Agriculture, and Food
Water

- M050.c** **ADDITIVE MANUFACTURED ELECTRONICS (AME) FOR INTEGRATED MICROFLUIDIC IMPEDANCE SPECTROSCOPY**
Haiyang Yun¹, Yilmaz A. Manav¹, Enise F. Altin¹, Mehdi Y. Arzefouni¹, Jacky Borenstein², Benjamin Davaji^{1,3}
¹Northeastern University, USA, ²NanoDimensions, USA, and ³Institute for NanoSystem Innovation, USA
- T049.c** **(BIOSENSE) BIOSENSOR-BASED INTEGRATED OBSERVATION STRATEGIES TOWARD EMERGING NEW SUBSTANCES FOR ENVIRONMENTAL MONITORING.**
Fiona Regan, Caroline Murphy, Paul Leonard, Ciprian Briciu-Burghina
Dublin City University, IRELAND
- T050.c** **SCALABILITY OF ION CONCENTRATION POLARIZATION-BASED WATER PURIFICATION PLATFORM**
Zisun Ahmed, Beatrise Berzina, Robbyn K. Anand
Iowa State University, USA

c - Environment, Energy, Agriculture, and Food

Late News

- M509.c FAST PCR UTILIZING A FILM CHIP ON A ROTATING ROLLER FOR UNMANNED CONTINUOUS DETECTION OF AIRBORNE VIRUSES**
Kwang Hyo Chung, Chang-Geun Ahn, You Jin Kim
Electronics and Telecommunications Research Institute, KOREA
- M510.c PATHFINDING STRATEGY OF CANDIDA ALBICANS HYPHAE IN A NETWORK OF OBSTACLES**
Luna Kaiser², Domenico Catucci², Christophe Lalanne², Antoine Rittaut¹, Igor M. Kulic¹, Catherine Villard^{1,2}
¹CNRS, FRANCE and ²Université Paris Cité, FRANCE
- T509.c MICROFLUIDIC SIZE EXCLUSION CHROMATOGRAPHY FOR SUSTAINABLE NANOPLASTIC DETECTION**
Liyuan Gong, Payel Biswas, Bryan Varela, Samantha Kipper, Irene Andreu, Yang Lin
University of Rhode Island, USA
- T510.c REAL-TIME TRACKING AND FORCE QUANTIFICATION OF ROOT-BACTERIA INTERACTIONS AT SINGLE-CELL LEVEL IN AN OPEN-CHANNEL MICROFLUIDICS SETUP**
Yilei Xue, Mackenzie E. Loranger, Keiko Yoshioka, Ruby M. Sullan
University of Toronto, CANADA
- W509.c MICROFLUIDIC STUDY OF CYCLIC INJECTION AND MICROBIAL ACTIVITY ON H₂ RECOVERY AND LOSS MECHANISMS DURING UNDERGROUND H₂ STORAGE**
Na Liu, Martin Fernø
University of Bergen, NORWAY
- W510.c µMISPE-MS: REPACKABLE MICROFLUIDIC MOLECULARLY IMPRINTED SOLID-PHASE EXTRACTION COUPLED WITH MASS SPECTROMETRY FOR RAPID DETECTION OF MYCOTOXIN IN AGRI-FOOD MATRICES**
Marti Z. Hua¹, Jinxin Liu¹, David R. McMullin², Yaxi Hu², Xiaonan Lu¹
¹McGill University, CANADA and ²Carleton University, CANADA

d - Fundamentals in Microfluidics and Nanofluidics

Acousto- and Magnetofluidic

- M051.d A DIGITAL FERROFLUIDIC PLATFORM FOR OPERATING DIFFERENT FORMATS OF FERRO-DROPLETS**
Chengzhi Zhang^{1,2}, Ruotong Zhang¹, Haotian Liu², Xing Cheng², Haisong Lin^{1,3}, Ho Cheung Shum^{1,3}
¹University of Hong Kong, HONG KONG, ²Southern University of Science and Technology, CHINA, and ³Advanced Biomedical Instrumentation Centre, HONG KONG
- M052.d INCREASED THROUGHPUT AND CAPACITY OF NM-PARTICLE AND EXTRACELLULAR VESICLE TRAPPING USING AN ULTRASOUND ACTIVATED PACKED BED**
Michael Gerlt, Thomas Laurell
Lund University, SWEDEN
- M053.d RAPID AND DIRECT SEPARATION OF BLOOD PLASMA WITH NEGATIVE MAGNETOPHORESIS**
Lin Zeng
Chinese Academy of Sciences, CHINA

- M054.d THEORETICAL AND EXPERIMENTAL EVALUATION OF ROTATION OF MICROOBJECTS BASED ON A VIBRATION-INDUCED FLOW**
Masatomo Arai, Takeshi Hayakawa
Chuo University, JAPAN
- T051.d ACOUSTIC PATTERNING OF MICROPARTICLES BY DIGITALLY CONTROLLED DROPLET-BASED WAVEGUIDE**
Zhen Wang¹, Fenggang Li¹, Huikai Xie¹, Rongxin Fu¹, Hang Li¹, Yucheng Luo², Zhichao Ma², Shuailong Zhang¹, Yao Lu¹
¹*Beijing Institute of Technology, CHINA* and ²*Shanghai Jiao Tong University, CHINA*
- T052.d NOVEL ACOUSTOFLUIDIC THIN-FILM DEVICE FOR HIGH THROUGHPUT APPLICATIONS**
Andreas Lenshof¹, Ramin Matloub², Pelle Ohlsson³, Igor Lubomirsky⁴, Henrik Bruus⁵, Nini Pryds⁵, Vincenzo Esposito⁵, Paul Muralt^{2,6}, Thomas Laurell¹
¹*Lund University, SWEDEN*, ²*Piemacs SARL, SWITZERLAND*, ³*AcouSort AB, SWEDEN*, ⁴*Weizmann Institute, ISRAEL*, ⁵*Technical University of Denmark, DENMARK*, and ⁶*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND*
- T053.d SYMPHONY OF SOUND: A NOVEL ACOUSTIC MODULATION OF OSCILLATING THIN ELASTIC MEMBRANE FOR ENHANCED STREAMING IN MICROFLUIDICS AND NANOSCALE LIPOSOME PRODUCTION**
Ali V. Pourabdollah, Faruk Aksoy, Gurkan Yesiloz
Bilkent University, TURKEY
- T054.d TWO-DIMENSIONAL TRAPPING AND ROTATIONAL MANIPULATION OF PANAGRELLUS REDIVIVUS BY SUPERPOSED BULK ACOUSTIC WAVES**
Andreas Fuchsluger¹, Tina Mitteramskogler¹, Annalisa De Pastina², Bernhard Jakoby¹
¹*Johannes Kepler University Linz, AUSTRIA* and ²*Silicon Austria Labs, AUSTRIA*
- W051.d BULK ACOUSTIC WAVE-INTEGRATED MICROFLUIDIC PROBE TO MANIPULATE FLUIDS AND MICROPARTICLES**
Waqas Waheed¹, Mohammad A. Qasaimeh^{1,2}
¹*New York University, Abu Dhabi, UAE* and ²*New York University, USA*
- W052.d ON-DEMAND VARIOUS-SIZED TUMOR SPHEROIDS VIA TRAVELLING SURFACE ACOUSTIC WAVES**
Yongtaek Im, Daesik Kwak, Hyung Jin Sung, Jessie S. Jeon
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- W053.d TEMPERATURE CYCLE WITH SURFACE ACOUSTIC WAVE DEVICES FOR PCR APPLICATIONS**
Clémence Biscara¹, Cécile Floer¹, Olivier Joubert¹, Mélanie Leroux¹, Laurent Badie¹, James Friend², Omar Elmazria¹
¹*Université de Lorraine, FRANCE* and ²*University of California, San Diego, USA*

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Capillary Microfluidics

- M055.d ENSURING HIGH REPRODUCIBILITY AND RELIABLE PERFORMANCE OF CAPILLARY-DRIVEN MICROFLUIDICS AT THE POINT-OF-NEED**
Ifeoluwa Babalola¹, Jose C. Contreras-Naranjo¹, Oyindamola Aje¹, Ghada Abdelrahman², Victor M. Ugaz¹
¹*Texas A&M University, USA* and ²*Texas A&M University, QATAR*

- T055.d REVERSABLE CAPILLARY CIRCUIT ACTUATION: NEW CFET FUNCTIONALITY TO AUTOMATE FLUID MANIPULATION IN PORTABLE ASSAYS**
Daniel Mak¹, Claude Meffan^{1,2}, Julian Menges¹, Rhys Marchant-Ludlow¹, Azy Hashemi¹, Renwick Dobson¹, Volker Nock¹
¹University of Canterbury, NEW ZEALAND and ²Victoria University of Wellington, NEW ZEALAND
- W054.d ACTUATED PINCHED CAPILLARY FLOWS VIA TRIGGER VALVES IN OPEN-CHANNEL GEOMETRY**
Jodie C. Tokihiro¹, Ingrid Robertson¹, Albert Shin¹, Denise Gregucci^{1,2}, Tristan M. Nicholson¹, Ayokunle Olanrewaju¹, Ashleigh B. Theberge¹, Jean Berthier¹, Erwin Berthier¹
¹University of Washington, USA and ²University of Bologna, ITALY
- W055.d TOWARDS QUANTITATIVE ASSAYS IN LOW-RESOURCE-SETTINGS WITH A LOW-COST, ROBUST, FAST, AND EQUIPMENT-FREE PARTITIONING PLATFORM MADE OF THERMOPLASTIC**
Eric Brouzes, Phenix-Lan Quan, Maria Alvarez-Amador, Amir Salimov, Yuhe Jiang, Martin Sauzade
Stony Brook University, USA

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Centrifugal Microfluidics

- M056.d AN ADJUSTABLE ELUENT MIXER FOR STEPWISE GRADIENT ELUTION IN REVERSED-PHASE LIQUID CHROMATOGRAPHY ON A CENTRIFUGAL PLATFORM**
Chih-Hsin Shih
Feng Chia University, TAIWAN
- M057.d HIGH-THROUGHPUT CENTRIFUGAL PRODUCTION OF ALGINATE BEADS USING A FULLY 3D-PRINTED MULTI-NOZZLE DEVICE**
Yu Suzuki, Kensei Okada, Minghao Nie, Shoji Takeuchi
University of Tokyo, JAPAN
- T056.d COMPUTER VISION-ENABLED CENTRIFUGAL MICROFLUIDIC PLATFORM: SAMPLE-TO-ANSWER NUCLEIC ACID-BASED DIAGNOSTICS IN POINT-OF-CARE SETTINGS**
Ahmad Saleem Akhtar¹, Noa Lapins¹, João M. Moura², Luis Paula², Adriano Pedro², Fabio Martins², Duarte Mota², Inês F. Pinto¹, Marco Martins², Aman Russom¹
¹KTH Royal Institute of Technology, SWEDEN and
²International Iberian Nanotechnology Laboratory, PORTUGAL
- T057.d MICROPARTICLE-SYNTHESIZED SYSTEM BY ULTRASOUND AND CENTRIFUGATION FOR HIGH-VISCOSITY FLUIDS**
Yuta Bando¹, Hiroaki Onoe², Yoshiyuki Tagawa¹, Yuta Kurashina¹
¹Tokyo University of Agriculture and Technology, JAPAN and ²Keio University, JAPAN
- W056.d DEVELOPING A MODULAR FRACTION COLLECTOR FOR CONDUCTING CHROMATOGRAPHY ON A CENTRIFUGAL PLATFORM FOR PROTEIN SEPARATION**
Chih-Hsin Shih
Feng Chia University, TAIWAN

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Digital Microfluidics

- M058.d** **A BACTERIAL ENDOTOXIN TEST ON A NOVEL SELF-CONTAINED DIGITAL MICROFLUIDICS PLATFORM**
 Jurgen Frasheri, Bingyu B. Li, Ian Swyer, Michael Dryden, Alexandros Sklavounos, Aaron R. Wheeler
University of Toronto, CANADA
- M059.d** **OPTIMIZED DIELECTRIC STACK FOR IMPROVING PERFORMANCE OF 3D DIGITAL MICROFLUIDIC PLATFORMS IN CELL CULTURING**
 Mert Ozden, Burcu Gumuscu
Eindhoven University of Technology, NETHERLANDS
- T058.d** **HIGHLY EFFICIENT PHAGE DISPLAY METHOD BASED ON THE ACTIVE-MATRIX DIGITAL MICROFLUIDICS TECHNOLOGY**
 Siyi Hu^{1,2}, Jianle Huang², Jiahao Li³, Mude Shi², Hanbin Ma^{1,2,3}
¹Chinese Academy of Sciences, CHINA, ²Guangdong ACXEL Micro & Nano Tech Co., Ltd., CHINA, and ³ACX instruments Ltd, UK
- W057.d** **5×10⁵-MICROWELL HIGHLY PRECISE DIGITAL PCR WITH WIDE-FIELD OPTICAL SYSTEM**
 Yoshio Kamura, Yoshiki Nakamura, Tatsuo Nakagawa
Hitachi, Ltd., JAPAN
- W058.d** **MINI-MAGBEAD: A SMALL AUTOMATED MAGNETIC BEAD CONCENTRATION PLATFORM BASED ON DIGITAL MICROFLUIDICS FOR IMMUNOASSAYS**
 Jose G. Camacho Valenzuela, Nguyen Le, Alinaghi Salari, Alexandros Sklavounos, Aaron R. Wheeler
University of Toronto, CANADA

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Droplet Microfluidics

- M060.d** **ACOUSTIC STREAMING FLOW INDUCED DYNAMIC CONTROL OF PICOLITER DROPLETS CHEMICAL CONCENTRATION**
 Woohyuk Kim, Jinsoo Park
Chonnam National University, KOREA
- M061.d** **DEVELOPMENT AND ASSESSMENT OF NANOFLUIDIC DROPLETS WITH EXTENDED LIFETIMES**
 Nattapong Chantipmanee¹, Yuto Tanaka¹, Hiroto Kawagishi², Yan Xu^{1,2,3}
¹Osaka Metropolitan University, JAPAN, ²Osaka Prefecture University, JAPAN, and ³Japan Science and Technology Agency (JST), JAPAN
- M062.d** **GENERATION OF SIZE CONTROLLABLE MONODISPERSE DROPLET DEPENDING ON THE CONTINUOUS FLOW DIRECTION USING MICROFLUIDIC CHANNELS WITH HIGH-ASPECT-RATIO ASYMMETRIC CROSS-SECTION**
 Youngseo Cho, Younghak Cho
Seoul National University of Science and Technology, KOREA
- M063.d** **INTEGRATED MICROFLUIDIC PLATFORM FOR SINGLE-CELL ANALYSIS REVEALING THE MATRIX MECHANICAL REGULATION ON CSCS**
 Jialei Song, Yi Liu, Mo Yang
Hong Kong Polytechnic University, CHINA

- M064.d OPTIMAL CHANNEL WIDTH OF MICROFLUIDIC DEVICES TOWARD SINGLE-CELL ENCAPSULATION IN MICRODROPLETS**
Risa Fujita, Masashi Kobayashi, Daiki Tanaka, Yuka Adachi, Tetsushi Sekiguchi, Shuichi Shoji, Masahiro Furuya, Takashi Tanii
Waseda University, JAPAN
- M065.d THE OPTIDROP MICROFLUIDIC ANALYZER AND SORTER: FIBER OPTICS INTEGRATED SYSTEM FOR MULTIPLEXED OPTICAL DETECTION AND SORTING OF SINGLE CELLS IN DROPLETS**
Preksha Gupta¹, Ambili Mohan², Atindra Nair¹, Dhanush Balekai¹, Neeladri Chowdhury¹, Anil Prabhakar², Taslimarif Saiyed¹
¹*Centre for Cellular and Molecular Platforms (C-CAMP), INDIA and*
²*Indian Institute of Technology Madras (IITM), INDIA*
- T059.d A DOUBLE EMULSION DROPLET DIGITAL CRISPR/CAS12A ASSAY FOR ULTRASENSITIVE AND RAPID ABSOLUTE QUANTIFICATION OF VIRAL DNA**
Yang Zhang, Ming Li
University of New South Wales, AUSTRALIA
- T060.d CONTINUOUS PRODUCTION OF SINGLE-CELL-LADEN MICROGELS THROUGH DETERMINISTIC LATERAL DISPLACEMENT MICROPILLAR ARRAYS**
Hiroki Fukunaga, Naotomo Tottori, Shinya Sakuma, Yoko Yamanishi
Kyushu University, JAPAN
- T061.d DEVELOPMENT OF A METHOD FOR LIQUID INJECTION INTO FEMTOLITER DROPLET IN A NANOFLUIDIC CHANNEL UTILIZING LAPLACE PRESSURE**
Yuki Watabe¹, Yuki Mita¹, Xin Jiang^{1,2}, Yutaka Kazoe¹
¹*Keio University, JAPAN and* ²*Kanagawa Institute of Industrial Science and Technology, JAPAN*
- T062.d HIGH-EFFICIENCY INTERDIGITATED ELECTRODE-BASED DROPLET MERGER UNDER POLYDISPERSE DROPLET MICROFLUIDIC CONDITIONS**
Jeong Jae Han, Han Zhang, Yuwen Li, Arum Han
Texas A&M University, USA
- T063.d MICROFLUIDIC ENCAPSULATION OF CELLS IN HOLLOW HYDROGEL MICROCAPSULES FOR IN VIVO AND IN VITRO THERAPEUTIC APPLICATIONS**
Nicholas Soucy, Simon Chewchuck, Fan Wan, James Harden, Michel Godin
University of Ottawa, CANADA
- T064.d PUMPLESS MICROFLUIDIC SYSTEM FOR CREATING UNIDIRECTIONAL FLOW PATTERNS FOR ON-CHIP ENDOTHELIAL CELL CULTURES**
Eun-Jin Lee^{1,2}, Mandy B. Esch²
¹*University of Maryland, USA and* ²*National Institute of Standards and Technology, USA*
- W059.d A LOW COST MICROFLUIDICS PLATFORM FOR SPHEROID GENERATION**
Sourita Ghosh, Pavan Kumar Kirar, Falguni Pati, Suhanya Duraiswamy
Indian Institute of Technology, Hyderabad, INDIA
- W060.d CRESCENT MICROBEADS-ENABLED MICROFLUIDICS-FREE POLYMERASE CHAIN REACTION FOR DIGITAL NUCLEIC ACID QUANTIFICATION**
Long Chen^{1,2}, Yifan Liu¹
¹*ShanghaiTech University, CHINA and* ²*Chinese Academy of Sciences, CHILE*
- W061.d ENHANCING MOTILITY BY CONTROLLING DROP SHAPE IN CENTRIFUGE-BASED DROPLET DISPENSERS**
Mi Song Nam¹, Hiroaki Onoe², Choongyeop Lee¹, Yun Jung Heo¹
¹*Kyung Hee University, KOREA and* ²*Keio University, JAPAN*

- W062.d HIGH-THROUGHPUT GENERATION OF SPHERICAL AND DISK-SHAPED DROPLETS AND HYDROGEL BEADS FOR BIOMEDICAL APPLICATIONS USING MICROFLUIDIC STEP EMULSIFICATION**
Jenil Mange, Riddha Manna, Debjani Paul
Indian Institute of Technology, Bombay, INDIA
- W063.d MICROFLUIDIC JETTING IN A STEP EMULSIFICATION SLIT DEVICE**
Chunqi Zheng¹, Shuzo Masui², Yusuke Kanno¹, Takasi Nisisako¹
¹Tokyo Institute of Technology, JAPAN and ²University of Tokyo, JAPAN
- W064.d SURFACE TENSION-DRIVEN SORTING OF BACTERIA LADEN DROPLETS**
Giulia Venturini, Donald A. Morrison, David T. Eddington
University of Illinois, Chicago, USA

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Electrokinetic Phenomena

- T065.d ELECTROKINETIC DEVICE FOR PARALLEL ENZYMATIC DNA AMPLIFICATION ASSAYS COMPATIBLE WITH RAW INPUT SAMPLE**
Alexandre S. Avaro^{1,2}, Andrew D. Griffiths², Juan G. Santiago¹
¹Stanford University, USA and ²ESPCI Paris, FRANCE

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Modeling, Numerical Simulation, Artificial Intelligence

- M066.d BRIDGING THE GAP: AN OPEN-SOURCE TOOLKIT FOR SIMULATION AND DESIGN AUTOMATION OF MICROFLUIDIC DEVICES**
Michel Takken¹, Maria Emmerich¹, Philipp Ebner², Robert Wille^{1,3}
¹Technical University of Munich, GERMANY, ²Johannes Kepler University, AUSTRIA, and ³Software Competence Center Hagenberg GmbH (SCCH), AUSTRIA
- M067.d SIMULATIONS OF MORPHOLOGY AND VIABILITY DETECTION OF C. ELEGANS WORMS IN AN ELECTRICAL-IMPEDANCE-SPECTROSCOPY-BASED MICROFLUIDIC DEVICE**
Jiaqi Liu¹, Song Yu¹, Tiancong Lan¹, Yingying Wang¹, Jianwei Ouyang¹, Yiyang Zhang^{2,3}, Di Chen³, Zixin Wang⁴, Zhen Zhu¹
¹Southeast University, CHINA, ²Nanjing University, CHINA, ³Zhejiang University, CHINA, and ⁴Sun Yat-sen University, CHINA
- T066.d CHANNEL CROSS-SECTIONAL SHAPE EFFECT ON FLUID MIXING SIMULATION USING DISSIPATIVE PARTICLE DYNAMICS WITH WALL INTERACTION**
Otoha Ebine, Mao Hamamoto, Hiromasa Yagyu
Kanto Gakuin University, JAPAN
- T067.d THE EFFECT OF DIURNAL FLUCTUATIONS IN INTESTINAL FLOW AND GEOMETRY ON SHAPING THE MICROBIAL POPULATIONS IN THE HUMAN LARGE INTESTINE**
Alinaghi Salari¹, Jonas Cremer²
¹University of Toronto, CANADA and ²Stanford University, USA
- W065.d AN INTEGRATED ALGORITHM FOR CAPILLARY MICROFLUIDIC CHIP DEVELOPMENT**
Mahmood Khalghollah, Azam Zare, Amir Sanati Nezhad, Behrouz H. Far, Amin Komeili
University of Calgary, CANADA

- W066.d MOLECULAR DYNAMICS SIMULATION OF ION CONCENTRATION POLARIZATION INDUCED BY HYDROGEL MEMBRANE IN A NANOFLUIDIC SYSTEM**
Hiba Aljayyousi^{1,2}, Serdal Kirmizialtin^{1,2}, Yong-Ak Song^{1,2}
¹New York University, Abu Dhabi, UAE and ²New York University, USA

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Nanofluidics and Nanofluidic Phenomena

- M068.d DEVELOPMENT OF NON-FLUORESCENT SINGLE NANOPARTICLE TRACKING METHOD IN NANOSPACES USING INTERFEROMETRIC LIGHT SCATTERING**
Koichiro Yamano, Yutaka Kazoe
Keio University, JAPAN
- M069.d MEMRISTIVE ION TRANSFER IN FUNNEL NANOCHANNEL EMULATES NEUROMORPHIC FUNCTIONS UNDER ULTRA-LOW VOLTAGE**
Peiyue Li¹, Junjie Liu¹, Junhui Yuan², Yechang Guo¹, Shaofeng Wang³, Pan Zang^{1,4}, Wei Wang^{1,4,5}
¹Peking University, CHINA, ²Wuhan University of Technology, CHINA, ³China University of Geosciences (Beijing), CHINA, ⁴National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA, and ⁵Beijing Advanced Innovation Center for Integrated Circuits, CHINA
- M070.d NANOLIQUID MANIPULATION ON A PILLAR ARRAY-BASED FLUIDIC SENSOR**
Bin Guan¹, Rossen Sedev^{1,2}, Craig Priest¹
¹University of South Australia, AUSTRALIA and ²University of Western Australia, AUSTRALIA
- M071.d SINGLE MOLECULE ANALYSIS IN LIQUID PHASE THROUGH HIGH-THROUGHPUT NANOFLUIDIC DROPLET GENERATION**
Ryoya Kato¹, Nattapong Chantipmanee¹, Yan Xu^{1,2}
¹Osaka Metropolitan University, JAPAN and ²Japan Science and Technology Agency, JAPAN
- T068.d DIFFUSION AND CHAOTIC ADVECTION REGIMES FOR STEALTH LIPOSOME SYNTHESIS IN 3D MULTIHELICAL MICROMIXER**
Bruno Telli Ceccato¹, Sávio S.V. Vianna¹, Lucimara G. de la Torre²
¹University of Campinas (UNICAMP), BRAZIL and
²Norwegian University of Science and Technology (NTNU), NORWAY
- T069.d MOLECULAR DYNAMICS SIMULATION OF VISCOELECTRIC EFFECTS IN NANOCHANNELS**
Che-Wei Ou¹, Haoyu Wang¹, Rui Qiao², Hirofumi Daiguji¹, Wei-Lun Hsu¹
¹University of Tokyo, JAPAN and ²Virginia Tech, USA
- T070.d ON-DEVICE NANOFLUIDIC MIXING TO RAPIDLY ADJUST IONIC STRENGTH PRIOR TO RESISTIVE-PULSE MEASUREMENTS**
Quintin J. Brown, Michael P. Kappler, Tariq Hussain, Adam Zlotnick, Stephen C. Jacobson
Indiana University, USA
- T071.d THREE-DIMENSIONAL NANOSCALE CONTROL OF LIQUID WATER USING ENVIRONMENTAL LIQUID CELL CONCEPT**
Chiwon Lee, R. J. Dwayne Miller
University of Toronto, CANADA
- W067.d BEHAVIOR OF NANOPARTICLES IN NANOCHANNELS REVEALED BY DEFOCUSING NANOPARTICLE TRACKING VELOCIMETRY**
Minato Tsuda, Yo Saeki, Yutaka Kazoe
Keio University, JAPAN

- W068.d IN-PLANE RESISTIVE-PULSE MEASUREMENTS WITH INTEGRATED BASELINE SUBTRACTION FOR IMPROVED SIGNAL-TO-NOISE RATIOS**
Ethan D. Call, Andrew R. Kneller, Quintin J. Brown, Kim Young, Adam Zlotnick, Stephen C. Jacobson
Indiana University, USA
- W069.d NANO-SHEET SAMPLE DELIVERY TECHNIQUES FOR FEMTOSECOND SOLUTION SCATTERING**
Adil Ansari¹, Roberto C. Alvarez¹, Dimitra Manatou¹, Konstantinos Karpos¹, Diandra Doppler¹, Mukul Sonker¹, Hao Hu¹, Patrick Konold², Daniel Westphal², Tej V. Yenupuri², Marcus Herrmann¹, Richard Kirian¹, Swathi Menon³, Tom Grant⁴, Filipe Maia²
¹Arizona State University, USA, ²Uppsala University, SWEDEN, ³University of Arizona, USA, and ⁴University of Buffalo,
- W070.d PERVAPORATION-BASED HETEROGENEOUS NANOPORE-INTEGRATED MICRO-/NANOFLUIDIC PLATFORM FOR ION TRANSPORT ANALYSIS IN THE PRESENCE OF MULTIPLE ELECTROLYTES**
Dongwoo Seo, Sangjin Seo, Taesung Kim
Ulsan National Institute of Science and Technology (UNIST), KOREA
- W071.d TUNABLE NANOFLUIDIC DEVICES: PUSHING THE BOUNDARIES OF ELECTRICAL SENSITIVITY**
Daichi Nakahara, Nattapong Chantipmanee, Yan Xu
Osaka Metropolitan University, JAPAN

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Open Space Microfluidics

- M072.d CHARACTERIZING THE IMPACT OF SIGNAL FREQUENCY ON THE NOTCH CELL SIGNALING PATHWAY USING MICROFLUIDIC DISPLAYS**
Maude Proulx¹, Pierre Clapperton-Richard¹, Laurent Potvin-Trottier², Alisa Piekny², Thomas Gervais^{1,3}
¹Polytechnique Montréal, CANADA, ²Concordia University, CANADA, and ³Université de Montréal, CANADA
- M073.d MODULAR MICROFLUIDIC PROBES: DISCRETIZING CONCENTRATION GRADIENTS BRICK BY BRICK**
Ayoub Glia¹, Mohammad A. Qasaimeh^{1,2}
¹New York University, Abu Dhabi, UAE and ²New York University, USA
- T072.d LUXNFLOW: DIRECT-LIGHT PROJECTION ON A CHIP FOR DYNAMIC FLOW PATTERNING**
Sridaran Rajagopal¹, Sofia Graham¹, Jonathan Ericsson², Moran Bercovici², Govind Kaigala¹
¹University of British Columbia, CANADA and ²Technion - Israel Institute of Technology, ISRAEL
- W072.d MICROSCALE MOLECULAR GRADIENTS ON OPEN BIOLOGICAL SURFACES**
Alisa Da Silva^{1,2}, Sofia Arshavsky Graham¹, Jake Pringle¹, Amirreza Ameri¹, Aditya Kashyap^{1,2}, Govind Kaigala^{1,2}
¹University of British Columbia, CANADA and ²Vancouver Prostate Center, CANADA

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Others

- M074.d SHEATHLESS FOCUSING OF NANOPARTICLES IN ELASTO-INERTIAL MICROFLUIDICS**
Selim Tanriverdi¹, Javier Cruz^{1,2}, Martim Costa¹, Gustaf Mårtensson¹, Aman Russom¹
¹Royal Institute of Technology, SWEDEN and ²Uppsala University, SWEDEN

- T073.d DISPERSION-FREE INERTIAL FOCUSING (DIF) FOR HIGH-YIELD SINGLE-CELL ANALYSIS OF POLYDISPERSE PARTICLES**
 Kelvin C. M. Lee^{1,2}, Bob M.F. Chung^{1,2}, Dickson M.D. Siu^{1,2}, Sam C.K. Ho¹, Daniel K.H. Ng¹, Kevin K. Tsia^{1,2}
¹University of Hong Kong, HONG KONG and
²Advanced Biomedical Instrumentation Centre (ABIC), HONG KONG
- W073.d ELASTO-INERTIAL FOCUSING AND MIGRATION OF PARTICLES FOR HIGH-THROUGHPUT SEPARATION**
 Selim Tanriverdi¹, Javier Cruz^{1,2}, Martim Costa¹, Gustaf Mårtensson¹, Aman Russom¹
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d - Fundamentals in Microfluidics and Nanofluidics

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- M511.d ACOUSTOFLUIDIC CHIP BASED ON SHARP-EDGES AND AIR-BUBBLES FOR RAPID CELL SPHEROID FORMATION.**
 Bryan D. Herrera Lozada, Maryam Tabrizian
 McGill University, CANADA
- M512.d APPLICATION OF CAPILLARY FLOW WITH MEDIATING OIL FILM TO OPEN MICROFLUIDICS**
 Hiroki Yasuga¹, Yusuke Takei¹, Shun Okada², Yuki Nakayama², Kan Shoji²
¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and ²Nagaoka University of Technology, JAPAN
- M513.d DETECTION OF RED BLOOD CELL DEFORMABILITY AND SICKLE CELL ANEMIA USING MINIATURIZED PHOTODETECTOR ARRAYS ON ELECTRIFIED LAB ON DISC PLATFORMS**
 Vahid Kordzadeh-Kermani¹, Sergio O Martinez Chapa¹, Marc J. Madou^{1,2}, Masoud Madadelahi¹
¹Tecnologico de Monterrey, MEXICO and ²University of California, Irvine, USA
- M514.d INVESTIGATION OF ANISOTROPIC FLUID TRANSPORT IN PAPER-BASED MATERIALS**
 Anna Anandita¹, Gaytri Sachdeva¹, Hemanth P¹, Kundan Kumar², Dharitri Rath¹
¹Indian Institute of Technology, Jammu, INDIA and ²University of Bergen, NORWAY
- M515.d NANOFLUIDIC PLATFORM FOR QUANTITATIVE ANALYSIS AND DISENTANGLEMENT OF PLASMON MEDIATED ELECTROCHEMISTRY AND THERMAL EFFECTS VIA IONIC CURRENT**
 Dongwoo Seo¹, Gyubin Park², Jaehyun Kim², Taesung Kim¹, Jungyul Park²
¹Ulsan National Institute of Science and Technology (UNIST), KOREA and ²Sogang University, KOREA
- T511.d ADJUSTMENT OF DROPLET SIZE FOR THE MICROFLUIDIC DROPLET SHOOTER THROUGH HYDROPHOBIC MEMBRANE THICKNESS CONTROL**
 Wei Lin Liu¹, Hsin-Yi Lee¹, Chihchen Chen¹, Yutaka Kazoe², Kyojiro Morikawa^{1,3,4}, Takehiko Kitamori^{1,4,5}
¹National Tsing Hua University, TAIWAN, ²Keio University, JAPAN, ³University of Tokyo, JAPAN, ⁴Kanagawa Institute of Industrial Science and Technology, JAPAN, and ⁵Lund University, SWEDEN
- T512.d AUTOMATED DENSITY GRADIENT CENTRIFUGE BASED ON LAB-ON-A DISC SYSTEM FOR SEPARATION OF MOTILE SPERM CELLS**
 Esmail Pishbin¹, Dorsa Kargar², Amin Dehghan²
¹Iranian Research Organization for Science and Technology, IRAN and ²Iran University of Science and Technology, IRAN
- T513.d DIGITAL MICROFLUIDICS: ELECTROWETTING TECHNOLOGY FOR MOTION, DISTURBING, AND SPLITTING**
 Arman Hajizadeh, Mohammad Hossein Pourghasemian, Amir Shamloo
 Sharif University of Technology, IRAN

