



Final Program

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μTAS 2010 Program at a Glance

Sunday	16:30 - 19:30	Conference Registration and Check-In			
	17:00 - 19:00	Wine & Cheese Welcome Reception			
Monday	07:00 - 18:00	Registration			
	08:45 - 09:30	Opening Remarks			
	09:30 - 10:15	PLENARY I - Dermot Diamond, <i>Dublin City University, IRELAND</i>			
	10:15 - 10:45	Break and Exhibit Inspection			
	10:45 - 11:30	PLENARY II - Albert van den Berg, <i>University of Twente, THE NETHERLANDS</i>			
		THEATRE	SPRINGERZAAL	BORGMANZAAL - A	BORGMANZAAL - B
	11:45 - 12:45	Session 1A1 Stem Cell Growth & Stimulation	Session 1B1 DNA Analysis	Session 1C1 Point-of-Care Diagnostics	Session 1D1 Applications of Advanced/Smart Materials
	12:45 - 13:45	Luncheon and Exhibit Inspection			
	13:45 - 14:45	Session 1A2 Neurons	Session 1B2 Gene Analysis	Session 1C2 Progress in On-Chip Biomolecular Detection	Session 1D2 New Materials
	14:45 - 16:45	Poster Session 1			
16:45 - 17:45	Session 1A3 Membrane-Transport Assays	Session 1B3 Sample Preparation for Nucleic Acids	Session 1C3 Sensing	Session 1D3 Fuel Cells	
Tuesday	08:00 - 08:15	Opening Remarks			
	08:15 - 09:00	PLENARY III - Rustem F. Ismagilov, <i>University of Chicago, USA</i>			
	09:15 - 10:15	Session 2A1 Cell Pairing	Session 2B1 Fixed Cells & Tissue	Session 2C1 Nucleic Acid Amplification	Session 2D1 Drug Screening
	10:15 - 10:45	Break and Exhibit Inspection			
	10:45 - 11:45	Session 2A2 Intrinsic Cell Separation	Session 2B2 Protein Analysis	Session 2C2 Two-Phase Flow	Session 2D2 <i>In-Vivo</i> Assays
	11:45 - 13:00	Luncheon and Exhibit Inspection			
	13:00 - 13:45	PLENARY IV - Jun-Ichi Yoshida, <i>Kyoto University, JAPAN</i>			
	13:45 - 13:50	Awards Ceremony 1			
	14:00 - 16:00	Poster Session 2			
	16:00 - 17:00	Session 2A3 Characterization of Intrinsic Cell Properties	Session 2B3 Proteomics	Session 2C3 Droplet Array for Bioassays	Session 2D3 Unconventional Separation Approaches
Wednesday	08:00 - 08:15	Opening Remarks			
	08:15 - 09:00	PLENARY V - Robert H. Austin, <i>Princeton University, USA</i>			
	09:15 - 10:15	Session 3A1 Cell Deformability	Session 3B1 Clinical Assays	Session 3C1 Integrated Microfluidic Systems	Session 3D1 Nanofluidics
	10:15 - 10:45	Break and Exhibit Inspection			
	10:45 - 11:45	Session 3A2 Cell Analysis I	Session 3B2 Blood Analysis	Session 3C2 Microfluidic Circuits	Session 3D2 Nanobiotechnology
	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 VI - Petra Schwillie, <i>University of Dresden, GERMANY</i>			
	14:00 - 16:00	Poster Session 3			
	16:00 - 17:00	Session 3A3 Cell Analysis II	Session 3B3 Assays for Trauma & Disease	Session 3C3 Advanced Fluid Handling	Session 3D3 Nanobiotechnology Separation
	18:30 - 22:00	Conference Banquet at Martinikerk (Martin's Church) the oldest church in Groningen			
Thursday	08:00 - 08:45	Awards Ceremony 2			
	09:00 - 10:10	Special Focus Session 4A1 Tissue Engineering	Special Focus Session 4B1 In-Line Analysis in Microreactors	Special Focus Session 4C1 Electrowetting-Driven Digital Microfluidics	Special Focus Session 4D1 Business with Microfluidics
	10:10 - 10:40	Break			
	10:40 - 11:40	Session 4A2 Tissue Models & Analysis	Session 4B2 Chemistry at "Small Scale"	Session 4C2 Cell Encapsulation in Droplets	Session 4D2 Microfluidics Pure and Simple



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Technical Program:

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Monday - Posters	20
Monday - Sessions	30
<small>1A3, 1B3, 1C3, 1D3</small>	
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<small>2A1, 2B1, 2C1, 2D1, 2A2, 2B2, 2C2, 2D2</small>	
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<small>2A3, 2B3, 2C3, 2D3</small>	
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<small>3A3, 3B3, 3C3, 3D3</small>	
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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 Veyport

P.S. For the linguists or just plain curious among you, Groningen is pronounced **groh**-ning-uhn, or **khroh**-ning-uhn 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
Concurrent Sessions A	Theatre
Concurrent Sessions B	Springerzaal
Concurrent Sessions C	Borgmanzaal - A
Concurrent Sessions D	Borgmanzaal - B
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.

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.

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



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.





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)
Martinierkhof 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 Martinierkhof (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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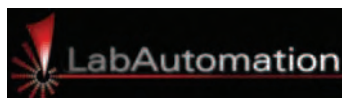
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EXHIBITORS

Exhibit Hours

Monday, 4 October	07:00 - 18:00	Wednesday, 6 October	07:30 - 17:15
Tuesday, 5 October	07:30 - 17:15	Thursday, 7 October	07:30 - 11:00

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Booth

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Biomicrofluidics is an online, freely available journal with content devoted to novel microfluidic and nanofluidic fundamentals, techniques and applications for diagnostic, medical, biological, pharmaceutical, environmental, and chemical applications. Biomicrofluidics also features special topic sections that highlight selected areas of current interest in the field of biomicrofluidics. The journal recently introduced the new Fabrications and Laboratory Methods section, which provides a strong reference point for researchers interested in developing lab-on-a-chip and related technologies. You'll find a helpful listing of open positions at universities and laboratories worldwide in our Featured Jobs section, and you can browse through our Video Gallery, where you'll find an engaging collection of videos from BMF articles.

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Fluigent conceives, develops, manufactures and markets innovative instruments, diagnostic kits and building blocks for Life Science and Microfluidics such as diagnosis, bioanalytical applications and nanotechnologies. Fluigent range of micro fluidic flow control systems, based on a proprietary FASTAB™ technology, open unbounded routes to various fundamental studies in micro or nano hydrodynamics, nano liter dispersing, fast mixing, bioassays, hybridization arrays, lab-on chip electrophoresis, micro-TAS, perfusion and accurate control of cells environment, flow cytometry, combinatorial chemistry, diagnosis...

Future Chemistry **13**
Toernooiveld 100
6525 EC Nijmegen THE NETHERLANDS
phone: +31-24-711-4029
fax: +31-24-890-1446
www.futurechemistry.com

FutureChemistry is a worldwide technology leader in flow chemistry. We develop, implement and sell microreactor hardware and procedures for optimising and screening chemical reactions and processes. These are important laboratory tools for every chemist. FutureChemistry develops its products from the customer's perspective and has in-house expertise for that. FutureChemistry has selected the FlowStart B-200 for the MicroTas 2010 exhibition. With the FlowStart, you can start working with flow chemistry today. It is a complete package, including advanced fluidic interfacing, temperature controller, pumps and all connections and tubings.

IOP Publishing **10**
Dirac House, Temple Back
Bristol, BS1 6BE UK
phone: +44-117-929-7481
fax: +44-117-929-4318
www.iop.org

Published by IOP Publishing, Journal of Micromechanics and Microengineering covers all aspects of micro structures, devices and systems, including miniaturised systems for chemistry and life sciences. The journal aims to highlight the link between fabrication technologies and their capacity to create novel devices. Free sample copies of JMM and other related journals will be available on our stand (10).

Lab on a Chip (Royal Society of Chemistry) **28**
Thomas Graham House, Milton Road Science Park
Cambridge, CB4 0WF UK
phone: +44-1233-43-2127
fax: +44-1223-42-0247
<http://pubs.rsc.org/>

Lab on a Chip provides a unique forum for the publication of significant and original work related to miniaturisation (on or off chips) at the micro- and nano-scale across a variety of disciplines including: chemistry, biology, bioengineering, physics, electronics, clinical/medical science, chemical engineering and materials science, which is likely to be of interest to the multidisciplinary community that the journal addresses.

Labsmith, Inc. **23**
4659 Las Positas Road, Suite C
Livermore, CA 94551 USA
phone: 1-925-292-5161
fax: 1-925-454-9487
www.labsmith.com

LabSmith, Inc., develops and builds laboratory tools that further the art of research. LabSmith products control the often exasperating aspects of experimentation, including timing, synchronization, high voltage and current sourcing, fluid routing and event capture. We craft rugged, innovative, and affordable solutions to everyday lab chores, so that you can focus on science. Scientists use LabSmith equipment for everything from sample preparation and on-chip separations to imaging. Visit us at www.labsmith.com.

Lambert Instruments **5**
Oosteinde 16
9301 ZP Roden THE NETHERLANDS
phone: +31-50-501-8461
fax: +31-50-5010034
www.lambert-instruments.com

Lambert Instruments offers solutions for image detection at low light levels for the life and physical sciences. Our intensified high-speed cameras are designed for low light level applications such as fluorescence imaging of tissues and cells and low intensity particle image velocimetry (PIV). We also specialize in modulated intensified camera systems for fluorescence lifetime imaging microscopy (FLIM), used for example in cell-biology and material science, and optical coherence tomography (OCT).



EXHIBITORS (cont.)

Exhibitor

Booth

LioniX BV **7**
De Veldmaat 10
7522 NM Enschede THE NETHERLANDS
phone: +31-53-489-3827
fax: +31-53-201-1303
www.lionixbv.nl

LioniX BV, part of a Micro/Nano Technology company group of 70 people, is a global leading provider in development and production for its (OEM) customers in Life Sciences, Process Control and Space. Key competences are integrated optics, microfluidics and related surface functionalization, giving an unrivalled position in the area of (bio)chemical analysis and processing.

MESA+ Institute for Nanotechnology **21**
P.O. Box 217
7500 AE Enschede THE NETHERLANDS
phone: +31-53-489-2715
fax: +31-53-489-2575
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.)

Exhibitor

Booth

MinacNed **25**
Dodeweg 6b
3830 AK Leusden THE NETHERLANDS
phone: +31-33-465-7505
fax: +31-33-461-6638
www.minacned.nl

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.

OAI **15**
685 River Oaks Parkway
San Jose, CA 95134 USA
phone: 1-408-323-0600
fax: 1-408-433-9904
www.oainet.com

OAI offers Front & Backside Mask Aligners, Collimated UV Light Sources, a rapid prototyping process (CLiPP) for making Microfluidic Devices, an economic option for Nanoimprinting & 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.

Ocean Optics **26**
Geograaf 24
6921 EW Duiven THE NETHERLANDS
phone: +026-319-0500
fax: +026-319-0505
www.oceanoptics.eu

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.

Philips Applied Technologies **2-11**
High Tech Campus 7
5656 AE Eindhoven THE NETHERLANDS
phone: +31-40-27-48425
fax: +31-40-27-46322
www.apptech.philips.com

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.

Philips Research MiPlaza **9**
High Tech Campus 4 (Room 1.218)
5656 AE Eindhoven THE NETHERLANDS
phone: +31-40-27-47896
fax:
www.miplaza.com

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.

Scienion AG **8**
Volmerstraße 7b
Berlin, D-12489 GERMANY
phone: +49-30-6392-1700
fax: +49-30-6392-1701
www.scienion.com

SCIENION 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.



EXHIBITORS (cont.)

Exhibitor

Booth

Takasago Electric, Inc......

27

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.....

4

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

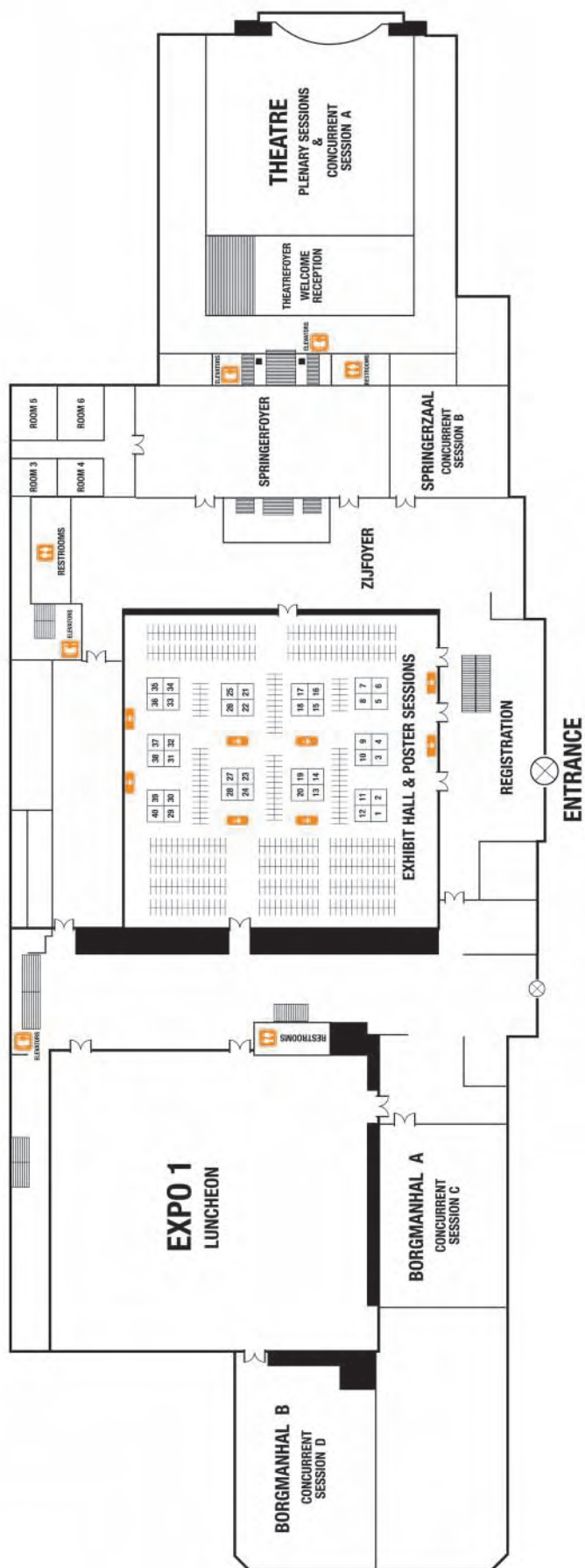




EXHIBIT HALL & POSTER SESSIONS FLOORPLAN



M12A	T13A	W39A	T37A	M60A	T61A	W2C	W3C
W13A	W14A	M36A	M37A	W65A	W66A	M2B	M3B
T12A	M13A	T36A	T38A	T60A	M61A	T1C	T2C
M11A	T14A	W38A	W40A	M59A	T62A	W1C	W4C
W12A	W15A	M35A	M38A	W64A	W67A	M1B	M4B
T11A	M14A	T35A	T39A	T59A	M62A	T7B	T3C
M10A	T15A	W37A	W41A	M58A	T63A	W8B	W5C
W11A	W16A	M34A	M39A	W63A	W68A	M82A	M5B
T10A	M15A	T34A	T40A	T58A	M63A	T6B	T4C
M9A	T16A	W36A	W42A	M57A	T64A	W7B	W6C
W10A	W17A	M33A	M40A	W62A	W69A	M81A	M6B
T9A	M16A	T33A	T41A	T57A	M64A	T5B	T5C
M8A	T17A	W35A	W43A	M56A	T65A	W6B	W7C
W9A	W18A	M32A	M41A	W61A	W70A	M80A	M7B
T8A	M17A	T32A	T42A	W60A	M65A	T4B	M1C
M7A	T18A	W34A	W44A	M55A	T66A	W5B	T6C
W8A	W19A	M31A	M42A	T56A	W71A	M79A	W8C
T7A	M18A	T31A	T43A	W59A	M66A	T3B	M2C
M6A	T19A	W33A	W45A	M54A	T67A	W4B	T7C
W7A	W20A	M30A	M43A	T55A	W72A	M78A	W9C
T6A	M19A	T30A	T44A	W58A	M67A	T2B	M3C
M5A	T20A	W32A	W46A	M53A	T68A	W3B	T8C
W6A	W21A	M29A	M44A	T54A	W73A	M77A	W10C
T5A	M20A	T29A	T45A	W57A	M68A	T1B	M4C
W5A	T21A	W31A	W47A	M52A	T69A	W2B	T9C
W4A	W22A	M28A	W48A	T53A	W74A	M76A	W11C
T4A	M21A	T28A	T46A	W56A	M69A	T77A	M5C
M4A	T22A	W30A	W49A	M51A	T70A	W1B	T10C
W3A	W23A	M27A	M45A	T52A	W75A	M75A	W12C
T3A	M22A	T27A	T47A	W55A	M70A	T76A	M6C
M3A	T23A	W29A	W50A	M50A	T71A	W80A	T11C
W2A	W24A	T26A	M46A	T51A	W76A	T75A	W13C
T2A	M23A	W28A	T48A	W54A	M71A	W79A	M7C
M2A	T24A	M26A	W51A	M49A	T72A	M74A	T12C
W1A	W25A	T25A	M47A	T50A	W77A	T74A	W1D
T1A	M24A	W27A	T49A	W53A	M72A	W78A	M8C
M1A	W26A	M25A	W52A	M48A	T73A	M73A	W2D



EXHIBIT HALL & POSTER SESSIONS FLOORPLAN

W33D	M7E
T27D	W11E
W34D	T7E
M28D	M6E
T28D	W10E
W1E	T6E
M29D	M5E
T29D	W9E
W2E	T5E
M30D	M4E
T30D	W8E
W3E	T4E
M31D	M3E
T31D	W7E

W4E	T3E
M32D	M2E
T32D	W6E
W5E	M1E
M33D	T2E
T1E	M34D

W12E	M1G
M8E	W5G
T8E	T1G
W13E	M21F
M9E	W4G
T9E	T20F
W1F	M20F
M10E	W3G
T10E	T19F
W2F	M19F
M11E	W2G
T11E	T18F
W3F	M18F
M12E	W1G
T12E	T17F
W4F	M17F
M1F	W19F
T13E	T16F
W5F	M16F
M2F	T15F

W6G	T7H
T2G	W9H
M2G	T6H
W7G	W8H
T3G	T5H
M3G	M7H
W8G	W7H
T4G	T4H
M4G	M6H
W9G	W6H
T5G	T3H
M5G	M5H
W10G	W5H
T6G	T2H
M6G	M4H
W11G	T1H
T7G	M3H
M7G	W4H
W12G	T23G
T8G	M2H



FOOD SERVICE



FOOD SERVICE



FOOD SERVICE

28	27
24	23



FOOD SERVICE

26	25
22	21

M13D	T26D
T12D	W32D
W17D	T25D
M14D	M27D
T13D	T24D
W18D	W31D
M15D	M26D
T14D	T23D
W19D	W30D
M16D	M25D
T15D	T22D
W20D	W29D

M17D	M24D
T16D	W28D
W21D	T21D
M18D	M23D
T17D	W27D
W22D	T20D
M19D	M22D
T18D	W26D
W23D	T19D
M20D	M21D
W24D	W25D



FOOD SERVICE

20	19
13	14



FOOD SERVICE

18	17
15	16

W3D	M12D
M9C	W16D
T13C	T11D
W4D	M11D
M10C	W15D
T1D	T10D
W5D	M10D
M1D	W14D
T2D	T9D
W6D	M9D
M2D	W13D
T3D	T8D
W7D	W12D
M3D	T7D

M4D	M8D
T4D	W11D
W8D	M7D
M5D	T6D
T5D	M6D
W9D	W10D

T1F	T14F
W6F	M15F
M3F	W18F
T2F	T13F
W7F	M14F
M4F	W17F
T3F	T12F
W8F	M13F
M5F	W16F
T4F	T11F
W9F	M12F
M6F	W15F
T5F	T10F
W10F	M11F
M7F	W14F
T6F	T9F
W11F	M10F
M8F	W13F
T7F	T8F
W12F	M9F

W13G	T22G
T9G	M1H
W14G	W3H
M8G	T21G
W15G	M20G
T10G	T20G
M9G	M19G
W16G	W2H
T11G	T19G
M10G	M18G
W17G	W1H
T12G	T18G
M11G	M17G
W18G	T17G
T13G	M16G
M12G	W21G
W19G	T16G
T14G	M15G
M13G	T15G
W20G	M14G

12	11
1	2

10	9
3	4

8	7
5	6

FOOD SERVICE



FOOD SERVICE







TECHNICAL PROGRAM INFORMATION

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 | C = Borgmanzaal - A |
| B = Springerzaal | 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

08:45 - 09:30

Opening Remarks

09:30 - 10:15

Plenary Presentation I - Chair: S. Verpoorte, University of Groningen, THE NETHERLANDS

FROM EVOLUTION TO REVOLUTION IN WATER QUALITY MONITORING: ARE STIMULUS-RESPONSIVE MATERIALS THE KEY TO THE ANALYTICAL PLATFORMS OF THE FUTURE?

