Final Program

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Dear MicroTAS Participant and Member of the MicroTAS Community,

Welcome to MicroTAS 2010, the 14th International Conference on Miniaturized Systems for Chemistry and Life Sciences!

This Conference is the latest in an international series of Conferences which made its debut in 1994 at the University of Twente in Enschede, The Netherlands. After 16 years and wonderful locations like Boston (2005), Tokyo (2006), Paris (2007), San Diego (2008), and Jeju Island (2009), I am very pleased to bring the meeting back to The Netherlands, this time to the northern city of Groningen.

Now in its 21st year, the microTAS field continues to grow, as evidenced by annually increasing numbers of publications and an ever-broadening research scope from fundamental micro-nanofluidics to new applications across emerging areas in chemistry and biology. If you are a veteran MicroTAS participant, you’ll note that our Technical Program of oral presentations has expanded for the first time from two to four parallel tracks. This change was implemented to reflect the growing number of researchers in our field, and ensure that the MicroTAS Conference continues to provide the best international forum for the latest advances and innovations in microfluidics / lab-on-a-chip research. Veteran or not, you’ll also note that the poster sessions, the other mainstay of our Program, boast almost 600 presentations. New this year, posters will remain on display for the duration of the Conference to provide participants extra opportunity to view them. I gratefully acknowledge the efforts of the 54 members of our Program Committee, who all worked incredibly hard to evaluate over 1100 submitted abstracts to make this yet another outstanding program. I also extend my gratitude to those 20 members of the Technical Program Committee who met in London in June to put the Final Program in place, based on the results of that abstract evaluation process. Whether you’re a veteran or newcomer to MicroTAS, I hope you will enjoy our Technical Program this year!

Finally, I’d like to thank you for coming to Groningen for the 14th edition of MicroTAS. You, together with the hundreds of other participants, ultimately are the joint creative force that brings our meeting about in the first place. It is a great pleasure for me, together with my colleagues on the Chemical and Biological Microsystems Society Board and Local Organizing Committee, to act as your hosts in Groningen. Enjoy the meeting, enjoy the city!

Met vriendelijke groeten uit Groningen!

Sabeth Vaghefi

P.S. For the linguists or just plain curious among you, Groningen is pronounced groh-ning-uhm, or kroh-ning-uhm in Dutch (http://dictionary.reference.com/browse/Groningen). And if that doesn’t work, just ask the locals – they’d be glad to help!
GENERAL INFORMATION

Registration & Information Desk
The Registration and Information Desk will be open during the following times:

- October 3  Sunday . . . . . . . . 16:30-19:30
- October 4  Monday . . . . . . . . 07:00-18:00
- October 5  Tuesday . . . . . . . . 07:30-17:15
- October 6  Wednesday . . . . 07:30-17:15
- October 7  Thursday . . . . . . 07:30-12:00

Meeting Room Locations  See Floorplan on page 13
- Plenary Sessions ............................................. Theatre
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- Poster Sessions .............................................. Middenhal
- Lunch ............................................................. Expo 1

Lunches
To reduce long lines, we suggest that you feel free to visit the posters and exhibits during the lunch hour.

Name Badges
All attendees must wear their name badge at all times to gain admission to all sessions, exhibits, lunches and receptions.

Electronic Proceedings
One copy of the Electronic Proceedings is included in your bag. Additional copies of the Electronic Proceedings may be purchased at the Registration Desk. The purchase price will increase after the Conference so be sure to order your additional copies in advance.

Additional Electronic Proceedings: €150.00

Chimes
The chimes will ring five minutes before the end of each scheduled break. The sessions will begin on time, so please return to the sessions when you hear the chimes.

Conference Attire
Attire during the duration of the Conference is business casual.

Cellular Phones, Pagers and Watch Alarms
As a courtesy to our speakers and other attendees, please turn off any cellular phones, pagers and watch alarms during sessions.

Smoking
All meeting rooms and seated functions are smoke free. Please adhere to the smoking policies within the Martiniplaza.

Message and Job Market Board
The Message and Job Market Board will be located near the Conference Registration Desk.

Public Transportation in Groningen
Qbuzz
Groningen’s local public transport company, Qbuzz, has generously offered free public transportation to attendees to and from local hotels to the Martiniplaza as well as throughout the City of Groningen. Please make sure to have your MicroTAS 2010 Conference Name Badge as it is your ticket to ride. For more information regarding which routes service Martiniplaza (conference location), please ask your hotel’s front desk.

Currency Exchange
Only Euros are acceptable at regular stores and restaurants. The exchange rate fluctuates daily. For current exchange rates, please visit www.exchangerate.com.

Traveler’s Checks & Credit Cards
Credit cards, including MasterCard®, Discover®, Diners Club®, Visa® and American Express®, and traveler’s checks are accepted at most hotels, restaurants, department stores, and souvenir shops.

Tipping Standards
In The Netherlands, Value Added Tax and service charges are included in your check in hotels, restaurants, shops and taxis. Tips for extra service are always appreciated but not necessary. It is customary to give taxi drivers and waiters a tip of about 10%. Many public restrooms have an attendant that is usually tipped €0.50.

Wireless Internet Service
Complimentary wireless will be available in the Conference area. Select “martiniplaza” from the list of available networks. Once prompted, the pass code (SSID) is: martiniplaza (please note that the code is case sensitive).

We ask that you limit your usage to be considerate of other attendees and please logout once you are finished.

In the main lobby of the Martiniplaza you will find the essent Internetcafe, a complimentary connection destination, with wired and wireless Internet access, along with free access to PC workstations. Please limit your usage to 15 minutes.
SOCIAL EVENTS

Sunday Welcome Reception
Sunday, 3 October
17:00 - 19:00

An informal Wine and Cheese Welcome Reception will be held in conjunction with registration from 17:00 - 19:00. The reception will be held in the Theatre Foyer of the Martiniplaza.

Conference Banquet
Wednesday, 6 October
18:30 - 22:00
Martinikerk (St. Martin’s Church)
Martinikerkhof 3, Groningen

The MicroTAS Conference Banquet will be held at the Martinikerk (St. Martin’s Church) the oldest church in Groningen. Back by popular demand after a wild and crazy performance at MicroTAS 2004 in Sweden, Stefan and Kim will be sure to entertain at the MicroTAS 2010 banquet. Their unique performance style combines music and comedy in skits that guarantee that a good time will be had by all... even in a church. See http://www.stefankim.com/english.php for a preview.

Behind the Martini Tower, or lovingly called “’d Olle Grieze” (The Old Grey One) by locals is St. Martin’s Church. It has dominated the heart of the city for ten centuries. Around AD 1000, the first stone church was situated on the Martinikerkhof (St. Martin’s Churchyard). Around 1220 a larger church stood on this site, this church was extended during the centuries until it has become the Cathedral that it is now.

The church has a rich history and traces of that history are still abundantly present in the architecture from different centuries. Beautiful murals and decorated vaults have been preserved. The church organ, built by Arp Schnitger, belongs to the most splendid baroque organs in the whole world. There are paintings dating from the 13th 15th and 16th Century. An exceptional series of paintings dating from 1545 is to be found in the choir of the church. Here the life of Christ has been portrayed.

The St. Martin’s Church is named after Martin of Tours (316-397). He was the patron of the diocese. Martin of Tours started out as a Roman soldier. He was baptized as an adult and became a monk. The most famous legend of his life is that he once cut his cloak in half to share with a beggar during a snowstorm, to save the beggar from dying of the cold.

For those of you who bought a Banquet Ticket, please note that transportation is not included. Please check with your hotel front desk for directions and bus schedule to the Martinikerk.

At the time of the printing of this program, there are few tickets remaining for purchase. Please visit the Conference Registration Desk for availability.
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| www.mesaplus.utwente.nl                        |       |
| MESA+ is one of the largest nanotechnology research institutes in the world, delivering competitive and successful high quality research. It uses a unique structure, which unites scientific disciplines, and builds fruitful international cooperation to excel in science and education. MESA+ has created a perfect habitat for start-ups in the micro- and nano-industry to establish and to mature. At the booth you’ll meet the microfluidic spin-off companies Medimate and Blue4Green, and the shared production facility High Tech Factory. |       |

| **microfluidic ChipShop GmbH**                 | 22    |
| Carl-Zeiss-Promenade 10, Jena, 07751 GERMANY   |       |
| Phone: +49-3641-3470570, Fax: +49-3641-3470590 |       |
| www.microfluidic-chipshop.com                  |       |
| microfluidic ChipShop offers off-the-shelf microfluidic devices as well as the full set of development & manufacturing services. From product development up to volume production – from simple microfluidic chips to complex lab-on-a-chip-systems. The product range comprises complete systems like chips for PCR or electrophoresis including the respective instrument. |       |

| **MicroLIQUID**                                | 12    |
| Avenida Uribarri 19, 1, Mondragón, 20500 SPAIN |       |
| Phone: +34-943-712-072, Fax: +34-943-712-223   |       |
| www.microliquid.com                            |       |

| **Micronit Microfluidics**                      | 20    |
| Colosseum 15, 7521 PV Enschede THE NETHERLANDS |       |
| Phone: +31-53-850-6850, Fax: +31-53-850-6851   |       |
| www.micronit.com                               |       |
| At Micronit Microfluidics, we take pride in being an independent world leader in developing, prototyping, and manufacturing custom microfluidic products. Our customers range in size from some of the world’s largest analytical and diagnostic instrumentation manufacturers to ambitious start-up companies. Our unique combination of expertise in microfluidics and micromachining, 10 years of experience, and commitment to quality make us the ideal outsourcing partner for a wide range of products. Whether you are looking for low-volume manufacturing of a precision product or high-volume production of a fully disposable chip, Micronit Microfluidics wants to work with you to make your product a success. |       |

| **MicruX Technologies**                        | 19    |
| Severo Ochoa Building, Julian Claveria s/n     |       |
| Floor 1, Room 6, Oviedo, 33006 SPAIN            |       |
| Phone: +34-98-415-1019, Fax: +34-98-415-1019   |       |
| www.micruxfluidic.com                          |       |
| MicruX-Fluidic S.L. is an innovative technology-based company which main activity is focused on the development of miniaturized and portable analysis systems. Integration of multiple steps carried out in a laboratory (sample pretreatment, mixing, reaction, separation, detection) on a single device is possible through miniaturization. MicruX designs, develops and manufactures microfluidic devices, especially microchips capillary electrophoresis (MCE), with and without integrated electrochemical detectors as well as portable instruments for their use. At MicroTAS 2010, MicruX will present the new HVStat, a compact and portable instrument which combines a high voltage power supply and a bipotentiostat. |       |
## EXHIBITORS (cont.)

<table>
<thead>
<tr>
<th>Exhibitor</th>
<th>Booth</th>
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<tbody>
<tr>
<td><strong>MinacNed</strong></td>
<td>25</td>
</tr>
<tr>
<td>Dodeweg 6b</td>
<td></td>
</tr>
<tr>
<td>3830 AK Leusden THE NETHERLANDS</td>
<td></td>
</tr>
<tr>
<td>phone: +31-33-465-7505</td>
<td></td>
</tr>
<tr>
<td>fax: +31-33-461-6636</td>
<td></td>
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<tr>
<td><a href="http://www.minacned.nl">www.minacned.nl</a></td>
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</table>

MinacNed is the association of companies and institutes creating economic added value in the Netherlands based on joint activities among members and with relevant stakeholders in the field of microsystem and nanotechnology.

<table>
<thead>
<tr>
<th>OAI</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>685 River Oaks Parkway</td>
<td></td>
</tr>
<tr>
<td>San Jose, CA 95134 USA</td>
<td></td>
</tr>
<tr>
<td>phone: 1-408-323-0600</td>
<td></td>
</tr>
<tr>
<td>fax: 1-408-433-9904</td>
<td></td>
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<tr>
<td><a href="http://www.oainet.com">www.oainet.com</a></td>
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</tbody>
</table>

OAI offers Front & Backside Mask Aligners, Collimated UV Light Sources, a rapid prototyping process (CLiPP) for making Microfluidic Devices, an economic option for Nanoimprinting and UV Ozone treatment systems for improved surface adhesion. OAI maintains engineering & support worldwide. Along with OAI are the products of SPS-Europe. These include versatile Spin Processors & Coaters for table top to full size Spin Process Stations, bare wafers, hot plate for soft bake or photoresist & PTFE process tanks.

<table>
<thead>
<tr>
<th>Ocean Optics</th>
<th>26</th>
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</thead>
<tbody>
<tr>
<td>Geograaf 24</td>
<td></td>
</tr>
<tr>
<td>6921 EW Duiven THE NETHERLANDS</td>
<td></td>
</tr>
<tr>
<td>phone: +026-319-0500</td>
<td></td>
</tr>
<tr>
<td>fax: +026-319-0505</td>
<td></td>
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<tr>
<td><a href="http://www.oceanoptics.eu">www.oceanoptics.eu</a></td>
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</tbody>
</table>

Bringing Answers to Light. Ocean Optics is a diversified electro-optics technology company and a global leader in solutions for optical sensing - fundamental methods of measuring and interpreting the interaction of light with matter. With locations in the United States, Europe and Asia, the company serves a wide range of markets and enabled diverse applications in medical and biological research, environmental monitoring, life science, science education, and process and quality control. Our extensive line of complementary technologies includes spectrometers, optical sensors, metrology instrumentation, light sources, sampling accessories, fibres and probes.

<table>
<thead>
<tr>
<th>Philips Applied Technologies</th>
<th>2-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Tech Campus 7</td>
<td></td>
</tr>
<tr>
<td>5656 AE Eindhoven THE NETHERLANDS</td>
<td></td>
</tr>
<tr>
<td>phone: +31-40-27-48425</td>
<td></td>
</tr>
<tr>
<td>fax: +31-40-27-46322</td>
<td></td>
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<tr>
<td><a href="http://www.apptech.philips.com">www.apptech.philips.com</a></td>
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</tbody>
</table>

Philips Applied Technologies, part of Royal Philips Electronics, has been providing contract innovation services for over 40 years. It focuses on offering support to help market leaders, fast growing companies and start-ups accelerate time-to-market for their innovative ideas, improve their process efficiency and solve complex operational problems. The company has extensive experience in many different fields and applications. One of these fields is microfluidics through which ultrafast diagnostic devices and high-end precision equipment are created.

<table>
<thead>
<tr>
<th>Philips Research MiPlaza</th>
<th>9</th>
</tr>
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<tbody>
<tr>
<td>High Tech Campus 4 (Room 1.218)</td>
<td></td>
</tr>
<tr>
<td>5656 AE Eindhoven THE NETHERLANDS</td>
<td></td>
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<tr>
<td>phone: +31-40-27-47986</td>
<td></td>
</tr>
<tr>
<td>fax: <a href="http://www.miplaza.com">www.miplaza.com</a></td>
<td></td>
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</tbody>
</table>

MiPlaza, division of Philips Research, offers a range of leading edge R&D services with shared access to state-of-the-art research expertise and infrastructure. High-tech innovators can tap into our capabilities including user-centric research support, concept development and prototyping, thin film technology and microsystem devices, right through to test measurement and materials analysis. We help you unleash your full innovation potential, saving you investment costs, saving you time and effort in building technical competence and thus shortening your time to market.

<table>
<thead>
<tr>
<th>Scienion AG</th>
<th>8</th>
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<tbody>
<tr>
<td>Volmerstraße 7b</td>
<td></td>
</tr>
<tr>
<td>Berlin, D-12489 GERMANY</td>
<td></td>
</tr>
<tr>
<td>phone: +49-30-6392-1700</td>
<td></td>
</tr>
<tr>
<td>fax: +49-30-6392-1701</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.scienion.com">www.scienion.com</a></td>
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</table>

SCIEON AG is a Dortmund and Berlin-based company offering complete solutions in the field of parallel bioanalytics. Products and services are targeted mostly for academic research, biotech, pharma and diagnostic companies where they are deployed for biochip and biosensor manufacturing. Scienion has developed integrated technologies for controlling droplet formation, volume measurement and quality assessment of the spotted array.
Takasago Electric, Inc.
66 Kakitsubata, Narumi-cho, Midori-ku
Nagoya, 458-8522 JAPAN
phone: +81-52-891-2301
fax: +81-52-891-7386
www.takasago-elec.com

Takasago is a leading manufacturer in Japan, having about 40 years of experience in the manufacture of chemically inert valves and having produced over 4000 models. We will be exhibiting a range of miniature valves, pumps and various chips suitable for micro-scale fluid control. Amongst the products on display will be Pen-Type Syringe Pump (dia. 8.8 mm), Ultra-Small Inert 2-Way Solenoid Valve (4.2 mm width), Piezoelectric Micro Pump and also the Chip Analysis Demo-Module that our valves and pumps integrated together, is controlled by LabVIEW. Based upon our long years of abundant experience and fresh ideas, we have come to offer various product customizations for each requirement and have achieved a high level of customer satisfaction. We are pleased to make prototypes in small quantities so please feel free to contact us with any particular requests for fluidic components such as solenoid valves or manifolds etc.

Zurich Instruments
Technoparkstrasse 1
Zurich, 8005 SWITZERLAND
phone: +41-44-515-0410
fax: +41-44-515-0419
www.zhinst.com

Technology-leader Zurich Instruments (ZI) designs and manufactures high performance dynamic signal analysis instruments for advanced scientific research and leading industrial applications. ZI products include lock-in amplifiers, instruments for electrical impedance spectroscopy, and application specific pre-amplifiers. Headquartered in Zurich, Switzerland, ZI is a technology spin-off from the Swiss Federal Institute of Technology (ETH Zurich). ZI customers are scientists and engineers in leading research labs and organizations worldwide.
MEETING SPACE FLOORPLAN
The technical program consists of six plenary sessions. The plenary sessions will be held during the first three days of the Conference. There will be four parallel oral sessions each day.

**Plenary Speakers:** (in order of presentation)

- Dermot Diamond  
  Dublin City University, IRELAND
- Albert van den Berg  
  MESA+, University of Twente, THE NETHERLANDS
- Rustem F. Ismagilov  
  University of Chicago, USA
- Jun-Ichi Yoshida  
  Kyoto University, JAPAN
- Robert H. Austin  
  Princeton University, USA
- Petra Schwille  
  University of Dresden, GERMANY

**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. Typical session number: **1A1**.

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

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

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

- A = Theatre
- B = Springerzaal
- C = Borgmanzaal - A
- D = Borgmanzaal - B

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

- 1 = Concurrent Session 1
- 2 = Concurrent Session 2
- 3 = Concurrent Session 3

**Posters**

Three poster sessions will be held in Middenhal of the Martiniplaza, from 14:45 to 16:45 on Monday and 14:00 to 16:00 on Tuesday and Wednesday. Posters will be on display and authors will be available for questions during their appointed time. All poster papers are listed in this program on the day that they are on display. See poster floorplan on page 14.

**Guide to Understanding Poster Numbering**

Each poster in the technical program 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. Typical Poster number: **M1A**.

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., **1**) is the poster board position on the floorplan.

The third character (i.e., **A**) shows the category of the poster:

- A = Life Science Applications
- B = Microreaction Applications
- C = Other Applications
- D = Microfluidics
- E = Nanotechnologies
- F = MEMS & NEMS Technologies
- G = Imaging & Detection Technologies
- H = Special Focus Session
**Monday, 4 October 2010**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:45 - 09:30</td>
<td>Opening Remarks</td>
</tr>
<tr>
<td>09:30 - 10:15</td>
<td><strong>Plenary Presentation I - Chair: S. Verpoorte, University of Groningen, THE NETHERLANDS</strong>&lt;br&gt;<strong>FROM EVOLUTION TO REVOLUTION IN WATER QUALITY MONITORING: ARE STIMULUS-RESPONSIVE MATERIALS THE KEY TO THE ANALYTICAL PLATFORMS OF THE FUTURE?</strong>&lt;br&gt;D. Diamond¹, S. Anastasova-Ivanova¹, A. Radu¹, R. Byrne¹, F.B. Lopez¹, U. Mattinen², J. Bobacka², and A. Lewenstam²&lt;br&gt;¹Dublin City University, IRELAND and ²Åbo Akademi University, FINLAND</td>
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<tr>
<td>10:15 - 10:45</td>
<td>Break and Exhibit Inspection</td>
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<tr>
<td>10:45 - 11:30</td>
<td><strong>Plenary Presentation II - Chair: A. Manz, KIST Europe GmbH, GERMANY</strong>&lt;br&gt;<strong>LABS ON A CHIP FOR HEALTH CARE APPLICATIONS</strong>&lt;br&gt;A. van den Berg&lt;br&gt;MESA+, University of Twente, THE NETHERLANDS</td>
</tr>
<tr>
<td>11:45 - 12:05</td>
<td><strong>THEATRE</strong>&lt;br&gt;<strong>Session 1A1</strong>&lt;br&gt;<strong>Stem Cell Growth and Stimulation</strong>&lt;br&gt;<strong>CHAIR: K.-Y. Suh, Seoul National University, SOUTH KOREA</strong>&lt;br&gt;<strong>Session 1B1</strong>&lt;br&gt;<strong>DNA Analysis</strong>&lt;br&gt;<strong>CHAIR: P. Onck, University of Groningen, THE NETHERLANDS</strong></td>
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<tr>
<td>12:05 - 12:25</td>
<td><strong>SPRINGERZAAL</strong>&lt;br&gt;<strong>Session 1A2</strong>&lt;br&gt;<strong>Neurons</strong>&lt;br&gt;<strong>CHAIR: P. Renaud, Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND</strong>&lt;br&gt;<strong>Session 1B2</strong>&lt;br&gt;<strong>Gene Analysis</strong>&lt;br&gt;<strong>CHAIR: D. DeVoe, University of Maryland, USA</strong></td>
</tr>
<tr>
<td>12:25 - 12:45</td>
<td><strong>THEATRE</strong></td>
</tr>
<tr>
<td>12:45 - 13:45</td>
<td>Luncheon and Exhibit Inspection</td>
</tr>
<tr>
<td>14:05 - 14:25</td>
<td><strong>THEATRE</strong></td>
</tr>
<tr>
<td>14:25 - 14:45</td>
<td><strong>SPRINGERZAAL</strong></td>
</tr>
</tbody>
</table>

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**Notes:**
- UTPS 2010 MONDAY PROGRAM
- Sessions are scheduled concurrently in different locations.
- Plenary Presentations are highlighted in bold.
- Breaks and exhibit inspections are marked with a love symbol.
- Chairs for sessions are indicated.
- Locations for sessions are noted, such as THEATRE and SPRINGERZAAL.
**IMMUNOASSAY ON COTTON YARN FOR LOW-COST DIAGNOSTICS**
G.Z. Zhou, R. Safaviah, X. Mao, and D. Juncker
McGill University, CANADA

**A FLUIDIC µ-TRANSFORMER WITH PRE-PROGRAMMED VACUUM ACTUATION FUNCTIONS FOR DISPOSABLE LAB-ON-A-CHIPS**
C.-C. Hong and J.-C. Chen
National Tsing Hua University, TAIWAN

**PINWHEEL ASSAY: A VISUAL AND LABEL-FREE METHOD FOR DNA QUANTITATION**
J. Li, D.C. Leslie, D.M. Haverstick, K.A. Kelly, N.S. Barker, and J.P. Landers
University of Virginia, USA

**SHAPE MEMORY MAGNETIC NANOCOMPOSITE ACTUATORS WITH IN-SITU PROGRAMMED MAGNETIC AXES**
J. Kim, S.E. Chung, H. Lee, S.-E. Choi, and S. Kwon
Seoul National University, SOUTH KOREA

**INVITED PRESENTATION**
DROPLET-BASED MICROFLUIDICS FOR THE QUANTITATIVE DETECTION OF RARE MUTATIONS
D. Pekin1, Y. Skhiri1, J.-C. Baret1,2,3, D. Le Corre1, L. Mazutis1, C. Ben Salem1, A. El Abed2, J.B. Hutchison3, D.R. Link1, A. Griffiths1, P. Laurent-Puig1, and V. Taly1
1 Université de Strasbourg, FRANCE, 2 Université Paris Descartes, FRANCE, 3 Max-Planck-Institute for Dynamics and Self-Organization, GERMANY, and 4 RainDance Technologies, USA

**SHAPE MEMORY MAGNETIC NANOCOMPOSITE ACTUATORS WITH IN-SITU PROGRAMMED MAGNETIC AXES**
J. Kim, S.E. Chung, H. Lee, S.-E. Choi, and S. Kwon
Seoul National University, SOUTH KOREA

**INVITED PRESENTATION**
BEYOND PDMS: OFF-STOICHIOMETRY THIOL-ENE BASED SOFT LITHOGRAPHY FOR RAPID PROTOTYPING OF MICROFLUIDIC DEVICES
C.F. Carlborg, T. Haraldsson, K. Oberg, M. Malkoch, and W. van der Wijngaart
Royal Institute of Technology (KTH), SWEDEN

**PINWHEEL ASSAY: A VISUAL AND LABEL-FREE METHOD FOR DNA QUANTITATION**
J. Li, D.C. Leslie, D.M. Haverstick, K.A. Kelly, N.S. Barker, and J.P. Landers
University of Virginia, USA

**TEMPLATE SYNTHESIS IN HYDRODYNAMICALLY-ALIGNED SUPRAMOLECULAR NANO-CHANNELS**
D. Kiriy1, H. Onoe1, M. Ikeda2, I. Hamachi2, and S. Takeuchi3
1 University of Tokyo, JAPAN and 2 Kyoto University, JAPAN

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**LABEL-FREE DETECTION OF PROTEIN BINDING SPECTRA WITH MULTISINE SPR MICROCHIPS**
T. Ghosh1, L. Williams1, F. Azizi2, and C.H. Mastrangelo1
1 University of Utah, USA and 2 Purdue University Calumet, USA

**NEW MATERIALS**

**SESSION 1C1**
**Point-of-Care Diagnostics**
**CHAIR: M. Khine, University of California, Irvine, USA**

**SESSION 1D1**
**Applications of Advanced/Smart Materials**
**CHAIR: P. Anderson, Eindhoven University of Technology, THE NETHERLANDS**

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**SESSION 1C2**
**Progress in On-Chip Biomolecular Detection**
**CHAIR: S. Ekström, Lund University, SWEDEN**

**SESSION 1D2**
**New Materials**
**CHAIR: M. Takai, University of Tokyo, JAPAN**

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**IN VITRO MICROFLUIDIC SYSTEM FOR THE QUANTITATIVE DETECTION OF RARE MUTATIONS**
D. Pekin1, Y. Skhiri1, J.-C. Baret1,2,3, D. Le Corre1, L. Mazutis1, C. Ben Salem1, A. El Abed2, J.B. Hutchison3, D.R. Link1, A. Griffiths1, P. Laurent-Puig1, and V. Taly1
1 Université de Strasbourg, FRANCE, 2 Université Paris Descartes, FRANCE, 3 Max-Planck-Institute for Dynamics and Self-Organization, GERMANY, and 4 RainDance Technologies, USA

**NOVEL HYDROPHILIC MICROFLUIDICS WITH DURABILITY VIA DIRECT MOLDING AND UNIQUE CAPILLARY FLOW PERFORMANCE**
T.-H. Yoon and D.-P. Kim
Chungnam National University, SOUTH KOREA

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**LUNCHEON AND EXHIBIT INSPECTION**
Life Science Applications
Genomics & Proteomics

M1A
A CD-LIKE MICROREACTOR ARRAY AND ITS APPLICATION IN PROTEIN CRYSTALLIZATION
Q. Chen, G. Li, and J. Zhao
Chinese Academy of Sciences, CHINA

M2A
CENTRIFUGAL FLUIDIC SYSTEM FOR ENHANCED MIXING AND REDUCING INCUBATION TIMES DURING PROTEIN MICROARRAY PROCESSING
Z. Noroozi1, H. Kido1, R. Peytavi1, R. Sasaki1, A. Jasinskas1, P. Felgner1, and M. Madou1,4
1University of California, Irvine, USA, 2RotoPrep Inc., USA, 3Université Laval, CANADA, and 4World Class University, SOUTH KOREA

M3A
EXTENSION, IMMOBILIZATION AND CHEMICAL MODIFICATION OF DOUBLE-STRANDED DNA ON A SOLID SURFACE - TOWARD DIRECT SEQUENCING WITH MICROSCOPY
K. Nishikawa1, M. Katsaka1, R. Nagata1, A. Kitayama1, R. Tero1, M. Washizu1, and H. Ogas1
1University of Tokyo, Japan, 2National Institute for Natural Sciences, Japan, 3TerABase Inc., Japan, and 4Institute for Molcular Science, Japan

M4A
MECHANICAL CELL LYSIS DEVICE
J.A. Beckers, M. Baragona, S. Shulepov, T. Vliegenhart, and A.R. van Doorn
Philips Applied Technologies, THE NETHERLANDS

M5A
PARALLEL DNA AMPLIFICATION USING LOCALIZED MICROWAVE HEATING IN STANDARD-MICROTUBES
W. Hilber1, T. Tiemann-Boege1, C. Diskus1, T. Lederer1, B. Jakoby1, and J. Boulanger2
1Johannes Kepler University Linz, AUSTRIA and 2Academy of Sciences, AUSTRIA

M6A
TECHNICAL REFINEMENTS OF THE MICROFLUIDIC INTEGRATED SELECTIVE ENRICHMENT TARGET FOR IMPROVED SOLID-PHASE EXTRACTION
Lund University, SWEDEN

Life Science Applications
Clinical Diagnostics

M7A
A MAGNETIC-BEAD-BASED IMMUNOASSAY FOR RAPID PURIFICATION AND DETECTION OF INFLUENZA VIRUSES UTILIZING SUCTION-TYPE MICROFLUIDIC SYSTEMS
K.-Y. Lien, L.-Y. Hung, H.-Y. Lei, and G.-B. Lee
National Cheng Kung University, TAIWAN

M8A
SUCTION-TYPE MICROFLUIDIC IMMUNOSENSING SYSTEMS FOR RAPID DETECTION OF DENGUE FEVER
C.H. Weng, T.B. Huang, C.C. Huang, C.S. Yeh, H.Y. Lei, and G.B. Lee
National Cheng Kung University, TAIWAN

M9A
AUTOMATING SAMPLE PREPARATION IN MICROFLOW CYTOMETRY
C.M. Pulido1, L. Zhu1, K. Shainkh1, H. Zeng1, C. Zhan1, J. Erickson1, F. Ligler1, and J. Xie1
1GE Global Research, USA and 2U.S. Naval Research Lab, USA

Life Science Applications
Point-of-Care Testing

M10A
DIFFERENTIAL WHITE CELL COUNT BY CENTRIFUGAL MICROFLUIDICS
Sandia National Laboratories, USA

M11A
HIGH-PERFORMANCE FLOW-THROUGH DNA PURIFICATION ON A MICROFLUIDIC CHIP
M. Karle1, G. Czilwik1, J. Miwa2, N. Paust1, G. Roth1,2, R. Zengerle1,2, and F. von Stetten1
1Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY and 2University of Freiburg - IMTEK, GERMANY

M12A
INTEGRATING PERFORMANCE EVALUATION SYSTEMS INTO THE DEVELOPMENT OF RAPID NUCLEIC ACID POINT-OF-CARE DIAGNOSTIC PLATFORMS
LGc Ltd, UK

M13A
MICROFLUIDIC DEVICES FOR THE DETECTION OF SEXUALLY TRANSMITTED INFECTIOUS AGENTS IN A URINE-BASED MATRIX
C. Kemp1, C. Birch1, K.J. Shaw1, G. Nixon1, P.T. Docker1, J. Greenman1, J.F. Huggett1, S.J. Haswell1, C. Foy1, and C.E. Dyer1
1University of Hull, UK and 2LGc Ltd., UK

