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Biomedical Microdevices: BioMEMS and Biomedical Nanotechnology is an interdisciplinary periodical devoted to all aspects of research in the medical diagnostic and therapeutic applications of Micro-Electro-Mechanical Systems (BioMEMS) and nanotechnology for medicine and biology. Subjects of interest include the design, characterization, testing, modeling and clinical validation of microfabricated systems, and their integration on-chip and in larger functional units. The specific interests include systems for neural stimulation and recording, bioseparation technologies, biosensors, and micro/nanotechnologies for cell and tissue research, tissue engineering, cell transplantation, and the controlled release of drugs and biological molecules.

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The Center of BioModular Multi-Scale Systems for Precision Medicine (CBM^2) is an NIH-funded national Biotechnology Resource Center with expertise in designing, fabricating, and delivering to the biomedical community plastic-based microfluidic and nanofluidic devices that utilize liquid biopsies for disease detection and management. The Center seeks opportunities to disseminate its Core Technologies through Collaborative and Service Projects with clinicians and researchers. CBM^2 invites researchers at all levels to participate in its Visiting Scholar Program, to learn more about plastic-based microfluidics/nanofluidics for a variety of applications. With a strong infrastructure of equipment, expertise, and training programs, we are ready to help you.

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Awards

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Lab on a Chip and Dolomite Pioneers in Miniaturization Prize

An award given for young-to-mid-career scientists, the prize recognizes outstanding contributions to the understanding and development of miniaturized systems. Sponsored by Lab on a Chip, Dolomite, and Chemical and Biological Microsystems Society (CBMS).

Awards, continued

NIST and Lab on a Chip Art in Science Award

To draw attention to the aesthetic value in scientific illustrations while still conveying scientific merit, the MicroTAS Conference features an award titled, "Under the Looking Glass: Art from the World of Small Science" sponsored by NIST and Lab on a Chip. Applications are encouraged from any person attending the MicroTAS Conference and the winner will be selected by a panel of senior scientists in the field of MicroTAS.

Lab on a Chip Widmer Poster Award

The Widmer Poster Award Competition sponsored by the Lab on a Chip is an award given to recognize excellence amongst the annual MicroTAS Conference poster presenters. A review committee will select the overall best-presented poster from the poster session and all presented posters will be reviewed for this honor.

CHEMINAS Young Researcher Poster Awards

The Young Researcher Poster Award Competition sponsored by The Society for Chemistry and Micro-Nano Systems (CHEMINAS) to recognize excellence among its participants. A select group of poster judges will select, on a daily basis, the best presented posters from the poster session.

IMT Masken und Teilungen AG Microfluidics on Glass Poster Award

To be relevant to the spirit and intent of this Microfluidics on Glass Award, the advancement considered must address at least one of the following: • Use glass as a substrate material for a nano/microfluidic device where the unique optical, electrical, or surface properties of glass provide a profound advantage; • Demonstrate novel biosensing capabilities; • Exhibit hybridisation of glass with other materials (composites); • Establish design for manufacturability with materials and processes that have the potential to be scaled up through transfer to industry

MDPI Micromachines & the Chemical Biological Microsystems Society (CBMS) Flash Presentation Award Sponsors

The Flash Presentation Award sponsored by MDPI Micromachines & the Chemical Biological Microsystems Society (CBMS) to recognize excellent poster presenters with flash presentations to advertise their posters in a dynamic and creative manner. Attributes of excellence include being original and highly informative; other attributes including being visually appealing and using humor may be appreciated as well.

Awards, continued

Sensors (MDPI) Outstanding Sensors and Actuators, Detection Technologies Poster Award

The Outstanding Sensors and Actuators, Detection Technologies Poster Award Competition sponsored by Sensors (MDPI), is to recognize excellence among its participants.

Biomicrofluidics - Best Paper Award

The Best Paper Award sponsored by Biomicrofluidics to recognize the three best papers submitted to the MicroTAS Conference.

Workshops - Saturday, October 3

Workshop 1 **09:00 - 10:00**

PLUG AND PLAY: FLUIDS DELIVERY AND SYSTEM INTEGRATION

Nicolas Verplanck[1], Leanna Levine[2], Masumi Yamada[3], and Edmond Young[4],
[1]Atomic Energy and Alternative Energies Commission - CEA, FRANCE, [2]ALine, Inc, USA, [3]Chiba University, JAPAN, and [4]University of Toronto, CANADA

Workshop 4 **10:00 - 11:00**

ADVANCED MICROSCOPY TECHNIQUES FOR CELL IMAGING IN 3D

Petra Paiè[1], Billy Huang[2], and Vincent Haguet[3]
[1]Istituto di Fotonica e Nanotecnologie, CNR, ITALY, [2]Nebulum Technologies, TAIWAN and [3]CEA, Grenoble, FRANCE

Workshop 6 **08:00 - 09:00**

SURFACE FUNCTIONALIZATION IN MICROFLUIDICS

Sung Gap Im[1] and Ying-Chih Chang[2,3]
[1]Korea Advanced Institute of Science and Technology (KAIST), KOREA, [2]Academia Sinica, TAIWAN, and [3]Stanford University, USA

Workshop 7 **08:00 - 09:00**

SMALL-SCALE BIOREACTORS

Krist V. Gernaey[1], Wim De Malsche[2], Pei-Chen Chiang[3], and Katrin Rosenthal[4]
[1]Technical University of Denmark, DENMARK, [2]Vrije Universiteit Brussel, BELGIUM, [3]Corning Research Center, TAIWAN, and [4]Technical University Dortmund, GERMANY

Workshop 8 **09:00 - 10:00**

BIO/3D-PRINTING

Shrike Zhang[1], Mei He[2], Oni Basu[3], and Hongkai Wu[4]
[1]Harvard Medical School, USA, [2]University of Florida, USA, [3]University of Chicago, USA, and [4]Hong Kong University of Science and Technology, HONG KONG

Workshop 9 **10:00 - 11:00**

LIQUID BIOPSY - LATEST DEVELOPMENT IN THE CTC, EXOSOME AND FREE-FLOATING DNA FOR DIAGNOSIS

Sunitha Nagrath[1], Valérie Taly[2], Chih-Chen Chen[3], Leon Terstappen[4], Fikri Abali[4], and Afroditi Nanou[4]
[1]University of Michigan, USA, [2]Université de Paris, FRANCE, [3]National Tsing Hua University, TAIWAN, and [4]University of Twente, THE NETHERLANDS

Workshop 12 **11:00 - 12:00**

POINT OF CARE FOR GLOBAL HEALTH

Fernando Benito Lopez[1], Yuksel Temiz[2], Jacqueline Linnes[3], and Konstantinos Mitsakakis[4]
[1]Universidad del País Vasco, SPAIN, [2]IBM, SWITZERLAND, [3]Purdue University, USA, [4]University of Freiburg - IMTEK, GERMANY

Workshops - Sunday, October 4

Workshop 2 08:00 – 09:00

SENSOR INTEGRATION IN MICROFLUIDICS

Federico Paratore[1], Federica Caselli[2] and Chii-Wann Lin[3]
[1]IBM, SWITZERLAND, [2]University of Rome Tor Vergata, ITALY, and [3]National Taiwan University, TAIWAN

Workshop 3 09:00 – 10:00

OPEN SPACE MICROFLUIDIC

Jean Berthier[1], Thomas Gervais[2], and Mohammad Qasaimeh[3]
[1]University of Washington, USA, [2]Polytechnique Montréal, Canada, and
[3]New York University Abu Dhabi, UAE

Workshop 5 11:00 – 12:00

FLOW MODELING AND VISUALIZATION IN MICROFLUIDICS

Henrik Bruus[1], Wei-Hsin Tien[2], Rune Barnkob[3], and Yuki Minamoto[4]
[1]Technical University of Denmark, DENMARK,
[2]National Taiwan University of Science and Technology, TAIWAN,
[3]Technical University of Munich, GERMANY, and [4]Flowsquare+/Tokyo Institute of Technology, JAPAN

Workshop 10 10:30 – 11:30

ORGAN ON CHIP AND MICROFLUIDIC-BASED TISSUE ENGINEERING

Stephanie Descroix[1], Deok-Ho Kim[2], Rebecca Rose Pompano[3], and Anna Herland[4]
[1]Institut Curie - CNRS, FRANCE, [2]Johns Hopkins University School of Medicine, USA,
[3]University of Virginia, USA, and [4]KTH Royal Institute of Technology, SWEDEN

Workshop 11 10:00 – 11:00

DROPLET MICROFLUIDICS

Yegan Erdem[1], Håkan Jönsson[2], and Charles Baroud[3]
[1]Bilkent University, TURKEY, [2]KTH Royal Institute of Technology, SWEDEN, and
[3]Institut Pasteur, FRANCE

Day 1 - Monday, October 5

Opening Remarks – Welcome Address

08:00 **CBMS President**
Nicole Pamme, *University of Hull, UK*

College of Engineering - Georgia Institute of Technology, USA
Steve McLaughlin, Provost and Executive Vice President for Academic Affairs

University of Twente, THE NETHERLANDS
Victor van der Chijs, President Executive Board (CVB)

MicroTAS 2020 Conference Chairs
Séverine Le Gac, *University of Twente, THE NETHERLANDS*
Hang Lu, *Georgia Institute of Technology, USA*

Plenary Speaker Presentation I

Session Chairs
Je-Kyun Park, *Korea Advanced Institute of Science and Technology (KAIST), KOREA*
Manabu Tokeshi, *Hokkaido University, JAPAN*

08:25 - 09:25
MP-01 **ON-CHIP ROBOTICS: EMERGING FUNCTIONS IN MICROFLUIDIC ENVIRONMENT WITH INTEGRATION OF SENSORS & ACTUATORS**
Fumihito Arai
University of Tokyo, JAPAN

09:25 - 09:30 Transition Break

Poster Session M1

09:30 - 10:30 Presentations are listed by topic category with their assigned number starting on page 16.

Coffee Break (offline) or join the Daily Quiz Featuring Fluigent

10:30 - 10:45 Join us for a quick quiz hosted by Fluigent. We will use Kahoot! for this quiz, so please install Kahoot! on your smartphone or head over to www.kahoot.it in your web browser. Further instructions available upon joining. Winner will be selected to participate in "Who Wants to be a Millionthaire?" on Friday.

Panel Discussion I

Moderators:
Audrey Bowden, *Vanderbilt University, USA*
Wouter van der Wijngaart, *KTH Royal Institute of Technology, SWEDEN*

10:45 - 11:35 **WOMEN IN ACADEMIA**
Sabeth Verpoorte[1], Karen Cheung[2], and Lingling Shui[3]
[1]University of Groningen, THE NETHERLANDS, [2]University of British Columbia, CANADA, and [3]South China Normal University, CHINA

Panel Discussion II

Moderators:

Abraham P. Lee, *University of California, Irvine, USA*

Bastien Venzac, *University of Twente, THE NETHERLANDS*

10:45 - 11:35 **ETHICS IN SCIENCE**

Claire Ribrault[1], Adam Marcus[2], Philippa Ross[3], and Jun Fudano[4]

[1]Ateliers des Jours à Venir, FRANCE, [2]Retraction Watch, USA, [3]Royal Society of Chemistry, UK, and [4]Waseda University, JAPAN

Industrial Stage 1

Session Chairs

Sally Peyman, *University of Leeds, UK*

Shoji Takeuchi, *University of Tokyo, JAPAN*

10:45 - 11:10 1a - Zurich Instruments AG

FAST IMPEDANCE SPECTROSCOPY FOR CHARACTERIZATION AND COUNTING

11:10 - 11:35 1b - microfluidic ChipShop GmbH

WHY ISN'T ELON MUSK DOING MICROFLUIDICS?

Industrial Stage 2

Session Chairs

Daniel Citterio, *Keio University, JAPAN*

Mei He, *University of Florida, USA*

10:45 - 11:10 2a – Newormics LLC

VIVOCHIP: HIGH-CONTENT ANALYSIS OF DISEASE MODELS AND TOXICOLOGY STUDIES USING C. ELEGANS

11:10 - 11:35 2b – Biond Solutions B.V.

NOURISHING, STIMULATING AND MONITORING CELLS WITH MICROELECTRONICS

11:35 - 11:40 Transition Break

Poster Session M2

11:40 - 12:40 Presentations are listed by topic category with their assigned number starting on page 16.

12:40 **Adjourn for the Day**

Day 2 - Tuesday, October 6

Plenary Speaker Presentation II

Session Chairs

Nicole Pamme, *University of Hull, UK*

Wouter van der Wijngaart, *KTH Royal Institute of Technology, SWEDEN*

08:00 - 09:00

TP-02 **COVID-19: CHANGING DIRECTIONS OF A PERFECT STORM**

Herman Goossens

University of Antwerp, BELGIUM

09:00 - 09:05 Transition Break

09:05 - 09:35 Speaker Corner with Herman Goossens

Poster Session T3

09:05 - 10:05 Presentations are listed by topic category with their assigned number starting on page 16.

Coffee Break (offline) or join one of the Daily Quizzes featuring RAN Biotechnologies and Zurich Instruments

10:05 - 10:20 Join us for a quick quiz hosted by RAN Biotechnologies and Zurich Instruments. We will use Kahoot! for this quiz, so please install Kahoot! on your smartphone or head over to www.kahoot.it in your web browser. Further instructions available upon joining. Winner will be selected to participate in "Who Wants to be a Millionthaire?" on Friday.

Plenary Speaker Presentation III

Session Chairs

Don DeVoe, *University of Maryland, College Park, USA*

Joel Voldman, *Massachusetts Institute of Technology (MIT), USA*

10:20 - 11:20

TP-03 **CHEMICAL SYNTHESIS ENABLED BY MICROFLUIDICS, AUTOMATION, AND MACHINE LEARNING**

Klavs F. Jensen

Massachusetts Institute of Technology, USA

11:20 - 11:25 Transition Break

11:25 - 11:55 Speaker Corner with Klavs F. Jensen

Poster Session T4

11:25 - 12:25 Presentations are listed by topic category with their assigned number starting on page 16.

12:25 - 12:30 Transition Break

Shark Tank

Moderators

Luc Bousse, *Kryptos Biotechnologies, USA*
Michelle Khine, *University of California, Irvine, USA*
Sumita Pennathur, *University of California, Santa Barbara, USA*

12:30 - 13:30

Panel of Judges

Don Arnold, *Veristad, USA*
Holger Becker, *microfluidic ChipShop, GERMANY*
David Cohen, *Marker AG, USA*
Yolanda Fintschenko, *FounderTraction, USA*
JD Harriman, *Foundation Law Group, USA*
Dirk Heckel, *DH Diagnostics LLC, a Danaher Company, USA*
Carl Meinhart, *University of California, Santa Barbara, USA*
Tomoko Minagawa, *Global Brain Corporation, JAPAN*
Josh Molho, *Milo at ProteinSample, USA*
Akhil Saklecha, *Cleveland Clinic Ventures, USA*
Erez Podoly, *MightyGate, USA*

13:30 **Adjourn for the Day**

Day 3 - Wednesday, October 7

Keynote Presentation I

Session Chairs

Kazuma Mawatari, *University of Tokyo, JAPAN*

Fan-Gang Tseng, *National Tsing Hua University, TAIWAN*

08:00 - 08:30

WK-01 **LIQUID MARBLE BASED DIGITAL MICROFLUIDICS: FUNDAMENTAL PHYSICS AND APPLICATIONS**

Nam-Trung Nguyen, Chin Hong Ooi, Raja Vadivelu, Kamalalayam Rajan Sreejith, Jing Jin, Nhat-Khuong Nguyen, and Pradip Singha

Griffith University, AUSTRALIA

Keynote Presentation II

Session Chairs

Stephanie Descroix, *Institut Curie CNRS, FRANCE*

Jacqueline Linnes, *Purdue University, USA*

08:00 - 08:30

WK-02 **ENGINEERING AND MEASURING SYSTEMIC MULTI-ORGAN INTERACTIONS FOR TRANSLATIONAL APPLICATIONS**

Lor Huai Chong[2], Hsih Yin Tan[2], Louis Ong[1,2], Christopher Tostado[2], and Yi-Chin Toh[1]

[1]Queensland University of Technology, AUSTRALIA and [2]National University of Singapore, SINGAPORE

Keynote Presentation III

Session Chairs

Ian Papautsky, *University of Illinois, Chicago, USA*

Hongkai Wu, *Hong Kong University of Science and Technology, HONG KONG*

08:00 - 08:30

WK-03 **INKJET-BASED HIGH THROUGHPUT SINGLE CELL DISPENSING**

Karen C. Cheung

University of British Columbia, CANADA

Keynote Presentation IV

Session Chairs

Hugh Fan, *University of Florida, USA*

Chang-Soo Lee, *Chungnam National University, KOREA*

08:00 - 08:30

WK-04 **MICROFLUIDICS FOR LIQUID BIOPSY**

Chao Liu, Fei Tian, and Jiashu Sun

National Center for Nanoscience and Technology, CHINA

08:30 - 08:35 Transition Break

08:35 – 09:05 **Speaker Corners**
Nam-Trung Nguyen, Yi-Chin Toh, Karen C. Cheung, and Jiashu Sun

Poster Session W5

08:35 - 09:35 Presentations are listed by topic category with their assigned number starting on page 16.

09:35 - 09:40 Transition Break

Panel Discussion III

Moderators:

Yi Chin Toh, *Queensland University of Technology, AUSTRALIA*

Wouter van der Wijngaart, *KTH Royal Institute of Technology, SWEDEN*

09:40 - 10:30 **ADVICE FOR EARLY CAREERS IN ACADEMIA**

Albert van den Berg[1], Maria Tenje[2], Joel Voldman[3], Jacqueline Linnes[4], Yoon-Kyoung Cho[5], and Ya-Yu Chiang[6]

[1]University of Twente, THE NETHERLANDS, [2]Uppsala University, SWEDEN, [3]Massachusetts Institute of Technology, USA, [4]Purdue University, USA, [5]Ulsan National Institute of Science and Technology (UNIST), KOREA, and [6]National Chung-Hsing University, TAIWAN

Panel Discussion IV

Moderators:

Aaron Wheeler, *University of Toronto, CANADA*

Monica Brivio, *Micronit Microtechnologies, THE NETHERLANDS*

09:40 - 10:30 **WOMEN IN INDUSTRY**

Leanna Levine[1], Alissa Fitzgerald[2], Claudia Gaertner[3], France Hamber[4], Mika Mizunuma[5], and Hong Ya Ying[6]

[1]A-Line, USA, [2]A.M. Fitzgerald & Associates, USA, [3]microfluidic ChipShop, GERMANY, [4]Fluigent, FRANCE, [5]CRAIF, JAPAN, and [6]Shenzhen Shineway Technology Corp., HONG KONG

Industrial Stage 3

Session Chairs

Joan Bienvenue, *University of Virginia, USA*

Kevin Nichols, *Global Health Labs, USA*

09:40 - 10:05 3a – Springer Nature

BOOK PUBLISHING @ SPRINGER NATURE

10:05 - 10:30 3b – Fluigent in Partnership with BEOnChip

Fluigent/ BEOnChip: A STRATEGIC PARTNERSHIP TO BETTER ADDRESS THE NEEDS OF THE MULTIDISCIPLINARY FIELD OF ORGAN ON CHIP

Industrial Stage 4

Session Chairs

Cullen Buie, *Massachusetts Institute of Technology, USA*

Rebecca Pompano, *University of Virginia, USA*

09:40 - 10:05 4a – HiComp Microtech (Suzhou) Co., Ltd.

CHALLENGES AND SOLUTIONS FOR NEW DIAGNOSTIC CONSUMABLE MANUFACTURING

10:05 - 10:30 4b – Heidelberg Instruments

CHALLENGES AND SOLUTIONS FOR NEW DIAGNOSTIC CONSUMABLE MANUFACTURING

Coffee Break (offline) or join the Daily Quiz featuring Emulseo

10:30 - 10:45 Join us for a quick quiz hosted by Emulseo. We will use Kahoot! for this quiz, so please install Kahoot! on your smartphone or head over to www.kahoot.it in your web browser. Further instructions available upon joining. Winner will be selected to participate in "Who Wants to be a Millionthaire?" on Friday.

Poster Session W6

10:45 - 11:45 Presentations are listed by topic category with their assigned number starting on page 16.

11:45 - 11:50 Transition Break

Plenary Speaker Presentation IV

Session Chairs

Hang Lu, *Georgia Institute of Technology, USA*

Jonas Tegenfeldt, *Lund University, SWEDEN*

11:50 - 12:50

WP-04 **SKIN-INSPIRED MATERIALS, SENSORS AND APPLICATIONS**

Zhenan Bao

Stanford University, USA

12:50 - 12:55 Transition Break

12:55 - 13:25 Speaker Corner with Zhenan Bao

13:25 **Adjourn for the Day**

Day 4 - Thursday, October 8

Plenary Speaker Presentation V

Session Chairs

Yoon-Kyoung Cho, *Ulsan National Institute of Science and Technology (UNIST), KOREA*

Amy Herr, *University of California, Berkeley, USA*

08:00 - 09:00

ThP-05 **BIOCOMPATIBLE INTERFACES OF NANOSTRUCTURED POLYMER FOR ADVANCED MEDICAL AND HEALTHCARE DEVICES**

Madoka Takai

University of Tokyo, JAPAN

09:00 - 09:05 Transition Break

09:05 – 09:35 Speaker Corner with Madoka Takai

Poster Session Th7

09:05 - 10:05 Presentations are listed by topic category with their assigned number starting on page 16.

Coffee Break (offline) or join the Daily Quiz featuring Nanoscribe GmbH

10:05 - 10:20 Join us for a quick quiz hosted by Nanoscribe GmbH. We will use Kahoot! for this quiz, so please install Kahoot! on your smartphone or head over to www.kahoot.it in your web browser. Further instructions available upon joining. Winner will be selected to participate in "Who Wants to be a Millionthaire?" on Friday.

Panel Discussion V

Moderators:

Michinao Hashimoto, *Singapore University of Technology and Design, SINGAPORE*

Agnieszka Zuchowska, *University of Twente, THE NETHERLANDS*

10:20 - 11:10 **PARENTING IN SCIENCE AND WORK-LIFE BALANCE**

Agnes Tixier-Mita[1], Yoshio Mita[1], Yong Zeng[2], Mei He[2], Jonas Tegenfeldt[3], and Christelle Prinz[3]

[1]University of Tokyo, JAPAN, [2]University of Florida, USA, and [3]Lund University, SWEDEN

Panel Discussion VI

Moderators:

Yi Chin Toh, *Queensland University of Technology, AUSTRALIA*

Daniel Citterio, *Keio University, JAPAN*

10:20 - 11:10 **STUDENTS AND POSTDOCS STUDYING ABROAD**

Petra Dittrich[1], Gaspard Pardon[2], Dino Di Carlo[3], Darius Rackus[1] Anderson Shum[4], and Christopher Tostado[5]

[1]ETH Zürich, Basel, SWITZERLAND, [2]Stanford University, USA, [3]University of California, Los Angeles, USA, [4]Hong Kong University, HONG KONG, and [5]Genome Institute of Singapore, SINGAPORE

Industrial Stage 5

Session Chairs

Ya-Yu Chiang, *National Chung Hsing University, TAIWAN*

John Oakey, *University of Wyoming, USA*

10:20 - 10:45 5a – Jobst Technologies GmbH
NANO/ MICRO FLOW SYSTEMS, AND BIOSENSORS

10:45 – 11:10 5b – PreciGenome LLC
A TOOL BOX FOR MICROFLUIDIC SYSTEM INTEGRATION AND ITS APPLICATIONS

Industrial Stage 6

Session Chairs

Axel Guenther, *University of Toronto, CANADA*

Tiina Sikanen, *University of Helsinki, FINLAND*

10:20 - 10:45 6a – Vision Research, AMETEK
HIGH-SPEED IMAGING SOLUTIONS FOR IMAGE CYTOMETRY

10:45 - 11:10 6b – STRATEC Consumables GmbH
COLLABORATION BY DESIGN – HOW TO INTEGRATE PARTNERS IN THE DEVELOPMENT AND MANUAFCTURING OF NEXT GENERATION DIAGNOSTICS

11:10 - 11:15 Transition Break

Poster Session Th8

11:15 - 12:15 Presentations are listed by topic category with their assigned number starting on page 16.

12:15 - 12:20 Transition Break

Keynote Presentation V

Session Chairs

Stephen Jacobson, *Indiana University, USA*

Marcel Utz, *University of Southampton, UK*

12:20 - 12:50

ThK-05 **EMERGING WATER TREATMENT TECHNOLOGIES**
Matthew E. Suss, Shada Abu Khalla, Imri Atlas, Eric Guyes, and Amit Shocron
Technion - Israel Institute of Technology, ISRAEL

Keynote Presentation VI

Session Chairs

Katherine Elvira, *University of Victoria, CANADA*

Han Wei Hou, *Nanyang Technological University, SINGAPORE*

12:20 - 12:50

ThK-06 **NANOSTRUCTURES FOR PROBING AND TRANSFECTING LIVING CELLS**
Christelle N. Prinz
Lund University, SWEDEN

Keynote Presentation VII

Session Chairs

Lourdes Basabe, *University of the Basque Country and IKERBASQUE, SPAIN*

Charles Henry, *Colorado State University, USA*

12:20 - 12:50

ThK-07 **EXPANDING THE (i)SIMPLE MICROFLUIDIC TOOLBOX TOWARDS ADVANCED DIAGNOSTICS AND THERAPEUTICS**

Dries Vloemans, Lorenz Van Hileghem, Henry Ordutowski, Dragana Spasic, Francesco Dal Dosso, and Jeroen Lammertyn

KU Leuven, BELGIUM

Keynote Presentation VIII

Session Chairs

Govind Kaigala, *IBM Research, Zurich, SWITZERLAND*

Darwin Reyes, *National Institute of Standards and Technology (NIST), USA*

12:20 - 12:50

ThK-08 **SQUEEZING DNA IN NANOCHANNELS**

Kevin D. Dorfman

University of Minnesota, USA

12:50 - 12:55 Transition Break

12:55 – 13:25 **Speaker Corners**
Matthew E. Suss, Christelle N. Prinz, Jeroen Lammertyn, and Kevin D. Dorfman

13:25 **Adjourn for the Day**

Day 5 - Friday, October 9

Plenary Speaker Presentation VI

Session Chairs

Petra Dittrich, *ETH Zürich, Basel, SWITZERLAND*

Séverine Le Gac, *University of Twente, THE NETHERLANDS*

08:00 - 09:00

FP-06 **WATER-REPELLENT MATERIALS: A FEW TRICKS WE LEARNT FROM NATURE, AND BEYOND**

David Quéré

ESPCI-Paris, PSL Research University, FRANCE

09:00 - 09:05 Transition

09:05 – 09:35 Speaker Corner with David Quéré

Analytical Chemistry Young Innovator Award and Presentation

09:05 - 09:25 **BUILDING SYNTHETIC HUMAN EMBRYO-LIKE STRUCTURES**

Jianping Fu

University of Michigan, Ann Arbor, USA

Lab on a Chip and Dolomite Pioneers of Miniaturization Lectureship Award and Presentation

09:25 - 09:45 **CLINICAL TRANSLATION OF MICROFLUIDIC SYSTEMS AND LESSONS LEARNED FROM THE COVID-19 PANDEMIC**

Wilbur A. Lam[1,2]

[1]*Emory University, USA and* [2]*Georgia Technical University, USA*

09:45 - 09:50 Transition

Who Wants to be a Millionthaire?

Moderator

Darius Rackus, *ETH Zürich, Basel, SWITZERLAND*

09:50 - 10:50

Join us for “Who Wants to be a Millionthaire?”, the very first MicroTAS gameshow! Twelve contestants will compete in rounds of trivia, games of skill, and silly activities all for a chance to win one free registration to MicroTAS 2021 in Palm Springs. Contestants will be selected through participation in the daily quizzes. Two lucky attendees will also have the chance to enter. There will be lots of audience participation, so join in for a little bit of fun at the end of this week!

10:50 - 11:05 Coffee Break (offline)

Award Ceremony

Session Chairs

Stephanie Descroix, *Institut Curie CNRS, FRANCE*
Thomas Gervais, *Polytechnique Montréal, CANADA*
Je-Kyun Park, *Korea Advanced Institute of Science and Technology (KAIST), KOREA*

11:05 – 12:15 CHEMINAS - **Young Researcher Poster Awards**
Lab on a Chip - **Widmer Poster Award**
IMT Masken und Teilungen AG - **Microfluidics on Glass Poster Award**
Sensors (MDPI) - **Outstanding Sensors and Actuators, Detection Technologies Poster Award**
National Institute of Standards and Technology (NIST) and Lab on a Chip - **Art in Science Award**
Micromachines (MDPI) and CBMS - **Flash Poster Presentation Awards**
Biomicrofluidics (AIP) - **Best Paper Awards**

Closing Remarks

12:15 **MicroTAS 2020 Conference Chairs**
Séverine Le Gac, *University of Twente, THE NETHERLANDS*
Hang Lu, *Georgia Institute of Technology, USA*

12:35 **Conference Adjourns**

POSTER PRESENTATIONS

M1	–	Monday, October 5	09:30 - 10:30	**M2**	–	Monday, October 5	11:40 - 12:40
T3	–	Tuesday, October 6	09:05 - 10:05	**T4**	–	Tuesday, October 6	11:25 - 12:25
W5	–	Wednesday, October 7	08:35 - 09:35	**W6**	–	Wednesday, October 7	10:45 - 11:45
Th7	–	Thursday, October 8	09:05 - 10:05	**Th8**	–	Thursday, October 8	11:15 - 12:15

Classification Chart

(last character of poster number)

a	**Fundamentals in Microfluidics and Nanofluidics**
b	**Micro- and Nanoengineering**
c	**Sensors and Detection Technologies**
d	**Integrated Microfluidic Platforms**
e	**Cells, Organisms and Organs on a Chip**
f	**Diagnostics, Drug Testing & Personalized Medicine**
g	**Other Applications of Microfluidics**

a - Fundamentals in Microfluidics and Nanofluidics

Electrokinetic Phenomena

M2-201.a **AN ELECTROKINETIC-BASED LARGE VOLUME CONCENTRATOR FOR ULTRA-LOW ABUNDANT TARGET DETECTION**
Hyukjin J. Kwon, Bryan Lenneman, Timothy Lu, Kyungyong Choi, and Jongyoon Han
Massachusetts Institute of Technology, USA

T3-301.a **CHARACTERIZING SINGLE SINONASAL SQUAMOUS CELL CARCINOMA USING DI-ELECTROPHORESIS AND ELECTROROTATION**
Thao N.P. Mai[1], Sakina Bensalem[1], Bénédicte Thiebot[2], Philippe Manivet[3], Juan Pelta[2], and Bruno Le Pioufle[1]
[1]Ecole Normale Superieure de Paris-Saclay, FRANCE, [2]Université Paris-Saclay, Université Evry, FRANCE, and [3]University of Paris 10, FRANCE

T4-401.a **CONTROLLING AC-ELECTROOSMOTIC VORTEX FLOWS BY SHAPING THE CHANNEL CROSS SECTION**
Christina Tiflidis[1,2], Eiko Westerbeek[1,2], Koen F.A. Jorissen[2], Wouter Olthuis[2], Jan Eijkel[2], and Wim De Malsche[1]
[1]Vrije Universiteit Brussel, BELGIUM and [2]University of Twente, THE NETHERLANDS

W5-501.a **DIELECTROPHORETIC EQUILIBRIUM OF COMPLEX PARTICLES**
Tom Elkeles[1], Pablo Garcia-Sanchez[2], Wu Yue[1], Antonio Ramos[2], and Gilad Yossifon[1]
[1]Technion – Israel Institute of Technology, ISRAEL and [2]Universidad de Sevilla, SPAIN

W6-601.a **ELECTROKINETIC WALL EFFECT MECHANISMS AND APPLICATIONS**
Jason P. Beech, Bao Dang Ho, Oskar Ström, and Jonas O. Tegenfeldt
Lund University, SWEDEN

Th7-701.a **N-DEP ENHANCED LATERAL DISPLACEMENT IN DLD DEVICE TO FOR HIGH EFFICIENT CELL SORTING**
Chia-Hsin Chang[1] and Fan-Gang Tseng[1,2]
[1]National Tsing Hua University, TAIWAN and [2]Academia Sinica, TAIWAN

a - Fundamentals in Microfluidics and Nanofluidics

Droplet Microfluidics

M1-102.a **A NOVEL PARTITIONING PLATFORM TOWARDS THE LOW-COST, RAPIDLY DEPLOYABLE, DIGITAL DETECTION OF SARS-COV-2**
Maria Alvarez Amador, Yuhe Jiang, Ling Li, and Eric Brouzes
Stony Brook University, USA

M1-103.a **DEFORMABILITY-BASED MICROFLUIDIC MICRODROPLET SORTING AS A SCREENING METHOD FOR SINGLE AGAROLYTIC BACTERIAL CELLS**
Mikihisa Muta[1], Kai Saito[1], Ryo Iizuka[1], Wataru Kawakubo[2], Dong Hyun Yoon[2], Mei Ito[3], Yuji Hatada[3], Tetsushi Sekiguchi[2], Shuichi Shoji[2], and Takashi Funatsu[1]
[1]University of Tokyo, JAPAN, [2]Waseda University, JAPAN, and [3]Saitama Institute of Technology, JAPAN

M1-104.a **ENDOTHELIAL-CELL SPROUTING ASSAY WITH MULTIPLE INTERACTING SEEDS AS A PLATFORM TO STUDY ANGIOGENESIS**
Katarzyna Rojek and Jan Guzowski
Polish Academy of Sciences, POLAND

M1-105.a **IMAGE ANALYSIS EXPLORATION: CASE FOR DROPLET MICROFLUIDICS**
Immanuel Sanka, Simona Bartkova, Pille Pata, Olli-Pekka Smolander, and Ott Scheler
Tallinn University of Technology, ESTONIA

M1-106.a **PARALLEL DROPLET GENERATION OF LINEAR CONCENTRATION GRADIENT FOR ANTIMICROBIAL SUSCEPTIBILITY TESTING OF ESCHERICHIA COLI O157:H7**
Jae Seong Kim[1], Byungjin Lee[1], Heon-Ho Jeong[2], Dong-Ho Kim[1], Kyoung Han Kim[1], and Chang-Soo Lee[1]
[1]Chungnam National University, KOREA and [2]Chonnam National University, KOREA

M1-107.a **TOWARDS HIGH-THROUGHPUT SCREENING FOR DRUG DISCOVERY IN MULTI SPLITTING AND MERGING SYSTEM USING MICROVALVES**
Sagar N. Agnihotri[1,2], Mohammad Reza Raveshi[1], Rajneesh Bhardwaj[2], and Adrian Neild[1]
[1]Monash University, AUSTRALIA and [2]Indian Institute of Technology, Bombay (IIT), INDIA