- T514.d INVESTIGATION OF WAVE-FLUID- SOLID INTERACTION IN DETACHABLE PDMS MICROFLUIDIC CHIP**
Jeongeun Park¹, Beomseok Cha¹, Furkan G. Almus², Mehmet A. Sahin², Ghulam Destgeer², Jinsoo Park¹
¹Chonnam National University, KOREA and ²Technical University of Munich, GERMANY
- W511.d ANCHORING BIO-IONIC CONTAINERS OF IONIC LIQUIDS ON MICROFLUIDIC-PAPER ANALYTICAL DEVICES FOR HIGH-PERFORMANCE COLORIMETRIC DETECTION**
Daniel S. de Paula¹, Larissa G. Velasco¹, Jean C.P. Sousa¹, Thiago M.G. Cardoso¹, Muhammad I. Qadir¹, Boniek G. Vaz¹, Wendell K.T. Coltro^{1,2}
¹Federal University of Goias, BRAZIL and ²Instituto Nacional de Ciência e Tecnologia de Bioanalítica, BRAZIL
- W512.d CAPILLARY-BASED MICROFLUIDIC PLATFORM FOR EXTRACELLULAR VESICLES FILTRATION**
Mohsen Hassani, Amir Sanati Nezhad
University of Calgary, CANADA
- W513.d EWOD DEVICE WITH INKJET PRINTED 3D PEDOT:PSS ELECTRODE**
Eli Nadia Abdul Latip¹, Christabel Tan², Loic Coudron², Ian Munro², Ian Johnston²
¹Universiti Teknologi MARA, MALAYSIA and ²University of Hertfordshire, UK
- W514.d LCD 3D PRINTED REAGENT STORAGE CAPSULES AND CAPILLARIC CIRCUITS FOR SNAP-ON REAGENT DELIVERY AT THE POINT-OF-CARE**
Berine Wehbeh, Houda Shafique, David Juncker
McGill University, CANADA

e - Integrated Microfluidic Platforms

Artificial Intelligence and Integrated Microfluidics

- M075.e LABEL-FREE BLOOD CELL ENRICHMENT AND QUANTIFICATION USING INERTIAL MICROFLUIDICS INTEGRATED TO AI-POWERED DIGITAL HOLOGRAPHIC MICROSCOPY**
Kerem Delikoyun^{1,2}, Kay Khine Maw³, Qianyu Chen^{1,2}, Si Ko Myo¹, Koh Kai Bing¹, Han Wei Hou³, Oliver Hayden^{1,2}
¹TUMCREATE, SINGAPORE, ²Technical University of Munich, GERMANY, and ³Nanyang Technological University, SINGAPORE
- T074.e AI ANALYSIS OF SERS BIOSENSOR SPECTRA FOR COVID-19**
Ankhubayar Nyamdavaa¹, Kiran Kaladharan², Fan-Gang Tseng², Tseren-Onolt Ishdorj¹
¹Mongolian University of Science and Technology, MONGOLIA and ²National Tsing Hua University, TAIWAN
- T075.e MAGNETIC LEVITATION-BASED CYTOMETRY IN A MICROFLUIDIC CHIP VIA DEEP LEARNING-ASSISTED ANALYSIS**
Seyda Keles¹, H. Cumhur Tekin^{1,2}
¹Izmir Institute of Technology, TURKEY and ²METU MEMS Center, TURKEY
- W074.e AI-DRIVEN DIGITAL MICROFLUIDICS FOR ENHANCED LABEL-FREE CELL SORTING**
Zongliang Guo¹, Fenggang Li¹, Rongxin Fu¹, Yao Lu¹, Siyi Hu², Hanbin Ma², Hang Li¹, Shuailong Zhang¹
¹Beijing Institute of Technology, CHINA and ²Guangdong ACXEL Micro & Nano Tech Co., Ltd, CHINA
- W075.e TAILORING COMPLEX FLOW SHAPES IN MICROFLUIDIC CHANNELS WITH DEEP LEARNING**
Zhenyu Yang^{1,2}, Zhongning Jiang³, Haisong Lin¹, Ho Cheung Shum^{1,2}
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- M076.e A LOW-COST AND SIMPLE FABRICATION OF ETHYL-CYANOACRYLATE PATTERNED PAPER-BASED ANALYTICAL DEVICE USING SUPER GLUE**
Hyo-eun Kang¹, Bui T. Huy¹, Won Han¹, Yong-Ill Lee², Joong Ho Shin¹
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- M077.e DEVELOPMENT OF QUANTITATIVE BARCODE READOUT APPROACH FOR PAPER-BASED ANALYTICAL DEVICES (PADS)**
Yanawut Manmana, Yuki Hiruta, Daniel Citterio
Keio University, JAPAN
- M078.e LAB ON CAPILLARY TOWARDS INSTRUMENT-FREE MULTIPLEX IMMUNOASSAY**
Yimin Yang, Mehmet Akif Sahin, Muhammad Usman Akhtar, Ghulam Destgeer
Technical University of Munich, GERMANY
- M079.e OXIDATIVE DYES-INSPIRED PEROXIDASE SUBSTRATES SIGNIFICANTLY IMPROVE THE SENSITIVITY OF ENZYMIC LATERAL FLOW IMMUNOASSAYS**
Karan Saxena, Bhushan J. Toley
Indian Institute of Science, Bangalore, INDIA
- M080.e POLYMERIC SHEETS WITH ORIENTED MICROGROOVES FOR STREAMLINING HIGH PERFORMANCE LATERAL FLOW IMMUNOASSAYS**
Asahi Ohtsu, Yuhei Saito, Rie Utoh, Masumi Yamada
Chiba University, JAPAN
- T076.e A MICROFLUIDIC CAPILLARY DEVICE FOR LOW-COST, RAPID, AND MULTIPLEXED IMMUNOASSAYS IN WHOLE BLOOD**
Yasin Ekinici, Thomas Mortelmans, Dimitrios Kazazis, Celestino Padeste, Xiao-Dan Li
Paul Scherrer Institute, SWITZERLAND
- T077.e DIRECT IMMOBILIZATION OF ANTIBODY FOR RAPID AND SIMPLE MICROFLUIDIC PAPER-BASED ELISA AND ASSAY AUTOMATION USING A 3D-PRINTED CAPILLARIC CIRCUIT CHIP**
Ahmed A. Shalaby¹, Houda Shafique², Akihiko Ishida¹, Yutaka Shimizu¹, Hiroki Saeki¹, Mitsue Hibino¹, Masatoshi Maeki¹, David Juncker², Manabu Tokeshi¹
¹Hokkaido University, JAPAN and ²McGill University, CANADA
- T078.e MAGNETOPHORETIC SLIDER ASSAY: A SENSITIVE POINT-OF-CARE DEVICE FOR RAPID DETECTION OF SARS-COV-2 NUCLEOCAPSID PROTEIN**
Thaisa A. Baldo¹, Nutnaree Fukana^{1,2}, Joowon Park¹, Gilberto J. Silva Junior³, Lauren E. Malsick¹, Emily N. Gallichotte¹, Gregory D. Ebel¹, Brian J. Geiss¹, David S. Sandy¹, Duangjai Nacapricha², Charles S. Henry¹
¹Colorado State University, USA, ²Mahidol University, THAILAND, and ³University of Sao Paulo, BRAZIL
- T079.e PAPER MICROFLUIDIC PLATFORM FOR MULTIPLEX SARS-COV-2 GENE DETECTION**
Pavithra Sukumar, Alla Saleh, Muhammedin Deliorman, Mohammad Qasaimeh
New York University, Abu Dhabi, UAE
- T080.e ROBUST PAPER-BASED NANOFLUIDIC CONCENTRATOR FOR PROTEIN PRECONCENTRATION IN LATERAL FLOW IMMUNOASSAY**
Qin-ge Yi, Cong Wang
China University of Geosciences, CHINA

- W076.e ACCESSIBLE ACUTE KIDNEY INJURY MONITORING FOR PEDIATRIC PATIENTS USING NOVEL LATERAL FLOW ASSAYS**
Kevin Da, Ryan Li, Craig Simmons, Xinyu Liu
University of Toronto, CANADA
- W077.e ELECTRONIC FLOW MONITORING OF PAPER/TEXTILE-BASED MICROFLUIDIC DEVICES**
Isidoro Ruiz-García, Pablo Escobedo, Celia E. Ramos-Lorente, Miguel M. Erenas, Luis F. Capitan-Vallvey, Miguel A. Carvajal, Alberto J. Palma, Nuria Lopez-Ruiz
University of Granada, SPAIN
- W078.e MICFLOW: A CAPILLARY-DRIVEN MICROFLUIDIC DEVICE FOR RAPID AND ACCURATE DETERMINATION OF MINIMUM INHIBITORY CONCENTRATIONS OF ANTIMICROBIAL SUBSTANCES**
Pezhman Jalali, Soroush Abdollahi, Maryam Vatani, Amir Sanati Nezhad
University of Calgary, CANADA
- W079.e PIEZO-DISPENSED PAPER-BASED MICRODEVICES FOR RAPID AND MULTIPLEX DETECTION OF BIOTOXINS**
Monica Araya-Farias, Elora Bessot, Hervé Volland, Stéphanie Simon, Nathalie Morel, Karla Perez-Toralla
CEA, FRANCE
- W080.e TARGET ACQUIRED: A MODIFIED SUBSTRATE FOR PREPARING AND SAMPLING DRIED MATRIX SPOTS WITH LIQUID MICROJUNCTION - SURFACE SAMPLING PROBE - MASS SPECTROMETRY AIDED BY COMPUTER VISION**
Daniel O. Reddy, Katherine Williams, Malek Hassan, Randy E. Ellis, Richard D. Oleschuk
Queen's University, CANADA

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Chemical Synthesis and Particle Synthesis

- M081.e CONTINUOUS ACETYLSALICYLIC ACID GREEN PRODUCTION**
Cheng-You Yang, Ya-Yu Chiang
National Taiwan University, TAIWAN
- M082.e MICROFLUIDIC SYNTHESIS OF IRON OXIDE NANOPARTICLES FOR HIGHLY EFFICIENT INTRACELLULAR DELIVERY**
Athira Prasad, Gayathri R, Ashwini Shinde, Jayaganthan R, Tuhin S. Santra
Indian Institute of Technology, Madras, INDIA
- T081.e FAST ANTISOLVENT CRYSTALLIZATION OF MICONAZOLE NITRATE IN MICROFLUIDIC DROPLETS**
Amaury de Hemptinne, Müge Bilgen, Wim De Malsche
Vrije Universiteit Brussel, BELGIUM
- T082.e SYNTHESIS AND CRYSTALLIZATION OF PROTEINS CONTAINING METAL COMPLEXES BY APPLICATION OF MICROFLUIDIC DEVICES FOR BOTH LIQUID AND SOLID**
Daiki Tanaka¹, Masashi Kobayashi¹, Risa Fujita¹, Masahiro Furuya¹, Takashiro Akitsu², Tetsushi Sekiguchi¹, Shuichi Shoji¹, Takashi Tanii¹
¹Waseda University, JAPAN and ²Tokyo University of Science, JAPAN
- W081.e MICROFLUIDIC DROPLET BASED POLYMERIZATION OF IMPRINTED POLYMERS FOR BIOLOGICAL APPLICATIONS**
John Brown, Alireza Zabihhesari, Pouya Rezai
York University, CANADA

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- M083.e A DIGITAL MICROFLUIDIC PLATFORM FOR THE PRODUCTION OF FUNCTIONAL IMMUNE CELL THERAPIES FROM PRIMARY HUMAN T-CELLS**
Samuel R. Little, Niloufar Rahbari, Fatemeh Gholizadeh, Mehri Hajiaghayi, Joel Philips, Peter J. Darlington, Steve C.C. Shih
Concordia University, CANADA
- M084.e AUTOMATED AND USER-FRIENDLY DIGITAL IMMUNOASSAY PLATFORM TO ENABLE REAL-TIME POINT-OF-CARE MEASUREMENT OF CRITICAL ILLNESS**
Adrienne D. Füredi¹, Mark Nicolas², Amanda Giacobbe², Andrew Stephens³, Yujing Song¹, Ming X. Tan², Katsuo Kurabayashi¹
¹New York University, USA, ²Wainamics Inc., USA, and ³University of Michigan, USA
- M085.e DIGITAL DETECTION OF EXTRACELLULAR VESICLES USING NANOWIRE DOT ARRAY**
Kunanon Chattrairat¹, Shunsuke Suzuki², Taiga Ajiri¹, Yoshinobu Baba², Takao Yasui¹
¹Tokyo Institute of Technology, JAPAN and ²Nagoya University, JAPAN
- M086.e LOW COST, PORTABLE DNA NANOBALL AMPLIFICATION KIT TO INTEGRATE WITH AND PERFORM LAMP REACTION IN A POINT-OF-CARE DIGITAL ASSAY FOR RAPID ELECTRONIC QUANTIFICATION OF CLINICAL PATHOGENS USING DNA NANOBALLS**
Koosha Karimi¹, Donal Barrett², Erin Chille¹, Timothy G. Stephens¹, Anna Toldra², Haoyu Jiang¹, Mahtab Kokabi¹, Debashish Bhattacharya¹, Vicent Pelechano², Mehdi Javanmard¹
¹Rutgers, The State University of New Jersey, USA and ²Karolinska Institutet, SWEDEN
- M087.e SURFACTANT IMPREGNATED PAPER-DIGITAL MICROFLUIDICS FOR PLASMA SEPARATION AND DIAGNOSTIC ASSAYS**
Nguyen Le¹, Alinaghi Salari¹, Gilberto Camacho¹, Joshua Dahmer¹, Ryan Manning², Cheuk W. Kan², Nira R. Pollock³, David C. Duffy², Aaron R. Wheeler¹
¹University of Toronto, CANADA, ²Quanterix Corporation, USA, and ³Boston Children's Hospital, USA
- M088.e ULTRAFast AND ULTRAPARALLEL PICOLITER PARTITIONING OF DIFFERENT REACTION MIXES BY CENTRIFUGAL MICROFLUIDIC ARRAY TECHNOLOGY (CM-ART)**
Marvin Heyer¹, Salman Murad¹, Fabian Lickert², Helena Gmoser¹, Tobias Hutzenlaub^{1,2}, Nils Paust^{1,2}, Peter Juelg^{1,2}
¹University of Freiburg, GERMANY and ²Hahn-Schickard, GERMANY
- T083.e ALL-IN-ONE DIGITAL MICROFLUIDICS-BASED SURVEILLANCE TOOL FOR AUTONOMOUS MULTIPLEXED PORTABLE DETECTION OF VIRAL INFECTION AND IMMUNITY**
Sathishkumar Narayanaswamy^{1,2}, Jose Gilberto Camacho Valenzuela^{1,2}, Nguyen Le^{1,2}, Anthony K.C. Yong^{1,2}, Martin A. Rossotti^{2,3}, Daniel Brassard^{2,3}, Lidija Malic^{2,3}, Martin Plante^{2,3}, Anna N. Moraitis^{2,3}, Joshua Dahmer^{1,2}, Alexandros A. Sklavounos^{1,2}, Jamshid Tanha^{2,3,4}, Jean Labrecque^{2,3}, Teodor Veres^{2,3}, Aaron R. Wheeler^{1,2}
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- T084.e AUTOMATED SEMI-INTELLIGENT DIGITAL MICROFLUIDICS PLATFORM FOR OPTICAL DETECTION IN CHEMICAL-ASSAYS**
Casper Kunstmann^{1,2}, Jacek Fiutowski¹, Steven D. Johnson², Andy M. Tyrrell²
¹University of Southern Denmark, DENMARK and ²University of York, UK
- T085.e DOUBLE DIGITAL ASSAY FOR SINGLE EXTRACELLULAR VESICLE AND SINGLE MOLECULE DETECTION**
David E. Reynolds, Menghan Pan, Jingbo Yang, George Galanis, Yoon Ho Roh, Renee T. Morales, Shailesh S. Kumar, Su-Jin Heo, Xiaowei Xu, Wei Guo, Jina Ko
University of Pennsylvania, USA

- T086.e MICROSPRAY HOLE FACILITATED COUPLING OF DIGITAL MICROFLUIDICS WITH THIN LAYER CHROMATOGRAPHY AND SURFACE-ENHANCED RAMAN SPECTROSCOPY**
Anish Das, Detlev Belder
Leipzig University, GERMANY
- T087.e TIME-RESOLVED AND WASH-FREE DIGITAL IMMUNOASSAY BASED ON DYNAMIC TRACKING OF SINGLE BINDING EVENTS**
Tingting Zhan, Pengcheng Zhang, Yi Zhang, Hui Yang
Chinese Academy of Sciences, CHINA
- T088.e ULTRASENSITIVE DDPCR:100K+ AI-DETECTED DROPLETS IN A MONOLAYER CONSUMABLE**
Alex Jafek, David Bauer, Kalyan Handique
Bio-Rad Laboratories, USA
- W082.e A DIGITAL BEAD ASSAY FOR SARS-COV-2 DETECTION VIA ROLLING CIRCLE AMPLIFICATION IMPLEMENTED ON DIGITAL MICROFLUIDICS**
Alinaghi Salari¹, Nguyen Le¹, N. Sathishkumar¹, Martin A. Rossotti², Sheldon Decombe¹, Richard P.S. de Campos¹, M. D. Chamberlain¹, Jamshid Tanha², Aaron Wheeler¹
¹University of Toronto, CANADA and ²National Research Council Canada, CANADA
- W083.e AMPLIFICATION-FREE DIGITAL CRISPR-POWERED BIOSENSOR CONCEPT USING SINGLE-IMPACT ELECTROCHEMISTRY**
Sebastian Freko¹, Marta Niki¹, Lennart J.K. Weiß¹, Dirk Mayer², Bernhard Wolfrum¹
¹Technical University of Munich, GERMANY and ²Research Centre Jülich, GERMANY
- W084.e COLLECTION OF RARE SINGLE CELLS USING DROPLET-DIGITAL MICROFLUIDICS**
Zhiyang Deng¹, James M. Perry¹, Marian Weiss², Robert Genth², Christoph A. Merten³, Steve Shih¹
¹Concordia University, CANADA, ²VERAXA Biotech GmbH, GERMANY, and ³École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- W085.e HIGH-RESOLUTION MELTING CURVE ANALYSIS WITH LINEAR TEMPERATURE GRADIENT IN DIGITAL MICROFLUIDICS PLATFORM**
Li Meng, Mingzhong Li, Zhenyu Xu, Meiwan Chen, Man-Kay Law
University of Macau, CHINA
- W086.e MULTI-AGENT PATHFINDING FOR DROPLET ROUTING IN DIGITAL MICROFLUIDIC BIOCHIP**
Mehjabin Rahman¹, Darius Rackus¹, Richard Valenzano^{1,2}
¹Toronto Metropolitan University, CANADA and ²Vector Institute for Artificial Intelligence, CANADA
- W087.e TOWARDS PROCESS INTEGRATION OF DIGITAL MICROFLUIDICS (DMF) WITH SINGLE MOLECULE ARRAYS (SIMOA) FOR ENHANCED ASSAY CAPABILITIES**
Alinaghi Salari¹, Jose Gilberto Camacho Valenzuela¹, Nguyen Le¹, Joshua Dahmer¹, Alexandros A. Sklavounos¹, Cheuk W. Kan², Ryan Manning², David C. Duffy², Nira R. Pollock³, Aaron R. Wheeler¹
¹University of Toronto, CANADA, ²Quanterix Corporation, USA, and ³Boston Children's Hospital, USA

e - Integrated Microfluidic Platforms

Electrophoretic and Chromatographic Separation

- W088.e A NANOBODY-BASED MICROFLUIDIC CHIP FOR AUTOMATED HIGH-THROUGHPUT PURIFICATION OF BIOLOGICAL SAMPLES**
Phebe De Keyser^{1,2}, Jan Steyaert^{1,2}, Gert Desmet²
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e - Integrated Microfluidic Platforms

Micromixers and Microreactors

- M089.e ACOUSTICALLY EXCITED MICROPOST-BASED MICROMIXERS: ENHANCING MIXING PERFORMANCE VIA ACOUSTIC MICROSTREAMING USING SYNTHESIZED MICROPOSTS IN MICROFLUIDIC DEVICES**
Bahareh Chaichypour¹, Sinthuran Jegatheeswaran¹, Alinaghi Salari², Dae Kun Hwang¹, Michael C. Kolios¹, Scott S.H. Tsai¹
¹Toronto Metropolitan University, CANADA and ²University of Toronto, CANADA
- M090.e MICROFLUIDIC MIXING IN STAGNANT FLUID USING PROGRAMMABLE MAGNETIC ARTIFICIAL CILIA**
Tongsheng Wang¹, Ishu Aggarwal², Erik Steur¹, Tess Homan¹, Patrick R. Onck², Ye Wang¹, Jaap M.J. den Toonder¹
¹Eindhoven University of Technology, NETHERLANDS and ²University of Groningen, NETHERLANDS
- M091.e RAPID ACOUSTOFLUIDIC MIXING BY SURFACE ACOUSTIC WAVE-INDUCED ACOUSTIC STREAMING FLOW AND ITS BIOLOGICAL APPLICATIONS**
Beomseok Cha, Jinsoo Park
Chonnam National University, KOREA
- T089.e CONTINUOUS-FLOW SYNTHESIS AND PURIFICATION OF DRUGS IN MICRODROPLETS**
Roel Poppen, Mirjam Brinkman, Elisabeth Verpoorte, Pim de Haan
University of Groningen, NETHERLANDS
- T090.e MAGNETOHYDRODYNAMICS-INDUCED STIRRING IN AN ELECTRO-OSMOTIC FLOW**
Léna Gonzalez, Clémence Biscara, Laurent Davoust, Jean-Maxime Roux
University Grenoble, Alpes, FRANCE
- T091.e SERIALY CONNECTED GLASS MICROFLUIDIC CHIPS VS SINGLE CHIP FOR PRECISE COPOLYMERS SYNTHESIS**
Adelina Smirnova¹, Hisashi Shimizu¹, Kyojiro Morikawa^{1,2}, Takahiro Aratani³, Atsushi Mori³, Chihchen Chen², Takehiko Kitamori^{1,2,4}
¹KISTEC, JAPAN, ²National Tsing Hua University, TAIWAN, ³Daicel Corporation, JAPAN, and ⁴Lund University, SWEDEN
- W089.e HYDROPHOBIC SURFACE STRATEGIES TO IMPROVE THE MIXING EFFICIENCY IN THE Y-TYPE PASSIVE MICROMIXER**
Ayoub Rahali¹, Arnaud Stolz¹, Sophie Roman², Philippe Lefaucheur¹, Rémi Dussart¹, Thomas Tillocher¹
¹Research Group for the Energetics of Ionised Environments (GREMI), FRANCE and ²Earth Sciences Institute of Orleans (ISTO), FRANCE
- W090.e MICROFLUIDIC MIXING INDUCED BY A MAGNETIC ARTIFICIAL CILIUM IN A CLOSED CHAMBER**
Yangyu Duan¹, Ye Wang¹, Patrick R. Onck², Jaap M.J. den Toonder¹
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e - Integrated Microfluidic Platforms

Particle Separation

- M092.e ECHOSEED: MODELING NANOPARTICLE RELEASE IN SILICA CLUSTERS AND PIONEERING NEW SEED PARTICLE MATERIALS FOR ACOUSTOFLUIDICS**
Martim Costa, Björn Hammarström, Selim Tanriverdi, Haakan Joensson, Martin Wiklund, Aman Russom
KTH Royal Institute of Technology, SWEDEN

- M093.e** **MULTI-PARAMETER PARTICLE ANALYSIS AND SINGLE-CELL PHENOTYPING WITH TRANSVERSE ALTERNATING CURRENT ELECTROPHORESIS (TRACE)**
M. Hannah Choi¹, Samaneh Zare Harofteh¹, William Booth², Boyd F. Edwards², Aaron T. Timperman¹
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- M094.e** **TUNABILITY OF CRITICAL SIZE OF PARTICLE SORTING IN SINGLE-COLUMN DETERMINISTIC LATERAL DISPLACEMENT DEVICES BY LATERAL FLOW CONTROL**
Miftahul Jannat Rasna, James C. Sturm
Princeton University, USA
- T092.e** **HIGH-RECOVERY HARVESTING OF LENTIVIRAL VECTORS FROM PERFUSION CULTURE USING SPIRAL INERTIAL MICROFLUIDIC TECHNOLOGY**
Alexander Bevacqua, Fuguo Liu, Do Hyun Park, Hans Gaensbauer, Jianzhu Chen, Jongyoon Han
Massachusetts Institute of Technology, USA
- T093.e** **MULTI-SORTING OF LARGE PARTICLES UTILIZING ON-DEMAND VORTEX GENERATION IN A MICROFLUIDIC CHIP FABRICATED BY INJECTION MOLDING**
Makoto Saito¹, Nariaki Kiyama¹, Yoko Yamanishi¹, Niko Kimura², Shigeo S. Sugano³, Shinya Sakuma¹
¹Kyushu University, JAPAN, ²Tokyo University of Agriculture and Technology, JAPAN, and ³National Institute of Advanced Industrial Science and Technology (AIST), JAPAN
- W091.e** **DEVELOPMENT OF MICROFLUIDIC DEVICES WITH THREE-DIMENSIONAL ELECTRODES FOR EFFICIENT CELL SEPARATION BY DIELECTROPHORESIS**
Keisuke Ueda¹, Toru Uda¹, Soo Hyeon Kim²
¹NOK Corporation, JAPAN and ²University of Tokyo, JAPAN
- W092.e** **MICRO-VISCOUS FLOW (UVISFLO) CELL RETENTION DEVICE FOR AUTOMATED SAMPLER IN BIOTECHNOLOGY USING DENSE SUSPENSION INERTIAL MICROFLUIDIC PARTICLE THEORY (DENSE-IMPACT)**
Shireen Goh^{1,2}, Soon Wei Daniel Lim³, Shan Mei Tan², Rerngchai Arayanarakool², Sitaram V.S.N. Gupta Vangeti², Yuansheng Yang², Steven Boon Hong Tan⁴
*¹Singapore University of Technology & Design (SUTD), SINGAPORE, ²Agency of Science Technology & Research (A*STAR), SINGAPORE, ³Stanford University, USA, and ⁴Nanyang Technological University, SINGAPORE*
- W093.e** **REAL-TIME IMPEDANCE-BASED DIELECTROPHORETIC ACTUATION FOR SELECTIVE MANIPULATION OF FLOWING PARTICLES**
Cristian Brandi¹, Alexis Lefevre², Adele De Ninno³, Filippo Ruggiero³, Enrico Verona³, Michael Gauthier², Paolo Bisegna¹, Aude Bolopion², Federica Caselli¹
¹University of Rome Tor Vergata, ITALY, ²FEMTO-ST Institute, FRANCE, and ³Italian National Research Council, ITALY
- W094.e** **TUNABLE PARTICLE SEPARATION VIA ACOUSTICALLY ASSISTED DETERMINISTIC LATERAL DISPLACEMENT**
Hiroki Fukunaga¹, Naotomo Tottori¹, Shinya Sakuma¹, Takeshi Hayakawa², Yoko Yamanishi¹
¹Kyushu University, JAPAN and ²Chuo University, JAPAN

e - Integrated Microfluidic Platforms

System Integration

- M095.e** **ALL-IN-ONE CHIP-FREE OSCIDROP DIGITAL PCR SYSTEM FOR HIGHLY MULTIPLEXED MOLECULAR DIAGNOSTICS**
Caiming Li, Wenbin Du
Chinese Academy of Sciences, CHINA

- M096.e EGFET INTEGRATED INTO MICROFLUIDIC CHIP FOR NON-INVASIVE SERUM CREATININE RECOGNITION**
Dhaniella Cristhina B. Oliveira¹, Fernando Henrique M. Costa¹, Elizangela Sanchez¹, José Alberto F. Silva^{1,2}
¹Universidade Estadual de Campinas, BRAZIL and ²INCTBio, BRAZIL
- M097.e ON-THE-SPOT DETECTION OF AIRBORNE VIRUSES ENABLED BY A 3D-PRINTED INTERFACE BETWEEN AN AEROSOL COLLECTOR AND A MICROFLUIDIC DEVICE**
Matthew Jansen¹, William Vass², Morteza Alipanah¹, Amin Shirkani², Tracey Logan¹, John Lednicky¹, Chang-Yu Wu², Hugh Fan¹
¹University of Florida, USA and ²University of Miami, USA
- T094.e A 3D PRINTED BIOCOMPATIBLE MOUTHGUARD WITH MICROFLUIDIC DRUG DISPENSER**
Tymon Janisz, Wojciech Kubicki, Rafał Walczak
Wroclaw University of Science and Technology, POLAND
- T095.e AN INTEGRATED MICROFLUIDIC SYSTEM FOR AUTOMATIC MRNA DISPLAY USING TRANSCRIPTION-TRANSLATION COUPLED WITH ASSOCIATION OF PUROMYCIN LINKER FOR PEPTIDE SCREENING**
Hao-Yen Wang, Shih-Yu Shen, Hui-Ching Wang, Gwo-Bin Lee
National Tsing Hua University, TAIWAN
- T096.e EXPERIMENTAL CHARACTERIZATION OF THE DYNAMIC RESPONSE OF FLUID SAMPLE TUBING FOR THE IMPROVEMENT OF FEEDBACK DROPLET MICROFLUIDIC CONTROL SYSTEMS**
Dylan G. H. Hahn, Carolyn Ren
University of Waterloo, CANADA
- T097.e OPTICAL AND MICROFLUIDIC PLATFORM FOR BIOSENSORS BINDING PERFORMANCE OPTIMIZATION**
Hélène Jousset^{1,3}, Xavier Mermet¹, Hippolyte Durand¹, Caroline Fontelaye¹, Mahfod Benessalah¹, Manuel Alessio¹, François Boizot¹, Stéphane Caplet¹, Cécile Jamois², Emmanuelle Laurenceau³, Charlotte Parent¹
¹University Grenoble, Alpes, FRANCE, ²University Lyon, FRANCE, and ³Université Claude Bernard, FRANCE
- W095.e DEVELOPMENT OF A MICROFLUIDIC SPIRAL SEPARATOR AND TRANSFECTION SYSTEM FOR CONTINUOUS TRANSIENT TRANSFECTION OF MAMMALIAN CELLS**
Michaela Dehne^{1,2}, Anton Enders¹, Janina Bahnemann^{1,2}
¹Leibniz University Hannover, GERMANY and ²University of Augsburg, GERMANY
- W096.e NFC-ENABLED POTENTIOSTAT AND NITROCELLULOSE-BASED METAL ELECTRODES FOR ELECTROCHEMICAL LATERAL FLOW ASSAY**
Laura Gonzalez-Macia, Yunpeng Li, Kaijia Zhang, Estefania Nunez-Bajo, Giandrin Barandun, Yasin Cotur, Tarek Asfour, Selin Olenik, Philip Coatsworth, Jack Herrington, Firat Güder
Imperial College London, UK

e - Integrated Microfluidic Platforms

Late News

- M516.e AN AUTONOMOUS, CLOCKWORK-DRIVEN, CUSTOMIZABLE PERISTALTIC PUMP NETWORK**
Carter K. Jones, Catherine Engel, Katherine Page, James P. Landers
University of Virginia, USA

- T515.e A SCALABLE MICROFLUIDIC SYSTEM FOR NANOPARTICLE FORMULATION: FOR HIGH AND LOW FLOWRATE SCALES**
Seder Fayyad
Technical University of Denmark, DENMARK
- T516.e DEVELOPMENT OF A PAPER-ON-A-ROLL PLATFORM WITH DISTANCE PADS FOR CONTINUOUS MONITORING OF DISSOLVED INORGANIC CARBON LEVELS IN WATER**
Amparo Ferrer-Vilanova, Pablo Giménez-Gómez, Alexander Iles, Nicole Pamme
Stockholm University, SWEDEN
- W515.e ALL POLYMER 3D PRINTED PUSH/PULL SYRINGE PUMP FOR ENHANCED FLOW CONTROL**
Pulkit Saluja, Rahul Singh, Neeti Kalyani, Aabha Bajaj, Maria Dimaki, Winnie Edith Svendsen
Technical University of Denmark, DENMARK
- W516.e MULTI-FUNCTIONAL DIGITAL MICROFLUIDICS COUPLED WITH LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY: A DETECTION PLATFORM FOR SARS-COV-2 VARIANT IN WASTEWATER SURVEILLANCE**
Jiaxi Peng^{1,2}, Vigneshwar Rajesh¹, Jiarui Shen¹, Jianxian Sun¹, Calvin Chan^{1,2}, Yechen Hu¹, Hui Peng¹, Aaron Wheeler¹
¹University of Toronto, CANADA and ²Mount Sinai Hospital, CANADA

f - Microfabrication, Manufacturing and Rapid Prototyping

3D Bioprinting

- W097.f HIGH THROUGHPUT BIOPRINTING OF PURE PROTEIN HYDROGELS IN THREE-DIMENSIONAL MICROARRAYS FOR DISEASE BIOMONITORING**
Lubna Najm¹, Amid Shakeri², Shadman Khan¹, Zeinab Hosseinidoust¹, Tohid F. Didar¹
¹McMaster University, CANADA and ²University of Toronto, CANADA

f - Microfabrication, Manufacturing and Rapid Prototyping

3D Printing - Stereolithography (Laser, DLP, LCD, ...)