M14A
NON-CONTACT HEAT MANAGEMENT FOR NUCLEIC ACID HYBRIDIZATION IN SAMPLE-TO-ANSWER CENTRIFUGAL MICROFLUIDICS
R.A. Gorkin1,2, K. Abi-Samra1, F. Begin1, G. Stewart1, M. Bergeron1, H. Kido1, and M. Madou1,3
1University of California, Irvine, USA, 2Université Laval, CANADA, and 3Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA

M15A
PULSATING GATE BIAS IN MICROFLUIDIC LIQUID-GATED FIELD-EFFECT TRANSISTOR BASED ON CARBON NANOTUBES: EXTENDING OPERATING WINDOW, AMPLIFYING SIGNAL, AND IMPROVING DETECTION TO ATTO-MOLAR LEVEL
I.P.M. Wijaya1, T.J. Nie2, I. Rodriguez3, and S.G. Mhaisalkar4
1Agency for Science, Technology and Research (A*STAR), SINGAPORE and 2Nanyang Technical University, SINGAPORE

M16A
FLUORESCENCE-INTENSITY MULTIPLEXING USING FLUORESCENT SILICA NANOPARTICLES IN A SHEATHLESS MICROCHIP FLOW CYTOMETER
H. Yun1, H. Bang1, W.G. Lee2, J. Min1, T.G. Park1, C. Chung3, and D.-C. Han1
1Ulsan National University, SOUTH KOREA, 2Kyung Hee University, SOUTH KOREA, and 3NanoEnTek, Inc., SOUTH KOREA
M19A
ELECTROKINETIC SAMPLE PREPARATION FOR ELECTROCHEMICAL ASSAYS: TOWARDS POINT-OF-CARE DIAGNOSIS OF URINARY TRACT INFECTIONS
M.L.Y. Sin1, V. Gaul2, J.C. Liao1, and P.K. Wong1
1University of Arizona, USA, 2GeneFluidics Inc, USA, and 3Stanford University, USA

M20A
HIGHLY EFFICIENT ON-CHIP PLASMA/SERUM GENERATION FOR DISPOSABLE POINT-OF-CARE DEVICES
H. Becker1, R. Klemm1, C. Carstens2, and C. Gartner1
1Microfluidic Chipshop, GERMANY and 2Laborgemeinschaft Ebracht und Carstens, GERMANY

M21A
INTEGRATED POLYMERASE CHAIN REACTION-CAPILLARY ELECTROPHORESIS MICRODEVICE FOR HANNOVER ALLELE-SPECIFIC GENOTYPING
J.Y. Choi1, S.J. Choi2, Y. Chen1, H.W. Kim2, S.A. You3, H.-K. Myeong2, and T.S. Seo1
1Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and 2Solgent Co., Ltd., SOUTH KOREA

M22A
MICROFLUIDIC ELISA FOR OCULAR DIAGNOSTICS
J.V. Green1, D. Sun2,4, A. Hafezi-Moghadam2,4, K. Lashkari3, and S.K. Murthy1
1Advanced Industrial Science and Technology (AIST), JAPAN and 2Sunnyvale, USA

M23A
MINIATURIZED PCR DEVICE FOR RAPID DETECTION OF INFECTIOUS AGENTS
T. Yotoryama1, K. Watanabe2, T. Anaguchi1, M. Miyachi1, T. Abe1, H. Watanabe1, J. Kajihara1, S. Kai1, T. Watanabe1, I. Ichimura1, Y. Segawa1, N. Shimizu1, and A. Yasuda1
1Sony Corporation, JAPAN and 2Tokyo Medical and Dental University, JAPAN

M24A
RAPID ON-CHIP BLOOD/PLASMA SEPARATOR USING HETERO-PACKED BEADS AT THE INLET OF MICROCANNEL
J.S. Shim and C.H. Ahn
University of Cincinnati, USA

M25A
ULTRA-FAST AND HIGHLY EFFICIENT FLOW-THROUGH PCR MICROFLUIDICS USING VAPOR PRESSURE AND ITS APPLICATION TO RAPID FIELD DETECTION
Y. Fuchiwaki1, M. Saito2, S. Wakida1, E. Tamiya2, and H. Nagai1
1Advanced Industrial Science and Technology (AIST), JAPAN and 2Osaka University, JAPAN

M26A
A WHOLE EMBRYO “LAB-ON-CHIP” MICROFLUIDIC DEVICE FOR DEVELOPMENT OF ZEBRAFISH, FLOUR BEETLE AND FRESH WATER SNAIL EMBRYOS
1Leiden University, THE NETHERLANDS, 2Micronit Microfluidics BV, THE NETHERLANDS, 3Delft University of Technology, THE NETHERLANDS, 4FLIR Systems Ltd., UK

M27A
DRUG SCREENING ON FAST KINETICS LIGAND GATED ION-CHANNELS
1Umeå University, SWEDEN, 2Autonomy Partnership, UK, 3Novacia, SWEDEN, 4Tecella, USA, and 5Astra Zeneca, SWEDEN

M28A
MICROFLUIDIC PLATFORMS FOR THE SCREENING OF SOLID FORMS OF CANDIDATE DRUGS
M.R. Thorson1, S. Goyal1, Y. Gong2, G.G.Z. Zhang2, C.F. Zukoski1, and P.J.A. Kenis1
1University of Illinois, Urbana-Champaign, USA and 2Abbott Laboratories, USA

M29A
PERFORMANCE OF Biotransformation of human primary hepatocytes exposed to a pharmacological cocktail inside a liver microchip
J.-M. Prot1, O. Videau2, C. Legallais3, H. Benech4, and E. Leclerc1
1University of Technology, Compiègne, FRANCE and 2Commissariat à l’Energie Atomique (CEA), FRANCE

M30A
TRANSPORT, LOCALIZATION AND SEPARATION OF CAENORHABDITIS ELEGANS USING ELECTROTAXIS FOR MOVEMENT BASED BEHAVIORAL ASSAYS IN DRUG DISCOVERY
P. Rezai, S. Salam, F.R. Selvaganapathy, and B.P. Gupta
McMaster University, CANADA

M31A
DYNAMIC CELL PATTERNING WITH MULTIPARTICLE SELF-ASSEMBLY
W. Dai, K.N. Ren, Y.Z. Zheng, and H.K. Wu
Hong Kong University of Science and Technology, HONG KONG

M32A
A USER-FRIENDLY, SELF-CONTAINED, PROGRAMMABLE MICROFLUIDIC CELL CULTURE SYSTEM FOR HIGH QUALITY MICROSCOPY
P. Skafte-Pedersen, D. Sabourin, M. Hemmingsen, P.F. Østergaard, F.S. Blaga, and M. Dufva
Technical University of Denmark, DENMARK

M33A
CHARACTERIZATION OF A HYDROSTATICALLY DRIVEN CELL SEEDING PROCEDURE USING POLYMER MICROSPHERES
P.P.M.F.A. Mulder and E. Verpoorte
University of Groningen, THE NETHERLANDS

M34A
CULTURE, DETECTION, AND RECOVERY OF THE ANTIBIOTIC-TOLERANT PERSISTER BACTERIA IN THE DIRECTLY ACCESSIBLE MICROCHAMBER ARRAY
R. Iino, K. Hayama, S. Sakakihara, and H. Noji
Osaka University, JAPAN

M35A
GEL SHEET BASED SKELETAL MUSCLE CELL CULTURE SYSTEM INTEGRATED WITH THE MICROELECTRODE ARRAY DEVICE
K. Nagamine1,2, H. Kaji3,4, M. Kanazaki1,2, and M. Nishizawa1,2
1Tohoku University, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

M36A
HIGH-THROUGHPUT CELL CULTURE CONDITION SCREENING BY MICROENVIRONMENT ARRAY
K. Hattori, S. Sugiura, and T. Kanamori
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

M37A
INFLUENCE OF NANOSTRUCTURE ON PROLIFERATION AND DIFFERENTIATION PROCESSES OF STEM CELL
K. Kubo1, Y. Okamoto1, M. Yamamoto2, N. Kaji1, M. Tokeshi1, Y. Tabata1, and Y. Baba1,3
1Tohoku University, JAPAN, 2Kyoto University, JAPAN, and 3National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

M38A
MICROFLUIDIC FLUID SHEAR DELIVERY SYSTEM FOR IN VITRO BONE MECHANOREGULATION
S.A. Al-Dujaili, L. You, and A. Guenther
University of Toronto, CANADA

M39A
NEURITE GUIDANCE THROUGH 3D HYDROGEL LAYERS IN A MICROFLUIDIC ENVIRONMENT
A. Kunze, R. Meissner, and P. Renaud
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
M40A
TEMPERATURE GRADIENT STIMULATION FOR CELL DIVISION IN C. ELEGANS EMBRYOS ON CHIP
S. Baranek1, A. Bezler1, C. Adamczyk1, P. Gönçzy2, and P. Renaud1
1Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and
2Swiss Institute for Experimental Cancer Research (ISREC), SWITZERLAND

M41A
A CONTINUOUS LATERAL DIELECTROPHORETIC MICROSEPARATOR BASED ON LATERAL DISPLACEMENT AS A FUNCTION OF PARTICLE SIZE
S.-I. Han, S. Kim, Y.-D. Joo, W.-S. Lee, S.-M. Lee, and K.-H. Han
Inje University, SOUTH KOREA

M42A
A NEW MICROFLUIDIC DEVICE FOR CELL SHAPE CONFINEMENT
G. Velve Casquillas1, M. Le Berre1, and P.T. Tran2,3
1Institut Curie, FRANCE and
2University of Pennsylvania, USA

M43A
A NOVEL PARTICLE SEPARATION METHOD USING MULTI-STAGE MULTI-ORIFICE FLOW FRACTIONATION (MS-MOFF)
K. Kwon1, T.S. Sim1, H.-S. Moon1, J.-G. Lee2, J.C. Park2, and H.-I. Jung2
1Yonsei University, SOUTH KOREA and
2Samsung Advanced Institute of Technology, SOUTH KOREA

M44A
A SELF-ASSEMBLED MONOLAYER CELLS ARRAY FOR RAPID TARGETED CELLS IDENTIFICATION
Y.-Y. Lin1, T.-J. Chen1, D.-J. Yao1, and F.-G. Tseng1,2
1National Tsing Hua University, TAIWAN and
2Academia Sinica, TAIWAN

M45A
ADJUSTABLE PASSBAND PARTICLE SEPARATION DEVICE
J.D. Adams1 and H.T. Soh
University of California, Santa Barbara, USA

M46A
CELL CYCLE SYNCHRONIZATION OF STEM CELLS USING INERTIAL MICROFLUIDICS
W.C. Lee1,2, A.A.S. Bhagat1, S. Huang1, K.J. Van Vliet1,2, J. Han1,2, and C.T. Lim1,2
1Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE,
2Singapore-MIT Alliance for Research and Technology (SMART) and
3Massachusetts Institute of Technology, USA, and
4National University of Singapore, SINGAPORE

M47A
CENTRIFUGE-ON-A-CHIP: SELECTIVE CELL TRAPPING WITH RAPID SOLUTION EXCHANGE IN MICROVORTEXES
University of California, Los Angeles, USA

M48A
DETECTION AND COLLECTION SYSTEM OF TARGET SINGLE CELL BASED ON RESPIRATION ACTIVITY
M. Suzuki, A. Murata, H. Tanaka, and Y. Iribe
University of Toyama, JAPAN

M49A
DIRECT INTRODUCTION OF PLASMID INTO NUCLEUS USING ON-CHIP ELECTROPORATION
O. Kurosawa1,2, Y Sumita1, M. Goto1,3, H. Oana1,2, H. Kotera2,3, T. Kato1,2, J. Toguchida1, and M. Washizu1,2
1University of Tokyo, JAPAN,
2Japan Science and Technology Agency (JST), JAPAN and
3Kyoto University, JAPAN

M50A
FLAGELLA-DRIVEN LIPOSOMES: LIPOSOMES ACTUATED BY ATTACHED FLAGELLA
T. Kurakazu1, M. Tanimou1, K. Kuribayashi-Shigetomi1, and S. Takeuchi1,2
1University of Tokyo, JAPAN and
2Kanagawa Academy of Science and Technology, JAPAN

M51A
HYDRODYNAMICS AND MAGNETOPHORESIS BASED HYBRID BLOOD CELL SORTER FOR HIGH THROUGHPUT SEPARATION
H.K. Seo, H.O. Kim, and Y.J. Kim
Yonsei University, SOUTH KOREA

M52A
ISOLATING CELLS FROM BLOOD USING BUOYANCY ACTIVATED CELL SORTING (BACS) WITH GLASS MICROBUBBLES
C.H. Hsu1,2, C.C. Chen1,2, D. Irmler1, and M. Toner1
1National Health Research Institutes, TAIWAN, 2National Tsing Hua University, TAIWAN, and
3Massachusetts General Hospital, Shriners Hospital for Children and Harvard Medical School, USA

M53A
MAGNETIC MICROPALLETS FOR SINGLE ADHERENT CELL RECOVERY AND ANALYSIS
N.M. Gunn, T. Westerhof, R. Chang, G.P. Li, E.L. Nelson, and M. Bachman
University of California, Irvine, USA

M54A
MICROFLUIDIC ACOUSTIC PLATELETPHERESIS
J.D. Adams1, P. Thévoz1, H. Brusse1, and H.T. Soh1
1University of California, Santa Barbara, USA and
2Technical University of Denmark, DENMARK

M55A
MICROFLUIDIC PLATFORM WITH CIRCULAR MICROCHANNELS FOR FACILE CELL TRAPPING AND SINGLE CELL ANALYSIS
M. Abdelgawad, W.-Y. Chien, T.-K. Liang, and Y. Sun
University of Toronto, CANADA

M56A
ON-CHIP DUAL ARM MICROROBOT FOR CELL MANIPULATIONS BY MAGNETICALLY DRIVEN MICROTOOLS
M. Hagiwara1, T. Kawahara1, Y. Yamanishi2, and F. Arai1
1Nagoya University, JAPAN and
2Japan Science and Technology Agency (JST), JAPAN

M57A
SEPARATION AND ENRICHMENT OF MESENCHYMAL STEM CELLS ON A CHIP
Z. Geng1,2, J. Du1, L. Zhang1, C. Yang1, W. Wang1, and Z. Li1
1Peking University, CHINA, 2Tsinghua University, CHINA, and
3Minzu University, CHINA

M58A
ULTIMATE HYDROGEL THERMAL-T RANSITION BASED FLOW CONTROL SYSTEM FOR USER-FRIENDLY PARTICLE AND CELL SORTING
H. Sugino1, K. Ozaki1, Y. Shirasaki1, T. Aoki1, T. Arakawa2, D.H. Yoon3, S. Shoji2, and T. Funatsu1
1University of Tokyo, JAPAN, 2Waseda University, JAPAN, and
3Tokyo Medical and Dental University, JAPAN
M62A
A NOVEL CYTOMETRIC TOOL FOR STUDYING KINETICS OF NANOPARTICLE UPTAKE INTO CELLS
J. Wang1 and C. Lu2
1Purdue University, USA and 2Virginia Polytechnic Institute and State University, USA

M63A
APPLYING A MICROFLUIDIC ‘DEFORMABILITY CYTOMETRY’ TO MEASURE STIFFNESS OF MALARIA-INFECTED RED BLOOD CELLS AT BODY AND FEBRILE TEMPERATURES
S. Huang, H. Bow, M. Diez-Silva, S. Suresh, and J. Han
Massachusetts Institute of Technology, USA

M64A
DIELECTROPHORETIC PRESSING OF BIOLOGICAL CELLS INTO CONTACT WITH SURFACES: A MECHANISM FOR BIOPHYSICAL FLOW CYTOMETRY
G.A. Ferrier1, M. Nikolic-Jaric1, S. Rzeszowski1, T. Cabel1, S. Nandagopal1, F. Lin1, M. Butler1, G.E. Bridges1, D.J. Thomson1, and M.R. Freeman1
1University of Manitoba, CANADA and 2University of Alberta, CANADA

M65A
ELECTROPHYSIOLOGICAL RECORDINGS USING SPATIALLY ARRANGED MICROELECTRODE PROBES EMBEDDED INTO 3-D NEURONAL CULTURES
W. Tomonura1, K. Shimizu1, and S. Kanishi1
1Ritsumeikan University, JAPAN and 2University, JAPAN

M66A
HIGH-THROUGHPUT SCREENING PLATFORM FOR THE SIMULTANEOUS CHEMICAL STIMULATION AND OPTICAL IMAGING OF DISSOCIATED CELLS
A.K. Au, W.C. Watt, D.R. Storm, and A. Folch
University of Washington, USA

M67A
INTRACELLULAR CALCIUM-EXPRESSION DISPLAY OPERATED BY COMPRESSIVE STRESS
J.H. Jeon, T.K. Kim, and O.C. Jeong
Inje University, SOUTH KOREA

M68A
LABEL-FREE MONITORING OF THE NEUTROPHIL DIFFERENTIATION PROGRESS OF HL60 CELLS USING MICROCAPILLARY ELECTROPHORESIS CHIPS
T. Akagi, R. Matsuhashi, K. Kawabata, K. Miyazono, and T. Ichiki
University of Tokyo, JAPAN

M69A
MICROFLUIDIC ASSAY TO COMPARE SECRETION VS CONTACT BASED CELL-CELL INTERACTIONS USING DYNAMIC ISOLATION CONTROL
P. Ingrami1, Y.-J. Kim1,2, T. Bersano-Begey1, X. Lou1, A. Asakura3, and E. Yoon1
1University of Michigan, USA, 2Samsung, SOUTH KOREA, and 3University of Minnesota, USA

M70A
NEW INSIGHTS INTO CELL MOTILITY AND NANOMECHANICS IN CONFINED MICRO-ENVIRONMENTS USING A MICROFLUIDIC DEVICE
K.A. Wilson, A. LeWalle, T. Duke, and G.T. Charras
University College London, UK

M71A
PHOTONIC LAB ON A CHIP ON POLYDIMETHYLSILOXANE SEGMENTED WAVEGUIDES FOR LOCAL MEASUREMENT OF OPTICAL DENSITY
1Centro Nacional de Microelectrónica (CNM), SPAIN and 2Technische Universität Braunschweig, GERMANY

M72A
SORTING AND CONCENTRATION OF MOTILE MICROBES USING CHEMOTAXIS ASSAY
S.H. Kim, M. Kim, S. Park, S.K. Lee, and T. Kim
Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA

M73A
THE DETECTION OF ANTIBODIES SECRETED BY MICROFLUIDICALLY TRAPPED BIOLOGICAL CELLS VIA EXTRAORDINARY OPTICAL DETECTION BASED NANOSCALE IMMUNOBIOSENSING ARRAYS
S.F. Romanuk1, S.M. Grist1, B.L. Gray2, N. Gulzar1, J.K. Scott1, D. Hohertz2, K.L. Kavanagh1, R. Nirwan1, C. Hui1, A.G. Brolo3, and R. Gordon1
1Simon Fraser University, CANADA and 2University of Victoria, CANADA

M74A
USING A MICROFABRICATED HYDROGEL TO STUDY THE EFFECT OF EXTRINSIC FACTORS ON DRUG RESPONSE
M. Håkanson1, S. Kobel1, M. Charnley1, M. Lutolf2, and M. Teixtor1
1ETH Zurich, SWITZERLAND and 2Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

M75A
A HIGH-THROUGHPUT MICROFLUIDIC LIGHT CONTROLLING PLATFORM FOR BIOFUEL PRODUCING PHOTOSYNTHETIC MICROALGAE ANALYSIS
H.S. Kim, T.L. Weiss, T.P. Devarenne, and A. Han
Texas A&M University, USA

M76A
ASSESSMENT OF NANOPARTICLE CYTOTOXICITY WITH ON-CHIP SUSPENDED BILAYERS
S. Aghdai, T. Heslington, N. Rogers, H. Morgan, and M.R.R. de Planque
University of Southampton, UK

M77A
FEASIBILITY STUDY OF CELL CULTURE MICRODEVICE ACTUATED BY PIEZOELECTRIC THIN FILM FOR ON-CHIP REGULATION OF CELL FUNCTIONS
T. Kawashima1, T. Shibata1, M. Nagai2, T. Masuzawa2, T. Kimura2, and A. Kishida2
1Toyoohashi University of Technology, JAPAN, 2Tokyo Medical and Dental University, JAPAN

M78A
INSTANTANEOUS TRAPPING AND LONG TERM CELL SURVIVAL UNDER DIELECTROPHORETIC CONDITIONS USING A HYBRID CELL ADHESIVE SURFACE
D.R. Reyes, J.S. Hong, J.T. Elliott, and M. Gaitan
National Institute of Standards and Technology (NIST), USA

M79A
MICROFLUIDIC COMPARTMENTALIZED DIRECTED EVOLUTION
B.M. Paegel and G.F. Joyce
Scripps Research Institute, USA

M80A
MICROFLUIDIC-BASED ASSAY PLATFORM FOR STUDYING POLARIZATION MECHANISM OF BUDDING YEAST UNDER GRADIENT OF MATING PHEROMONE
S.S. Lee1, J.W. Park2, S. Pelet1, B. Hegemann1, N.L. Jeon2, and M. Peter1
1ETH Zürich, SWITZERLAND and 2Seoul National University, SOUTH KOREA

M81A
MOUSE EMBRYO ELECTROPORATION AND CULTURE IN DEVICES MADE BY SOFT LITHOGRAPHY
E. Mazari1, J. Laniel1, G. Dubois1, S. Griffon1, F. Marty1, A. Perez-Gomez2, and C. Gosse1
1Centre National de la Recherche Scientifique (CNRS), FRANCE, 2Laboratoire ESYCOM, FRANCE, and 3Université Paris, FRANCE

M82A
SPATIOTEMPORAL DYNAMICS OF VASOCONSTRICTION IN SMALL ARTERIES MADE BY PIEZOELECTRIC THIN FILM FOR ON-CHIP REGULATION OF CELL FUNCTIONS
S. Yasotharan1, S. Pinto1, J. Yang1, J. Voigtlaender-Bolz2, S.-S. Bolz1, and A. Günther1
1University of Toronto, CANADA and 2St. Michael’s Hospital, CANADA
M1B
A ROBUST PLATINUM-BASED ELECTROCHEMICAL MICRO FLOW CELL FOR DRYING OF [18F] FLUORIDE FOR PET TRACER SYNTHESIS
S. Sadeghi1, J. Ly1, Y. Deng1,2, and R.M. van Dam1
1University of California, Los Angeles, USA and 2Wuhan University, CHINA

M2B
EFFECTIVE CARBON DIOXIDE REDUCTION INTO CARBON MONOXIDE USING MILLICHANNEL EMBEDDED IN-LINE DIELECTRIC BARRIER DISCHARGE REACTOR
K. Jun and J.M. Jacobson
Massachusetts Institute of Technology, USA

M3B
MICRO-GAS ANALYZING PROTOTYPE SYSTEM FOR SENSITIVE AND CONTINUOUS ANALYSIS
S. Hiki1, M. Saito1, I. Tanaka2, K. Mawatari1, and T. Kitsmori1
1University of Tokyo, JAPAN and 2Shimizu Corp., JAPAN

M4B
ONE-STEP PREPARATION OF MICROCELLULAR STYRENE-BUTYL ACRYLATE COPOLYMER BEADS USING A MICROFLUIDIC DEVICE
K.W. Wang1, K.G. Lee1, J. Choe2, J.-H. Seo2, and D.H. Kim1
1Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and 2LG Chem. Ltd, SOUTH KOREA

M5B
DROP KINETIC ANALYSIS IN REAL TIME BY OPTICAL SPECTROSCOPY
J. Davies1, C. Rushworth2, C. Vallance2, and J.T. Cabral1
1Imperial College London, UK and 2Oxford University, UK

M6B
LARGE VOLUME SAMPLE-PRETREATMENT MICRODEVICE BASED ON SOL-GEL 3D MATRIX
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

M7B
ENHANCED MOBILE HYBRIDIZATION OF GOLD NANOPARTICLES DECORATED WITH Oligonucleotide IN MICROCHANNEL DEVICES
M.-H. Hsu1, W.-F. Fang1, Y.-H. Lai1, J.-T. Yang1, T.-L. Tsai2, and D.-B. Shieh2
1National Taiwan University, TAIWAN and 2National Cheng Kung University, TAIWAN

M1C
A BRIEFCASE-SIZED SYSTEM FOR TOXIN DETECTION USING PLANAR PATCH CLAMP
A. Boussaoud, I. Fontelle, F. Kermarrec, C. Arnault, and N. Picollet-D’Hahan
CEA Grenoble, FRANCE

M2C
ALGAL BIOTOXICITY ASSAY USING µFLOW CYTOMETER FOR ENVIRONMENTAL MONITORING
W. Shi and Y.-C. Tai
California Institute of Technology, USA

M3C
HIGH-SENSITIVE DETECTION OF POLYCHLORINATED BIPHENYL ON THREE-DIMENSIONAL LAB-ON-A-CD
Y. Ukit1, T. Azeta1, S. Kondo1, C. Kataoka2, S. Yusa2, M. Takeo1, Y. Takamura1, and Y. Utsumi2
1Japan Advanced Institute of Science and Technology (JAIST), JAPAN, 2University of Hyogo, JAPAN, and 3Cartuncle bio-sciences LLC., JAPAN

M4C
EFFECTIVE CARBON DIOXIDE REDUCTION INTO CARBON MONOXIDE USING MILLICHANNEL EMBEDDED IN-LINE DIELECTRIC BARRIER DISCHARGE REACTOR
K. Jun and J.M. Jacobson
Massachusetts Institute of Technology, USA

M5C
FREE-FLOW ELECTROPHORESIS WITH ELECTRODE-LESS INJECTION MOULDED CHIPS
S. Köhler1, H. Becker1, V. Beushausen1, E. Beckert1, S. Howitz2, and D. Belder1
1University of Leipzig, GERMANY, 2microfluidic ChipShop GmbH, GERMANY, 3Laser Laboratorium Göttingen e.V., GERMANY, 4Fraunhofer IOF Jena, GERMANY, and 5GeSiM, GERMANY

M6C
MICROCHIP ELECTROPHORESIS OF OLIGOSACCHARIDES IN 'SINGLE' STRAIGHT CHANNEL
T. Kawai, K. Sueyoshi, F. Kitagawa, and K. Otsuka
Kyoto University, JAPAN

M7C
ON-CHIP MICROSCALE DISTILLATION FOR ACETONE-WATER SEPARATION
K.F. Lam, E. Sorensen, and A. Gavrilidis
University College London, UK

M8C
STRONGLY CONVERGENT CHANNELS FOR HIGH SENSITIVITY LABEL-FREE CHEMICAL DETECTION USING ISOTACHOPHORESIS
S.S. Bahga, G.V. Kaigala, M. Bercovici, and J.G. Santiago
Stanford University, USA

M9C
AN ABIOTICALLY CATALYZED GLUCOSE FUEL CELL BASED ON DECORATED BUCKYPAPER
L. Hussein and G. Urban
University of Freiburg-IMTEK, GERMANY

M10C
IMICROFLUIDICS: SMARTPHONE CONTROLLED HANDHELD MICROFLUIDIC PLATFORM
J.L. Prieto, R. Lin, M.V. Patel, and A.P. Lee
University of California, Irvine, USA
M1D CHARACTERIZATION OF TWO APERTURES MICROFLUIDIC PROBE
M. Safavieh, M.A. Qasaimeh, R. Safavieh, and D. Juncker
McGill University, CANADA

M2D FORCE MEASUREMENT AND MODELING FOR MOTOR PROTEINS BETWEEN MICROSPHERE AND MICROFLUIDIC CHANNEL SURFACE
R. Yokokawa1, 2, Y. Sakai1, A. Okonogi1, I. Kanno1, and H. Kotera1
1Kyoto University, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

M3D INTRINSIC BIOPARTICLE-INDUCED SOLUTION TRANSFER FOR ON-CHIP MIXING AND SAMPLE PREPARATION
H. Amini, E. Sollier, and D. Di Carlo
University of California, Los Angeles, USA

M4D NUMERICAL ESTIMATION OF PLASMA LAYER THICKNESS IN BRANCHED MICROCHANNEL USING A MULTI-LAYER MODEL OF BLOOD FLOW
K. Morimoto, D. Kato, and S. Konishi
Ritsumeikan University, JAPAN

M5D ORIGINS OF REDUCTION IN EFFICIENCY IN MICROFLUIDIC PARTICLE SEPARATION
W. Lee1, H. Amini1, H.A. Slone2, and D. Di Carlo3
1University of California, Los Angeles, USA and 2Princeton University, USA

M6D SURFACE CHARGE STABILIZATION IN MICROFLUIDIC CHIPS: A Hysteresis Based Method
A. Pallandre1, I. le Potier1, B. Xiong1, M. Taverna1, A. Plecis2, C. Robin1, and A.-M. Haghir-Geosnet1
1Université Paris Sud, FRANCE and 2Centre National de la Recherche Scientifique (CNRS), FRANCE

M7D A PROGRAMMABLE MICROFLUIDIC SYSTEM FOR SELECTIVE RNA OR DNA EXTRACTION FROM VARIOUS BIOLOGICAL SAMPLES
M. Johnson1, J. Kim1, A. Williams2, and B. Gale3
1University of Utah, USA and 2Integrated Exploration, CANADA

M8D ACTIVE MICRO FLOW-RATE REGULATION TECHNIQUE BASED ON SOFT MEMBRANE DEFORMATION USING MINIATURIZED ELECTROOSMOTIC PUMPS
H. Kinoshita, T. Atsumi, T. Fukuba, and T. Fujii
University of Tokyo, JAPAN

M9D BIDIRECTIONAL DROPLET TRANSPORTATION USING EWOD-INDUCED WETTABILITY GRADIENT
T. Yasuda and K. Imamura
Kyushu Institute of Technology, JAPAN

M10D ENCODED DROPLET MICROCARRIER FOR FORMATION AND ISOLATION OF DROPLET IN A MICROFLUIDIC DEVICE
W. Park, S. Han, H. Lee, A.J. Heinz, and S. Kwon
Seoul National University, SOUTH KOREA

M11D LAB-IN-A-SUITCASE FOR DRUG SCREENING AND PROTEOMICS APPLICATIONS
M. Odijk, H.L. de Boer, W. Oldhuis, and A. van den Berg
University of Twente, THE NETHERLANDS

M12D MAGNETIC BEAD BASED DNA PURIFICATION ON A DISPOSABLE CENTRIFUGAL MICROFLUIDIC FOIL CARTRIDGE
O. Strohmeier1, A. Emperle1, M. Focke1, G. Roth1,2, D. Mark1, R. Zengerle1,2, and F. von Stetten1
1University of Freiburg - IMTEK, GERMANY and 2Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY

M13D ON THE WAY TO A FULLY INTEGRATED DNA-PURIFICATION SYSTEM ON A STANDARD LABORATORY CENTRIFUGE
M. Mueller1,2, D. Mark1, R. Mombach2, G. Roth1,2, J. Hoffmann1, R. Zengerle1,2, and F. von Stetten1
1University of Freiburg - IMTEK, GERMANY and 2Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY

M14D T-JUNCTION SPLITTING OF DROPLETS FROM NANOLITER TO FEMTOLITER AND MANIPULATION OF SINGLE NANOPARTICLES ON MICROFLUIDIC CHIPS
X. Feng, Y. Yi, D.-W. Pang, and Z.-L. Zhang
Wuhan University, CHINA