D. Diamond¹, S. Anastasova-Ivanova¹, A. Radu¹, R. Byrne¹, F.B. Lopez¹, U. Mattinen², J. Bobacka², and A. Lewenstam²

¹Dublin City University, IRELAND and ²Abo Akademi University, FINLAND

10:15 - 10:45

Break and Exhibit Inspection

10:45 - 11:30

Plenary Presentation II - Chair: A. Manz, KIST Europe GmbH, GERMANY

LABS ON A CHIP FOR HEALTH CARE APPLICATIONS

A. van den Berg

MESA+, University of Twente, THE NETHERLANDS

THEATRE

Session 1A1

Stem Cell Growth and Stimulation

CHAIR: K.-Y. Suh, Seoul National University, SOUTH KOREA

SPRINGERZAAL

Session 1B1

DNA Analysis

CHAIR: P. Onck, University of Groningen, THE NETHERLANDS

11:45 - 12:05

MICROFLUIDIC SPATIAL CONTROL OF STEM CELL DIFFERENTIATION

J. Kawada^{1,3}, H. Kimura^{1,3}, H. Akutsu^{2,3}, Y. Sakai^{1,3}, and T. Fujii^{1,3}

¹University of Tokyo, JAPAN, ²National Research Institute for Child Health and Development, JAPAN, and ³Japan Science and Technology Agency (JST), JAPAN

BIO-CHEMICAL REACTION ENHANCEMENT USING MAGNETIC AXIS CONTROLLED SPINNING MICROPARTICLES WITH STRUCTURAL COLOR BARCODE

H. Lee, H. Kim, J. Kim, J. Kim, and S. Kwon

Seoul National University, SOUTH KOREA

12:05 - 12:25

MULTIPLEX MICROFLUIDIC PERFUSION IDENTIFIES SHEAR STRESS MECHANOSENSING MEDIATORS IN MOUSE EMBRYONIC STEM CELLS

Y.C. Toh and J. Voldman

Massachusetts Institute of Technology, USA

ON-CHIP CONTINUOUS FLOW INTERACTION STUDIES OF DNA AND PROTEIN COMPLEXED DNA

M. Everwand, D. Anselmetti, and J. Regtmeier

Bielefeld University, GERMANY

12:25 - 12:45

A MICROFLUIDIC DEVICE FOR CHEMICAL AND MECHANICAL STIMULATION OF MESENCHYMAL STEM CELLS

H.W. Wu¹, C.C. Lin¹, S.M. Hwang², and G.B. Lee¹

¹National Cheng Kung University, TAIWAN and

²Food Industry Research and Development Institute, TAIWAN

A NEW SIGNAL-ON ELECTROCHEMISTRY-BASED DETECTION PLATFORM FOR DNA AND POLYMERASE ENZYME ON A MICROCHIP WITHOUT PROBE IMMOBILIZATION CHEMISTRY

X. Luo and I.-M. Hsing

Hong Kong University of Science and Technology, HONG KONG

12:45 - 13:45

Luncheon and Exhibit Inspection

Session 1A2

Neurons

CHAIR: P. Renaud, Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

Session 1B2

Gene Analysis

CHAIR: D. DeVoe, University of Maryland, USA

13:45 - 14:05

DIRECTED GROWTH OF RAT HIPPOCAMPAL NEURONS IN MICROFLUIDIC CULTURE WITHOUT SURFACE PATTERNING OR CHEMICAL GRADIENTS

A.C. Barbati¹, C. Fang², G.A. Banker², and B.J. Kirby¹

¹Cornell University, USA and ²Oregon Health and Sciences University, USA

DROPLET-BASED MICROFLUIDICS FOR QUANTITATIVE CELL-BASED REPORTER GENE ASSAYS

J.-C. Baret, Y. Beck, I. Billas-Massobrio, D. Moras, and A.D. Griffiths

Centre National de la Recherche Scientifique (CNRS), FRANCE

14:05 - 14:25

RECONSTRUCTION OF MULTICOMPARTMENT ORIENTED NEURONAL NETWORKS FOR THE STUDY OF NEURODEGENERATIVE DISEASES

M. Vignes^{1,2}, B. Deleglise¹, P. Gougis², L. Saias², S. Magnifico¹, L. Malaquin²,

B. Brugg¹, J.L. Viovy², and J.M. Peyrin¹

¹Université Pierre et Marie Curie, FRANCE and ²Curie Institute, FRANCE

COMPLETE SAMPLE-TO-ANSWER GENETIC ANALYSIS OF INFLUENZA H1N1 VIA THE MAGNETIC INTEGRATED MICROFLUIDIC ELECTROCHEMICAL DETECTOR (MIMED)

B.S. Ferguson¹, S.F. Buchsbaum¹, T.-T. Wu², K. Hsieh¹, R. Sun², and H.T. Soh^{1,2}

¹University of California, Santa Barbara, USA and

²University of California, Los Angeles, USA

14:25 - 14:45

NEURON AGGREGATE CULTURE PLATFORM FOR IN VITRO CNS MYELINATION STUDY

J. Park, H. Koito, J. Li, and A. Han

Texas A&M University, USA

INEXPENSIVE AND PORTABLE SAMPLE-IN-ANSWER-OUT GENETIC ANALYSIS SYSTEMS FOR POINT OF CARE APPLICATIONS

M. Behnam, A. Olanrewaju, J. Martinez-Quijada, F. Hejazi, G. Banting, A. Bidulock,

S. Groendahl, R.W. Johnstone, D.M. Glerum, and C.J. Backhouse

University of Alberta, CANADA



BORGMANZAAL - A

Session 1C1 Point-of-Care Diagnostics

CHAIR: M. Khine, *University of California, Irvine, USA*

BORGMANZAAL - B

Session 1D1 Applications of Advanced/Smart Materials

CHAIR: P. Anderson, *Eindhoven University of Technology, THE NETHERLANDS*

11:45 - 12:05

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

12:05 - 12:25

IMMUNOASSAY DEVICE INTEGRATING PLASTIC FLOW-CHANNEL REACTOR AND RFID SENSOR CHIP
Y. Yazawa¹, A. Shiratori¹, S. Funaoka², and M. Fukushima²
¹*Hitachi, Ltd., JAPAN* and ²*Sumitomo Bakelite Co., Ltd., JAPAN*

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

12:25 - 12:45

SENSING SWEAT IN REAL-TIME USING WEARABLE MICRO-FLUIDICS
F. Benito-Lopez, S. Coyle, R. Byrne, and D. Diamond
Dublin City University, IRELAND

12:45 - 13:45

Luncheon and Exhibit Inspection

**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*

13:45 - 14:05

**INVITED PRESENTATION
DROPLET-BASED MICROFLUIDICS FOR THE QUANTITATIVE DETECTION OF RARE MUTATIONS**
D. Pekin¹, Y. Skhiri¹, J.-C. Baret^{1,3}, D. Le Corre², L. Mazutis¹, C. Ben Salem¹, A. El Abed², J.B. Hutchison⁴, D.R. Link⁴, A. Griffiths¹, P. Laurent-Puig², and **V. Taly¹**
¹*Université de Strasbourg, FRANCE*, ²*University 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

14:05 - 14:25

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

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

14:25 - 14:45

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*

TEMPLATE SYNTHESIS IN HYDRODYNAMICALLY-ALIGNED SUPRAMOLECULAR NANO-CHANNELS
D. Kiriya¹, H. Onoe¹, M. Ikeda², I. Hamachi², and S. Takeuchi¹
¹*University of Tokyo, JAPAN* and ²*Kyoto University, JAPAN*



14:45 - 16:45

Poster Session 1

Refreshments will be served at 16:15

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. Kido^{1,2}, R. Peytavi³, R. Sasaki¹, A. Jasinskas¹, P. Felgner¹, and M. Madou^{1,4}

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. Kataoka², R. Nagata², A. Kitayama³, R. Tero⁴, M. Washizu¹, and H. Oana¹

¹University of Tokyo, JAPAN, ²National Institute for Natural Sciences, JAPAN,

³TerABase Inc., JAPAN, and ⁴Institute for Molecular Science, JAPAN

M4A

MECHANICAL CELL LYSIS DEVICE

L.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, I. Tiemann-Boege¹, C. Diskus¹, T. Lederer¹, B. Jakoby¹,

and J. Boulanger²

¹Johannes Kepler University Linz, AUSTRIA and ²Academy of Sciences, AUSTRIA

M6A

TECHICAL REFINEMENTS OF THE MICROFLUIDIC INTEGRATED SELECTIVE ENRICHMENT TARGET FOR IMPROVED SOLID-PHASE EXTRACTION

B. Adler, L. Wallman, G. Marko-Varga, J. Nilsson, T. Laurell, and S. Ekström

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. Puleo¹, L. Zhu¹, K. Shaiikh¹, H. Zeng¹, C. Zhan¹, J. Erickson², F. Ligler², and J. Xie¹

¹GE Global Research, USA and ²U.S. Naval Research Lab, USA

M10A

DIFFERENTIAL WHITE CELL COUNT BY CENTRIFUGAL MICROFLUIDICS

U.Y. Schaff, A.M. Tentori, and G.J. Sommer

Sandia National Laboratories, USA

M11A

HIGH-PERFORMANCE FLOW-THROUGH DNA PURIFICATION ON A MICROFLUIDIC CHIP

M. Karle¹, G. Czilwik¹, J. Miwa², N. Paust^{1,2}, G. Roth^{1,2}, R. Zengerle^{1,2}, and F. von Stetten^{1,2}

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

G.J. Nixon, C.E. Donald, J.F. Huggett, and C.A. Foy

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. Nixon², P.T. Docker¹, J. Greenman¹, J.F. Huggett², 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. Gorkin^{1,3}, K. Abi-Samra^{1,3}, F. Begin², G. Stewart², M. Bergeron², H. Kido¹, and M. Madou^{1,3}

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. Rodriguez¹, and S.G. Mhaisalkar²

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

¹Seoul National University, SOUTH KOREA, ²Kyung Hee University, SOUTH KOREA,

and ³NanoEnTek, Inc., SOUTH KOREA

Life Science Applications

Point-of-Care Testing

M17A

A MICROFLUIDIC SYSTEM FOR THE DETECTION OF ENDOTHELIAL PROGENITOR CELLS IN BLOOD SPECIMENS USING ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY

L.T.-H. Kao¹, S.Y. Ng¹, H.Y.J. Liaw¹, K.Y. Wang¹, J.Z.J. Tan², K.C. Tang¹, J. Reboud¹, and Y. Chen¹

¹Agency for Science, Technology and Research (A*STAR), SINGAPORE and

²Nanyang Technological University, SINGAPORE

M18A

DEVELOPMENT OF A POINT-OF-CARE BOVINE LIVE STOCK HEALTH CONTROL SYSTEM USING ACOUSTOPHORESIS

C. Grenvall¹, P. Augustsson¹, J. Riis Folkenberg², and T. Laurell¹

¹Lund University, SWEDEN and ²FOSS A/S, DENMARK



M19A

ELECTROKINETIC SAMPLE PREPARATION FOR ELECTROCHEMICAL ASSAYS: TOWARDS POINT-OF-CARE DIAGNOSIS OF URINARY TRACT INFECTIONS

M.L.Y. Sin¹, V. Gau², J.C. Liao³, 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. Gärtner¹

¹Microfluidic Chipshop, GERMANY and ²Laborgemeinschaft Elbracht und Carstens, GERMANY

M21A

INTEGRATED POLYMERASE CHAIN REACTION-CAPILLARY ELECTROPHORESIS MICRODEVICE FOR HANWOO ALLELE-SPECIFIC GENOTYPING

J.Y. Choi¹, S.J. Choi¹, Y. Chen¹, H.W. Kim², S.A. You², 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. Sun^{2,4}, A. Hafezi-Moghadam^{2,4}, K. Lashkari³, and S.K. Murthy¹

¹Northeastern University, USA, ²Massachusetts Eye and Ear Infirmary, USA, ³Schepens Eye Research, USA, and ⁴Harvard Medical School, 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. Shimizu², 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 MICROCHANNEL

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

Life Science Applications

Drug Development

M26A

A WHOLE EMBRYO "LAB-ON-CHIP" MICROFLUIDIC DEVICE FOR DEVELOPMENT OF ZEBRAFISH, FLOUR BEETLE AND FRESH WATER SNAIL EMBRYOS

E.M. Wielhouwer¹, S. Ali¹, A. Al-Afandi¹, M.T. Blom², M.B. Olde Riekerink², C. Poelma³, J. Chicken⁴, J. Oonk², E.X. Vrouwe², W. Buesink², R. van 't Oever², and M.K. Richardson¹

¹Leiden University, THE NETHERLANDS, ²Micronit Microfluidics BV, THE NETHERLANDS, ³Delft University of Technology, THE NETHERLANDS, and ⁴FLIR Systems Ltd., UK

M27A

DRUG SCREENING ON FAST KINETICS LIGAND GATED ION-CHANNELS

F. Pettersson¹, D. Granfeldt¹, J. Newall², J. Owen², C. Johansson¹, A. Wylde², J. Sinclair³, Y. Tanaka⁴, M.A. Dabrowski⁵, and M. Karlsson¹

¹Cellectricon, SWEDEN, ²Automation Partnership, UK, ³iNovacia, 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. Legallais¹, H. Benech², and E. Leclerc¹

¹University of Technology, Compiègne, FRANCE and ²Commissariat à l'Énergie Atomique (CEA), FRANCE

M30A

TRANSPORT, LOCALIZATION AND SEPARATION OF CAENORHABDITIS ELEGANS USING ELECTROTAXIS FOR MOVEMENT BASED BEHAVIORAL ASSAYS IN DRUG DISCOVERY

P. Rezaei, S. Salam, P.R. Selvaganapathy, and B.P. Gupta

McMaster University, CANADA

Life Science Applications

Cell Culture

M31A

DYNAMIC CELL PATTERNING WITH MICROPARTICLE 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. Skafté-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 PERSISTENT 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. Nagamine^{1,2}, H. Kaji^{1,2}, M. Kanzaki^{1,2}, and M. Nishizawa^{1,2}

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. Tabata², and Y. Baba^{1,3}

¹Nagoya 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. Bezler², C. Adamczyk¹, P. Gönczy², and P. Renaud¹
¹*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and*
²*Swiss Institute for Experimental Cancer Research (ISREC), SWITZERLAND*

Life Science Applications

Cell Handling & Sorting

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. Tran^{1,2}
¹*Institut Curie, FRANCE and* ²*University of Pennsylvania, USA*

M43A

A NOVEL PARTICLE SEPARATION METHOD USING MULTI-STAGE MULTI-ORIFICE FLOW FRACTIONATION (MS-MOFF)

K. Kwon¹, T.S. Sim², H.-S. Moon¹, J.-G. Lee², J.C. Park², and H.-I. Jung¹
¹*Yonsei University, SOUTH KOREA and*
²*Samsung 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. Tseng^{1,2}
¹*National Tsing Hua University, TAIWAN and* ²*Academia Sinica, TAIWAN*

M45A

ADJUSTABLE PASSBAND PARTICLE SEPARATION DEVICE

J.D. Adams and H.T. Soh
University of California, Santa Barbara, USA

M46A

CELL CYCLE SYNCHRONIZATION OF STEM CELLS USING INERTIAL MICROFLUIDICS

W.C. Lee^{1,2}, A.A.S. Bhagat¹, S. Huang², K.J. Van Vliet^{1,2}, J. Han^{1,2}, and C.T. Lim^{1,2}
¹*Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE,*
²*Massachusetts Institute of Technology, USA, and*
³*National University of Singapore, SINGAPORE*

M47A

CENTRIFUGE-ON-A-CHIP: SELECTIVE CELL TRAPPING WITH RAPID SOLUTION EXCHANGE IN MICROVORTICES

A.J. Mach, J.H. Kim, S.C. Hur, and D. Di Carlo
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. Kurosawa^{1,2}, Y. Sumita¹, M. Gel^{1,2}, H. Oana^{1,2}, H. Kotera^{2,3}, T. Kato³, J. Toguchida³, and M. Washizu^{1,2}
¹*University of Tokyo, JAPAN,*
²*Japan Science and Technology Agency (JST), JAPAN and*
³*Kyoto University, JAPAN*

M50A

FLAGELLA-DRIVEN LIPOSOMES: LIPOSOMES ACTUATED BY ATTACHED FLAGELLA

T. Kurakazu¹, M. Takinoue¹, K. Kuribayashi-Shigetomi¹, and S. Takeuchi^{1,2}
¹*University of Tokyo, JAPAN and*
²*Kanagawa 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. Hsu^{1,3}, C.C. Chen^{2,3}, D. Irimia³, and M. Toner³
¹*National Health Research Institutes, TAIWAN,* ²*National Tsing Hua University, TAIWAN,*
and ³*Massachusetts 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. Bruus², and H.T. Soh¹
¹*University of California, Santa Barbara, USA and*
²*Technical 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
¹*Nagoya University, JAPAN and* ²*Japan Science and Technology Agency (JST), JAPAN*

M57A

SEPARATION AND ENRICHMENT OF MESENCHYMAL STEM CELLS ON A CHIP

Z. Geng^{1,3}, J. Du², L. Zhang¹, C. Yang², W. Wang¹, and Z. Li¹
¹*Peking University, CHINA,* ²*Tsinghua University, CHINA, and* ³*Minzu University, CHINA*

M58A

ULTIMATE HYDROGEL THERMAL-TRANSITION BASED FLOW CONTROL SYSTEM FOR USER-FRIENDLY PARTICLE AND CELL SORTING

H. Sugino¹, K. Ozaki², Y. Shirasaki², T. Aoki², T. Arakawa³, D.H. Yoon², S. Shoji², and T. Funatsu¹
¹*University of Tokyo, JAPAN,* ²*Waseda University, JAPAN, and*
³*Tokyo Medical and Dental University, JAPAN*

Life Science Applications

Cell Analysis

M59A

A Ca²⁺ ION-SELECTIVE ELECTRODE BIOSENSOR IN MICROFLUIDICS TO MONITOR HEPATOCYTE'S ACTIVITIES

J. Park¹, R. Meissner², O. Ducloux¹, H.V. Lintel², P. Renaud², and H. Fujita¹
¹*University of Tokyo, JAPAN and*
²*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND*

M60A

A HIGH THROUGHPUT AND HIGH CONTENT ANALYSIS OF CELL DEATH PROCESSES USING MICROFLUIDIC IMAGE CYTOMETRY (μFIC)

H.J. Yoo¹, J.H. Park¹, M.J. Kim¹, K.H. Lim¹, H.W. Nho¹, S.W. Rhee², and T.H. Yoon¹
¹*Hanyang University, SOUTH KOREA and* ²*Kongju National University, SOUTH KOREA*

M61A

A MICRO-ASPIRATOR CHIP USING VACUUM EXPANDED MICROCHANNELS FOR HIGH-THROUGHPUT MECHANICAL CHARACTERIZATION OF BIOLOGICAL CELLS

W. Kim and A. Han
Texas A&M University, USA



M62A

A NOVEL CYTOMETRIC TOOL FOR STUDYING KINETICS OF NANOPARTICLE UPTAKE INTO CELLS

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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. Freeman²

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M65A

ELECTROPHYSIOLOGICAL RECORDINGS USING SPATIALLY ARRANGED MICROELECTRODE PROBES EMBEDDED INTO 3-D NEURONAL CULTURES

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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. Matsushashi, 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. Ingram¹, Y.-J. Kim^{1,2}, T. Bersano-Begey¹, X. Lou¹, A. Asakura³, and E. Yoon¹

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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

J. Vila-Planas¹, S. Demming², A. Llobera^{1,2}, S. Aliasghar Zadeh², A. Edlich², E. Franco-Lara², R. Radespiel², and S. Büttgenbach²

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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. Romanuik¹, S.M. Grist¹, B.L. Gray¹, N. Gulzar¹, J.K. Scott¹, D. Hohertz¹, K.L. Kavanagh¹, R. Nirwan², C. Hui², A.G. Brolo², and R. Gordon²

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M74A

USING A MICROFABRICATED HYDROGEL TO STUDY THE EFFECT OF EXTRINSIC FACTORS ON DRUG RESPONSE

M. Håkanson¹, S. Kobel², M. Charnley¹, M. Lutolf², and M. Textor¹

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²Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

Life Science Applications

Others

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. Aghdaei, 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. Nagai¹, T. Masuzawa², T. Kimura³, and A. Kishida³

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²Ibaraki University, JAPAN, and

³Tokyo 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. Marty², A. Perea-Gomez³, and C. Gosse¹

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²Laboratoire ESYCOM, FRANCE, and ³Université Paris, FRANCE

M82A

SPATIOTEMPORAL DYNAMICS OF VASOCONSTRICTION IN SMALL ARTERIES

S. Yasotharan¹, S. Pinto¹, J. Yang¹, J. Voigtlaender-Bolz², S.-S. Bolz¹, and A. Günther¹

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Microreaction Applications

Flow Chemistry / Synthesis

M1B

A ROBUST PLATINUM-BASED ELECTROCHEMICAL MICRO FLOW CELL FOR DRYING OF [¹⁸F] FLUORIDE FOR PET TRACER SYNTHESIS

S. Sadeghi¹, J. Ly¹, Y. Deng^{1,2}, 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. Kitamori¹

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

Microreaction Applications

In-Line Analysis / Process Control

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

Microreaction Applications

Integrated Synthesis & Work-up

M6B

LARGE VOLUME SAMPLE-PRETREATMENT MICRODEVICE BASED ON SOL-GEL 3D MATRIX

J.H. Jung, C.J. Lee, M.-A. Woo, M.I. Kim, H.G. Park, and T.S. Seo

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

Microreaction Applications

Others

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

Other Applications

Environment

M1C

A BRIEFCASE-SIZED SYSTEM FOR TOXIN DETECTION USING PLANAR PATCH CLAMP

A. Boussaoud, I. Fonteille, F. Kermarrec, C. Arnoult, 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. Ukita¹, T. Azeta², S. Kondo², C. Kataoka³, S. Yusa², M. Takeo², Y. Takamura¹, and Y. Utsumi²

¹Japan Advanced Institute of Science and Technology (JAIST), JAPAN,

²University of Hyogo, JAPAN, and ³Carbuncle bio-scientech LLC., JAPAN

Other Applications

Separation Science

M4C

ELECTROKINETIC FILTERING ON MAGNETIC FLUID NANO-PILLAR FOR HIGHLY SENSITIVE MICROCHIP ELECTROPHORESIS

F. Kitagawa, T. Samukawa, K. Sueyoshi, and K. Otsuka

Kyoto University, JAPAN

M5C

FREE-FLOW ELECTROPHORESIS WITH ELECTRODE-LESS INJECTION MOULDED CHIPS

S. Köhler¹, H. Becker², V. Beushausen³, E. Beckert⁴, S. Howitz⁵, 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. Gavriilidis

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

Other Applications

Fuel Cells

M9C

AN ABIOTICALLY CATALYZED GLUCOSE FUEL CELL BASED ON DECORATED BUCKYPAPER

L. Hussein and G. Urban

University of Freiburg-IMTEK, GERMANY

Other Applications

Others

M10C

iMICROFLUIDICS: SMARTPHONE CONTROLLED HANDHELD MICROFLUIDIC PLATFORM

J.L. Prieto, R. Lin, M.V. Patel, and A.P. Lee

University of California, Irvine, USA



Microfluidics

Fluid Mechanics & Modeling

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. Yokokawa^{1,2}, 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. Stone², and D. Di Carlo¹
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. Roblin², and A.-M. Haghiri-Gosnet²

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²Centre National de la Recherche Scientifique (CNRS), FRANCE

Microfluidics

Micro Liquid Handling

M7D

A PROGRAMMABLE MICROFLUIDIC SYSTEM FOR SELECTIVE RNA OR DNA EXTRACTION FROM VARIOUS RAW BIOLOGICAL SAMPLES

M. Johnson¹, J. Kim¹, A. Williams², and B. Gale¹
¹University of Utah, USA and ²Integrated Exploration, CANADA

M8D

ACTIVE MICRO FLOW-RATE REGULATION TECHNIQUE BASED ON SOFT MEMBRANE DEFORMATION USING MINIATURIZED ELECTROSMOTIC 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. Odiijk, H.L. de Boer, W. Olthuis, 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. Roth^{1,2}, D. Mark², R. Zengerle^{1,2}, and F. von Stetten^{1,2}

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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. Mueller^{1,2}, D. Mark², M. Rombach^{1,2}, G. Roth^{1,2}, J. Hoffmann¹, R. Zengerle^{1,2}, and F. von Stetten^{1,2}

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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

Microfluidics

Multi-Phase and Digital Microfluidics

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. Takahashi^{1,2}, Y. Sugii^{1,3}, K. Mawatari^{1,3}, and T. Kitamori^{1,3}

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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

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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. Fukuyama 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. Suzuki^{1,2}, and T. Yomo^{1,2}
¹*Japan Science and Technology Agency (JST), JAPAN* and ²*Osaka University, JAPAN*

M25D

THERMOCAPILLARY ACTUATION BY OPTIMIZED RESISTOR PATTERN

B. Selva^{1,3}, I. Cantat², and M.C. Jullien³
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²*University of Rennes, FRANCE*, and
³*Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE*

