

THE **27th** INTERNATIONAL CONFERENCE
ON MINIATURIZED SYSTEMS
FOR CHEMISTRY AND
LIFE SCIENCES



UTAS
2023

15-19 OCTOBER

KATOWICE | POLAND

PROGRAM

CONFERENCE CHAIRS

Zbigniew Brzózka

Warsaw University of Technology
POLAND

Elżbieta Jastrzębska

Warsaw University of Technology
POLAND

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UNIVERSITY OF SILESIA
IN KATOWICE

CONFERENCE AT A GLANCE

SUNDAY, 15 OCTOBER

09:00-17:00	Morning and Afternoon Workshops
17:00-19:00	Conference Registration and Check-In
17:00-19:00	Wine and Cheese Welcome Reception

MONDAY, 16 OCTOBER

07:00-18:05	Registration		
08:00-08:30	Opening Remarks		
08:30-09:15	Plenary Presentation I <i>Nicole Pamme – Stockholm University, SWEDEN</i>		
09:15-09:30	Transition		
09:30-10:30	Session 1A1 Hypoxia-on-a-Chip	Session 1B1 Single Cell Analysis I	Session 1C1 Biomolecular Detection I
10:30-11:00	Break: Exhibit and Poster Inspection		
11:00-12:20	Session 1A2 Microfluidic Flow Cytometry	Session 1B2 Single Cell Analysis II	Session 1C2 Permeability
12:20-13:30	Lunch		
12:25-13:25	Industrial Stage 1		
13:30-13:50	Analytical Chemistry – Young Innovator Award Presentation		
13:50-14:35	Plenary Presentation II <i>Séverine Le Gac – University of Twente, NETHERLANDS</i>		
14:35 - 16:35	Poster Session 1 and Exhibit Inspection		
16:05-16:35	Break		
16:35-18:05	Session 1A4 Extracellular Matrix	Session 1B4 Blood Processing	Session 1C4 Wearable and Diagnosis
	KEYNOTE Pilnam Kim	KEYNOTE Ian Papautsky	KEYNOTE Chwee Teck Lim
18:15-19:45	Student Mixer		
18:15-22:30	Women in Microfluidics Event		

TUESDAY, 17 OCTOBER

08:15-08:30	Announcements		
08:30-09:15	Plenary Presentation III <i>Manabu Tokeshi – Hokkaido University, JAPAN</i>		
09:15-09:35	Lab on a Chip and Dolomite – Pioneers of Miniaturization Lectureship Prize and Presentation		
09:35-09:50	Transition		
09:50-11:10	Session 2A1 Cardiac & Stem-Derived Cells	Session 2B1 Pathogens Analysis	Session 2C1 Electrochemical Detection
11:10-11:40	Break: Exhibit and Poster Inspection		

CONFERENCE AT A GLANCE

TUESDAY, 17 OCTOBER (continued)

11:20-11:40	Science Speed Dating		
11:40-12:40	Special Focus Session – Organoids		
	SPEAKERS Leonora Buzańska and Milica Radisic		
12:40-13:50	Lunch		
12:45-13:45	Industrial Stage 2		
13:50-15:10	Session 2A3 Vascularization-on-a-Chip	Session 2B3 Droplets	Session 2C3 Bacteria Analysis
	Poster Session 2 and Exhibit Inspection		
16:40-17:10	Break		
17:10-18:40	Session 2A4 Cell/Organ-on-a-Chip I	Session 2B4 Optical Detection	Session 2C4 Single Cell Analysis III
	KEYNOTE Agnieszka Żuchowska	KEYNOTE Wouter van der Wijngaart	KEYNOTE Aram Chung

WEDNESDAY, 18 OCTOBER

08:15-08:30	Announcements		
08:30-09:15	Plenary Presentation IV Bogusław Buszewski – <i>Mikolaj Kopernik University Torun, POLAND</i>		
09:15-09:30	Transition		
09:30-10:30	Session 3A1 Cell/Organ-on-a-Chip II	Session 3B1 Biomolecular Detection II	Session 3C1 Micromixers & Microreactors
	Break: Exhibit and Poster Inspection		
11:00-12:00	Session 3A2 Nucleid Acid Analysis	Session 3B2 Biohybrid Microrobots	Session 3C2 Separation
	Lunch		
12:05-12:45	Industrial Stage 3		
13:05-13:50	Plenary Presentation V Lydia L. Sohn – <i>University of California, Berkeley, USA</i>		
13:50-14:00	MicroTAS 2024 Announcement		
14:00-16:00	Poster Session 3 and Exhibit Inspection		
15:30-16:00	Break		
16:00-17:30	Session 3A4 Neurobiology & Neuroscience	Session 3B4 Point-of-Care	Session 3C4 3D Printing
	KEYNOTE Ashley E. Ross	KEYNOTE Jacqueline Linnes	KEYNOTE Rosanne Guijt
19:00-24:00	Conference Banquet		

CONFERENCE AT A GLANCE

THURSDAY, 19 OCTOBER

08:30-09:15	Plenary Presentation VI Artur Chmielewski – <i>National Aeronautics and Space Administration (NASA), USA and California Institute of Technology, USA</i>		
09:15-09:35	Microsystems & Nanoengineering/Springer Nature – Test of Time Award		
09:35-09:50	Transition		
09:50-11:20	Session 4A1 Cell-on-a-Chip & Pathogens	Session 4B1 Microvalves & Delivering	Session 4C1 Space Exploration
	KEYNOTE Krzysztof Pyrc	KEYNOTE David Juncker	KEYNOTE Lourdes Basabe
11:20-11:50	Break and Exhibit Inspection		
11:50-12:30	Awards Ceremony <ul style="list-style-type: none">• CHEMINAS – Young Researcher Poster Awards• Royal Society of Chemistry/Lab on a Chip – Widmer Poster Award• Sensors (MDPI) – Outstanding Sensors and Actuators, Detection Technologies Poster Award• IMT Masken und Teilungen AG – Microfluidics on Glass Poster Award• NIST and Lab on a Chip – Art in Science Award• Biomicrofluidics (AIP) – Best Paper Awards• Elsevier Sensors and Actuators B. Chemical – Best Paper Award• Microsystems & Nanoengineering/Springer Nature – Best Talk Award		
12:30-12:45	Closing Remarks		
12:45	Conference Adjourns		



Welcome Letter	2
Special Focus Session Speakers	5
Keynote Speakers	6
Plenary Speakers	9

TECHNICAL PROGRAM

Technical Program Information	11
Sunday Program	12
Monday Program	14
Tuesday Program	22
Wednesday Program	32
Thursday Program	40
Poster Presentations	45
Late News Poster Presentations	113
Poster Floorplan	125
Meeting Space Floorplan	126
MicroTAS 2024 Announcement	Last Page



Welcome to the 27th International Conference on Miniaturized Systems for Chemistry and Life Sciences

Welcome to MicroTAS 2023, the 27th International Conference on Miniaturized Systems for Chemistry and Life Sciences, which represents a returning of our community's flagship scientific conference as an in-person event. Following on-line and hybrid versions of the conference in Asia (Hangzhou, China in 2022), America (Palm Springs, USA in 2021) and fully online/virtual in 2020, we are very pleased to welcome you this year in Katowice, Poland. Katowice is the heart of Silesia region and in the past, Silesia was known mainly for coal mines, heavy industry, agriculture, and forging. Today, it is one of the national leaders in innovation, new technologies, and green transformation. Katowice is an academic, cultural, and sports centre and we hope you enjoy your time in the city.

In redesigning several aspects of MicroTAS, we have been guided by a core mission: (1) to deliver a high-quality scientific program; (2) to create a forum for cutting edge and even unpublished work; (3) to facilitate scientific engagement across a spectrum of subject areas; (4) to foster connections among researchers of all career stages from across the international community; and (5) to grow and strengthen our community by including emerging scientific directions and diverse researchers.

We are pleased to welcome a community of almost 1,000 individuals to this "normal" MicroTAS, that continues to be the premier international forum for reporting the latest research results in microfluidics and lab-on-a-chip technologies, including aspects of microfabrication, nanotechnology, device integration, materials and surfaces, analysis and synthesis, and sensing and detection in the fields of life sciences and chemistry.

Over the last three years, the pandemic has prevented the safe organization of traditional forms of our conference, based on stationary presentations, direct scientific discussion, and participation in accompanying events. We thank you each for joining us and sharing your research here. It is you, our community, that makes MicroTAS the world's premier microfluidics conference.

At the heart of the meeting is the Technical Program. This year, abstract submissions were solicited within seven core topical areas that have been selected to reflect the scope of our growing field, spanning from fundamental physics and fabrication through sensors and detection to applications of microfluidic technology. Today, microfluidic technology addresses and serves a broad range of applications in the life sciences as reflected in the categories "cells and organs-on-chip" as well as biomedical and pharmaceutical areas like diagnostics, drug testing and personalized medicine.

To ensure the quality of abstracts accepted for MicroTAS 2023, a Technical Program Committee (TPC) consisting of 61 of our colleagues, together with 25 members of the Executive Technical Program Committee (ETPC), balanced across all three regions, contributed significant time and energy towards evaluating all abstract submissions. Together these volunteers evaluated 777 submissions in June, during on-line meetings, and selected 99 for oral presentations and 612 for poster presentations. In addition to the regular submissions, we accepted 101 Late News submissions for a grand total of 813 accepted abstracts. We arranged the parallel sessions into the Technical Program, taking care that similar topics be not presented in concurrent sessions, so that everybody be able to attend all talks on topics of his/her preference.

The importance of the contributions of TPC and ETPC members in maintaining the technical quality of the meeting and ensuring that the best and most exciting work emerges in both, poster and oral presentations cannot be overemphasized.

The diligent, dedicated, and unbiased work of the TPC/ETPC members are the bedrock of MicroTAS scientific program with exceptional quality. Membership on each committee is for a fixed term, with new members nominated by leaders in our community and self-nominated, then selected by the CBMS Board of Directors. The TPC/ETPC members dedicate late nights and weekends to our community to ensure the best and most exciting work is accepted. Thank you, TPC and ETPC members.

The MicroTAS 2023 oral program includes a suite of six exceptional Plenary Speakers, and twelve engaging Keynote Speakers, along with a slate of 99 exceptional submitted oral presentations. In each case, we sincerely hope that the scientific content and the presenter will inspire you to reflect the capabilities and understanding that can be unlocked by microfluidic systems, perhaps even influencing your own thinking and path forward.

For the first time in the MicroTAS, we decided to organize a Special Focus Session. This year it will be Organoids and the session will present fundamental research concerning organoids, human-induced pluripotent cell (iPS cell) models and recent work on studies of tissue development using organoids. We believe that it will be a huge inspiration for our community for further research.

The heart of every day's program is the poster session. The excellent contributions of hundreds of presenters make this part of the day a particularly great time for discussions, brainstorming and networking. PhD students with abstracts that have been highly ranked during the TPC/ETPC evaluation will be challenged in a competition for the daily or conference poster award. Even more awards will be celebrated during the week and specifically during the awards ceremony on Thursday.

In addition to the talks and poster sessions, we have arranged for 11 pre-conference workshops on Sunday, 15 October 2023. The workshops cover a wide range of emerging thematic areas related to microfluidics and provide an excellent opportunity to get a comprehensive overview on a specific topic in an intensive, 3-hours lecture.

COVID-19 showed us how in-person contact and conversation is important. Therefore, we organized for you activities associated with the conference such as Student Mixer, Women's Evening, and the Banquet in Spodek. Furthermore, for the first time in MicroTAS we have Science Speed Dating. This opportunity gives young scientists a chance to talk briefly with experienced scientists about specific topics such as Mobility, Family and Career, Women in Science, Post-Doc Positions, and Industrial. We hope that they will be held successfully and become a permanent part of the next MicroTAS conferences.

The list of individuals involved in making this MicroTAS conference a success is extensive. We would like to again thank the members of the TPC and ETPC for helping to build a strong scientific program and serving as session chairs, and, in particular, the ETPC group leaders who were central to this process (Yi-Chin Toh, Rebecca Pompano, Thomas Gervais, and Elżbieta Jastrzębska. Moreover, we are grateful for the efforts of members of the Exhibit and Sponsorship Committee (with Nicolas Verplanck and Artur Dybko as chairs), the Promotion Committee (with Stephanie Decrouix and Agnieszka Żuchowska as chairs) and Local Organizing Committee. We thank Jonathan Cottet and Bastien Venzac who have promoted MicroTAS in social media. We thank Ilona Grabowska-Jadach and Sławomir Jakiela for setting up the Sunday Workshops, Lourdes Basabe Desmonts and Edmond Young, for serving as Poster Award Chairs, Agnieszka Żuchowska for organizing Welcome Reception, Magdalena Flont for organizing the Women's Faculty Event and Patrycja Sokolowska for organizing the Students Mixer and Michal Chudy for coordinating Conference Banquet. Finally, we thank all 40 chairs of the sessions and plenary talks.

We are most thankful for help and support of students and postdoctoral fellows before and during the conference.

We are grateful to CBMS and its board members, including the current and past Boards of Directors and Executive Boards, who have promoted the growth of the MicroTAS conference over the years and provided valuable feedback during the planning of this year's meeting. In particular, we thank Amy Herr, CBMS President, and Joel Voldman, head of the TPC, as well as Petra Ditrich, head of the Awards Committee, for their support. It was your trust that made it possible to host this top-level conference for the first time in Poland.

Of course, we also thank all the sponsors, who have generously supported the conference, as well as the exhibitors, who will present their products and services during the meeting.

In addition, as with previous MicroTAS, the recipients of the Young Innovator Award, co-sponsored by the ACS Analytical Chemistry and CBMS, the Pioneers in Miniaturization co-sponsored by RSC journal Lab on a Chip, Dolomite and CBMS, and the Test of Time Award sponsored by Springer Nature Microsystems & Nanoengineering will be announced. In each case, we sincerely hope that the scientific content and the presenter will inspire you to reflect the capabilities and understanding that can be unlocked by microfluidic systems.

There will also be a series of awards to be presented in MicroTAS 2023, including: Microsystems & Nanoengineering/Springer Nature Best Talk Award, Elsevier Sensors and Actuators B. Chemical Best Paper Award, Biomicrofluidics (AIP) Best Paper Award, NIST and Lab on a Chip Art in Science Award, CHEMINAS (Society for Chemistry and Micro-Nano Systems) daily Young Researcher Poster Award, Royal Society of Chemistry/Lab on a Chip Widmer Poster Award, Sensors (MDPI) Outstanding Sensors and Actuators, Detection Technologies Poster Award, and IMT Masken und Teilungen AG Microfluidics on Glass Poster Award.

Moreover, we would like to express our most sincere and deepest gratitude to Sara Stearns and Shirley Galloway of Preferred Meeting Management Inc. (PMMI), who guided us through the past months, answered questions efficiently and with great patience. Without their expertise, their deep knowledge of the MicroTAS community, permanent kindness and tireless efforts as conference organizers, the meeting would not be as successful as it is.

Finally, thank you to all of you for joining us in Katowice for MicroTAS 2023 and for contributing to the success of the conference.

Welcome to Poland, welcome to Katowice!




Zbigniew Brzózka
Warsaw University of Technology,
POLAND




Elżbieta Jastrzębska
Warsaw University of Technology,
POLAND

Special Focus Session - Organoids
11:40 - 12:40

Hall C

This session will present fundamental research concerning organoids, human-induced pluripotent cell (iPS cell) models and recent work on studies of tissue development using organoids.

TUESDAY, 17 OCTOBER — 11:40 – 12:10**Special Session Speaker****Leonora Bużańska***Polish Academy of Sciences, POLAND***EMERGING HUMAN BRAIN ORGANOID FIELD TO
MODEL EARLY DEVELOPMENT AND PATHOLOGY****TUESDAY, 17 OCTOBER — 12:10 – 12:40****Special Session Speaker****Milica Radisic***University of Toronto, CANADA***ORGANOIDS AND ORGANS-ON-A-CHIP: FROM
TOXICITY TESTING TO PERSONALIZED MEDICINE**

Mariacka Pedestrian Street & Virgin Mary Church; Katowice. By bbsferrari; Adobe Stock.

MONDAY, 16 OCTOBER — 16:35 – 17:05



Session 1A4 - Extracellular Matrix

**ENGINEERING EXTRACELLULAR MATRIX:
COMPONENTS, MECHANICS, AND
ARCHITECTURE**

Pilnam Kim

*Korea Advanced Institute of Science and
Technology (KAIST), KOREA*



Session 1B4 - Blood Processing

**BLOOD MICROFLUIDICS: FROM FRACTIONATION
TO LIQUID BIOPSY**

Ian Papautsky

University of Illinois, Chicago, USA



Session 1C4 - Wearable and Diagnosis

**WEARABLE MICROFLUIDIC SENSING
TECHNOLOGIES FOR HEALTHCARE
APPLICATIONS**

Chwee Teck Lim

National University of Singapore, SINGAPORE

TUESDAY, 17 OCTOBER — 17:10 – 17:40



Session 2A4 - Cell/Organ-on-a-Chip I

**CELL AND ORGAN-ON-CHIP APPROACHES
IN CANCER RESEARCH**

Agnieszka Żuchowska

Warsaw University of Technology, POLAND



Session 2B4 - Optical Detection

**ADVANCEMENTS IN MICROFLUIDICS: CELL
BIOPSIES, DIAGNOSTICS, AND
PROGRAMMABLE MATTER**

Wouter van der Wijngaart

KTH Royal Institute of Technology, SWEDEN

TUESDAY, 17 OCTOBER — 17:10 – 17:40 (continued)



Session 2C4 - Single Cell Analysis III

**MICROFLUIDIC PLATFORMS FOR
IMMUNOTHERAPY AND
GENOME EDITING**

Aram Chung
Korea University, KOREA

WEDNESDAY, 18 OCTOBER — 16:00 – 16:30



Session 3A4 - Neurobiology & Neuroscience

**EX VIVO ORGAN-ON-CHIP PLATFORMS FOR
SENSING NEURON-IMMUNE COMMUNICATION**

Ashley E. Ross
University of Cincinnati, USA



Session 3B4 - Point-of-Care

**PAPER-BASED MOLECULAR DIAGNOSTICS FOR
PATHOGEN DETECTION AT THE EXTREME
POINTS-OF-CARE**

Jacqueline Linnes
Purdue University, USA



Session 3C4 - 3D Printing

3D PRINTING MEMBRANE INTEGRATED DEVICES

Rosanne Guijt
Deakin University, AUSTRALIA

THURSDAY, 19 OCTOBER — 09:50 – 11:20



Session 4A1 - Cell-on-a-Chip Pathogens

**ADVANCED MODELS FOR COMPREHENSIVE
UNDERSTANDING OF VIRAL INFECTION**

Krzysztof Pyrc
Jagiellonian University, POLAND

THURSDAY, 19 OCTOBER — 09:50 – 11:20 (continued)



**Session 4B1 - Microvalves & Delivering
DIGITAL MANUFACTURING OF FUNCTIONAL,
READY-TO-USE MICROFLUIDIC SYSTEMS**

David Juncker
McGill University, CANADA



**Session 4C1 - Space Exploration
TOWARDS UNIVERSAL ANALYTICAL PLATFORMS
TO STUDY BIOLOGICAL SYSTEMS**

Lourdes Basabe
University of the Basque Country, SPAIN



Central Square of Katowice. By velishchuk; Adobe Stock.

MONDAY, 16 OCTOBER — 08:30 – 09:15

Plenary Presentation I



Nicole Pamme

Stockholm University, SWEDEN

**MICROFLUIDICS FOR CLINICAL DIAGNOSTICS
AND ENVIRONMENTAL ANALYSIS IN
RESOURCE-LIMITED SETTINGS**

MONDAY, 16 OCTOBER — 13:50 – 14:35

Plenary Presentation II



Séverine Le Gac

University of Twente, NETHERLANDS

**ORGAN-ON-CHIP MODELS FOR BIOLOGICAL
AND MEDICAL APPLICATIONS**

TUESDAY, 17 OCTOBER — 08:30 – 09:15

Plenary Presentation III



Manabu Tokeshi

Hokkaido University, JAPAN

**DEVELOPMENT OF FUNCTIONAL LIPID
NANOPARTICLES USING MICROFLUIDIC
DEVICES**

WEDNESDAY, 18 OCTOBER — 08:30 – 09:15

Plenary Presentation IV



Bogusław Buszewski

Mikolaj Kopernik University Torun, POLAND

**BIOANALYTICS FROM MICRO- TO
NANO- DIMENSION**

WEDNESDAY, 18 OCTOBER — 13:05 – 13:50

Plenary Presentation V



Lydia L. Sohn

University of California, Berkeley, USA

**MICROFLUIDICS FOR ASSESSING BREAST
CANCER SUSCEPTIBILITY**

THURSDAY, 19 OCTOBER — 08:30 – 09:15

Plenary Presentation VI



Artur Chmielewski

*National Aeronautics and Space Administration (NASA),
and California Institute of Technology, USA*

**HOW MICRODEVICES REVOLUTIONIZE DEEP
SPACE EXPLORATION**

Parallel Oral Sessions

Each day papers will be presented in three parallel sessions. There will be a total of 99 oral sessions throughout the Conference.

Guide to Understanding Session Numbering

Each session in the technical program is assigned a unique number which clearly indicates when and where the session is presented. The number of each session is shown before the session title.

Session Number: **1A1**

The first character (i.e., **1**) indicates the day of the Conference:

- | | |
|--------------------|----------------------|
| 1 = Monday | 3 = Wednesday |
| 2 = Tuesday | 4 = Thursday |

The second character (i.e., **A**) indicates which room the session is held in:

- A** = Hall C
- B** = Auditorium
- C** = Ballroom B

The third character (i.e., **1**) shows the sequence the session is held during the day:

- 1** = morning
- 2** = late-morning
- 3** = afternoon
- 4** = late afternoon

Posters

Three poster sessions will be held Hall B of the Congress Centre on Monday, Tuesday, and Wednesday. All posters are listed with their assigned number and day that they are on display. Authors will be available for questions during their appointed time. Posters are color coded by day and classification to coordinate with the poster floor plan on the page 125 of this program.

Guide to Understanding Poster Numbering

Each poster is assigned a unique number which clearly indicates when and where the poster is presented. The number of each poster is shown before the title.

Poster Number: **M001.a**

The first character (i.e., **M**) indicates the day of the Conference that the poster will be on display.

- | | | |
|-------------------|--------------------|----------------------|
| M = Monday | T = Tuesday | W = Wednesday |
|-------------------|--------------------|----------------------|

The second character (i.e., **001**) is the poster board position on the floor plan.

The last character (i.e., **a**) shows the classification color of the poster.

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

SUNDAY, 15 OCTOBER
08:15 - 09:15 Morning Workshop Registration
09:00 - 12:00 Morning Workshops (Break at 10:30)
WORKSHOP 1
MULTIORGAN-ON-A-CHIP

 Yi-Chin Toh¹, Ashleigh Theberge², Rebecca Pompano³, Bryan Gao⁴, and Jee Yeon Lee⁵
¹Queensland University of Technology, AUSTRALIA, ²University Washington, USA,

³University of Virginia, USA, ⁴University of Melbourne, AUSTRALIA, and

⁵National University of Singapore, SINGAPORE

WORKSHOP 3
MICROFLUIDICS MEETS CARDIOVASCULAR BIOLOGY

 Sara Baratchi¹, Khashayar Khoshmanesh², and Darwin R. Reyes^{3,4}
¹Baker Heart Diabetes Institute, AUSTRALIA, ²RMIT University, AUSTRALIA,

³National Institute of Standards and Technology (NIST), USA, and

⁴Microfluidics Association (MFA), USA

WORKSHOP 4
SMART MATERIALS WITHIN MICROFLUIDIC DEVICES FOR SENSING AND ACTUATION

 Fernando Benito López, Lourdes Basabe-Desmots, and Janire Saez Castaño
 University of the Basque Country, SPAIN

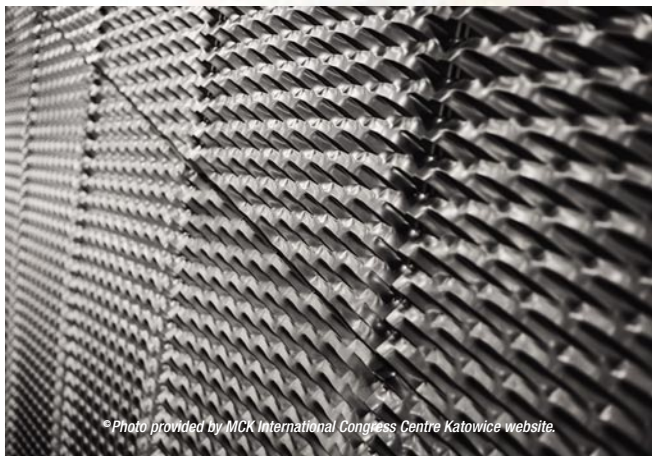
Workshop sponsored by: Frontiers Media S.A.

WORKSHOP 5
DROPLET MICROFLUIDICS – DESIGN, IMPLEMENTATION AND APPLICATIONS

 Piotr M. Korczyk¹, Sławomir Błoński¹, and Sławomir Jakieta²
¹Institute of Fundamental Technological Research Polish Academy of Sciences, POLAND and ²Warsaw University of Life Sciences, POLAND

WORKSHOP 6
COMMERCIALIZATION OF MICROFLUIDICS DEVICES AND SYSTEMS

 Piotr Garstecki¹, Vincent Linder², Tomasz Kosiński³, and Marcin Myszowski³
¹Polish Academy of Sciences, POLAND, ²BioMedical Entrepreneur and IVD

 Independent Consultant, SWITZERLAND, and ³Scope Fluidics S.A., POLAND


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13:45 - 14:15 Afternoon Workshop Registration

14:00 - 17:00 Afternoon Workshops (Break at 15:30)

WORKSHOP 7

DNA ANALYSIS IN NANOCANNELS

Jonas Tegenfeldt¹ and Fredrik Westerlund²

¹Lund University, SWEDEN and ²Chalmers University, SWEDEN

WORKSHOP 8

STATISTICAL TOOLS AND APPROACHES TO VALIDATE RESEARCH RESULTS

Katarzyna Pawlak and Magdalena Borowska

Warsaw University of Technology, POLAND

WORKSHOP 9

PAPER MICROFLUIDICS – DESIGN, MANUFACTURE, APPLICATION

Daniel Citterio

Keio University, JAPAN

WORKSHOP 10

3D PRINTING FOR BIOMEDICINE

Wojciech Swieszkowski¹ and Marco Costantini²

¹Warsaw University of Technology, POLAND and ²Institute of Physical Chemistry, Polish Academy of Sciences, POLAND

WORKSHOP 11

POC DIAGNOSTICS AT RESOURCE LIMITED SETTINGS

Aman Russom

KTH Royal Institute of Technology, SWEDEN

WORKSHOP 12

POLYMER PRODUCTION AND STANDARDIZATION AND A HAND-ON TEST WITH OFF-THE-SHELF MICROFLUIDIC COMPONENTS

Claudia Gärtner

microfluidic ChipShop GmbH, GERMANY

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

17:00 - 19:00 Wine and Cheese Reception



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MONDAY AT A GLANCE

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18:15-19:45	Student Mixer		
18:15-22:30	Women in Microfluidics Event		

MONDAY, 16 OCTOBER

07:00 - 18:05	Registration
08:30	Opening Remarks – MicroTAS 2023 Conference Chairs <ul style="list-style-type: none"> • Zbigniew Brzózka – <i>Warsaw University of Technology, POLAND</i> • Elżbieta Jastrzębska – <i>Warsaw University of Technology, POLAND</i>

Plenary Presentation I

 Chair: Elżbieta Jastrzębska, *Warsaw University of Technology, POLAND*

Hall C

08:30 MICROFLUIDICS FOR CLINICAL DIAGNOSTICS AND ENVIRONMENTAL ANALYSIS IN RESOURCE-LIMITED SETTINGS

Nicole Pamme

Stockholm University, SWEDEN
09:15 - 09:30 Transition
Session 1A1 - Hypoxia-on-a-Chip

 Chair: Karen Cheung, *University of British Columbia, CANADA*

Hall C

09:30 BRACHYTHERAPY ON-A-CHIP: A SIMPLE, PRECISE, AND CLINICALLY-RELEVANT APPROACH FOR RADIOTHERAPY TESTING IN 3D BIOLOGY

 Rodin Chermat^{1,2,3}, Elena Refet-Mollof^{1,2,3}, Yuji Kamio^{2,5},
 Jean-François Carrier^{2,3,4,5}, Philip Wong^{2,3,6},
 and Thomas Gervais^{1,2,3}
¹Polytechnique Montréal, CANADA, ²Centre de recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM), CANADA, ³Institut du Cancer de Montréal (ICM), CANADA, ⁴Université de Montréal, CANADA, ⁵Centre Hospitalier de l'Université de Montréal (CHUM), CANADA, and ⁶University Health Network, CANADA
09:50 INTERPLAY BETWEEN DRUG RESISTANCE AND MITOCHONDRIA MORPHOLOGY IN A TUMOR-ON-CHIP MODEL UNDER PRECISE OXYGEN CONTROL

 Charlotte Bouquerel^{1,2}, Mathieu Deygas¹, Linda Meddahi¹,
 Bertrand Cinquin³, Géraldine Gentric¹, Giacomo Groppero¹,
 William César², Fatima Mechta-Grigoriou¹, Gérard Zalcman¹,
 Nathalie Mazure⁴, Maria Carla Parrini¹, and Stephanie Descroix¹
¹Institut Curie, FRANCE, ²Fluigent, FRANCE, ³Institut Pierre Gilles de Gennes, FRANCE, and ⁴INSERM, FRANCE
10:10 A MICROFLUIDIC DEVICE TO SIMULTANEOUSLY GENERATE SHEAR STRESS AND HYPOXIA CONDITIONS TO STUDY ENDOTHELIAL CELL MORPHOLOGY AND REACTIVE OXYGEN SPECIES BEHAVIOR

 Min-Yen Hsin¹, Yen-Cheng Hsiung¹, Kuang-Hsing Chiang^{1,2},
 and Nien-Tsu Huang^{1,3}
¹National Taiwan University, TAIWAN, ²Taipei Medical University, TAIWAN, and ³National Taiwan University, TAIWAN

Session 1B1 - Single Cell Analysis I
Chair: Petra Ditrich, *ETH Zurich, SWITZERLAND*

Auditorium

- 09:30** **THREE-DIMENSIONAL ISOTROPIC IMAGING OF LIVE SUSPENSION CELLS BASED ON DROPLET MICROVORTICES**
Braulio Cardenas Benitez, Xuhao Luo, Erin Rhee, Shehreen T. Hassan, Richard Hurtado, Abigail F. Howe, and Abraham P. Lee
University of California, Irvine, USA
- 09:50** **LIVE FLUOROSPOT: HIGH-THROUGHPUT SYSTEM FOR REAL-TIME SINGLE-CELL SECRETION IMAGING WITH OPTICAL WAVEGUIDE CHIP**
Zhuohao Yang¹, Mai Yamagishi², Nobutake Suzuki², Yuto Kurisu¹, Koji Nagaoka¹, Kazuyo Moro³, Kazuhiro Kakimi⁴, Etsushi Kuroda⁵, Shinya Sakuma⁶, Takashi Funatsu¹, and Yoshitaka Shirasaki¹
¹*University of Tokyo, JAPAN*, ²*Live Cell Diagnosis, Ltd., JAPAN*, ³*Institute of Physical and Chemical Research (RIKEN), JAPAN*, ⁴*Kindai University, JAPAN*, ⁵*Hyogo College of Medicine, JAPAN*, and ⁶*Kyushu University, JAPAN*
- 10:10** **HIGH-SPEED REPETITIVE OSMOTIC STIMULATIONS TO A SINGLE CELL BY UTILIZING MICRO-VORTICES**
Makoto Saito, Yoko Yamanishi, and Shinya Sakuma
Kyushu University, JAPAN

Session 1C1 - Biomolecular Detection I
Chair: Joel Voldman, *Massachusetts Institute of Technology, USA*

Ballroom B

- 09:30** **A MICROFLUIDIC DEVICE COMBINING COMPETITIVE NON-SELEX METHOD WITH WASHING STRINGENCY CONTROL FOR SELECTING FOLATE RECEPTOR ALPHA APTAMERS**
Yi-Da Chung and Gwo-Bin Lee
National Tsing Hua University, TAIWAN
- 09:50** **MEDIATOR PROBE-BASED MULTIPLEX DIGITAL METHYLATION-SPECIFIC PCR FOR SENSITIVE DETECTION AND METHYLATION ANALYSIS OF BIOMARKER PANELS**
Weiwen Cui, Fan-En Chen, Yang Zhao, and Tza-Huei Wang
Johns Hopkins University, USA
- 10:10** **PIXELATED CHEMICAL DISPLAYS AS A TOOL FOR STUDYING THE DYNAMICS OF THE NOTCH CELLULAR SIGNALING PATHWAY**
Maude Proulx¹, Pierre Clapperton-Richard¹, Laurent Potvin-Trottier², and Thomas Gervais¹
¹*Polytechnique Montréal, CANADA* and ²*Concordia University, CANADA*

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

Session 1A2 - Microfluidic Flow Cytometry
 Chair: Kazuma Mawatari, *Waseda University, JAPAN*

Hall C

- 11:00 IMPEDANCE FLOW CYTOMETRY BASED ON CONSTRICTIONAL MICROCHANNELS AND DEEP LEARNING**
 Huiwen Tan^{1,2}, Xiao Chen^{1,2}, Xukun Huang^{1,2}, Deyong Chen^{1,2}, Junbo Wang^{1,2}, and Jian Chen^{1,2}
¹Chinese Academy of Sciences, CHINA and ²University of Chinese Academy of Sciences, CHINA
- 11:20 MULTI-COLOR AND MULTI-DELAY, TWO-DIMENSIONAL FLOW CYTOMETRY FOR MULTI MARKER IDENTIFICATION AND DISCRIMINATION OF FLUORESCENCE AND SCATTERING**
 Kunihiko Iizuka^{1,2}, Masaki Ueno¹, and Soo Hyeon Kim¹
¹University of Tokyo, JAPAN and ²Lab Arco Limited, JAPAN
- 11:40 IMAGING CYTOMETRY USING ELECTRICAL IMPEDANCE TRIGGERED FLASH**
 Ishita Bansal, Shamibrota K. Roy, Kaushik Basu, and Prosenjit Sen
Indian Institute of Science, INDIA
- 12:00 IMPEDANCE FLOW CYTOMETRY BASED SINGLE CELL SORTING AND DESALTING FOR MASS SPECTROMETRY**
 Junwen Zhu, Yongxiang Feng, Peng Zhao, Huichao Chai, Fei Liang, and Wenhui Wang
Tsinghua University, CHINA

Session 1B2 - Single Cell Analysis II

 Chair: Jose L. Garcia Cordero, *Institute of Human Biology, SWITZERLAND*

Auditorium

- 11:00 A NOVEL HIGH-THROUGHPUT INTRACELLULAR DELIVERY PLATFORM FOR HIGHLY EFFICIENT "OFF-THE-SHELF" NATURAL KILLER CELL-BASED IMMUNOTHERAPY**
 Hyelee Kim¹, Mujin Lee², Bohwa Han², Junsang Doh², and Aram J. Chung¹
¹Korea University, KOREA and ²Seoul National University, KOREA
- 11:20 DENDRIMERIC DNA COORDINATE BARCODING DESIGN FOR SPATIAL RNA SEQUENCING**
 Jiao Cao and Lingling Wu
Xiamen University, CHINA
- 11:40 A MICROFLUIDIC ASSAY FOR SINGLE CELL MICRORNA QUANTIFICATION IN NON-INVASIVELY SAMPLED PRIMARY HUMAN CELLS**
 Vanessa Ho, Jonathan R. Baker, Keith R. Willison, Peter J. Barnes, David R. Klug, and Louise E. Donnelly
Imperial College London, UK

Session 1B2 - Single Cell Analysis II (continued)
12:00 ELASTOMICS: HIGH-THROUGHPUT MECHANICAL PHENOTYPING AND TRANSCRIPTOMICS OF SINGLE CELLS

 Akifumi Shiomi¹, Taikopaul Kaneko¹, Kaori Nishikawa¹, and Hirofumi Shintaku^{1,2}
¹*Institute of Physical and Chemical Research (RIKEN), JAPAN and*
²*Kyoto University, JAPAN*
Session 1C2 - Permeability
Chair: Carolyn Ren, *University of Waterloo, CANADA*
Ballroom B
11:00 LIPOSOME BUDDING: MICROFLUIDIC GENERATION OF MONODISPERSE LIPOSOMES

Jiajue Ji and Ryuji Kawano

Tokyo University of Agriculture and Technology, JAPAN
11:20 SHAPE-CONTROLLED LIPID BILAYER FOR ENHANCED ION CHANNEL INCORPORATION

 Hisatoshi Mimura¹, Toshihisa Osaki^{1,2}, Sho Takamori¹, Kenji Nakao², and Shoji Takeuchi^{1,3}
¹*Kanagawa Institute of Industrial Science and Technology, JAPAN,*
²*MAQsys Inc., JAPAN, and* ³*University of Tokyo, JAPAN*
11:40 MALE AND FEMALE HUMAN-MIMETIC ARTIFICIAL CELL MEMBRANES TO ASSESS PASSIVE PERMEABILITY IN THE SMALL INTESTINE USING MICROFLUIDIC TECHNOLOGIES

Kirandeep Gill, Jaime Korner, and Katherine Elvira

University of Victoria, CANADA
12:00 SYNTHESIS AND ISOLATION OF METAL COMPLEX-CONTAINING PROTEINS BY SUPER WATER REPELLENT DOUBLY REENRANT STRUCTURE UMBRELLA PILLAR ARRAY

 Daiki Tanaka¹, Masashi Kobayashi¹, Risa Fujita¹, Takashiro Akitsu², Takashi Tanii¹, Masahiro Furuya¹, Tetsushi Sekiguchi¹, and Shuichi Shoji¹
¹*Waseda University, JAPAN and* ²*Tokyo University of Science, JAPAN*
12:20 - 13:30 Lunch
Industrial Stage 1
Chair: Lisa Muiznieks, *ELVESYS, FRANCE*
Auditorium
12:25 1a - CHALLENGES OF DEVELOPING HIGH-PRECISION FLUID MANAGEMENT PRODUCTS BASED ON STATE-OF-THE-ART TECHNOLOGIES FOR LIFE SCIENCES AND DIAGNOSTICS

Bruno Charl  ty

Fluigent, FRANCE
12:45 1b - WHERE PHOTONICS MEET MICROFLUIDICS – CONSUMABLES FOR LIFE SCIENCES MADE OF GLASS

Tobias Bauert

IMT Microtechnologies, SWITZERLAND

Industrial Stage 1 (continued)

- 13:05** **1c - STANDARDIZATION LEADING MICROFLUIDICS TOWARDS LABORATORY ROUTINE**
 Claudia Gärtner
microfluidic ChipShop GmbH, GERMANY

Analytical Chemistry - Young Innovator Award Presentation

Hall C

- 13:30** Govind Kaigala
University of British Columbia, CANADA

Plenary Presentation II

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

Hall C

- 13:50** **ORGAN-ON-CHIP MODELS FOR BIOLOGICAL AND MEDICAL APPLICATIONS**
 Séverine Le Gac
University of Twente, NETHERLANDS

09:15 - 09:30 Transition

- 14:35 - 16:35** **Poster Session 1 and Exhibit Inspection**
 Presentations are listed by topic category with their assigned number starting on page 45.