M15D WIRELESS MULTI-OPERATING MICROVALVE SYSTEM BY INDUCTION HEATING
S.-K. Baek1, Y.-K. Yoon2, and J.-H. Park1
1Kyungwon University, SOUTH KOREA and 2University of Florida, USA

M16D A RANDOM-ACCESS, DROPLET STORAGE ARRAY FOR PROGRAMMABLE REACTION SCREENING
Y.M. Tseng, C.C. Wang, and Y.C. Su
National Tsing Hua University, TAIWAN

M17D CHIP BASED UNILAMELLAR VESICLE FORMATION AND DISPENSING USING DIELECTROPHORESIS
R. Prakash and K.V.I.S. Kaler
University of Calgary, CANADA

M18D DIGITAL NUCLEIC ACID AMPLIFICATION ON A SLIPCHIP
F. Shen, E.K. Davydova, and R.F. Ismagilov
University of Chicago, USA

M19D DYNAMICS OF A MICRO DROPLET COLLIDER TO EXTEND MICROFLUIDIC APPLICATIONS
K. Takahashi1,2, Y. Sugii1,3, K. Mawatari1,3, and T. Kitamori1,3
1University of Tokyo, JAPAN, 2SHARP Corporation, JAPAN, and 3Japan Science and Technology Agency (JST), JAPAN

M20D HIGH-THROUGHPUT MONODISPERSE ALGINATE GEL BEAD FORMATION USING MICROFLUIDIC PSEUDO-CHECK VALVE
C.W. Beh1, D. Kraitchman2, H.-Q. Mao1, and T.-H. Wang1
1Johns Hopkins University, USA and 2Johns Hopkins Medical Institutions

M21D MICROCAPILLARY-ASSISTED FABRICATION OF BI-CONCAVE MICROLENSES FROM TERNARY EMULSION DROPLETS
T. Nisisako, T. Ando, and T. Hatsuzawa
Tokyo Institute of Technology, JAPAN

M22D NOVEL FAST-MIXING SYSTEM UTILIZING MICRODROPLETS
M. Fukushima and A. Hibara
University of Tokyo, JAPAN
M23D
OPTO-ELECTROWETTING DEVICE FOR DNA AMPLIFICATION
P. Ramesh, R. Maessen, and J. den Toonder
Philips Applied Technologies, THE NETHERLANDS

M24D
SHRUNK TO NANO: A NOVEL APPROACH FOR FEMTOLITER
COMPARTMENTALIZATION USING W/O EMULSIONS
T. Wu1, H. Suzuki1,2, and T. Yomo1,2
1Japan Science and Technology Agency (JST), JAPAN and 2Osaka University, JAPAN

M25D
THERMOCAPILLARY ACTUATION BY OPTIMIZED RESISTOR PATTERN
B. Selva1,2, I. Cantat2, and M.C. Jullien3
1École Normale Supérieure (ENS), de Cachan, FRANCE, and 2University of Rennes, FRANCE, and 3École Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

M26D
AN INTEGRATED MICRO-NANOFLUIDIC SYSTEM FOR SAMPLE PREPARATION AND PRECONCENTRATION OF PROTEINS
K. Anwar, T. Han, S. Yu, and S.M. Kim
Inha University, SOUTH KOREA

M27D
HYDRO_DYNAMIC FOCUSING FOR IMPROVED SENSITIVITY OF AN IMPEDANCE - BASED SENSOR FOR CELL DETECTION AND ANALYSIS
M. Nasir, G. Justin, L.C. Shrifier-Lake, J.P. Golden, and F.S. Ligler
Naval Research Laboratory, USA

M28D
MAGNETO-CAPILLARY VALVE FOR LAB-ON-A-CHIP SAMPLE PREPARATION
R.C. den Dulk1,2, K.A. Schmidt1, R. Gill1, J.C.B. Jongen1,2, and M.W.J. Prins3,4
1Philips Research, THE NETHERLANDS and 2Eindhoven University of Technology, THE NETHERLANDS

M29D
PAIRING BEADS WITH A MEANDER-SHAPED DYNAMIC MICROARRAY DEVICE
T. Teshima1, H. Ishihara1, K. Iwai1, A. Adachi2, and S. Takouchi3,4
1University of Tokyo, JAPAN and 2Kanagawa Academy of Science and Technology, JAPAN

M30D
SIMULTANEOUS DETECTION OF PROTEIN AND DNA IN A MICROFLUIDIC DEVICE USING SPATIAL ADDRESSABLE MICROBEADS ON A GEL PAD ARRAY
Q. Zhu and D. Trau
National University of Singapore, CHINA

M31D
A BOND-LESS FABRICATION METHOD FOR HOMOGENEOUS POLYMER MICROCANNEL BY CAPILLARY FORCE LITHOGRAPHY
Seoul National University, SOUTH KOREA

M32D
AN INTEGRATED MICROFLUIDIC DEVICE FOR THE PREPARATION AND EVALUATION OF MAGNETO-RESPONSIVE COMPOSITE PARTICLES
E. Rondeau, S. Holzapfel, P. Fischer, and E. Windhab
ETH Zürich, SWITZERLAND

M33D
MICROFLUIDIC GENERATION OF TEMPORALLY STABLE, FLOW-FREE PROFILES OF CHEMICAL CONCENTRATION GRADIENTS
Y. Zhou and Q. Lin
Columbia University, USA

M34D
TOWARDS HIGHLY EFFICIENT NANOPOREous ELECTROOSMOTIC PUMPS: EFFECTS OF CONCENTRATION POLARIZATION ZONES SOURCED FROM THE PUMP SUBSTRATE AND ELECTRODES
M.E. Suss, A. Mani, T.A. Zangile, and J.G. Santiago
Stanford University, USA

M3E
A NANOFLUIDIC DEVICE FOR SELECTIVE CONCENTRATION AND LABEL-FREE SURFACE-ENHANCED RAMAN DETECTION OF PROTEIN AGGREGATES IMPLICATED IN NEURODEGENERATION
I. Choi, Y.S. Huh, and D. Erickson
Cornell University, USA

M4E
CONTROLLING NEURONAL NETWORKS, AXO-DENDRITIC POLARITIES AND SYNAPSE FORMATION BY MICROCONTACT PRINTING AND MICROCHANNEL TECHNIQUES
T. Shinoe1, J. Shi1, Y. Chen1,2, and A. Triller1
1École Normale Supérieure (ENS), FRANCE and 2Kyoto University, JAPAN

M5E
ELECTROCHEMICAL DETECTION OF ENZYME KINETICS USING A NANOFLUIDIC THIN LAYER CELL DEVICE
1Delft University of Technology, THE NETHERLANDS, 2Leiden University, THE NETHERLANDS, and 3University of Twente, THE NETHERLANDS

M6E
LABEL-FREE DETECTION OF BIOMOLECULES WITH NANOWALL ARRAYS
T. Yasui1, N. Kaji1, Y. Okamoto1, M. Tokeshi1, Y. Horiike2, and Y. Baba1,3
1Kanagawa Academy of Science and Technology, JAPAN and 2National Institute for Materials Science, JAPAN, and 3National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

M7E
NANOPARTICLE ARRAYS WITH PORE SIZE GRADIENTS INCREASE PEAK CAPACITY IN DNA ELECTROPHORESIS
W. Ye, L. Wang, N. Nazemifard, and D.J. Harrison
University of Alberta, CANADA

M8E
PRESSURE REGULATED BIOMOLECULE INJECTION INTO NIH 3T3 CELLS THROUGH INTEGRATED NANO/ MESOPORES
J. Shi1,2, F. Zhang1, J. Liu1, X. Li1, J. Hu1, D. Jung2, N. Nakatsuji2, and Y. Chen1,2
1École Normale Supérieure (ENS), FRANCE and 2Kyoto University, JAPAN
M9E  SHORTENING THE DIFFUSION LENGTH: REAL-TIME SENSING WITH SINGLE-PIXEL RESOLVED KINETICS USING ROOM-TEMPERATURE BONDED BIOFUNCTIONAL NANOSLITS
T. Leïchlé1,2, K.-T. Liao1, and C.-F. Chou1
1Academia Sinica, TAIWAN and 2Université de Toulouse, FRANCE

M7F  ZEOLITE-ENCLOSED MICRO-CAVITIES ON SILICON WAFER FOR CHEMICAL STORAGE
K.F. Lam1,2, W.Y. Lai1, N.W. Chan1, and K.L. Yeung1
1Hong Kong University of Science and Technology, HONG KONG and 2University College London, UK

M10E  MICROFLUIDIC SYNTHESIS OF DESIGNED COLLOIDAL PARTICLES USING STRUCTURED ELASTOMERIC MEMBRANES
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

M8F  A NOVEL PERISTALTIC MICROPUMP USING THREE WINGS WITH DIFFERENT WIDTHS FOR FLUID CIRCULATION
B.P. Mun, C.J. Park, S.K. Yoo, and J.H. Lee
Gwangju Institute of Science and Technology (GIST), SOUTH KOREA

M11E  NANOFIBER-BASED SURFACE MICROFLUIDIC STRUCTURES FOR CELL AND NANOPARTICLE PATTERNING
H.Y. Mao, W.G. Wu, Q.H. Liu, Y.L. Zhang, and Y. Li
Peking University, CHINA

M9F  CONTINUOUS SIZE-BASED SEPARATION OF MICROPARTICLES IN STRAIGHT CHANNELS
T.E. Kagalwala, J. Zhou, and I. Papautsky
University of Cincinnati, USA

M10F  GLASS MICROFLUIDIC CHIPS FOR LONG-TERM LIPID BILAYER FORMATION
Y. Watanabe1,3 and S. Takeuchi1,2
1BEANS Project, JAPAN, 2University of Tokyo, JAPAN, and 3Olympus Co., JAPAN

M11F  MINIATURIZED ENDOThERMIC COOLING MODULE FOR DENATURATION OF ON-CHIP PCR PRODUCT AND ITS ELECTRICAL DETECTION USING NANOWIRE BIOSENSOR
T.G. Kang, S.P.M. Tan, H.M. Ji, M.Y.D. Ang, M.J. Huang, X. Zhang, G.-J. Zhang, and Y. Chen
Agency for Science, Technology and Research (A*STAR), SINGAPORE

M12F  SOLVENT-FREE BILAYER LIPID DOME DEVICE FOR CHANNEL PROTEIN RECORDINGS
T. Osaki1, R. Kavano, K. Kuribayashi-Shigetomi2, H. Sasaki1, and S. Takeuchi2
1Kanagawa Academy of Science and Technology (KAST), JAPAN and 2University of Tokyo, JAPAN

M13F  A NOVEL PERISTALTIC MICROPUMP USING THREE WINGS WITH DIFFERENT WIDTHS FOR FLUID CIRCULATION
B.P. Mun, C.J. Park, S.K. Yoo, and J.H. Lee
Gwangju Institute of Science and Technology (GIST), SOUTH KOREA

M14F  IRREVERSIBLE INTEGRATION OF SU-8 MICROSTRUCTURES INTO PDMS DEVICES
C.G. Sip and A. Folch
University of Washington, USA

M15F  PRINTING AND BONDING OF THE FLOUROELASTOMER VITON FOR MICROFLUIDICS
G. Sharma, L. Klintberg, and K. Hjort
Uppsala University, SWEDEN
MEMS & NEMS Technologies

Surface Modification

M16F
ON-CHIP GAS CONCENTRATION GRADIENT FORMATION USING PoreflonTM AND NeoflonTM FOR IN VITRO OBSERVATION OF CANCER CELL
Y. Harada, K. Kawai, and S. Shoji
Waseda University, JAPAN

M17F
SOFT-LITHOGRAPHY-BASED HIGH TEMPERATURE MOLDING METHOD TO FABRICATE WHOLE TEFLON MICROFLUIDIC CHIPS
Hong Kong University of Science and Technology, HONG KONG

MEMS & NEMS Technologies

Others

M18F
ELECTROCHEMICAL AGAROSE STAMP FOR ADDRESSABLE MICROPATTERNING
S. Sekine1, S. Nakanishi1, T. Miyake1,2, K. Nagamine1,2, and M. Nishizawa1,2
1Tohoku University, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

M19F
LOW-FEMTOMOLAR DETECTION OF BIOMARKER PROTEIN BY POINT-OF-CARE IMMUNOASSAY ON A POWER-FREE MICROCHIP WITH COVALENTLY IMMOBILIZED ANTIBODY
H. Okada, K. Hosokawa, and M. Maeda
RIKEN, JAPAN

M20F
SINGLE-STEP AND MULTIPLE BIOASSAY BASED ON COMBINABLE PDMS CAPILLARY (CPC) SENSOR ARRAY
Y. Uchiyama, F. Okubo, K. Akai, Y. Fujii, T.G. Henares, K. Kawamura, T. Yao, and H. Hisamoto
Osaka Prefecture University, JAPAN

Imaging & Detection Technologies

Flow Visualization

M1G
MEASUREMENT OF THREE DIMENSIONAL FLOW STRUCTURE OF DROPLET FORMATION MECHANISM IN T-SHAPED JUNCTION USING PHASE-LOCKED CONFOCAL MICRO-PIV
M. Oishi, H. Kinoshita, T. Fujii, and M. Oshima
University of Tokyo, JAPAN

M2G
AN IMPROVED SCANOMETRIC IMMUNOASSAY BASED ON DUAL ENLARGEMENT OF GOLD NANO PARTICLES FOR RAPID AND LOW COST PATHOGEN DETECTION
C. Cao, L.L.T. Tram, A. Wolff, and D.D. Bang
Technical University of Denmark, DENMARK

M3G
CONCENTRATION DETERMINATION IN EXTENDED NANOCHELON USING DIFFERENTIAL INTERFERENCE CONTRAST THERMAL LENS MICROSCOPE
H. Shimizu, K. Mawatari, and T. Kitamori
University of Tokyo, JAPAN

Imaging & Detection Technologies

Optical

M4G
FLUORESCENCE ENHANCEMENT FROM SINGLE DNA MOLECULES CONFINED IN SiO2 NANOCHANNELS
F. Westerlund1,2, F. Persson1,2, A. Kristensen1, and J.O. Tegenfeldt1,4
1University of Gothenburg, SWEDEN, 2Chalmers University of Technology, SWEDEN, 3Technical University of Denmark, DENMARK, and 4Lund University, SWEDEN

M5G
INTEGRATED ELECTROKINETIC LAB-ON-A-CHIP BASED BIOSENSOR - A TOOL FOR DRUG SCREENING APPLICATIONS
G. Krishnamoorthy, E.T. Carlen, R.B.M. Schasfoort, and A. van den Berg
MESA+, University of Twente, THE NETHERLANDS

M6G
LENSFREE TELEMEDICINE MICROSCOPE ON A WIRELESS PHONE
D. Tseng, O. Mudanayli, C. Oztoprak, S.O. Isikman, I. Sencan, O. Yaglidere, and A. Ozcan
University of California, Los Angeles, USA

Imaging & Detection Technologies

Electrochemical

M9G
A MULTI-POINT DETECTION SYSTEM WITH ADDRESSABLE ELECTRODE ARRAY DEVICE INCORPORATED WITH IDA ELECTRODES
K. Iino1, W. Saito1, M. Koide2, T. Umemura1, H. Shiku1, and T. Matsue1
1Tohoku University, JAPAN and 2National Institute for Environmental Studies, JAPAN

M10G
MICROFLUIDIC REFERENCE ELECTRODE FOR APPLICATIONS IN BIOMEDICAL SENSORS
S. Safari-Mohsenabad, P.R. Selvaganapathy, and M.J. Deen
McMaster University, CANADA

M11G
SIMULTANEOUS DETECTION OF CATECHOLAMINE NEUROTRANSMITTERS UTILIZING A CYCLODEXTRIN-BASED MICRO ELECTRODE ARRAY
J.-H. Yang, J.W. Park, and H. Kim
University of Utah, USA

Imaging & Detection Technologies

Mass Spectrometry

M12G
DEUALIZATION INTERFACE DEVICE FOR LC-MS USING TiO2-COADED MAGNETIC MICROPARTICLES
Y. Akiyama1, Y. Takahashi2, J. Akutagawa1, A. One1, K. Morishima1, and K. Chiba2
1Tokyo University of Agriculture and Technology, JAPAN and 2JEOL Ltd., JAPAN

M13G
LOW-COST MICROFLUIDIC EMITTERS FOR NANOELECTROSAY IONIZATION-MASS SPECTROMETRY
A.E. Kirby, M.J. Jebrial, H. Yang, and A.R. Wheeler
University of Toronto, CANADA
M14G HIGH THROUGHPUT MELTING CURVE ANALYSIS IN MONOLITHIC SILICON-BASED MICROFLUIDIC DEVICE
J.B.W. Soon1, P. Neuzil1, C. Fang1, J. Reboud1, C.C. Wong1, and L.T. Kao1
1Agency for Science, Technology and Research (A*STAR), SINGAPORE and 2Nanyang Technological University, SINGAPORE

M15G OPTICALLY RECONFIGURABLE MICROFLUIDICS
M. Krishnan and D. Erickson
Cornell University, USA

M16G A CRYO-COOLED MICROFLUIDIC CHANNEL DEVICE FOR MAGNETIC RESONANCE (MR) MICROSCOPY SYSTEM
C. Koo, M.A. Carrillo, M.P. McDougall, S.M. Wright, and A. Han
Texas A&M University, USA

M17G CODED ELECTRODES FOR LOW SIGNAL-NOISE RATIO SINGLE CELL DETECTION IN FLOW-THROUGH IMPEDANCE SPECTROSCOPY
Philips Research Laboratories, UK

M18G ELECTROHYDRODYNAMIC COULTER COUNTING
Y. Zhao and C.-H. Chen
Duke University, USA

M19G MEASUREMENT OF NONLINEAR BIOCHEMICAL REACTION IN MICRODROPLETS USING THE FRACTAL-SHAPED MICRO CHANNEL
K. Hirata1, T. Ichii2, H. Suzuki1,2, T. Matsuura1,2, and T. Yomo1,2
1Osaka University, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

M20G SERS DETECTION USING SILVER NANOCLUSTER-EMBEDDED POROUS POLYMER MONOLITHS
J. Liu, I. White, and D.L. DeVoe
University of Maryland, USA

M4H MICROFLUIDIC PLATFORM FOR THE SIMULTANEOUS GENERATION OF FOUR INDEPENDENT GRADIENTS: TOWARDS THE HIGH THROUGHPUT SCREENING OF TRACE ELEMENTS FOR BONE TISSUE ENGINEERING
B. Harink, S. Le Gac, C. van Blitterswijk, and P. Habibovic
University of Twente, THE NETHERLANDS

M5H SOFT TAPERED STENCIL MASK FOR COMBINATORIAL 3D CLUSTER FORMATION OF STEM CELLS
M. Ikeuchi1, K. Oishi1, H. Noguchi2, S. Hayashi1, and K. Ikuta3
1Nagoya University, JAPAN, 2Baylor Research Institute, USA, and 3University of Tokyo, JAPAN

M6H A HIGH FUNDAMENTAL FREQUENCY QUARTZ CRYSTAL BIOSensor INTEGRATED INTO AN ELECTRO-WETTING-ON-DIELECTRICS BASED LAB-ON-A-CHIP
T. Lederer, B.P. Stehrer, B. Jakoby, S. Bauer, and W. Hilber
Johannes Kepler University, AUSTRIA

M7H EWOD LAB-ON-CHIP FOR MASS SPECTROMETRY AND FLUORESCENCE ANALYSIS
F. Lapierre1, G. Piret1, H. Drobecq2, O. Melnyk2, Y. Coffinier1, V. Thomy1, and R. Boukherroub1
1Université de Lille, FRANCE and 2Institut de Biologie de Lille, FRANCE

M1H CELL FIBERS: CONSTRUCTION OF CENTIMETER-SCALE 3D TISSUES BY WEAVING
University of Tokyo, JAPAN

M2H FABRICATION OF TRANSPLANTABLE 3D-NEURONAL NETWORK
M. Kato-negishi, Y. Tsuda, H. Onoe, and S. Takeuchi
University of Tokyo, JAPAN

M3H IN-VITRO HEPATOCYTE-ACTIVITY ENHANCEMENT VIA A LOBULE-MIMETIC ENGINEERED LIVER TISSUE LAB CHIP
National Tsing Hua University, TAIWAN
Session 1A3
Membrane-Transport Assays
CHAIR: P. Dittrich, ETH Zurich, SWITZERLAND

16:45 - 17:05
A MICROFLUIDIC MODEL TO STUDY THE METASTATIC CASCADE: FROM ADHESION TO MIGRATION
W.A. Velema¹, P.P.M.F.A. Mulder¹, L.P. Lee², and E. Verpoorte¹
¹University of Groningen, THE NETHERLANDS and
²University of California, Berkeley, USA

17:05 - 17:25
DOUBLE-SIDED LIPID-BILAYER MICROCHAMBERS
T. Tonooka¹, M. Takinoue¹, and S. Takeuchi¹,²
¹University of Tokyo, JAPAN and
²Kanagawa Academy of Science and Technology, JAPAN

Rapid Nucleic Acid Purification via Microchannel Immiscible Phase Filtration
S.M. Berry and D.J. Beebe
University of Wisconsin, USA
### BORGMANZAAL - A

#### Session 1C3

**Sensing**

**CHAIR:** A. Wheeler, University of Toronto, CANADA

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<tr>
<td>16:45 - 17:05</td>
<td><strong>OPTIMIZATION OF RADIOSYNTHESIS OF MOLECULAR TRACERS IN EWOD MICROFLUIDIC CHIP</strong></td>
<td>P. Y. Keng, S. Chen, H.-J. Ding, S. Sadeghi, M. E. Phelps, N. Satymurthy, C.-J. Kim, and R. M. van Dam</td>
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<td>University of California, Los Angeles, USA</td>
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#### Session 1D3

**Fuel Cells**

**CHAIR:** I.-M. Hsing, Hong Kong University of Science and Technology, HONG KONG

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<td>16:45 - 17:05</td>
<td><strong>A MICROFLUIDIC MICROBIAL FUEL CELL ARRAY FOR ELECTROCHEMICALLY-ACTIVE MICROBE SCREENING AND ANALYSIS</strong></td>
<td>H. Hou, C. U. Ceylan, L. Li, P. de Figueiredo, and A. Han</td>
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<td>Texas A&amp;M University, USA</td>
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### BORGMANZAAL - B

#### 16:45 - 17:05

**ARTIFICIAL GLAND FOR PRECISE RELEASE OF SEMIOCHEMICALS FOR CHEMICAL COMMUNICATION**

W. P. Bula	extsuperscript{1}, N. G. Dimov	extsuperscript{1}, L. Munoz	extsuperscript{2}, A. Guerrero	extsuperscript{2}, and J. G. E. Gardeniers	extsuperscript{1}

	extsuperscript{1}MESA+, University of Twente, THE NETHERLANDS and

	extsuperscript{2}Spanish National Research Council (CSIC), SPAIN

#### 17:05 - 17:25

**HYBRID CHEMICAL AND ELECTRICAL CONTROL OVER INSECT CYBORG AIR VEHICLES**

B. Cordovez, A. J. Chung, X. T. Huang, N. Jasuja, and D. Erickson

Cornell University, USA

#### 17:25 - 17:45

**MICROFLUIDIC ANALYTICAL PLATFORM FOR CATALYST AND ELECTRODE CHARACTERIZATION AND OPTIMIZATION**

F. R. Brushett, M. S. Naughton, H. R. M. Jhong, and P. J. A. Kenis

University of Illinois, Urbana-Champaign, USA
Tuesday, 5 October 2010

08:00 - 08:15 Opening Remarks

08:15 - 08:45 Plenary Presentation III - Chair: A. Lee, University of California, Irvine, USA
SLIPCHIP, CHEMISTRODE, AND DROPLET-BASED MICROFLUIDIC TECHNOLOGIES: FROM BASIC SCIENCE TO APPLICATIONS
University of Chicago, USA

THEATRE

Session 2A1

Cell Pairing
CHAIR: S. Takayama, University of Michigan, USA

09:15 - 09:35 PAIRING AND FUSION OF HETEROPTIC CELLS IN A MICROCHANNEL
N. Sasaki, J.S. Gong, K. Hosokawa, M. Maeda, and Y. Ito
RIKEN, JAPAN

09:35 - 09:55 A MICROFLUIDIC ARRAY WITH CELLULAR VALVING FOR CO-CULTURING SINGLE CELL COUPLES
J.-P. Frimat, M. Becker, Y.-Y. Chiang, D. Janasek, J.G. Hengstler, J. Franzke, and J. West
Institute for Analytical Sciences (ISAS), GERMANY

09:55 - 10:15 SIZE-INDEPENDENT ELECTRO CELL FUSION WITH MASSIVE PARALLELISM
Y. Kimura1,2, Y. Nishigaichi1, Y. Nakada1, Y. Mor1, H. Iwanari1, M. Gel1, O. Kurosawa1,2, H. Oana1,2, T. Hamakubo1, H. Kotera2,3, and M. Washizu1,2
1University of Tokyo, JAPAN, 2Japan Science and Technology Agency (JST), JAPAN, and 3Kyoto University, JAPAN

10:15 - 10:45 Break and Exhibit Inspection

Session 2A2

Intrinsic Cell Separation
CHAIR: D. Ingles, Macquarie University, AUSTRALIA

10:45 - 11:05 MICROFLUIDIC COUNTERFLOW CENTRIFUGAL ELUTRIATION FOR CELL SEPARATION USING DENSITY-GRADIENT MEDIA
T. Morijiri, T. Hikida, M. Yamada, and M. Seki
Chiba University, JAPAN

11:05 - 11:25 GENOME-WIDE ANALYSIS OF ELECTRICAL PHENOTYPE USING ISODIELECTRIC SEPARATION
M.D. Vahey1, J.P. Svensson2, L. Quiros-Pesudo1, L.D. Samson1, and J. Voldman1
1Massachusetts Institute of Technology, USA and 2Karolinska Institutet, SWEDEN

11:25 - 11:45 TEMPERATURE-CONTROLLED HIGH-THROUGHPUT (1 L/H) ACOUSTOPHORETIC PARTICLE SEPARATION IN MICROCHANNELS
C.L. Ebbesen1, J.D. Adams3, R. Barnkob1, H.T. Soh1, and H. Bruus1
1Technical University of Denmark, DENMARK and 3University of California, Santa Barbara, USA

SPRINGERZAAL

Session 2B1

Fixed Cells and Tissue
CHAIR: S.H. Lee, Korea University, SOUTH KOREA

09:15 - 09:35 A NOVEL METHOD TO INVESTIGATE PROTEOMIC PROFILING OF CANCERS USING A MICROFLUIDIC IMMUNOHISTOCHEMISTRY SYSTEM
M.S. Kim1, S. Kwon1, E.S. Lee1, and J.-K. Park1
1Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA, 2Samsung Advanced Institute of Technology (SAIT), SOUTH KOREA, and 3Korea University, SOUTH KOREA

09:35 - 09:55 FAST IMMUNOHISTOCHEMICAL BIOMARKER DETECTION DEVICE FOR CANCER TISSUE SLICES
A.T. Ciftlik1, B. Song1, C. Vandeveer4, J.C. Bünzli3, H.-A. Lehr2, and M.A.M. Gijs1
1École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, 2Université de Lausanne, SWITZERLAND, 3Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA, and 4University of Groningen, THE NETHERLANDS

09:55 - 10:15 A HIGH-THROUGHPUT FISH MICROCHIP FOR CLINICAL GENETICS
H. Suzuki1, D. Hiramaru2, K. Terao1, H. Takao1, F. Oohira1, H. Koteras1, and T. Suzuki2
1Kagawa University, JAPAN and 2Kyoto University, JAPAN

10:45 - 11:05 ON-CHIP MULTI-ANALYTE NATIVE WESTERN BLOTTING IN TWO MINUTES
S.Q. Tia, M. He, D. Kim, and A.E. Herr
University of California, Berkeley, USA

11:05 - 11:25 KILO-TO-GIGA DNA MICROARRAY FOR CONVERSION HIGH-DENSITY PROTEIN MICROARRAY ON-DEMAND
M. Biyani1,2, S. Sato1, T. Fujita1, T. Akagi1, and T. Ichiki1,2
1University of Tokyo, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

11:25 - 11:45 TEMPERATURE-CONTROLLED HIGH-THROUGHPUT (1 L/H) ACOUSTOPHORETIC PARTICLE SEPARATION IN MICROCHANNELS
C.L. Ebbesen1, J.D. Adams3, R. Barnkob1, H.T. Soh1, and H. Bruus1
1Technical University of Denmark, DENMARK and 3University of California, Santa Barbara, USA

MICROSCALE ISODELLECTRIC FRACTIONATION USING IMMobilIZED pH-SPECIFIC MEMBRANES FOR MULTI-DIMENSIONAL ANALYSIS
J. Mai, G.J. Sommer, and A.V. Hatch
Sandia National Laboratories, USA
Session 2C1
Nucleic Acid Amplification
CHAIR: X. Xia, Nanjing University, CHINA
09:15 - 09:35
INVITED PRESENTATION
CHALLENGES AND OPPORTUNITIES IN PERSONALIZED MEDICINE
H.R. Stapert¹ and R. Pauwels²
¹ Biocartis BV, THE NETHERLANDS and ² Biocartis SA, SWITZERLAND

Session 2D1
Drug Screening
CHAIR: Z. Brzózka, Warsaw University of Technology, POLAND
09:15 - 09:35
MICROFLUIDIC CHAMBER ARRAYS FOR WHOLE-ORGANISM HIGH-THROUGHPUT COMBINATORIAL CHEMICAL SCREENING BASED ON BEHAVIORAL RESPONSES
K. Chung¹, E. Gong¹, J. Srinivasan², P.W. Sternberg², and H. Lu¹
¹ Georgia Institute of Technology, USA and ² California Institute of Technology, USA

10:15 - 10:45 Break and Exhibit Inspection

Session 2C2
Two-Phase Flow
CHAIR: J.-L. Wosy, Institut Curie, FRANCE
10:45 - 11:05
HYDRODYNAMIC PARTICLE CONCENTRATION INSIDE A MICROFLUIDIC PLUG
G.K. Kurup and A.S. Basu
Wayne State University, USA

Session 2D2
In-Vivo Assays
CHAIR: S. Lunte, University of Kansas, USA
10:45 - 11:05
A SKIN-CONTACT-ACTUATED DISPENSER/PUMP FOR TRANSDERMAL DRUG DELIVERY
C. Mousoulis¹, M. Ochoa¹, D. Papageorgiou², and B. Ziaie¹
¹ Purdue University, USA and ² Solid-State Research, Inc., USA

11:05 - 11:25
GENERATION OF TEMPORAL LOGARITHMIC CONCENTRATION FOR DOSE-RESPONSE ASSAYS ON ION CHANNELS
C.-Y. Chen, T.-Y. Tu, D.-S. Jong, and A.M. Wo
National Taiwan University, TAIWAN

11:25 - 11:45
APPLICATION OF AN ENZYMATIC MICROREACTOR COUPLED WITH MICRODIALYSIS FOR CONTINUOUS MONITORING OF SUBCUTANEOUS GLUCOSE IN RATS
B.-U. Moon¹, M.G. de Vries¹, C.A. Cordeiro², A.J.M. Schoonen³, B.H.C. Westerink¹, and E. Vervoort¹
¹ University of Groningen, THE NETHERLANDS and ² Brains-on-Line B.V., THE NETHERLANDS

3D LIQUID-LIQUID WAVEGUIDES USING TWO FLOW STREAMS BY CENTRIFUGAL FORCE
Y. Yang, C.D. Ohl, H.S. Yoon, and A.O. Liu
Nanyang Technological University, SINGAPORE