Microfluidics

Multi-Scale / Integrative Microfluidics

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

HYDRODYNAMIC FOCUSING FOR IMPROVED SENSITIVITY OF AN IMPEDANCE - BASED SENSOR FOR CELL DETECTION AND ANALYSIS

M. Nasir, G. Justin, L.C. Shriver-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 Dulk^{1,2}, K.A. Schmidt¹, R. Gill¹, J.C.B. Jongen^{1,2}, and M.W.J. Prins^{1,2}
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²*Eindhoven University of Technology, THE NETHERLANDS*

M29D

PAIRING BEADS WITH A MEANDER-SHAPED DYNAMIC MICROARRAY DEVICE

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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

Microfluidics

Others

M31D

A BOND-LESS FABRICATION METHOD FOR HOMOGENEOUS POLYMER MICROCHANNEL BY CAPILLARY FORCE LITHOGRAPHY

S.H. Lee, D.H. Kang, H.N. Kim, and K.Y. Suh
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 NANOPOROUS ELECTROSMOTIC PUMPS: EFFECTS OF CONCENTRATION POLARIZATION ZONES SOURCED FROM THE PUMP SUBSTRATE AND ELECTRODES

M.E. Suss, A. Mani, T.A. Zangle, and J.G. Santiago
Stanford University, USA

Nanotechnologies

Nanofluidics

M1E

A COMBINED NANOCOLLOID-NANOCHANNEL PLATFORM FOR SENSITIVE BIOMOLECULAR DETECTION

G. Yossifon¹, S. Basuray², P. Musenheim², T. Haggen², and H.-C. Chang²,
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²*University of Notre Dame, USA*

Nanotechnologies

Nanoengineering

M2E

LARGE-SCALE FABRICATION OF NANOSTRUCTURES USING PDMS-BASED PHASE SHIFT LITHOGRAPHY, AND THEIR APPLICATION TO NANOFUIDICS

Y. Viero^{1,2}, Q. He^{1,2}, L. Mazenq^{1,2}, D. Belharet^{1,2}, and A. Bancaud^{1,2}
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Nanotechnologies

Nanobiotechnology

M3E

A NANOFUIDIC 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. Shinoue¹, J. Shi¹, Y. Chen^{1,2}, and A. Triller¹
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M5E

ELECTROCHEMICAL DETECTION OF ENZYME KINETICS USING A NANOFUIDIC THIN LAYER CELL DEVICE

E.D. Goluch¹, N. Wongrajit¹, P.S. Singh¹, A.W.J.W. Tepper², H.A. Heering², G.W. Canters², and S.G. Lemay³
¹*Delft University of Technology, THE NETHERLANDS*,
²*Leiden University, THE NETHERLANDS*, and
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M6E

LABEL-FREE DETECTION OF BIOMOLECULES WITH NANOWALL ARRAYS

T. Yasui¹, N. Kaji¹, Y. Okamoto¹, M. Tokeshi¹, Y. Horiike², and Y. Baba^{1,3}
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³*National 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. Shi^{1,2}, F. Zhang¹, J. Liu¹, X. Li¹, J. Hu¹, D. Jung², N. Nakatsuji², and Y. Chen^{1,2}
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M9E

SHORTENING THE DIFFUSION LENGTH: REAL-TIME SENSING WITH SINGLE-PIXEL RESOLVED KINETICS USING ROOM-TEMPERATURE BONDED BIOFUNCTIONAL NANOSLITS

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Nanotechnologies

Nanostructured Materials

M10E

MICROFLUIDIC SYNTHESIS OF DESIGNED COLLOIDAL PARTICLES USING STRUCTURED ELASTOMERIC MEMBRANES

J.Y. Sim, J.-H. Choi, J.-M. Lim, and S.-M. Yang

Korea Advanced Institute of Science and Technology (KAIST), 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

M12E

SILICON NANOVLCRO TO ATTACH INORGANIC MICRODEVICES TO BIOLOGICAL MATERIAL

S. Durán¹, S. Novo², M. Fernández-Regúlez¹, M. Duch¹, R. Gómez-Martínez¹, A. San Paulo¹, E. Ibáñez¹, J. Esteve¹, and J.A. Plaza¹

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MEMS & NEMS Technologies

Micro- & Nanomachining

M1F

COMBINED PHOTOLITHOGRAPHY AND EMBOSsing FOR FABRICATION OF MULTILEVEL, FREE STANDING MICROFLUIDIC STRUCTURES

S. Aura and S. Franssila

Aalto University, FINLAND

M2F

EXTENDED TIMOSHENKO BEAM FORMULA FOR CELLULAR CONTRACTION FORCE CALCULATION

P. Du¹, X. Zheng¹, I.K. Lin¹, H. Lu², and X. Zhang¹

¹Boston University, USA and ²University of Texas, Dallas, USA

M3F

FABRICATION OF TRANSPARENT CARBON NANOTUBE FILM PIEZORESISTORS

K. Lee¹, J.A. Lee², K.-C. Lee², and S.S. Lee¹

¹Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and

²Korea Research Institute of Standards and Science (KRISS), SOUTH KOREA

M4F

INKJET PRINTING OF MAGNETIC / NON-MAGNETIC POLYMER MICROFLUIDIC ACTUATORS

D. Liu¹, K. Bastiaansen¹, D. Broer¹, P. Onck², and J. den Toonder^{1,3}

¹Eindhoven University of Technology, THE NETHERLANDS,

²University of Groningen, THE NETHERLANDS, and

³Philips Applied Technologies, THE NETHERLANDS

M5F

NOVEL APPROACH TO PRODUCE NANOPATTERNED TITANIUM IMPLANTS BY COMBINING NANOIMPRINT LITHOGRAPHY AND REACTIVE ION ETCHING

M. Domanski¹, R. Luttge¹, E. Lamers², A.J.A. Winnubst¹, F.X. Walboomers², J.A. Jansen², and J.G.E. Gardeniers¹

¹MESA+, University of Twente, THE NETHERLANDS and

²Radboud University Nijmegen Medical Centre, THE NETHERLANDS

M6F

QUANTITATIVE STUDIES OF LONG-TERM STABLE, TOP-DOWN FABRICATED SILICON NANOWIRE SENSOR

S. Choi and A.P. Pisano

University of California, Berkeley, USA

M7F

ZEOLITE-ENCLOSED MICRO-CAVITIES ON SILICON WAFER FOR CHEMICAL STORAGE

K.F. Lam^{1,2}, W.Y. Lai¹, N.W. Chan¹, and K.L. Yeung¹

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

²University College London, UK

MEMS & NEMS Technologies

Microfluidic Components/Packaging

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

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. Watanabe^{1,3} and S. Takeuchi^{1,2}

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. Kawano¹, K. Kuribayashi-Shigetomi², H. Sasaki¹, and S. Takeuchi²

¹Kanagawa Academy of Science and Technology (KAST), JAPAN and

²University of Tokyo, JAPAN

MEMS & NEMS Technologies

Integration Strategies

M13F

DEVELOPMENT OF A BIOSENSOR CARTRIDGE INTEGRATING ACTIVE MICROFLUIDICS, MEMS SENSOR TECHNOLOGY AND DETECTION ELECTRONICS

P. Ortiz^{1,4}, N. Keegan¹, J. Spoor¹, R. Burnett¹, J. Hedley¹, A. Harris¹, J. Burdess¹, T. Velten², M. Biehl², W. Haberer², M. Solomon³, A. Campitelli³, and C. McNeil¹

¹Newcastle University, UK,

²Fraunhofer Institute for Biomedical Engineering (IBMT), GERMANY,

³MiniFAB Pty Ltd, AUSTRALIA, and

⁴Centro Nacional de Microelectrónica (CNM), SPAIN

M14F

IRREVERSIBLE INTEGRATION OF SU-8 MICROSTRUCTURES INTO PDMS DEVICES

C.G. Sip and A. Folch

University of Washington, USA

MEMS & NEMS Technologies

New Chip Materials

M15F

IMPRINTING AND BONDING OF THE FLOUROELASTOMER VITON FOR MICROFLUIDICS

G. Sharma, L. Klintberg, and K. Hjort

Uppsala University, SWEDEN



M16F

ON-CHIP GAS CONCENTRATION GRADIENT FORMATION USING Poreflon™ AND Neoflon™ 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

K.N. Ren, Y.Z. Zheng, W. Dai, D. Ryan, C.Y. Fung, and H.K. Wu
Hong Kong University of Science and Technology, HONG KONG

MEMS & NEMS Technologies

Surface Modification

M18F

ELECTROCHEMICAL AGAROSE STAMP FOR ADDRESSABLE MICROPATTERNING

S. Sekine¹, S. Nakanishi¹, T. Miyake^{1,2}, K. Nagamine^{1,2}, and M. Nishizawa^{1,2}
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

MEMS & NEMS Technologies

Others

M21F

METAL ION DETECTION OF NOVEL CONJUGATED-POLYMER SENSOR FIBERS FABRICATED WITH 3-D HYDRODYNAMIC FOCUSING

I. Yoo and S. Song
Hanyang University, SOUTH KOREA

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

Imaging & Detection Technologies

Optical

M2G

AN IMPROVED SCANOMETRIC IMMUNOASSAY BASED ON DUAL ENLARGEMENT OF GOLD NANOPARTICLES 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 NANOCHANNEL USING DIFFERENTIAL INTERFERENCE CONTRAST THERMAL LENS MICROSCOPE

H. Shimizu, K. Mawatari, and T. Kitamori
University of Tokyo, JAPAN

M4G

FLUORESCENCE ENHANCEMENT FROM SINGLE DNA MOLECULES CONFINED IN SiO₂ NANOCHANNELS

F. Westerlund^{1,2}, F. Persson^{1,3}, A. Kristensen³, and J.O. Tegenfeldt^{1,4}
¹University of Gothenburg, SWEDEN, ²Chalmers University of Technology, SWEDEN, ³Technical University of Denmark, DENMARK, and ⁴Lund University, SWEDEN

M5G

INTEGRATED ELEKTROKINETIC 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. Mudanyali, C. Oztoprak, S.O. Isikman, I. Sencan, O. Yaglidere, and A. Ozcan
University of California, Los Angeles, USA

M7G

MULTIPLE-INTERNAL-REFLECTION POLY(DIMETHYLSILOXANE) SYSTEMS FOR ON-LINE pH MONITORING

M.J. Lopez-Martinez¹, J. Vila-Planas², S. Demming³, P.P.M.F.A. Mulder¹, S. Büttgenbach³, A. Llobera², and E. Verpoorte¹

¹University of Groningen, THE NETHERLANDS,
²Centro Nacional de Microelectrónica (CNM), SPAIN, and
³Universität Braunschweig, GERMANY

M8G

SMALL, COST-EFFICIENT STOPPED-FLOW DEVICE

M. Ritzi-Lehnert¹, R. Bleul¹, J. Hoeth¹, N. Scharpfenecker¹, I. Frese¹, T.E. Hansen-Hagge¹, F.-J. Meyer-Almes², and K.S. Drese¹

¹Institut fuer Mikrotechnik Mainz GmbH, GERMANY and ²Hochschule Darmstadt, GERMANY

Imaging & Detection Technologies

Electrochemical

M9G

A MULTI-POINT DETECTION SYSTEM WITH ADDRESSABLE ELECTRODE ARRAY DEVICE INCORPORATED WITH IDA ELECTRODES

K. Ino¹, 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 BIOSENSING

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

DESALINATION INTERFACE DEVICE FOR LC-MS USING TiO₂-COATED MAGNETIC MICROPARTICLES

Y. Akiyama¹, Y. Takahashi², I. Akutagawa¹, A. Ono¹, K. Morishima¹, and K. Chiba¹

¹Tokyo University of Agriculture and Technology, JAPAN and ²JEOL Ltd., JAPAN

M13G

LOW-COST MICROFLUIDIC EMITTERS FOR NANO-ELECTROSPRAY IONIZATION-MASS SPECTROMETRY

A.E. Kirby, M.J. Jebrail, H. Yang, and A.R. Wheeler
University of Toronto, CANADA



Imaging & Detection Technologies

Optofluidics

M14G

HIGH THROUGHPUT MELTING CURVE ANALYSIS IN MONOLITHIC SILICON-BASED MICROFLUIDIC DEVICE

J.B.W. Soon¹, P. Neuzil¹, C. Fang¹, J. Reboud¹, C.C. Wong², 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

Imaging & Detection Technologies

Others

M16G

A CRYO-COOLING 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

D. Polling, S.C. Deane, M.R. Burcher, C. Glasse, and C.H. Reccius
 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. Suzuki^{1,2}, T. Matsuura^{1,2}, and T. Yomo^{1,2}
¹Osaka University, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

M20G

SERS DETECTION USING SILVER NANOCUSTER-EMBEDDED POROUS POLYMER MONOLITHS

J. Liu, I. White, and D.L. DeVoe
 University of Maryland, USA

Special Focus Session

Tissue Engineering

M1H

CELL FIBERS: CONSTRUCTION OF CENTIMETER-SCALE 3D TISSUES BY WEAVING

H. Onoe, R. Gojo, Y. Tsuda, D. Kiriya, M. Kato-Negishi, and S. Takeuchi
 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

C.-K. Chin, R.-J. Chen, C.-Y. Fu, H.-Y. Chang, and C.-H. Liu
 National Tsing Hua University, TAIWAN

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

Special Focus Session

Electrowetting-Driven Digital Microfluidics

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





THEATRE

Session 1A3

Membrane-Transport Assays

CHAIR: P. Dittrich, *ETH Zurich, SWITZERLAND*

SPRINGERZAAL

Session 1B3

Sample Preparation for Nucleic Acids

CHAIR: N. Pamme, *University of Hull, UK*

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

¹*University of Groningen, THE NETHERLANDS* and

²*University of California, Berkeley, USA*

ABSOLUTE QUANTIFICATION OF MICRORNA FROM HUMAN AND MOUSE TISSUE RNA USING HIGHLY SELECTIVE ISOTACHOPHORETIC FOCUSING

A. Persat¹, R.R. Chivukula², J.T. Mendell², and J.G. Santiago¹

¹*Stanford University, USA* and ²*Johns Hopkins University, USA*

17:05 - 17:25

DOUBLE-SIDED LIPID-BILAYER MICROCHAMBERS

T. Tonooka¹, M. Takinoue¹, and S. Takeuchi^{1,2}

¹*University of Tokyo, JAPAN* and

²*Kanagawa Academy of Science and Technology, JAPAN*

HIGH-SPEED RNA MICROEXTRACTION TECHNOLOGY USING MAGNETIC OLIGO-dT BEADS AND LATERAL MAGNETOPHORESIS

H. Lee, J. Jung, S.-I. Han, and K.-H. Han

Inje University, SOUTH KOREA

17:25 - 17:45

INDUCTION OF QUORUM SENSING IN MICRODROPLETS BY TRANSPORTING SMALL MOLECULES THROUGH PDMS

J.-U. Shim, S.N. Patil, J.T. Hodgkinson, S.D. Bowden, D.R. Spring, M. Welch,

W.T.S. Huck, F. Hollfelder, and C. Abell

University of Cambridge, UK

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*

BORGMANZAAL - B

Session 1D3 Fuel Cells

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

16:45 - 17:05

OPTIMIZATION OF RADIOSYNTHESIS OF MOLECULAR TRACERS IN EWOD MICROFLUIDIC CHIP

P.Y. Keng, S. Chen, H.-J. Ding, S. Sadeghi, M.E. Phelps, N. Satymurthy, C.-J. Kim, and R.M. van Dam
University of California, Los Angeles, USA

A MICROFLUIDIC MICROBIAL FUEL CELL ARRAY FOR ELECTROCHEMICALLY-ACTIVE MICROBE SCREENING AND ANALYSIS

H. Hou, C.U. Ceylan, L. Li, P. de Figueiredo, and A. Han
Texas A&M University, USA

17:05 - 17:25

ARTIFICIAL GLAND FOR PRECISE RELEASE OF SEMIOCHEMICALS FOR CHEMICAL COMMUNICATION

W.P. Bula¹, N.G. Dimov¹, L. Munoz², A. Guerrero², and J.G.E. Gardeniers¹
¹MESA+, *University of Twente, THE NETHERLANDS* and
²Spanish National Research Council (CSIC), *SPAIN*

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

17:25 - 17:45

HYBRID CHEMICAL AND ELECTRICAL CONTROL OVER INSECT CYBORG AIR VEHICLES

B. Cordovez, A.J. Chung, X.T. Huang, N. Jajuja, and D. Erickson
Cornell University, USA





Tuesday, 5 October 2010

08:00 - 08:15

Opening Remarks

08:15 - 09:00

Plenary Presentation III - Chair: A. Lee, University of California, Irvine, USA

SLIPCHIP, CHEMISTRODE, AND DROPLET-BASED MICROFLUIDIC TECHNOLOGIES: FROM BASIC SCIENCE TO APPLICATIONS
W. Du, L. Li, F. Shen, W. Liu, K.P. Nichols, and R.F. Ismagilov
University of Chicago, USA

THEATRE

Session 2A1 Cell Pairing

CHAIR: S. Takayama, University of Michigan, USA

SPRINGERZAAL

Session 2B1 Fixed Cells and Tissue

CHAIR: S.H. Lee, Korea University, SOUTH KOREA

09:15 - 09:35

PAIRING AND FUSION OF HETEROTYPIC CELLS IN A MICROCHANNEL

N. Sasaki, J.S. Gong, K. Hosokawa, M. Maeda, and Y. Ito
RIKEN, JAPAN

A NOVEL METHOD TO INVESTIGATE PROTEOMIC PROFILING OF CANCERS USING A MICROFLUIDIC IMMUNOHISTOCHEMISTRY SYSTEM

M.S. Kim^{1,2}, S. Kwon¹, E.S. Lee³, 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

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

FAST IMMUNOHISTOCHEMICAL BIOMARKER DETECTION DEVICE FOR CANCER TISSUE SLICES

A.T. Ciftlik¹, B. Song¹, C. Vandevyver¹, J.C. Bünzli¹, H.-A. Lehr², and M.A.M. Gijs¹
¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and
²Université de Lausanne, SWITZERLAND

09:55 - 10:15

SIZE-INDEPENDENT ELECTRO CELL FUSION WITH MASSIVE PARALLELISM

Y. Kimura^{1,2}, Y. Nishigaichi¹, Y. Nakada¹, Y. Mori^{1,2}, H. Iwanari¹, M. Gel^{1,2}, O. Kurosawa^{1,2}, H. Oana^{1,2}, T. Hamakubo¹, H. Kotera^{2,3}, and M. Washizu^{1,2}
¹University of Tokyo, JAPAN, ²Japan Science and Technology Agency (JST), JAPAN, and ³Kyoto University, JAPAN

A HIGH-THROUGHPUT FISH MICROCHIP FOR CLINICAL GENETICS

H. Suzuki¹, D. Hiramaru², K. Terao¹, H. Takao¹, F. Oohira¹, H. Kotera², and T. Suzuki¹
¹Kagawa University, JAPAN and ²Kyoto University, JAPAN

10:15 - 10:45

Break and Exhibit Inspection

Session 2A2 Intrinsic Cell Separation

CHAIR: D. Inglis, Macquarie University, AUSTRALIA

Session 2B2 Protein Analysis

CHAIR: R. Bischoff, University of Groningen, THE NETHERLANDS

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

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

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

KILO-TO-GIGA DNA MICROARRAY FOR CONVERSION HIGH-DENSITY PROTEIN MICROARRAY ON-DEMAND

M. Biyani^{1,2}, S. Sato¹, T. Fujita¹, T. Akagi¹, and T. Ichiki^{1,2}
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. Adams², R. Barnkob¹, H.T. Soh², and H. Bruus¹
¹Technical University of Denmark, DENMARK and
²University of California, Santa Barbara, USA

MICROSCALE ISOELECTRIC FRACTIONATION USING IMMOBILIZED pH-SPECIFIC MEMBRANES FOR MULTI-DIMENSIONAL ANALYSIS

J. Mai, G.J. Sommer, and A.V. Hatch
Sandia National Laboratories, USA



BORGMANZAAL - A

Session 2C1 Nucleic Acid Amplification

CHAIR: X. Xia, Nanjing University, CHINA

BORGMANZAAL - B

Session 2D1 Drug Screening

CHAIR: Z. Brzózka, Warsaw University of Technology, POLAND

09:15 - 09:35

INVITED PRESENTATION

CHALLENGES AND OPPORTUNITIES IN PERSONALIZED MEDICINE

H.R. Stapert¹ and R. Pauwels²

¹Biocartis BV, THE NETHERLANDS and ²Biocartis SA, SWITZERLAND

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

¹Georgia Institute of Technology, USA and ²California Institute of Technology, USA

09:35 - 09:55

RAPID, MULTISTEP DNA HYBRIDISATION IN CONTINUOUS FLOW

M. Vojtišek, A. Iles, and N. Pamme

University of Hull, UK

ON-CHIP PRE-CLINICAL CARDIAC TOXICITY: TESTING COMPOUNDS BEYOND hERG AND QT USING hES/hiPS CARDIOMYOCYTE RE-ENTRY CELL NETWORK MODEL ON A CHIP

K. Yasuda, T. Kaneko, and F. Nomura

Tokyo Medical and Dental University, JAPAN

09:55 - 10:15

AGAROSE DROPLET MICROFLUIDICS FOR HIGHLY PARALLEL AND EFFICIENT EMULSION PCR

C.J. Yang, X. Leng, and W. Zhang

Xiamen University, CHINA

HIGH-THROUGHPUT OF PHOTODYNAMIC THERAPY (PDT) SCREENING FROM MULTIPLE PARAMETER ASSAYS OF 1,000 DIFFERENT CONDITIONS IN A SINGLE CHIP

X. Lou, G. Kim, Y. Koo, R. Kopelman, and E. Yoon

University of Michigan, USA

10:15 - 10:45

Break and Exhibit Inspection

Session 2C2 Two-Phase Flow

CHAIR: J.-L. Viovy, Institut Curie, FRANCE

Session 2D2 In-Vivo Assays

CHAIR: S. Lunte, University of Kansas, USA

10:45 - 11:05

HYDRODYNAMIC PARTICLE CONCENTRATION INSIDE A MICROFLUIDIC PLUG

G.K. Kurup and A.S. Basu

Wayne State University, USA

A SKIN-CONTACT-ACTUATED DISPENSER/PUMP FOR TRANSDERMAL DRUG DELIVERY

C. Mousoulis¹, M. Ochoa¹, D. Papageorgiou², and B. Ziaie¹

¹Purdue University, USA and ²Solid-State Research, Inc., USA

11:05 - 11:25

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. Nielsen^{1,2}, M. Møller², K.N. Toft², J.K. Jacobsen³,
B. Vestergaard², L. Arleth², and J.P. Kutter¹

¹Technical University of Denmark, DENMARK, ²Copenhagen University, DENMARK,
and ³Novo Nordisk A/S, DENMARK

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

3D LIQUID-LIQUID WAVEGUIDES USING TWO FLOW STREAMS BY CENTRIFUGAL FORCE

Y. Yang, C.D. Ohl, H.S. Yoon, and A.Q. Liu

Nanyang Technological University, SINGAPORE

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. Schoonen¹, B.H.C. Westerink¹,
and E. Verpoorte¹