16:05 - 16:35 Break

Session 1A4 - Extracellular Matrix

 Chair: Hiroaki Suzuki, *Chuo University, JAPAN*

Hall C

- 16:35** **KEYNOTE PRESENTATION**
ENGINEERING EXTRACELLULAR MATRIX: COMPONENTS, MECHANICS, AND ARCHITECTURE
 Pilnam Kim
Korea Advanced Institute of Science and Technology (KAIST), KOREA
- 17:05** **A PATTERNING TECHNIQUE FOR MICRO-CRIMPED COLLAGEN SHEETS WITH TUNABLE TENSILE PROPERTIES**
 Yuming Zhang
University of Toronto, CANADA
- 17:25** **TISSUE-M2: TUNABLE IN SITU SYNTHESIS OF ULTRA-THIN EXTRACELLULAR MATRIX-DERIVED MEMBRANES**
 Jeremy Newton, Siwan Park, and Edmong W.K. Young
University of Toronto, CANADA

Session 1A4 - Extracellular Matrix (continued)

- 17:45 IN-FLOW FORMATION OF COLLAGEN MICROGELS FOR REDUCED CONTRACTION IN LONG-TERM TISSUE CULTURE**
Sushant Singh, Teodor Veres, and Axel Guenther
University of Toronto, CANADA

Session 1B4 - Blood Processing

Chair: Daniel Irimia, *Massachusetts General Hospital, Harvard Medical School, USA*

Auditorium

- 16:35 KEYNOTE PRESENTATION**
BLOOD MICROFLUIDICS: FROM FRACTIONATION TO LIQUID BIOPSY
Ian Papautsky
University of Illinois, Chicago, USA
- 17:05 ACOUSTOPHORESIS ENRICHMENT OF TUMOR CELL CLUSTERS IN BLOOD OF PATIENTS WITH METASTATIC PROSTATE CANCER**
Cecilia Magnusson¹, Per Augustsson¹, Eva Undvall Anand¹, Andreas Lenshof¹, Andreas Josefsson^{2,3}, Anders Bjartell¹, Yvonne Ceder¹, Hans Lilja^{1,4}, and Thomas Laurell¹
¹Lund University, SWEDEN, ²Gothenburg University, SWEDEN, ³Umeå University, SWEDEN, and ⁴Memorial Sloan-Kettering Cancer Center, USA
- 17:25 INERTIAL ISOLATION OF LEUKOCYTES FROM ULTRA-LOW VOLUME BLOOD SAMPLES OBTAINED BY FINGERSTICK**
Roberto Rodriguez-Moncayo¹, John-Alexander Preuss², Janina Bahnmann², Jongyoon Han¹, and Joel Voldman¹
¹Massachusetts Institute of Technology, USA and ²University of Augsburg, GERMANY
- 17:45 RARE CELL ENRICHMENT BY CELL SELF-ORGANIZATION IN ACOUSTIC FIELDS**
Richard Soller, Ola Jakobsson, and Per Augustsson
Lund University, SWEDEN

Session 1C4 - Wearable and Diagnosis

Chair: Artur Dybko, *Warsaw University of Technology, POLAND*

Ballroom B

- 16:35 KEYNOTE PRESENTATION**
WEARABLE MICROFLUIDIC SENSING TECHNOLOGIES FOR HEALTHCARE APPLICATIONS
Chwee Teck Lim
National University of Singapore, SINGAPORE
- 17:05 ARAUCARIA LEAF-INSPIRED MICROFLUIDIC PATCH FOR HIGHLY EFFICIENT SWEAT COLLECTION AND ANALYSIS**
Yifan Li^{1,2}, Sixuan Duan^{1,2}, Shuhe Liu¹, Kai Hoettges^{1,2}, Quan Zhang^{1,2}, Mark Leach^{1,2}, and Pengfei Song^{1,2}
¹Xi'an Jiaotong-Liverpool University, CHINA and ²University of Liverpool, UK

Session 1C4 - Wearable and Diagnosis (continued)

- 17:25** **TEOS-COATED SERS MASK PATCH FOR LUNG CANCER BIOMARKER DETECTION IN EXHALED BREATH AEROSOL**
 Sejin Lee, Sangyeon Lee, and Ki-hun Jeong
Korea Advanced Institute of Science and Technology (KAIST), KOREA
- 17:45** **QUANTUM SENSING MEETS LAB-ON-A-CHIP**
 Robin D. Allert¹, Fleming Bruckmaier¹, Nick R. Neulig¹, Phillip Amrein², Sebastian Littin², Fabian A. Freire-Moschovitis¹, Kristina S. Liu¹, Karl D. Briegel¹, Claudia Schrepel³, Philipp Schätzle⁴, Peter Knittel⁵, Martin Hermans³, Maxim Zaitsev², and Dominik B. Bucher¹
¹Technical University of Munich, GERMANY, ²University Medical Center Freiburg, GERMANY, ³LightFab GmbH, GERMANY, ⁴University of Freiburg, GERMANY, and ⁵Fraunhofer Institute for Applied Solid State Physics, GERMANY

18:05 **Adjourn for the Day**

18:15 - 19:45 **Student Mixer**

18:15 - 22:30 **Women in Microfluidics Event**

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TUESDAY AT A GLANCE

08:15-08:30	Announcements		
08:30-09:15	Plenary Presentation III Manabu Tokeshi – Hokkaido University, JAPAN		
09:15-09:35	Lab on a Chip and Dolomite – Pioneers of Miniaturization Lectureship Prize and Presentation		
09:35-09:50	Transition		
09:50-11:10	Session 2A1 Cardiac & Stem-Derived Cells	Session 2B1 Pathogens Analysis	Session 2C1 Electrochemical Detection
11:10-11:40	Break: Exhibit and Poster Inspection		
11:20-11:40	Science Speed Dating		
11:40-12:40	Special Focus Session – Organoids SPEAKERS Leonora Bużańska and Milica Radisic		
12:40-13:50	Lunch		
12:45-13:45	Industrial Stage 2		
13:50-15:10	Session 2A3 Vascularization- on-a-Chip	Session 2B3 Droplets	Session 2C3 Bacteria Analysis
15:10-17:10	Poster Session 2 and Exhibit Inspection		
16:40-17:10	Break		
17:10-18:40	Session 2A4 Cell/Organ- on-a-Chip I KEYNOTE Agnieszka Żuchowska	Session 2B4 Optical Detection KEYNOTE Wouter van der Wijngaart	Session 2C4 Single Cell Analysis III KEYNOTE Aram Chung

TUESDAY, 17 OCTOBER

08:15 - 08:30	Announcements
Plenary Presentation III Chair: Chuck Henry, Colorado State University, USA	
Hall C	
08:30	DEVELOPMENT OF FUNCTIONAL LIPID NANOPARTICLES USING MICROFLUIDIC DEVICES Manabu Tokeshi Hokkaido University, JAPAN

**Lab on a Chip and Dolomite - Pioneers of Miniaturization
Lectureship Prize and Presentation**
Hall C
**09:15 DEVELOPING HYBRID MICROFLUIDIC / MICROELECTRONIC
CHIPS TO REVOLUTIONIZE DISEASE DIAGNOSTICS AND
DRUG MANUFACTURING**

David Issadore

University of Pennsylvania, USA
09:35 - 09:50 Transition
Session 2A1 - Cardiac & Stem-Derived Cells

 Chair: Shoji Takeuchi, *University of Tokyo, JAPAN*
Hall C
**09:50 NOVEL LAB-ON-A-CHIP SYSTEM: MECHANICAL STIMULATION OF
CARDIAC CELLS VIA MAGNETIC NANOFIBERS AND ALTERNATING
MAGNETIC FIELDS**

 Dominik Kołodziejek, Oliwia Tadko, Marcin Drozd, Michał Wojasiński,
Iwona Łopianiak, and Elżbieta Jastrzębska

Warsaw University of Technology, POLAND
**10:10 THE HYBRID CANTILEVER OF CONDUCTIVE GRAPHENE AND SU-8
FOR IMPROVING THE MATURITY AND ELECTRICAL COUPLING
OF CARDIOMYOCYTES**

 Longlong Li¹, Jong-Yun Kim¹, Daeyun Lim²,
Chil-Hyoung Lee², and Dong-Weon Lee¹
¹*Chonnam National University, KOREA and*
²*Korea Institute of Industrial Technology, KOREA*
**10:30 PULSE FREQUENCY-DEPENDENT MATURATION OF HUMAN
IPS-DERIVED CARDIAC MICROFIBER BY ELECTRICAL
STIMULATION**

 Akari Masuda¹, Jumpei Muramatsu¹, Shun Itai¹, Yuta Kurashina²,
Shugo Tohyama¹, and Hiroaki Onoe¹
¹*Keio University, JAPAN and* ²*Tokyo University of Agriculture and
Technology, JAPAN*
**10:50 LABEL-FREE SINGLE CELL IMPEDANCE ANALYSIS OF
IPSC-DERIVED SPINAL CORD PROGENITOR CELLS
FOR RAPID SAFETY AND EFFICACY PROFILING**

 Linwei He¹, Jerome Tan^{1,2}, Shi Yan Ng³, King Ho Holden Li¹,
Jongyoon Han^{2,4}, Sing Yian Chew^{1,2}, and Han Wei Hou^{1,2}
¹*Nanyang Technological University, SINGAPORE,* ²*Singapore-MIT Alliance
for Research and Technology (SMART), SINGAPORE,* ³*Agency for Science,
Technology and Research (A*STAR), SINGAPORE, and* ⁴*Massachusetts
Institute of Technology, USA*

Session 2B1 - Pathogens Analysis

 Chair: Yoon-Kyoung Cho, *IBS (Institute for Basic Science), KOREA*
Auditorium

- 09:50 PORTABLE HIGHLY MULTIPLEXED PROBE-MELT PCR PLATFORM FOR RAPID IDENTIFICATION AND ANTIMICROBIAL RESISTANCE GENOTYPING**
 Fan-En Chen, Alexander Trick, and Jeff Wang
Johns Hopkins University, USA
- 10:10 ON-DISC DNA EXTRACTION AND LAMP AMPLIFICATION FOR PLANT PATHOGEN DETECTION ENABLED BY DIGITAL ROTATIONALLY ACTUATED VALVES**
 David Kinahan¹, Rohit Mishra¹, Lourdes Julius¹, Jack Condon¹, Patricija Pavelskopfa¹, Philip Early¹, Matthew Dorian¹, Katarina Mrvova¹, Grace Henihan¹, Faith Mangwanya¹, Tanya Dreo², and Cor Schoen³
¹*Dublin City University, IRELAND*, ²*National Institute of Biology, SLOVENIA*, and ³*Wageningen University Research, NETHERLANDS*
- 10:30 MICROFLUIDIC DEVICE COUPLED WITH PLASMONIC HOT-SPOT CATALYSIS FOR RAPID PATHOGEN NUCLEIC ACID DETECTION**
 Tamer AbdElFatah, Mahsa Jalali, Sripadh Guptha Yedire, Imman I. Hosseini, Carolina del Real Mata, Haleema Khan, Seyed Vahid Hamidi, Olivia Jeanne, Roozbeh Siavash Moakhar, Myles Mclean, Dhanesh Patel, Zhen Wang, Geoffrey McKay, Mitra Yousefi, Dao Nguyen, Silvia M. Vidal, Chen Liang, and Sara Mahshid
McGill University, CANADA
- 10:50 ELECTROSTATIC MICROFILTRATION-BASED ENRICHMENT OF LOW-ABUNDANCE PATHOGENS FROM LARGE-VOLUME SAMPLES IMPROVES THE DETECTION PERFORMANCE OF AMPLIFICATION-FREE NANOPORE SEQUENCING**
 Yaoping Liu¹, Patrina Wei Lin Chua¹, Sharon Yan Han Ling¹, Joshua Raymond¹, James Strutt¹, Cheryl Siew Choo Chan¹, Peiyong Ho¹, Megan Mcbee¹, Rohan Williams^{1,2}, Stacy L. Springs^{1,3}, and Jongyoon Han^{1,3}
¹*Singapore - MIT Alliance for Research and Technology (SMART), SINGAPORE*, ²*National University of Singapore, SINGAPORE*, and ³*Massachusetts Institute of Technology (MIT), USA*

Session 2C1 - Electrochemical Detection

 Chair: Elizaveta Vereshchagina, *SINTEF Digital, NORWAY*
Ballroom B

- 09:50 ON-CHIP ELECTROCHEMICAL SENSING WITH ENHANCED DETECTING SIGNAL DUE TO CONCENTRATION-POLARIZATION BASED ANALYTE PRECONCENTRATION**
 Sinwook Park¹, Daniel Kaufman², Hadar Ben-Yoav², and Gilad Yossifon¹
¹*Tel Aviv University, ISRAEL* and ²*Ben-Gurion University of the Negev, ISRAEL*

Session 2C1 - Electrochemical Detection (continued)

- 10:10 SUPER-NERNSTIAN PHOSPHORUS ION SENSITIVE FIELD EFFECT TRANSISTOR VIA EUROPIUM ION PROBE**
Yingming Xu, Peng Zhou, Terrence Simon, and Tianhong Cui
University of Minnesota, USA
- 10:30 SINGLE-CELL ELECTRIC IMPEDANCE SENSOR BASED ON INTEGRATED CIRCUIT CHIP**
Wenhao Hui¹, Aman Lyu¹, Yingying Liu¹, Pui-In Mak¹, P. Martins Rui^{1,2}, K-Meng Lei¹, and Yanwei Jia¹
¹*University of Macau, CHINA and* ²*Universidade de Lisboa, PORTUGAL*
- 10:50 POINT-OF-CARE NUCLEIC ACID TESTING WITH A ONE-STEP BRANCHED DNA-BASED BIOSENSOR**
Xueqi Wang and Han Wang
Tsinghua University, CHINA

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

11:20 - 11:40 Science Speed Dating

Special Focus Session - Organoids

Chair: Pilnam Kim, *Korea Advanced Institute of Science & Technology (KAIST), KOREA*

Hall C

- 11:40 EMERGING HUMAN BRAIN ORGANOID FIELD TO MODEL EARLY DEVELOPMENT AND PATHOLOGY**
Leonora Bużańska
Polish Academy of Sciences, POLAND
- 12:10 ORGANOID AND ORGANS-ON-A-CHIP: FROM TOXICITY TESTING TO PERSONALIZED MEDICINE**
Milica Radisic
University of Toronto, CANADA

12:40 - 13:50 Lunch

Industrial Stage 2

Chair: Guillaume Mottet, *Sanofi, FRANCE*

Auditorium

- 12:45 2a - BIOCOMPATIBLE, HIGH- RESOLUTION, 3D PRINTING IN THE PRESENCE OF LIVING CELLS**
Henrik Akesson
UpNano GmbH, AUSTRIA
- 13:05 2b - TWO-PHOTON-POLYMERIZATION AS THE KEY ENABLING TECHNOLOGY FOR LIFE SCIENCES**
Alexander Legant
Nanoscribe GmbH & Co. KG, GERMANY, AUSTRIA
- 13:25 2c - A GENERIC MICROFLUIDIC CONNECTION SYSTEM BECOMES A REALITY**
Henne van Heeren
The Microfluidics Association, NETHERLANDS

Session 2A3 - Vascularization-on-a-Chip
 Chair: Yi-Chin Toh, *Queensland University of Technology, AUSTRALIA*

Hall C

- 13:50 A VASCULARIZED MULTI-COMPOSITION TUMOR ARRAY BIOPRINTED ON A MICROFLUIDIC CELL CULTURE AND DRUG SCREENING SYSTEM FOR MULTIVARIABLE ANALYSIS**
 Gihyun Lee, Soo Jee Kim, and Je-Kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA
- 14:10 PERSONALIZED ARTERIAL-WALL-ON-A-CHIP FOR ASSESSMENT OF VASCULAR DYSFUNCTION AND RISK STRATIFICATION IN TYPE 2 DIABETES MELLITUS**
 Hiromi Takahashi¹, Hong Boon Ong¹, Chengxun Su¹, Rijan Gurung², Andrew Mark Choong^{2,3}, Rinkoo Dalan⁴, Roger Foo^{2,3}, Derek Hausenloy^{5,6}, and Han Wei Hou^{1,4}
¹Nanyang Technological University, SINGAPORE, ²National University of Singapore, SINGAPORE, ³National University Heart Centre, SINGAPORE, ⁴Tan Tock Seng Hospital, SINGAPORE, ⁵Duke-National University of Singapore Medical School, SINGAPORE, and ⁶National Heart Research Institute, SINGAPORE
- 14:30 A VASCULAR MICROPHYSIOLOGICAL SYSTEM WITH A DEFINED INJURY SITE FOR COAGULATION**
 Halston Deal^{1,2}, Jack Twiddy^{1,2}, Kimberly Nellenbach^{1,2}, Anastasia Sheridan^{1,2}, Ashley Brown^{1,2}, and Michael Daniele^{1,2}
¹North Carolina State University, USA and ²University of North Carolina, Chapel Hill, USA
- 14:50 ENGINEERING AUTOLOGOUS VASCULARIZED THROMBUS IMPLANTS FOR ENHANCING CUTANEOUS WOUND HEALING**
 Su Hyun Jung, Bong Hwan Jang, Seyong Kwon, Sung Jin Park, Tae-Eun Park, and Joo H. Kang
Ulsan National Institute of Science and Technology (UNIST), KOREA

TUESDAY

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Session 2B3 - Droplets

 Chair: Aaron Wheeler, *University of Toronto, CANADA*
Auditorium

- 13:50 HIGH-THROUGHPUT DROPLET-PRINTING OF CONCENTRATION GRADIENTS FOR MULTIMODAL FLUORESCENCE- AND MALDI-MS ANALYSIS**
 Maximilian Breitsfeld, Claudius L. Dietsche, Mario A. Saucedo-Espinosa, Simon F. Berlanda, and Petra S. Dittrich
ETH Zürich, SWITZERLAND
- 14:10 DIGITAL DETECTION OF TUMOR-DERIVED EXTRACELLULAR VESICLES VIA CHARGE-INDUCED FUSION**
 Elizabeth Maria Clarissa^{1,2}, Sumit Kumar^{1,2}, and Yoon-Kyoung Cho^{1,2}
¹*Ulsan National Institute of Science and Technology (UNIST), KOREA* and ²*Institute of Basic Science (IBS), KOREA*
- 14:30 STIMULI-RESPONSIVE DNA ORIGAMI MICROCAPSULES**
 Nagi Yamashita¹, Marcos K. Masukawa¹, Mayumi Chano¹, Yusuke Sato², Kanta Tsumoto³, Kenichi Yoshikawa⁴, and Masahiro Takinoue¹
¹*Tokyo Institute of Technology, JAPAN*, ²*Kyushu Institute of Technology, JAPAN*, ³*Mie University, JAPAN*, and ⁴*Kyoto University, JAPAN*
- 14:50 VOICEPRINT FOR IDENTIFYING DRIPPING-JETTING TRANSITION IN A COAXIAL MICROFLUIDIC DEVICE**
 Peng-Nian Chen, Jin-Jia Hu, and Chia-Hung D. Tsai
National Yang Ming Chiao Tung University, TAIWAN

Session 2C3 - Bacteria Analysis

 Chair: Catherine Villard, *CNRS, FRANCE*
Ballroom B

- 13:50 MICROFLUIDIC CHANNELS FOR ANALYSIS OF FLAGELLAR WRAPPING MOTION OF BACTERIA**
 Yoshiki Shimada, Aoba Yoshioka, Daisuke Nakane, and Tetsuo Kan
University of Electro-Communications, JAPAN
- 14:10 A NOVEL OPTICAL-ELECTROCHEMICAL LAB-ON-A-CHIP FOR BIOLOGICAL BEHAVIOR ACTIVATION AND MONITORING IN SINGLE BACTERIAL CELLS**
 Daniel Kaufman¹, Chen Chen-Yu², Tsao Chen-Yu², Zhao Zhiling², Avia Lavon¹, Gregory F. Payne², William E. Bentley², and Hadar S. Ben-Yoav¹
¹*Ben-Gurion University in the Negev, ISRAEL* and ²*University of Maryland, USA*

Session 2C3 - Bacteria Analysis (continued)

- 14:30 A MICROFLUIDIC 96-WELL ELECTROPORATION DEVICE FOR AUTOMATED, HIGH-THROUGHPUT BACTERIAL GENETIC ENGINEERING**
Po-Hsun Huang, Sijie Chen, and Cullen R. Buie
Massachusetts Institute of Technology, USA
- 14:50 REAL-TIME IN-SITU BACTERIAL GROWTH MONITORING USING MINIATURIZED MRI SYSTEM**
Qi Zhou¹, Shuhao Fan¹, Ka-Meng Lei¹, Donhee Ham², Rui P. Martins^{1,3}, and Pui-In Mak¹
¹*University of Macau, MACAO*, ²*Harvard University, USA*, and ³*Universidade de Lisboa, PORTUGAL*

15:10 - 17:10 Poster Session 2 and Exhibit Inspection
Presentations are listed by topic category with their assigned number starting on page 45.

16:40 - 17:10 Break

Session 2A4 - Cell/Organ-on-a-Chip I

Chair: Albert van den Berg, *University of Twente, NETHERLANDS*

Hall C

- 17:10 KEYNOTE PRESENTATION**
CELL AND ORGAN-ON-CHIP APPROACHES IN CANCER RESEARCH
Agnieszka Żuchowska
Warsaw University of Technology, POLAND
- 17:40 UNIVERSAL, HIGH-THROUGHPUT PLATFORM FOR THE MONITORING OF CELL BEHAVIOURS CONTROLLING FUNDAMENTAL CELL INTERACTIONS**
Enrique Azuaje-Hualde, Naiara Lartitegi-Meneceas, Juncal Alonso-Cabrera, Yara Alvarez Braña, Marian M. de Pancorbo, Fernando Benito-López, and Lourdes Basabe-Desmonts
University of the Basque Country, SPAIN
- 18:00 SEMI TUBULAR ORGAN-ON-CHIP WITH TUBELESS PERFUSION**
Blanca del Pozo¹, Marta Ollé², Jonatan Cucala², Lourdes Gombay², Pooya Azizian¹, and Joan M. Cabot¹
¹*Leitat Technological Center, SPAIN* and ²*ReadyCell SL, SPAIN*
- 18:20 OPEN MICROFLUIDIC PLATFORM FOR CO-CULTURING TUMOR SPHEROIDS AND ENDOTHELIAL CELLS IN A 3D ENVIRONMENT**
Jooyoung Ro^{1,2}, 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*

Session 2B4 - Optical Detection

 Chair: Fernando Benito López, *University of the Basque Country, SPAIN*
Auditorium

- 17:10 KEYNOTE PRESENTATION**
ADVANCEMENTS IN MICROFLUIDICS: CELL BIOPSIES, DIAGNOSTICS, AND PROGRAMMABLE MATTER
Wouter van der Wijngaart
KTH Royal Institute of Technology, SWEDEN
- 17:40 NON-INVASIVE INTERFERENCE-BASED PROBE OF THE NANO-SCALE SURFACE ROUGHNESS OF LIVING CELLS**
 Jose C. Contreras-Naranjo, Arul Jayaraman, and Victor M. Ugaz
Texas A&M University, USA
- 18:00 CRITICALLY AMPLIFIED HYDROGEL SENSORS FOR BIOCHEMICAL DETECTION**
 Haitao Zhao^{1,2}, Sijun Pan², and Huilin Shao²
¹*Northwestern Polytechnical University, CHINA and*
²*National University of Singapore, SINGAPORE*
- 18:20 DUAL-TARGET MICROFLUIDIC SYSTEM INTEGRATED WITH AN OPTICAL DETECTION MODULE FOR AUTOMATIC DIAGNOSIS OF RHEUMATOID ARTHRITIS**
 Kuan-Yu Chen¹, Gwo-Bin Lee¹, Yi-Cheng Tsai¹, Feng-Chih Kuo², Mel S. Lee³, and Chih-Chien Hu⁴
¹*National Tsing Hua University, TAIWAN,* ²*Kaohsiung Chang Gung Memorial Hospital, TAIWAN,* ³*Paochien Hospital, TAIWAN, and*
⁴*Chang Gung Memorial Hospital, TAIWAN*

Session 2C4 - Single Cell Analysis III

 Chair: Thomas Laurell, *Lund University, SWEDEN*
Ballroom B

- 17:10 KEYNOTE PRESENTATION**
MICROFLUIDIC PLATFORMS FOR IMMUNOTHERAPY AND GENOME EDITING
Aram Chung
Korea University, KOREA
- 17:40 MULTI-STEP DROPLET MICROFLUIDIC PLATFORM FOR HIGH-CONTENT SINGLE-CELL SEQUENCING**
 Tomasz S. Kaminski^{1,2}, Joachim De Jonghe^{2,3}, and Florian Hollfelder²
¹*University of Warsaw, POLAND,* ²*University of Cambridge, UK, and*
³*Francis Crick Institute, UK*
- 18:00 AN AUTOMATED SINGLE-CELL MICROFLUIDIC PLATFORM FOR MONOCLONAL ANTIBODY DISCOVERY**
 Fatemeh Ahmadi¹, Hao Tran¹, Natasha Letourneau¹, Samuel R. Little¹, Annie Fortin², Anna Moraitis², and Steve C.C. Shih¹
¹*Concordia University, CANADA and* ²*National Research Council Canada, CANADA*

Session 2C4 - Single Cell Analysis III (continued)

18:20 SINGLE-CELL ELECTROKINETICS REVEALS SURFACE-MEDIATED ATTACHMENT BETWEEN ALGAE AND BACTERIA

Hyungseok Kim¹, Qianru Wang², Rhona K. Stuart³, Xavier Mayali³, and Cullen R. Buie¹

¹Massachusetts Institute of Technology, USA, ²Stanford University, USA, and ³Lawrence Livermore National Laboratory, USA

18:40 Adjourn for the Day

TUESDAY



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TUESDAY



WEDNESDAY AT A GLANCE

08:15-08:30	Announcements		
08:30-09:15	Plenary Presentation IV Bogusław Buszewski – <i>Mikolaj Kopernik University Torun, POLAND</i>		
09:15-09:30	Transition		
09:30-10:30	Session 3A1 Cell/Organ-on-a-Chip II	Session 3B1 Biomolecular Detection II	Session 3C1 Micromixers & Microreactors
10:30-11:00	Break: Exhibit and Poster Inspection		
11:00-12:00	Session 3A2 Nucleid Acid Analysis	Session 3B2 Biohybrid Microrobots	Session 3C2 Separation
12:00-13:05	Lunch		
12:05-12:45	Industrial Stage 3		
13:05-13:50	Plenary Presentation V Lydia L. Sohn – <i>University of California, Berkeley, USA</i>		
13:50-14:00	MicroTAS 2024 Announcement		
14:00-16:00	Poster Session 3 and Exhibit Inspection		
15:30-16:00	Break		
16:00-17:30	Session 3A4 Neurobiology & Neuroscience	Session 3B4 Point-of-Care	Session 3C4 3D Printing
	KEYNOTE Ashley E. Ross	KEYNOTE Jacqueline Linnes	KEYNOTE Rosanne Guijt
19:00-24:00	Conference Banquet		

WEDNESDAY, 18 OCTOBER

08:15 - 08:30 Announcements

Plenary Presentation IV

 Chair: Zbigniew Brzózka, *Warsaw University of Technology, POLAND*

Hall C

 08:30 **BIOANALYTICS FROM MICRO- TO NANO- DIMENSION**

Bogusław Buszewski

Mikolaj Kopernik University Torun, POLAND

09:15 - 09:30 Transition

Session 3A1 - Cell/Organ-on-a-Chip II

 Chair: Thomas Gervais, *Polytechnique Montreal, CANADA*
Hall C

- 09:30 A CELL WRAPPING SEEDING TECHNIQUE TO CONSTRUCT TUBULAR ORGAN-ON-A-CHIP MODELS**
 Jing Nie, Sha Lou, Andreas M.A.O. Pollet, Manon van Vegchel, Carlijn Bouten, Jaap M.J. den Toonder
Eindhoven University of Technology, NETHERLANDS
- 09:50 USING SELF-ASSEMBLY AND MIGRATION TO FORM TUBULAR TISSUE ENGINEERED IN VITRO MODELS OF BIOLOGICAL BARRIERS**
 Seyedaydin Jalali and Ponnambalam R. Selvaganapathy
McMaster University, CANADA
- 10:10 NANOWIRE EMBEDDED CONDUCTING DIAPHRAGMS FOR COUPLING ELECTRICAL CUES WITH MECHANICAL STIMULATION TO PROMOTE INTERCELLULAR COMMUNICATION**
 Abdullah-Bin Siddique, Aditya Rane, and Nathan Swami
University of Virginia, USA

Session 3B1 - Biomolecular Detection II

 Chair: Gwo-Bin "Vincent" Lee, *National Tsing Hua University, TAIWAN*
Auditorium

- 09:30 TWO-STAGE TUBERCULOSIS DIAGNOSTICS FROM A SINGLE SAMPLE: COMBINING CENTRIFUGAL MICROFLUIDICS AT THE POINT-OF-CARE WITH SUBSEQUENT COMPREHENSIVE NGS ANTIBIOTIC RESISTANCE PROFILING**
 Judith Schlenderer¹, Jan Lüddecke^{1,2}, Andrey Golubov⁴, Wolfgang Grasse⁵, Thomas A. Kohl⁶, Christoph Metzger-Boddien⁵, Stefan Niemann⁶, Claudia Pilloni⁴, Sara Plesnik⁴, Bijendra Raya⁷, Bhawana Shresta⁷, Roland Zengerle^{1,2}, Markus Beutler⁴, Harald Hoffmann^{3,4}, and Nils Paust^{1,2}
¹Hahn-Schickard, GERMANY, ²University of Freiburg, GERMANY, ³SYNLAB Gauting, GERMANY, ⁴IML Red GmbH, GERMANY, ⁵gerbion, GERMANY, ⁶Research Center Borstel, GERMANY, and ⁷Nepal Anti-Tuberculosis Association, NEPAL
- 09:50 COMPETITIVE PCR PLATFORM FOR PRECISE NUCLEIC ACID QUANTIFICATION**
 Reya Ganguly and Chang-Soo Lee
Chungnam National University, KOREA
- 10:10 INTEGRATION OF ENZYMATIC DNA SYNTHESIS AND SEQUENCING ON DIGITAL MICROFLUIDICS FOR AUTOMATIC INFORMATION STORAGE**
 Huimin Zhang
Xiamen university, CHINA

Session 3C1 - Micromixers & Microreactors

 Chair: Per Augustsson, *Lund University, SWEDEN*
Ballroom B

- 09:30 SPATIOTEMPORALLY GENERATED MICROVORTEXES WEAVE LAMINAR FLOW**
 Makoto Saito, Niko Kimura, Yoko Yamanishi, and Shinya Sakuma
Kyushu University, JAPAN
- 09:50 DNA-POWERED MULTITARGET STIMULI-RESPONSIVE GEL SENSOR FOR THE SENSING OF HISTAMINE AND CAFFEINE**
 Satofumi Kato¹, Yurika Ishiba¹, Masahiro Takinoue², and Hiroaki Onoe¹
¹*Keio University, JAPAN* and ²*Tokyo Institute of Technology, JAPAN*
- 10:10 PREPARATION OF MONODISPERSE DNA GELS USING VIBRATION-INDUCED FLOW**
 Zhitai Huang¹, Kanji Kaneko¹, Ryotaro Yoneyama¹, Takeshi Hayakawa¹, Masahiro Takinoue², and Hiroaki Suizuki¹
¹*Chuo University, JAPAN* and ²*Tokyo Institute of Technology, JAPAN*

10:30 - 11:00 Break: Exhibit and Poster Inspection
Session 3A2 - Nucleid Acid Analysis

 Chair: Jean-Louis Viovy, *Institut Curie/CNRS, FRANCE*
Hall C

- 11:00 UTILIZING SPATIALLY-RESOLVED AND MULTIPLEXED MICRORNA QUANTIFICATION TO PREDICT DRUG RESISTANCE IN BRCA1 MUTANT TUMORS AND PREDICT THE EFFICACY OF COMBINATION THERAPY**
 Omar N. Mohd¹, Yu J. Heng², Gerburg M. Wulf², Frank J. Slack², and Patrick S. Doyle¹
¹*Massachusetts Institute of Technology, USA* and ²*Harvard Medical School, USA*
- 11:20 MICROFLUIDICS-MEDITATED CRISPR/CAS9 DELIVERY: THE DROPLET CELL PINCHER (DCP) PLATFORM FOR EFFICIENT GENOME EDITING**
 You-Jeong Kim, Da Young Yun, Ha-Sung Lee, Cheulhee Jung, and Aram J. Chung
Korea University, KOREA
- 11:40 EMULSION-FREE DIGITAL PCR WITH PERMEABILITY-ENGINEERED HYDROGEL CAPSULES**
 Jie Li and Yifan Liu
ShanghaiTech University, CHINA

Session 3B2 - Biohybrid Microrobots
Chair: Jens Ducreé, *Dublin City University, IRELAND*

Auditorium

- 11:00 AN ANTAGONISTIC PAIR OF 3D CARDIAC RING TISSUES FOR SELF-BEATING BIOHYBRID ROBOT**
 Tomohiro Morita, Minghao Nie, and Shoji Takeuchi
University of Tokyo, JAPAN
- 11:20 ELEVATED VWF LEVELS DRIVE THROMBUS INSTABILITY**
 Ava M. Obenaus¹, Dang Truong², Junmei Chen³, José A. López³, and Nathan J. Sniadecki¹
¹*University of Washington, USA*, ²*University of Washington Bothell, USA*, and ³*Bloodworks Northwest Research Institute, USA*
- 11:40 LIGHT CONTROLLED BIOHYBRID MICROBOTS**
 Nicola Pellicciotta^{1,2}, Ojus S. Bagal¹, Viridiana C. Sosa¹, Giacomo Frangipane^{1,2}, Gaszton Vizsnyiczai³, and Roberto Di Leonardo^{1,2}
¹*Sapienza University of Rome, ITALY*, ²*CNR Institute of Nanotechnology, ITALY*, and ³*Eötvös Loránd Research Network, HUNGARY*

Session 3C2 - Separation

Chair: Jonas Tegenfeldt, *Lund University, SWEDEN*

Ballroom B

- 11:00 DLD-BASED SINGLE CELL MASS CYTOMETRY**
 Yingqi Yang, Junwen Zhu, Huichao Chai, Peng Zhao, and Wenhui Wang
Tsinghua University, CHINA
- 11:20 CONTINUOUS-FLOW SIZE FRACTIONATION OF SUBMICRON PARTICLES AND EXTRACELLULAR VESICLES WITH TWO-DIMENSIONAL ELECTROPHORESIS IN AN ARTIFICIAL SIEVING ARRAY**
 Yang Bu, Jinhui Wang, Sheng Ni, Zechen Lu, Yusong Guo, and Levent Yobas
Hong Kong University of Science and Technology, CHINA
- 11:40 ENGINEERING HIGH-THROUGHPUT ELECTROKINETIC FILTRATION FOR BIOMOLECULES ENRICHMENT**
 Mingyang Cui, Eric M. Wynne, and Jongyoon Han
Massachusetts Institute of Technology, USA

12:00 - 13:05 Lunch

Industrial Stage 3

 Chair: Frankie Myers, *Mosaic Design Labs, USA*
Auditorium

- 12:05 **3a - PRIMO, BIOENGINEERING TOOL FOR 2D AND 3D CELLULAR MODELS**
 Matthieu Opitz
Alvéole – Sygnis, FRANCE
- 12:25 **3b - MULTI-ELECTRODE ARRAYS FOR CMOS BIOSENSORS**
 Christine Dufour
X-FAB MEMS Foundry GmbH, GERMANY

Plenary Presentation V

 Chair: Séverine Le Gac, *University of Twente, NETHERLANDS*
Hall C

- 13:05 **MICROFLUIDICS FOR ASSESSING BREAST CANCER SUSCEPTIBILITY**
Lydia L. Sohn
University of California, Berkeley, USA

MicroTAS 2024 Announcement
Hall C

- 13:50 **2024 Conference Chairs**
- David Juncker, *McGill University, CANADA*
 - Aaron Wheeler, *University of Toronto, CANADA*

14:00 - 16:00
Poster Session 3 and Exhibit Inspection

Presentations are listed by topic category with their assigned number starting on page 45.

15:30 - 16:00
Break


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Session 3A4 - Neurobiology & Neuroscience
Chair: Tza-Huei (Jeff) Wang, *Johns Hopkins University, USA*

Hall C

- 16:00 KEYNOTE PRESENTATION**
EX VIVO ORGAN-ON-CHIP PLATFORMS FOR SENSING NEURON-IMMUNE COMMUNICATION
Ashley E. Ross
University of Cincinnati, USA
- 16:30 NEURAL STEM CELL SINGLE-CELL ISOLATION USING THE OPTOELECTRONIC MICROROBOT**
Mohamed Elsayed¹, Harrison Edwards¹, Filip Stojic¹, Mahmoud A. Sakr¹, Christopher Bendkowski², Xi Chen^{1,3}, Laurent Menillo², Shuailong Zhang⁴, Michael Shaw², Cindi Morshead¹, and Aaron Wheeler¹
¹*University of Toronto, CANADA*, ²*University College London, UK*, ³*Harbin Institute of Technology, CHINA*, and ⁴*Beijing Institute of Technology, CHINA*
- 16:50 MONITORING THE MITOCHONDRIAL NETWORK IN SH-SY5Y NEURONAL-LIKE CELLS UNDER THE INFLUENCE OF POTENTIAL DRUGS IN NEURODEGENERATIVE DISEASES**
Damian Woznica, Ewelina Kalwarczyk, Julia Anchimowicz, Weronika Switlik, and Slawomir Jakiela
Warsaw University of Life Sciences, POLAND
- 17:10 ELECTROCEUTICAL THERAPEUTIC TECHNOLOGY FOR AN INTRACTABLE PERIPHERAL NEUROPATHY USING A HIGH-THROUGHPUT SCREENING PLATFORM**
Aseer Intisar¹, Hyun Young Shin^{1,2}, Hyun Gyu Kang¹, Woon-Hae Kim^{1,2}, Hanwoong Woo¹, Min Young Kim¹, Yu Seon Kim¹, Yun Jeoung Mo¹, Yun-Il Lee¹, and Minseok S. Kim^{1,2}
¹*Daegu Gyeongbuk Institute of Science & Technology (DGIST), KOREA* and ²*CTCELLS Corp., KOREA*

Session 3B4 - Point-of-Care

Chair: Michal Chudy, *Warsaw University of Technology, POLAND*

Auditorium

- 16:00 KEYNOTE PRESENTATION**
PAPER-BASED MOLECULAR DIAGNOSTICS FOR PATHOGEN DETECTION AT THE EXTREME POINTS-OF-CARE
Jacqueline Linnes
Purdue University, USA

Session 3B4 - Point-of-Care (continued)

- 16:30** **INTEGRATING A CHIMERIC BINJARI VIRUS NANOTECHNOLOGY INTO PAPER-BASED ASSAYS FOR POC DETECTION OF FLAVIVIRAL INFECTIONS IN VETERINARY APPLICATIONS**
 Ryan A. Johnston¹, Gervais Habarugira¹, Sally Isberg¹, Jessica Harrison¹, Mahali Morgan¹, Lorna Melville¹, Steven Davis¹, Christopher Howard¹, Charles Henry², Paul Hick¹, Peter Kirkland¹, Helle Bielefeldt-Ohmann¹, Roy A Hall¹, and Jody Hobson-Peters¹
¹University of Queensland, AUSTRALIA and
²Colorado State University, USA
- 16:50** **ORIGAMI PAPER-BASED IMMUNOASSAY DEVICE WITH CRISPR/CAS12A SIGNAL AMPLIFICATION**
 Hikaru Suzuki, Guodong Tong, Yuki Hiruta, and Daniel Citterio
 Keio University, JAPAN
- 17:10** **LAMP-MEDIATED CRISPR/CAS12A REACTION ON SSDNA IMMOBILIZED ITO-BASED EG-FET FOR RAPID HEPATITIS C VIRUS DETECTION**
 Hsin-Ying Ho, Wei-Sin Kao, Ling-Shan Yu, and Che-Hsin Lin
 National Sun Yat-sen University, TAIWAN

Session 3C4 - 3D Printing

Chair: Michael Breadmore, University of Tasmania, AUSTRALIA

Ballroom B

- 16:00** **KEYNOTE PRESENTATION**
3D PRINTING MEMBRANE INTEGRATED DEVICES
Rosanne Guijt
 Deakin University, AUSTRALIA
- 16:30** **TUNA STEP: A TUNABLE STEP EMULSIFICATION FOR DYNAMIC CONTROL OF DROPLET VOLUME TO 3D PRINT FUNCTIONALLY GRADED MATERIALS**
 Francesco Nalin¹, Maria Celeste Tirelli¹, Witold Postek², Piotr Garstecki¹, and Marco Costantini¹
¹Polish Academy of Sciences, POLAND and
²Broad institute of MIT and Harvard, USA
- 16:50** **DIGITAL MANUFACTURING OF MICROFLUIDIC SYSTEMS USING ULTRALOW-COST LCD PHOTOPOLYMERIZATION 3D PRINTERS FOR WIDESPREAD ADOPTION**
 Houda Shafique, Vahid Karamzadeh, Yonatan Morocz, Andy Ng, and David Juncker
 McGill University, CANADA
- 17:10** **HYBRID BIOFABRICATION OF MULTILAYERED HIGH-RESOLUTION CONSTRUCTS USING NATURAL AND LOW-VISCOSITY BIOINKS**
 Soo Jee Kim, Gihyun Lee, and Je-Kyun Park
 Korea Advanced Institute of Science and Technology (KAIST), KOREA
- 17:30** **Adjourn for the Day**

Conference Banquet

Spodek

19:00 – 24:00

No conference is complete without a banquet. This year's banquet will be held in one of the most recognizable buildings in Poland, which is the "Spodek" in Katowice.

As of the printing of this program, there are a few tickets remaining for purchase. Please visit the Onsite Conference Registration Desk for availability.