ADVANCED FLUIDIC HANDLING AND USE OF TWO-PHASE FLOW FOR HIGH THROUGHPUT STRUCTURAL INVESTIGATION OF PROTEINS ON A MICROFLUIDIC SAMPLE PREPARATION PLATFORM
J.P. Lafleur¹, D. Snakenborg¹, S.S. Nielsen², M. Møller², K.N. Toft², J.K. Jacobsen³, B. Vestergaard³, L. Arleth², and J.P. Kutter²
¹ Technical University of Denmark, DENMARK, ² Copenhagen University, DENMARK, and ³ Novo Nordisk A/S, DENMARK
13:00 - 13:45  
**Plenary Presentation IV - Chair: S. Shoji, Waseda University, JAPAN**

**FLASH CHEMISTRY: FAST CHEMICAL SYNTHESIS IN FLOW MICROREACTORS**
J.-I. Yoshida  
Kyoto University, JAPAN

13:45 - 13:50  
**Awards Ceremony 1**

Young Innovator Award  
sponsored by Analytical Chemistry and the Chemical and Biological Microsystems Division (CBMS)

14:00 - 16:00  
**Poster Session 2**

Refreshments will be served at 15:30

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**T1A**  
**A FLUID ARRAY DEVICE FOR HIGH-THROUGHPUT PROTEIN SYNTHESIS**  
Z.H. Fan, R. Khnouf, Q. Mei, and S. Jin  
University of Florida, USA

**T2A**  
**DEVELOPMENT OF SPECIFIC SINGLE-CELL GENE ANALYSIS SYSTEM ON A MICROCHIP**  
J. Wakabayashi1, Y. Tanaka1,2, K. Sato3,4, K. Mawatari1,2, Y. Tanaka1, M. Nilsson5, and T. Kitamori1,2  
1University of Tokyo, JAPAN, 2Japan Science and Technology Agency (JST), JAPAN, 3Japan Women’s University, JAPAN, and 4Uppsala University, SWEDEN

**T3A**  
**HIGH-THROUGHPUT GENE EXPRESSION ANALYSIS OF SINGLE CELLS USING DIGITAL MICROFLUIDICS**  
N. Bois1,2, L. Mahmoudian1, P. Mary2, F Monti2, J.-L. Viovy2, P. Tabeling2, and M.-C. Potier3  
1Hôpital Pitié-Salpêtrière, FRANCE, 2Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and 3Curie Institute, FRANCE

**T4A**  
**MICROFLUIDIC VOLUME REDUCTION SOLID PHASE EXTRACTION OF COMPROMISED AND LOW DNA TEMPLATE FORENSIC SAMPLES**  
C.R. Reedy, J.J. Higginson, and J.P. Landers  
University of Virginia, USA

**T5A**  
**TOWARDS AN INTEGRATED MICRODEVICE FOR LIQUID DNA EXTRACTION AND AMPLIFICATION APPLICABLE TO FORENSIC DNA ANALYSIS**  
J.A. Lounsbury1, N. Coult1, P. Kinnon2, D. Saul2, and J.P. Landers1  
1University of Virginia, USA and 2ZyGEM Corporation, NEW ZEALAND

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**T9A**  
**FISH IN CHIPS: MOLECULAR TYPING OF HER-2 BIOMARKER FOR RAPID AND LOW COST CANCER DIAGNOSIS AND TREATMENT SELECTION**  
Institut Curie, FRANCE

**T10A**  
**HIGH-THROUGHPUT SIZE BASED RARE CELL ISOLATION USING MICROSCALE VORTICES**  
S.C. Hur, A.J. Mach, and D. Di Carlo  
University of California, Los Angeles, USA

**T11A**  
**ADHESION-BASED MICROFLUIDIC ENDOTHELIAL PROGENITOR CELL CAPTURE TECHNOLOGY FOR CARDIOVASCULAR MEDICINE**  
B.D. Plouffe1, A. Hatch1, G. Hansmann2, and S.K. Murthy1  
1Northeastern University, USA and 2Children’s Hospital Boston, USA

**T12A**  
**PAPER MEMS CHIP FOR INK-JET PRINTER-LIKE CLINICAL AUTO Analyzer**  
Hiroshima University, JAPAN

**T13A**  
**RAPID AND HIGH SENSITIVITY DETECTION OF URINARY TRACT INFECTIONS USING ISOTACHOPHORESIS**  
M. Bercovici, G.V. Kaigala, J.C. Liao, and J.G. Santiago  
Stanford University, USA

**T14A**  
**SOL-GEL INTEGRATED PROTEIN MICROARRAY FOR HIGH-RESOLUTION SIGNAL READOUT OF PSA (PROSTATE SPECIFIC ANTIGEN) IN CLINICAL SAMPLES**  
S.W. Lee1, J.Y. Ahn1, K. Järås1, H. Lilja1, M.J. Jo1, C.Y. Jung1, O.C. Jeong2, S.Y. Kim2, and T. Laurell1  
1Lund University, SWEDEN, 2Dongguk University, SOUTH KOREA, and 3Inje University, SOUTH KOREA

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**T15A**  
**BLOOD COAGULATION STUDY USING LIGHT-TRANSMISSION METHOD**  
H. Lim, J. Nam, Y. Lee, S. Xue, S. Chung, and S. Shin  
Korea University, SOUTH KOREA

**T16A**  
**DEVELOPMENT OF THREE-STEP CONSOLIDATING MICROCHIP FOR THERAPEUTIC DRUG MONITORING**  
K. Sugiuira1, N. Kaji1, Y. Okamoto1, M. Tokeshi2, and Y. Baba1,2  
1Nagoya University, JAPAN and 2National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

**T17A**  
**EXTENDED DYNAMIC RANGE CAPILLARY-DRIVEN MICROFLUIDICS**  
L. Gervais and E. Delamarche  
IBM Research GmbH, SWITZERLAND

T19A LARGE-VOLUME CENTRIFUGAL MICROFLUIDIC DEVICE FOR WHOLE BLOOD SAMPLE PREPARATION M. Amasia1, J. Siegrist1, and M. Madou2,3 1University of California, Irvine, USA and 2US National Institute of Science and Technology, SOUTH KOREA

T20A MICROFLUIDIC LAB-ON-A-CHIP SYSTEM WITH INTEGRATED SAMPLE PREPARATION FOR PROCESSING IMMUNOASSAYS G. Wette1, S. Lutz2, B. Cleven3, H. Brahms4, C. Gärtnert5, G. Roth1, D. Mark4, R. Zengerle6,7, and F. von Stetten1,8,9 1University of Freiburg - IMTEK, GERMANY, 2Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY, 3Vulkan Technisch Maschinen-Konstruktions GmbH, GERMANY, 4DRC Instruments GmbH, GERMANY, and 5Microfluidic ChipShop GmbH, GERMANY

T21A ONE-STEP MICRO-ELISA FOR HIGHLY SENSITIVE DETERMINATION OF TSH T. Ohashi1, F. Fukahori1, H. Tazawa1, A. Harano1, T. Ebata1, K. Mawatari1,2, and T. Kitamori1,2 1Institute of Micro Chemical Technology, JAPAN and 2University of Tokyo, JAPAN


T23A A MICROMECHANICAL CHIP WITH CHAOTIC MIXER TO CONSTRUCT MULTIFUNCTIONAL ENVELOPE-TYPE NANODEVICE FOR DELIVERY SYSTEM K. Kitazoe1, Y. Okamoto1, N. Kaji1, M. Tokeshi1, K. Kogure2, H. Harashima3, and Y. Baba3,4,5 1Nagoya University, JAPAN, 2Kyoto Pharmaceutical University, JAPAN, 3Hokkaido University, JAPAN, and 4National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

T24A BLM EXPERIMENTATION AND OPTO-ELECTRICAL CHARACTERIZATION IN MICROCHIPS. TOWARDS AN INTEGRATED PLATFORM FOR DRUG SCREENING ON MEMBRANE PROTEINS V.C. Stingmer, I. van Uitert, S. Le Gac, and A. van den Berg  MESA+, University of Twente, THE NETHERLANDS

T25A LIVER-KIDNEY MICROFLUIDIC BIOREACTOR FOR CELL CO-CULTURE IN DRUG STUDIES L. Choucha-Snoubet1, L. Griscom2, P.E. Polini3, F. Razan4, C. Brochot1, C. Aninat5, A. Corlu4, C. Legallais1, and E. Leclerc1 1Université de Technologie de Compiegne, FRANCE, 2Ecole Normale Supérieure de Cachan (ENS), FRANCE, 3INERIS, FRANCE, and 4Université de Rennes 1, FRANCE

T26A NOVEL HIGH-THROUGHPUT SCREENING SYSTEM FOR CANCER THERAPY WITH SIMULTANEOUS COMBINATION TREATMENTS J.Y. Kim1, D. Taylor1, K. Rege1, H.S. Kim1, A.R. Han1, and A. Jayaraman1 1Texas A&M University, USA and 2Arizona State University, USA

T27A SELECTION OF PHAGE DISPLAYED PEPTIDES ON LIVE ADHERENT CELLS IN MICROFLUIDIC CHANNELS J. Wang1, Y. Liu1, T. Teesalu2, K.N. Sugahara2, J.D. Adams3, E. Ruoslahti2, Y. Xiao1, and H.T. Soh1 1University of California, Santa Barbara, USA and 2Sanford-Burnham Medical Research Institute, USA

T28A TRANSPORTERS ON A CHIP: A FLUORESCENCE ANALYSIS OF AN ATP-BINDING CASSETTE (ABC)-TRANSporter H. Sasaki1, H. Onose1, T. Oasaki1, R. Kawano1, and S. Takeuchi1,2 1Kanagawa Academy of Science and Technology (KAST), JAPAN and 2University of Tokyo, JAPAN

T29A A PUMPLESS CELL CULTURE CHIP WITH THE CONSTANT MEDIUM PERFUSION-RATE MAINTAINED BY BALANCED DROPLET DISPENSING T. Kim and Y.-H. Cho  Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

T30A AN AUTOMATED AND MULTIPLEXED MICROFLUIDIC BIOREACTOR PLATFORM WITH TIME-LAPSE IMAGING FOR CULTIVATION OF EMBRYONIC STEM CELLS AND ON-LINE ASSESSMENT OF MORPHOLOGY AND PLURIPOTENCY MARKERS M. Reichen, F.S. Veraichel, and N. Szita  University College London, UK

T31A COMPOSITE MATERIAL DIAPHRAGM ARRAYS FOR MECHANOBIOLOGICAL STIMULATION OF CULTURED CELLS C. Moraes, C.J. Lam, B.M. Beca, Y. Sun, and C.A. Simmons  University of Toronto, CANADA

T32A DEVELOPMENT OF SIMPLE MICROFLUIDIC CELL CULTURING SYSTEM TOWARD OBSERVATION OF CELL-TO-CELL COMMUNICATION A. Okonogi1, K. Terao2, T. Okitsu1, T. Suzuki2, R. Yokokawa1, M. Ohoka1, and H. Kotera1 1Kyoto University, JAPAN and 2Kagawa University, JAPAN

T33A GRAVITY-ORIENTED MICROFLUIDIC DEVICE FOR CELL SPHEROID FORMATION K. Lee1, C. Kim2, J. Bang2, Y. Kim2, S. Lee1, B. Ahn2, J.Y. Kang2, and K.W. Oh1 1University at Buffalo, The State University of New York, USA and 2Korea Institute of Science and Technology (KIST), SOUTH KOREA

T34A HIGH-THROUGHPUT COMPARTMENTALIZED CNS NEURON CULTURE PLATFORM FOR AXON DEGENERATION/REGENERATION STUDY J. Park, H. Koito, J. Li, and A. Han  Texas A&M University, USA


T36A MICROFLUIDIC SYNTHESIS OF COMPLEX ALGINATE FIBERS FOR THE DIRECTION CONTROL OF CELL GROWTH M. Yamada, S. Sugaya, and M. Seki  Chiba University, JAPAN

T37A OPEN-CHAMBER FOCAL STIMULATION DEVICE FOR BIOMIMETIC STUDY OF THE NEUROMUSCULAR JUNCTION T. Chang, N. Bhattacharjee, and A. Folch  University of Washington, USA
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<th>T38A</th>
<th>A MEMBRANELESS CONTINUOUS-FLOW FILTER FOR HIGH-THROUGHPUT SEPARATION AND ENRICHMENT OF PARTICLES AND CELLS</th>
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<tbody>
<tr>
<td>J.-H. Huang and V.M. Ugas</td>
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<td>Texas A&amp;M University, USA</td>
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<tr>
<th>T39A</th>
<th>A RELEASABLE CELL SEPARATION PLATFORM USING TEMPERATURE-RESPONSIVE POLYMERS</th>
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<tbody>
<tr>
<td>L.-I. Wang(^1), Y.-S. Chen(^1), J.M. Obliesca(^1), P.-C. Wang(^1), G.-H. Hsieu(^1), and F.-G. Tseng(^2,3)</td>
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<tr>
<td>(^1)National Tsing Hua University, TAIWAN and (^2)Academia Sinica, TAIWAN</td>
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<tr>
<th>T40A</th>
<th>A SINGLE-CELL TRAPPING MICROARRAY AND AUTOMATED TRACKING OF CLONAL EXPANSION</th>
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<tr>
<td>A.J.E. Rettie, T. Chang, W.C. Watt, and A. Folch</td>
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<td>University of Washington, USA</td>
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<tr>
<th>T41A</th>
<th>AUTOMATED DIELECTROPHORETIC CHARACTERIZATION FOR MICROFLUIDIC CELL SEPARATION DEVICES</th>
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<td>C. Huang, B.G. Hawkins, S. Arasanipalai, and B.J. Kirby</td>
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<td>Cornell University, USA</td>
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<tr>
<th>T42A</th>
<th>CELL SORTING BY DIELECTROPHORESIS FOR EVALUATION OF LYSIS EFFICIENCY IN CONTINUOUS FLOW</th>
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<tr>
<td>G. Merrier(^1), N. Piacentini(^2,3), and P. Renaud(^1)</td>
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<tr>
<td>(^1)École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and (^2)Politecnico di Torino, ITALY</td>
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<tr>
<th>T43A</th>
<th>CONTINUOUS-FLOW BIOMOLECULE CONCENTRATOR BY ION CONCENTRATION POLARIZATION</th>
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<tr>
<td>R. Kwak, S.J. Kim, and J. Han</td>
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<tr>
<td>Massachusetts Institute of Technology, USA</td>
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<th>T44A</th>
<th>DIELECTROPHORETIC SEPARATION OF HETEROGENEOUS STEM CELL POPULATIONS</th>
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<td>J.L. Prieto, J. Nourse, J. Lu, L. Flanagan, and A.P. Lee</td>
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<td>University of California, Irvine, USA</td>
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<th>T45A</th>
<th>ELECTROPHYSIOLOGICAL SORTING OF PLURIPOTENT STEM CELL-DERIVED CARDIOMYOCYTES IN A MICROFLUIDIC PLATFORM</th>
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<tr>
<td>F.B. Myers(^1), O.J. Abilez(^2), C.K. Zarins(^2), and L.P. Lee(^3)</td>
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<td>(^1)University of California, Berkeley, USA and (^2)Stanford University, USA</td>
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<tr>
<th>T46A</th>
<th>HIGH THROUGHPUT CELL SEPARATION AND FOCUS VIA DIELECTROPHORESIS BASED ON PARTICLES CHARACTERIZATION</th>
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<th>T47A</th>
<th>HYDROGEL EMBEDDING OF PRECISION-CUT LIVER SLICES IN A MICROFLUIDIC DEVICE IMPROVES METABOLIC STABILITY</th>
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<td>P.M. van Midwoud, G.M.M. Groothuis, M.T. Merema, and E. Verpoorte</td>
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<td>University of Groningen, THE NETHERLANDS</td>
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<tr>
<th>T48A</th>
<th>LABEL-FREE LATERAL MAGNETO-DIELECTROPHORETIC MICROSEPARATION METHOD FOR SEPARATING NUCLEATED CELLS FROM PERIPHERAL BLOOD</th>
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<tr>
<td>J. Jung, S.-I. Han, H. Lee, M. Yoo, and K.-H. Han</td>
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<tr>
<th>T49A</th>
<th>MAGNETICALLY DRIVEN MICRO-MOVABLE ELECTRODE FOR CELL COUPLING</th>
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<tr>
<td>Y. Yamanishi(^1), T. Kawahara(^2), T. Iyanagi(^3), M. Hagiwara(^2), and F. Arai(^2)</td>
<td></td>
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<tr>
<td>(^1)Japan Science and Technology Agency (JST), JAPAN, (^2)Nagoya University, JAPAN, and (^3)Tohoku University, JAPAN</td>
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<tr>
<th>T50A</th>
<th>MICROFLUIDIC CHIP FOR ACTIVE AND AUTONOMOUS SINGLE-CELL ISOLATION BY USING DIELECTROPHORESIS AND IMPEDANCE MEASUREMENT</th>
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<tr>
<td>H. Park, D. Kim, and K.-S. Yun</td>
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<td>Sogang University, SOUTH KOREA</td>
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<tr>
<th>T51A</th>
<th>NONCOMPOSITE CARBON-PDMS THICK ELECTRODES FOR ELECTROKINETIC MANIPULATION DURING CELL FUSION</th>
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<td>M. Brun(^1), A.L. Deman(^1), J.F. Chatdeaux(^1), M. Frenea-Robin(^2), N. Haddour(^2), and R. Ferrigno(^1)</td>
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<tr>
<td>(^1)Université de Lyon, FRANCE and (^2)University of Southern Denmark, DENMARK</td>
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<tr>
<th>T52A</th>
<th>PARTICLE TRANSPORTATION BY USING RECTIFIED AC ELECTROOSMOTIC FLOWS IN OPEN MICROFLUIDIC CHANNELS</th>
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<tr>
<td>W.I. Wu, P.R. Selvaganapathy, and C.Y. Ching</td>
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<td>McMaster University, CANADA</td>
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<th>T53A</th>
<th>SEPARATION OF NEURAL CELLS USING TWO-STEP SEPARATION BY COMBINATION OF SOFT INERTIAL MICROFLUIDICS AND PINCHED FLOW FRACTIONATION</th>
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<tr>
<td>Z. Wu(^1), G. Wicher(^2), A. Fax Svenningsen(^2), and K. Hjort(^1)</td>
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<tr>
<td>(^1)Uppsala University, SWEDEN and (^2)University of Southern Denmark, DENMARK</td>
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<tr>
<th>T54A</th>
<th>REUSABLE MICROFLUIDIC CHIP FOR CELL CAPTURE AND RELEASE USING SURFACE-IMMOBILIZED APTAMERS</th>
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<td>J. Zhu, T.H. Nguyen, R. Pei, M. Stojanovic, and Q. Lin</td>
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<td>Columbia University, USA</td>
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<th>T55A</th>
<th>VISION SENSING AND POSITION CONTROL OF 2DOF MAGNETICALLY DRIVEN MICRO TOOL FOR REMOVING OF ZONA PELLUCIDA OF OOCYTE</th>
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<td>C. Huang, B.G. Hawkins, S. Arasanipalai, and B.J. Kirby</td>
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<td>Cornell University, USA</td>
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<tr>
<th>T56A</th>
<th>A CANCER-SPECIFIC RESPONSE TO SUBEROYLANILIDE HYDROXAMIC ACID (SAHA) DISTINGUISHES MDA-MB-231 AND MCF10A HUMAN BREAST CELLS IN THREE-DIMENSIONAL (3-D) SILICON MICROSTRUCTURE ARRAYS</th>
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<tr>
<td>J.S. Strobl, M. Nikkhah, and M. Agah</td>
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<td>Virginia Polytechnic Institute and State University, USA</td>
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<th>T57A</th>
<th>A LAB-USE MICROFLUIDIC PLANAR PATCH-CLAMP SYSTEM</th>
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<tr>
<td>T.-Y. Tu, C.-Y. Chen, D.-S. Jong, and A.M. Wo</td>
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<td>National Taiwan University, TAIWAN</td>
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<th>T58A</th>
<th>A MULTI-PURPOSE MICROFLUIDIC PIPETTE FOR SINGLE-CELL ANALYSIS</th>
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<tr>
<td>A. Aina, E.T. Jansson, N. Stepanyants, O. Orwar, and A. Jesorka</td>
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<td>Chalmers University of Technology, SWEDEN</td>
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<tr>
<th>T59A</th>
<th>A PEPTIDE APTAMER-COATED SURFACE FOR SELECTIVE ADHESION OF CANCER CELLS IN BLOOD CELLS SUSPENSION</th>
</tr>
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<tr>
<td>Y. Yamanishi(^1), T. Kawahara(^2), T. Iyanagi(^3), M. Hagiwara(^2), and F. Arai(^2)</td>
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<tr>
<td>(^1)Japan Science and Technology Agency (JST), JAPAN, (^2)Nagoya University, JAPAN, and (^3)Tohoku University, JAPAN</td>
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**Life Science Applications**

**Cell Handling & Sorting**

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**Life Science Applications**

**Cell Analysis**
T60A
CARCINOMA CELL-BASED 5-FLUOROURACIL EVALUATION IN MICROFLUIDIC SYSTEM
E. Jedrych1, K. Sofinska1, S. Flis2, Z. Jastrzebski2, M. Chudy1, and Z. Brzozka1
1 Warsaw University of Technology, POLAND and 2National Institute of Public Health, POLAND

T61A
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B. Ibarlucea1, J. Vila-Planas1, E. Fernández-Rosas1,2, S. Demming1, C. Nogues1, J.A. Plaza1, S. Büttingbach1, and A. Liebera1
1Centre Nacional de Microelectrónica (CNM), SPAIN, 2Universitat Autonoma de Barcelona, SPAIN, and 3Technische Universität Braunschweig, GERMANY

T62A
IN VITRO 3D COLLECTIVE ANGIogenic RESPONSE UNDER OCHESTRATED MULTIPLE CHEMICAL GRADIENTS
1Massachusetts Institute of Technology, USA and 2Korea University, SOUTH KOREA

T63A
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K. Toyama, M. Yamada, and M. Seki
Chiba University, JAPAN

T64A
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T. Frisk1, K. Guldevall2, B. Vanherbergen1, H. Brismar1,2, and Ö. Önfelt1,2
1Rudbeck Laboratory, SWEDEN and 2Kungliga Tekniska Högskolan, SWEDEN

T65A
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1Korea University, SOUTH KOREA, 2Rochester Institute of Technology, USA, and 3Massachusetts Institute of Technology, USA

T66A
MICRO ORIFICE BASED HIGH YIELD CELL-CELL FUSION: ON-CHIP ANALYSIS OF POST-FUSION PHENOMENA
M. Gel1, Y. Kimura3, S. Suzuki1, O. Kurosawa3, H. Oana1, H. Kotera2, and M. Washizu1
1University of Tokyo, JAPAN, 2Kyoto University, JAPAN, and 3Japan Science and Technology Agency (JST), JAPAN

T67A
QUALITY AND VIABILITY ASSESSMENT OF OOCYTES/EMBRYOS OF ANIMALS BY OPTICAL CHARACTERIZATION IN LAB-ON-A-CHIP DEVICE
P. Szczepanik1, R. Walczak1, J. Dziuban1, B. Kempisty2, A. Chelmonska-Soyta3, J. Kluger3, M. Jackowska4, and J. Jaskowski4
1Kungliga Tekniska Högskolan, SWEDEN and 2Polish Academy of Sciences, POLAND, 3University of Medical Sciences, 4Poznan University of Life Sciences, POLAND

T68A
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R. Lin, D.C. Chang, and Y.-K. Lee
Hong Kong University of Science and Technology, HONG KONG

T69A
TOWARDS AUTOMATED HIGH CONTENT SCREENING ON A 672-MICROWELL SLIDE
E. Weibull1, S. Lindström2, A. Segerman1, and H. Andersson-Svahn1,2
1Royal Institute of Technology (KTH), SWEDEN, 2Picovitro, SWEDEN, 3Karolinska Institute, SWEDEN, and 4Rudbeck Laboratory, SWEDEN

T70A
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D. van Noort
National University of Singapore, SINGAPORE

T71A
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F. Frederix1, B. Cobelens2, R.J.O.M. Hoedman1, F. Jedema2, T. Merelle1, A. Sedzini2, E. Sterckx1, H. Suy1, C. Tak1, J. Uebelfeld1, R. van der Werf2, D. van Steenwinckel1, K. Verheyden1, and F. Widdershoven2
1NXP Semiconductors, BELGIUM and 2NXP Semiconductors, THE NETHERLANDS

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M. Javanmard, J. Mok, M. Mindrinos, and R.W. Davis
Stanford University, USA

T73A
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University of Tokyo, JAPAN

T74A
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Y. Skhiri1, T. Beneyton1, L. Mazutis1, J.C. Bare1, A. El Harrak1, E. Mayot1, A.D. Griffiths1, and V. Taly1
1University of Strasbourg, FRANCE and 2Max-Planck-Institute for Dynamics and Self-Organization, FRANCE

T75A
MICROFLUIDIC DEVICE TO STUDY THE INTERPLAY OF LIVER AND INTESTINE IN THE REGULATION OF BILE ACID SYNTHESIS
P.M. van Midwoud, M.T. Merema, E. Verpoorte, and G.M.M. Groothuis
University of Groningen, THE NETHERLANDS

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H. Yin, B. Ji, M. Cusack, A. Freer, P.S. Dobson, N. Gardeggard, and J. Jiang
University of Glasgow, UK

T77A
OVERFLOW MICROFLUIDIC NETWORKS
R.D. Lovchik1, F. Bianco2, N. Tonna2, A. Ruiz2,3, M. Matteoli2,4, and E. Delamarche2
1IBM Research, Zurich, SWITZERLAND, 2Neuro-Zone s.r.l., ITALY, 3Fondazione Filarete, ITALY, and 4University of Milano, ITALY

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Others

Microreaction Applications
Flow Chemistry/Synthesis

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M. Rhee1,2, P.M. Valencia1, M.I. Rodriguez1, R.S. Langer1, O.C. Farokhzad1,2, and R. Karnik1
1Massachusetts Institute of Technology, USA and 2Rochester Institute of Technology, USA, and 3University of Milano, ITALY

T2B
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P.J. Nieuwland1, K. Koch1, R. Becker1, J.C.M. van Hest1, and F.P.J.T. Rutjes2
1FutureChemistry, THE NETHERLANDS and 2Radboud University Nijmegen, THE NETHERLANDS

T3B
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C.P. Park and D.-P. Kim
Chungnam National University, SOUTH KOREA
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V. Chokkalingam1,2, B. Weidenhof1, W.F. Maier1, and R. Seemann1,2
1Saarland University, GERMANY and 
2Max Planck Institute, GERMANY

T5B
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D.J. Rowe, J. Naylon, A. Porch, D.A. Barrow, and C.J. Allender
Cardiff University, UK

T5C
MICROWAVE RESONANT SENSOR FOR REAL-TIME CONTINUOUS-FLOW MEASUREMENTS OF MICROFLUIDIC SYSTEMS
D.J. Rowe, J. Naylon, A. Porch, D.A. Barrow, and C.J. Allender
Cardiff University, UK

T6B
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F. Sasaki and M. Ban
Nippon Institute of Technology, JAPAN

T6C
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J. Ou and K.D. Dorfman
University of Minnesota, USA

T7C
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N. Shi, and V.M. Ugaz
Texas A&M University, USA

T8C
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L. Bogunovic1, R. Eichhorn2, P. Reimann1, J. Regtmeier1, and D. Anselmetti1
1University of Bielefeld, GERMANY and 
2Nordic Institute for Theoretical Physics (NORDITA), SWEDEN

T9C
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K. Tanigawa, K. Sueyoshi, F. Kitagawa, and K. Otsuka
Kyoto University, JAPAN

T10C
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M. Kataoka, H. Yokoyama, T.G. Henares, K. Kawamura, T. Yao, and H. Hisamoto
Osaka Prefecture University, JAPAN

T11C
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K. Takenaka1, Y. Sasaki1, H. Inami1, H. Nakamoto1, Y. Watanabe1, M. Kurihara1, K. Takei1, J. Ishikawa1, and R. Miyake2
1Hitachi, Ltd., JAPAN and 
2Hiroshima University, JAPAN

T12C
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S.-P. Lai1, K.-Y. Huang1, H.-C. Peng1, Y.-J. Huang1, and F.-G. Tseng1,2
1National Tsing Hua University, TAIWAN and 
2Academia Sinica, TAIWAN

T13C
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T. Miyake1,2, S. Yoshino1, Y. Yatagawa1, K. Haneda1, and M. Nishizawa1,2
1Tohoku University, JAPAN and 
2Japan Science and Technology Agency (JST), JAPAN

T1D
CHAOTIC ANALYSIS AND FRET REACTION OF A SPLIT-AND-RECOMBINE MICROREACTOR
Y.-T. Chen, W.-F. Fang, and J.-T. Yang
National Taiwan University, TAIWAN
T2D DYNAMICS OF ROTATING MAGNETIC MICRO-BEAD CHAINS
Y. Gao1, M. Hulsen1, and J.M.J. den Toonder1,2
1Eindhoven University of Technology, THE NETHERLANDS and
2Philips Applied Technologies, THE NETHERLANDS

T3D MICROFLUIDIC LUBRICATED EXTENSIONAL FLOW OF VISCOELASTIC FLUIDS
J. Wang, D.F. James, and A. Günther
University of Toronto, CANADA

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P.A. Kler, C.L.A. Berli, and F.A. Guarnieri
Universidad Nacional del Litoral, ARGENTINA

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J.P. Gleghorn, J.P. Smith, and B.J. Kirby
Cornell University, USA

T6D AC ELECTRO-Osmotic MICROMIXER USING A FACE-TO-FACE, ASYMMETRIC
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National Chung Cheng University, TAIWAN

T7D AN ADAPTIVE BI-DIRECTIONAL MICRO-PUMP BY USING LIGHT-INDUCED
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S.-M. Yang1, R.-J. Chen2, T.-M. Yu1, H.-P. Huang1, L. Hsu1, and C.-H. Liu2
1National Chiao Tung University, TAIWAN and 2National Tsing Hua University, TAIWAN

T8D ROBUST FILLING OF SLIPCHIPS
L. Li, M.A. Karymov, K.P. Nichols, and R.F. Ismagilov
University of Chicago, USA

T9D FORMATION AND ACTUATION OF MULTILAMELLAR LIPID TUBES USING
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M. Masubuchi1, M. Yamada1, T. Toyota1,2, and M. Seki1
1Chiba University, JAPAN and 2University of Tokyo, JAPAN

T10D MICROFLUIDIC DROPLET-BASED LIQUID-LIQUID EXTRACTION FOR
FLUORESCENCE-INDICATED MASS TRANSFER
J.Q. Yu1,2, L.K. Chni1, Y. Chen1, G.J. Zhang2, G.Q. Lo2, T.C. Ayi1, P.H. Yap3, D.L. Kwong4, and A.Q. Liu5
1Nanyang Technological University, SINGAPORE, 2Agency for Science, Technology and Research (A*STAR), SINGAPORE, and
3DSO National Laboratories, SINGAPORE

T11D NOVEL COMBINATION OF HYDROPHILIC/HYDROPHOBIC SURFACE FOR LARGE
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T. Kobayashi1, K. Shimizu1, Y. Kaizuma1, and S. Konishi1
1Ritsumeikan University, JAPAN, 2Kyoto University, JAPAN, and
3Shinko Seiki Co., LTD, JAPAN

T12D SELECTIVE DROPLET SAMPLING FLOW SYSTEM USING MINIMUM NUMBER OF
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D.H. Yoon, D. Wakui, T. Sekiguchi, and S. Shoji
Waseda University, JAPAN