- M098.f 3D PRINTING SPATIALLY ENGINEERED ACOUSTOFLUIDIC DEVICES**
Roxanne Kate Balanay, Tyler R. Ray
University of Hawaii, Manoa, USA
- M099.f EXPANDING CAPILLARY MICROFLUIDICS WITH 3D-PRINTED PHASEGUIDES AND SELF-COALESCEING MODULES**
Cosette Craig, Megan Chang, Kelsey Leong, Carrie Lin, Ayokunle Olanrewaju
University of Washington, USA
- M100.f PORTABLE, 3D-PRINTED PNEUMATIC TIMERS FOR PRECISE AND FLEXIBLE NANOLITER DROPLET CONTROL WITHOUT THE NEED FOR ELECTRICAL POWER**
Joanne Y.R. Seow, Md Mohibullah, Christopher Easley
Auburn University, USA
- T098.f ACHIEVING HIGH RESOLUTION MICROFLUIDIC PRINTING BY PNEUMATIC CLEARANCE OF NASCENT MICROCHANNELS**
Dionis S. Yew, Cyrus W. Beh
*Agency for Science, Technology and Research (A*STAR), SINGAPORE*

- T099.f** **INTEGRATION OF MEMBRANES INTO A MICROFLUIDIC SYSTEM BY UTILIZING MULTISCALE 3D PRINTING**
Julia K. Hoskins, Patrick M. Pysz, Julie A. Stenken, Min Zou
University of Arkansas, USA
- T100.f** **RAPID PROTOTYPING OF MICROFLUIDIC CHANNELS USING 3D-PRINTER FOR DENSITY BASED ANALYSIS OF MICROPARTICLES IN A MAGNETIC LEVITATION PLATFORM**
Seyda Keles¹, E. Alperay Tarim¹, H. Ahsen Ozcan¹, H. Cumhur Tekin^{1,2}
¹Izmir Institute of Technology, TURKEY and ²METU MEMS Center, TURKEY
- W098.f** **COMBINING ONE - AND TWO-PHOTON 3D PRINTING: ON THE MECHANICAL PROPERTIES OF LATTICE STRUCTURES AND THE MANUFACTURING OF MICROFLUIDIC CHIPS**
Oliver Walker¹, Thierry Roland², Michael Heymann¹, Cosima Stubenrauch¹
¹University of Stuttgart, GERMANY and ²Institute Charles Sadron, GERMANY
- W099.f** **LCD 3D PRINTING OF A FLUIDIC DIODE**
Abdil Muhaymin Chowdhury, Thaddaeus D. Stine, Kalp B. Upadhayay, Carolyn G. Catan, Althea Marielle G. Eclarin, Luana M. Rojas Zurita, Catherine W. Lim, Michelle Liu, Ryan D. Sochol
University of Maryland, USA
- W100.f** **SUB-\$500 PROJECTION MICROSTEREOLITHOGRAPHY 3D PRINTING**
Olivia O. Enietan, Lauren Twombly, Patrick M. Pysz, Julie A. Stenken
University of Arkansas, USA

f - Microfabrication, Manufacturing and Rapid Prototyping

Bonding, Sealing and Interfacing

- M101.f** **A TEFLON-MEDIATED GLASS HETEROGENEOUS BONDING METHOD FOR FABRICATING HIGH CHEMICAL RESISTANCE MICROFLUIDIC FLOW REGULATOR**
Kao-Mai Shen¹, Kyojiro Morikawa^{1,2,3}, Takehiko Kitamori^{1,3,4}, Chihchen Chen¹
¹National Tsing Hua University, TAIWAN, ²University of Tokyo, JAPAN, ³Kanagawa Institute of Industrial Science and Technology, JAPAN, and ⁴Lund University, SWEDEN
- M102.f** **THE STUDY OF CYTOTOXICITY AND INTEGRATION EFFICIENCY OF POROUS POLYMER MEMBRANES AS STRUCTURAL ELEMENTS IN ORGAN-ON-A-CHIP SYSTEMS**
Magdalena Flont, Kena D. Ejeta, Oliwia Tadko, Elzbieta Jastrzebska
Warsaw University of Technology, POLAND
- T101.f** **FLEXCONNECT: AN ELECTROMECHANICALLY RELIABLE, FLEXIBLE, UNIVERSAL LEADOUT SOLUTION FOR SOFT BIOELECTRONIC INTERFACES**
Zhitong Zhang, Ziyang He, Xiaoyi Shi, Junshi Li, Zhongyan Wang, Jiayan Zhang, Xiaoyong Tang, Yu-Qing Zheng, Zhihong Li
Peking University, CHINA
- W101.f** **REVERSIBLE MICROFLUIDIC INTERCONNECTS FOR HIGH-DENSITY ELECTRICAL AND FLUIDIC INTERFACING OF SOLID-STATE NANOPORE SENSOR ARRAYS**
Dmytro Lomovtsev, Michel Stephan, Matthew Waugh, Vincent Tabard-Cossa
University of Ottawa, CANADA

f - Microfabrication, Manufacturing and Rapid Prototyping

Design for Manufacturability

- M103.f LOW-COST, HIGH-RESOLUTION 3D-PRINTING OF MICROFLUIDICS TOWARDS SELF-SUSTAINING HYDRATION IN ENGINEERED LIVING MATERIALS**
Aileen Y. Sun, Carrie H. Lin, John A. Tarka, Shannon Daily, Kinsey Drake, Alshakim Nelson, Ayokunle O. Olanrewaju
University of Washington, USA
- T102.f ADVANCING TUBULAR-LUMEN ORGAN-ON-CHIPS: FROM 3D-PRINTING TO MASS-MANUFACTURING-, AUTOMATION- AND HIGH THROUGHPUT-COMPATIBILITY**
Julius A. Perschel¹, Munkhtur Otgonbayar¹, Caroline Remmert¹, Maren Marder¹, Flavien Martinot¹, Sandra Wiedenmann¹, Matthias Meier^{1,2}
¹*Helmholtz Munich, GERMANY and* ²*University of Leipzig, GERMANY*
- T103.f ON-SKIN SENSING DEVICE WITH FILM-BASED FLEXIBLE ACTIVE PUMP**
Ryo Matsui¹, Gaia Oda¹, Toshihiro Kasama², Madoka Takai², Ryo Miyake², Yuichiro Abe¹
¹*TOPPAN Inc., JAPAN and* ²*University of Tokyo, JAPAN*
- W102.f FLOW CONTROL INSIDE 3D PRINTED MICROCHANNEL WITH MULTIPLE STACKED NOZZLES**
Helen Werner¹, Ebrahim TaiediNejad², Mehmet A. Sahin¹, Peer Erfle², Andreas Dietzel², Ghulam Destgeer¹
¹*Technical University of Munich, GERMANY and* ²*Technical University of Braunschweig, GERMANY*

f - Microfabrication, Manufacturing and Rapid Prototyping

Direct Laser Write and 2-Photon Fabrication

- M104.f COMBINING 2-PHOTON POLYMERIZATION AND NANOIMPRINT LITHOGRAPHY FOR THROMBOGENICITY ASSESSMENT IN LEFT VENTRICULAR ASSIST DEVICES**
Stjepan Perak^{1,5}, Marta Bonora^{2,5}, Sonja Kopp³, Michael Muehlberger³, Francesco Moscato^{2,4,5}, Markus Lunzer^{1,5}
¹*UpNano GmbH, AUSTRIA,* ²*Medical University of Vienna, AUSTRIA,* ³*PROFACTOR GmbH, AUSTRIA,* ⁴*Ludwig Boltzmann Institute for Cardiovascular Research, AUSTRIA, and* ⁵*Austrian Cluster for Tissue Regeneration, AUSTRIA*
- T104.f DIRECT LASER WRITING OF A SOFT MULTI-ACTUATOR MICROROBOT ATOP AN LCD 3D-PRINTED MICROFLUIDIC CHIP**
Olivia M. Young¹, Adira Colton¹, Dheeraj Gandhi², Mirosław Janowski², Jeremy D. Brown³, Mark Fuge¹, Axel Krieger³, Ryan D. Sochol¹
¹*University of Maryland, USA,* ²*University of Maryland School of Medicine, USA, and* ³*Johns Hopkins University, USA*
- W103.f 3D PRINTED µDICER FOR UNIFORM TISSUE MICRODISSECTION**
Annatoma Arif, Saisneha Koppaka, Seth C. Cordts, Sindy K.Y. Tang
Stanford University, USA

f - Microfabrication, Manufacturing and Rapid Prototyping

Droplets, Particles and Fiber Manufacturing

- M105.f A CUSTOMIZED ASSEMBLED CENTRIFUGAL STEP EMULSIFIER FOR DROPLET GENERATION PREDICTION**
Xin Wang, Peng Chen, Bi-Feng Liu
Huazhong University of Science and Technology, CHINA

- M106.f TAILORING THE DEGRADATION KINETICS OF POLYCAPROLACTONE (PCL) MICROPARTICLES VIA MICROFLUIDIC SYNTHESIS WITH A BIS-DIAZERINE CROSSLINKER**
Paige Allard^{1,2}, Lily Pestereva^{1,2}, Jeremy E. Wulff^{1,2}, Katherine S. Elvira^{1,2}
¹University of Victoria, CANADA and
²Centre for Advanced Materials and Related Technology (CAMTEC), CANADA
- T105.f CORE-SHELL STRUCTURAL COLOR VOXELS WITH CONTROLLABLE ELASTICITY FOR ACOUSTICALLY LEVITATED DISPLAYS**
Hayato Goto, Satoshi Nishita, Hidetoshi Takahashi, Hiroaki Onoe
Keio University, JAPAN
- T106.f THERMORESPONSIVE POLYMER BRUSH GRAFTED-GELMA MICROGELS FACILITATE FIBROBLAST CELL EXPANSION**
Esfandiyar Askari
University of Victoria, CANADA
- W104.f 3D HYDRODYNAMIC FLOW SCULPTING USING PDMS MICROCHANNELS FOR STRUCTURED ANISOTROPIC PARTICLE FABRICATION**
Yiying Zou, Mehmet Akif Sahin, Ghulam Destgeer
Technical University of Munich, GERMANY
- W105.f MICROFLUIDIC MANUFACTURING AND BIOSENSOR APPLICATION OF MAGNETIC FIELD-RESPONSIVE GLUCOSE OXIDASE BEADS**
Yusuke Kanno¹, Yeyi Tang¹, Shuzo Masui², Takasi Nisisako¹
¹Tokyo Institute of Technology, JAPAN and ²University of Tokyo, JAPAN

f - Microfabrication, Manufacturing and Rapid Prototyping

Microfluidics-Based Patterning and Manufacturing

- M107.f SELECTIVE SURFACE COATING IN CLOSED MICROFLUIDIC ARRAYS FOR CELL ASSAYS**
Anna Kaehr, Guillaume Aubry, Hang Lu
Georgia Institute of Technology, USA
- T107.f WATER/OIL MULTI-PHASE FLOW IN MICROCHANNEL WITH HELICAL CORRUGATION SURFACE BY DIGITAL LIGHT PROCESSING 3D PRINTING TECHNOLOGY**
Doheon Koo, Hongyun So
Hanyang University, KOREA
- W106.f REPRODUCIBLE AND REPEATABLE CELLULAR MICROARRAY GENERATION USING MULTI-CAPILLARY STAMPING**
Haruka Oda¹, Hisatoshi Mimura², Toshihisa Osaki², Shoji Takeuchi^{1,2}
¹University of Tokyo, JAPAN and ²Kanagawa Institute of Industrial Science and Technology, JAPAN

f - Microfabrication, Manufacturing and Rapid Prototyping

Microscale Fabrication, Patterning, and Integration

- M108.f ANALYSIS OF ELECTROPLATING PROCESS CONDITIONS FOR MICROSCALE COPPER STRUCTURE FABRICATION**
Sangyeun Park, Byungkwon Chun, Doheon Koo, Hongyun So
Hanyang University, KOREA

- M109.f COMBINING INJECTION MOLDING AND MICRO-3D PRINTING FOR SPATIALLY RESOLVED POLYMER MATERIAL PROPERTIES**
Michelle Vigogne¹, Carsten Zschech¹, Markus Stommel¹, Ines Kühnert¹, Julian Thiele^{1,2}
¹Leibniz Institute of Polymer Research Dresden, GERMANY and
²Otto von Guericke University Magdeburg, GERMANY
- M110.f FABRICATION AND CHARACTERISATION OF BIOPOLYMER NANOFIBERS USING ELECTROHYDRODYNAMIC JET 3D PRINTING**
Sara Sadati, Dmitry Isakov
University of Warwick, UK
- M111.f IN SITU UV-CROSSLINKING OF HYDROGELS TO ESTABLISH CELL-BARRIERS IN ORGAN-ON-CHIP SYSTEMS.**
Simon Werner¹, Ning Zhang², Melisa Tekinalp², Tengku I. Maulana², Brigitte Angres³, Helmut Wurst³, Peter M. Loskill²
¹University of Tübingen, GERMANY, ²University of Tübingen, GERMANY, and ³Cellendes GmbH, GERMANY
- M112.f MICROFLUIDIC PREPARATION OF ULTRATHIN, MINERALIZED COLLAGEN SHEETS**
Gahyeon Kim, Liyang Zhong, Wuyang Gao, Eli Sone, Axel Günther
University of Toronto, CANADA
- M113.f PLASTRON LIFETIME OF SUPERHYDROPHOBIC SURFACES SUBMERGED IN BIOFLUIDS**
Mohammad Awashra, Seyed Mehran Mirmohammadi, Lingju Meng, Sami Franssila, Ville Jokinen
Aalto University, FINLAND
- M114.f SMOOTH SURFACE FUSED SILICA MICROCHANNEL BY CNC MILLING FABRICATION**
Wei-Jen Soong¹, Chihchen Chen¹, Takehiko Kitamori^{1,2,3}, Kyojiro Morikawa^{1,2,4}
¹National Tsing Hua University, TAIWAN, ²Kanagawa Institute of Industrial Science and Technology, JAPAN, ³Lund Univeristy, JAPAN, and ⁴University of Tokyo, JAPAN
- T108.f ATOMIZATION OF NARROW-WIDTH SURFACE ACOUSTIC WAVE DEVICE FOR INTRANASAL NEBULIZATION**
Kosuke Wakayama¹, Shun Koda¹, Yuta Bando¹, Sho Kurihara², Yuta Kurashina¹
¹Tokyo University of Agriculture and Technology, JAPAN and ²Jikei University School of Medicine, JAPAN
- T109.f CONFIGURABLE AND MODULAR 3D-PRINTED MICROSTRUCTURED STAMP FOR VERSATILE PATTERNING OF A LOW-VISCOUS BIOINK**
Yejin Choi, Soo Jee Kim, Je-Kyun Park
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- T110.f FABRICATION OF PICOLITER TO MICROLITER STRUCTURES IN ONE CHIP USING HYBRID COC FILM TECHNOLOGY**
Salman Murad¹, Marvin Heyer¹, Fabian Lickert², Christoph Stöver³, Thomas Ruhl³, Benedikt Bläsi⁴, Markus Rombach², Daniel Kainz², Tobias Hutzenlau^{1,2}, Nils Paust^{1,2}, Peter Juelg^{1,2}
¹University of Freiburg, GERMANY, ²Hahn-Schickard, GERMANY, ³Temicon GmbH, GERMANY, and ⁴Fraunhofer Institute, GERMANY
- T111.f MASSIVELY PARALLEL HIGH THROUGHPUT SINGLE-CELL PRINTING AND HIGHLY EFFICIENT LARGE BIOMOLECULAR DELIVERY INTO MAMMALIAN CELLS**
Ashwini S. Shinde¹, Pallavi S. Shinde¹, Moeto Nagai², Srabani Kar³, Tuhin S. Santra¹
¹Indian Institute of Technology, Madras, INDIA, ²Toyohashi University of Technology, JAPAN, and ³Indian Institute of Science Education and Research Tirupati, INDIA
- T112.f MODIFYING A CONTROLLED DIFFUSION MICROFLUIDIC DEVICE THROUGH APPLICATIONS OF TUNABLE WIDTH CHANNELS BASED ON PDMS NANOCRACKS**
Animesh Sahu, Nicholas J. Ginga
University of Alabama, USA

- T113.f POLYMORPHING HYDROGELS REGULATED BY PHOTO-REACTIVE DNA CROSS-LINKS**
Junho Roh, Seongjun Park, Hoeseong Kim, Eunjin Choi, Yeongjae Choi
Gwangju Institute of Science and Technology, KOREA
- T114.f USE OF POLYMER MICROPILLAR ARRAYS FOR SIGNAL ENHANCEMENT IN COLORIMETRIC AND FLUORESCENCE-BASED DETECTION ASSAYS**
Matthias Geissler¹, Daniel Brassard¹, Nadine Adam², Neda Nasheri², Liviu Clime¹, Caroline Miville-Godin¹, Maxence Mounier¹, Christina Nassif¹, Lidija Malic¹, Keith J. Morton¹, Nathalie Corneau², Teodor Veres¹
¹National Research Council of Canada, CANADA, ²Health Canada, CANADA, ³National Research Council, CANADA, and ⁴Health Canada, CANADA
- W107.f ACTISCUPT: ACTIVE SCULPTING OF MULTILAYERED FLOW FOR NEXT GENERATION OF 3D PRINTING NOZZLES**
Mehmet Akif Sahin, Ghulam Destgeer
Technical University of Munich, GERMANY
- W108.f BIOELECTROCHEMICAL CROSSBAR ARCHITECTURE SCREENING PLATFORM FOR HIGH-THROUGHPUT ANALYSIS OF ELECTROACTIVE BACTERIA**
Hasika Suresh¹, Kundan Saha¹, Cihan Asci¹, Rhea Patel², Surya V. Devaraj², Atul Sharma¹, Matthew Carpenter³, Caroline M. Ajo-Franklin³, Maryam S. Baghini², Sameer Sonkusale¹
¹Tufts University, USA, ²Indian Institute of Technology, Bombay, INDIA, and ³Rice University, USA
- W109.f EXPLORING COST-EFFECTIVE APPROACHES TO MICROFLUIDIC SYSTEMS FOR HEALTHCARE IN DEVELOPING COUNTRIES**
Shermineh Shakeri¹, Nasrollah Tabatabaei¹, Nur Mustafaoglu², Mahya Marashian¹, Mohammad Amin Hashemi¹, Houra Mobaleghol Eslam¹, Mohammad Akbarpour¹, Mohammad Taleb¹
¹Tehran University of Medical Sciences, IRAN and ²Sabanci University, TURKEY
- W110.f HIGH-THROUGHPUT X-Y SPERM SORTING MICROFLUIDIC DEVICE IN A REVERSE MICRO FLOW TO MEET THE MARKET NEEDS OF EVERY LIVESTOCK SPECIES**
Cheng-Yang Li¹, Bang-Lun Wang¹, Hsien-Chin Peng¹, Ching-Fu Tu³, Tzu-Hsuan Kuo¹, Fan-Gang Tseng^{1,2}
¹National Tsing Hua University, TAIWAN, ²Academia Sinica, TAIWAN, and ³Agricultural Technology Research Institute, TAIWAN
- W111.f MICROFLUIDIC DEVICE PROCESSING AND PRODUCTION IN THERMOPLASTIC AND GLASS FOR ALL**
Izadora Fujinami Tanimoto¹⁻², Elian Martin¹⁻², Bertrand Cinquin¹⁻²
¹ESPCI-PSL, FRANCE and ²CNRS, FRANCE
- W112.f ON-CIHP MECHANICAL CHARACTERIZATION OF SINGLE CELLS BY UTILIZING LAYERED RIGID POLYMER STRUCTURE**
Nariaki Kiyama, Yoko Yamanishi, Shinya Sakuma
Kyushu University, JAPAN
- W113.f RAPID FABRICATION OF THERMOPLASTIC-BASED MICROFLUIDIC CHIP BY COMBINING 3D LITHOGRAPHY AND INJECTION MOLDING**
Ayumu Oizumi¹, Atsuhito Okonogi², Tomomi Okonogi², Arata Tsuchida³, Hirofumi Shintaku^{3,4}, Takaaki Suzuki¹
¹Gunma University, JAPAN, ²Laboko Co., LTD, JAPAN, ³RIKEN, JAPAN, and ⁴Kyoto University, JAPAN
- W114.f VALIDATION AND CHARACTERIZATION OF RAPID PROTOTYPED MATERIALS FOR SUB-TERAHERTZ DIELECTRIC SPECTROSCOPY IN BIOMEDICAL APPLICATIONS**
Hanane Tissir, Jian-Ye Mai, Raphael Trouillon, Ke Wu
Polytechnique Montréal, CANADA

f - Microfabrication, Manufacturing and Rapid Prototyping
Molding, Embossing, and Roll-to-Roll

- M115.f COMBINATORIAL MOLDING STRATEGIES FOR MONOLITHIC TRUE 3D MICROFLUIDIC BIOREACTORS**
Bram Servais, David R. Nisbet, David Collins
University of Melbourne, AUSTRALIA
- T115.f MASS FABRICATION OF PDMS DEVICES BY INJECTION MOLDING**
Raphaël Filion^{1,2,3}, Yann Trovalet⁴, David Reyter⁴, Zahra Kanani¹, Claire Cerclé¹, Abdellah Ajji¹, Thomas Gervais^{1,2,3,5}
¹*Polytechnique Montréal, CANADA*, ²*Centre de recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM), CANADA*, ³*Institut du Cancer de Montréal (ICM), CANADA*, ⁴*DBM Reflex, CANADA*, and ⁵*Miso Chip, CANADA*
- W115.f TOWARD REPRODUCEABLE MULTILUMEN TUBING AS A SUBSTRATE FOR DIRECT LASER WRITING-BASED MICROFLUIDICS**
Bailey M. Felix¹, Jordi T. Andreou¹, Olivia M. Young¹, Nicholas Portwood¹, A. Muhaymin Chowdhury¹, Hannah Moskios¹, Sarah McHugh¹, Claudia Davis¹, Nathan Ravnitzky¹, Fola Agbebi¹, Clifford R. Weiss², Christopher R. Bailey², Deeraaj Gandhi³, Mirosław Janowski³, Jeremy D. Brown⁴, Mark Fuge¹, Axel Kreiger⁴, Ryan D. Sochol¹
¹*University of Maryland, USA*, ²*Johns Hopkins School of Medicine, USA*, ³*University of Maryland School of Medicine, USA*, and ⁴*Johns Hopkins University, USA*

f - Microfabrication, Manufacturing and Rapid Prototyping
New Materials and Surface Modification

- M116.f CHARACTERIZATION OF UV NAIL SCULPTING GEL FOR LOW-COST APPLICATIONS IN MICROFLUIDICS**
Lorenzo A. Tell, Karen A. Sosa Navarro, María de los Angeles Rossi, Carolina D.V. Bessone, Evelina Frontera
Universidad Nacional de Villa Mercedes, ARGENTINA
- M117.f OPTICAL QUALITY CONTROL OF FUNCTIONALIZED GLASS SURFACES FOR NANOPARTICLE AND SINGLE FLUOROPHORE DETECTION**
Andreas Wallucks, Hugues Martin, David Juncker
McGill University, CANADA
- T116.f DUAL SURFACE FUNCTIONALIZATION OF MICROFLUIDIC BLOOD OXYGENATORS USING ANTITHROMBIN-HEPARIN COMPLEX (ATH) AND TISSUE PLASMINOGEN ACTIVATOR (T-PA) PROVIDES SUPERIOR ANTITHROMBOGENICITY**
Siyuan Li¹, Helen M. Atkinson¹, Gerhard Fusch¹, Niels Rochow^{1,2}, Christoph Fusch^{1,2}, P. Ravi Selvaganapathy¹, John L. Brash¹, Anthony K.C. Chan¹, Kyla N. Sask
¹*McMaster University, CANADA* and ²*University Hospital Nuremberg, GERMANY*
- W116.f INVESTIGATION OF THE SCALABILITY OF POSS-BASED PHOTOMATERIALS FOR 3D-PRINTED GLASS MICROFLUIDICS**
Adira Colton¹, Mahima Srivastava¹, Ryan N. Halli¹, Declan Fitzgerald¹, Kinneret Rand-Yadin², Ryan D. Sochol¹
¹*University of Maryland, USA* and ²*SeeTrue Technology, USA*

f - Microfabrication, Manufacturing and Rapid Prototyping

Others

- W118.f NON-INVASIVE TOOLKIT FOR SURVEILLING MOSQUITO PATHOGEN THROUGH EXCRETA**
Zhuolun Meng, Dana Price, Mehdi Javanmard
Rutgers University, New Brunswick, USA

f - Microfabrication, Manufacturing and Rapid Prototyping

Resins and Inks for 3D Printing

- M118.f PRINTING OF SHAPE MEMORY HYDROGELS BY ROBOTIC DISPENSERS**
Shumon Ogura, Hiroaki Suzuki
Chuo University, JAPAN
- T117.f CYTOTOXICITY ASSESSMENT IN RAPID PROTOTYPING INJECTION MOLDING FOR MANUFACTURING OF POLYMERS-BASED MICROFLUIDIC DEVICES**
Mert Gulcur¹, Adel Tekari², Pengcheng Zhu¹, Lucia Brown¹, Vito Kontrimas¹, Frédéric Flahaut², Esteban Alvarez Seoane², Valentin Robert-Charrue², Saskia Schmidt^{3,4}, Carine Gaiser^{3,4}, Silvia Demuru⁵, Bradley Petkus⁵, Loïc Burr⁵, Laura Suter-Dick³, Robert Dallmann¹, Greg Gibbons¹, Alexandra Homsy², Jérôme Charnet^{1,2,6}
¹University of Warwick, UK, ²University of Applied Sciences Western Switzerland (HES-SO), SWITZERLAND, ³University of Applied Sciences and Arts Northwestern Switzerland, SWITZERLAND, ⁴University of Basel, SWITZERLAND, ⁵Centre Suisse d'Electronique et de Microtechnique SA (CSEM), SWITZERLAND, and ⁶University of Bern, SWITZERLAND
- W117.f POROUS POLY(ETHYLENE GLYCOL) DIACRYLATE HYDROGEL-BASED INKS FOR HIGH-RESOLUTION LOW-COST LCD 3D PRINTING OF MICROFLUIDICS**
Justin de Vries, Houda Shafique, Emilie Johnson, David Juncker
McGill University, CANADA

f - Microfabrication, Manufacturing and Rapid Prototyping

Subtractive Prototyping (Laser Machining, Milling, Etc.)

- T118.f TINY CHANNELS, STICKY STUFF, AND BIOFIXES - KAPPA (κ) CHIP: A MODULAR MICROFLUIDIC DEVICE FOR ANALYTE SCREENING USING A PARALLELIZED ASSAYS AND MULTIPLE SHEAR RATE APPROACH**
Jose A. Wippold, Mark Kozlowski, Joshua Orlicki, Justin Jahnke
Army Research Laboratory, USA

f - Microfabrication, Manufacturing and Rapid Prototyping

Late News

- M517.f 3D-PRINTED PERMEOTUBES FOR INVESTIGATING CARDIAC RESISTANCE TO CANCER METASTASIS**
Amid Shakeri^{1,2}, Sargol Okhovatian^{1,2}, Matthew Lei^{1,2}, Richard Jiang^{1,2}, Milica Radisic^{1,2}
¹University of Toronto, CANADA and ²Toronto General Hospital Research Institute, CANADA

- M518.f BIOMIMETIC FRACTAL TOPOGRAPHY ENHANCES KIDNEY PODOCYTE MATURATION IN VITRO**
Chuan Liu^{1,2}, Praful Aggarwal³, Karl T. Wagner^{1,2}, Shira S. Landau^{1,2}, Teng Cui¹, Xin Song¹, Laleh Shamaei⁴, Naimeh Rafatian¹, Yimu Zhao^{1,2}, Sonia Rodriguez-Ramirez², Keith Morton⁵, Elizabeth Virlee³, Chen Yu Li¹, Dawn Bannerman^{1,2}, Simon Pascual-Gil², Sargol Okhovatian^{1,2}, Anastasia Radisic¹, Sergi Clotet-Freixas², Teodor Veres^{1,5,6}, Mohtada Sadrzadeh⁴, Tobin Filleter¹, Ulrich Broeckel³, Ana Konvalinka^{1,2}, Milica Radisic^{1,2,6},
¹University of Toronto, CANADA, ²University Health Network, CANADA, ³Medical College of Wisconsin, USA, ⁴University of Alberta, CANADA, ⁵National Research Council Canada, CANADA, and ⁶Centre for Research and Applications in Fluidic Technologies, CANADA
- M519.f ENHANCING STRUCTURAL INTEGRITY OF GRANULAR HYDROGELS THROUGH SURFACE ROUGHNESS MODULATION OF MICROGELS**
Navid Tavoosi, Luc Mongeau
McGill University, CANADA
- M520.f FEASIBILITY OF 3D MICROELECTRODE ARRAY FOR 3D NEURONAL CULTURES USING A DIGITAL LIGHT PROCESSING 3D PRINTING**
Dongjo Yoon
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- M521.f MANIPULATION OF CELL MORPHOLOGY AND ATTACHMENT ON NANOIMPRINTED THIOL-ENE-EPOXY TOPOGRAPHIES**
Reza Zandi Shafagh¹, Joanne Shen¹, Sonia Youhanna¹, Weijin Guo², Tommy Haraldsson², Wouter van der Wijngaart², Volker Lauschke¹
¹Karolinska Institute, SWEDEN and ²KTH Royal Institute of Technology, SWEDEN
- M522.f MICROFLUIDIC PAPER-BASED ANALYTICAL SOFT ACTUATORS (PAC)**
Koki Yoshida^{1,2}, Masahiro Takinoue¹, Hiroaki Onoe³, Michinao Hashimoto²
¹Tokyo Institute of Technology, JAPAN, ²Singapore University of Technology and Design, SINGAPORE, and ³Keio University, JAPAN
- M523.f SIMPLE FABRICATION METHOD OF OPEN 3D ELECTRODES INTEGRATED IN MICROFLUIDIC SYSTEMS FOR HIGHLY SENSITIVE DROPLET ANALYSIS**
Byeolnim Oh¹, Moon Sung Son¹, Jaewon Park³, Kang-Ho Lee², Hyun Soo Kim¹
¹Kwangwoon University, KOREA, ²Korea Institute of Machinery and Materials, KOREA, and ³Konkuk University, KOREA
- M524.f VASCULAR FLOW MODEL FOR THE EVALUATION OF EMBOLIC AGENTS: ENHANCING ANATOMICAL ACCURACY AND COMPLIANCE**
Élie Daoust¹, Arthur Haroutounian², Sophie Lerouge¹, Gilles Soulez²
¹École de Technologie Supérieure, CANADA and ²Université de Montréal, CANADA
- T517.f AGILE AND LOW-COST FABRICATION OF GLASS MICROFLUIDIC DEVICES - CHARACTERIZING THE EFFECT OF TOOL GEOMETRY AND TOOL PATH STRATEGY USING SPARK-ASSISTED CHEMICAL ENGRAVING**
Guillaume Villeneuve¹, Jean-Philippe Leclair¹, Rolf Wuthrich², Emmanuel Brousseau³, Lucas A. Hof¹
¹École de Technologie Supérieure, CANADA, ²Concordia University, CANADA, and ³Cardiff University, UK
- T518.f DIRECT LASER WRITING OF LIQUID CRYSTALLINE CELLULOSE PHOTONIC ACTUATORS RESPONSIVE MICROFLUIDICS WITH A SPLASH OF COLOUR**
Aoife Donohoe¹, Jing Qian¹, Raquel Catalan², Enrique Azuaje Hualde^{1,2}, Louise Bradley¹, Lourdes Basabe-Desmonts², Fernando Benito-Lopez², Larissa Florea¹, Colm Delaney¹
¹Trinity College Dublin, IRELAND and ²University of the Basque Country UPV/EHU, SPAIN

- T519.f FABRICATION OF NANO-ELECTRODES IN A NANOCHANNEL USING NANOFLUIDICS AND NANO-ELECTROCHEMISTRY**
 Kyojiro Morikawa^{1,2,3}, Tomoaki Takeuchi², Takehiko Kitamori^{1,3,4}
¹National Tsing Hua University, TAIWAN, ²University of Tokyo, JAPAN, ³Kanagawa Institute of Industrial Science and Technology, JAPAN, and ⁴Lund University, SWEDEN
- T520.f FUNCTIONALIZATION OF 3D PRINTED MICROCHANNEL PLATE DETECTORS BY ATOMIC LAYER DEPOSITION**
 Kristian Deneke, Stefanie Haugg, Bent Andersen, Robert Zierold, Robert H. Blick
 Universität Hamburg, GERMANY
- T521.f MASSIVE GENERATION OF INDEPENDENTLY STRUCTURE-ENCODABLE PARTICLES BY NOVEL 3D-CONFIGURED FLOW-LITHOGRAPHY**
 Akihiro Eguchi, Yuichiro Iwamoto, Hinata Tokuda, Minato Yamashita, Kazuki Hattori, Sadao Ota
 University of Tokyo, JAPAN
- T522.f MICROCYCLONES FOR HIGH-EFFICIENCY COLLECTION OF SUBMICRON BIOAEROSOLS**
 Prama Bhattacharya, Dewansh Rastogi, Sima Mehraji, Akua Asa-Awuku, Don L. DeVoe
 University of Maryland, USA
- T523.f SURFACTANT BASED DEVELOPMENT OF UNIQUE MULTI-RING PHOTONIC STRUCTURES**
 Appurva Tiwari¹, Ashish K. Thokchom¹, Seong J. Lee²
¹Shiv Nadar Institution of Eminence Deemed to be University, INDIA and ²University of Suwon, KOREA
- W517.f ATPSPIN: A MICROFLUIDIC APPROACH FOR VARIED ALGINATE MICROFIBER PRODUCTION**
 Niloofar Ghasemzaie^{1,2,4}, Morteza Jeyhani^{1,2,4}, Kushal Joshi^{1,2,4}, Warren L. Lee^{1,2,3,4}, Scott S. H. Tsai^{1,2,4}
¹Toronto Metropolitan University, CANADA, ²St. Michael's Hospital, Unity Health, CANADA, ³University of Toronto, CANADA, and ⁴Institute for Biomedical Engineering, Science and Technology (iBEST), CANADA
- W518.f DISPOSABLE POLYESTER-BASED MICROFLUIDIC DEVICE FOR FLOW INJECTION ANALYSIS OF MIDAZOLAM MALEATE AS A LOW-COST ALTERNATIVE ASSAY FOR QUALITY CONTROL**
 Almir A. De Carvalho¹, Wendell K. T. Coltro², Cyro L.S. Chagas¹
¹University of Brasília, BRAZIL and ²Federal University of Goiás, BRAZIL
- W519.f FABRICATION OF VERTICAL THROUGH GLASS MICROCHANNEL WITH DETACHABLE BONDING, MILLING, AND ETCHING**
 Hsin-Yi Lee¹, Po-yin Chen¹, Wei-Jen Soong¹, Chihchen Chen¹, Takehiko Kitamori^{1,2,3}, Kyojiro Morikawa^{1,2,4}
¹National Tsing Hua University, TAIWAN, ²Kanagawa Institute of Industrial Science and Technology, JAPAN, ³Lund University, JAPAN, and ⁴University of Tokyo, JAPAN
- W520.f INTEGRATED CIRCUIT (IC) BASED SINGLE-CELL ELECTRIC IMPEDANCE SENSING CHIPLET BATCHES PROCESSING**
 Wenhao Hui, Ren Shen, Pui-In Mak, Rui P. Martins, Yanwei Jia
 University of Macau, MACAO
- W521.f NOVEL CULTURE SUBSTRATES FOR MECHANICAL STIMULATION IN CARDIOVASCULAR RESEARCH**
 Dominik Kolodziejek, Zuzanna Zoltowska, Natalia Wasiak, Julia Bialota, Aleksandra Dabala, Marcin Drozd, Zbigniew Brzozka, Elzbieta Jastrzebska
 Warsaw University of Technology, POLAND
- W522.f REALIZING HIGH-VIABILITY SINGLE CELL PRINTING IN ACRYLATED HYDROGELS BY OVERCOMING OXYGEN TOXICITY**
 Alan Stenquist, Ben Noren, Cassidy Enloe, John Oakey
 University of Wyoming, USA

- W523.f TEXTILE-BASED SUBSTRUCTIVE MANUFACTURING APPLIED TO ORGANS-ON-CHIPS**
 Vivian Aubert¹, Melissa Saelens¹, Arthur Salles^{1,2}, Emile Gasser^{1,2}, Catherine Villard², Andrei Kolosov¹,
 Anissa Kaddouche¹, Quentin Watel³, Aurelie Cayla³, Fabien Salaun³, François Bousso³, Jean-Louis Viovy¹
¹Institut Curie/CNRS/PSL University, FRANCE, ²Université Paris Cité, FRANCE, and
³Lille University, FRANCE

g - Sensors, Actuators and Detection Technologies

Artificial Intelligence Enhanced Sensing

- M119.g AIOT-ENHANCED GLOBAL ANTIMICROBIAL RESISTANCE AUTOMATED SURVEILLANCE SYSTEM USING MULTIPLEX MICROFLUIDIC TECHNIQUE**
 Jinxin Liu¹, Xinyu Yan¹, Luyao Ma², Qian Liu¹, Xiaonan Lu¹
¹McGill University, CANADA and ²Oregon State University, USA
- T119.g IONIC CELL MICROSCOPY: A NEW MODALITY FOR VISUALIZING CELLS USING MICROFLUIDIC IMPEDANCE CYTOMETRY AND GENERATIVE AI**
 Mahtab Kokabi¹, Gulam M. Rather², Mehdi Javanmard¹
¹Rutgers University, New Brunswick, USA and ²Rutgers Cancer Institute of New Jersey, USA
- W119.g A COMPARATIVE ANALYSIS OF MACHINE LEARNING ALGORITHMS FOR THE CLASSIFICATION OF REAL-TIME ELECTROCHEMICAL SENSING DATA**
 Sadman Sakib, Kulmanak Bajaj, Payel Sen, Wantong Li, Jimmy Gu, Yingfu Li, Leyla Soleymani
 McMaster University, CANADA

g - Sensors, Actuators and Detection Technologies

Chemical and Electrochemical Sensors

- M120.g A MICROFLUIDIC PLASMA SEPARATION DEVICE INTEGRATED WITH A NOVEL REDOX-CONTAINING MOLECULAR IMPRINTED POLYMER BIOSENSOR FOR DETECTION OF METABOLITES IN THE WHOLE BLOOD**
 Bahareh Babamiri, Mohammadreza Farrokhnia, Mehdi Mohammadi, Amir Sanati Nezhad
 University of Calgary, CANADA
- M121.g ADDITIVELY MANUFACTURED ELECTROCHEMICAL PLATFORMS FOR BIOSENSING APPLICATIONS**
 Arash Khorrami Jahromi
 McGill University, CANADA
- M122.g DEVELOPMENT OF A MICROPORE-BASED FLUIDIC CELL FOR RAPID DETECTION OF NANOPARTICLES IN FLUIDS**
 Leon Juarez, Alessandro Porro, Giulia Montrucchio, Federico Thei
 elements srl, ITALY
- M123.g FABRICATION AND INTEGRATION OF 3D ELECTRODES FOR MICROFLUIDICS**
 Said Abdellatif, Darius G. Rackus
 Toronto Metropolitan University, CANADA
- M125.g MULTIVALENT APTAMER GENERATION THROUGH ROLLING CIRCLE AMPLIFICATION ON A NANOSTRUCTURED SURFACE FOR BIOSENSING APPLICATIONS**
 Seyed Vahid Hamidi, Arash Khorrami Jahromi, Imman I. Hosseini, Roozbeh Siavash Moakhar, Sara Mahshid
 McGill University, CANADA