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WEDNESDAY

THURSDAY AT A GLANCE

08:30-09:15	Plenary Presentation VI Artur Chmielewski – <i>National Aeronautics and Space Administration (NASA), USA and California Institute of Technology, USA</i>		
09:15-09:35	Microsystems & Nanoengineering/Springer Nature – Test of Time Award		
09:35-09:50	Transition		
09:50-11:20	Session 4A1 Cell-on-a-Chip & Pathogens	Session 4B1 Microvalves & Delivering	Session 4C1 Space Exploration
	KEYNOTE Krzysztof Pyrc	KEYNOTE David Juncker	KEYNOTE Lourdes Basabe
11:20-11:50	Break and Exhibit Inspection		
11:50-12:30	Awards Ceremony <ul style="list-style-type: none"> • CHEMINAS – Young Researcher Poster Awards • Royal Society of Chemistry/Lab on a Chip – Widmer Poster Award • Sensors (MDPI) – Outstanding Sensors and Actuators, Detection Technologies Poster Award • IMT Masken und Teilungen AG – Microfluidics on Glass Poster Award • NIST and Lab on a Chip – Art in Science Award • Biomicrofluidics (AIP) – Best Paper Awards • Elsevier Sensors and Actuators B. Chemical – Best Paper Award • Microsystems & Nanoengineering/Springer Nature – Best Talk Award 		
12:30-12:45	Closing Remarks		
12:45	Conference Adjourns		

THURSDAY, 19 OCTOBER
Plenary Presentation VI

 Chair: Jan Dziuban, *Wroclaw University of Science and Technology, POLAND*

Hall C

08:30	HOW MICRODEVICES REVOLUTIONIZE DEEP SPACE EXPLORATION Artur Chmielewski <i>National Aeronautics and Space Administration (NASA), USA and California Institute of Technology, USA</i>
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**Microsystems & Nanoengineering/Springer Nature –
Test of Time Award**

Hall C

- 09:15 **DESIGNING FOR TRANSLATION OF SINGLE-CELL BIOLOGY TOOLS**
Amy E. Herr
University of California, Berkeley, USA

09:35 - 09:50 Transition

Session 4A1 - Cell-on-a-Chip Pathogens
Chair: Victor Ugaz, *Texas A&M University, USA*

Hall C

- 09:50 **KEYNOTE PRESENTATION**
ADVANCED MODELS FOR COMPREHENSIVE UNDERSTANDING OF VIRAL INFECTION
Krzysztof Pyrc
Jagiellonian University, POLAND
- 10:20 **SARS-COV-2 ELICITS A DIFFERENTIAL INNATE IMMUNE RESPONSE IN HIPSC-DERIVED AIRWAY-ON-CHIP AND ALVEOLI-ON-CHIP MODELS**
Sachin Yadav, Kazuya Fujimoto, Toru Takenaga, Yukiko Muramoto, Ryuta Mikawa, Koichi Igura, Senye Takahashi, Takeshi Noda, Shimpei Gotoh, and Ryuji Yokokawa
Kyoto University, JAPAN
- 10:40 **ADIPOSE TISSUE MICROPHYSIOLOGICAL SYSTEM TO STUDY OBESITY-ASSOCIATED PATHOPHYSIOLOGY**
Heejoeng Yoon, Jeong Kon Seo, and Tae-Eun Park
Ulsan National Institute of Science and Technology (UNIST), KOREA
- 11:00 **ADRIAMYCIN-INDUCED GLOMERULOPATHY MODEL USING HIPSC-DERIVED PODOCYTES**
Darryl Koh¹, Ayumu Tabuchi¹, Kensuke Yabuuchi^{2,3}, Yoshiki Sahara², Minoru Takasato^{2,4}, Kazuya Fujimoto¹, and Ryuji Yokokawa¹
¹*Kyoto University, JAPAN*, ²*Institute of Physical and Chemical Research (RIKEN), JAPAN*, ³*Osaka University, JAPAN*, and ⁴*Kyoto University, JAPAN*

Session 4B1 - Microvalves & Delivering
Chair: Jeroen Lammertyn, *KU Leuven, BELGIUM*

Auditorium

- 09:50 **KEYNOTE PRESENTATION**
DIGITAL MANUFACTURING OF FUNCTIONAL, READY-TO-USE MICROFLUIDIC SYSTEMS
David Juncker
McGill University, CANADA

Session 4B1 - Microvalves & Delivering (continued)

- 10:20 A SINGLE-MOLECULE VALVE ENABLED BY A FLEXIBLE NANOFLUIDIC DEVICE**
 Nattapong Chantipmanee¹, Hiroto Kawagishi², Shun-ichi Funano³, Yo Tanaka³, and Yan Xu^{1,2}
¹Osaka Metropolitan University, JAPAN, ²Osaka Prefecture University, JAPAN, and ³Institute of Physical and Chemical Research (RIKEN), JAPAN
- 10:40 INTEGRATED ON-CHIP GEL VALVES WITH HIGH EXPANSION RATE BY USING PARTIAL CONSTRAINT TO SUBSTRATES**
 Kyoka Nakano¹, Yoshiyuki Yokoyama², and Takeshi Hayakawa¹
¹Chuo University, JAPAN and ²Toyama Industrial Technology Research and Development Center, JAPAN
- 11:00 PROBING 3D TISSUE RHEOLOGY WITH A HIGH-THROUGHPUT MICROFLUIDIC ASPIRATION PIPETTE**
 Sylvain Landiech¹, Pierre Lapèze¹, Marianne Elias¹, Morgan Delarue¹, Clément Roux², Fabien Mesnilgrete¹, David Bourier¹, and Pierre Joseph¹
¹LAAS - CNRS, FRANCE and ²Université Toulouse III, FRANCE

Session 4C1 - Space Exploration

Chair: Nicolas Verplanck, CEA, FRANCE

Ballroom B

- 09:50 KEYNOTE PRESENTATION**
TOWARDS UNIVERSAL ANALYTICAL PLATFORMS TO STUDY BIOLOGICAL SYSTEMS
Lourdes Basabe
 University of the Basque Country, SPAIN
- 10:20 AN AUTOMATED AND MULTIPLEXING MICROFLUIDIC SYSTEM FOR IN-SITU BIOMARKER ANALYSIS FOR ASTRONAUT HEALTH MONITORING**
 Zachary Estlack¹, Matin Golozar², Anna L. Butterworth², Richard A. Mathies², and Jungkyu Kim¹
¹University of Utah, USA, and ²University of California, Berkeley, USA
- 10:40 MICROFLUIDIC PLATFORMS - NEW RESEARCH TOOLS FOR SPACE BIOLOGY APPLICATIONS**
 Agnieszka Krakos (Podwin)¹, Patrycja Śniadek¹, Wojciech Kubicki¹, Dawid Przystupski², Mateusz Psurski³, Marta Jurga⁴, Julita Kulbacka², Rafał Walczak¹, and Jan Dziuban¹
¹Wrocław University of Science and Technology, POLAND, ²Wrocław Medical University, POLAND, ³Polish Academy of Sciences, POLAND, and ⁴Wrocław University of Environmental and Life Sciences, POLAND
- 11:00 MICROFLUIDIC-BASED DIFFRACTED X-RAY TRACKING METHOD FOR PRECISE RECORDING OF ION CHANNEL MOTION IN RESPONSE TO SEQUENTIAL CHEMICAL SOLUTION CHANGES**
 Yusuke Asagoe¹, Hirofumi Shimizu², and Yoshikazu Hirai¹
¹Kyoto University, JAPAN and ²University of Fukui, JAPAN

11:20 - 11:50 Break and Exhibit Inspection

Awards Ceremony and Closing Remarks

Hall C

- 11:50 Award Ceremony**
- CHEMINAS – Young Researcher Poster Awards
 - Royal Society of Chemistry/Lab on a Chip – Widmer Poster Award
 - Sensors (MDPI) – Outstanding Sensors and Actuators, Detection Technologies Poster Award
 - IMT Masken und Teilungen AG – Microfluidics on Glass Poster Award
 - NIST and Lab on a Chip – Art in Science Award
 - Biomicrofluidics (AIP) – Best Paper Awards
 - Elsevier Sensors and Actuators B. Chemical – Best Paper Award
 - Microsystems & Nanoengineering/Springer Nature – Best Talk Award

- 12:30 Closing Remarks – MicroTAS 2023 Conference Chairs**
- Zbigniew Brzózka – *Warsaw University of Technology, POLAND*
 - Elżbieta Jastrzębska – *Warsaw University of Technology, POLAND*

- 12:45 Conference Adjourns**

acxel

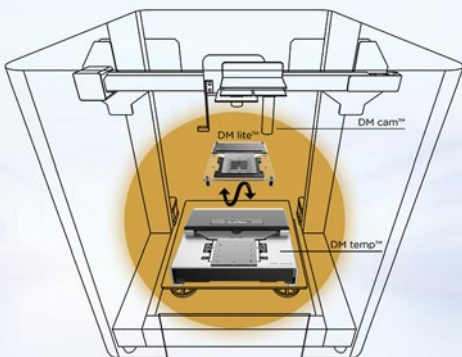
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THURSDAY



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Topics of Particular Interest

Including, but not limited to:

- Micro-nano sensors and actuators
- MEMS and NEMS materials, fabrication and packaging
- Applied sciences of micro-nano systems
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THURSDAY

MONDAY
14:35 – 16:35

TUESDAY
15:10 – 17:10

WEDNESDAY
14:00 – 16:00

CLASSIFICATION

(last character of poster number)

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

See poster floor plan on the page 125 of this program.

a - Cells, Organisms and Organs on a Chip

Bioinspired, Biomimetic and Biohybrid Devices

M001.a A 3D-PRINTED DEVICE FOR FOLDING STRING-SHAPED MUSCLE TISSUE TOWARD CULTURED MEAT PRODUCTION

Jung-Chun Sun¹, Byeongwook Jo¹, Yuya Morimoto^{1,2}, and Shoji Takeuchi¹

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

M002.a BIOINSPIRED INTESTINAL MODEL BASED ON DYNAMIC AND MULTI-SCALE CURVED SUBSTRATES

Valentin Chalut¹, Damien Le Roy², Delphine Delacour³, Anne-Laure Deman¹, and Caterina Tomba¹

¹Université Claude Bernard Lyon 1, FRANCE, ²Institut Lumière Matière, FRANCE, and ³Institut de Biologie du Développement de Marseille, FRANCE

M003.a HUMAN PLATELET MEMBRANE REACTOR FOR REMOVAL OF PATHOGENIC BIOFILMS ON NATURAL TEETH

Mamata Karmacharya^{1,2}, Sumit Kumar^{1,2}, and Yoon-Kyoung Cho^{1,2}

¹Ulsan National Institute of Science and Technology (UNIST), KOREA and ²Institute of Basic Science (CSLM-IBS), KOREA

M903.a A VESSEL ON CHIP MODEL TO STUDY THE ROLE OF SHEAR STRESS IN VASCULAR CONDITIONS

Swachhatoa Ghosh, Praphulla C. Shukla, and Soumen Das
Indian institute of Technology, Kharagpur, INDIA

- T001.a A LIVING SKIN DISPLAY THAT TELLS YOU WILL BE SICK**
Jun Sawayama¹, Yuki Takayama^{1,3}, Shogo Nagata¹, Hoshimi Aoyagi¹, Aki Takimoto¹, Miki Takase², Miho Ogawa², Makoto Takeo², Koji Yano³, Shoji Takeuchi¹, Takashi Tsuji², and Hiroyuki Fujita^{3,4}
¹University of Tokyo, JAPAN, ²Institute of Physical and Chemical Research (RIKEN), JAPAN, ³Canon Medical Systems Co., JAPAN, and ⁴Tokyo City University, JAPAN
- T002.a CONSTRUCTION OF A SKIN-COVERED ROBOTIC FINGER WITH HYDROGEL SUBCUTANEOUS SUPPORT TOWARDS LONG-TERM OPERATION IN AIR**
Keisuke Ohta¹, Minghao Nie¹, Haruka Oda¹, Yuya Morimoto^{1,2}, and Shoji Takeuchi¹
¹University of Tokyo, JAPAN and ²Waseda University, JAPAN
- T003.a MICROFLUIDIC CONSTRUCTION OF ARTIFICIAL CELLS WITH MULTIPLE DNA CONDENSATES AS ORGANELLE MIMIC**
Ryotaro Yoneyama¹, Ryota Ushiyama¹, Tomoya Maruyama², Masahiro Takinoue², and Hiroaki Suzuki¹
¹Chuo University, JAPAN and ²Tokyo Institute of Technology, JAPAN
- W002.a CORE-SHELL HYDROGEL FIBERS USING INTERFACIAL POLYELECTROLYTE COMPLEXATION FOR CELL CULTURE APPLICATIONS**
Yoshinobu Utagawa¹, Kosuke Ino¹, Masahiro Takinoue², and Hitoshi Shiku¹
¹Tohoku University, JAPAN and ²Tokyo Institute of Technology, JAPAN
- W003.a REJUVENATING T CELLS TO BEAT CANCER USING ARTIFICIAL IMMUNE NICHES**
Janet Huisman¹, Ansooya Bokil¹, Nadra Nilsen¹, Emma Haabeth¹, Naresh Veldurthi¹, Simon Sayer², Markus Lunzer², and Oyvind Halaas¹
¹Norwegian University of Science and Technology, NORWAY and ²UpNano GmbH, AUSTRIA

Cell Capture, Counting, & Sorting

- M004.a A HIGH-THROUGHPUT AND MULTIFUNCTIONAL MICROFLUIDIC CHIP FOR RAPID ENRICHMENT OF CTMS AND CTC CLUSTERS**
Chan-Hua Yeh¹, Hsinyu Yang^{1,2}, Cian-Ling Wang¹, Hsien-Chih Peng¹, and Fan-Gang Tseng^{1,2}
¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN
- M005.a CROSSOVER CELL MIGRATION MEASUREMENTS (CCM): COMPREHENSIVE OPTICAL AND ELECTRICAL CELL TRACKING**
Karina Torres-Castro^{1,2}, Brian J. Nablo¹, and Darwin R. Reyes¹
¹National Institute of Standards and Technology, USA and ²Theiss Research, USA
- M006.a ELECTROHYDRODYNAMICS: A VERSATILE TECHNIQUE FOR SINGLE CELL DIAGNOSIS AND ITS APPLICATIONS ON METAL NANOPARTICLE LOCATING**
Chih-Jie Li and Hsiang-Yu Wang
National Tsing Hua University, TAIWAN

- M007.a HIGH THROUGHPUT X-Y SPERM SORTING BY ELECTRIC FIELD GRADIENT IN A REVERSE MICRO FLOW**
 I-Jui Chen¹, Hsien-Chih Peng¹, Nian-Je Wu¹, Ren-Guei Wu¹, and Fan-Gang Tseng^{1,2}
¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN
- M008.a INTEGRATED SERS- DROPLET MICROFLUIDICS PLATFORM FOR SINGLE CELL SORTING**
 Yuanshuai Zhu¹, William J. Peveler¹, Andrew Glidle¹, Zhugen Yang², and Huabing Yin¹
¹University of Glasgow, UK, and ²Cranfield University, UK
- M009.a LOW-COMPLEX IMAGE-ACTIVATED CELL SORTING**
 Neus Godino, Tobias Gerling, Felix Pfisterer, Nina Hupf, Simone De Carli, and Michael Kirschbaum
 Fraunhofer IZI-BB, GERMANY
- M010.a PH SORTING OF BACTERIA LADEN DROPLETS**
 Giulia Venturini, Donald A. Morrison, and David T. Eddington
 University of Illinois, Chicago, USA
- M011.a SIMPLE AND ROBUST MICROFLUIDIC CAPTURE OF T CELLS AND ANALYSIS OF CD MARKERS**
 Yohan Choi, Woo-Joong Kim, Dongwoo Lee, Bum Joon Jung, Eui-Cheol Shin, and Wonhee Lee
 Korea Advanced Institute of Science and Technology (KAIST), KOREA
- T004.a AUTONOMOUS CELL MANIPULATION SYSTEM BASED ON DEEP REINFORCEMENT LEARNING**
 Seiya Matsuda, Takaaki Abe, and Yoshiaki Ukita
 University of Yamanashi, JAPAN
- T005.a DROPLET MICROFLUIDIC SYSTEMS FOR HIGH-THROUGHPUT PASSIVE SELECTION AND ENRICHMENT OF BACTERIA PRODUCING BIOSURFACTANTS**
 Klaudia J. Staskiewicz^{1,2}, Maria Dabrowska², Lukasz Kozon^{1,2}, Lukasz Drewniak², and Tomasz S. Kaminski²
¹Polish Academy of Sciences, POLAND and ²University of Warsaw, POLAND
- T006.a GELATIN METHACRYLATE AS A CELL-ENCAPSULATING HYDROGEL FOR IMAGE-BASED SINGLE-CELL SCREENING**
 Takeru Fukunaga¹, Shunya Okamoto¹, Takayuki Shibata¹, Tuhin S. Santra², and Moeto Nagai¹
¹Toyohashi University of Technology, JAPAN and ²Indian Institute of Technology, Madras, INDIA
- T007.a HIGHLY ACCURATE MULTIPLEX FLUORESCENCE-ACTIVATED DROPLET SORTING PLATFORM**
 Wannas Verbist, Jolien Breukers, Sapna Sharma, Lotte Coelmont, Francesco Dal Dosso, Kai Dallmeier, and Jeroen Lammertyn
 KU Leuven, BELGIUM
- T008.a LARGE-SCALE CELL CAPTURE ARRAYS ON SUSPENDED SILICON NITRIDE MEMBRANES**
 Jacek Lechowicz, Amir Tahmasebipour, Varoon Aluri, and Marc S. Chooljian
 Mekonos Inc, USA

- T009.a MICROFLUIDICS DEVICES AS A TOOL TO STUDY MECHANISM OF TRANSFORMATION BETWEEN STREPTOCOCCUS PNEUMONIAE CELLS**
Anna Borowska, Donald A. Morrison, and David T. Eddington
University of Illinois, Chicago, USA
- T010.a RED BLOOD CELL DISTRIBUTION ON COMPLEX BIFURCATING NETWORKS**
Jonatan Mac Intyre, Elizabeth M. Nallukunnel Raju, Micaela Tavares Oliveira, Samin Nooranian, Irina Raykhel, Ilya Skovorodkin, Seppo Vainio, and Caglar Elbuken
University of Oulu, FINLAND
- T011.a SINGLE CELL ANALYSIS OF INERTIAL MIGRATION BY TUMOR CELLS AND CLUSTERS**
Jian Zhou, Alexandra Vorobyeva, Qiyue Luan, and Ian Papautsky
University of Illinois, Chicago, USA
- W004.a CELL PATTERNING ON CYTOPHOBIC SUBSTRATES THROUGH COMBINED PHYSICOCHEMICAL AND BIOCHEMICAL FUNCTIONALIZATIONS**
Enrique Azuaje-Hualde¹, Job Komen², Juncal Alonso-Cabrera¹, Albert van der Berg², Marian M. de Pancorbo¹, Andries van der Meer², Fernando Benito-López¹, and Lourdes Basabe-Desmonts¹
¹*University of the Basque Country, SPAIN and*
²*University of Twente, NETHERLANDS*
- W005.a EFFECTS OF MICROFLUIDIC SORTING ON CANCER CELLS**
Esra Yilmaz, Zhimeng Fan, Jason P. Beech, Vinay Swaminathan, and Jonas O. Tegenfeldt
Lund University, SWEDEN
- W006.a GLASS-BOTTOM NANOWELLS FOR SINGLE CELL IMAGE CYTOMETRY**
Samuel Berryman, Deasung Jang, Pan Deng, Kerryn Matthews, and Hongshen Ma
University of British Columbia, CANADA
- W007.a INTEGRATED LABEL-FREE BLOOD FRACTIONATION AND LEUKOCYTE CONCENTRATOR IN PMMA SPIRAL MICROFLUIDIC DEVICES**
Kay Khine Maw^{1,2}, Sheng Yuan Leong¹, Wei Wang², and Han Wei Hou^{1,3}
¹*Nanyang Technological University, SINGAPORE, ²Singapore Institute of Manufacturing Technology (SIMTech), SINGAPORE, and ³Nanyang Technological University, SINGAPORE*
- W008.a LEVERAGING THE ELASTIC DEFORMABILITY OF POLYDIMETHYLSILOXANE MICROFLUIDIC CHANNELS FOR EFFICIENT INTRACELLULAR DELIVERY**
Hashim Alhמוד, Mohammed Alkhaled, Batuhan E. Kaynak, and Selim Hanay
Bilkent University, TURKEY
- W009.a OPTOHYDRODYNAMIC TWEEZERS FOR SINGLE-CELL MANIPULATION AND ANALYSIS**
Shreyas K Vasantham¹, Yurii Promovych¹, Piotr Garstecki¹, Abhay Kotnala^{1,2}, and Ladislav Derzsi¹
¹*Polish Academy of Sciences, POLAND and ²University of Houston, USA*

W010.a SHEATH-AIDED INERTIAL SEPARATION OF BLOOD CELLS BY SIZE
 Tianlong Zhang^{1,2}, Yaxiaer Yalikusun², Yoichiro Hosokawa², and Ming Li¹
¹Macquarie University, AUSTRALIA and ²Nara Institute of Science and Technology, JAPAN

W011.a SINGLE CELL DIFFERENTIATION ON A NOVEL ELECTRO MECHANO SENSING PLATFORM
 Ishita Bansal, Nishant Sharma, and Prosenjit Sen
 Indian Institute of Science, INDIA

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

M012.a 3D POROUS MICROFLUIDIC ARCHITECTURES FOR PERFUSABLE ENGINEERED HEART TISSUES
 Aniruddha Paul, Tomas V. Dorp, Anne Leferink, Anke R. Vollertsen, Andries V. D. Meer, and Mathieu Odijk
 University of Twente, NETHERLANDS

M013.a AN INTEGRATED ELECTROTHERMAL PUMP FOR TAILORED PULSATILE VASCULAR CULTURE IN MICROPHYSIOLOGICAL SYSTEMS
 Kai Zhao, Itaru Kawata, Yoshiyasu Ichikawa, and Masahiro Motosuke
 Tokyo University of Science, JAPAN

M014.a ELECTRODES ON POROUS MEMBRANES FOR DIELECTROPHORETIC ASSEMBLY AND IMPEDIMETRIC MEASUREMENT OF MODEL BARRIER TISSUES ON CHIP
 Alexander P.M. Guttenplan and Darwin R. Reyes
 National Institute of Standards and Technology, USA

M015.a HYDROSTATIC PRESSURE AS A BIOMECHANICAL STIMULI ON HUVECS IN A 96-WELL-PLATE
 David T. Eddington
 University of Illinois, Chicago, USA

M016.a MICROFLUIDIC HARVESTING OF SINGLE BREAST CANCER CELL-DERIVED SPHEROIDS FOR HIGH-THROUGHPUT CANCER STEM CELL-TARGETING DRUG SCREENING
 Wenxiu Li
 City University of Hong Kong, HONG KONG

M017.a OXYGEN CONSUMPTION RATE (OCR) CHARACTERIZATION OF SINGLE SPHEROIDS USING A MICROFLUIDIC PLATFORM AND FLUORESCENCE LIFETIME IMAGING MICROSCOPY
 Santhosh Kannan^{1,2}, Chien-Chung Peng¹, and Yi-Chung Tung¹
¹Academia Sinica, TAIWAN and ²National Tsing Hua University, TAIWAN

M018.a THREE-DIMENSIONAL IN VITRO GUT-IMMUNE MODEL TO MIMIC PEYER'S PATCHES BASED ON BIOPRINTING
 Jongho Park, Gihyun Lee, and Je-Kyun Park
 Korea Advanced Institute of Science and Technology (KAIST), KOREA

T012.a A NEW LAB-ON-A-CHIP SYSTEM FOR MODELING VASCULARIZED OVARIAN CANCER TISSUE
 Paulina Musolf, Magdalena Flont, Joanna Konopka, Agnieszka Żuchowska, and Elżbieta Jastrzębska
 Warsaw University of Technology, POLAND

- T013.a BATCH BAYESIAN OPTIMIZATION FOR IN VITRO SKELETAL MUSCLE TISSUE MATURATION WITH MULTIPLE STIMULATION PARAMETERS**
 Daiki Miyata¹, Keitaro Kasahara¹, Yuta Tokuoka¹, Yujin Taguchi¹, Takahiro Yamada¹, Akira Funahashi¹, Yuta Kurashina², and Hiroaki Onoe¹
¹Keio University, JAPAN and ²Tokyo University of Agriculture and Technology, JAPAN
- T014.a EVALUATION OF POLYMETHYLPENTENE, AN OXYGEN PERMEABLE THERMOPLASTIC, FOR LONG-TERM ON-A-CHIP CELL CULTIVATION**
 Linda Sønstevold¹, Maciej Czerkies², Enrique Escobedo-Cousin¹, Sławomir Blonski², and Elizaveta Vereshchagina¹
¹SINTEF Digital, NORWAY and ²Institute of Fundamental Technological Research, POLAND
- T015.a HYPOXIA ON A CHIP: ASSESSING THE CLINICAL HALLMARKS OF HYPOXIA ON NATURALLY HYPOXIC SPHEROIDS**
 Elena Refet-Mollof^{1,2,3}, Rodin Chermat^{1,2,3}, Philip Wong^{2,3,4,5}, and Thomas Gervais^{1,2,3}
¹Polytechnique Montréal, CANADA, ²Centre de recherche du Centre Hospitalier de l'Université de Montréal, CANADA, ³Institut du Cancer de Montréal, CANADA, ⁴Centre Hospitalier de l'Université de Montréal, CANADA, and ⁵Princess Margaret Cancer Centre, CANADA
- T016.a MICROFLUIDIC SYSTEM FOR MODELING THE VASCULARIZATION OF THE PANCREATIC ISLET MODEL**
 Patrycja Sokołowska, Magdalena Kopińska, Elżbieta Jastrzębska, and Zbigniew Brzózka
 Warsaw University of Technology, POLAND
- T017.a POROUS MICROCHAMBER-INTEGRATED MICROPERFUSION SYSTEM FOR FORMATION, MORPHOLOGY CONTROL, AND OBSERVATION OF MULTICELLULAR AGGREGATES**
 Yusuke Araki, Mai Takagi, Rie Utoh, and Masumi Yamada
 Chiba University, JAPAN
- T018.a TOWARDS 3D CELL CULTURES ON-CHIP – TECHNOLOGICAL STUDIES OF NOVEL HYDROGEL MATRICES**
 Adrianna Cieślak¹, Agnieszka Krakos (Podwin)¹, Magdalena Łabowska¹, Julita Kulbacka^{2,3}, and Jerzy Detyna¹
¹Wrocław University of Science and Technology, POLAND, ²Wrocław Medical University, POLAND, and ³State Research Institute Centre for Innovative Medicine, LITHUANIA
- W012.a AN EFFECTIVE METHOD TO PROMOTE THE MATURATION OF HUMAN IPSC CARDIOMYOCYTES USING A THIN POLYMER FILM**
 Yu-Hsiang Hsu¹, Hong-Wen Wang¹, Chia-Wei Liu¹, Ching-Ying Huang², Darien Z.H. Chan², and Patrick C.H. Hsieh^{1,2}
¹National Taiwan University, TAIWAN and ²Academia Sinica, TAIWAN
- W013.a DEVELOPING RAPID SCAFFOLD-FREE CELL SHEET BIOFABRICATION TECHNIQUE AND ITS APPLICATION AS BUILDING BLOCKS OF COMPLEX 3D TISSUE CONSTRUCTS**
 Maedeh Khodamoradi and Ponnambalam R. Selvaganapathy
 McMaster University, CANADA

- W014.a FABRICATION OF ROPE-LIKE AXON BUNDLE BY APPLYING DIAMOND-LIKE CARBON THIN FILM DEPOSITION**
Tetsuo Endo and Masahito Ban
Nippon Institute of Technology, JAPAN
- W015.a MICROENGINEERING PAPER PLATFORM WITH MICROFLUIDIC DELIVERY FOR SPHEROIDS CRYOPRESERVATION AND DRUG TESTING**
Ayoub Gila¹, Safeeya Alawadhi¹, Muhammedin Deliorman¹, Pavithra Sukumar¹, and Mohammad A. Qasaimeh^{1,2}
¹*New York University, Abu Dhabi, UAE* and ²*New York University, USA*
- W016.a MYOBLAST CELL CULTURE ON EDIBLE BLOOD PLASMA-ALGINATE HYDROGEL MICROFIBERS FOR CULTURED MEAT APPLICATION**
Kensei Okada, Byeongwook Jo, Minghao Nie, and Shoji Takeuchi
University of Tokyo, JAPAN
- W017.a THE STUDY OF PRIMARY CELLS DIFFERENTIATION INTO CANCER-ASSOCIATED FIBROBLASTS (CAF) UNDER MICROFLUIDIC CONDITIONS**
Magdalena Flont, Patrycja Sokolowska, and Elżbieta Jastrzębska
Warsaw University of Technology, POLAND
- W018.a UNLEASHING THE POTENTIAL OF CONTINUOUS UNIDIRECTIONAL PERFUSION: AN AUTOMATED SMART LID SYSTEM FOR LONG-TERM CULTURE OF BIOENGINEERED TISSUES**
Sarah Heub¹, Stéphanie Boder-Pascher¹, Manon Garzuel¹, Charlotte Fonta¹, Ary Marsee², Hüseyin B. Atakan¹, Jonas Goldowsky¹, Réal Ischer¹, Diane Ledroit¹, Thomas M. Valentin¹, Kerstin Schneeberger², and Bart Spee²
¹*CSEM SA, SWITZERLAND* and ²*Utrecht University, NETHERLANDS*

Inter- & Intracellular Signaling, Cell Migration

- M019.a A BILAYERED TUMOR-VASCULAR MODEL IN DIGITAL MICROFLUIDIC CHIP FOR TUMOR CELL INTRAVASATION STUDY**
Wenting Qiu^{1,2}, Wanqing Wu¹, Jinqing Huang², and Mengsu Yang¹
¹*City University of Hong Kong, HONG KONG* and ²*Hong Kong University of Science and Technology, HONG KONG*
- M020.a MIMICKING T CELL ACTIVATION AND MIGRATION IN RESPONSE TO CHEMOKINE GRADIENT IN A MICROSYSTEM**
Parvaneh Sardarabadi¹, Kang-Yun Lee², Wei-lun Sun², and Cheng-Hsien Liu¹
¹*National Tsing Hua University, TAIWAN* and ²*Taipei Medical University, TAIWAN*
- T019.a DEVELOPMENT OF A THREE-DIMENSIONAL MICROFLUIDIC PLATFORM FOR CELL MIGRATION STUDIES**
Tak Keung Pang, Yu Zhu, Eileen Yi Lam Li, Anna M. Blocki, Yi Ping Ho, and Wood Yee Chan,
Chinese University of Hong Kong, HONG KONG

- W019.a** **MICROWELL CHIPS REVISITED: APPLYING MICROWELLS TO STUDY CELL-CELL JUNCTION IN CALCIUM SIGNALING**
 Hanyu Yao and Hon Son Ooi
Chinese University of Hong Kong, HONG KONG

Liposomes/Membranes

- M021.a** **EVALUATION OF MEMBRANE PROTEINS SYNTHESIZED USING THE IN SITU IVTT SYSTEM FOR INSERTION INTO MONODISPERSE GUVS**
 Satoshi Nanjo¹, Mamiko Tsugane¹, Tomoaki Matsuura², and Hiroaki Suzuki¹
¹Chuo University, JAPAN and ²Tokyo Institute of Technology, JAPAN
- M022.a** **GIGA-OHM SEALED BLOCK COPOLYMER-BASED 3D POLYMORPHIC ARTIFICIAL CELL MEMBRANE ARRAY FOR ELECTROPHYSIOLOGICAL RECORDING**
 Dong-Hyun Kang¹, Bong Kyu Kim^{1,2}, Hyunil Ryu¹, and Tae Song Kim¹
¹Korea Institute of Science and Technology, KOREA and ²Korea University, KOREA
- M023.a** **STABILIZING ARTIFICIAL CELLS WITH HYDROGEL CYTOSKELETON**
 Conghui Ma
ShanghaiTech University, CHINA
- T020.a** **A CENTRIFUGAL DROPLET FORMATION UNIT FOR SINGLE-STEP GENERATION OF GIANT LIPOSOMES IN A CDICE DEVICE**
 Sho Takamori¹, Hisatoshi Mimura¹, Toshihisa Osaki¹, and Shoji Takeuchi^{1,2}
¹Kanagawa Institute of Industrial Science and Technology, JAPAN and ²University of Tokyo, JAPAN
- T021.a** **FORMING ASYMMETRIC LIPOSOMES WITH NATURALLY-DERIVED LIPIDS TO MIMIC RED BLOOD CELLS**
 Alex R. McDonald, Paige Allard, Kaitlyn E.E. Ramsay, and Katherine S. Elvira
University of Victoria, CANADA
- T022.a** **ION FLUX RECORDING OF SINGLE PROTEINS IN 3D FREE-STANDING LIPID BILAYER ARRAY FORMED BY PRESSURE-ASSISTED ELECTROFORMATION IN PHYSIOLOGICAL SALT CONCENTRATION**
 Bong Kyu Kim^{1,2}, Dong-Hyun Kang¹, Hyunil Ryu¹, Seok Chung², and Tae Song Kim¹
¹Korea Institute of Science and Technology, KOREA and ²Korea University, KOREA
- W020.a** **ANALYZING THE ROLE OF PROTEIN ON TEAR FILM LIPID LAYER IN EVAPORATION RESISTANCE USING A 3D-PRINTED CHAMBER**
 Ahmed Fuwad, Deeborah Lee, Sun Min Kim, and Tae-Joon Jeon
INHA University, KOREA
- W021.a** **INVESTIGATION AND CHARACTERIZATION OF SINGLE NANOSIZED LIPOSOMES IN A NANOFUIDIC DEVICE**
 Soji Miyata¹, Nattapong Chantipmanee¹, and Yan Xu^{1,2}
¹Osaka Metropolitan University, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

W022.a MICROFLUIDIC FORMATION OF MULTICAVITY LIPID PARTICLE (MCLP) FROM DOUBLE EMULSION TEMPLATE
Mostafa Bakouei, Indraj S. Raju, Ali Kalantarifard, and Caglar Elbuken
University of Oulu, FINLAND

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

M024.a BIOENERGETIC HEALTH ASSESSMENT OF CORAL POLYPS VIA REAL-TIME MONITORING OF OXYGEN CONSUMPTION RATES IN A MICROFLUIDIC DEVICE
Hsin-ying Wu, Pei-Heng Tai, and Shih-Hao Huang
National Taiwan Ocean University, TAIWAN

M025.a LOW-COST OPTOFLUIDIC DEVICE FOR RAPID AND CONTINUOUS LIGHT SHEET SCREENING OF NEURODEGENERATION IN LARVAL AND ADULT C. ELEGANS
Faraz Rahimpouresfahani, Nima Tabatabaei, and Pouya Rezai
York University, CANADA

T023.a A MICROFLUIDIC PLATFORM FOR IN SITU ANALYSIS OF BIOFILM FORMATION IN FLOW AND TURBULENCE MEASUREMENT
Keqing Wen^{1,2}, Anna A. Gorbushina^{1,2}, Karin Schwibbert¹, and Jérémy Bell¹
¹Bundesanstalt für Materialforschung und -prüfung (BAM), GERMANY and
²Freie Universität Berlin, GERMANY

T024.a DEVELOPING MICROFLUIDIC PLATFORMS FOR RAPID IDENTIFICATION OF NEW TARGETS FOR NEURODEGENERATIVE DISORDERS
Paloma P. Torres, Richard Kaye, Ian Johnston, Maria Dimitriadi, and Christabel Tan
University of Hertfordshire, UK

T025.a SONOROTOR: AN ACOUSTIC ROTATIONAL ROBOTIC PLATFORM FOR ZEBRAFISH LARVAE
Zhiyuan Zhang and Daniel Ahmed
ETH Zürich, SWITZERLAND

W023.a ACOUSTOFLUIDIC IMMOBILISATION OF C. ELEGANS FOR NEURODEGENERATIVE DISEASE RESEARCH
Nino F. Läubli and Gabriele S. Kaminski Schierle
University of Cambridge, UK

W024.a ELECTRICAL-IMPEDANCE-SPECTROSCOPY-BASED DETECTION OF MORPHOLOGY AND VIABILITY OF IMMOBILIZED C. ELEGANS WORMS IN A MICROFLUIDIC DEVICE
Song Yu¹, Tiancong Lan¹, Jiaqi Liu¹, Shuangye Xu¹, Xinxin Lu¹, Yiyang Zhang², Di Chen³, Zixin Wang⁴, and Zhen Zhu¹
¹Southeast University, CHINA, ²Nanjing University, CHINA,
³Zhejiang University, CHINA, and ⁴Sun Yat-sen University, CHINA

Organs on Chip

- M026.a** **A COMPARTMENTALISED MICROFLUIDIC DEVICE ENABLES AIR-LIQUID INTERFACE CULTURE OF AIRWAY EPITHELIAL CELLS AND MEASUREMENT OF DYNAMIC IMMUNE CELL RECRUITMENT**
Lucy-May Young, Louis J.Y. Ong, Kirsten Spann, and Yi-Chin Toh
Queensland University of Technology, AUSTRALIA
- M027.a** **A MULTIORGAN-ON-CHIP PLATFORM TO STUDY CANCER METASTASIS AND ASSOCIATED VASCULAR HOMEOSTATIC DYNAMICS**
Nilesh Kumar, Prosenjit Sen, and Ramray Bhat
Indian Institute of Science, INDIA
- M028.a** **A THERMOPLASTIC ELASTOMER BASED MICROFLUIDIC DEVICE FOR BLOOD VESSEL NETWORK FORMATION AND APPLICATIONS**
Byeong-Ui Moon¹, Kebin Li¹, Han Shao², Lauren Banh², Lidija Malic¹, Edmond Young², Sowmya Viswanathan^{2,3}, and Teodor Veres¹
¹*National Research Council Canada, CANADA*, ²*University of Toronto, CANADA*, and ³*University Health Network, CANADA*
- M029.a** **BLADDER-ON-A-CHIP RECAPITULATING THE STRATIFIED UROTHELIUM BY CO-CULTURING WITH FIBROBLASTS**
Taiki Nishimura¹, Yuji Takata¹, Kazuhiro Ofuji², Kazuya Fujimoto¹, Minoru Takasato², and Ryuji Yokokawa¹
¹*Kyoto University, JAPAN* and ²*Institute of Physical and Chemical Research (RIKEN), JAPAN*
- M030.a** **DESMOPLASIA IN STROMAL CELLS AND ANTI-CANCER DRUG RESISTANCE: ONE CHIP MICRO ENGINEERED TUMOR MODEL**
Madhu Shree Poddar¹, Yu-De Chu², Chau-Ting Yeh², and Cheng-Hsien Liu¹
¹*National Tsing Hua University, TAIWAN* and ²*Chang Gung Memorial Hospital, TAIWAN*
- M031.a** **DEVELOPMENT OF MICROPHYSIOLOGICAL MODEL FOR HYPOXIA-INDUCED PLACENTAL REMODELING**
Ahmed Fuwad, Seorin Jeong, Tae-Joon Jeon, and Sun Min Kim
INHA University, KOREA
- M032.a** **EVALUATION OF THE THREE-DIMENSIONAL SHAPE OF THE CELL SPHEROIDS FORMED BY USING VIBRATION-INDUCED FLOW**
Yui Katsumata and Takeshi Hayakawa
Chuo University, JAPAN
- M033.a** **INJECTION MOLDED LUNG-ON-CHIP MODEL INTEGRATING A PROTEIN-BASED CELL CULTURE MEMBRANE TO STUDY ALVEOLAR ECM REMODELING**
Tobias A. Weber¹, Jan Schulte¹, Pauline Zamprogno¹, Johannes Fehr¹, and Olivier T. Guenat^{1,2}
¹*University of Bern, SWITZERLAND* and ²*University Hospital of Bern, SWITZERLAND*

- M034.a** **MICROFLUIDIC PLATFORM FOR MODELLING OF ALVEOLAR-VASCULAR CELL INTERACTIONS IN PULMONARY HYPERTENSION (PH) ASSOCIATED WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)**
Maïke Haensel, Vanessa Ho, Joshua Edel, Darryl Overby, Clare Lloyd, and Beata Wojciak-Stothard
Imperial College London, UK
- M035.a** **ON-CHIP MODEL OF TUMOR ANGIOGENESIS IN TRANSLOCATION RENAL CELL CARCINOMA INCORPORATING PERICYTES AND ENDOTHELIAL CELLS**
Atsuya Kitada¹, Hang Zhou¹, Kazuya Fujimoto¹, Miwa Tanaka², Masaya Baba³, Takuro Nakamura⁴, and Ryuji Yokokawa¹
¹*Kyoto University, JAPAN*, ²*Japanese Foundation for Cancer Research, JAPAN*, ³*Kumamoto University, JAPAN*, and ⁴*Tokyo Medical University, JAPAN*
- M036.a** **QUANTIFYING THE REGENERATION OF RADIATION-DAMAGED VESSELS ON A 3D VASCULATURE CHIP USING DEEP LEARNING-BASED IMAGE ANALYSIS**
Dong-Hee Choi^{1,2}, Jinchul Ahn^{1,2}, Yong Hun Jung^{1,2}, Euijeong Song², and Seok Chung^{1,3}
¹*Korea University, KOREA*, ²*Next&Bio Inc, KOREA*, and ³*Korea Institute of Science and Technology (KIST), KOREA*
- M037.a** **TIME COURSE ANALYSIS AND NUMERICAL SIMULATION OF ON-CHIP-VASCULAR BED FORMATION TOWARD QUANTITATIVE UNDERSTANDING**
Kazuya Fujimoto, Yoshikazu Kameda, and Ryuji Yokokawa
Kyoto University, JAPAN
- T026.a** **A GLOMERULUS-ON-A-CHIP PLATFORM FOR STUDYING HYPERTENSION-BORN PROTEINURIC RENAL DISEASE**
Zong-Min Liu, Bo-Yi Yao, Yun-Jie Hao, and Fan-Gang Tseng
National Tsing Hua University, TAIWAN
- T027.a** **A MULTIWELL MICROFLUIDIC-MEA PLATFORM FOR NEUROMUSCULAR JUNCTION RECONSTRUCTION**
Oramany Phouphetlinthong, Audrey Moisan, Audrey Sebban, Pauline Duc, Florence Rage, and Benoit Charlot
Université de Montpellier, FRANCE
- T028.a** **ADVANCING CANCER COMPREHENSION: UNVEILING PROMISING OPTIONS WITH MULTI-ORGAN-ON-CHIP (MULTI-OOC) APPROACH**
Paweł Romańczuk, Agnieszka Żuchowska, Elżbieta Jastrzębska, Magdalena Matczuk, Joanna Zajda, and Zbigniew Brzózka
Warsaw University of Technology, POLAND
- T029.a** **CANTILEVER MICRO ELECTRODE ARRAY (MEA) FOR THE MEASUREMENT OF INNER EXTRACELLULAR ACTIVITY OF CEREBRAL ORGANOIDS**
Oramany Phouphetlinthong, Emma Partiot, Audrey Sebban, Raphaël Gaudin, and Benoit Charlot
Université de Montpellier, FRANCE

T030.a DEVELOPING MICROFLUIDIC DEVICES FOR CELLULAR MODELLING OF INHERITED KIDNEY DISORDERS

George Parpas, Colin Johnson, and Christoph Walti
University of Leeds, UK

T032.a FIBROBLASTS INDUCE DRUG RESISTANCE IN LUNG CANCER ORGANIODS

Qiyue Luan, Ines Pulido, Jian Zhou, Takeshi Shimamura, and Ian Papautsky
University of Illinois, Chicago, USA

T033.a LARGE-SCALE MANUFACTURING OF FOIL-BASED MICROFLUIDIC CHIPS FOR NEURON CELL CULTURE AND AXON OUTGROWTH MONITORING

Nihan Atak¹, Anja Haase¹, Ana Ayerdi-Izquierdo², Martin Smolka¹, Jan Hesse¹, Nerea briz Iceta², Lea Tomasova³, Clarissa Salado⁴, Stephan Ruttloff¹, Johannes Götz¹, Alvaro Conde⁵, Conor O'Sullivan⁶, and Nastasia Okulova⁶

¹Joanneum Research Forschungsgesellschaft mbH, AUSTRIA,

²TECNALIA, Basque Research and Technology Alliance (BRTA),

SPAIN, ³Ibidi GmbH, GERMANY, ⁴Innoprot, SPAIN, ⁵Micronit BV,

NETHERLANDS, and ⁶Inmold, DENMARK

T034.a MONOLITHIC CO-CULTURE SYSTEM FOR THE GUT-LIVER INTERACTION STUDY INTEGRATING PARACELLULAR BARRIER FUNCTION ASSAY

Ryuya Kida¹, Alan Rajendran², Mamiko Tsugane¹, Jean-Charles Duclos-Vallee², Maxime M. Mahe³, Sakina Bensalem², Hiroaki Suzuki¹, and Bruno L. Pioufle²

¹Chuo University, JAPAN, ²Universite Paris Saclay, FRANCE, and

³Nantes Universite, FRANCE

T035.a OPTIMIZATION OF CULTURE CONDITIONS FOR PROMOTING ANGIOGENESIS AROUND AND WITHIN A LIVER SPHEROID IN A MICROFLUIDIC DEVICE

Satomi Matsumoto¹, Wenlong Wang¹, Ayumi Haginiwa¹, Anna K. Kopec², Julie Harney², Lindsay Tomlinson², Nasir Khan², Kazuya Fujimoto¹, and Ryuji Yokokawa¹

¹Kyoto University, JAPAN and ²Pfizer, Inc., USA

T036.a SPIDER SILK MEMBRANE-BASED TISSUE MODELS IN OPEN-TOP MICROFLUIDIC CHIPS ALLOW INTERMEDIATE SHEAR LEVELS

Linnea Gustafsson^{1,3}, Nayere Tabina², Volker Lauschke², My Hedhammar³, and Wouter van der Wijngaart³

¹Spiber Technologies AB, SWEDEN, ²Karolinska Institutet, SWEDEN, and

³KTH Royal Institute of Technology, SWEDEN

T037.a UNIBODY 3D PRINTING OF MICROFLUIDIC DEVICES FOR CELL CULTURE APPLICATIONS

Louis Jun Ye Ong, Lucy M-G. Young, and Yi-Chin Toh
Queensland University of Technology, AUSTRALIA

- W025.a A 3D PRINTED PATIENT-SPECIFIC CAROTID VESSEL WITH PHYSIOLOGICAL HEMODYNAMICS AND TISSUE ARCHITECTURE**
 Jorge A. Catano¹, Louis J. Y. Ong¹, Prasad KDV. Yarlagadda^{1,2}, Zhiyong Li¹, and Yi-Chin Toh¹
¹Queensland University of Technology, AUSTRALIA and
²University of Southern Queensland, AUSTRALIA
- W026.a A MICROFLUIDIC ONE-SINGLE-TOUCH PLATFORM FOR HIGH-THROUGHPUT GENERATION OF VASCULARIZED TUMOR MODELS**
 Shou-Yu Ma^{1,2}, Didem Rodoplu Solovchuk¹, Gou-Jen Wang², and Chia-Hsien Hsu^{1,2}
¹National Health Research Institutes, TAIWAN and
²National Chung Hsing University, TAIWAN
- W028.a ASSESSING COMBINATION IMMUNOTHERAPY THROUGH A TUMOUR-MICROENVIRONMENT-ON-CHIP PLATFORM**
 Hsuan-Yu Mu, Chiao-Min Lin, Li-An Chu, Ji Li, Chao-Yu Liu, Hsi-Chien Huang, Sheng-Liang Cheng, Tsung-Ying Lee, Hsin Mei Lee, Hsin-Min Chen, Yun-Jen Tsai, Yunching Chen, and Jen-Huang Huang
 Tsing Hua University, TAIWAN
- W029.a DESIGN AUTOMATION FOR ORGANS-ON-CHIP**
 Maria Emmerich¹, Philipp Ebner², and Robert Wille^{1,3}
¹Technical University of Munich, GERMANY,
²Johannes Kepler University Linz, AUSTRIA, and
³Software Competence Center Hagenberg GmbH, AUSTRIA
- W030.a DEVELOPMENT OF A MICROFLUIDIC MODEL OF CEREBRAL MICROBLEEDS AT THE BLOOD-BRAIN INTERFACE**
 Sae R. Choi¹, Natalia Ospina-Munuz¹, Nishanth Surianarayanan¹, Sehong Kang², Michelle Luo³, Yun Chang¹, Xiaoping Bao¹, Alisa S. Wolberg³, Martha U. Gellente², Hyunjoon Kong², and Bumsoo Han¹
¹Purdue University, USA, ²University of Illinois, Urbana-Champaign, USA, and ³University of North Carolina, USA
- W031.a EVALUATION AND COMPARISON OF ANGIOGENIC SPROUTS ACCORDING TO THE ORIGINS OF ENDOTHELIAL CELLS IN AN ON-CHIP ALVEOLAR SOFT PART SARCOMA (ASPS) ANGIOGENESIS MODEL**
 Ayumi Haginiwa¹, Surachada Chuaychob¹, Satomi Matsumoto¹, Miwa Tanaka², Kazuya Fujimoto¹, Takuro Nakamura³, and Ryuji Yokokawa¹
¹Kyoto University, JAPAN, ²Japanese Foundation for Cancer Research, JAPAN, and ³Tokyo Medical University, JAPAN
- W032.a GROWING SPHEROIDS IN A CONTINUOUSLY PERFUSABLE HYBRID MICROFLUIDIC CHIP**
 Hiba Aljayyousi¹, Amani Ghassan¹, Sarah Sahloul¹, Navajit Baban¹, Ajymurat Orozaliev¹, Piergiorgio Percipalle¹, and Yong-Ak Song^{1,2}
¹New York University, Abu Dhabi, UAE and ²New York University, USA