M2-202.a **A SAMPLE INJECTION INTERFACE OF MASS SPECTROMETRY UTILIZING FEMTOLITER-DROPLET SHOOTER BY MICROFLUIDICS**
Yuto Takagi[1], Yutaka Kazoe[2], and Takehiko Kitamori[1,3]
[1]University of Tokyo, JAPAN, [2]Keio University, JAPAN, and [3]National Tsing Hua University, TAIWAN

M2-203.a **DROPLET GENERATOR IN A SINGLE TUBE FOR DNA AMPLIFICATION**
Shaw-Hwa Parng, Ping-Jung Wu, Yu-Yin Tsai, Ruey-Shyan Hong, and Su-Jan Lee
Industrial Technology Research Institute, TAIWAN

M2-204.a **FACILE EVAPORATION INDUCED ON SURFACE MANIPULATION OF AQUEOUS DROPLETS AND ITS APPLICATION IN BIOLOGICAL CARGO TRANSPORT**
Butunath Majhy and Ashis K. Sen
Indian Institute of Technology, Madras, INDIA

M2-205.a **MANIPULATION OF DROPLETS IN NON-NEWTONIAN FLUID**
Shamik Hazra[1], Sushanta K. Mitra[2], and Ashis Kumar Sen[1]
[1]Indian Institute of Technology, Madras, INDIA and [2]University of Waterloo, CANADA

M2-206.a **PERIODIC CONCENTRATION-POLARIZATION BASED FORMATION OF BIOMOLECULE PRECONCENTRATION**
Sinwook Park, Ramadan Abu-Rjal, Keren Buchnik, Yechezkel Kashi, and Gilad Yossifon
Technion – Israel Institute of Technology, ISRAEL

T3-302.a **ACTIVE GENERATION OF FEMTOLITER DROPLET IN MICROFLUIDICS USING INKJET NOZZLE**
Dege Li[1], Yi Cao[1], Bingfang Huang[1], Chao Zheng[1], Yonghong Liu[1], and Yanzhen Zhang[1,2]
[1]China University of Petroleum (East China), CHINA and [2]Swinburne University of Technology, AUSTRALIA

T3-303.a **DROPLET GENERATORS COMMUNICATION FOR A HIGH THROUGHPUT PRODUCTION**
Ilyesse Bihi, Pierre Gelin, and Wim De Malsche
Vrije Universiteit Brussel, BELGIUM

T3-304.a **FAST DROPLET ENRICHMENT USING SPONTANEOUS EMULSIFICATION**
Piangrawee Santivongskul[1], Mao Fukuyama[1,2], and Akihide Hibara[1]
[1]Tohoku University, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

T3-305.a **MICRO-MAGNETIC-TWEEZERS: A TOOL FOR BIOSEPARATION IN SUB-NANOLITER DROPLETS**
Simon Dumas, Mathilde Richerd, Marco Serra, and Stéphanie Descroix
Institut Curie, FRANCE

T3-306.a **PRODUCTION OF MONODISPERSE CAPSULES FOR CONTROLLED SPORE RELEASE**
Iwona Ziemecka[1], Ilyesse Bihi[1], Pierre Gelin[1], Guy Van Assche[2], Suzy Vaupre[1], Roberto Teixeira[1], Dominique Maes[1], and Wim De Malsche[1]
[1]Vrije Universiteit Brussel, BELGIUM and [2]Devan Chemicals NV, BELGIUM

T4-402.a **AUTOMATED MICROFLUIDIC DROPLET GENERATION AND MERGING TO RESOLVE DYNAMICS OF UPTAKE AND SECRETION IN WHITE ADIPOSE TISSUE (WAT)**
Nan Shi, Md Moniruzzaman, Yvette Kayirangwa, and Christopher J. Easley
Auburn University, USA

T4-403.a **DROPLET MICROFLUIDIC BASED METHOD FOR IN-SITU CALIBRATION AND DETERMINATION OF RECOVERY RATE OF MICRODIALYSIS**
Gareth W.H. Evans[1], Jameelah Salahuddin[1], Wahida T. Bhuiyan[1], Brett Warren[2], and Xize Niu[1,2]
[1]University of Southampton, UK and [2]SouthWestSensor Ltd., UK

T4-404.a **GENERATION OF AQUEOUS-DROPLET-FILLED HYDROGEL FIBERS AS ORGANOIDS CARRIES USING ALL-IN-WATER MICROFLUIDIC SYSTEM**
Hui Wang, Hai-Tao Liu, Ya-Qing Wang, Meng-Qian Zhao, Wen-Wen Chen, and Jian-Hua Qin
Chinese Academy of Sciences, CHINA

T4-405.a **MICROFLUIDIC GENERATION OF WATER-IN-WATER-IN-WATER(-IN-WATER) DOUBLE AND TRIPLE EMULSIONS**
Morteza Jeyhani[1,2], Risavarshni Thevakumaran[1,2], Niki Abbasi[1,2], Dae Kun Hwang[1,2], and Scott S. H. Tsai[1,2]
[1]Ryerson University, CANADA and [2]St. Michael's Hospital, CANADA

T4-406.a **REAL-TIME IMAGE-BASED DROPLET MEASUREMENT**
Sepehr Elahi[1], Ali Kalantarifard[1], Fatemeh Kalantarifard[2], and Caglar Elbuken[1,3]
[1]Bilkent University, TURKEY, [2]Bogazici University, TURKEY, and [3]University of Oulu, FINLAND

W5-502.a **BINARY CONSTRICTIONS, TIP ELONGATION AND DUTY CYCLE: SHAPE BASED MECHANISMS FOR LABEL-FREE DETECTION IN DROPLETS**
Afreen Fatima and Amar S. Basu
Wayne State University, USA

W5-503.a DROPLET MICROFLUIDIC PLATFORM FOR INTRACELLULAR PHASE SEPARATION EXPERIMENTS
Katherine Chan[1,2], Maryam Navi[1,2], Jennifer Kieda[1,2], and Scott S.H. Tsai[1,2]
[1]Ryerson University, CANADA and [2]St. Michael's Hospital, CANADA

W5-504.a GENERATION OF COMPLEX EMULSIONS USING MONOLITHIC, DUAL- MATERIAL 3D-PRINTED MICROFLUIDIC DEVICES
Jin Li, Pantelitsa Dimitriou, Oliver Castell, and David Barrow
Cardiff University, UK

W5-505.a MOLECULAR REORIENTATION OF CHOLESTERIC DROPLET INDUCED BY STRAIN FOR FLEXIBLE SENSING APPLICATION
Shuting Xie, Mingliang Jin, Ruizhi Yang, Guofu Zhou, and Lingling Shui
South China Normal University, CHINA

W5-506.a SELF-EMULSIFICATION IN LIQUID CRYSTAL DROPLETS
Ruizhi Yang, Yueming Deng, Shuting Xie, Qi An, and Lingling Shui
South China Normal University, CHINA

W6-602.a COMPUTER VISION APPLIED TO MEMBRANE DISPLACEMENT TRAP ARRAYS FOR AUTOMATED DROPLET CONTROL AND MANIPULATION
Michael Yeh[1,2], Jason Harriot[1], Supriya Padmanabhan[1], and Don L. DeVoe[1]
[1]University of Maryland, College Park, USA and [2]National Cancer Institute, USA

W6-603.a DROPLET SQUEEZING FOR HIGHLY EFFECTIVE GENE DELIVERY INTO HUMAN T LYMPHOCYTES
Byeongju Joo, Hasung Lee, Seung Gyu Yun, and Aram Chung
Korea University, KOREA

W6-604.a GENERATION OF SPHEROIDS USING AN AQUEOUS TWO-PHASE SYSTEM DROPLET MICROFLUIDIC PLATFORM
Jennifer Kieda[1,2], Morteza Jeyhani[1,2], Maryam Navi[1,2], Katherine Chan[1,2], and Scott S.H. Tsai[1,2]
[1]Ryerson University, CANADA and 2St. Michael's Hospital, CANADA

W6-605.a MONITORING OF AMMONIA IN NATURAL WATERS USING A VERSATILE, PROGRAMMABLE DROPLET MICROFLUIDIC PLATFORM
Wahida Bhuiyan[1], Evanthia Papadoupoulou[2], Sharon Coleman[2], Matthew Pearson[2], Adrian Nightingale[1], Gareth Evans[1], and Xize Niu[1,2]
[1]University of Southampton, UK and [2]SouthWestSensor Ltd., UK

W6-606.a SIMULTANEOUS DROPLET FORMATION VIA GRAVITY-INDUCED FLOW WITH IN-SERIES DROPLET GENERATING JUNCTIONS
Khashayar R. Bajgiran, Riad Elkhanoufi, James A. Dorman, and Adam T. Melvin
Louisiana State University, USA

Th7-702.a CONTINUOUS GENERATION OF CELL-LADEN MICROGELS THROUGH DETERMINISTIC LATERAL DISPLACEMENT ARRAYS
Naotomo Tottori and Takasi Nisisako
[1]Kyushu University, JAPAN and [2]Tokyo Institute of Technology, JAPAN

Th7-703.a DROPLET-ASSISTED PHASE SEPARATION BY INTEGRATED SILICON ELECTROSPRAY NANO-EMITTER FOR NEUROCHEMICAL SENSING
Yan Zhang, Weihua Shi, Insu Park, Sungho Kim, Christopher Brenden, Hrishikesh Iyer, Prasoon Jha, Rashid Bashir, and Yurii Vlasov
University of Illinois, Urbana-Champaign, USA

Th7-704.a HIGH-THROUGHPUT SORTING OF NANOLITER DROPLETS USING AN ELECTRODE ARRAY WITH A SLANTED MICROCHANNEL
Mun Hong Loo[1], Yuta Nakagawa[1], Akihiro Isozaki[1,2], and Keisuke Goda[1,3,4]
[1]University of Tokyo, JAPAN, [2]Kanagawa Institute of Industrial Science and Technology, JAPAN, [3]University of California, Los Angeles, USA, and [4]Wuhan University, China

Th7-705.a MONITORING OF REACTION KINETICS THROUGH THE SYNCHRONIZED RELEASE OF LIPOSOMAL CARGO IN DOUBLE EMULSIONS
Ariane Stucki, Petra Jusková, Nicola Nuti, and Petra S. Dittrich
ETH Zürich, Basel, SWITZERLAND

Th7-706.a SPACE-FILLING OPEN MICROFLUIDICS FOR DROPLET COLLECTION: GENERALIZED DESIGN OF FRACTAL HYPERBRANCHED CHANNELS
Hiroyuki Kai
Tohoku University, JAPAN

Th8-801.a A MICROFLUIDIC MAGNETIC EXTRACTOR FOR MAGNETIC BEAD SEPARATION IN DROPLETS
Junyue Chen[1,2], Weiliang Shu[1], Ying Tan[2], Hongtao Feng[1], Yimo Yan[2], and Yan Chen[1]
[1]Chinese Academy of Sciences, CHINA and [2]Tsinghua University, CHINA

Th8-802.a CONTROLLED ACTUATION OF SELF-PROPELLED DROPLETS
Loïc Coudron, Clément Lemenu, Kevin Lemaine, Daniel McCluskey, Christabel Tan, Ian Munro, Arne Erik Holdo, Mark Tracey, and Ian Johnston
University of Hertfordshire, UK

Th8-803.a ELECTROCOALESCENCE OF MICRODROPLETS WITH ACTIVE PAIRING
Kaijian Zhu[1,2], Wen Yue[1], and Dahai Ren[2]
[1]China University of Geosciences, CHINA and [2]Tsinghua University, CHINA

Th8-804.a HYBRID MICROGELS PRODUCED VIA DROPLET MICROFLUIDICS FOR NANOPARTICLE ENCAPSULATION AND DRUG DELIVERY
Bruna G. Carvalho[1], Thiago B. Taketa[1], Bianca B.M. Garcia[2], Sang W. Han[2], and Lucimara G. de la Torre[1]
[1]University of Campinas, BRAZIL and [2]São Paulo Federal University, BRAZIL

Th8-805.a OPTICAL ACCESSIBILITY IMPROVEMENTS FOR THE CHARACTERIZATION OF THE NANOPEDE
Edo A.G. de Kruiff[1], Chris L. Kennedy[2], Corentin B.M. Tregouet[3], Alfons van Blaaderen[2], Jan C.T. Eijkel[1], and Mathieu Odijk[1]
[1]University of Twente, THE NETHERLANDS, [2]Utrecht University, THE NETHERLANDS, and [3]University of Rennes [1], FRANCE

Th8-806.a SPRING-POWERED PORTABLE SYRINGE PUMP THAT PROVIDES CONSTANT FLOW RATE
Won Han and Joong Ho Shin
Pukyong National University, KOREA

a - Fundamentals in Microfluidics and Nanofluidics
Digital Microfluidics

M2-207.a **ALL-IN-ONE DIGITAL MICROFLUIDIC SYSTEM FOR MOLECULAR DIAGNOSIS BASED ON THE LOOP-MEDIATED ISOTHERMAL AMPLIFICATION**
Siyi Hu[1], Chao Yang[2], Yuhan Jie[2], Haifei Yang[2], Yang Su[1,2], and Hanbin Ma[1,2]
[1]Chinese Academy of Sciences, CHINA and [2]ACXEL TECH LTD, UK

T3-307.a **OPEN SURFACE DROPLET MANIPULATION AND MIXING BY FERROFLUID INSTABILITIES**
Vahid Nasirimarekani[1], Fernando Benito-Lopez[1], and Lourdes Basabe-Desmonts[1,2]
[1]University of the Basque Country, SPAIN and [2]Basque Foundation of Science, IKERBASQUE, SPAINSPAIN

a - Fundamentals in Microfluidics and Nanofluidics
Centrifugal Microfluidics

M1-108.a **RELIABLE LIQUID REAGENT HANDLING AND ROTATIONAL RELEASE FOR CENTRIFUGAL SAMPLE-TO-ANSWER AUTOMATION**
Yao Lu, Darren McAuley, Rohit Mishra, David Boyle, and Jens Ducrée
Dublin City University, IRELAND

M2-208.a **VISCOSITY INDEPENDENT FLOW FOR PLANAR CHROMATOGRAPHIC IMMUNOASSAYS BY CENTRIFUGAL MICROFLUIDICS**
Daniel M. Kainz[1,2], Susanna M. Früh[1,2], Tobias Hutzenlaub[1,2], Roland Zengerle[1,2], and Nils Paust[1,2]
[1]University of Freiburg, GERMANY and [2]Hahn-Schickard, GERMANY

T4-407.a **AUTOMATED CELL CULTURE AND ACTIVATION ASSAY USING CENTRIFUGAL MICROFLUIDIC PLATFORM**
Lidija Malic[1], Liviu Clime[1], Jamal Daoud[1], Abdelrahman Elmanzalawy[1], Ljuboje Lukic[1], Huailo Lee[2], Yuh-Tyng Tsai[2], Pei-Shin Jiang[2], and Teodor Veres[1]
[1]National Research Council, CANADA and [2]Industrial Technology Research Institute, TAIWAN

W5-507.a **AUTOMATED LIBRARY PREPARATION FOR NEXT GENERATION SEQUENCING OF IMMUNOGLOBULIN GENE REARRANGEMENTS BY CENTRIFUGAL MICROFLUIDICS**
Jacob F. Hess[1], Michaela Kotrová[2], Silvia Calabrese[1], Tobias Hutzenlaub[1,3], Roland Zengerle[1,3], Monika Brüggemann[2], and Nils Paust[1,3]
[1]Hahn-Schickard, GERMANY, [2]University Medical Center Schleswig Holstein, GERMANY, and [3]University of Freiburg, GERMANY

W6-607.a **FULLY INTEGRATED LTA ASSAY ON CENTRIFUGAL MICROFLUIDIC DEVICE**
Jungmin Kim[1,2], Chi-Ju Kim[1], Jonathan Sabaté del Río[1], and Yoon-Kyoung Cho[1,2]
[1]Ulsan National Institute of Science & Technology (UNIST), KOREA and [2]Institute for Basic Science (IBS)< KOREA

Th7-707.a **PNEUMATICALLY CONTROLLED DROPLET GENERATION ON A CENTRIFUGAL MICROFLUIDIC PLATFORM**
Liviu Clime, Lidija Malic, Luke Lukic, Matthias Geissler, and Teodor Veres
National Research Council, CANADA

Th8-807.a **PURIFICATION OF DNA FRAGMENTS USING PNEUMATIC CONTROL COUPLED TO CENTRIFUGAL MICROFLUIDICS**
Daniel Brassard, Jimin Guo, Maxence Mounier, Jason Ferreira, Mojra Janta-Polczynski, and Teodor Veres
National Research Council, CANADA

a - Fundamentals in Microfluidics and Nanofluidics
Acousto- and Magnetofluidics

M1-109.a **RAPID MUTINODAL ACOUSTIC TRAPPING OF EXTRACELLULAR VESICLES FOR DOWNSTREAM MASS SPECTROMETRY ANALYSIS**
Axel Broman, Lotta Happonen, Frida Palm, Oonagh Shannon, Johan Malmström, and Thomas Laurell
Lund University, SWEDEN

M2-209.a **REDUCING TAYLOR DISPERSION WITH ACOUSTIC STREAMING**
Pierre Gelin, Dominique Maes, and Wim De Malsche
Vrije Universiteit Brussel, BELGIUM

T3-308.a **A SINGLE CELL MANIPULATION TOOL BASED ON GIGAHERTZ ACOUSTIC-STREAMING TWEEZERS**
Ke Jin, Yang Yang, Yang Bai, Wei Wei, and Xuexin Duan
State Key Laboratory of Precision Measuring Technology & Instruments, CHINA

W5-508.a **BINARY PARTICLE ACOUSTOPHORESIS SEPARATION BASED ON NODAL POSITION ADJUSTMENT THROUGH PDMS WALL**
Sinan Yigit[1], Song-I Han[2], Younghak Cho[3], and Arum Han[2]
[1]Necmettin Erbakan University, TURKEY, [2]Texas A&M University, USA, and [3]Seoul National University of Science & Technology, KOREA

W6-608.a **FREQUENCY TUNABLE LABEL-FREE SURFACE ACOUSTIC WAVE-BASED FLOW SENSOR**
Aurore Quelennec, Jason J. Gorman, and Darwin R. Reyes
National Institute of Standards and Technology (NIST), USA

Th7-708.a **MOTILITY-BASED SPERM SELECTION USING ACOUSTOFLUIDICS**
Junyang Gai, Reza Nosrati, and Adrian Neild
Monash University, AUSTRALIA

Th8-808.a **QUANTIFYING THE ACOUSTIC FIELD IN A MICROCHANNEL USING MICROSWIMMERS AS MEASUREMENT PROBES**
Minji Kim[1], Rune Barnkob[2], and J. Mark Meacham[1]
[1]Washington University, St. Louis, USA and [2]Technical University of Munich, GERMANY

a - Fundamentals in Microfluidics and Nanofluidics
Capillary Microfluidics

M1-110.a **MULTILEVEL PASSIVE MICROFLUIDICS FOR ELECTROCHEMICAL BIOSENSORS**
Pooya Azizian[1,2], Adrián Ortega[1], Jordi Ricart[1], Jasmina Casals-Terré[2], and Joan M. Cabot[1]
[1]Leitat Technological Center, SPAIN and [2]Technical University of Catalonia, SPAIN

M2-210.a **MULTISCALE MODELLING AND COMPUTATIONAL DESIGN OF FLUID FLOW AND MASS TRANSPORT IN 3D PRINTED LAB-ON-CHIPS**
Agnese Piovesan, Bart Dequeker, Ruben Dochy, Cesar Parra Cabrera, Clement Achille, Rob Ameloot, Pieter Verboven, and Bart Nicolai
KU Leuven, BELGIUM

T3-309.a **3D PRINTED AXISYMMETRIC FLOW-FOCUSING DEVICE USING FUSED SILICA CAPILLARY TUBES**
Keisuke Sugahara and Shoji Takeuchi
University of Tokyo, JAPAN

T3-310.a **OPEN-CHANNEL CAPILLARY TREES AND CAPILLARY PUMPING**
Jing J. Lee, Jean Berthier, Kathleen E. Kearney, Erwin Berthier, and Ashleigh B. Theberge
University of Washington, USA

T4-409.a 3D-PRINTING AND COMPUTATIONAL FLUID DYNAMICS 'MEET' PAPER-BASED MICROFLUIDICS FOR ENHANCED FLOW CONTROL IN DIFFUSIVE SENSORS
Joan Antoni López, Pau Fernández, Pouya Mehdrel, and Jasmina Casals-Terré
Technical University of Catalonia, SPAIN

T4-410.a POLY(N-ISOPROPYL ACRYLAMIDE) COATING OF MICROCHANNELS AND BACTERIAL SAMPLE LOADING VIA CAPILLARY-DRIVEN FLOW
Sammer-ul Hassan[1], Steve Carter[2], Sehaj Singh[2], Edward Dyson[2], Stephen Rimmer[2], and Xunli Zhang[1]
University of Southampton, UK and [2]University of Bradford, UK

W5-509.a CAPILLARY-DRIVEN LOADING OF HriCFP EXPRESSING ESCHERICHIA COLI INTO MICROCHANNELS
Ahmed Donia[1], Salma Saeed[1], Aamira Tariq[1], Zobia Noreen[1], Habib Bokhari[1], Xunli Zhang[2], and Sammer-ul Hassan[2]
[1]Comsats University Islamabad, PAKISTAN and [2]University of Southampton, UK

W5-510.a PASSIVE FLOW CONTROL IN A LAMINATION-BASED CAPILLARY-DRIVEN MICROFLUIDIC DEVICE
Ilhoon Jang[1,2] and Charles S. Henry[2]
[1]Hanyang University, KOREA and [2]Colorado State University, USA

W6-609.a DIGITAL MANUFACTURING OF FUNCTIONAL AUTONOMOUS CAPILLARIC CIRCUITS USING HYDROPHILIC RESINS AND A 3D PRINTER
Ahmad Sohrabi Kashani, Vahid Karamzadeh, Oriol Ymbern Llorens, Andy Ng, and David Juncker
McGill University, CANADA

W6-610.a SIGNAL AMPLIFICATION IN A LATERAL FLOW ASSAY ENABLED BY A CAPILLARY VALVE AND SELF-ACTUATING ELEVATOR VALVE
Caitlin E. Anderson, Joshua D. Bishop, Andrew K. Miller, Benjamin D. Grant, Toan Huynh, David M. Cate, Bernhard H. Weigl, and Kevin P. Nichols
Intellectual Ventures Laboratory, USA

Th7-709.a INCORPORATING FLOW CONTROL FUNCTIONALITY IN MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICES USING PLASMA PROCESSES
Nikhil Raj, Victor Breedveld, and Dennis W. Hess
Georgia Institute of Technology, USA

Th7-710.a THREAD AS A PRECISE SAMPLING AND DELIVERY PLATFORM FOR IMPLANTABLE OR INGESTIBLE APPLICATIONS
H. Rezaei Nejad, Aydin Sadeqi, and Sameer Sonkusale
Tufts University, USA

Th8-809.a LIQUID ATOMIZATION IN PERIODIC ELECTRO-PULSATING MODE. INDIRECT MEASUREMENT OF THE ELECTRIC FIELD ON THE OSCILLATING MENISCUS
Antonio J. Hijano[1], Ignacio G. Loscertales[1], and Francisco J. Higuera[2]
[1]Universidad de Málaga, SPAIN and [2]Universidad Politecnica de Madrid, SPAIN

a - Fundamentals in Microfluidics and Nanofluidics
Nanofluidics/Nanofluidic Phenomena

M1-111.a **GENERATION OF NANOMETER-SCALE GEOMETRICAL GAS-LIQUID INTERFACES IN HYDROPHILIC/HYDROPHOBIC PATTERNED NANOCHANNELS**
Hiroto Kawagishi[1], Shuichi Kawamata[1], and Yan Xu[1,2]
[1]Osaka Prefecture University, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

M2-211.a **INTEGRATED IONIC ELECTRONICS BASED ON HORIZONTALLY-ALIGNED CARBON NANOTUBES**
Ran Peng[1], Yueyue Pan[1], Zhi Li[2], Shuailong Zhang[1], Aaron R. Wheeler[1], Shirley Tang[2], and Xinyu Liu[1]
[1]University of Toronto, CANADA and [2]University of Waterloo, CANADA

T3-311.a **INTEGRATED MICRO- AND NANOFLUIDIC DEVICES FOR REAL-TIME MONITORING OF HEPATITIS B VIRUS CAPSID ASSEMBLY**
Michael P. Kappler, Panagiotis Kondylis, Caleb Starr, Adam Zlotnick, and Stephen C. Jacobson
Indiana University, USA

T4-411.a **LATERAL MIGRATION OF DOUBLETS IN UNTREATED WHOLE BLOOD**
Jian Zhou and Ian Papautsky
University of Illinois, Chicago, USA

W5-511.a **NANOFLUIDIC DEVICE FOR SURFACE CHARGE MEASUREMENT OF NANOPARTICLES USING TUNABLE ELECTROSTATIC LANDSCAPE**
Imman I. Hosseini, Zezhou Liu, Walter Reisner, and Sara Mahshid
McGill University, CANADA

W6-611.a **TRANSPORT OF VISCOUS FLUID THROUGH MICRO- AND NANO-POROUS MEDIA**
Md Minhajul Islam and D. Jed Harrison
University of Alberta, CANADA

Th8-810.a **A SENSE-REACT-SENSE NANOFLUIDIC SYSTEM FOR PERFORMING REACTIONS ON SINGLE VIRUS CAPSIDS**
Mi Zhang, Caleb Starr, Zhongchao Zhao, Adam Zlotnick, and Stephen C. Jacobson
Indiana University, USA

a - Fundamentals in Microfluidics and Nanofluidics
Modeling/Numerical Simulation

M1-112.a **COMPUTATIONAL FLUID DYNAMIC SIMULATION FOR THE STENOSIS MICROFLUIDIC THROMBOSIS MODEL CHARACTERIZATION**
Yunduo Charles Zhao[1], Parham Vatankhah[1], Tiffany Goh[1,2], and Lining Arnold Ju[1,2]
[1]University of Sydney, AUSTRALIA and [2]Heart Research Institute, AUSTRALIA

M1-113.a **SHAPE DEPENDENT MODEL-BASED APPROACH FOR ELASTIC MODULI ESTIMATION OF BIOLOGICAL CELLS IN FLOW**
Gangadhar Eluru, Ramya Shekhar, and Sai Siva Gorthi
Indian Institute of Science, INDIA

M2-212.a **COMPUTATIONAL MODELLING OF FLOW AND DRUG TRANSPORT IN A MICROFLUIDIC DEVICE FOR SPHEROID CULTURES**
Sina Kheiri, Eugenia Kumacheva, and Edmond W.K. Young
University of Toronto, CANADA

M2-213.a **SURFACE TEXTURE MODULATES WALL SLIP IN MICROFLUIDIC FLOWS**
Siyu Chen and Joe Fujiou Lo
University of Michigan, Dearborn, USA

T3-312.a **CONCENTRATION GRADIENTS INSIDE MICRODROPLETS**
Christian F. Chamberlayne, Juan Santiago, and Richard N. Zare
Stanford University, USA

T3-313.a **TOWARD THE CHARACTERIZATION OF COMPLEX MICROVESSEL NETWORKS *VIA* IN-LINE FLOW RATE SENSING**
Michael A. Daniele[1,2], Vladimir A. Pozdin[3], Patrick Erb[1,2], and McKenna Downey[1]
[1]North Carolina State University, USA, [2]University of North Carolina, Chapel Hill, USA, and [3]Florida International University, USA

T4-412.a **CREATIVE SHAPING OF 2D FLOW AND CONCENTRATION PROFILES IN MICROFLUIDIC CHAMBERS**
Etienne Boulais and Thomas Gervais
Polytechnique Montréal, CANADA

W5-512.a **ENHANCING MICROMIXING CAPABILITIES OF FLEXIBLE FLUOROPOLYMER MICROCAPILLARY FILMS WITH 3D PRINTED TEMPLATES: A COMPUTATIONAL FLUID DYNAMICS ANALYSIS**
Kirandeep K. Gill[1], Patrick Hester[2], Pedro Estrela[1], and Nuno M. Reis[1]
[1]University of Bath, UK and [2]Lamina Dielectrics Ltd., UK

W6-612.a **NUMERICAL SIMULATION AND EXPERIMENTAL ANALYSIS OF INERTIAL CELL FOCUSING IN A CONTRACTION-EXPANSION ARRAY (CEA) MICROCHANNEL**
Ali C. Atik, Ender Yıldırım, and Haluk Külah
Middle East Technical University, TURKEY

Th7-711.a **2D PHASE-FIELD SIMULATION AND EXPERIMENTAL VALIDATION OF DROPLET FORMATION IN A FLOW-FOCUSING JUNCTION**
Ali C. Atik, Ender Yıldırım, and Haluk Külah
Middle East Technical University, TURKEY

Th7-712.a **NUMERICAL MODELING OF SEQUENTIAL SEGMENTATION FOR ENHANCEMENT OF MICROMIXING**
Ibragim Abu Dagga[1,2] and Mohamed Abdelgawad[1]
[1]American University of Sharjah, UAE and [2]Khalifa University of Science and Technology, UAE

Th8-811.a **BEHAVIOR OF PHASE CHANGE SLURRY IN A MICROCHANNEL**
Vikram Soni, Hannah McPhee, Sepehr Saber, Jason Riordon, and David Sinton
University of Toronto, CANADA

Th8-812.a **RESIDENCE TIME DISTRIBUTION IN MICROMIXERS: SCALE-UP EFFECTS**
Harrson S. Santana[1] and João L. Silva Jr.[2]
[1]University of Campinas, BRAZIL and [2]Federal University of ABC, BRAZIL

a - Fundamentals in Microfluidics and Nanofluidics
Others

M1-114.a **HIGH-THROUGHPUT SPERM SORTING BY A FLAT RHEOTAXIS MICROFLUID DEVICE**
Suei-Shen Wang[1] and Fan-Gang Tseng[1,2]
[1]National Tsing Hua University, TAIWAN and [2]Academia Sinica, TAIWAN

M2-214.a **TO STICK OR NOT TO STICK: PREDICTING PARTICLE CAPTURE ON A SURFACE IN A MICROCHANNEL**
Donatien Mottin[1,2], Florence Razan[2], Frédéric Kanoufi[3], and Marie-Caroline Jullien[1]
[1]University of Rennes, FRANCE, [2]École Normale Supérieure de Rennes, FRANCE, and [3]Université de Paris, FRANCE

T3-314.a **IMPROVED UNDERSTANDING OF PARTICLE MIGRATION IN SHEAR THINNING VISCOELASTIC FLUID**
Shamik Hazra[1], Sushanta K. Mitra[2], and Ashis Kumar Sen[1]
[1]Indian Institute of Technology, Madras, INDIA and [2]University of Waterloo, CANADA

T4-413.a **CONCENTRATION-DEPENDENT LOSS OF CHARGED ANALYTES IN PAPERFLUIDIC DEVICES**
Siddhant Jaitpal[1], Priyanka Naik[1], Shashwat Banerjee[2], and Debjani Paul[1]
[1]Indian Institute of Technology, Bombay, INDIA and
[2]Maharashtra Institute of Medical Education and Research Medical College, INDIA

W5-513.a **DIFFERENTIAL 3D-VISCOELASTIC FOCUSING OF PARTICLES IN A RECTANGULAR MICROFLUIDIC CHANNEL**
Ludovica Barilla, Jian Zhou, Zhangli Peng, and Ian Papautsky
University Illinois, Chicago, USA

W6-613.a **DNA CONCENTRATION WAVE FORMATION IN PILLAR ARRAYS**
Oskar E. Ström, Jason P. Beech, and Jonas O. Tegenfeldt
Lund University, SWEDEN

Th7-713.a **EFFECT OF DEAN FLOWS ON SUB-MICRON PARTICLES IN LOW ASPECT RATIO MICROCHANNELS – ANALYSIS OF DFF**
Suhanya Duraiswamy[1] and Lin Yue Lanry Yung[2]
[1]Indian Institute of Technology, Hyderabad, INDIA and [2]National University of Singapore, SINGAPORE

Th8-813.a **EFFECTS OF PARTICLE SIZE AND FLUID ELASTICITY ON ELASTO-INERTIAL MIGRATION IN SPIRAL CHANNEL**
Hua Gao, Jian Zhou, and Ian Papautsky
University of Illinois, Chicago, USA

a - Fundamentals in Microfluidics and Nanofluidics
Industrial Benefactor

M2-215.a **LITHOGRAPHY SOLUTIONS FOR MICROFLUIDICS AND BIOTECH**
Charles Turk
OAI, USA

T3-383.a **FROM SURFACTANTS TO HYDROGEL BEADS TO EMULSION TEMPLATING KITS**
Robert Lintner, Brian O'Day, Anne-Milda Pu and Roger Nassar
RAN Biotechnologies Inc.

a - Fundamentals in Microfluidics and Nanofluidics

Late News

M1-172.a **ARRESTED COALESCENCE OF LIQUID MARBLES TRIGGERED BY ELECTROSTATICS**
Yage Zhang[1], Chentianyi Yang[1], Shuai Yuan[1], Xiaoxue Yao[2], and Ho Cheung Shum[1]
[1]University of Hong Kong, HONG KONG and [2]Shenzhen University, CHINA

M1-173.a **RECTIFIED AC ELECTROOSMOSIS INDUCED BY SURFACE CONDUCTANCE AROUND INSULATING MICROPOSTS**
Victor Calero[1], Raul Fernández-Mateo[1], Pablo García-Sánchez[2], Antonio Ramos[2], and Hywel Morgan[1]
[1]University of Southampton, UK and [2]Universidad de Sevilla, SPAIN

M2-272.a **A NOVEL MICROFLUIDIC DEVICE TO FLEXIBLY GENERATE GROOVED MICROFIBERS AS ANISOTROPIC SCAFFOLDS**
Meng-Qian Zhao, Hai-Tao Liu, Hui Wang, Ting-Ting Tao, and Jian-Hua Qin
Chinese Academy of Sciences, CHINA

M2-273.a **DIGITAL-WGS: AUTOMATED, HIGHLY EFFICIENT WHOLE-GENOME SEQUENCING OF SINGLE CELLS BY DIGITAL MICROFLUIDICS**
Qingyu Ruan[1], Weidong Ruan[1], Xiaoye Lin[1], Zhi Zhu[1], and Chaoyong Yang[1,2]
[1]Xiamen University, CHINA and [2]Shanghai Jiao Tong University, CHINA

T3-373.a **CELL MANIPULATION VIA ACOUSTIC FORCES IN A SPHERICAL MICROCHAMBER**
Bettina Sailer, Rune Barnkob, and Oliver Hayden
Technical University of Munich, GERMANY

T3-374.a **DOUBLE MONOCLONAL DISPLAY FOR HIGHLY EFFICIENT PEPTIDE SCREENING**
Junxia Wang, Yuyu Tan, Jiajun Ling, Mingxia Zhang, Wenli Liu, Mengjiao Huang, Jia Song, Ao Li, Yanling Song, Zhi Zhu, and Chaoyong Yang
Xiamen University, CHINA