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Z.G. Li1,2, J.Q. Yu1, P.A. Quito-Su1, C.D. Oh1, J.B. Zhang2, and A.Q. Liu1
1Nanyang Technological University, SINGAPORE and
2Agency for Science, Technology and Research (A*STAR), SINGAPORE

T14D A ‘MICROFLUIDIC PINBALL’ FOR CONTINUOUS GENERATION OF
LAYER-BY-LAYER POLY ELECTROLYTE MICROCAPSULES
C. Kantada1,2, L. Rabies3, T. Bansai3, and D. Trau2
1Agency for Science, Technology and Research (A*STAR), SINGAPORE and
2National University of Singapore, SINGAPORE

T15D A MAGNETOPHORESIS SYSTEM FOR CONTROLLED TRANSPORT AND
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Z.-C. Peng1, W. Guo1, J.L. Cannon2, and P.J. Hesketh1
1Georgia Institute of Technology, USA, 2Tsinghua University, CHINA, and
3University of Georgia, USA

T16D CONTROLLABLE DROPLET SYNCHRONIZATION MODULE FOR TEMPORAL
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D.-H. Lee and J.-K. Park
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

T17D DIRECTED PRECIPITATION OF SUSPENSION PARTICLES ONTO BLANK
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E. Hendarto and Y.B. Gianchandani
University of Michigan, USA

T18D FROM CHEMICAL MIXTURES TO PICOLITER DROPLET LIBRARIES:
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A.B. Theberge1, G. Whyte1, and W.T.S Huck1,2
1University of Cambridge, UK and 2Radboud University Nijmegen, UK

T19D LAPLACE TRAP FOR ONE-TO-ONE FUSION OF ASYNCHRONOUSLY
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M.G. Simon, R. Lin, J.S. Fisher, and A.P. Lee
University of California, Irvine, USA

T20D MULTI-SIZE DROPLETS GENERATION VIA SIDE-BRANCH MICROFLUIDIC
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S. Xiong1, L.K. Chni1, Y.F. Yu1, J.Q. Yu1, Y. Chen2, G.J. Zhang2, G.Q. Lo2, D.L. Kwong3, and A.Q. Liu4
1Nanyang Technological University, SINGAPORE, 2Agency for Science, Technology and Research (A*STAR), SINGAPORE and
3DSO National Laboratories, SINGAPORE

T21D ON-CHIP INVESTIGATION OF DRUG-PROTEIN BINDING BY MEANS OF
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D. Lombardi and P.S. Dittrich
ETH Zürich, SWITZERLAND

T22D ROBUST ON-DEMAND ELECTROSTATIC DROPLET CHARGING AND
SORTING IN A DROPLET-BASED MICROFLUIDIC DEVICE
B. Ahn, K. Lee, R. Panchapakesan, P. Gopalan, and K.W. Oh
University at Buffalo, The State University of New York, USA

T23D SIZE CONTROLLABLE POLYMERIC MICROLENS FABRICATION BY USING A
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D.H. Yoon1, T. Arakawa2, J.S. Go3, and S. Shoji3
1Waseda University, JAPAN, 2Tokyo Medical and Dental University, JAPAN, and
3Pusan National University, SOUTH KOREA
Microfluidics
Multi-Scale / Integrative Microfluidics

T24D
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B.E. Rapp, T. Duttenhofer, and K. Länge
Karlsruhe Institute of Technology (KIT), GERMANY

T25D
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D. Mampallil, D. van den Ende, and F. Mugele
University of Twente, THE NETHERLANDS

T26D
INTEGRATED MICROFLUIDIC PLATFORM FOR ALGAL TOXIN ANALYSIS
G. Sui, S. Liu, J. Zhang, and P. Yang
Fudan University, CHINA

T27D
PHOSPHOLIPID MEMBRANE CHIPS FOR THERMODYNAMICS STUDIES OF CERAMIDE ION CHANNELS
C. Shao, M. Colombini, and D.L. DeVoe
University of Maryland, USA

T28D
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Z.-M. Li, D. Ma, Q.-H. He, and H.-W. Chen
Zhejiang University, CHINA

T29D
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Hiroshima University, JAPAN

T30D
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S. Jambovane, H.S. Rho, and J.W. Hong
Auburn University, USA

T31D
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T.G. Kang1, W.J.A. Ng1, S.R.B. Mohamed Rafei1, and S. Kim2
1Agency for Science, Technology and Research (A*STAR), SINGAPORE and 2National University of Singapore, SINGAPORE

T32D
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R.Ch. Meier, V. Badilitta, U. Wallrabe, and J.G. Korvink
University of Freiburg, GERMANY

Nanotechnologies
Nanoengineering

T2E
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B. Teste1, F. Malloggi1, A.L. Gassner2, T. Georgelin1, H.H. Girault2, J.M. Siaugue1, P. Tabeling1, and S. Descroix1
1Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and 2Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T3E
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Y. Zhang, J.M. Shih, T.L. Wang, and T.H. Wang
Johns Hopkins University, USA

T4E
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J.M. Obliosca, P.-C. Wang, and F.-G. Tseng
National Tsing Hua University, TAIWAN

T5E
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Y. Tanaka1,2, H. Xi1, K. Sato1,2, K. Mawatari1,2, B. Renberg1, M. Nilsson1, and T. Kitamori1,2
1University of Tokyo, JAPAN, 2Japan Science and Technology Agency (JST), JAPAN, and 3Japan Women’s University, JAPAN

T6E
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B. Reddy, Jr.1, O.H. Elibol2, P.R. Nair3, B.R. Dorvel1, D. Bergstrom3, M.A. Alam3, and R. Bashir1
1University of Illinois, Urbana-Champaign, USA, 2Intel Corporation, USA, and 3Purdue University, USA

T7E
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T.W. Huang1, L.T. Lin1, K.W. Liu1, ‘Y. Chuang2, C.H. Huang1, F.R. Chen1, and F.G. Tseng1,3
1National Tsing Hua University, TAIWAN, 2Ming Chuan University, TAIWAN, and 3Academia Sinica, TAIWAN

T8E
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R.-G. Wu1, J.-W. Lee1, H.-Y. Chang2, and F.-G. Tseng1,2
1National Tsing Hua University, TAIWAN and 2Research Center for Applied Sciences, TAIWAN

T9E
SILICON NANOWIRE BIOSENSOR FOR STUDYING NUCLEAR HORMONE RECEPTOR AND RESPONSE ELEMENT INTERACTIONS
Agency for Science, Technology and Research (A*STAR), SINGAPORE
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**Nanostructured Materials**

**T10E**

**ANTIBACTERIAL SURFACE WITH CYLINDRICAL NANOSHELL ARRAY**

Y.-B. Park, M.-S. Kang, and Y.-K. Choi  
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

**T11E**

**HIGH SENSITIVE SERS IMMUNO SENSOR BASED ON GOLD-SHELLED AND CORRUGATED POLYSTYRENE NANOBEBDS FOR IN-VIVO TRACKING IN CELLS**

H.Y. Hsieh1 and F.-G. Tseng1,2  
1National Tsing Hua University, TAIWAN and 2Academia Sinica, TAIWAN

**T12E**

**STUDY ON NANOSCALE PATTERNING METHOD OF SELF-ASSEMBLED MONOLAYER USING NEAR-FIELD PHOTOTHERMAL DESORPTION**

Y. Yamamoto, Y. Taguchi, and Y. Nagasaka  
Keio University, JAPAN

**MEMS & NEMS Technologies**

**Micro- & Nanomachining**

**T1F**

**DAMAGE-FREE MICROFABRICATION OF TRANSPARENT PERFLUOROPOLYMER FOR SINGLE-MOLECULE IMAGING DEVICE**

T. Ono1,2, R. Iizuka1,2, T. Akagi1,2, T. Funatsu1,2, and T. Ichiki1,2  
1University of Tokyo, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

**T2F**

**FABRICATION OF 1-D NANOCHANNELS ON PMMA SUBSTRATE BY PHOTORESIST-FREE UV LITHOGRAPHY AND UV-ASSISTED BONDING UNDER LOW TEMPERATURE**

Zhejiang University, CHINA

**T3F**

**FABRICATION OF VERTICAL AND HIGH-ASPECT-RATIO GLASS MICROFLUIDIC DEVICE BY BOROSILICATE GLASS MOLDING TO SILICON STRUCTURE**

K. Kawai, F. Yamaguchi, A. Nakahara, and S. Shoji  
Waseda University, JAPAN

**T4F**

**LATERAL NANO-CHANNEL FABRICATED IN FUSED SILICA BY FEMTOSECOND LASER IRRADIATION AND WET ETCHING**

O. Nukaga1, S. Yamamoto2, K.V. Tabata1,2, T. Kubota3,4, S. Samukawa1,5, and M. Sugiyama1,2  
1BEAMS Project, JAPAN, 2Fujikura Ltd., JAPAN, 3Osaka University, JAPAN, 4University of Tokyo, JAPAN, and 5Tohoku University, JAPAN

**T5F**

**TRANSFER BONDING OF MICROSTRUCTURES AND FABRICATION OF FRAGILE PDMS MEMBRANES USING WATER DISSOLVABLE FILM**

J.M. Karlsson, T. Haraldsson, C.F. Carlberg, G. Stemme, and W. van der Wijngaart  
Royal Institute of Technology (KTH), SWEDEN

**T6F**

**FABRICATION OF ROOM TEMPERATURE OPERABLE MERCURY.toJson() POWERED BY INSECT MUSCLE CELL SHEET**

K. Shimizu1, Y. Akiyama1, T. Hoshino1, K. Iwabuchi1, Y. Saito2, M. Yamato2, T. Okano1, and K. Morishima3  
1Tokyo University of Agriculture and Technology, JAPAN and 2Singapore Institute of Manufacturing Technology, SINGAPORE, and 3Texas State University, USA

**MEMS & NEMS Technologies**

**Microfluidic Components/Packaging**

**T7F**

**A DISPOSABLE DISCRETE-AGENT-RELEASE CARTRIDGE FOR FLEXIBLE ENDOCOPES**

N. Wangler, M. Welche, G. Roth, N. Paust, and R. Zengerle  
University of Freiburg, Germany

**T8F**

**A VAPOR BASED MICROFLUIDIC SAMPLE CONCENTRATOR**

W. Xu1, L.L. Wu2, G.P. Li2, and M. Bachman2  
1University of North Carolina, USA and 2University of California, Irvine, USA

**T9F**

**HIGH SENSITIVE SERS IMMUNO SENSOR BASED ON GOLD-SHELLED AND CORRUGATED POLYSTYRENE NANOBEADS FOR IN-VIVO TRACKING IN CELLS**

H.Y. Hsieh1 and F.-G. Tseng1,2  
1National Tsing Hua University, TAIWAN and 2Academia Sinica, TAIWAN

**T10F**

**HIGHLY-INTEGRATED, LOW-COST IN-VITRO DIAGNOSTIC PLATFORM FOR MINIATURIZED ASSAY DEVELOPMENT**

J. Nestler1, A. Morschhauser2, T. Otto1,2, B. Koger1, A. Brandenburg1, K. Wunderlich1, E. Ehrentreich-Forster1, F.F. Bier1, and T. Gessner1,2  
1Fraunhofer Research Institution, GERMANY and 2Chemnitz University of Technology, GERMANY

**T11F**

**PASSIVE MICRO-ASSEMBLY OF A FLUIDIC CONTROL CHIP AND A MULTI-WELL CONTINUOUS FLOW PCR CHIP FOR HIGH THROU**

D.S. Park1, H. Wang1, P.-C. Chen1,2, T. Park1, N. Kim1, B.H. You1, D.E. Nikitopoulos1, S.A. Soper1, and M.C. Murphy1  
1Louisiana State University, USA, 2Singapore Institute of Manufacturing Technology, SINGAPORE, and 3Texas State University, USA

**T12F**

**PASSIVE MICRO-ASSEMBLY OF A FLUIDIC CONTROL CHIP AND A MULTI-WELL CONTINUOUS FLOW PCR CHIP FOR HIGH THROUGHPUT APPLICATIONS**

D.S. Park1, H. Wang1, P.-C. Chen1,2, T. Park1, N. Kim1, B.H. You1,12, D.E. Nikitopoulos1, S.A. Soper1, and M.C. Murphy1  
1Louisiana State University, USA, 2Singapore Institute of Manufacturing Technology, SINGAPORE, and 3Texas State University, USA

**MEMS & NEMS Technologies**

**Integration Strategies**

**T13F**

**ELECTROSPRAYING MICROFLUIDIC CHIP FOR EMULSION GENERATION AND SATELLITE DROplet SEPARATION**

H.C. Lin1, M.H. Lee1, C.H. Yeh1, Y.C. Chung2, and Y.C. Lin1  
1National Cheng Kung University, TAIWAN and 2Ming Chi University of Technology, TAIWAN

**T14F**

**HOT EMBossing of PLASTIC MICROFLUIDIC DEVICES USING POLYMETHYLACETALDEHYDE MOLDS**

V.N. Goral1, Y.-C. Hsieh1, O.N. Petzold1, R.A. Faris1, and P.K. Yuen1  
1Corning Incorporated, USA and 2Coming Research Center, TAIWAN

**MEMS & NEMS Technologies**

**New Chip Materials**

**T15F**

**FABRICATION OF ROOM TEMPERATURE OPERABLE MERCURY-PUMPED**

K. Shimizu1, Y. Akiyama1, T. Hoshino1, K. Iwabuchi1, Y. Saito2, M. Yamato2, T. Okano1, and K. Morishima3  
1Tokyo University of Agriculture and Technology, JAPAN and 2Tokyo Women’s Medical University, JAPAN
T16F
LASER WELDED POLYANILINE CIRCUITS
R.D. Henderson, O.S. Hutter, R.M. Guijt, T. Lewis, E.F. Hilder, P.R. Haddad, and M.C. Breadmore
University of Tasmania, AUSTRALIA

T17F
THERMOPLASTICS ELASTOMERS FOR MICROFLUIDICS VALVING AND MIXING, TOWARD HIGH-THROUGHPUT FABRICATION OF MULTILAYERS DEVICES
E. Roy, J.-C. Galas, and T. Veres
National Research Council Canada, CANADA

T18F
FUNCTIONAL COATING OF HETEROGENEOUS MICROSTRUCTURE SURFACES WITH SELF INTERACTING BIOMOLECULES
N.M. Gunn, M. Bachman, G.P. Li, and E.L. Nelson
University of California, Irvine, USA

T19F
SELF-ASSEMBLED MONOLAYER-ASSISTED SILICON NANOWIRE BIOSENSOR FOR STUDYING PROTEIN-DNA INTERACTIONS
G.-J. Zhang, M.J. Huang, Z.H.H. Luo, G.K.I. Tay, E.-J.A. Lim, E.T. Liu, and J.S. Kee1,2
Agency for Science, Technology and Research (A*STAR), SINGAPORE

T20F
SOLVENT PROCESSING OF PMMA AND COC CHIPS FOR BONDING DEVICES WITH OPTICAL QUALITY SURFACES
University of Southampton, UK

T21F
INTEGRATED WITH MICROFLUIDIC SYSTEM (DIMETHYLSILOXANE) SINGLE-MODE RIB WAVEGUIDE EVANESCENT FIELD ABSORPTION SPECTROSCOPY ON POLY (DIMETHYLSILOXANE) SINGLE-MODE RIB WAVEGUIDE INTEGRATED WITH MICROFLUIDIC SYSTEM
J.S. Kee1,2, D.P. Poenar2, L. Yobas1, and Y. Chen1
1 Agency for Science, Technology and Research (A*STAR), SINGAPORE and 2Nanyang Technological University, SINGAPORE

T22F
INTEGRATED WITH SUBWAVELENGTH FABRICATION OF SILICON NANOSTRUCTURE BY METAL-ASSISTED ETCHING
University of Amsterdam, THE NETHERLANDS

T23F
MOLECULAR IDENTIFICATION BIOSENSING PERIODIC PATTERNED METAL SURFACES FOR SERS-BASED ELECTROCHEMICAL IMMUNOSENSING OF ZEARALENONE MYCOTOXIN IN BABY FOODS ON MICROFLUIDIC CHIP: TOWARDS A TOTAL INTEGRATION
M. Hervás, M.A. López and A. Escarpa
University of Alcalá, SPAIN

T24F
HYBRID OPTICAL READOUT FOR QUANTITATIVE DETECTION OF COCAINE IN SWEAT BY LAB-ON-A-PAPER: TOWARDS NEW GENERATION OF DRUGMETERS
R. Walczak1, J.A. Dziuban1, J. Krüger1, M. Scholles1, and J. Ruano-Lopez4
1Wroclaw University of Technology, POLAND, 2Biosensia Ltd., IRELAND, 3IFMS, GERMANY, and 4IKERLAN, SPAIN

T25F
INTEGRATED MULTI BEAM SPECTROSCOPY WITH EMBEDDED PRECISE OPTICS Y. Kazama and A. Hibara
University of Tokyo, JAPAN

T26F
LIGHT-DIRECTED, SPATIALLY ADDRESSABLE OXYGEN DETECTION IN A HYDROGEL MICROARRAY BASED ON PHASE-BASED LIFETIME DETECTION USING DIGITAL MICROMIRROR DEVICE S.H. Huang1, C.H. Tsai1, K.Y. Hung3, and Y.C. Chung2
1National Taiwan Ocean University, TAIWAN and 2Mingchi University of Technology, TAIWAN

T27F
MULTISPECTRAL ABSORBANCE PHOTOMETRY WITH A SINGLE LIGHT DETECTOR USING FREQUENCY DIVISION MULTIXPLEXING G.K. Kurup and A.S. Balu
Wayne State University, USA

T28F
TEMPERATURE MODULATION AND PHASE SENSITIVE IMAGING TO DETECT POINT MUTATIONS K. Zrelli1, T. Barilero1, E. Cavatorta1, H. Berthoumieux1, V. Croquette1, A. Lemarchand1, L. Jullien1, T. Le Sau1, and C. Gresse2
1École Normale Supérieure (ENS), FRANCE and 2Université Paris 6, FRANCE

T29F
ELECTROCHEMICAL IMMUNOSENSING OF ZEAARALENONE MYCOTOXIN IN BABY FOODS ON MICROFLUIDIC CHIP: TOWARDS A TOTAL INTEGRATION M. Hervás, M.A. López and A. Escarpa
University of Alcalá, SPAIN

T30F
HYDROGEL MICROARRAY BASED ON PHASE-BASED LIFETIME DETECTION OF PROTEINS IN A CYCLO OLEFIN POLYMER CHIP CONTAINING A COLUMN WITH AN ORDERED PILLAR ARRAY WITH INTEGRATED GOLD MICROELECTRODES X. Ilía1, R. Rodríguez-Trujillo1, O. Ordeig2, W. De Malsche3, A. Homs-Corbera1, G. Desmet4, J.P. Kutter2, J. Samitier1, and A. Romano-Rodríguez1
1Universitat de Barcelona, SPAIN, 2Université Paris 6, FRANCE and 3University of Twente, THE NETHERLANDS

T31F
SWEAT BY LAB-ON-A-PAPER: TOWARDS NEW GENERATION OF DRUGMETERS C.W. Tsao1, J.T. Huang1, Y.C. Cheng1, W.Y. Chen1, and C.C. Chien2
1Nation Central University, TAIWAN and 2Cathay General Hospital, TAIWAN

Imaging & Detection Technologies
Flow Visualization

T2G
University of Amsterdam, THE NETHERLANDS

T3G
BIOSENSOR BASED ON FLUORESCENT SPHERICAL RESONATOR USING POLYSTYRENE MICROBEAD Y.F. Yu1, T. Bourouina2, Z.X. Shen1, N.Q. Ngo1, and A.Q. Liu1
1Nanyang Technological University, SINGAPORE and 2University of Paris Est, FRANCE

T4G
EVANESCENT FIELD ABSORPTION SPECTROSCOPY ON POLY (DIMETHYLSILOXANE) SINGLE-MODE RIB WAVEGUIDE INTEGRATED WITH MICROFLUIDIC SYSTEM J.S. Kee1,2, D.P. Poenar2, L. Yobas1, and Y. Chen1
1Agency for Science, Technology and Research (A*STAR), SINGAPORE and 2Nanyang Technological University, SINGAPORE

Imaging & Detection Technologies
Optical

T5G
IMAGING & DETECTION TECHNOLOGIES

T6G
MEMS & NEMS Technologies
Surface Modification

T7G
Imaging & Detection Technologies
Electrochemical

T8G
Imaging & Detection Technologies
Mass Spectrometry

T9G
IMAGING & DETECTION TECHNOLOGIES

T10G
IMAGING & DETECTION TECHNOLOGIES
**Imaging & Detection Technologies**

**Optofluidics**

**T15G**

AN OPTOFLUIDIC TUNABLE PRISM VIA CONTROL OF FLOW RATE RATIO
S. Xiong, Y. Yang, Y. Chen, G.J. Zhang, G.Q. Lo, D.L. Kwong, and A.Q. Liu
1 Nanyang Technological University, SINGAPORE
2 Agency for Science, Technology and Research (A*STAR), SINGAPORE

**T16G**

DEVELOPMENT OF NOVEL MICRO OPTICAL DIFFUSION SENSOR USING MICRO FRENSNEL MIRROR
T. Oka, K. Itani, Y. Taguchi, and Y. Nagasaka
Keio University, JAPAN

**T17G**

MICROFLUIDIC DROPLET DYE LASER BASED ON A FABRY-PEROT CAVITY
G. Aubry, G. Kour, C. Wang, S. Meanse, J.J. He, and A.M. Haghtiri-Gosnet
1 Université Paris Sud, FRANCE, 2 Centre National de la Recherche Scientifique (CNRS), FRANCE, and 3 Zhejiang University, CHINA

**T18G**

THREE-DIMENSIONAL MICROFLUIDIC L2 WAVEGUIDE USING DEAN VORTEX
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

**Imaging & Detection Technologies**

**Others**

**T19G**

A NANOGAP-EMBEDDED NANOWIRE FIELD EFFECT TRANSISTOR FOR SENSOR APPLICATIONS: IMMUNOSENSOR AND HUMIDITY SENSOR
J.-H. Ahn, J.-Y. Kim, M. Im, J.-W. Han, and Y.-K. Choi
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

**T20G**

DEMONSTRATION OF MICROCANTILEVER BIOSENSOR ARRAY WITH IN-PLANE PHOTONIC TRANSDUCTION MECHANISM
Brigham Young University, USA

**T21G**

FLOW SPEED PARTICLE FOCUSSING IN MICROFLUIDIC IMPEDANCE MEASUREMENTS
1 Philips Research Laboratories, UK and 2 University of Southampton, UK

**T22G**

MICROENGINEERED MULTISPECTRAL CONTRAST AGENTS FOR MAGNETIC RESONANCE IMAGING
X. Wang, S.W. Anderson, and X. Zhang
1 Boston University, USA and 2 Boston Medical Center, USA

**T23G**

ULTRA-MULTIPLEXED BEADS SYSTEM WITH IN SITU DNA PROBE SYNTHESIS
K. Machida, N. Kishii, M. Ichimura, K. Itô, N. Sakamoto, and A. Yasuda
Sony Corporation, JAPAN

**Special Focus Session**

**Electrowetting-Driven Digital Microfluidics**

**T6H**

AN ELECTROWETTING-BASED MICROFLUIDIC PLATFORM FOR MAGNETIC BIOASSAYS
1 Chalmers University of Technology, SWEDEN, 2 East China University of Science and Technology, CHINA, and 3 Imego Institute, SWEDEN

**T7H**

INTEGRATED MICROBIOREACTOR FOR CULTURE AND ANALYSIS OF BACTERIA, ALGAE AND YEAST (BAY)
S.C.C. Shih, S.H. Au, and A.R. Wheeler
University of Toronto, CANADA

**Special Focus Session**

**Tissue Engineering**

**T1H**

CONSTRUCTION OF VASCULAR-MIMETIC TISSUE IN A SEPARABLE MICROCHIP
T. Yamashita, Y. Tanaka, Y. Sugii, K. Mawatari, and T. Kitamori
University of Tokyo, JAPAN
### MEASURING THE ACOUSTOPHORETIC CONTRAST FACTOR OF LIVING CELLS IN MICROCHANNELS

P. Augustsson¹, R. Barnkob², C. Grenvall¹, T. Deierborg¹, P. Brundin¹, H. Bruus³, and T. Laurell⁴

¹Lund University, SWEDEN and ²Technical University of Denmark, DENMARK

### PNEUMATIC VALVE ASSISTED SOL-GEel MICROFLUIDIC PLATFORM FOR MULTIPLEX SELEX ON A CHIP

S.W. Lee¹, J.-Y. Ahn¹, R. Shou², E. Kim², T. Laurell¹, O.C. Jeong³, and S. Kim²

¹Lund University, SWEDEN, ²Dongguk University, SOUTH KOREA, and ³Inje University, SOUTH KOREA

### UNCERTAINTY IN FLOW IMPEDANCE MEASUREMENTS ARISING FROM SHEAR-INDUCED ROTATION OF PARTICLES IN MICROFLUIDIC CHANNELS

M. Nikolic-Jaric¹, G.A. Ferrier¹, S. Rzeszowski¹, T. Cabel¹, S. Nandagopal¹, F. Lin¹, G.E. Bridges¹, D.J. Thomson¹, and M.R. Freeman¹

¹University of Manitoba, CANADA and ²University of Alberta, CANADA

### AN INTEGRATED DIFFERENTIAL NANOCALOMETER WITH ON-CHIP MICROFLUIDIC MULTIPLEXING FOR HIGH THROUGHPUT GENOMICS AND PROTEOMICS

H. Esfandyarpour and R.W. Davis

Stanford University, USA

### MORPHOLOGY-BASED SORTING -BLOOD CELLS AND PARASITES

J.P. Beech¹, S. Holm¹, M.P. Barrett², and J.O. Tegenfeldt³

¹Lund University, SWEDEN, ²University of Glasgow, SCOTLAND, and ³University of Gothenburg, SWEDEN

### DROPLET ANALYSIS WITH ELECTROSpray IONIZATION MASS SPECTROMETRY USING AN INTEGRATED GLASS MICROCHIP

Y. Zhu and Q. Fang

Zhejiang University, CHINA
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<th>Droplet Array for Bioassays</th>
<th>Chair: M. Gaitan, National Institute of Standards and Technology (NIST), USA</th>
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<td>DETERMINISTIC LATERAL DISPLACEMENT DEVICE FOR DROPLET SEPARATION BY SIZE – TOWARDS RAPID CLONAL SELECTION BASED ON DROPLET SHRINKING</td>
<td>H.N. Joensson, M. Uhlén, and H. Andersson-Svahn</td>
<td>Royal Institute of Technology (KTH), SWEDEN</td>
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<td>BUBBLE-BASED CONTINUOUS SEPARATION SYSTEM IN MICROFLUIDIC DEVICE</td>
<td>A. Kobayashi, M. Yamada, and M. Seki</td>
<td>Chiba University, JAPAN</td>
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<td>1-MILLION DROPLET ARRAY FOR HIGH-DYNAMIC-RANGE DIGITAL MICROFLUIDICS</td>
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<td>MICROFLUIDIC SYNTHESIS OF MAGNETOCHROMATIC MICROSPHERES UTILIZING MAGNETIC SELF-ASSEMBLY AND PHOTOPOLYMERIZATION PROCESS</td>
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<td>DEFORMABILITY BASED CELL MARGINATION FOR MALARIAL INFECTED RED BLOOD CELL ENRICHMENT</td>
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**Session 2D3**

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<td>EXAMINING LATERAL DISPLACEMENT OF CELLS ROLLING ON ASYMMETRIC RECEPTOR PATTERNS</td>
<td>C.-H. Lee¹, S. Bose⁰, K.J. Van Vliet¹, J.M. Karp², and R. Karnik¹</td>
<td>¹Massachusetts Institute of Technology, USA and ²Harvard University, USA</td>
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**16:40 - 17:00**
Wednesday, 6 October 2010

08:00 - 08:15  Opening Remarks

08:15 - 09:00  Plenary Presentation V  - Chair: J. Landers, University of Virginia, USA

IGNITING EVOLUTION WITH MICROFABRICATED FITNESS LANDSCAPES
O. Zhang1, K. Robin1, C.-K. Tang1, and R.H. Austin2
1Princeton University, USA, 2Hong Kong University of Science and Technology, and 3University of Pittsburgh, USA

THEATRE

Session 3A1  Cell Deformability
CHAIR: B. Kirby, Cornell University, USA

09:15 - 09:35  BACTERIA IN SUBMICRON CHANNELS AND MICROVALVES
J. Männik, F. Sekhavati, J.E. Keymer, and C. Dekker
Delft University of Technology, THE NETHERLANDS

09:35 - 09:55  MICROFLUIDIC MODEL OF SICKLE CELL PATHOPHYSIOLOGY
D.K. Wood1, J.M. Higgins2, L. Mahadevan1, and S.N. Bhatia1,2,6
1Massachusetts Institute of Technology, USA, 2Massachusetts General Hospital, USA, 3Harvard Medical School, USA, 4Harvard University, USA, 5Howard Hughes Medical Institute, USA, and 6Brigham and Women’s Hospital, USA

09:55 - 10:15  DEFORMABILITY CYTOMETRY: HIGH-THROUGHPUT, CONTINUOUS MEASUREMENT OF CELL MECHANICAL PROPERTIES IN EXTENSIONAL FLOW
D.R. Gossett, H.T.K. Tse, S. Lee, A.T. Clark, and D. Di Carlo
University of California, Los Angeles, USA

10:15 - 10:45  Break and Exhibit Inspection

Session 3A2  Cell Analysis I
CHAIR: J. Han, Massachusetts Institute of Technology, USA

10:45 - 11:05  INVITED PRESENTATION
D.L. Floyd1, J.J. Otterstrom1,2, J.J. Skehel1, S.C. Harrison1, and A.M. van Oijen2
1Harvard Medical School, USA, 2University of Groningen, THE NETHERLANDS, and 3Medical Research Council, UK

11:05 - 11:25  CANCER CELL ASSAYS BY USE OF IMMUNOCAPTURE, SUBCELLULAR IMAGING, AND PROGRAMMED CELL RELEASE IN GEDI MICRODEVICES
J.P. Gleghorn1, S.M. Santana1, E.D. Pratt1, M.S. Loftus2, M. Jodari-Karimi2, N.H. Bandier1, D.M. Namus1, P. Giannakakou1, and B.J. Kirby1
1Cornell University, USA and 2Weill Cornell Medical College, USA

11:25 - 11:45  MICROFLUIDIC DEVICE TO ENABLE FUNCTIONAL ASSAYS OF CIRCULATING TUMOR CELL BEHAVIOR AND HETEROGENEITY
J.W. Warrick, B.P. Casavant, M.L. Frisk, and D.J. Beebe
University of Wisconsin, USA

SPRINGERZAAL

Session 3B1  Clinical Assays
CHAIR: W. van der Wijngaart, Royal Institute of Technology (KTH), SWEDEN

09:15 - 09:35  MULTIPLEX BIOASSAYS USING A SUSPENSION ARRAY PLATFORM: TOWARDS THE HIGH THOUGHPUT SCREENING OF DRUGS TARGETING CANCER STEM CELLS
G.R. Broder1, S.W. Birtwell1, G. Hagel1, O. Thastrup2, H. Morgan1 and P.L. Roach1
1University of Southampton, UK, and 22cureX, DENMARK