¹University of Groningen, THE NETHERLANDS and

²Brains-on-Line B.V., THE NETHERLANDS



11:45 - 13:00

Lunch and Exhibit Inspection

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

Life Science Applications

Genomics & Proteomics

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. Tanaka^{1,2}, K. Sato^{2,3}, K. Mawatari^{1,3}, Y. Tanaka⁴, M. Nilsson⁴, and T. Kitamori^{1,2}
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. Bois^{1,3}, L. Mahmoudian¹, L. Dauphinot¹, P. Mary², F. Monti², J.-L. Viovy³, P. Tabeling², and M.-C. Potier¹
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

Life Science Applications

Clinical Diagnostics

T6A

A NEW IMMUNOASSAY PLATFORM ON A MICROCHIP UTILIZING YEAST SURFACE DISPLAY AND IMPEDANCE FLOW CYTOMETRY

J. Wang, Y. Guo, K.-L. Chan, and I.-M. Hsing
Hong Kong University of Science and Technology, CHINA

T7A

AN ULTRA-SENSITIVE MICROFLUIDIC IMMUNOASSAY USING LIVING RADICAL POLYMERIZATION AND POROUS POLYMER MONOLITHS

V.V. Abhyankar, A.K. Singh, and A.V. Hatch
Sandia National Laboratories, USA

T8A

BIOASSAY CHIP FOR EVALUATION OF MITOCHONDRIAL MEMBRANE POTENTIAL WITH INTEGRATED ION-SELECTIVE MICROSENSORS

T.-S. Lim, A. Dávila, D.C. Wallace, and P. Burke
University of California, Irvine, USA

T9A

FISH IN CHIPS: MOLECULAR TYPING OF HER-2 BIOMARKER FOR RAPID AND LOW COST CANCER DIAGNOSIS AND TREATMENT SELECTION

K. Perez-Toralla, I. Draskovic, F.-D. Delapierre, S. Miserere, L. Malaquin, J.-L. Viovy, and G. Mottet
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

R. Miyake, S. Okabe, K. Sakamoto, Y. Murakami, and T. Ishikawa
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. Ahn², K. Järås¹, H. Lilja¹, M.J. Jo², C.Y. Jung², O.C. Jeong³, S.Y. Kim², and T. Laurell¹
¹Lund University, SWEDEN, ²Dongguk University, SOUTH KOREA, and ³Inje University, SOUTH KOREA

Life Science Applications

Point-of-Care Testing

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. Sugiura¹, N. Kaji¹, Y. Okamoto¹, M. Tokeshi¹, and Y. Baba^{1,2}
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



T18A

INTEGRATED MICROFLUIDIC LOOP-MEDIATED-ISOTHERMAL-AMPLIFICATION SYSTEM FOR RAPID DIAGNOSIS OF AQUACULTURE VIRUS

C.-H. Wang, K.-Y. Lien, T.-Y. Wang, T.-Y. Chen, and G.-B. Lee
National Cheng Kung University, TAIWAN

T19A

LARGE-VOLUME CENTRIFUGAL MICROFLUIDIC DEVICE FOR WHOLE BLOOD SAMPLE PREPARATION

M. Amasia¹, J. Siegrist¹, and M. Madou^{1,2}

¹*University of California, Irvine, USA and*

²*Ulsan National Institute of Science and Technology, SOUTH KOREA*

T20A

MICROFLUIDIC LAB-ON-A-CHIP SYSTEM WITH INTEGRATED SAMPLE PREPARATION FOR PROCESSING IMMUNOASSAYS

G. Welte¹, S. Lutz², B. Cleven³, H. Brahm⁴, C. Gärtner⁵, G. Roth¹, D. Mark², R. Zengerle^{1,2}, and F. von Stetten^{1,2}

¹*University of Freiburg - IMTEK, GERMANY,*

²*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY,*

³*Vulkan Technik Maschinen-Konstruktions GmbH, GERMANY,*

⁴*DRG Instruments GmbH, GERMANY, and* ⁵*Microfluidic ChipShop GmbH, GERMANY*

T21A

ONE-STEP MICRO-ELISA FOR HIGHLY SENSITIVE DETERMINATION OF TSH

T. Ohashi¹, O. Fukahori¹, H. Tazawa¹, A. Harano¹, T. Ebata¹, K. Mawatari², and T. Kitamori^{1,2}

¹*Institute of Micro Chemical Technology, JAPAN and* ²*University of Tokyo, JAPAN*

T22A

SINGLE CHIP INTEGRATED VIRAL RNA EXTRACTION AND RT-PCR FOR INFECTIOUS DISEASE IDENTIFICATION FROM BLOOD SAMPLE

T.G. Kang, H.M. Ji, L. Zhang, M.Y.D. Ang, S.R.B. Mohamed Rafei, G.K.I. Tay, K.C. Tang, and Y. Chen

*Agency for Science, Technology and Research (A*STAR), SINGAPORE*

Life Science Applications

Drug Development

T23A

A MICRODEVICE 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. Baba^{1,4}

¹*Nagoya University, JAPAN,* ²*Kyoto Pharmaceutical University, JAPAN,*

³*Hokkaido University, JAPAN, and*

⁴*National 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. Stimberg, 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-Snoubert¹, L. Griscorn², P.E. Polini¹, F. Razan², C. Brochot³, C. Aninat⁴, A. Corlu⁴, C. Legallais¹, and E. Leclerc¹

¹*Université de Technologie de Compiègne, FRANCE,*

²*Ecole Normale Supérieure de Cachan (ENS), FRANCE,* ³*INERIS, FRANCE, and*

⁴*Université de Rennes 1, FRANCE*

T26A

NOVEL HIGH-THROUGHPUT SCREENING SYSTEM FOR CANCER THERAPY WITH SIMULTANEOUS COMBINATION TREATMENTS

J.Y. Kim¹, D. Taylor², K. Rege², H.S. Kim¹, A.R. Han¹, and A. Jayaraman¹

¹*Texas A&M University, USA and* ²*Arizona 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. Adams¹, E. Ruoslahti², Y. Xiao¹, and H.T. Soh¹

¹*University of California, Santa Barbara, USA and*

²*Sanford-Burnham Medical Research Institute, USA*

T28A

TRANSPORTERS ON A CHIP: A FLUORESCENCE ANALYSIS OF AN ATP-BINDING CASSETTE (ABC)-TRANSPORTER

H. Sasaki¹, H. Onoe², T. Osaki¹, R. Kawano¹, and S. Takeuchi^{1,2}

¹*Kanagawa Academy of Science and Technology (KAST), JAPAN and*

²*University of Tokyo, JAPAN*

Life Science Applications

Cell Culture

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. Veraitch, 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

¹*Kyoto University, JAPAN and* ²*Kagawa University, JAPAN*

T33A

GRAVITY-ORIENTED MICROFLUIDIC DEVICE FOR CELL SPHEROID FORMATION

K. Lee¹, C. Kim², J. Bang², Y. Kim², S. Lee², B. Ahn¹, J.Y. Kang², and K.W. Oh¹

¹*University at Buffalo, The State University of New York, USA and*

²*Korea 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

T35A

INTEGRATED MICROFLUIDIC CELL CULTURE AND ANALYSIS OF RETROVIRAL shRNA PRODUCTION

A. Poehler, G. Wan, Z. Lihan, H.-P. Too, and S.A. Khan

National University of Singapore, SINGAPORE

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



Life Science Applications

Cell Handling & Sorting

T38A

A MEMBRANELESS CONTINUOUS-FLOW FILTER FOR HIGH-THROUGHPUT SEPARATION AND ENRICHMENT OF PARTICLES AND CELLS

J.-H. Huang and V.M. Ugaz
Texas A&M University, USA

T39A

A RELEASABLE CELL SEPARATION PLATFORM USING TEMPERATURE-RESPONSIVE POLYMERS

L.-I. Wang¹, Y.-S. Chen¹, J.M. Obliosca¹, P.-C. Wang¹, G.-H. Hsiue¹, and F.-G. Tseng^{1,2}

¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN

T40A

A SINGLE-CELL TRAPPING MICROARRAY AND AUTOMATED TRACKING OF CLONAL EXPANSION

A.J.E. Rettie, T. Chang, W.C. Watt, and A. Folch
University of Washington, USA

T41A

AUTOMATED DIELECTROPHORETIC CHARACTERIZATION FOR MICROFLUIDIC CELL SEPARATION DEVICES

C. Huang, B.G. Hawkins, S. Arasanipalai, and B.J. Kirby
Cornell University, USA

T42A

CELL SORTING BY DIELECTROPHORESIS FOR EVALUATION OF LYSIS EFFICIENCY IN CONTINUOUS FLOW

G. Mermier¹, N. Piacentini^{1,2}, and P. Renaud¹

¹Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and ²Politecnico di Torino, ITALY

T43A

CONTINUOUS-FLOW BIOMOLECULE CONCENTRATOR BY ION CONCENTRATION POLARIZATION

R. Kwak, S.J. Kim, and J. Han
Massachusetts Institute of Technology, USA

T44A

DIELECTROPHORETIC SEPARATION OF HETEROGENEOUS STEM CELL POPULATIONS

J.L. Prieto, J. Nourse, J. Lu, L. Flanagan, and A.P. Lee
University of California, Irvine, USA

T45A

ELECTROPHYSIOLOGICAL SORTING OF PLURIPOTENT STEM CELL-DERIVED CARDIOMYOCYTES IN A MICROFLUIDIC PLATFORM

F.B. Myers¹, O.J. Abilez², C.K. Zarins², and L.P. Lee¹

¹University of California, Berkeley, USA and ²Stanford University, USA

T46A

HIGH THROUGHPUT CELL SEPARATION AND FOCUS VIA DIELECTROPHORESIS BASED ON PARTICLES CHARACTERIZATION

N.D. Dinh, R.J. Chen, L.Y. Ke, and C.H. Liu

National Tsing Hua University, TAIWAN

T47A

HYDROGEL EMBEDDING OF PRECISION-CUT LIVER SLICES IN A MICROFLUIDIC DEVICE IMPROVES METABOLIC STABILITY

P.M. van Midwoud, G.M.M. Groothuis, M.T. Merema, and E. Verpoorte

University of Groningen, THE NETHERLANDS

T48A

LABEL-FREE LATERAL MAGNETO-DIELECTROPHORETIC MICROSEPARATION METHOD FOR SEPARATING NUCLEATED CELLS FROM PERIPHERAL BLOOD

J. Jung, S.-I. Han, H. Lee, M. Yoo, and K.-H. Han

Inje University, SOUTH KOREA

T49A

MAGNETICALLY DRIVEN MICRO-MOVABLE ELECTRODE FOR CELL COUPLING

Y. Yamanishi¹, T. Kawahara², T. Iyanagi³, M. Hagiwara², and F. Arai²

¹Japan Science and Technology Agency (JST), JAPAN,

²Nagoya University, JAPAN, and

³Tohoku University, JAPAN

T50A

MICROFLUIDIC CHIP FOR ACTIVE AND AUTONOMOUS SINGLE-CELL ISOLATION BY USING DIELECTROPHORESIS AND IMPEDANCE MEASUREMENT

H. Park, D. Kim, and K.-S. Yun

Sogang University, SOUTH KOREA

T51A

NANOCOMPOSITE CARBON-PDMS THICK ELECTRODES FOR ELECTROKINETIC MANIPULATION DURING CELL FUSION

M. Brun¹, A.L. Deman¹, J.F. Chateaux¹, M. Frenea-Robin², N. Haddour², and R. Ferrigno¹

¹Université de Lyon, FRANCE and ²Ecole Centrale de Lyon, FRANCE

T52A

PARTICLE TRANSPORTATION BY USING RECTIFIED AC ELECTROOSMOTIC FLOWS IN OPEN MICROFLUIDIC CHANNELS

W.I. Wu, P.R. Selvaganapathy, and C.Y. Ching

McMaster University, CANADA

T53A

SEPARATION OF NEURAL CELLS USING TWO-STEP SEPARATION BY COMBINATION OF SOFT INERTIAL MICROFLUIDICS AND PINCHED FLOW FRACTIONATION

Z. Wu¹, G. Wicher¹, Å. Fex Svenningsen², and K. Hjort¹

¹Uppsala University, SWEDEN and ²University of Southern Denmark, DENMARK

T54A

REUSABLE MICROFLUIDIC CHIP FOR CELL CAPTURE AND RELEASE USING SURFACE-IMMOBILIZED APTAMERS

J. Zhu, T.H. Nguyen, R. Pei, M. Stojanovic, and Q. Lin

Columbia University, USA

T55A

VISION SENSING AND POSITION CONTROL OF 2DOF MAGNETICALLY DRIVEN MICROTOOL FOR REMOVING OF ZONA PELLUCIDA OF OOCYTE

T. Kawahara¹, M. Hagiwara¹, Y. Yamanishi², and F. Arai¹

¹Nagoya University, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

Life Science Applications

Cell Analysis

T56A

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

J.S. Strobl, M. Nikkhah, and M. Agah

Virginia Polytechnic Institute and State University, USA

T57A

A LAB-USE MICROFLUIDIC PLANAR PATCH-CLAMP SYSTEM

T.-Y. Tu, C.-Y. Chen, D.-S. Jong, and A.M. Wo

National Taiwan University, TAIWAN

T58A

A MULTI-PURPOSE MICROFLUIDIC PIPETTE FOR SINGLE-CELL ANALYSIS

A. Ainla, E.T. Jansson, N. Stepanyants, O. Orwar, and A. Jesorka

Chalmers University of Technology, SWEDEN

T59A

A PEPTIDE APTAMER-COATED SURFACE FOR SELECTIVE ADHESION OF CANCER CELLS IN BLOOD CELLS SUSPENSION

S. Kaneda^{1,3}, T. Minamisawa^{2,3}, K. Shiba^{2,3}, and T. Fujii^{1,3}

¹University of Tokyo, JAPAN,

²Cancer Institute of Japanese Foundation of Cancer Research, JAPAN, and

³Japan Science and Technology Agency (JST), JAPAN



T60A CARCINOMA CELL-BASED 5-FLUOROURACIL EVALUATION IN MICROFLUIDIC SYSTEM

E. Jedrych¹, K. Sofinska¹, S. Flis², Z. Jastrzebski², M. Chudy¹, and Z. Brzozka¹
¹Warsaw University of Technology, POLAND and
²National Institute of Public Health, POLAND

T61A DISPOSABLE MULTIPLE INTERNAL REFLECTION SYSTEMS FOR PHOTONIC CELL SCREENING

B. Ibarlucea¹, J. Vila-Planas¹, E. Fernández-Rosas^{1,2}, S. Demming³, C. Nogues²,
J.A. Plaza¹, S. Büttgenbach³, and A. Llobera¹
¹Centre Nacional de Microelectrónica (CNM), SPAIN,
²Universitat Autònoma de Barcelona, SPAIN, and
³Technische Universität Braunschweig, GERMANY

T62A IN VITRO 3D COLLECTIVE ANGIOGENIC RESPONSE UNDER COORDINATED MULTIPLE CHEMICAL GRADIENTS

J.S. Jeon¹, Y. Shin², J. Nam², S. Lee², G.S. Jung², S. Shin², S.H. Lee², R.D. Kamm¹,
and S. Chung²
¹Massachusetts Institute of Technology, USA and ²Korea University, SOUTH KOREA

T63A ISOLATION OF CELL NUCLEUS BY SHORT-TIME CHEMICAL TREATMENT IN CARRIER-MEDIUM EXCHANGE MICROCHANNELS

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

T64A LIVE-CELL IMAGING OF NATURAL KILLER CELL MEDIATED TUMOR REJECTION IN ARRAYS OF MICROWELLS

T. Frisk¹, K. Guldevall², B. Vanherbergen², H. Brismar^{1,2}, and B. Önfelt^{1,2}
¹Karolinska Institute, SWEDEN and ²Kungliga Tekniska Högskolan, SWEDEN

T65A MICROFLUIDIC SYSTEM FOR 3D CELL INVASION STUDY

Y. Shin¹, H. Kim¹, J.S. Jeon³, G.-Y. Kim², J. Nam¹, S. Lee¹, S. Shin¹, J.-H. Kim¹,
and S. Chung¹
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. Szczepańska¹, R. Walczak¹, J. Dziuban¹, B. Kempisty², A. Chelmonska-Soyta³,
J. Kluger³, M. Jackowska⁴, and J. Jaskowski⁴
¹Wrocław University of Technology, POLAND, ²University of Medical Sciences,
POLAND, ³Polish Academy of Sciences, POLAND, and
⁴Poznan University of Life Sciences, POLAND

T68A STUDY OF TEMPERATURE EFFECT ON SINGLE-CELL FLUID-PHASE ENDOCYTOSIS USING MICRO CELL CHIPS AND THERMOELECTRIC DEVICES

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. Lindström^{2,3}, A. Segerman⁴, and H. Andersson-Svahn^{1,2}
¹Royal Institute of Technology (KTH), SWEDEN, ²Picovitro, SWEDEN,
³Karolinska Institute, SWEDEN, and ⁴Rudbeck Laboratory, SWEDEN

T70A μSWIMMING POOLS FOR CILIATES

D. van Noort
National University of Singapore, SINGAPORE

Life Science Applications

Others

T71A A NOVEL ADVANCED ELECTRICAL CMOS BIOSENSOR TECHNOLOGY FOR MEASURING BIOLOGICAL AFFINITY REACTIONS

F. Frederix¹, B. Cobelens², R.J.O.M. Hoofman¹, F. Jedema², T. Merelle¹, A. Sedzin²,
E. Sterckx¹, H. Suy², C. Tak², J. Ueberfeld², R. van der Werf², D. van Steenwinckel¹,
K. Verheyden¹, and F. Widdershoven²
¹NXP Semiconductors, BELGIUM and ²NXP Semiconductors, THE NETHERLANDS

T72A ATTOMOLAR SENSITIVE FUNCTIONAL PROTEOMIC ASSAY FOR BIOMARKER DETECTION AND DRUG SCREENING

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

T73A HEAT-SHOCK PROTEIN SYNTHESIS IN ANIMAL CELLS INDUCED BY GOLD MICROHEATERS

P. Ginet, K. Montagne, S. Akiyama, Y. Sakai, T. Fujii, D. Fourmy, S. Voltz,
and B.J. Kim
University of Tokyo, JAPAN

T74A INTEGRATED MICROFLUIDIC PLATFORM FOR DIRECTED EVOLUTION OF BIOCATALYSTS FOR BIOFUEL CELL APPLICATIONS

Y. Skhiri¹, T. Beneyton¹, L. Mazutis¹, J.C. Baret², 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

T76A MICROFLUIDICS FOR BIOMINERALIZATION AND BIOMIMICKING SYNTHESIS

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. Ruiz^{3,4}, M. Matteoli^{3,4}, and E. Delamarche²
¹IBM Research, Zurich, SWITZERLAND, ²Neuro-Zone s.r.l., ITALY,
³Fondazione Filarete, ITALY, and ⁴University of Milano, ITALY

Microreaction Applications

Flow Chemistry/Synthesis

T1B 3D HYDRODYNAMIC FOCUSING FOR CONFINED PRECIPITATION OF NANOPARTICLES WITHIN MICROFLUIDIC CHANNELS

M. Rhee^{1,2}, P.M. Valencia¹, M.I. Rodriguez¹, R.S. Langer¹, O.C. Farokhzad^{1,2},
and R. Karnik¹
¹Massachusetts Institute of Technology, USA and
²Brigham and Women's Hospital, USA

T2B FAST SCALE UP USING MICROREACTORS: FROM MICROSCALE TO PRODUCTION

P.J. Nieuwland¹, K. Koch¹, R. Becker¹, J.C.M. van Hest², and F.P.J.T. Rutjes²
¹FutureChemistry, THE NETHERLANDS and
²Radboud University Nijmegen, THE NETHERLANDS

T3B MICROCHEMICAL SYSTEM WITH CONTINUOUS RECOVERY AND RECIRCULATION OF CATALYST-IMMOBILIZED MAGNETIC PARTICLES

C.P. Park and D.-P. Kim
Chungnam National University, SOUTH KOREA



T4B

PREPARATION OF PLATINUM DOPED SILICA CATALYTIC MICROSPHERES THROUGH MICROFLUIDIC SYNTHESIS ROUTE

V. Chokkalingam^{1,2}, B. Weidenhof¹, W.F. Maier², and R. Seemann^{1,2}
¹Saarland University, GERMANY and ²Max Planck Institute, GERMANY

Microreaction Applications

In-Line Analysis / Process Control

T5B

MICROWAVE RESONANT SENSOR FOR REAL-TIME CONTINUOUS-FLOW MEASUREMENTS OF MICROFLUIDIC SYSTEMS

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

Microreaction Applications

Others

T6B

APPLICATION OF INKJET-FABRICATED CRYSTALLINE C60 PARTICLES GENERATING REACTIVE OXYGEN SPECIES UNDER VISIBLE LIGHT IRRADIATION TO MICROARRAY CHIPS

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

T7B

PDMS EVAPORATION CHIP TO CONCENTRATE [18F] FLUORIDE FOR SYNTHESIS OF PET TRACERS IN MICROFLUIDICS

W.-Y. Tseng, J. Cho, X. Ma, K. Mahal, A. Chatziioannou, and R.M. van Dam
 University of California, Los Angeles, USA

Other Applications

Environment

T1C

A MICROFLUIDIC CONCENTRATOR ARRAY FOR STUDYING PREDATORY BACTERIA

S. Park, D. Kim, R.J. Mitchell, and T. Kim
 Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA

T2C

AUTONOMOUS MICROFLUIDIC SENSORS FOR NUTRIENT DETECTION: APPLIED TO NITRITE, NITRATE, PHOSPHATE, MANGANESE AND IRON

V.J. Sieben¹, A.D. Beaton², C.F.A. Floquet², S. Abi Kaed Bey², I.R.G. Ogilvie², E.M. Waugh², J.K.C. Ang¹, M.C. Mowlem², and H. Morgan¹
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²National Oceanography Centre Southampton, UK

T3C

INTERFACING HYDRODYNAMIC FLOW WITH MICROCHIP CAPILLARY ELECTROPHORESIS TO ACHIEVE REAL-TIME ANALYSIS OF ATMOSPHERIC AEROSOLS

M.M. Mentele, S.D. Noblitt, J.L. Collett, and C.S. Henry
 Colorado State University, USA

T4C

THE INTEGRATION AND EVALUATION OF A PROTOTYPE REAL-TIME MICRO GAS ANALYZER EMPLOYING MEMS BASED KEY COMPONENTS

R.-S. Jian and C.-J. Lu
 National Taiwan Normal University, TAIWAN

Other Applications

Separation Science

T5C

CONTROLLED ELECTROPHORETIC FILTERING OF BIO SAMPLES USING PI FLOW FETS

A. Plecis¹, A. Pallandre², J. Gamby³, I. Le Potier², Y. Chen⁴, and A.M. Haghiri-Gosnet³
¹DGA-Maitrise NRBC, FRANCE, ²University Paris Sud, FRANCE,
³Centre National de la Recherche Scientifique (CNRS), FRANCE, and
⁴École Normale Supérieure (ENS), FRANCE