- M126.g PHOTOELECTROCHEMICAL SENSOR FOR DETECTION OF ULTRA-LOW CONCENTRATION PHOSPHATE**
Peng Zhou, Yingming Xu, Tianhong Cui
University of Minnesota, USA
- M127.g SENSITIVE ARSENITE DETECTION BASED ON GRAPHENE ION-SENSITIVE FIELD-EFFECT TRANSISTORS**
Yingming Xu, Peng Zhou, Terrence Simon, Tianhong Cui
University of Minnesota, USA
- T120.g A NOVEL ELECTROCHEMICAL MICROFLUIDIC APTASENSOR FOR THE DETECTION OF PARASITE**
Roozbeh Siavash Moakhar¹, Rohan Mahimkar², Arash Khorrami Jahromi¹, Sahar Sadat Mahshid³, Carolina del Real Mata¹, Yao Lu¹, Fabio Vasquez Camargo², Brent Dixon⁴, John Gilleard⁵, Alexandre J. Da Silva⁶, Momar Ndao^{1,2}, Sara Mahshid¹
¹McGill University, CANADA, ²McGill University Health Center, CANADA, ³Sunnybrook Health Sciences Centre, CANADA, ⁴Health Canada, CANADA, ⁵University of Calgary, CANADA, and ⁶US FDA-Center for Food Safety and Applied Nutrition, CANADA
- T121.g AN INTEGRATED DIGITAL MICROFLUIDIC ELECTROCHEMICAL BROAD-SPECTRUM PATHOGEN SENSOR**
Richard Piffer Soares de Campos¹, Dipesh Aggarwal¹, Nora W.C. Chan², Abebaw B. Jemere¹
¹National Research Council of Canada, CANADA and ²Defence Research and Development Canada, CANADA
- T122.g DEVELOPMENT OF A PORTABLE MEASUREMENT SYSTEM FOR MULTI-ION DETECTION**
Jia-Yuan Chang¹, Chia-Ming Yang^{1,2,3}, Chao-Sung Lai^{1,2,3}
¹Chang-Gung University, TAIWAN, ²Chang Gung Memorial Hospital, TAIWAN, and ³Ming-Chi University, TAIWAN
- T123.g FABRICATION OF A CMOS ISFET MICROSYSTEM TO CHARACTERIZE THE PROTON PUMPING OF BACTERIORHODOPSIN**
Abhijit Kakati¹, Oleksandr Dobroliubov¹, Hope Sylva⁴, Daniel Sylva⁴, Ashley Johnson⁴, Krishna Dixit⁴, Jordan Greco⁴, Nicole Wagner⁴, Robert Birge⁴, Bjørn T. Stokke^{1,2}, Philipp Häfliger³, Erik A. Johannessen¹
¹University of Southeastern, NORWAY, ²Norwegian University of Science and Technology, NORWAY, ³University of Oslo, NORWAY, and ⁴LambdaVision, USA
- T124.g HIGHLY SENSITIVE, MULTIPLEXED DETECTION OF CIRCULATING BIOMARKERS USING A GOLD-NANOPARTICLE-EMBEDDED MEMBRANE**
Rebecca Goodrum, Roshan Tosh Aggarwal, Huiyan Li
University of Guelph, CANADA
- T125.g NANO-CRYSTALIZED PRUSSIAN BLUE MODIFIED GRAPHENE OXIDE LEAD NEEDLE FOR HIGH-PERFORMANCE ELECTROCHEMICAL DETERMINATION OF HYDROGEN PEROXIDE**
Wei-Ren Hou, Dai-En Li, Yi-Xiang Wang, Che-Hsin Lin
National Sun Yat-sen University, TAIWAN
- T126.g MICROFLUIDIC-INTEGRATED BIOSENSOR FOR RAPID DETECTION OF GLIAL FIBRILLARY ACIDIC PROTEIN (GFAP) IN THE WHOLE BLOOD OF MILD TRAUMATIC BRAIN INJURY PATIENTS**
Mohammadreza Farrokhnia^{1,2}, Bahareh Babamiri^{1,2}, Mehdi Mohammadi², Amir Sanati-Nezhad¹
¹University of Calgary, CANADA and ²BioChipTech-Fluidome Company, CANADA
- T127.g TUMOR DIAGNOSIS ON ELECTRIC IMPEDANCE INTEGRATED CIRCUIT (IC) CHIP WITH SINGLE-CELL RESOLUTION**
Wenhao Hui¹, Ren Shen¹, Yingying Liu¹, Ka-Meng Lei¹, Pui-In Mak¹, Rui Martins^{1,2}, Yanwei Jia¹
¹University of Macau, MACAO and ²Universidade de Lisboa, PORTUGAL

- W120.g A METAL-ORGANIC FRAMEWORKS (MOF)-BASED ELECTROCHEMICAL BIOSENSOR WITH A WIDE LINEAR RANGE FOR GLUCOSE DETECTION**
Muxue Wang, Xun Xu, Youchun Xu
Tsinghua University, CHINA
- W121.g A REUSABLE MICROFLUIDIC SENSOR DEVICE FOR THE COLORIMETRIC DETECTION OF AMMONIA EXUDATES IN BUILDING MATERIALS**
Emilio García-Rodríguez¹, Ilaria Costantini², Kepa Castro²,
Lourdes Basabe-Desmonts¹, Fernando Benito-Lopez¹
¹Microfluidics Cluster, SPAIN and ²University of the Basque Country, SPAIN
- W122.g BROAD SIZE-SPECTRUM SENSING FROM IONS TO PROTEINS ENABLED BY DNA APTAMER HYDROGEL SENSORS**
Satofumi Kato¹, Masahiro Takinoue², Hiroaki Onoe¹
¹Keio University, JAPAN and ²Institute of Science Tokyo, JAPAN
- W123.g ELECTROTHERMAL COATING OF BACTERIA IMPRINTED POLYMER ON METALLIC MICROWIRES**
Alireza Zabihisari, Arezoo Khalili, Ayobami Elisha Oseyemi, Pouya Rezai
York University, CANADA
- W124.g FABRICATION OF HIGH-RESOLUTION, FLEXIBLE, LASER-INDUCED GRAPHENE SENSORS VIA STENCIL MASKING**
Kaylee Clark, Tyler R. Ray
University of Hawaii, Manoa, USA
- W125.g LOW-COST MEMBRANE-INTEGRATED MICROFLUIDIC ELECTROCHEMICAL SENSOR FOR LOW-LIMIT DETECTION OF SPECIFIC SALT IONS IN DRINKING WATER**
Ayobami E. Oseyemi, Alireza Zabihisari, Pouya Rezai
York University, CANADA
- W126.g NOVEL IMPEDIMETRIC MICROFLUIDIC BIOSENSOR BASED ON CELL IMPRINTED POLYMERS FOR ENHANCED WATERBORNE BACTERIA DETECTION**
Shiva Akhtarian, Satinder Kaur Brar, Pouya Rezai
York University, CANADA
- W127.g POROUS MEMBRANE ELECTRODE DEVICES FOR IN SITU ELECTROCHEMICAL MEASUREMENT OF ALKALINE PHOSPHATASE ACTIVITY IN HUMAN GUT MODELS**
Yoshinobu Utagawa¹, Kosuke Ino¹, Takeo Miyake², Hiroya Abe¹, Hitoshi Shiku¹
¹Tohoku University, JAPAN and ²Waseda University, JAPAN
- W128.g USING DNA NANOSCAFFOLD TO CONTROL THE SIZE OF PEPTIDE NANOPORES TOWARD DEVELOPMENT OF ULTRASENSITIVE NANOPORE SENSOR**
Zugui Peng, Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN

g - Sensors, Actuators and Detection Technologies

Micropumps, Valves, and Dispensers

- M128.g ADDITIVELY MANUFACTURED MICROFLUIDICS FOR SEQUENTIAL FLOW CONTROL IN AMPLIFICATION ASSAYS**
Sripadh Guptha Yedire, Imman Isaac Hosseini, Tamer AbdelFatah, Sara Mahshid
McGill University, CANADA

- T128.g DEVELOPMENT OF A HYDRAULIC ACTUATOR FOR INTEGRATION OF NANOCHANNEL OPEN/CLOSE VALVES UTILIZING ELASTIC GLASS DEFORMATION**
Shohei Sugita¹, Mizuho Koyama¹, Xin Jiang^{1,2}, Yutaka Kazoe¹
¹Keio University, JAPAN and ²Kanagawa Institute of Industrial Science and Technology, JAPAN
- W129.g EFFECT OF NOZZLE RADIUS ON THE PERFORMANCE OF A HEAT-DRIVEN MICRO JET PUMP USING A SELF-OSCILLATING FLUIDIC HEAT ENGINE (SOFHE)**
Nooshin Karami, Etienne Leveille, Amrid Amnache, Luc Frechette
Université de Sherbrooke, CANADA

g - Sensors, Actuators and Detection Technologies

Nanopores and Others

- M129.g ELECTROCHEMICAL DETECTION AND ELECTROCHEMILUMINESCENCE REPORTING OF NITRATED PEPTIDES WITH MICROCHIP ELECTROPHORESIS**
Indika K. Warnakula¹, Manjula B. Wijesinghe², Susan M. Lunte¹
¹University of Kansas, USA and ²University of Peradeniya, SRI LANKA
- M130.g NANOWELL-BASED IMPEDANCE SENSING FOR REAL-TIME RAPID SARS-COV-2 DETECTION**
Zhuolun Meng, Liam White, Pengfei Xie, Reza Mahmoodi, Aris Karapiperis, Hao Lin, German Drazer, Mehdi Javanmard, Edward P. DeMauro
Rutgers University, New Brunswick, USA
- T129.g ION CONCENTRATION-DRIVEN MOLECULE ACCUMULATION USING HETEROGENEOUS NANOPORE-INTEGRATED MICRO-/NANOFLUIDIC PLATFORM**
Dongwoo Seo, Taesung Kim
Ulsan National Institute of Science and Technology (UNIST), KOREA
- W130.g LABEL-FREE CONTINUOUS CORROSION MONITORING MICROSENSOR USING ELECTRICAL IMPEDANCE SPECTROSCOPY**
Yuwen Li, Song-I Han, Han Zhang, Arum Han
Texas A&M University, USA

g - Sensors, Actuators and Detection Technologies

Optical Sensors and Imaging

- M131.g DETECTION OF MULTISPECIES ORAL BIOFILM GROWTH IN 3D-PRINTED MICROFLUIDIC FLOW CHAMBERS**
Nicolas Debener^{1,2}, Nils Heine^{1,3}, Katharina Frings^{1,2}, Maria L. Torres-Mapa^{1,2}, Alexander Heisterkamp^{1,2}, Meike Stiesch^{1,3}, Katharina Doll-Nikutta^{1,3}, Thomas Scheper^{1,2}, Janina Bahnemann^{1,4}
¹Safety-Integrated and Infection-Reactive Implants, GERMANY, ²University of Hannover, GERMANY, ³Hannover Medical School, GERMANY, and ⁴University of Augsburg, GERMANY
- M132.g DUAL-CLAMPED SERS BARCODING-BASED DIAGNOSTIC ASSAY FOR MULTIPLEX DETECTION OF SARS-COV-2 VARIANTS USING PORTABLE RAMAN SPECTROMETER**
Kiran Kaladharan¹, Tuhin Subhra Santra², Tseren-Onolt Ishdorj³, Fan-Gang Tseng^{1,4}
¹National Tsing Hua University, TAIWAN, ²Indian Institute of Technology Madras, INDIA, ³Mongolian University of Science and Technology, MONGOLIA, and ⁴Academia Sinica, TAIWAN
- M133.g HIGH-THROUGHPUT TITRATION VIA SEGMENTED FLOW IN A LAB-ON-A-CHIP DEVICE FOR ENVIRONMENTAL SENSING APPLICATIONS**
Shahrooz Motahari, Alireza Zabihhesari, Colin Sonnichsen, Andre Hendricks, Vincent J. Sieben
Dalhousie University, CANADA

- M134.g MOBILE-PHONE BASED PORTABLE DEVICE FOR MI-RNA DETECTION IN PLASMA AND SALIVA**
Sadhana Tiwari¹, Martin Sosniok¹, Nilüfer Tasli¹, Nathalie P. Pranzner¹, Alischa B. Ostermaier¹, Malte Holzapfel², Neus Feliu², Irene Fernandez-Cuesta¹
¹University of Hamburg, GERMANY and
²Fraunhofer Center for Applied Nanotechnology Hamburg, GERMANY
- M135.g SILVER CLUSTERS GROWN WITHIN ZEOLITES FOR WASH-FREE BIOSENSING**
Cecilia García-Guzmán¹, Eduardo Coutiño-González², Eden Morales-Narváez³
¹Centro de Investigaciones en Optica A.C., MEXICO, ²Flemish Institute for Technological Research - VITO, BELGIUM, and ³Universidad Nacional Autónoma de México, MEXICO
- M136.g UNVEILING TUMOR MICROENVIRONMENT DYNAMICS: RUTHENIUM-EMBEDDED OXYGEN SENSITIVE PROBE WITH LONG LIFETIME AND HIGH QUANTUM YIELD**
Ashish Kumar^{1,2}, Chih Cheng Chen¹, Fan-Gang Tseng²
¹Academia Sinica, TAIWAN and ²National Tsing Hua University, TAIWAN
- T130.g DESIGNING AND COMPARING ROBUST COVALENT SURFACE FUNCTIONALIZATION APPROACHES FOR MICROFLUIDICS-INTEGRATED SILICON PHOTONIC IMMUNOSENSORS**
Lauren S. Puumala^{1,2,3}, Samantha M. Grist^{1,2,3}, Karyn Newton^{1,2}, Stephen Kioussis^{1,2}, Lukas Chrostowski^{1,3}, Sudip Shekhar^{1,3}, Karen C. Cheung^{1,2}
¹University of British Columbia, CANADA, ²Centre for Blood Research, CANADA, and
³Dream Photonics Inc., CANADA
- T131.g DEVELOPMENT OF A FIELD-DEPLOYABLE DIAGNOSTIC SYSTEM(DELISA) BASED ON DIGITAL MICROFLUIDIC CHIPS UTILIZING MAGNETIC PARTICLES**
Woojoong Kim, Unjin Choi, Eunyong Jeong, Kyunghee Seo, Sungchul Kim, Han T.N. Bui, Seongsu Byun, Minsik Sung, Joshua T. Kim, Junkyu Choi
Smallmachines, KOREA
- T132.g ENHANCING SURFACE PLASMON RESONANCE IMAGING SENSITIVITY TO MICRO-RNAS IN THE CONTEXT OF ORGAN DONATION**
Coline Beltrami^{1,2}, Julien Moreau², Laurence Convert¹, Jean-François Bryche¹, Paul G. Charette¹, Michael Canva²
¹Université de Sherbrooke, CANADA and ²Université de Paris Saclay, FRANCE
- T133.g IMPROVEMENT OF DETECTION PERFORMANCE OF 2-DIMENSIONAL FLOW CYTOMETRY BY ADDING METAL MASKS ON SINGLE PHOTON AVALANCHE DIODES FOR AUTOMATED CYTOLOGY**
Shogo Mikami¹, Kunihiro Iizuka^{1,2}, Teruo Fujii¹, Soo Hyeon Kim¹
¹University of Tokyo, JAPAN and ²Lab Arco Limited, JAPAN
- T134.g MULTIPLEXED ULTRASENSITIVE CANCER EARLY DETECTION ON A PAPER-IN-POLYMER HYBRID MICROFLUIDIC DEVICE**
Sanjay Timilsina, XiuJun Li
University of Texas, El Paso, USA
- T135.g TOWARDS A PORTABLE IMPRINTED POLYMER-BASED MICROFLUIDIC SENSOR FOR FLUORESCENT BACTERIA DETECTION IN WATER**
Ali Doostmohammadi, Pouya Rezai
York University, CANADA
- W131.g DETECTION AND CAPTURE OF CANCER CELLS USING A LAB-IN-A-FIBER DEVICE**
João C. Varela¹, Achar V. Harish^{1,2}, Pawel Maniewski¹, Oana Tudoran³, Rainer Heuchel⁴, Matthias Löhr⁴, Walter Margulis¹, Aman Russom¹, Fredrik Laurell¹
¹KTH Royal Institute of Technology, SWEDEN, ²Research Institute of Sweden (RISE), SWEDEN, ³Oncology Institute, ROMANIA, and ⁴Karolinska University Hospital, SWEDEN

- W132.g OPTICAL-FIBER ENHANCED MINIATURIZED MICROSCOPE FOR RECONFIGURABLE MULTI-SPOT FLUORESCENCE DETECTION**
Tsuyoshi Koga, Byeongwook Jo, Haruka Oda, Minghao Nie, Shoji Takeuchi
University of Tokyo, JAPAN
- W133.g FULLY INTEGRATED MULTICOLOR, MULTIPLEX OPTICAL BIOSENSOR FOR DETECTING MULTIPLE ANALYTES FOR HEALTH MONITORING AT POINT OF NEED**
Reza Abbasi, Sebastian Wachsmann-Hogiu
McGill University, CANADA
- W134.g LAB-ON-CHIP BASED ON MICROFLUIDIC ENABLES IMPROVEMENT OF APTAMER SENSITIVITY IN THE DETECTION OF ZINC WATER POLLUTANT**
Francesca Costantini, Nicola Lovecchio, Alexandra Mogosmorteau, Augusto Nascetti, Gabriele Favero, Giampiero de Cesare, Massimo Reverberi, Cesare Manetti, Domenico Caputo
Sapienza University of Rome, ITALY
- W135.g NANOSCALE FUNCTIONALIZATION BY ULTRAFAST PHOTODEGRADATION**
Marlo Vega^{1,2,3}, Paul-Ludovic Karsenti^{1,2}, Julien Moreau³, Michael Canva^{1,2}, Paul Charette^{1,2}, Jean-François Bryche^{1,2}
¹LN2 CNRS, CANADA, ²Université de Sherbrooke, CANADA, and ³LCF Université Paris Saclay, FRANCE
- W136.g TOWARDS INTEGRATED ENRICHMENT AND LATERAL FLOW ASSAY BASED DETECTION OF E. COLI USING VISCOELASTIC FOCUSING AND PHOTOTHERMAL SENSING**
Yasaman Ghazi, Arsalan Nikdoost, Nima Tabatabaei, Pouya Rezai
York University, CANADA

g - Sensors, Actuators and Detection Technologies

Physical Sensors

- M137.g HIGH-THROUGHPUT CHIP-CALORIMETER FOR BACTERIAL METABOLIC HEAT MEASUREMENT USING A BITE THERMOPILE HEAT FLUX SENSOR ARRAY**
Yang Liu, Yushan Xie, Zhengguang Chen, Yinghao Zhang
Beijing Institute of Technology, CHINA
- M138.g MICROFLUIDIC PLATFORM WITH EMBEDDED PRESSURE TRANSDUCER FOR ON-CHIP NANOPARTICLE DETECTION**
Zachary AB. Morris, Juliana Chawich, Owen Perreault, Cole Gavin, Michel Godin
University of Ottawa, CANADA
- M139.g PROTRUDING CANTILEVERS MEA WITH EMBEDDED STRAIN GAUGES FOR MONITORING CONTRACTILE ORGANOID**
Oramany Phouphetlinthong^{1,2}, Audrey Sebban^{1,2}, Robert Zweigerdt³, Andree Birgit³, Lika Drakhlis³, Florence Rage^{2,4}, Benoit Charlot^{1,2}
¹CNRS Institute of Electronics and Systems, FRANCE, ²University of Montpellier, FRANCE, ³MHH Hannover Medical School, GERMANY, and ⁴CNRS IGMM, FRANCE
- T136.g GHZ ULTRASOUND ENABLED NONINVASIVE QUANTITATIVE CHARACTERIZATION OF OOCYTE MECHANOBIOLOGY**
Yilmaz Arin Manav¹, Andrew Piasecki¹, Anuj Baskota², Justin Kuo², Amit Lal^{2,3}, Dori Woods¹, Benyamin Davaji^{1,4}
¹Northeastern University, USA, ²Geegah LLC, USA, ³Cornell University, USA, and ⁴Institute for NanoSystems Innovation (NanoSI), USA

- T137.g** **HIGHLY SENSITIVE BIOSENSOR UTILIZING THE GAP METHOD AND CANTILEVER BEAM PAIR FOR DETECTION OF E-COLI BACTERIA**
Syed Ali Raza Bukhari, Yongjun Lai
Queen's University, CANADA
- T138.g** **MULTI-MICROCHANNEL FLUIDIC FORCE SENSORS**
Wael Othman^{1,2}, Mohammad A. Qasaimeh^{1,2}
¹New York University, Abu Dhabi, UAE and ²New York University, USA
- T139.g** **SMART INTRAOCULAR PLATFORM FOR REAL-TIME INTRAOCULAR PRESSURE MONITORING**
Pablo Pérez-Merino¹, Steven Verstuyft², Günther Roelkens², Andrés Vásquez Quintero²
¹Consejo Superior de Investigaciones Científicas (CSIC), SPAIN and ²Ghent University, BELGIUM
- W137.g** **HARMONIZING HEALTH METRICS: MICROFLUIDIC SURFACE ACOUSTIC WAVE TECHNOLOGY FOR MEASURING PLASMA VISCOSITY**
Karina Torres-Castro^{1,2}, Jason J. Gorman¹, Darwin R. Reyes¹
¹National Institute of Standards and Technology (NIST), USA and ²Theiss Research, USA
- W138.g** **INNOVATIVE ULTRASOUND TELEMETRY METHODS FOR INTRACRANIAL PRESSURE SENSING USING AN IMPLANTED MICROSYSTEMS TARGET**
Cecilia A. Luna^{1,2}, Saeyoung Kim², Adeoye Olomodosi^{1,2}, Nicholas Au Yong^{1,2}, Brooks D. Lindsey^{1,2}, David R. Myers^{1,2}
¹Emory University, USA and ²Georgia Institute of Technology, USA
- W139.g** **PRINTED HIGH-PERFORMANCE FLEXIBLE POLYSTYRENE/GRAPHITE-BASED TEMPERATURE SENSOR**
Ahmad M. Al Shboul, Ricardo R. Izquierdo
École de Technologie Supérieure ETS, CANADA

g - Sensors, Actuators and Detection Technologies

Sensor Stability and Fouling

- W140.g** **PLATFORM FOR CHARACTERIZING FUNCTIONALIZED SOLID-STATE NANOPORE SENSORS**
Mohamed Yassine Bouhamidi, Zachary Roelen, Vincent Tabard-Cossa
University of Ottawa, CANADA

g - Sensors, Actuators and Detection Technologies

Late News

- M525.g** **A LOW-COST 3D-PRINTED MOBILE STATION FOR ANALYSIS OF SHAPE CODED PARTICLES**
Leander V. D. Eijnden, Mehmet Akif Sahin, Ghulam Destgeer
Technical University of Munich, GERMANY
- M526.g** **DEVELOPMENT OF AN ELECTROCHEMICAL CONDUCTOMETRIC SENSING METHOD FOR THE LABEL-FREE AND RAPID DETECTION OF SHIGA TOXIN IN FOOD**
Yeongbeom Jang, Jeongtae Kim, Chiwan Koo
Hanbat National University, KOREA
- M527.g** **ENHANCED SURFACE REACTION IN SOLID-PHASE DIGITAL ELISA USING MULTIPLE EVAPORATION OF FL-SCALE DROPLETS**
Bo Hoon Han^{1,2}, Seok Chung², Ji Yoon Kang¹
¹Korea Institute of Science and Technology, KOREA and ²Korea University, KOREA

- M528.g IMPROVING THE LIMIT OF DETECTION AND SENSITIVITY OF A HOME-MADE MICROFLUIDIC ELECTROCHEMICAL SENSOR THROUGH THE UTILIZATION OF SECONDARY DEAN FLOW**
Shapour Jafargholinejad, Basit Ilyas, Alireza Zabihhesari, Razieh Salahandish, Stephanie Gora, Pouya Rezai
York University, CANADA
- M529.g MICROFABRICATED HYDROGEL DROPLET SENSORS TO OPTICALLY MEASURE EVOLUTION OF INTERNAL AND EXTERNAL STRESSES DURING 3D TUMOR METASTATIC PROGRESSION**
Christina-Marie Boghdady, Ayesha Basu, Mara Whitford, Luke McCaffrey, Christopher Moraes
McGill University, CANADA
- M530.g PAPER-BASED MICROFLUIDICS AS A TOOL FOR IMPROVING ON-SITE ELECTROCHEMICAL DETECTION OF MANGANESE IN WATER**
Enahoro Asein, Selina Kern, Alexander Iles, Pablo Giménez-Gómez, Nicole Pamme
Stockholm University, SWEDEN
- M531.g SIMULTANEOUS SENSING OF MULTI-PROTEINS BY SERS USING MACHINE LEARNING**
Dongkwon Seo, Yeonho Choi
Korea University, KOREA
- T524.g A GREEN AND FACILE APPROACH OF GRAPHITE CONDUCTIVE INK PREPARATION FOR ELECTROCHEMICAL SENSING APPLICATION**
Smriti Sinha, Soumen Das
Indian Institute of Technology, Kharagpur, INDIA
- T525.g A NOVEL INVASIVE BIOSENSOR SENSOR MODULE INTEGRATING MULTI-SENSORS AND READOUT IC FOR ENHANCED CONVENIENCE IN DAILY LIFE BIOMONITORING**
Kwon-Hong Lee^{1,2}, Sang-Sik Kim^{1,2}, Jin-Hyoung Kim¹, Kyoung-A Hyun¹, Ji-Hyoung Roh³, Yong-Chan Lee³, Kyu-Sik Shin¹, Cheol-Ung Cha¹, Hyung-Min Lee²
¹Korea Electronics Technology Institute, KOREA, ²Korea University, KOREA, and ³KEMDIhub, KOREA
- T526.g DEVELOPMENT OF ENVIRONMENTALLY FRIENDLY CONDUCTIVE BIOINK AND ELECTROCHEMICAL PAPER-BASED ANALYTICAL DEVICES FOR EPINEPHRINE ANALYSIS**
Danielly S. Rocha^{1,2}, Laisa C. Oliveira¹, Habdias A. Silva-Neto³, Wendell K. T. Coltro^{1,4}
¹Federal University of Goiás, BRAZIL, ²University of Toronto, CANADA, ³Federal University of Santa Catarina, BRAZIL, and ⁴National Institute of Bioanalytical Science and Technology, BRAZIL
- T527.g ENHANCING ILLEGAL DRUG DETECTION WITH A MULTIMODAL INTELLIGENT E-NOSE SYSTEM: VIRTUAL SENSOR GENERATION VIA ADAPTIVE HEATING VOLTAGE MODULATION**
Hyung Wook Noh, Yongwon Jang, Hwin Dol Park, Do Hyeun Kim, Chang-Geun Ahn
Electronics and Telecommunications Research Institute, KOREA
- T528.g LABORATORY TESTING OF HUMAN BLOOD SAMPLES USING MICROFLUIDIC ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY**
Zhbanov Alexander, Ye Sung Lee, Sung Yang
Gwangju Institute of Science and Technology, KOREA
- T529.g MINIATURIZED AND PORTABLE MULTIPLEX SENSING PLATFORM FOR MONITORING OF PREDICTIVE BIOMARKERS IN VASCULARIZED COMPOSITE ALLOTRANSPLANTATION**
Atul Sharma¹, Nafize Ishtiaque Hossain¹, Vijay Gorantla², Anvesh N. Kodali², Yalcin Kulahci², Omer F. Dirican², Wensheng Zhang^{3,4}, Casey M. Sabbag^{3,4,5}, Sameer Sonkusale¹
Tufts University, USA, ²Atrium Health Wake Forest Baptist Medical Center, USA, ³59th Medical Wing/Science & Technology, USA, ⁴Uniformed Services University of the Health Sciences, USA, ⁵Brooke Army Medical Center, USA

- T530.g** **QUANTIFICATION AND CLASSIFICATION OF DISEASE BIOMARKERS USING MACHINE LEARNING AND MULTIWAVELENGTH SURFACE ENHANCED RAMAN SPECTROSCOPY**
Saba Ale Ebrahim, Katelyn Dixon, Farzad Khalvati, Anna Zavodni, Naomi Matsuura, Nazir P. Kherani
University of Toronto, CANADA
- T531.g** **STUDY ON A LONG-TERM STORAGE OF GLOBOTRIAOSYLCERAMIDE (GB3)-COATED MICROCHIP FOR ON-SITE IN-FOOD SHIGA TOXIN DETECTION**
Jeongtae Kim, Keying Li, Moo-seung Lee, Chiwan Koo
Hanbat National University, KOREA
- W524.g** **A HANDHELD SYSTEM UTILIZING OPTICAL EMISSION SPECTROSCOPY FOR RAPID ANALYSIS OF LIQUID SAMPLES**
Manjeet Kumar, Bhaskar Mitra
Indian Institute of Technology, Delhi, INDIA
- W525.g** **DETECTING IL-8 USING ENZYMATIC AMPLIFICATION AND REGENERATION WITH PDA-BASED ANTIBODY IMMOBILIZATION ON MICROFLUIDICS-INTEGRATED SILICON PHOTONIC IMMUNOSENSORS**
Sajida Chowdhury^{1,2}, Yuting Hou^{1,2}, Samantha M. Grist^{1,2,3}, Avineet Randhawa^{1,2}, Lauren S. Puumala^{1,2,3}, Karyn Newton^{1,2}, Stephen Kioussis^{1,2}, Lukas Chrostowski^{1,3}, Sudip Shekhar^{1,3}, Karen C. Cheung^{1,2}
¹University of British Columbia, CANADA, ²Centre for Blood Research, CANADA, and ³Dream Photonics Inc., CANADA
- W526.g** **ELECTROCHEMICAL-BASED POINT-OF-CARE DETECTION OF G6PD THROUGH BI-SUBSTRATE REACTION**
Arun Saini, P.H. Sai Siddharth, Ishani Gupta, Dharitri Rath
Indian Institute of Technology, Jammu, INDIA
- W527.g** **FLUORESCENCE SENSING SYSTEM FOR DETECTING TNT EXPLOSIVES BASED ON CAPILLARY MICROCHANNELS**
Piaotong Liu, Jialong Guo, Xin Li, Weize Shi, Yang Liu
Beijing Institute of Technology, CHINA
- W528.g** **METAMATERIALS WITH ENHANCED PIEZOELECTRIC AND PYROELECTRIC PROPERTIES**
Jiahao Shi^{1,2,3}, Kang Ju¹, Haoyu Chen¹, Ali Ahmadi^{2,3}, Agus Sasmito¹, Abdolhamid Akbarzadeh¹
¹McGill University, CANADA, ²École de Technologie Supérieure, CANADA, and ³University of Montreal, CANADA
- W529.g** **MOLECULARLY IMPRINTED POLYMER-BASED VP28 ELECTROCHEMICAL SENSOR FOR ANALYSIS OF WHITE SPOT SYNDROME VIRUS**
Young-ran Yun
Gwangju Institute of Science and Technology, KOREA
- W530.g** **REAL-TIME, IMPEDIMETRIC MONITORING OF CARDIOMYOCYTE DYNAMICS ON BOTH FACES OF A POROUS MEMBRANE**
Derrick J. Butler, Darwin R. Reyes
National Institute of Standards and Technology (NIST), USA
- W531.g** **STUDY ON MEASURING URINE-DERIVED GASES FOR DETECTING ADULT DISEASES USING NDIR SENSOR**
JinHyoun Kim¹, JaIn Choi^{1,2}, KwonHong Lee^{1,2}, Kyoung-A Hyun¹, KyuSik Shin¹, Cheolung Cha¹
¹Korea Electronics Technology Institute, KOREA and ²Korea University, KOREA

h - Tissue Engineering, Organs on a Chip and Organisms
3D Cell Culture and 3D Constructs

- M140.h A MICROPHYSIOLOGICAL SYSTEM FOR DEVELOPING A VASCULARIZED LIVER TUMOR MODEL**
 Yu-Hsiang Hsu¹, Yu-Zhou Lin¹, Kang-Hsu Liu¹, Chih-Yu Lin¹, Yu-Chia Su², Chia-Yuan Chang²,
 Chi-Kuang L. Wang², Hsian-Jean Chin²
¹National Taiwan University, TAIWAN and ²National Applied Research Laboratories, TAIWAN
- M141.h BRACHYTHERAPY ON-A-CHIP: EXPLORING THE EFFECT OF DOSE-RATE MODULATION IN RADIOTHERAPY/DRUG COMBINATIONS FOR TRANSLATIONAL RESEARCH**
 Rodin Chermat^{1,2,3}, Elena Refet-Mollof^{1,2,3}, Yuji Kamio^{2,5}, Jean-François Carrier^{2,3,4}, Philip Wong^{2,3,5},
 Thomas Gervais^{1,2,3}
¹Polytechnique Montréal, CANADA, ²Centre de recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM), CANADA, ³Institut du Cancer de Montréal (ICM), CANADA, ⁴Centre Hospitalier de l'Université de Montréal (CHUM), CANADA, and ⁵University Health Network, CANADA
- M142.h CULTURE DEVICE FOR HUMAN NEUROMUSCULAR TISSUE USING REMOVABLE CULTURE WELL WITH MOTOR NEURONS**
 Kanta Shimamoto, Yuya Morimoto
 Waseda University, JAPAN
- M143.h FORMING SPHEROIDS IN MICRO-MOLDED AGAROSE GELS USING MECHANICAL STIMULI**
 Ryota Kawamae¹, Atsushi Takata², Kenjiro Takemura³, Yuta Kurashina¹
¹Tokyo University of Agriculture and Technology, JAPAN, ²Tokyo Institute of Technology, JAPAN, and
³Keio University, JAPAN
- M144.h IN VITRO 3D COMPARTMENTALIZED TUMOUR MODELS FOR SPATIAL RECAPITULATION OF PROSTATE CANCER CELL PLASTICITY NICHES**
 Brian Ma, Aditya Kashyap, Govind Kaigala
 University of British Columbia, CANADA
- M145.h MICROFLUIDICS-BASED DROPLETS HYDROGEL TO CULTURE REVERSAL-POLARITY SPHEROIDS FOR DRUG RESEARCH**
 Jhonatan R.O. Bianchi, Hernandes F. de Carvalho, Lucimada G. de la Torre
 University of Campinas (UNICAMP), BRAZIL
- M146.h QUANTIFYING CELL FREE DNA; A MEANS FOR MONITORING CELL DEATH AND TREATMENT RESPONSE FOR ON-CHIP THREE-DIMENSIONAL TUMOR MODELS**
 Maryam Ziaee^{1,2}, Julie Lafontaine², Francis Rodier^{2,3}, Thomas Gervais^{1,2,3}, Philip Wong^{2,3,4}
¹Polytechnique Montréal, CANADA, ²Université de Montréal, CANADA,
³Institut du Cancer de Montréal, CANADA, and ⁴Princess Margaret Cancer Centre, CANADA
- M147.h SCREENING OF BREAST CANCER AND IPSC SPHEROIDS ON A RECONFIGURABLE CHIP USING OPTICAL COHERENCE TOMOGRAPHY**
 Hiba Aljayyousi^{1,2}, Sarah Sahloul¹, Paulin John¹, Ajymurat Orozaliev¹, Azhar Zam^{1,2}, Yong-Ak Song^{1,2}
¹New York University, Abu Dhabi, UAE and ²New York University, USA
- M148.h TUMOROID ARRAY-ON-A-PLATE (TOP): PHYSIOLOGICALLY RELEVANT CO-CULTURED PDAC MODEL GENERATION AND THERAPEUTIC SCREENING**
 Amir Seyfoori, Esfandiyar Askari, Mohsen Akbari
 University of Victoria, CANADA
- T140.h A TUBULAR PLACENTAL VILI BARRIER MODEL FOR TRANSPORT STUDIES**
 Seyedaydin Jalali, Ponnambalam R. Selvaganapathy
 McMaster University, CANADA