09:35 - 09:55  DISPOSABLE BIOANALYTICAL MICRODEVICE FOR MONITORING THE EFFECT OF ANTI-PLATELET DRUGS
L. Basabe-Desmonots1,2, S. Ramstrom1, A. Lopez-Alonso1, M. Somers1, A.J. Ricco1, and D. Kenny1
1Dublin City University, IRELAND and 2Royal College of Surgeons in Ireland (RCSI), IRELAND

09:55 - 10:15  HIGH-THROUGHPUT CIRCULATING TUMOR CELLS (CTCs) ISOLATION USING INERTIAL FORCES
A.A.S. Bhagat1, H.W. Hou1,2, S. Huang3, C.T. Lim1,2, and J. Han1,3
1Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE, 2National University of Singapore, SINGAPORE, and 3Massachusetts Institute of Technology, USA

10:15 - 10:45  QUANTIFICATION OF AMINO ACIDS IN BLOOD USING DIGITAL MICROFLUIDICS
M.J. Jebrail, H. Yang, J.M. Mudrik, and A.R. Wheeler
University of Toronto, CANADA

10:45 - 11:05  HIGH-THROUGHPUT BLOOD ANALYSIS ON A CHIP USING LENSESLESS DIGITAL Holography
S.O. Isikman1, S.S. Seo1,2, I. Sencan1, O. Mudanyali1, T.-W. Su1, W. Bishara1, A. Erlinger1, and A. Ozcan1
1University of California, Los Angeles, USA and 2Korea University, SOUTH KOREA

11:05 - 11:25  BACK-TO-BACK INTEGRATED NANOWIRE BIOSSENSOR WITH MICROFLTRATION DEVICE FOR APPLICATION TO THE CARDIAC BIOMARKER DETECTION FROM BLOOD SAMPLE
T.G. Kang, H.M. Ji, G.-J. Zhang, A. Agarwal, and Y. Chen
Agency for Science, Technology and Research (A*STAR), SINGAPORE
Session 3C1 Integrated Microfluidic Systems
CHAIR: A. Hibara, University of Tokyo, JAPAN

ENHANCEMENT OF A LABEL-FREE DIELECTROPHORETIC CELL SORTER WITH AN INTEGRATED IMPEDANCE DETECTION SYSTEM
M. Carminati1, M.D. Vahey2, A. Rottigni1, G. Ferrari1, J. Voldman2, and M. Sampietro1
1 Politecnico di Milano, ITALY and 2 Massachusetts Institute of Technology, USA

MINIATURIZATION OF INTEGRATED MICROFLUIDIC SYSTEMS
H. Kinoshita1, K. Aoki1, I. Yanagisawa2, and T. Fuji1
1 University of Tokyo, JAPAN and 2 Nano Fusion Technologies, Inc., JAPAN

MICSOSCALE CONTROLLED CONTINUOUS CELL CULTURE
K.S. Lee, P. Bocazzi, A.J. Sinskey, and R.J. Ram
Massachusetts Institute of Technology, USA

Session 3D1 Nanofluidics
CHAIR: H. Bruus, Technical University of Denmark, DENMARK

THE IMPORTANCE OF WALL CHEMISTRY IN NANOFLUIDICS
J.C.T. Eijkel and A. van den Berg
MESA+, University of Twente, THE NETHERLANDS

ELECTROCHEMICAL NANOFLUIDICS: THE MESOSCOPIC LIMIT
M.A.G. Zevenbergen1, N. Wongraji1, P.S. Singh1, E.D. Goluch1, B.L. Wolfrum1, and S.G. Lemay1
1 Delft University of Technology, THE NETHERLANDS and 2 National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

Session 3C2 Microfluidic Circuits
CHAIR: H. van der Linden, Leiden University, THE NETHERLANDS

PRESSURE MAPPING OF MICROFLUIDIC FLOWS WITH COLORIMETRIC PRESSURE SENSING PARTICLES
S. Chalasani, Y. Xie, and C.H. Mastrangelo
University of Utah, USA

FAST AND SIMPLE: RECONFIGURABLE ELEMENTS AND SOLUTIONS FOR CREATING AND DRIVING FLUIDIC NETWORKS
D. Sabourin1, P. Skafte-Pedersen1, V. Coman1, M. Hemmingsen1, J. Petersen2, J.P. Kutter1, J. Emmeus2, D. Snakenborg1, and M. Dufva1
1 Danmarks Tekniske Universitet (DTU), DENMARK and 2 Herlev University Hospital, DENMARK

Session 3D2 Nanobiotechnology
CHAIR: J. Emnéus, Technical University of Denmark, DENMARK

TRACKING OF SINGLE DNA AND PROTEIN MOLECULES UNDERGOING ENZYMATIC DEGRADATION IN FLUID
D. Onoshima1, N. Kaji1, M. Tokeshi1, and Y. Baba1,2
1 Technical University of Denmark, DENMARK and 2 National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

THE DISASSEMBLY OF A CORE-SATELLITE NANOASSEMBLED SUBSTRATE FOR COLORIMETRIC BIOMOLECULAR DETECTION
J.R. Waldlsen, T. Wang, B.M. Ross, and L.P. Lee
University of California, Berkeley, USA and University of California, Berkeley, USA

MASSIVELY PARALLEL, HIGH FORCE INTERROGATION OF SINGLE CELL MECHANICS VIA LOCALIZED MAGNETIC NANOPARTICLES
P. Tseng, J.W. Judy, and D. Di Carlo
University of California, Los Angeles, USA
11:45 - 13:00
Luncheon and Exhibit Inspection

13:00 - 13:15
Announcement of the MicroTAS 2011 and MicroTAS 2012 Conferences

13:15 - 14:00
Plenary Presentation VI - Chair: T. Fujii, University of Tokyo, JAPAN
MICROFLUIDIC TOOLS FOR SYNTHETIC BIOLOGY
P. Schwille
University of Dresden, GERMANY

14:00 - 16:00
Poster Session 3
Refreshments will be served at 15:30

Life Science Applications
Genomics & Proteomics

W1A
BEADS-IN-GELS ANTIBODY MICROARRAYS FOR MULTIPLEXED PROTEIN PROFILING
H. Li, R.F. Leulmi, and D. Juncker
McGill University and Genome Quebec Innovation Centre, CANADA

W2A
ELECTROPORATION-BASED SELECTIVE EXTRACTION OF SUBCELLULAR PROTEINS
Y. Zhan1, V.A. Martin1, R.L. Geahlen1, and C. Lu2
1Purdue University, USA and 2Virginia Polytechnic Institute and State University, USA

W3A
ON-CHIP MELTING CURVE ANALYSIS WITH A PRECISE TEMPERATURE COMPENSATION METHOD
Agency for Science, Technology and Research (A*STAR), SINGAPORE

Life Science Applications
Clinical Diagnostics

W5A
A FULLY-INTEGRATED APTAMER-BASED AFFINITY ASSAY PLATFORM FOR MONITORING ASTRONAUT HEALTH IN SPACE
G.J. Sommer1, A.H. Hecht1, R.H. Durland2, X. Yang3, A.K. Singh1, and A.V. Hatch1
1Sandra National Laboratories, USA, 2University of Michigan, USA, and 3AM Biotechnologies, LLC, USA

W6A
A NOVEL TECHNIQUE FOR DETECTING THE THERAPEUTIC TARGET, KRAS MUTANT, FROM PERIPHERAL BLOOD USING THE AUTOMATIC GENECHIP ANALYZER DEVICE WITH WEIGHTED ENZYMATIC CHIP ARRAY
1Fooyin University Hospital, TAIWAN, 2Kaohsiung Medical University, TAIWAN, 3University of Michigan, USA, 4Tainan Medical College, TAIWAN, 5Genie Target Technology Co., Ltd., TAIWAN

W7A
ANALYSIS OF SPERM QUALITY IN A MICROFLUIDIC DEVICE
National Taiwan University, TAIWAN

W8A
DEVELOPMENT OF MICROFLUIDIC BASED DEVICES FOR STUDYING TUMOUR BIOLOGY AND EVALUATING TREATMENT RESPONSE IN HEAD AND NECK CANCER BIOPSY
D.C. Sylvester, S.M. Hattersley, S.J. Haswell, N.D. Stafford, and J. Greenman
University of Hull, UK

W9A
HIGH-SENSITIVE ENZYME-LINKED IMMUNOSORBENT ASSAY IN THREE-DIMENSIONAL LAB-ON-A-CD
1Japan Advanced Institute of Science and Technology (JAIST), JAPAN, 2University of Hyogo, JAPAN, and 3Hyogo Institute of Technology, JAPAN

W10A
IN SITU MONITORING OF CAUTERIZATION WITH A BIOPSY NEEDLE USING IMPEDANCE CHARACTERISTICS OF EMBEDDED PIEZOTHERMAL ELEMENTS
K. Visvanathan, T. Li, and Y.B. Gianchandani
University of Michigan, USA

W1A
MICROFLUIDIC CHIP-CAPILLARY ELECTROPHORESIS WITH ADJUSTABLE ON-CHIP SAMPLE DILUTION FOR PROFILING OF URINARY MARKERS
W.P. Guo and Y.S. Fung
University of Hong Kong, HONG KONG

W12A
MICROFLUIDIC SYSTEMS FOR IMPROVING ASSISTED REPRODUCTIVE TECHNOLOGIES CULTURE PROTOCOLS
F. van Rossem1, T.C. Esteves2, M. Boiani2, S. Le Gac1, and A. van den Berg1
1MESA+, University of Twente, THE NETHERLANDS and 2Max-Planck Institute for Molecular Biomedicine, GERMANY

W9A
DEVELOPMENT OF SmartAmp2-BASED TECHNOLOGY FOR RAPID DETECTION OF THE 2009 PANDEMIC INFLUENZA A/H1N1 VIRUS
Y. Kawai1, J.-E. Morlighem1, Y. Kimura1, H. Kanamori2, T. Ishidao2, Y. Mitani2, Y. Kogo2, T. Hanami1, T. Soma1, Y. Ishizu1, M. Hanami1, S. Aoki2, A. Katayama1, H. Kinoshita1, Y. Tanaka1, A. Lezhava1, T. Ishikawa1, and Y. Hayashizaki1
1RIKEN Omics Science Center, JAPAN and 2K.K. DNAFORM, JAPAN

W15A
RAPID AND SENSITIVE MICRORNA PROFILING USING ENCODED GEL PARTICLES
S.C. Chapin1, D.C. Appleyard1, D.C. Pregibon2, and P.S. Doyle1
1Massachusetts Institute of Technology, USA and 2Firefly BioWorks, USA

W16A
A GENERAL PURPOSE, MULTIWAVELENGTH, MICROFLOW CYTOMETER FOR CLINICAL AND ENVIRONMENTAL APPLICATIONS
P.B. Howell, N. Hashemi, J.S. Erickson, J. Kim, G.P. Anderson, and F.S. Ligler
Naval Research Laboratory, USA
W17A
CELL-BASED TOXIN SCREENING INTEGRATED WITH A CELL-SUSTAINABLE HYDROGEL ON CHIP FOR ONSITE AND PORTABLE APPLICATIONS
Y. Xu1,2, K. Jang1,2, K. Mawatari1,2, T. Konno1, K. Ishihara1, and T. Kitamori1,2
1University of Tokyo, JAPAN and 2Japan Science and Technology Agency (JST), JAPAN

W18A
DIRECT ON-DISK WIRELESS TEMPERATURE MEASUREMENT FOR CENTRIFUGAL MICROFLUIDIC PLATFORMS
J. Burger1, T. Jäger2, A. Gross1, A. Lastochkin2, D. Mark1, G. Roth2, F. von Stetten2, R. Zengerle1,2, and L. Reindl2
1Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY and 2Université de Neuchâtel, SWITZERLAND

W19A
HIGH SPEED PLATELET COUNTING BY MICROFLUIDIC IMPEDANCE MEASUREMENT IN DILUTED WHOLE BLOOD
Philips Research Laboratories, UK

W20A
INTEGRATED MICROSYSTEM FOR MULTIPLEXED DETECTION OF CARDIAC BIOMARKERS IN BLOOD TOWARDS POINT-OF-CARE DEVICE DEVELOPMENT
G.-J. Zhang, T.G. Kang, T.C.K. Chai, Z.H.H. Luo, M.-J. Huang, G.K.I. Tay, E.-J.A. Lim, H. Ji, and M. Je
Agency for Science, Technology and Research (A*STAR), SINGAPORE

W21A
MICROFLUIDIC DEVICES FOR RAPID LABEL-FREE SEPARATION AND SENSING OF CELLS
S. Bose1, C.-H. Lee1, J.M. Karp2, and R. Karnik1
1Massachusetts Institute of Technology, USA and 2Brigham and Women’s Hospital, USA

W22A
MICROFLUIDIC SENSOR FOR THE DETECTION OF DNA OR PROTEIN BY HYBRIDIZATION-BASED FLUORESCENCE ENHANCEMENT OR IMMUNOASSAY-BASED FLUORESCENCE QUENCHING
J. Wang1, M. Aki2, D. Onoshima1, K. Arinaga2, N. Kaji1, M. Tokeshi1, S. Fujita2, N. Yokoyama2, and Y. Baba1
1National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, 2Nagoya University, JAPAN,
1Philips Research Laboratories, UK

W23A
POINT-OF-CARE MEASUREMENT OF ZINC IN BLOOD SERUM
P. Jothimuthu1, R. Wilson1, S. Sukavasi1, J Herren1, H. Wong2, F. Beyette1, W. Heineman1, and I. Papautsky1
1Massachusetts Institute of Technology, USA and 2University of Kansas, USA and 3Pinnacle Technologies, USA

W24A
THE DEVELOPMENT OF A DIAGNOSTIC TEST FOR THE DETECTION OF DRUGS IN SALIVA USING A DISPOSABLE SAMPLE PREPARATION MICRO-FLUIDIC CARTRIDGE
A.M. Susay1, U. Krühne2, S. Sonny1, T. Lund-Olesen2, and V. Virtanen1
1Oulu University, FINLAND and 2Danish Technological Institute, DENMARK

W25A
A CELLULAR MICROARRAY PERFUSION SYSTEM FOR CHEMO-DRUG SCREENINGS
National Taiwan University, TAIWAN

W26A
DEVELOPMENT OF A MICRO CARDIOVASCULAR SYSTEM FOR EVALUATION OF ANTICANCER ACTIVITY AND RENAL CLEARANCE
K. Sato, Y. Imura, and E. Yoshimura
University of Tokyo, JAPAN

W27A
MERGING ‘MICRO’ WITH ‘NANO’: ON-CHIP HIGH-THROUGHPUT SYNTHESIS OF POLYMERIC NAPANPOTICLES FOR CANCER THERAPY
P.M. Valencia1,2, M. Rhee1,2, R. Langer1, O.C. Farokhzad2, and R. Karnik1
1Massachusetts Institute of Technology, USA and 2Brigham and Women’s Hospital, Harvard Medical School, USA

W28A
ON THE GENERATION OF POLY(DL-LACTIDE-CO-GLYCOLIDE) (PLGA) PARTICLES IN MICROFLUIDIC FLOW FOCUSING DEVICES (MFFD) MADE OF NORDAN OPTICAL ADHESIVE (NOA 81)
A. Hornay1, P. Klouček2, and N.F. de Rooij1
1Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and 2Université de Neuchâtel, SWITZERLAND

W29A
THE DEVELOPMENT OF A MINIATURIZED WIRELESS MICRODIALYSIS-MICROCHIP ELECTROPHORESIS SYSTEM FOR IN VIVO MONITORING OF DRUGS AND NEUROTRANSMITTERS IN AWAKE AND FREELY MOVING SHEEP
S.M. Lunte1, P. Nandi1, A. Regel1, R. Grigsby1, M.K. Hulvey1, D. Scott1, E. Naylor1, S. Gabbert2, and D. Johnson2
1University of Kansas, USA and 2Pinnacle Technologies, USA

W30A
A MICROFLUIDIC DEVICE WITH HYDRODYNAMIC SWITCHING FOR TRANSPORT PROPERTY MEASUREMENTS OF CELL MEMBRANES
W.J. Chen and W.H. Hsieh
National Chung Cheng University, TAIWAN

W31A
A THERMO-RESPONSIVE PNIPAAm-GRAFTED-PDMS SURFACE USED FOR CELL CULTURE IN MICROFLUIDIC CHANNELS
D. Ma, Z.-M. Li, Q.-H. He, and H.-W. Chen
Zhejiang University, CHINA

W32A
AN AUTOMATED EMBRYO CULTURE SYSTEM USING DYNAMIC MICROARRAY
H. Kimura1, H. Nakamura1, T. Kurakazu1, T. Yamamoto2, S. Takeuchi1, Y. Sakai1, and T. Fujii1
1University of Tokyo, JAPAN and 2Tokyo Institute of Technology, JAPAN

W33A
CONTINUOUS MYELOMA CELL CULTURE IN STORAGE CHAMBER BASED ON DROPLET FUSION-DIVISION
L.K. Chin1, T.C. Ayi2, P.H. Yap2, and A.Q. Liu1
1National Taiwan University, TAIWAN and 2DSO National Laboratories, SINGAPORE

W34A
FLOW-THROUGH ELECTROPORATION FOR TRANSFECTION BASED ON LOW-FREQUENCY AC VOLTAGE
Y. Zhan1, J. Wang1, N. Bao1, T. Geng1, and C. Lu2
1Zhejiang University, CHINA and 2Danish Technological Institute, DENMARK

W35A
HIGH RESOLUTION PATTERNING OF CELLS WITH A PHOSPHORYLCHOLINE-BASED POLYMER IN A MICROFLUIDIC CHANNEL USING A PARYLENE DRY FILM MASK
K. Kuribayashi-Shigetomi1, Y. Tsuda1,2, H. Nakamura1, and S. Takeuchi1,2
1University of Tokyo, JAPAN and 2BEANS Project, JAPAN

W36A
IMPEDEANCE SPECTROSCOPY FOR IN SITU BIOMASS MEASUREMENTS IN MICROBIOREACTORS
S. Goh and R.J. Ram
Zhejiang University, CHINA

Life Science Applications

W27A
W28A
W29A
W30A
W31A
W32A
W33A
W34A
W35A
W36A
W37A  INTEGRATED PERFUSION CULTURE MICRO-CHAMBER ARRAY CHIP FOR HIGH-THROUGHPUT DRUG DOSE RESPONSE ASSAY
K. Hattori, S. Sugiura, and T. Kanamori
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

W38A  MICROHOLE DEVICE FOR DERIVATION AND SEPARATION OF LIPOSOMES FROM HUMAN LYMPHOCYTES WITH SYNCHRONIZED CULTURE
M. Yamanaka and T. Yasuda
Kyushu Institute of Technology, JAPAN

W39A  REALIZATION OF TWO-DIMENSIONAL CONCENTRATION SPACES BY MICRO SEGMENTED FLOW FOR MICROTOXICOCLOGICAL SCREENING
P.M. Günther, A. Funfak, J. Cao, S. Schneider, F. Möller, and J.M. Köhler
Ilmenau University of Technology, GERMANY

W40A  STRAIN-GRADATION GENERATOR USING SERIALLY CONNECTED MICROBALLOONS FOR PARALLEL TESTING OF CELL-STRETCHING CULTURE
K. Shimizu1,2, A. Shunori2, K. Morimoto2, M. Hashida1, and S. Konishi1,2
1Kyoto University, JAPAN and 2Ritsumeikan University, JAPAN

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W41A  A MICROFLUIDIC MAMMALIAN CELL SORTER WITH THERMAL GELATION POLYMER SOLUTION
Y. Shirasaki1, M. Goto1, H. Sugino2, T. Arakawa2, D. Yoon3, J. Mizuno1, S. Shoji1, T. Funatsu1, and O. Ohara1,4
1Waseda University, JAPAN, 2University of Tokyo, JAPAN, 3Tokyo Medical and Dental University, JAPAN, and 4Kazusa DNA Research Institute, JAPAN

W42A  A REUSABLE HIGH-DENSITY MICROFLUIDIC CELL TRAPPING SYSTEM
R.D. Sochol1,2, K. Iwai3, A.T. Higa1, J.C. Lo2, E. Zhou1, L. Lo1, C. Luong1, M. Dueck1, S. Li1, L.P. Lee1, and L. Lin1
1University of California, Berkeley, USA and 2Sandia National Laboratories, USA

W43A  ACOUSTOPHORETIC PRETREATMENT OF CELL LYSATE PRIOR TO FACS ANALYSIS
A. Lenshof1, B. Warner2, and T. Laurell1
1P.Z. Wei, H. Huang, M. Wu, Z. Liang, W. Wang, and Z. Li
2University of California, Berkeley, USA, and 3Sandia National Laboratories, USA

W44A  BIOLOGICAL PARTICLE HANDLING USING FLOW-INDUCED ELECTROKINETIC TRAPPING
L.C. Jellema and E. Verpoorte
University of Groningen, THE NETHERLANDS

W45A  CONCENTRATION AND EXTRACTION CHIP OF FETAL NUCLEATED RED BLOOD CELL (NRBC) BY MICRO GAP WITH DIAPHRAGM FOR FETAL DNA DIAGNOSIS FROM MATERNAL BLOOD
T. Kumo1, Y. Tomizawa1, M. Kita2, H. Takabayashi2, E. Tamiya1, and Y. Takamura1
1Japan Advanced Institute of Science and Technology (JAIST), JAPAN, 2Kanazawa Medical University, JAPAN, and 3Osaka University, JAPAN

W46A  DEAN FLOW-COUPLED INERTIAL FOCUSING FOR ULTRA-HIGH-THROUGHPUT PARTICLE FILTRATION
S. Ardablil, J. Gantelius, J. Kowalewski, H. Brismar, and A. Russom
Royal Institute of Technology (KTH), SWEDEN

W47A  DIFFERENT BARCODES CODIFICATION FOR EMBRYO MICRO-LABELING
R. Gómez-Martínez1, S. Novo1, M. Duch1, L. Barrios2, E. Ibañez2, C. Nogues2, J. Esteve1, and J.A. Plazà1
1Centro Nacional de Microelectrónica (CNM), SPAIN and 2Universitat Autònoma de Barcelona, SPAIN

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W48A  EXTRACTION OF CIRCULATING TUMOR CELLS FROM BLOOD USING ACOUSTOPHORESIS
P. Augustsson1, C. Magnusson1, C. Grenvall1, H. Lilja1,2, and T. Laurell1
1Lund University, SWEDEN and 2Memorial Sloan-Kettering Cancer Center, USA

W49A  CELL ‘TRAP AND RELEASE’ USING NOVEL MICROFLUIDIC ‘HYDRAULIC JUMP’ TRAP
D. Mitra1, Y. Park1,2, Y. Choi1, H. Patel1, B. Pham1, J.R. Waldeisen1, T. Kang2, and L.P. Lee1
1University of California, Berkeley, USA, 2Sogang University, SOUTH KOREA, and 3Korea University, SOUTH KOREA

W50A  LONG-RANGE CONCENTRATION GRADIENTS OF MULTI-COMPOUNDS FOR BACTERIAL CHEMOTAXIS ASSAY
M. Kim and T. Kim
Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA

W51A  MICRO-SANDWICH IN MICROFLUIDICS: 3D BIOPOLYMER MEMBRANES FOR CELL ASSEMBLY
X.L. Luo, H.C. Wu, C.Y. Tsao, Y. Cheng, G.W. Rubloff, and W.E. Bentley University of Maryland, USA

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W52A  MICROFLUIDIC MODULES FOR [18F] ACTIVATION – TOWARDS AN INTEGRATED MODULAR LAB ON A CHIP FOR PET RADIOTRACER SYNTHESIS
F. De Leodardis1, G. Pascali1, P.A. Salvadori1, P. Watts1, and N. Pamme1
1University of Hull, UK and 2University of Pisa, ITALY

W53A  NEGATIVE DIELECTROPHORETIC FORCE BASED SEPARATION SYSTEM FOR HUMAN BREAST CANCER CELL (MCF 7) IN DILUTED RED BLOOD CELLS (RBC)
J. Lee, Y. Kim, and B. Kim
Korea Aerospace University, SOUTH KOREA

W54A  PASSIVE LABEL-FREE RARE CELL ENRICHMENT INERTIAL MICROFLUIDIC DEVICE USING CELL DEFORMABILITY AS A BIOMARKER
S.C. Hur and D. Di Carlo
University of California, Los Angeles, USA

W55A  SIZE SELECTIVITY AND TRAPPING EFFICIENCY OF SINGLE-CELLS WITH A HYDRODYNAMIC WELL IN A MICROFLUIDIC DEVICE
C.-M. Lin, C.-C. Tseng, T.-Y. Tu, C.-L. Chen, and A.M. Wo
National Taiwan University, TAIWAN

W56A  TWO-DIMENSIONAL CELL SORTING DEVICE EMPLOYING PINCHED-FLOW FRACTIONATION AND MAGNETOPHORESIS
M. Senaha, R. Mitamura, M. Yamada, and M. Seki
Chiba University, JAPAN

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W57A  ‘SNIFFER-PATCH ASSAY’ ON A MICROFLUIDIC CHIP FOR HIGH-THROUGHPUT SCREENING OF DRUGS TO CONTROL NEUROTRANSMITTER RELEASE
Korea Institute of Science and Technology (KIST), SOUTH KOREA

W58A  A HIGH PERFORMANCE CONTINUOUS ELECTROPORATION CHIP
Z. Wei, H. Huang, M. Wu, Z. Liang, W. Wang, and Z. Li
Peking University, CHINA

W59A  A MICRO MOIRE CHIP FOR AUTOMATED WHOLE FIELD CELL ANALYSIS
X.Y. Zheng and X. Zhang
Boston University, USA
W60A
A NEURONAL NETWORK DISPLAY FOR NEUROTOXICITY SCREENING
J.-P. Frimat1, J. Sienaske1, H. Hardelauf2, S. Subbiah1, M. Leist1, P. Lampen1, J. Franzke1, J.G. Hengstetter1, C. van Thriel1, and J. West1
1Institute for Analytical Sciences (ISAS), GERMANY, 2Technische Universität Dortmund, GERMANY, and 3Universität Konstanz, GERMANY

W61A
ANALYSIS OF INTRACELLULAR RESPONSE TO LOCALIZED CHEMICAL STIMULATION ON TISSUE-MIMICKING MICRODEVICE
K. Terao1,2, M. Gei1, A. Fuke1, A. Okonogi2, T. Okitoku2, T. Suzuki2, T. Tada2,3, M. Washizu1, and H. Koterai2,4
1Kagawa University, JAPAN, 2Japan Science and Technology Agency (JST), JAPAN, 3University of Tokyo, JAPAN, and 4Kyoto University, JAPAN

W62A
DEPLETION ZONE ISOTACHOPHORESIS: A NEW MICRO/NANOFLUIDIC ELECTROKINETIC METHOD
J.W. Quist, K.G.H. Janssen, J. Li, H.J. van der Linden, and T. Hankemeier
Leiden University, THE NETHERLANDS

W63A
ELECTRON-BEAM INDUCED IN SITU SPATIOTEMPORAL NANOFABRICATION TOWARD INTRACELLULAR NANOROBOTICS
T. Hoshino and K. Morishima
Tokyo University of Agriculture and Technology, JAPAN

W64A
FISH 'N' CHIPS – A SINGLE CELL GENOMIC ANALYZER FOR THE HUMAN MICROBIOME
Sandia National Laboratories, USA

W65A
INTEGRATED LABELLING, DISSOCIATION, ELECTROKINETIC TRANSPORT AND DETECTION OF PRIMARY TUMOUR CELLS
University of Hull, UK

W66A
LABEL-FREE DETECTION OF B AND T CELL RESPONSES BY USING HIGH RESOLUTION 2D-SPR IMAGING SENSOR
Y. Irbe, H. Shinohara, and M. Suzuki
University of Toyama, JAPAN

W67A
MICRODROPLET EMULSION GENERATOR ARRAYS FOR HIGH-THROUGHPUT SINGLE CELL GENETIC VARIATION ANALYSIS
R. Novak, Y. Zeng, J. Shuga, G. Venugopalan, D. Fletcher, L. Zhang, M.T. Smith, and R.A. Mathies
University of California, Berkeley, USA

W68A
MICROFLUIDIC SYSTEM FOR EVALUATION OF PHOTODYNAMIC THERAPY (PDT) PROCEDURES
E. Jedrych, Z. Pawlicka, M. Chudy, A. Dybko, and Z. Brzozka
Warsaw University of Technology, POLAND

W69A
OPTICAL INJECTION AND MANIPULATION OF FUNCTIONAL NAOTOOOL USING PHOTO-RESPONSIVE CHEMICAL AND OPTICALTWEEZERS FOR INTRACELLULAT MEASUREMENT
H. Maruyama1, K. Kotani1, A. Honda1, T. Takahatta1, and F. Arai1
1Nagoya University, JAPAN, 2Tohoku University, JAPAN, and 3Hosei University, JAPAN

W70A
SINGLE LIVING CELL MANIPULATION AND MICRORHEOLOGICAL STUDY WITH LASER-INDUCED CAVITATION BUBBLES
Z.G. Li1, P.A. Quinto-Su1, J.B. Zhang2, C.D. Ohl1, and A.Q. Liu1
1Nanyang Technological University, SINGAPORE and 2Agency for Science, Technology and Research (A’STAR), SINGAPORE

W71A
STUDYING NF-KAPPA B TRANSLOCATION BETWEEN NUCLEUS AND CYTOSPLASM BY ELECTROPORATIVE FLOW CYTOMETRY
J. Wang1, B. Fei1, Y. Zhan2, R.L. Gehlen1, and C. Lu2
1Purdue University, USA and 2Virginia Polytechnic Institute and State University, USA

W72A
DEVELOPMENTS TOWARDS INTEGRATED ACOUSTIC CELL TRAPPING AND PCR
B.L. Poe1, B. Hammarström2, T. Laurelli2, J. Nilsson1, and J.P. Landers1
1University of Virginia, USA and 2Lund University, SWEDEN

W73A
A CAPILLARY-ENDOTHELIUM-MIMETIC MICROFLUID CHIP FOR THE STUDY OF CHEMOTACTIC RESPONSE
W.H. Wu1, T.H. Punde1, P.C. Shih2, C.Y. Fu1, T.P. Wang1, L. Hsu2, H.Y. Changu1, and C.H. Liu1
1National Tsing Hua University, TAIWAN and 2National Chiao Tung University, TAIWAN

W74A
AN ANTIBIOTIC BIOSENSOR PLATFORM FOR PRECLINICAL EVALUATION OF DRUG RELEASE PROFILE OF NANOCAPSULES
C.-C. Hwang1, C.-Y. Wang2, K.—T. Peng2, and I.-M. Chu1
1National Tsing Hua University, TAIWAN and 2Chang Chung Memorial Hospital, TAIWAN

W75A
CHARGE-REVERSIBLE SOLID SURFACE AND ITS APPLICATION TO DNA MANIPULATION UNDER MICROFLUIDIC ENVIRONMENTS
K.-Y. Hwang1, J.-H. Kim1, K.P. Suh1, K. Namgoong1, S.-H. Paek1, and N. Huh1
1Samsung Electronics, SOUTH KOREA and 2Seoul National University, SOUTH KOREA

W76A
HIGH-THROUGHPUT END-ON IMAGING OF DROSOPHILA EMBRYO FOR QUANTITATIVE ANALYSIS OF MORPHOGENS AND SIGNALING
K. Chung1, Y. Kim1, E. Gong1, S. Shvartsman2, and H. Lu1
1Georgia Institute of Technology, USA and 2Princeton University, USA

W77A
MAGNETICALLY ACTUATED PARTICLE-BASED PROCEDURES IN CONTINUOUS FLOW
M.D. Tarn1, S.A. Peyman1, R.F. Fakhrullin2, A. Iles1, V.N. Paunov1, and N. Pamme1
1University of Hull, UK and 2Kazan State University, RUSSIA