T6C

DNA SEPARATION IN A PLASMA-THINNED NANOPOST ARRAY

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

T7C

ENHANCED RESOLUTION IN MICROCHIP DNA ELECTROPHORESIS BY TAILORING HYDROGEL NANOSTRUCTURE TO EXPLOIT ENTROPIC TRAPPING

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

T8C

FREELY SELECTABLE DIRECTION OF SEPARATION FOR DIFFERENT PARTICLE SPECIES WITH A NEW MICROFLUIDIC SEPARATION DEVICE

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

T9C

ON-LINE PRECONCENTRATION USING DENATURATION OF PROTEINS ON A HEATER INTEGRATED ELECTROPHORESIS MICROCHIP

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

T10C

REAGENT-RELEASE CAPILLARY ARRAY-ISOELECTRIC FOCUSING DEVICE FOR RAPID SCREENING OF PROTEIN ANALYSIS CONDITIONS

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

Other Applications

Food & Nutrition

T11C

INTEGRATED CASSETTE FOR COUNTING LOW-CONCENTRATION LIVE BACTERIA IN FOODS USING 3D STAINING TECHNOLOGY

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

Other Applications

Fuel Cells

T12C

LOW TEMPERATURE POM MICRO-REFORMER WITH SILICON NANO-WIRE SUPPORTED NANO CATALYSTS

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

Other Applications

Others

T13C

SEQUENTIAL POWER GENERATION FOR Prolonging the Net Lifetime of a Miniature Biofuel Cell Stack

T. Miyake^{1,2}, S. Yoshino¹, Y. Yatagawa¹, K. Haneda¹, and M. Nishizawa^{1,2}
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Microfluidics

Fluid Mechanics & Modeling

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 Toonder^{1,2}

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

T4D

NUMERICAL PROTOTYPING OF MICROFLUIDIC CHIPS FOR MULTIDIMENSIONAL ELECTROPHORETIC SEPARATIONS

P.A. Kler, C.L.A. Berli, and F.A. Guarnieri

Universidad Nacional del Litoral, ARGENTINA

T5D

PARTICLE COLLISION DYNAMICS IN GEOMETRICALLY-ENHANCED DIFFERENTIAL IMMUNOCAPTURE (GEDI) μDEVICES FOR RARE CELL CAPTURE

J.P. Gleghorn, J.P. Smith, and B.J. Kirby

Cornell University, USA

Microfluidics

Micro Liquid Handling

T6D

AC ELECTRO-OSMOTIC MICROMIXER USING A FACE-TO-FACE, ASYMMETRIC PAIR OF PLANAR ELECTRODES

J.L. Chen, W.H. Shih, and W.-H. Hsieh

National Chung Cheng University, TAIWAN

T7D

AN ADAPTIVE BI-DIRECTIONAL MICRO-PUMP BY USING LIGHT-INDUCED ELECTROOSMOSIS

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 MICROFLUIDIC PICOLITER DISPENSING ARRAY

M. Masubuchi¹, M. Yamada¹, T. Toyota^{1,2}, 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. Yu^{1,2}, L.K. Chin¹, Y. Chen², G.J. Zhang², G.Q. Lo², T.C. Aji³, P.H. Yap³, D.L. Kwong², and A.Q. Liu¹

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 WETTABILITY DIFFERENCE AND ITS APPLICATION TO LIQUID MANIPULATION

T. Kobayashi¹, K. Shimizu², Y. Kaizuma³, 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 HORIZONTAL PNEUMATIC VALVES FORMED BY SINGLE STEP PDMS MOLDING

D.H. Yoon, D. Wakui, T. Sekiguchi, and S. Shoji

Waseda University, JAPAN

T13D

TWO SAME-SIZED DROPLETS COALESCENCE BY LASER-INDUCED CAVITATION BUBBLES

Z.G. Li^{1,2}, J.Q. Yu¹, P.A. Quito-Su¹, C.D. Ohl¹, J.B. Zhang², and A.Q. Liu¹

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²Agency for Science, Technology and Research (A*STAR), SINGAPORE

Microfluidics

Multi-Phase and Digital Microfluidics

T14D

A 'MICROFLUIDIC PINBALL' FOR CONTINUOUS GENERATION OF LAYER-BY-LAYER POLYELECTROLYTE MICROCAPSULES

C. Kantak^{1,2}, L. Yobas¹, T. Bansai¹, and D. Trau²

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²National University of Singapore, SINGAPORE

T15D

A MAGNETOPHORESIS SYSTEM FOR CONTROLLED TRANSPORT AND TRAPPING OF MAGNETIC BEADS

Z.-C. Peng¹, W. Guo², J.L. Cannon³, and P.J. Hesketh¹

¹Georgia Institute of Technology, USA, ²Tsinghua University, CHINA, and

³University of Georgia, USA

T16D

CONTROLLABLE DROPLET SYNCHRONIZATION MODULE FOR TEMPORAL CONTROL OF MICRODROPLETS

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 SUBSTRATES USING MARANGONI CELLS

E. Hendarto and Y.B. Gianchandani

University of Michigan, USA

T18D

FROM CHEMICAL MIXTURES TO PICOLITER DROPLET LIBRARIES: HARNESSING CONCENTRATION GRADIENTS WITH DROPLET-BASED MICROFLUIDICS

A.B. Theberge¹, G. Whyte¹, and W.T.S. Huck^{1,2}

¹University of Cambridge, UK and ²Radboud University Nijmegen, UK

T19D

LAPLACE TRAP FOR ONE-TO-ONE FUSION OF ASYNCHRONOUSLY GENERATED DROPLETS

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 CHANNELS

S. Xiong¹, L.K. Chin¹, Y.F. Yu¹, J.Q. Yu¹, Y. Chen², G.J. Zhang², G.Q. Lo², D.L. Kwong², and A.Q. Liu¹

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T21D

ON-CHIP INVESTIGATION OF DRUG-PROTEIN BINDING BY MEANS OF DROPLET MICROFLUIDICS AND MAGNETIC BEADS

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 MULTIPHASE DROPLET INCLUDING AIR CORE

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³Pusan National University, SOUTH KOREA



Microfluidics

Multi-Scale / Integrative Microfluidics

T24D

20/100/400-CHANNEL CHEMICALLY INERT, REVERSIBLE PARALLEL MICROFLUIDIC CONNECTOR AS GENERIC CHIP-TO-WORLD INTERFACE

B.E. Rapp, T. Duttenhofer, and K. Lange
Karlsruhe Institute of Technology (KIT), GERMANY

T25D

ELECTRO OSMOTIC SHEAR FLOW IN MICROCHANNELS

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

PLANAR PHOSPHOLIPID MEMBRANE CHIPS FOR THERMODYNAMICS STUDIES OF CERAMIDE ION CHANNELS

C. Shao, M. Colombini, and D.L. DeVoe
University of Maryland, USA

T28D

THERMO-SWITCHABLE ELECTROKINETIC ION-ENRICHMENT, ELUTION AND SEPARATION BASED ON A POLY (N-ISOPROPYLACRYLAMIDE) HYDROGEL PLUG PREPARED INSIDE A GLASS MICROCHANNEL

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

Microfluidics

Others

T29D

BIOCHEMICAL QUANTIZATION BY MICROFLUIDIC DROPLETS FOR THE DEVELOPMENT OF MICROBE COUNTER

K.A. Aritome, Y. Takahata, K. Sakamoto, K. Noda, A. Kuroda, T. Ishikawa, R. Miyake, and Y. Murakami
Hiroshima University, JAPAN

T30D

LORENZ-LIKE CHAOTIC SYSTEM ON A CHIP

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

T31D

NUCLEIC ACID EXTRACTION MICRODEVICE AND ITS MICROFLUIDIC PROTOCOL OPTIMIZATION

T.G. Kang¹, W.J.A. Ng¹, S.R.B. Mohamed Rafei¹, and S. Kim²
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²National University of Singapore, SINGAPORE

T32D

TWISTED MICROFLUIDICS: A NOVEL PHOTORESIST LAMINATION PROCESS FOR 3D MULTILEVEL LAB-ON-A-CHIP (LOC) APPLICATIONS

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

Nanotechnologies

Nanofluidics

T1E

NANOFLUIDIC DEVICES FOR PROTEIN CONCENTRATION AND ENZYMATIC REACTION KINETICS

X.-H. Xia and C. Wang
Nanjing University, CHINA

Nanotechnologies

Nanoengineering

T2E

MAGNETIC CORE SHELL NANOPARTICLES TRAPPING USING IRON BEADS MAGNETIC CHAMBER

B. Teste¹, F. Malloggi¹, A.L. Gassner², T. Georgelin¹, H.H. Girault², J.M. Siaugue¹, P. Tabeling¹, and S. Descroix¹

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²Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

Nanotechnologies

Nanobiotechnology

T3E

A QUANTUM DOT BASED NANOASSAY FOR QUANTIFYING GENE COPY NUMBER WITH ULTRAHIGH RESOLUTION

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

T4E

DISTANCE-DEPENDENT VARIATION WITH THE LENGTH OF DNA SPACERS IN FLUORESCENCE SIGNALS OF DNA-CY3-TAILORED GOLD NANOPARTICLES DEPOSITED ON A SOLID SURFACE

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

T5E

EXTENDED-NANO CHANNEL BASED ROLLING CIRCLE AMPLIFICATION TO DETECT SINGLE MOLECULE DNA

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T6E

LOCALIZED HEATING ON SILICON FIELD EFFECT TRANSISTORS FOR BIO-CHEMICAL REACTIONS

B. Reddy, Jr.¹, O.H. Elibol², P.R. Nair³, B.R. Dorvel¹, D. Bergstrom³, M.A. Alam³, and R. Bashir¹

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³Purdue University, USA

T7E

OBSERVATION OF HIGH CONTRAST FERRITIN PROTINS IN TEM ENHANCED BY MICRO ELECTROSTATIC PHASE PLATE

T.W. Huang¹, L.T. Lin¹, K.W. Liu¹, Y.J. Chuang², C.H. Huang¹, F.R. Chen¹, and F.G. Tseng^{1,3}

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T8E

ULTRA-RAPID 3D-ACEO ELECTROKINETIC PRECONCENTRATION FOR VIRUS DETECTION

R.-G. Wu¹, J.-W. Lee¹, H.-Y. Chang², and F.-G. Tseng^{1,2}

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²Research Center for Applied Sciences, TAIWAN

T9E

SILICON NANOWIRE BIOSENSOR FOR STUDYING NUCLEAR HORMONE RECEPTOR AND RESPONSE ELEMENT 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. Thomsen

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Nanotechnologies

Nanostructured Materials

T10E

ANTIBACTERIAL SURFACE WITH CYLINDRICAL NANOSHELL ARRAY

Y.-B. Park, M.-S. Kang, and Y.-K. Choi

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T11E

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

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T12E

NANOPARTICLE FACTORIES IN FLOWING FOAMS

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²Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE

T13E

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. Ono^{1,2}, R. Iizuka^{1,2}, T. Akagi^{1,2}, T. Funatsu^{1,2}, and T. Ichiki^{1,2}

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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

X.-Q. Hu, X.-B. Zhang, L. Zheng, Q.-H. He, and H.-W. Chen

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

LASER STENCILING FOR POLYMER MICROFLUIDIC DEVICES

W. Longsine and A. Han

Texas A&M University, USA

T5F

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

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⁴University of Tokyo, JAPAN, and ⁵Tohoku University, JAPAN

T6F

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

J.M. Karlsson, T. Haraldsson, C.F. Carlborg, G. Stemme, and W. van der Wijngaart

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MEMS & NEMS Technologies

Microfluidic Components/Packaging

T7F

A DISPOSABLE DISCRETE-AGENT-RELEASE CARTRIDGE FOR FLEXIBLE ENDOSCOPES

N. Wangler, M. Welsche, 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

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T9F

ELECTROSPRAYING MICROFLUIDIC CHIP FOR EMULSION GENERATION AND SATELLITE DROPLET SEPARATION

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²Ming Chi University of Technology, TAIWAN

T10F

HOT EMBOSsing OF PLASTIC MICROFLUIDIC DEVICES USING POLY(DIMETHYLSILOXANE) MOLDS

V.N. Goral¹, Y.-C. Hsieh², O.N. Petzold¹, R.A. Faris¹, and P.K. Yuen¹

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T11F

OXYGEN PLASMA-FREE MICROFLUIDIC DEVICE SEALING

C.W. Beh, W. Zhou, and T.-H. Wang

Johns Hopkins University, USA

T12F

THREE-DIMENSIONAL HYDRO-MAGNETIC FOCUSING OF SUPERPARAMAGNETIC BEADS

R. Afshar, Y. Moser, T. Lehnert, and M.A.M. Gijs

École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

MEMS & NEMS Technologies

Integration Strategies

T13F

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

J. Nestler¹, A. Morschhauser², T. Otto^{1,2}, B. Koger¹, A. Brandenburg¹, K. Wunderlich¹,

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T14F

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. Chen^{1,2}, T. Park¹, N. Kim¹, B.H. You^{1,3}, D.E. Nikitopoulos¹,

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²Singapore Institute of Manufacturing Technology, SINGAPORE, and

³Texas State University, USA

MEMS & NEMS Technologies

New Chip Materials

T15F

FABRICATION OF ROOM TEMPERATURE OPERABLE MICROPUMP POWERED BY INSECT MUSCLE CELL SHEET

K. Shimizu¹, Y. Akiyama¹, T. Hoshino¹, K. Iwabuchi¹, Y. Akiyama², M. Yamato²,

T. Okano², and K. Morishima¹

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. Bredmore
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

MEMS & NEMS Technologies

Surface Modification

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. Thomsen
*Agency for Science, Technology and Research (A*STAR), SINGAPORE*

T20F

SOLVENT PROCESSING OF PMMA AND COC CHIPS FOR BONDING DEVICES WITH OPTICAL QUALITY SURFACES

I.R.G. Ogilvie, V.J. Sieben, C.F.A. Floquet, R. Zmijan, M.C. Mowlem, and H. Morgan
University of Southampton, UK

Imaging & Detection Technologies

Flow Visualization

T1G

AN AUTOMATED FULL-CHIP MICRO-PIV SETUP FOR MEASURING MICROCHANNEL ACOUSTOPHORESIS: SIMULTANEOUS DETERMINATION OF FORCES FROM ACOUSTIC RADIATION AND ACOUSTIC STREAMING

R. Barnkob¹, P. Augustsson², T. Laurell², and H. Bruus¹
¹*Technical University of Denmark, DENMARK* and ²*Lund University, SWEDEN*

Imaging & Detection Technologies

Optical

T2G

A LAB-ON-A-CHIP SYSTEM INTEGRATED WITH SUBWAVELENGTH PERIODIC PATTERNED METAL SURFACES FOR SERS-BASED MOLECULAR IDENTIFICATION BIOSENSING

M. Jin, V. Pully, L. Shui, C. Otto, A. van den Berg, and E.T. Carlen
University of Twente, 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
¹*Nanyang Technological University, SINGAPORE* and ²*University of Paris Est, FRANCE*

T4G

EVANESCENT FIELD ABSORPTION SPECTROSCOPY ON POLY (DIMETHYLSILOXANE) SINGLE-MODE RIB WAVEGUIDE INTEGRATED WITH MICROFLUIDIC SYSTEM

J.S. Kee^{1,2}, D.P. Poenar², L. Yobas¹, and Y. Chen¹
¹*Agency for Science, Technology and Research (A*STAR), SINGAPORE* and ²*Nanyang Technological University, SINGAPORE*

T5G

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. Krüger², M. Scholles³, and J. Ruano-Lopez⁴
¹*Wroclaw University of Technology, POLAND*, ²*Biosensia Ltd., IRELAND*, ³*IFMS, GERMANY*, and ⁴*IKERLAN, SPAIN*

T6G

INTEGRATED MULTI BEAM SPECTROSCOPY WITH EMBEDDED PRECISE OPTICS

Y. Kazama and A. Hibara
University of Tokyo, JAPAN

T7G

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. Hung², and Y.C. Chung²
¹*National Taiwan Ocean University, TAIWAN* and ²*Mingchi University of Technology, TAIWAN*

T8G

MULTISPECTRAL ABSORBANCE PHOTOMETRY WITH A SINGLE LIGHT DETECTOR USING FREQUENCY DIVISION MULTIPLEXING

G.K. Kurup and A.S. Basu
Wayne State University, USA

T9G

TEMPERATURE MODULATION AND PHASE SENSITIVE IMAGING TO DETECT POINT MUTATIONS

K. Zrelli¹, T. Barilero¹, E. Cavatore¹, H. Berthoumieux¹, V. Croquette¹, A. Lemarchand², L. Jullien¹, T. Le Saux¹, and C. Gosse²
¹*École Normale Supérieure (ENS), FRANCE* and ²*Université Paris 6, FRANCE*

Imaging & Detection Technologies

Electrochemical

T10G

BIOLOGICAL NOSES FOR A ROBOT

N. Misawa, H. Mitsuno, R. Kanzaki, and S. Takeuchi
University of Tokyo, JAPAN

T11G

SIGNAL IMPROVEMENT BY DIELECTRIC FOCUSING IN MICROFLUIDIC IMPEDANCE CYTOMETERS

M. Evander, B. Dura, A.J. Ricco, G.T.A. Kovacs, and L. Giovangrandi
Stanford University, USA

T12G

SIMULTANEOUS IMPEDANCE AND FLUORESCENCE DETECTION OF PROTEINS IN A CYCLO OLEFIN POLYMER CHIP CONTAINING A COLUMN WITH AN ORDERED PILLAR ARRAY WITH INTEGRATED GOLD MICROELECTRODES

X. Illa¹, R. Rodríguez-Trujillo¹, O. Ordeig², W. De Malsche³, A. Homs-Corbera¹, H. Gardeniers⁴, G. Desmet³, J.P. Kutter², J. Samitier¹, and A. Romano-Rodríguez¹
¹*Universitat de Barcelona, SPAIN*, ²*Technical University of Denmark, DENMARK*, ³*Vrije Universiteit, BELGIUM*, and ⁴*MESA+, University of Twente, THE NETHERLANDS*

T13G

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

Imaging & Detection Technologies

Mass Spectrometry

T14G

FABRICATION OF SILICON NANOSTRUCTURE BY METAL-ASSISTED ETCHING AND ITS EFFECTS TO MATRIX-FREE LASER DESORPTION/IONIZATION MASS SPECTROMETRY

C.W. Tsao¹, J.T. Huang¹, Y.C. Cheng², W.Y. Chen¹, and C.C. Chien²
¹*Nation Central University, TAIWAN* and ²*Cathay General Hospital, TAIWAN*



Imaging & Detection Technologies

Optofluidics

T15G

AN OPTOFLUIDIC TUNABLE PRISM VIA CONTROL OF FLOW RATE RATIO

S. Xiong^{1,2}, 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

T16G

DEVELOPMENT OF NOVEL MICRO OPTICAL DIFFUSION SENSOR USING MICRO FRESNEL 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^{1,2}, Q. Kou^{1,2}, C. Wang^{1,2}, S. Meance^{1,2}, J.J. He³, and A.M. Haghiri-Gosnet²
¹Université Paris Sud, FRANCE, ²Centre National de la Recherche Scientifique (CNRS), FRANCE, and ³Zhejiang University, CHINA

T18G

THREE-DIMENSIONAL MICROFLUIDIC L2 WAVEGUIDE USING DEAN VORTEX

K.S. Lee, S.B. Kim, K.H. Lee, H.J. Sung, and S.S. Kim
 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

G.P. Nordin, S. Kim, W. Hu, R.R. Anderson, J.W. Noh, S.J. Ness, W.C. Dahlquist, and D.C. Richards
 Brigham Young University, USA

T21G

FLOW SPEED PARTICLE FOCUSING IN MICROFLUIDIC IMPEDANCE MEASUREMENTS

R.M. Pugo¹, S.C. Deane¹, C. Glasse¹, M.R. Burcher¹, H. Morgan², and C.H. Reccius¹
¹Philips Research Laboratories, UK and ²University of Southampton, UK

T22G

MICROENGINEERED MULTISPECTRAL CONTRAST AGENTS FOR MAGNETIC RESONANCE IMAGING

X. Wang¹, S.W. Anderson², and X. Zhang¹
¹Boston University, USA and ²Boston Medical Center, USA

T23G

ULTRA-MULTIPLEXED BEADS SYSTEM WITH IN SITU DNA PROBE SYNTHESIS

K. Machida, N. Kishii, M. Ichimura, K. Ito, N. Sakamoto, and A. Yasuda
 Sony Corporation, JAPAN

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

T2H

GENERATION OF CHITOSAN MICROFIBER FOR BIO-ARTIFICIAL LIVER MICROCHIP

K.-H. Lee^{1,4}, S.-J. Shin¹, D.Y. No¹, C.-B. Kim¹, J.K. Kim², Y.W. Cho³, B.G. Chung³, S. Chung¹, R.D. Kamm⁴, and S.-H. Lee¹
¹Korea University, SOUTH KOREA, ²Kookmin University, SOUTH KOREA, ³Hanyang University, SOUTH KOREA, and ⁴Massachusetts Institute of Technology, USA

T3H

MICROFLUIDIC-BASED 3D MICROTISSUE WITH PERFUSED HUMAN CAPILLARIES

Y.-H. Hsu, M. Moya, C.C.W. Hughes, S. George, and A.P. Lee
 University of California, Irvine, USA

T4H

PRECISE ASSEMBLY OF MICRO-TISSUES IN A MICROFLUIDIC DEVICE USING AN AVIDIN-BIOTIN BINDING SYSTEM AND OPTICAL TWEEZERS

N. Kojima^{1,2}, K. Miura¹, H. Nakayama¹, S. Takeuchi^{1,2}, and Y. Sakai^{1,2}
¹University of Tokyo, JAPAN and ²BEANS Project, JAPAN

T5H

USING CO-CULTURE MICROSYSTEM FOR CELL MIGRATION UNDER FLUID SHEAR STRESS

C.H. Yeh, S.H. Tsai, L.W. Wu, and Y.C. Lin
 National Cheng Kung University, TAIWAN

Special Focus Session

Electrowetting-Driven Digital Microfluidics

T6H

AN ELECTROWETTING-BASED MICROFLUIDIC PLATFORM FOR MAGNETIC BIOASSAYS

S. Chang^{1,2}, V. Schaller¹, B. Raeissi¹, A. Kalabukhov¹, J.F. Schneiderman¹, F. Östjören¹, A. Jesorka¹, A. Prieto Astalan³, C. Johansson³, P. Enoksson¹, D. Winkler¹, and A. Sanz-Velasco¹
¹Chalmers University of Technology, SWEDEN, ²East China University of Science and Technology, CHINA, and ³Imego 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





THEATRE

Session 2A3

Characterization of Intrinsic Cell Properties

CHAIR: H. Morgan, *University of Southampton, UK*

SPRINGERZAAL

Session 2B3

Proteomics

CHAIR: P.-Y. Yang, *Fudan University, CHINA*

16:00 - 16:20

MEASURING THE ACOUSTOPHORETIC CONTRAST FACTOR OF LIVING CELLS IN MICROCHANNELS

P. Augustsson¹, R. Barnkob², C. Grenvall¹, T. Deierborg¹, P. Brundin¹, H. Bruus², and T. Laurell¹

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

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

S.W. Lee¹, J.-Y. Ahn², R. Shou², E. Kim², T. Laurell¹, O.C. Jeong³, and S. Kim²

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

³Inje University, SOUTH KOREA

16:20 - 16:40

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. Freeman²

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

16:40 - 17:00

MORPHOLOGY-BASED SORTING -BLOOD CELLS AND PARASITES

J.P. Beech¹, S. Holm¹, M.P. Barrett², and J.O. Tegenfeldt^{1,3}

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





BORGMANZAAL - A

Session 2C3

Droplet Array for Bioassays

CHAIR: M. Gaitan, *National Institute of Standards and Technology (NIST), USA*

BORGMANZAAL - B

Session 2D3

Unconventional Separation Approaches

CHAIR: J.-K. Park, *Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA*

16:00 - 16:20

DETERMINISTIC LATERAL DISPLACEMENT DEVICE FOR DROPLET SEPARATION BY SIZE – TOWARDS RAPID CLONAL SELECTION BASED ON DROPLET SHRINKING