T4-473.a **HIGH RESOLUTION EXOSOME TYPING METHOD FOR CANCER DIAGNOSIS**
Bingqian Lin[1], Lingling Wu[2], Zhi Zhu[1], Yanling Song[1], and Chaoyong Yang[1,2]
[1]Xiamen University, CHINA and [2]Shanghai Jiao Tong University, CHINA

T4-474.a **HIGHLY EFFICIENT ACOUSTOPHORETIC SINGLE CELL-SUPERNATANT SEPARATION INSIDE NANOLITER DROPLETS**
Michael Gerlt[1], Dominik Haidas[2], Alexandre Ratschat[1], Philipp Suter[1], Petra Dittrich[2], and Jürg Dual[1]
[1]ETH Zürich, SWITZERLAND and [2]ETH Zürich, Basel, SWITZERLAND

W5-572.a **DYNAMIC FORMATION OF MULTIPLE PRECONCENTRATED MOLECULE PLUGS**
Barak Sabbagh[1], Elad Stolovicki[2], Sinwook Park[1], and Gilad Yossion[1]
[1]Technion - Israel Institute of Technology, ISRAEL and [2]Harvard University, USA

W5-573.a **HIGH THROUGHPUT, MOBILE DIGITAL FLUORESCENCE DROPLET ASSAYS USING TIME DOMAIN EXCITATION MODULATION**
Zijian Yang, Yasemin Atiyas, and David Issadore
University of Pennsylvania, USA

W6-674.a **MAPPING THE PHASE DIAGRAM OF DNA HYDROGELS WITH DROPLET MICROFLUIDICS**
Guilhem Mariette[1,2], Nicolas Lobato-Dauzier[2], Robin Deteix[2], Mia Zhang[2], Shu Okumura[2], Yusuke Sato[3], Masahiro Takinoue[4], Teruo Fujii[2], and Anthony J. Genot[2]
[1]Ecole Normale Supérieure, FRANCE, [2]University of Tokyo, JAPAN and [3]Tohoku University, JAPAN, and [4]Tokyo Institute of Technology, JAPAN

Th7-772.a **ACCELERATING THE FINITE-ELEMENT METHOD FOR REACTION-DIFFUSION SIMULATIONS ON GPUs WITH CUDA**
Hedi Sellami, Leo Cazenille, Teruo Fujii, Masami Hagiya, Nathanael Aubert-Kato, and Anthony J. Genot
University of Tokyo, JAPAN

Th7-773.a **NOVEL APPROACH FOR ADVANCED PERSONALIZED CANCER TREATMENT**
Anna Luise Grab[1], Ramesh Utharala[1], Thorsten Cramer[2,3], Julio Saez-Rodrigue[4], Nicolas Peschke[1], Denes Türei[1,4], Wenwei Ma[1], Vida Vafaizdah[1], Federica Eduati[5], and Christoph Merten[1,6]
[1]European Molecular Biology Laboratory, GERMANY, [2]RWTH Aachen, Germany, [3]Maastricht University, THE NETHERLANDS, [4]Faculty of Medicine of Heidelberg, GERMANY, [5]Eindhoven University of Technology, THE NETHERLANDS, and [6]Swiss Federal Institute of Technology Lausanne, SWITZERLAND

Th8-871.a **VACUUM POUCH MICROFLUIDIC SYSTEM FOR THE APPLICATION OF DIGITAL PCR**
Cheng-Je Lee and Yu-Hsiang Hsu
National Taiwan University, TAIWAN

b - Micro- and Nanoengineering

Microscale Fabrication, Patterning, and Integration

M1-115.b **A VACUUM-DRIVEN MICROFLUIDIC ARRAY FOR MULTI-STEP SAMPLE DIGITALIZATION**
Jiumei Hu, Liben Chen, Hui Li, Kuangwen Hsieh, Pengfei Zhang, and Tza-Huei Wang
Johns Hopkins University, USA

M1-116.b **ENGINEERING MULTIPLY ENCAPSULATED MICROGELS FOR CONTROLLED LONG-TERM DRUG DELIVERY**
Jing Liu, Cassidy Marie Enloe, Ralph McBride, John S. Oakey, and Katie Li-Oakey
University of Wyoming, USA

M1-117.b **FULLY PRINTED PIEZOELECTRIC DEVICES**
Marc Alique[1], Marcos Duque[2], Claudia Delgado[1], Paul Lacharmoise[1], Gonzalo Murillo[2], and Ana Moya[1]
[1]Fundació Eurecat, SPAIN and [2]IMB-CNM (CSIC), SPAIN

M1-118.b **NANOPARTICLE DETECTION BY SOLID-STATE NANOPORE INTEGRATED INTO A REUSABLE MICROFLUIDIC DEVICE**
Izadora Mayumi Fujinami Tanimoto[1,2], Benjamin Cressiot[3], Jean Roman[1], Nathalie Jarroux[1,2], Gilles Patriarche[1], Bruno Le Pioufle[1], Juan Pelta[1,2,3], and Laurent Bacri[1,1]
[1]Université Paris-Saclay, FRANCE, [2]Université d'Evry, FRANCE, and [3]CY Cergy Paris Université, FRANCE

M1-119.b **WHY ARE 3D-PRINTED MOLDS INHIBITING PDMS CURING?**
Bastien Venzac[1], Shanliang Deng[1], Ziad Mahmoud[2], Aufried Lenferink[1], Fabrice Bray[2], Cees Otto[1], Christian Rolando[2], and Séverine Le Gac[1]
[1]University of Twente, THE NETHERLANDS and [2]Université de Lille, FRANCE

M2-216.b **AN INTEGRATED FLEXIBLE PLATFORM WITH PRINTED ORGANIC ELECTROCHEMICAL AND FIELD-EFFECT TRANSISTORS FOR BIOCHEMICAL SENSING**
Silvia Demuru[1], Khalil Chennit[2], Vincent Noël[2], Benoit Piro[2], Giorgio Mattana[2], and Danick Briand[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and [2]Paris Diderot University, FRANCE

M2-217.b **ETCHED SILICON µDICER FOR UNIFORM SECTIONING OF TISSUE SAMPLES**
Seth C. Cordts, Saisneha Koppaka, Nicolas Castaño, and Sindy K.Y. Tang
Stanford University, USA

M2-218.b IN-SITU 3D WRITING OF MICROELECTRODES BASED ON PLASMA-ASSISTED MICROPLATING
Shinya Sakuma, Natsumi Basaki, Keita Ichikawa, and Yoko Yamanishi
Kyushu University, JAPAN

M2-219.b OPTICAL GROWTH AND PATTERNING OF HIGHLY CONDUCTIVE SILVER ON ULTRASMOOTH NANOCELLULOSE PAPER
Yueyue Pan, Sina Kheiri, Zhen Qin, Binbin Ying, Peng Pan, Ran Peng, and Xinyu Liu
University of Toronto, CANADA

T3-315.b ANALYSIS OF INSERTION FORCE OF POLYMER MICRONEEDLES WITH HIGH ASPECT RATIO
Yukihiro Kanda[1], Hiroaki Takehara[1,2], and Takanori Ichiki[1,2]
[1]University of Tokyo, JAPAN and [2]Kawasaki Institute of Industry Promotion, JAPAN

T3-316.b FABRICATION AND CHARACTERIZATION OF 3D MICROFLUIDICS BLADES TO IMPROVE THE CUTTING OF BIOLOGICAL MATERIALS
Saisneha Koppaka, Lucas R. Blauch, Kevin S. Zhang, Seth C. Cordts, and Sindy K.Y. Tang
Stanford University, USA

T3-317.b MECHANICALLY DIRECTING THE DIFFERENTION AND ORGANISATION OF STEM CELL TO RECAPITULATE KEY LIVER FUNCTION
Mary Okesola, Tamir S. Rashid, and Ciro Chiappini
King's College London, UK

T3-318.b PIXELATED CHEMICAL DISPLAYS FOR DRY SURFACE PATTERNING IN INDUSTRIAL ROLL-TO-ROLL PROCESSES
Pierre-Alexandre Goyette[1] and Thomas Gervais[1,2]
[1]École Polytechnique de Montréal, CANADA and [2]Université de Montréal, CANADA

T4-414.b 2D TO 3D TRANSFORMATION OF PEN-DRAWING
Sumin Lee[1], Seo Woo Song[1], Jun Kyu Choe[2], Na-Hyang Kim[2], Junwon Kang[1], Ju-Young Kim[2], Jiyun Kim[2], and Sunghoon Kwon[1]
[1]Seoul National University, KOREA and [2]Ulsan National Institute of Science & Technology (UNIST), KOREA

T4-415.b BIOMIMETIC MICROFLUIDIC SYSTEM FOR EVALUATION OF SPERM NAVIGATION BEHAVIOR
Yimo Yan, Qiqi Fu, Boxuan Zhang, and Ran Liu
Tsinghua University, CHINA

T4-416.b FABRICATION AND CHARACTERIZATION OF LITHIUM DOPED NAFION MEMBRANE AND HOLLOW GLASSY CARBON MICRONEEDLE FOR MICROPUMP BASED DRUG DELIVERY
Arkaprava Datta, Richa Mishra, Shatavisha Biswas, Jhimli Sarkar Manna, Riddhiman Dhar, and Tarun Kanti Bhattacharyya
Indian Institute of Technology, Kharagpur, INDIA

T4-417.b METAMOLDING: A MODULAR APPROACH TOWARD LARGE SCALE MICROPATTERNING AND MICROFLUIDICS
Jung Y. Han, Pranav Menon, and Don L. DeVoe
University of Maryland, College Park, USA

T4-418.b QUANTITATIVE DESIGN STRATEGY OF THE RESOLUTION AND SCREEN AREA OF MICROFLUIDIC REFLECTIVE DISPLAY WITH SUB-PIXELS
Jumpei Muramatsu and Hiroaki Onoe
Keio University, JAPAN

W5-514.b 360° LIGHT HARVESTING REFLECTOR FULLY INTEGRATED ON MICRLFUIDIC PLATFORM
Filippo Storti[1,2], Silvio Bonfadini[1], and Luigino Criante[1]
[1]Istituto Italiano di Tecnologia, ITALY and [2]Politecnico di Milano, ITALY

W5-515.b CELL TRANSPORT WITH ADDRESSABLE MICROCHANNEL FORMED BY GEL ACTUATORS
Hiroki Wada[1], Yuha Koike[1], Yoshiyuki Yokoyama[2], and Takeshi Hayakawa[1]
[1]Chuo University, JAPAN and [2]Toyama Industrial Technology Research and Development Center, JAPAN

W5-516.b FABRICATION OF ACTIVE MICROFLUIDICS ON GLASS WITH SEMICONDUCTOR GRADE MATERIAL
Boshen Liang[1,2], Grim Keulemans[1], Brice Eychenne[1], Shruti Jambaldinni[1], David Cheyns[1], Tim Stakenborg[1], Veronique Rochus[1], Paul Heremans[1,2], and Lei Zhang[1]
[1]IMEC, BELGIUM and [2]KU Leuven, BELGIUM

W5-517.b MICRO-PATTERNED PAPER FOR DRUG TESTING OF 3D TUMOR MODELS
Bisan Samara[1], Pavithra Sukumar[1], and Mohammad A. Qasaimeh[1,2]
[1]New York University Abu Dhabi, UAE and [2]New York University, USA

W5-518.b RADIOPAQUE HYDROGEL MICROFIBER FOR ARTERIAL EMBOLIZATION
Naoki Takakura[1], Hiroki Ohta[2], Teppei Komatsu[2], Yuta Kurashina[3], Hirotaka J. Okano[2], and Hiroaki Onoe[1]
[1]Keio University, JAPAN, [2]Jikei University School of Medicine, JAPAN, and
[3]Tokyo Institute of Technology, JAPAN

W6-614.b 3D PRINTED MULTIPURPOSE ATOMIC FORCE MICROSCOPY PROBES
Ayoub Glia, Muhammedin Deliorman, and Mohammad A. Qasaimeh
[1]New York University Abu Dhabi, UAE and [2]New York University, USA

W6-615.b DIGITAL LIGHT PROCESSING-BASED 3D PRINTED HYDROGEL SCAFFOLDS FOR ARTICULAR CARTILAGE TISSUE ENGINEERING
Chuan-Yung Wu[1], Yun-Jie Hao[1], Yu-Chuan Su[1], and Fan-Gang Tseng[1,2]
[1]National Tsing Hua University, TAIWAN and [2]Academia Sinica, TAIWAN

W6-616.b FABRICATION OF HIGHLY ORDERED POLYCAPROLACTONE MICROSPHERES FOR *IN VITRO* DRUG DELIVERY USING MICROFLUIDIC TECHNOLOGIES
Alejandro Forigua, Laila Abelseth, Stephanie M. Willerth, and Katherine S. Elvira
University of Victoria, CANADA

W6-617.b MICROFLUIDIC DEVICES FOR PLASMA SEPARATION FABRICATED WITH A HIGH RESOLUTION CUSTOM MADE 3D PRINTER
Sandra Garcia-Rey[1,2], Gregory P. Nordin[1], Lourdes Basabe-Desmonts[1,3], Fernando Benito-Lopez[1], and Adam T. Woolley[2]
[1]University of the Basque Country, SPAIN, [2]Brigham Young University, USA, and
[3]IKERBASQUE, Basque Foundation for Science

W6-618.b STRETCHABLE INERTIAL MICROFLUIDICS
Hedieh Fallahi, Jun Zhang, Hoang-Phuong Phan, and Nam-Trung Nguyen
Griffith University, AUSTRALIA

Th7-714.b 3D SKIN MICROFLUIDIC PHANTOM FOR IN VITRO WEARABLE TESTING
Genís Rabost-Garcia[1,2], Oscar Carreras-Gallo[1], Valeria Colmena[2], Javier Aguilar[2], Jaime Punter-Villagrasa[2], Francesc X. Muñoz[2,3], Josep Farré-Lladós[1], and Jasmina Casals-Terré[1]
[1]Universitat Politècnica de Catalunya, SPAIN, [2]Onalabs Inno-hub S.L., SPAIN, and
[3]Centro Nacional de Microelectrónica, SPAIN

Th7-715.b DNA MICRO-DISK FOR THE EFFICIENT MANAGEMENT OF DNA-BASED DATA STORAGE
Hansol Choi[1], Yeongjae Choi[1], Amos Chungwon Lee[1], Wook Park[2], and Sunghoon Kwon[1]
[1]Seoul National University, KOREA and [2]Kyung Hee University, KOREA

Th7-716.b FOCUSING OF MICROPARTICLES AT LOW REYNOLDS NUMBERS
Tianlong Zhang[1,2], Yaxiaer Yalikun[1], Misuzu Namoto[1], Kazunori Okano[1], Yo Tanaka[3], Ming Li[2], and Yoichiroh Hosokawa[1]
[1]Nara Institute of Science and Technology, JAPAN, [2]Macquarie University, AUSTRALIA, and [3]RIKEN, JAPAN

Th7-717.b MULTIPLEXED CONVECTION-ENHANCED KINETICS IN MICROTITER PLATES
Iago Pereiro, Anna Fomitcheva Khartchenko, Robert D. Lovchik, and Govind V. Kaigala
IBM Research - Europe, SWITZERLAND

Th7-718.b TUNING FIELD NON-UNIFORMITY ACROSS MICROCHANNELS FOR FLOW-THROUGH DIELECTROPHORETIC SEPARATIONS
XuHai Huang, Karina Torres-Castro, Walter Varhue, and Nathan S. Swami
University of Virginia, USA

Th8-814.b A GENERALIZED SEMI-AUTOMATED RATIONAL DESIGN OF MICROPILLAR ARRAYS FOR MECHANOBIOLOGICAL STUDIES
Christopher J. Stubbs[1], Samuel O. Sofela[2,3], Navajit S. Baban[2,3], and Yong-Ak Song[2,3]
[1]University of Idaho, USA, [2]New York University Abu Dhabi, UAE, and [3]New York University, USA

Th8-815.b EASILY-FABRICATED FLUOROPOLYMER CHIPS FOR SENSITIVE LONG-TERM ABSORBANCE MEASUREMENT IN DROPLET MICROFLUIDICS
Adrian M. Nightingale[1], Sammer-ul Hassan[1], Kyriacos Makris[2], Wahida T. Bhuiyan[1], Terry J. Harvey[1], and Xize Niu[1,2]
[1]University of Southampton, UK and [2]SouthWestSensor Ltd., UK

Th8-816.b FOUR-DIMENSIONAL PHOTONIC MICRO-ACTUATORS FOR MICROFLUIDICS APPLICATIONS
Marc del Pozo[1], Colm Delaney[2], Cees W.M. Bastiaansen[1,3], Dermot Diamond[4], Albert P.H.J. Schenning[1], and Larisa Florea[2]
[1]Eindhoven University of Technology, THE NETHERLANDS, [2]Trinity College Dublin, IRELAND, [3]Queen Mary University of London, UK and [4]Dublin City University, IRELAND

Th8-817.b NanoFACEs: AN OPTICALLY TRANSPARENT NANOPAPER-BASED DEVICE FOR CELL CULTURE
Siwan Park[1], Binbin Ying[1,2], Edmond W.K. Young[1], and Xinyu Liu[1]
[1]University of Toronto, CANADA and [2]McGill University, CANADA

Th8-818.b VISCOELASTIC FOCUSING OF PARTICLES IN TRIANGULAR MICROCHANNEL
Prithviraj Mukherjee, Jian Zhou, and Ian Papautsky
University of Illinois, Chicago, USA

b - Micro- and Nanoengineering

Nanoscale Fabrication, Patterning, and Integration

M1-120.b POLYMER-BASED NANOFLUIDIC DEVICES FOR RESISTIVE-PULSE SENSING OF HEPATITIS B VIRUS CAPSIDS
Sheng-Yuan Huang, Mi Zhang, Zhongchao Zhao, Adam Zlotnick, and Stephen C. Jacobson
Indiana University, USA

M2-220.b APTAMER-BASED NANOFLUIDICS FOR THE MOLECULAR DETECTION IN ULTRA-SMALL VOLUME
Jinbin Yang[1], Hiroki Kamai[1], Yong Wang[2], and Yan Xu[1,3]
[1]Osaka Prefecture University, JAPAN, [2]Pennsylvania State University, USA, and [3]Japan Science and Technology Agency (JST), JAPAN

M2-221.b SURFACE PATTERNING OF NANOFLUIDIC CHANNELS AND ITS EVALUATION USING STREAMING CURRENT
Kyojiro Morikawa[1], Haruki Kazumi[1], Ryoichi Ohta[1], and Takehiko Kitamori[1,2]
University of Tokyo, JAPAN and [2]National Tsing Hua University, TAIWAN

T3-319.b COATING MOFs ON MAMMALIAN CELL FOR BIOMEDICAL APPLICATIONS
Laura Ha and Dong-Pyo Kim
Pohang University of Science and Technology (POSTECH), KOREA

T3-320.b SELECTIVE ELECTRICAL SWITCHING OF MOLECULAR MOTORS BY DYNAMIC VIRTUAL CATHODE
Kenta Hatazawa[1], Ryuzo Kawamura[2], and Takayuki Hoshino[1]
[1]Hirosaki University, JAPAN and [2]Saitama University, JAPAN

T4-419.b DEVELOPMENT OF FABRICATION METHOD FOR CONCENTRIC CONNECTION OF MICROCHANNEL AND NANOCHANNEL
Kyojiro Morikawa[1], Erina Takeuchi[1], and Takehiko Kitamori[1,2]
[1]University of Tokyo, JAPAN and [2]National Tsing Hua University, TAIWAN

T4-420.b TECHNOLOGICAL ASPECTS OF DEVICES FOR EFFICIENT ION CONCENTRATION POLARIZATION AND ELECTRODRIVENSEPARATION WITH ULTRA-SHALLOW NANOCHANNELS
Elizaveta Vereshchagina[1], Yuliya Shakalisava[2], Aina Suphellen[1], Sigurd Moe[1], and Thomas Hankemeier[2]
[1]SINTEF, NORWAY and [2]Leiden University, THE NETHERLANDS

W5-519.b FABRICATION OF SUB-40-NANOMETER NANO-IN-NANO STRUCTURES IN NANOCHANNELS
Hiroki Kamai[1] and Yan Xu[1,2]
[1]Osaka Prefecture University, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

W5-520.b TWO-PHOTON POLYMERIZATION OF MASTERS FOR POLYMERIC NANOPILLAR REPLICATION
Niamh Geoghegan[1,2], Colm Delaney[1], Larisa Florea[3], Mark O' Loughlin[1], and Susan M. Kelleher[1,2]
[1]University College Dublin, IRELAND, [2]National University of Ireland, Galway, IRELAND, and [3]Trinity College Dublin, IRELAND

W6-619.b INTEGRATION OF GLASS DEFORMATION NANOCHANNEL OPEN/CLOSE VALVES INTO A NANOFLUIDIC DEVICE AND FEMTO-LITER FLUID OPERATIONS
Hiroki Sano[1], Yutaka Kazoe[2], Kyojiro Morikawa[1], and Takehiko Kitamori[1,3]
[1]University of Tokyo, JAPAN, [2]Keio University, JAPAN, and [3]National Tsing Hua University, TAIWAN

Th7-719.b NANOFLUIDIC DEVICE WITH fL-pL DROPLET HANDLING FOR SINGLE MOLECULE CHEMICAL REACTION
Naoya Sawahata[1], Kyojiro Morikawa[1], and Takehiko Kitamori[1,2]
[1]University of Tokyo, JAPAN and [2]National Tsing Hua University, TAIWAN

Th8-819.b NANOSURFACE MICROFLUIDIC DEVICE EMBEDDED WITH NANO-TRIANGLES FOR SURFACE-ENHANCED RAMAN SPECTROSCOPY AND SURFACE-ENHANCED FLUORESCENT MICROSCOPY
Mahsa Jalali, Sayed Imman Issac Hosseini, Tamer Abdelfattah, Lara Montermini, Sebastian Wachsmann Hugo, Janusz Rak, and Sara Mahshid
McGill University, CANADA

b - Micro- and Nanoengineering

Micropumps, Valves, and Dispensers

M1-121.b A MODULAR MICROFLUIDIC PARALLEL DISPENSING SYSTEM
Dean de Boer, Anke R. Vollertsen, Albert van den Berg, Andries D. van der Meer, and Mathieu Odijk
University of Twente, THE NETHERLANDS

M2-222.b AUTOMATED BLOOD PLASMA SEPARATION AND METERING FOR CLINICAL SETTINGS AND CENTRIFUGAL MICROFLUIDICS DEVICES
Noa Lapins, Amin Kazemzadeh, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

T3-321.b AUTONOMOUS CAPILLARY MICROFLUIDIC DEVICES WITH CONSTANT FLOW RATE AND TEMPERATURE-CONTROLLED VALVING
Lanhui Li[1,2], Eiko Westerbeek[1], Jeroen Vollenbroek[1,3], Lingling Shui[2], Mathieu Odijk[1], and Jan Eijkel[1]
[1]University of Twente, THE NETHERLANDS, [2]South China Normal University, CHINA, and [3]University Medical Center, THE NETHERLANDS

T4-421.b BARRIER-FILM BASED REAGENT STORAGE AND RELEASE ON MICROFLUIDIC PLATFORMS FOR SAMPLE-TO-ANSWER AUTOMATION OF BIOASSAYS
Rohit Mishra, Darren McAuley, Natalia Rolinska, David Boyle, and Jens Ducrée
Dublin City University, IRELAND

W5-521.b DEVELOPMENT OF A MIST-BASED HYDROGEL CROSSLINKING PRINTHEAD FOR DROPLET-BASED BIOPRINTING
Ben MacCallum, Sara Badr, Emad Naseri, Armin Bodaghkhani, and Ali Ahmadi
University of Prince Edward Island, CANADA

W6-620.b 3D-PRINTED PERISTALTIC PUMP KIT
Terry Ching[1,2], Yi-Chin Toh[2,3], and Michinao Hashimoto[1]
[1]Singapore University of Technology and Design, SINGAPORE, [2]National University of Singapore, SINGAPORE, and [3]Queensland University of Technology, AUSTRALIA

W6-621.b METACHRONAL ACTUATION OF MAGNETIC ARTIFICIAL CILIA GENERATES STRONG MICROFLUIDIC PUMPING
Shuaizhong Zhang, Zhiwei Cui, Ye Wang, and Jaap den Toonder
Eindhoven University of Technology, THE NETHERLANDS

Th7-720.b A MICRO-MACHINED HYDRAULIC FLOW AND COMPLIANCE TUNER
Cornelia Nef[1], Peter Heeb[2], Sabrina Frey[3], Dominic Obrist[4], and André Bernard[5]
[1]OST University of Applied Science, SWITZERLAND, [2]FISBA AG, SWITZERLAND, [3]CorFlow Therapeutics AG, SWITZERLAND, [4]University of Bern, SWITZERLAND, [5]matriq AG, SWITZERLAND

Th7-721.b **RECIPROCATING FLOW-ASSISTED FINGER-ACTUATED DNA EXTRACTION DEVICE**
Dong Hyun Han, Juhwan Park, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

Th8-820.b **A MICROFLUIDIC VALVING ARRAY FOR WEARABLE BIOFLUID MANAGEMENT**
Jiawei Tan, Haisong Lin, Shuyu Lin, Wenzhuo Yu, Jialun Zhu, Yichao Zhao, Xuanbing Cheng, Siyang Yang, Eric Tang, and Sam Emaminejad
University of California, Los Angeles, USA

Th8-821.b **ROTARY ACTUATION SYSTEM FOR MAGNETIC BEADS**
Fujio Tsumori and Kazuki Tokumaru
Kyushu University, JAPAN

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

M1-122.b **DIRECT LASER WRITING IN THERMOPLASTIC MICROCHANNELS BY *IN SITU* PHOTOINITIATION**
Jung Y. Han, Sarah Warshawsky, and Don L. DeVoe
University of Maryland, College Park, USA

M2-223.b **SIMULATION OF TUMOR CELL EXTRAVASATION ON A PHOTOLITHOGRAPHY-FREE MICROFLUIDIC DEVICE**
Yuichiro Asaumi[1] and Naoki Sasaki[1,2]
[1]Toyo University, JAPAN and [2]Rikkyo University, JAPAN

b - Micro- and Nanoengineering
New Materials and Surface Modification

M1-123.b **MECHANISTIC STUDY OF OXYGEN-SCAVENGING PROPERTIES OF OFF-STOICHIOMETRIC THIOL-ENES**
Iiro Kiiski[1], Päivi Järvinen[1], Ville Jokinen[2], and Tiina Sikanen[1]
[1]University of Helsinki, FINLAND and [2]Aalto University, FINLAND

M2-224.b **MULTI-MODAL ANALYSIS OF TUMOR-DERIVED EXTRACELLULAR VESICLES IMMUNOCAPTURED FROM PLASMA**
Pepijn Beekman[1], Agustin Enciso-Martinez[2], Melissa Piontek[3], Leon Terstappen[2], Wouter Roos[3], Cees Otto[2], and Séverine Le Gac[1]
[1]University of Twente, THE NETHERLANDS and [2]Rijksuniversiteit Groningen, THE NETHERLANDS

T3-322.b **DEVELOPMENT OF A FLOW-FREE GRADIENT GENERATOR USING A SELF-ADHESIVE THIOL-ACRYLATE MICROFLUIDIC RESIN/HYDROGEL (TAMR/H) HYBRID SYSTEM**
Anowar H. Khan[1], Noah M. Smith[1], Michael P. Tullier[1], B. Seth Roberts[1], Derek Englert[2], John A. Pojman[1], and Adam T. Melvin[1]
[1]Louisiana State University, USA and [2]University of Kentucky, USA

T3-323.b **NANOCATALYSTS FOR MAGNETIC FILED ASSISTED BIOFILM ERADICATION**
Mamata Karmacharya[1,2], Sumit Kumar[1,2], and Yoon-Kyoung Cho[1,2]
[1]Ulsan National Institute of Science & Technology (UNIST), KOREA and
[2]Institute for Basic Science (IBS), KOREA

T4-422.b **ELECTROACTIVE POLYMER MEMBRANES AS SUBSTRATES FOR POINT-OF-CARE DEVICES**
Ricardo Brito-Pereira[1], André S. Macedo[1], Senentxu Lanceros-Méndez[1,2,3], and Vanessa F. Cardoso[1]
[1]University of Minho, PORTUGAL, [2]BCMaterials, SPAIN, and
[3]IKERBASQUE, Basque Foundation for Science, SPAIN

W5-522.b **EVALUATION OF MINERAL AND BACTERIA ADHESION ON MICROCHANNEL COATED WITH DIAMOND LIKE CARBON AND MPC BASED COPOLYMER**
Tomomi Sato, Shun Murooka, Toshihiro Kasama, Zhou Lu, Madoka Takai, and Ryo Miyake
University of Tokyo, JAPAN

W6-622.b **FABRICATION OF GOLD-NANORINGS FOR MASSIVELY PARALLEL INTRACELLULAR DELIVERY**
Loganathan Mohan[1], Ren Hattori[1], Miho Ishii-Teshima[1], Sathish Sundar Dhilip Kumar[2], Srabani Kar[3], Tuhin Subhra Santra[4], Takayuki Shibata[1], and Moeto Nagai[1]
[1]Toyohashi University of Technology, JAPAN, [2]University of Johannesburg, SOUTH AFRICA, [3]University of Cambridge, UK, and [4]Indian Institute of Technology Madras, INDIA

Th7-722.b **HOLIFAB: PRECISE FLOW CONTROL USING PHOTO ACTUATED HYDROGEL VALVES AND PI CONTROLLED LED ACTUATION FOR MICROFLUIDIC MEMS.**
Ruairí Barrett, Komala Pandurangan, Akshay Shinde, Dermot Diamond, and Margaret McCaul
Dublin City University, IRELAND

Th8-822.b **MECHANICAL CHARACTERIZATION OF SPIDER SILK NANOMEMBRANES**
Linnea Gustafsson, Christos Panagiotis Tasiopoulos, Thijs Duursma, Ronnie Jansson, Thomas Christian Gasser, My Hedhammar, and Wouter van der Wijngaart
KTH Royal Institute of Technology, SWEDEN

b - Micro- and Nanoengineering
Others

T4-423.b **RECONSTITUTION OF HUMAN PRIMORDIAL GERM CELL DEVELOPMENT FROM PLURIPOTENT STEM CELLS IN A SYNTHETIC EMBRYONIC ENVIRONMENT**
Sajedeh Nasr Esfahani[1], Yi Zheng[1], Agnes M. Resto Irizarry[1], Yue Shao[2], Sicong Wang[1], Xufeng Xue[1], and Jianping Fu[1]
[1]University of Michigan, Ann Arbor, USA and [2]Tsinghua University, CHINA

b - Micro- and Nanoengineering
Industrial Benefactor

M1-124.b **FROM LAB TO FAB: CONSIDERATIONS FOR DEVICE DESIGN AND MANUFACTURING OPTIONS FOR UPSCALING MICROFLUIDIC DEVICE PRODUCTION**
Holger Becker, Nadine Hlawatsch, Richard Klemm, and Claudia Gärtner
microfluidic ChipShop GmbH, GERMANY

M2-282.b **Hicomp - YOUR TRUSTED TECHNOLOGY AND SOLUTION PROVIDER FOR MICROFLUIDICS**
Yexiam Wu
HiComp Microtech (Suzhou) Co., Ltd., CHINA

Th7-783.b **MASKLESS ALIGNER TECHNOLOGY FOR THICK PHOTORESIST APPLICATIONS**
Gregg Moore and Niels Wijnaendts van Resandt
Heidelberg Instruments, Inc., USA

b - Micro- and Nanoengineering

Late News

M1-174.b **CELLOPHANE-BASED ANALYTICAL DEVICES FOR PUMP-FREE LIQUID TRANSPORT AND BACKGROUND-TINTED COLORIMETRIC ASSAYS**
Hiroki Shigemori, Kento Maejima, Hiroyuki Shibata, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

M1-175.b **ON-CHIP BIDIRECTIONAL MICROFLUIDIC PUMPING ACTUATED REMOTELY BY ACOUSTIC WAVES**
Tao Luo and Mingming Wu
Cornell University, USAch

M1-176.b **REVERSIBLE UNDERWATER-ADHESIVE HYDROGEL MICROSTRUCTURE BASED ON PHOTOCROSSLINKING GRADIENT**
Jinsik Yoon and Wook Park
Kyung Hee University, KOREA

M2-274.b **DEMOCRATISED MICROFLUIDIC PROTOTYPING USING A 3D-PRINTED CLICK-AND-CONNECT SCAFFOLD LIBRARY**
Robert R. Hughes, Harry Felton, and Andrea Diaz Gaxiola
University of Bristol, UK

M2-275.b **OPTICAL METHOD FOR THE MEASUREMENT OF TRANSIENT FLOW RATES OF A TPU-MEMBRANE-BASED MICROPUMP**
Hannah Bott[1], Ronny Leonhardt[1], Franz Laermer[1], Roland Zengerle[2], and Jochen Hoffmann[1]
[1]Robert Bosch GmbH, GERMANY and [2]University of Freiburg, GERMANY

M2-276.b **SIMPLE METHOD FOR MICRO-PATTERNED CONDUCTIVE HYDROGEL FABRICATION**
Hyeli Kim, Goomin Kwon, Jungmok You, and Wook Park
Kyung Hee University, KOREA

T3-375.b **DESIGN AND MICROFABRICATION OF MICROREACTOR ARRAY FOR PLATE READER FOR *E. Coli* RESEARCH**
Gaozhe Cai[1,2], Shilun Feng[1], Yang Liu[1], Wenshuai Wu[1], Jingbo Zhang[1], Jianhan Lin[2], and Ai-Qun Liu[1]
[1]Nanyang Technological University, SINGAPORE and [2]China Agricultural University, CHINA

T3-376.b **STUDY OF THE FABRICATION OF MODULAR FLUIDIC/MICROFLUIDIC PLATFORM USING A LOW-CLASS 3D PRINTER**
Isa Anshori[1], Vincent Lukito[1], Angelica Irene[1], Brian Yuliarto[1], and Briliant Adhi Prabowo[2]
[1]Institut Teknologi Bandung, INDONESIA and [2]International Iberian Nanotechnology Laboratory, PORTUGAL

T4-475.b **DEVELOPMENT OF A MICRO-MICROBIAL DOMESTICATION POD FOR *IN-SITU* MARINE BACTERIAL CULTIVATION**
Sydney K. Wheatley[1], Christopher Cartmell[1], Bradley A. Haltli[1,2], Russell G. Kerr[1,2], and Ali Ahmadi[1]
[1]University of Prince Edward Island, CANADA and [2]Nautilus Biosciences, CANADA

T4-476.b **THROMBOGENIC POLYMER SURFACE MANIPULATION OF MICROFLUIDIC CHIPS VIA ULTRAVIOLET LASER**
Yi Xu[1], Guang Yu[1], Ruqiong Nie[2], and Zhigang Wu[1]
[1]Huazhong University of Science and Technology, CHINA and [2]Sun Yat-Sen University, CHINA