W78A
MICROFLUIDIC DEVICES FOR ANESTHETIC FREE IN VIVO AXONAL TRANSPORT IMAGING
S. Mondal1, S. Ahlawat1, K. Rao1, V. Venkataraman2, and S.P. Koushika1
1University of Hull, UK and 2Kazan State University, RUSSIA

W79A
MINIATURE OSMOTIC ACTUATORS FOR ANESTHETIC FREE IN VIVO AXONAL DISTRACTION OSTEOGENESIS
National Tsing Hua University, TAIWAN

W80A
PARALLEL NEURON-BENIGN MICROFLUIDIC GRADIENT GENERATOR ARRAY FOR STUDYING THE RESPONSE OF SINGLE NEURONS TO BIOCHEMICAL GRADIENTS
N. Bhattacharjee and A. Folch
University of Washington, USA
W1B
A MICROFLUIDIC APPROACH TO “GREEN” SINGLE OXYGEN MEDIATED OXIDATION
E. Lumley1, C. Wiles1,2, C. Dyer1, N. Pamme1, and R. Boyle1
1University of Hull, UK and 2Chemtrix BV, THE NETHERLANDS

W2B
DIRECT SYNTHESIS OF HYDROGEN PEROXIDE BASED ON MICROREACTOR TECHNOLOGY
T. Inoue1, K. Ohtaki1, Y. Kikutani2, K. Sato1, M. Nishioka1, S. Hamakawa1, K. Mawatari3, A. Hibara3, F. Mizukami1, and T. Kitamori3
1National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, 2Kanagawa Academy of Science and Technology (KAST), JAPAN, and 3University of Tokyo, JAPAN

W3B
PAPER WITHDRAWN

W4B
STRATIFIED FLOW-DRIVEN ROUTE TO MONODISPERSE UNILAMELLAR LIPID VESICLES
S. Matosevic and B.M. Paegel
Scripps Research Institute, USA

W5B
STUDY ON THE RATE ACCELERATION OF THE BAYLIS-HILLMAN REACTION WITHIN MICROREACTORS
L. Qi, J. Yang, J. Qiao, H. Ma, and Y. Chen
Chinese Academy of Sciences, CHINA

W6B
IMPROVING CRYSTAL SIZE DISTRIBUTION USING MICROREACTOR MIXING UNITS
R. Goovaerts, W. De Malsche, N. De Meirleir, G. Desmet, and J. Denayer
Vrije Universiteit Brussel, BELGIUM

W7B
LANDSCAPING REACTION KINETICS ON A CHIP
H.S. Rho, S. Jambovane, and J.W. Hong
Auburn University, USA

W8B
SIZE CONTROL OF UNILAMELLAR GIANT VESICLES USING MICROFLUIDICS FOR ARTIFICIAL CELL STUDIES
K. Nishimura1, T Toyota2, H. Suzuki1,2, and T. Yomo1,3
1Osaka University, JAPAN, 2Tokyo University, JAPAN, and 3Japan Science and Technology Agency (JST), JAPAN

W9C
MIGRATION AND SEPARATION OF PHOTO-ABSORBING MICRO-PARTICLES USING LASER-PHOTOPHORESIS IN AQUEOUS SOLUTION
H. Monjushiro1, M. Takahashi2, and H. Watarai2
1High Energy Accelerator Research Organization, JAPAN and 2Osaka University, JAPAN

W11C
INTEGRATED OPTOFLOW SYSTEM FOR CHARACTERIZATION OF RED WINES
M. Gutiérrez1, C. Domingo1, J. Vila-Planas1, F. Capdevila2, S. Demming3, S. Büttgenbach1, A. Llobera1, and C. Jiménez-Jorquera1
1Instituto de Microelectrónica de Barcelona (IMB-CNM), SPAIN, 2Estación de Viticultura e Enología, INCAVI, SPAIN, and 3Institut für Mikrotechnik, GERMANY

Other Applications
Environment

W1C
A MINIATURE HIGH PRECISION CONDUCTIVITY AND TEMPERATURE SENSOR SYSTEM FOR OCEAN MONITORING
X. Huang, M.C. Mowlem, R. Pascal, K. Chamberlain, C. Banks, and H. Morgan
University of Southampton, UK

Other Applications
Food & Nutrition

Other Applications
Separation Science

Other Applications
Integrated Synthesis & Work-up

Other Applications
Others
Other Applications

Fuel Cells

W12C
SCALING AND MANUFACTURING OF LAMINAR FLOW-BASED FUEL CELLS
A.S. Hollinger1, F.R. Brushett1, L.J. Markoski2, and P.J.A. Kenis1
1University of Illinois, Urbana-Champaign, USA and 2Inn Power Systems, USA

Other Applications

Others

W13C
ULTRASONIC MANIPULATION OF MICRON SIZE BUBBLES IN NANO-LITHOGRAPHY
M. Baragona1, R. in ‘t Groen1, M. Kovacevic-Milivojevic1, R. Maessen1, M. Riepen1, R. Badie1, and J. den Toonder2

Microfluidics

Fluid Mechanics & Modeling

W1D
CHARACTERIZATION OF A HYDRODYNAMIC WELL FOR NON-INVASIVE TRAPPING OF SINGLE CELLS
C.-C. Tseng, C.-M. Lin, and A.M. Wo
National Taiwan University, TAIWAN

W2D
EFFECTS OF ELECTROTHERMAL FLOW ON PARTICLE DEFLECTION AND TRAPPING IN INSULATING (ELECTRODELESS) DIELECTROPHORESIS DEVICES
B.G. Hawkins and B.J. Kirby
Cornell University, USA

W3D
HIGHLY PRACTICAL, MODEL-BASED SIMULATION PLATFORM FOR INTEGRATED MICRO-FLUID CIRCUIT
R. Miyake1, S. Okabe1, H. Tsudome1, Y. Endo2, K. Mawatari3, and T. Kitamori1
1Hiroshima University, JAPAN, 2Hitachi Plant Technologies, JAPAN, and 3University of Tokyo, JAPAN

W4D
MIXING ANALYSIS OF NEUTRALLY BUOYANT PARTICLES OF FINITE SIZE IN COMPLEX FLOW AIDED BY A NOVEL SINGLE-FIELD THREE-DIMENSIONAL EPILUMINESCENCE PARTICLE IMAGING TECHNIQUE
A.M. Hirsch, B. Zhang, C.-Y. Kuo, and H. Lu
Georgia Institute of Technology, USA

W5D
OPTIMUM PECLET NUMBERS FOR ACCURATE MEASUREMENT OF ELECTROOSMOTIC MOBILITY OF COMPLEX DNA BUFFERS IN MICRO/FLUIDICS
W. Wang and Y.-K. Lee
Hong Kong University of Science and Technology, HONG KONG

W6D
PARTICLE FOCUSING IN A STRAIGHT SQUARE MICROCHANNEL VIA COMBINATION OF INERTIAL AND ELASTIC FLOW
S. Yang1, S.S. Lee2, S.J. Lee1, and J.M. Kim1
1Ajou University, SOUTH KOREA, 2ETH Zurich, SWITZERLAND, and 3University of Suwon, SOUTH KOREA

Microfluidics

Micro Liquid Handling

W7D
A PHASE REPLACEMENT-TRIGGERED MICROVALVE FOR PROTEIN CRYSTALLIZATION BY FREE INTERFACE DIFFUSION
G. Li, Q. Chen, and J. Zhao
Chinese Academy of Sciences, CHINA

W8D
ACCURATE AND RELIABLE MULTI CHAMBER PCR CHIP WITH SAMPLE LOADING AND PRIMER MIXING USING VACCUM JACKETS FOR n x m QUANTITATIVE ANALYSIS
N.B. Trung1, M. Saito2, T. Mizumura2, and Y. Takamura3
1Japan Advanced Institute of Science and Technology (JAIST), JAPAN and 2Osaka University, JAPAN

W9D
AN OPEN-SURFACE MICRO-DESPENSER VALVE FOR THE LOCAL STIMULATION OF CONVENTIONAL TISSUE CULTURES
C.G. Sip and A. Folch
University of Washington, USA

W10D
DEVELOPMENT OF ON-CHIP AUTOMATIC CELL SENSING AND EJECTION SYSTEM
T. Kawahara1, T. Mizunuma2, H. Uvet1, M. Hagiwara1, Y. Yamanishi3, and F. Arai1
1Nagoya University, JAPAN, 2Tohoku University, JAPAN, and 3Japan Science and Technology Agency (JST), JAPAN

W11D
INCREASING THE FLUID FLOW VELOCITY IN A MICROCHANNEL USING 3D NON-METALLIC ELECTRODES
H.A. Rouabah1, B.Y. Park2, R.B. Zaouk2, M.J. Madoud1, H. Morgan1, and N.G. Green1
1University of Southampton, UK and 2University of California, Irvine, USA

Microfluidics

Multi-Phase ad Digital Microfluidics

W12D
MICROFLUIDIC NETWORK-BASED COMBINATORIAL DILUTION DEVICE WITH AN INITIAL CONCENTRATION CONTROLLER
K. Lee1, C. Kim2, Y. Kim3, B. Ahn4, J. Bang2, J. Kim5, Y.-K. Yoon1, J.Y. Kang6, and K.W. Oh1
1University at Buffalo, The State University of New York, USA and 2Korea Institute of Science and Technology (KIST), SOUTH KOREA

W13D
ON-CHIP LIQUID DEGASSING WITH LOW WATER LOSS
J.M. Karlsson, T. Haraldsson, N. Sandström, G. Stemme, A. Russom, and W. van der Wijngaart
Royal Institute of Technology (KTH), SWEDEN

W14D
VERTICAL MICROFLUIDIC PROBE HEADS
R.D. Lovchik, U. Drechsler, and E. Delamarche
IBM Research, Zurich, SWITZERLAND

W15D
SAMPLE VOLUME METERING IN A DISPOSABLE MICROFLUIDIC CARTRIDGE
S. Vanhanen, P. Järvelä, and P. Kallio
Tampere University of Technology, FINLAND

W16D
NUMERICAL MODELLING OF THERMOCAPILLARY FLOW ON SUPERHYDROPHOBIC SURFACES
T. Baier, C. Steffes, and S. Haritz
Technische Universität Darmstadt, GERMANY
**W21D**

**GENERATION OF CONCENTRATION GRADIENTS IN DROPLET-BASED MICROFLUIDIC SYSTEM WITH A SINGLE NANOLITER-SCALE INJECTION**

L.F. Cai and Q. Fang

Zhejiang University, CHINA

**Microfluidics**

Multi-Scale / Integrative Microfluidics

**W22D**

**MAGNETIC DROPLETS - GENERATION AND MANIPULATION IN CONTINUOUS FLOW**

E. Alletti, O.J. Hatt, M. Vojišek, M.D. Tam, and N. Pamme

University of Hull, UK

**W23D**

**MULTIPLE EMULSION FORMATION IN CROSS-SHAPED MICROCHANNEL USING ALTERNATIVE DROPLET GENERATION TECHNIQUE**

J. Shimamura, Y. Yokoyama, H. Moriguchi, and T. Torii

University of Tokyo, JAPAN

**W24D**

**ON-DROP SEPARATION AND SENSING WITH COMPOUND DROPLET MICROFLUIDICS**

Z. Barikbin1, M.T. Rahman1, P. Parthiban2, A.S. Rane1, V. Jain1, and S.A. Khan1,2

1Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE and 2National University of Singapore, SINGAPORE

**W25D**

**SELF-SORTING OF DEFORMABLE PARTICLES IN A MICROFLUIDIC CIRCUIT**

M.S. Raafat, M. Cartas Ayala, and R. Karnik

Massachusetts Institute of Technology, USA

**W26D**

**SOLUTION CONCENTRATION CHANGE OF PICOLITER-SIZED MICRODROPLET REACTORS**

M. Takinoue, H. Onoe, and S. Takeuchi

University of Tokyo, JAPAN

**Microfluidics**

Others

**W20D**

**ACTIVE MICROFLUIDIC MIXER USING VIRTUAL SOURCE-SINK PAIRS FOR DNA PURIFICATION**

H.C. Tckin, C. Vandevyver, and M.A.M. Gijis

École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

**W21D**

**FLOATING MICROFLUIDIC GRADIENTS**

M.A. Gasaimeh and D. Juncker

McGill University, CANADA

**W22D**

**MICROFLUIDIC GENERATION OF MAGNETIC SEMIFLEXIBLE CHAIN BASED ON CHITOSAN MICROCAPSULES**

K. Jiang, C. Arya, S.R. Raghavan, and D.L. DeVoe

University of Maryland, USA

**W23D**

**OPTOFLUIDIC FABRICATION OF FOLDABLE HYDROGEL PARTICLES TOWARD INTUITIVE DRUG DELIVERY CARRIERS**

J. Krajniak and H. Lu

Georgia Institute of Technology, USA

**Nanotechnologies**

Nanoengineering

**W24D**

**INTEGRATED MICROFLUIDICS FOR SEROTYPE IDENTIFICATION OF FOOT AND MOUTH DISEASE VIRUS**

H. Sant1, S. Sundberg1, A. Miles3, M. Johnson1, E. Liddiard1, and B. Gale1,2

1University of Utah, USA and 2Wasatch Microfluidics, USA

**W25D**

**VERTICAL NANOTUBES CONNECTED BY A SUBSURFACE NANOCHANNEL**

H. Persson1, J. Beech1, W. Hallström1, C. Nimani1, L. Samuelson1, M. Kanje1, S. Oredsson1, C.N. Prinz1, and J.O. Tegenfeldt1,2

1Lund University, SWEDEN and 2University of Gothenburg, SWEDEN

**W26D**

**AN OPEN MICROFLUIDIC DEVICE WITH ACTIVE VALVES FOR ACCURATE TRAPPING OF DNA BY SILICON NANOTWEEZERS**

L. Wang1, Z.-L. Zhang1, R. Cui1, H.-H. Liu1, J. Li1, S.-L. Liu1, Z.-X. Xie1, Y. Chen2, and D.-W. Pang1

1Wuhan University, CHINA and 2Ecole Normale Supérieure, FRANCE

**Nanotechnologies**

Nanobiotechnology

**W27D**

**INTEGRATED MICROFLUIDICS FOR DROPLET BASED MICROPHYSICS OF NUCLEIC ACID ASSEMBLY**

J. Davis, D. Chin, and P. Cao

University of Washington, USA

**W28D**

**MICROFLUIDIC CULTURE CHAMBER FOR THE LONG-TERM PERFUSION AND PRECISE CHEMICAL STIMULATION OF ORGANOTYPIC BRAIN TISSUE SLICES**


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

**Nanotechnologies**

Nanobiotechnology

**W29D**

**PRECISION MICROFLUIDIC OSCILLATORS FOR ON-CHIP TIMING AND CONTROL**

P.N. Duncan, T.V. Nguyen, and E.E. Hui

University of California, Irvine, USA

**W30D**

**CONTROLLED DROP GENERATION FOR DIGITAL MICROFLUIDIC SYSTEMS BY MEANS OF ELECTROWETTING**

H. Gu, M.H.G. Duin, and F. Mugele

MESA+, University of Twente, THE NETHERLANDS

**W31D**

**DROPLET MICROFLUIDIC SYSTEM FOR HIGH-THROUGHPUT SCREENING OF TOXICITY OF ANTIBIOTICS**

K. Churski, T. Kamiński, S. Jakiela, P. Korczyk, and P. Garstecki

Polish Academy of Sciences, POLAND

**W32D**

**GENERATION OF CONCENTRATION GRADIENTS IN DROPLET-BASED MICROFLUIDIC SYSTEM WITH A SINGLE NANOLITER-SCALE INJECTION**

L.F. Cai and Q. Fang

Zhejiang University, CHINA

**W33D**

**USE OF INTEGRATED ELECTRODES AND EMBRYO TRAPS FOR INDIVIDUALLY ADDRESSABLE LOADING, CULTURING AND MONITORING OF C. elegans**

J. Krajniak and H. Lu

Georgia Institute of Technology, USA

**Nanotechnologies**

Nanobiotechnology

**W34D**

**CLOSED-END NANOCHANNELS: MODEL PLATFORM FOR NANOFLOWIC FLUIDICS**

P. Joseph1, VN. Phan2, P. Dubreuil1, P. Abgrall2, A.-M. Gué1, and N.-T. Nguyen2

1Université de Toulouse, FRANCE and 2Nanyang Technological University, SINGAPORE

**W35D**

**SELECTIVE PRECONCENTRATION WITHIN MICRO-NANOFLUIDIC DEVICE: A SINGLE STEP FOR ON CHIP BIOMOLECULE PRECONCENTRATION AND SEPARATION**

C. Nanteuil, A.C. Louër, A. Plecis, and A.M. Haghir-Gosnet

Centre National de la Recherche Scientifique (CNRS), FRANCE

**Nanotechnologies**

Nanobiotechnology

**W36D**

**ACTIVE MICROFLUIDIC MIXER USING VIRTUAL SOURCE-SINK PAIRS FOR DNA PURIFICATION**

H.C. Tckin, C. Vandevyver, and M.A.M. Gijis

École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

**W37D**

**FLOATING MICROFLUIDIC GRADIENTS**

M.A. Gasaimeh and D. Juncker

McGill University, CANADA

**W38D**

**MICROFLUIDIC GENERATION OF MAGNETIC SEMIFLEXIBLE CHAIN BASED ON CHITOSAN MICROCAPSULES**

K. Jiang, C. Arya, S.R. Raghavan, and D.L. DeVoe

University of Maryland, USA

**W39D**

**OPTOF IUDIC FABRICATION OF FOLDABLE HYDROGEL PARTICLES TOWARD INTUITIVE DRUG DELIVERY CARRIERS**

J. Krajniak and H. Lu

Georgia Institute of Technology, USA

**Nanotechnologies**

Nanobiotechnology
W6E
FABRICATION OF SILICON NANOPlate AND NANOWire BIOSensor ARRAYS WITH HIGH SPECIFICITY AND SUB-PICOMOLAR LIMITS OF DETECTION
B. Dorve1, B. Reddy Jr.1, D. Bergstrom2, M.A. Alami3, S. Clare4, and R. Bashir1
1 University of Illinois, Chicago, USA, 2Purdue University, USA, and 3Indiana University School of Medicine, USA
W7E
NANOFLUIDic SINGLE-MOLECULE SORTer CONCEPTUALLY PROVEN BY SORTING OF DNA
T. Yamamoto1 and T. Fuji1
1Tokyo Institute of Technology, JAPAN and 2University of Tokyo, JAPAN
W8E
ON-CHIP NANOMANIPULATION OF SINGLE INFLUENza VIRUS USING DIELECTROPHoretic CONCENTRATION AND OPTICAL TWEeZERS
H. Maruyama1, K. Kotani2, A. Honda3, T. Takahata4, and F. Arai5
1Nagoya University, JAPAN, 2Tohoku University, JAPAN, and 3Hosei University, JAPAN
W9E
REAL-TIME OBSERVATION OF DNA COMFORMATIONAL TRANSITIONS AT A SINGLE-MOLECULE LEVEL BY MICROFLUIDic DEVICES
H. Suzuki1, N. Kaji1, Y. Okamoto1, M. Tokeshi1, and Y. Baba1,2
1Nagoya University, JAPAN and 2National Institute of Advanced Industrial Science and Technology (AIST), JAPAN
W10E
SIMULTANEOUS CONTROL OF LENGTH AND LOCATION OF METAL-ORGANic NANOWIRES GROWN BY HYDRODYNAMIC FOCUSING IN A MULTILAYER MICROFLUIDIC DEVICE
P. Kuhn1, J. Puigmartí-Luis1, I. Imaz2, D. Maspoch2, and P.S. Dittrich1
1ETH Zürich, SWITZERLAND and 2Centre d’Investigacions en Nanociencia i Nanotecnologia (ICN-CSIC), SPAIN
W11E
CHEMICAL SG-SELEX ON THE NANOPorous SILICON SUBSTRATE CAN GENERATE HIGH AFFINITY ssDNA APTAMERS AGAINST NON-SOLUBLE CHEMICALS
J.-Y. Ahn1, S.W. Lee2, M. Jo1, M. Kim1, H. Bae1, T. Laurell2, O.C. Jeong3, and S. Kim1
1Dongguk University, SOUTH KOREA, 2Lund University, SWEDEN, and 3Inje University, SOUTH KOREA
W12E
INVESTIGATION OF PHONON-ASSISTED OPTICAL NEAR-FIELD EXCITATION ON NANOSTRUCTURED TiO2 TOWARDS ON-CHIP FUEL CELL USE
Peking University, CHINA and 2University of California, Irvine, USA
W13E
SELECTIVE DEPOSITION OF ELECTROSPun ALGINATE-BASED NANOFIBers ON CELL-REPELLING HYDROgel SURFACES FOR CELL-BASED MICROARRAY
S.H. Huang1, T.C. Chien1, K.Y. Hung2, and Y.C. Chung2
1National Taiwan Ocean University, TAIWAN and 2Indianapolis University School of Medicine, USA
W14E
A TWO CHAMBER SUB LABONACHIP WITH INTEGRATED BURST VALVE FOR SAMPLE PREPARATION, SAMPLE CONCENTRATION AND PCR
V. Calvo1, M. Agirregabiria1, L.J. Fernandez1, A. Ezkerra1, J. Berganzo1, J. Elizalde1, K. Mayor1, D. Verdoy2, and J.M. Ruano-Lopez2
1University of Tokyo, JAPAN, 2Hosei University, JAPAN, and 3Ikerlan S. Coop, SPAIN
W15E
REAL-TOUCH PLATFORMS FOR AUTOMATIC ION CHANNEL RECORDING
M. Rossi1, F. Thei1, H. Morgan2, and M. Tartagni1
1University of Bologna, ITALY and 2University of Southampton, UK
W16E
METABOLOMIE NMR BY INDUCTIVE COUPLING AND ITS USE FOR LOW-TEMPERATURE-BONDING OF BIO-FUNCTIONALIZED µTAS
M. Díaz-González and A. Baldí
Instituto de Microelectrónica de Barcelona (IMB-CN2), SPAIN
W17E
A DISPOSABLE MICROFLUIDIC ARRAY PLATFORM FOR AUTOMATIC ION CHANNEL RECORDING
M. Rossi1, F. Thei1, H. Morgan2, and M. Tartagni1
1University of Bologna, ITALY and 2University of Southampton, UK
W18E
A TWO CHAMBER SU8 LABONACHIP WITH INTEGRATED BURST VALVE
V. Calvo1, M. Agirregabiria1, L.J. Fernandez1, A. Ezkerra1, J. Berganzo1, J. Elizalde1, K. Mayor1, D. Verdoy2, and J.M. Ruano-Lopez2
1University of Tokyo, JAPAN, 2Hosei University, JAPAN, and 3Ikerlan S. Coop, SPAIN
W19E
MICROMACHINING OF PYREX7740 GLASS FOR MICRO-FLUIDIC DEVICES
J.W. Liu, Q.A. Huang, J.T. Shang, and J.Y. Tang
Southeast University, CHINA
W20E
REAL-TOUCH PLATFORMS FOR AUTOMATIC ION CHANNEL RECORDING
M. Rossi1, F. Thei1, H. Morgan2, and M. Tartagni1
1University of Bologna, ITALY and 2University of Southampton, UK
W21E
METABOLOMIE NMR BY INDUCTIVE COUPLING
A. Zaß1, K. Wang1, J. Korvink1, M. Reed2, J. Landers1, and M. Utz1
1University of Virginia, USA and 2University of California, Irvine, USA
W22E
PDMS NANOSTRUCTURES FABRICATED BY TWO-STEP MOLDING PROCESS USED FOR TUNABLE SEERs INTEGRATED WITH MICROFLUIDICS
X. Wang1, Z. Geng1,2, W. Wang1, and Z. Li1
1Peking University, CHINA and 2Minzu University, CHINA
W23E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W24E
FLEXIBLE MICROPOST ARRAYS FOR STUDYING TRACTION FORCES OF VASCULAR SMOOTH MUSCLE CELLS
Q. Cheng, Z. Sun, G.A. Mehniger, and M. Almasri
University of Missouri, USA
W25E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W26E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W27E
A TWO CHAMBER SUB LABONACHIP WITH INTEGRATED BURST VALVE
V. Calvo1, M. Agirregabiria1, L.J. Fernandez1, A. Ezkerra1, J. Berganzo1, J. Elizalde1, K. Mayor1, D. Verdoy2, and J.M. Ruano-Lopez2
1University of Tokyo, JAPAN, 2Hosei University, JAPAN, and 3Ikerlan S. Coop, SPAIN
W28E
REAL-TOUCH PLATFORMS FOR AUTOMATIC ION CHANNEL RECORDING
M. Rossi1, F. Thei1, H. Morgan2, and M. Tartagni1
1University of Bologna, ITALY and 2University of Southampton, UK
W29E
METABOLOMIE NMR BY INDUCTIVE COUPLING
A. Zaß1, K. Wang1, J. Korvink1, M. Reed2, J. Landers1, and M. Utz1
1University of Virginia, USA and 2University of California, Irvine, USA
W30E
PDMS NANOSTRUCTURES FABRICATED BY TWO-STEP MOLDING PROCESS USED FOR TUNABLE SEERs INTEGRATED WITH MICROFLUIDICS
X. Wang1, Z. Geng1,2, W. Wang1, and Z. Li1
1Peking University, CHINA and 2Minzu University, CHINA
W31E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W32E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W33E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W34E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
W35E
FABRICATION OF A MRI STANDARDIZATION DEVICE FOR STACKING HIGHLY PATTERNED THIN PDMS LAYERS
University of Utah, USA
MEMS & NEMS Technologies
Surface Modification

W14F
FLUOROTHERMOPLASTIC CHIPS FOR DROPLET MICROFLUIDICS AND DNA ANALYSIS
S. Begolo, G. Colas, L. Maiaquin, and J.-L. Viovy
Institut Curie, FRANCE

W15F
MICROFLUIDIC DEVICES MADE OF UV-CURABLE GLUE (NOA81) FOR FLUORESCENCE DETECTION BASED APPLICATIONS
Ph. Wägeli, B.Y. Guélat, A. Hornsy, and N.F. de Rooij
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

MEMS & NEMS Technologies
New Chip Materials

W16F
A HEMOCOMPATIBLE ARRAY CYLINDRICAL NANOSHELL WITH A REDUCED EFFECTIVE BLOOD CONTACT AREA
H. Im, Y.-B. Park, J. Suk, M. Im, C.O. Joe, and Y.-K. Choi
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

MEMS & NEMS Technologies
Flow Visualization

W1G
MEASUREMENT OF PERIODIC FLOW USING MICRO PARTICLE IMAGE VELOCIMETRY WITH PHASE SAMPLING TECHNIQUE
W.-I. Wu, D. Ewing, P.R. Selvaganapathy, and C.Y. Ching
McMaster University, CANADA

W2G
A POLYMERIC MICRO-OPTIC DEVICE FOR THE DETECTION OF MICROFLUIDIC FLOW SPATIAL PROFILE
F. Sapuppo1, A. Llobera2, F. Schembri1, and M. Bucolo1
1Università degli Studi di Catania, ITALY and 2Centro Nacional de Microelectrónica (CNM), SPAIN

Imaging & Detection Technologies
Mass Spectrometry

W12G
CHIP-BASED HEATERLESS NANO-APCI-MS
R.J. Raterink, M. de Korte, H. van der Linden, and T. Hankemeier
Leiden University, THE NETHERLANDS

W3G
CMOS-BASED LUMINESCENCE DETECTION FOR LAB-ON-A-CHIP
L. Shen1, M. Ratterman1, D. Klotzkin2, and I. Papautsky3
1University of Cincinnati, USA and 2State University of New York, Binghamton, USA

W4G
FIBER FREE PLUG AND PLAY ON-CHIP SCATTERING CYTOMETER MODULE – FOR IMPLEMENTATION IN MICROFLUIDIC POINT OF CARE DEVICES
T.G. Jensen and J.P. Kutter
Danmarks Tekniske Universitet (DTU), DENMARK

W5G
HYDRATION LAYERS OF ALCOHOL AND PROTEINS ANALYZED BY THZ BIMEMS
S. Laurette, A. Teizebere, and B. Bocquet
Université de Lille, FRANCE

W6G
INVESTIGATION OF PLASMONIC NANODOT ARRAYS COMPARED WITH NANOHOLE ARRAYS FABRICATED BY A SEQUENTIAL NANOIMPRINT TECHNIQUE
K. Nakamoto1,2, R. Kurita2, and O. Niwa1,2
1University of Tsukuba, JAPAN and 2National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

W7G
LONG-RANGE SPR SENSOR WITH MICRO LIQUID CHANNELS FOR MAINTAINING SYMMETRICAL CONDITION
T. Kan1, H. Koj2, E. Iwae2, K. Matsumoto1, and I. Shimoyama3
1University of Tokyo, JAPAN, 2Cannon Corp., JAPAN, and 3Harvard University, USA

W8G
3-D CARBON INTERDIGITATED ARRAY NANOELECTRODES FOR HIGHLY SENSITIVE SENSING OF NEUROTRANSMITTER
F. Zhang1,2, J.J. Liu1, J.H. Tran1, L. Wang1, P.G. He2, and Y. Chen1,3
1East China Normal University, CHINA, 2National Institute of Science & Technology (UNIST), SOUTH KOREA and 3University of California, Irvine, USA

Imaging & Detection Technologies
Optical

W11G
SIGNIFICANT IMPROVEMENT IN SENSITIVITY OF LEAKAGE CURRENT MICROSENSOR BY USING DENATURANT AND ELECTROLYTE-ENTRAPPING DPPC LIPOSOMES
P. Lorchirachonkul1, T. Shimanouchi1, K. Yamashita1, H. Umakoshi2, R. Kuboi2, and M. Noda1
1Kyoto Institute of Technology, THAILAND and 2Osaka University, JAPAN

Imaging & Detection Technologies
Electrochemical

W9G
CHIP-BASED HEATERLESS NANO-APCI-MS
R.J. Raterink, M. de Korte, H. van der Linden, and T. Hankemeier
Leiden University, THE NETHERLANDS

Imaging & Detection Technologies
Mass Spectrometry

W10G
INTEGRATED ELECTROCHEMICAL MICRO-SENSORS FOR METABOLISM STUDIES OF YEST Cells
F. Zhang1,2, J.J. Liu1, J.H. Tran1, L. Wang1, P.G. He2, and Y. Chen1,3
1East China Normal University, CHINA, 2National Institute of Science & Technology (UNIST), SOUTH KOREA and 3University of California, Irvine, USA

Imaging & Detection Technologies
Flow Visualization
W13G
IDENTIFYING PSA BIOMARKER WITH SOL-GEL INTEGRATED MICROARRAY AND MALDI-TOF MS
J.-Y. Ahn1, S.W. Lee2, M. Jo1, S. Ren1, J. Kang1, S. Lee1, T. Laurell1, and S. Kim1
1Dongguk University, SOUTH KOREA and 2Lund University, SWEDEN

Imaging & Detection Technologies
Optofluidics

W14G
CHARACTERIZATION OF AN OPTOFLUIDIC MICROFLOW CYTOMETER FOR SINGLE PARTICLE ANALYSIS
M. Rosenauer and M.J. Vellekoop
Vienna University of Technology, AUSTRIA

W15G
ELASTOMER MEMBRANE PRESSURE SENSORS FOR MICROFLUIDICS
A.G. Orth, E.F. Schonbrun, and K.B. Crozier
Harvard University, USA