H.N. Joensson, M. Uhlén, and H. Andersson-Svahn
Royal Institute of Technology (KTH), SWEDEN

BUBBLE-BASED CONTINUOUS SEPARATION SYSTEM IN MICROFLUIDIC DEVICE

A. Kobayashi, M. Yamada, and M. Seki
Chiba University, JAPAN

16:20 - 16:40

1-MILLION DROPLET ARRAY FOR HIGH-DYNAMIC-RANGE DIGITAL MICROFLUIDICS

A.C. Hatch, J.S. Fisher, and A.P. Lee
University of California, Irvine, USA

EXAMINING LATERAL DISPLACEMENT OF CELLS ROLLING ON ASYMMETRIC RECEPTOR PATTERNS

C.-H. Lee¹, S. Bose¹, K.J. Van Vliet¹, J.M. Karp², and R. Karnik¹
¹*Massachusetts Institute of Technology, USA* and ²*Harvard University, USA*

16:40 - 17:00

MICROFLUIDIC SYNTHESIS OF MAGNETOCHROMATIC MICROSPHERES UTILIZING MAGNETIC SELF-ASSEMBLY AND PHOTOPOLYMERIZATION PROCESS

J. Kim, Y. Song, H. Lee, W. Park, H. Kim, and S. Kwon
Seoul National University, SOUTH KOREA

DEFORMABILITY BASED CELL MARGINATION FOR MALARIAL INFECTED RED BLOOD CELL ENRICHMENT

H.W. Hou^{1,2}, A.A.S. Bhagat¹, P. Mao³, J. Han^{1,3}, and C.T. Lim³
¹*Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE,*
²*National University of Singapore, SINGAPORE,* and
³*Massachusetts Institute of Technology, USA*





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

Q. Zhang¹, K. Robin², C.-K. Tung³, and R.H. Austin^{1,2}

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

SPRINGERZAAL

Session 3B1 Clinical Assays

CHAIR: W. van der Wijngaart, Royal Institute of Technology (KTH), SWEDEN

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

MULTIPLEX BIOASSAYS USING A SUSPENSION ARRAY PLATFORM: TOWARDS THE HIGH THROUGHPUT SCREENING OF DRUGS TARGETING CANCER STEM CELLS

G.R. Broder¹, S.W. Birtwell¹, G. Hage², O. Thastrup², H. Morgan¹ and P.L. Roach¹
¹University of Southampton, UK, and ²cureX, DENMARK

09:35 - 09:55

MICROFLUIDIC MODEL OF SICKLE CELL PATHOPHYSIOLOGY

D.K. Wood¹, J.M. Higgins^{2,3}, L. Mahadevan⁴, and S.N. Bhatia^{1,5,6}
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

DISPOSABLE BIOANALYTICAL MICRODEVICE FOR MONITORING THE EFFECT OF ANTI-PLATELET DRUGS

L. Basabe-Desmonts^{1,2}, S. Ramstrom², A. Lopez-Alonso², M. Somers¹, A.J. Ricco¹, and D. Kenny²
¹Dublin City University, IRELAND and ²Royal College of Surgeons in Ireland (RCSI), IRELAND

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

HIGH-THROUGHPUT CIRCULATING TUMOR CELLS (CTCs) ISOLATION USING INERTIAL FORCES

A.A.S. Bhagat¹, H.W. Hou^{1,2}, S. Huang³, C.T. Lim^{1,2}, and J. Han^{1,3}
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

Break and Exhibit Inspection

Session 3A2 Cell Analysis I

CHAIR: J. Han, Massachusetts Institute of Technology, USA

Session 3B2 Blood Analysis

CHAIR: K. Hjort, Uppsala University, SWEDEN

10:45 - 11:05

INVITED PRESENTATION VISUALIZING VIRAL FUSION AT THE SINGLE-PARTICLE LEVEL IN MICROCHANNELS

D.L. Floyd¹, J.J. Otterstrom^{1,2}, J.J. Skehel³, S.C. Harrison², and A.M. van Oijen²
¹Harvard Medical School, USA, ²University of Groningen, THE NETHERLANDS, and ³Medical Research Council, UK

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

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. Bander², D.M. Nanus², P. Giannakakou², and B.J. Kirby¹
¹Cornell University, USA and ²Weill Cornell Medical College, USA

HIGH-THROUGHPUT BLOOD ANALYSIS ON A CHIP USING LENSLESS DIGITAL HOLOGRAPHY

S.O. Isikman¹, S.S. Seo^{1,2}, 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

11:25 - 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

BACK-TO-BACK INTEGRATED NANOWIRE BIOSENSOR WITH MICROFILTRATION 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



BORGMANZAAL - A

Session 3C1
Integrated Microfluidic Systems
 CHAIR: A. Hibara, *University of Tokyo, JAPAN*

BORGMANZAAL - B

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

09:15 - 09:35

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*

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

09:35 - 09:55

MINIATURIZATION OF INTEGRATED MICROFLUIDIC SYSTEMS
 H. Kinoshita¹, K. Aoki¹, I. Yanagisawa², and T. Fujii¹
¹*University of Tokyo, JAPAN* and ²*Nano Fusion Technologies, Inc., JAPAN*

INVITED PRESENTATION
ELECTROCHEMICAL NANOFUIDICS: THE MESOSCOPIC LIMIT
 M.A.G. Zevenbergen¹, N. Wongrajit¹, P.S. Singh¹, **E.D. Goluch¹**, B.L. Wolfrum¹, and S.G. Lemay^{1,2}
¹*Delft University of Technology, THE NETHERLANDS* and ²*MESA+, University of Twente, THE NETHERLANDS*

09:55 - 10:15

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

CONCENTRATION DEPENDENCE OF STERN LAYER CAPACITANCES AND SURFACE EQUILIBRIUM CONSTANTS IN SILICA-BASED NANOFUIDIC CHANNELS
 M.B. Andersen¹, J.S. Frey², H. Bruus¹, and S. Pennathur²
¹*Technical University of Denmark, DENMARK* and ²*University of California, Santa Barbara, USA*

10:15 - 10:45

Break and Exhibit Inspection

Session 3C2

Microfluidic Circuits

CHAIR: H. van der Linden, *Leiden University, THE NETHERLANDS*

Session 3D2

Nanobiotechnology

CHAIR: J. Emnéus, *Technical University of Denmark, DENMARK*

10:45 - 11:05

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

TRACKING OF SINGLE DNA AND PROTEIN MOLECULES UNDERGOING ENZYMIC DEGRADATION IN FLUID
 D. Onoshima¹, N. Kaji¹, M. Tokeshi¹, and Y. Baba^{1,2}
¹*Nagoya University, JAPAN* and ²*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

11:05 - 11:25

FAST AND SIMPLE: RECONFIGURABLE ELEMENTS AND SOLUTIONS FOR CREATING AND DRIVING FLUIDIC NETWORKS
 D. Sabourin¹, P. Skafté-Pedersen¹, V. Coman¹, M. Hemmingsen¹, J. Petersen², J.P. Kutter¹, J. Emnéus¹, D. Snakenborg¹, and M. Dufva¹
¹*Danmarks Tekniske Universitet (DTU), DENMARK* and ²*Herlev University Hospital, DENMARK*

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

11:25 - 11:45

SPATIALLY RESOLVED PRESSURE AND FLOW METERING IN MICROFLUIDIC SYSTEMS USING POLYELECTROLYTE HYDROGELS
 M. Utz and K. Prudnikova
University of Virginia, 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. Schwillé

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

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W3A

ON-CHIP MELTING CURVE ANALYSIS WITH A PRECISE TEMPERATURE COMPENSATION METHOD

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W4A

SINGLE DNA MOLECULE DETECTION BY ON-BEAD ROLLING CIRCLE AMPLIFICATION USING MICROCHIP FOR EFFICIENT DETECTION

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Life Science Applications

Clinical Diagnostics

W5A

A FULLY-INTEGRATED APTAMER-BASED AFFINITY ASSAY PLATFORM FOR MONITORING ASTRONAUT HEALTH IN SPACE

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W6A

A NOVEL TECHNIQUE FOR DETECTING THE THERAPEUTIC TARGET, KRAS MUTANT, FROM PERIPHERAL BLOOD USING THE AUTOMATIC GENECHIP ANALYZER DEVICE WITH WEIGHTED ENZYMIC CHIP ARRAY

S.K. Hsiung¹, H.J. Chang¹, M.J. Yang², M.S. Chang¹, D.A. Tsao¹, H.H. Chiu³, Y.F. Chen⁴, T.L. Cheng², and S.R. Lin¹

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W7A

ANALYSIS OF SPERM QUALITY IN A MICROFLUIDIC DEVICE

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J.-T. Hsieh, H.-C. Chang, W.-Y. Ma, and A.M. Wo

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W8A

DEVELOPMENT OF MICROFLUIDIC BASED DEVICES FOR STUDYING TUMOUR BIOLOGY AND EVALUATING TREATMENT RESPONSE IN HEAD AND NECK CANCER BIOPSIES

D.C. Sylvester, S.M. Hattersley, S.J. Haswell, N.D. Stafford, and J. Greenman

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W9A

HIGH-SENSITIVE ENZYME-LINKED IMMUNOSORBENT ASSAY IN THREE-DIMENSIONAL LAB-ON-A-CD

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W10A

IN SITU MONITORING OF CAUTERIZATION WITH A BIOPSY NEEDLE USING IMPEDANCE CHARACTERISTICS OF EMBEDDED PIEZOTHERMAL ELEMENTS

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W11A

MICROFLUIDIC CHIP-CAPILLARY ELECTROPHORESIS WITH ADJUSTABLE ON-CHIP SAMPLE DILUTION FOR PROFILING OF URINARY MARKERS

W.P. Guo and Y.S. Fung

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W12A

MICROFLUIDIC SYSTEMS FOR IMPROVING ASSISTED REPRODUCTIVE TECHNOLOGIES CULTURE PROTOCOLS

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W13A

PAPER-BASED ELECTROCHEMICAL ELISA

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W14A

RAPID AND SENSITIVE MICRORNA PROFILING USING ENCODED GEL PARTICLES

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W15A

DEVELOPMENT OF SmartAmp2-BASED TECHNOLOGY FOR RAPID DETECTION OF THE 2009 PANDEMIC INFLUENZA A/H1NA VIRUS

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Life Science Applications

Point-of-Care Testing

W16A

A GENERAL PURPOSE, MULTIWAVELENGTH, MICROFLOW CYTOMETER FOR CLINICAL AND ENVIRONMENTAL APPLICATIONS

P.B. Howell, N. Hashemi, J.P. Golden, J.S. Erickson, J. Kim, G.P. Anderson, and F.S. Ligler

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W17A CELL-BASED TOXIN SCREENING INTEGRATED WITH A CELL-SUSTAINABLE HYDROGEL ON CHIP FOR ONSITE AND PORTABLE APPLICATIONS

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W18A DIRECT ON-DISK WIRELESS TEMPERATURE MEASUREMENT FOR CENTRIFUGAL MICROFLUIDIC PLATFORMS

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W19A HIGH SPEED PLATELET COUNTING BY MICROFLUIDIC IMPEDANCE MEASUREMENT IN DILUTED WHOLE BLOOD

D.M. Pettigrew, S.C. Deane, J.D. Gwyer, C.H. Reccius, C. Glasse, M.R. Burcher, and C. van Berkel

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

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W21A MICROFLUIDIC DEVICES FOR RAPID LABEL-FREE SEPARATION AND SENSING OF CELLS

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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. Baba^{1,3}

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W23A POINT-OF-CARE MEASUREMENT OF ZINC IN BLOOD SERUM

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W. Heineman¹, and I. Papautsky¹

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W24A THE DEVELOPMENT OF A DIAGNOSTIC TEST FOR THE DETECTION OF DRUGS IN SALIVA USING A DISPOSABLE SAMPLE PREPARATION MICRO-FLUIDIC CARTRIDGE

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Life Science Applications

Drug Development

W25A A CELLULAR MICROARRAY PERFUSION SYSTEM FOR CHEMO-DRUG SCREENINGS

L.-C. Hsiung, C.-H. Wang, C.-L. Chiang, C.-T. Kuo, Y.-H. Huang, H. Lee, and A.M. Wo

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W26A DEVELOPMENT OF A MICRO CARDIOVASCULAR SYSTEM FOR EVALUATION OF ANTICANCER ACTIVITY AND RENAL CLEARANCE

K. Sato, Y. Imura, and E. Yoshimura

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W27A MERGING 'MICRO' WITH 'NANO': ON-CHIP HIGH-THROUGHPUT SYNTHESIS OF POLYMERIC NANOPARTICLES FOR CANCER THERAPY

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W28A ON THE GENERATION OF POLY(DL-LACTIDE-CO-GLYCOLIDE) (PLGA) PARTICLES IN MICROFLUIDIC FLOW FOCUSING DEVICES (MFFD) MADE OF NORLAND OPTICAL ADHESIVE (NOA 81)

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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. Naylor², S. Gabbert², and D. Johnson²

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Life Science Applications

Cell Culture

W30A A MICROFLUIDIC DEVICE WITH HYDRODYNAMIC SWITCHING FOR TRANSPORT PROPERTY MEASUREMENTS OF CELL MEMBRANES

W.J. Chen and W.H. Hsieh

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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

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W32A AN AUTOMATED EMBRYO CULTURE SYSTEM USING DYNAMIC MICROARRAY

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and T. Fujii¹

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W33A CONTINUOUS MYELOMA CELL CULTURE IN STORAGE CHAMBER BASED ON DROPLET FUSION-DIVISION

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W34A FLOW-THROUGH ELECTROPORATION FOR TRANSFECTION BASED ON LOW-FREQUENCY AC VOLTAGE

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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. Tsuda^{1,2}, H. Nakamura¹, and S. Takeuchi^{1,2}

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W36A IMPEDANCE SPECTROSCOPY FOR IN SITU BIOMASS MEASUREMENTS IN MICROBIOREACTORS

S. Goh and R.J. Ram

Massachusetts Institute of Technology, USA



W37A

INTEGRATED PERFUSION CULTURE MICRO-CHAMBER ARRAY CHIP FOR HIGH-THROUGHPUT DRUG DOSE RESPONSE ASSAY

K. Hattori, S. Sugiura, and T. Kanamori
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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 MICROTOXICOLOGICAL SCREENINGS

P.M. Günther, A. Funfak, J. Cao, S. Schneider, F. Möller, and J.M. Köhler
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W40A

STRAIN-GRADATION GENERATOR USING SERIALLY CONNECTED MICROBALLOONS FOR PARALLEL TESTING OF CELL-STRETCHING CULTURE

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Life Science Applications

Cell Handling & Sorting

W41A

A MICROFLUIDIC MAMMALIAN CELL SORTER WITH THERMAL GELATION POLYMER SOLUTION

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W42A

A RESETTABLE HIGH-DENSITY MICROFLUIDIC CELL TRAPPING SYSTEM

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W43A

ACOUSTOPHORETIC PRETREATMENT OF CELL LYSATE PRIOR TO FACS ANALYSIS

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W44A

BIOLOGICAL PARTICLE HANDLING USING FLOW-INDUCED ELECTROKINETIC TRAPPING

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W45A

CONCENTRATION AND EXTRACTION CHIP OF FETAL NUCLEATED RED BLOOD CELL (NRBC) BY MICRO GAP WITH DIAPHRAGM FOR FETAL DNA DIAGNOSIS FROM MATERNAL BLOOD

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W46A

DEAN FLOW-COUPLED INERTIAL FOCUSING FOR ULTRA-HIGH-THROUGHPUT PARTICLE FILTRATION

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W47A

DIFFERENT BARCODES CODIFICATION FOR EMBRYO MICRO-LABELING

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W48A

EXTRACTION OF CIRCULATING TUMOR CELLS FROM BLOOD USING ACOUSTOPHORESIS

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W49A

CELL 'TRAP AND RELEASE' USING NOVEL MICROFLUIDIC 'HYDRAULIC JUMP' TRAP

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W50A

LONG-RANGE CONCENTRATION GRADIENTS OF MULTI-COMPOUNDS FOR BACTERIAL CHEMOTAXIS ASSAY

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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

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W52A

MICROFLUIDIC MODULES FOR [18F] ACTIVATION - TOWARDS AN INTEGRATED MODULAR LAB ON A CHIP FOR PET RADIOTRACER SYNTHESIS

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W53A

NEGATIVE DIELECTROPHORETIC FORCE BASED SEPARATION SYSTEM FOR HUMAN BREAST CANCER CELL (MCF 7) IN DILUTED RED BLOOD CELLS (RBC)

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W54A

PASSIVE LABEL-FREE RARE CELL ENRICHMENT INERTIAL MICROFLUIDIC DEVICE USING CELL DEFORMABILITY AS A BIOMARKER

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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

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W56A

TWO-DIMENSIONAL CELL SORTING DEVICE EMPLOYING PINCHED-FLOW FRACTIONATION AND MAGNETOPHORESIS

M. Senaha, R. Mitamura, M. Yamada, and M. Seki

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Life Science Applications

Cell Analysis

W57A

'SNIFFER-PATCH ASSAY' ON A MICROFLUIDIC CHIP FOR HIGH-THROUGHPUT SCREENING OF DRUGS TO CONTROL NEUROTRANSMITTER RELEASE

Y.H. Kim, G.W. Jeong, Y.E. Kim, D.H. Woo, C.J. Lee, J.Y. Kang, and T.S. Kim

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W58A

A HIGH PERFORMANCE CONTINUOUS ELECTROPORATION CHIP

Z. Wei, H. Huang, M. Wu, Z. Liang, W. Wang, and Z. Li

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W59A

A MICRO MOIRE CHIP FOR AUTOMATED WHOLE FIELD CELL ANALYSIS

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W60A

A NEURONAL NETWORK DISPLAY FOR NEUROTOXICITY SCREENING

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W61A

ANALYSIS OF INTRACELLULAR RESPONSE TO LOCALIZED CHEMICAL STIMULATION ON TISSUE-MIMICKING MICRODEVICE

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W62A

DEPLETION ZONE ISOTACHOPHORESIS: A NEW MICRO/NANOFLUIDIC ELECTROKINETIC METHOD

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W63A

ELECTRON-BEAM INDUCED IN SITU SPATIOTEMPORAL NANOFABRICATION TOWARD INTRACELLULAR NANOROBOTICS

T. Hoshino and K. Morishima

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W64A

FISH 'N' CHIPS – A SINGLE CELL GENOMIC ANALYZER FOR THE HUMAN MICROBIOME

R.J. Meagher, P. Liu, Y.K. Light, K.D. Patel, T.D. Perroud, and A.K. Singh

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W65A

INTEGRATED LABELLING, DISSOCIATION, ELECTROKINETIC TRANSPORT AND DETECTION OF PRIMARY TUMOUR CELLS

J. Woods, P.T. Docker, C.E. Dyer, S.J. Haswell, and J. Greenman

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W66A

LABEL-FREE DETECTION OF B AND T CELL RESPONSES BY USING HIGH RESOLUTION 2D-SPR IMAGING SENSOR

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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

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W68A

MICROFLUIDIC SYSTEM FOR EVALUATION OF PHOTODYNAMIC THERAPY (PDT) PROCEDURES

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W69A

OPTICAL INJECTION AND MANIPULATION OF FUNCTIONAL NAOTOOL USING PHOTO-RESPONSIVE CHEMICAL AND OPTICAL TWEEZERS FOR INTRACELLULAR MEASUREMENT

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W70A

SINGLE LIVING CELL MANIPULATION AND MICRORHEOLOGICAL STUDY WITH LASER-INDUCED CAVITATION BUBBLES

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W71A

STUDYING NF-KAPPA B TRANSLOCATION BETWEEN NUCLEUS AND CYTOPLASM BY ELECTROPORATIVE FLOW CYTOMETRY

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W72A

DEVELOPMENTS TOWARDS INTEGRATED ACOUSTIC CELL TRAPPING AND PCR

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Life Science Applications

Others

W73A

A CAPILLARY-ENDOTHELIUM-MIMETIC MICROFLUIDIC CHIP FOR THE STUDY OF CHEMOTACTIC RESPONSE

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W74A

AN ANTIBIOTIC BIOSENSOR PLATFORM FOR PRECLINICAL EVALUATION OF DRUG RELEASE PROFILE OF NANOCAPSULES

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W75A

CHARGE-REVERSIBLE SOLID SURFACE AND ITS APPLICATION TO DNA MANIPULATION UNDER MICROFLUIDIC ENVIRONMENTS

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W76A

HIGH-THROUGHPUT END-ON IMAGING OF DROSOPHILA EMBRYO FOR QUANTITATIVE ANALYSIS OF MORPHOGENS AND SIGNALING

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W77A

MAGNETICALLY ACTUATED PARTICLE-BASED PROCEDURES IN CONTINUOUS FLOW

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W78A

MICROFLUIDIC DEVICES FOR ANESTHETIC FREE IN VIVO AXONAL TRANSPORT IMAGING

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W79A

MINIATURE OSMOTIC ACTUATORS FOR CONTROLLED MAXILLOFACIAL DISTRACTION OSTEOGENESIS

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W80A

PARALLEL NEURON-BENIGN MICROFLUIDIC GRADIENT GENERATOR ARRAY FOR STUDYING THE RESPONSE OF SINGLE NEURONS TO BIOCHEMICAL GRADIENTS

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Microreaction Applications

Flow Chemistry/Synthesis

W1B

A MICROFLUIDIC APPROACH TO "GREEN" SINGLET OXYGEN MEDIATED OXIDATION

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W2B

DIRECT SYNTHESIS OF HYDROGEN PEROXIDE BASED ON MICROREACTOR TECHNOLOGY

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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

Microreaction Applications

Integrated Synthesis & Work-up

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

Microreaction Applications

Others

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. Suzuki^{1,3}, and T. Yomo^{1,3}
¹Osaka University, JAPAN, ²Tokyo University, JAPAN, and
³Japan Science and Technology Agency (JST), JAPAN

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

W2C

AUTONOMOUS MICROFLUIDIC SYSTEM FOR SPECTROSCOPIC pH MEASUREMENTS

R.E.G van Hal¹, J. Shah¹, R.J. Schroeder¹, P. Dryden¹, J. Wong¹, D.J. Pittman², G.H. Gustavson¹, and B. Raghuraman¹

¹Schlumberger-Doll Research, USA and

²Schlumberger Riboud Product Centre, FRANCE

W3C

MICRO PRECONCENTRATOR FOR HANDHELD MONITORING OF WATER QUALITY

B. Alfeeli^{1,2} and M. Agah¹

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²Kuwait Institute for Scientific Research, KUWAIT