W5-574.b **DUAL-SCALE PERMANENT MAGNET FOR ENHANCED MAGNETIC SORTING EFFICIENCY IN A MICROFLUIDIC SYSTEM**
Lucie Descamps[1], Samir Mekkaoui[1], Marie-Charlotte Audry[1], Emmanuelle Laurenceau[1], Jessica Garcia[1], Léa Payen[2], Anne-Laure Deman[1], and Damien Le Roy[2]
[1]Université Lyon 1, FRANCE and [2]Hospices Civils de Lyon, FRANCE

W5-575.b **TRAFFIC-LIGHT-TYPE MICROFLUIDIC PAPER-BASED ANALITICAL DEVICE FOR HYDROGEN PEROXIDE DETECTION**
Sera Ohta, Ryuya Hiraoka, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

W6-675.b **ACTIVE AND PASSIVE FLOW CONTROL BY PNEUMATIC ACTUATED FLEXIBLE VALVE ON SINGLE LAYER**
Yoshiharu Bessho, Yingzhe Wang, and Keisuke Morishima
Osaka University, JAPAN

W6-676.b **FABRICATION OF A MICROPARTICLE COATED WITH A GOLD NANO THIN FILM**
Kibeom Kim and Wook Park
Kyung Hee University, KOREA

Th7-774.b **BATTERY-FREE BUILT-IN MICROPUMP DRIVEN BY A SELF-PROPELLED DROPLET**
Taiji Okano[1], Kazuki Otsubo[2], Junya Wada[2], and Hiroaki Suzuki[2]
[1]Tokyo University of Agriculture and Technology, JAPAN and [2]Chuo University, JAPAN

Th7-775.b **HYDROGEL-BASED Microswimmer MOVING TOWARDS THE TARGET POSITION WITH RECOGNITION OF ENVIRONMENTAL CHANGES**
Cheolheon Park[1], Youngjae Choi[2], Sunghoon Kwon[2], and Wook Park[1]
[1]Kyung Hee University, KOREA and [2]Seoul National University, KOREA

Th8-872.b **FULLY AUTOMATED IMMUNOASSAY IN A LAB-ON-A-FOIL DEVICE WITH LED-ACTUATED VALVES**
Mireia Burdó-Masferrer[1], María Díaz-González[1], Ana Sanchis[2,3], M.-Pilar Marco[2,3], César Fernández-Sánchez[1,3], and Antonio Baldi[1]
[1]Institut de Microelectrònica de Barcelona, SPAIN, [2]Institut de Química Avançada de Catalunya, SPAIN, and [3]CIBER-BBN, SPAIN

Th8-873.b **INK-JET PRINTED MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICES RELYING ON QR CODE DETECTION**
Aya Katoh, Kento Maejima, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

c - Sensors and Detection Technologies

Physical Sensors

M1-125.c **HARDNESS MEASUREMENT BY MICROMANIPULATOR WITH EMBEDED SEMICONDUDTOR STRAIN GAUGE**
Mitsuhiro Horade
National Defense Academy of Japan, JAPAN

M2-225.c **LOVE WAVE SENSOR FOR DETECTION OF VISCOSITY CHANGES ON A CELL MONOLAYER**
Pedro A. Segura Chavez[1,2], Frederic Sarry[1,2], Mohamed Lamine Fayçal Bellaredj[2], Jérémy Bonhomme[1,2], Lucile Olive[2], Denis Beyssen[2], Mourad Oudich[2], and Paul G. Charette[1]
[1]Universite de Sherbrooke, CANADA and [2]Universite de Lorraine, FRANCE

T3-324.c **DEVELOPMENT OF A QCM-P SENSING SYSTEM FOR BIOLOGICAL DETECTION**
Siqi Ji[1], Berk Akinci[2], Tory A. Farnping[3], Thomas A. Radzik[3], and Hongwei Sun[1]
[1]University of Massachusetts, Lowell, USA, [2]Invitrometrix, USA, and [3]Lowell High School, USA

T4-424.c **WEARABLE MICROFLUIDIC SENSOR TO MONITOR SWEAT FLOW RATE AND ELECTROLYTE CONCENTRATION**
Yuki Hashimoto[1], Yuki Sakurai[1,2], Takako Ishihara[1], Kei Kuwabara[1], and Hiroyoshi Togo[1]
[1]NTT Device Innovation Center, NTT Corporation, JAPAN and [2]Nagaoka University of Technology, JAPAN

W5-523.c **A FLEXIBLE AND STABLE STRAIN SENSOR BASED ON POLYIMIDE INCORPORATED WITH CARBON BLACK**
Jie Wang, Yunfei Liu, Wenhan Chang, Shoule Sun, Chengchen Gao, Zhenchuan Yang, and Yilong Hao
Peking University, CHINA

W6-623.c **CARBON NANOTUBE-PAPER COMPOSITE-CAPACITIVE SENSOR FOR RESPIRATORY MONITORING**
Tianyi Li, Vigneshwar Sakthivelpathi, Seong-Joong Kahng, Zhongjie Qian, Sheila Goodman, Heather Wise, Anthony B. Dichiara, Younghoon Kwon, and Jae-Hyun Chung
University of Washington, USA

Th7-723.c **A COMPACT MICROCALORIMETER FOR THE RAPID CHARACTERIZATION OF LIQUID THERMAL PROPERTIES**
Sheng Ni[1], Hanliang Zhu[2], Pavel Neuzil[2,3], and Levent Yobas[1]
[1]Hong Kong University of Science and Technology, HONG KONG,
[2]Northwestern Polytechnical University, CHINA, and [3]Brno University of Technology, CZECH REPUBLIC

Th8-823.c **DESIGN AND CONSTRUCTION OF A CONTINUOUS QUANTITATIVE FORCE MEASUREMENT MICRODEVICE FOR ARTIFICIAL SKELETAL MUSCLE**
Masaki Harada, Tomohiro Nakamura, and Sho Yokoyama
Osaka Institute of Technology, JAPAN

c - Sensors and Detection Technologies

Chemical & Electrochemical Sensors

M1-126.c **A PAPER-BASED DEVICE FOR INTEGRATED HIGH-THROUGHPUT COVID-19 DETECTION**
Hao Sun[1,2], Jianping Zheng[3], Hui Dong[1,2], and Yuan Jia[4]
[1]Fuzhou University, CHINA, [2]Fujian Provincial Collaborative Innovation Center of High-End Equipment Manufacturing, CHINA, [3]Fujian Provincial Hospital, CHINA, and [4]Southeast University, CHINA

M1-127.c **ELECTROCHEMICAL OLIGONUCLEOTIDE TEMPLATED REACTIONS**
Robert B. Channon[1], Philip Gillespie[1], Md Nazmul Islam[2], Xiaotong Meng[1], Yu-Chih Chen[1], Danny O'Hare[1], and Sylvain Ladame[1]
[1]Imperial College London, UK and [2]Teeside University, UK

M1-128.c **MULTISTEP REACTIONS BY ALIGNED TABLET REAGENTS FOR LONG TERM MONITORING OF PLANT CULTURE SOLUTION**
Yoko Azuma[1,4], Toshihiro Kasama[1,4], Yoshishige Endo[1,4], Tetsushi Koide[2,4], Chiharu Sone[3,4], Masashi Komine[3,4], Atsushi Ogawa[3,4], and Ryo Miyake[1,4]
[1]University of Tokyo, JAPAN, [2]Hiroshima University, JAPAN, [3]Akita Prefectural University, JAPAN, and [4]Japan Science and Technology Agency (JST), JAPAN

M1-129.c **PRINTED MULTISENSING PATCH WITH INTEGRATED MICROFLUDICS FOR WEARABLE SWEAT ANALYSIS APPLICATIONS**
Brince Paul[1], Silvia Demuru[1], Rubaiyet Iftekharul Haque[1], Peter van der Wal[1], Céline Lafaye[2], Mathieu Saubade[2], and Danick Briand[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and
[2]Centre Hospitalier Universitaire Vaudois (CHUV), SWITZERLAND

M2-226.c **A THREAD-BASED ELECTROCHEMICAL SENSOR FOR SPATIAL MONITORING OF WOUND OXYGENATION**
Junfei Xia, Wenxin Zeng, Wei Wang, Rachel Owyeung, Victor Arsenescu, and Sameer Sonkusale
Tufts University, USA

M2-227.c **ELECTROCHEMICAL SENSOR FOR Mn DETECTION IN DRINKING WATER**
Elena Boselli[1], Zhizhen Wu[1], Alexa Friedman[2], Birgit Claus Henn[2], and Ian Papautsky[1]
[1]University of Illinois, Chicago, USA and [2]Boston University School of Public Health, USA

M2-228.c **NANOPORE DECODING FOR DNA COMPUTATION WITH PARALLEL SELF-ASSEMBLY**
Sotaro Takiguchi and Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN

M2-229.c **TiO_2 NANOTUBES-HYDROGEL BIOSENSOR SCAFFOLD FOR SWEAT MONITORING**
Udara B. Gunatilake[1], Edilberto Ojeda[1], Sandra Garcia-Rey[1], Lourdes Basabe-Desmonts[1,2], and Fernando Benito-Lopez[1]
[1]University of the Basque Country, SPAIN and [2]Basque Foundation of Science, IKERBASQUE, SPAIN

T3-325.c **ANALYSIS OF ION COMPONENTS DERIVED FROM PARTICULATE MATTER USING ION SELECTIVE ELECTRODES**
Haruka Yamauchi[1], Taisuke Shimada[1], Takao Yasui[1,2], Tatsuro Goda[3], Noritada Kaji[4], Yuji Miyahara[3], and Yoshinobu Baba[1,5]
[1]Nagoya University, JAPAN, [2]Japan Science and Technology Agency (JST), JAPAN, [3]Tokyo Medical and Dental University, JAPAN, [4]Kyushu University, JAPAN, [5]National Institutes for Quantum and Radiological Science and Technology, JAPAN

T3-326.c **EMBEDDED SENSOR BASED ON TANDEM SMARTPHONE-MICROFLUIDIC DEVICE FOR THE DETECTION OF TNT IN SURFACE AND SEA WATERS**
Jérémy Bell, Mustafa Biyikal, and Knut Rurack
Bundesanstalt für Materialforschung & -prüfung (BAM), GERMANY

T3-327.c **NOVEL FORMAT OF A PAPER-BASED DEVICE FOR COMPETITIVE IMMUNOASSAYS**
Takeshi Komatsu, Masatoshi Maeki, Akihiko Ishida, Hirofumi Tani, and Manabu Tokeshi
Hokkaido University, JAPAN

T3-328.c **TOWARDS ON-SITE MONITORING OF SOIL NUTRIENTS VIA CAFETIERE-BASED EXTRACTION AND PAPER-BASED ANALYSIS**
Samantha Richardson[1], Samira AlHinai[1], Jesse Gitaka[2], Will M. Mayes[1], Mark Lorch[1], and Nicole Pamme[1]
[1]University of Hull, UK and [2]Mount Kenya University, KENYA

T4-425.c **ANALYSIS OF PARTICULATE MATTERS VIA SURFACTANT-ASSISTED IONIC CURRENT SENSING**
Keiko Fujino[1], Taisuke Shimada[1], Takao Yasui[1,2], Kazuki Nagashima[3], Takashi Yanagida[3], Noritada Kaji[3], and Yoshinobu Baba[1,4]
[1]Nagoya University, JAPAN, [2]Japan Science and Technology Agency (JST), JAPAN, [3]Kyushu University, JAPAN, and [4]National Institutes for Quantum and Radiological Science and Technology, JAPAN

T4-426.c **HIGH-RESOLUTION BIOCHEMICAL ACTIVITY MEASUREMENTS WITH COMMERCIAL TRANSISTORS**
Seulki Cho, Son T. Le, Curt A. Richter, and Arvind Balijepalli
National Institute of Standards and Technology (NIST), USA

T4-427.c **ON-CHIP MONITORING OF PHOSPHATE VIA A DROPLET MICROFLUIDIC SENSOR**
Bingyuan Lu[1], Sharon Coleman[1], Evanthia Papadopoulou[2], Kyriacos Makris[2], Brett M. Warren[2], Adrian M. Nightingale[1], and Xize Niu[1]
[1]University of Southampton, UK and [2]SouthWestSensor Ltd., UK

T4-428.c **WEARABLE PATCH-TYPE DEVICE FOR BIO-INFORMATION MONITORING WITH POROUS MICRONEEDLE AND FLEXIBLE AG/AGCL REFERENCE ELECTRODE**
Ryohei Takizawa, Yuina Abe, Bibek Raut, Hajime Konno, Natsumi Kimura, Shotaro Yoshida, Hiroya Abe, and Matsuhiko Nishizawa
Tohoku University, JAPAN

W5-524.c **A BIOCHIP INTEGRATED WITH MICROELECTRODES FOR MONITORING OF PYOCYANIN IN THE FORMATION PROCESS OF BIOFILMS**
Lulu Liu, Ling Li, Chuang Ge, and Yi Xu
Chongqing University, CHINA

W5-525.c **CARBON DOT-CONJUGATED-NAPHTHALIMIDE BASED RATIOMETRIC FLUORESCENCE PROBE FOR HYALURONIDASE DETECTION**
Pushap Raj and Tae Yoon Lee
Chungnam National University, KOREA

W5-526.c **HYBRID WEARABLE TECHNOLOGY FOR SWEAT BIOMONITORING**
Meritxell Rovira[1], César Fernández-Sánchez[1], Silvia Demuru[2], Rubaiyet Haque[2], Danick Briand[2], and Cecilia Jimenez-Jorquera[1]
[1]Instituto de Microelectrónica de Barcelona (IMB-CNM), SPAIN and
[2]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W5-527.c **OPEN CHANNEL SWEAT VIA FOR LONG-TERM MONITORING OF SWEAT RATE AND CONCENTRATION**
Jina Choi[1], Sangha Kim[1], Sunho Kim[2], Hyunjung Yi[2], and Rhokyun Kwak[1]
[1]Hanyang University, KOREA and [2]Korea Institute of Science and Technology (KIST), KOREA

W6-624.c **A DIFFERENTIAL MODE EXTENDED GATE FIELD EFFECT TRANSISTOR PH SENSOR BASED ON AL_2O_3 THICKNESS DEPENDENT SENSITIVITY**
Qi Cheng, Qiancheng Zhao, Chengchen Gao, Yilong Hao, and Zhenchuan Yang
Peking University, CHINA

W6-625.c **DIFFERENTIAL PHOTOELECTROCHEMICAL DNA SENSING BY MODULATING THE PLASMONIC PROPERTIES OF METAL NANOPARTICLES**
Sudip Saha, Amanda Victorious, and Leyla Soleymani
McMaster University, CANADA

W6-626.c **HYDROGEL-BASED TRANSPARENT SUBDURAL ELECTRODE WITH IONIC CONNECTION**
Ayaka Nishimura, Ryota Suwabe, Yuka Ogihara, Yuina Abe, Hiroya Abe, Shotaro Yoshida, and Matsuhiko Nishizawa
Tohoku University, JAPAN

W6-627.c **OXYGEN METABOLISM ANALYSIS OF A VASCULARIZED SPHEROID USING A SCANNING ELECTROCHEMICAL MICROSCOPY**
Yuji Nashimoto[1], Rei Mukomoto[1], Takato Terai[1], Kosuke Ino[1], Koichi Nishiyama[2], Ryuji Yokokawa[3], Takahsi Miura[4], and Hitoshi Shiku[1]
[1]Tohoku University, JAPAN, [2]Kumamoto University, JAPAN, [3]Kyoto University, JAPAN, and [4]Kyushu University, JAPAN

Th7-724.c **A DUAL-READOUT PAPER-BASED SENSOR FOR ON-SITE DETECTION OF PENICILLINASE WITH A SMARTPHONE**
Jia Xu and Li Yang
Northeast Normal University, CHINA

Th7-725.c **EFFECT OF MEMBRANE ELECTRODE VIBRATION ON MASS TRANSFER FOR ELECTROCHEMICAL MICRO SENSORS**
Tianyi Zhang, Peng Zhou, Terrence Simon, and Tianhong Cui
University of Minnesota, USA

Th7-726.c **LABEL-FREE IMPEDIMETRIC SENSING OF CORTISOL IN HUMAN SERUM BASED ON NANOWELL ARRAY ELECTRODES**
Seyed Reza Mahmoodi[1], Pengfei Xie[1], Daniel P. Zachs[2], Erik J. Peterson[2], Hubert H. Lim[2], Mark Allen[3], and Mehdi Javanmard[1]
[1]Rutgers University, USA, [2]University of Minnesota, USA, and [3]University of Pennsylvania, USA

Th7-727.c **POINT-OF-CARE MICROANALYZER FOR POTENTIOMETRIC DETERMINATION OF AMMONIUM IN PLASMA**
Beatriz Rebollo-Calderon[1], Antonio Calvo-Lopez[1], Aida Ormazabal[2], Mar Puyol[1], Rafael Artuch[2], and Julian Alonso-Chamarro[1]
[1]Autonomous University of Barcelona, SPAIN and [2]Sant Joan de Déu Hospital, SPAIN

Th8-824.c **A NON-ENZYMATIC ELECTROCHEMICAL SENSOR USING WRINKLED GOLD FILM ON SHRINK POLYMER**
Xiaomeng Bian[1] and Tianhong Cui[2]
[1]Tsinghua University, CHINA and [2]University of Minnesota, USA

Th8-825.c **ELECTROCHEMICAL DETERMINATION OF MANGANESE IN WHOLE BLOOD**
Zhizhen Wu and Ian Papautsky
University of Illinois, Chicago, USA

Th8-826.c **MULTIPLEX SENSOR FOR ION SENSING BASED ON PRINTED CIRCUIT BOARD**
Zhehao Zhang and Ian Papautsky
University of Illinois, Chicago, USA

Th8-827.c **POWER-FREE AUTOMATED CAPILLARY FLOW ASSAY FOR SARS-COV-2 DETECTION**
Jeremy Link[1], Cody Carrell[1], Ilhoon Jang[1,2], Yosita Panraksa[1,3], Ana Sánchez-Cano[1,4], Zachary Call[1], Eka Noviana[1], David S. Dandy[1], Brian J. Geiss[1], and Charles S. Henry[1]
[1]Colorado State University, USA, [2]Hanyang University, KOREA, [3]Chulalongkorn University, THAILAND, and [4]Universitat Autònoma de Barcelona (UAB), SPAIN

c - Sensors and Detection Technologies

Optical Sensors & Imaging

M1-130.c **DNA SEQENCING USING RGB SENSOR OF COMSUMER DIGITAL CAMERA**
Takashi Anazawa[1], Motohiro Yamazaki[2], Shuhei Yamamoto[2], and Ryoji Inaba[2]
[1]Hitachi, Ltd., JAPAN and [2]Hitachi High-Tech Corporation, JAPAN

M1-131.c **REAL-TIME STRAIN MEASUREMENT OF PIEZOELECTRICALLY ACTUATED POLYDIMETHYLSILOXANE (PDMS) BAR USING FIBRE BRAGG GRATING SENSOR FOR BIOMEDICAL APPLICATIONS**
Rahul Kumar[1], Bruno Rente[1], Souvik Ghosh[1], Christabel Tan[2], Tong Sun[1], and Kenneth Grattan[1]
[1]City University of London, UK and [2]University of Hertfordshire, UK

M2-230.c **REAL-TIME TRACKING OF PARTICLES AT >1,200 EVENTS PER SECOND USING GPU-ACCELERATED IMAGE PROCESSING**
Arpith Vedhanayagam and Amar S. Basu
Wayne State University, USA

T3-329.c **FABRICATION AND CHARACTERIZATION OF AXIAL VIEW LIQUID ELECTRODE PLASMA**
Yueh-Han Huang[1], Daisuke Hirose[2], Meng-Jiy Wang[1], and Yuzuru Takamura[2]
[1]National Taiwan University of Science and Technology, TAIWAN and
[2]Japan Advanced Institute of Science and Technology, JAPAN

T3-330.c **REFERENCE PH MICROSENSR FOR FLUORESCENCE MEASUREMENT IN CELL CULTURE ENVIRONMENT WITHOUT INITIAL PH INFORMATION**
Hisataka Maruyama[1] and Fumihito Arai[2]
[1]Nagoya University, JAPAN and [2]University of Tokyo, JAPAN

T4-429.c **HIGH RESOLUTION PATTERNING OF HYDROGEL SENSING MOTIFS WITHIN FIBROUS SUBSTRATES FOR HIGHLY SENSITIVE AND MULTIPLEXED DETECTION OF NUCLEIC ACID BIOMARKERS**
Dana Al Sulaiman, Sarah J. Shapiro, Jose Gomez-Marquez, and Patrick S. Doyle
Massachusetts Institute of Technology, USA

T4-430.c **SOLVENT-ENHANCED PHOTOTHERMAL MOLECULE DETECTION METHOD FOR NANOFLUIDICS AND ITS APPLICATION TO FEMTOLITER NORMAL-PHASE CHROMATOGRAPHY**
Yoshiyuki Tsuyama, Kyojiro Morikawa, and Kazuma Mawatari
University of Tokyo, JAPAN

W5-528.c **A MODULAR SMARTPHONE-ENABLED PLATFORM TO DETECT NUCLEIC ACID TARGETS BASED ON QUANTIFICATION OF COALESCED LAMP PRECIPITATE**
Manaswini Masetty, Joseph Sepate, Sanghyun Do, and Aashish Priye
Univeristy of Cincinnati, USA

W5-529.c **INTEGRATED MICROFLUIDIC SERS CHIP FOR THE CAPTURE AND DETECTION OF PATHOGENIC BACTERIA IN THE AIR**
Xi Su, Rui Ren, Shifang Li, Li Chen, and Yi Xu
Chongqing University, CHINA

W5-530.c **SPATIOTEMPORAL MAPPING OF A HYPOXIA-FFA SYNERGY ON BETA CELL CALCIUM OSCILLATIONS**
Kai Duan and Joe Fujiou Lo
University of Michigan, Dearborn, USA

W6-628.c **ACHIEVING SUB-MICROMETER IMAGING RESOLUTION IN PDMS SOFT LITHOGRAPHY DEVICES USING MODIFIED INVERTED SELECTIVE PLANE ILLUMINATION MICROSCOPY**
Tienan Xu[1], Yean Jin Lim[1], Yujie Zheng[1], Moon Sun Jung[2], Katharina Gaus[2], Elizabeth E. Gardiner[1], and Woei Ming Lee[1]
[1]Australian National University, AUSTRALIA and [2]University of New South Wales, AUSTRALIA

W6-629.c **LOW-COST AND PORTABLE PHOTONIC IMMUNO-SENSOR BASED ON GUIDED MODE RESONANCE**
Alexander Drayton, Kezheng Li, Matthew Simmons, Christopher Reardon, and Thomas F. Krauss
University of York, UK

W6-630.c **ULTRASENSITIVE PLASMONIC SENSORS ON OPTICAL FIBERS END-FACE**
Alba Calatayud-Sanchez[1], Angel Ortega-Gomez[1], Javier Barroso[1], Joseba Zubia[1], Fernando Benito-Lopez[1], Joel Villatoro[1,2], and Lourdes Basabe-Desmonts[1,2]
[1]University of the Basque Country, SPAIN and [2]Basque Foundation of Science, IKERBASQUE, SPAIN

Th7-728.c **DETECTION OF HYDROGEN SULPHIDE IN HUMAN BLOOD PLASMA ON A MICROFLUIDIC PLATFORM**
Ravindra Gaikwad, Karunya Ramsamy, and Ashis K. Sen
Indian Institute of Technology, Madras, INDIA

Th7-729.c **METAL ION ENRICHMENT USING ORGANIC NANOCRYSTAL COATED-MICROFLUIDIC PAPER ANALYTICAL DEVICES TO ACHIEVE HIGHLY SENSITIVE COLORIMETRIC DETECTION**
Grasianto, Mao Fukuyama, Derrick Mott, Yoshitaka Koseki, Hitoshi Kasai, and Akihide Hibara
Tohoku University, JAPAN

Th8-828.c **DEVELOPMENT OF A SCANNING PIV TECHNIQUE FOR 3D CHARACTERIZATION OF FLOWS IN MICROCHANNELS**
Quentin Galand, Pierre Gelin, Ketki Srivastava, David Blinder, Peter Schelkens, and Wim De Malsche
Vrije Universiteit Brussel, BELGIUM

Th8-829.c **RAPID IDENTIFICATION OF HCC SERUM BASED ON MICROFLUIDIC SERS CHIP**
Xinyu He, Chuang Ge, Li Chen, and Yi Xu
Chongqing University, CHINA

c - Sensors and Detection Technologies

Others

M1-132.c **FLEXIBLE POLYOLEFIN-BASED DOPAMINE SENSOR WITH HIGH SELECTIVITY**
Wenzheng He[1], Ruitao Liu[1], Peng Zhou[2], Qingyuan Liu[1], Tianhong Cui[2]
[1]Tsinhua University, CHINA and [2]University of Minnesota, USA

M1-133.c **WIRELESS AND BATTERY-FREE DIGESTIBLE SENSOR FOR INTESTINAL BACTERIA MONITORING**
Ayaka Inami, Erika Iyama, Shun Itai, and Hiroaki Onoe
Keio University, JAPAN

M2-231.c **GRADIENT ELUTION MOVING BOUNDARY ELECTROPHORESIS OF HOMEMADE FUEL-OXIDIZER EXPLOSIVES**
Shannon T. Krauss[1], Dillon Jobes[2], and Thomas P. Forbes[1]
[1]National Institute of Standards and Technology (NIST), USA and [2]Tulane University, USA

T3-331.c **LOW-COST LOW-MOTION ARTIFACT ON-SKIN SENSOR-SYSTEM FOR PHYSIOLOGICAL SIGNAL RECORDING**
Anan Zhang, Thalia Hua, Damian Redfearn, and S.K. Ameri
Queen's University, CANADA

T4-431.c **PAPER MICROFLUIDICS DEVICE FOR LABEL-FREE DETECTION OF MESENCHYMAL STEM CELLS SECRETED VASCULAR ENDOTHELIAL GROWTH FACTOR**
Enrique Azuaje Hualde[1], Marian Martínez de Pancorbo[1], Fernando Benito Lopez[1], and Lourdes Basabe-Desmonts[1,2]
[1]University of the Basque Country, SPAIN and [2]Basque Foundation of Science, IKERBASQUE, SPAIN

W5-531.c **PLGA POROUS MICRONEEDLES FOR INTERSTITIAL FLUID COLLECTION AIMED FOR CONTINUOUS GLUCOSE SENSING**
Gwenaël Bonfante, Hakjae Lee, Leilei Bao, Nobuyuki Takama, and Beomjoon Kim
University of Tokyo, JAPAN

W6-631.c **RAPID LABEL-FREE DNA QUANTIFICATION BY MULTI-FREQUENCY IMPEDANCE SENSING ON A CHIP**
Jianye Sui[1], Neeru Gandotra[2], Curt Scharfe[2], and Mehdi Javanmard[1]
[1]Rutgers University, USA and [2]Yale University, USA

Th7-730.c **AN ULTRASENSITIVE SURFACE ACOUSTIC WAVE SENSOR BASED ON TI_3C_2Tx/Au NPS COMPOSITE FOR THE DETECTION OF ENDOTOXIN**
Xiao Li Wang, Chuang Ge, Li Chen, and Yi Xu
Chongqing University, CHINA

Th7-731.c **SHAKE IT OR SHRINK IT: MASS TRANSPORT AND KINETICS IN SURFACE BIOASSAYS USING AGITATION AND MICROFLUIDICS**
Anna Fomitcheva Khartchenko, Iago Pereiro, and Govind V. Kaigala
IBM Research - Europe, SWITZERLAND

Th8-830.c **DETECTION OF PROTEOFORMS FROM SINGLE CELLS BY MULTIPLEXED ION BEAM IMAGING**
Gabriela Lomeli[1], Marc Bosse[2], Sean Bendall[2], Michael Angelo[2], and Amy E. Herr[3]
[1]UC Berkeley – UCSF Graduate Program in Bioengineering, USA,
[2]University of California, Berkeley, USA, and [3]Stanford University, USA

Th8-831.c **STIMULI-RESPONSIVE HYDROGELS EMBEDDING MECHANICHAL METAMATERIALS FOR HIGH SENSITIVE BIOCHEMICAL SENSORS**
Shota Yamawaki, Mio Tsuchiya, and Hiroaki Onoe
Keio University, JAPAN

c - Sensors and Detection Technologies
Industrial Benefactor

T3-332.c **NOVEL IMAGING BASED HIGH-SPEED, HIGH-THROUGHPUT ANALYSIS AND CONTROL SYSTEM FOR MICROFLUIDICS**
Daniel Geiger[1], Jonas Pfeil[1], Tobias Neckernuss[1], Lisa Kwapich[2], Patricia Schwilling[2], and Othmar Marti[2]
[1]Sensific GmbH, GERMANY and [2]University of Ulm, GERMANY

T4-432.c **FAST ELECTRICAL IMPEDANCE SPECTROSCOPY FOR CELL CHARACTERIZATION AND COUNTING**
Meng Li
Zurich Instruments AG, SWITZERLAND

c - Sensors and Detection Technologies
Late News

M1-177.c **PARALLELIZED FLOW CYTOMETRY REALIZED BY ARRAY OF TIME-GATED SINGLE PHOTON AVALANCHE DIODES**
Camille Trzeciakowski[1], Daiki Sato[2], Takahiro Shindo[2], Takeshi Mitsunaka[2], Yoshihisa Fujimoto[2], Kunihiko Iizuka[2], Saori Tago[1], Teruo Fujii[1], and Soo Hyeon Kim[1,3]
[1]University of Tokyo, JAPAN, [2]Sharp Corporation, JAPAN, and
[3]Japan Science and Technology Agency (JST), JAPAN

M2-277.c **PHOTONIC SENSOR TO DETECT OF SARS-COV-2**
Binh T.T. Nguyen[1], Zhenyu Li[1], Yuzhi Shi[1], Patricia Y. Liu[1], Hongwei Zhao[2], Xiaohong Zhou[1], Eric P.H. Yap[1], and Ai Qun Liu[1]
[1]Nanyang Technological University, SINGAPORE, [2]Hainan University, CHINA, and
[3]Tsinghua University, CHINA

T3-377.c **ELECTROCHEMICAL DNA SENSING ENHANCED BY ELECTRIC FIELD USING CRISPR-CAS12A**
Ziyue Li[1,2], Xiong Ding[1], Kun Yin[1], and Changchun Liu[1]
[1]University of Connecticut Health Center, USA and [2]University of Connecticut, USA

T3-378.c **RAPID ANTIFUNGAL SUSCEPTIBILITY TESTING ON SILICON MICROWELLS**
Christopher Heuer[1,2], Heidi Leonard[1], Nadav Nitzan[1], Ariella Lavy-Alperovitch[1], Naama Massad-Ivanir[1], Janina Bahnemann[2], Thomas Scheper[2], and Ester Segal[1]
[1]Technion - Israel Institute of Technology, ISRAEL and [2]Leibniz University Hannover, GERMANY

T4-477.c **AN IMPROVED ACETYLCHOLINESTERASE INHIBITION ASSAY UTILIZING ORGANIC SOLVENT EXTRACTION FOR FOOD ANALYSIS**
Lili Jin[1], Zhenxia Hao[1,2], Qingin Zheng[1], Hongping Chen[1,2], and Chengyin Lu[1,2]
[1]Chinese Academy of Agricultural Sciences, CHINA and [2]Ministry of Agriculture and Rural Affairs, CHINA

T4-478.c **FLEXIBLE DOPAMINE SENSOR WITH ELECTROPHORETIC DEPOSITED GRAPHENE OXIDE/PEDOT:PSS COMPOSITE FOR BRAIN DISORDER MONITORING**
Seung Hyeon Ko[1,2], Seung Wook Kim[2], and Yi Jae Lee[1]
[1]Korea Institute of Science and Technology (KIST), KOREA and [2]Korea University, KOREA

W5-576.c **ANALYSIS OF ELECTRICAL PROPERTIES OF THE CELLS USING ELECTROROTATION AND LENS-FREE IMAGE DETECTION**
Camila D.M. Campos[1,2], Yuqian Li[1], Ziduo Lin[1], Geert Vanmeerbeeck[1], Pawel Barmuta[2,3], Tomislav Markovic[1,2], Rahul Yadav[1,2], Giovanni Mangraviti[1], Willem Van Roy[1], Ilja Ocket[1], Yao Hong Liu[1], Tim Stakenborg[1], Richard Stahl[1], Liesbet Lagae[1,2], Jan Genoe[1,2], and Chengxun Liu[1]
[1]Imec, BELGIUM, [2]KU Leuven, BELGIUM, and 3Warsaw University of Technology, POLAND

W5-577.c **MICROFLUIDIC CHIP FOR THE ELECTROCHEMICAL DETECTION OF MICRORNAs: STUDY OF THE SPECIFICITY**
Claire Poujouly[1], Pedro Gonzalez Losada[1], Sébastien Banzet[2], and Jean Gamby[1]
[1]Université Paris-Saclay, FRANCE and [2]Institut de Recherche Biomédicale des Armées, FRANCE

W6-677.c **A MINIATURE ON-CHIP MICROSCOPE**
Ekta Prajapati and Shishir Kumar
Indian Institute of Technology, Hyderabad, INDIA

Th7-776.c **CAN WE MAKE POROUS SILICON BIOSENSORS MORE SENSITIVE? MODELING AND LIMITATIONS**
Sofia Arshavsky-Graham[1,2], Evgeniy Boyko[1], Rachel Salama[1], and Ester Segal[1]
Technion-Israel Institute of Technology, ISRAEL

Th8-874.c **INTEGRATION OF PLASMONICS AND ELECTRONICS FOR DYNAMIC TRAPPING AND SENSING OF BIOMOLECULES**
Daehan Yoo[1], Avijit Barik[1], Fernando de Léon-Pérez[2,3], Daniel A. Mohr[1], Matthew Pelton[4], Luis Martín-Moreno[3], and Sang-Hyun Oh[1]
[1]University of Minnesota, Minneapolis, USA, [2]Centro Universitario de la Defensa de Zaragoza, SPAIN, [3]Universidad de Zaragoza, SPAIN, and [4]University of Maryland, Baltimore County, USA

d - Integrated Microfluidic Platforms
Electrophoretic & Chromatographic Separation

M1-134.d **MIXED-SCALE FLUIDIC SYSTEM FOR POINT-OF-CARE TESTING**
Steven A. Soper[1], Michael C. Murphy[2], and Sunggook Park[2]
[1]University of Kansas, USA and [2]Louisiana State University, USA

M2-232.d **3D PRINTING FOR ENHANCED FABRICATION OF MICROFLUIDIC FREE-FLOW ELECTROPHORESIS**
John-Alexander Preuss and Janina Bahnemann
Leibniz Universität, Hannover, GERMANY