- T141.h CAPILLARY IMAGING SYSTEM USING A 3D PRINTED FOCUSING JIG TOWARDS HIGH-THROUGHPUT 3D SHAPE EVALUATION OF CELL SPHEROIDS**
Xueping Yu, Yuta Tezuka, Takeshi Hayakawa
Chuo University, JAPAN
- T142.h DEMONSTRATING THE BIOMIMETIC VERSATILITY OF A MAGNETICALLY INTEGRATED TUMOR-ON-CHIP PLATFORM**
Simrit Safarulla², Vikram Surendran¹, Jonathan Spicer², Arvind Chandrasekaran¹
¹*North Carolina A&T State University, USA* and ²*McGill University, CANADA*
- T143.h HORIZONTALLY STANDING THERMOPLASTIC ELASTOMER POST ASSISTED HANGING DROPLETS FOR SPHEROID FORMATION**
Byeong-Ui Moon, Kebin Li, Lidija Malic, Elham Moslemi, Keith Morton, Teodor Veres
National Research Council of Canada, CANADA
- T144.h INVESTIGATING THE INFLUENCE OF BACTERIAL BIOFILMS ON THE PROGRESSION OF ATHEROSCLEROTIC PLAQUES USING A MICROSYSTEM-BASED FP-I MODEL**
Yatian Fu^{1,2}, Bee Luan Khoo^{1,2}
¹*City University of Hong Kong, HONG KONG* and
²*Hong Kong Center for Cerebro-Cardiovascular Health Engineering, HONG KONG*
- T145.h ORGAN-ON-A-CHIP DRIVEN REGENERATION: INVESTIGATING NANOFIBROUS MAT IMPACT ON HUMAN INDUCED PLURIPOTENT STEM CELLS-DERIVED CARDIOMYOCYTES (IPSC-CM) POST-HYPOXIA**
Dominik Kolodziejek¹, Zuzanna Iwon¹, Aleksandra Szlachetka¹, Marcin Drozd¹, Michał Wojasiński¹, Ewelina Krogulec², Elzbieta Jastrzebska¹
¹*Warsaw University of Technology, POLAND* and ²*Nencki Institute of Experimental Biology PAS, POLAND*
- T146.h RAPID SCAFFOLD-FREE ADDITIVE MANUFACTURING OF SCALABLE SKIN ANALOGOUS FROM MSCS FOR BURN WOUND HEALING**
Maedeh Khodamoradi, Yufei Chen, Marc G. Jeschke, Ponnambalam R. Selvaganapathy
McMaster University, CANADA
- T147.h SPHEROID FORMATION IN CELLULOSE NANOFIBRILS-COATED MICROFLUIDIC CHIPS**
Farzaneh Fayazbakhsh, Negar Abbasi Aval, Noa Lapins, Torbjörn Pettersson, Aman Russom
KTH Royal Institute of Technology, SWEDEN
- T148.h VITRIFICATION STRATEGIES FOR IMPROVED CRYOPRESERVATION OF COMPLEX 3D TUMORAL TISSUE MODELS ON MICROFLUIDIC CHIPS**
Tommy Brasseur^{1,2,3}, Gabriel Pagé^{2,3}, Benjamin Péant^{2,3}, Jennifer Kendall-Dupont^{2,3}, Amélie St-Georges-Robillard^{1,2,3}, Thomas Gervais^{1,2,3}
¹*Polytechnique Montréal, CANADA*, ²*Centre de Recherche du Centre Hospitalier de l'Université de Montréal, CANADA*, and ³*Institut du Cancer de Montréal, CANADA*
- W141.h A TUMOR SPHEROIDS CULTURE PLATFORM FOR SMALL AMOUNTS OF CELL SAMPLES TOWARDS FAST CLINICAL PRIMARY CELL DRUG SCREENING WITHIN A WEEK**
Yixue Chen, Jianzhang Pan, Qun Fang
Zhejiang University, CHINA
- W142.h COMBINATION OF VIBRATION-INDUCED FLOW AND FARADAY WAVES FOR LARGE SCALE TISSUE CONSTRUCTION BUILT UP FROM CELL SPHEROIDS**
Ryutaro Toyoshima, Takeshi Hayakawa
Chuo University, JAPAN

- W143.h DEVELOPMENT OF A DUAL-FLOW MICROFLUIDIC DEVICE TO STUDY THE INTERACTION OF THE INTESTINAL EPITHELIUM AND THE ENTERIC NERVOUS SYSTEM**
Alexandra Lorenz, Martin Frauenlob, Peter Ertl
TU Wien, AUSTRIA
- W144.h HYPOXIC-CORE SPHEROIDS ON CHIP**
Elena Refet-Mollof^{1,2,3}, Rodin Chermat^{1,2,3}, Julie Lafontaine^{2,3}, Philip Wong^{2,3,4,5,6}, Thomas Gervais^{1,2,3}
¹Polytechnique Montréal, CANADA, ²Montreal Cancer Institute, CANADA, ³University Hospital of the University of Montréal, CANADA, ⁴University of Toronto, CANADA, ⁵Princess Margaret Cancer Centre, CANADA, and ⁶University Health Network, CANADA
- W145.h MICROFLUIDIC-PREPARATION OF VISCOELATIC MICROFIBER FOR ENHANCED FABRICATION OF ARTIFICIAL MEAT**
Si Da Ling, Wenjun Ma, Yingzhe Liu, Yanan Du, Zhuo Chen, Jianhong Xu
Tsinghua University, CHINA
- W146.h PHOTOCROSSLINKABLE GELMA HYDROGELS SUPPORT NEURITE OUTGROWTH IN A MICROSCALE IN VITRO SPINAL CORD INJURY MODEL**
Iryna Liubchak, Alex Pieters, Paul Juralowicz, Tanya Bennet, Tara M. Caffrey, Karen C. Cheung
University of British Columbia, CANADA
- W147.h ROOM-TEMPERATURE STORED MESENCHYMAL STEM CELL SPHERES BANDAGE FOR WOUND HEALING**
Yingying Liu¹, Aman Lv¹, Wenhao Hui¹, Caiwei Li¹, Pui-in Mak¹, Martins P. Rui^{1,2}, Yanwei Jia¹
¹University of Macau, CHINA and ²Universidade de Lisboa, PORTUGAL
- W148.h THREE-DIMENSIONAL IN VITRO MODELING FOR PANCREATIC CANCER AND NERVE CO-CULTURE IN A MICROFLUIDIC CHIP**
Seok-Hyeon Kang, Jinchul Ahn, Sieun Choi, Seok Chung
Korea University, KOREA

h - Tissue Engineering, Organs on a Chip and Organisms

Artificial Intelligence Enhanced Culture Systems

- W149.h REVOLUTIONIZING CANCER SPHEROID VIABILITY ANALYSIS: DEEP LEARNING IN MICROFLUIDICS**
Rajiv Anne^{1,2}, Chun-Cheng Chiang^{1,2}, Pooja Chawla¹, Rachel M. Shaw¹, Sarah He³, Edwin C. Rock¹, Mengli Zhou^{1,2}, Jinxiong Cheng^{1,2}, Yinan Gong^{1,2}, Yu-Chih Chen^{1,2}
¹University of Pittsburgh, USA, ²UPMC Hillman Cancer Center, USA, and ³Carnegie Mellon University, USA

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Body on a Chip

- T149.h 24-WELL TRANSWELL FORMAT-BASED MICROFLUIDIC PLATFORM AND TILTING TOWER SYSTEM FOR PARALLEL INTERCONNECTION AND CULTIVATION**
Chaewon Jin, Yeo Jin Hwang, Hongsoo Choi, Kyeong-Min Lee, Jin-Young Kim
Daegu Gyeongbuk Institute of Science & Technology (DGIST), KOREA
- W150.h PARALLELIZED DRUG TOXICITY TESTING WITH THE ON-CHIP 3D MICROTISSUE NETWORK IN A 96-WELL FORMAT-BASED MICROFLUIDIC PLATFORM**
Sebeen Lee, Chaewon Jin, Hongsoo Choi, Jin-young Kim
Daegu Gyeongbuk Institute of Science & Technology (DGIST), KOREA

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Cell Culture

- M150.h A FIVE-CHANNEL MICROFLUIDIC DEVICE TO STUDY CELL-TO-CELL COMMUNICATION IN THE TUMOR MICROENVIRONMENT**
 Riley Osbourn¹, Emmaline Miller², Laurel Fishburn², Elizabeth C. Martin³, Adam T. Melvin¹
¹Clemson University, USA, ²Louisiana State University, USA, and ³Tulane University, USA
- M151.h HARNESSING MICROFLUIDIC CONCENTRATION GRADIENT GENERATORS FOR CELLULAR MICROENVIRONMENT CONTROL**
 Kebin Li¹, Byeong-Ui Moon¹, Liviu Clime¹, Luke Lukic¹, Keith Morton¹, Lidija Malic¹, Anu David²,
 Christophe Faure², Teodor Veres^{1,3}
¹National Research Council of Canada, CANADA, ²University of Montreal, CANADA, and
³University of Toronto, CANADA
- M152.h THE SOUND OF SEEDING: AN ACOUSTIC-BASED STRATEGY TO CONTROL MAMMALIAN CELL PATTERNING IN MICROFLUIDICS**
 Gianpio Caringella, Elise Cachat, Filippo Menolascina, Lucia Bandiera
 University of Edinburgh, UK
- T150.h DEVELOPMENT OF A SUPERCOOLING PRESERVATION METHOD FOR A THREE-Dimensionally CULTURED MICROLIVER MODEL**
 Maaya Hikichi¹, Masaru Tsunoda², Kiichi Sato¹
¹Gunma University, JAPAN and ²Sanden Retail Systems, JAPAN
- T151.h INVESTIGATION OF THE EFFECTS OF URACIL IN CANCER METASTASIS UNDER SHEAR STRESS**
 Sitang Maknitikul¹, Huabing Yin¹, Jim Norman², Cassie Clarke²
¹University of Glasgow, UK and ²Cancer Research UK Scotland Institute, UK
- W151.h DEVELOPMENT OF NEURONAL JUNCTION CHAMBER VIA HIGH-PRECISION ROLL-TO-ROLL (R2R) MANUFACTURING**
 Nihan Atak
 Joanneum Research, AUSTRIA
- W152.h OPENABLE AND REUSABLE NEUROFLUIDIC CHIPS IN STYRENIC BLOC COPOLYMER: AN ALTERNATIVE TO PDMS DEMONSTRATED ON DORSAL ROOT GANGLIA**
 Solène Moreau¹, Raul Flores-Berdines¹, Tatiana El Jalkh², Céline Dargenet-Becker¹, Anne Simon¹,
 Anna Fomina¹, Guillaume Taret¹, Jean-Marc Di Meglio¹, Sophie Bernard¹, Hugo Salmon¹
¹Université Paris Cité, FRANCE and ²Université Paris-Est, FRANCE

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Organ on Chip and Organoids

- M153.h A BIOENGINEERED LUNG-ON-A-CHIP PLATFORM FOR IN VITRO MODELING AND MECHANIS-TIC INVESTIGATION OF CHLORINE INHALATION TOXICOLOGY IN HUMAN LUNGS**
 Pouria Fattahi¹, Mousa Younesi¹, Sezin Aday¹, Darrell N. Kotton², Dan D. Huh¹
¹University of Pennsylvania, USA and ²Boston University, USA
- M154.h A FUNCTIONAL ORGAN-ON-A-CHIP MODEL FOR STUDYING HYPERTENSIVE PODOCYTOPATHY**
 Bo-Yi Yao¹, Yun-Jie Hao¹, Yi-Ching Ko², Hsiang-Hao Hsu², Fan-Gang Tseng¹
¹National Tsing Hua University, TAIWAN and ²Chang Gung Memorial Hospital, TAIWAN

- M155.h A MULTILAYER ORGAN-ON-A-CHIP FOR GENERATING CENTIMETER-SCALE MICROVASCULAR NETWORKS**
Xiaoqi Lu, Ning Jiang, Huiying Yang, Yue Wang, Na Liu, Tao Yue
Shanghai University, CHINA
- M156.h BLADDER-ON-A-CHIP RECAPITULATING THE PROCESS OF UROTHELIAL MATURATION REGULATED BY FIBROBLASTS**
Taiki Nishimura¹, Yuji Takata¹, Kazuhiro Ofuji², Kazuya Fujimoto¹, Minoru Takasato², Ryuji Yokokawa¹
¹Kyoto University, JAPAN and ²Institute of Physical and Chemical Research (RIKEN), JAPAN
- M157.h DEVELOPMENT OF HIPSC-DERIVED AIRWAY AND ALVEOLUS MPS TO EMULATE VIRAL PATHOGENESIS**
Sachin Yadav^{1,2}, Kazuya Fujimoto^{1,2}, Toru Takenaga^{1,2}, Senye Takahashi^{1,2}, Yukiko Muramoto^{1,2}, Ryuta Mikawa^{1,2}, Takeshi Noda^{1,2}, Shimpei Gotoh^{1,2}, Ryuji Yokokawa^{1,2}
¹Kyoto University, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN
- M158.h EVALUATION OF VASCULATURE FORMATION AND HEPATOCYTE FUNCTION OF A VASCULARIZED LIVER SPHEROID**
Satomi Matsumoto¹, Yixin Sun¹, Jo Sugawa¹, Anna K. Kopec², Julie Harney², Lindsay Tomlinson², Nasir Khan², Kazuya Fujimoto¹, Ryuji Yokokawa¹
¹Kyoto University, JAPAN and ²Pfizer, Inc., USA
- M159.h HIGH-THROUGHPUT MICROPHYSIOLOGICAL MODEL OF HEALTHY AND ASTHMATIC AIRWAYS FOR VIRAL EXPOSURE AND DRUG SCREENING**
Kimia Asadi Jozani, Alexander Sotra, Nadia Milad, Karen Mossman, Matthew Miller, Manali Mukherjee, Jeremy Hirota, Boyang Zhang
McMaster University, CANADA
- M160.h HYPERGLYCEMIC NEUROVASCULATURE-ON-A-CHIP TO STUDY THE AXIS OF DIABETES AND ALZHEIMER'S DISEASE**
Minjeong Jang¹, Hong Nam Kim²
¹Korea Institute of Radiological and Medical Sciences (KIRAMS), KOREA and ²Korea Institute of Science and Technology (KIST), KOREA
- M161.h INTEGRATED MICROFLUIDIC PLATFORM FOR SINGLE ORGANOID CULTURE AND SECRETED EXTRACELLULAR VESICLE ISOLATION**
Marie Hut, Flora Clement, Frederic Bottausci, Josiane Denis, Manuel Alessio, François Boizot, Nadia Cherradi, Myriam Cubizolles, Fabrice Navarro, Yves Fouillet, Vincent Agache
University Grenoble, Alpes, FRANCE
- M162.h KINTRE SYSTEM: KINETIC TRAINING AND EVALUATION SYSTEM FOR ENGINEERED SKELETAL MUSCLE TISSUE**
Shota Noda, Sterker Louis, Jun Sawayama, Shoji Takeuchi
University of Tokyo, JAPAN
- M164.h PIEZOELECTRIC HEART-ON-CHIP PLATFORM FOR NON-INVASIVE CARDIOMYOCYTE CONTRACTILITY MEASUREMENT**
Lance D. Cordes, Alexis P. Applequist, Lais Ferreira, Julia Hoskins, Min Zou, Kartik Balachandran
University of Arkansas, USA
- M165.h PROBING THE BIOMECHANICAL BASIS OF ASTHMATIC TISSUE REMODELING USING A MECHANICALLY ACTUATABLE AIRWAY ON A CHIP**
Jungwook Paek¹, Anika Alim¹, Dan Huh²
¹State University of New York, Binghamton, USA and ²University of Pennsylvania, USA

- M166.h SPATIOTEMPORALLY MAPPED ENDOTHELIAL DYSFUNCTION AT BIFURCATIONS IN A CORONARY ARTERY-ON-A-CHIP**
 Jasneil Singh^{1,2}, Tanya Gambhir^{1,2}, Tiffany Goh^{1,2}, Isabelle van Vuuren^{1,2}, Lingzi Gao^{1,2}, Steven Wise¹, Anna Waterhouse^{1,2}
¹University of Sydney, AUSTRALIA and ²Heart Research Institute, AUSTRALIA
- M167.h VESSEL-ON-CHIP MODEL FOR THE EMULATION OF B-CELL LYMPHOMA AND VESSEL TARGETING CAR-T CELL THERAPY**
 Mohammad Jouybar^{1,2,3}, Charlotte M. de Winde^{3,4,5}, Parvin Akbari^{3,5}, Judy R. van Beijnum^{3,5}, Arjan W. Griffioen^{3,5}, Reina E. Mebius^{3,4,5}, Jaap M.J. den Toonder^{1,2}
¹Eindhoven University of Technology, NETHERLANDS, ²Institute for Complex Molecular Systems, NETHERLANDS, ³University Medical Center Vrije Universiteit, NETHERLANDS, ⁴Amsterdam Institute for Immunology & Infectious Diseases, NETHERLANDS, and ⁵Cancer Center Amsterdam, NETHERLANDS
- T152.h 3D PERFUSABLE IN VITRO INTESTINAL TUBE-SHAPED DEVICE WITH CRYPTIC STRUCTURE COVERED BY MUCIN LAYER FOR BACTERIAL CO-CULTURE**
 Shota Uramoto¹, Shuma Tanaka¹, Shun Itai², Hiroaki Onoe¹
¹Keio University, JAPAN and ²Tohoku University, JAPAN
- T153.h A BIOMIMETIC ALVEOLI-ON-A-CHIP SYSTEM WITH RELEVANT GEOMETRY AND CYCLICAL STRETCH**
 Shiyuan Bian^{1,2}, Maryam Nejatian^{1,2}, Thomas K. Waddell^{1,2}, Golnaz Karoubi^{1,2}
¹University of Toronto, CANADA and ²University Health Network, CANADA
- T154.h A GLOMERULUS-ON-A-CHIP USING A HIGHLY POROUS ELECTROSPUN MEMBRANE PROMOTING CELL-CELL INTERACTION FOR SLIT DIAPHRAGM FORMATION**
 Minju Kim, Jiyoung Chang, Laith Al-Rabadi, Jungkyu Kim
 University of Utah, USA
- T155.h A PROXIMAL TUBULE-ON-CHIP MODEL INCORPORATING HIPSC-DERIVED KIDNEY ORGANOIDs FOR ENHANCED FUNCTIONAL ANALYSIS OF RENAL TRANSPORTERS**
 Cheng Ma¹, Ramin B. Sadeghian¹, Ryosuke Negoro², Kazuya Fujimoto¹, Toshikazu Araoka¹, Naoki Ishiguro³, Minoru Takasato^{1,4,5}
¹Kyoto University, JAPAN, ²Ritsumeikan University, Kusatsu, JAPAN, ³Nippon Boehringer Ingelheim Co. Ltd., JAPAN, ⁴RIKEN Center for Biosystems Dynamics Research (BDR), JAPAN, and ⁵Osaka University, JAPAN
- T156.h DESIGN TOOL FOR THE GENERATION OF MULTI-ORGAN-ON-CHIP GEOMETRIES**
 Maria Emmerich¹, Philipp Ebner², Robert Wille^{1,3}
¹Technical University of Munich, GERMANY, ²Johannes Kepler University Linz, AUSTRIA, and ³Software Competence Center Hagenberg GmbH, AUSTRIA
- T157.h ENGINEERING COMPLEX VASCULAR ARCHITECTURES: SPATIALLY INTRICATE VESSELS FOR ENHANCED VASCULAR MODELING**
 Jennifer D. Lee¹, Ankit Kumar¹, Tanmay Mathur¹, Abhishek Jain^{1,2,3}
¹Texas A&M University, USA, ²Texas A&M Health Science Center, USA, and ³Houston Methodist Research Institute, USA
- T158.h EXPLORING THE IMPACT OF ELECTROMAGNETIC STIMULATION ON CARDIOVASCULAR MICROMODELS**
 Ana C. Manjua, Burcu Gumuscu
 Eindhoven University of Technology, NETHERLANDS
- T159.h HIGH-THROUGHPUT PLATFORM FOR MODELLING TUBULAR INJURIES IN KIDNEY**
 Shravanthi Rajasekar, Anushree Chakravarthy, Kimia Asadi, Brenda Truong, Matana Hendrickson, Ahmed Attia, Muna Sabouny, Anna Basatskaya, Sergi-Clotet Freixas, Madeline Ludlow, Alexander Sotra, Dawn S.Y. Lin, Feng Zhang, Boyang Zhang
 McMaster University, CANADA

- T160.h IN VITRO 3D MODELING OF ER+ BREAST CANCER AND PRIMARY ADIPOSE DERIVED STEM CELL DEMONSTRATES ALTERATIONS IN ENDOCRINE THERAPY RESPONSE DUE TO PATIENT CHARACTERISTICS.**
 Braulio A. Ortega Quesada¹, Elizabeth C. Martin², Adam T. Melvin¹
¹Clemson University, USA and ²Tulane University, USA
- T161.h INTEGRATION OF COMPRESSIVE FORCES IN HUMAN BIOMIMETIC GUT-ON-CHIP MODEL TO STUDY MICROBIOTA BACTERIAL MIXING**
 Elise Delannoy, Aurélie Burette, Catherine Daniel, Alexandre Grassart
 Center for Infection & Immunity of Lille, FRANCE
- T162.h LCD 3D PRINTING FOR THE FABRICATION AND MASS PRODUCTION OF ORGAN-ON-A-CHIP DEVICES**
 Molly L. Shen, Houda Shafique, Vahid Karamzadeh, David Juncker
 McGill University, CANADA
- T163.h MODELING THE DRAINAGE OF NANOPARTICLES TO THE LYMPH NODE USING EX VIVO LYMPH NODE SLICES IN A MULTI-ORGAN-ON-CHIP DEVICE**
 Erin Lawrence, Sophie Cook, Rebecca Pompano
 University of Virginia, USA
- T164.h PLATELET ADHESION AND ACTIVATION IN AN ECMO THROMBOSIS-ON-A-CHIP MODEL**
 Tiffany Goh¹, Lingzi Gao¹, Jasneil Singh¹, Richard Totaro², Ruaidhri Carey², Kevin Yang², Bruce Cartwright², Mark Dennis², Lining A. Ju¹, Anna Waterhouse¹
¹University of Sydney, AUSTRALIA and ²Royal Prince Alfred Hospital, Sydney, AUSTRALIA
- T165.h PULMONARY ACINUS-ON-A-CHIP**
 Yuta Tani¹, Jun Sawayama¹, Satoshi Ikeo¹, Yuki Yamamoto², Minghao Nie¹, Shoji Takeuchi¹
¹University of Tokyo, JAPAN and ²HiLung Inc., JAPAN
- T166.h THE TRANSLATIONAL ORGAN-ON-CHIP PLATFORM STARTER KIT: AN ISO-COMPLIANT, RECONFIGURABLE PLATFORM FOR PLUG-AND-PLAY ORGAN-ON-CHIP RESEARCH**
 Joshua Loessberg-Zahl, Aniruddha Paul, Eric Safai, Anke Vollertsen, Jasper Lozeman, Loes Segerink, Mathieu Odijk, Andries van der Meer
 University of Twente, NETHERLANDS
- T167.h µGRATER: A MICROFABRICATED DEVICE TO ACCELERATE TISSUE DISSECTION TO GENERATE ORGANOIDs FOR TUMOR-IMMUNE MICROENVIRONMENT MODELING**
 Seth C. Cordts, Kanako Yuki, Maria F. Henao Echeverri, Balasubramanian Narasimhan, Calvin J. Kuo, Sindy K.Y. Tang
 Stanford University, USA
- W153.h 3D-OXYGEN GRADIENT CHIP FOR CANCER CELL MIGRATION RESEARCH**
 Pan Zuo, Jelle J.F. Sleeboom, Oscar Stassen, Mohammad JouyBar, Ye Wang, Jaap M.J. den Toonder
 Eindhoven University of Technology, NETHERLANDS
- W154.h A DROPLET MICROFLUIDIC PLATFORM USED TO ENCAPSULATE PRE-FORMED CANCER SPHEROIDS IN HYDROGEL SYSTEMS FOR CONTROLLED GROWTH AND ANALYSIS**
 Noura Ezzo, Thu H. Nguyen, Evelyn K.F. Yim, Carolyn L. Ren
 University of Waterloo, CANADA
- W155.h A LONG-TERM STORABLE HT-OOC PLATFORM AND ARTIFICIAL INTELLIGENCE-ASSISTED DRUG TESTING**
 Jeong Ah Kim¹, Min Kyeong Kim¹, Kyurim Paek¹
¹Korea Basic Science Institute, KOREA and ²University of Science & Technology, KOREA

- W156.h ADIPOCYTE-INS¹ CROSSTALK: CLOSED LOOP CO-CULTURE MODEL WITH SHEAR MODULATION**
Mohamad Orabi, Tae-Hwa Chun, Joe F. Lo
University of Michigan, USA
- W157.h DEVELOPMENT OF A SMALL-INTESTINE-ON-A-CHIP DEVICE THROUGH VISCOUS FINGER PATTERNING METHODOLOGY**
Sergio Davila Martinez, Maria Peltonen, Federica Quacquarelli, Maria Antfolk
University of Lund, SWEDEN
- W158.h ENHANCEMENT OF MICROSCOPE VISUALIZATION FOR 3D-NANOPRINTED PDMS MICROVESSELS**
Xin Xu¹, Abdil Muhaymin Chowdhury¹, Yunxiu Qiu², Chen-Yu Chen¹, Bidhan C. Bandyopadhyay³, Bryan R. Smith², William E. Bentley¹, Ryan D. Sochol¹
¹University of Maryland, USA, ²Michigan State University, USA, and ³Veterans Affairs Medical Center, USA
- W159.h HCC-ON-A-CHIP MODEL TO EVALUATE THE TUMOR ENVIRONMENTAL STRESS ON MACROPHAGE HETEROGENEITY AND ITS EFFECT ON HCC PROGRESSION**
Xiahe Han, Wu Liu
Shandong University, CHINA
- W160.h HUMAN BRAIN TUMOR-ON-A-CHIP MODEL INVESTIGATING THE INFLUENCE OF ASTROCYTES, PERICYTES, AND BRAIN ENDOTHELIAL CELLS ON GLIOMA STEM CELLS INVASION DYNAMICS**
Kalpana Ravi¹, Twinkle Jina M. Manoharan¹, Samantha O' Connor¹, Christopher Plaisier¹, Shwetal Mehta², Mehdi Nikkhah¹
¹Arizona State University, USA and ²Barrow Neurological Institute, USA
- W161.h INTEGRATED MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT GENERATION OF INTESTINAL ORGANOID IN HYDROGEL DROPLETS**
Barbora Lavickova, Hannah T. Kronabitter, Mar Cervera Negueruela, Eylul Ceylan, Laura Benito Zarza, Jose L. Garcia-Cordero
Roche Institute of Human Biology, SWITZERLAND
- W162.h INVESTIGATING THE IMPACT OF CANCER DRUGS ON SPECIFIC ORGANS USING A MULTI-ORGAN-ON-CHIP (MULTI-OOC) APPROACH**
Pawel Romanczuk, Gabriela Ulanowicz, Agnieszka Zuchowska, Elzbieta Jastrzebska, Zbigniew Brzozka
Warsaw University of Technology, POLAND
- W163.h MICROFLUIDIC TUMOR-ON-A-CHIP FOR INVESTIGATING TUMOR-IMMUNE DYNAMICS IN BREAST CANCER**
Twinkle Jina Minette Manoharan¹, Kalpana Ravi¹, Abhirami P. Suresh^{1,2}, Abhinav P. Acharya^{1,2}, Mehdi Nikkhah¹
¹Arizona State University, USA and ²Case Western Reserve University, USA
- W164.h MULTI-ORGAN-ON CHIP APPROACH TOWARD SIMULATION OF BREAST CANCER METASTASIS TO LIVER**
Joanna Konopka, Agnieszka Zuchowska, Elzbieta Jastrzebska
Warsaw University of Technology, POLAND
- W165.h PRESERVATION OF DRUG SENSITIVITY STRATIFICATION IN MINIATURIZED TUMOR ORGANOID CULTURES**
Aarthi Namasivayam, Christopher Halbrook, Elliot Hui
University of California, Irvine, USA

- W166.h RECONFIGURABLE HANGING DROP MICROARRAY PLATFORM FOR HIGH-THROUGHPUT FORMATION OF BRAIN ASSEMBLOID ARRAY AND MULTIPLEXED CONDITION TREATMENT**
Hwisoo Kim, Hyunsoo Jang, Ki-Jun Yoon, Je-Kyun Park
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- W167.h THREE-DIMENSIONAL VASCULARIZED MODEL OF OVARIAN CANCER - A NEW APPROACH IN STUDYING THE CANCER PROCESS BASED ON ORGAN-ON-A-CHIP TECHNOLOGY**
Oliwia Tadko¹, Magdalena Flont², Joanna Konopka¹, Agnieszka Gnyszka¹, Agnieszka Zuchowska¹, Elzbieta Jastrzebska^{1,2}
¹*Warsaw University of Technology, POLAND* and ²*Center for Advanced Materials and Technologies, POLAND*

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Organisms On Chip (C. Elegans, Zebrafish, Arabidopsis, Etc.)

- M168.h CONCURRENT FORCE SENSING AND IMAGING OF ACTIN CYTOSKELETON DYNAMICS IN PHYTOPHTHORA SPECIES ON A LAB-ON-A-CHIP DEVICE**
Ayelen Tayagui¹, Yiling Sun¹, Kiki Kots², Haig Bishop¹, Tijs Ketelaar², Francine Govers², Volker Nock¹, Ashley Garrill¹
¹*University of Canterbury, NEW ZEALAND* and ²*Wageningen University, NETHERLANDS*
- M169.h ON-CHIP MULTI-ROUTE IN-VIVO REAL-TIME NANOPLASTIC TOXICITY TEST: FROM SOFT LITHOGRAPHY TO 3D PRINTING**
Preyojon Dey¹, Terence M. Bradley², Alicia Boymelgreen¹
¹*Florida International University, USA* and ²*University of Rhode Island, USA*
- T168.h LABEL-FREE AND ULTRA-SENSITIVELY MONITORING C.ELEGANS MULTI-ORGAN DEGENERATION ALONG AGING WITH WIDE-BAND ELECTRICAL IMPEDANCE SPECTROSCOPY**
Song Yu¹, Jiaqi Liu¹, Jianwei Ouyang¹, Yingying Wang¹, Yiyan Zhang^{2,3}, Di Chen³, Zixin Wang⁴, Zhen Zhu¹
¹*Southeast University, CHINA*, ²*Nanjing University, CHINA*, ³*Zhejiang University, CHINA*, and ⁴*Sun Yat-sen University, CHINA*
- W168.h ADVANCED 3D GLASS CHIP FOR PATTERNED STIMULATION AND RECORDING OF NEURONAL ACTIVITY IN SINGLE CELL RESOLUTION**
Dominika Schrödter, Janine Fichtner, Jakob W. von Trotha, Reinhard W. Köster, Andreas Dietzel
Technische Universität Braunschweig, GERMANY
- W169.h MICROFLUIDIC AND COMPUTATIONAL APPROACH TO MODELING BIOMINERALIZATION IN LIVING MATERIALS**
Brooke Filanoski, Kendal Phinney, Liming Zhao, Darke Hull
Cornell University, USA

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Others

- T177.h OPTICAL DENSITY MEASUREMENT FOR FLOW MONITORING OF MICROPHYSIOLOGICAL SYSTEM**
Hiroki Kumon, Kosuke Hironaka, Shigeo Hara, Hidenao Yamada
Hamamatsu Photonics K.K., JAPAN

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Tissue Engineering

- M170.h BIOPRINTING BIPHASIC JAMMED BIOINKS USING MULTI-NOZZLE PRINTHEADS ON PHYSIOLOGICAL SURFACES AND IN REDUCED GRAVITY**
Sushant Singh
University of Toronto, CANADA
- M171.h DEVELOPMENT OF A CULTURE VISSLER TO EVALUATE THE EFFECTS OF MICROGRAVITY ON ARTIFICIAL SKELETAL MUSCLE**
Ryo Nakajima, Yuka Nakanaga, Tomohiro Nakamura, Sho Yokoyama
Osaka Institute of Technology, JAPAN
- M172.h GENERATION OF PROLIFERATIVE HUMAN IPSC-DERIVED HEPATIC ORGANOID USING CHAMBER MICROWELL ARRAY FOR FLUID FLOW DYNAMIC MICROENVIRONMENT**
Sang Woo Lee, Gi Seok Jeong
Asan Medical Center, KOREA
- M173.h MULTI-STIMULUS FUSION PLATFORM FOR PROMOTING C2C12 ALIGNMENT AND MYOTUBE FORMATION**
Yuyin Zhang, Yuanjie Gan, Yue Wang, Na Liu, Tao Yue
Shanghai University, CHINA
- T169.h A NEEDLE BIOPSY INSPIRED MICROCATETER FOR RAPID TISSUE MECHANICAL MEASUREMENT**
Zhaokai Wang, Syed Ali Raza Bukhari, Diancheng Li, Matthew A. Robertson, Yong Jun Lai, Xian Wang
Queen's University, CANADA
- T170.h CARDIAC TISSUE ABLATION USING A MINIATURIZED SMART ELECTROPORATION SYSTEM**
Junrui Zhang^{1,2}, Yizhou Jiang³, Jiabin Dou¹, Xingyu Jiang¹
¹*Southern University of Science and Technology, CHINA*, ²*Roumai Medical SA, SWITZERLAND*, and ³*Fuwai Hospital, CHINA*
- T171.h ENGINEERED GELATIN METHACRYLOYL GRANULAR SCAFFOLDS FOR MRNA DELIVERY**
Bruna G. Carvalho^{1,2}, Aya Nakayama¹, Hiromi Miwa³, Sang W. Han⁴, Lucimara G. de la Torre², Dino Di Carlo³, Junmin Lee^{5,6}, Han-Jun Kim^{1,7}, Ali Khademhosseini¹, Natan R. Barros¹
¹*Terasaki Institute for Biomedical Innovation, USA*, ²*University of Campinas, BRAZIL*, ³*University of California, Los Angeles, USA*, ⁴*Federal University of São Paulo, BRAZIL*, ⁵*Pohang University of Science and Technology, KOREA*, ⁶*Yonsei University, KOREA*, ⁷*Korea University, KOREA*, and ⁸*Vellore Institute of Technology, INDIA*
- T172.h HIGH-RESOLUTION STRUCTURING OF BIOACTIVE GLASSES BY TWO-PHOTON LITHOGRAPHY**
Leonhard Hambitzer¹, Louise Roolfs², Cornelia Lee-Thedieck², Frederik Kotz-Helmer¹
¹*University of Freiburg, GERMANY* and ²*University of Hannover, GERMANY*
- W170.h BIOMIMETIC PIEZOELECTRIC NANOFIBER SCAFFOLD AND ITS EFFECTS ON THE CHONDROGENIC DIFFERENTIATION OF MESENCHYMAL STEM CELLS**
Jing Li, Runxin Liu, Dahai Ren
Tsinghua University, CHINA
- W171.h CELL-ENCAPSULATING HOLLOW COLLAGEN MICROGEL BEADS FOR HOLLOW ORGAN TISSUE MODEL IN VITRO**
Satona Abeta¹, Akari Masuda¹, Aiki Hioki¹, Kayoko Hirayama-Shoji², Hiroaki Onoe¹
¹*Keio University, JAPAN* and ²*Oslo University Hospital, NORWAY*

- W172.h EVALUATION OF CONTRACTILE FORCE OF RING-SHAPED SMOOTH MUSCLE TISSUE USING A 3D-PRINTED FLEXIBLE DEVICE**
DongWoo Lee, Byeongwook Jo, Shoji Takeuchi
University of Tokyo, JAPAN
- W173.h MICROFLUIDIC-GENERATED CRESCENT-SHAPED HYDROGEL PARTICLES AS BUILDING BLOCKS THAT ENCOURAGE CELL INGROWTH FOR MICROPOROUS ANNEALED PARTICLE SCAFFOLDS**
Rui Chian Tang¹, Lily Shang¹, Phillip O. Scumpia^{1,2}, Dino Di Carlo¹
¹University of California, Los Angeles, USA and ²VA Greater Los Angeles Healthcare System, USA

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Vascularization and Perfusion