- W033.a MEDIUM FLOW CONTROLLED-CYCLIC BREATHING LUNG INFLAMMATION CHIP FOR PULMONARY DRUG SCREENING**
Chao-Yu Liu, Ying-Ru Chen, Hsuan-Yu Mu, and Jen-Huang Huang
National Tsing Hua University, TAIWAN
- W034.a NOVEL THIOL-ENE-BASED MICROFLUIDIC DEVICE INTEGRATED WITH INKJET-PRINTED MULTI-SENSING CAPABILITIES FOR ORGAN-ON-A-CHIP APPLICATIONS**
Denise Marrero^{1,2}, Ferran Pujol-Vila¹, Gemma Gabriel^{1,2}, Rosa Villa^{1,2}, Mar Alvarez^{1,2}, and Xavi Illa^{1,2}
¹*Consejo Superior de Investigaciones Científicas (CSIC), SPAIN and*
²*Centro de Investigación Biomédica en Red en Bioingeniería Biomateriales y Nanomedicina (CIBER-BBN), SPAIN*
- W035.a PERIODONTIUM-ON-CHIP: A NOVEL VASCULARIZED HUMAN DENTAL MODEL TO STUDY PERIODONTITIS**
Sara Svanberg¹, Elisabeth Hirth¹, Thimios A. Mitsiadis², and Petra S. Dittrich¹
¹*ETH Zürich, SWITZERLAND and* ²*University of Zurich, SWITZERLAND*
- W036.a THE ONSET OF CELLULAR DYSFUNCTION IN A 3D GLYCATED EXTRACELLULAR MATRIX**
Insung Yong¹, Eun Sun Ji², Hyejin Kim¹, Yoonmi Hong¹, Jin Young Kim², and Pilnam Kim¹
¹*Korea Advanced Institute of Science and Technology (KAIST), KOREA and*
²*Korea Basic Science Institute (KBSI), KOREA*

Single-Cell Analysis

- M038.a A MICROFLUIDIC PLATFORM TO STUDY BACTERIAL MOTILITY UNDER CONFINEMENT**
Md Ramiz Raza, Jijo E. George, Savita Kumari, Mithun K. Mitra, and Debjani Paul
Indian Institute of Technology, Bombay, INDIA
- M039.a CONSTRUCTION OF A CELL SIZE AND HARDNESS MEASUREMENT METHOD USING A MICROFLUIDIC DEVICE WITH A MULTI-LAYERED STRUCTURE**
Mitsuhiro Horade¹, Masatsugu Moriga¹, Shuichi Murakami², and Tsunemasa Saiki³
¹*National Defense Academy of Japan, JAPAN,* ²*Osaka Research Institute of Industrial Science and Technology, JAPAN, and*
³*Hyogo Prefectural Institute of Technology, JAPAN*
- M040.a DEVELOPMENT OF A MICROFLUIDIC DEVICE FOR MEASUREMENT OF DEFORMABILITY AND PLURIPOTENCY FROM THE SAME CELL**
Takuma Nomiyama, Sachiko Ide, and Noritada Kaji
Kyushu University, JAPAN
- M041.a HIGH-THROUGHPUT REAL-TIME CHARACTERISATION OF THE INTRINSIC MEMBRANE MECHANICAL PROPERTIES OF LIVING CELLS**
Ziyu Guo and Yi Sui
Queen Mary University of London, UK

- M042.a IN-SITU LABEL-FREE QUANTITATIVE PHASE IMAGING FLOW CYTOMETRY FOR BACTERIA EXTRACELLULAR POLYMERIC SUBSTANCES CHARACTERIZATION IN SEWAGE TREATMENT**
Fei Liang, Shunan Zhao, Junwen Zhu, Yifan Sun, Ruiping Liu, and Wenhui Wang
Tsinghua University, CHINA
- M043.a MASSIVELY PARALLEL HIGH THROUGHPUT SINGLE-CELL PRINTING AND HIGHLY EFFICIENT LARGE BIOMOLECULAR DELIVERY INTO CELLS**
Ashwini S. Shinde¹, Pallavi S. Shinde¹, Kavitha Illath¹, Moeto Nagai², Srabani Kar³, and Tuhin S. Santra¹
¹*Indian Institute of Technology, Madras, INDIA*, ²*Toyohashi University of Technology, JAPAN*, and ³*Indian Institute of Science Education and Research, INDIA*
- M044.a ON THE COMPATIBILITY OF NANOVALS WITH MICROFLUIDIC IMPEDANCE CYTOMETRY**
Federico Petitta¹, Cristian Brandi¹, Adele De Ninno², Paolo Bisegna¹, and Federica Caselli¹
¹*University of Rome Tor Vergata, ITALY* and ²*Italian National Research Council, ITALY*
- M045.a PERFORMANCE-ENHANCED CLOGGING-FREE VISCOUS SHEATH CONSTRICTION IMPEDANCE FLOW CYTOMETRY**
Junwen Zhu, Yongxiang Feng, Huichao Chai, Fei Liang, Zhen Cheng, and Wenhui Wang
Tsinghua University, CHINA
- M046.a STUDYING SINGLE PROTOPLASTS - A FLUIDOT CASE STUDY ON SINGLE PLANT CELLS**
Karen Ven¹, David De Vleeschauwer², Jolien Breukers¹, Robin De Groote¹, Aurélie Mohrbacher¹, Ilse Van Den Brande², Sarah De Cokere², Francesco Dal Dosso¹, Peter Denolf², and Jeroen Lammertyn¹
¹*KU Leuven, BELGIUM* and ²*BASF Seeds & Traits, BELGIUM*
- M047.a UNCOVERING STRAIN-DEPENDENT MECHANICAL BIOMARKERS WITH SEQUENTIAL-SQUEEZE NODE-PORE SENSING**
Rachel Rex, Sharicka Zutshi, and Lydia Sohn
University of California, Berkeley, USA
- T038.a APOPTOSIS MONITORING OF CHINESE HAMSTER OVARY CELLS USING MICROFLUIDIC ISODIELECTROPHORESIS**
John-Alexander Preuss¹, Roberto Rodriguez-Moncayo², Joel Voldman², and Janina Bahnemann¹
¹*University of Augsburg, GERMANY* and ²*Massachusetts Institute of Technology, USA*
- T039.a DEFORMABILITY CYTOMETRY REVEALS INCREASED CELL STIFFNESS IN PATIENTS WITH MAJOR DEPRESSIVE DISORDER**
Lisa Kwapich¹, Alexander Karabatsiakis², Tobias Neckernuss³, Daniel Geiger³, Jonas Pfeil^{1,3}, Eun-Jin Sim⁴, Markus Kiefer⁴, Alexander Behnke¹, Iris T. Kolassa¹, and Othmar Marti¹
¹*Ulm University, GERMANY*, ²*University of Innsbruck, AUSTRIA*, ³*Sensific GmbH, GERMANY*, and ⁴*Ulm University Medical Center, GERMANY*

- T040.a** **ELECTROROTATION OF SINGLE CELLS FOR THE ANALYSIS OF MEMBRANE DAMAGE INDUCED BY THE NEUROTOXIC PROTEIN ALPHA-SYNUCLEIN**
Till Ryser, Hilal Lashuel, and Carlotta Guiducci
École Polytechnique Fédérale de Lausanne, SWITZERLAND
- T041.a** **HIGHLY SELECTIVE IMAGE-BASED ELECTROPORATION OF SINGLE CELLS**
Felix Pfisterer, Neus Godino, Tobias Gerling, Simone De Carli, and Michael Kirschbaum
Fraunhofer IZI-BB, GERMANY
- T042.a** **LABEL -FREE ANALYSIS OF GROWTH AND LYSIS OF MICROBIAL COMMUNITIES AT THE SINGLE-CELL LEVEL USING OBJECT DETECTION ORIENTED DEEP LEARNING AND DROPLET MICROFLUIDICS**
Anuj Tiwari, Vasileios Anagnostidis, Robyn Manly, Nela Nikolic, Ben Temperton, and Fabrice Gielen
University of Exeter, UK
- T043.a** **MICROFLUIDIC MEASUREMENT OF YOUNG'S MODULI OF STORED AND MALARIA-INFECTED SINGLE RED BLOOD CELLS**
Savita Kumari¹, Priyanka Naik¹, Chhaminder Kaur¹, Vijay Mistari¹, Tanusri Roy¹, Swati Patankar¹, Shamik Sen¹, Dhrubaditya Mitra^{2,3}, and Debjani Paul¹
¹Indian Institute of Technology, Bombay, INDIA, ²KTH Royal Institute of Technology, SWEDEN, and ³Stockholm University, SWEDEN
- T044.a** **ONE-SHOT SINGLE-CELL PROTEOME AND METABOLOME ANALYSIS TECHNIQUE FOR THE SAME SINGLE CELL ANALYSIS**
Jie Wu
Zhejiang University, CHINA
- T045.a** **RAPID AND ROBUST CONSTRUCTION OF SINGLE CELL CAPTURE ARRAY ON DIGITAL MICROFLUIDICS FOR DRUG SCREENING ASSAY**
Wanqing Wu, Wenting Qiu, and Mengsu Yang
City University of Hong Kong, HONG KONG
- T046.a** **TRANSCRIPTOME, PROTEOME AND METABOLOME PROFILING OF SINGLE MOUSE OOCYTES WITH DROPLET-BASED MICROFLUIDICS AND MASS SPECTROMETRY TECHNIQUES**
Yi-Rong Jiang¹, Jie Wu¹, Lan-Rui Cao², Hao Wu², Xu-Dong Fu², and Qun Fang^{1,3}
¹Zhejiang University, CHINA, ²Zhejiang University Medical Center, CHINA, and ³ZJU-Hangzhou Global Scientific and Technological Innovation Center, CHINA
- W037.a** **A "SMART" HYDROGEL-BASED MICROFLUIDIC PLATFORM FOR SELECTIVE CELL RETRIEVAL**
Julie Van Lent, Karen Ven, Amelie Remmerie, Vince Engelborghs, Christian Clasen, Karen Vanhoorelbeke, and Jeroen Lammertyn
KU Leuven, BELGIUM

- W038.a APPLICATION OF QUANTITATIVE ANALYSIS OF SINGLE-CELL PROTEINS IN LEUKEMIA GATING, TUMOR CLASSIFICATION AND HIERARCHY OF CANCER STEM CELLS**
 Ting Zhang¹, Lixing Liu¹, Yuanchen Wei¹, Chiyuan Gao¹, Liangliang Ma², Mengge Gao³, Xiaosu Zhao³, Yixiang Wang⁴, Deyong Chen¹, Lichao Sun², Junbo Wang¹, and Jian Chen¹
¹Chinese Academy of Sciences, CHINA, ²Cancer Hospital Chinese Academy of Medical Sciences, CHINA, ³National Clinical Research Center for Hematologic Disease, CHINA, and ⁴Peking University Hospital of Stomatology, CHINA
- W039.a DETECTION OF SINGLE-CELL CYTOKINE SECRETION USING CELL-BASED REPORTER CELLS IN A HONEYCOMB MICROFLUIDIC DEVICE**
 Jonathan C. Briones¹, Wilfred V. Espulgar², JeongHoon Park¹, Eri Itotagawa¹, Shohei Koyama¹, Eiichi Tamiya¹, Hyota Takamatsu¹, and Masato Saito¹
¹Osaka University, JAPAN and ²De La Salle University, PHILIPPINES
- W040.a FETAL NUCLEATED RED BLOOD CELLS (FNRBCS) ISOLATION BASE ON SACA CHIP AND AUTOMATIC FLUORESCENCE IMAGE SYSTEM**
 Hsinyu Yang^{1,2}, Chunhao Lai¹, and Fangang Tseng^{1,2}
¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN
- W041.a IMPEDANCE FLOW CYTOMETRY CONFIGURED FOR SINGLE-CELL ELECTRICAL-MECHANICAL INTRINSIC CHARACTERIZATION**
 Junwen Zhu¹, Yongxiang Feng¹, Huichao Chai¹, Weihua He¹, Liang Huang², and Wenhui Wang¹
¹Tsinghua University, CHINA and ²Hefei University of Technology, CHINA
- W042.a MAGNETIC ARTIFICIAL CILIA ACTUATION IN CELL CULTURE MEDIUM FOR STUDYING DYNAMIC MECHANOTRANSDUCTION**
 Roel Kooi, Tanveer Ul Islam, Oscar M.J.A. Stassen, Jan de Boer, and Jaap M.J. den Toonder
 Eindhoven University of Technology, NETHERLANDS
- W043.a NEUROMORPHIC-ENABLED IMAGING FLOW CYTOMETRY WITH MULTI-ANGLE SPATIAL-TEMPORAL ENHANCEMENT**
 Weihua He, Yongxiang Feng, Junwen Zhu, Fei Liang, and Wenhui Wang
 Tsinghua University, CHINA
- W044.a PARALLEL MONITORING OF SINGLE-CELL CULTURE IN OIL-SEALED HYDROGEL MICROWELL ARRAY FOR SINGLE-CELL ANALYSIS ON EXOSOMES**
 Chisaki Yamagata¹, Shun Itai¹, Yuta Kurashina², Makoto Asai¹, Ayuko Hoshino³, and Hiroaki Onoe¹
¹Keio University, JAPAN, ²Tokyo University of Agriculture and Technology, JAPAN, and ³University of Tokyo, JAPAN
- W045.a RISK IN LONG-TERM OPTICAL MONITORING OF CELL CULTURE: INVESTIGATION OF VISIBLE LIGHT INDUCED DEFECT ON YEAST CELL CYCLE**
 Yingying Wang¹, Yulu Geng¹, Jiaming Fu², Qing-an Huang¹, Zhenxiang Yi¹, and Zhen Zhu¹
¹Southeast University, CHINA and ²Nanjing Forestry University, CHINA

W046.a ULTRA-SENSITIVE FLUORESCENCE-ACTIVATED DROPLET SORTING ENABLED BY TETRAMER HYBRIDIZATION CHAIN REACTIONLong Chen^{1,2}, Yifan Liu¹, and Xiangqiang Mi²¹ShanghaiTech University, CHINA and ²Chinese Academy of Sciences, CHINA**Synthetic Biology****M048.a SILICA NANOPARTICLE-ASSEMBLED MICROWELL ARRAY CHIP FOR HIGH-CAPACITY OLIGONUCLEOTIDE SYNTHESIS**

Duo Fu, Xiao Su, Dachao Li, and Xiaoping Li

Tianjin University, CHINA

T047.a DROPLET-DIGITAL MULTIPLEXED SORTER MICROFLUIDICS FOR STRAIN DEVELOPMENTChiara Leal Alves¹, Sebastien Dumont², Fatemeh Ahmadi¹, Ziuwin Leung¹, Zhiyang Deng¹, Michelle Oeser², and Steve C. C. Shih¹¹Concordia University, CANADA and ²Lallemand, CANADA**W047.a INTERFACING ELECTROCHEMICAL MEASUREMENTS WITH MICROFLUIDICS FOR METABOLIC ENGINEERING**

Nicholas F.O. Crudele, Laszlo Kekedy-Nagy, Chiara Leal Alves, James M. Perry, and Steve C.C. Shih

Concordia University, CANADA

Other Applications in Biology**M049.a DETECTION OF A SINGLE AMYLOID NUCLEATION EVENT IN MICROMETER-SIZED PROTEIN DROPLETS FORMED BY LIQUID-LIQUID PHASE SEPARATION**Mao Fukuyama¹, Taiki Ozawa¹, Suguru Nishinami², Yoko Maruyama¹, Shunsuke Tomita³, Yumiko Ohhashi⁴, Motohiro Kasuya⁵, Masao Gen¹, Eri Chatani⁶, Kentaro Shiraki², and Akihide Hibara⁴¹Tohoku University, JAPAN, ²University of Tsukuba, JAPAN, ³National Institute of Advanced Industrial Science and Technology (AIST), JAPAN,⁴Tokyo Institute of Technology, JAPAN, ⁵Komatsu University, JAPAN, and⁶Kobe University, JAPAN**M050.a LARGE-SCALE MICROFLUIDIC ELECTROPORATION FOR THE TRANSFORMATION OF PREVIOUSLY GENETICALLY INTRACTABLE BACTERIA**Po-Hsun Huang¹, Yiyin E. Chen¹, Cheng Li¹, Mary Anderson¹, Kerwyn C. Huang², and Cullen R. Buie¹¹Massachusetts Institute of Technology, USA and²Stanford University, USA**M051.a QUANTITATIVE PHASE DEFORMABILITY CYTOMETRY FOR NONINVASIVE HIGH-THROUGHPUT CHARACTERIZATION OF CELLS**Qinru Xiao¹, Yanping He¹, Md Habibur Rahman¹, Guangyao Cheng¹, Renjie Zhou¹, and Yi-Ping Ho^{1,2}¹Chinese University of Hong Kong, HONG KONG and²City University of Hong Kong, HONG KONG

- T048.a AU NANOROD MIXED PDMS MICROTIP DEVICE FOR HIGHLY EFFICIENT INTRACELLULAR DELIVERY ACTIVATED BY INFRARED LIGHT PULSES**
Hima Manoj¹, Kavitha Illath¹, Uvanesh Kasiviswanathan³, Srabani Kar², and Tuhin S. Santra¹
¹Indian Institute of Technology, Madras, INDIA, ²Indian Institute of Science Education and Research Tirupati, INDIA, and ³Motilal Nehru National Institute of Technology, Allahabad, INDIA
- T049.a DEVELOPMENT NOVEL MICROFLUIDIC DEVICES FOR PASSIVE SEMEN SEPARATION**
Ilona Grabowska-Jadach, Kamil Żukowski, Sandra Skorupska, Natalia Glapa, Waldemar Kuczyński, Michał Chudy, and Artur Dybko
Warsaw University of Technology, POLAND
- T050.a MICROBIAL ECOSYSTEM ANALYSIS OF BIOCHAR-ENRICHED SOIL IN KENYA USING MICROFLUIDIC SOIL MODELS**
Erik Karlsson, Edith C. Hammer, Pelle Ohlsson, and Hanbang Zou
Lund University, SWEDEN
- T051.a REAL-TIME MONITORING OF THE ACTIVATION OF CELLULAR STRESS RESPONSE IN A RECOMBINANT ECOLI REPORTER STRAIN ON A DIELECTROPHORESIS CHIP**
Lourdes Albina Nirupa Julius, Dora Akgül, Fabian Falk, Vlad Badilita, and Jan G. Korvink
Karlsruhe Institute of Technology, GERMANY
- W048.a COMBINED EFFECT OF CONFINEMENT AND SHEAR ALTERS TRYPSIN-MEDIATED DEADHESION OF CELLS IN A MICROFLUIDIC GRADIENT GENERATOR**
Senjuti Chakraborty, Shamik Sen, and Debjani Paul
Indian Institute of Technology, Bombay, INDIA
- W049.a INTEGRATION OF FIBER OPTICAL SENSORS INTO MICROSYSTEMS FOR THE DETECTION OF SPECIFIC BIOFILM PATTERNS**
Nicolas Debener^{1,2}, Nils Heine^{1,3}, Katharina Frings^{1,2}, Maria L. Torres-Mapa^{1,2}, Alexander Heisterkamp^{1,2}, Meike Stiesch^{1,3}, Katharina Doll-Nikutta^{1,3}, Thomas Scheper^{1,2}, and Janina Bahnemann^{1,4}
¹Leibniz University, GERMANY, ²Leibniz University Hannover, GERMANY, ³Hannover Medical School, GERMANY, and ⁴University of Augsburg, GERMANY
- W050.a MODULATION OF IMMUNE RESPONSE USING MAGNETICALLY-ACTUATED DYNAMIC SURFACES - ADVANCING BIOMATERIALS FOR THE NEXT-GENERATION SMART IMPLANTS**
Lanhui Li and Burcu Gumuscu
Eindhoven University of Technology, NETHERLANDS
- W051.a STUDY OF PLASMA MEMBRANE AND NUCLEAR ENVELOPE WOUND REPAIR DYNAMICS USING A NANOSTRUCTURED MICROFLUIDICS PLATFORM**
Apresio K. Fajrial and Xiaoyun Ding
University of Colorado, Boulder, USA

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

- M052.b 3D-OXYGEN GRADIENT CHIP FOR CANCER CELL MIGRATION RESEARCH**
Pan Zuo, Jelle Sleeboom, and Jaap den Toonder
Eindhoven University of Technology, NETHERLANDS
- M053.b ENHANCING INFILTRATION OF CAR-T CELLS INTO SOLID TUMOR MICROENVIRONMENT THROUGH 3D ADAPTATION**
Seung Won Oh¹, Junho Lee¹, Sangjoon Lah¹, Jae-Ho Cheong², Chan Hyuk Kim¹, and Pilnam Kim¹
¹*Korea Advanced Institute of Science and Technology (KAIST), KOREA* and ²*Yonsei University, KOREA*
- M054.b RAPID ISOLATION OF CIRCULATING TUMOR CELLS AND FULL COLLECTION OF THEIR EXOSOMES USING A THREE-DIMENSIONAL MICROBEAD ARRAY DESIGN**
Sungchi Tsai¹, Wen-Yi Chang¹, Yun-Chi Tsai¹, Pyea-Yoo Kim¹, and Howard Doong^{1,2}
¹*LifeCode Biotech, TAIWAN* and ²*Fu-Jen Catholic University, TAIWAN*
- T052.b A 3D MANUFACTURING OF PEUMATIC MICROPUMP TO CAPTURE CIRCULATING TUMOR CELLS AND AUTOMATED STAINING WITH FLUORESCENT DYE**
Sungchi Tsai¹ and Howard Doong^{1,2}
¹*LifeCode Biotech, TAIWAN* and ²*Fu-Jen Catholic University, TAIWAN*
- T053.b ENRICHMENT OF CHEMO-RESISTANT LIVE FLOATING PANCREATIC CANCER CELLS FROM MEDIA OF TUMOR MODEL BASED ON CELL MEMBRANE BIOPHYSICAL METRICS**
Aditya Rane¹, Javad Jarmoshti¹, Abdullah-Bin Siddique¹, Sara Adair¹, Karina Torres-Castro², Todd W. Bauer¹, Carlos Honrado³, and Nathan S. Swami¹
¹*University of Virginia, USA*, ²*National Institute of Standards & Technology (NIST), USA*, and ³*Iberian International Nanotechnology Institute, PORTUGAL*
- T054.b THE BIOMECHANICS OF DIFFERENT BREAST CANCER CELL SUBTYPES DIFFERS IN RESPONSE TO FAST INDUCED DEFORMATION AND RECOVERY**
Emile Gasser^{1,2}, Kyohei Terao³, Emilie Su², Nassiba Abbade^{1,2}, Kotryna Vaidziulyte¹, Jean-Baptiste Manneville², Matthieu Piel¹, Jean-Louis Viovy¹, Jean-Yves Pierga¹, and Catherine Villard²
¹*Institut Curie, FRANCE*, ²*Université Paris Cité, FRANCE*, and ³*Kagawa University, JAPAN*
- W052.b CANCER RESEARCH, CAPTURE & ANALYSIS OF CIRCULATING TUMOR CELLS**
Lu-Wei Chang¹, Xin-Zhi Lee¹, Huan-Wei Liao¹, Hsin-Yu Yang^{1,2}, and Fan-Gang Tseng^{1,2}
¹*National Tsing Hua University, TAIWAN* and ²*Academia Sinica, TAIWAN*

W053.b MICROGAP CHANNEL SYSTEM FORMED ON NANOIMPRINTED MICROCONE ARRAY FOR IMMUNOAFFINITY-BASED SELECTION OF RARE CELLS

Yuhei Saito¹, Natsumi Shimmyo¹, Rie Utoh¹, Shuhei Aoyama², Minoru Seki¹, and Masumi Yamada¹

¹Chiba University, JAPAN and ²Denka Co. Ltd., JAPAN

Civilization Diseases (diabetes, allergies)

M055.b MICROFLUIDIC IMMUNOSENSING PLATFORM BASED ON ROLLING CIRCLE AMPLIFICATION-ASSISTED DNA DENDRIMER PROBE FOR PORTABLE AND SENSITIVE DETECTION OF ALLERGEN-SPECIFIC IGE

Yiyu Chen¹, Huiting Lian¹, Bin Liu¹, Guangming Liu², and Xiaofeng Wei¹

¹Huaqiao University, CHINA and ²Jimei University, CHINA

T055.b NEW TWO FLOW CHEMILUMINESCENCE-BASED RAPID DIAGNOSTIC TEST (RDT) PLATFORM FOR RAPID DIAGNOSTICS OF CARDIAC BIOMARKERS

Heeyeong Jang, Supreeth Setty, and Chong Ahn

University of Cincinnati, USA

W054.b GELMA HYDROGEL IMMUNOWALL DEVICE FOR IL-6 QUANTITATION IN HUMAN SERUM

Yuto Banno, Takuma Nomiyama, Shoma Okuno, and Noritada Kaji

Kyushu University, JAPAN

Clinical Chemistry

W055.b TARGET-RESPONSIVE CATALYZED HAIRPIN ASSEMBLY-INTEGRATED PHOTOTHERMAL APTASENSOR FOR SENSITIVE AND VISUAL QUANTIFICATION OF CARCINOEMBRYONIC ANTIGEN USING A DISTANCE-BASED MICROFLUIDIC CHIP

Xiaofeng Wei, Zhiming Wang, Huiting Lian, and Bin Liu

Huaqiao University, CHINA

Drug Delivery

M056.b A MICROFLUIDICS-BASED METHOD FOR BRAIN TUMOR-TARGETING NANOMEDICINE PREPARATION

Ji Wang and Shuhuai Yao

Hong Kong University of Science and Technology, HONG KONG

M057.b DELIVERY OF LARGE CARGO IN MAMMALIAN CELLS ENHANCED BY INFRARED LIGHT PULSE-ACTIVATED MICRO-RING DEVICE

Ashwini S. Shinde¹, Pallavi S. Shinde¹, Kavitha Illath¹, Moeto Nagai², Srabani Kar³, and Tuhin S. Santra¹

¹Indian Institute of Technology, Madras, INDIA, ²Toyohashi University of Technology, JAPAN, and ³Indian Institute of Science Education and Research, INDIA

M058.b NANOSTRUCTURED MICROFLUIDICS FOR HIGH-THROUGHPUT NUCLEAR DELIVERY OF PLASMID DNA AND RAPID PROTEIN EXPRESSION

Aprasio K. Fajrial, Leyla Akh, and Xiaoyun Ding

University of Colorado, Boulder, USA

- T056.b ALGINATE HYDROGEL BEADS WITH TUNABLE CROSS-LINKING RATIO ENABLE PRECISELY CONTROLLED RELEASE OF ADENO-ASSOCIATED VIRUS FOR GENE THERAPY**
Aiki Hioki¹, Shuhei Takatsuka¹, Yuta Kurashina², and Hiroaki Onoe¹
¹Keio University, JAPAN and ²Tokyo University of Agriculture and Technology, JAPAN
- T057.b DEVELOPMENT OF ARTIFICIAL EXOSOMES USING A MICROFLUIDIC DEVICE FOR RNA DELIVERY**
Masatoshi Maeki^{1,2}, Ayuka Niwa¹, Shota Oyama¹, Akihiko Ishida¹, and Manabu Tokeshi¹
¹Hokkaido University, JAPAN and ²KEK, JAPAN
- W056.b BIORESIST-BASED SINGLE-CELL ARRAY CHIP FOR STANDARDIZED OPTOPERATION**
Aniket Mishra¹, Shunya Okamoto¹, Takayuki Shibata¹, Tuhin S. Santra², and Moeto Nagai¹
¹Toyohashi University of Technology, JAPAN and ²Indian Institute of Technology, Madras, INDIA
- W057.b INVESTIGATING NOVEL DRUG DELIVERY MECHANISMS WITH A MICROFLUIDIC CULTURE MODEL OF THE BIOPHYSICAL BARRERS TO DRUG DELIVERY IN PANCREATIC DUCTAL ADENOCARCINOMA**
Delanyo Kpeglo¹, Margaret A. Knowles¹, Malcolm Haddrick², Stephen D. Evans¹, and Sally A. Peyman¹
¹University of Leeds, UK and ²Medicines Discovery Catapult, UK

Drug Screening & Development

- M059.b ESTABLISHMENT OF MICROFLUIDIC STAPHYLOCOCCUS AUREUS BIOFILM ON THIOL-ENE POLYMERS FOR ANTIMICROBIAL EFFICACY SCREENING**
Jéssica Amorim, Cristina D. Cruz, Markus Haapala, Päivi Tammela, and Tiina M. Sikanen
University of Helsinki, FINLAND
- M060.b LOW ASPECT RATIO LAMINATION MIXER (LARLM) ENABLED BY TWO-PHOTON POLYMERIZATION FOR LIPID NANOPARTICLE SYNTHESIS WITH IN-SITU SIZE DETERMINATION**
Ebrahim Taedinejad
Technische Universität Braunschweig, GERMANY
- M061.b SIMPLE DROPLET MICROFLUIDICS PLATFORM FOR DRUG SCREENING ON CANCER SPHEROIDS**
Caroline Parent¹, Kiran Raj Melayil¹, Ya Zhou¹, Vivian Aubert¹, Didier Surdez², Olivier Delattre¹, Claire Wilhelm¹, and Jean-Louis Viovy¹
¹Institut Curie, FRANCE and ²Univerity of Zurich, SWEDEN
- T058.b DIGITAL TWIN OF MINIATURIZED SYSTEM FOR HOLLOW-FIBER INFECTION MODEL TO ACCELERATE ANTIMICROBIAL RESISTANCE EVALUATION**
Kazuhiro Noda¹, Toshihiro Kasama¹, Marie Shinohara¹, Masakaze Hamada², Kotaro Aoki², Yukiko T. Matsunaga¹, Madoka Takai¹, Yoshikazu Ishii², and Ryo Miyake¹
¹University of Tokyo, JAPAN and ²Toho University, JAPAN

- T059.b HIGH-THROUGHPUT DROPLET PLATFORM TO PRODUCE BARCODED APC LIBRARY FOR T CELL ANTIGEN SCREENING**
Xu Cui
University of Singapore, SINGAPORE
- T060.b MICROCHAMBER DEVICE FOR SIMULTANEOUS ASSESSMENTS OF LOCAL BARRIER FUNCTION AND MORPHOLOGY OF EPITHELIAL CELL SHEET**
Ryuya Kida, Mamiko Tsugane, and Hiroaki Suzuki
Chuo University, JAPAN
- W058.b EFFICIENT FULL-LENGTH IGG SECRETION AND SORTING FROM SINGLE YEAST CLONES IN DROPLET PICOREACTORS**
Esteban Lebrun^{1,2}, Vasily A. Shenshin¹, Cécile Plaire¹, Vincent Vignerès³, Théo Pizette¹, Bruno Dumas¹, Jean-Marc Nicaud², and Guillaume Mottet¹
¹Sanofi, FRANCE, ²INRAE, FRANCE, and ³Arcade, FRANCE
- W059.b LABEL-FREE LONG-TERM VISUALIZATION OF ADHERENT CELL MULTIPOLAR DIVISION UNDER THIAMET-G TREATMENT**
Fei Liang¹, Peng Zhao¹, Yongxiang Feng¹, Huichao Chai¹, Weihua He¹, Jing Li², and Wenhui Wang¹
¹Tsinghua University, CHINA and ²Capital Normal University, CHINA
- W060.b REPRODUCTION OF INCREASED MUSCLE CONTRACTION FORCE BY FLAVONOIDS USING A MODEL DEVICE WITH ARTIFICIAL SKELETAL MUSCLE**
Kota Kishishita, Tomohiro Nakamura, Marino Mizutani, and Sho Yokoyama
Osaka Institute of Technology, JAPAN

Liquid Biopsy and Sample Preparation

- M062.b DEPLETION OF TUMOUR CELLS FROM ~40 ML SALVAGED BLOOD AT ~5 ML/MIN LEVERAGING MODIFIED PERFECT FILTERS COMBINED WITH LEUKOCYTE-DEPLETED FILTER**
Yi Zhang¹, Xiaoqing Zhang², Qingmei Xu¹, Songtao Dou¹, Xiangyang Guo², and Wei Wang^{1,3,4}
¹Peking University, CHINA, ²Peking University Third Hospital, CHINA, ³National Key Laboratory of Advanced Micro and Nano Manufacture Technology, CHINA, and ⁴Beijing Advanced Innovation Center for Integrated Circuits, CHINA
- M063.b ROBOTIC CENTRIFUGAL MICROFLUIDICS: A NOVEL AUTOMATION PLATFORM FOR LARGE SAMPLE VOLUME APPLICATIONS DEMONSTRATED BY CELL-FREE DNA ISOLATION**
Tu T. Truong¹, Yumi Kaku¹, Sara ElGenk¹, Moritz Bösenberg¹, Holger Sültmann², Timo Gemoll³, Nikolas C. C. von Bubnoff³, Sabrina Kartmann^{1,4}, Jan Lüddecke^{1,4}, Tobias Hutzenlaub^{1,4}, Nils Paust^{1,4}, Peter Juelg^{1,4}, Lea Kubetzko³, Stefanie Derer³, Martina Oberländer³, Alexander Katalinic³, Ruth Deck³, Christian Sina³, and Hauke Busch³
¹Hahn-Schickard, GERMANY, ²German Cancer Research Center (DKFZ), GERMANY, ³University of Lübeck (UKSH), GERMANY, and ⁴University of Freiburg (IMTEK), GERMANY

- T061.b A MODULAR FINGER-ACTUATED FRUGAL APPROACH FOR POINT-OF-CARE BLOOD SAMPLE PREPARATION**
Maiwenn Kersaudy Kerhoas
Heriot Watt University, UK
- T062.b HIGHLY MULTIPLEXED ANTIBIOTIC SUSCEPTIBILITY ASSAY EMPLOYING COMBINATORIAL PICOLITRE DROPLET GENERATION**
Ashkan Samimi^{1,2}, Sundar Hengoju¹, and Miriam A. Rosenbaum^{1,2}
¹*Hans Knöll Institute, GERMANY and*
²*Friedrich Schiller University, GERMANY*
- T063.b STANDALONE ELECTROKINETIC PRECONCENTRATOR FOR ENHANCED DETECTION SENSITIVITY OF COMMERCIALY AVAILABLE RAPID ASSAYS**
Barak Sabbagh^{1,2}, Sinwook Park², and Gilad Yossifon²
¹*Technion - Israel Institute of Technology, ISRAEL and*
²*Tel Aviv University, ISRAEL*
- W061.b ACOUSTOFLUIDIC IMMUNOFLUORESCENCE ENHANCEMENT FOR TEAR-BASED DIABETIC RETINOPATHY DIAGNOSIS**
Hsuan-An Chen¹, Yan-Chin Yen¹, Sheng-Min Hsu², and Han-Sheng Chuang^{1,3}
¹*National Cheng Kung University, TAIWAN, ²National Cheng Kung University Hospital, TAIWAN, and ³Medical Device Innovation Center, TAIWAN*
- W062.b ON-CHIP COLORIMETRIC ASSAY FOR POINT-OF-CARE LITHIUM BLOOD LEVEL DETERMINATION USING FINGER-PRICK-BLOOD**
Carl Olsson¹, Federico Ribet¹, Janosch Hauser¹, Olof Beck², Fredrik Wikström², Martin Schalling², Lena Backlund², and Niclas Roxhed¹
¹*KTH Royal institute of Technology, SWEDEN and*
²*Karolinska Institutet, SWEDEN*

Neurobiology/Neuroscience

- W063.b SCREENING OF RNA OLIGONUCLEOTIDE BEACON (MIRNA) FOR NEURODEGENERATIVE BIOMARKERS DETECTION IN MICROFLUIDIC SYSTEMS**
Weronika Z. Świtlik, Julia Anchimowicz, Magdalena Stobiecka, and Slawomir Jakiela
Warsaw University of Life Sciences, POLAND

Nucleic-Acid Analysis

- M064.b A CENTRIFUGAL MICROFLUIDIC DEVICE CAPABLE OF SEQUENTIAL DISPENSING OF MULTIPLE SAMPLES FOR THE DETECTION OF MULTIPLE FOOD ALLERGENS**
Daigo Natsuhara¹, Yuka Kiba², Shunya Okamoto¹, Moeto Nagai¹, Masashi Kitamura², and Takayuki Shibata¹
¹*Toyohashi University of Technology, JAPAN and ²Josai University, JAPAN*
- M065.b A PROGRAMMABLE DNA-BASED NANOSENSOR FOR SEQUENCE-BASED DETECTION AT SINGLE NUCLEOTIDE RESOLUTION**
Eun Yeong Lee and Yong Shin
Yonsei University, KOREA

- M067.b DE NOVO ASSEMBLY OF YEAST GENOMES USING OPTICAL GENOME MAPPING**
Luis M. Leal Garza¹, Albertas Dvirnas², Gaurav Goyal¹, Ikenna Obi³, Nasim Sabouri³, Tobias Ambjörnsson², and Fredrik Westerlund¹
¹Chalmers University of Technology, SWEDEN, ²Lund University, SWEDEN, and ³Umeå University, SWEDEN
- M068.b LAB-ON-FOIL MICROFLUIDIC CHIP FOR POC DIAGNOSTICS OF GENETIC DISORDER FABRICATED BY R2R UV NIL**
Anja Haase
Joanneum Research Forschungsgesellschaft mbH, AUSTRIA
- M070.b SYNCHRONIZED PHYSICO-CHEMICAL OPTIMIZATION ENABLES RAPID MICROFLUIDIC CONVECTIVE PCR**
MinGin Kim, Vijay Ravisankar, Yassin A. Hassan, and Victor M. Ugaz
Texas A&M University, USA
- T064.b A CUSTOMIZED HEATER PATTERNING PLATFORM BASED ON CARBON BLACK-PDMS AND NICHROME WIRE**
Juhee Lim and Joong Ho Shin
Pukyong National University, KOREA
- T065.b AMPLIFICATION OF SERS INTENSITY FOR DOUBLE-STRANDED DNA DETECTION USING DIFFUSE REFLECTION FACILITATED BY AG/ZNO NANOWIRE ARRAYS**
Yujin Jung, Jung Kim, Jong Hwan Lee, Sung Kyun Lee, Nam Hoon Kim, and Hong Gi Kim
Korea Research Institute of Chemical Technology, KOREA
- T066.b AN INTEGRATED PLATFORM FOR EXTRACTION AND DETECTION OF CHLAMYDIA TRACHOMATIS DNA IN RESOURCE-LIMITED SETTINGS**
Anton Stolt, Pablo Rodriguez Mateos, Alexander Iles, and Nicole Pamme
Stockholm University, SWEDEN
- T067.b ELECTROSTATIC MICROFILTRATION PERFORMS BETTER THAN THE COMMERCIAL KIT IN THE CAPTURE AND DETECTION OF LOW-ABUNDANCE CELL-FREE DNA (CFDNA)**
Yaoping Liu¹, Matilda Yu Yan Ong², Melody Xing Yen Song², Joshua Raymond¹, Chia-Ching Chan¹, and Jongyoon Han^{1,3}
¹Singapore - MIT Alliance for Research and Technology (SMART), SINGAPORE, ²Ngee Ann Polytechnic, SINGAPORE, and ³Massachusetts Institute of Technology (MIT), USA
- T068.b MICROFLUIDIC PLATFORM FOR DNA SEQUENCE PROFILING TOWARDS EARLY DETECTION OF CANCER**
Christine O'Keefe, Yang Zhao, Thomas R. Pisanic, Weiwen Cui, Tian-Li Wang, Ie-Ming Shih, and Tza-Huei Wang
Johns Hopkins University, USA
- T069.b SIMPLE MOLECULAR DIAGNOSTIC TECHNIQUES FROM SAMPLE PREPARATION USING AMINE-FUNCTIONALIZED DIATOMACEOUS EARTH (AMINE-DE) TO ACCURATE MUTATION DETECTION BY HOT-SPOT-SPECIFIC PROBE (HSSP)**
Hyo Joo Lee, Bonhan Koo, Yoon Ok Jang, Huifang Liu, and Yong Shin
Yonsei University, KOREA

- T070.b ZNO-AU-SERS DIRECT NUCLEIC ACID AMPLIFICATION SYSTEM FOR RAPID AND SENSITIVE MOLECULAR DIAGNOSTICS**
 Myoung Gyu Kim¹, Kwan Hee Lee², Mi Yeon Jue², Jun Ki Kim², and Yong Shin¹
¹University of Yonsei, KOREA and ²University of Ulsan College of Medicine, KOREA
- W064.b A DIGITAL MICROFLUIDIC APPROACH TO ANALYZING FORENSIC SAMPLES**
 Mohamed Elsayed¹, Leticia Bodo¹, Jonathan Millman², and Aaron Wheeler¹
¹University of Toronto, CANADA and
²Centre of Forensic Sciences, CANADA
- W065.b AN EASY-TO-USE MULTIPLEX PCR CHIP BY USING WAX FILM FOR SEALING AND CONTROLLABLE RELEASE OF PRIMERS**
 Yuanyue Zhang, Nan Li, and Youchun Xu
 Tsinghua University, CHINA
- W066.b AUTOMATION OF DIGITAL DROPLET PCR USING CENTRIFUGAL MICROFLUIDICS FOR HIGHLY SENSITIVE DETECTION AND QUANTIFICATION OF SARS-COV-2 VIRAL RNA**
 Lidija Malic¹, Liviu Clime¹, Byeong-Ui Moon¹, Christina Nassif¹, Dillon Da Fonte¹, Matthias Geissler¹, Aaron Bessofo¹, Luke Lukic¹, Mojra Janta¹, Denis Charlebois², and Teodor Veres¹
¹National Research Council Canada, CANADA and
²Canadian Space Agency, CANADA
- W067.b FAST AND ROBUST DETECTION OF SCLEROTIUM ROLFSII VIA WORKFLOW INTEGRATION OF IFAST-BASED EXTRACTION AND LAMP**
 Phanupong Changtor^{1,2}, Pablo Rodriguez Mateos¹, Kittisak Buddhachat², Nonglak Yimtragool², Wandee Wattanachaiyingcharoen², Alexander Iles¹, and Nicole Pamme¹
¹Stockholm University, SWEDEN and ²Naresuan University, THAILAND
- W068.b MULTIPLEXED DETECTION OF MICRORNA BIOMARKERS VIA CRISPR-CAS-POWERED GRAPHICALLY-ENCODED HYDROGEL BIOSENSORS**
 Haoliang Lu, Erol Hasan, and Dana Alsulaiman
 King Abdullah University of Science and Technology, SAUDI ARABIA
- W069.b SPATIAL MULTIPLEXING AND QUANTITATIVE MIRNA DETECTION OF PLANT TISSUE USING NANOLITER WELL ARRAYS**
 Jennifer Fang and Patrick S. Doyle
 Massachusetts Institute of Technology, USA

Pathogen Detection & Antibiotics

- M071.b A MICROFLUIDIC COMBINATORY ANTIBIOTIC CONCENTRATION GRADIENT GENERATOR INTEGRATING SURFACE-ENHANCED RAMAN SPECTROSCOPY FOR MULTIPARALLEL ANTIMICROBIAL SUSCEPTIBILITY TESTING**
 Yu-Tung Yeh and Nien-Tsu Huang
 National Taiwan University, TAIWAN

M072.b COLLECTION OF STREPTOCOCCUS PYOGENES FROM PEDIATRIC PATIENTS WITH PHARYNGITIS USING THE CANDYCOLLECT DEVICE

Wan-chen Tu¹, Andrea Blom², Ingrid Jeacopello¹,
Victoria A. M. Shinkawa¹, Daniel B. Hatchett¹,
Juan C. Sanchez¹, Anika M. McManamen¹,
Xiaojing Su¹, Elena Alfaro², Alexandra Lindstrom²,
Bridget L. Johnson², Erwin Berthier¹,
Sanitta Thongpang^{1,3}, Ellen R. Wald²,
Gregory P. DeMuri², and Ashleigh B. Theberge¹