M2-233.d **OVERCOMING MASS TRANSFER LIMITATIONS BY INTRODUCING VORTEX CHROMATOGAPHY**
Eiko Y. Westerbeek[1,2], Guillermo Gonzalez Amaya[1], Wouter Olthuis[2], Jan C.T. Eijkel[2], and Wim de Malsche[1]
[1]Vrije Universiteit Brussel, BELGIUM and [2]University of Twente, THE NETHERLANDS

T3-333.d **A MEDIUM THROUGHPUT SYSTEM FOR MEASUREMENT OF ISLET SECRETIONS**
Yao Wang, Weijia Leng, and Michael G. Roper
Florida State University, USA

T3-334.d **SUMMIT: A SEMI-AUTOMATED PROTEIN PEAK QUANTIFICATION ALGORITHM FOR HIGH-THROUGHPUT SINGLE-CELL ELECTROPHORESIS**
Julea Vlassakis[1], Kevin A. Yamauchi[1,2], and Amy E. Herr[1]
[1]University of California, Berkeley, USA and
[2]Friedrich Miescher Institute for Biomedical Research, SWITZERLAND

T4-433.d **A MICROFLUIDIC IN-SITU SAMPLING PROBE INTEGRATED WITH LIQUID CHROMATOGRAPHIC SEPARATION CAPACITY FOR MASS SPECTROMETRY ANALYSIS**
Di-Qiong Jin, Shao-Wen Shi, Yan Ma, and Qun Fang
Zhejiang University, CHINA

W5-532.d **A MONOLITHIC 3D PRINTED µFFE DEVICE WITH INTEGRATED SWAB RECEPTACLE FOR ENRICHMENT OF MULTIDRUG-RESISTANT PATHOGENS**
Christian Neubert[1], Ole Behrmann[1], Denny Maaz[2], Frank T. Hufert[1], and Gregory Dame[1]
[1]Brandenburg Medical School Theodor Fontane, GERMANY and
[2]German Federal Institute for Risk Assessment, GERMANY

W6-632.d **DETECTING CELL DEATH BY ELECTROPHORETIC CYTOMETRY**
Ana E. Gomez Martinez and Amy E. Herr
University of California, Berkeley, USA

Th7-732.d **DEVELOPMENT OF A NOVEL MICROFLUIDIC APPROACH FOR RAPID AND CONTINUOUS DETECTION OF PATHOGENS IN FOOD AND WATER SAMPLES**
Gurpreet Klar, Crystal M. Han, and Liat Rosenfeld
San Jose State University, USA

Th8-832.d **INTEGRATED SAMPLE PREPARATION FOR HIV MOLECULAR TESTING IN A PAPER-BASED DEVICE**
Andrew T. Bender[1], Benjamin P. Sullivan[1], Jane Y. Zhang[1], Lorraine Lillis[2], David S. Boyle[2], and Jonathan D. Posner[1]
[1]University of Washington, USA and [2]PATH, USA

d - Integrated Microfluidic Platforms

Particle Separation

M1-135.d **HIGH THROUGHPUT EXTRACELLULAR VESICLE SORTING USING ELECTROKINETIC DETERMINISTIC LATERAL DISPLACEMENT**
Bao D. Ho, Jason P. Beech, and Jonas O. Tegenfeldt
Lund University, SWEDEN

M1-136.d **PARTICLE MANIPULATION USING PROGRAMMABLE HYDRODYNAMIC FORCES**
Ankur Kislaya, Daniel S.W. Tam, and Jerry Westerweel
Delft University of Technology, THE NETHERLANDS

M2-234.d **HIGH THROUGHPUT ISOLATION OF SMALL EXTRACELLULAR VESICLES FROM WHOLE BLOOD USING MULTIPLEXED SPIRAL MICROFLUIDICS (ExoDFF^{HT})**
Sheng Yuan Leong[1], Hui Min Tay[1], Megha Upadya[1], Fang Kong[1], Rinkoo Dalan[2], Dao Ming[1,3], and Han Wei Hou[1]
[1]Nanyang Technological University, SINGAPORE, [2]Tan Tock Seng Hospital, SINGAPORE, and [3]Massachusetts Institute of Technology, USA

M2-235.d **POROUS PDMS SUBSTRATE-ASSISTED PARTICLE SORTING BASED ON HYDRODYNAMIC CROSS-FLOW MICROFLUIDIC FILTRATION**
Yurika Sakurai, Takeru Sato, Masumi Yamada, and Minoru Seki
Chiba University, JAPAN

T3-335.d **HIGH-THROUGHPUT CONTINUOUS INERTIAL FOCUSING OF MICROALGAE IN ASYMMETRIC SERPENTINE CHANNELS**
Mohammad Al-Hurani, Rodney Forster, Nicole Pamme, and Alex Iles
University of Hull, UK

T3-336.d **SCALING OF DLD DEVICES FOR CELL FRACTIONATION DOWN TO A SINGLE COLUMN FOR ULTRAHIGH THROUGHPUT PER AREA**
Weibin Liang, Robert H. Austin, and James C. Sturm
Princeton University, USA

T4-434.d **DETERMINISTIC LATERAL DISPLACEMENT OCCURS WITHOUT CONTACT AT INERTIAL FLOW RATES**
William J. Monck[1], Calum P. Mallorie[2], Rohan R. Vernekar[2], Timm Krüger[2], and David W. Inglis[1]
[1]Macquarie University, AUSTRALIA and [2]University of Edinburgh, UK

T4-435.d **MANIPULATION OF BIOMOLECULES USING A 3D-PRINTED INSULATOR-BASED DIELECTROPHORESIS DEVICE**
Mohammad Towshif Rabbani, Mukul Sonker, Jorvani Cruz Villarreal, and Alexandra Ros
Arizona State University, USA

T4-436.d **SHAPE BASED CHROMOSOME SEPARATION IN THE INERTIAL FOCUSING DEVICE**
Haidong Feng, Bruce Gale, Himanshu Sant
University of Utah, USA

W5-533.d **DETERMINISTIC LATERAL DISPLACEMENT SYSTEMS WITH ARRAYED THREE-DIMENSIONAL ELECTRODES FOR TUNABLE PARTICLE SORTING**
Gloria Porro[1], Kevin Keim[1], Giovanni Cappai[1], Jason P. Beech[2], Jonas O. Tegenfeldt[2], and Carlotta Guiducci[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and 2Lund University, SWEDEN

W5-534.d **OPERATING SPIRAL INERTIAL MICROFLUIDICS AT CONCENTRATIONS UP TO 3.4X10^9 CELLS/ML FOR HIGH-CONCENTRATION DEWATERING OF *CHLORELLA VULGARIS***
Catherine Hill, Nik Willoughby, and Helen Bridle
Heriot-Watt University, UK

W5-535.d **STREAM BIFURCATION INDUCED BLOOD CELL SEPARATION IN SEMI-DILUTED VISCOELASTIC FLOW**
Haidong Feng, Jules Magda, and Bruce K. Gale
University of Utah, USA

W6-633.d **DEVELOPING MICROFLUIDIC DEVICES AND TECHNIQUES FOR ISOLATION AND DETECTION OF EXTRACELLULAR VESICLES (EVS)**
Himayasri Rao Lekkala[1], Ian Johnston[1], Nikolay Dimov[1], and Jameel Inal[2,3]
[1]University of Hertfordshire, UK, [2]School of Life and Medical Sciences, UK, and [3]London Metropolitan University, UK

W6-634.d **PAPER-BASED PUMP-FREE MAGNETOPHORESIS**
Zachary D. Call, Cody S. Carrell, Ilhoon Jang, Brian J. Geiss, David S. Dandy, and Charles S. Henry
Colorado State University, USA

W6-635.d **UPSCALING OF DIELECTROPHORETIC CONTINUOUS-FLOW DNA SEPARATION IN A MICROFLUIDIC SYSTEM**
Jakob Derksen, Dario Anselmetti, and Martina Viefhues
Bielefeld University, GERMANY

Th7-733.d **FLOW FIELD-ASSISTED MICROFLUIDIC CHIP FOR THE SHEATHLESS SEPARATION OF MICROPARTICLES AND CELLS**
Shitao Shen[1], Mingliang Jin[1], Zichuan Yi[2], Xing Li[1], Zhibin Yan[1], Guofu Zhou[1], and Lingling Shui[1,2]
[1]South China Normal University, CHINA and
[2]University of Electronic Science and Technology of China, CHINA

Th7-734.d **PARTICLE AND PATHOGEN FOCUSING AND PRE-ENRICHMENT IN ASYMMETRICALLY CURVED WINDING CHANNELS VIA INERTIAL MICROFLUIDICS**
Pablo Rodriguez-Mateos, Charlotte E. Dyer, Alexander Iles, and Nicole Pamme
University of Hull, UK

Th8-833.d **HIGH THROUGHPUT CLOGGING-FREE MICROFLUIDIC PARTICLE FILTER BY FEMTOSECOND LASER MICROMACHINING**
Filippo Storti[1,2], Silvio Bonfadini[1], and Luigino Criante[1]
[1]Istituto Italiano di Tecnologia, ITALY and [2]Politecnico di Milano, ITALY

Th8-834.d **PARTICLE MIGRATION IN SHEAR THINNING VISCOELASTIC FLUID**
Shamik Hazra[1], Sushanta K. Mitra[2], and Ashis Kumar Sen[1]
[1]Indian Institute of Technology, Madras, INDIA and [2]University of Waterloo, CANADA

d - Integrated Microfluidic Platforms

Micromixers & Microreactors

M1-137.d **HIGH-THROUGHPUT 3D GLASS MICROMIXER WITH AN IMPELLER MONOLITHICALLY FABRICATED USING SELECTIVE LASER-INDUCED ETCHING (SLE)**
Sungil Kim[1,2], Jeongtae Kim[1], Yeun-Ho Joung[1], Sanghoon Ahn[2], Jiyeon Choi[2], and Chiwan Koo[1]
[1]Hanbat National University, KOREA and [2]Korea Institute of Machinery and Materials (KIMM), KOREA

M2-236.d **STUDY OF LIQUID PHASE OXIDATIVE DEGRADATION OF LIGNIN IN MICROFLUIDIC AND BATCH REACTOR**
Niloofar Manafi and Neda Nazemifard
University of Alberta, CANADA

T3-337.d **THE INFLUENCE OF SHEAR ON THE POLYMORPHISM OF ROY UNDER CONSTANT SHEAR CONDITIONS**
Sander Stroobants, Marzena Krezk, Pierre Gelin, Iwona Ziemecka, Yousef Pourvais, Heidi Ottevaere, Wim De Malsche, and Dominique Maes
Vrije Universiteit Brussel, BELGIUM

T4-437.d **THERMAL MANIPULATION FOR A SINGLE CELL UTILIZING AREA COOLING**
Yigang Shen[1,2], Yaxiaer Yalikun[1,3], Yusufu Aishan[1,2], and Yo Tanaka[1,2]
[1]RIKEN, JAPAN, [2]Osaka University, JAPAN, and [3]Nava Institute of Science and Technology, JAPAN

Th7-735.d **DEVELOPMENT OF A PILLAR ARRAY MIXER FOR POST-COLUMN DERIVATIZATION ON A CHIP**
Makoto Tsunoda, Muneki Isokawa, and Takashi Funatsu
University of Tokyo, JAPAN

Th8-835.d **ENHANCEMENT OF PHOTOCATALYTIC REACTION ASSISTED BY NANOELECTROKINETICS**
Cong Wang and Jungyul Park
Sogang University, KOREA

d - Integrated Microfluidic Platforms
Chemical & Particle Synthesis

M1-138.d **PHOTOCHEMISTRY IN AN ASSEMBLY OF 108 MICROMETRIC CAPILARIES (id 3.65µm) GRAFTED WITH A PHOTOSENSITIZER**
Christian Rolando, Fabien Gelat, Christophe Penverne, Maël Penhoat, Géraud Bouwmans, and Laëtitia Chausset-Boissarie
Université de Lille, FRANCE

W5-536.d **A BOLT-NUT MICROREACTOR FOR THE SYNTHESIS OF $CuInS_2$/ZnS QUANTUM DOTS**
Hyunbin Kim and Do Hyun Kim
Korea Advanced Institute of Science and Technology (KAIST), KOREA

W6-636.d **A CONTINUOUS PLATFORM FOR EMBEDDED DROPLET PRINTING OF PHARMACEUTICAL PARTICLES**
Arif Z. Nelson[1], Jiaxun Xie[2], Saif A. Khan[2], and Patrick S. Doyle[3]
[1]Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE, [2]National University of Singapore, SINGAPORE, and [3]Massachusetts Institute of Technology, USA

Th7-736.d **CHEMOENZYMATIC MICROFLUIDIC CASCADE REACTION: COUPLING OF A DIELS-ALDER REACTION WITH A TRANSKETOLASE-CATALYZED REACTION**
Mariana Santos[1], Brian O'Sullivan[1], Sarah Müller[2], Alina Bunescu[2], Frank Baganz[1], Marco P.C. Marques[1], Helen Hailes[1], Nicolas Szita[1], and Roland Wohlgemuth[3]
[1]University College London, UK, [2]Sigma-Aldrich, GERMANY, and [3]Technical University, Lodz, GERMANY

Th8-836.d **DEVELOPMENT OF SYNTHESIS ROUTES TO HUMAN DRUG METABOLITES USING IMMOBILISED ENZYMATIC REACTIONS WITHIN MICROFLUIDIC REACTORS**
Bradley Doyle[1], Leigh A. Madden[1], Nicole Pamme[1], and Huw S. Jones[2]
[1]University of Hull, UK and [2]University of Bradford, UK

d - Integrated Microfluidic Platforms
Other Applications in Chemistry

M1-139.d **DEVELOPMENT OF AN OPTIC MICRO-RHEOMETER USING MULTILAYER PMMA CARTRIDGES AND MODULAR POLYMERIC MICROPUMPS**
Yara Alvarez-Braña[1], Josep Ferre-Torres[2], Andreu Benavent-Claro[2], Francisco Palacio-Bonet[2], Fernando Benito-Lopez[1], Mauricio Moreno-Sereno[2], Aurora Hernandez-Machado[2], and Lourdes Basabe-Desmonts[1,3]
[1]University of the Basque Country, SPAIN, [2]University of Barcelona, SPAIN, and [3]Basque Foundation of Science, IKERBASQUE, SPAIN

M2-237.d **A DEVICE FOR URINE CELL CONCENTRATION, LYSIS AND NUCLEIC ACID AMPLIFICATION FOR CHLAMYDIA DETECTION AT THE POINT OF CARE**
Steven Bennett, Sujatha Kumar, Erin Heiniger, and Paul Yager
University of Washington, USA

M2-238.d **HYBRID MONOLITHS SUPPORTED ON FDM-BASED 3D-PRINTED SCAFFOLDS**
Marcella E.P. Schmidt, Lucas P. Bressan, José A.F. da Silva, and Carla B.G. Bottoli
State University of Campinas, BRAZIL

T3-338.d **A DISPOSABLE INTEGRATED DIAGNOSTIC DEVICE FOR BLOOD ACQUISITION, SAMPLE PROCESSING, LYSIS, AND DETECTION OF EBOLA VIRUS MARKERS**
Sujatha Kumar, Steven Bennett, Shichu Huang, Joshua Buser, and Paul Yager
University of Washington, USA

T3-339.d **PRE-CONCENTRATION WITH ELECTROSPUN MEMBRANES COUPLED WITH PAPER-BASED ASSAYS TOWARDS ONSITE MONITORING OF HEAVY METALS IN WATER**
Bongkot Ngamsom, Samantha Richardson, Mila Sari, Alexander Iles, Mark Lorch, Will M. Mayes, and Nicole Pamme
University of Hull, UK

T4-438.d **A MONOLITHIC WEARABLE SYSTEM DESIGN METHODOLOGY FOR PHYSIOLOGICAL ACTUATION AND ELECTROCHEMICAL SENSING**
Hannaneh Hojaiji, Yichao Zhao, Max C. Gong, Mudith Mallajosyula, Amir M. Hojaiji, Asad M. Madni, and Sam Emaminejad
University of California, Los Angeles, USA

W5-537.d **ACCELERATED MICROFLUIDIC STUDIES OF SWITCHABLE HYDROPHILICITY SOLVENTS**
Suyong Han, Mahdi Ramezani, and Milad Abolhasani
North Carolina State University, USA

W6-637.d **AMYLOID ß ANALYSIS FROM MICRODISSECTED BRAIN CELLS USING MICROFLUIDICS AND MALDI MASS SPECTROMETRY**
Jorvani Cruz Villarreal, Ana Egatz-Gomez, Jiawei Liu, Robert Ros, Paul D. Coleman, and Alexandra Ros
Arizona State University, USA

Th7-737.d **AN INTEGRATED CENTRIFUGAL DEGASSED PDMS-BASED MICROFLUIDIC DEVICE FOR SERIAL DILUTION**
Anyang Wang, Samaneh Moghadasi Boroujeni, Stelios T. Andreadis, and Kwang W. Oh
University at Buffalo, USA

Th8-837.d **DEVELOPING THE FUTURE OF CLINICAL RADIOPHARMACY: OPTIMISING ON-CHIP GALLIUM-68 RADIOLABELLING FOR PET IMAGING**
Vincent Nail, Mark D. Tarn, Ping He, Nicole Pamme, and Stephen J. Archibald
University of Hull, UK

d - Integrated Microfluidic Platforms

Industrial Benefactor

W5-538.d **HOLIFAB: MICROFLUIDIC INTEGRATION PILOT LINE AND CAD SOFTWARE FOR COMMERCIALIZATION OF YOUR MICROFLUIDIC SET-UP**
Nicolas Lafitte, Mikael Trellet, Ygor Oliveira, Benjamin Rouffet, Serge Renouard, and Jean-Louis Viovy
Holifab/Fluigent, FRANCE

d - Integrated Microfluidic Platforms

Late News

M1-178.d **MULTI-LAYERED CLASSIFICATION BY DNA BASED COMPUTING WITH DROPLET PLATFORM**
Shu Okumura[1], Guillaume Gines[2], Nicolas Lobato-Dauzier[1], Robin Deteix[1], Alexandre Baccouche[1], Teruo Fujii[1], Yannick Rondelez[2], and Anthony J. Genot[1]
[1]University of Tokyo, JAPAN and [2]ESPCI Paris, FRANCE

W6-678.d **HIGHLY EFFICIENT EXOSOME PURIFICATION FROM HUMAN PLASMA BY TANGENTIAL FLOW FILTRATION BASED MICROFLUIDIC CHIP**
Zhenzhen Han[1], Cheng Peng[2], Jia Yi[1], Dongxue Zhang[1], Bin Su[3], Baohong Liu[1], Yuhui Shen[2], and Liang Qiao[1]
[1]Fudan University, CHINA, [2]Shanghai Jiao Tong University School of Medicine, CHINA, and [3]Zhejiang University, CHINA

Th7-777.d **DROPLET MICROFLUIDICS TO ENGINEER SMART BUILDING BLOCKS FOR MODULAR TISSUE ENGINEERING**
Niels Willemen, Tom Kamperman, Cindy Kelder, Michelle Koerselman, João Crispim, Jan Hendriks, Sieger Henke, Xandra De Peuter, Piet Dijkstra, Marcel Karperien, and Jeroen Leijten
University of Twente, NETHERLANDS

Th8-875.d **INTEGRATED IMPEDANCE SENSORS IN A MICROFLUIDIC SYSTEM: TOWARD A FULLY AUTOMATED HIGH THROUGHPUT NMR SPECTROSCOPY**
Omar Nassar, Mazin Jouda, Jan Korvink, Dario Mager, and Neil Mackinnon
Karlsruhe Institute of Technology, GERMANY

e - Cells, Organisms and Organs on a Chip

Cell Capture, Counting, & Sorting

M1-140.e **FULLY-AUTOMATED AND FIELD-DEPLOYABLE BLOOD SEPARATION PLATFORM USING MULTI-DIMENSIONAL DOUBLE SPIRAL (MDDS) INERTIAL MICROFLUIDICS**
Hyungkook Jeon[1,2] and Jongyoon Han[1]
[1]Massachusetts Institute of Technology, USA and [2]Pohang University of Science and Technology, KOREA

M1-141.e **PORTABLE PLATELET APHERESIS SYSTEM**
Lap Man Lee, Ketan H. Bhatt, Dustin W. Haithcock, Balabhaskar Prabhakarpandian, and Kapil Pant
CFD Research Corporation, USA

M1-142.e **ULTRASENSITIVE DETECTION AND DEPLETION OF RARE LEUKEMIC B CELLS IN T CELL POPULATIONS VIA MICROFLUIDICS-MEDIATED IMMUNOMAGNETIC CELL RANKING**
Zongjie Wang and Shana O. Kelley
University of Toronto, CANADA

M2-239.e **GENTLE TRAP-AND-RELEASE MECHANISM FOR MULTISTEP CELL PROCESSING USING PDMS SPONGE-INTEGRATING MICROFLUIDIC DEVICES**
Natsumi Miura, Masumi Yamada, and Minoru Seki
Chiba University, JAPAN

M2-240.e **RARE CELLS ISOLATION ON SACA CHIP FOR AUTOMATIC CELLS ANALYSIS**
Yi-Wen Hu[1], Ping-Hao Yeh[1], Hsin-Yao Wu[1], and Fan-Gang Tseng[1,2]
[1]National Tsing Hua University, TAIWAN and [2]Academia Sinica, TAIWAN

T3-340.e **HIGH-THROUGHPUT LIVE CELL PRINTING SYSTEM USING NEAR INFRA-RED PULSE LASER**
Amos Chungwon Lee, Wooseok Lee, Yongju Lee, Ahyoun Choi, Sudeok Kim, Kyoung Seob Shin, and Sunghoon Kwon
Seoul National University, KOREA

T3-341.e **SAFELY SORTING AND ISOLATING RARE SPERM USING DIELECTROPHORESIS BY TRAPPING THE TAIL AND SIMULTANEOUSLY DISTANCING THE HEAD FROM STRONG ELECTRIC FIELDS**

Sholom Shuchat[1], Ofer Fainaru[2], Shahar Kol[3], and Gilad Yossifon[1]
[1]Technion – Israel Institute of Technology, ISRAEL, [2]Rappaport Faculty of Medicine, ISRAEL, and [3]Elisha Hospital, Haifa Israel, ISRAEL

T4-439.e **A DROPLET-BASED DETECTION AND SORTING OF CELLS UTILIZING OPTOFLUIDICS AND ELECTRO- COALESCENCE TECHNIQUE**

Ravindra Gaikwad and Ashis K. Sen
Indian Institute of Technology, Madras, INDIA

T4-440.e **HIGH-THROUGHPUT SINGLE-CELL QUANTIFICATION OF ELASTIC MODULUS**

Ryan Dubay[1,2], Jason Fiering[2], and Eric M. Darling[1]
[1]Brown University, USA and [2]Draper, USA

T4-441.e **SELECTIVE RETRIEVAL OF INDIVIDUAL CELLS FROM MICROFLUIDIC ARRAYS COMBINING DIELECTROPHORETIC FORCE AND DIRECTED HYDRODYNAMIC FLOW**

Pierre-Emmanuel Thiriet, Joern Pezoldt, Gabriele Gambardella, Kevin Keim, Bart Deplancke, and Carlotta Guiducci
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W5-539.e **CELL SORTING ACROSS LAMINAR INTERFACE USING STIFFNESS CONTRAST**

Shamik Hazra[1], Sushanta K. Mitra[2], and Ashis Kumar Sen[1]
[1]Indian Institute of Technology, Madras, INDIA and [2]University of Waterloo, CANADA

W5-540.e **LABEL-FREE SINGLE-CELL CAPTURE AND RELEASE VIA A FIRST-IN FIRST-OUT MICROFLUIDIC CELL ROUTER**

Nathaniel Liu, Kristina Chan, and Lydia L. Sohn
University of California, Berkeley, USA

W5-541.e **SINGLE CELL PER WELL TRAPPING AND ANALYSIS OF *CHLAMYDOMONAS REINHARDTII* USING SURFACE ACOUSTIC WAVES**

Mingyang Cui, Philip V. Bayly, Susan K. Dutcher, and J. Mark Meacham
Washington University, St. Louis, USA

W6-638.e **DEFORMABILITY BASED CELL SORTING AS A BIOMARKER FOR THE QUALITY OF STORED RED BLOOD CELLS**

Emel Islamzada[1], Kerryn Matthews[1], Erik Lamoureux[1], Quan Guo[1], Aline T. Santoso[1], Mark D. Scott[1,2], and Hongshen Ma[1,3]
[1]University of British Columbia, CANADA, [2]Canadian Blood Services, CANADA, and [3]Vancouver General Hospital, CANADA

W6-639.e **MICROFLUIDIC MEDIUM EXCHANGER WITH MICROPORED FLUID DRAINAGE FOR CELL CULTURE APPLICATIONS**

Takeru Sato, Yurika Sakurai, Masumi Yamada, and Minoru Seki
Chiba University, JAPAN

W6-640.e **SPIRAL MICROFLUIDICS ENHANCED ISOLATION OF EPITHELIAL CELLS FROM INFECTED MICE URINE**

Suhanya Duraiswamy[1], Lin Yue Lanry Yung[2], and Swaine L. Chen[2]
[1]Indian Institute of Technology, Hyderabad, INDIA, [2]National University of Singapore, SINGAPORE, and [3]Genome Institute of Singapore, SINGAPORE

Th7-738.e **FABRICATION OF CMOS-COMPATIBLE GRAPHENE MICROHALL SENSORS FOR MAGNETIC CYTOMETRY**
Nishal Shah, Vasant Iyer, and David Issadore
University of Pennsylvania, USA

Th7-739.e **MICROFLUIDIC TRAP ARRAYS FOR PROBING STOCHASTIC IMMUNE-TUMOR DYNAMICS**
Michael C. Yeh[1,2], Emanuel Salazar Cavazos[2], Supriya Padmanabhan[1], Grégoire Altan-Bonnet[2], and Don L. DeVoe[1]
[1]University of Maryland, College Park, USA and [2]National Cancer Institute, USA

Th7-740.e **TECHNIQUE FOR PASSIVE DROPLET SORTING AFTER PHOTO-TAGGING**
Chandler Dobson, Claudia Zielke, Ching Pan, Cameron Feit, and Paul Abbyad
Santa Clara University, USA
**poster will be presented during the M2 poster session on Monday*

Th8-838.e **FERTDISH: MICROFLUIDIC SPERM SELECTION-IN-A-DISH FOR ICSI**
Sa Xiao[1], Jason Riordon[1], Alexander Lagunov[2], Tom Hannam[2], Reza Nosrati[3], and David Sinton[1]
[1]University of Toronto, CANADA, [2]Hannam Fertility Centre, CANADA, and [3]Monash University, AUSTRALIA

Th8-839.e **PAIRING CELLS WITH DIFFERENT DIMENSIONS IN A MICROFLUIDIC DEVICE USING A UNIDIRECTIONAL FLOW**
Faruk A. Shaik[1], Clara Lewuillon[1,2], Yasmine Touil[1,2], Aurélie Guillemette[1,2], Bruno Quesnel[1,2], Carine Brinster[1,2], Loic Lemonnier[2], Dominique Collard[3], and Mehmet C. Tarhan[1,4]
[1]University of Lille, FRANCE, [2]INSERM, FRANCE, [3]University of Tokyo, FRANCE, and [4]University Valenciennes, FRANCE

Th8-840.e **THE EFFECT OF ELEVATED HEMATOCRIT ON HUMAN BLOOD FLOW IN A MICROCHANNEL**
Md Ehtashamul Haque[1,2], Krystian Wlodarczyk[1], Duncan P. Hand[1], Miguel O. Bernabeu[2], and Maïwenn Kersaudy-Kerhoas[1,2]
[1]Heriot Watt University, UK and [2]Edinburgh University, UK

e - Cells, Organisms and Organs on a Chip

Single-Cell Analysis

M1-143.e **LABEL-FREE ASSESSMENT OF CELL CYCLE SYNCHRONIZATION IN NEURAL PROGENITOR CELLS BY IMPEDANCE CYTOMETRY**
Carlos Honrado, Nadine Michel, John H. Moore, Armita Salahi, Veronica Porterfield, Michael J. McConnell, and Nathan S. Swami
University of Virginia, USA

M1-144.e **ELECTROROTATION FOR SINGLE CELL ANALYSIS OF MEMBRANE DAMAGE INDUCED BY TOXINS MIMICKING THE NEURODEGENERATIVE EFFECT OF AMYLOID BETA IN THE ALZHEIMER'S DISEASE**
Till Ryser, Kevin Keim, Anne-Laure Mahul-Mellier, Hilal Lashuel, and Carlotta Guiducci
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

M1-145.e **MICROFLUIDIC HANGING PILLARS ARRAYS FOR SINGLE-CELL ANALYSIS OF OSMOTIC SWELLING DYNAMICS AS PHYSICAL BIOMARKERS**
Apresio K. Fajrial, Kun Liu, Yu Gao, and Xiaoyun Ding
University of Colorado, Boulder, USA

M1-146.e SPATIALLY RESOLVED GENOMICS FROM SINGLE CELLS WITH DISTINCT FLUORESCENT SIGNALS USING TRANSPOSASE-BASED DIRECT LIBRARY PREPARATION

Ahyoun Choi[1], Amos Chungwon Lee[1], Yongju Lee[1], Jinhyun Kim[1], Kyoung Seob Shin[1], Dajeong Jeong[2], Myoung Hee Ham[2], Sung-Min Kim[3], Okju Kim[4], Yushin Jung[4], Changhoe Kim[4], Taehoon Ryu[4], Dongsoon Lee[2,3], and Sunghoon Kwon[1]
[1]Seoul National University, KOREA, [2]Seoul National University Hospital, KOREA, [3]Seoul National University College of Medicine, KOREA, and [4]Celemics, Inc., KOREA

M2-241.e 3D PROJECTION ELECTROPHORESIS FOR HIGH-DENSITY SINGLE-CELL IMMUNOBLOTTING

Samantha M. Grist, Andoni P. Mourdoukoutas, and Amy E. Herr
University of California, Berkeley, USA

M2-242.e BIOMECHANICAL MARKERS FOR MONITORING HETEROGENEITY IN ISLET REORGANIZATION DYNAMICS WITH ADIPOSE STEM CELLS

Karina Torres-Castro, Mohammad S. Azimi, Walter B. Varhue, Carlos Honrado, Shayn M. Pierce-Cottler, and Nathan S. Swami
University of Virginia, USA

M2-243.e HIGH-THROUGHPUT QUANTIFICATION OF SINGLE-CELL CORTICAL TENSION USING MUTIPLE CONSTRCTION CHANNELS

Ke Wang[1], Yan Liu[2,3], Xiaohao Sun[4], Deyong Chen[2,3], Junbo Wang[2,3], and Jian Chen[2,3]
[1]Beijing University of Posts and Telecommunications, CHINA, [2]Chinese Academy of Sciences, CHINA, [3]University of Chinese Academy of Sciences, CHINA, and [4]University of Colorado Boulder, USA

M2-244.e MONITORING THE GROWTH PHASES OF MICROALGAE USING STRAIGHTFORWARD DIELECTROPHORESIS MEASUREMENTS

Yu-Sheng Lin[1,2], Bruno Le Pioufle[2], and Hsiang-Yu Wang[1]
[1]National Tsing Hua University, TAIWAN and [2]Université Paris Saclay, FRANCE

M2-245.e SPATIALLY TARGETED WHOLE TRANSCRIPTOME ACCESSIBLE IN SITU SEQUENCING

Kyoungseob Shin[2], Hower Lee[1], Yongju Lee[1], Ahyoun Choi[2], Amos Chungwon Lee[2], Narayanan Madaboosi[1], Mats Nilsson[1], and Sunghoon Kwon[2]
[1]Stockholm University, SWEDEN and [2]Seoul National University, KOREA

T3-342.e A DUAL IMAGING SYSTEM FOR UNDERSTANDING MICROSWIMMER LOCOMOTION

Farzan Akbaridoust[1,2], Ivan Marusic[2], and Reza Nosrati[1]
[1]Monash University, AUSTRALIA and [2]University of Melbroune, AUSTRALIA

T3-343.e CONSTRICTION CHANNEL BASED MICROFLUIDIC SYSTEM OF QUANTIFYING SINGLE-CELL CYTOPLASMIC VISCOSITY, CYTOPLASMIC CONDUCTIVITY AND SPECIFIC MEMBRANE CAPACITANCE

Yan Liu[1], Ke Wang[2], Xiaohao Sun[3], Deyong Chen[1], Junbo Wang[1], and Jian Chen[1]
[1]Chinese Academy of Sciences, CHINA, [2]Beijing University of Posts and Telecommunications, CHINA, and [3]University of Colorado Boulder, USA

T3-344.e IMPEDANCE CYTOMETRY OF APOPTOTIC BODIES TO QUANTIFY DRUG SENSITIVITY OF PANCREATIC TUMOR XENOGRAFTS

Carlos Honrado, John H. Moore, Sara J. Adair, Armita Salahi, Todd W. Bauer, and Nathan S. Swami
University of Virginia, USA

T3-345.e MULTIPLEXED RESISTIVE–PULSE SENSING THROUGH CODED NODE–PORE CHANNEL GEOMETRY

Kristen L. Cotner[1] and Lydia L. Sohn[1,2]
[1]UC Berkeley – UCSF Graduate Program in Bioengineering, USA and [2]University of California, Berkeley, USA

T3-346.e **VIBRATIONAL FLOW CYTOMETRY ON A CHIP: A LABEL-FREE TOOL FOR METABOLIC PHENOTYPING**
Julia Gala de Pablo[1], Matthew Lindley[1], Kotaro Hiramatsu[1,2], Akihiro Isozaki[1,2], and Keisuke Goda[1,3,4]
[1]University of Tokyo, JAPAN, [2]Kanagawa Institute of Industrial Science and Technology, JAPAN, [3]University of California, Los Angeles, USA, and [4]Wuhan University, JAPAN

T4-442.e **A GENETIC NETWORK FOR THE COMMUNICATION AND SYNCHRONIZATION OF NEUROSPORA CRASSA**
Xiao Qiu, Jia Hwei Cheong, Heinz-Bernd Schüttler, Jonathan Arnold, and Leidong Mao
University of Georgia, USA

T4-443.e **DETECTING MULTIPLEX MUTATION IN SINGLE MELANOMA CELLS USING MOLECULAR BEACONS IN LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (MB-LAMP)**
Darshna Pagariya, Marcelino Varona, Jared L. Anderson, and Robbyn K. Anand
Iowa State University, USA

T4-444.e **MACHINE LEARNING-ENABLED HIGH-SPEED IMPEDANCE CYTOMETRY**
Federica Caselli[1], Adele De Ninno[1,2], Riccardo Reale[1], Luca Businaro[2], and Paolo Bisegna[1]
[1]University of Rome Tor Vergata, ITALY and [2]Italian National Research Council, ITALY

T4-445.e **OCEAN CARBON CYCLE STUDIED BY SINGLE-CELL IMPEDANCE CYTOMETRY ON CALCIFYING ALGAE**
Douwe S. de Bruijn[1], Paul M. ter Braak[1], Dedmer B. Van de Waal[2], Wouter Olthuis[1], and Albert van den Berg[1]
[1]University of Twente, THE NETHERLANDS and
[2]Netherlands Institute of Ecology (NIOO-KNAW), THE NETHERLANDS