- M174.h BACK-AND-FORTH OSCILLATORY SHEAR STRESS IN MICROFLUIDIC CULTURE SYSTEM ENABLES TO ANALYZE MECHANICAL RESPONSE OF VASCULAR ENDOTHELIAL TISSUE**
Hayate Yamamoto¹, Jumpei Muramatsu¹, Shigenori Miura², Hiroaki Onoe¹
¹Keio University, JAPAN and ²Hirosihma, JAPAN
- M175.h EXPLORING THE INFLUENCE OF MICROENVIRONMENTAL CUES ON VASCULAR DYNAMICS**
Utku Devamoglu, Séverine Le Gac
University of Twente, NETHERLANDS
- M176.h MICROFLUIDIC MODULATION OF TUMOR MICROVASCULATURE IN MICRO-DISSECTED CANCER TISSUES**
Tran N.H. Nguyen¹, Lisa Horowitz¹, Brandon Nguyen¹, Timothy Krilov¹, Songli Zhu², Ethan Lockhart¹, Taranjit Gujral², Albert Folch¹
¹University of Washington, USA and ²Fred Hutchinson Cancer Research Center, USA
- M177.h VASCULARIZED PERFUSABLE LIVER TISSUE ON CHIP FABRICATED USING EMBEDDED BIOPRINTING METHOD**
Nima Tabatabaei Rezaei¹, Kartikeya Dixit¹, Hitendra Kumar², Jacob John¹, Giovanniantonio Natale¹, Simon S. Park¹, Keekyoung Kim¹
¹University of Calgary, CANADA and ²Indian Institute of Technology Indore, INDIA
- T173.h A MICROFLUIDIC METHOD TO STUDY THE DEVELOPMENT AND REMODELING OF HUAEC VESSELS UNDER CYCLIC FLOWS**
Subhashree Shivani, Chih-Ting Lin, Yu-Hsiang Hsu
National Taiwan University, TAIWAN
- T174.h BIOMIMETIC RETINA ON A CHIP FOR CHARACTERIZATION OF MICROVASCULAR DYNAMICS**
Laureline Julien^{1,2,3}, Andy V. Le^{4,5}, Tatiana Turcitu⁴, Manouk Abkarian⁵, Léo Coudène⁵, Michel Paques³, José-Maria Fullana², Benoît Charlot⁵, Marianne Fenech⁴
¹Université Paris-Cité, FRANCE, ²Sorbonne Université, FRANCE, ³XV-XX Hospital, FRANCE, ⁴University of Ottawa, CANADA, and ⁵University of Montpellier, FRANCE
- T175.h IN VITRO MICROENVIRONMENT OF TRANSLOCATION RENAL CELL CARCINOMA FOR THE QUANTITATIVE EVALUATION OF ANGIOGENESIS**
Atsuya Kitada¹, Hang Zhou¹, Kazuya Fujimoto¹, Miwa Tanaka², Masaya Baba³, Takuro Nakamura⁴, Ryuji Yokokawa¹
¹Kyoto University, JAPAN, ²Japanese Foundation for Cancer Research, JAPAN, ³Kumamoto University, JAPAN, and ⁴Tokyo Medical University, JAPAN

- T176.h MICROFLUIDIC VASCULARIZATION IN PARAMETERIZED CHANNEL GEOMETRY FROM A METABOLIC PERSPECTIVE**
Joonha Park, Soonyong Kwon, Hongki Yoo, Jessie S. Jeon
Korea Advanced Institute of Science & Technology (KAIST), KOREA
- W174.h ADVANCED MORPHOLOGY ANALYSIS ON THE BIOCHEMICAL AND MECHANICAL EFFECT ON MICROFLUIDIC VESSEL NETWORK**
Han Shao, Edmond W.K. Young
University of Toronto, CANADA
- W175.h DEVELOPMENT OF THE 3D PERFUSABLE TUMOR TISSUE MODEL WITH ENHANCED T-CELL PERFUSION AND INFILTRATION**
Rinki Singh^{1,2}, Nobuhito Mori², Ryo Tsumura³, Yoshikatsu Koga³, Yasuyuki S. Kida^{1,2}
¹University of Tsukuba, JAPAN, ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, and ³National Cancer Center, JAPAN
- W176.h LIVE-CELL IMAGING SYSTEM FOR ECM-BASED BRANCHING VASCULAR MODEL IN PERFUSION AND STRETCHING CULTURE**
Jumpei Muramatsu¹, Michinao Hashimoto², Shigenori Miura³, Hiroaki Onoe¹
¹Keio University, JAPAN, ²Singapore University of Technology and Design, SINGAPORE, and ³Hiroshima University, JAPAN
- W177.h SIMULATION OF ON-CHIP VASCULAR BED FORMATION AND ITS VERIFICATION BY COMPARISON WITH EXPERIMENTS**
Kazuya Fujimoto¹, Yoshikazu Kameda², Ryuji Yokokawa¹
¹Kyoto University, JAPAN and ²Icomes Lab Co., Ltd., JAPAN

h - Tissue Engineering, Organs on a Chip and Organisms

Late News

- M532.h 3D PRINTED MICROPERFUSED AND MESOSCALE HUMAN LIVER MODEL WITH PHYSIOLOGICAL OXYGEN GRADIENT AND HEPATIC ZONATION**
Nayere Taebnia¹, Milan Wessler², Niels B. Larsen², Volker M. Lauschke¹
¹Karolinska Institute, SWEDEN and ²Technical University of Denmark, DENMARK
- M533.h A CHITOSAN-BASED INJECTABLE AND MACROPOROUS SCAFFOLD AS A IMMUNE CELLS GROWTH AND DELIVERY SYSTEM TO TREAT CANCER**
Baptiste Marin^{1,2}, Paméla Thébault^{2,3}, Nick Cunningham^{1,2}, Inès Hamouda^{1,2}, Réjean Lapointe^{2,3,4}, Sophie Lerouge^{1,2}
¹École de Technologie Supérieure, CANADA, ²University of Montreal Hospital Center, CANADA, ³Institut du Cancer de Montréal, CANADA, and ⁴University of Montreal, CANADA
- M534.h BRAIN-ON-CHIP TO INVESTIGATE THE ROLE OF RED BLOOD CELLS IN AGE-ASSOCIATED NEURODEGENERATION**
Ami Mehta-Doshi¹, Jonalyn DeCastro², Irina Conboy³, Kiana Aran^{1,2,3}
¹University of California, San Diego, USA, ²Keck Graduate Institute, USA, and ³University of California, Berkeley, USA
- M535.h DEVELOPMENT OF A 2D GRADIENT CULTURE MODEL FOR PRIMARY INTESTINAL EPITHELIAL CELLS**
Federica Quacquarelli¹, Sergio Davila¹, Zishuo Yuan², Jörg Kutter², Maria Antfolk¹
¹Lund University, SWEDEN and ²University of Copenhagen, DENMARK

- M536.h** **EXPLORING THE MECHANISMS OF COLORECTAL CANCER METASTASIS THROUGH ITS MICROENVIRONMENT USING MICROFLUIDIC TUMOR ON A CHIP ARRAY**
Shao-Wei Huang¹, Long-Sheng Lu², Fan-gang Tseng¹
¹National Tsing Hua University, TAIWAN and ²Taipei Medical University Hospital, TAIWAN
- M537.h** **INVESTIGATION OF GLYCOCALYX DYNAMICS IN CIRCULAR CHANNELS UNDER VARYING SHEAR STRESSES**
Karim Saadé, Maryam Tabrizian
McGill University, CANADA
- M538.h** **SUPERCritical CO₂ SOFT TISSUE DECELLULARIZATION PRESERVES IN VIVO-LIKE MECHANICAL PROPERTIES**
Omar Peza-Chavez, Yulemi Gonzalez-Quesada, Kelly K. Hu, Lauren R. Harrison, Melanie Rodger, Joseph M. Kinsella
McGill University, CANADA
- M539.h** **UNLOCKING THE FUTURE OF MENTAL HEALTH: BRAIN-ON-CHIP AS THE ULTIMATE BLOOD-BRAIN BARRIER (BBB) MODEL**
Pawel Romanczuk¹, Agnieszka Zuchowska¹, Patrycja Baranowska², Zbigniew Brzozka¹
¹Warsaw University of Technology, POLAND and ²Centre for Advanced Materials and Technologies CEZAMAT, POLAND
- T532.h** **3D PRINTING-BASED ORGAN-ON-A-CHIP SYSTEM TO RECAPITULATE A PHYSIOLOGICAL ORGAN MICROENVIRONMENT WITH COMPLEX VASCULAR STRUCTURE**
Yong Duk Han, Alma Antonio, Tracy Lin, Queeny Dasgupta, Juliana Navarro-Yepes, SoonSeng Ng, Ameya Narkar, Taci Pereira, Sammy S. Datwani
Systemic Bio, USA
- T533.h** **A PERIPHERAL-CENTRAL NERVOUS SYSTEM ON-CHIP TO STUDY TARGETED DELIVERY OF PERIPHERALLY ADMINISTERED NUCLEIC ACIDS**
Miguel Xavier¹, Ana P. Spencer^{2,3,4}, Adiana Vilaça¹, Sofia C. Guimarães^{2,3}, Rafael Santos^{2,3}, Ariel Ionescu⁵, Yael Leichtmann-Bardoog⁵, Maria Lazaro^{2,3}, Victoria Leiro^{2,3}, Eran Perlson⁵, Ben Maoz⁵, Ana P. Pego^{2,3,6}
¹International Iberian Nanotechnology Laboratory, PORTUGAL, ²Instituto de Investigação e Inovação em Saúde, PORTUGAL, ³Instituto de Engenharia Biomédica, PORTUGAL, ⁴University of Porto, PORTUGAL, ⁵Tel Aviv University, ISRAEL, and ⁶Instituto de Ciências Biomédicas Abel Salazar, PORTUGAL
- T534.h** **DESIGN & DEVELOPMENT OF DEFORMABLE PERITONEUM-ON-CHIP TO INVESTIGATE OVARIAN CANCER METASTASIS**
Satyarthi Mishra, Bhavana C. R, Ramray Bhat, Prosenjit Sen
Indian Institute of Science, INDIA
- T535.h** **DEVELOPMENT OF A MICROFLUIDIC PLATFORM TO PRODUCE CELL-LOADED ZWITTERIONIC MICROGELS FOR CELL THERAPEUTICS**
Afshin Abrishamkar^{1,2,3,4}, Nada Ibrahim², Cynthia Pham², Keith Morton^{1,3}, Todd Hoare², Teodor Veres^{1,3,4}
¹National Research Council, CANADA, ²McMaster University, CANADA, ³Centre for Research and Applications in Fluidic Technologies (CRAFT), CANADA, and ⁴University of Toronto, CANADA
- T536.h** **HIGH FIDELITY CARDIAC VENTRICLE FABRICATED FROM POROUS ELASTOMER PROMOTES VASCULOGENESIS**
Sargol Okhovatian^{1,2}, Ramak Khosravi^{2,3}, Shira Landau^{1,2}, Milica Radisic^{1,2}
¹University of Toronto, CANADA, ²Toronto General Research Institute, CANADA, and ³Duke University, USA
- T537.h** **INSIDE-OUT INTESTINAL ORGANOIDs USING DROPLET MICROFLUIDIC-PRODUCED HYDROGEL MICROPARTICLES**
Federica Quacquarelli¹, Sergio Davila¹, Jaekyung Koh², Joseph de Rutte², Dino Di Carlo², Maria Antfolk¹
¹Lund University, SWEDEN and ²University of California, USA

- T538.h VASCULARIZATION OF KIDNEY ORGANOIDS AND GLOMERULAR CELLS WITH SELF-ASSEMBLED VASCULATURE**
Chuan Liu^{1,2}, Shira S. Landau^{1,2}, Qinghua Wu^{1,2}, Matthew Lei^{1,2}, Milica Radisic^{1,2,3}
¹University of Toronto, CANADA, ²University Health Network, CANADA, and ³Centre for Research and Applications in Fluidic Technologies, CANADA
- W532.h A BIOMIMETIC DILATED THREE-LAYER PLACENTA-ON-A-CHIP WITH MICROPOROUS MEMBRANE LAYER UNDER FLOW-INDUCED SHEAR STRESS STIMULATION AND PLACENTAL CIRCULATION**
Tzu-Chi Wang¹, Hao-En Lee¹, Chie-Pein Chen², Tong-Miin Liou¹, Chien-Chong Hong¹
¹National Tsing Hua University, TAIWAN and ²MacKay Memorial Hospital, TAIWAN
- W533.h A REVERSIBLE BONDING MICROFLUIDIC CHIP FOR VERSATILE CELL CULTURING AND EXTRACTION**
Xiaohan Feng¹, Zehaoyu Wu¹, Lily K.W. Cheng¹, Yang Xiang², Ryohichi Sugimura², Xuyan Lin¹, Angela R. Wu¹
¹Hong Kong University of Science and Technology, HONG KONG and ²University of Hong Kong, HONG KONG
- W534.h DEVELOPING PATENT-DERIVED ORGANOID MODELS FOR PRECISION MEDICINE IN RENAL CELL CARCINOMA (RCC)**
Ali Shahini¹, Zohreh Mehrjoo¹, Hellen Kuasne¹, Minjun Kim¹, Binesh Emami¹, Simon Tanguay¹, Sebastian Merker², Morag Park¹, Yasser Riazalhosseini¹
¹McGill University, CANADA and ²Maisonneuve-Rosemont Hospital Research Centre, CANADA
- W535.h EFFECT OF POROSITY ON TIGHT JUNCTION FORMATION OF CEREBRAL VASCULAR ENDOTHELIAL CELLS CULTURED ON A MICROPOROUS SIN MEMBRANE**
Kota Usui, Takashi Yasuda
Kyushu Institute of Technology, JAPAN
- W536.h HUMAN-LIKE CANCER TISSUE MODELS AS A DRUG SCREENING PLATFORM**
Asees Kaur, Anna Poon, Sam Paton, Annelise Lapointe, Ekaterina Shteinberg, Jenna Sonmor, Sebastian Steiner, Genevieve Boice, Karolina Valente
VoxCell BioInnovation, CANADA
- W537.h SENSOR-INTEGRATED MICROFLUIDIC ORGAN CHIPS FOR CONTINUOUS METABOLIC PROFILING**
Zohreh Izadifar, Micaela Almeida, Kanoelani Pilobello, Adama M. Sesay, Donald E. Ingber
Harvard University, USA
- W538.h TAILORING HYDROGEL MECHANICS AND ARCHITECTURE FOR EFFECTIVE VOCAL FOLD REGENERATION**
Sara Nejati, Luc Mongeau
McGill University, CANADA

i - Wearables and Continuous Biosensing

Continuous Monitoring and Biosensing

- M178.i A HIGHLY SENSITIVE AND LONG-TERM STABLE ELECTROCHEMICAL APTAMER-BASED SENSOR BASED ON AUNPS@MXENE NANOCOMPOSITE FOR CONTINUOUS DETECTION OF BIOMARKERS**
Haowei Duan, Ming Li
University of New South Wales, AUSTRALIA

- M179.i AN INTEGRATED DIGITAL MICROFLUIDICS DEVICE FOR MULTIPLEXED ELECTROCHEMICAL BIOSENSING OF PROTEIN BIOMARKERS OF PROSTATE CANCER: SOLVING ISSUES WITH TRANSLATION TO AUTOMATED AND SCALABLE SYSTEMS FOR COMMERCIALIZATION**
Kulmanak S. Bajaj¹, Harmanjit Kaur¹, Mohammed Hasan¹, Amin Hosseini², Jeff Sutton², Leyla Soleymani¹
¹McMaster University, CANADA and ²VERV Technologies, CANADA
- M180.i CONTINUOUS IN-VITRO PHYSIOLOGICAL PH SENSING IN 3D CO-CULTURED TUMOUR SPHEROIDS USING SERS BASED PH NANOSENSORS**
Koyel Dey^{1,2}, Venkanagouda S. Goudar¹, Tuhin Santra², Fan Gang Tseng¹
¹National Tsing Hua University, TAIWAN and ²Indian Institute of Technology, Madras, INDIA
- M181.i ELECTROCHEMICAL MODULATION OF AFFINITY-BASED SENSORS**
Scott Isaacson, Connor Flynn, Shana O. Kelley
Northwestern University, USA
- M182.i INTEGRATED FULL-BRIDGE STRAIN SENSOR ON A POLYMER CANTILEVER FOR PRECISE CARDIOMYOCYTE CONTRACTION FORCE MEASUREMENT**
Ke Liu, Haolan Sun, Longlong Li, Dong-weon Lee
Chonnam National University, KOREA
- M183.i NANOBODY RECEPTORS ENABLE HIGH SENSITIVITY IL-6 MONITORING USING MOLECULAR PENDULUM BIOANALYSIS**
Connor D. Flynn¹, Zhenwei Wu¹, Amy Bantle², Scott Isaacson¹, Dingran Chang¹, Alam Mahmud², Hanie Yousefi¹, Jagotamoy Das¹, Shana O. Kelley¹
¹Northwestern University, USA and ²University of Toronto, CANADA
- M184.i REDEFINING PASTURES: INNOVATING GRAZING SYSTEMS WITH AFFORDABLE VIRTUAL FENCING SOLUTIONS**
Hannah L. James, Clara Rial, Darke R. Hull, Julio Giordano, David Erickson
Cornell University, USA
- T178.i A MICROFLUIDIC CHOLINE SENSING SYSTEM TO DETECT ORGANOPHOSPHORUS POISONING BY THE CONTINUOUS MEASUREMENT OF CHANGES IN ACETYLCHOLINESTERASE ACTIVITY**
Georgia K. Smith¹, Nick Coe², Jennifer Dawson², Thomas Mann², Sally A.N. Gowers¹, Christopher Green², Sarah A. Goodchild², Martyn G. Boutelle¹
¹Imperial College London, UK and ²Dstl, UK
- T179.i BEAD-BASED QUANTUM DOT MEDIATED IMMUNOASSAYS FOR REAL-TIME MULTIPLEXED BIOMARKER MONITORING**
Sanjana Srikant¹, Hesam Abouali¹, Nicole G. Barra², Jon D. Schertzer², Mahla Poudineh¹
¹University of Waterloo, CANADA and ²McMaster University, CANADA
- T180.i CONTINUOUS LACTATE MONITORING WITH DROPLET-BASED PORTABLE DEVICE IN CLINICAL DIAGNOSIS**
Xinne Zhao¹, Tom A. Schröder², Lars Heubner², Larysa Baraban¹
¹Helmholtz-Zentrum Dresden-Rossendorf, GERMANY and
²Universitätsklinikum Carl Gustav Carus, GERMANY
- T181.i FLOWING TOWARDS EFFICIENCY: MICROFLUIDIC DNAZYME BIOSENSOR FOR REAL-TIME LEGIONELLA PNEUMOPHILA DETECTION IN WATER**
Enas Osman, Survanshu Saxena, Shuwen Qian, Jonathan L'Heureux-Hache, Phoebe Li, Jinal Manek, Jimmy Gu, Todd Hoare, Yingfu Li, Leyla Soleymani
McMaster University, CANADA

- T182.i LABEL-FREE IMPEDANCE FLOW CYTOMETRY WITH MICROELECTRODES OPTIMIZED FOR HIGH SENSITIVITY FOR INDIVIDUAL MICROORGANISMS**
Mohadeseh Mozafari, Peer Erfle, Jonathan Block, Rainer Krull, Andreas Dietzel
Technische Universität Braunschweig, GERMANY
- T183.i RAPID BIOCHEMICAL SENSOR USING SUBMICROMETER-THICK HYDROGEL FILM WITH INTERFEROMETRIC COLOR**
Momoka Minami, Hiroaki Onoe
Keio university, JAPAN
- T184.i UTILIZING DEGREE OF CIRCULAR POLARIZATION TO DETECT D-GLUCOSE CONCENTRATION IN SCATTERING MEDIA**
Hsin-Yi Hsieh, Chia-Chun Chang, Chin-Chuan Hsieh
VisEra Technologies Company Ltd., TAIWAN
- W178.i 3D PRINTED MICROSAMPLING PROBES**
Patrick M. Pysz, Julia K. Hoskins, Min Zou, Julie A. Stenken
University of Arkansas, USA
- W179.i ADVANCED SENSING TECHNOLOGIES FOR HEALTHCARE AUTOMATION**
Irfani Ausri¹, Sadegh Sadeghzadeh¹, Peyman GhavamiNejad¹, Amin GhavamiNejad², Mahla Poudineh¹
¹University of Waterloo, CANADA and ²University of Toronto, CANADA
- W180.i CONTINUOUS BIOSENSING ENABLED BY MICROFLUIDICS INTEGRATED WITH NANOSWITCH-BASED FIBER OPTIC SPR**
Annelies Dillen¹, Claudia Scarpellini¹, Jalu Setiya Pradana^{1,2}, Jolien Breukers¹, Seppe Driesen¹, Aurélie Mohrbacher¹, Livio Oliveira de Miranda³, Peter Zijlstra³, Filip Delpoort², Karen Leirs¹, Dragana Spasic¹, Jeroen Lammertyn¹
¹KU Leuven, BELGIUM, ²Fox Biosystems, BELGIUM, and ³Eindhoven University of Technology, NETHERLANDS
- W181.i DUAL-MODE HEART RATE AND CONTINUOUS GLUCOSE MONITORING WEARABLE SYSTEM FOR HOUSE SPARROWS**
Rachel E. Riccio, Cihan Asci, L. Michael Romero, Sameer Sonkusale
Tufts University, USA
- W182.i IN-LINE MICROWAVE BIOSENSOR FOR MONITORING ANASTOMOTIC LEAKAGE THROUGH AMYLASE CONTENT IN POST-OPERATIVE PERITONEAL DRAINAGE FLUID AFTER COLORECTAL ANASTOMOSIS SURGERY.**
Weijia Cui¹, Qianying Mao¹, Maziar Shafiei-Darabi¹, Lauren LeSergent², Ricky Tjandra², Robert Miranda³, Zahra Abbasi³, Carolyn L. Ren¹
¹University of Waterloo, CANADA, ²FluidAI Medical, CANADA, and ³University of Calgary, CANADA
- W183.i MICROFLUIDIC BIOSENSING SYSTEM FOR REAL-TIME CONTINUOUS MONITORING OF NEUROCHEMICAL CHANGES DURING CARDIAC ARREST AND RESUSCITATION IN A PORCINE MODEL**
Sally A.N. Gowers¹, Chiara Cicatiello¹, Georgia K. Smith¹, Xinyue Liu¹, Xueer Zhang¹, Raimund Helbok^{2,3}, Judith Martini², Gabriel Putzer², Martyn G. Boutelle¹
¹Imperial College London, UK, ²Innsbruck Medical University, AUSTRIA, and ³Johannes Kepler University, AUSTRIA
- W184.i REAL-TIME CONTINUOUS MONITORING MICROFLUIDIC PLATFORM FOR MULTIPLEXED BIOMARKER DETECTION**
Hesam Abouali¹, Sanjana Srikant¹, Md. Fahim Al Fattah¹, Nicole G. Barra², Dayan Ban¹, Jon D. Schertzer², Mahla Poudineh¹
¹University of Waterloo, CANADA and ²McMaster University, CANADA

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Implantables and Ingestibles

- M185.i** **A THREE-DIMENSIONAL MICROELECTRODE ARRAY SIMULTANEOUSLY RECORDING ELECTROCORTICOGRAPHY AND INTRA-CORTEX SIGNALS**
Xiaoyi Shi^{1,2}, Yuxing Pang^{1,2}, Junshi Li^{1,2}, Zhihong Li^{1,2}
¹*Peking University, CHINA and*
²*National Key Laboratory of Advanced Micro and Nano Manufacture Technology, CHINA*
- M186.i** **LOCATION AND VELOCITY DETECTION OF EDIBLE WIRELESS CAPSULE SENSOR FOR DIGESTIVE SYSTEM MONITORING**
Kentaro Tomita¹, Kan Tetsuo², Hiroaki Onoe¹
¹*Keio University, JAPAN and* ²*University of Electro-Communications, JAPAN*
- T185.i** **AN EDIBLE WIRELESS SENSOR USING PIEZOELECTRIC BROCCOLI/CELLULOSE FILM WITH SPLIT-RING RESONATORS FOR GASTRIC MOTILITY SENSING**
Shion Miura¹, Tetsuo Kan², Hiroaki Onoe¹
¹*Keio University, JAPAN and* ²*University of Electro-Communications, JAPAN*
- T186.i** **REMOTELY ACTIVATABLE GUT SAMPLING PILL**
Rogier M. Schoeman¹, Jinane Elias¹, Jan Willem de Wit¹, Anita Ahmadi¹, Aniek J.G. Even¹, Klaus Mathwig¹, Tom Torfs², Nick van Helleputte², Chris van Hoof^{1,2}
¹*iimec, NETHERLANDS and* ²*iimec, BELGIUM*
- W185.i** **A NOVEL MULTI-ELECTRODE MICROPROBE ARRAY WITH DISSOLVING PROBE BODY**
Xiaoyi Shi, Xiaoyong Tang, Yingjie Ren, Junshi Li, Zhihong Li
Peking University, CHINA
- W186.i** **INGESTIBLE BIOIMPEDANCE SENSING DEVICE FOR MONITORING INTESTINAL MUCOSAL PERMEABILITY**
Brian M. Holt¹, Hammed Ayansola¹, Justin M. Stine¹, Luke A. Beardslee¹, Pankaj J. Pasricha², Younggeon Jin¹, Reza Ghodssi¹
¹*University of Maryland, USA and* ²*Mayo Clinic Hospital, USA*

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Microneedles

- M187.i** **CONDUCTIVE HYDROGEL MICRONEEDLE MADE WITH PEDOT: PSS AND GOLD NANOPARTICLES FOR SENSING OF GLUCOSE IN DIABETIC RATS**
Peyman Ghavami, Nejad, Mahla Poudineh
University of Waterloo, CANADA
- M188.i** **HIGHLY WICKING CELLULOSE MICRONEEDLES FOR RAPID SAMPLING AND TRANSPORT OF DERMAL INTERSTITIAL FLUID**
Elizabeth C. Wilkerson, Peter B. Lillehoj
Rice University, USA
- M189.i** **METAL-BASED, THREE-DIMENSIONAL INTRACORTICAL MICROELECTRODE ARRAY AS A NEURAL INTERFACE**
Junshi Li^{1,2}, Zhongyan Wang^{1,2}, Yu-Qing Zheng^{1,2}, Zhihong Li^{1,2}
¹*Peking University, CHINA and* ²*Beijing Advanced Innovation Center for Integrated Circuits, CHINA*

- T187.i DOPAMINE MODIFIED HYDROGEL MICRONEEDLE BIOSENSOR FOR KETONE BODY SENSING**
Sadeqh Sadeghzadeh¹, Irfani Ausri¹, Amin GhavamiNejad², Mahla Poudineh¹
¹University of Waterloo, CANADA and ²University of Toronto, CANADA
- T188.i HIGH-PERFORMANCE FLEXIBLE MICRONEEDLE DRY ELECTRODE ARRAY FOR HIGH-DENSITY ELECTROENCEPHALOGRAPH (HD-EEG) RECORDING**
Junshi Li^{1,2}, Zhongyan Wang^{1,2}, Jiayan Zhang^{1,2}, Yu-Qing Zheng^{1,2}, Zhihong Li^{1,2}
¹Peking University, CHINA and ²Beijing Advanced Innovation Center for Integrated Circuits, CHINA
- T189.i REMOTE-CONTROLLED SENSING AND DRUG DELIVERY VIA 3D-PRINTED HOLLOW MICRONEEDLES**
Mahmood Razzaghi, Mohsen Akbari
University of Victoria, CANADA
- W187.i A HYDROGEL MICRONEEDLE INTEGRATED APTAMER-BASED ELECTROCHEMICAL SENSOR FOR GLUCOSE AND LACTATE MONITORING IN LIVE ANIMALS**
Hanjia Zheng¹, Fatemeh Bakhshandeh², Leyla Soleymani², Mahla Poudineh¹
¹University of Waterloo, CANADA and ²McMaster University, CANADA
- W188.i HIGH DENSITY GOLD NANOPARTICLES FUNCTIONALIZED ELECTRODE COMBINED WITH SWELLABLE MICRONEEDLE FOR IN-VIVO SENSING OF GLUCOSE IN DIABETIC RATS**
Ziying Yang, Peyman GhavamiNejad, Mahla Poudineh
University of Waterloo, CANADA
- W189.i HYDROGEL MICRONEEDLE COUPLED WITH ELECTROCHEMICAL APTASENSOR FOR MINIMALLY INVASIVE AND REAL-TIME THERAPEUTIC DRUG MONITORING**
Fatemeh Keyvani¹, Peyman GhavamiNejad GhavamiNejad¹, Mahmoud Ayman Saleh², Mahla Poudineh¹
¹University of Waterloo, CANADA and ²University of MacGill, CANADA
- W190.i SWELLABLE HYDROGEL MICRONEEDLE PATCHES CAN INTERROGATE MIRNA COMPOSITION IN SKIN FLUID TO DIAGNOSE SKIN CANCER**
Ahmad Kenaan, Oliver Teenan, Connor Daniels, Christina Malactou, Jessica Strid, Claire A. Higgins, Sylvain Ladame
Imperial College London, UK

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Physiological Sensing and Plethysmography

- M190.i WEARABLE SENSOR FOR CONTINUOUS MICROFLUIDIC BLOOD FLOW MEASUREMENT VIA MULTI-WAVELENGTH PHOTOPLETHYSMOGRAPHY (MWPPG) FOR REMOTE MONITORING**
Tenzin Yangzom, Megh Rathod, Samantha Unger, Daniel Franklin
University of Toronto, CANADA

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Wearable Systems

- M191.i AN ELECTRICAL-IMPEDANCE-TOMOGRAPHY-BASED WEARABLE ARMBAND FOR NON-INVASIVE AND CONTINUOUS BONE MONITORING**
Shuangye Xu¹, Liudi Dong¹, Junchen Fan¹, Xiaowen Huang², Zixin Wang³, Zhen Zhu¹
¹Southeast University, CHINA, ²Jiangsu Province Hospital, CHINA, and ³Sun Yat-Sen University, CHINA

- M192.i WEARABLE ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY FOR NON-INVASIVE CORTISOL MONITORING: BRIDGING THE GAP IN STRESS**
Vyshnavi Devarakonda, Ahmed Asiff, Carter Fuchs, Thanusha Veeraperumal, Mitchell Rhead, Aliaa Elmurshedy, Bahareh Babamiri, Mohammadreza Farrokhnia, Mahmood Khalghollah, Kirankumar Kuruvinaashetti, Mohsen Hassani Amir Sanati Nezhad, Amin Komeili
University of Calgary, CANADA
- T190.i DEVELOPMENT OF A FLEXIBLE ELECTROCHEMICAL IMMUNOSENSOR WITH GRAPHENE AND GOLD NANOPARTICLE MODIFICATION FOR POINT-OF-CARE E-ELISA DETECTION OF BIOMARKERS**
Zahrasadat Hosseini, George Jie Yuan
Hong Kong University of Science and Technology, HONG KONG
- T191.i SKIN-INTERFACED, SOFT, RELIABLE PULSE SENSOR FOR CARDIOVASCULAR DISEASE DIAGNOSTICS ENABLED BY MACHINE LEARNING**
Zhiqiang Ma^{1,2}, Ke Huang^{1,2}, Bee Luan Khoo^{1,2,3}
¹City University of Hong Kong, HONG KONG, ²Hong Kong Center for Cerebro-Cardiovascular Health Engineering, HONG KONG, and ³City University of Hong Kong, Futian, CHINA
- W191.i RECORDING EEG ON HAIRY SCALP WITH FLEXIBLE ANNULAR MICRONEEDLE ARRAY ELECTRODE (A-MAE)**
Junshi Li^{1,2}, Zhitong Zhang^{1,2}, Jiayan Zhang^{1,2}, Yu-Qing Zheng^{1,2}, Zhihong Li^{1,2}
¹Peking University, CHINA and ²Beijing Advanced Innovation Center for Integrated Circuits, CHINA
- W192.i STRETCHABLE RIGID-SOFT STRUCTURED ELECTRONIC SUBSTRATE ON WHICH ORGANIC THIN-FILM TRANSISTORS CAN BE MOUNTED**
Sho Sato¹, Fumika Nakamura¹, Yutaka Isoda¹, Tamami Takano¹, Kyohei Nagatake¹, Ryosuke Matsuda¹, Naoko Nanba³, Takafumi Uemura², Tsuyoshi Sekitani², Hiroki Ota¹
¹Yokohama National University, JAPAN, ²Osaka University, JAPAN, and ³National Institute of Advanced Industrial Science and Technology, JAPAN

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Late News

- M540.i E-NOSE: A PORTABLE INSECT ODORANT INTEGRATED GRAPHENE FIELD EFFECT BIOSENSOR FOR REAL-TIME MONITORING OF ORGANIC COMPOUNDS**
Deependra K. Ban¹, Alicia Contet², Michael Catania³, Kerstin Kanonenberg², Martin Tyler⁴, Brett Goldsmith³, Kiana Aran¹
¹University of California, San Diego, USA, ²Eurofins CALIXAR, Bât. Laënnec, FRANCE, ³Paragraf, USA, and ⁴Paragraf Limited, UK
- T539.i ADVANCEMENTS IN SWEAT BIOMARKER ANALYSIS THROUGH A NOVEL AI-ASSISTED WEARABLE PLATFORM APPROACH: A PROOF OF CONCEPT**
Elnaz Haghani, Hamidreza Akbari, Iliya Beigmohammadi, Razieh Salahandish
York University, CANADA
- T540.i REAL-TIME CUFFLESS BLOOD PRESSURE MEASUREMENT AFTER EXERCISE USING PULSE TRANSIT TIME METHOD**
Jingyu Choe, Chiwan Koo
Hanbat National University, KOREA
- W539.i DOUBLE-LAYERED MICRONEEDLES WITH RESISTANCE TO OXIDATION ENVIRONMENT FOR LONG-TERM CONTINUOUS GLUCOSE MONITORING**
Yuna Han^{1,2}, Ga Yeong Lee^{1,2}, Seonghyeon Eom³, Inhee Choi³, Yun Jung Heo^{1,2}
¹Kyung Hee University, KOREA, ²Kyung Hee University, KOREA, and ³University of Seoul, KOREA

- W540.i SWEAT FOR TRAINING SMART: HIGHLY INTEGRATED MICROFLUIDIC PLATFORM FOR ENHANCED SPORTS PERFORMANCE**
 Genis Rabost-Garcia¹, Maria Sánchez¹, Andrea Fajardo-Garcia¹, Samantha Toinga-Villafuerte¹, Albert Álvarez-Carulla¹, Valeria Colmena-Rubil¹, Javier Aguilar-Torán¹, Alfredo Ongaro¹, Jaime Punter-Villagrasa¹, Pedro L. Cosío², Lia Moreno-Simonet², Joan Cadefau², Xavier Muñoz-Pascual¹, Jasmina Casals-Terré¹
¹Universitat Politècnica de Catalunya, SPAIN and ²Institut Nacional d'Educació Física, SPAIN

j - μTAS and Diagnostics

Artificial Intelligence Enhanced Analysis and Diagnostics

- M193.j DEEP LEARNING-ASSIST SINGLE-BACTERIUM DISTINGUISHMENT IN MICROWELL ARRAY**
 Po-Hsuan Chao¹, Nien-Tsu Huang^{1,2}
¹National Taiwan University, TAIWAN and ²Industrial Technology Research Institute, TAIWAN
- M194.j OPTIMIZATION OF DROPLET-MICROARRAY 3D BIOPRINTING PARAMETERS USING A MACHINE-LEARNING APPROACH**
 Jaemyung Shin¹, Minseok Kang¹, Kinam Hyun¹, Zhangkang Li¹, Hitendra Kumar², Kangsoo Kim¹, Simon S. Park¹, Keekyoung Kim¹
¹University of Calgary, CANADA and ²Indian Institute of Technology, Indore, INDIA
- T192.j AI ENHANCED LABEL-FREE PLASMONIC IMAGING OF SINGLE SMALL EXTRACELLULAR VESICLES FOR EARLY CANCER DETECTION**
 Mohammad Sadman Mallick¹, Saswat Mohapatra¹, Steven H. Lin², Wei-Chuan Shih¹
¹University of Houston, USA and ²University of Texas MD Anderson Cancer Center, USA
- T193.j MACHINE LEARNING ASSISTED RAPID SCREENING OF NUCLEIC ACID AMPLIFICATION COLORIMETRIC ASSAY.**
 Carolina del Real Mata¹, Mahsa Jalali², Tamer AbdElFatah¹, Sara Mahshid¹
¹McGill University, CANADA and ²Research Institute of the McGill University Health Centre (RIMUHC), CANADA
- W193.j ARTIFICIAL INTELLIGENCE IN LARGE SCALE ACTIVE-MATRIX DIGITAL MICROFLUIDICS**
 Zhiqiang Jia^{1,3}, Wenfei Dong^{1,3}, Hanbin Ma^{1,2}
¹Chinese Academy of Sciences, CHINA, ²ACX Instruments Ltd, UK, and ³Changchun University of Science and Technology, CHINA
- W194.j OBJECT DETECTION ORIENTED DEEP LEARNING FOR ANALYSIS OF MICROBIAL COMMUNITIES AND HIGH-THROUGHPUT SCREENING USING DROPLET MICROFLUIDICS**
 Anuj Tiwari, Robyn Manley, Fabrice Gielen
 University of Exeter, UK

j - μTAS and Diagnostics

Cell-Based Analysis and Diagnostics

- M195.j ASSESSMENT OF RED CELL DEFORMABILITY IN WHOLE BLOOD USING A MICROFLUIDIC DIELECTRIC COAGULOMETER**
 Calvin Abonga, Hanif Alizadeh, Dante Disharoon, Sonali Rohiwal, Christopher A. Delianides, Sina Pourang, Anirban Sen Gupta, Michael A. Suster, Pedram Mohseni
 Case Western Reserve University, USA