¹University of Washington, USA, ²University of Wisconsin, USA, and

³Mahidol University, THAILAND

M073.b IMPROVING ACCURACY OF DIGITAL MELT VIA OLIGONUCLEOTIDE-ENABLED CURVE ALIGNMENT

Amelia Traylor, Pei-Wei Lee, Kuangwen Hsieh, Weiwen Cui,
and Jeff Tza-Huei Wang

Johns Hopkins University, USA

M074.b LONG-TERM STORAGE OF READY-TO-USE REAGENTS FOR POINT-OF-CARE ISOTHERMAL NUCLEIC ACID TESTING IN RESOURCE-POOR SETTINGS

Giulia Core, Jonathan M. Cooper, and Julien Reboud

University of Glasgow, UK

M075.b OXYGEN CONSUMPTION MONITORING AS A METHOD TO EXPLORE HETERORESISTANCE IN MIXED BACTERIAL POPULATIONS EXPOSED TO ANTIBIOTIC TREATMENT

Petra Juskova¹, Steven Schmitt², Adrian Egli³, and Petra S. Dittrich¹

¹ETH Zürich, SWITZERLAND, ²Myria Biosciences AG, SWITZERLAND, and

³University of Zurich, SWITZERLAND

M076.b RAPID ANTIMICROBIAL SUSCEPTIBILITY TESTING IN SLIPCHIPS

Ka Hei Wat^{1,2}, Dhruv Mehra², Miao Xu², Ho Cheung Shum^{1,2},
and Sammer Ul Hassan^{1,2}

¹Advanced Biomedical Instrumentation Centre, HONG KONG and

²University of Hong Kong, HONG KONG

T071.b AN ENCAPSULATED SILVER/CHITOSAN HYDROGEL AS A LONG-ACTING DELIVERY VEHICLE FEATURING WITH ATTRACTED-KILLED INHIBITION MECHANISM IN RALSTONIA SOLANACEARUM

Yi-Hsin Chien, Bon-Yen Lin, and Han-Hsiang Shih

Feng Chia University, TAIWAN

T072.b DROPLET MICROFLUIDIC AND DEEP LEARNING POWERED APPROACH FOR LABEL-FREE ANTIMICROBIAL SUSCEPTIBILITY TESTING FOR COLISTIN IN CLINICAL ISOLATES

Justine Riti¹, Guillaume Sutra¹, Thierry Naas^{2,3,4}, Hervé Volland¹,
Stéphanie Simon¹, and Karla Perez-Toralla¹

¹CEA, FRANCE, ²APHP Hôpital Bicêtre, FRANCE, ³Université Paris-Saclay-INSERM-CEA, FRANCE, and ⁴Associated French National Reference Center for Antibiotic Resistance, FRANCE

- T073.b INTEGRATING A LOLLIPOP-INSPIRED MICROFLUIDIC ORAL SAMPLING DEVICE WITH RAPID GROUP A STREPTOCOCCUS TESTING**
 Juan C. Sanchez¹, Victoria A. M. Shinkawa¹, Ingrid Jeacopello¹, Xiaojing Su¹, Ellen R. Wald², Gregory P. DeMuri², Erwin Berthier¹, Sanitta Thongpang^{1,3}, and Ashleigh B. Theberge¹
¹University of Washington, USA, ²University of Wisconsin, USA, and ³Mahidol University, THAILAND
- T074.b MICROFLUIDIC PLATFORM TO VISUALIZE AND QUANTIFY BACTERIAL RESPONSE TO DYNAMIC DRUG TREATMENTS**
 Friederike L. Born, Petra Jusková, and Petra S. Dittrich
 ETH Zürich, SWITZERLAND
- T075.b PORTABLE DEVICES FOR RNA PURIFICATION, AMPLIFICATION, AND DETECTION OF MAYARO VIRUS**
 Z. Hugh Fan, Morteza Alipanah, John A. Lednicky, and J. Glenn Morris
 University of Florida, USA
- T076.b RAPID DETECTION OF CARBAPENEM RESISTANT ENTEROBACTERIACEAE (CRE) ANTIBIOTIC RESISTANCE WITH STANDALONE POINT-OF-CARE (POC) SELF-COALESCING MICROFLUIDIC**
 Lily M. Kamat^{1,2,3}, Priscilla Delgado^{1,3}, Ali Haider⁴, Jesse Waggoner⁴, and David R. Myers^{1,2,3}
¹Emory University, USA, ²Georgia Tech, USA, ³Aflac Cancer and Blood Disorders Center of CHO, USA, and ⁴Emory University School of Medicine, USA
- W070.b A HEAT-ACTIVATED ANTIMICROBIAL MICROFILM FOR ELIMINATING PATHOGEN TRANSMISSION IN HIGH TOUCH SURFACES**
 Dimitris Barmpakos^{1,2,3}, Stavroula Kritikou⁴, Athanasios Tsakris⁴, Georgia Vrioni⁴, and Nikos Chronis^{1,2}
¹National Centre for Scientific Research "Demokritos", GREECE, ²National Technical University of Athens, GREECE, ³University of West Attica, GREECE, and ⁴National and Kapodistrian University of Athens, GREECE
- W071.b AN EXTRACORPOREAL PLATELET-POOR PLASMA (PPP) CLOT HEMOADSORPTION FOR IMPROVED TREATMENT OF BACTEREMIA**
 Bong Hwan Jang, Su Hyun Jung, Seyong Kwon, Sung Jin Park, and Joo H. Kang
 Ulsan National Institute of Science and Technology (UNIST), KOREA
- W072.b DUAL MODULE DROPLET-BASED SERS MICROFLUIDIC SENSING PLATFORM FOR HER-2 POSITIVE EXOSOME DETECTION**
 Kwun Hei Willis Ho, Huang Lai, RouLin Zhang, Ching Ying Lam, YuTian Gu, and Mo Yang
 Hong Kong Polytechnic University, HONG KONG
- W073.b LAB-IN-A-PACKAGE: DETECTING SALMONELLA IN WHOLE CHICKEN SAMPLES IN SITU**
 Akansha Prasad, Shadman Khan, Jonathan K. Monteiro, Jiuxing Li, Fatima Arshad, Liane Ladouceur, Lei Tian, Amid Shakeri, Carlos Filipe, Yingfu Li, and Tohid F. Didar
 McMaster University, CANADA

- W074.b MOVING RAPID ANTIBIOTIC SUSCEPTIBILITY TESTING TO THE CLINIC: THE ROLE OF MASS-MANUFACTURING MICROFLUIDICS IN GENERATING CLINICAL DATA**
Sarah Needs¹, Jessica Hayward¹, Stephen P. Kidd², and Alexander Edwards¹
¹University of Reading, UK and ²Hampshire Hospitals NHS Foundation Trust, UK
- W075.b POWER-FREE HIV RNA EXTRACTION FROM WHOLE BLOOD FOR REAL-TIME SMARTPHONE-BASED DETECTION**
Emeka Nwanochie¹, Hyunjin Lee¹, Dong Hong Lee¹, Eddy Odari², Steven Wereley¹, Tamara Kinzer-Ursem¹, and Jacqueline Linnés¹
¹Purdue University, USA and ²Jomo Kenyatta University of Science and Technology, KENYA
- W076.b RAPID DIAGNOSIS OF ANTIMICROBIAL RESISTANCE USING FLOURESCENT PROBE-BASED MOLECULAR IMAGING AND MICROFLUIDIC SYSTEM**
Brian Choi, Min Seok Lee, Hwi Hyun, Sungho Kim, Hajin Kim, Taejoon Kwon, and Joo H. Kang
Ulsan National Institute of Science and Technology (UNIST), KOREA

Personalized Medicine

- M077.b A THERMAL ACTIVATION METHOD TO IMPROVE SKIN PERMEABILITY FOR HIGHLY EFFICIENT EXTRACTION OF INTERSTITIAL FLUID**
Hao Zheng, Zhihua Pu, Wangwang Zhu, Yuxiao Ma, Chengcheng Li, Xingguo Zhang, and Dachao Li
Tianjin University, CHINA
- M078.b DEVELOPMENT OF A FRUGAL TUMOR ON-CHIP PLATFORM FOR SCREENING DRUG-NANOCARRIERS**
Dhruba Dhar, Soumen Das, and Jyotirmoy Chatterjee
Indian institute of Technology, Kharagpur, INDIA
- M079.b OVERCOMING CO-TRANSFECTION HURDLES FOR CELLULAR/GENE THERAPY: ON-CHIP SEQUENTIAL INTRACELLULAR DELIVERY OF GENETIC CODING MOLECULES VIA AN ACOUSTIC-ELECTRIC MICROFLUIDIC PLATFORM**
Aida Z. Travatfard, Mohammad Aghaamoo, and Abraham P. Lee
University of California, Irvine, USA
- M080.b SILVER ELECTROCEUTICAL TECHNOLOGY TO TREAT SARCOPENIA**
Min Young Kim¹, Hyun Young Shin², Sohae Yang¹, Aseer Intisar¹, and Minseok S. Kim^{1,2}
¹Daegu Gyeongbuk Institute of Science & Technology (DGIST), KOREA and ²CTCELLS, Inc, KOREA
- T077.b AN APTAMER-BASED MICRONEEDLE PATCH TO CONTINUOUSLY MONITOR BIOMARKERS OF CARDIOVASCULAR DISEASES**
Sung-Chi Chang, Chih-Hung Wang, and Gwo-Bin Lee
National Tsing Hua University, TAIWAN

- T078.b** **EXPLORING THE EFFECTS OF HIGH TEMPERATURE EXPOSURE ON RNA INTEGRITY FROM STABILIZED BLOOD SAMPLES IN REMOTE RESEARCH STUDIES**
 Filip Stefanovic, Lauren G. Brown, Yuting Zeng, Serena Nguyen, Victoria Shinakawa, Erwin Berthier, Amanda J. Haack, and Ashleigh B. Theberge
University of Washington, USA
- T079.b** **RAPID IDENTIFICATION OF THERAPEUTIC BACTERIOPHAGES FOR PERSONALIZED PHAGE THERAPY USING HIGH THROUGHPUT ALL-INCLUSIVE TABLETS**
 Freshteh Bayat Bayat, Arwa Hilal, Mathura Thirugnanasampanthar, Carlos Filipe, Tohid F. Didar, and Zeinab Hosseinidoust
McMaster University, CANADA
- T080.b** **THERANOSTICS MOLECULAR ROBOT: DETECT A MIRNA FROM TUMOR CELLS AND GENERATE THE DNA DRUG IN A LIPOSOME**
 Harune Suzuki¹, Ken Komiyama², and Ryuji Kawano¹
¹*Tokyo University of Agriculture and Technology, JAPAN* and
²*Japan Agency for Marine-Earth Science and Technology, JAPAN*
- W077.b** **CELL PROCESSING FOR AUTOLOGOUS CELL THERAPY: HIGH-EFFICIENCY MICROFLUIDIC CELL SEPERATION AND WASHING DEVICES**
 An Eng Lim, Shan Mei Tan, and Shireen Goh
*Agency for Science, Technology and Research (A*STAR), SINGAPORE*
- W078.b** **METAL-POLYMER SERIES CONNECTION HYBRID STENT INTEGRATED WITH PI BASED WIRELESS PRESSURE SENSOR**
 Lei Wang, Dong-Su Kim, Nomin-Erdene Oyunbaatar, and Dong-Weon Lee
Chonnam University, KOREA
- W079.b** **RAPID IMMUNE RESPONSE ASSESSMENT FOR POST-INFUSION CAR-T PATIENTS THROUGH BIOPHYSICAL WBC ANALYSIS**
 Kwan Zen Nicholas Tan¹, Zeming Kerwin Kewk¹, Kai Yun Quek¹, Chin Ren Goh¹, Zhi Heng Nicholas Ng¹, Wei Inng Francesca Lorraine Lim², Yun Xin Chen², Michael E. Birnbaum³, and Jongyoon Han³
¹*Singapore - MIT Alliance for Research and Technology (SMART), SINGAPORE*, ²*Singapore General Hospital, SINGAPORE*, and
³*Massachusetts Institute of Technology, USA*
- W080.b** **WORKFLOW INTEGRATION FOR ELECTROCHEMICAL-BASED HOME-TESTING**
 Fabien Abeille¹, Bianka Fabinyi¹, Jelle Bannink¹, Thérèse Gorisse¹, Daniel-Stefan Cristea², Marko Blom¹, and Winnie E. Svendsen²
¹*Micronit BV, NETHERLANDS* and ²*Technical University of Denmark, DENMARK*

Protein Analysis & Proteomics

- M081.b** **DIGITAL MAGNETIC PROXIMITY EXTENSION RPA-CRISPR/CAS12A-ASSISTED IMMUNOASSAY WITH ATTOMOLAR SENSITIVITY**
 Fangchi Shao, Jiumei Hu, Kuangwen Hsieh, Pengfei Zhang, Pataraiarin Akarapipad, Joon Soo Park, and Tza-Huei Wang
Johns Hopkins University, USA

- M082.b INTEGRATED STRATEGY FOR STREAMLINED SINGLE-CELL FUNCTIONAL PROTEOMICS AND SENSITIVE DOPAMINE DETECTION**
Hsiung-Lin Tu¹, Sofani Gebreyesus¹, Gul Muneer¹, Ying Li¹, Asad Ali¹, Chih-Min Wang², and Yu-Ju Chen¹
¹*Academia Sinica, TAIWAN and* ²*National Taiwan Ocean University, TAIWAN*
- T081.b DISPOSABLE, FLEXIBLE MICROFLUIDIC SYSTEM FOR RAPID, PRE-ANALYTICAL SEPARATION OF IGG ANTIBODIES FROM SERUM SAMPLES**
Marcin Drozd, Katarzyna Tokarska, Zuzanna Tylenda, Sylwia Karoń, Kamil Żukowski, Mariusz Pietrzak, Elżbieta Malinowska, and Zbigniew Brzózka
Warsaw University of Technology, POLAND
- T082.b MAMMOTHFLUIDICS¹: AMINO ACID DATING OF FOSSILISED TEETH**
Laila Patinglag¹, Marc R. Dickinson², Kirsty EH. Penkman², and Kirsty J. Shaw¹
¹*Manchester Metropolitan University, UK and* ²*University of York, UK*
- W081.b ELECTROKINETIC TRAPPING AND QUANTIFICATION OF HISTONES FROM PLASMA IN A MICROFLUIDIC DEVICE USING DEHYDRATED ISOELECTRIC GATES**
Shadi Shahriari, Patricia P. Liaw, Alison E. Fox-Robichaud, and Ponnambalam Ravi Selvaganapathy
McMaster University, CANADA

Testing for COVID-19, Rapid Virus Testing, Pandemic Management

- M083.b APPLICATION OF ONE-POT DUAL-CLAMPED SERS-BASED DIAGNOSTIC PLATFORM IN THE DETECTION OF SARS-COV-2 FROM CLINICAL SAMPLES: COMPARISON WITH COMMERCIAL RAPID ANTIGEN TEST KITS**
Kiran Kaladharan¹ and Fan-Gang Tseng^{1,2}
¹*National Tsing Hua University, TAIWAN and* ²*Academia Sinica, TAIWAN*
- M084.b HPV 16 DNA AMPLIFICATION AND DETECTION FROM CELL LYSATES, ON A PAPER SUBSTRATE, WITH A LATERAL FLOW READOUT**
Luke Brennan, Francesca Hamacher, Ana Claire, Jacqueline Linnes, and Natalia Rodriguez
Purdue University, USA
- M085.b INTEGRATED MICROFLUIDIC PLATFORM AND BIO-OPTICAL SENSOR SYSTEM: A RAPID AND SENSITIVE SAMPLE-TO-ANSWER DIAGNOSTIC APPROACH FOR EMERGING INFECTIOUS DISEASES**
Bonhan Koo, Myoung Gyu Kim, and Yong Shin
Yonsei University, KOREA
- M086.b ON-CHIP RPA AND CAS12A ASSAY USING AUNIS-BASED PLASMONIC PCR SYSTEM FOR REAL-TIME SARS-COV-2 DETECTION**
Eun-Sil Yu, Hyejeong Jeong, Jaehyeok Park, Jaemyeong Kwon, and Ki-hun Jeong
Korea Advanced Institute of Science and Technology (KAIST), KOREA

- M087.b RNASTICK: HASSLE-FREE DIPSTICK BASED RNA ISOLATION FROM WASTEWATER**
Shruti Ahuja, Maria D'costa, Avani Kulkarni, Kiran Kondabagil, and Siddharth Tallur
Indian Institute of Technology, Bombay, INDIA
- T083.b CENTRIFUGAL FORCE-ASSISTED THERMAL CONVECTION PCR DEVICE FOR RAPID DETECTION OF VIRAL RNA IN SALIVA: A PROMISING POINT-OF-CARE TESTING APPROACH**
Masato Saito¹, Jonathan Briones¹, Ryota Kokutani², Yasutaka Minegishi², Shigeto Hamaguchi¹, and Satoshi Kutsuna¹
¹*Osaka University, JAPAN* and ²*NIPPON GENE Co., LTD., JAPAN*
- T084.b IMMUNOCHROMATOGRAPHIC HCG TEST STRIPS USING GOLD NANOTRIANGLES**
Asahi Kimura, Mao Hamamoto, and Hiromasa Yagyu
Kanto Gakuin University, JAPAN
- T085.b LAB-ON-A-FOIL MICROFLUIDIC SYSTEM FOR SARS-COV-2 DIAGNOSTICS**
Kamil Żukowski¹, Katarzyna Tokarska¹, Marcin Drozd¹, Mariusz Pietrzak¹, Adam Nowiński², Elżbieta Malinowska¹, and Zbigniew Brzózka¹
¹*Warsaw University of Technology, POLAND* and ²*Screenmed, POLAND*
- T086.b POINT-OF-CARE PATHOGEN TESTING PLATFORM WITH INTEGRATED SAMPLE AMPLIFICATION CONTROL**
Navaporn Sritong, Riley J. Brown, Karin F. K. Ejendal, and Jacqueline C. Linnes
Purdue University, USA
- T087.b TOWARDS DETECTION OF AIRBORNE PATHOGENIC MICROORGANISMS BY A MICROTOTAL ANALYSIS SYSTEM**
Guillaume Blaire, Manuel Alessio, Melissa Baque, Fabrice Navarro, and Jean-Maxime Roux
CEA Leti, FRANCE
- W082.b ABSOLUTE ELECTRICAL QUANTIFICATION OF TARGET NUCLEIC ACID USING DIGITAL SORT-ENABLED COUNTING (DISCO)**
Yi Liu and Xu Cui
University of Singapore, SINGAPORE
- W083.b DIGITAL FOCUS ASSAY PLATFORM FOR THE QUANTIFICATION OF VIABLE VIRUSES**
Siddharth Raghu Srimathi, Maxinne A. Ignacio, Margaret A. Scull, and Don L. DeVoe
University of Maryland, USA

W084.b INEXPENSIVE-BY-DESIGN, VERSATILE AND INTUITIVE MOLECULAR DIAGNOSTICS PLATFORM FOR POINT OF USE

Laura Folkertsma^{1,2}, Alvaro J. Conde¹, Brigitte B. Bruijns^{3,4}, Arno C. Pol⁵, Elsa Dragt⁶, Michelle G. van Heteren¹, Elwin X. Vrouwe¹, Lisanne P. Karbaat⁷, Frank van der Hoek⁸, Marko Blom¹, Tom Evers⁶, Han J.W. Zendman⁵, Herbert Torfs², and Ronny van 't Oever¹

¹Micronit BV, NETHERLANDS, ²Salvitat BV, NETHERLANDS,

³Saxion University of Applied Sciences, NETHERLANDS,

⁴Politieacademie, NETHERLANDS, ⁵NYtor, NETHERLANDS,

⁶DE-design, NETHERLANDS, ⁷Holland Innovative,

NETHERLANDS, and ⁸Fris en Fruitig VZW

W085.b LYOPHILIZED CHEMILUMINESCENCE (CL) BASED MICROCAPILLARY FLOW ASSAY (MCFA) LAB CHIPS FOR RAPID AND HIGH-SENSITIVE TESTS OF SARS-COV-2

Supreeth Setty¹, Heeyeong Jang¹, Nogi Park², Keun Seok Seo², and Ahn Chong¹

¹University of Cincinnati, USA and ²Mississippi State University, USA

W086.b RAPID SINGLE-ROUND POOL TESTING OF INFECTIOUS DISEASE ENABLED BY MULTICOLOR DIGITAL MELTING PCR

Xu Cui

University of Singapore, SINGAPORE

Others
M088.b CAPTURE AND CHARACTERIZATION OF EXTRACELLULAR VESICLES BY DIELECTROPHORESIS

Charlotte Neel^{1,2}, Jean F. Audibert¹, Sameh Obeid², Rasta Ghasemi¹, Sakina Bensalem¹, Zuzana Krupova³, Myriam Taverna², and Bruno Le-Pioufle¹

¹ENS Paris-Saclay, FRANCE, ²Institut Galien Paris-Saclay, FRANCE, and

³Excilone, FRANCE

T088.b FULLY-AUTOMATIC MICROFLUIDIC BEAD-BASED ASSAY FOR FAST QUANTIFICATION OF MULTIPLE KIDNEY FAILURE BIOMARKERS

Gloria Porro

École Polytechnique Fédérale de Lausanne, SWITZERLAND

W087.b A MICROFLUIDIC SYSTEM INTEGRATED WITH A SHEAR FORCE CONTROL DEVICE TO OPTIMIZE SELECTION OF APTAMERS TARGETING FOLATE RECEPTOR ALPHA

Yang-Sheng Shao, Yi-Cheng Tsai, and Gwo-Bin Lee

University of Tsing Hua, TAIWAN

W088.b SINGLE MOLECULE DRUG-DNA INTERACTION STUDIES USING NANOFLUIDIC DEVICES

Sriram Kk, Kseniya Ihnatsiuk, Raphael de Paiva, Andrew Kellett, and Fredrik Westerlund

Chalmers University of Technology, SWEDEN

c - Fundamentals in Microfluidics and Nanofluidics

Acousto- and Magnetofluidics

- M089.c ACOUSTIC SENSING OF BIOANALYTES WITH FUNCTIONALIZED MICROBUBBLES**
Marc Prudhomme¹, Mahmoud Addouche¹, Jacques Fattaccioli², and Franck Chollet¹
¹FEMTO-ST, FRANCE and ²ENS Paris, FRANCE
- M090.c ACOUSTOFLUIDICS IN LAB-ON-A-ROBOT APPLICATION**
Cornel Dillinger¹, Till Häussner¹, Nitesh Nama², and Daniel Ahmed¹
¹ETH Zürich, SWITZERLAND and ²University of Nebraska, Lincoln, USA
- M091.c FULLY MICROFABRICATED SURFACE ACOUSTIC WAVE TWEezer FOR (SUB-)MICRON PARTICLE FOCUSING**
Armaghan Fakhfour¹, Melanie Colditz¹, Citsabehsan Devendran², Stefan Jacob³, Kateryna Ivanova¹, Adrian Neild², and Andreas Winkler¹
¹Leibniz IFW Dresden, GERMANY, ²Monash University, AUSTRALIA, and ³Physikalisch-Technische Bundesanstalt, GERMANY
- M092.c LEVERAGING PIEZOELECTRIC MICROMACHINED ULTRASONIC TRANSDUCERS (PMUT) FOR 3D ACOUSTOFLUIDIC MANIPULATION OF PARTICLES AND ORGANIDS**
Emilie Vuille-dit-Bille^{1,2}, Sarah Heub¹, Dara Z. Bayat¹, Marc-Alexandre Dubois¹, Thomas Overstolz¹, Michel Despont¹, Selman Sakar², and Gilles Weder¹
¹CSEM SA, SWITZERLAND and ²École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- M093.c NAVIGATION OF ULTRASOUND MICROROBOTS THROUGH OBSTACLES BY MEANS OF AN AUTONOMOUS SYSTEM**
Mahmoud Medany¹, Sarp Sepici¹, S. Karthik Mukkavilli², and Daniel Ahmed¹
¹ETH Zürich, SWITZERLAND and ²IBM Research, SWITZERLAND
- M094.c SILICA SEED PARTICLES IMPROVE NANOPARTICLE ACOUSTIC TRAPPING EFFICIENCY AND THROUGHPUT**
Megan Havers¹, Thierry Baasch¹, Andreas Lenshof¹, Mikael Evander², and Thomas Laurell¹
¹Lund University, SWEDEN and ²AcouSort AB, SWEDEN
- M095.c UPSCALING OF ACOUSTIC FOCUSING OF PARTICLES IN A PARALLEL CHANNEL CONFIGURATION**
Amaury A. de Hemptinne, Pierre P. Gelin, and Wim W. De Malsche
Vrije Universiteit Brussel (VUB), BELGIUM
- T089.c ACOUSTICALLY LEVITATED DROPLET AS A MICROGRAVITY SIMULATOR**
Sreejith Kamalalayam Rajan, Aditya Vashi, and Nam-Trung Nguyen
Griffith University, AUSTRALIA
- T090.c CELL CONCENTRATION BY USING SIMPLE ACOUSTOFLUIDIC SYSTEM WITH LOW SAMPLE LOSS FOR RARE CELL APPLICATIONS**
Natsumi Hirata, Hayato Yamaki, and Takeshi Hayakawa
Chuo University, JAPAN

- T091.c HIGH-POWER ACOUSTOFLUIDICS DRIVEN BY LINE DOUBLE-PARABOLIC-REFLECTORS WAVE-GUIDED HIGH-POWER ULTRASONIC TRANSDUCER**
 Enrico Corato¹, Wei Qiu¹, Takeshi Morita², and Per Augustsson¹
¹Lund University, SWEDEN and ²University of Tokyo, JAPAN
- T092.c MANIPULATION OF THE POSITION AND ORIENTATION OF PROLATE SPHEROIDS IN A PSEUDO-STANDING SURFACE ACOUSTIC WAVE FIELD**
 Sebastian Sachs¹, Christian Cierpka^{1,2}, and Jörg König¹
¹Technische Universität Ilmenau, GERMANY and ²Lund University, SWEDEN
- T093.c PRECISION GUIDED NON-INVASIVE TREATMENT OF ANEURYSMS USING ACOUSTIC ROBOTICS**
 Mahmoud Medany and Daniel Ahmed
 ETH Zürich, SWITZERLAND
- T094.c SURFACE ACOUSTIC WAVE MICROFLUIDIC DEVICE ENABLES RAPID PROTEIN CONCENTRATION ANALYSIS IN BLOOD PLASMA**
 Nakul Sridhar¹, Julie McAfee², Rachelle Nuss², Kathryn Hassell², and Xiaoyun Ding¹
¹University of Colorado, Boulder, USA and
²University of Colorado, Anschutz, USA
- W089.c ACOUSTOFLUIDIC PROPERTIES OF POLYSTYRENE PARTICLES**
 Alexander Edthofer¹, Jakub Novotny², Andreas Lenshof¹, Thomas Laurell¹, and Thierry Baasch¹
¹Lund University, SWEDEN and ²Institute of Analytical Chemistry of the CAS, CZECH REPUBLIC
- W090.c ECHOTILT: A LOW-COST ACOUSTOFLUIDIC METHOD FOR HIGH FLOW RATE ENVIRONMENTAL NANOPLASTIC ENRICHMENT**
 Liesbeth G. B. van der Geer, Martim Costa, Björn Hammarström, Selim Tanriverdi, Haakan N. Joensson, Martin Wiklund, and Aman Russom
 KTH Royal institute of Technology, SWEDEN
- W091.c INVESTIGATION ON PARTICLE DEFLECTION IN SURFACE ACOUSTIC WAVE MICROFLUIDIC DEVICE FOR EFFICIENT EXOSOME EXTRACTION**
 Tao Peng
 University of Macau, CHINA
- W092.c MICROSCALE PARTICLE MANIPULATION USING AN ACOUSTOFLUIDIC END EFFECTOR ASSISTED BY ROBOTIC ARM**
 Jan Durrer¹, Prajwal Agrawa¹, Ali Ozgul¹, Stephan Neuhaus², Nitesh Nama³, and Daniel Ahmed¹
¹ETH Zürich, SWITZERLAND, ²University of Zurich, SWITZERLAND, and
³University of Nebraska, Lincoln, USA
- W093.c RECONFIGURATION OF ACOUSTOFLUIDICS VIA TUNING THE COMPETITION BETWEEN DIFFERENT WAVE MODES**
 Yu Gao and Xiaoyun Ding
 University of Colorado, Boulder, USA

W094.c THE ACOUSTOPHORETIC MIGRATION AND SEPARATION OF SUSPENDED CELLS IN ACOUSTIC IMPEDANCE GRADIENTS

Mahdi Rezayati Charan and Per Augustsson
Lund University, SWEDEN

Capillary Microfluidics**M096.c LABEL-FREE ANTIMICROBIAL SUSCEPTIBILITY TESTING IN MICROFLUIDIC 'DIP STICKS'**

Zhuoling Yu¹, Sarah H. Needs², Brian V. Jones¹, Alexander D. Edwards², and Nuno M. Reis¹
¹University of Bath, UK and ²University of Reading, UK

M097.c ON THE DYNAMIC CONTACT ANGLE OF CAPILLARY-DRIVEN MICROFLOWS IN OPEN CHANNELS

Jodie C. Tokihiro, Jean Berthier, Anika M. McManamen, David N. Phan, Sanitta Thongpang, and Ashleigh B. Theberge
University of Washington, USA

T095.c 3D INVESTIGATION OF DROPLET FORMATION AND GEOMETRY-INDUCED SINGLE DROPLET COALESCENCE USING MICRO-COMPUTED TOMOGRAPHY

Bastian Oldach, Carolin Müller, Philipp Wintermeyer, and Norbert Kockmann
TU Dortmund University, GERMANY

T096.c MICROFLUIDIC GENERATION OF MICRO-SOAP BUBBLES FOR AIRBORNE MOLECULAR ROBOT

Rina Takagi and Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN

T097.c TIME- AND DISTANCE-RESOLVED FLUID FLOW IN VERTICAL MICROFLUIDIC STRIPS: A NEW OPEN SOURCE ROBOTIC PLATFORM FOR QUANTITATIVE, MULTIPARAMETER MEASUREMENT OF GLOBAL HAEMOSTASIS AND BLOOD FUNCTION

Rüya M. Sariyer¹, Kirandeep Gill², Sarah H. Needs¹, Daniel Hodge¹, Nuno M. Reis², Chris I. Jones¹, and Alexander D. Edwards¹
¹University of Reading, UK and ²University of Bath, UK

W095.c DETERMINISTIC CELL-PARTICLE PAIRING DEVICE IN THE OPEN MICROFLUIDICS ARCHITECTURE TOWARD SINGLE-CELL RNA SEQUENCING

Hiroto Teratani, Tomoki Murakami, and Hiroaki Suzuki
Chuo University, JAPAN

W096.c MULTIPHASE RESERVOIR SUBCIRCUIT FOR MICROFLUIDIC CHAIN REACTION OF IMMISCIBLE AND MISCIBLE MULTIPHASE LIQUIDS IN CAPILLARIC CIRCUITS

Geunyoung Kim, Andy Ng, David Juncker
McGill University, CANADA

Centrifugal Microfluidics**M098.c A PORTABLE LAB ON A DISC PLATFORM FOR CONTINUOUS HANDLING OF WIDE RANGE OF SAMPLE VOLUME**

Sourav Acharya, Jasleen Chhabra, Soumyo Mukherji, and Debjani Paul
Indian Institute of Technology, Bombay, INDIA

M099.c AUTOMATING COMPLEX DNA LIBRARY PREPARATION PROCEDURES IN CENTRIFUGAL MICROFLUIDICS

Daniel Brassard¹, Jimin Guo¹, Nadine Adam², Adrian Vester², Julie Shay², Caroline Miville-Godin¹, Mojra Janta-Polczynski¹, Jason Ferreira¹, Maxence Mounier¹, Kyle Tapp², Ana Pilar², and Matthew Shiu¹
¹National Research Council, CANADA, ²Health Canada, CANADA, and ³Canadian Space Agency, CANADA

M100.c FAST AND BUBBLE-FREE FILLING OF NANOIMPRINTED HIGH-DENSITY PICOLITER WELL ARRAYS FOR DIGITAL ASSAYS ENABLED BY CENTRIFUGAL MICROFLUIDICS

Salman Murad¹, Marvin Heyer¹, Fabian Lickert², Julian Menges², Silvia Calabrese², Tobias Hutzenlaub^{1,2}, Nils Paust^{1,2}, and Peter Juelg^{1,2}
¹IMTEK, GERMANY and ²Hahn-Schickard, GERMANY

M101.c INDUCTION HEATING FOR LAB-ON-A-DISC APPLICATIONS

Tadej Kokalj¹, Marko Mahne², Indradumna Banerjee³, Franci Vode¹, Aman Russom³, and Matjaz Vencelj²
¹Institute of Metals and Technology, SLOVENIA, ²Jozef Stefan Institute, SLOVENIA, and ³KTH Royal Institute of Technology, SWEDEN

T098.c A RAPID PCR SYSTEM BASED ON CENTRIFUGAL MICROFLUIDICS WITH TEC-BASED CONTACT HEATING

Yu Wu and Youchun Xu
 Tsinghua University, CHINA

T099.c CENTRIFUGAL GRAVITY ENABLES VOID-FREE PRIMING OF DEAD-END NANOLITER CAVITIES

Yu-Kai Lai¹, Jacob F. Hess^{1,2}, and Nils Paust^{1,2}
¹University of Freiburg, GERMANY and ²Hahn-Schickard, GERMANY

T100.c FLIPPING AS A CONTROL STRATEGY FOR CENTRIFUGAL MICROFLUIDIC SYSTEMS

Ali Gholizadeh, Gabriel Mazzucchelli, and Tristan Gilet
 University of Liège, BELGIUM

W097.c A METHOD FOR BUBBLE-FREE REAGENT DISCRETIZATION AND AUTOMATED DIGITAL POYMERASE CHAIN REACTION ON CENTRIFUGAL MICROFLUIDICS

Tae-Hyeong Kim, Daniel Brassard, Lidija Malic, Keith J. Morton, Christina Nassif, Dillon Da Fonte, Luke Lukic, Jason Ferreira, Caroline Miville-Godin, Maxence Mounier, Aaron Bessoff, and Teodor Veres
 National Research Council Canada, CANADA

W098.c ALGORITHMIC DESIGN OPTIMIZATION AND PROGRAMMABILITY OF HIGHLY INTEGRATED LAB-ON-A-DISC SYSTEMS

Jens Ducree
 Dublin City University, IRELAND

W099.c DEVELOPMENT OF AN AUTOMATED NUCLEAR ACID AMPLIFICATION ASSAY WITH ELECTROCHEMICAL MONITORING USING AN ELECTRIFIED-LAB-ON-A-DISC PLATFORM

Fabian O. Romero-Soto¹, Meysam Saeedi¹, Dario Mager²,
 Mohammad M. Aeinehvand¹, and Sergio O. Martinez-Chapa¹

¹Tecnologico de Monterrey, MEXICO and

²Karlsruhe Institute of Technology, GERMANY

W100.c HYPERGRAVITY CELL CULTURE SYSTEM THROUGH SPINNING OF THE MAGNETIC COUPLING DISK

Byeongwook Jo and Shoji Takeuchi

University of Tokyo, JAPAN

Digital Microfluidics

M102.c ABSOLUTE QUANTIFICATION OF NUCLEIC ACID ON DIGITAL MICROFLUIDICS PLATFORM BASED ON SUPERHYDROPHOBIC-SUPERHYDROPHILIC MICROPATTERNING

Li Meng¹, Mingzhong Li¹, Man-Kay Law¹, Pui-In Mak¹,
 and Rui P. Martins^{1,2}

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

M103.c ENABLING LONG-TERM LIQUID HANDLING IN DIGITAL MICROFLUIDICS PLATFORMS FOR CELL CULTURE SETTINGS

Oksana K. Savchak and Burcu Gumuscu

Eindhoven University of Technology, NETHERLANDS

T102.c DEVELOPMENT OF A 3D FABRICATED DIGITAL MICROFLUIDIC PLATFORM FOR MULTIPLEXED OPERATIONS ON LARGE ELECTRODE ARRAYS

Mert Ozden and Burcu Gumuscu-Sefunc

Eindhoven University of Technology, NETHERLANDS

T103.c HIGH-THROUGHPUT AND LOW-COST ORTHOGONAL ELECTRODE MATRIX DIGITAL MICROFLUIDICS CHIP

Yufan Wang¹, Chi Chung Tsoi³, Xiaodong Lin², Haoran Li¹, Ren Shen¹,
 Xuming Zhang³, and Yanwei Jia¹

¹University of Macau, CHINA, ²Macau Zhuhai UM Science & Technology Research Institute, CHINA, and ³Hong Kong Polytechnic University, CHINA

W101.c A PORTABLE, INTEGRATED SYSTEM FOR ON-CHIP ANTIBIOTIC SUSCEPTIBILITY TESTING

Caiwei Li

University of Macau, MACAO

W102.c DRUG SCREENING OF PRIMARY TUMOR CELLS ON SMART DIGITAL MICROFLUIDICS FOR CANCER PRECISION MEDICINE

Yingying Liu, Caiwei Li, Wenhao Hui, Pui-in Mak, Rui P. Martins,
 and Yanwei Jia

University of Macau, CHINA

W103.c POLARITY-DEPENDENT ELECTRO-WETTING OR -DEWETTING ON A CONDUCTIVE SILICON SUBSTRATE

Lele Zhou

ShanghaiTech University, CHINA

Droplet Microfluidics

- M104.c** **“PICO’CLOCK” - HIGHLY CONTROLLABLE PICOINJECTION FOR TIMED REACTIONS IN DROPLET MICROFLUIDICS**
 Jolien Breukers and Jeroen Lammertyn
KU Leuven, BELGIUM
- M105.c** **A NOVEL STRATEGY TO SYNTHESIZE FLUORINATED SURFACTANT AND ITS APPLICATIONS IN DROPLET MICROFLUIDICS**
 Jiyuan Yao^{1,2}, Lingling Shui², Shuting Xie², Loes Segerink¹, and Sergii Pud¹
¹*University of Twente, NETHERLANDS and*
²*South China Normal University, CHINA*
- M106.c** **CHARACTERIZATION OF DROPLET GENERATION THROUGH A POST-ARRAY DEVICE**
 Shuzo Masui, Yusuke Kanno, and Takasi Nisisako
Tokyo Institute of Technology, JAPAN
- M107.c** **DOUBLING ACCELERATION OF SYNTHESIS SPEED OF METAL COMPLEXES BY SCALE EFFECTS IN MICRODROPLETS**
 Masashi Kobayashi¹, Tomoya Murashige¹, Takashi Akitsu², Hiroyuki Fujita³, Takashi Tanii¹, Masahiro Furuya¹, Tetsushi Sekiguchi¹, Shuichi Shoji¹, Risa Fujita⁴, and Daiki Tanaka⁴
¹*Waseda University, JAPAN, ²Tokyo University of Science, JAPAN,*
³*Canon Medical Systems Corporation, JAPAN, and ⁴Research Organization for Nano & Life Innovation, JAPAN*
- M108.c** **ELECTROKINETIC DESALTING AND SALTING OF WATER-IN-OIL DROPLETS**
 Aparna Krishnamurthy and Robbyn K. Anand
Iowa State University, USA
- M109.c** **FORMATION OF DNA-FUNCTIONALIZED COLLOIDAL CRYSTALS IN A MICRODROPLET**
 Naotomo Tottori¹, Azusa Takao¹, Maasa Yokomori¹, Miho Tagawa², Shigeo S. Sugano³, Shinya Sakuma¹, and Yoko Yamanishi¹
¹*Kyushu University, JAPAN, ²Nagoya University, JAPAN, and*
³*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*
- M110.c** **LMOI: A NOVEL EVAPORATION TUNABLE MICROREACTOR PLATFORM**
 Rutvik Lathia, Satchit Nagpal, Chandantaru D. Modak, Bheema Reddy, and Prosenjit Sen
Indian Institute of Science, INDIA
- M111.c** **OIL-INFUSED SIEVE-BASED TRAPPING SYSTEM FOR VERSATILE 3D CELL CULTURE AND BIOCHEMICAL APPLICATIONS**
 Bheema S. Reddy, Rutvik Lathia, Chandantaru D. Modak, Satyarathi Mishra, Ramray Bhat, and Prosenjit Sen
Indian Institute of Science, INDIA

- T106.c CONTROLLED ATPS DROPLET FORMATION AND CAPTURE USING MICROFLUIDICS**
 Hailin Fu, Chris Li, Tongsheng Wang, Kalpit Bakal, Jaap M. J. den Toonder, Bert E. W. Meijer, and Hans M. Wyss
TU Eindhoven, NETHERLANDS
- T107.c DROPLET MICROFLUIDIC BASED FABRICATION OF SOFT MICROROBOTS WITH TAILORED MAGNETIC ANISOTROPY**
 Chao Song, Yimo Yan, Michael G. Christiansen, Stavros Stavrakis, Simone Schürle, and Andrew deMello
ETH Zürich, SWITZERLAND
- T108.c FABRICATION OF CRESCENT-SHAPED PARTICLES FOR PARTICLE-TEMPLATED DROPLET FORMATION**
 Yimin Yang and Ghulam Destgeer
Technical University of Munich, GERMANY
- T109.c IMPROVING THE EFFICIENCY OF DROPLET COMPARTMENTALIZATION BY DOUBLE EMULSIONS FOR CRISPR-BASED NUCLEIC ACID DETECTION**
 Yang Zhang and Ming Li
Macquarie University, AUSTRALIA
- T110.c MICROFLUIDIC DEVICES FOR THE GENERATION OF MONODISPERSE, SUBMICROMETER, SELF-ASSEMBLED SUPERPARTICLES**
 Tanner W. Young, Baixu Zhu, Xingchen Ye, and Stephen C. Jacobson
Indiana University, USA
- T111.c ON CHIP SHEATH FLOW INDUCED MICROPARTICLE ENCAPSULATION IN SPIRAL CHANNELS**
 Byeong-Ui Moon¹, Lidija Malic¹, Dillon Da Fonte¹, Liviu Clime¹, Félix Lussier², Luke Lukic¹, David Juncker², and Teodor Veres¹
¹National Research Council Canada, CANADA and
²McGill University, CANADA
- W105.c AN ASYMMETRIC CROSS-JUNCTION MICROFLUIDIC DEVICE FOR SYNTHESIS OF ANISOTROPIC MAGNETIC JANUS PARTICLES IN A MICROFLUIDIC DEVICE**
 Muhammad Saqib and Emine Yegan Erdem
Bilkent University, TURKEY
- W108.c FABRICATION OF SYNTHETIC POLYMER FOAMS AND GRADIENT STRUCTURES VIA MICROFLUIDICS FOR ENERGY ABSORPTION APPLICATIONS**
 Abhishek Viswanath and Marco Costantini
Polish Academy of Sciences, POLAND
- W109.c LENGTH-CODED AMPHIPHILIC PARTICLES FOR THE ENCAPSULATION OF A WIDE RANGE OF DROPLET VOLUMES**
 Muhammad Usman Akhtar, Mehmet Akif Sahin, Helen Werner, and Ghulam Destgeer
Technical University of Munich, GERMANY

W110.c MONITORING PANCREATIC α -AMYLASE OF POSTOPERATIVE PATIENTS WITH DROPLET-BASED MICROFLUIDICS
 Xinne Zhao¹, Fiona R. Kolbinger², Denys Makarov¹, and Larysa Baraban¹
¹*Helmholtz-Zentrum Dresden-Rossendorf e.V., GERMANY* and
²*Dresden University of Technology, GERMANY*

W111.c THE EFFECTS OF DIFFERENTIAL IMPEDANCE SIGNAL ON DROPLET MEASUREMENT
 Xun Liu¹, Tao Tang², Yoichiro Hosokawa¹, and Yaxiaer Yalikun¹
¹*Nara Institute of Science and Technology, JAPAN* and
²*National University of Singapore, SINGAPORE*