W5-542.e **A HIGH-THROUGHPUT MEMS DEVICE FOR MECHANICAL DETECTION OF CANCER CELLS**
Quentin Rezard[1,2], Grégoire Perret[1,3], Jean Claude Gerbedoen[1,3], Deniz Pekin[3,4], Dominique Collard[1,3], Chann Lagadec[1,4], and Mehmet C. Tarhan[1,2]
[1]University of Lille, FRANCE, [2]University of Valenciennes, FRANCE, [3]University of Tokyo, JAPAN, and [4]INSERM, FRANCE

W5-543.e **DETERMINISTIC CELL-BEAD AND CELL-CELL PAIRING AND ENCAPSULATION**
Rafal Krzysztoń, Martin Sauzade, and Eric Brouzes
Stony Brook University, USA

W5-544.e **LIGHT-SHEET IN A μTAS FOR SINGLE CELL IMAGING**
Erick Vargas-Ordaz[1], Sergey Gorelick[1], Adrian Neild[1], Alex de Marco[1,2], and Victor J. Cadarso[1,3]
Monash University, AUSTRALIA, [2]University of Warwick, UK, and
[3]Melbourne Centre for Nanofabrication, AUSTRALIA

W5-545.e **OPTIMIZATION OF MARINE BACTERIA MICROENCAPSULATION FOR THE DISCOVERY OF NOVEL MARINE NATURAL PRODUCTS**
Emily Pope, Tartela Alkayyali, Sydney Wheatley, Christopher Cartmell, Jultwahnique MacDonald, Bradley Haltli, Russell G. Kerr, and Ali Ahmadi
University of Prince Edward Island, CANADA

W6-641.e **A HYPERBOLIC MICROFLUIDIC IMPEDANCE CHIP FOR DEFORMABILITY CYTOMETRY**
Riccardo Reale[1], Adele De Ninno[1,2], Luca Businaro[2], Paolo Bisegna[1], and Federica Caselli[1]
[1]University of Rome Tor Vergata, ITALY and [2]Italian National Research Council, ITALY

W6-642.e **DIRECT QUANTIFICATION OF SINGLE CELL DRUG UPTAKE**
Erika J. Fong[1], Nick. R. Hum[1,2], Kelly A. Martin[1], Melinda Simon[3], Gaby G. Loots[1,2], and Ted J. Ognibene[1]
[1]Lawrence Livermore National Laboratory, USA, [2]University of California, Merced, USA and
[3]San Jose State University, USA

W6-643.e **MACROMOLECULE DELIVERY INTO HARD-TO-TRANSFECT PRIMARY CELLS VIA HYDRODYNAMIC CELL DEFORMATION**
Jeongsoo Hur and Aram Chung
Korea University, KOREA

W6-644.e **PHENOTYPE BASED SELECTIVE SINGLE CELL ISOLATION USING NEAR-INFRARED PULSE LASER FOR SPATIALLY RESOLVED OMICS ANALYSIS**
Yongju Lee[1], Amos Chungwon Lee[1], Ahyoun Choi[1], Kyoungseob Shin[1], Okju Kim[2], Yushin Jung[2], Changhoe Kim[2], Taehoon Ryu[2], and Sunghoon Kwon[1]
[1]Seoul National University, KOREA and [2]Celemics, Inc., KOREA

Th7-741.e **A MICROFLUIDIC DEVICE TO MEASURE THE SHEAR ELASTIC MODULUS OF SINGLE RED BLOOD CELLS**
Ninad Mehendale[1], Savita Kumari[1], Priyanka Naik[1], Dhrubaditya Mitra[2,3], and Debjani Paul[1]
[1]Indian Institute of Technology, Bombay, INDIA, [2]KTH Royal Institute of Technology, SWEDEN, and [3]Stockholm University, SWEDEN

Th7-742.e **DROPLET MICROFLUIDICS FOR STUDIES OF BACTERIAL GENETIC TRANSFORMATION IN *STREPTOCOCCUS* PNEUMONIAE**
Trinh Lam, Mark Maienschein-Cline, David T. Eddington, and Donald A. Morrison
University of Illinois, Chicago, USA

Th7-743.e **MARKERS FOR ASTROGENESIS IN HETEROGENEOUS NEURAL STEM CELL SAMPLES BY SINGLE-CELL IMPEDANCE CYTOMETRY**
John Moore[1], Carlos Honrado[1], Armita Salahi[1], Alan Jiang[2], Andrew Yale[2], Lisa Flannagan[2], and Nathan S. Swami[1]
[1]University of Virginia, USA and [2]University of California, Irvine, USA

Th7-744.e **RED BLOOD CELLS AS MODEL PARTICLES WITH MODULATED SUBCELLULAR ELECTROPHYSIOLOGY FOR IMPEDANCE CYTOMETRY**
Armita Salahi, Carlos Honrado, and Nathan S. Swami
University of Virginia, USA

Th8-841.e **ACTIVE PARTICLE BASED SELECTIVE TRANSPORT AND RELEASE OF CELL ORGANELLES AND MECHANICAL PROBING OF A SINGLE NUCLEUS**
Yue Wu, Afu Fu, and Gilad Yossifon
Technion – Israel Institute of Technology, ISRAEL

Th8-842.e **ELECTRICAL SENSING OF SICKLED RED BLOOD CELLS SUBPOPULATIONS IN MICROFLUIDIC DEVICE**
Tieying Xu[1], Maria A. Lizarralde-Iragorri[2], Jean Roman[1], Emile Martincic[3], Valentine Brousse[2], Olivier Français[4], Wassim El Nemer[2], and Bruno Le Pioufle[1]
[1]Université Paris-Saclay, FRANCE, [2]Université de Paris, FRANCE, [3]Université Paris-Sud, FRANCE, and [4]University Gustave Eiffel, FRANCE

Th8-843.e **MATCHING AND COMPARING OBJECTS IN A SERIAL CYTOMETER**
Nikita Podobedov[1,2], Matthew DiSalvo[2,3], Jason Hsu[2,4], Paul Patrone[2], and Gregory A. Cooksey[2]
[1]Columbia University, USA, [2]National Institute of Standards and Technology (NIST), USA, [3]Johns Hopkins University, USA, and [4]Montgomery Blair High School, USA

Th8-844.e **SERIAL MICROFLUIDIC CYTOMETRY WITH INERTIAL AND HYDRODYNAMIC FLOW FOCUSING**
Matthew DiSalvo[1,2], Paul N. Patrone[2], and Gregory A. Cooksey[2]
[1]Johns Hopkins University, USA and [2]National Institute of Standards and Technology (NIST), USA

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

M1-147.e **AN ENZYME-FREE AND ULTRAFAST CELL-DISSOCIATION TECHNIQUE FOR CELL CULTURE APPLICATIONS USING ACOUSTOFLUIDICS**
Alinaghi Salari[1,2], Sila Appak-Baskoy[1,2], Imogen R. Coe[1], Scott S.H. Tsai[1,2], and Michael C. Kolios[1,2]
[1]Institute for Biomedical Engineering, Science and Technology (iBEST), CANADA and
[2]Ryerson University, CANADA

M1-148.e **MODULAR TISSUE ASSEMBLY FOR FABRICATION OF COMPLEX AND SCALED UP TISSUE**
Byeongwook Jo, Yuya Morimoto, and Shoji Takeuchi
University of Tokyo, JAPAN

M1-149.e **TUNABLE 3D IN VITRO ARTERY-MIMICKING MULTICHANNEL SYSTEM FOR DISEASE MODELING**
Minkyung Cho and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

M2-246.e **DIRECTING SELF-ORGANIZATION AND DIFFERENTIATION OF STEM CELLS USING A MICROMESH SUSPENSION CULTURE**
Kennedy O. Okeyo, Yuta Ando, and Taiji Adachi
Kyoto University, JAPAN

M2-247.e **NEW MICROFLUIDIC DESIGNS FOR HIGH-THROUGHPUT ANALYSIS OF ANGIOGENESIS, BLOOD VESSEL PERMEABILITY AND ENDOTHELIAL ACTIVATION**
Elise Delannoy[1,2], Anthony Treizebre[2], and Fabrice Soncin[1]
[1]Lille University, FRANCE and [2]University Polytechnique Hauts-de-France, FRANCE

M2-248.e **Z-WIRE – A MICRO-SCAFFOLD THAT SUPPORTS GUIDED TISSUE ASSEMBLY AND INTRAMYOCARDIUM DELIVERY FOR CARDIAC REPAIR**
Luis E. Portillo-Esquivel, Vibudha Nanduri, Feng Zhang, Wenbin Liang, and Boyang Zhang
McMaster University, CANADA

T3-347.e **FLOW-THROUGH CELL CULTURE SYSTEM USING MICROCAVITIES EMBEDDED IN SPONGELIKE PDMS MATRIX**
Mai Takagi, Masumi Yamada, and Minoru Seki
Chiba University, JAPAN

T3-348.e **RAPID PROTOTYPING OF CONCAVE MICROWELLS FOR SPHEROID CULTURE BY COMBINING MICROMILLING AND CARAMEL REPLICA MOULDING**
Zhiyuan Dong, Bangyong Sun, and Gang Li
Chongqing University, CHINA

T4-446.e **3D CO-CULTURED MULTICELLULAR SPHEROIDS ON MICROFLUIDIC CHIP FOR STUDYING ECM-MEDIATED DRUG RESISTANCE**
Venkanagouda S. Goudar[1], Long Sheng Lu[2], Manohar Prasad Koduri[1], and Fan-Gang Tseng[1,3]
[1]National Tsing Hua University, TAIWAN, [2]Taipei Medical University Hospital, TAIWAN, and
[3]Academia Sinica, TAIWAN

T4-447.e **FORMATION OF CONTRACTILE SKELETAL MUSCLE TISSUE WITH TENDON TISSUE AT BOTH ENDS**
Yuya Morimoto, Shigenori Miura, and Shoji Takeuchi
University of Tokyo, JAPAN

T4-448.e **REPLICA MOLDING OF THIOL-ENE MICROWELL ARRAYS FOR MICROFLUIDIC 3D CELL SPHEROID CULTURING**
Päivi Järvinen[1], Sari Tähkä[1], Ashkan Bonabi[1], Ville Jokinen[2], and Tiina Sikanen[1]
[1]University of Helsinki, FINLAND and [2]Aalto University, FINLAND

W5-546.e **3D PRINTED DEVICE FOR 96-WELL HYDROSTATIC PRESSURE CONTROL**
Adam Szmelter and David Eddington
University of Illinois, Chicago, USA

W5-547.e **HIGHLY PARALLELIZED HUMAN EMBRYONIC STEM CELL DIFFERENTIATION IN NANOLITER CHAMBERS**
Anke R. Vollertsen, Simone A. ten Den, Verena Schwach, Albert van den Berg, Robert Passier, Andries D. van der Meer, and Mathieu Odijk
University of Twente, THE NETHERLANDS

W5-548.e **SEQUESTERING EXTRACELLULAR VESICLE PROFILES IN NEUROFLUIDICS**
Zeynep Malkoc, Stephanie E. McCalla, and Anja Kunze
Montana State University, USA

W6-645.e **A DROPLET MICROFLUIDIC PLATFORM FOR GENERATING STEM CELL-DERIVED AND LONG-LASTING HUMAN LIVER MICROTISSUES**
Regeant Panday[1], David A. Kukla[1], Alexandra L. Crampton[2], David K. Wood[2], and Salman R. Khetani[1]
[1]University of Illinois, Chicago, USA and [2]University of Minnesota, USA

W6-646.e **INTEGRATED HEPATOCYTE SPHEROID FORMATION AND ENCAPSULATION FOR SYSTEMATIC STUDY OF EXTRACELLULAR MATRIX EFFECT**
Shuai Deng, Yanlun Zhu, Xiaoyu Zhao, and Hon Fai Chan
Chinese University of Hong Kong, CHINA

W6-647.e **SIMPLE CHEMICAL GRADIENT GENERATION FOR A SPHEROID CULTURE ARRAY**
Panhui Yang, Lei Wu, and Hongju Mao
Chinese Academy of Sciences, CHINA

Th7-745.e **A MICROFLUIDIC ORGANOID TRAPPING DEVICE TO FORM TUBE-LIKE INTESTINAL ORGANOIDS**
Miki Matsumoto[1], Yuya Morimoto[1], Toshiro Sato[2], and Shoji Takeuchi[1]
[1]University of Tokyo, JAPAN and [2]Keio University School of Medicine, JAPAN

Th7-746.e **INTERPENETRATING HYDROGEL NETWORK BASED ON 3D-PRINTABLE ENDOTHELIAL CELLS COCULTURED WITH FIBROBLASTS**
Soo Jee Kim, Gihyun Lee, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

Th7-747.e **SKIN-EQUIVALENT CULTURE DEVICE FOR APPLYING VERTICAL COMPRESSION**
Satoshi Inagaki, Keigo Nishimura, Yuya Morimoto, and Shoji Takeuchi
University of Tokyo, JAPAN

Th8-845.e **A SIMPLE METHOD TO ANALYZE NATURAL HYPOXIA EXPRESSION IN JUMBO SPHEROIDS ON-CHIP**
Elena Refet-Mollof[1,2], Ouafa Najyb[2], Rodin Chermat[1,2], Julie Lafontaine[2], Philip Wong[2], and Thomas Gervais[1,2]
[1]Polytechnique Montréal, CANADA and [2]Centre Hospitalier de l'Université de Montréal, CANADA

Th8-846.e **MODELING CTC CLUSTERS USING 3D-PRINTED AGAROSE MICROWELLS**
Qiyue Luan, Jian Zhou, Celine Macaraniag, and Ian Papautsky
University of Illinois, Chicago, USA

Th8-847.e TIME-LAPSE IMAGING OF MOUSE EMBRYONIC STEM CELLS USING AN AUTOMATED MICROFLUIDIC DEVICE

Adam F. Laing[1], Venkat Tirumala[1], Evan Hegarty[1], Sudip Mondal[1], Peisen Zhao[1], William B. Hamilton[2], Joshua M. Brickman[2], and Adela Ben-Yakar[1]
[1]University of Texas, Austin, USA and [2]University of Copenhagen, DENMARK

e - Cells, Organisms and Organs on a Chip
Inter-& Intracellular Signaling, Cell Migration

T3-349.e A CIRCULATING CO-CULTURE MICROFLUIDIC DEVICE FOR THE DYNAMIC SAMPLING OF PARACRINE FACTORS

Emmaline F. Miller[1], Jacy Busboom[2], Joshua J. Clavin[1], Elizabeth C. Martin[1], and Adam T. Melvin[1]
[1]Louisiana State University, USA and [2]University of Wyoming, Laramie, USA

T4-449.e A MODULAR GRANULOMA MODEL FOR MICROENVIRONMENT SIGNALING STUDIES *IN VITRO*

Maia S. Gower, Samuel B. Berry, Xiaojing Su, Chetan Seshadri, and Ashleigh B. Theberge
University of Washington, USA

W5-549.e DENDRITIC CELL MIGRATION IN 2D CONFINED ENVIRONMENT

Yongjun Choi[1,2] and Yoon-Kyoung Cho[1,2]
[1]Ulsan National Institute of Science & Technology (UNIST), KOREA and
[2]Institute for Basic Science (IBS), KOREA

W6-648.e HIGH THROUGHPUT INTRACELLULAR DELIVERY FACILITATED BY ACOUSTOFLUIDICS

Alinaghi Salari[1,2], Sila Appak-Baskoy[1,2], Imogen R. Coe[2], John Abousawan[2], Costin N. Antonescu[2], Scott S.H. Tsai[1,2], and Michael C. Kolios[1,2]
[1]Institute for Biomedical Engineering, Science and Technology (iBEST), CANADA and
[2]Ryerson University, CANADA

Th7-748.e MICROFLUIDIC CHAMBER DEVICE TO TEST QUORUM SENSING THEORY

Jia Hwei Cheong, Xiao Qiu, Yang Liu, James Griffith, Heinzr Bernd Schüttler, Jonathan Arnold, and Leidong Mao
University of Georgia, USA

Th8-848.e MULTIPLEXED END-POINT MICROFLUIDIC CHEMOTAXIS ASSAY USING CENTRIFUGAL ALIGNMENT

Pan Deng[1], Sampath Satti[1], Kerryn Matthews[1], Simon P. Duffy[1,2], and Hongshen Ma[1,3]
[1]University of British Columbia, CANADA, [2]British Columbia Institute of Technology, CANADA, and
[3]Vancouver General Hospital, CANADA

e - Cells, Organisms and Organs on a Chip
Organisms on Chip (C. elegans, Zebrafish, Arabidopsis, etc.)

M1-150.e AN ULTRA-HIGH-DENSITY MICROFLUIDIC PLATFORM TO IMAGE *C. ELEGANS* FOR HIGH-CONTENT PHENOTYPIC SCREENS

Sudip Mondal, Evan Hegarty, Chris Martin, Sertan K. Gökçe, and Adela Ben-Yakar
University of Texas, Austin, USA

M1-151.e MICROFLUIDIC DEVICE TO SCREEN THE ELECTRIC INDUCED BEHAVIORAL RESPONSE OF MULTIPLE ZEBRAFISH LARVAE

Arezoo Khalili, Ellen van Wijngaarden, Khaled Youssef, Georg Zoidl, and Pouya Rezai
York University, CANADA

M2-249.e **CONTROLLABLE MICROFLUIDIC ROTATION OF *CAENORHABDITIS ELEGANS***
Peng Pan[1,2], John D. Laver[1], Zhen Qin[1], Yuxiao Zhou[1], Ran Peng[1], Lijun Zhao[3], Hui Xie[3], John A. Calarco[1], and Xinyu Liu[1]
[1]University of Toronto, CANADA, [2]McGill University, CANADA, and [3]Harbin Institute of Technology, CANADA

M2-250.e **ON-DEMAND DIRECT CURRENT ELECTRIC FIELD IMMOBILIZATION ENABLES HIGH-RESOLUTION IMAGING OF *C. ELEGANS***
Khaled Youssef[1], Daphne Archonta[1], Terrance J. Kubiseski[1], Anurag Tandon[2], and Pouya Rezai[1]
[1]York University, CANADA and [2]University of Toronto, CANADA

T3-350.e **CONTROLLING THE BODY ORIENTATION OF *C. ELEGANS* BY EXPLOITING ITS PROPRIOCEPTION IN A MICROFLUIDIC CONFINEMENT FOR BODY WALL MUSCLE IMAGING**
Samuel Sofela[1,2], Sarah Sahloul[1], Sukanta Bhattacharjee[1], and Yong-Ak Song[1,2]
[1]New York University Abu Dhabi, UAE and [2]New York University, USA

T3-351.e **ON-DEMAND SAMPLE SELECTION AND BEHAVIORAL SCREENING OF ACTIVE MICROSWIMMERS ENABLED BY AN OPEN-ACCESSIBLE DEVICE**
Gongchen Sun, Cassidy-Arielle Manning, Ga Hyun Lee, and Hang Lu
Georgia Institute of Technology, USA

T4-450.e **EFFECT OF MICROFLUIDIC PROCESSING ON THE VIABILITY OF BOAR AND BULL SPERMATOZOA**
Tanja Hamacher[1], Johanna T.W. Berendsen[1], Stella A. Kruit[1], Marleen L.W.J. Broekhuijse[2,3], and Loes I. Segerink[1]
[1]University of Twente, THE NETHERLANDS, [2]CRV, THE NETHERLANDS, and [3]Topigs Norsvin, THE NETHERLANDS

T4-451.e **PARALLEL SCREENING OF SINGLE ZOOSPORE GERMINATION AND GERM TUBE PROTRUSIVE FORCES**
Yiling Sun, Ayelen Tayagui, Ashley Garrill, and Volker Nock
University of Canterbury, NEW ZEALAND

W5-550.e **EGG LAYING NEURON MEDIATES ELECTROSENSATION IN *CAENORHABDITIS ELEGANS***
Khaled Youssef[1], Daphne Archonta[1], Terrance J. Kubiseski[1], Anurag Tandon[2], and Pouya Rezai[1]
[1]York University, CANADA and [2]University of Toronto, CANADA

W5-551.e **STRAIGHTFORWARD MICROFLUIDIC SYSTEM FOR BEHAVIORAL RESPONSES ANALYSIS OF *C. ELEGANS* TO PHYSICAL CUES**
Sunhee Yoon, Tae-Joon Jeon, and Sun Min Kim
Inha University, KOREA

W6-649.e **HABITUATION OF ZEBRAFISH LARVAE TO ELECTRICAL STIMULUS**
Arezoo Khalili, Ellen van Wijngaarden, Georg Zoidl, and Pouya Rezai
York University, CANADA

Th7-749.e **ELECTRIC FIELD INDUCED *C. ELEGANS* EGG LAYING IS NEURON-MEDIATED AND DEPENDENT ON FIELD POLARITY**
Khaled Youssef[1], Daphne Archonta[1], Terrance J. Kubiseski[1], Anurag Tandon[2], and Pouya Rezai[1]
[1]York University, CANADA and [2]University of Toronto, CANADA

Th8-849.e ***IN-VIVO* QUANTIFICATION OF DROSOPHILA LARVA HEART FUNCTIONS**
Alireza Zabihihesari, Arthur J. Hilliker, and Pouya Rezai
York University, CANADA

e - Cells, Organisms and Organs on a Chip

Organs on Chip

M1-152.e **A MICROFLUIDIC MODEL OF THE HUMAN PLACENTA**
Taisei Amanokura, Takeshi Hori, Norio Kobayashi, Hiroaki Okae, Takahiro Arima, and Hirokazu Kaji
Tohoku University, JAPAN

M1-153.e **FABRICATION AND FLUIDIC INTEGRATION OF SELF-ASSEMBLED CELLULAR MICROTUBULES FOR NEPHRON-ON-CHIP APPLICATIONS**
Kevin Tröndle[1], Ahmad Itani[1], Fritz Koch[1], Roland Zengerle[1,2], Stefan Zimmermann[1], and Peter Koltay[1,2]
[1]University of Freiburg, GERMANY and 2Hahn-Schickard, GERMANY

M1-154.e ***LAB-ON-A-CHIP* SYSTEM INTEGRATED WITH NANOFIBER MATS FOR BIOCHEMICAL SIMULATION OF HYPOXIA OF CARDIAC CELLS**
Anna Kobuszewska, Dominik Kolodziejek, Michal Wojasiński, Tomasz Ciach, Zbigniew Brzózka, and Elżbieta Jastrzębska
Warsaw University of Technology, POLAND

M1-155.e **MODELLING SKIN PRO-INFLAMMATORY RESPONSE IN AN ENGINEERED INFECTED EPIDERMIS MODEL**
Maryam Jahanshai, Zhina Hadisi, and Mohsen Akbari
University of Victoria, CANADA

M1-156.e **WOUND-ON-A-CHIP DEVICE FOR HUMAN SKIN HEALING ASSAYS**
Kamil Talar[1], Holly N. Wilkinson[2], Alexander Iles[1], Matthew J. Hardman[2], and Nicole Pamme[1]
[1]University of Hull, UK and [2]Hull York Medical School, UK

M2-251.e **A MULTI-CULTURE ARRAY FOR MODELLING NUMEROUS MECHANISMS OF CUTANEOUS DRUG REACTIONS**
Lor Huai Chong[1], Terry Ching[1,2], Gianluca Grenci[3], and Yi-Chin Toh[1,4]
[1]National University of Singapore, SINGAPORE, [2]Singapore University of Technology and Design, SINGAPORE, [3]Mechanobiology Institute, SINGAPORE, and
[4]Queensland University of Technology, AUSTRALIA

M2-252.e **FROM MODEL SYSTEM TO THERAPY – SCALABLE PRODUCTION OF PERFUSABLE VASCULARIZED LIVER SPHEROIDS IN ''OPEN-TOP'' 384- WELL PLATE**
Dawn S.Y. Lin, Shravanthi Rajasekar, Mandeep Kaur Marway, and Boyang Zhang
McMaster University, CANADA

M2-253.e **LOW-COST OPEN MICROFLUIDIC DEVICE FOR VASCULARIZED SPHEROID-ON-A-CHIP**
Qinyu Li, Kai Niu, and Xiaolin Wang
Shanghai Jiao Tong University, CHINA

M2-254.e **MODELLING THE TUMOR MICRO-ENVIRONMENT IN HEPATOCELLULAR CARCINOMA USING MULTI-CELLULAR SPHEROIDS**
Ana Ortiz-Perez, Agnieszka Zuchowska, Jean-Baptiste Blondé, Ruchi Bansal, and Séverine Le Gac
University of Twente, THE NETHERLANDS

T3-352.e **A VASCULARIZED MICRO LIVER MODEL SUPPORTS ROBUST ALBUMIN AND CYP450 EXPRESSION BY HUMAN HEPATOCYTES**
Satomi Matsumoto, Jennifer S. Fang, Yu-Hsi Chen, Da Zhao, Abraham P. Lee, and Christopher C.W. Hughes
University of California, Irvine, USA

T3-353.e **HEART-LIVER ON A CHIP INTEGRATED WITH A MICROELECTRODE ARRAY TO MONITOR EXTRACELLULAR FIELD POTENTIALS OF CARDIOMYOCYTES**
Dongxiao Zhang[1], Yoshikazu Hirai[1], Ken-ichiro Kamei[1], Osamu Tabata[1,2], and Toshiyuki Tsuchiya[1]
[1]Kyoto University, JAPAN and [2]Kyoto University of Advanced Science, JAPAN

T3-354.e MEASURING BARRIER FUNCTION IN A GUT-ON-CHIP
Elsbeth G.B.M. Bossink, Mariia Zakharova, Mathieu Odijk, and Loes Segerink
University of Twente, THE NETHERLANDS

T3-355.e ON-CHIP MODELLING OF THE BIOPHYSICS OF PANCREATIC DUCTAL ADENOCARCINOMA FOR ASSESSMENT WITH NEW THERAPEUTICS
Delanyo Kpeglo[1], Margaret Knowles[1], Malcolm Haddrick[2], Stephen D. Evans[1], and Sally A. Peyman[1]
[1]University of Leeds, UK and [2]Medicines Discovery Catapult (MDC), UK

T4-452.e AN ELASTIC PROTEIN MEMBRANE FOR PERFUSABLE MICROFLUIDIC CELL BARRIER MODELLING IN A POLYDIMETHYLSILOXANE-FREE FLEXIBLE CHIP
Lisa D. Muiznieks, Jessica Ayache, Emma Thomée, and Noémi Thomazo
Elvesys - Microfluidics Innovation Center, FRANCE

T4-453.e HEMOSTASIS-ON-A-CHIP: EVALUATING THE EFFICACY OF THROMBIN-CONJUGATED IRON OXIDE NANOPARTICLES FOR PLATELET ACTIVATION IN ORGANOTYPIC BLOOD VESSELS
Alexander F. Pessell, Kennedy R. Baugh, Anthony Geraci, Kayle Riley, Max M. Gong, and Melanie G. Watson
Trine University, USA

T4-454.e MECHANICAL STIMULATION INCREASES ECM PRODUCTION BY CHONDROCYTES IN A CARTILAGE-ON-A-CHIP PLATFORM
Carlo Alberto Paggi[1], Jan Hendriks[1], Liliana Moreira Teixeira[1,2], Marcel Karperien[1], and Séverine Le Gac[1]
[1]University of Twente, THE NETHERLANDS and [2]Utrecht University, THE NETHERLANDS

T4-455.e ORAL MUCOSA-CHIP AS AN ALTERNATIVE PLATFORM TO EVALUATE THE IMPACTS OF DENTAL MONOMERS
Khanh Ly[1], Seyed Rooholghodos[1], Christopher Rahimi[1], Benjamin Rahimi[1], Diane R. Bienek[2], Gili Kaufman[2], Christopher Raub[1], and Xiaolong Luo[1]
[1]Catholic University of America, USA and [2]ADA Science and Research Institute, USA

W5-552.e CANCER METASTASIS RECAPITULATED IN THREE-DIMENSIONAL HUMAN LIVER-CHIP
Jooyoung Ro[1,2], Junyoung Kim[1,2], Chaeeun Lee[1,2], and Yoon-Kyoung Cho[1,2]
[1]Ulsan National Institute of Science & Technology (UNIST), KOREA and
[2]Institute for Basic Science (IBS), KOREA

W5-553.e MEMS ACTUATION PROMOTES IN VITRO BRAIN-ON-CHIP MATURATION
Alex Bastiaens[1], Gulden Akcay[1], Maaike Fransen[1], Sijia Xie[2], and Regina Luttge[1]
[1]Eindhoven University of Technology, THE NETHERLANDS and [2]Paul Scherrer Institute, SWITZERLAND

W5-554.e RECONSTITUTING THE ARTERIAL INTIMA-MEDIA INTERFACE USING A DUAL-LANE EXTRACELLULAR MATRIX PATTERNED MICROFLUIDIC 3D CO-CULTURE PLATFORM FOR STUDY OF ATHEROSCLEROSIS
Chengxun Su[1], Nishanth Venugopal Menon[1], Xiaohan Xu[1], Yu Rong Teo[1], Huan Cao[1], Rinkoo Dalan[1,2], Chor Yong Tay[1], and Han Wei Hou[1]
[1]Nanyang Technological University, SINGAPORE and [2]Tan Tock Seng Hospital, SINGAPORE

W6-650.e A 3D MICROPATTERNED NEURONAL CULTURE PLATFORM USING EXTRACELLULAR MATRIX-BASED HYDROGEL ON A MICROELECTRODE ARRAY
Dongjo Yoon, Jaejung Son, Je-Kyun Park, and Yoonkey Nam
Korea Advanced Institute of Science and Technology (KAIST), KOREA

W6-651.e CONTINUOUS MONITORING OF ISOGENIC BLOOD-BRAIN BARRIER INTEGRITY IN A PDMS-FREE MICROPHYSIOLOGICAL SYSTEM
Thomas E. Winkler[1], Isabelle Matthiesen[1], Dimitrios Voulgaris[1], Polyxeni Nikolakopoulou[2], and Anna Herland[1,2]
[1]KTH Royal Institute of Technology, SWEDEN and [2]Karolinska Institute, SWEDEN

W6-652.e INTEGRATED ANISOTROPIC TUBULAR CARDIAC TISSUE AND CIRCULATING MICROCHANNEL SYSTEM FOR DRUG TESTING

Bo-Heng (Henry) Liu and Fan-Gang Tseng
National Tsing Hua University, TAIWAN

W6-653.e WITHDRAWN

W6-654.e SECRETOME ANALYSIS WITH SIMULTANEOUS ON-CHIP ANGIOGENESIS AND ANASTOMOSIS BETWEEN HUMAN ARTERIAL AND VENOUS CELLS

Elisabeth Hirth[1], Claudius Dietsche[1], Todd Duncombe[1], Danilo Ritz[2], Maria Filippova[2,3], and Petra S. Dittrich[1]
[1]ETH Zürich, Basel, SWITZERLAND, [2]University of Basel, SWITZERLAND, and [3]University Hospital, SWITZERLAND

Th7-750.e A 3D-PRINTED MODULAR MICROCHIP WITH AN INTEGRATED IMPELLER PUMP TO MODEL INTER-ORGAN COMMUNICATION

Sophie R. Cook and Rebecca R. Pompano
University of Virginia, USA

Th7-751.e DEVELOPMENT OF CLOSED AND PUMPLESS PLATFORM FOR CO-CULTURE IN MINIMALIZED SPACE

Hidetaka Ueno[1,2], Yuri Aoki[3], Kenji Hanamura[3], Mai Yamamura[3], Tomoaki Shirao[3], and Takaaki Suzuki[3]
[1]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, [2]JSPS Research Fellow, JAPAN, and [3]Gunma University, JAPAN

Th7-752.e INTEGRATING PANCREAS TISSUE SLICES WITH ADVANCED ANALYTICAL APPROACHES FOR MEASUREMENT OF INSULIN RELEASE

I-An Wei and Michael G. Roper
Florida State University, USA

Th7-753.e MICROFLUIDICS AND IMMUNOTHERAPY: MODELLING SOLID TUMORS

Jose M. Ayuso, Maria Virumbrales-Munoz, Patrick H. McMinn, Shujah Rehman, Cate M. Fitzgerald, Melissa C. Skala, and David J. Beebe
University of Wisconsin, USA

Th7-754.e SOFT STRETCHABLE BIOLOGICAL MEMBRANES FOR ORGANS-ON-CHIP

Pauline Zamprogno[1], Giuditta Thoma[1], Veronika Cencen[2], Dario Ferrari[1], Barbara Putz[3], Johann Michler[3], Georg E. Fantner[2], and Olivier T. Guenat[1,4]
[1]University of Bern, SWITZERLAND, [2]Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, [3]EMPA Swiss Federal Laboratories for Materials Science and Technology, SWITZERLAND, and [4]University Hospital of Bern, SWITZERLAND

Th8-850.e A LIVER-IN-CHIP PLATFORM FOR PRESERVING *EX VIVO* TISSUE VIABILITY

Foivos Chatzidimitriou, Soon Seng Ng, S. Tamir Rashid, Joseph M. Sherwood, and Darryl R. Overby
Imperial College London, UK

Th8-851.e EFFECT OF SHEAR STRESS ON THE EXPRESSION OF FUNCTIONAL PROTEINS IN A BILAYER PROXIMAL TUBULE-ON-A-CHIP

Ramin Banan Sadeghian[1], Ryohei Ueno[1], Toshikazu Araoka[1], Jun Yamashita[1], Tatsuji Enoki[2], Minoru Takasato[3], and Ryuji Yokokawa[1]
[1]Kyoto University, JAPAN, [2]Takara Bio, Inc., JAPAN, and [3]RIKEN, JAPAN

Th8-852.e **INVESTIGATING DRUG-INDUCED AUTOPHAGY IN A MICROFLUIDIC MODEL OF GLIOBLASTOMA**
Ehsan Samiei[1], Saeid Ghavami[2], and Mohsen Akbari[1]
[1]University of Victoria, CANADA and [2]University of Manitoba, CANADA

Th8-853.e **MICROPILLAR-BASED MICROFLUIDIC SYSTEM FOR STUDIES OF 3D PANCREATIC ISLET STRUCTURES**
Patrycja Sokolowska[1,2], Anna Grabowska[1], Kamil Żukowski[1], Elzbieta Jastrzebska[1], Zbigniew Brzozka[1], and Agnieszka Dobrzyn[2]
[1]Warsaw University of Technology, POLAND and [2]Nencki Institute of Experimental Biology, POLAND

Th8-854.e **SYNOVIAL MEMBRANE ON CHIP: A NEW TOOL TO STUDY CO-CULTURE RESPONSE TO MECHANICAL STIMULATION**
Carlo Alberto Paggi[1], Mariia Zakharova[1], Loes Segerink[1], Séverine Le Gac[1], Liliana Moreira-Teixeira[1,2], and Marcel Karperien[1]
[1]University of Twente, THE NETHERLANDS and [2]Utrecht University, THE NETHERLANDS