W4C

WATER QUALITY MANAGEMENT USING A COST-EFFECTIVE AND FIELD-PORTABLE LENSFREE ON-CHIP MICROSCOPE

O. Mudanyli, C. Oztoprak, D. Tseng, A. Erlinger, and A. Ozcan
 University of California, Los Angeles, USA

Other Applications

Separation Science

W5C

DEVELOPMENT OF A MICROFLUIDIC DEVICE FOR PERFORMING SAMPLE PRECONCENTRATION AND CAPILLARY ELECTROPHORESIS SEPARATION

H. Chun¹, J.P. Alarie², and J.M. Ramsey²

¹Seoul National University, SOUTH KOREA and ²University of North Carolina, USA

W6C

DOWNSCALING QUANTITATIVE ISOTACHOPHORESIS: LIMITS AT THE SUB-PICOLITER SCALE

K.G.H. Janssen¹, J. Li¹, H.T. Hoang², N.R. Tas², H.J. van der Linden¹, and T. Hankemeier¹

¹Leiden University, THE NETHERLANDS and

²MESA+, University of Twente, THE NETHERLANDS

W7C

FLUORESCENCE IMAGING ANALYSIS OF TRANSIENT TRAPPING-MICROCHIP MICELLAR ELECTROKINETIC CHROMATOGRAPHY

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

W8C

ION-PAIR REVERSED PHASE LIQUID CHROMATOGRAPHY OF DNA IN DEEP-UV PATTERNED SILICON PILLAR ARRAYS

W. De Malsche^{1,2}, L. Zhang², J. Op De Beeck¹, J. Vangelooen¹, M. Hiraoka^{2,3}, I. Yamashita³, B. Majeed², M. Op de Beeck², P. Fiorini², and G. Desmet¹

¹Vrije Universiteit Brussel, BELGIUM, ²IMEC, BELGIUM, and ³Panasonic, JAPAN

W9C

MIGRATION AND SEPARATION OF PHOTO-ABSORBING MICRO-PARTICLES USING LASER-PHOTOPHORESIS IN AQUEOUS SOLUTION

H. Monjushiro¹, M. Takahashi², and H. Watarai²

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²Osaka University, JAPAN

W10C

SAMPLE STACKING CAPILLARY ELECTROPHORETIC MICRODEVICE FOR HIGHLY SENSITIVE MINI Y SHORT TANDEM REPEAT GENOTYPING

Y. Chen, J.Y. Choi, S.J. Choi, and T.S. Seo

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

Other Applications

Food & Nutrition

W11C

INTEGRATED OPTOFLUIDIC SYSTEM FOR CHARACTERIZATION OF RED WINES

M. Gutiérrez¹, C. Domingo², J. Vila-Planas¹, F. Capdevila², S. Demming³, S. Büttgenbach³, A. Llobera¹, and C. Jiménez-Jorquera¹

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³Institut für Mikrotechnik, GERMANY



Other Applications

Fuel Cells

W12C

SCALING AND MANUFACTURING OF LAMINAR FLOW-BASED FUEL CELLS

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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. Riepen², R. Badie², and J. den Toonder¹

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²ASML Research, THE NETHERLANDS

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. Tsudome², Y. Endo², K. Mawatari³, and T. Kitamori³

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 EPIFLUORESCENCE 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 ELECTROSMOTIC MOBILITY OF COMPLEX DNA BUFFERS IN MICRO/NANOFLUIDICS

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

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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 VACUUM JACKETS FOR $n \times m$ QUANTITATIVE ANALYSIS

N.B. Trung¹, M. Saito², E. Tamiya², and Y. Takamura¹

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²Osaka University, JAPAN

W9D

AN OPEN-SURFACE MICRO-DISPENSER 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

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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. Madou², H. Morgan¹, and N.G. Green¹

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W12D

MICROFLUIDIC NETWORK-BASED COMBINATORIAL DILUTION DEVICE WITH AN INITIAL CONCENTRATION CONTROLLER

K. Lee¹, C. Kim², Y. Kim², B. Ahn¹, J. Bang², J. Kim¹, Y.-K. Yoon¹, J.Y. Kang², and K.W. Oh¹

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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. Delamarque

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. Hardt

Technische Universität Darmstadt, GERMANY

Microfluidics

Multi-Phase and Digital Microfluidics

W17D

A HOMOGENEOUS ASSAY FOR BIOMOLECULE INTERACTION ANALYSIS IN DROPLETS BY FLUORESCENCE POLARIZATION

H. Joensuu, C. Zhang, M. Uhlén, and H. Andersson Svahn

Royal Institute of Technology (KTH), SWEDEN

W18D

BUBBLES NO MORE: TRAPPING AND REMOVAL OF GAS BUBBLES IN SINGLE-LAYER ELASTOMERIC DEVICES

C. Lochovsky, S. Yasotharan, and A. Günther

University of Toronto, CANADA



W19D CONTROLLED DROP GENERATION FOR DIGITAL MICROFLUIDIC SYSTEMS BY MEANS OF ELECTROWETTING

H. Gu, M.H.G. Duits, and F. Mugele
MESA+, University of Twente, THE NETHERLANDS

W20D 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

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

W22D MAGNETIC DROPLETS - GENERATION AND MANIPULATION IN CONTINUOUS FLOW

E. AlHettani, O.J. Hatt, M. Vojtišek, M.D. Tarn, 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. Khan^{1,2}
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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

Multi-Scale / Integrative Microfluidics

W27D INTEGRATED MICROFLUIDICS FOR SEROTYPE IDENTIFICATION OF FOOT AND MOUTH DISEASE VIRUS

H. Sant¹, S. Sundberg¹, A. Miles², M. Johnson¹, E. Liddiard¹, and B. Gale^{1,2}
¹*University of Utah, USA* and ²*Wasatch Microfluidics, USA*

W28D MICROFLUIDIC CULTURE CHAMBER FOR THE LONG-TERM PERFUSION AND PRECISE CHEMICAL STIMULATION OF ORGANOTYPIC BRAIN TISSUE SLICES

H.H. Caicedo¹, M. Vignes^{2,3}, B. Brugg², and J.M. Peyrin²
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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

Microfluidics

Others

W30D ACTIVE MICROFLUIDIC MIXER USING VIRTUAL SOURCE-SINK PAIRS FOR DNA PURIFICATION

H.C. Tekin, C. Vandevyver, and M.A.M. Gijs
Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W31D FLOATING MICROFLUIDIC GRADIENTS

M.A. Qasaimeh and D. Juncker
McGill University, CANADA

W32D 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

W33D OPTOFLUIDIC FABRICATION OF FOLDABLE HYDROGEL PARTICLES TOWARD INTUITIVE DRUG DELIVERY CARRIERS

T.S. Shim, S.-H. Kim, C.-J. Heo, J.-H. Choi, and S.-M. Yang
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

W34D 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

Nanofluidics

W1E CLOSED-END NANOCHANNELS: MODEL PLATFORM FOR NANOFLUIDIC FLOWS

P. Joseph¹, V.N. Phan², P. Dubreuil¹, P. Abgrall², A.-M. Gué¹, and N.-T. Nguyen²
¹*Université de Toulouse, FRANCE* and ²*Nanyang Technological University, SINGAPORE*

W2E 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. Haghiri-Gosnet
Centre National de la Recherche Scientifique (CNRS), FRANCE

Nanotechnologies

Nanoengineering

W3E VERTICAL NANOTUBES CONNECTED BY A SUBSURFACE NANOCHANNEL

H. Persson¹, J. Beech¹, W. Hällström¹, C. Niman¹, L. Samuelson¹, M. Kanje¹, S. Oredsson¹, C.N. Prinz¹, and J.O. Tegenfeldt^{1,2}
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Nanotechnologies

Nanobiotechnology

W4E AN OPEN MICROFLUIDIC DEVICE WITH ACTIVE VALVES FOR ACCURATE TRAPPING OF DNA BY SILICON NANOTWEEZERS

N. Lafitte, M. Kumemura, M. Nagai, L. Jalabert, D. Collard, and H. Fujita
University of Tokyo, JAPAN

W5E DYNAMIC TRACKING OF SINGLE CELL SYNTHESIS OF CdSe QUANTUM DOTS WITH A MICROFLUIDIC DEVICE

L. Wang¹, Z.-L. Zhang¹, R. Cui¹, H.-H. Liu¹, J. Li¹, S.-L. Liu¹, Z.-X. Xie¹, Y. Chen², and D.-W. Pang¹
¹*Wuhan University, CHINA* and ²*Ecole Normale Supérieure, FRANCE*



W6E

FABRICATION OF SILICON NANOPATE AND NANOWIRE BIOSENSOR ARRAYS WITH HIGH SPECIFICITY AND SUB-PICOMOLAR LIMITS OF DETECTION

B. Dorvel¹, B. Reddy Jr.¹, D. Bergstrom², M.A. Alam², S. Clare³, and R. Bashir¹
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W7E

NANOFLUIDIC SINGLE-MOLECULE SORTER CONCEPTUALLY PROVEN BY SORTING OF DNA

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W8E

ON-CHIP NANOMANIPULATION OF SINGLE INFLUENZA VIRUS USING DIELECTROPHORETIC CONCENTRATION AND OPTICAL TWEEZERS

H. Maruyama¹, K. Kotani², A. Honda³, T. Takahata³, and F. Arai¹
¹Nagoya University, JAPAN, ²Tohoku University, JAPAN, and ³Hosei University, JAPAN

W9E

REAL-TIME OBSERVATION OF DNA CONFORMATIONAL TRANSITIONS AT A SINGLE-MOLECULE LEVEL BY MICROFLUIDIC DEVICES

H. Suzuki¹, N. Kaji¹, Y. Okamoto¹, M. Tokeshi¹, and Y. Baba^{1,2}
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Nanotechnologies

Nanoassembly

W10E

SIMULTANEOUS CONTROL OF LENGTH AND LOCATION OF METAL-ORGANIC NANOWIRES GROWN BY HYDRODYNAMIC FOCUSING IN A MULTILAYER MICROFLUIDIC DEVICE

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Nanotechnologies

Nanostructured Materials

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 APPLICATION

Thu.H.H. Le, K. Mawatari, K. Kitamura, T. Yatsui, T. Kawazoe, M. Ohtsu, and T. Kitamori
University of Tokyo, JAPAN

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
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MEMS & NEMS Technologies

Micro- & Nanomachining

W1F

A NOVEL FABRICATION METHOD OF HOLLOW NANONEEDLES APPLICABLE FOR SINGLE CELL OPERATION

Y. Zhang, X. Ji, C. Li, W. Wu, and Z. Li
Peking University, CHINA

W2F

ENHANCED MICROFABRICATION CAPABILITIES OF THERMOPLASTICS ELASTOMERS FOR CD LAB SYSTEM INCLUDING: LYSING, PCR AND HYBRIDIZATION MICROFLUIDIC FUNCTIONS

E. Roy¹, M. Mounier¹, R. Peytavi², J. Siegrist³, R. Gorkin³, M. Madou², M.G. Bergeron² and T. Veres¹
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W3F

FABRICATION OF A MRI STANDARDIZATION DEVICE BY STACKING HIGHLY PATTERNED THIN PDMS LAYERS

R. Samuel, H.J. Sant, F. Jiao, C.R. Johnson, and B.K. Gale
University of Utah, USA

W4F

FLEXIBLE MICROPOST ARRAYS FOR STUDYING TRACTION FORCES OF VASCULAR SMOOTH MUSCLE CELLS

Q. Cheng, Z. Sun, G.A. Meininger, and M. Almasri
University of Missouri, USA

W5F

MICROMACHINING OF PYREX7740 GLASS FOR MICRO-FLUIDIC DEVICES

J.W. Liu, Q.A. Huang, J.T. Shang, and J.Y. Tang
Southeast University, CHINA

W6F

WAX PATTERNS BY DECAL-TRANSFER-MICROLITHOGRAPHY AND ITS USE FOR LOW-TEMPERATURE-BONDING OF BIO-FUNCTIONALIZED μTAS

M. Díaz-González and A. Baldi
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MEMS & NEMS Technologies

Microfluidic Components/Packaging

W7F

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

W8F

ALL IN ONE LATERAL-FLOW CHIP FOR ARRAY IMMUNOASSAY

T. Miura, T. Horiuchi, J. Takahashi, Y. Iwasaki, M. Seyama, and E. Tamechika
NTT Microsystem Integration Laboratories, JAPAN

W9F

FREQUENCY ADDRESSABLE ACOUSTIC COLLECTION, SEPARATION AND MIXING IN A PZT DRIVEN GLASS CAPILLARY MICROFLUIDIC ACTUATOR

M.K. Araz and A. Lal
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W10F

METABOLOMIC NMR BY INDUCTIVE COUPLING

A. Zaß¹, K. Wang¹, J. Korvink¹, M. Reed², J. Landers¹, and M. Utz¹
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W11F

PDMS NANOSTRUCTURES FABRICATED BY TWO-STEP MOLDING PROCESS USED FOR TUNABLE SERS INTEGRATED WITH MICROFLUIDICS

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MEMS & NEMS Technologies

Integration Strategies

W12F

A TWO CHAMBER SU8 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. Mayora¹, D. Verdoy², and J.M. Ruano-Lopez¹
¹Ikerlan S. Coop, SPAIN and ²Gaiker, SPAIN



W13F

FACILE AND CONTROLLED INTEGRATION OF FUNCTIONAL NANOSTRUCTURES IN MICROFLUIDIC DEVICE

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MEMS & NEMS Technologies

New Chip Materials

W14F

FLUOROTHERMOPLASTIC CHIPS FOR DROPLET MICROFLUIDICS AND DNA ANALYSIS

S. Begolo, G. Colas, L. Malaquin, and J.-L. Viovy

Institut Curie, FRANCE

W15F

MICROFLUIDIC DEVICES MADE OF UV-CURABLE GLUE (NOA81) FOR FLUORESCENCE DETECTION BASED APPLICATIONS

Ph. Wägli, B.Y. Guélat, A. Homsy, and N.F. de Rooij

Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

MEMS & NEMS Technologies

Surface Modification

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

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W17F

IN-SITU SOL-GEL MODIFICATION OF PDMS ELECTROPHORETIC ANALYTICAL DEVICES

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W18F

SIMPLE AND FUNCTIONAL MODIFICATION OF PDMS SURFACE FOR MICROCHANNEL ELECTROPHORESIS

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W19F

WETTABILITY PATTERNING IN MICROFLUIDIC SYSTEMS BY POLY(ACRYLIC ACID) GRAFT POLYMERIZATION

M.H. Schneider^{1,2}, B. Kozlov^{1,2}, H. Willaime¹, Y. Tran¹, F. Rezgui², and P. Tabeling¹

¹École Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and ²Études et Production Schlumberger, FRANCE

Imaging & Detection 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

Imaging & Detection Technologies

Optical

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

W3G

CMOS-BASED LUMINESCENCE DETECTION FOR LAB-ON-A-CHIP

L. Shen¹, M. Ratterman¹, D. Klotzkin², and I. Papautsky¹

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 BIOMEMS

S. Laurette, A. Treizebre, and B. Bocquet

Université de Lille, FRANCE

W6G

INVESTIGATION OF PLASMONIC NANODOT ARRAYS COMPARED WITH NANO HOLE ARRAYS FABRICATED BY A SEQUENTIAL NANOIMPRINT TECHNIQUE

K. Nakamoto^{1,2}, R. Kurita², and O. Niwa^{1,2}

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. Kojo², E. Iwase³, K. Matsumoto¹, and I. Shimoyama¹

¹University of Tokyo, JAPAN, ²Cannon Corp., JAPAN, and ³Harvard University, USA

W8G

REAL-TIME BIOCHEMICAL RESPONSE UPON CHEMICAL STIMULATION OF LIVING MONOCYTES INVESTIGATED BY FOURIER TRANSFORM INFRARED MICROSCOPY (μ-FTIR)

G. Birarda^{1,2}, G. Greci², L. Businaro², S. Pacor³, M. Tormen², and L. Vaccari¹

¹ Elettra Synchrotron Light Laboratory, ITALY,

² Consiglio Nazionale delle Ricerche (CNR), ITALY, and

³ Trieste University, ITALY

Imaging & Detection Technologies

Electrochemical

W9G

3-D CARBON INTERDIGITATED ARRAY NANO-ELECTRODES FOR HIGHLY SENSITIVE SENSING OF NEUROTRANSMITTERS

J.-I. Heo¹, D.-S. Shim¹, R.M. Duarte², M. Madou², and H. Shin¹

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

²University of California, Irvine, USA

W10G

INTEGRATED ELECTROCHEMICAL MICRO-SENSORS FOR METABOLISM STUDIES OF YEAST CELLS

F. Zhang^{1,2}, J.J. Liu¹, J.H. Tian¹, L. Wang¹, P.G. He², and Y. Chen^{1,3}

¹École Normale Supérieure (ENS), FRANCE,

²East China Normal University, CHINA, and

³Kyoto University, JAPAN

W11G

SIGNIFICANT IMPROVEMENT IN SENSITIVITY OF LEAKAGE CURRENT MICROSENSOR BY USING DENATURANT AND ELECTROLYTE-ENTRAPPING DPPC LIPOSOMES

P. Lorchirachonkul¹, T. Shimanouchi², K. Yamashita¹, H. Umakoshi², R. Kuboi², and M. Noda¹

¹Kyoto Institute of Technology, THAILAND and ²Osaka University, JAPAN

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



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. Laurell², 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. Xiong^{1,2}, 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 NO_x CONVERTER FOR THE TOTAL NO_x 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 3 ω 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. Sulaimalebbe, and D.A. Barrow
 Cardiff University, UK

Special Focus Session

Tissue Engineering

W1H
BEAD-BASED RAPID CONSTRUCTION OF HETEROGENEOUS 3D TISSUE ARCHITECTURE
 Y. Tsuda^{1,2}, H. Onoe¹, and S. Takeuchi^{1,2}
¹University of Tokyo, JAPAN and ²BEANS Project, JAPAN

W2H
DEVELOPMENT OF INSULIN DELIVERY DEVICES COMPOSED OF LANGERHANS ISLETS AND CARDIOMYOCYTES
 H. Akaike¹, Y. Tanaka^{1,2}, Y. Sugii^{1,2}, and T. Kitamori^{1,2}
¹University of Tokyo, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

W3H
HIGHLY ALIGNED SKELETAL MUSCLE FIBERS
 Y. Shimoyama, H. Onoe, Y. Tsuda, and S. Takeuchi
 University of Tokyo, JAPAN

W4H
MICROARRAYS FOR THE SCALABLE PRODUCTION OF UNIFORM AND METABOLICALLY RELEVANT TUMOUR SPHEROIDS
 H. Hardelauf¹, J.-P. Frimat¹, W. Schormann², J.D. Stewart², Y.-Y. Chiang¹, C. Cadenas², J. Franzke¹, J.G. Hengstler², L.A. Kunz-Schughart³, and J. West¹
¹Institute for Analytical Sciences (ISAS), GERMANY, ²IfADO, GERMANY, and
³University of Dresden, GERMANY

W5H
SCULPTING TISSUE SCAFFOLDS WITH EMBEDDED 3-D VASCULATURE
 J.-H. Huang, J. Kim, A. Jayaraman, and V.M. Ugaz
 Texas A&M University, USA

W6H
PREPARATION OF ALGINATE MICROFIBERS FOR CELL ENTRAPMENT USING A MICROFLUIDIC DEVICE
 L. Capretto¹, S. Mazzitelli², X. Zhang¹, and C. Nastruzzi²
¹University of Southampton, UK and ²University of Ferrara, ITALY

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
 H. Kim, M.S. Bartsch, R.F. Renzi, G.L. Pezzola, E.M. Remillard, E.A. Kittlaus, J. He, and K.D. Patel
 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





THEATRE

Session 3A3 Cell Analysis II

CHAIR: J. Voldman, *Massachusetts Institute of Technology, USA*

SPRINGERZAAL

Session 3B3 Assays for Trauma & Disease

CHAIR: H. Hisamoto, *Osaka Prefecture University, JAPAN*

16:00 - 16:20

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

K.L. Butler, V. Ambravaneswaran, N. Agrawal, M. Bilodeau, M. Toner, R.G. Tompkins, S. Fagan, and D. Irimia
Massachusetts General Hospital, Shriners Hospital for Children and, Harvard Medical School, USA

16:20 - 16:40

SEPARATION AND DETECTION OF RARE CELLS VIA MULTISTAGE MAGNETIC GRADIENT IN A MICROFLUIDIC DISK

C.-L. Chen, K.-C. Chen, Y.-C. Pan, T.-P. Lee, C.-W. Yang, L.-C. Hsiung, C.-M. Lin, C.-Y. Chen, C.-H. Lin, B.-L. Chiang, and A.M. Wo
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. Kivlehan², F. Mavre², D. Marchal², B. Limoges², A. Le Nel³, and J. Goulpeau³
¹Institut Curie, FRANCE, ²Université Paris, FRANCE, and ³FLUIGENT, FRANCE

16:40 - 17:00

SICKLING RED BLOOD CELLS IN DROPLET ARRAYS

P. Abbyad¹, R. Dangla¹, P.-L. Tharoux², A. Alexandrou¹, and C.N. Baroud¹
¹Ecole Polytechnique, FRANCE and ²Paris-Cardiovascular Research Centre, FRANCE

ASSESSING THE TRAUMATIC BRAIN INJURY MARKERS S100 AND C-REACTIVE PROTEIN IN HUMAN CEREBROSPINAL FLUID VIA MICROFLUIDIC IMMUNOSUBTRACTION

A.A. Apori and A.E. Herr
University of California, Berkeley, USA

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*

BORGMANZAAL - B

Session 3D3

Nanobiotechnology Separation

CHAIR: H. Gardeniers, *MESA+, University of Twente, THE NETHERLANDS*

16:00 - 16:20

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

16:20 - 16:40

BIOLOGICALLY INSPIRED BIDIRECTIONAL FLUIDIC DIODE

H. Cho, A. Kimteng, and L.P. Lee
University of California, Berkeley, USA

NANOSLINKY: DNA ENTROPYPHORESIS DOWN A NANOFUIDIC STAIRCASE

E.A. Strychalski, S.M. Stavis, M. Gaitan, and L.E. Locascio
National Institute of Standards and Technology (NIST), USA

16:40 - 17:00

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

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*

SPRINGERZAAL

Special Focus Session 4B1

In-Line Analysis in Microreactors

CHAIR: F. Rutjes, *Radboud University Nijmegen, THE NETHERLANDS*

09:00 - 09:30

INVITED PRESENTATION

COMPLEX TISSUE

C.A. van Blitterswijk

University of Twente, THE NETHERLANDS

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

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

AMPLIFICATION OF RNA IN GROWING AND DIVIDING MICRO-DROPLETS

T. Ichii¹, H. Suzuki^{1,2}, and T. Yomo^{1,2}

¹*Japan Science and Technology Agency (JST), JAPAN* and ²*Osaka University, JAPAN*

09:50 - 10:10

HIGH-THROUGHPUT SCREENING OF CELL-SURFACE TOPOGRAPHIC INTERACTIONS

H.V. Unadkat¹, M. Hulsman², K. Cornelissen¹, B. Papenburg¹, R.K. Truckenmüller¹, G.F. Post¹, M. Uetz¹, M.J.T. Reinders², D. Stamatialis¹, C. van Blitterswijk¹, and J. de Boer¹