Electrokinetic Phenomena

M112.c ELECTRO-ROTATION MEASUREMENT SYSTEM FOR AUTOMATIC HIGH-THROUGHPUT DIELECTRIC CHARACTERIZATIONS OF CELLS POPULATIONS
 Samuele Moscato^{1,2}, Andrea Ballo^{1,2}, Pasquale Memmolo³, Paolo Bonacci², Nicolò Musso², Stefania Stefani², Ron Pethig², Maide Bucolo², and Massimo Camarda¹
¹*STLab srl, ITALY*, ²*University of Catania, ITALY*, and
³*CNR ISASI, ITALY*

M113.c MICROFLUIDIC CHIP FOR MULTIMODAL MANIPULATION OF PARTICLES/CELLS BASED ON WAVY FLOATING ELECTRODE
 Wenru Dai, Hongfang Yu, and Liang Huang
Hefei University of Technology, CHINA

T112.c EVAPORATIVE CRYSTALLIZATION OF SESSILE DROPLETS USING ELECTROWETTING
 Qi An¹, Pingping Cui^{1,2}, Bijoy Bera¹, Massimo Mastrangeli¹, Johan T. Padding¹, and Burak Eral¹
¹*TU Delft, NETHERLANDS* and ²*Tianjin University, CHINA*

T113.c OSTE-BASED MICROFLUIDIC CHIP FOR PEF TREATMENT OF MAMMALIAN CELLS
 Neringa Bakute¹, Eivydas Andriukonis¹, Kamile Kasperaviciute¹, Elinga Brazionyte¹, Jorunas Dobilas¹, Vilius Vertelis¹, Skirmantas Kersulis¹, Gatis Mozolevskis², Arunas Stirke^{1,2}
¹*State Research Institute Physical and Technological Sciences Center (FTMC), LITHUANIA* and ²*University of Latvia, LATVIA*

W112.c HIGH THROUGHPUT AND SCALABLE PRECONCENTRATION OF CHARGED ANALYTES BASED ON ION CONCENTRATION POLARIZATION ON A PACKED BED OF MICROBEADS
 Umesha Peramune, Zisun Ahmed, Suriya Dhakshinamoorthy, Mehdi Shadkhah, Baskar Ganapathysubramanian, and Robbyn K. Anand
Iowa State University, USA

W113.c STUDY OF AC ELECTROTHERMAL MICRO FLOWS TO ENHANCE BIOCHEMICAL DETECTION
 Léna Gonzalez¹, Laurent Davoust², and Jena-Maxime Roux¹
¹*CEA Leti, FRANCE* and ²*CNRS, FRANCE*

Modeling/Numerical Simulation

- M114.c ACCELERATING CFD SIMULATIONS OF MICROFLUIDIC DEVICES BY EXPLOITING HIGHER LEVELS OF ABSTRACTIONS**
Michel Takken¹ and Robert Wille^{1,2}
¹Technical University of Munich, GERMANY and
²Software Competence Center Hagenberg SCCH, AUSTRIA
- M115.c NUMERICAL CHARACTERIZATION OF COMPLIANCE OF THICK PDMS MICROCHANNELS**
Mohammed Elmahdi Elgack, Omar Ghannam,
and Mohamed Abdelgawad
American University of Sharjah, UAE
- T114.c EFFECT OF JUNCTION ANGLE ON PARTICLE ENCAPSULATION IN DROPLET MICROFLUIDICS**
Maryam Fatehifar, Alessandro De Rosis, and Alistair Revell
University of Manchester, UK
- T115.c OPTIMIZATION OF MICROCHANNEL GEOMETRY FOR IMPROVING SENSITIVITY ON PARTICLE/CELL IMPEDANCE MEASUREMENT**
Yuanyuan Guo and Liang Huang
Hefei University of Technology, CHINA
- W114.c ENHANCING MASS TRANSFER EFFICIENCY VIA INTERNAL FLUID VORTEX IN DIFFERENT HELIX CONFIGURATIONS**
Pin-Ru Huang¹, Guan-Yu Lu¹, Po-Yao Syu¹, Wei-Hsin Tien²,
Yi-Hsin Chien³, Wei-Hsiang Wang¹, and Ya-Yu Chiang^{1,4}
¹National Chung Hsing University, TAIWAN, ²National Taiwan University of Science and Technology, TAIWAN, ³Feng Chia University, TAIWAN, and ⁴National Taiwan University, TAIWAN
- W115.c THE VIBRATION-INDUCED CHAOTIC MIXING WITH SWITCHING OF VIBRATIONS AXES**
Kanji Kaneko^{1,2}, Yosuke Hasegawa³, Takeshi Hayakawa¹,
and Hiroaki Suzuki¹
¹Chuo University, JAPAN, ²Japan Society for the Promotion of Science (JSPS), JAPAN, and ³University of Tokyo, JAPAN

Nanofluidics/Nanofluidic Phenomena

- M116.c CO-FLOW OF NEWTONIAN AND VISCOELASTIC FLUIDS FOR BACTERIA SEPARATION BY SIZE IN A MICROCHANNEL**
Tianlong Zhang^{1,2}, Yaxiaer Yalikun², Yoichiro Hosokawa², and Ming Li¹
¹Macquarie University, AUSTRALIA and
²Nara Institute of Science and Technology, JAPAN
- M117.c NANOFUIDIC DEVICE WITH POSITIVELY CHARGED CHANNEL SURFACES IMITATE INHIBITORY SYNAPTIC FUNCTION**
Peiyue Li¹, Pan Zhang¹, Han Xu¹, Yechang Guo¹, Shaofeng Wang³,
Yufeng Jin¹, and Wei Wang^{1,2}
¹Peking University, CHINA, ²National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA, and
³China University of Geosciences, CHINA

- M118.c ON-DEMAND 3D NANOCONFINEMENT IN BEAD-ARRAY MICROFLUIDIC CHIPS VIA CONTROLLABLE PDMS COLLAPSE FOR EFFICIENT BIOREACTION**
 Jui-Hong Weng¹, Deng-Kai Yang¹, Abdullah-Bin Siddique², Nathan Swami², and Chia-Fu Chou¹
¹Academia Sinica, TAIWAN and ²University of Virginia, USA
- T116.c ENHANCED DNA MIXING WITH VISCOELASTIC WAVES**
 Enrico Turato, Jason P. Beech, and Jonas O. Tegenfeldt
 Lund University, SWEDEN
- T117.c NANOFLUIDIC ELECTROKINETIC TRANSPORT ACROSS MULTIPLE NANOCHANNELS MONITORED IN REAL TIME**
 Nattapong Chantipmanee¹, Taichi Nakajima², Sasikarn Seetasang^{2,3}, and Yan Xu^{1,2,4}
¹Osaka Metropolitan University, JAPAN, ²Osaka Prefecture University, JAPAN, ³National Nanotechnology Center (NANOTEC), THAILAND, and ⁴Japan Science and Technology Agency (JST), JAPAN
- T118.c THE EFFECT OF CONFINEMENT ON FLOW GENERATION BY ARTIFICIAL CILIA**
 Yiqing Sun, Ye Wang, and Jaap den Toonder
 Eindhoven University of Technology, NETHERLANDS
- W116.c GATE-CONTROLLED NANOFLUIDIC MEMORY DEVICES MIMIC EXCITATORY SYNAPTIC AND INHIBITORY SYNAPTIC FUNCTIONS**
 Pan Zhang¹, Peiyue Li¹, Han Xu¹, Yechang Guo¹, Shaofeng Wang³, Yufeng Jin¹, and Wei Wang^{1,2}
¹Peking University, CHINA, ²National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA, and ³China University of Geosciences, CHINA
- W117.c NANOFLUIDIC EVALUATION OF INDIVIDUAL NANOGEL-BASED MOLECULAR SYSTEMS**
 Yusuke Dote¹, Xuejin Huang², Madoka Takai², Nattapong Chantipmanee¹, and Yan Xu¹
¹Osaka Metropolitan University, JAPAN and ²Tokyo University, JAPAN
- W118.c WETTABILITY INSPIRED MODIFICATION OF MEMBRANES FOR IMPROVED DESALINATION**
 Vinay Arya and Chirodeep Bakli
 Indian institute of Technology, Kharagpur, INDIA

Others

- T119.c LONG-TERM OPERATION OF SPRING-BASED SYRINGE PUMP THROUGH THE SEQUENTIAL OPERATION OF THE CLOCKWORK MECHANISM**
 Won Han, Se Been Park, and Joong Ho Shin
 Pukyong National University, KOREA
- W119.c ROOM TEMPERATURE QUANTITATIVE LIQUID CONCENTRATION INTERFACE**
 Hidekatsu Tazawa¹ and Kazuma Mawatari²
¹University of Tokyo, JAPAN and ²Waseda University, JAPAN

d - Integrated Microfluidic Platforms
Chemical & Particle Synthesis

- M120.d A DROPLET MICROFLUIDIC DEVICE FOR RAPID IN-SITU POLYMERIZATION OF SUPERABSORBENT POLYMER MICROPARTICLES (SAP-MPS)**
Ehsan Tabesh, John Brown, Alireza Zabihhesari, Siu Ning (Sunny) Leung, and Pouya Rezai
York University, CANADA
- M121.d RAIL-AIDED LATERAL PARTICLE TRANSPORT ACROSS INTACT CO-FLOWS: EFFECT OF WALLS AND RAIL GEOMETRY**
Vyacheslav R. Misko, Iwona Ziemecka, Amaury de Hemptinne, Matthieu Briet, Pierre Gelin, Ilyesse Bihi, Dominique Maes, and Wim De Malsche
Vrije Universiteit Brussel (VUB), BELGIUM
- T120.d A NOVEL MICROFLUIDIC REACTOR ARCHITECTURE FOR RAPID DNA SYNTHESIS**
Naghme Fatemi, Ahmed Taher, Jelle Fondu, Hamideh Jafarpoorchehab, Kherim Willems, Olivier Henry, Peter Peumans, Tim Stakenborg, and Ben Jones
imec, BELGIUM
- T121.d TUNABLE SYNTHESIS OF BRANCHED GOLD NANOPARTICLES IN MICROFLUIDIC DEVICE FOR LARGE BIOMOLECULAR DELIVERY**
Kavitha Illath¹, Hima Manoj¹, Ashwini Shinde¹, Moeto Nagai², and Tuhin S. Santra¹
¹*Indian Institute of Technology, Madras, INDIA and*
²*Toyohashi University of Technology, JAPAN*
- W120.d RAIL INDUCED PARTICLE MULTILAYER COATING**
Amaury A. de Hemptinne, Iwona I. Ziemecka, Vyacheslav R.V.R. Misko, Matthieu M. Briet, Pierre P. Gelin, Ilyesse I. Bihi, Dominique D. Maes, and Wim W. De Malsche
Vrije Universiteit Brussel (VUB), BELGIUM
- W121.d ULTRA-HIGH THROUGHPUT MICROFLUIDIC PHOTOCATALYTIC SYNTHESIS AND SCREENING UP TO 10,000 REACTIONS PER DAY**
Jia-Min Lu
Zhejiang University, CHINA

Electrophoretic & Chromatographic Separation

- M122.d ELECTROPHORETIC QUALITY ASSESSMENT OF ADENO-ASSOCIATED VIRUS (AAV) BY MICROFLUIDIC ION CONCENTRATION POLARIZATION**
Yejin Park^{1,2}, Mingyang Cui², Jinsik Kim¹, and Jongyoon Han²
¹*Dongguk University, KOREA and*
²*Massachusetts Institute of Technology, USA*
- M123.d HIGH-THROUGHPUT ELECTROKINETIC FILTER FOR CHO MEDIA REGENERATION**
Eric M. Wynne, Dohyun Park, Mingyang Cui, and Jongyoon Han
Massachusetts Institute of Technology, USA

- T122.d** **EXPLORING THE POTENTIAL OF VORTEX LIQUID CHROMATOGRAPHY**
 Pierre Gelin¹, Ilyesse Bihi¹, Levi Ezechukwu¹, Elahe Naghdi¹,
 Eiko Westerbeek^{1,2}, Wouter Olthuis², Jan Eijkel²,
 and Wim De Malsche¹
¹*Vrije Universiteit Brussel (VUB), BELGIUM* and
²*Twente University, NETHERLANDS*
- T123.d** **MINIATURIZED EXTRACTION DEVICE COUPLED TO MASS SPECTROMETRY FOR ON-LINE PURIFICATION AND CHARACTERIZATION OF NUCLEAR SAMPLES**
 Marine Boudias¹, Erwan Dupuis¹, Alexandre Quémet²,
 and Carole Bresson¹
¹*Université Paris-Saclay, FRANCE* and ²*CEA, FRANCE*
- T124.d** **POINT-OF-CARE TESTING (POCT) OF THALASSEMIA ON ISOELECTRIC FOCUSING (IEF) CHIP/PLATFORM**
 Kay Khine Maw, Wei Wang, and Zhiping Wang
*Agency for Science, Technology and Research (A*STAR), SINGAPORE*
- W122.d** **FEMI-GC: A MICRO GAS CHROMATOGRAPHY SYSTEM WITH FLUIDIC AND ELECTRICAL MODULAR INTERFACING**
 Nipun Thamatham, Mustahsin Chowdhury, and Masoud Agah
Virginia Polytechnic and State University, USA
- W123.d** **NANOSPRAY EMITTERS: MICROFABRICATED ELECTROSPRAY INTERFACES (ESI) WITH A LIQUID JUNCTION FOR SENSITIVE BIONALYSES**
 Elizaveta Vereshchagina¹, Tomáš Václavěk², Anand Summanwar¹,
 Sigurd Moe¹, Leny Nazareno¹, Aina K. Herbjørnrød¹, Guido Sordo¹,
 Anna Nordborg³, Andreas Vogl¹, Franta Foret², and Roman Řemínek²
¹*SINTEF Digital, NORWAY*, ²*Czech Academy of Sciences, CZECH REPUBLIC*, and ³*SINTEF Industry, NORWAY*

Micromixers & Microreactors

- M125.d** **CHARACTERIZATION OF A MICROFLUIDIC MIXING PROBE (MMP)**
 Dima S. Ali, Ayoub Glia, Muhammedin Deliorman,
 and Mohammad Qasaimeh
New York University, Abu Dhabi, USA
- M126.d** **HYDRODYNAMIC ENHANCEMENT OF AGGLUTINATION-BASED NANOPARTICLE DETECTION DRIVEN BY THE VIBRATION-INDUCED FLOW**
 Kanji Kaneko^{1,2}, Mamiko Tsugane¹, Yosuke Hasegawa³,
 Takeshi Hayakawa¹, and Hiroaki Suzuki¹
¹*Chuo University, JAPAN*, ²*Japan Society for the Promotion of Science (JSPS), JAPAN*, and ³*University of Tokyo, JAPAN*
- M127.d** **MICROFLUIDIC-ASSISTED DIGITAL MANUFACTURING OF FUNCTIONALLY GRADED POROUS MATERIALS WITH TRANSIENT PHYSICAL AND BIOLOGICAL PROPERTIES**
 Maria Celeste Tirelli¹, Francesco Nalin¹, Nehar Celikkin¹,
 Andrea Curatolo², Piotr Kasprzycki², Karol Karnowski²,
 and Marco Costantini¹
¹*Polish Academy of Sciences, POLAND* and
²*International Center for Translational Eye Research, POLAND*

- M128.d SIMULATIONS AND ANALYSIS OF PROGRAMMABLE LIQUID METAL DROPLET ARRAY PLATFORM FOR GENERATING RECONFIGURABLE FLOW FIELD**
 Xu Gao, Shitao Shen, and Wei Wang
Peking University, CHINA
- T125.d DEVELOPMENT OF MICROWAVE MICROFLUIDICS WITH PARALLEL HEATING USING POST-WALL WAVEGUIDE FOR COMBINATORIAL SYNTHESIS**
 Kaito Fujitani¹, Hiroshi Nakamura¹, Akinobu Yamaguchi¹, Mitsuyoshi Kishihara², and Yuichi Utsumi¹
¹*University of Hyogo, JAPAN* and ²*Okayama Prefectural University, JAPAN*
- T126.d MICROBIAL STIR BARS: LIGHT-ACTIVATED ROTATION OF TETHERED BACTERIAL CELLS TO ENHANCE MIXING IN STAGNANT FLUIDS**
 Jyoti P. Gurung¹, Moein N. Kashani^{2,3}, Charitha M.D.E. Silva¹, and Matthew A.B. Baker^{1,4}
¹*University of New South Wales, AUSTRALIA*, ²*University of South Australia, AUSTRALIA*, ³*Australian National Fabrication Facility, AUSTRALIA*, and ⁴*ARC centre of Excellence in Synthetic Biology, AUSTRALIA*
- T127.d PNEUMATIC VALVE-BASED MICROFLUIDIC DEVICE FOR THE DETECTION OF HEPO GENE**
 Hyewon Yun and Chang-Soo Lee
Chungnam National University, KOREA
- W124.d AN INTEGRATED, AUTOMATED MICROFLUIDIC INSTRUMENT FOR COMPLEX BIOLOGICAL MICROREACTIONS**
 Greg Liddiard, Bahar Kazemi, Munawar Jawad, Chris Lambert, Sabin Nepal, and Bruce Gale
University of Utah, USA
- W125.d ELECTRO-GUIDED MICRO-VESSELS WITH DUAL MOTION**
 Annaël Sort-Montenegro, Luke Dowling, Colm Delaney, and Larisa Florea
Trinity College Dublin, IRELAND
- W126.d MICROFLUIDIC ULTRAFAST MIXER FOR CONTINUOUS AND SCALABLE PRODUCTION OF DRUG DELIVERY NANOPARTICLES**
 Dong-Pyo Kim, Gi-Su Na, Jeong-Un Joo, and Byung Kwon Kaang
Pohang University of Science and Technology (POSTECH), KOREA
- W127.d POLYDIMETHYLSILOXANE-FREE MICROFLUIDIC TECHNOLOGY FOR THE RAPID CAPTURE OF EXTRACELLULAR VESICLES FROM URINE**
 Janis Cipa^{1,2}, Edgars Endzelins², Roberts Rimša¹, Arturs Abols^{1,2}, Aija Line², and Gatis Mozolevskis¹
¹*Cellboxlab Ltd, LATVIA* and ²*University of Latvia, LATVIA*

Mimicking Acutators (Muscles, Nanorobots)

- M129.d MULTI-POLAR ELECTRODE DEVICE FOR SELECTIVE STIMULATION OF THREE-DIMENSIONAL CULTURED SKELETAL MUSCLE TISSUE**
 Hirone Yamada¹, Yuya Morimoto², Byeongwook Jo¹, Minghao Nie¹, and Shoji Takeuchi¹
¹*University of Tokyo, JAPAN* and ²*Waseda University, JAPAN*

T128.d A MICROFLUIDIC DOCKING ASSEMBLED ROTATIONAL ACTUATOR DRIVEN BY BIOMOLECULAR MOTORS
 Masakiyo Takahashi¹, Yingzhe Wang¹, Takahiro Nitta², Yuichi Hiratsuka³, and Keisuke Morishima¹
¹Osaka University, JAPAN, ²Gifu University, JAPAN, and ³Japan Advanced Institute of Science and Technology (JAIST), JAPAN

W128.d MICROFLUIDIC SOFT ROBOTS BASED ON TEXTILE TECHNOLOGIES FOR ENDOSCOPY AND MICROMANIPULATION
 Vivian Aubert¹, Anissa Kaddouche¹, Clara Brouaux¹, Raphael Leurond¹, Chloé Visbecq², Quentin Watel², Aurelie Cayla², Fabien Salaün², Francois Boussu², and Jean-Louis Viovy¹
¹Institut Curie, FRANCE and ²University Lille, FRANCE

Particle Separation

M130.d DESIGN OF A MICROFLUIDIC DEVICE FOR MICROPARTICLE COLLECTION THROUGH ELECTROSTATIC ATTRACTION AND REPULSION
 Yuki Ito, Kota Suzuki, Keiichiro Yoshida, and Sho Yokoyama
 Osaka Institute of Technology, JAPAN

M131.d ECHOGRID: A NOVEL ACOUSTOFLUIDIC, HIGH-THROUGHPUT PLATFORM FOR ENVIRONMENTAL MICROPLASTIC ENRICHMENT
 Martim Costa, Liesbeth van der Geer, Björn Hammarström, Selim Tanriverdi, Håkan Jönsson, Martin Wiklund, and Aman Russom
 KTH Royal Institute of Technology, SWEDEN

M132.d MICROFLUIDIC DEVICE WITH 3D SELF-ASSEMBLED LIQUID METAL ELECTRODES FOR DIELECTROPHORETIC FRACTIONATION OF LARGE-SIZE-RANGE PARTICLES
 Huichao Chai, Junwen Zhu, Yongxiang Feng, and Wenhui Wang
 Tsinghua University, CHINA

M133.d SIZE-BASED SEPARATION OF MULTI-TARGET USING AN ALL GLASS MICROFLUIDIC DEVICE WITH DEFORMABLE CHANNEL
 Doudou Ma^{1,2,3}, Yalikus Yaxiaer^{2,3}, Nobutoshi Ota², Yuri Ito², and Koki Yamamoto²
¹Oaka University, JAPAN, ²Center for Biosystems Dynamics Research, JAPAN, and ³Nara Institute of Science and Technology, JAPAN

T129.d AUTOMATED DROPLETS SCREENING SYSTEM USING A MICROFLUIDIC DEVICE INTEGRATING PNEUMATIC MICROVALVES
 Jo Han He, Yi Ting Hsiau, Jing Tang Yang, and Suz I Yeh
 National Cheng Kung University, TAIWAN

T130.d DEVELOPMENT OF HIGH-THROUGHPUT CIRCULATING TUMOR CELLS SEPARATION DEVICE BASED ON 3D HYDRODYNAMIC FILTRATION
 Taiga Ajiri, Hiroyuki Obinata, Natsuki Maeda, and Kentaro Shirai
 Sysmex Corporation, JAPAN

T131.d HIGH-THROUGHPUT FLUORESCENCE-ACTIVATED SINGLE EXTRACELLULAR VESICLE SORTER
 Yoshiyuki Tsuyama¹, Kenji Hinode², Yusuke Yoshioka¹, and Sadao Ota²
¹Tokyo Medical University, JAPAN and ²University of Tokyo, JAPAN

- T132.d** **PRESSURE-DEPENDENT SORTING OF GROUP A STREPTOCOCCUS BY DETERMINISTIC LATERAL DISPLACEMENT: AN EXAMPLE OF SORTING A HETEROGENOUS SAMPLE BY A PASSIVE MICROFLUIDIC METHOD**
Elham Akbari, Sebastian Wrighton, Jason P. Beech, Pontus Nordenfelt, and Jonas O. Tegenfeldt
Lund University, SWEDEN
- W129.d** **CAPILLARITY ENABLED LARGE-ARRAY 3D LIQUID METAL ELECTRODES FOR COMPACT DIELECTROPHORETIC MICROFLUIDICS**
Huichao Chai, Yongxiang Feng, Junwen Zhu, and Wenhui Wang
Tsinghua University, CHINA
- W130.d** **DEVELOPMENT OF PARTICLE SEPARATION AND CONCENTRATION MICROFLUIDIC DEVICE FOR DIAGNOSIS OF PERITONEAL DIALYSIS PERITONITIS**
Ye Sung Lee, Sung Hoon Bae, Alexander Zhbanov, and Sung Yang
Gwangju Institute of Science and Technology (GIST), KOREA
- W131.d** **MICRO/NANOPARTICLE SEPARATION VIA RADIAL TEMPERATURE GRADIENT IN THREE-DIMENSIONAL SPIRAL MICROCHANNELS**
Junho Kim, Kyunghoon Lee, and Taesung Kim
Ulsan National Institute of Science and Technology (UNIST), KOREA
- W132.d** **SEPARATION OF TWO BACTERIAL SPECIES USING VISCOELASTIC FLOWS**
Tianlong Zhang^{1,2}, Li Ming¹, Yaxiaer Yalikun², and Yoichiroh Hosokawa²
¹Macquarie University, AUSTRALIA and ²Nara Institute of Science and Technology, JAPAN

Others

- M134.d** **CONTINUOUS BIODIESEL PRODUCTION PROCESS AND SYSTEM OPTIMIZATION**
Pin-Ru Huang¹, Cheng-Yu Wang¹, Hsiang-Yu Yang¹, Bo-Chuan Hsueh¹, Faisal Maqbool¹, Yu-Chieh Chen^{1,3}, Yi-Hsin Chien², and Ya-Yu Chiang^{1,3}
¹National Chung Hsing University, TAIWAN, ²Feng Chia University, TAIWAN, and ³National Taiwan University, TAIWAN
- M135.d** **MICROFLUIDIC PRODUCTION OF [18F]ALF-PSMA-11 RADIOPHARMACEUTICAL**
Olga Ovdichuk¹, Laurent Tanguy², and Charlotte Collet^{1,3}
¹Nancyclotep, FRANCE, ²PMB-Alcen, FRANCE, and ³Université de Lorraine, FRANCE
- T133.d** **CHARACTERIZING ACOUSTIC BEHAVIOR OF SILICON MICROCHANNELS SEPARATED BY POROUS WALLS**
Mehrnaz Hashemiesfahan^{1,2}, Pierre Gelin¹, Jo W. Christiaens¹, Han Gardeniers², and Wim De Malsche¹
¹Vrije Universiteit Brussel (VUB), BELGIUM and ²University of Twente, NETHERLANDS

T134.d IN-SITU ENZYMATIC ACTIVITY MONITORING PLATFORM USING FOIL-BASED DISPOSABLE MICROFLUIDIC CHIPS

Alvaro J. Conde¹, Veronica Mora Sanz², Elisabeth Hengge³, Jihye Jung³, Bernd Nidetzky³, Matija Strbac², Nerea Briz Iceta², Andoni Rodriguez⁴, Pakapreud Khumwan⁵, Conor O'Sullivan⁶, Nastasia Okulova⁶, and Maciej Skolimowski¹

¹Micronit BV, NETHERLANDS, ²Tecnalia-BRTA, SPAIN, ³Graz University of Technology, AUSTRIA, ⁴Bionic Surface Technologies GmbH, AUSTRIA, ⁵Joanneum Research, AUSTRIA, and ⁶Inmold AS, DENMARK

W133.d COAXIAL DUAL-ION SOURCE UTILIZING CHIP-BASED MICRO RF PLASMA AND ELECTROSPRAY IONIZATIONS FOR MASS SPECTROMETRY DETECTING OF ALL-POLARITIES SAMPLES

Yi Chi Liu and Che Hsin Lin

National Sun Yat-sen University, TAIWAN

W134.d INDEPENDENT UNIT OPERATION OF SERIALY AND PARALLELLY INTERCONNECTED MULTIPLE MICROFLUIDIC DEVICES USING CLAMPED PRESSURES

Kao-Mai Shen¹, Chihchen Chen¹, Kyojiro Morikawa^{1,2,3}, and Takehiko Kitamori^{1,2,3,4}

¹National Tsing Hua University, TAIWAN, ²University of Tokyo, JAPAN, ³Kanagawa Institute of Industrial Science and Technology, JAPAN, and ⁴Lund University, SWEDEN

e - Micro- and Nanoengineering

Bonding, Sealing & Interfacing Technologies

M136.e IRREVERSIBLE PDMS BONDING USING FLAME ACTIVATION OF ADHESIVES FOR FABRICATION OF ORGAN-ON-CHIP DEVICES

Mohammadhossein Dabaghi, Ryan Singer, and Jeremy Hirota
McMaster University, CANADA

T135.e CLEAN-ROOM FREE FABRICATION OF HYBRID GLASS CHIP FOR PRECISE OXYGEN CONTROL

Charlotte Bouquerel^{1,2}, Simon Dumas¹, Elias Abdelnour³, Ester Simkova¹, Guillem Wetherell Mateu¹, Linda Meddahi¹, Bertrand Cinquin⁴, Giacomo Groppero¹, Michael Tatoulian³, Maria Carla Parrini¹, William Cesar², and Stephanie Descroix¹

¹Institut Curie, FRANCE, ²Fluigent, FRANCE, ³PSL University, FRANCE, and ⁴Institut Pierre Gilles de Gennes, FRANCE

T136.e SEMI-AUTOMATED FABRICATION METHOD OF A HYDROGEL-BASED MICROFLUIDIC CHIP FOR CELL CULTURE

Pouya Mehrdel, Christophe Vedrine, and Gabriele Pitingolo
Biaoster, FRANCE

W135.e INTEGRATION OF GAAS-BASED LATERAL FIELD EXCITATION (LFE) SENSOR WITH PDMS MICROFLUIDIC CHANNEL: SIMULATION AND EXPERIMENTAL VALIDATION

Muhammad Hamidullah, Franck Chollet, and Thérèse Leblois
University Bourgogne Franche-Comté, FRANCE

- W136.e THE STUDY OF IRREVERSIBLE INTEGRATION OF POROUS PLASTIC MEMBRANES IN A POLY(DIMETHYLSILOXANE) MICROFLUIDIC SYSTEM FOR 3D CELL CULTURE**
Magdalena Flont, Krzysztof Mrozik, and Elżbieta Jastrzębska
Warsaw University of Technology, POLAND

Micropumps, Valves and Dispensers

- M137.e A FULLY AUTOMATED PORTABLE PERFUSION SYSTEM FOR LIQUID DOSING, CELL INCUBATION AND MONITORING**
Katarzyna Tokarska, Kamil Zukowski, and Zbigniew Brzózka
Warsaw University of Technology, POLAND

- M138.e CHARACTERIZATION OF THE FLOW PROFILE IN PUSHBUTTON-ACTIVATED MICROFLUIDIC DEVICES**
Dong Hyun Han, Gihyun Lee, Untaek Oh, and Je-kyun Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

- M139.e HIGH-RIGIDITY ON-CHIP MEMBRANE PUMP FOR HIGH-SPEED PICOLITRE PIPETTE**
Nariaki Kiyama¹, Makoto Saito¹, Yoshitaka Shirasaki², Yoko Yamanishi¹, and Shinya Sakuma¹
¹*Kyushu University, JAPAN* and ²*University of Tokyo, JAPAN*

- M140.e NUMERICAL SIMULATIONS OF POLYDIMETHYLSILOXANE (PDMS) PUMPS FOR MICROFLUIDICS APPLICATIONS**
Pablo E. Guevara-Pantoja, Fernando Benito-López, and Lourdes Basabe-Desmonts
University of the Basque Country, SPAIN

- T137.e A LOW-COST MICROFLUIDIC SENSOR WITH GLASSY CARBON/GRAPHENE ELECTRODES AND A VALVELESS MICROPUMP FOR HIGHLY SENSITIVE DETECTION OF HEAVY METAL IONS**
Peng Zhou, Yingming Xu, Terrence Simon, and Tianhong Cui
University of Minnesota, USA

- T138.e DUAL MAGNET SOLENOID ACTUATOR FOR PORTABLE MICROFLUIDIC APPLICATIONS**
Seo Jun Bae and Do Jin Im
Pukyong National University, KOREA

- T139.e METACHRONAL MOTION OF MINIATURIZED MAGNETIC ARTIFICIAL CILIA GENERATES MICROFLUIDIC FLOW**
Zhiwei Cui, Ye Wang, and Jaap den Toonder
Eindhoven University of Technology, NETHERLANDS

- T140.e PHOTOACTIVE MICROFLUIDIC PUMPS - BY SPLAY ALIGNED LIQUID CRYSTAL NETWORK ACTUATORS**
Christina A. Schmidleithner¹, Yuxin You², Dirk J. Broer², and Johannes R. Peham¹
¹*AIT Austrian Institute of Technology, AUSTRIA* and ²*Technical University of Eindhoven, NETHERLANDS*

- W137.e A PORTABLE SPRING-POWERED 3D-PRINTED WIND-UP SYRINGE PUMP FOR MICROFLUIDIC APPLICATIONS**
Se Been Park and Joong Ho Shin
Pukyong National University, KOREA

W138.e FABRICATION OF AN AUTOMATED, NON-ELECTRIC SYRINGE PUMP THAT PUMPS LIQUIDS SEQUENTIALLY USING A SPIRAL SPRING FOR IMMUNOASSAY

Minseon Kim and Joong Ho Shin
Pukyung National University, KOREA

W139.e MICROSCALE IN-TUBE CHECK-VALVE

Edwin En-Te Hwu¹, Dali Reda¹, Bilge G. Kyuchuk¹, Tien-Jen Chang¹,
Nikolaj Gadegaard², and Anja Boisen¹
¹*Technical University of Denmark, DENMARK* and
²*University of Glasgow, UK*

Microscale Fabrication, Patterning and Integration
M141.e 3-D PRINTED MICRO-OPTOFLUIDIC CHAMBER FOR CELL POPULATION CHARACTERIZATION AND VELOCITY DETECTION

Emanuela Cutuli, Giovanna Stella, Dario Sanalitra, Lorena Saitta,
Francesca Guarino, Gianluca Cicala, and Maide Bucolo
University of Catania, ITALY

M142.e ACOUSTICALLY LEVITATED STRUCTURAL COLOR VOXELS WITH VARIED ULTRASOUND SENSITIVITY FOR AERIAL DISPLAYS

Hayato Goto, Satoshi Nishita, and Hiroaki Onoe
Keio University, JAPAN

M143.e COST-EFFECTIVE LITHO-FREE TECHNIQUE FOR HIGH THROUGHPUT SINGLE CELL TRAPPING AND BIOPRINTING USING WETTABILITY CONTRAST AND SUPERHYDROPHOBIC COPPER SURFACES

Khuushi¹, Sanna Showkat², and Prosenjit Sen¹
¹*Indian Institute of Science, INDIA* and
²*National Institute of Technology, Srinagar, INDIA*

M144.e ENGINEERING SUB-10 MICRON CAPILLARY-SCALE MICROVASCULATURE MODELS IN HYDROGEL

Shusei Kawara¹, Brian Cunningham^{1,2}, James Bezer¹, Neelima Kc¹,
Jun Ishihara¹, James J. Choi¹, and Sam H. Au^{1,2}
¹*Imperial College London, UK* and
²*Cancer Research UK Convergence Science Centre, UK*

M145.e FABRICATION OF PERIODIC SURFACE STRUCTURE ON NANO-ENABLED GRAPHENE OVER KAPTON POLYAMIDE MEMBRANES USING FEMTOSECOND LASER

Suman Chatterjee, Abhijit Cholkar, David Kinahan, and Dermot Brabazon
Dublin City University, IRELAND

M146.e FUNCTIONALITIES INTEGRATION IN 3D-PRINTED MICROFLUIDICS USING A "PRINT-PAUSE-PRINT" STRATEGY

Bastien Venzac¹, Laurent Malaquin¹, Vincent Raimbault¹,
Corentin Tregouet³, Elise Bou^{1,2}, Timothée Derkenne³,
and Matthieu Sagot^{1,2}
¹*LAAS - CNRS, FRANCE*, ²*Smartcatch, FRANCE*, and
³*ESPCI Paris, FRANCE*

M147.e IMPROVED SINGLE-SHOT THREE-DIMENSIONAL PRINTING METHOD BY EXPLOITING STEREOGRAPHIC OPTICAL PROXIMITY CORRECTION IN GRAYSCALE LITHOGRAPHY

Jinsik Yoon and Wook Park
Kyung Hee University, KOREA

- M148.e MICROLUIDICS FOR HOBBYISTS**
Ladislav Derzsi, Yurii Promovych, Shreyas Vasantham,
and Piotr Garstecki
Polish Academy of Sciences, POLAND
- M149.e DESIGN AND DEVELOPMENT OF INTRICATE MICRO-CHANNELS TO IMPROVE MICROFLUIDIC HEAT-SINK PERFORMANCE**
Pramod Vishwakarma, Win-Jet Luo, and Bivas Panigrahi
National Chin-Yi University of Technology, TAIWAN
- M150.e POROUS MEMBRANE-ASSISTED MAGNETIC BEADS METHOD FOR COMPETITIVE IMMUNODETECTION OF VANCOMYCIN**
Shaofeng Wang^{1,2}, Yechang Guo¹, Yi Zhang¹, Qingmei Xu¹, Songtao Dou¹,
Jiajie Kang², and Wei Wang^{1,3}
¹*Peking University, CHINA*, ²*China University of Geosciences, CHINA*, and
³*National Key Laboratory of Science and Technology on Micro/Nano Fabrication, CHINA*
- M151.e SPHEROID FORMATION IN PDMS MICROFLUIDIC DEVICES FABRICATED FROM 3-D PRINTED MOLDS WITH STEEL BALL ARRAYS**
Ziya Isiksacan^{1,2}, Rahime Senturk^{1,2,3}, Ismail Bilican⁴,
Aslihan Gokaltun^{1,2,5}, and O. Berk Usta^{1,2}
¹*Massachusetts General Hospital and Harvard Medical School, USA*, ²*Shriners Children's Boston, USA*, ³*Eindhoven University of Technology, NETHERLANDS*, ⁴*Aksaray University, TURKEY*, and ⁵*Hacettepe University, TURKEY*
- M152.e UTILIZATION OF POLY (LACTIC-CO-GLYCOLIC) ACID FOR ON-CHIP REAGENT ENCAPSULATION IN DISPOSABLE THERMOPLASTIC CHIPS**
Jaesung Lee, Evan Benke, Ian M. White, and Don L. DeVoe
University of Maryland, USA
- T141.e 4D PRINTING OF SEQUENTIAL-CURING SYSTEM FOR FABRICATION OF MICROFLUIDIC DEVICES FOR BIOASSAYS**
David Böcherer, Yuanyuan Li, Bastian E. Rapp, and Dorothea Helmer
University of Freiburg, GERMANY
- T142.e AN OPEN-SOURCE MICROFLUIDIC DESIGN AUTOMATION WORKFLOW FOR 3D PRINTING**
Brady Goenner¹, Scott Temple¹, Sebastian Zapata²,
Pierre Emmanuel-Gaillardon¹, Gregory Nordin²,
and Bruce K. Gale¹
¹*University of Utah, USA* and ²*Brigham Young University, USA*
- T143.e DIRECT WRITING TECHNIQUE FOR COMBINATORIAL SCREENING OF SOLUTION-PROCESSABLE MULTI-MATERIAL FILMS AND COATINGS**
Anindya L. Roy and Konrad Walus
University of British Columbia, CANADA
- T144.e ENHANCEMENT OF IMPEDANCE CYTOMETRY SIGNAL WITH DIMENSION-ADJUSTABLE MICROFLUIDIC CHANNEL**
Trisna Julian¹, Tao Tang², Yoichiro Hosokawa¹, and Yaxiaer Yalikun¹
¹*Nara Institute of Science and Technology, JAPAN* and
²*National University of Singapore, SINGAPORE*

- T145.e FABRICATION OF VILLI MICROINTESTINAL STRUCTURES FOR EVALUATION OF INTESTINAL MICROBIOTA**
Yota Yamakawa¹, Wataru Iwasaki², and Noritada Kaji¹
¹*Kyushu University, JAPAN* and ²*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*
- T146.e HIGH-RESOLUTION SURFACE REPLICATION OF LIVING ORGANISMS USING AIR-THROUGH-PRECURSOR SUCTION-AUGMENTED REPLICA MOLDING**
Seok Joon Mun, Wookyoung Jang, Ji Yeon Eom, Hyeon Ung Kim, and Ki Wan Bong
Korea University, KOREA
- T147.e IN-SITU SYNTHESIS AND FLUID FLOW CHARACTERIZATION OF VERTICAL CELL IMPRINTED POLYMER (CIP) BASED MEMBRANES IN MICROCHANNELS FOR FUTURE ELECTROCHEMICAL SENSING APPLICATIONS**
Ayobami E. Oseyemi¹, Alireza Zabihhesari¹, Garrett Kraft², and Pouya Rezaei¹
¹*York University, CANADA* and ²*Sixth Wave Innovations Inc., CANADA*
- T148.e MICROPATTERNED CYCLIC OLEFIN COPOLYMER FOILS FOR ENHANCED CELL GROWTH IN MICROFLUIDICS**
Jiří Smejkal¹, Petr Aubrecht¹, Petr Malinský², Marcel Štofík¹, and Jan Malý¹
¹*Jan Evangelista Purkyně University in Ústí nad Labem, CZECH REPUBLIC* and ²*Academy of Sciences of the Czech Republic, CZECH REPUBLIC*
- T149.e PARALLEL HIGH-THROUGHPUT SINGLE-CELL PRINTING PLATFORM FOR OPTOPERATION MEDIATED LARGE CARGO DELIVERY**
Gayathri Rajeswari¹, Pallavi Gupta², Moeto Nagai³, Pallab Sinha Mahapatra¹, and Tuhin Subhra Santra¹
¹*Indian Institute of Technology, Madras, INDIA*,
²*CSIR-Central Drug Research Institute (CDRI), INDIA*, and
³*Toyohashi University of Technology, JAPAN*
- T150.e RAPID, LOW-COST FABRICATION OF VALVED ELECTRONIC MICROFLUIDICS VIA INKJET-PRINTING AND XUROGRPAHY (MINX)**
Kruthika Kikkeri and Joel Voldman
Massachusetts Institute of Technology, USA
- T151.e STOPPING INERTIAL FLOW WITHIN A MICROFLUIDIC CHANNEL**
Mehmet Akif Sahin, Muhammad Usman Akhtar, and Ghulam Destgeer
Technical University of Munich, GERMANY
- W140.e "AGC-ACE" PROCESS, HIGH-PRECISION AND HIGH-SPEED DEEP MICROFABRICATION TECHNIQUE OF SILICA GLASS USING HYDROGEN FLUORIDE GAS AND CATALYST**
Yoshitaka Ono^{1,2}, Kohei Sano¹, and Yasuo Hayashi¹
¹*AGC Inc., JAPAN* and ²*Tokyo University of Science, JAPAN*
- W141.e A NOVEL METHOD OF CLEANING SLA 3D PRINTED MICROFLUIDIC DEVICES THROUGH CENTRIFUGATION**
Kim Nicolau, Vipul Gupta, Fernando Maya Alejandro, and Michael C. Breadmore
University of Tasmania, AUSTRALIA

- W142.e APPLICATION OF BIOLOGICAL ADHESION MECHANISM TOWARD FLUIDIC SELF-ASSEMBLY**
Akira Ito and Hiroaki Suzuki
Chuo University, JAPAN
- W143.e ELECTROHYDRODYNAMIC JET ASSISTED RAPID PROTOTYPING OF NON-SACRIFICIAL MICROFLUIDIC TEMPLATES: APPLICATION TO SOFT LITHOGRAPHY AND HOT EMBOSING**
Anupam Choubey and Supreet Singh Bahga
Indian Institute of Technology, Delhi, INDIA
- W144.e FABRICATION OF BIOMIMETIC AND FLAT COLLAGEN SCAFFOLDS CONTAINING EMBEDDED MICROCHANNELS INSIDE 3D EXTRACELLULAR MATRICES WITH 2D BASEMENT MEMBRANE LININGS**
Ali Maghzian, Neda Fakhri, Arezoo Khalili, Terry Sachlos, and Pouya Rezaei
York University, CANADA
- W145.e FACILE FABRICATION OF HIERARCHICALLY STRUCTURED SUPERHYDROPHOBIC GLASS SUBSTRATES**
Kathryn Pacheco^{1,2} and Don DeVoe^{1,2}
¹*University of Maryland, USA and*
²*Fischell Institute for Biomedical Devices, USA*
- W146.e HYBRID PLASMONIC NANOCAVITY MICROCHIP FOR SINGLE EVASERS MOLECULAR PROFILING**
Mahsa Jalali, Carolina del Real Mata, Yao Lu, Laura Montermini, Janusz Rak, and Sara Mahshid
McGill University, CANADA
- W147.e MICROCHANNEL FABRICATION WITH SMOOTH SURFACE AND HIGH ETCHING SELECTIVITY ON GLASS SUBSTRATE**
Kyojiro Morikawa^{1,2,3}, Po-yin Chen¹, Hai Linh Tran¹, Yutaka Kazoe⁴, Chihchen Chen¹, and Takehiko Kitamorij^{1,3,5}
¹*National Tsing Hua University, TAIWAN,* ²*University of Tokyo, JAPAN,*
³*Kanagawa Institute of Industrial Science and Technology, JAPAN,*
⁴*Keio University, JAPAN, and* ⁵*Lund University, SWEDEN*
- W148.e NEW MULTI-RESOLUTION 3D PRINTING: 2 μM CHANNELS AND TINY DIFFUSION MIXER IN ONLY 0.017 MM³ PRINTED VOLUME**
Dallin Miner, Matthew Viglione, Kent Hooper, Adam T. Woolley, and Gregory P. Nordin
Brigham Young University, USA
- W149.e PARYLENE-BASED MICROCHANNELS FOR BRAIN DRUG DELIVERY APPLICATIONS**
Feyza Pirim, Akin M. Yilmaz, Ali C. Atik, Haluk Kulah, and Mahmut K. Aslan
Middle East Technical University, TURKEY
- W150.e SINGLE-CELL TRAPPING AND RELEASING METHOD USING NITROGEN GAS GENERATED FROM LIGHT-RESPONSIVE GAS-GENERATING POLYMER (LGP)**
Hidetaka Ueno¹, Yoshinori Akagi², and Shohei Yamamura³
¹*Kobe University, JAPAN,* ²*Sekisui Chemical Co., Ltd., JAPAN,*
³*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