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

M1-157.e **FORMATION OF A NEURON-MUSCLE CONSTRUCT USING NEURAL CELL FIBERS AND SKELETAL MUSCLE TISSUE FOR BIOHYBRID ACTUATORS**
Akihiro Sunagawa[1], Midori Negishi[1,2], Minghao Nie[1], Yuya Morimoto[1], and Shoji Takeuchi[1]
[1]University of Tokyo, JAPAN and [2]Musashino University, JAPAN

M2-255.e **A NEW PLATFORM FOR CULTURE AND ELECTROPORATION OF 3D CELL CONSTRUCTS BASED ON A POROUS SCAFFOLD**
Marie Frénéa-Robin, Julien Marchalot, Laure Franqueville, and Charlotte Rivière
University of Lyon, FRANCE

M2-256.e **RECAPITULATING CYCLIC STRETCH IN MICROVASCULATURE BY FLOW-INDUCED CUES IN HYDROGEL MICROCHANNELS**
Walter Varhue, Aditya Rane, Shayn Peirce-Cottler, George Christ, and Nathan S. Swami
University of Virginia, USA

T3-356.e **ACTOMYOSIN-COLLAGEN HYBRID SOFT ACTUATOR**
Kenjiro Kohno[1], Shusei Kawara[1], Yuichi Hiratsuka[2], and Hiroaki Onoe[1]
[1]Keio University, JAPAN and [2]Japan Advanced Institute of Science and Technology (JAIST), JAPAN

T3-357.e **THE INFLUENCE OF SHEAR STRESS GENERATED BY OSMOTIC DRIVEN FLOW ON THE ALIGNMENT OF ENDOTHELIIAL CELL**
Zong-Han Sie[1], Lu-Wei Wu[1], Yen-Yu Chang[1], Yi-Chin Toh[2], and Ya-Yu Chiang[1]
[1]National Chung-Hsing University, TAIWAN and [2]Queensland University of Technology, AUSTRALIA

T4-456.e **ANTI-BIOFOULING SURFACES FEATURED WITH MAGNETIC ARTIFICIAL CILIA**
Shuaizhong Zhang[1], Pan Zuo[1], Ye Wang[1], Patrick R. Onck[2], and Jaap M.J. den Toonder[1]
[1]Eindhoven University of Technology, THE NETHERLANDS and
[2]University of Groningen, THE NETHERLANDS

W5-555.e **ZINC OXIDE NANOPILLARS INHIBIT BACTERIAL ATTACHMENT**
Nicholas Lin, Amin Valiei, Nathalie Tufenkji, and Christopher Moraes
McGill University, CANADA

W6-655.e **CELL-BASED SENSOR INTEGRATED IN OPTICAL FIBER TOWARD MONITORING OF NEUROTRANSMITTERS**
Hisashi Shimizu[1], Yuichi Morohashi[2], Yoko Yazaki-Sugiyama[1,2], and Shoji Takeuchi[1]
[1]University of Tokyo, JAPAN and [2]Okinawa Institute of Science and Technology Graduate University, JAPAN

Th7-755.e **CROSSLINKING AEROSOL-BASED MULTI-BIOINK PRINTING SYSTEM TO CONSTRUCT HETEROGENEOUS AND MULTILAYERED HYDROGELS**
Gihyun Lee, Soo Jee Kim, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

Th8-855.e **EXOSKELETAL BIOHYBRID ROBOT USING ANTAGONISTIC XENOPUS MUSCLE**
Jinhwa Lee[1], Yuya Morimoto[1], Masahiro Shimizu[2], and Shoji Takeuchi[1]
[1]University of Tokyo, JAPAN and [2]Osaka University, JAPAN

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Synthetic Biology

T4-457.e **CELL-FREE LOW-COST *DE NOVO* BACTERIOPHAGE GENOME SYNTHESIS FROM SEQUENCE-VERIFIED MICROARRAY-SYNTHESIZED DNA OLIGONUCLEOTIDES**
Huiran Yeom[1v], Taehoon Ryu[2], Namphil Kim[1], and Sunghoon Kwon[1]
[1]Seoul National University, KOREA and [2]Celemics, Inc, KOREA

W5-556.e **DNA NANOBALL RETRIEVAL MICROCHIP DESIGN FOR HIGH-THROUGHPUT ERROR-FREE DNA PURIFICATION PLATFORM**
Namphil Kim, Huiran Yeom, Yonghee Lee, and Sunghoon Kwon
Seoul National University, KOREA

W6-656.e **DROPLET MICROFLUIDIC MICROCOLONY SORTING BY FLUORESCENCE AREA FOR HIGH THROUGHPUT, YIELD-BASED SCREENING OF TRIACYL GLYCERIDES IN *S. CEREVISIAE***
Sara M. Björk, Martin Schappert, and Haakan N. Joensson
KTH Royal Institute of Technology, SWEDEN

Th7-756.e **INTRACELLULAR SENSING OF EXPRESSED FACTORS BY REDOX AMPLIFICATION USING BIO-CAPACITOR ON NANOPOROUS GOLD**
Yi Liu, John H. Moore, and Nathan S. Swami
University of Virginia, USA

Th8-856.e **RT-OGENE: A REAL-TIME OPTOGENETICS SYSTEM FOR CONTROLLING GENE EXPRESSION USING MODEL-BASED DESIGN**
James M. Perry, Guy Soffer, and Steve C.C. Shih
Concordia University, CANADA

e - Cells, Organisms and Organs on a Chip
Liposomes/Membranes

M1-158.e **AN APROTIC POLAR SOLVENT ASSISTED SIZE-TUNING METHOD FOR MICROFLUIDIC PRODUCTION OF LIPID-BASED DRUG NANOCARRIERS WITH VARIOUS SIZES**
Niko Kimura, Masatoshi Maeki, Akihiko Ishida, Hirofumi Tani, and Manabu Tokeshi
Hokkaido University, JAPAN

M2-257.e **MICROFLUIDIC FORMATION OF LIPID-OUT ASYMMETRIC DROPLET INTERFACE BILAYERS FOR ON-CHIP PHARMACOKINETICS MODELLING**
Elanna B. Stephenson and Katherine S. Elvira
University of Victoria, CANADA

T3-358.e **PLASMONIC STRUCTURES FOR CLINICAL-SCALE EXOSOME ANALYSIS**
Felix Kurth, Luc Driencourt, Fabian Lütolf, Rolando Ferrini, and Silvia Generelli
CSEM, SWITZERLAND

T4-458.e **THE BOTTOM-UP SYNTHESIS OF BESPOKE PROTOTISSUES USING A MICROFLUIDIC PLATFORM**
Kaitlyn E. Ramsay[1], Jae F. Levy[1], Pierangelo Gobbo[2], and Katherine Elvira[1]
[1]University of Victoria, CANADA and 2University of Bristol, UK

e - Cells, Organisms and Organs on a Chip
Other Applications in Biology

W5-557.e **AN ACOUSTIC-ELECTRICAL SHEAR OPENING PORATION (AESOP) PLATFORM FOR INTRACELLULAR DELIVERY**
Yu-Hsi Chen, Mohammad Aghaamoo, and Abraham P. Lee
University of California, Irvine, USA

W6-657.e **DEVELOPMENT OF NOVEL SCREENING PLATFORM AND ORGANOID CULTURE MODEL FOR QUANTIFIABLE HIGH THROUGHPUT SCREENING OF TUMOR ORGANOID**
Yong Hun Jung[1], Donghee Choi[1], Kyungwon Park[1], Satbyol Lee[3], Hyunwoo Chung[1], Jihun Yang[1], Jinah Kim[1], Byungsoh Min[3], and Seok Chung[1,2]
[1]Korea University, KOREA, [2]Korea Institute of Science and Technology (KIST), KOREA, and [3]Yonsei University College of Medicine, KOREA

Th7-757.e **MICROFLUIDIC INTRACELLULAR DELIVERY VIA FLUID CELL SHEARING**
GeoumYoung Kang, Chan Kwon, and Aram Chung
Korea University, KOREA

Th8-857.e **ORGANOSILICON INTERACTION WITH BIOLOGICAL MEMBRANES**
Pepijn Beekman[1], Agustin Enciso-Martinez[1], Sidharam Pujari[2], Han Zuilhof[2], Leon Terstappen[1], Cees Otto[1], and Séverine Le Gac[1]
[1]University of Twente, THE NETHERLANDS and [2]Wageningen University, THE NETHERLANDS

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W6-658.e **CUSTOMIZABLE MICROFLUIDIC DEVICES FOR CO-CULTURE AND ALI RECREATION: BE-DOUBLEFLOW & BE-TRANSFLOW**
Sandra González Lana[1,2], Lara Pancorbo Lambán[1], Sara Aldea Martín[1], Luis E. Serrano Ramón[1], and Rosa M. Monge Prieto[1]
[1]BEOnChip S.L., SPAIN and [2]University of Zaragoza, SPAIN

Th8-879.e **NOURISHING, MONITORING AND STIMULATING CELLS WITH BI/OND'S ORGAN-ON-CHIP DEVICE**
Amr Othman[1], Lucie Decourt[1], William. F. Quiros-Solano[1], Dik C. van Gent[2], Sanjiban Chakrabarty[3], Cinzia Silvestri[1], and Nikolas Gaio[1]
[1]BIOND Solutions B.V., THE NETHERLANDS, [2]Erasmus Medical Centre, THE NETHERLANDS, and [3]Manipal Academy of Higher Education, INDIA

M1-182.e **A USER-FRIENDLY MICROFLUIDICS PLATFORM FOR HIGH-CONTENT IMAGING OF SMALL MODEL ORGANISMS FOR ASSESSMENT OF CHEMICAL TOXICITY**
Evan M. Hegarty, Adam F. Laing, Adela Ben-Yakar
Newormics LLC, USA

T4-483.e **RESEALABLE, RECIRCULATING PLATFORM FOR THE MECHANICAL STIMULATION OF CELL CO-CULTURES IN A TRANSWELL INSERT**

Sandro Meucci[1], Jasper ten Napel[1], Bianka Fabinyi[1], Astrid D. Bakker[2], Lasse Jensen[3], and Anna Fahlgren[4]
[1]Micronit Microtechnologies BV, THE NETHERLANDS, [2]Academisch Centrum Tandheelkunde Amsterdam (ACTA), THE NETHERLANDS, [3]BioReperia, SWEDEN, and [4]Linköping University, SWEDEN

e - Cells, Organisms and Organs on a Chip

Late News

M1-180.e **REAL-TIME OPTICAL MONITORING OF CELL CULTURE IN CENTRIFUGAL MICROFLUIDICS**

Edwin En-Te Hwu[1], Lina Gruzinskyte[1,3], Atsushi Ishimoto[1,2], Laura Serioli[1], Sriram Thoppe Rajendran[1], Akinobu Yamaguchi[2], Kinga Zór[1], and Anja Boisen[1]
[1]Technical University of Denmark, DENMARK, [2]University of Hyogo, JAPAN, and [3]University of Copenhagen, DENMARK

M2-278.e **A MICROFLUIDIC CHIP FOR MEASURING WHITE BLOOD CELL CONCENTRATION FROM AN UNDILUTED, WHOLE BLOOD**

Georgia Korompili[1], Katerina Skorda[1], and Nikos Chronis[1,2]
[1]National Centre of Scientific Research (NCSR) Demokritos, GREECE and [2]University of Crete, GREECE

M2-279.e **A MICROFLUIDIC SYSTEM FOR INVESTIGATING THE TRANSIT DYNAMICS OF LIVE AND HEAT-KILLED *E. COLI* BACTERIA IN *C. ELEGANS***

Vittorio Viri, Thomas Lehnert, and Martin A.M. Gijs
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T3-379.e **3D VASCULAR NETWORKS CO-CULTURED WITH VARIOUS TYPES OF COLORECTAL CANCER CELLS FOR VALIDATION OF NATURAL KILLER CELL CYTOTOXICITY**

Hyeri Choi, Jiyoung Song, Dohyun Park, and Noo Li Jeon
Seoul National University, KOREA

T3-380.e **HIGH-RESOLUTION AND MASSIVE TRAPPING AND SEPARATION OF BACTERIA AND NANOPARTICLES IN AN OPTOFLUIDIC CHIP**

Yuzhi Shi, Yi Zhang, Yang Liu, Shilun Feng, Wee Ser, Peng Huat Yap, and Ai Qun Liu
Nanyang Technological University, SINGAPORE

T4-479.e **EVALUATION OF PLURIPOTENCY IN HUMNAN INTENSTINAL CELLS BY MICROFLUIDIC-BASED SINGLE CELL DEFORMABILITY ANALYSIS**

Miyu Terada[1], Sachiko Ide[1], Toyohiro Naito[1], Michiya Matsusaki[2], and Noritada Kaji[1]
[1]Kyushu University, JAPAN and [2]Osaka University, JAPAN

T4-480.e **MICROFLUIDIC COLLAGEN PATTERNING FOR TENDON REGENERATION**

Francesca Giacomini, David B. Barata, Hoon Suk Rho, Zeinab Tahmasebi Birgani, Stefan Giselbrecht, Roman Truckenmüller, and Pamela Habibović
Maastricht University, NETHERLANDS

W5-578.e **HIGHLY PARALLEL SINGLE-CELL SIMULTANEOUS TRANSCRIPTOME AND PROTEIN ANALYSIS**

Xing Xu, Mingxia Zhang, Xuebing Zhang, Zhi Zhu, and Chaoyong Yang
Xiamen University, CHINA

W5-579.e **MICROPHYSIOLOGICAL MODEL OF ENDOTHELIUM-FIBROBLAST INTERFACE FOR INVESTIGATING WOUND HEALING**

Halston E. Deal[1,2], Ashlyn T. Young[1,2], Ashley C. Brown[1,2], and Michael A. Daniele[1,2]
[1]North Carolina State University, USA and [2]University of North Carolina, Chapel Hill, USA

W6-679.e DNA HYDROGELS AS A SCAFFOLD FOR ORGANS-ON-CHIPS: STUDY OF BUOYANCY AND SEDIMENTATION OF MICROBEADS IN DNA GELS

Emilie Belot[1,2], Yannick Tauran[1,2], Yusuke Sato[3], Masahiro Takinoue[4], Arnaud Brioude[1], Teruo Fujii[2], and Anthony J. Genot[2]
[1]Université de Lyon, FRANCE, [2]University of Tokyo, FRANCE, [3]Tohoku University, JAPAN, and [4]Tokyo Institute of Technology, JAPAN

W6-680.e RECONSTRUCTION OF 3D HUMAN LYMPHATIC VESSEL WITHIN TUMOR IMMUNE MICROENVIRONMENT USING HIGH-THROUGHPUT PLATFORM

Habin Kang[1], Somin Lee[1], Dohyun Park[1], James Yu[1], Seung Kwon Koh[2], Duck Cho[2], Da-Hyun Kim[1], Kyung-Sun Kang[1], and Noo Li Jeon[1]
[1]Seoul National University, KOREA and [2]Sungkyunkwan University, KOREA

Th7-778.e A HYDROGEL CO-CULTURE PLATFORM REVEALS COMMUNITY RESPONSES OF BACTERIA TO ALGAL HOST AND NUTRIENTS UNDER A DIFFUSION-CONTROLLED ENVIRONMENT

Hyungseok Kim[1], Jeffrey A. Kimbrel[2], Jessica Wollard[2], Xavier Mayali[2], and Cullen R. Buie[1]
[1]Massachusetts Institute of Technology, USA and [2]Lawrence Livermore National Laboratory, USA

Th7-779.e TOWARDS HYBRID BIOPRINTING AIDED LIVER ON CHIP

Muhammad Asim Faridi, Zofia Korczak, Philip Dalsbecker, and Caroline B. Adiels
Gothenburg University, SWEDEN

Th8-876.e MICROGROOVE GUIDED 2D CELL CULTURE APPLIED TO CONSTRUCT 3D SEMI-SPHERICAL HEART PUMPING SYSTEM

Bo-Heng (Henry) Liu, Guan-You Shih, and Fan-Gang Tseng
National Tsing Hua University, TAIWAN

Th8-877.e THERMAL MORPHOGENESIS IN TISSUE-LIKE ARRAYS OF DROPLETS

Nicolas Lobato-Dauzier[1], Robin Deteix[1], Shu Okumura[1], Alexandre Baccouche[1], Guillaume Gines[2], Yannick Rondelez[2], Teruo Fujii[1], and Anthony J. Genot[1]
[1]University of Tokyo, JAPAN and [2]PSL Research University, FRANCE

f - Diagnostics, Drug Testing & Personalized Medicine

Liquid Biopsy and Sample Preparation

M1-159.f ISOLATION OF ALZHEIMER'S DISEASE ASSOCIATED EXOSOMES USING GRAPHENE OXIDE-BASED MICROFLUIDIC CHIP WITH PREFIBRILLAR AMYLOID β (AβExoChip)

Yoon-Tae Kang, Ji-Young Kim, Thomas Hadlock, Andrew Rellinger, Nicholas Kotov, and Sunitha Nagrath
University of Michigan, Ann Arbor, USA

M2-258.f CHARACTERIZATION OF EXTRACELLULAR VESICLES PURIFIED BY ULTRACENTRIFUGATION, SIZE-EXCLUSION CHROMATOGRAPHY AND LAB-ON-A-DISC FILTRATION

Lucile Alexandre[1,2], Philippe DeCorwin-Martin[1], Rosalie Martel[1], Molly Shen[1], Johan Renault[1], Lorenna Oliveira[1], Andy Ng[1], and David Juncker[1]
[1]McGill University, CANADA and [2]Institut Curie, FRANCEe

M2-259.f MOLECULAR AND FUNCTIONAL EXTRACELLULAR VESICLE ANALYSIS USING NANOPATTERNED MICROCHIPS MONITORS TUMOR PROGRESSION AND METASTASIS

Peng Zhang[1,2], Chaoyong Yang[2], and Yong Zeng[1]
[1]University of Kansas, USA and [2]Shanghai Jiaotong University School of Medicine, CHINA

T3-359.f **DETERMINISTIC LATERAL DISPLACEMENT FOR THE SORTING OF EXTRACELLULAR VESICLES FROM COMPLEX BIOLOGICAL SAMPLES**
Marie Gaillard[1], Nicolas Sarrut-Rio[1], Léopold Virot[1], François Boizot[1], Nicolas Verplanck[1], Camille Raillon[1], Vincent Agache[1,2], Yoann Roupioz[1], and Aurélie Thuaire[1]
[1]University Grenoble Alpes, FRANCE and [2]Massachusetts Institute of Technology, USA

T3-360.f **PRECISELY METERED DRIED BLOOD SPOTS BY USING TUNABLE HYDROPHOBIC BURST VALVES**
Lorenz Van Hileghem, Dries Vloemans, Francesco Dal Dosso, and Jeroen Lammertyn
KU Leuven, BELGIUM

T4-459.f **EFFICIENT HUMAN PLASMA EXTRACTION FROM UNDILUTED WHOLE BLOOD BY CELL-FREE LAYER MARGINATION WITH CLOSED-LOOP SINGLE MICROFLUIDIC CHANNEL DEVICE**
Lap Man Lee, Ketan H. Bhatt, Dustin W. Haithcock, Mary A. Arugula, Balabhaskar Prabhakarpandian, and Kapil Pant
CFD Research Corporation, USA

T4-460.f **TEM GRID PREPARATION WITH MINIMAL USER INTERACTION**
Janosch Hauser[1], Gustaf Kylberg[2], Göran Stemme[1], Ida-Maria Sintorn[2], and Niclas Roxhed[1]
[1]KTH Royal Institute of Technology, SWEDEN and [2]Vironova AB, SWEDEN

W5-558.f **EXOSOME ISOLATION VIA CLICK CHEMISTRY (EXOCLICK) CHIP FOR SCREENING AND QUANTIFICATION OF CANCER-ASSOCIATED EXOSOMES**
Yoon-Tae Kang, Thomas Hadlock, Shruti Jolly, and Sunitha Nagrath
University of Michigan, Ann Arbor, USA

W6-659.f **EXTRACELLULAR VESICLE DETECTION DIRECTLY IN COMPLEX MATRICES BY USING FO-SPR SENSOR**
Yagmur Yildizhan[1], Venkata Suresh Vajrala[1], Charles Declerck[1], Edward Geeurickx[2], Sam Noppen[1], Dominique Schols[1], Johannes V. Swinnen[1], Sven Eyckerman[2], An Hendrix[2], Jeroen Lammertyn[1], and Dragana Spasic[1]
[1]KU Leuven, BELGIUM and [2]Gent University, BELGIUM

Th7-758.f **HARVESTING BIOMOLECULES FROM TISSUE BY POROUS SILICON NANONEEDLES**
Davide A. Martella and Ciro Chiappini
King's College London, UK

Th8-858.f **INKJET-PRINTED 3D NANO-ENGINEERED MICROCHIPS FOR FUNCTIONAL ANALYSIS OF METASTATIC EXOSOMES**
Yong Zeng[1], Peng Zhang[2], and Liang Xu[2]
[1]University of Florida, USA and [2]University of Kansas, USA

f - Diagnostics, Drug Testing & Personalized Medicine

Nucleic-Acid Analysis

M1-160.f **EVALUATION OF DLP 3D PRINTING MATERIALS FOR THE MANUFACTURE OF RECOMBINASE POLYMERASE AMPLIFICATION (RPA) MICROREACTORS**
Ole Behrmann[1,2], Matthias Hügle[1,2], Franz Eckardt[1], Iris Bachmann[1], Frank T. Hufert[1], and Gregory Dame[1]
[1]Brandenburg Medical School Theodor Fontane, GERMANY and [2]University of Freiburg, GERMANY

M2-260.f **METAL OXIDE NANOWIRES MICROFLUIDIC DEVICES FOR DNA METHYLATION MAPPING**
Marina Musa[1], Takao Yasui[1,2], Taisuke Shimada[1], Akihide Arima[1], and Yoshinobu Baba[1,3]
[1]Nagoya University, JAPAN, [2]Japan Science and Technology Agency (JST), JAPAN, and [3]National Institutes for Quantum and Radiological Science and Technology, JAPAN

T3-361.f **MICRORNA DETECTION USING STRAND DISPLACEMENT AMPLIFICATION IN HYDROGEL PARTICLES**

Nidhi Juthani and Patrick S. Doyle
Massachusetts Institute of Technology, USA

T4-461.f **NAKED-EYE DETECTION OF POLYMERASE CHAIN REACTION ON MICROFLUIDICS**

Ren Shen[1], Yanwei Jia[1], Pui-In Mak[1], and Rui P. Martins[1,2]
[1]University of Macau, CHINA and [2]Universidade de Lisboa, PORTUGAL

W5-559.f **AUTOMATION OF THE PAPER-BASED VERTICAL FLOW PLATFORM FOR RADIATION BIODOSIMETRY DURING DEEP SPACE MISSION**

Jasmine P. Devadhasan, Paul Kuehl, Jerome Lacombe, Jana Stoudemire, Twyman Clements, Jian Gu, and Frederic Zenhausern
University of Arizona, College of Medicine, USA

W5-560.f **OE-PCR IN DROPLETS FOR RAPID CONVERSION OF ANTIBODY LIBRARIES**

Micaela Vitor[1], Lucas Pereira[2], Guillaume Mottet[1], Emmanuelle Vigne[1], and Melody Shahsavarian[1]
[1]Sanofi, FRANCE and [2]L'École Supérieure de Physique et de Chimie Industrielles (ESPCI)FRANCE

W6-660.f **CENTRIFUGAL MICROFLUIDIC 4-PLEX DIGITAL DROPLET PCR FOR QUANTIFICATION OF CIRCULATING TUMOR DNA**

Franziska Schlenker[1], Elena Kipf[1], Nadine Borst[1,2], Tobias Hutzenlaub[1,2], Nils Paust[1,2], Roland Zengerle[1,2], Felix von Stetten[1,2], and Peter Juelg[1]
[1]Hahn-Schickard, GERMANY and [2]University of Freiburg, GERMANY

W6-661.f **REAGENT INTEGRATION IN DISPOSABLE THERMOPLASTIC 2D MICROWELL ARRAYS USING A CUSTOM SPOTTING PIN**

Supriya Padmanabhan, Micaela Everitt, Michael Yeh, Ian White, and Don L. DeVoe
University of Maryland, College Park, USA

Th7-759.f **COMPLEX NUCLEIC ACID HYBRIDIZATION REACTIONS INSIDE CAPILLARY-DRIVEN MICROFLUIDIC CHIPS**

Marie L. Salva[1,2], Marco Rocca[1,2], Yong Hu[1], Emmanuel Delamarche[2], and Christof M. Niemeyer[1]
[1]Karlsruhe Institute of Technology, GERMANY and [2]IBM Research Europe, SWITZERLAND

Th7-760.f **UNRAVELLING THE REACTION MECHANISM AND KINETICS OF DNAZYMES BASED ON BULK AND SINGLE MOLECULE STUDIES**

Aida Montserrat Pagès[1], Phebe De Keyser[1], Victor Top[1], Rebecca Andrews[2], Maarten Hertog[1], Achillefs N. Kapanidis[2], Dragana Spasic[1], and Jeroen Lammertyn[1]
[1]KU Leuven, BELGIUM and [2]Oxford University, UK

Th8-859.f **DIGITAL AND MULTIPLEX MICRO RNA DETECTION WITH MICROCOMPARTMENTALIZED BEAD ASSAY**

Thomas Jet[1], Guillaume Gines[2], Alexis Moravic[2], Yannick Rondelez[2], and Valérie Taly[1]
[1]Université de Paris, FRANCE and [2]ESPCI Paris, FRANCE

f - Diagnostics, Drug Testing & Personalized Medicine

Protein Analysis & Proteomics

M1-161.f **AUTOMATING NANODROPLET SAMPLE PREPARATION WITH LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY FOR HIGH THROUGHPUT SINGLE-CELL PROTEOMICS**

Ying Zhu
Pacific Northwest National Laboratory, USA

M1-162.f **TIME-RESOLVED MICROFLUIDIC SAMPLE PREPARATION FOR CRYO-EM STRUCTURAL ANALYSIS OF BIOMOLECULAR ASSEMBLIES**

Byungjin Lee[1], Märt-Erik Mäeots[2], Dong-Ho Kim[1], Kyung Han Kim[1], Sung Sik Lee[3], Radoslav E. Ivanov[2], Matthias Peter[3], and Chang-Soo Lee[1]
[1]Chungnam National University, KOREA, [2]ETH Zürich, SWITZERLAND, and [3]Francis Crick Institute, UK

M2-261.f **BIOASSAY ARCHITECTURE COMBINING A QUANTITATIVE G6PDH ASSAY AND A MEASUREMENT OF HEMOGLOBIN CONCENTRATION ON A SINGLE CAPILLARY-DRIVEN MICROFLUIDIC CHIP**

Marco Rocca[1,2], Yuksel Temiz[1], Marie L. Salva[1,2], Samuel Castonguay[3], Thomas Gervais[3], Christof M. Niemeyer[2], and Emmanuel Delamarche[1]
[1]IBM Research Europe, SWITZERLAND, [2]Karlsruhe Institute of Technology (KIT), GERMANY, and [3]École Polytechnique de Montréal (EPM), CANADA

T3-362.f **DETECTION OF MULTIPLE SEPSIS BIOMARKERS USING A MICROFLUIDIC FLOW CYTOMETER**

Xilong Yuan[1], Todd Darcie[1], Srishti Garg[1], James Dou[2], Lu Chen[2], and J. Stewart Aitchison[1]
[1]University of Toronto, CANADA and [2]Thinkari Research Inc., CANADA

T4-462.f **DROPLET MICROFLUIDICS BASED ENZYMATIC DIGESTION: A NEW SAMPLE PREPARATION TOOL FOR MALDI-TOF MS**

Mathilde Richerd[1], Sarah Bregant[2], Florent Malloggi[2], and Stéphanie Descroix[1]
[1]Institut Curie, FRANCE and [2]Université Paris-Saclay, FRANCE

W5-561.f **ELISA UTILIZING THIN-LAYERED CHANNEL FOR PERFECT CAPTURE AND ACCUMULATION OF TARGET MOLECULE**

Ryoichi Ohta[1], Keisuke Sekiya[1], Smirnova Aderina[1], Emi Mori[1], and Takehiko Kitamori[1,2]
[1]University of Tokyo, JAPAN and [2]National Tsing Hua University, TAIWAN

W6-662.f **PICO-LITER PROTEIN DIGESTION AND SEPARATION USING NANOFLUIDIC DEVICE**

Kyojiro Morikawa[1], Koki Yamamoto[1], Hiroki Sano[1], Yutaka Kazoe[2], Hisashi Shimizu[1], Hiroyuki Imanaka[3], Koreyoshi Imamura[3], and Takehiko Kitamori[1,4]
[1]University of Tokyo, JAPAN, [2]Keio University, JAPAN, [3]Okayama University, JAPAN, and [4]National Tsing Hua University, TAIWAN

Th7-761.f ***IN SITU* NMR LAB-ON-A-CHIP SYSTEM FOR STUDYING PROTEIN-LIGAND INTERACTIONS**

Marek Plata, William Hale, Manvendra Sharma, Jörn M. Werner, and Marcel Utz
University of Southampton, UK

Th8-860.f **AUTOMATED CHIP-BASED THIN-LAYERED ELISA**

Adelina Smirnova[1], Ryoichi Ohta[1], and Takehiko Kitamori[2]
[1]University of Tokyo, JAPAN and [2]National Tsing Hua University, TAIWAN

Th8-861.f **LOCALIZED MULTIPLEXED SURFACE FUNCTIONALIZATION OF THERMOPLASTIC MICROCHANNELS TOWARDS THE ENRICHMENT AND PROTEIN CARGO ANALYSIS OF EXTRACELLULAR VESICLES**

André Kling, Yannick R.F. Schmid, Jonas Nikoloff, and Petra S. Dittrich
ETH Zürich, SWITZERLAND

f - Diagnostics, Drug Testing & Personalized Medicine

Cancer Research, Capture & Analysis of Circulating Tumor Cells

M1-163.f **PATIENT-DERIVED KIDNEY CANCER MODELS ON-A-CHIP TO INFORM PRECISION ONCOLOGY**
Maria Virumbrales-Muñoz, Jiong Chen, Jose Ayuso, E. Jason Abel, and David J. Beebe
University of Wisconsin, Madison, USA

M2-262.f **A BIO-MICROCHIP FUNCTIONALIZED BY SELF-ASSEMBLED AUNPS FOR EFFICIENT CAPTURE AND RELEASE OF CIRCULATING TUMOR CELLS**
Yixing Gou[1,2], Zheng You[2], Changku Sun[1], and Dahai Ren[1]
[1]Tianjin University, CHINA and [2]Tsinghua University, CHINA

M2-263.f **QUANTIFICATION OF PROTEIN EXPRESSION LOCALLY ON FROZEN TISSUE SECTIONS TO EVALUATE TUMOR HETEROGENEITY**
Anna Fomitcheva Khartchenko[1,2], Peter Schraml[3], and Govind V. Kaigala[2]
[1]ETH Zürich, SWITZERLAND, [2]IBM Research – Europe, SWITZERLAND, and
[3]University Hospital Zurich, SWITZERLAND

T3-363.f **ACOUSTIC MICROSTREAMING CAPTURE OF CIRCULATING TUMOR CELLS AND CIRCULATING CANCER ASSOCIATED FIBROBLASTS AND FUNCTIONAL IMMUNE ASSESSMENT FROM BREAST CANCER PATIENTS**
Ruoyu Jiang, Sudhanshu Agrawal, Ritesh Parajuli, Anshu Agrawal, and Abraham P. Lee
University of California, Irvine, USA

T3-364.f **SACA CHIP ENABLED CIRCULATING TUMOR CELL CLUSTERS PHENOTYPING FOR CANCER IMMUNOTHERAPY RESPONSE MONITORING**
Chun-Jieh Hsu[1], Yu-Chia Kan[2], Chun-Wei Lee[1], Jen-Kuei Wu[1,2], Kang-Yun Lee[3], Po-Hao Feng[3], Wei-Chiao Chang[3], and Fan-Gang Tseng[1,2]
[1]National Tsing Hua University, TAIWAN, [2]Academia Sinica, TAIWAN, and
[3]Taipei Medical University, TAIWAN

T4-463.f **CREATING AN *IN VITRO* LUNG MICROENVIRONMENT VIA DNA-DIRECTED PATTERNING TO INVESTIGATE THE ROLE OF EXTRACELLULAR VESICLES IN METASTASIS**
Sean E. Kitayama and Lydia L. Sohn
University of California, Berkeley, USA

T4-464.f **TUMOR-AGNOSTIC MICROFLUIDIC ISOLATION OF CIRCULATING TUMOR CELLS FROM LEUKAPHERESIS PRODUCTS**
Avanish Mishra[1,2], Taronish D. Dubash[1,2], Jon F. Edd[1], Michelle Jewett[1], Suhaas G. Garre[1], Nezihi Murat Karabacak[1,3], Daniel C. Rabe[1,2], Baris R. Mutlu[1,2], John R. Walsh[1], Ravi Kapur[4], Shannon L. Stott[1,2], Shyamala Maheswaran[1,2], Daniel A. Haber[1,2,5], and Mehmet Toner[1,2,3]
[1]Massachusetts General Hospital, USA, [2]Harvard Medical School, USA, [3]Shriners Hospitals for Children, USA, [4]MicroMedicine, Inc., USA, [5]Howard Hughes Medical Institute, USA

W5-562.f **HIERARCHICAL HERRINGBONE MICROWELLS FOR HIGH-THROUGHPUT SINGLE CELL ENTRAPMENT**
Ayoub Glia[1,2], Pavithra Sukumar[1], Muhammedin Deliorman[1], and Mohammad A. Qasaimeh[1,2]
[1]New York University Abu Dhabi, UAE and [2]New York University, USA

W5-563.f **WHOLE GENOME SEQUENCING OF SINGLE CIRCULATING TUMOR CELLS AFTER THEIR SIZE-BASED ENRICHMENT**
Wooseok Lee, Amos Chungwon Lee, Yongju Lee, Ahyoun Choi, Sudeok Kim, and Sunghoon Kwon
Seoul National University, KOREA

W6-663.f **MICRODISSECTED TUMOR TISSUE HAS LOWER HYPOXIA, APOPTOSIS, AND NECROSIS, AND HIGHER PROLIFERATION THAN TUMOR SLICES CULTURED UNDER SIMILAR CONDITIONS**

Dina Dorrigiv[1,3], Kayla Simeone[1,2], Benjamin Péant[1,2], Euridice Carmona[1], Jennifer K. Dupont[1], Anne-Marie Mes-Masson[1,2], and Thomas Gervais[1,3]
[1]Centre Hospitalier de l'Université de Montréal, CANADA, [2]Université de Montréal, CANADA, and [3]Polytechnique Montréal, CANADA

Th7-762.f **MICROFLUIDIC MODELS FOR NATURAL KILLER/CANCER CELL INTERACTIONS IN METASTASIS**

Heather E. Bomberger, Behiye Kodal, Martin Felices, and David K. Wood
University of Minnesota, USA