- M196.j CORRELATING THE MECHANICAL PROPERTIES OF MESENCHYMAL STEM CELLS AND THEIR DIFFERENTIATION ABILITIES BY HIGH-THROUGHPUT DEFORMABILITY CYTOMETRY**
Qinru Xiao, Yanlun Zhu, Hon Fai Chan, Yi-Ping Ho
Chinese University of Hong Kong, HONG KONG
- M197.j EXPLORING RED BLOOD CELL MARGINATION IN CAPILLARY MICROCHANNELS UNDER CONTROLLED SHEAR RATES**
Maya Salame, Camille Chartrand, Andy V. Le, Hiba Ksaa, Marianne Fenech
University of Ottawa, CANADA
- M198.j INVESTIGATING T CELL ACTIVATION AND CYTOKINE SECRETION USING A NOVEL CELL MONITORING PLATFORM**
Naiara Lartitegui Meneses¹, Enrique Azuaje Hualde¹, Andrea Merino¹, Adai Colom², Janire Saez^{1,2}, Fernando Benito Lopez¹, Lourdes Basabe Desmonts^{1,2}
¹*University of the Basque Country, SPAIN and* ²*IKERBASQUE, SPAIN*
- M199.j LINEAGE CELL AND MASS TRACKING IN LOW REFRACTIVE INDEX MICROWELLS VIA QUANTITATIVE PHASE IMAGING**
Jingzhou Zhang, Justin Griffin, Thomas A. Zangle
University of Utah, USA
- M200.j PHAGE INFECTION CYCLE MONITORED BY SINGLE CELL IMPEDANCE CYTOMETRY**
Xiang Wang¹, Franklin Nobrega¹, Yi Wu¹, Daniel Spencer¹, Mark Sutton², Hywel Morgan¹
¹*University of Southampton, UK and* ²*UK Health Security Agency, UK*
- T194.j A MICRO-WELL DEVICE INTEGRATES MULTIPLE SENSOR CELLS WITH HYDROGEL FOR ODORANT DETECTION**
Hisatoshi Mimura¹, Toshihisa Osaki¹, Sho Takamori¹, Haruka Oda², Shoji Takeuchi^{1,2}
¹*Kanagawa Institute of Industrial Science and Technology, JAPAN and* ²*University of Tokyo, JAPAN*
- T195.j AUTOMATED CULTURE SYSTEM FOR HIGH-THROUGHPUT ANALYSIS OF ORGANOID DYNAMICS IN 3D**
Yiyu Deng, Minjun Son, Jonathan Matthews, Feng Qian, Adekunle Odunsi, Savas Tay
University of Chicago, USA
- T196.j DIELECTROPHORESIS DIFFERENTIATION OF TEMOZOLOMIDE-RESISTANT AND NON-RESISTANT GLIOBLASTOMA CELLS**
Elham Salimi, Emerich Kovacs, Behnam Arzhang, Simone C. da Silva Rosa, Courtney Clark, Shahrokh Lorzadeh, Justyna Lee, Saeid Ghavami, Greg Bridges, Douglas Thomson
University of Manitoba, CANADA
- T197.j FLIP THE CHIP: TRAPPING LOW NUMBER OF CANCER CELLS FOR HOMOGENEOUS SPHEROID FORMATION**
Raphael Dezauzier, Petra S. Dittrich
ETH Zürich, SWITZERLAND
- T198.j LABEL-FREE, PHENOTYPIC CELL CHARACTERIZATION IN CONTINUOUS FLOW**
Laura C. Orellana, Thijs Roebroek, Willem Van Roy, Sophie Roth, Zhenxiang Luo, Elnaz Vaezzadeh, Wiebe Vanhove, Youssef El Jerrari, Deise Origuella, Joost Van Duppen, Guiquan Wang, Riet Labie, Kasper Claes, Siri Willems, Van Pham, Ben Jones, Chad Arnett, Frederic Van Bellinghen, Martin Obst, Ziduo Lin, Seungkyu Ha, Karolien Jans, Thomas Hopfes, Peter Peumans, Murali Jayapala, Tim Stakenborg
imec, BELGIUM

- T199.j MEASUREMENT OF IMMUNE RESPONSE BY ENVIRONMENTAL PARTICULATES**
Zhuohao Yang¹, Takumi Adachi², Nobutake Suzuki¹, Mai Yamagishi³, Takashi Funatsu³, Etsushi Kuroda², Shinya Sakuma⁴, Yoshitaka Shirasaki¹
¹University of Tokyo, JAPAN, ²Hyogo College of Medicine, JAPAN, ³Live Cell Diagnosis, Ltd., JAPAN, and ⁴Kyushu University, JAPAN
- T200.j POINT-OF-CARE TECHNOLOGIES FOR MOLECULAR SUBTYPING OF BREAST CANCER IN LOW- AND MIDDLEINCOME COUNTRIES.**
Wenting Gao¹, Iftak Hussain¹, David Erickson¹, Clement Adebamowo²
¹Cornell University, USA and ²University of Maryland, USA
- W195.j A SPONGE MONOLITH COLUMN FOR CELL SEPARATION BASED ON CELL ELASTICITY**
Yusei Tsutsumi¹, Tetsuya Tanigawa², Takuya Kubo², Noritada Kaji¹
¹Kyushu University, JAPAN and ²Kyoto University, JAPAN
- W196.j BUOYANCY-BASED DROPLET MICROFLUIDICS FOR THE PRODUCTION OF CELL SPHEROIDS IN ALGINATE GEL BEADS**
Malik Grini¹, Kevin Maltez Cavaleiro¹, Stéphanie van Loo², Christine Gilles¹, Tristan Gilet¹
¹University of Liège, BELGIUM and ²Livedrop, BELGIUM
- W197.j DIGITAL MICROFLUIDIC BENCHTOP SYSTEM FOR PRENATAL GENETIC TESTING FROM SINGLE CELLS**
Dylan Siriwardena¹, Michael Dryden¹, Dean Chamberlain³, Louise Dupoirion¹, David Chitayat², Elena Greenfeld², Aaron Wheeler¹
¹University of Toronto, CANADA, ²Sinai Health System, CANADA, and ³University of Saskatchewan, CANADA
- W198.j FULLY-AUTOMATED ELECTROROTATION SYSTEM FOR ALIGNMENT-FREE CHARACTERIZATION OF CANCER CELLS**
Daisuke Sekiguchi, Yoshiyasu Ichikawa, Masahiro Motosuke
Tokyo University of Science, JAPAN
- W199.j LET IT SEDIMENT - A NOVEL MICROFLUIDIC SAMPLE PREPARATION STRATEGY FOR THE UNBIASED ANALYSIS OF SINGLE NUCLEATED CELLS FROM WHOLE BLOOD**
Samir Kadic¹, Michael Knapp¹, Jochen Hoffmann¹, Anne Serout¹, Steffen Strehle², Franz Lärmer¹
¹Robert Bosch GmbH, GERMANY and ²Technische Universität Ilmenau, GERMANY
- W200.j MICROPARTICLE ENABLED SINGLE CELL ELECTRONIC IMMUNOPHENOTYPING AND SELECTIVE ELECTROPORATION**
Madeline Hoyle, Josiah Rudge, Yuvraj Rallapalli, Aniruddh Sarkar
Georgia Institute of Technology, USA
- W201.j TWO-DIMENSIONAL FLOW CYTOMETRY DEVICE APPLIED FOR P16/KI 67 DUAL IMMUNOSTAINING CERVICAL CYTOLOGY**
Kunihiko Iizuka^{1,2}, Shogo Mikami¹, Teruo Fujii¹, Soo Hyeon Kim¹
¹University of Tokyo, JAPAN and ²Lab Arco Limited, JAPAN

j - μTAS and Diagnostics

Clinical Chemistry

- M201.j A PASSIVE FLOW MICROREACTOR FOR URINE CREATININE TEST**
Dumitru Tomsa¹, Yang Liu¹, Amanda Stefanson¹, Xiaou Ren¹, AbdulRazaq A.H. Sokoro¹, Paul Komenda^{1,3}, Navdeep Tangri^{1,3}, Rene Zahedi^{1,2}, Claudio Rigatto^{1,3}, Francis Lin¹
¹University of Manitoba, CANADA, ²Manitoba Centre for Proteomics and Systems Biology, CANADA, and ³Seven Oaks General Hospital, CANADA

j - μTAS and Diagnostics
Drug Screening and Development

- M202.j** **CONCENTRATION-BASED ANTICANCER DRUG SORTING FOR IN VITRO COMBINATORIAL EFFICACY TESTING AND PREDICTION USING MAGNETIC MICROFLUIDIC DEVICE**
Vinit K. Yadav, Preetha Ganguly, Prashant Mishra, Samaresh Das, Dhiman Mallick
Indian Institute of Technology, Delhi, INDIA
- M203.j** **MONITORING OF DRUG-IMPACTED CARDIOMYOCYTES CONTRACTILITY USING PI MICROCANTILEVER STRUCTURES WITH NANO-SILICON STRAIN SENSOR**
Haolan Sun, Longlong Li, Dong-weon Lee
Chonnam National University, KOREA
- T201.j** **A MICROFLUIDIC PLATFORM FOR EVALUATING THE INTERNALIZATION OF LIPOSOME DRUG CARRIERS IN TUMOR SPHEROIDS**
Ilya Yakavets¹, Monica Ayachit^{1,2}, Sina Kheiri¹, Zhengkun Chen¹, Faeze Rakhshani¹, Samantha McWhirter¹, Edmond W.K. Young¹, Gilbert C. Walker¹, Eugenia Kumacheva¹
¹University of Toronto, CANADA and ²Queen's University, CANADA
- T202.j** **DEVELOPMENT OF A MICROFLUIDIC PLATFORM FOR CORTICOSTERONE IMPACT INVESTIGATION ON HT22 CELLS**
Huy Quoc Hoang Hua, Chang-SooLee
Chungnam National University, KOREA
- W202.j** **AUTONOMOUS MICROFLUIDIC DEVICE FOR THE NAKED-EYE DETECTION OF DIAZEPAM IN ADULTERATED BEVERAGES**
Isabel Poves-Ruiz¹, Enrique Azuaje-Hualde¹, Igor Corchado-Gonzalez¹, Lourdes Basabe-Desmonts^{1,2}, Fernando Benito-Lopez¹
¹University of the Basque Country, SPAIN and ²IKERBASQUE, SPAIN
- W203.j** **HIGH-THROUGHPUT COMBINATORIAL SCREENING OF PHAGE-HOST INTERACTIONS**
Madhumitha Prakash, Gabriel Mercado-Vásquez, Jono Matthews
University of Chicago, USA

j - μTAS and Diagnostics
Exhalate and Air Sampling

- T203.j** **3D PRINTED MICROFLUIDIC CHANNEL IMPACTOR FOR EXHALED BIOAEROSOL CAPTURE**
Yonatan Morocz¹, Xavier Lefebvre², Justin De Vries¹, Etienne Robert², David Juncker¹
¹McGill University, CANADA and ²Polytechnique Montreal, CANADA
- W204.j** **BIOAERIUM: AUTONOMOUS MICROFLUIDIC SENSOR FOR AIRBORNE VIRAL PATHOGEN DETECTION USING ISOTHERMAL NUCLEIC ACID AMPLIFICATION (LAMP)**
Nitin Jayakumar, Michael Caffrey, Igor Paprotny
University of Illinois, Chicago, USA

j - μTAS and Diagnostics
Extracellular Vesicles and Nanoparticles

- M204.j** **AUTONOMOUS MICROFLUIDIC DEVICE FOR EXTRACELLULAR VESICLE EXTRACTION FROM WHOLE BLOOD**
Ellinor Hedberg¹, Carl Olsson¹, Mattias Hällbrink², André Görgens², Daniel Hagey², Niclas Roxhed¹
¹KTH Royal Institute of Technology, SWEDEN and ²Karolinska Institutet, SWEDEN

- M205.j** **CONCURRENT DETECTION OF PROTEIN AND MIRNA AT THE SINGLE EXTRACELLULAR VESICLE LEVEL USING A DIGITAL DUAL CRISPR-CAS ASSAY**
Xun Xu, Yuanyue Zhang, Muxue Wang, Youchun Xu
Tsinghua University, CHINA
- M206.j** **HIGH-THROUGHPUT, MULTIPLEX, QUANTITATIVE ANALYSIS OF SINGLE-EV USING A HYDROGEL DROPLET BASED ROLLING CIRCLE AMPLIFICATION**
Juhwan Park, Michelle Feng, Jingbo Yang, Zhiyuan Qin, Hanfei Shen, Wei Guo, David Issadore
University of Pennsylvania, USA
- M207.j** **OPTIMIZING EXTRACELLULAR VESICLE DELIVERY: ALGINATE ELECTROSPRAY AND ENZYMATIC CARGO RELEASE**
Reese Wunsche^{1,2}, Morteza Jeyhani¹, Boyang Su^{2,3}, Hon Leong^{2,3}, Scott Tsai¹
¹Toronto Metropolitan University, CANADA, ²Sunnybrook Research Institute, CANADA, and ³University of Toronto, CANADA
- M208.j** **STREAMLINED DIGITAL MICROFLUIDIC-MASS SPECTROMETRY FOR RAPID EXOSOME ENRICHMENT AND LIPIDS PROFILING**
Yudan Ma, Menglei Zhao, Fenggang Li, Boyu Li, Rongxin Fu, Yao Lu, Hang Li, Shuailong Zhang
Beijing Institute of Technology, CHINA
- M209.j** **UNIVERSAL DESIGN OF A MACROPOROUS MATERIAL FOR THE EFFECTIVE SEPARATING EXTRACELLULAR VESICLES, VIRUSES, AND CELLS**
Takuya Kubo¹, Sayaka Konishi-Yamada¹, Eisuke Kanao², Tetsuya Tanigawa^{1,2}, Noritada Kaji³
¹Kyoto Prefectural University, JAPAN, ²Kyoto University, JAPAN, and ³Kyushu University, JAPAN
- T204.j** **APPLICATION OF HYALURONIC ACID-BASED NANOPARTICLE VIA SIMPLE MICROFLUIDICS ASSISTED NANOPRECIPITATION FOR TRANSDERMAL DELIVERY**
JungEun Lee, EunSol Choi, HyungJin Bae, JinMo Kim, SangKeun Han
Kolmar Korea, KOREA
- T205.j** **ELECTROCHEMICAL IMPEDANCE PROFILING FOR THE RAPID AND SENSITIVE ANALYSIS OF TUMOR-DERIVED EXOSOMES**
Youngeun Choi, Jonathan L'Heureux-Haché, Payel Sen, Leyla Soleymani
McMaster University, CANADA
- T206.j** **NANOFLUIDIC APPROACHES FOR SIZE-BASED SEPARATION TO EXPLORE EXOSOME DIVERSITY**
Sayano Arai¹, Daigo Tamaoki¹, Koichiro Hirosawa², Kenichi Suzuki², Nattapong Chantipmanee¹, Yan Xu^{1,3}
¹Osaka Metropolitan University, JAPAN, ²Gifu University, JAPAN, and ³Japan Science and Technology Agency, JAPAN
- T207.j** **PROFILING DNA CARGOS IN SINGLE EXTRACELLULAR VESICLES VIA HYDROGEL-BASED DROPLET DIGITAL MULTIPLE DISPLACEMENT AMPLIFICATION**
Yufeng Jiao¹, Liyang Gao¹, Ziyi He², Siyang Zheng³, Wu Liu¹
¹Shandong University, CHINA, ²Huazhong Agricultural University, CHINA, and ³Carnegie Mellon University, USA
- T208.j** **SUPER ABSORBENT POLYMER BEAD-BASED EXTRACELLULAR VESICLE ENRICHMENT AND CAPTURE FOR EFFICIENT BIOMARKER DETECTION**
Won Jong Rhee, Yubin Kang, Soobin Lee
Incheon National University, KOREA

- W205.j AN ULTRAHIGH-THROUGHPUT NANOFLUIDIC DEVICE FOR MECHANOPORTION OF SMALL EXTRACELLULAR VESICLES**
Rui Hao¹, Shi Hu¹, Sihui Chen², Huitao Zhang¹, Wenhao Jiang², Lianyu Lu¹, Xiaotian Tan¹, Yi Zhang¹, Hui Yang¹
¹Chinese Academy of Sciences, CHINA and ²SomesTech Co., Ltd., CHINA
- W206.j FLUID DEVICE FOR SIZE FRACTIONATION OF EXTRACELLULAR VESICLES**
Satoshi Sueyasu, Koki Sato, Yuto Matunaga, Yuka Nozaki, Masahiro Motosuke, Masakazu Umezawa
Tokyo University of Science, JAPAN
- W207.j ONE-STEP PRE-PROCESSING OF COMPLEX BIOLOGICAL SAMPLES USING HIGH-ASPECT RATIO SPIRAL (HARS) MICROFLUIDIC DEVICE FOR ENRICHMENT OF EXTRACELLULAR VESICLES**
Sourav Acharya, Ashwin A, Haimanti Mukherjee, Sayani Das, Sandip Kaledhonkar, Prakriti Tayalia, Debjani Paul
Indian Institute of Technology, Bombay, INDIA
- W208.j SINGLE PARTICLE ANALYSIS OF EXTRACELLULAR VESICLES FOR DETECTION OF MICROINFLAMMATION**
Shota Kawaguchi¹, Taiga Ajiri¹, Yukiko Kamiya², Masatoshi Maeki³, Manabu Tokeshi³, Hiroataka Koga⁴, Masaaki Murakami³, Takao Yasui¹
¹Tokyo Institute of Technology, JAPAN, ²Kobe Pharmaceutical University, JAPAN, ³Hokkaido University, JAPAN, and ⁴Osaka University, JAPAN
- W209.j TRACER-LABELED EXTRACELLULAR VESICLES FOR CONFIRMING EXTRACELLULAR VESICLES FILTRATION IN GLOMERULUS**
Taiga Ajiri¹, Shota Kawaguchi¹, Rina Mitsuya², Atsuhi Natsume², Ryosuke Kojima², Kiichi Sato³, Takao Yasui¹
¹Tokyo Institute of Technology, JAPAN, ²Nagoya University, JAPAN, and ³Gunma University, JAPAN

j - μTAS and Diagnostics

Liquid Biopsy and Tissue Biopsy

- M210.j DEVELOPMENT OF A MICRO-FABRICATED FILTER BASED CIRCULATING FILTRATION SYSTEM FOR MEASURING DEPLETION KINETICS OF CIRCULATING TUMOR CELLS (CTCS)**
Yi Zhang¹, Songtao Dou¹, Qingmei Xu¹, Shitao Shen¹, Qi Wang², Wei Wang^{1,3,4}
¹Peking University, CHINA, ²Second Affiliated Hospital of Dalian Medical University, CHINA, ³National Key Laboratory of Advanced Micro and Nano Manufacture Technology, CHINA, and ⁴Beijing Advanced Innovation Center for Integrated Circuits, CHINA
- M211.j MICROFILTER DEVICE FOR CANCER CELL DETECTION FROM PATIENT'S WHOLE BLOOD AND CONTENTIOUS CANCER MONITORING**
Yuta Nakashima¹, Suzuka Ishikawa¹, Aoi Ogata¹, Yoichi Saito¹, Seitaro Kumamoto², Keiichiro Yasuda², Yusuke Kitamura¹, Masaaki Iwatsuki¹, Hideo Baba¹, Toshihiro Ihara¹, Yoshitaka Nakanishi¹
¹Kumamoto University, JAPAN and ²Ogic Technologies Co., Ltd., JAPAN
- M212.j OPTIMIZATION OF A MICROFLUIDIC SYSTEM FOR AUTOMATED DETECTION OF CHOLANGIOCARCINOMA CELLS IN BILE FOR PROGNOSIS AND EARLY DIAGNOSIS**
Yu-Ting Su¹, Yi-Cheng Tsai¹, Chien-Jui Huang², Nai-Jung Chiang^{3,4}, Anandaraju Bandaru⁵, Shang-Cheng Hung⁵, Yan-Shen Shan², Gwo-Bin Lee¹
¹University of Tsing Hua, TAIWAN, ²University of Cheng Kung, TAIWAN, ³Taipei Veterans General Hospital, TAIWAN, ⁴National Health Research Institutes, TAIWAN, and ⁵Academia Sinica, TAIWAN

- T209.j A FLUIDIC NANOFORST HERRINGBONE CHIP FOR IN SITU MIRNA AND PROTEIN PROFILING OF TUMOR-DERIVED EXTRACELLULAR VESICLES**
Yanli Gong¹, Jianzhou Feng¹, Chaoyong Yang^{1,2}, Lingling Wu¹
¹Shanghai Jiao Tong University School of Medicine, CHINA and ²Xiamen University, CHINA
- T210.j FLAME-MELT: A DIGITAL MELTING PLATFORM FOR QUANTITATIVE MULTIPLEX PROFILING OF DNA METHYLATION BIOMARKERS**
Yang Zhao, Weiwen Cui, Thomas R. Pisanic, Tza-Huei Wang
Johns Hopkins University, USA
- T211.j MICROFLUIDIC STRATEGY FOR SCREENING NK-CELL CYTOTOXICITY AGAINST CIRCULATING TUMOR CELL CLUSTERS**
Junhyun Park¹, Jaejeung Kim¹, Minjung Yoon¹, Hyo-Il Jung¹, Kyung-A Hyun²
¹Yonsei University, KOREA and ²Korea Electronics Technology Institute, KOREA
- T212.j PROBE-FREE SINGLE EXTRACELLULAR VESICLE SERS LANDSCAPES FOR MOLECULAR PROFILING OF THERAPY RESISTANCE IN GLIOBLASTOMA**
Mahsa Jalali¹, Laura Montermini¹, Yao Lu¹, Brian Meehan¹, Nadim Tawil¹, Carolina Del real Mata², Sara Mahshid², Janusz Rak¹
¹McGill University Health Center, CANADA and ²McGill University, CANADA
- W210.j ADVANCING KS-DETECT: IMPLEMENTING SLICER AND RAPID DNA EXTRACTION FOR KAPOSI'S SARCOMA DIAGNOSIS AT THE POINT OF CARE.**
Jason Manning¹, Juan Boza¹, Aggrey Semeere², Ethel Cesarman³, Jeffrey Martin⁴, David Erickson¹
¹Cornell University, USA, ²Infectious Diseases Institute, UGANDA, ³Weill Cornell Medical College, USA, and ⁴University of California, San Francisco, USA
- W211.j HIGHLY EFFICIENT ISOLATION AND MULTISTEP ANALYSIS OF TUMOR CELLS FROM WHOLE BLOOD**
Michael Knapp^{1,2}, Samir Kadić², Nils Paust^{1,3}, Jochen Hoffmann², Roland Zengerle^{1,3}
¹University of Freiburg, GERMANY, ²Robert Bosch GmbH, GERMANY, and ³Hahn-Schickard, GERMANY
- W212.j NOVEL CANCER MARKER-INDEPENDENT ENRICHMENT AND CAPTURE MICROFLUIDIC SYSTEMS TO ANALYZE THE HETEROGENEITY OF CIRCULATING TUMOR CELLS.**
Yoshinobu Sugitani¹, Kazunori Nagasaka², Yuko Miyagawa², Kazuki Takasaki², Teruo Fujii¹, Soo Hyeon Kim¹
¹University of Tokyo, JAPAN and ²Teikyo university, JAPAN
- W213.j PROFILING PHENOTYPIC HETEROGENEITY OF CIRCULATING TUMOR CELLS THROUGH SPATIALLY RESOLVED IMMUNOCAPTURE ON NANOPOROUS MICROPILLAR ARRAYS**
Peng Zhang
Shanghai Jiaotong University, CHINA

j - μTAS and Diagnostics

Nucleic-Acid Analysis and Genomics

- M213.j A FULLY INTEGRATED MICROFLUIDIC CARTRIDGE WITH FUNCTIONALIZED HYDROGEL-ASSISTED LAMP FOR COMPLETE SAMPLE-TO-ANSWER NUCLEIC ACID ANALYSIS**
Natish Kumar, Monika Kumari
Indian Institute of Technology, Jammu, INDIA
- M214.j AN INTEGRATED PLATFORM FOR DIGITAL DROPLET ASSAYS TOWARDS CRISPR/CAS12A-ASSISTED METHYLATION QUANTIFICATION**
Jasper Rietveld, Jeanne E. van Dongen, Loes I. Segerink
University of Twente, NETHERLANDS

- M215.j FLUIDICS-FREE GEL-GRID DIGITAL PCR**
Bhargav Krishna Pullagura¹, Sophia Ahktar¹, Sofonias N. Kedir¹, Abdi M. Kaba¹, Nhung Tran²,
Seunghyun Shin², Minsub Chung², Dohyun Kim¹
¹Myongji University, KOREA and ²Hongik University, KOREA
- M216.j ISOTHERMAL MICROFLUIDIC PCR ENABLES ACCELERATED PATHOGEN DETECTION AND DIAGNOSTICS**
MinGin Kim, Vijay Ravisankar, Yassin A. Hassan, Victor M. Ugaz
Texas A&M University, USA
- M217.j SELF-INTERFERENCE DIGITAL OPTOFLUIDIC GENOTYPING FOR INTEGRATED AND LABEL-FREE BACTERIA DETECTION**
Tianqi Zhou¹, Fan Yang¹, Hang Li¹, Huikai Xie¹, Guoliang Huang², Rongxin Fu¹, Shuailong Zhang¹
¹Beijing Institute of Technology, CHINA and ²Tsinghua University, CHINA
- M218.j ULTRAFast PHOTOTHERMAL DROPLET PCR BASED ON ACTIVE PLASMONIC FLUOROSURFACTANT**
Chit Yau Kuan, Chun Lung Ho, Guangyao Cheng, Yi-Ping Ho
Chinese University of Hong Kong, HONG KONG
- T213.j A WIDE DYNAMIC RANGE MULTIPLEX DIGITAL CRISPR CHIP FOR RAPID DETECTION AND ABSOLUTE QUANTIFICATION OF NUCLEIC ACIDS**
Liping Xia, Yu Wang, Yehong Gui, Weihong Yin, Qiangyuan Zhu, Tao Zhang, Wei Jin, Ying Mu
Zhejiang University, CHINA
- T214.j DROPLET MICROFLUIDIC PRODUCTION OF ACRYLOYL GELATIN MICROGELS FOR DROPLET DIGITAL LOOP-MEDIATED ISOTHERMAL AMPLIFICATION**
Jun Deng¹, Huidan Zhang^{1,2}, Biyi Xu¹
¹Shanghai University, CHINA and ²Harvard University, USA
- T215.j FULLY AUTOMATED, SAMPLE-TO-ANSWER DETECTION OF MIRNA DIRECTLY FROM WHOLE BLOOD WITH THERMALLY RESPONSIVE ALKANE PARTITIONS AND LIGATION LOOP-MEDIATED ISOTHERMAL AMPLIFICATION**
Evan H. Benke, Alejandra Bogusch, David Boegner, Ian M. White
University of Maryland, USA
- T216.j PLASMONICALLY ENHANCED ISOTHERMAL NUCLEIC ACID ASSAYS FOR PATHOGENIC BACTERIA IDENTIFICATION**
Tamer AbdelFatah¹, Mahsa Jalali^{1,2}, Sripdah Guptha Yedire¹, Imman I. Hosseini¹, Carolina del Real Mata¹,
Haleema Khan¹, Seyed Vahid Hamidi¹, Roozbeh Siavash Moakhar¹, Geoffrey Mckay², Dao Nguyen^{1,2},
Sara Mahshid¹
¹McGill University, CANADA and ²McGill University Health Centre, CANADA
- T217.j SENSITIVE MULTIPLEXED MICRORNA SPATIAL PROFILING AND DATA CLASSIFICATION FRAMEWORK FOR ASSESSING DRUG EFFICACY IN MURINE BREAST TUMORS**
Omar N. Mohd¹, Yu J. Heng², Lin Wang², Abhishek Thavamani², Erica S. Massicott², Gerburg M. Wulf²,
Frank J. Slack², Patrick S. Doyle¹
¹Massachusetts Institute of Technology, USA and ²Harvard Medical School, USA
- W214.j AN ELECTROMAGNETICALLY-DRIVEN PORTABLE MICROFLUIDIC SYSTEM FOR MULTIPLEX QRT-PCR DIAGNOSIS OF SARS-COV-2 AND INFLUENZA A/B VIRUSES**
Ko-Hua Lin¹, Chih-Hung Wang¹, Ying-Jun Lin², Wen-Yen Huang², Yan-Shen Shan², Huey-Pin Tsai²,
Gwo-Bin Lee¹
¹University of Tsing Hua, TAIWAN and ²University of Cheng Kung, TAIWAN

- W215.j ELECTROCHEMICAL LIQUID-INFUSED BIOSENSORS WITH NANO-STRUCTURED FEATURES FOR DETECTING BACTERIA IN COMPLEX MATRICES**
Sara Moetakef Imani¹, Enas Osman¹, Fatemeh Bakhshandeh¹, Shuwen Qian¹, Sadman Sakib¹, Michael MacDonald¹, Mark Gaskin², Igor Zhitomirsky¹, Deborah Yamamura², Yingfu Li¹, Tohid Didar¹, Leyla Soleymani¹
¹McMaster University, CANADA and ²Hamilton General Hospital, CANADA
- W216.j HIGHLY MULTIPLEXED DCAS9-MEDIATED NANO-ELECTROKINETIC DETECTION OF MUTATED DNA**
Taewan Kim¹, Sungjae Ha², Taehyun Kim¹, Sang Woo Seo¹, Sung Jae Kim¹
¹Seoul National University, KOREA and ²ProvaLabs, Inc., KOREA
- W217.j QUANTITATIVE AND SPATIALLY RESOLVED DETECTION OF MULTIPLEXED MICRORNA FROM PLANT TISSUE USING NANOLITER WELL ARRAYS**
Jennifer Fang, Patrick S. Doyle
Massachusetts Institute of Technology, USA
- W218.j TOWARDS AUTONOMOUS MEASUREMENT OF ANTIRETROVIRAL DRUGS WITH 3D-PRINTED MICROFLUIDICS**
Carrie H. Lin, Cosette Craig, Kelsey M. Leong, Megan M. Chang, Ayokunle O. Olanrewaju
University of Washington, USA

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Protein Analysis and Proteomics

- M219.j A SPECTROFLUIDIC DEVICE FOR CHARACTERIZING ENZYME KINETICS: APPLICATION PLASTIC DEPOLYMERIZATION**
Laurent Gosselin, Nan Jia, Charles Larouche, Jérémie Labelle, Bianca Huot, Jordan Zounmenou, André Bégin-Drolet, Jesse Greener
Université Laval, CANADA
- M220.j MICROSECOND H/D EXCHANGE VIA AN INTEGRATED MICROFLUIDIC ESI-MS SILICON DEVICE**
Neha Srikumar¹, Benjamin A. Garcia², David A. Issadore¹
¹University of Pennsylvania, USA and ²Washington University, USA
- M221.j RAPID, ELECTRONIC, ACCESSIBLE DETECTION OF SARS-COV-2**
Yeji Choi, SeyedSina Mirjalili, MD Ashif Ikbal, Sean McClure, Chao Wang
Arizona State University, USA
- T218.j A CLEAN-UP-BASED MICROFLUIDIC SAMPLE PREPARATION WORKFLOW FOR LOW-INPUT PROTEOMICS**
Aurélien Mohrbacher¹, Gemma Jacobs¹, Jolien Breukers¹, Iene Rutten¹, An Staes², Marcel Bühler², Francis Impens², Kris Gevaert², Jeroen Lammertyn¹
¹KU Leuven, BELGIUM and ²Ghent University, BELGIUM
- T219.j AM-DMF-SCP: INTEGRATED SINGLE-CELL PROTEOMICS ANALYSIS ON AN ACTIVE-MATRIX DIGITAL MICROFLUIDIC CHIP**
Kai Jin¹, Zhicheng Yang¹, Maolin Zhang^{1,2}, Siyi Hu¹, Hu Zhou¹, Hanbin Ma^{1,2}
¹Chinese Academy of Sciences, CHINA and ²University of Science and Technology of China, CHINA
- T220.j MICROFLUIDIC STRESS DEVICE TO DECOUPLE THE SYNERGISTIC EFFECT OF SHEAR AND INTERFACES ON ANTIBODY AGGREGATION**
Michael Gerlt¹, Eduard Meier¹, Fabian Dingfelder², Dominik Zürcher¹, Marius Müller², Paolo Arosio¹
¹ETH Zürich, SWITZERLAND and ²Janssen-Cilag AG, SWITZERLAND

- W219.j A MICROFLUIDIC SYSTEM THAT ALLOWS FOR SINGLE-CELL ANALYSIS OF THE ACTIVE PROTEOME**
Olivia Laxton
University of Chicago, USA
- W220.j HIGHLY SENSITIVE, MULTIPLEXED, AND ACCESSIBLE DIGITAL PROTEIN MEASUREMENT WITH MAGDROPLEX**
Jiumei Hu
Johns Hopkins University, USA
- W221.j PAT-ON-A-CHIP: MINIATURIZATION OF ANALYTICAL ASSAYS TOWARDS DATA-DRIVEN BIOPROCESS DEVELOPMENT AND OPTIMIZATION**
Inês F. Pinto¹, Fabien Abeille², Sebastian Giehring³, David Sergeant⁴, Veronique Chotteau¹, Aman Russom¹
¹*KTH Royal Institute of Technology, SWEDEN*, ²*Micronit, NETHERLANDS*, ³*PAIA Biotech, GERMANY*, and ⁴*Ipratech, BELGIUM*

j - μTAS and Diagnostics

Sample Preparation and Preservation

- M222.j A POINT-OF-CARE MICROFLUIDIC METHOD FOR LYSIS OF HIV AND PURIFICATION OF HIV RNA FROM SERUM**
Erin K. Heiniger, Kevin P. Jiang, Sujatha Kumar, Paul Yager
University of Washington, USA
- M223.j AUTOMATED SEPSIS DIAGNOSTICS UTILIZING VANCOMYCIN AND ALLANTOIN CONJUGATED TO POLYDOPAMINE COATED MAGNETIC NANOPARTICLES**
Abdurhaman Teyib Abafogi¹, Jinyeop Lee^{1,2}, Joochan Kim¹, Sei Won Lee³, Seongsoo Jang³, Sungsu Park¹
¹*Sungkyunkwan University, KOREA*, ²*KingoBio Inc., KOREA*, and ³*University of Ulsan, KOREA*
- M224.j EVALUATION OF ERYTHROCYTES AND MUCUS REDUCTION METHODS IN PAP SAMPLES FOR AUTOMATED CERVICAL CANCER SCREENING WITH HIGH-THROUGHPUT IMAGING FLOW CYTOMETRY PLATFORM CELLFACE**
Ellen Emken, Julia Sistermanns, Christian Klenk, Marion Kiechle, Wolfgang Utschick, Gregor Weirich, Oliver Hayden
Technical University of Munich, GERMANY
- M225.j OPEN-CHANNEL DROPLET MICROFLUIDIC PLATFORM FOR PASSIVE GENERATION OF HUMAN SPERM MICRODROPLETS**
Jodie C. Tokihiro, Wan-chen Tu, Jian Wei Khor, Ulri N. Lee, Erwin Berthier, John K. Amory, Thomas J. Walsh, Charles H. Muller, Ashleigh B. Theberge, Tristan M. Nicholson
University of Washington, USA
- T221.j A COST-EFFECTIVE PAPER-DEVICE FOR FILTRATION, CONCENTRATION AND EXTRACTION OF ENVIRONMENTAL DNA (EDNA)**
Chau H. Pham¹, Birgitte K. Hønsvall², Erik A. Johannessen¹, Bao Q. Ta¹
¹*University of Southeastern, NORWAY* and ²*Zimmer & Peacock AS, NORWAY*
- T222.j A SIMPLE METHOD FOR THE LIBERATION OF MICRO-ORGANIC AND MICROBIOLOGICAL ENTITIES FROM SUBSTRATES USING A WATER-SOLUBLE RELEASE LAYER**
Juan Pablo Aguil¹, Marta Duch¹, Pau Mercier¹, Adrian Rodríguez-Lau¹, Lara Cantarero², Mònica Roldán^{2,3}, José A. Plaza¹
¹*Instituto de Microelectrónica de Barcelona (IMB-CNM (CSIC)), SPAIN*, ²*Sant Joan De Déu Institut De Recerca, SPAIN*, and ³*Centro de Investigación Biomédica en Red de Enfermedades Raras (CIBERER), SPAIN*