- W151.e SUPERHYDROPHILIC/ SUPERHYDROPHOBIC DROPLET MICROARRAYS FOR NUCLEIC ACID DETECTION**
 Mohammad Awashra¹, Pinja Elomaa², Päivi Saavalainen², and Ville Jokinen¹
¹Aalto University, FINLAND and ²University of Helsinki, FINLAND

Nanoscale Fabrication, Patterning and Integration

- M153.e FABRICATION OF HOMOGENEOUS SHELL-ISOLATED SERS SUBSTRATES FOR CATALYTIC APPLICATIONS**
 Ketki Srivastava¹, Thimo S. Jacobs², Stefan Ostendorf³, Dirk Jonker⁴, Arturo Susarrey Arce⁴, Han Gardeniers⁴, Gerhard Wilde³, Bert M. Weckhuysen², Albert van den Berg¹, Ward van der Stam², and Mathieu Odijk¹
¹University of Twente, NETHERLANDS, ²Utrecht University, NETHERLANDS, ³WWU Münster, GERMANY, and ⁴University of Twente, NETHERLANDS

- M154.e HIGH-THROUGHPUT NANOPARTICLE ALIGNMENT AND PATTERNING USING WRINKLE-BASED NANOCANNEL ARRAY: TOWARD MULTIPLEX BIOSENSORS**
 Yeonghoon Jeong, Jungyu Park, Minsu Kwon, and Taesung Kim
 Ulsan National Institute of Science and Technology (UNIST), KOREA

- T152.e BUBBLE DEGASSING CHARACTERISTICS VIA NANOSTRUCTURES ON THE SUBSTRATE OF A MICROFLUIDIC DEVICE**
 Hyewon Kim¹, Hyewon Lim¹, Yejin Nam², Sanghyun Lee², Sangmin Lee², and Hyungmo Kim¹
¹Gyeongsang National University, KOREA and ²Donggeui University, KOREA

- T153.e NANOSCALE LENSES EMBEDDED IN MICROFLUIDIC CHANNELS FOR SIZE-SELECTIVE OPTICAL TRAPPING AND GUIDING OF PARTICLES**
 Brigham Pope and Stephen Jacobson
 Indiana University, USA

- T154.e TARGETED INSERTION OF DNA NANOPORE INTO GIANT LIPOSOMES**
 Hiroki Koiwa¹, Shin-ichiro M. Nomura², Satoshi Murata², and Kan Shoji¹
¹Nagaoka University of Technology, JAPAN and ²Tohoku University, JAPAN

- W152.e ENHANCED BIOMOLECULE SENSING USING NANOWIRE-INTEGRATED PLASTIC LABWARE FABRICATED BY INJECTION MOLDING FOR IMPROVED ANTIBODY DETECTION**
 Jung Kim, Yujin Jung, Jong-Hwan Lee, Sung Kyun Lee, Nam Hoon Kim, and Hong Gi Kim
 Korea Research Institute of Chemical Technology, KOREA

- W153.e SELF-ASSEMBLED, HIERARCHICAL NANOPATTERNED STRUCTURES TO ENHANCE DURABILITY OF LUBRICANT INFUSED SURFACES**
 Joowon Lim, Beomsu Kim, Chenrui Li, Geonho Lee, Seokhyun Noh, Junho Oh, and Won Chul Lee
 Hanyang University, KOREA

New Materials and Surface Modification

- M155.e ARTIFICIAL IRIS FOR ENHANCED ANTI-COUNTERFEITING STRATEGIES**
 Cheolheon Park¹ and Daewon Lee²
¹Seoul National University, KOREA and ²Myongji University, KOREA

- M156.e MEMS COMPATIBLE SUBSTRATES FOR CYANOBACTERIA MOTILITY STUDIES IN LOC DEVICES**
Lourdes Albina Nirupa Julius¹, Lukas Matter¹, Nils Schuergers², Johannes Lützenkirchen¹, Vanessa Trouillet¹, Teba Gil-Díaz^{1,3}, Emil R. Mamleyev¹, Annegret Wilde², Vlad Badilita¹, and Jan G. Korvink¹
¹Karlsruhe Institute of Technology, GERMANY, ²University of Freiburg, GERMANY, and ³Friedrich Schiller University Jena, GERMANY
- M157.e OMNIPHOBIC AND SUBSTRATE-INDEPENDENT SPRAY COATING CONSISTING OF HIERARCHICAL STRUCTURES PREVENTS THE TRANSMISSION OF INFECTIOUS DISEASES ON HIGH-TOUCH SURFACES**
Noor Abu Jarad, Kenneth Rachwalski, Fereshteh Bayat, Shadman Khan, Amid Shakeri, Roderick MacLachlan, Martin Villegas, Eric D. Brown, Leyla Soleymani, and Tohid F. Didar
McMaster University, CANADA
- T155.e HIGH-RESOLUTION 3D IMAGING OF CANCER CELLS INFILTRATING A CYTOP V-GROOVE MICROCHANNEL DIRECTLY WRITTEN BY FS-LASER**
Kazunari Ozasa, Kotaro Obata, Hiroyuki Kawano, Atsushi Miyawaki, and Koji Sugioka
Institute of Physical and Chemical Research (RIKEN), JAPAN
- T156.e NANOFIBERS WITH DIFFERENT PHYSICOCHEMICAL PROPERTIES AS A NEW SUBSTRATE FOR MICRO- AND NANOENGINEERING USED FOR HYPOXIA SIMULATION OF HUMAN CARDIOMYOCYTES**
Zuzanna Iwoń¹, Aleksandra Kierłańczyk¹, Ewelina Krogulec², Michał Wojasiński¹, Iwona Łopianiak¹, and Elżbieta Jastrzębska¹
¹Warsaw University of Technology, POLAND and ²Nencki Institute of Experimental Biology PAS, POLAND
- T157.e OSTEMER AS A MATERIAL SUITABLE FOR BIOLOGICAL MICROFLUIDIC APPLICATIONS**
Petr Aubrecht, Jiří Smejkal, Petr Panuška, Klára Španbauerová, Viktorie Neubertová, Jindřich Matoušek, Stanislav Vinopal, Michaela Liegertová, Marcel Štofík, and Jan Malý
Jan Evangelista Purkyně University in Ústí nad Labem, CZECH REPUBLIC
- W154.e A SCALABLE, MICROFLUIDIC APPROACH FOR FABRICATION OF METER-LONG ALIGNED COLLAGEN SHEET FOR LOAD-BEARING SCAFFOLDS**
Samuel V. Lasinski, Lihua Wei, Yuming Zhang, Chantel Campbell, Wuyang Gao, and Axel Guenther
University of Toronto, CANADA
- W155.e INFLUENCE OF AIR PLASMA TREATMENT ON THE CONTACT ANGLE OF FLEXDYM®**
Samuel Wenger, Mattéo Meister, Laure Jeandupeux, Frédéric Flahaut, Jérôme Charmet, and Alexandra Homsy
Haute Ecole Arc, SWITZERLAND
- W156.e NEW PDMS CROSSLINKING PROCEDURE**
Michał Chudy, Elżbieta Jastrzębska, Monika Mehra, and David Madukwe
Warsaw University of Technology, POLAND

W157.e TOWARDS ECO-FRIENDLY LAB-ON-A-CHIP WITH BIO-SOURCED POLYMER

Morgane Zimmer¹, Stephane Trombotto², Anne-Laure Deman¹, and Emmanuelle Laurenceau¹

¹Université Claude Bernard Lyon 1, FRANCE and

²Ingénierie des Matériaux Polymères, FRANCE

Others
M158.e A METHOD FOR REGULATING THE FATE OF STEM CELLS USING SELF-POWERED DEVICES

Jing Li and Dahai Ren

Tsinghua University, CHINA

T158.e ADAPTATION OF OPENROAD FOR MICROFLUIDIC DESIGN AUTOMATION

Brady Goenner¹, Scott Temple¹, Pierre Emmanuel-Gaillardon¹, Gregory Nordin², and Bruce K. Gale¹

¹University of Utah, USA and ²Brigham Young University, USA

f - Sensors and Detection Technologies
Chemical & Electrochemical Sensors
M159.f DEVELOPMENT OF AN ORIGINAL MICROMACHINED FLUIDIC CIRCUIT BOARD FOR A COMPACT MULTIGAS DETECTION SYSTEM EXCLUSIVELY BASED ON MEMS COMPONENTS

Florence Ricoul, Jean-Baptiste Tissot, Raymond Charles, Armelle Keiser, and Nicolas Verplanck

University Grenoble Alpes, FRANCE

M160.f EXTRACTION-FREE DETECTION OF LISTERIA MONOCYTOGENES WITH AN ELECTROCHEMICAL LAMP-BASED SENSOR IN FOOD SAMPLES

Ane Rivas Macho¹, Unai Eletxigerra², Ruth Díez-Ahedo²,

Santos Merino^{2,3}, Felipe Goñi-de-Cerio¹, and Garbiñe Olabarria¹

¹GAIKER Technology Center, SPAIN, ²TEKNIKER, SPAIN, and

³University of the Basque Country, SPAIN

M161.f MICROFLUIDIC BIOSENSOR FOR THE CONTINUOUS ENZYMATIC DETECTION OF ORGANOPHOSPHATE PESTICIDES IN WATER

Julie Lachaux, Celestine Mairaville, Menel Ben Frej, Hervé Volland, Stephanie Simon, and Karla Perez Toralla

Paris-Saclay University, FRANCE

M162.f MICROFLUIDIC IMMUNOSENSOR FOR IMMUNE RESPONSE DETECTION OF ANTIBIOTIC RESISTANT BACTERIA AND VACCINES

Ruta Grinyte¹, Pol Monterde¹, Daniel M. Prats¹, David Cecilia¹, Pooya Azizian^{1,2}, and Joan M. Cabot¹

¹Leitat Technological Center, SPAIN and

²Technical University of Catalonia, SPAIN

M163.f NANODISC-BASED PORTABLE BIOELECTRONIC NOSE FOR MONITORING OF FOOD FRESHNESS IN GAS PHASE

Hyun Seok Song

Korea Institute of Science and Technology, KOREA

- M164.f** **PLA/AU MICRONEEDLES-BASED ELECTROCHEMICAL SENSORS FOR INTERSTITIAL FLUID GLUCOSE MONITORING: FACILE FABRICATION AND SUPERIOR PERFORMANCE**
Shicheng Zhou, Toshihiro Kasama, Ryo Miyake, and Madoka Takai
University of Tokyo, JAPAN
- M165.f** **SMART SENSOR LID FOR MONITORING PH IN MULTIWELL PLATES**
Micaela T. Oliveira^{1,2,3}, Luke Marren^{1,4}, Ana S. Martins¹, Lorena Diéguez¹, and Alar Ainla¹
¹*International Iberian Nanotechnology Laboratory (INL), PORTUGAL*,
²*University of Minho, PORTUGAL*, ³*University of Oulu, FINLAND*, and ⁴*Technological University Dublin, IRELAND*
- T159.f** **DEVELOPMENT OF ELECTROCHEMICAL DNA SENSOR WITH NANOPORE-BASED DNA EXTRACTION FUNCTION**
Haruki Tanabe, Hiromu Akai, and Kan Shoji
Nagaoka University of Technology, JAPAN
- T160.f** **INTEGRATION AND RELIABILITY OF THIN FILM ELECTRODES IN MINIATURIZED ELECTROCHEMICAL CELLS**
Elizaveta Vereshchagina¹, Karolina Kolczyk-Siedlecka², Zbigniew Szklarz², Aina K. Herbjørnrød¹, Paul Wittendorp¹, Guido Sordo¹, Shruti Jain¹, Chi Hoang¹, Sigurd Moe¹, Anand Summanwar¹, and Pawel Wojcik²
¹*SINTEF Digital, NORWAY* and
²*redoxme AB sp. z o.o. Oddział w Polsce, POLAND*
- T162.f** **MOLECULARLY IMPRINTED ELECTROCHEMICAL SENSOR BASED ON THE POLY(O-PHENYLENEDIAMINE-CO-O-AMINOPHENOL) FOR DETECTION OF WHITE SPOT SYNDROME VIRUS VIA VIRAL ENVELOPE PROTEIN VP28**
Young-ran Yun
Gwangju Institute of Science and Technology (GIST), KOREA
- T163.f** **NANOPORE SENSING FOR NUCLEIC ACID DETECTION AT FEMTOMOLAR LEVELS WITHOUT AMPLIFICATION**
Nanami Takeuchi and Ryuji Kawano
Tokyo University of Agriculture and Technology, JAPAN
- T164.f** **POINT-OF-CARE MULTIPLEXED ELECTROCHEMICAL BIOSENSOR FOR SALIVARY HEART FAILURE BIOMARKERS**
Trey W. Pittman¹, Chuck Henry^{1,4}, Chamindie Punyadeera^{2,3}, Xi Zhang², and Daniel Decsi²
¹*Colorado State University, USA*, ²*Griffith University, AUSTRALIA*,
³*Translational Research Institute, AUSTRALIA*, and
⁴*Chulalongkorn University, THAILAND*
- W158.f** **ANALYTICAL DETERMINATION OF TRANSEPITHELIAL ELECTRICAL RESISTANCE FROM ELECTRIC CELL-SUBSTRATE IMPEDANCE SENSING METHOD AS THE DIAMETER OF THE ELECTRODES GOES MICRO**
Jose Yeste^{1,2,3,4}, Xavi Illa^{3,4}, Nitesh Shashikanth^{1,2}, Denise Marrero^{3,4}, Anton Guimerà-Brunet^{3,4}, Rosa Villa^{3,4}, and Jerrold R. Turner^{1,2}
¹*Brigham and Women's Hospital, USA*, ²*Harvard Medical School, USA*,
³*Instituto de Microelectronica de Barcelona, IMB-CNM (CSIC), SPAIN*, and
⁴*Centro de Investigacion Biomedica en Red en Bioingenieria, Biomateriales y Nanomedicina (CIBER-BBN), SPAIN*

- W159.f ELECTROCHEMICAL MICROFLUIDIC SENSOR BASED ON CELL IMPRINTED POLYMER-COATED MICROWIRES FOR SELECTIVE RECOGNITION OF BACTERIA IN WATER**
Shiva Akhtarian¹, Satinder Kaur Brar¹, Garrett Kraft², and Pouya Rezai¹
¹York University, CANADA and ²Sixth Wave Innovations Inc., CANADA
- W160.f MICROBIAL COUNTING IN AN ARRAY OF MICROCHAMBERS COMBINED WITH A CHEMICAL IMAGING SENSOR**
Ko-ichiro Miyamoto¹, Yohta Horie¹, Ryuju Arai¹, Carl Frederik Werner², and Tatsuo Yoshinobu¹
¹Tohoku University, JAPAN and ²Kyoto Institute of Technology, JAPAN
- W161.f MICROFLUIDIC DETERMINATION OF EQUIVALENCE AND ISOELECTRIC POINTS USING 3D-PRINTED FLOW CELL AND OPEN-SOURCE AUTOMATION STRATEGY**
Robin Dinter, Lennart Helwes, Stijn De Vries, Henning Jibben, Marcel Pillath, and Norbert Kockmann
TU Dortmund University, GERMANY
- W162.f NANO-STRUCTURIZED LEAD NEEDLES PRODUCED UTILIZING SULFURIC ACID ELECTRO-ETCHING FOR ELECTROCATALYTIC DETECTION OF PIROXICAM IN URINE**
Wei-Ren Hou, Dai-En Li, and Che-Hsin Lin
National Sun Yat-sen University, TAIWAN
- W163.f PAPER-BASED ELECTROCHEMICAL LACTATE SENSOR FABRICATED BY LASER-INDUCED GRAPHENE TECHNIQUE FOR HUMAN SWEAT ANALYSIS**
Jinze Chen, Panpan Gao, Toshihiro Kasama, Madoka Takai, and Ryo Miyake
University of Tokyo, JAPAN

Optical Detection & Imaging

- M166.f A HIGH-SENSITIVITY, HIGH Q-FACTOR TERAHERTZ METASURFACE SENSOR BASED ON SURFACE LATTICE RESONANCES FOR BIOCHEMICAL DETECTION**
Sun Hongshun, Li Liye, Ma Lijun, Cao Yunhao, Chen Yusa, Xiong Shisong, Yang Bingquan, and Wu Wengang
Peking University, CHINA
- M167.f ALGINATE/TIO₂ BEAD BIOSYSTEM FOR CHOLESTEROL DETERMINATION IN A MICROFLUIDIC DEVICE**
Sandra Garcia-Rey¹, Juncal A. Alonso-Cabrera¹, Udara B. Gunalitake¹, Lourdes Basabe-Desmonts^{1,2}, and Fernando Benito-López¹
¹University of the Basque Country, SPAIN and ²IKERBASQUE, SPAIN
- M168.f DEPENDENCE ON MOLECULAR ADSORPTION AND DESORPTION ON THE SERS STRUCTURE USING BOEHMITE**
Shunya Saegusa¹, Taku Tanaka¹, Ryota Tanaka¹, Masayuki Naya², Takao Fukuoka¹, Yuichi Utsumi¹, and Akinobu Yamaguchi¹
¹University of Hyogo, JAPAN and ²Keio University, JAPAN
- M169.f DUAL-FIELD CELL CHARACTERIZATION AND SORTING VIA NEUROMORPHIC-ENABLED IMAGING FLOW CYTOMETRY**
Weihua He, Yongxiang Feng, Fei Liang, Junwen Zhu, and Wenhui Wang
Tsinghua University, CHINA

- M170.f IN-LINE MICRO SPECTROMETER AS THE COLOR AND CONCENTRATION SENSOR WITH A STRUCTURAL COLOR POLYMER**
Satoshi Nishita and Hiroaki Onoe
Keio University, JAPAN
- M171.f NEXT GENERATION IN-SITU SENSING-ON-CHIP (μ SOC)**
Chayenne W.C. van Dongen¹, Georgia Kontaxi¹, Hanieh Bazyar¹, Behrooz Fereidoonzehad¹, Nikolas Gaio², and Tawab Karim²
¹*Delft University of Technology, NETHERLANDS* and
²*Bi/ond, NETHERLANDS*
- M172.f THREAD-BASED OPTICAL BIOSENSOR FOR UREA DETERMINATION**
Izabela Lewińska¹, Paweł Bącał², Miguel M. Erenas^{3,4}, Luis Fermín Capitán-Vallvey^{3,4}, and Łukasz Tymecki¹
¹*University of Warsaw, POLAND*, ²*Polish Academy of Sciences, POLAND*,
³*University of Granada, SPAIN*, and ⁴*University of Granada, SPAIN*
- T165.f 3D BIOPRINTED HYDROGEL SENSOR WITH OPTICAL DETECTION TOWARDS RAPID PH-BASED SALIVARY DIAGNOSTICS**
Magdalena Łabowska, Agnieszka Krakos (Podwin), and Wojciech Kubicki
Wroclaw University of Science and Technology, POLAND
- T166.f A LABEL-FREE STRATEGY TO CLASSIFY MICROEMBOLUS AND WHITE BLOOD CELLS IN MICRORESERVOIRS USING LENSLESS IMAGING POWERED WITH DEEP LEARNING-BASED ALGORITHMS**
Alperay E. Tarim¹, Oyku Doyran¹, Eda Efe¹, Ozden Yalcin-Ozuyul¹, and Cumhuri H. Tekin^{1,2}
¹*Izmir Institute of Technology, TURKEY* and ²*METU MEMS Center, TURKEY*
- T167.f AN ANGLE-MULTIPLEXED ALL-METAL METASURFACE FOR REFRACTIVE INDEX SENSING BASED ON SURFACE LATTICE RESONANCE**
Liye Li and Wengang Wu
Peking University, CHINA
- T168.f DEVELOPMENT OF A GLOBOTRIAOSYL CERAMIDE (GB3) SUPPORTED LIPID BILAYER (SLB)-FORMED MICROCHIP TO OPTICALLY DETECT SHIGA TOXIN IN FOODS**
Jeongtae Kim¹, Keying Li¹, Jeongyun Kim², Moo-Seung Lee³, and Chiwan Koo¹
¹*Hanbat National University, KOREA*, ²*Dankook University, KOREA*, and ³*Korea Research Institute of Bioscience and Biotechnology (KRIBB), KOREA*
- T169.f EGGSHELL BIOACTIVE MEMBRANE-ASSISTED FABRICATION OF COPPER NANOCLUSTERS AS A VOLATILE AMMONIA-RESPONSIVE FLUORESCENT PROBE FOR EVALUATION OF CHRONIC KIDNEY DISEASE STAGE AT AMBIENT TEMPERATURE**
Yi-Hsin Chien, Kuan-Hsiang Yeh, Zheng-Da Du, Wei-Chen Lin, and Yu-Ling Huang
Feng Chia University, TAIWAN

- T170.f** **IONIC LIQUID-BASED DYE NANOEMULSION USING MERCYANINE DYE: HIGHLY-SENSITIVE AND RAPIDLY-RESPONSIVE ION-SENSING COMPONENT OF HYDROGEL-BASED MICROANALYTICAL DEVICES**
Yu Koizumi, Shuto Oka, Kenji Sueyoshi, Tatsuro Endo, and Hideaki Hisamoto
Osaka Metropolitan University, JAPAN
- T171.f** **PHYSIOLOGICAL GLUCOSE SENSING IN 3D TUMOUR SPHEROIDS USING SERS BASED NANO PARTICLE SENSORS**
Koyel Dey^{1,2}, Venkanagouda S. Goudar¹, Fan Gang Tseng¹, and Tuhin Santra²
¹*National Tsing Hua University, TAIWAN* and
²*Indian Institute of Technology, Madras, INDIA*
- W165.f** **3D PRINTED CELL ENCAPSULATION SYSTEM TOWARDS DRY-RESISTANT YEAST-BASED BIOHYBRID SENSOR**
Kazuki Nishimoto, Minghao Nie, and Shoji Takeuchi
University of Tokyo, JAPAN
- W166.f** **A SURFACE LATTICE RESONANCE BIOCHEMICAL SENSOR BASED ON A COMPOSITE METAL METASURFACE**
Liye Li, Lijun Ma, Yifan Ouyang, and Wengang Wu
Peking University, CHINA
- W167.f** **AN OPEN SPACE OPTOFLUIDIC SENSOR BASED ON WHISPERING GALLERY MODE MICROSPHERES FOR VIRUS DETECTION**
Bin Guan¹, Tuck-Weng Kok², Nicolas Riesen¹, David G. Lancaster¹, Koukou Suu³, and Craig Priest¹
¹*University of South Australia, AUSTRALIA*, ²*University of Adelaide, AUSTRALIA*, and ³*ULVAC Inc., JAPAN*
- W168.f** **DEVELOPMENT OF SILICON NITRIDE INTEGRATED PHOTONICS PLATFORM FOR BIOSENSING APPLICATIONS**
Mateusz Slowikowski, Marcin Juchniewicz, Marcin Lelit, Adrian Duszczyk, Sylwia Karon, Krystian Pavlov, Maciej Filipiak, Bartłomiej Stonio, Bartosz Michalak, Michał Golas, Marcin Mysliwiec, and Piotr Wisniewski
Warsaw University of Technology, POLAND
- W169.f** **FLUOROMETRIC DETECTION OF SALMONELLA IN WATER USING CELL IMPRINTED POLYMER THIN FILMS INTEGRATED WITH A MICROFLUIDIC DEVICE**
Islam Mahmoud¹, Ali Doostmohammadi¹, Garret Kraft², and Pouya Rezaei¹
¹*York University, CANADA* and ²*Sixth Wave Innovations Inc, CANADA*
- W170.f** **MICROFLUIDIC ELECTROCHEMICAL SURFACE-ENHANCED RAMAN SCATTERING SENSORS FOR DETECTION OF PESTICIDES IN SURFACE WATERS**
Elizaveta Vereshchagina¹, Karolina Milenko¹, Rebeca Moldovan², Aina K. Herbjørnørud¹, Anand Summanwar¹, Guido Sordo¹, Sigurd Moe¹, Firehun Tsige Dullo¹, Cosmin Farcau³, and Ede Bodoki²
¹*SINTEF Digital, NORWAY*, ²*University of Medicine and Pharmacy, ROMANIA*, and ³*National Institute for Research and Development of Isotopic and Molecular Technologies, ROMANIA*

W171.f SELF-ASSEMBLED PHOTSENSITIVE DNA/SG-I NANOFLOWER-ASSISTED COLORIMETRIC SENSOR FOR DETECTION OF CARCINOEMBRYONIC ANTIGEN

Shan He, Huiting Lian, Xuegong Cao, Bin Liu, and Xiaofeng Wei
Huaqiao University, CHINA

Physical Sensors

M173.f COULOMETRIC DETECTION OF FLOW RATE IN A MICROCHANNEL USING ON-CHIP MICROELECTRODES

Harsh Deswal¹, Ullas Pandey², Shiv G. Singh², and Amit Agrawal¹
¹*Indian Institute of Technology, Bombay, INDIA* and
²*Indian Institute of Technology, Hyderabad, INDIA*

M174.f FLEXIBLE ULTRA THIN GLASS SHEET CANTILEVER INTEGRATED WITH STRAIN GAUGE SENSOR FOR STIFFNESS MEASUREMENT

Yapeng Yuan^{1,3}, Yaxiaer Yalikun², and Yo Tanaka³
¹*Osaka University, JAPAN*, ²*Graduate School of Nara Institute of Science and Technology, JAPAN*, and ³*Institute of Physical and Chemical Research (RIKEN), JAPAN*

M175.f POSITION INDEPENDENT MICROPARTICLE SENSING WITH SUB MICROELECTRODES 3-D INTEGRATED WITH MICROWAVE SENSORS

Yağmur C. Alataş¹, Uzay Tefek¹, Burak Sari², and Mehmet S. Hanay¹
¹*Bilkent University, TURKEY* and ²*Sabancı University, TURKEY*

T173.f EIS MONITORING OF SINGLE YEAST GROWTH AND DISSECTION ON A MEA-INTEGRATED MICROFLUIDIC DEVICE

Zhao Zhang¹, Mingze Luo¹, Liudi Dong¹, Haoran Wu¹, Yanze Shi¹, Yingying Wang¹, Xiao Xie¹, Zixin Wang², Qing-An Huang¹, and Zhen Zhu¹
¹*Southeast University, CHINA* and ²*Sun Yat-Sen University, CHINA*

T174.f MICRO ULTRASONIC ENDOSCOPE ARRAYS FOR INVASIVE KNEE JOINT DIAGNOSTICS

Yuchen Chiang, Chien-Chong Hong, and Tong-Miin Liou
National Tsing Hua University, TAIWAN

T175.f STUDY ON GEOMETRIC STRUCTURE OPTIMIZATION OF SPATIAL POSITIONING DEVICE BASED ON FLOATING ELECTRODES

Tan Wang, Qiang Fang, and Liang Huang
Hefei University of Technology, CHINA

W172.f CLOSED LOOP, LOCALIZED TEMPERATURE CONTROL FOR MICRO-FLUIDICS

Saima Hamid, Naveen Kumar K. Ramakrishnan, and Shishir Kumar
Indian Institute of Technology, Hyderabad, INDIA

W173.f ELECTRO-MICROFLUIDIC DETECTION AND QUANTIFICATION OF MICROPLASTICS IN WATER: SALINITY'S IMPACT ON SENSOR PERFORMANCE

Haider Warraich, Alireza Zabihhesari, Shooka Karimpour, and Pouya Rezai
York University, CANADA

W174.f ORIGAMI-INSPIRED TACTILE SENSOR WITH ENHANCED SENSITIVITY IN POSTURE AND BRUXISM DETECTION

Rajat Subhra Karmakar¹, Chia-Pei Chu¹, Jhih-Fong Huang², Jui-I Chao², Ying-Chih Liao¹, and Yen-Wen Lu¹

¹National Taiwan University, TAIWAN and

²National Yang Ming Chiao Tung University, TAIWAN

Others

M176.f EVALUATION METHOD FOR INTERNAL ELASTIC DISTRIBUTIONS OF CELL CULTURE ENVIRONMENTS BY USING ARRAYED LIGHT-DRIVEN GEL ACTUATORS

Hibiki Nakajima¹, Yoshiyuki Yokoyama², Masaya Hagiwara³, and Takeshi Hayakawa¹

¹Chuo University, JAPAN, ²Toyama Industrial Technology Research and Development Center, JAPAN, and ³Institute of Physical and Chemical Research (RIKEN), JAPAN

M177.f SMARTPHONE-BASED TACHOMETER FOR LOW-COST POINT-OF-CARE CENTRIFUGAL MICROFLUIDICS APPLICATIONS

Noa Lapins, Ahmad Saleem Akhtar, and Aman Russom
KTH Royal Institute of Technology, SWEDEN

T176.f MULTIPLEXED BIOSENSOR USING QUARTZ-ON-SILICON MICRO-ACOUSTIC (QSIM) TECHNOLOGY FOR IN-VITRO LABEL-FREE INVESTIGATION OF HEMOSTASIS

Aleksander Oseev^{1,4}, Franck Chollet^{1,4}, Thomas Lecompte^{2,3}, and Thérèse Leblois^{1,4}

¹University Bourgogne Franche-Comté, FRANCE, ²Université de Lorraine, FRANCE, ³Université de Genève, SWITZERLAND, and ⁴CNRS, FRANCE

W175.f A MINIATURIZED 3-D-MRI SCANNER FEATURING A HIGH-VOLTAGE SOI ASIC FOR NON-INVASIVE OBJECT RECONSTRUCTION AND FLOW ANALYSIS

Shuhao Fan¹, Qi Zhou¹, Ka-Meng Lei¹, Rui P. Martins^{1,2}, and Pui-In Mak¹

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

W176.f PERMITTIVITY-BASED MICROPARTICLE CLASSIFICATION BY THE INTEGRATION OF IMPEDANCE CYTOMETRY AND MICROWAVE RESONATORS

Uzay Tefek¹, Burak Sari², and Mehmet S. Hanay¹

¹Bilkent University, TURKEY and ²Sabancı University, TURKEY

g - Other Applications of Microfluidics

Artificial Intelligence and Microfluidics

M178.g AUTONOMOUS CELL DISTRIBUTION CONTROL MICROFLUIDIC SYSTEM BASED ON DEEP REINFORCEMENT LEARNING

Kenji Tamura, Takaaki Abe, and Yoshiaki Ukita
University of Yamanashi, JAPAN

M179.g EVALUATING DONOR RED BLOOD CELL QUALITY USING BLOOD SMEARS AND DEEP LEARNING

Erik S. Lamoureux¹, You Cheng¹, Emel Islamzada¹, Kerryn Matthews¹, Simon P. Duffy^{1,2}, and Hongshen Ma^{1,3}

¹University of British Columbia, CANADA, ²British Columbia Institute of Technology, CANADA, and ³Vancouver General Hospital, CANADA

- T177.g ARTIFICIAL INTELLIGENCE-BASED VESSEL-ON-A-CHIP PLATFORM FOR ACCURATE IDENTIFICATION OF DEVELOPMENTAL STAGES IN VASCULOGENESIS**
Hang Zhou, Taiga Irisa, Kazuya Fujimoto, and Ryuji Yokokawa
Kyoto University, JAPAN
- T178.g DEEP LEARNING-BASED OBJECT DETECTION FOR SOIL BACTERIAL COMMUNITY ANALYSIS IN MICROFLUIDICS**
Hanbang Zou, Alexandros Sopasakis, Francois Maillard, Erik Karlsson, Julia Duljas, Simon Silwer, Pelle Ohlsson, and Edith C. Hammer
Lund University, SWEDEN
- T179.g SEGMENTATION, FEATURE EXTRACTION AND CLASSIFICATION OF LEUKOCYTES LEVERAGING DEEP NEURAL NETWORKS**
Tingxvan Fang^{1,2}, Xvkun Huang^{1,3}, Xiao Chen^{1,3}, Deyong Chen^{1,3}, Junbo Wang^{1,3}, and Jian Chen^{1,3}
¹Chinese Academy of Sciences, CHINA, ²Wuhan University, CHINA, and ³University of Chinese Academy of Sciences, CHINA
- W177.g ARTIFICIAL INTELLIGENT IDENTIFICATION AND CLASSIFICATION OF SINGLE CANCER CELLS USING HYPERSPECTRAL IMAGE COMBINED WITH MACHINE LEARNING WITHOUT FLUORESCENCE LABELING**
Chih-Ching Hsu¹ and Fan-Gang Tseng^{1,2}
¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN
- W178.g DEEP LEARNING-ENABLED HIGH-THROUGHPUT DETECTION OF SARS-COV-2 VARIANT OF CONCERN USING THE CENTRIFUGAL MICROFLUIDIC PLATE**
Li Zhang and Youchun Xu
Tsinghua University, CHINA

Fuel Cells & Energy

- W179.g INSIGHTS IN OPERATION OF MEMBRANELESS MICRO FLOW BATTERIES**
Alberto E. Quintero^{1,2}, Beatriz Oraá-Poblete¹, Daniel Perez-Antolin¹, Ange A. Maurice², and Alberto Bernaldo de Quirós¹
¹Micro Electrochemical Technologies S.L., SPAIN and ²Carlos III of Madrid University, SPAIN

Microfluidics for X-Ray and e-Beam Applications

- M180.g CREATION OF A BIOLOGICAL X-RAY IMAGING SYSTEM INCORPORATING A MICROFLUIDIC SYSTEM**
Akinobu Yamaguchi, Kanta Yamamoto, Shunya Saegusa, Hidehiro Ishizawa, Masahiro Takeo, Sho Amano, Satoru Suzuki, and Yuichi Utsumi
University of Hyogo, JAPAN
- M181.g X-RAY-COMPATIBLE MICROFLUIDIC DEVICE FOR DIELECTROPHORETIC MANIPULATION AND TRAPPING OF CELLS AND MICROPARTICLES**
Simone De Carli¹, Neus Godino¹, Christian Guernth-Marschner¹, Chang Liu^{2,3}, Wilhelm Eschen^{2,3}, Jan Rothhardt^{2,3,4}, and Michael Kirschbaum¹
¹Fraunhofer IZI-BB, GERMANY, ²Friedrich-Schiller-University Jena, GERMANY, ³Helmholtz-Institute Jena, GERMANY, and ⁴Fraunhofer IOF, GERMANY

T180.g DROPLET-ON-DEMAND SAMPLE DELIVERY AT A PULSED X-RAY SOURCE
 Sebastian Dehe, Mark S. Hunter, Raymond G. Sierra, Thomas Kroll, and Daniel P. DePonte
Stanford University, USA

W180.g IN SITU X-RAY DIFFRACTION OF ACCELERATED CEMENT CARBONATION WITH A 3D-PRINTED MICROFLUIDIC DEVICE
 Valentin Herault, Eddy Foy, Valérie Geertsen, Corinne Chevallard, Stéphane Poyet, and Mark A. Levenstein
Université Paris-Saclay, FRANCE

Microfluidics in Military and Defense Applications

T181.g AT-HOME BIOAEROSOL SAMPLING USING AEROSOLIZED DROPLETS AND OPEN MICROFLUIDICS
 Wan-chen Tu, Jodie C. Tokihiro, David N. Phan, Tammi L. van Neel, Ulri N. Lee, Jean Berthier, Igor Novosselov, John S. Meschke, Ashleigh B. Theberge, and Erwin Berthier
University of Washington, USA

Paper-Based Microfluidics

M182.g BASIC EVALUATION OF COLORIMETRIC SIGNALING ON PAPER-BASED ANALYTICAL DEVICES FOR TRACE HEAVY METAL ION ANALYSIS
 Misaki Nakagawa, Sera Ohta, Yuki Hiruta, and Daniel Citterio
Keio University, JAPAN

M183.g COMBINATION OF PAPER-BASED MICROFLUIDICS AND A CAFETIÈRE-BASED PRE-CONCENTRATION PROCESS FOR ON-SITE DETECTION OF COPPER CONTAMINATION IN WATERS
 Jacqueline Karlsson¹, Pablo Giménez-Gómez¹, Samantha Richardson², Alexander Iles¹, and Nicole Pamme¹
¹Stockholm University, SWEDEN and ²University of Hull, UK

M184.g IMPACT OF PAPER CHARACTERISTICS ON CHEMIRESTOR SWEAT VOLUME SENSOR
 Genis Rabost-Garcia^{1,2}, Laura Verdaguer-Sánchez¹, and Jasmina Casals-Terré¹
¹Universitat Politècnica de Catalunya, SPAIN and ²Onalabs Inno-hub S.L., SPAIN

M185.g PAPER FLUIDICS FOR THE INVESTIGATION OF ROOT EXUDATES OF LIVING PLANTS IN SPACE AND TIME
 Daniel Patko¹, Udara B. Gunatilake¹, Lionel X. Dupuy^{2,3}, Lourdes Basabe-Desmonts^{1,3}, and Fernando Benito-López¹
¹University of the Basque Country, SPAIN, ²NEIKER, SPAIN, and ³IKERBASQUE, SPAIN

M186.g SMART AND PORTABLE PAPER-BASED SENSOR FOR ON-SITE DETECTION OF NITRATES AND LEAD IONS IN ENVIRONMENTAL MONITORING
 Akashlina Basu and Soumen Das
Indian institute of Technology, Kharagpur, INDIA

- T182.g BLOOMSAFE: DEVELOPING A COST-EFFECTIVE, RAPID, AND PORTABLE DIAGNOSTIC TOOL FOR THE DETECTION OF TOXINS RESULTING FROM ALGAL BLOOMS**
 Marcus S. Hill, Andrew P. Dean, James Redfern, and Kirsty J. Shaw
Manchester Metropolitan University, UK
- T183.g DEVELOPMENT OF A DISTANCE-BASED PAPER ANALYTICAL DEVICE FOR ON-SITE MONITORING OF DISSOLVED INORGANIC CARBON IN INLAND WATERS**
 Pablo Giménez-Gómez¹, Iris Hättestrand¹, Susanne Sjöberg¹, Christophe Dupraz¹, Samantha Richardson², Mike Rogerson³, and Nicole Pamme¹
¹*Stockholm University, SWEDEN*, ²*University of Hull, UK*, and ³*Northumbria University, UK*
- T184.g MULTIPLEXED ANALYSIS OF SOIL NUTRIENTS WITH CAFETIÈRE-BASED EXTRACTION AND PAPER-BASED ANALYTICAL DEVICES (PADS) FOR ON-SITE MONITORING**
 Nicolina Priem¹, Pablo Giménez-Gómez¹, Samantha Richardson², and Nicole Pamme¹
¹*Stockholm University, SWEDEN* and ²*University of Hull, UK*
- T185.g PAPER-BASED MICROFLUIDIC DEVICE FOR THE DETECTION OF MICROBIAL CONTAMINATION AND ANTIMICROBIAL RESISTANCE IN DRINKING WATER**
 Yuwei Pan^{1,2} and Zhugen Yang¹
¹*Cranfield University, UK* and ²*University of Glasgow, UK*
- W181.g AN OFFLINE DEEP LEARNING-ASSISTED AUTOMATED PAPER-BASED MICROFLUIDIC PLATFORM**
 Sixuan Duan^{1,2}, Tianyu Cai¹, Fuyuan Liu^{1,2}, Hang Yuan¹, Yifan Li^{1,2}, Wenwen Yuan^{1,2}, Keran Jiao¹, Min Chen^{1,2}, Yuyuan Chen¹, and Pengfei Song^{1,2}
¹*Xi'an Jiaotong-Liverpool University, CHINA* and ²*University of Liverpool, UK*
- W182.g CAPILLARY-DRIVEN MICROFLUIDICS COUPLED WITH PAPER-BASED PLATFORM FOR RAPID AND USER-FRIENDLY DETECTION OF WATER CONTAMINANTS**
 Prakash Aryal¹, Claire Hefner¹, Eric Brack², Todd Alexander², and Charles Henry^{1,3}
¹*Colorado State University, USA*, ²*U.S. Army Combat Capabilities Development Command (DEVCOM), USA*, and ³*Chulalongkorn University, USA*
- W183.g EVALUATION OF PAPER-BASED LATERAL-FLOW STRIP FOR EARLY DIAGNOSIS OF BREAST CANCER USING ACTUAL HUMAN SERUM**
 Jungchan Shin¹, Dongwoo Kim¹, Keunkoo Shin¹, Yugyeong Kim², Eunae Kang², Jongam Song¹, and Kyoungsoon Suh¹
¹*E&S Healthcare Co., Ltd., KOREA* and ²*Nature Inspired Energy Technology (NIET), KOREA*

- W184.g** **ORIGAMI PAPER MICROFLUIDIC ASSAY TO TEST EDIBLE OIL QUALITY**
Pavithra Sukumar¹, Muhammedin Deliorman¹, Fernando Castano¹, Dana H. Abujalban³, Muhammad A. Datt³, and Mohammad A. Qasaimeh^{1,2}
¹New York University, Abu Dhabi, UAE, ²New York University, USA, and ³Jordan University of Science and Technology, JORDAN

- W185.g** **REAL-TIME FLOW MONITORING PLATFORM FOR PAPER-BASED MICROFLUIDIC DEVICES**
Isidoro Ruiz-García, Pablo Escobedo, Celia E. Ramos-Lorente, Miguel M. Erenas, Luis F. Capitan-Vallvey, Miguel A. Carvajal, Alberto J. Palma, and Nuria Lopez-Ruiz
University of Granada, SPAIN

Space Exploration

- M187.g** **LAB-PAYLOAD FOR BIO-NANOSATELLITE**
Patrycja Sniadek, Agnieszka Krakos, Adrianna Graja, Bartosz Kawa, Marcin Białas, Rafał Walczak, and Jan Dziuban
Wrocław University of Science and Technology, POLAND
- T186.g** **INERTIAL MICROFLUIDIC PASSIVE MIXER FOR BIOLOGICAL NANOSATELLITE MISSIONS**
Adrianna Graja, Mateusz Gumieniak, Maciej Dzimira, Tymon Janisz, and Agnieszka Krakos
Wrocław University of Science and Technology, POLAND
- T187.g** **MEMS PLASMA SPECTROMETER FOR DETECTION OF THE BIOTIC METHANE ON MARS**
Jan Dziuban¹, Paweł Knapkiewicz¹, Tomasz Grzebyk¹, and Pin Chen²
¹Wrocław University of Science and Technology, POLAND and ²Jet Propulsion Laboratory California Institute of Technology, USA

- W186.g** **INTEGRATED MICROFLUIDIC SYSTEM FOR AUTOMATED BACTERIAL CULTIVATION IN SPACE**
Wen-Ching Chen¹, Pin-Ru Huang¹, Jun-Wei Chang¹, Shao-Yu Huang¹, Chieh-Chen Huang¹, and Ya-Yu Chiang^{1,2}
¹National Chung Hsing University, TAIWAN and ²National Taiwan University, TAIWAN