Th8-862.f **PARALLELIZED MICROFLUIDIC THIN CELL TRAPPERS FOR EFFECTIVELY SELECTING BLOOD CIRCULATING TUMOR CELLS**

Natsumi Shimmyo, Makoto Furuhata, Masumi Yamada, Rie Utoh, and Minoru Seki
Chiba University, JAPAN

f - Diagnostics, Drug Testing & Personalized Medicine
Neurobiology/Neuroscience

W6-664.f **SPATIALLY RESOLVED MICROFLUIDICS FOR STIMULATING LOCAL ISCHEMIA IN BRAIN TISSUE**

Michael T. Cryan, Yuxin Li, and Ashley E. Ross
University of Cincinnati, USA

Th7-763.f **WIRELESS BIORESORBABLE NERVE STIMULATORS WITH SOFT CUFF ELECTRODE**

Kyung Su Kim, Seunghun Han, and Jahyun Koo
Korea University, KOREA

f - Diagnostics, Drug Testing & Personalized Medicine
Clinical Chemistry

M1-164.f **POINT-OF-CARE DETECTION OF CIRCULATING HISTONES FOR INTERNAL TRAUMA DIAGNOSIS**

Micaela L. Everitt and Ian M. White
University of Maryland, College Park, USA

Th8-863.f **FINGER-DRIVEN PUMP ASSISTED MICROFLUIDIC PLATFORM FOR COLORIMETRIC DETECTION OF LITHIUM**

Angelo Traina[1], Han Gardeniers[2], and Burcu Gumuscu[2,3]
[1]University of Roma "La Sapienza", ITALY, [2]University of Twente, THE NETHERLANDS, and [3]Eindhoven University of Technology, THE NETHERLANDS

f - Diagnostics, Drug Testing & Personalized Medicine

Personalized Medicine

M1-165.f **POINT-OF-CARE SOLUTION FOR THERAPEUTIC DRUG MONITORING ENABLED BY INTEGRATING FO-SPR READOUT INTO A SELF-POWERED MICROFLUIDIC PLATFORM**
Henry Ordutowski, Jiahuan Qu, Ruben Verbruggen, Francesco Dal Dosso, Saba Safdar, Nick Geukens, Debby Thomas, Dragana Spasic, and Jeroen Lammertyn
KU Leuven, BELGIUM

M2-264.f **A MICROFLUIDIC 3-PART DIFFERENTIAL SORTER**
Mohammad Aghaamoo, Ruoyu Jiang, Braulio Cardenas Benitez, and Abraham P. Lee
University of California, Irvine, USA

M2-265.f **WHOLE BLOOD PROFILING REVEALS BIOPHYSICAL IMMUNE RESPONSE SIGNATURES FOR CLINICAL TRIAGE**
Kerwin Kwek Zeming[1], Rohan Vernekar[2], Mui Teng Chua[3,4], Kai Yun Quek[1], Greg Suton[2], Timm Krueger[2], Win Sen Kuan[3,4], and Jongyoon Han[1,5]
[1]Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE, [2]University of Edinburgh, UK, [3]National University of Singapore, SINGAPORE, [4]National University Health System, SINGAPORE, and [5]Massachusetts Institute of Technology, USA

T3-365.f **A SENSOR SURFACE ENGINEERING METHODOLOGY FOR NONINVASIVE WEARABLE ELECTROACTIVE DRUG MONITORING**
Shuyu Lin, Wenzhuo Yu, Bo Wang, Yichao Zhao, Ke En, Jialun Zhu, and Sam Emaminejad
University of California, Los Angeles, USA

T4-465.f **A WEARABLE MICROFLUIDIC SYSTEM FOR HIGH SIGNAL-TO-NOISE RATIO SWEAT RATE SENSING VIA PROGRAMMABLE MICROBUBBLE GENERATION AND TRACKING**
Haisong Lin, Shuyu Lin, Jorge Emiliano De Dios Suarez, Harish Athavan, Yibo Wang, Wenzhuo Yu, and Sam Emaminejad
University of California, Los Angeles, USA

W5-564.f **AN EX VIVO TUMOR-DERIVED MODEL TO STUDY THE EFFECT OF THERAPEUTIC AGENTS USED FOR THE TREATEMENT OF CANCER PATIENTS**
Kayla Simeone[1], Benjamin Péant[1], Euridice Carmona[1], Diane Provencher[1], Fred Saad[1], Thomas Gervais[1,2], and Anne-Marie Mes-Masson[1]
[1]Université de Montréal, CANADA and [2]Polytechnique de Montréal, CANADA

W6-665.f **INDEX MATCHED MICROFLUIDIC DEVICES FOR PRECISE MEASUREMENT OF SINGLE CELL MASS**
Edward R. Polanco, Justin Griffin, and Thomas A. Zangle
University of Utah, USA

Th7-764.f **MECHANICAL PROPERTIES OF HYDROGEL MICRONEEDLES FOR INTERSTITIAL FLUID SAMPLING**
Emilee Madsen and Jacqueline C. Linnes
Purdue University, USA

Th8-864.f **MICROPHYSIOLOGICAL DRUG-SCREENING PLATFORM FOR PERSONALIZED LEUKEMIA TREATMENT**
Furkan Gökçe[1], Mario M. Modena[1], Beat C. Bornhauser[2], and Andreas Hierlemann[1]
[1]ETH Zürich, Basel, SWITZERLAND and [2]University Children's Hospital Zürich, SWITZERLAND

f - Diagnostics, Drug Testing & Personalized Medicine

Pathogen Detection & Antibiotics

M1-166.f **MINIATURIZED DEVICE FOR PERFORMING PCR, INTEGRATED WITH AN ELECTROCHEMICAL DNA BIOSENSOR FOR DETECTION OF *CORYNEBACTERIUM DIPHTHERIAE***

Kasper Marchlewicz[1,2,3], Iga Ostrowska[1], Zuzanna Iwón[1], Robert Ziólkowski[1], Kamil Żukowski[3], Elżbieta Jastrzębska[1], Zbigniew Brzózka[1], and Elżbieta Malinowska[1,3]
[1]Warsaw University of Technology, POLAND, [2]University of Warsaw, POLAND, and [3]Centre of Advanced Materials and Technologies CEZAMAT, POLAND

M1-167.f **VIRUS IDENTIFICATION BY EASY TO FABRICATE NANOPORE-CHIP USING ULTRATHIN GLASS-FILM AND OPRICAL BONDING**

Takatoki Yamamoto
Tokyo Institute of Technology, JAPAN

M2-266.f **PORTABLE MICROSCALE PLATFORM FOR MALARIA AND ANTIMALARIAL RESISTANCE SCREENING IN RESOURCE-LIMITED SETTINGS**

Shreya Deshmukh[1], Oswald Byaruhanga[2], Patrick Tumwebaze[2], Bryan Greenhouse[3], Elizabeth Egan[1], and Utkan Demirci[1]
[1]Stanford University, USA, [2]Infectious Diseases Research Collaboration, UGANDA, and [3]University of California, San Francisco, USA

T3-366.f **A MULTIPLEX GENETIC DIAGNOSTIC DEVICE INTEGRATED WITH VERTICAL PHASEGUIDES CAPABLE OF AUTONOMOUS DISPENSING FOR THE DETECTION OF ARBOVIRUS INFECTIONS**

Daigo Natsuhara[1], Kisuke Tanaka[1], Hiroka Aonuma[2], Tatsuya Sakurai[2], Moeto Nagai[1], Hirotaka Kanuka[2], and Takayuki Shibata[1]
[1]Toyohashi University of Technology, JAPAN and [2]Jikei University School of Medicine, JAPAN

T3-367.f **QUANTIFYING BACTERIAL SPORE GERMINATION BY IMPEDANCE CYTOMETRY FOR ASSESSING HOST MICROBIOTA SUCEPTIBILITY**

John Moore, Armita Salahi, Carlos Honrado, Christopher Warburton, Cirle Warren, and Nathan S. Swami
University of Virginia, USA

T4-466.f **NANO/MICROFLUIDIC DEVICE FOR EFFICIENT BACTERIA CAPTURE**

Tamer Abdelfattah[1], Mahsa Jalali[1], Roozbeh Siavash Moakhar[1], Sahar Sadat Mahshid[2], and Sara Mahshid[1]
[1]McGill University, CANADA and [2]University of Toronto, CANADA

T4-467.f **RAPID AMPLIFICATION OF FEMTOGRAMS OF DNA WITH HIGH PURITY IN DIGITAL MICROFLUIDICS FOR SEQUENCING**

Yuguang Liu, Patricio Jeraldo, Helena Mendes-Soares, Thao Masters, Heidi Nelson, Robin Patel, Nicholas Chia, and Marina Walther-Antonio
Mayo Clinic, USA

W5-565.f **AN AUTOMATED MICROFLUDICIC DIAGNOSTICS PIPELINE FOR INFECTIOUS DISEASE DETECTION IN LOW RESOURCE SETTINGS**

Miren Urrutia Iturritza[1], Giulia Gaudenzi[1,2], Ahamad Saleem Akhtar[1], Inês Fernandes Pinto[1], Noa Lapins[1], Aman Russom[1], and Håkan Jönsson[1]
[1]KTH Royal Institute of Technology, SWEDEN and [2]Karolinska Institute, SWEDEN

W5-566.f **RAPID BACTERIA ENRICHMENT AND DIAGNOSIS OF ANTIBIOTIC RESISTANCE FROM URINE SAMPLE**

Yuetao Li[1], Andrew Glidle[1], Julien Reboud[1], Jing Zhang[1], Yuanshuai Zhu[1], Jonathan M. Cooper[1], Wei Huang[2], and Huabing Yin[1]
[1]University of Glasgow, UK and [2]University of Oxford, UK

W6-666.f **CELL-FREE, CRISPR/CAS-BASED PAPER DIAGNOSTICS FOR FOOD AND WATERBORNE PATHOGEN DETECTION**
Helena de Puig Guixe[1], Michael S. Wiederoder[2], Shannon K. McGraw[2], and James J. Collins[1]
[1]Wyss Institute for Biologically Inspired Engineering, USA and [2]US Army CCDC - Soldier Center, USA

W6-667.f **RESPIDISK: A POINT-OF-CARE PLATFORM FOR FULLY AUTOMATED DETECTION OF RESPIRATORY TRACT INFECTION PATHOGENS IN CLINICAL SAMPLES**
Markus Rombach[1], Sebastian Hin[1], Mara Specht[1], Benita Johannsen[1], Jan Lüddecke[1], Nils Paust[1], Roland Zengerle[1], and Konstantinos Mitsakakis[2]
[1]Hahn-Schickard, GERMANY and [2]University of Freiburg, GERMANY

Th7-765.f **DIRECT ISOLATION AND DETECTION OF PATHOGENIC BACTERIA USING A NANOGAP DEVICE**
Jung Y. Han, Michael Yeh, and Don L. DeVoe
University of Maryland, College Park, USA

Th7-766.f **RNA/DNA AMPLIFICATION METHODS FOR THE DETECTION OF BACTERIA AND VIRUS THROUGH AN OPTOELECTRONIC LAB-ON-CHIP**
Francesca Costantini[1], Nicola Lovecchio[2], Lorenzo Iannascoli[2], Valeria Scala[1], Francesco Faggioli[1], Nicoletta Pucci[1], Stefania Loreti[1], Giampiero deCesare[2], Augusto Nascetti[2], and Domenico Caputo[2]
[1]CREA-DC Research Centre for Plant Protection and Certification, ITALY and
[2]Sapienza University of Rome, ITALY

Th8-865.f **HIGH EFFICIENT AND SELECTABLE CONCENTRATION OF BACTEREMIA AND RAPID BACTERIAL ANTIBIOTIC SUSCEPTIBILITY TEST THROUGH ELECTROKINETIC CONCENTRATION MICRODEVICE**
Kuan-Hung Chen[1], Shih-Han Lee[1], Chun-Wei Lee[1], Tseren-Onolt Ishdorj[2], and Fan-Gang Tseng[1,3]
[1]National Tsing Hua University, TAIWAN, [2]Mongolian University of Science and Technology, MONGOLIA, and [3]Academia Sinica, TAIWAN

Th8-866.f **SURFACE-ENHANCED RAMAN SPECTROSCOPY BASED DETECTION OF β-LACTAMASE ACTIVITY IN SMALL SAMPLES OF RESISTANT *E. COLI***
Shannon H. Hilton, Martha David, Connor Hall, and Ian M. White
University of Maryland, College Park, USA

f - Diagnostics, Drug Testing & Personalized Medicine
Testing for COVID-19, Rapid Virus Testing, Pandemic Management

M1-168.f **LAMP BASED DETECTION OF SARS-COV-2 WITH LOW-COST OFF-THE-SHELF COMPONENTS**
Kamalalayam Rajan Sreejith, Muhammad Umer, Narshone Soda, Surasak Kasetsirikul, Muhammad J.A. Shiddiky, and Nam-Trung Nguyen
Griffith University, AUSTRALIA

M2-267.f **3D-PRINTED CAPILLARIC CHIP FOR INSTRUMENTATION-FREE, RAPID, AND QUANTITATIVE COVID-19 SEROLOGICAL TESTING USING SALIVA**
Oriol Ymbern, Ahmad Sohrabi, Azim Parandakh, Vahid Karamzadeh, Johan Renault, Marziye Mirbagheri, Zijie Jin, Justin Lessard-Wajcer, Jay Pimprikar, Molly Shen, Lorenna Oliveira, Yiannis Paschalidis, Andy Ng, and David Juncker
McGill University, CANADA

M2-268.f **LATERAL FLOW ASSAY FOR THE DETECTION OF NOROVIRUS USING PEPTIDE-COATED GOLD NANOPARTICLES**
Taeyeong You, Woojin Jeong, Sun Min Kim, and Tae-Joon Jeon
Inha University, KOREA

T3-368.f **A MICROFLUIDIC APPROACH TO RAPID CRISPR-BASED DETECTION OF SARS-COV-2 RNA**
Ashwin Ramachandran, Diego A. Huyke, Eesha Sharma, Malaya K. Sahoo, Niaz Banaei, Benjamin A. Pinsky, and Juan G. Santiago
Stanford University, USA

T3-369.f **MICRO-RAPID AUTONOMOUS ANALYTICAL DEVICE FOR SARS-COV-2 DETECTION**
Jacqueline C. Linnes, Navaporn (Amy) Sritong, Ashlee Colbert, and Karin F.K. Ejendal
Purdue University, USA

T4-468.f **AN ADAPTABLE, MASS PRODUCTION CAPABLE, MICROFLUIDIC MIXER FOR POINT OF CARE SAMPLE PREP**
Priscilla Delgado, Pranav Dorbala, Abhijit Ravindran, and David Myers
Emory University, USA

W5-567.f **DETECTION OF AVIAN INFLUENZA VIRUS AND ITS ANTIBODY BY FLUORESCENCE POLARIZATION IMMUNOASSAY**
Keine Nishiyama[1], Yohei Takeda[2], Masatoshi Maeki[1], Akihiko Ishida[1], Hirofumi Tani[1], Koji Shigemura[3], Akihide Hibara[4], Haruko Ogawa[2], and Manabu Tokeshi[1]
[1]Hokkaido University, JAPAN, [2]Obihiro University of Agriculture and Veterinary Medicine, JAPAN, [3]Tianma Japan, Ltd., JAPAN, and [4]Tohoku University, JAPAN

W6-668.f **ELECTROCHEMICAL CAPILLARY-FLOW IMMUNOASSAY FOR THE DETECTION OF ANTI-SARS-COV-2 ANTIBODIES**
Isabelle C. Samper[1], Ana Sánchez-Cano[1,2], Wisarut Khamcharoen[1,3], Ilhoon Jang[1], Brian J. Geiss[1], David S. Dandy[1], and Charles S. Henry[1]
[1]Colorado State University, USA, [2]Universitat Autònoma de Barcelona, SPAIN, and [3]Srinakharinwirot University, THAILAND

Th7-767.f **HANDHELD LIGHTWEIGHT BATTERY-OPERATED REAL-TIME PCR DEVICE FOR COVID-19 DIAGNOSIS**
Geoffrey Mulberry, Matthew Moench, and Brian N. Kim
University of Central Florida, USA

Th8-867.f **HIGHLY PERFORMING POINT-OF-CARE MOLECULAR TESTING FOR SARS-COV-2 WITH RNA EXTRACTION AND ISOTHERMAL AMPLIFICATION.**
Etienne Coz[1], Pierre Garneret[1], Elian Martin[1], Jean-Claude Manuguerra[2], Elodie Brient-Litzler[2], Vincent Enouf[2], Daniel Felipe Gonzalez Obando[2], Jean Christophe Olivo-Marin[2], Fabrice Monti[1], Sylvie Van der Werf[2], and Patrick Tabeling[2]
[1]ESPCI, FRANCE and [2]Institut Pasteur, FRANCE

f - Diagnostics, Drug Testing & Personalized Medicine

Drug Screening and Development

M1-169.f **MICROFLUIDIC GRADIENT GENERATOR FOR DRUG SCREENING APPLICATIONS**
Arian Jaberi[1], Amir Monemian Esfahani[1], Ali Tamayol[1,2], and Ruiguo Yang[1]
[1]University of Nebraska, Lincoln, USA and [2]University of Connecticut, USA

M2-269.f **MICROFLUIDIC IMMOBILIZED ENZYME REACTOR FOR DETERMINING THE ELIMINATION OF ENVIRONMENTAL DRUG RESIDUES IN FISH**
Vera Kouhi, Tea Pihlaja, Elisa Ollikainen, and Tiina Sikanen
University of Helsinki, FINLAND

T4-469.f **"CUBOIDS" FOR MULTIPLEXED MICROFLUIDIC DRUG TESTING OF INTACT TISSUES**
Adán Rodríguez, Lisa Horowitz, and Albert Folch
University of Washington, USA

W5-568.f **ARTIFICIAL BRAIN ''CELLS-ON-A-CHIP'' FOR DRUG PERMEABILITY PREDICTION**
Jaime L. Korner and Katherine S. Elvira
University of Victoria, CANADA

W6-669.f **DROPLET-BASED APPROACH TO HIGH SPEED DRUG DISCOVERY**
Stacey Markovic[1], Ryan A. Dubay[1,2], Peter Hsi[1], Nerses J. Haroutunian[1], Cassie M. Bryan[1], Kettner Griswold Jr.[1], Eric M. Darling[2], Andrew P. Magyar[1], and Vishal Tandon[1]
[1]Draper Laboratory, USA and [2]Brown University, USA

Th7-768.f **ESTABLISHMENT OF AN AUTOMATIZED MICROFLUIDIC PLATFORM FOR SCREENING OF NOVEL HBV CAPSID ASSEMBLY MODULATORS (CAMS)**
Tamás Vermes[1,2], Thomas Henkel[3], Helmut Buschmann[1], Miquel A. Pericàs[2], Esther Alza[2], Thomas Goldner[1], and Andreas Urban[1]
[1]AiCuris Anti-infective Cures GmbH, GERMANY, [2]Institute of Chemical Research of Catalonia (ICIQ), SPAIN, and [3]Leibniz Institute of Photonic Technology (IPHT), GERMANY

Th8-868.f **HIGH-THROUGHPUT GENERATION OF UNIFORM CEREBRAL BRAIN ORGANOIDS**
Kyungwon Park[1], Yong Hun Jung[1], and Seok Chung[1,2]
[1]Korea University, KOREA and [2]Korea Institute of Science and Technology (KIST), KOREA

f - Diagnostics, Drug Testing & Personalized Medicine

Drug Delivery

T3-370.f **2D AND 3D TUMOR MODELS ON-A-CHIP TO EVALUATE EFFECTIVENESS OF PHOTODYNMIC THERAPY (PDT) WITH GRAPHENE OXIDE CONJUGATES**
Agnieszka Zuchowska, Bartlomiej Dabrowski, Artur Kasprzak, Ksenia Kaminska, Magdalena Poplawska, and Zbigniew Brzozka
Warsaw University of Technology, POLAND

T4-470.f **A NOVEL MICROSYSTEM FOR STUDYING THE EFFECTIVENESS OF ELECTROCHEMOTHERAPY AND CHEMOTHERAPY PROCEDURES**
Sandra Skorupska, Ilona Grabowska-Jadach, Malgorzata Pieta, Artur Dybko, and Zbigniew Brzozka
Warsaw University of Technology, POLAND

W5-569.f **DRUG LOADING INTO EXTRACELLULAR VESICLE VIA TONICITY CONTROL**
Chaeeun Lee[1,2], Sumit Kumar[2], Juhee Park[2], Junyoung Kim[1,2], and Yoon-Kyoung Cho[1,2]
[1]Ulsan National Institute of Science and Technology (UNIST), KOREA and
[2]Institute for Basic Science (IBS), KOREA

W6-670.f **HIGH-THROUGHPUT MICROFLUIDICS FOR EVALUATING MICROBUBBLE ENHANCED DELIVERY OF CANCER THERAPEUTICS IN SPHEROID CULTURES**
Matthew D. Bourn[1,2], Damien V.B. Batchelor[1], Nicola Ingram[2], James McLaughlan[1,2], P. Louise Coletta[2], Stephen D. Evans[1], and Sally A. Peyman[1,2]
[1]University of Leeds, UK and [2]St James' University Hospital, UK

Th7-769.f **MASSIVELY PARALLEL INTRACELLULAR DELIVERY USING TITANIUM OXIDE NANOTUBES**
Loganathan Mohan[1], Srabani Kar[2], Ren Hattori[1], Miho Ishii-Teshima[1], Kavitha Illath[2], Anuj Tiwari[1], Tuhin Subhra Santra[3], Takayuki Shibata[1], and Moeto Nagai[1]
[1]Toyohashi University of Technology, JAPAN, [2]University of Cambridge, UK, and
[3]Indian Institute of Technology Madras, INDIA

f - Diagnostics, Drug Testing & Personalized Medicine
Others

M1-170.f **INSTANT LABELING OF THERAPEUTIC STEM CELLS WITH MICROFLUIDICS FOR IN VIVO TRACKING**
Todd Sulchek[1], Hossein Nejadnik[2], Kyung Oh Jung[2], Ashok J. Theruvath[2], Anna Liu[2], Wei Wu[2], Louise Kiru[2], Guillem Pratx[2], and Heike E. Daldrup-Link[2]
[1]Georgia Institute of Technology, USA and [2]Stanford University, USA

M2-270.f **USING RBC SHAPES TO DISTINGUISH BETWEEN SICKLE CELL DISEASE AND TRAIT SAMPLES**
Riddha Manna, Oshin Sharma, Anish Mahto, Srushti Singh, and Debjani Paul
Indian Institute of Technology, Bombay, INDIA

T3-371.f **PORTABLE AND AUTOMATED ANALYZER FOR RAPID AND HIGH PRECISION IN VITRO DISSOLUTION OF DRUGS**
Zhongmei Chi[1], Yunxiang Feng[2], and Li Yang[1]
[1]Northeast Normal University, CHINA and [2]Jingke-Oude Science and Education Instruments Co., Ltd., CHINA

Th8-869.f **DEVELOPMENT OF A METHOD FOR CELL DELIVERY INTO THE SUBRETINAL SPACE USING BIODEGRADABLE NANOSHEETS**
Kazuya Yamashita, Hideto Kojima, Nobuhiro Nagai, Toshiaki Abe, and Hirokazu Kaji
Tohoku University, JAPAN

f - Diagnostics, Drug Testing & Personalized Medicine
Industrial Benefactor

Th7-782.f **MICROFLUIDIC METHODS OF AUTOMATED LIPOSOME LIBRARY GENERATION**
Valentina Nappo, Gurinder Vinner, Ben Knappett, Damiano Rossi, Richard H. Gray
Dolomite Microfluidics, UK

f - Diagnostics, Drug Testing & Personalized Medicine
Late News

M1-181.f **AN EASY-TO-USE MICROFLUIDIC CHIP WITH ISOTHERMAL NUCLEIC ACID AMPLIFICATION FOR RAPID COVID-19 DETECTION**
Dan Liu[1], Haicong Shen[2], Yuqian Zhang[1], and Chaoyong Yang[2]
[1]Huaqiao University, CHINA and [2]Xiamen University, CHINA

M2-280.f **3D NANO-PATTERNED FLUIDIC INTERFACE ENABLES ULTRASENSITIVE DETECTION OF CIRCULATING EXOSOMES FOR IMMUNOTHERAPY RESPONSE PREDICTION**
Lingling Wu[1], Jiafeng Gao[1], and Chaoyong Yang[1,2]
[1]Shanghai Jiao Tong University, CHINA and [2]Xiamen University, CHINA

M2-281.f **ELECTROCHEMICAL IMPEDANCE-BASED DETECTOR FOR SARS-COV-2 ANTIBODIES**
Mohamed Z. Rashed[1], Jonathan A. Kopechek[1], Mariah C. Priddy[1], Krystal T. Hamorsky[1], Kenneth E. Palmer[1], Nikhil Mittal[2], Joseph Valdez[2], and Stuart J. Williams[1]
[1]University of Louisville, USA and [2]Agilent Technologies Inc, USA

T3-381.f **AT-HOME BLOOD COLLECTION AND RNA STABILIZATION USING A CAPILLARY PRESSURE BASED DEVICE**
Amanda J. Haack, Fang Yun Lim, Dakota S. Kennedy, Jing J. Lee, Erwin Berthier, and Ashleigh B. Theberge
University of Washington, USA

T3-382.f **IFAST AND RT-LAMP: AN APPROACH FOR ON-CHIP DETECTION OF SARS-CoV-2 RNA FOR RESOURCE-LIMITED SETTINGS**

Pablo Rodriguez-Mateos[1], Bongkot Ngamsom[1], Cheryl Walter[1], Charlotte E. Dyer[1], Jesse Gitaka[2], Alexander Iles[1], and Nicole Pamme[1]
[1]University of Hull, UK and [2]Mount Kenya University, KENYA

T4-481.f **HIERARCHICAL MULTIVALENT APTAMERS-PRINTED MICROFLUIDIC DEVICE FOR ISOLATING CIRCULATING FETAL CELLS**

Huimin Zhang[1], Xiyuan Yu[1], Yilong Liu[2], Bingqian Lin[2], Yidi Wang[2], Yanling Song[2], Zhi Zhu[2], and Chaoyong Yang[1,2]
[1]Shanghai Jiao Tong University School of Medicine, CHINA and [2]Xiamen University, CHINA

T4-482.f **HIGH THROUGHPUT GLOMERULUS EXPERIMENTAL MODEL DEVICE WITH MECHANICAL FILTRATION FOR DRUG DISCOVERY RESEARCH**

Kotaro Doi[1], Hiroshi Kimura[2], Masaomi Nangaku[1], and Teruo Fujii[1]
[1]University of Tokyo, JAPAN and [2]Tokai University, JAPAN

W5-580.f **AN ULTRASENSITIVE DETECTION OF AGGREGATED α-SYNUCLEIN AS A BIOMARKER MOLECULE FOR PARKINSON DISEASE BY LIPOSOME-IMMOBILIZED CANTILEVER BIOSENSOR USING SELF-TEMPLATING PHENOMENA OF PRIONOID PROTEIN**

Ryoko Kobayashi[1], Masanori Sawamura[2], Hodaka Yamakado[2], Masayuki Sohgawa[3], and Minoru Noda[1]
[1]Kyoto Institute of Technoligy, JAPAN, [2]Kyoto University, JAPAN, and [3]Niigata University, JAPAN

W5-581.f **MICRO-IMPLANTS WIRELESS DEVICE FOR DEEP TISSUE PHOTO THERAPEUTICS**

Sophie Wan Mei Lian[1], Jin Yunxia[2], John S. Ho[1,2], and Chia-Hung Chen[3]
[1]National University of Singapore, SINGAPORE, [2]Institute for Health Innovation and Technology (iHealthtech) and [3]City University of Hong Kong, HONG KONG

W6-681.f **ELECTROMECHANICAL LAB-ON-A-CHIP PLATFORM FOR CREATININE ANALYSIS USING AUTOMATED ELISA PROTOCOLS**

Betul Karakuzu, E. Alperay Tarim, Cemre Oksuz, and H. Cumhur Tekin
Izmir Institute of Technology, TURKEY

W6-682.f **HUMAN NEUTROPHIL CHEMOTAX THROUGH TAPERED CHANNELS IN RESPONSE TO COMPLEMENT ACTIVATION AND INHIBITION**

Sinan Muldur and Daniel Irimia
Massachusetts General Hospital, Harvard Medical, Shriners Hospital for Children, USA

Th7-780.f **PERSONALIZED ANTIBIOTHERAPY VIA ''FINGER PRICK'' BLOOD TEST**

H. Ceren Ates, Nils Schneider, Hasti Mohsenin, Wilfried Weber, Gerald Urban, and Can Dincer
University of Freiburg, GERMANY

Th8-878.f **MICROFLUIDIC ASSAYS MEASURING NEUTROPHIL RESPONSES TO BORRELIA BURGDORFERI IDENTIFY COMPLEMENT COMPONENT C5A AS A KEY MEDIATOR**

Felix Ellett, Sinan Mulder, Anika L. Marand, Charles Marvil, John Branda, Jacob E. LeMieux, Adam B. Raff, Klemen Strle, and Daniel Irimia
Massachusetts General Hospital, Harvard Medical, Shriners Hospital for Children, USA

g - Other Applications of Microfluidics
Artificial Intelligence and Microfluidics

T4-471.g **AI-ASSISTED MICROFLUIDIC STIFFNESS GRADIENT FOR ANALYSIS OF 3D CELL CULTURES IN HYDROGEL BEADS**
Vasileios Anagnostidis, Dalia Al-Saadi, and Fabrice Gielen
University of Exeter, UK

W5-570.g **AI-GUIDED MICROFLUIDIC SYNTHESIS OF COLLOIDAL LEAD HALIDE PEROVSKITE QUANTUM DOTS**
Robert W. Epps[1], Amanda A. Volk[1], Kameel Abdel-Latif[1], Kristofer G. Reyes[2], and Milad Abolhasani[1]
[1]North Carolina State University, USA and [2]University of Buffalo, USA

W6-671.g **DEEP LEARNING CLASSIFICATION OF PARTICLE DEPTH FOR DEFOCUSING 3D-3C micro-PTV**
Evan Lammertse[1], Martin Sauzade[1], Hongxiao Li[2], Jun Kong[2], and Eric Brouzes[1]
[1]Stony Brook University, USA and [2]Georgia State University, USA

Th7-770.g **FLOW FOCUS-FREE IMAGE FLOW CYTOMETRY BY IMAGE PROCESSING AND DATA ESTIMATION**
Arpith Vedhanayagam and Amar S. Basu
Wayne State University, USA

Th8-870.g **INTELLIGENT ON-CHIP ANALYSIS OF THROMBOSIS IN ECMO WITH A GOAT MODEL**
Yuqi Zhou[1], Atsushi Yasumoto[1,2], Masako Nishikawa[1], Yuya Nobori[1], Yi Wang[1], Masaki Anraku[1,3], Yutaka Yatomi[1], and Keisuke Goda[1,4,5]
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g - Other Applications of Microfluidics
Fuel Cells & Energy

M1-171.g **COTTON-BASED MICROFLUIDIC EVAPORATOR TO ENHANCE THE PERFORMANCE OF A THERMOELECTRIC DEVICE**
Liang Jun Zheng, Dong Hee Kang, Na Kyong Kim, and Hyun Wook Kang
Chonnam National University, KOREA

M2-271.g **FLUORESCENT VISUALIZATION OF OIL DISPLACEMENT IN A MICROFLUIDIC DEVICE FOR ENHANCED OIL RECOVERY APPLICATIONS**
Khashayar R. Bajgiran, Hannah C. Hymel, Shayan Sombolestani, Nora Safa, Nathalie Dante, James A. Dorman, Dandina Rao, and Adam T. Melvin
Louisiana State University, USA

T3-372.g **UNDERSTANDING POLYMER RETENTION IN POROUS FORMATIONS USING MICROFLUIDICS**
Antonia Sugar, Maged F. Serag, Ulrich Buttner, Satoshi Habuchi, and Hussein Hoteit
King Abdullah University of Science & Technology (KAUST), SAUDI ARABIA

g - Other Applications of Microfluidics

Microfluidics for X-Ray and e-Beam Applications

T4-472.g **THREE DIMENSIONAL HYDRODYNAMIC FOCUSING IN A MONOLITHIC FUSED SILICA MICROFLUIDIC DEVICE**

Diego A. Huyke[1], Ashwin Ramachandran[1], Thomas Kroll[2], Daniel P. DePonte[2], and Juan G. Santiago[1]
[1]Stanford University, USA and [2]SLAC National Accelerator Lab, USA

g - Other Applications of Microfluidics

Others

W5-571.g **AEROSOLIZED DROPLETS AND OPEN MICROFLUIDICS FOR CAPTURING AT-HOME AIRBORNE EXPOSURES**

Ulri N. Lee, Tammi L. van Neel, Fang Yun Lim, Jean Berthier, Erwin Berthier, and Ashleigh B. Theberge
University of Washington, USA

W6-672.g **REPROGRAMMABLE FERROMAGNETIC DOMAINS FOR RECONFIGURABLE SOFT MAGNETIC ACTUATORS**

Hyeonseo Song, Hajun Lee, Jaebyeong Lee, Jun Kyu Choe, Suwoo Lee, Jee Yoon Yi, Sunghoon Park, Jung-Woo Yoo, Min Sang Kwon, and Jiyun Kim
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Th7-771.g **TOWARDS ASTROBIOLOGICAL NANOSATELLITE MISSION – LOC INSTRUMENTATION FOR CELL CULTIVATION RESEARCH IN SPACE**

Agnieszka Podwin[1], Patrycja Śniadek[1], Adrianna Graja[1,2], Bartosz Kawa[1], Marcin Bialas[1], Wojciech Kubicki[1], Marta Jurga[3], Agata Kaczmarek[3], Krzysztof Matkowski[3], Rafal Walczak[1], and Jan Dziuban[1]
[1]Wroclaw University of Science and Technology, POLAND, [2]SatRevolution S.A., POLAND, and [3]Wroclaw University of Environmental and Life Sciences, POLAND

g - Industrial Benefactor

W5-572.g **A COMPARISON OF CYCLO OLEFIN POLYMER WITH GLASS AND OTHER PLASTICS FOR THE CONSTRUCTION OF MOLECULAR DIAGNOSTIC CONSUMABLE DEVICES**

Tachi Sawaguchi, Shotaro Suzuki, Hiro Fujiki, Toshiro Katayama, and Larry Atupem
Zeon Specialty Materials Inc., USA

g - Other Applications of Microfluidics

Late News

Th7-781.g **A KINETIC MATCHING APPROACH ON MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICES FOR RAPID ASSESSMENT OF TOTAL POLYPHENOL CONTENT IN TEA**

Qinqin Zheng[1,3], Zhenxia Hao[1,2], Lili Jin[1], Hongping Chen[1,2], and Chengyin Lu[1,2]
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