- T223.j EASYBAT: A SAMPLE PREPARATION-TO-ANALYSIS WORKFLOW FOR SIMPLIFYING THE BASOPHIL ACTIVATION TEST FOR FOOD ALLERGY ASSESSMENT**
Nicolas Castano, An Nguyen, Kaiser Chua, Mindy Tsai, Manisha Desai, Sayantani B. Sindher, R. Sharon Chinthrajah², Stephen J. Galli, Sindy K.Y. Tang
Stanford University, USA
- T224.j HOMERNA+ AND HOMERNAMINI: DEVELOPMENT OF A NEW GENERATION OF TOOLS TO STABILIZE RNA IN BLOOD COLLECTED IN REMOTE STUDIES**
Madeleine P. Eakman¹, Filip Stefanovic¹, Liam Knudsen¹, Ingrid Jeacopello¹, Jean Berthier¹, Cosette Craig¹, Kelsey M. Leong¹, Karen N. Adams¹, Ayokunle O. Olanrewaju¹, Sanitta Thongpang^{1,2}, Tristan Nicholson¹, Erwin Berthier¹, Amanda J. Haack¹, Ashleigh B. Theberge¹
¹*University of Washington, USA* and ²*Mahidol University, THAILAND*
- W222.j A MICROFLUIDIC DEVICE FOR RAPID ASSEMBLY OF LAYERED FILMS FOR CELL COATING**
So-Yeon Jung, Chang-Soo Lee
Chungnam National University, KOREA
- W223.j AUTOMATED PLATFORM FOR THE SAMPLE PREPARATION OF SEQUENCING: FROM SAMPLE TO LIBRARY PREPARATION**
Mélissa Baque, Nicolas Sarrut-Rio, yVES Fouillet, François Boizot, Mahfod Benessalah, Jean-Maxime Roux
University Grenoble, Alpes, FRANCE
- W224.j ENHANCING TIME-RESOLVED CRYO-EM SAMPLE PREPARATION WITH PARYLENE-BASED THIN-FILM MICROFLUIDICS**
Haerang Hwang¹, Bum-joon Jung², Jiho Park¹, Yujin Jung¹, Yo-han Choi¹, Jin Young Kang¹, Wonhee Lee¹
¹*Korea Advanced Institute of Science & Technology (KAIST), KOREA* and ²*University of Chicago, USA*
- W225.j ON-CHIP DIELECTROPHRETIC ENRICHMENT AND MALDI-TOF MS IDENTIFICATION OF PATHOGENS FOR BLOODSTREAM INFECTIONS**
Xiaolin Wu¹, Xin Cheng², Shuiling Guo², Wenbin Du¹
¹*Chinese Academy of Sciences, CHINA* and ²*Beijing Friendship Hospital, Capital Medical University, CHINA*

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Tissue Analysis (Including Spatial Omics)

- M226.j WHOLE TRANSCRIPTOME SPATIAL GENE EXPRESSION WITH SINGLE CELL SCALE RESOLUTION IN FORMALIN-FIXED, PARAFFIN-EMBEDDED (FFPE) TISSUES USING VISIUM HD**
Zixue Ma, Jerald Sapida, Monica Nagendran, David Sukovich, Naishitha Anaparathy, Joey Arthur, David Patterson, Augusto M. Tentori
10x Genomics, USA
- T225.j HIGH-RESOLUTION AND HIGH-SENSITIVITY MASS SPECTROMETRY IMAGING SYSTEM BY PICOLITER DROPLET ELECTROSPRAY IONIZATION**
Peng Zhao, Jinlei Yang, Xinrong Zhang, Sichun Zhang, Wenhui Wang
Tsinghua University, CHINA
- W226.j TAGNBAG: SPATIAL DNA BARCODING ASSISTED BY MICROFLUIDICS FOR QUANTIFICATION OF TUMOR HETEROGENEITY**
Ruth Y. Yu^{1,2}, Aditya Kashyap^{1,2}, Govind V. Kaigala^{1,2}
¹*University of British Columbia, CANADA* and ²*Vancouver Prostate Centre, CANADA*

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μTAS and Lab-on-a-Chip

- M227.j A MICRO AND NANOFLUIDIC LAB ON A CHIP SYSTEM FOR DNA EXTRACTION AND ANALYSIS**
Franziska M. Esmek, Louise Von Lacroix, Phil Grzybeck, Irene Fernández-Cuesta
University of Hamburg, GERMANY
- M228.j ACTIVE-MATRIX CONTROL OF HIGHLY MULTIPLEXED MICROFLUIDIC CONDITIONS**
Navid Ghorashian¹, Ziqi Jiao¹, Gengjie Jia¹, Heidi Klumpe², Andrey Rzhetsky¹, Michael Elowitz², Savas Tay¹
¹University of Chicago, USA and ²California Institute of Technology, USA
- M229.j BIOMOLECULAR TRAPPING AND COUNTING TO DEPLETION: QUANTIFICATION OF SAMPLE CONCENTRATION WITH A MICROFLUIDIC-ASSISTED NANOPORE SENSOR**
Morteza Safari, Juliana Chawich, Ali Najafi Sohi, Martin Charron, Vincent Tabard-Cossa, Michel Godin
University of Ottawa, CANADA
- M230.j CONSTRUCTING AN EX-VIVO HUMAN OLFACTORY SYSTEM ON A CHIP**
Mahmoud A. Sakr, Tahmid Hussain, Maggie Li, Aaron Au, Aaron R. Wheeler, Michael Garton
University of Toronto, CANADA
- M231.j DYNAMICALLY MODULATED CORE-SHELL DROPLETS TO STUDY THE EFFECT OF MECHANICAL PROPERTIES ON STEM CELL FATE**
Shuai Bu
University of Glasgow, UK
- M232.j HEXAGONAL MICROFLUIDIC MIXING PROBE FOR FLOW CONCENTRATION GRADIENTS ON SUSPENDED CELLS**
Dima S. Ali^{1,2}, Ayoub Glia¹, Waqas Waheed¹, Pavithra Sukumar¹, Mohammad A. Qasaimeh^{1,2}
¹New York University, Abu Dhabi, UAE and ²New York University, USA
- M233.j INNOVATIVE DETECTION OF BIOLOGICAL TARGETS USING A GMR SENSOR-BASED BIOCHIP PROTOTYPE FOR FUTURE EARLY DIAGNOSIS**
Agathe Trillat¹, Maïkane Deroo¹, Manon Giraud¹, Elodie Fabre-Paul¹, Aurélie Solignac¹, Pierre Bonville¹, Frédéric Coneggo¹, Amine Afroun¹, Stéphanie Simon¹, Florence Doucet-Populaire², Cécile Feraudet-Tarisse¹, Guenaelle Jasmin-Lebras¹
¹CEA Saclay, FRANCE and ²IPBC, FRANCE
- M234.j ION SENSING IN DIGITAL MICROFLUIDICS FOR CELL MICROENVIRONMENT MONITORING**
Mohammad Khorsand Ahmadi^{1,2,3}
¹Eindhoven University of Technology, NETHERLANDS, ²Institute for Complex Molecular Systems (ICMS), NETHERLANDS, and ³Max Planck Institute for Polymer Research, GERMANY
- M235.j LUNG TUMOR MICROENVIRONMENT LAB CHIP FOR IMMUNOTHERAPY DRUGS AND IMMUNE-CELL MIGRATION ANALYSIS**
Xiao-Han Wang¹, Sin-Huei Wang¹, Kang-Yun Lee², Wei-Lun Sun³, Cheng-Hsien Liu¹
¹National Tsing Hua University, TAIWAN, ²Taipei Medical University, TAIWAN, and ³Pythia Biotech Ltd., TAIWAN
- M236.j MICROFLUIDIC MULTI-FACETED BLADDER TUMOR MODEL FOR BIOFILM POTENTIATES CANCER-PROMOTING EFFECTS**
Mingze Zhu, Yanlin Deng, Bee Luan Khoo
City University of Hong Kong, HONG KONG

- M237.j ONE-STEP MULTI-MARKER IMMUNOASSAY SYSTEM FOR PRETERM BIRTH RISK DETECTION IN VAGINAL SECRETIONS**
Micaela S. Cristofori, Gloria Porro, Pierre-Emmanuel Thiriet, Carlotta Guiducci
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- M238.j PHOTOMASK-FREE DIGITAL PHOTOPATTERNING OF HYDROGELS IN SELF-ASSEMBLED CELL ARRAY (SACA) CHIPS FOR HIGH-THROUGHPUT CELLS SORTING**
Hsin-Ling Lee¹, Ren-Qui Wu², Fan-Gang Tseng¹
¹National Tsing Hua University, TAIWAN and ²CellEnvision Company Limited, TAIWAN
- M239.j RAPID LAMP-BASED COLORIMETRIC MRSA DETECTION USING A MICROFLUIDIC SYSTEM INTEGRATED WITH ACCELERATED ELECTROPHORETIC NUCLEIC ACIDS PURIFICATION**
Yung Ching Lee, Yang Bu, Sheng Ni, Yuze Liu, Anni Hu, Levent Yobas
Hong Kong University of Science and Technology, HONG KONG
- M240.j SELECTIVE AND SENSITIVE MIRNA DETECTION THROUGH A POROUS ELECTRONIC SENSOR**
Zetao Zhu, Taiga Ajiri, Takao Yasui
Tokyo Institute of Technology, JAPAN
- M241.j UBINAAT: MULTIPLEXED, DISEASE-AGNOSTIC NUCLEIC ACID DIAGNOSTIC TOOL FOR POINT-OF-CARE SIMULTANEOUS CLINICAL PATHOGEN DETECTION**
Kevin P. Jiang, Erin K. Heiniger, Steven Bennett, Sujatha Kumar, Paul Yager
University of Washington, USA
- T226.j 3D-PRINTED LAB-ON-A-CHIP FOR AUTOMATED INSULIN MONITORING BY SCREEN-PRINTED ELECTRODE SENSORS**
Steffen Winkler¹, Natalie Plewka¹, Tanja Zidarič², Boštjan Vihar², Tina Maver², Uroš Maver², Janina Bahnmann¹
¹University of Augsburg, GERMANY and ²University of Maribor, SLOVENIA
- T227.j A PAPER-BASED MICROFLUIDIC DEVICE FOR THE DETECTION OF CYSTEINE USING GOLD NANOPARTICLES FROM WHOLE-BLOOD**
Monika Kumari, Natish Kumar
Indian Institute of Technology, Jammu, INDIA
- T228.j AN INTERGATED PLATFORM ENABLING ISOLATING AND ELECTROPORATION TRANSFECTING OF CIRCULATING TUMOR CELLS HIGH EFFICIENTLY**
Songtao Dou¹, Qingmei Xu¹, Shitao Shen¹, Qi Wang², Yi Zhang¹, Wei Wang^{1,3,4}
¹Peking University, CHINA, ²Second Affiliated Hospital of Dalian Medical University, CHINA, ³National Key Laboratory of Advanced Micro and Nano Manufacture Technology, CHINA, and ⁴Beijing Advanced Innovation Center for Integrated Circuits, CHINA
- T229.j CHICK EMBRYO SEXING ‘SIMPLE-FIED’ WITH A SAMPLE-IN-RESULT-OUT RPA LAB ON-A-CHIP PLATFORM**
Simão M.B. Santos, Dries Vloemans, Celine Wegsteen, Dragana Spasic, Jeroen Lammertyn
KU Leuven, BELGIUM
- T230.j CTC/CTM/EMT BASED COLORECTAL CANCER PROGNOSIS ON AN AUTOMATIC HIGH-DENSITY SELF-ASSEMBLE CELL ARRAY (HD-SACA) CHIP SYSTEM**
Fan-gang Tseng, Xin-Zhi Lee, Huan-Wei Liao, Hsiang-Wei Liu, Yun-Jie Hao, Hsin-Yu Yang, Ren-Qui Wu, Fan-gang Tseng
National Tsing Hua University, TAIWAN

- T231.j ECONOMICAL POINT-OF-CARE DEVICE FOR ELECTRICAL DETECTION OF A LARGE NUMBER OF BIOMARKERS FROM PLASMA**
Chih-Lin Chen, Thomas W. Cowell, Aaron Jankelow, Mohammadreza Ghaderinia, Enrique Valera, Rashid Bashir, Hee-Sun Han
University of Illinois, Urbana-Champaign, USA
- T232.j HIGH-THROUGHPUT 3D MICROFLUIDIC SKIN-ON-A-CHIP PLATFORM FOR COSMETIC COMPOUNDS TESTING**
Sunbeen Choi¹, Stephen Rhee¹, Sofia Madrigal Gamboa¹, Jungeun Lim^{1,2}, Mikang Shim¹, Noo Li Jeon¹
¹Seoul National University, KOREA and ²Georgia Institute of Technology, USA
- T233.j INTEGRATED MICROFLUIDIC DEVICE FOR BACTERIAL DNA PURIFICATION AND AMR GENES DETECTION**
Adrián Sánchez-Visedo¹, Ana Costa-Ribeiro¹, Sofia Araújo¹, Rui Campos¹, Andrey Ipatov¹, Marta Prado²
¹International Iberian Nanotechnology Laboratory, PORTUGAL and ²University of Santiago, SPAIN
- T234.j LAB-ON-A-PARTICLE APPROACH FOR MULTIPLEXED IMMUNOASSAYS USING A TRYAMIDE-BASED DROPLET-FREE SIGNAL AMPLIFICATION STRATEGY**
Alyssa Arnheim, Alice Matsuda, Andrew Tran, Boyi Wang, Dino Di Carlo
University of California, Los Angeles, USA
- T235.j MECHANOPORATION OF HUMAN T-LYMPHOCYTES USING MICROFLUIDIC CONFINING CHANNEL ARRAY**
Yi Liu¹, Raymond Hiu Wai Lam², Mo Yang¹
¹Hong Kong Polytechnic University, HONG KONG and ²City University of Hong Kong, HONG KONG
- T236.j MULTIPLEXED COLORIMETRIC TEST ON A LENSLESS CMOS IMAGE SENSOR**
Xinyue Hu, Laura C. Penuela Cardenas, Young C. Han, Nassib Hassouna, Lan Anh Huynh, Mary Wang, Emma Wong, Sebastian Wachsmann-Hogiu
McGill University, CANADA
- T237.j OPTIMIZATION OF THE BIORECOGNITION SURFACE OF GRAPHENE FIELD-EFFECT SENSORS FOR THE DETECTION OF BIOMARKERS**
Madline Sauvage¹, Amira Bencherif¹, Charlotte Allard², Claudia M. Bazán¹, Richard Martel², Delphine Bouilly¹
¹Université de Montréal, CANADA and ²Polytechnique Montréal, CANADA
- T238.j PRECLINICAL TESTING OF HEMOSTATIC BIOMATERIALS USING A NOVEL MICROFLUIDIC PLATFORM**
Alireza Zabihhesari, Sajjad Fanaee, Mark Filiaggi, Vahid Adibnia
Dalhousie University, CANADA
- T239.j RAPID, CAPILARY-DRIVEN IMMUNOASSAYS FOR STI DETECTION**
Elijah J.O. Barstis, Joowon Park, Jonah Rodasta, Brian Geiss, David Dandy, Charles Henry
Colorado State University, USA
- T240.j SINGLE FETAL NUCLEATED RED BLOOD CELL (FNRBC) ISOLATION BY HIGH-DENSITY SELF-ASSEMBLED CELLS ARRAY CHIP SYSTEM FOR NON-INVASIVE PRENATAL TEST**
Fan-Gang Tseng^{1,2}, Mu-Chi Huang¹, Hsin-Yu Yang^{1,2}, Zhe-Xian Lin¹, Ren-Qui Wu³
¹National Tsing Hua University, TAIWAN, ²Academia Sinica, TAIWAN, and ³CellEnvision Company Limited, TAIWAN
- T241.j VESSEL STIFFNESS AND CYCLIC STRETCH BOOST NEUTROPHIL EXTRACELLULAR TRAP FORMATION**
Manijeh Khanmohammadi^{1,2}, Sergio Aguilera Suarez^{1,2}, Chanly Chheang¹, Karlheinz Peter^{1,3}, Khashayar Khoshmanesh^{1,2}, Sara Baratchi^{1,3}
¹Baker Heart and Diabetes Institute, AUSTRALIA, ²RMIT University, AUSTRALIA, and ³University of Melbourne, AUSTRALIA

- W227.j A DISPOSABLE, PASSIVE MICROFLUIDIC DEVICE FOR POINT-OF-CARE DETECTION OF SARS-COV-2 ANTIBODY USING HEMAGGLUTINATION ASSAY**
Munawar Jawad, Afroza Akhi, Bruce Gale
University of Utah, USA
- W228.j A PROGRAMMABLE MICROFLUIDIC PLATFORM FOR STUDYING BACTERIA CHEMOTAXIS AND CHEMOTAXIS-BASED CELL SORTING**
Xiaobo Li, Yanqing Song, Andrew Glidle, Cindy Smith, William Sloan, Huabing Yin
University of Glasgow, UK
- W229.j AUTOMATION OF FLUORESCENCE-ACTIVATED DROPLET RELEASE WORKFLOW BY DEEP LEARNING-BASED DROPLET DETECTOR**
Guangyao Cheng, Yi-Ping Ho
Chinese University of Hong Kong, CHINA
- W230.j BOOSTING ANALYTICAL CHEMISTRY WITH MICROFLUIDICS: INTRODUCING LAMINAR FLOW SPECTROELECTROCHEMISTRY**
Linlin Liu, Nan Jia, Ian Burgess, Jesse Greener
Université Laval, CANADA
- W231.j DEEP DROPLET DIGITAL NUCLEIC ACID QUANTIFICATION BY OMNI-DIRECTIONAL EJECTION ON DIGITAL MICROFLUIDICS**
Aman Lyu, Liang Wan, Ren Shen, Pui-In Mak, Rui P. Martins, Yanwei Jia
University of Macau, CHINA
- W232.j FAST SIZE PROFILING OF CHROMOSOMAL DNA USING OPTOFLUIDIC DEVICES**
Tzu-Tsai Chu^{1,2,4}, Yii-Lih Lin², Jia-Wei Yeh², Guia Abaya Cline^{2,3}, Chia-Fu Chou²
¹National Taiwan University, TAIWAN, ²Academia Sinica, TAIWAN, ³National Central University, TAIWAN, and ⁴Taiwan International Graduate Program (TIGP), TAIWAN
- W233.j HIGH-THROUGHPUT GENERATION OF AQUEOUS TWO-PHASE MICROCAPSULES USING MICROFLUIDIC BUBBLE-TRIGGERING**
Sixiang Rao, Yifan Liu, Long Chen, Weiliang Zhi
ShanghaiTech University, CHINA
- W234.j INTEGRATED MULTISENSOR CHIP WITH DENSE-ELECTROPLATED REFERENCE ELECTRODE FOR GOAT ESTRUS DETECTION**
Hsiang Wang, Che-Hsin Lin, Wei-Sin Kao, Dai-En Li
National Sun Yat-sen University, TAIWAN
- W235.j LABEL-FREE QUANTIFICATION ACROSS TISSUE BARRIERS IN ORGAN-ON-A-CHIP SYSTEMS**
Niels W.J. Klement¹, Roel Poppen¹, Pim de Haan¹, Daniel R. Duijnste^{1,2}, Vika Telle¹, Alexandar Staykov², Wesley R. Browne¹, Elisabeth M.J. Verpoorte¹
¹University of Groningen, NETHERLANDS and ²Kyushu University, JAPAN
- W236.j MICROFLUIDIC DEVICE MIMICKING PERIODONTUM MICROARCHITECTURE**
Abinaya R¹, Lakshmi Krishnan¹, Suresh Rao¹, Moeto Nagai², Shantanu Pradhan¹, Tuhin S. Santra¹
¹Indian Institute of Technology, Madras, INDIA and ²Toyohashi University of Technology, INDIA
- W237.j MULTIPLEXED DETECTION OF PATHOGENIC RNAs BASED ON MICROFLUIDIC CELL-FREE PROTEIN SYNTHESIS**
Donghyun Han¹, Yurim Kim¹, Yu Jin Park², Dong-Myung Kim²
¹Korea Advanced Institute of Science & Technology (KAIST), KOREA and ²Chungnam National University, KOREA

- W238.j PASSIVELY PRESSURE-BALANCED MICROFLUIDIC DEVICE FOR NEUTROPHIL MIGRATION ANALYSIS**
Yehyun Choi, Subhash B. Arya, Carole A. Parent, Euisik Yoon
University of Michigan, USA
- W239.j PUMPLESS BLOOD SEPARATION PLATFORM WITH MAGNETIC REPLUSION FORCE FOR POINT-OF-CARE TESTING**
Dong-Uk Han, Young Ki Hahn
Kyungpook National University, KOREA
- W240.j ROBUST SMARTPHONE-BASE PHENOTYPIC ANTIBIOTIC SUSCEPTIBILITY TESTING INCORPORATING A DAM DIVERSION CONCENTRATION GRADIENT GENERATOR**
Shunji Li, Wan Chao, Longyu Yi, Peng Chen, Bi-Feng Liu
Huazhong University of Science and Technology, CHINA
- W241.j TOWARDS A MULTIPLEXED HORMONAL SENSING MICROFLUIDIC PLATFORM: DEVELOPMENT OF A NOVEL ELECTROCHEMICAL APTASENSOR FOR THE DETECTION OF LUTEINISING HORMONE**
Marie-Charlotte Horny^{1,2}, Hiu Mun Man¹, Pierre-Emmanuel Bouet³, Brice Calvignac², Isabelle Le Potier¹, Jean Gamby¹
¹Paris-Saclay University, FRANCE, ²Angers University, FRANCE, and ³Angers University Hospital Center, FRANCE
- W242.j VORTEX MICROSCALE ELECTROPORATOR FOR GENETIC MODIFICATION OF PRIMARY CELLS**
Hyun Woo Sung, Soojung Claire Hur
Johns Hopkins University, USA

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Late News

- M541.j 3-D PRINTED BIOMIMETIC COLLECTORS FOR INGESTIBLE CAPSULE TISSUE BIOPSY**
Michael A. Straker, Joshua A. Levy, Reza Ghodssi
University of Maryland, USA
- M542.j A RAPID AND BUBBLE-FREE PCR THROUGH OSCILLATORY DISPLACEMENT ON A CENTRIFUGAL MICROFLUIDIC PLATFORM**
Tae-Hyeong Kim, Daniel Brassard, Christina Nassif, Dillon Da Fonte, Teodor Veres
National Research Council, CANADA
- M543.j DEVELOPMENT OF A LOW BARRIER-TO-ENTRY MICROFLUIDIC CHIP FOR HIGH THROUGHPUT CLONAL CULTURES**
Eve Petit, Fanny-Meï Cloarec-Ung, Delphine Bouilly, David J.H.F. Knapp
Université de Montréal, CANADA
- M544.j HIGH-PRECISION CELL CLASSIFICATION THROUGH MECHANICAL TRAIT ANALYSIS IN MICROFLUIDIC SYSTEMS USING MULTIPLEX IMAGE MACHINE LEARNING**
Yaling Liu, Khayrul Islam, Yuwen Zhao
Lehigh University, USA
- M545.j REAGENT-FREE ELECTROCHEMICAL BIOSENSOR UTILIZING MOLECULARLY IMPRINTED POLYMERS FOR SINGLE-STEP DETECTION OF TROPONIN I IN BIOLOGICAL SAMPLES**
Mahmoud Abdelhakem, Arash Khorrami Jahromi, Hamed Shieh, Roozbeh Siavash Moakhar, Carolina del Real Mata, Sara Mahshid
McGill University, CANADA

- M546.j** **ULTRA-LOCALIZED IN-VIVO PROFILING OF BRAIN NEUROCHEMISTRY WITH SILICON INTEGRATED NANODIALYSIS PLATFORM DURING EPILEPTIC CORTICAL SEIZURES**
Weihua Shi, Keyin Li, Yu Ding, Alex Armstrong, Jonathan Sweedler, Yurii Vlasov
University of Illinois, Urbana Champaign, USA
- T541.j** **A 3D-PRINTED MICROFLUIDIC SENSOR PLATFORM FOR ONLINE BIOPROCESS MONITORING**
Christopher Heuer¹, Anton Enders², Jonathan Nyenhuis¹, Janina Bahnemann¹
¹*University of Augsburg, GERMANY* and ²*Leibniz University Hannover, GERMANY*
- T542.j** **AMPLIFICATION CASCADE FOR SARS-COV-2 DETECTION VIA DUAL STRUCTURE-SWITCHING APTAMERS**
Eun-Kyung Lim, Jaewoo Lim
Korea Research Institute of Bioscience and Biotechnology, KOREA
- T543.j** **EXPLORING EPIDIDYMAL CELL MECHANOTRANSDUCTION THROUGH MICROFLUIDIC SHEAR STRESS APPLICATIONS**
Sepideh Fakhari, Gabriel Campolina-Silva, Farnaz Asayesh, Laura Girardet, Marie-Pier Scott-Boyer, Arnaud Droit, Denis Soulet, Jesse Greener, Clémence Belleannée
Laval University, CANADA
- T544.j** **NANOPARTICLE-BASED ASSAY FOR MICRORNA PROFILING FROM UNPROCESSED BLOOD PLASMA: A NEW PREDICTIVE TEST FOR ADVERSE PRENATAL OUTCOMES**
Marc Soler, Loukia Petrou, Brenna Parke, Sylvain Ladame
Imperial College London, UK
- T545.j** **THE DEVELOPMENT OF LATERAL FLOW IMMUNOASSAY FOR MONITORING VANCOMYCIN IN PERITONEAL DIALYSATE**
Yugyung Jung, Seonjong Kim, Min-Gon Kim, Sung Yang
Gwangju Institute of Science and Technology, KOREA
- W541.j** **A NOVEL MICROFLUIDIC PLATFORM FOR SIMULATING CIRCULATING TUMOR CELL GENERATION PROCESS AND DOWNSTREAM STUDY**
Zihan Yang, Yuanyuan Jiang, Zhihang Zhou, Mengsu Yang
City University of Hong Kong, CHINA
- W542.j** **CENTRIFUGAL MICROFLUIDIC DEVICE FOR RAPID SEROLOGICAL ANALYSIS OF FORENSICALLY-RELEVANT BODY FLUIDS**
Taylor G. Chambers¹, Renna L. Nouwairi¹, Larissa L. Cunha¹, Ashleigh Williamson¹, Liam Barry², Rachel Fleming², James P. Landers¹
¹*University of Virginia, USA* and ²*Institute of Environmental Science and Research Limited, NEW ZEALAND*
- W543.j** **HIGH THROUGHPUT CENTRIFUGAL MICROFLUIDIC DEVICE FOR ONE-STEP GENERATION OF CORE-SHELL MICROSPHERES**
Elioth Daniel Macias Frotto, Mallar Ray, Masoud Madadelahi
Tecnologico de Monterrey, MEXICO
- W544.j** **PAM-FREE DETECTION OF MICRORNA USING A NOVEL DROPLET CRISPR-CAS12A ASSAY WITH NUCLEIC ACID BREAKS AND NONCANONICAL REPORTERS**
Yufeng Zhao^{1,2}, Idorenyin Iwe², Afshin Abrishamkar^{1,2}, Ariel Corsano², Kayla Soon¹, Keith Pardee², Teodor Veres¹
¹*National Research Council, CANADA* and ²*University of Toronto, CANADA*

- W545.j** **TRANSMEMBRANE HYDROSTATIC PRESSURE DIFFERENTIALS AS A BIOPHYSICAL BASIS FOR AIR-LIQUID INTERFACE DIFFERENTIATION**
 Chen Li¹, Kaline Arnauts², Tanvi A. Javkar¹, Syeda S. Z. Zaidi¹, John W. Hanrahan¹, Alex Gregorieff¹, Christopher Moraes¹
¹*McGill University, CANADA* and ²*KU Leuven, BELGIUM*

k - Other Microfluidics and μTAS

Anti-Counterfeiting

- M242.k** **DUAL-FRAME QR-CODED MICROTAGGANT INTEGRATED WITH A HIDDEN WATERMARK**
 Junghyun Bae¹, Mingyeom Jeong¹, Cheolheon Park², Kibeom Kim³, Wook Park¹
¹*Kyung Hee University, KOREA*, ²*Seoul National University, KOREA*, and
³*Korea Institute of Science and Technology, KOREA*
- T242.k** **FOUR-DIMENSIONAL PHYSICAL UNCLONABLE FUNCTIONS FOR ANTI-COUNTERFEITING APPLICATIONS BASED ON ORGANIC PHOSPHOR CRYSTAL MICROPATTERNS**
 Jinsik Yoon¹, Healin Im^{2,3}, Dong Hyuk Park⁴, Sunkook Kim², Wook Park¹
¹*Kyung Hee University, KOREA*, ²*Sungkyunkwan University, KOREA*,
³*University of California, Berkeley, USA*, and ⁴*Inha University, KOREA*
- W243.k** **INTEGRATING VIVID-COLOUR, LINE ART HOLOGRAMS IN INJECTION MOLDED MICROFLUIDIC DEVICES AS ANTI-COUNTERFITTING SECURITY FEATURES**
 Keith Morton, Liviu Clime, Gaétan Veilleux, Luke Lukic, Kebin Li, Karine Turcotte, Matthew Shiu, Alex Boutin, Daniel Brassard, Teodor Veres
National Research Council of Canada, CANADA

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Artificial Intelligence and Microfluidics

- M243.k** **ARTIFICIAL INTELLIGENCE ASSISTED PHENOTYPIC ANTIMICROBIAL RESISTANCE TESTING ON SLIPCHIP**
 Zheyi Sheng, Yanan Ren, Qi Wang
Shanghai Jiao Tong University, CHINA
- T243.k** **NEUROMORPHIC-ENABLED VIDEO-ACTIVATED CELL SORTING FOR HIGH-ACCURACY CLASSIFICATION OF REGULAR RED BLOOD CELLS AND BLOOD-DISEASE-RELATED SPHEROCYTES**
 Weihua He, Junwen Zhu, Yongxiang Feng, Fei Liang, Wenhui Wang
Tsinghua University, CHINA

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Forensics, Archeology, and Paleontology

- M244.k** **BRIGHTFIELD-ONLY DETECTION OF SPERM (BODS) USING A GENERATIVE ADVERSARIAL NETWORK**
 Mohamed Elsayed¹, Harrison Edwards¹, Leticia Bodo¹, Melissa Schwandt², Julie F. French², Jonathan Millman³, Aaron R. Wheeler¹
¹*University of Toronto, CANADA*, ²*ANDE Corporation, USA*, and ³*Centre of Forensic Sciences, CANADA*

- T244.k RAPID AND COST-EFFECTIVE MULTIPLEX DETECTION OF SYNTHETIC CATHINONES AND AMPHETAMINES**
Kirsty J. Shaw¹, Oliver B. Sutcliffe¹, David Megson¹, Lauren McNeill^{1,2}, Patricia E. Linton¹
¹Manchester Metropolitan University, UK and ²Lancaster University, UK
- W244.k 'WISDOM TEETH': AMINO ACID DATING OF FOSSILIED TEETH**
Laila Patinglag¹, Marcus Hill¹, Marc R. Dickinson², Kirsty E.H. Penkman², Kirsty J. Shaw¹
¹Manchester Metropolitan University, UK and ²University of York, UK

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Military and Defense

- W245.k PRIMDEX: WHEN DEFENSE MEETS MICROFLUIDICS - FROM RAPID PROTOTYPING TO TIME & COST SAVING INJECTION MOLDING**
Jose A. Wippold, Patrick Kruk, Bryn L. Adams
Army Research Laboratory, USA

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Space and Space Travel

- M245.k MICROPREP MISSION: CENTRIFUGAL MICROFLUIDIC AUTOMATION OF COMPLEX SAMPLE PREPARATION PROCEDURES FOR THE INTERNATIONAL SPACE STATION**
Daniel Brassard¹, Karine Turcotte¹, Keith Morton¹, Liviu Clime¹, Matthias Geissler¹, Matthew Shiu¹, Tae-Hyeong Kim¹, Lidija Malic¹, Maxence Mounier¹, Christina Nassif¹, Dillon Da Fonte¹, Jason Ferreira¹, Emilie Leblanc Gaudreau¹, Mojra Janta-Polczynski¹, Sam Ng², Tim Fielding², Denis Charlebois³, Teodor Veres¹
¹National Research Council of Canada, CANADA, ²MDA, CANADA, and ³Canadian Space Agency, CANADA
- T245.k MICROSCALE THERMAL CONVECTION IN HYDROTHERMAL VENT SYSTEMS: ENVIRONMENTS FOR INTEGRATED PREBIOTIC CHEMISTRY AND EXOBIOLGY PROCESSES**
Vijay Ravisankar, Yassin A. Hassan, Victor M. Ugaz
Texas A&M University, USA

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X-Ray (E.G. Synchrotron) and E-Beam

- M246.k DROPLET-BASED MICROFLUIDICS REVEALS INSIGHTS INTO CROSS-COUPLING MECHANISMS OVER SINGLE-ATOM HETEROGENEOUS CATALYSTS**
Thomas Moragues¹, Georgios Giannakakis¹, Andrea Ruiz-Ferrando^{2,3}, Camelia N. Borca⁴, Thomas Huthwelker⁴, Aram Bugaev⁴, Andrew J. deMello¹, Javier Pérez-Ramírez¹, Sharon Mitchell¹
¹ETH Zürich, SWITZERLAND, ²ICIQ-CERCA, SPAIN, ³University of Rovira i Virgili, SPAIN, and ⁴Paul Scherrer Institute, SWITZERLAND
- T246.k LOW-COST CONTINUOUS MANUFACTURING OF MICROFLUIDIC PLATFORMS FOR REMOTE AUTOMATED ROOM TEMPERATURE X-RAY PROTEIN CRYSTALLOGRAPHY**
Sarathak Saha¹, Yaozy Chen¹, Silvia Russi², Darya Marchany-Rivera², Aina Cohen², Sarah L. Perry¹
¹University of Massachusetts, USA and ²SLAC National Accelerator Laboratory, USA

W246.k **DIFFRACTED X-RAY TRACKING METHOD FOR ANALYZING THE SEQUENTIAL DYNAMIC MOTION OF ION CHANNELS IN RESPONSE TO A CHEMICAL STIMULUS**

Yusuke Asagoe¹, Hirofumi Shimizu², Yoshikazu Hirai¹

¹Kyoto University, JAPAN and ²University of Fukui, JAPAN

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Late News

T546.k **GENERATIVE AI-BASED APPROACH FOR DESIGNING 3D-PRINTED MICROFLUIDIC DEVICES**

Kevin D. Hayes, Bailey M. Felix, Ryan D. Sochol

University of Maryland, USA

W546.k **ROBUST ACOUSTOFLUIDIC MICROMIXER BASED ON AN ULTRATHIN PDMS MICROBALLOON OSCILLATOR**

Yeji Yang, Heeyeon Kim, Dohyun Park, Abdi M. Kaba, Dohyun Kim

Myongji University, KOREA