- W187.g** **MEMS-BASED MASS SPECTROMETER FOR POTABLE AND SPACE APPLICATIONS**
Piotr Szyszka, Jakub Jendryka, Jan Sobków, Michał Zychła, Marcin Białas, Paweł Knapkiewicz, Jan Dziuban, and Tomasz Grzebyk
Wrocław University of Science and Technology, POLAND

Others

- M188.g** **A SELF-ALIGNING TERAHERTZ METASURFACE MICROFLUIDIC SENSOR WITH HIGH SENSITIVITY AND HIGH QUALITY FACTOR**
Yunhao Cao, Hongshun Sun, Lijun Ma, Yusa Chen, and Wengang Wu
Peking University, CHINA

T188.g GROWING THE UNKNOWN: INVESTIGATION INTO A NEW APPROACH FOR IN-SITU MICROBIAL GROWTH

Sydney K. Wheatley^{1,2}, Tina Navaei³, Emily Pope³, Tartela Alkayyali³, Christopher Cartmell⁴, Bradley A. Halti^{3,5}, Russell G. Kerr^{3,5}, and Ali Ahmadi^{1,2}

¹*École de Technologie Supérieure, CANADA*, ²*University of Montreal Hospital Research Centre, CANADA*, ³*University of Prince Edward Island, CANADA*, ⁴*University of Arizona, USA*, and ⁵*Nautilus BioSciences, CANADA*



POSTER
PRESENTATIONS

h – Late News

Cells, Organisms and Organs on a Chip

- M189.h** **A MICROFLUIDIC ANALYSIS OF CELL-CELL COMMUNICATION FOR SCREENING OF CHEMICALS TO REGULATE CIRCADIAN METABOLISM**
 Huiseong Son and Chang-Soo Lee
Chungnam National University, KOREA
- M190.h** **BIOENGINEERED HUMAN GUT-ON-CHIP MODEL TO STUDY HOST-MICROBIOME INTERACTIONS**
 Elise Delannoy, Aurélie Burette, Catherine Daniel, Laurine De Rycker, and Alexandre Grassart
University of Lille, FRANCE
- M191.h** **DEVELOPMENT OF POLY(ETHYLENE-GLYCOL)-DIMETHACRYLATE (PEGDMA)-BASED BIOINK FOR STEREOLITHOGRAPHY THREE-DIMENSIONAL (3D) PRINTING**
 Shu-Yung Chang, Joseph Zhi Wei Lee, Anupama S. Ranganath, Terry Ching, and Michinao Hashimoto
Singapore University of Technology and Design, SINGAPORE
- M192.h** **EXPLORATION OF DETRIMENTAL EFFECT OF AGES ON 3D SKELETAL MUSCLE MODEL IN MICROPHYSIOLOGICAL SYSTEM**
 Jaesang Kim¹, Inu Kim¹, Jeongmoo Han¹, Jisong Ahn², Youngmin Jo¹, Pilnam Kim¹, Hongki Yoo¹, and Jessie S. Jeon¹
¹*Korea Advanced Institute of Science and Technology, KOREA and*
²*Korea Food Research Institute, KOREA*
- M193.h** **INTEGRATION OF SENSORS ONTO POROUS MEMBRANES FOR ELECTRICAL MONITORING OF CARDIOMYOCYTES**
 Derrick J. Butler and Darwin R. Reyes
National Institute of Standards and Technology, USA
- M194.h** **MICROFLUIDIC 3D CULTURES OF SCAFFOLD-FREE CARDIOMYOCYTE SPHEROIDS DIFFERENTIATED FROM HUMAN-INDUCED PLURIPOTENT STEM CELLS**
 Marina Castro Guerrero, Päivi Järvinen, Virpi Talman, Markus Haapala, and Tiina Sikanen
University of Helsinki, FINLAND
- M195.h** **MICROGELS FOR A LARGE-SCALE SCREENING AND LONGITUDINAL OBSERVATIONS OF CANCER CELL DORMANCY**
 Misa Minegishi¹ and Hirofumi Shintaku^{1,2}
¹*RIKEN, JAPAN and* ²*Kyoto University, JAPAN*
- M196.h** **PDMS-BASED MICROFLUIDIC APPROACH FOR PRIMARY MURINE ENDOTHELIAL CELLS PHENOTYPING**
 Stefano Rocchetti¹, Kasper Marchlewicz^{2,3}, Marek Grosicki¹, Kanchana Pandian⁴, Michal Chudy³, and Stefan Chlopicki¹
¹*Jagiellonian University, POLAND,* ²*Warsaw University of Technology, POLAND,* ³*University of Warsaw, POLAND, and*
⁴*Leiden University, NETHERLANDS*

- M197.h SPONTANEOUS DYNAMIC MICROCOMPARTMENTATION IN CELL-SIZED MICRODROPLETS**
Naoki Sasaki and Sakurako Kojima
Rikkyo University, JAPAN
- T189.h A MICROFLUIDIC PLATFORM FOR STUDYING MECHANO-CHEMICAL INTERACTIONS BETWEEN CO-CULTURES OF CANCER AND ENDOTHELIAL CELLS**
Brian J. Nablo and Darwin R. Reyes
National Institute of Standards and Technology (NIST), USA
- T190.h BIOPRINTING OPTIMIZATION BY COMPUTATIONAL FLUID DYNAMICS MODELING**
Simone L. Marasso¹, Francesca Frascella², Jens Gabel³, Lucia Napione², Simona Villata², Desiree Baruffaldi², Lukas Wichmann³, and Peter Farber³
¹*CNR-IMEM, ITALY*, ²*Politecnico di Torino, ITALY*, and ³*Hochschule Niederrhein, GERMANY*
- T191.h DYNAMIC ORGAN-ON-A-CHIP FABRICATION USING DIGITAL PHOTOMASK**
Terry Ching^{1,2}, Nina Shu-Yung Chang¹, Yi-Chin Toh³, and Michinao Hashimoto¹
¹*Singapore University of Technology and Design, SINGAPORE*, ²*National University of Singapore, SINGAPORE*, and ³*Queensland University of Technology, AUSTRALIA*
- T192.h EXPLORING MICROBE-INDUCED GUT DISEASE AND THERAPEUTICS WITH A GUT MICROBIOME-ON-A CHIP**
Jeeyeon Lee, Nishanth Menon, and Chwee Teck Lim
National University of Singapore, SINGAPORE
- T193.h LUNG-ON-CHIP FOR THE STUDIES OF TUMOR HETEROGENEITY AND TARGETED THERAPY TESTS**
Yu-Che Chueh¹, Yi-Ting Ke¹, Kang-Yun Lee², Wei-Lun Sun³, and Cheng-Hsien Liu¹
¹*National Tsing Hua University, TAIWAN*, ²*Taipei Medical University, TAIWAN*, and ³*Pythia Biotech Ltd, TAIWAN*
- T194.h MICROFLUIDIC PERFUSION CULTURE DEVICE THAT APPLIES MULTIPLE DEGREES OF SHEAR STRESS AND VARIOUS FLOW TYPES**
Hayate Yamamoto¹, Jumpei Muramatsu¹, Shigenori Miura², and Hiroaki Onoe¹
¹*Keio University, JAPAN* and ²*University of Tokyo, JAPAN*
- T195.h MONITORING BRAIN ACTIVITY WITH ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY**
Shadi Karimi^{1,2}, Jasmina Casals Terre¹, and Michael Krieg²
¹*Universitat Politecnica Catalunya, SPAIN* and ²*Institute of Photonic Sciences, SPAIN*

- T196.h POLYSTYRENE LUNG-ON-A-CHIP MODEL FOR OXYGEN METABOLISM STUDIES**
Pim de Haan¹, Jean-Paul S.H. Mulder¹, Ruby E.H. Karsten¹, Monieb A.M. Ahmed¹, Maud Pijnenburg², Anika Nagelkerke¹, Irene H. Heijink², and Elisabeth Verpoorte¹
¹University of Groningen, NETHERLANDS and ²University Medical Center Groningen, NETHERLANDS
- T197.h TAPERED MICROSTEPS IN MICROCHANNELS FOR BUILDING THREE-DIMENSIONAL UNIDIRECTIONAL NEURAL NETWORKS**
Sanshiro Yanagawa¹, Midori Kato-Negishi², and Hiroaki Onoe¹
¹Keio University, JAPAN and ²Musashino University, JAPAN
- W188.h A NOVEL SILICON MESH MEMBRANE AS A SCAFFOLD FOR ORGAN-ON-CHIP APPLICATIONS**
Mariia Zakharova¹, Mar Córdor², Sohail F. Shaikh², Aaron Delahanty², Dries Braeken², Andries D. van der Meer¹, and Loes I. Segerink¹
¹University of Twente, NETHERLANDS and ²Interuniversity Microelectronics Centre, BELGIUM
- W189.h DEVELOPMENT OF A BREAST CANCER MICROENVIRONMENT PLATFORM FOR ANTI-CANCER DRUG SCREENING**
Ki-Hwan Nam and HyeMi Kim
Korea Basic Science Institute, KOREA
- W190.h ENHANCING THE ENRICHMENT OF WHITE BLOOD CELLS IN A SIZE-BASED SEPARATION MICROFLUIDIC DEVICE WITH A RECTANGULAR CHANNEL**
Dhiren Mohapatra, Rahul Purwar, and Amit Agrawal
Indian Institute of Technology Bombay, INDIA
- W191.h HIGH-THROUGHPUT ORGAN-ON-A-CHIP PLATFORM FOR OSTEOARTHRITIS MODELING AND BIOMARKER DETECTION**
Aldeliane Maria Da Silva¹, Heidi Hannula¹, Muthusamy Saranya¹, Tuan Nguyen², Sebastien Mosser², Prateek Singh², Ali Mobasher¹, and Gabriela S. Lorite¹
¹University of Oulu, FINLAND and ²Finnadvance, FINLAND
- W192.h MAGNETICALLY-ASSEMBLED ARRAYS OF MICROVASCULAR NETWORKS ON CHIP**
Katarzyna Rojek¹, Antoni Wrzos², Stanisław Żukowski², Michał Bogdan¹, Maciej Lisicki², Piotr Szymczak², and Jan Guzowski¹
¹Polish Academy of Sciences, POLAND and ²University of Warsaw, POLAND
- W193.h MICROFLUIDIC-BASED ISOLATION AND ANALYSIS OF CIRCULATING TUMOR CELLS FOR MONITORING THERAPY EFFICACY IN PANCREATIC DUCTAL ADENOCARCINOMA PATIENTS**
Malgorzata A. Witek^{1,2}, Ian M. Freed¹, Anup Kasi², Oluwadamilola Fateru¹, Mengjia Hu², Nyla Weatherington¹, Harsh Pathak², Stephen Hyter², Mateusz L. Hupert³, Prabhakar Chalish², Andrew K. Godwin², and Steven A. Soper^{1,2}
¹University of Kansas, USA, ²University of Kansas Medical Center, USA, and ³Biofluidica, Inc., USA

W194.h NOVEL LIQUID BASED OXYGEN ISOLATION TECHNOLOGY FOR SINGLE CELL SCREENING FOR MITOCHONDRIAL DISEASES
Shruti Mankar, Abhishek Kumarranjan, Kunpeng Cai,
and Kentaro Shirai
Sysmex Corporation, JAPAN

W195.h PUMPLESS FLUIDIC DEVICE FOR THE CULTURE OF MECHANOSENSITIVE CELLS UNDER UNIDIRECTIONAL RECIRCULATING FLUIDIC FLOW
Eun-Jin Lee^{1,2} and Mandy B. Esch²
¹*University of Maryland, USA* and ²*National Institute of Standards and Technology (NIST), USA*

Diagnostics, Drug Testing & Personalized Medicine

M198.h A SAMPLE-TO-ANSWER MICROFLUIDIC SYSTEM FOR NAKED-EYE DETECTION OF HEPATITIS C RNA USING IMMISCIBLE PHASE EXTRACTION COUPLED WITH ISOTHERMAL AMPLIFICATION
Mohammad N. Abo-Zeid^{1,2}, Bongkot Ngamsom¹, Alexander Iles³,
Nicole Pamme³, Cheryl Walter¹, and John Greenman¹
¹*University of Hull, UK*, ²*Assiut University, EGYPT*, and ³*Stockholm University, SWEDEN*

M199.h ANALYTICAL PANEL BASED ON SPRI BIOSENSORS FOR QUANTIFICATION OF SELECTED POTENTIAL BRAIN GLIOMA BIOMARKERS
Lukasz Oldak^{1,2} and Ewa Gorodkiewicz^{1,2}
¹*University of Bialystok, POLAND* and ²*Biomarkilo Sp. z o.o., POLAND*

M200.h DEVELOPMENT OF A PIPELINE TO STREAMLINE DESIGN OF CRISPR-BASED DIAGNOSTIC TOOLS FOR THE DIFFERENTIATION OF SARS-COV-2 VARIANTS
Gabriel Lamothe¹, Julie Carbonneau¹, Charles Joly-Beauparlant¹,
Thierry Vincent¹, Patrik Quessy², Anthony Guedon², Gary Kobinger³,
Jean-François Lemay², Guy Boivin¹, Arnaud Droit¹, Nathalie Turgeon¹,
and Jacques P. Tremblay¹
¹*Laval University, CANADA*, ²*CNETE, Inc., CANADA*, and
³*University of Texas Medical Branch, USA*

M201.h HIGH-PERFORMANCE MICROFLUIDIC DNA EXTRACTOR BASED ON OPTIMIZED EXCITATION VOLTAGE AND 3D OUT-OF-PLANE CAVITATION MICROSTREAMING
Sofonias N. Kadir, Bhargav K. Pullagura, Abdi M. Kaba, and Dohyun Kim
Myongji University, KOREA

M202.h PROTEIN DIGESTION BY THIN-LAYER NANOFLUIDIC CHANNELS
Yu-Ting Hung¹, Kyojiro Morikawa^{1,2,3}, Hai Linh Tran¹,
Chihchen Chen¹, and Takehiko Kitamori^{1,3,4}
¹*National Tsing Hua University, TAIWAN*, ²*University of Tokyo, JAPAN*,
³*Kanagawa Institute of Industrial Science and Technology, JAPAN*,
and ⁴*Lund University, SWEDEN*

T198.h ACOUSTIC TRAPPING BASED HIGH THROUGHPUT ISOLATION AND CHARACTERIZATION OF PATHOGEN ACTIVATED PLATELET DERIVED EXTRACELLULAR VESICLES FROM PLASMA
Axel Broman, Frida Palm, Genevieve Marcoux, John Semple,
Thomas Laurell, Johan Malmström, and Oonagh Shannon
Lund University, SWEDEN

- T199.h CENTRIFUGE FREE IMMUNE CELL RADIOLABELING ACHIEVED USING ACOUSTOPHORESIS METHODS**
 Stephen Adler¹, Emma Stevenson², Noriko Sato³, Julia Alsved⁴, and Peter Choyke³
¹Frederick National Laboratory for Cancer Research, USA, ²University of Alabama, USA, ³National Cancer Institute, USA, and ⁴AcouSort AB, SWEDEN
- T200.h FILTER-IN-CENTRIFUGE SEPARATION OF LOW-CONCENTRATION BACTERIA FROM BLOOD**
 Mohammad Osaid, Kaiyang Zeng, and Wouter van der Wijngaart
 KTH Royal Institute of Technology, SWEDEN
- T201.h INTEGRATED MICROFLUIDIC DEVICE FOR RAPID MIXING, LOW CONSUMPTION AND FAST DISPENSING FOR APPLICATIONS IN TIME-RESOLVED CRYOGENIC ELECTRON MICROSCOPY**
 Stefania Torino^{1,2}, Mugdha K. Dhurandhar^{1,2}, and Rouslan G. Efremov^{1,2}
¹Vlaams Instituut voor Biotechnologie, BELGIUM and ²VUB - Vrije Universiteit Brussel, BELGIUM
- T202.h TUMOR MICROENVIRONMENT LABCHIP INTEGRATING DIELECTROPHORESIS FOR HIPEC APPLICATIONS**
 Chia-Peng Wang¹, Chih-Yung Hsu¹, Mao-Chih Hsieh², Yu-Ting Tai², Jen-Tsan Ashley Chi³, Kang-Yun Lee⁴, Wei-Lun Sun⁵, and Cheng-Hsien Liu¹
¹National Tsing Hua University, TAIWAN, ²Taipei Municipal Wanfang Hospital, TAIWAN, ³Duke University, USA, ⁴Taipei Medical University, TAIWAN, and ⁵Pythia Biotech Ltd, TAIWAN
- W196.h A MICROFLUIDIC DEVICE FOR ISOLATION AND QUANTITATION OF HEPATOCYTE-SECRETED EXTRACELLULAR VESICLES AND MONITORING THEIR EXOSOMAL ENZYME ACTIVITIES ON-CHIP**
 Ehsanollah Moradi, Päivi Järvinen, Markus Haapala, and Tiina Sikanen
 University of Helsinki, FINLAND
- W197.h ADVANCING CARDIOTOXICITY ASSESSMENT: SCADA PLATFORM FOR DRUG SCREENING OF HIPSC-DERIVED CARDIOMYOCYTES**
 Alba Calatayud-Sanchez¹, Pilar Montero-Calle², Fernando Benito-López¹, Manuel M. Mazo², and Lourdes Basabe-Desmots^{1,3}
¹University of the Basque Country, SPAIN, ²University of Navarra, SPAIN, and ³Basque Foundation for Science, SPAIN
- W198.h CHARACTERIZATION OF A 3D PRINTED MICROFLUIDIC CHIP FOR LOCALIZED AND SUSTAINED STIMULATION IN HIPPOCAMPAL SLICES**
 Colby E. Witt, Maria Kristendotter, Lauren M. Delong, and Ashley E. Ross
 University of Cincinnati, USA
- W199.h FREEZE-DRYING OF IMMOBILIZED HUMAN LIVER MICROSOMES INSIDE MICROFLUIDIC ENZYME REACTORS**
 Iiro Rautola¹, Markus Haapala¹, Leo Huttunen¹, Ossi Korhonen², and Tiina Sikanen¹
¹University of Helsinki, FINLAND and ²University of Eastern Finland, FINLAND

- W200.h POINT-OF-CARE VISCOMETER FOR PORTABLE COAGULATION MEASUREMENT**
Mina Stefanovic, Alexandros Sklavounos, Qimo Huang, Lenny Chen, Anthony Yong, and Aaron Wheeler
University of Toronto, CANADA

Fundamentals in Microfluidics and Nanofluidics

- M203.h DEVELOPING MINIATURIZED OPTICAL DETECTORS INTEGRATED ON CENTRIFUGAL LAB ON DISC PLATFORMS FOR COLOR-DEPENDENT DETECTIONS**
Vahid Kordzadeh-Kermani¹, Maryam Vahid², Seyed Nezameddin Ashrafizadeh¹, Sergio O. Martinez-Chapa³, Marc J. Madou⁴, and Masoud Madadelahi³
¹*Iran University of Science and Technology, IRAN*, ²*Isfahan University of Technology, IRAN*, ³*Tecnologico de Monterrey, MEXICO*, and ⁴*University of California, Irvine, USA*
- M204.h EVAPORATION OF BACTERIA-LADEN SURROGATE RESPIRATORY FLUID DROPLETS: SESSILE MODE V/S LEVITATED MODE**
Amey Nitin Agharkar, Dipasree Hajra, Prasenjit Kabi, Dipshikha Chakravorty, Saptarshi Basu, and Vivek Jaiswal
Indian Institute of Science, INDIA
- M205.h HIGH-THROUGHPUT NUCLEIC ACID CYTOMETRY WITH HYDROLYSIS-PROBE PCR IN POLYACRYLAMIDE BEADS**
Rodrigo Cotrim Chaves and Aaron Streets
University of California, Berkeley, USA
- M206.h PERMEATION MECHANISM OF IMIDAZOLIUM-BASED ILS INTO CU3(BTC)2 SINGLE CRYSTAL**
Ichiro Ohira, Yumeng Zheng, and Kentaro Kinoshita
Tokyo University of Science, JAPAN
- M207.h RAPID, COST-EFFECTIVE CENTRIFUGAL MICROFLUIDIC DISC FOR AUTOMATED NANOLITER VOLUME ASSAY OPTIMIZATION**
Renna L. Nouwairi, Carter K. Jones, Maura E. Charette, Emilee Holmquist, Zoey Golabek, and James P. Landers
University of Virginia, USA
- M208.h SHEATH FLOW ASSISTED ELECTRO-HYDRODYNAMIC LATERAL PARTICLE MIGRATION AND SEPARATION**
Seyedamirhosein Abdorahimzadeh, Feby W. Pratiwi, Seppo J. Vainio, Henrikki Liimatainen, and Caglar Elbuken
University of Oulu, FINLAND
- T203.h DIELECTROPHORETIC MANIPULATION OF PREOSTEOBLASTIC CELLS IN PRESENCE OF A SILICA-BASED ALLOPLASTIC SCAFFOLD IN A MICROFLUIDIC FLOW CELL DEVICE**
Lilliam V. Trejos-Soto¹, Abraham Valerio-Aguilar^{2,3}, Guido A. Ramírez-González¹, Sergio A. Paniagua⁴, Jorge Oviedo-Quirós^{2,5}, Alfonso García-Piñeres², Carolina Centeno-Cerdas¹, and Leonardo Lesser-Rojas²
¹*Costa Rica Institute of Technology (TEC), COSTA RICA*, ²*University of Costa Rica, COSTA RICA*, ³*Kent State University, USA*, ⁴*National Center for High Technology (CENAT), COSTA RICA*, and ⁵*National Children's Hospital, COSTA RICA*

- T204.h FLOW RATE-INDEPENDENT MULTISCALE MICROFLUIDIC SYSTEM AND ITS APPLICATIONS FOR THE CAPTURE AND STUDY OF CTCs**
Jing Yan¹ and Jerome Charmet²
¹University of Cambridge, UK, CHINA and ²University of Applied Sciences Western Switzerland, SWITZERLAND
- T205.h INTEGRATED MICROVALVES FOR AUTONOMOUS ON-CHIP FLOW CONTROL**
Mohammed Shahadha¹, Denise Gruner^{1,2}, Anthony Beck¹, Andreas Voigt¹, Markus Friedemann², Paula Kalenczuk¹, Stefan Grünzner¹, Franziska Obst¹, Uwe Marschner¹, Mario Menschikowski², and Andreas Richter¹
¹Technische Universität Dresden, GERMANY and ²University Hospital Carl Gustav Carus Dresden, GERMANY
- T206.h PLATFORM BASED ON ACTIVE-MATRIX DIGITAL MICROFLUIDICS FOR HIGH-THROUGHPUT SINGLE-CELL PROCESSING AND SINGLE-CELL PROTEOMICS**
Siyi Hu^{1,2}
¹Chinese Academy of Sciences, CHINA and ²Guangdong ACXEL Micro & Nano Tech Co., Ltd, CHINA
- T207.h REMOVAL OF DMSO FROM CELL SAMPLES USING ACOUSTIC TRAPPING**
Albin Hermansson, Anke Urbansky, and Mikael Evander
AcouSort AB, SWEDEN
- W201.h AN INTEGRATED MULTIPLEXED CHIP FOR DIGITAL DROPLET LOOP-MEDIATED ISOTHERMAL AMPLIFICATION**
Paul Gaube, Elfi Töpfer, and Claudia Gärtner
microfluidic ChipShop GmbH, GERMANY
- W202.h EFFICIENT OIL MICRODROPLET COLLECTION USING SPACE-FILLING OPEN MICROFLUIDIC CHANNELS WITH OLEOPHILIC AND OLEOPHOBIC SURFACES**
Yusho Segawa¹, Kentaro Kinoshita¹, and Hiroyuki Kai^{1,2}
¹Tokyo University of Science, JAPAN and ²Toyo University, JAPAN
- W203.h FREEZE FRAME IMAGING- A NEW IMAGING TECHNIQUE FOR FAST DYNAMICS PARTICLE TRACKING**
Ola Jakobsson¹, Massimiliano Rossi², Christian Cierpka³, and Per Augustsson¹
¹Lund University, SWEDEN, ²University of Bologna, ITALY, and ³Technische Universität Ilmenau, GERMANY
- W204.h NUMERICAL SIMULATION FOR COMPARISON OF MIXING EFFICIENCY IN SERPENTINE CHANNELS WITH DIFFERENT FLOW DIRECTIONS**
Hyeonji Hong¹, Jaehwan Jeong², Il Doh¹, and Eunseop Yeom²
¹Korea Research Institute of Standards and Science, KOREA and ²Pusan National University, KOREA
- W205.h PUMP-FREE UNIDIRECTIONAL COLLOID TRANSPORT SYSTEM BASED ON LIGHT-DRIVEN SELF-ASSEMBLY IN WEDGE-SHAPED GAP**
Natsumi Watanabe and Hiroaki Onoe
Keio University, JAPAN

- W206.h REUSABLE WIRE ELECTRODE INTERFACE FOR DROPLET MERGING WITH A PULSE-WIDTH FLOW MODULATION CONTROL SYSTEM TO SIMPLIFY DROPLET-BASED MICROFLUIDIC TISSUE SAMPLING**
Andresa Bresler Bezerra, Md Mohibullah, and Christopher J. Easley
Auburn University, USA

Integrated Microfluidic Platforms

- M209.h DEVELOPMENT OF MULTI-MATERIAL 3D-PRINTED MICROFLUIDIC CONNECTORS FOR NANOPARTICLE SYNTHESIS**
Muhammad Mubashar Saeed, David Kinahan, Nicholas Dunne, Eadaoin Carthy, and Srishti Agarwal
Dublin City University, IRELAND

- M210.h MICROFLUIDIC DISTILLATION DEVICE WITH CONTROLLING GAS AND LIQUID FILM FLOW**
Chengyu Hsu¹, Kyojiro Morikawa^{1,2,3}, Satoru Matsuoka⁴, Morihito Saito⁴, Masaharu Ueno⁵, Chihchen Chen¹, and Takehiko Kitamori^{1,3,6}
¹*National Tsing Hua University, TAIWAN*, ²*University of Tokyo, JAPAN*, ³*Kanagawa Institute of Industrial Science and Technology, JAPAN*, ⁴*Daicel Corporation, JAPAN*, ⁵*Tokushima University, JAPAN*, and ⁶*Lund University, SWEDEN*

- T208.h A PORTABLE HEATING AND COOLING TEMPERATURE CONTROLLER FOR ORGAN CHIPS**
Shiemaa A.M. Elhassan¹, Gurhan Özkayar¹, Joost Lötters^{1,2}, Nicolaas J.H. Raat³, and Murali K. Ghatkesar¹
¹*Delft University of Technology, NETHERLANDS*, ²*Bronkhorst B.V., NETHERLANDS*, and ³*Erasmus Medical Centre, NETHERLANDS*

- T209.h ELECTROKINETIC-ASSISTED CONTINUOUS SEPARATION OF CATIONIC DYES USING ANION-EXCHANGEABLE MULTISCALE-POROUS CHANNELS**
Woonjae Choi and Geunbae Lim
Pohang University of Science and Technology, KOREA

- T210.h PRECISE SYNTHESIS OF COPOLYMERS USING SERIALY CONNECTED GLASS MICROFLUIDIC CHIPS**
Adelina Smirnova¹, Hisashi Shimizu¹, Yu Sugimoto¹, Kyojiro Morikawa^{1,2}, Takahiro Aratani³, Atsushi Mori³, Makoto Ouchi⁴, Chihchen Chen², and Takehiko Kitamori^{1,2,5}
¹*University of Tokyo, JAPAN*, ²*National Tsing Hua University, TAIWAN*, ³*Daicel Corporation, JAPAN*, ⁴*Kyoto University, JAPAN*, and ⁵*Lund University, SWEDEN*

- W207.h A SEMI-AUTOMATED MONODISPERSITY-TUNABLE MAGNETIC PLATFORM FOR ON-CHIP IMMUNOMAGNETIC SEPARATION OF BACTERIA**
Didem Rodoplu Solovchuk¹, Shou-Yu Ma¹, Jing-Yi Yang¹, Hung-Yu Chien¹, and Chia-Hsien Hsu^{1,2,3}
¹*National Health Research Institutes, TAIWAN*, ²*National Tsing Hua University, TAIWAN*, and ³*National Chung Hsing University, TAIWAN*

W208.h FLUIDIC CONTROL OF AN INTEGRATED AND MODULAR SYSTEM FOR DIAGNOSING ISCHEMIC STROKE

Katie Childers¹, Harshani Wijerathne¹, Sheila de Melo Barros¹, Favour Nwachukwu¹, Mateusz L. Hupert², Farhad Shiri¹, Malgorzata A. Witek¹, Daniel S. Park³, Alison Baird⁴, and Steven A. Soper¹

¹University of Kansas, USA, ²Biofluidica, Inc, USA, ³Louisiana State University, USA, and ⁴SUNY Downstate Medical Center, USA

W209.h PROTEIN-PROTEIN INTERACTION MEASUREMENT USING PARTICLE DIFFUSOMETRY IN A LOW-VOLUME MICROFLUIDIC CHIP

Hui Ma, Aiswarya A. Ramanujam, Jacqueline C. Linnes, and Tamara L. Kinzer-Ursem
Purdue University, USA

Micro- and Nanoengineering

M211.h A NEW POLYMERIC, BIODEGRADABLE, AND MINIMALLY INVASIVE GLAUCOMA IMPLANT

Inês C.F. Pereira
Eindhoven University of Technology, NETHERLANDS

M212.h IMPROVING INTERFACIAL ADHESION OF HYDROGEL MATRICES TO PDMS-BASED MICROFLUIDIC PLATFORMS

Yu Na, Utku Devamoglu, Séverine Le Gac, and Julieta I. Paez
University of Twente, NETHERLANDS

M213.h LOW-COST MICROFLUIDIC PDMS MOLDS BASED ON PCB SILKSCREEN FOR EDUCATIONAL AND RAPID PROTOTYPING USE

Marco Carminati
Politecnico di Milano, ITALY

M214.h THE PREPARATION OF SERS SUBSTRATE USING ULTRASONIC-ASSISTED FABRICATION METHOD FOR THE DETECTION OF HUMAN IGG

Aysen Gumustas^{1,2}, Hilal Torul³, Mert Kerem Ulku⁴, M.A. Sahir Arıkan⁴, Ugur Tamer^{1,3}, and Ender Yildirim^{1,4}

¹METU MEMS Center, TURKEY, ²Ankara University, TURKEY, ³Gazi University, TURKEY, and ⁴Middle East Technical University, TURKEY

T211.h AN INTEGRATED BIOSENSOR FOR AFLATOXIN B1 DETECTION

Yi Liu, Cong Lin, and Jiahao Miao
Peking University, CHINA

T212.h FABRICATION OF WARP-RESISTANT MICROMOLDS BY DIGITAL-LIGHT-PROCESSING (DLP) PRINTING

Nie Xiaolei, Nidhi Nagaraju, and Michinaho Hashimoto
Singapore University of Technology and Design, SINGAPORE

T213.h MICROFLUIDIC FRONT DYNAMICS FOR THE CHARACTERIZATION OF PUMPS FOR LONG-TERM AUTONOMOUS MICROSYSTEMS

Yara Alvarez-Braña¹, Andreu Benavent-Claro², Fernando Benito-López¹, Aurora Hernandez-Machado², and Lourdes Basabe-Desmonts¹

¹University of the Basque Country, SPAIN and ²University of Barcelona, SPAIN

- T214.h STUDYING AND IMPROVING THE CYTOCOMPATIBILITY OF SLA RESINS**
 Bastien Venzac³, Sem Bertelink¹, Ludivine Laffont², Isabelle Grasseau², Karine Reynaud², Marie Saint-Dizier², and Séverine Le Gac¹
¹University of Twente, NETHERLANDS, ²PRC - INRAE, FRANCE, and ³LAAS - CNRS, FRANCE
- W210.h DEVELOPING A BACKSIDE PHOTOLITHOGRAPHY METHOD FOR CREATING MICROFLUIDIC BLOOD OXYGENATORS WITH ROUNDED CROSS-SECTIONS AND HIERARCHICAL BLOOD VASCULAR NETWORKS**
 Neda Saraei and Ravi Selvaganapathy
 McMaster University, CANADA
- W211.h IN-LINE QUALITY CONTROL SYSTEM FOR THE STATE-OF-THE-ART ROLL-TO-ROLL MASS-MANUFACTURING PROCESS FOR VERSATILE MICROFLUIDIC SYSTEMS**
 Nastasia Okulova¹, Victor J. Tolstrup¹, Conor O'Sullivan¹, Anja Haase², Andoni Rodriguez³, Andreas Flanschger³, Alvaro Conde⁴, Maciej Skolimowski⁴, Veronica Mora Sanz⁵, Nerea Briz Iceta⁵, and Jan Kafka¹
¹Inmold A/S, DENMARK, ²JOANNEUM RESEARCH, AUSTRIA, ³bionic surface technologies GmbH, AUSTRIA, ⁴Micronit Micro Technologies, NETHERLANDS, and ⁵Tecnalia Research and Innovation, SPAIN
- W212.h NOVEL MAGNETIC CULTURE SUBSTRATES: POLYCARBONATE AND POLYDIMETHYLSILOXANE MEMBRANES FOR STUDYING CARDIAC CELL RESPONSES**
 Oliwia Tadko¹, Dominik Kołodziejek¹, Zuzanna Żółtowska¹, Natalia Wasiak¹, Marcin Drozd^{1,2}, and Elżbieta Jastrzębska^{1,2}
¹Warsaw University of Technology, POLAND and ²Center of Advanced Materials and Technologies, POLAND

Other Applications of Microfluidics

- M215.h IMAGE-TO-HYDRAULIC RESISTANCE: PRE-TRAINED ARTIFICIAL NEURAL NETWORK MODEL TO OVERCOME HAGEN-POISEUILLE EQUATIONS LIMITATIONS**
 Juan Sandubete-López^{1,2}, Patrick Finn¹, José L. Risco-Martín², and Alexander H. McMillan¹
¹Elvesys Microfluidic Innovation Center, FRANCE and ²Universidad Complutense de Madrid, SPAIN
- M216.h UTILIZING CHATGPT TO ASSIST CAD FOR MICROFLUIDIC DEVICES**
 Brady L. Goenner, Matt D. Nelson, and Bruce K. Gale
 University of Utah, USA
- T215.h THE AUTOMATION AND CHARACTERIZATION OF A MICROFLUIDIC ACOUSTIC LEVITATION SYSTEM FOR SYNCHROTRON SAMPLE DELIVERY**
 Eleanor Hedges¹, Danny Axford², Davide Crivelli², Emilio Perez Juarez², Gabriel Leen³, Victoria Baker⁴, Florimond Gueniat⁴, and Peter Docker²
¹University of Sheffield, UK, ²Diamond Light Source, UK, ³University of Limerick, IRELAND, and ⁴Birmingham City University, UK

W213.h ICE-NUCLEATING PARTICLE ACTIVITY IN RIVER OUTFLOWS

Mark D. Tarn¹, Katherine H. Bastin¹, Rachel E. Sipler²,
and Benjamin J. Murray¹

¹University of Leeds, UK and ²Bigelow Laboratory for Ocean Sciences, USA

W214.h TNT PAPER-BASED SENSOR WITH ENHANCED SENSITIVITY

Viktoriia Lastivka¹, Piotr Kasprzak², Izabela Mazur², Piotr Baran²,
Wawrzyniec Pniewski², Ilona Grabowska-Jadach¹, Michal Chudy¹,
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¹Warsaw University of Technology, POLAND, ²Military Institute of Armament Technology, POLAND, and ³CEZAMAT, POLAND

Sensors and Detection Technologies

M217.h 3-D PRINTED MICROFLUIDIC DEVICES FOR IN-FIELD COLOURIMETRIC MEASUREMENT OF SOIL MACRONUTRIENTS

Reuben Mah Han Yang¹, Fernando Maya Alejandro¹, Marcus Hardie¹,
Richard Doyle¹, Lawrence Di Bella², Robert Milla³,
and Michael Breadmore¹

¹University of Tasmania, AUSTRALIA, ²Herbert Can Productivity Services Ltd, AUSTRALIA, and ³Burdekin Productivity Services, AUSTRALIA

M218.h FLUORESCENCE REPORTING COUPLED WITH AMPEROMETRIC SENSING USING A NON-POTENTIOSTAT-DRIVEN BIPOLAR ELECTRODE WITH MICROCHIP ELECTROPHORESIS

Indika K. Warnakula¹, Manjula B. Wijesinghe², and Susan M. Lunte¹

¹University of Kansas, USA and ²University of Peradeniya, SRI LANKA

M219.h INVESTIGATIONS ON RECEPTOR LAYER COMPOSITION, QUALITY OF ELECTROCHEMICAL TRANSDUCERS GOLD SURFACE AND PREPARATION PROCEDURE OF BIOSENSOR DEDICATED TO CHOSEN SARS-COV-2 GENETIC MARKERS DETECTION

Robert Ziółkowski, Jakub Krzemiński, Dominika Baran,
Anna Szymczyk, and Elżbieta Malinowska

Warsaw University of Technology, POLAND

M220.h PROOF OF PRINCIPLE HIGH SURFACE AREA MICROFLUIDIC BIOSENSOR BASED ON INTERLOCKED MICROPILLARS FOR EARLY CANCER DIAGNOSTICS

Gunita Paidere, Edmunds Zutis, Janis Cipa, Roberts Rimša,
Gatis Mozolevskis, and Andris Anspoks

University of Latvia, LATVIA

T216.h DEVELOPMENT OF A MICROFLUIDIC AIR-LIQUID INTERFACE BASED VISCOMETER FOR BIOLOGICAL APPLICATIONS

Vinaya Vinaya¹, Ayan Kumar², Stuti Maheshwari³, and Prosenjit Sen¹

¹Indian Institute of Science, Bangalore, INDIA, ²Indian Institute of Technology, Kharagpur, INDIA, and ³Texas A&M University, USA

T217.h FROM DESIGN TO PERFORMANCE: OPTIMIZING THE FABRICATION PROTOCOL AND FINE-TUNING THE PARAMETERS OF SOFT MICROFLUIDIC FORCE SENSORS

Wael Othman^{1,2} and Mohammad A. Qasaimeh^{1,2}

¹New York University Abu Dhabi, UAE and ²New York University, USA

- T218.h LAB-AROUND-FIBER FOR IMMUNOCAPTURE AND OPTICAL DETECTION OF ANTIMICROBIAL RESISTANCE MARKERS**
 Fatima Flores-Galicia, Marine Poret, Camille Frangville, Alexandre Lerner, Hervé Volland, Guillaume Laffont, and Karla Perez-Toralla
Paris-Saclay University, FRANCE
- T219.h TEMPERATURE MONITORING BY RELATIVE DIFFERENTIAL METHOD OF MOLECULAR TEMPERATURE PROBES FOR POINT-OF-CARE DIAGNOSTICS**
 Lauri K. Rannaste^{1,2}, Leena M. Hakalahti¹, and Jussi A. Hiltunen¹
¹VTT Technical Research Centre of Finland Ltd, FINLAND and
²University of Oulu, FINLAND
- W215.h A MICROFLUIDIC PLATFORM FOR SELECTIVE ON-SITE ELECTROCHEMICAL IDENTIFICATION OF ILLICIT DRUGS**
 Annemarijn Steijlen, Marc Parrilla, Robin Van Echelpoel, and Karolien De Wael
Universiteit Antwerpen, BELGIUM
- W216.h ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY (EIS) FOR RAPID PATHOGEN DETECTION IN LAB-ON-A-DISC (LOAD) PLATFORM**
 Eadaoin Carthy^{1,2}, David Boyle^{1,2}, Kellie Adamson^{1,2}, Elaine Spain^{1,2}, and Robert J. Forster^{1,2}
¹Dublin City University, IRELAND and ²National Centre for Sensor Research, IRELAND
- W217.h INTEGRATED POINT-OF-CARE MICROFLUIDIC DEVICE FOR MULTIPLEX QUANTITATIVE MONITORING OF VIRAL RESPIRATORY INFECTIONS AND IMMUNE RESPONSES WITH MOLECULARLY IMPRINTED POLYMERS**
 Roozbeh Siavash Moakhar¹, Carolina del Real Mata¹, Mahsa Jalali¹, Tamer Abdel Fatah¹, Imman Isaac Hosseini¹, Sripath Guptha Yedire¹, Houda Shafique¹, Sahar Sadat Mahshid², and Sara Mahshid¹
¹McGill University, CANADA and ²Sunnybrook Health Sciences Centre, CANADA
- W218.h NOTEM: THE NEAR-FIELD OPTICAL TRANSMISSION ELECTRON MICROSCOPY FOR AN INNOVATIVE 'IN VIVO' PARALLEL IMAGING ON THE NANOMETRIC SCALE**
 Krzysztof P. Grzelakowski
NOTEM, POLAND



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69

71

75

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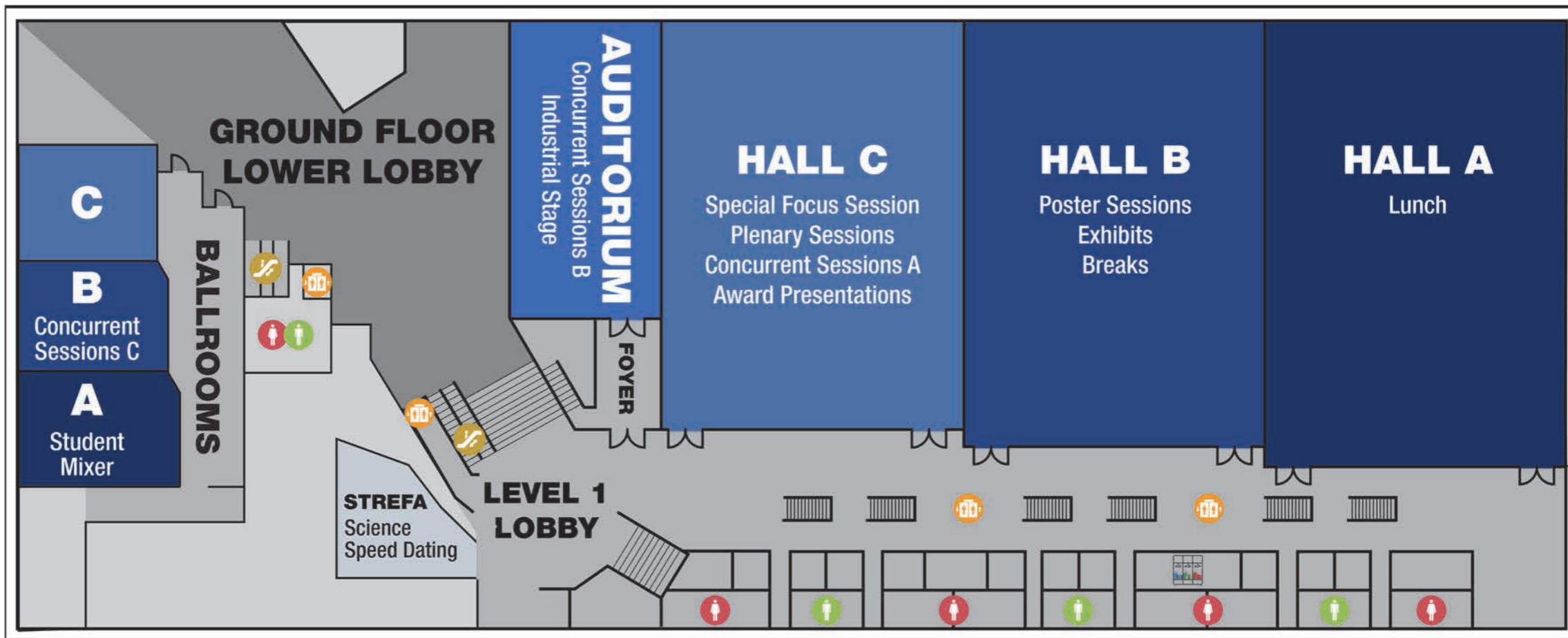
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