W16G
ON-CHIP REFRACTIVE INDEX MEASUREMENT VIA INTERFACIAL REFRACTION OF TWO PHASE FLOW STREAMS
S. Xiong1,2, Y. Yang1, Y. Chen2, G.J. Zhang2, G.Q. Lo2, D.L. Kwong2, and A.Q. Liu1
1Nanyang Technological University, SINGAPORE and 2Agency for Science, Technology and Research (A*STAR), SINGAPORE

Imaging & Detection Technologies
Others

W17G
A CORONA DISCHARGE PROCESS BASED MICRO ELECTRIC NOx CONVERTER FOR THE TOTAL NOx EVALUATION IN AIR
S.I. Yoon, Y.H. Choi, M.S. Kim, and Y.J. Kim
Yonsei University, SOUTH KOREA

W18G
CHARACTERIZATION OF PDMS MICROVALVES USING MUSIC
A.K. Au, P. Liu, and A. Folch
University of Washington, USA

W19G
DETECTION OF TRACE EXPLOSIVES BY SERS USING 3-D NANOCHANNEL ARRAYS
K. Jiang, I. White, and D.L. DeVoe
University of Maryland, USA

W20G
IN SITU MICRO DROPLET TYPING SYSTEM USING 3ω METHOD
N. Yi, D. Kim, and J. Park
Pohang University of Science and Technology (POSTECH), SOUTH KOREA

W21G
SAPPHIRE DIELECTRIC RESONATORS FOR MICROFLUIDIC COMPOSITIONAL ANALYSIS
A. Porch, A. Masood, A.J. Naylon, A. Sulaimageble, and D.A. Barrow
Cardiff University, UK

Special Focus Session
Electrowetting-Driven Digital Microfluidics

W7H
A FEEDBACK CONTROL SYSTEM FOR HIGH-FIDELITY DIGITAL MICROFLUIDICS
S.C.C. Shih1, R. Fobel1, P. Kumar2, and A.R. Wheeler1
1University of Toronto, CANADA and 2Indian Institute of Technology, INDIA

W8H
DIGITAL MICROFLUIDIC HUB FOR AUTOMATED NUCLEIC ACID SAMPLE PREPARATION
Sandia National Laboratories, USA

W9H
MODELING THE SPONTANEOUS INSERTION OF ONE LIQUID INTO ANOTHER ON A DROPLET MICROFLUIDIC PLATFORM
D. Chatterjee, A.K. Tucker-Schwartz, and R.L. Garrell
University of California, Los Angeles, USA
HIGH-DENSITY ARRAY OF SINGLE CELL TRAPS FOR HIGH-THROUGHPUT IMAGING OF CALCIUM DYNAMICS IN RESPONSE TO OXIDATIVE STRESS
C.A. Rivet, K. Chung, M.L. Kemp, and H. Lu
Georgia Institute of Technology, USA

BURN INJURY INHIBITS NEUTROPHIL CHEMOTAXIS IN MICROFLUIDIC DEVICES
Massachusetts General Hospital, Shriners Hospital for Children and, Harvard Medical School, USA

SEPARATION AND DETECTION OF RARE CELLS VIA MULTISTAGE MAGNETIC GRADIENT IN A MICROFLUIDIC DISK
National Taiwan University, TAIWAN

REAL TIME ELECTROCHEMICAL DNA QUANTIFICATION IN A COC LAB ON A CHIP: TOWARDS LOW-COST DIAGNOSIS OF NOSOCOMIAL INFECTIONS
V. Taniga1, G. Mottet1, S. Miserere1, L. Malaquin1, J.L. Viovy1, F. Kivlehan1, F. Mavre1, D. Marchal2, B. Limoges2, A. Le Ne3 and J. Goulpeau3
1Institut Curie, FRANCE, 2Université Paris, FRANCE, and 3FLUIGENT, FRANCE

SICKLING RED BLOOD CELLS IN DROPLET ARRAYS
P. Abyad1, R. Dangla1, P.-L. Tharaux2, A. Alexandrou1 and C.N. Baroud1
1Ecole Polytechnique, FRANCE and 2Paris-Cardiovascular Research Centre, FRANCE

ASSESSING THE TRAUMATIC BRAIN INJURY MARKERS S100 AND C-REACTION PROTEIN IN HUMAN CEREBROSPINAL FLUID VIA MICROFLUIDIC IMMUNOSUBTRACTION
A.A. Apori and A.E. Herr
University of California, Berkeley, USA

16:00 - 16:20

16:20 - 16:40

16:40 - 17:00

18:30 - 22:00 Conference Banquet at Martinikerk (Martin’s Church)
### BORGMANZAAL - A

**Session 3C3**
Advanced Fluid Handling  
CHAIR: S. Takeuchi, University of Tokyo, JAPAN

**DROPS ON RAILS**  
R. Dangla, S. Lee, and C.N. Baroud  
École Polytechnique, FRANCE

**SIMULTANEOUS CONCENTRATION AND SEPARATION OF PROTEINS IN NANOCHANNELS**  
D.W. Inglis, N. Calander, and E.M. Goldys  
Macquarie University, AUSTRALIA

**ON-CHIP POROUS POLYMER MONOLITHS FOR SOLID PHASE EXTRACTION USING DIGITAL MICROFLUIDICS**  
H. Yang, J.M. Mudrik, M. Jebrail, and A.R. Wheeler  
University of Toronto, CANADA

**ORDER AND DISORDER IN NANOPOROUS MEDIA CONTROLS DNA SEPARATION EFFICIENCY**  
N. Nazemifard, L. Wang, W. Ye, S. Bhattacharjee, J.H. Masliyah, and D.J. Harrison  
University of Alberta, CANADA

### BORGMANZAAL - B

**Session 3D3**
Nanobiotechnology Separation  
CHAIR: H. Gardeniers, MESA+, University of Twente, THE NETHERLANDS

**BIOLOGICALLY INSPIRED BIDIRECTIONAL FLUIDIC DIODE**  
H. Cho, A. Kimteng, and L.P. Lee  
University of California, Berkeley, USA

**NANOSLINKY: DNA ENTROPHORESIS DOWN A NANOFLUIDIC STAIRCASE**  
E.A. Strychalski, S.M. Stavis, M. Gaitan, and L.E. Locascio  
National Institute of Standards and Technology (NIST), USA

**16:00 - 16:20**

**16:20 - 16:40**

**16:40 - 17:00**

18:30 - 22:00  
Conference Banquet at Martinikerk (Martin's Church)
Thursday, 7 October 2010

08:00 - 08:45

Awards Ceremony 2

Pioneers in Miniaturization Prize
sponsored by Lab on a Chip (Royal Society of Chemistry) and Corning Inc.

Widmer Poster Award
sponsored by Lab on a Chip (Royal Society of Chemistry)

Young Researcher Poster Award
sponsored by The Society for Chemistry and Micro-Nano Systems (CHEMINAS)

Art in Science Award
sponsored by National Institute of Standards and Technology (NIST) and Lab on a Chip (Royal Society of Chemistry)

THEATRE

Special Focus Session 4A1
Tissue Engineering
CHAIR: J. West, Leibniz-Institute for Analytische, GERMANY

09:00 - 09:30

INVITED PRESENTATION

COMPLEX TISSUE
C.A. van Blitterswijk
University of Twente, THE NETHERLANDS

MICROFLUIDIC EXPERIMENTAL PLATFORM USING MICRO-ROTATION FLOW FOR PRODUCING MULTIPLE SIZE-CONTROLLED THREE-DIMENSIONAL SPHEROIDS
H. Ota, T. Kodama, and N. Miki
Keio University, JAPAN

09:30 - 09:50

SPRINGERZAAL

Special Focus Session 4B1
In-Line Analysis in Microreactors
CHAIR: F. Rutjes, Radboud University Nijmegen, THE NETHERLANDS

09:00 - 09:30

INVITED PRESENTATION

IN-LINE NMR ANALYSIS USING STRIPLINE BASED DETECTORS
J. Bart1, A.-J. Oosthoek-de Vries1, K. Tijssen1, J.W.G. Janssen1, P.J.M. van Bentum1, J.G.E. Gardeniers2, and A.P.M. Kentgens1
1 Radboud University Nijmegen, THE NETHERLANDS and 2 University of Twente, THE NETHERLANDS

09:30 - 09:50

EFFICIENT MICROWAVE HEATING AND DIELECTRIC CHARACTERIZATION OF MICROFLUIDIC SYSTEMS
J. Naylon, S. Gooding, C. John, A. Morgan, O. Squires, J. Lees, D.A. Barrow, and A. Porch
Cardiff University, UK

HIGH-THROUGHPUT SCREENING OF CELL-SURFACE TOPOGRAPHIC INTERACTIONS
H.V. Unadkat1, M. Hulsman2, K. Cornelissen1, B. Paperburg1, R.K. Truckenmüller1, G.F. Post1, M. Uetz1, M.J.T. Reinders1, D. Stamatialis1, C. van Blitterswijk1, and J. de Boer1
1 University of Twente, THE NETHERLANDS and 2 Delft University of Technology, THE NETHERLANDS

09:50 - 10:10

10:10 - 10:40 Break
AN INTEGRATED PLATFORM FOR LIGHT-INDUCED DIELECTROPHORESIS AND ELECTROWETTING
J.K. Valley, S.N. Pei, H.-Y. Hsu, A. Jamshidi, and M.C. Wu
University of California, Berkeley, USA

A PREFILLED, READY-TO-USE, ELECTROPHORESIS-BASED LAB-ON-A-CHIP DEVICE FOR MONITORING IONS IN BLOOD AND URINE
S.S. Staal1, J. Floris1, S.O. Lenk1, E. Staijen1, M. Avilla Muñoz2, D. Kohlheyer3, J.C.T. Eijkel3, and A. van den Berg3
1Medimate BV, THE NETHERLANDS, 2University of Castilla-La Mancha, SPAIN, and 3MESA+, University of Twente, THEN NETHERLANDS

FLUID FLOW AND MIXING WITHIN DROPS IN AC ELECTROWETTING
P. Garcia-Sanchez1, A. Ramos1, and F. Mugele2
1University of Sevilla, SPAIN and 2University of Twente, THE NETHERLANDS

VALUE CREATION BASED ON HIGH TECH
J. Elders
Thermo Fisher Scientific, THE NETHERLANDS
MICROFLUIDIC INTERFACE DEVICES FOR IN VIVO ANALYSIS OF NEURAL CELLS USING 2-PHOTON LASER SCANNING MICROSCOPY
University of Tokyo, JAPAN

PERFUSION-BASED MICROFLUIDIC DEVICE FOR THREE-DIMENSIONAL DYNAMIC PRIMARY HUMAN HEPATOCYTE CELL CULTURE IN THE ABSENCE OF BIOLOGICAL OR SYNTHETIC MATRICES OR COAGULANTS
V.N. Goral1, Y.-C. Hsieh2, O.N. Petzold1, J.S. Clark1, P.K. Yuen1, and R.A. Faris1
1Corning Incorporated, USA and 2Corning Research Center, TAIWAN

SONOCHEMICAL MICROREACTOR WITH MICROBUBBLES CREATED ON MICROMACHINED SURFACES
D. Fernandez Rivas1, A.G. Zijlstra1, A. Prosperetti1,2, D. Lohse1, and J.G.E. Gardeniers1
1MESA+, University of Twente, THE NETHERLANDS and 2Johns Hopkins University, USA

FINE REGULATION OF POLARITY IN A HEPATOCYTE CULTURE UTILIZING OXYGEN-PERMEABLE MEMBRANES AND MICROPATTERNED COLLAGEN GEL
H. Matsui1,2, H. Kimura3, T. Osada2, M. Sekijima2, T. Fujii2, S. Takeuchi2, and Y. Sakai2
1BEANS Laboratory, JAPAN, 2University of Tokyo, JAPAN, and 3Mitsubishi Chemical Medience Co. Ltd., JAPAN

CHAOTICALLY ACCELERATED BIOCHEMISTRY IN MICROSACLE CONVECTIVE FLOWS
R. Muddu, Y.A. Hassan, and V.M. Ugaz
Texas A&M University, USA
A PULSE LASER-DRIVEN MICROFLUIDIC DEVICE FOR ULTRA-FAST DROPLET GENERATION ON DEMAND AND SINGLE-CELLS ENCAPSULATION
S.Y. Park, T.H. Wu, Y. Chen, S. Nisperos, J. Zhong, and P.-Y. Chiou
1 University of California, Los Angeles, USA and 2 University of Southern California, USA

DYNAMIC PICO-LITER BUBBLE MANIPULATION VIA TIOPC-BASED LIGHT-INDUCED DIELECTROPHORESIS
J. Reboud, R. Wilson, Y. Bourquin, Y. Zhang, S.L. Neale, and J.M. Cooper
University of Glasgow, UK

MICROFLUIDIC DEVICE FOR SINGLE-CELL ENCAPSULATION BY RANDOM BREAKUP AND SORTING OF MICRO-DROPLETS
E. Um and J.-K. Park
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

PHONONIC CRYSTAL METAMATERIALS FOR FREQUENCY TUNABLE MICROFLUIDIC FUNCTIONS USING SURFACE ACOUSTIC WAVES
1 National Chiao Tung University, TAIWAN and 2 National Tsing Hua University, TAIWAN

HIGH EFFICIENCY CELL ENCAPSULATION UTILIZING NOVEL ON-DEMAND DROPLET GENERATION SCHEME AND IMPEDANCE-BASED DETECTION
R. Lin, J.-L. Prieto, J.S. Fisher, and A.P. Lee
University of California, Irvine, USA

11:20 - 11:40

Conference Adjourns
# Day 1 - Monday, 4 October 2010

**08:45 - 09:30** Opening Remarks

**09:30 - 10:15** *Plenary Presentation I* - D. Diamond, Dublin City University, IRELAND  
FROM EVOLUTION TO REVOLUTION IN WATER QUALITY MONITORING: ARE STIMULUS-RESPONSIVE MATERIALS THE KEY TO THE ANALYTICAL PLATFORMS OF THE FUTURE?

**10:15 - 10:45** Break and Exhibit Inspection

**10:45 - 11:30** *Plenary Presentation II* - A. van den Berg, MESA+, University of Twente, THE NETHERLANDS

LABS ON A CHIP FOR HEALTH CARE APPLICATIONS

**12:45 - 13:45** Luncheon and Exhibit Inspection

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## Theatre Layout

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<th>Springerzaal</th>
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<td>Stem Cell Growth &amp;</td>
<td>Session 1B1 DNA Analysis</td>
<td>Session 1D1 Applications</td>
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## Program Tear-Outs

### Day 2 - Tuesday, 5 October 2010

**08:00 - 08:15** Opening Remarks

**08:15 - 09:00** *Plenary Presentation III* - R.F. Ismagilov, University of Chicago, USA  
SLIPCHIP, CHEMISTRODE, AND DROPLET-BASED MICROFLUIDIC TECHNOLOGIES: FROM BASIC SCIENCE TO APPLICATIONS

**10:15 - 10:45** Break and Exhibit Inspection
### DAY 1 - Monday, 4 October 2010 (cont.)

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<td>Neurons</td>
<td>Gene Analysis</td>
<td>Progress in On-Chip Biomolecular Detection</td>
<td>New Materials</td>
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#### POSTER SESSION 1 (Refreshments will be served at 16:15)

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<tr>
<td>RECONSTRUCTION OF MULTICOMPARTMENT ORIENTED NEURAL NETWORKS FOR THE STUDY OF NEURODEGENERATIVE DISEASES</td>
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#### SESSION 1A3 | Membrane-Transport Assays

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<tr>
<td>A MICROFLUIDIC MODEL TO STUDY THE METASTATIC CASCADE: FROM ADHESION TO MIGRATION</td>
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#### SESSION 1B3 | Sample Preparation for Nucleic Acids

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<tr>
<td>ABSOLUTE QUANTIFICATION OF MICRORNA FROM HUMAN AND MOUSE TISSUE RNA USING HIGHLY SELECTIVE ISOTHIOPHORETIC FOCUSING</td>
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#### SESSION 1C3 | Sensing

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<tr>
<td>OPTIMIZATION OF RADIOSYNTHESIS OF MOLECULAR TRACERS IN EWOD MICROFLUIDIC CHIP</td>
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#### SESSION 1D3 | Fuel Cells

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<tr>
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<tbody>
<tr>
<td>A MICROFLUIDIC MICROBIAL FUEL CELL ARRAY FOR ELECTROCHEMICALLY-ACTIVE MICROBE SCREENING AND ANALYSIS</td>
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### DAY 2 - Tuesday, 5 October 2010 (cont.)

<table>
<thead>
<tr>
<th>Session 2A2 (con't.)</th>
<th>Session 2B2 (con't.)</th>
<th>Session 2C2 (con't.)</th>
<th>Session 2D2 (con't.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intracellular Separation</td>
<td>Protein Analysis</td>
<td>Two-Phase Flow</td>
<td>In-Vivo Assays</td>
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#### SESSION 2A2 (con't.)

<table>
<thead>
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<tbody>
<tr>
<td>GENOME-WIDE ANALYSIS OF ELECTRICAL PHENOTYPE USING ISODIELECTRIC SEPARATION</td>
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#### SESSION 2B2 (con't.)

<table>
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<tbody>
<tr>
<td>KILO-TO-GIGA DNA MICROARRAY FOR CONVERSION HIGH-DENSITY PROTEIN MICROARRAY ON-DEMAND</td>
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#### SESSION 2C2 (con't.)

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<tbody>
<tr>
<td>ADVANCED FLUIDIC HANDLING AND USE OF TWO-PHASE FLOW FOR HIGH THROUGHPUT STRUCTURAL INVESTIGATION OF PROTEINS ON A MICROFLUIDIC SAMPLE PREPARATION PLATFORM</td>
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<table>
<thead>
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<tbody>
<tr>
<td>APPLICATION OF AN ENZYMATIC MICROREACTOR COUPLED WITH MICRODIALYSIS FOR CONTINUOUS MONITORING OF SUBCUTANEOUS GLUCOSE IN RATS</td>
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#### SESSION 2A3 | Proteomics

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<tr>
<td>MEASURING THE ACOUSTOPHORETIC CONTRAST FACTOR OF LIVING CELLS IN MICROCHANNELS</td>
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#### SESSION 2B3 | Droplet Array for Bioassays

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<td>DETERMINISTIC LATERAL DISPLACEMENT DEVICE FOR DROPLET SEPARATION BY SIZE – TOWARDS RAPID CLONAL SELECTION BASED ON DROPLET SHRINKING</td>
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#### SESSION 2C3 | Unconventional Separation Approaches

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### Program Tear-Outs

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<td>FLASH CHEMISTRY: FAST CHEMICAL SYNTHESIS IN FLOW MICROREACTORS</td>
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### DAY 3 - Wednesday, 6 October 2010

#### Opening Remarks
08:00 - 08:15

#### Plenary Presentation V - R.H. Austin, Princeton University, USA
IGNITING EVOLUTION WITH MICROFABRICATED FITNESS LANDSCAPES
08:15 - 09:00

<table>
<thead>
<tr>
<th>THEATRE</th>
<th>SPRINGERZAAL</th>
<th>BORGMANZAAL - A</th>
<th>BORGMANZAAL - B</th>
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<tbody>
<tr>
<td>Session 3A1 - Cell Deformability</td>
<td>MULTIPLEX BIOASSAYS USING A SUSPENSION ARRAY PLATFORM: TOWARDS THE HIGH THROUGHPUT SCREENING OF DRUGS TARGETING CANCER STEM CELLS</td>
<td>ENHANCEMENT OF A LABEL-FREE DIELECTROPHORETIC CELL SORTER WITH AN INTEGRATED IMPEDANCE DETECTION SYSTEM</td>
<td>INVITED PRESENTATION THE IMPORTANCE OF WALL CHEMISTRY IN NANOFLUIDICS</td>
</tr>
<tr>
<td>Session 3B1 - Clinical Assays</td>
<td>BACTERIA IN SUBMICRON CHANNELS AND MICROVALVES</td>
<td>DISPOSABLE BIOANALYTICAL MICRODEVICE FOR MONITORING THE EFFECT OF ANTI-PLATELET DRUGS</td>
<td>MINIMIZATION OF INTEGRATED MICROFLUIDIC SYSTEMS</td>
</tr>
<tr>
<td>Session 3C1 - Integrated Microfluidic Systems</td>
<td>MICROFLUIDIC MODEL OF SICKLE CELL PATHOPHYSIOLOGY</td>
<td>HIGH-THROUGHPUT CIRCULATING TUMOR CELLS (CTCs) ISOLATION USING INERTIAL FORCES</td>
<td>CONCENTRATION DEPENDENCE OF STEERN LAYER CAPACITANCES AND SURFACE EQUILIBRIUM CONSTANTS IN SILICA-BASED NANOFLUIDIC CHANNELS</td>
</tr>
<tr>
<td>Session 3D1 - Nanofluidics</td>
<td>DEFORMATION CYTOMETRY: HIGH-THROUGHPUT, CONTINUOUS MEASUREMENT OF CELL MECHANICAL PROPERTIES IN EXTENSIONAL FLOW</td>
<td>MICROSCALE CONTROLLED CONTINUOUS CELL CULTURE</td>
<td>INVITED PRESENTATION ELECTROCHEMICAL NANOFLUIDICS: THE MESOSCOPIC LIMIT</td>
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#### 10:15 - 10:45 Break and Exhibit Inspection

#### Session 3A2 - Cell Analysis 1
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<tr>
<td>INVITED PRESENTATION VISUALIZING VIRAL FUSION AT THE SINGLE-PARTICLE LEVEL IN MICROCHANNELS</td>
<td>QUANTIFICATION OF AMINO ACIDS IN BLOOD USING DIGITAL MICROFLUIDICS</td>
<td>PRESSURE MAPPING OF MICROFLUIDIC FLOWS WITH COLORIMETRIC PRESSURE SENSING PARTICLES</td>
</tr>
</tbody>
</table>

### DAY 4 - Thursday, 7 October 2010

#### Awards Ceremony 2
08:00 - 08:45

**Pioneers in Miniaturization Prize** - sponsored by Lab on a Chip (Royal Society of Chemistry) and Corning Inc.

**Widmer Poster Award** - sponsored by Lab on a Chip (Royal Society of Chemistry)

**Young Researcher Poster Award** - sponsored by The Society for Chemistry and Micro-Nano Systems (CHEMINAS)

**Art in Science Award** - sponsored by National Institute of Standards and Technology (NIST) and Lab on a Chip (Royal Society of Chemistry)

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<td>MULTIPLEX BIOASSAYS USING A SUSPENSION ARRAY PLATFORM: TOWARDS THE HIGH THROUGHPUT SCREENING OF DRUGS TARGETING CANCER STEM CELLS</td>
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<td>INVITED PRESENTATION THE IMPORTANCE OF WALL CHEMISTRY IN NANOFLUIDICS</td>
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<tr>
<td>Special Focus Session 4B1 - In-Line Analysis in Microreactors</td>
<td>BACTERIA IN SUBMICRON CHANNELS AND MICROVALVES</td>
<td>DISPOSABLE BIOANALYTICAL MICRODEVICE FOR MONITORING THE EFFECT OF ANTI-PLATELET DRUGS</td>
<td>MINIMIZATION OF INTEGRATED MICROFLUIDIC SYSTEMS</td>
</tr>
<tr>
<td>Special Focus Session 4C1 - Electrowetting-Driven Digital Microfluidics</td>
<td>MICROFLUIDIC MODEL OF SICKLE CELL PATHOPHYSIOLOGY</td>
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<tr>
<td>Special Focus Session 4D1 - Business with Microfluidics</td>
<td>DEFORMATION CYTOMETRY: HIGH-THROUGHPUT, CONTINUOUS MEASUREMENT OF CELL MECHANICAL PROPERTIES IN EXTENSIONAL FLOW</td>
<td>MICROSCALE CONTROLLED CONTINUOUS CELL CULTURE</td>
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#### 10:10 - 10:40 Break
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<thead>
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<th>Session 3B2</th>
<th>Session 3C2</th>
<th>Session 3D2</th>
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<tbody>
<tr>
<td>Cell Analysis</td>
<td>Blood Analysis</td>
<td>Microfluidic Circuits</td>
<td>Nanobiotechnology</td>
</tr>
<tr>
<td>11:05 - 11:25</td>
<td>FAST AND SIMPLE: RECONFIGURABLE ELEMENTS AND SOLUTIONS FOR CREATING AND DRIVING FLUIDIC NETWORKS</td>
<td>THE DISASSEMBLY OF A CORE-SATELLITE NANOASSEMBLED SUBSTRATE FOR COLORIMETRIC BIOMOLECULAR DETECTION</td>
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<tr>
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<th>Session 3C3</th>
<th>Session 3D3</th>
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<tbody>
<tr>
<td>Cell Analysis</td>
<td>Assays for Trauma &amp; Disease</td>
<td>Advanced Fluid Handling</td>
<td>Nanobiotechnology Separation</td>
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<tr>
<td>11:45 - 13:00</td>
<td>HIGH-DENSITY ARRAY OF SINGLE CELL TRAPS FOR HIGH-THROUGHPUT IMAGING OF CALCIUM DYNAMICS IN RESPONSE TO OXIDATIVE STRESS</td>
<td>DROPS ON RAILS</td>
<td>SIMULTANEOUS CONCENTRATION AND SEPARATION OF PROTEINS IN NANOCANALS</td>
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<tr>
<td>13:00 - 13:15</td>
<td>BURN INJURY INHIBITS NEUTROPHIL CHEMOTAXIS IN MICROFLUIDIC DEVICES</td>
<td>DROPS ON RAILS</td>
<td>SIMULTANEOUS CONCENTRATION AND SEPARATION OF PROTEINS IN NANOCANALS</td>
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<tr>
<td>16:00 - 16:20</td>
<td>SEPARATION AND DETECTION OF RARE CELLS VIA MULTISTAGE MAGNETIC GRADIENT IN A MICROFLUIDIC DISK</td>
<td>REAL TIME ELECTROCHEMICAL DNA QUANTIFICATION IN A COC LAB ON A CHIP: TOWARDS LOW-COST DIAGNOSIS OF NOSOCOMIAL INFECTIONS</td>
<td>NANOFLUIDIC TOOLS FOR SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td>16:20 - 16:40</td>
<td>ASSESSING THE TRAUMATIC BRAIN INJURY MARKERS S100 AND C-REACTIVE PROTEIN IN HUMAN CEREBROSPINAL FLUID VIA MICROFLUIDIC IMMUNOSUBTRACTION</td>
<td>ON-CHIP POROUS POLYMER MONOLITHS FOR SOLID PHASE EXTRACTION USING DIGITAL MICROFLUIDICS</td>
<td>ORDER AND DISORDER IN NANOPOROUS MEDIA CONTROLS DNA SEPARATION EFFICIENCY</td>
</tr>
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<td>17:00 - 17:20</td>
<td>SICKLING RED BLOOD CELLS IN DROPLET ARRAYS</td>
<td>SIMULTANEOUS CONCENTRATION AND SEPARATION OF PROTEINS IN NANOCHANNELS</td>
<td>NANOFLUIDIC TOOLS FOR SYNTHETIC BIOLOGY</td>
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<tr>
<td>Tissue Models and Analysis</td>
<td>Chemistry at “Small Scale”</td>
<td>Cell Encapsulation in Droplets</td>
<td>Microfluidics Pure and Simple</td>
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<tr>
<td>10:40 - 11:00</td>
<td>USING STRUCTURED MICROFLOWS TO SYNTHESIZE FUNCTIONAL PARTICLES</td>
<td>A PULSE LASER-DRIVEN MICROFLUIDIC DEVICE FOR ULTRA-FAST DROPLET GENERATION ON DEMAND AND SINGLE-CELLS ENCAPSULATION</td>
<td>PHONONIC CRYSTAL METAMATERIALS FOR FREQUENCY TUNABLE MICROFLUIDIC FUNCTIONS USING SURFACE ACOUSTIC WAVES</td>
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<tr>
<td>11:00 - 11:20</td>
<td>MICROFLUIDIC INTERFACE DEVICES FOR IN VIVO ANALYSIS OF NEURAL CELLS USING 2-PHOTON LASER SCANNING MICROSCOPY</td>
<td>PHONONIC CRYSTAL METAMATERIALS FOR FREQUENCY TUNABLE MICROFLUIDIC FUNCTIONS USING SURFACE ACOUSTIC WAVES</td>
<td>DYNAMIC PICO-LITER BUBBLE MANIPULATION VIA TIOPC-BASED LIGHT-INDUCED DIELECTROPHORESIS</td>
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<td>11:20 - 11:40</td>
<td>PERFUSION-BASED MICROFLUIDIC DEVICE FOR THREE-DIMENSIONAL DYNAMIC PRIMARY HUMAN HEPATOCYTE CELL CULTURE IN THE ABSENCE OF BIOLOGICAL OR SYNTHETIC MATRICES OR COAGULANTS</td>
<td>MICROFLUIDIC DEVICE FOR SINGLE-CELL ENCAPSULATION BY RANDOM BREAKUP AND SORTING OF MICRO-DROPLETS</td>
<td>DYNAMIC PICO-LITER BUBBLE MANIPULATION VIA TIOPC-BASED LIGHT-INDUCED DIELECTROPHORESIS</td>
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<td>11:40 - 12:00</td>
<td>FINE REGULATION OF POLARITY IN A HEPATOCYTE CULTURE UTILIZING OXYGEN-PERMEABLE MEMBRANES AND MICROPATERNED COLLAGEN GEL</td>
<td>HIGH EFFICIENCY CELL ENCAPSULATION UTILIZING NOVEL ON-DEMAND DROPLET GENERATION SCHEME AND IMPEDANCE-BASED DETECTION</td>
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### Program Tear-Outs

**Session 3A2**
- Cancer Cell Assays by Use of ImmunoCapture, Subcellular Imaging, and Programmed Cell Release in GEDI Microdevices
- Microfluidic Device to Enable Functional Assays of Circulating Tumor Cell Behavior and Heterogeneity

**Session 3B2**
- High-Throughput Blood Analysis on a Chip Using Lenegless Digital Holography
- Back-to-Back Integrated Nanowire Biosensor with Microfiorlation Device for Application to the Cardiac Biomarker Detection from Blood Sample

**Session 3C2**
- Fast and Simple: Reconfigurable Elements and Solutions for Creating and Driving Fluidic Networks
- Spatially Resolved Pressure and Flow Metering in Microfluidic Systems Using Poly electrolyte Hydrogels

**Session 3D2**
- The Disassembly of a Core-Satellite Nanoassembled Substrate for Colorimetric Biomolecular Detection

**Session 3A3**
- High-Density Array of Single Cell Traps for High-Throughput Imaging of Calcium Dynamics in Response to Oxidative Stress
- Separation and Detection of Rare Cells via Multistage Magnetic Gradient in a Microfluidic Disk
- Sickling Red Blood Cells in Droplet Arrays

**Session 3B3**
- Burn Injury Inhibits Neutrophil Chemotaxis in Microfluidic Devices
- Real Time Electrochemical DNA Quantification in a CoC Lab on a Chip: Towards Low-Cost Diagnosis of Nosocomial Infections
- Assessing the Traumatic Brain Injury Markers S100 and C-Reactive Protein in Human Cerebrospinal Fluid Via Microfluidic Immunosubtraction

**Session 3C3**
- Dips on Rails
- Biologically Inspired Bidirectional Fluidic Diode
- On-Chip Porous Polymer Monoliths for Solid Phase Extraction Using Digital Microfluidics

**Session 3D3**
- Simultaneous Concentration and Separation of Proteins in Nanochannels
- NanoFluidic Tools for Synthetic Biology
- Order and Disorder in Nanoporous Media Controls DNA Separation Efficiency
Final Program

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