¹*University of Twente, THE NETHERLANDS* and

²*Delft University of Technology, THE NETHERLANDS*

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

10:10 - 10:40

Break





BORGMANZAAL - A

Special Focus Session 4C1

Electrowetting-Driven Digital Microfluidics

CHAIR: F. Mugele, *University of Twente, THE NETHERLANDS*

BORGMANZAAL - B

Special Focus Session 4D1

Business with Microfluidics

CHAIR: H. van Heeren, *enablingMNT / MinacNed, THE NETHERLANDS*

09:00 - 09:30

INVITED PRESENTATION

PARALLEL PROCESSING OF MULTIFUNCTIONAL, POINT-OF-CARE BIO-APPLICATIONS ON ELECTROWETTING CHIPS

R.B. Fair
Duke University, USA

09:00 - 09:10 / SESSION INTRODUCTION

J. den Toonder, *Philips Applied Technologies, THE NETHERLANDS*

09:10 - 09:30 / INVITED PRESENTATION

THE JOURNEY OF ÅMIC

O. Öhman
Meje AB, SWEDEN

09:30 - 09:50

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

INVITED PRESENTATION

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, THE NETHERLANDS

09:50 - 10:10

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

INVITED PRESENTATION

VALUE CREATION BASED ON HIGH TECH

J. Elders
Thermo Fisher Scientific, THE NETHERLANDS

10:10 - 10:40

Break





THEATRE

Session 4A2

Tissue Models and Analysis

CHAIR: G. Groothuis, *University of Groningen, THE NETHERLANDS*

SPRINGERZAAL

Session 4B2

Chemistry at "Small Scale"

CHAIR: M. Kreutzer, *Delft University of Technology, THE NETHERLANDS*

10:40 - 11:00

MICROFLUIDIC INTERFACE DEVICES FOR IN VIVO ANALYSIS OF NEURAL CELLS USING 2-PHOTON LASER SCANNING MICROSCOPY

H. Takehara, A. Nagaoka, J. Noguchi, T. Akagi, H. Kasai, and T. Ichiki
University of Tokyo, JAPAN

USING STRUCTURED MICROFLOWS TO SYNTHESIZE FUNCTIONAL PARTICLES

K.W. Bong, K.T. Bong, D.C. Pregibon, and P.S. Doyle
Massachusetts Institute of Technology, USA

11:00 - 11:20

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. Prosperetti^{1,2}, D. Lohse¹, and J.G.E. Gardeniers¹
¹MESA+, *University of Twente, THE NETHERLANDS* and ²Johns Hopkins University, USA

11:20 - 11:40

FINE REGULATION OF POLARITY IN A HEPATOCYTE CULTURE UTILIZING OXYGEN-PERMEABLE MEMBRANES AND MICROPATTERNED COLLAGEN GEL

H. Matsui^{1,3}, H. Kimura², T. Osada³, M. Sekijima³, 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 MICROSCALE CONVECTIVE FLOWS

R. Muddu, Y.A. Hassan, and V.M. Ugaz
Texas A&M University, USA

11:40 | Conference Adjourns





BORGMANZAAL - A

Session 4C2

Cell Encapsulation in Droplets

CHAIR: S. Le Gac, *University of Twente, THE NETHERLANDS*

BORGMANZAAL - B

Session 4D2

Microfluidics Pure and Simple

CHAIR: A. Llobera, *Centre Nacional de Microelectrónica, SPAIN*

10:40 - 11:00

A PULSE LASER-DRIVEN MICROFLUIDIC DEVICE FOR ULTRA-FAST DROPLET GENERATION ON DEMAND AND SINGLE-CELLS ENCAPSULATION

S.Y. Park¹, T.H. Wu¹, Y. Chen¹, S. Nisperos², J. Zhong², and P.-Y. Chiou¹
¹*University of California, Los Angeles, USA* and ²*University of Southern California, USA*

PHONONIC CRYSTAL METAMATERIALS FOR FREQUENCY TUNABLE MICROFLUIDIC FUNCTIONS USING SURFACE ACOUSTIC WAVES

J. Reboud, R. Wilson, Y. Bourquin, Y. Zhang, S.L. Neale, and J.M. Cooper
University of Glasgow, UK

11:00 - 11:20

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

DYNAMIC PICO-LITER BUBBLE MANIPULATION VIA TIOPC-BASED LIGHT-INDUCED DIELECTROPHORESIS

S.-M. Yang¹, T.-M. Yu¹, H.-P. Huang¹, H.-P. Chen², L. Hsu¹, and C.-H. Liu²
¹*National Chiao Tung University, TAIWAN* and ²*National Tsing Hua University, TAIWAN*

11:20 - 11:40

HIGH EFFICIENCY CELL ENCAPSULATION UTILIZING NOVEL ON-DEMAND DROPLET GENERATION SCHEME AND IMPEDANCE-BASED DETECTION

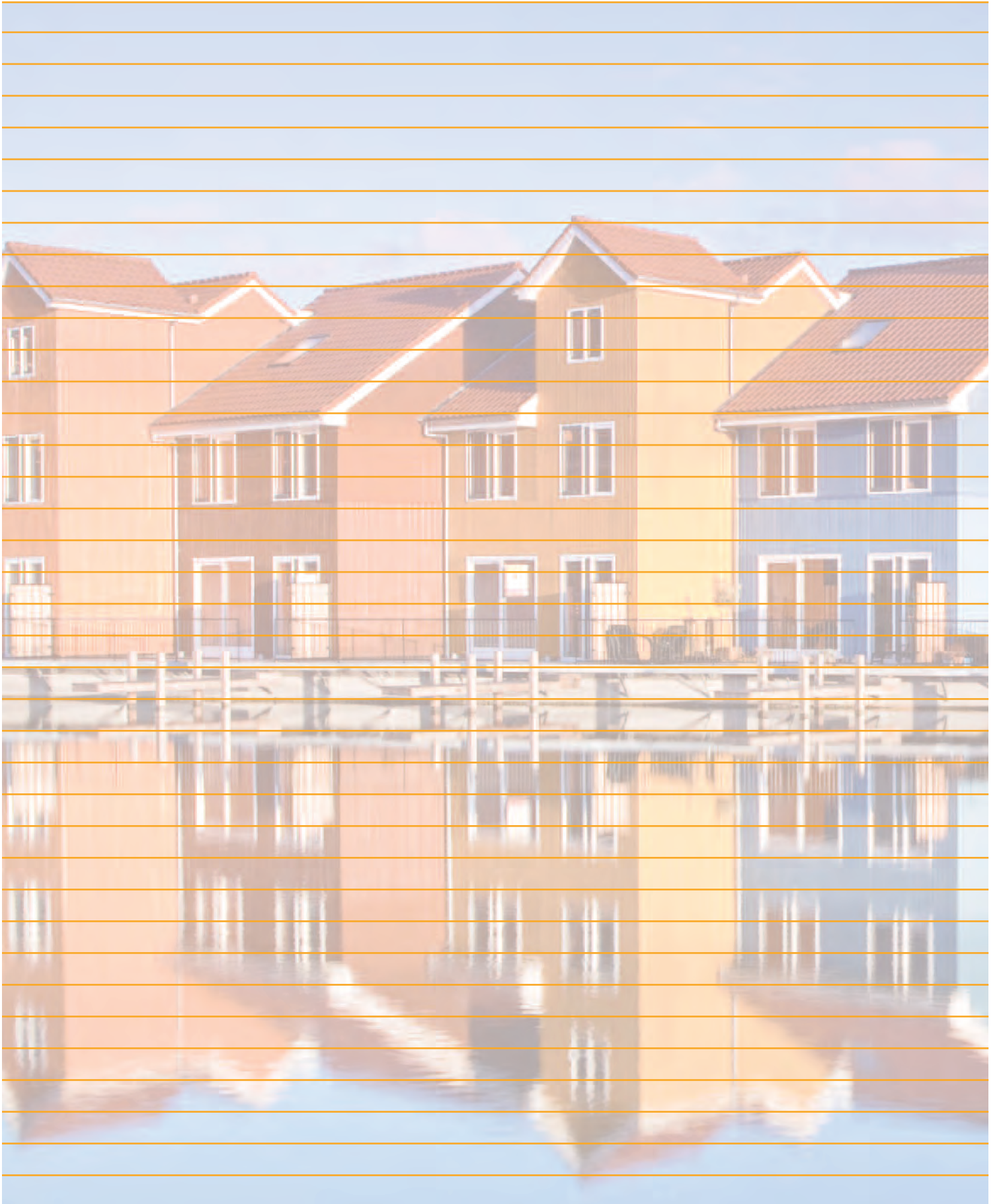
R. Lin, J.-L. Prieto, J.S. Fisher, and A.P. Lee
University of California, Irvine, USA

11:40 | Conference Adjourns





NOTES



Program Tear-Outs

DAY 1 - Monday, 4 October 2010

08:45 - 09:30	Opening Remarks
09:30 - 10:15	Plenary Presentation I - D. Diamond, <i>Dublin City University, IRELAND</i> 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, <i>MESA+, University of Twente, THE NETHERLANDS</i> LABS ON A CHIP FOR HEALTH CARE APPLICATIONS

THEATRE	SPRINGERZAAL	BORGMANZAAL - A	BORGMANZAAL - B
Session 1A1 Stem Cell Growth and Stimulation	Session 1B1 DNA Analysis	Session 1C1 Point-of-Care Diagnostics	Session 1D1 Applications of Advanced/Smart Materials
11:45 - 12:05			
MICROFLUIDIC SPATIAL CONTROL OF STEM CELL DIFFERENTIATION	BIO-CHEMICAL REACTION ENHANCEMENT USING MAGNETIC AXIS CONTROLLED SPINNING MICROPARTICLES WITH STRUCTURAL COLOR BARCODE	IMMUNOASSAY ON COTTON YARN FOR LOW-COST DIAGNOSTICS	A FLUIDIC μ -TRANSFORMER WITH PRE-PROGRAMMED VACUUM ACTUATION FUNCTIONS FOR DISPOSABLE LAB-ON-A-CHIPS
12:05 - 12:25			
MULTIPLEX MICROFLUIDIC PERFUSION IDENTIFIES SHEAR STRESS MECHANOSENSING MEDIATORS IN MOUSE EMBRYONIC STEM CELLS	ON-CHIP CONTINUOUS FLOW INTERACTION STUDIES OF DNA AND PROTEIN COMPLEXED DNA	IMMUNOASSAY DEVICE INTEGRATING PLASTIC FLOW-CHANNEL REACTOR AND RFID SENSOR CHIP	SHAPE MEMORY MAGNETIC NANOCOMPOSITE ACTUATORS WITH <i>IN-SITU</i> PROGRAMMED MAGNETIC AXES
12:25 - 12:45			
A MICROFLUIDIC DEVICE FOR CHEMICAL AND MECHANICAL STIMULATION OF MESENCHYMAL STEM CELLS	A NEW SIGNAL-ON ELECTROCHEMISTRY-BASED DETECTION PLATFORM FOR DNA AND POLYMERASE ENZYME ON A MICROCHIP WITHOUT PROBE IMMOBILIZATION CHEMISTRY	SENSING SWEAT IN REAL-TIME USING WEARABLE MICRO-FLUIDICS	
12:45 - 13:45	Luncheon and Exhibit Inspection		

DAY 2 - Tuesday, 5 October 2010

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

THEATRE	SPRINGERZAAL	BORGMANZAAL - A	BORGMANZAAL - B
Session 2A1 Cell Pairing	Session 2B1 Fixed Cells and Tissue	Session 2C1 Nucleic Acid Amplification	Session 1D1 Drug Screening
09:15 - 09:35			
PAIRING AND FUSION OF HETEROTYPIC CELLS IN A MICROCHANNEL	A NOVEL METHOD TO INVESTIGATE PROTEOMIC PROFILING OF CANCERS USING A MICROFLUIDIC IMMUNOHISTOCHEMISTRY SYSTEM	INVITED PRESENTATION CHALLENGES AND OPPORTUNITIES IN PERSONALIZED MEDICINE	MICROFLUIDIC CHAMBER ARRAYS FOR WHOLE-ORGANISM HIGH-THROUGHPUT COMBINATORIAL CHEMICAL SCREENING BASED ON BEHAVIORAL RESPONSES
09:35 - 09:55			
A MICROFLUIDIC ARRAY WITH CELLULAR VALVING FOR CO-CULTURING SINGLE CELL COUPLES	FAST IMMUNOHISTOCHEMICAL BIOMARKER DETECTION DEVICE FOR CANCER TISSUE SLICES	RAPID, MULTISTEP DNA HYBRIDISATION IN CONTINUOUS FLOW	ON-CHIP PRE-CLINICAL CARDIAC TOXICITY: TESTING COMPOUNDS BEYOND hERG AND QT USING hES/hiPS CARDIOMYOCYTE RE-ENTRY CELL NETWORK MODEL ON A CHIP
09:55 - 10:15			
SIZE-INDEPENDENT ELECTRO CELL FUSION WITH MASSIVE PARALLELISM	A HIGH-THROUGHPUT FISH MICROCHIP FOR CLINICAL GENETICS	AGAROSE DROPLET MICROFLUIDICS FOR HIGHLY PARALLEL AND EFFICIENT EMULSION PCR	HIGH-THROUGHPUT OF PHOTODYNAMIC THERAPY (PDT) SCREENING FROM MULTIPLE PARAMETER ASSAYS OF 1,000 DIFFERENT CONDITIONS IN A SINGLE CHIP
10:15 - 10:45	Break and Exhibit Inspection		
Session 2A2 Intrinsic Cell Separation	Session 2B2 Protein Analysis	Session 2C2 Two-Phase Flow	Session 2D2 <i>In-Vivo</i> Assays
10:45 - 11:05			
MICROFLUIDIC COUNTERFLOW CENTRIFUGAL ELUTRIATION FOR CELL SEPARATION USING DENSITY-GRADIENT MEDIA	ON-CHIP MULTI-ANALYTE NATIVE WESTERN BLOTTING IN TWO MINUTES	HYDRODYNAMIC PARTICLE CONCENTRATION INSIDE A MICROFLUIDIC PLUG	A SKIN-CONTACT-ACTUATED DISPENSER/PUMP FOR TRANSDERMAL DRUG DELIVERY

Program Tear-Outs

DAY 1 - Monday, 4 October 2010 (con't.)

Session 1A2 Neurons	Session 1B2 Gene Analysis	Session 1C2 Progress in On-Chip Biomolecular Detection	Session 1D2 New Materials
13:45 - 14:05			
DIRECTED GROWTH OF RAT HIPPOCAMPAL NEURONS IN MICROFLUIDIC CULTURE WITHOUT SURFACE PATTERNING OR CHEMICAL GRADIENTS	DROPLET-BASED MICROFLUIDICS FOR QUANTITATIVE CELL-BASED REPORTER GENE ASSAYS	INVITED PRESENTATION DROPLET-BASED MICROFLUIDICS FOR THE QUANTITATIVE DETECTION OF RARE MUTATIONS	NOVEL HYDROPHILIC MICROFLUIDICS WITH DURABILITY VIA DIRECT MOLDING AND UNIQUE CAPILLARY FLOW PERFORMANCE
14:05 - 14:25			
RECONSTRUCTION OF MULTICOMPARTMENT ORIENTED NEURONAL NETWORKS FOR THE STUDY OF NEURODEGENERATIVE DISEASES	COMPLETE SAMPLE-TO-ANSWER GENETIC ANALYSIS OF INFLUENZA H1N1 VIA THE MAGNETIC INTEGRATED MICROFLUIDIC ELECTROCHEMICAL DETECTOR (MIMED)	PINWHEEL ASSAY: A VISUAL AND LABEL-FREE METHOD FOR DNA QUANTITATION	BEYOND PDMS: OFF-STOICHIOMETRY THIOL-ENE BASED SOFT LITHOGRAPHY FOR RAPID PROTOTYPING OF MICROFLUIDIC DEVICES
14:25 - 14:45			
NEURON AGGREGATE CULTURE PLATFORM FOR IN VITRO CNS MYELINATION STUDY	INEXPENSIVE AND PORTABLE SAMPLE-IN-ANSWER-OUT GENETIC ANALYSIS SYSTEMS FOR POINT OF CARE APPLICATIONS	LABEL-FREE DETECTION OF PROTEIN BINDING SPECTRA WITH MULTISINE SPR MICROCHIPS	TEMPLATE SYNTHESIS IN HYDRODYNAMICALLY-ALIGNED SUPRAMOLECULAR NANO-CHANNELS
14:45 - 16:45	Poster Session 1 (Refreshments will be served at 16:15)		
Session 1A3 Membrane-Transport Assays	Session 1B3 Sample Preparation for Nucleic Acids	Session 1C3 Sensing	Session 1D3 Fuel Cells
16:45 - 17:05			
A MICROFLUIDIC MODEL TO STUDY THE METASTATIC CASCADE: FROM ADHESION TO MIGRATION	ABSOLUTE QUANTIFICATION OF MICRORNA FROM HUMAN AND MOUSE TISSUE RNA USING HIGHLY SELECTIVE ISOTACHOPHORETIC FOCUSING	OPTIMIZATION OF RADIOSYNTHESIS OF MOLECULAR TRACERS IN EWOD MICROFLUIDIC CHIP	A MICROFLUIDIC MICROBIAL FUEL CELL ARRAY FOR ELECTROCHEMICALLY-ACTIVE MICROBE SCREENING AND ANALYSIS
17:05 - 17:25			
DOUBLE-SIDED LIPID-BILAYER MICROCHAMBERS	HIGH-SPEED RNA MICROEXTRACTION TECHNOLOGY USING MAGNETIC OLIGO-dT BEADS AND LATERAL MAGNETOPHORESIS	ARTIFICIAL GLAND FOR PRECISE RELEASE OF SEMIOCHEMICALS FOR CHEMICAL COMMUNICATION	MICROFLUIDIC ANALYTICAL PLATFORM FOR CATALYST AND ELECTRODE CHARACTERIZATION AND OPTIMIZATION
17:25 - 17:45			
INDUCTION OF QUORUM SENSING IN MICRODROPLETS BY TRANSPORTING SMALL MOLECULES THROUGH PDMS	RAPID NUCLEIC ACID PURIFICATION VIA MICROCHANNEL IMMISCIBLE PHASE FILTRATION	HYBRID CHEMICAL AND ELECTRICAL CONTROL OVER INSECT CYBORG AIR VEHICLES	

DAY 2 - Tuesday, 5 October 2010 (con't.)

Session 2A2 (con't.) Intrinsic Cell Separation	Session 2B2 (con't.) Protein Analysis	Session 2C2 (con't.) Two-Phase Flow	Session 2D2 (con't.) In-Vivo Assays
11:05 - 11:25			
GENOME-WIDE ANALYSIS OF ELECTRICAL PHENOTYPE USING ISODIELECTRIC SEPARATION	KILO-TO-GIGA DNA MICROARRAY FOR CONVERSION HIGH-DENSITY PROTEIN MICROARRAY ON-DEMAND	ADVANCED FLUIDIC HANDLING AND USE OF TWO-PHASE FLOW FOR HIGH THROUGHPUT STRUCTURAL INVESTIGATION OF PROTEINS ON A MICROFLUIDIC SAMPLE PREPARATION PLATFORM	GENERATION OF TEMPORAL LOGARITHMIC CONCENTRATION FOR DOSE-RESPONSE ASSAYS ON ION CHANNELS
11:25 - 11:45			
TEMPERATURE-CONTROLLED HIGH-THROUGHPUT (1 L/H) ACOUSTOPHORETIC PARTICLE SEPARATION IN MICROCHANNELS	MICROSCALE ISOELECTRIC FRACTIONATION USING IMMOBILIZED pH-SPECIFIC MEMBRANES FOR MULTI-DIMENSIONAL ANALYSIS	3D LIQUID-LIQUID WAVEGUIDES USING TWO FLOW STREAMS BY CENTRIFUGAL FORCE	APPLICATION OF AN ENZYMATIC MICROREACTOR COUPLED WITH MICRODIALYSIS FOR CONTINUOUS MONITORING OF SUBCUTANEOUS GLUCOSE IN RATS

11:45 - 13:00

Lunch and Exhibit Inspection

13:00 - 13:45

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

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)

Session 2A3 Characterization of Intrinsic Cell Properties	Session 2B3 Proteomics	Session 2C3 Droplet Array for Bioassays	Session 2D3 Unconventional Separation Approaches
16:00 - 16:20			
MEASURING THE ACOUSTOPHORETIC CONTRAST FACTOR OF LIVING CELLS IN MICROCHANNELS	PNEUMATIC VALVE ASSISTED SOL-GEL MICROFLUIDIC PLATFORM FOR MULTIPLEX SELEX ON A CHIP	DETERMINISTIC LATERAL DISPLACEMENT DEVICE FOR DROPLET SEPARATION BY SIZE - TOWARDS RAPID CLONAL SELECTION BASED ON DROPLET SHRINKING	BUBBLE-BASED CONTINUOUS SEPARATION SYSTEM IN MICROFLUIDIC DEVICE
16:20 - 16:40			
UNCERTAINTY IN FLOW IMPEDANCE MEASUREMENTS ARISING FROM SHEAR-INDUCED ROTATION OF PARTICLES IN MICROFLUIDIC CHANNELS	AN INTEGRATED DIFFERENTIAL NANOCALOMETER WITH ON-CHIP MICROFLUIDIC MULTIPLEXING FOR HIGH THROUGHPUT GENOMICS AND PROTEOMICS	1-MILLION DROPLET ARRAY FOR HIGH-DYNAMIC-RANGE DIGITAL MICROFLUIDICS	EXAMINING LATERAL DISPLACEMENT OF CELLS ROLLING ON ASYMMETRIC RECEPTOR PATTERNS
16:40 - 17:00			
MORPHOLOGY-BASED SORTING - BLOOD CELLS AND PARASITES	DROPLET ANALYSIS WITH ELECTROSPRAY IONIZATION MASS SPECTROMETRY USING AN INTEGRATED GLASS MICROCHIP	MICROFLUIDIC SYNTHESIS OF MAGNETOCHROMATIC MICROSPHERES UTILIZING MAGNETIC SELF-ASSEMBLY AND PHOTOPOLYMERIZATION PROCESS	DEFORMABILITY BASED CELL MARGINATION FOR MALARIAL INFECTED RED BLOOD CELL ENRICHMENT

Program Tear-Outs

DAY 3 - Wednesday, 6 October 2010

08:00 - 08:15 | Opening Remarks

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

THEATRE	SPRINGERZAAL	BORGMANZAAL - A	BORGMANZAAL - B
Session 3A1 Cell Deformability	Session 3B1 Clinical Assays	Session 3C1 Integrated Microfluidic Systems	Session 3D1 Nanofluidics
09:15 - 09:35			
BACTERIA IN SUBMICRON CHANNELS AND MICROVALVES	MULTIPLEX BIOASSAYS USING A SUSPENSION ARRAY PLATFORM: TOWARDS THE HIGH THROUGHPUT SCREENING OF DRUGS TARGETING CANCER STEM CELLS	ENHANCEMENT OF A LABEL-FREE DIELECTROPHORETIC CELL SORTER WITH AN INTEGRATED IMPEDANCE DETECTION SYSTEM	INVITED PRESENTATION THE IMPORTANCE OF WALL CHEMISTRY IN NANOFUIDICS
09:35 - 09:55			
MICROFLUIDIC MODEL OF SICKLE CELL PATHOPHYSIOLOGY	DISPOSABLE BIOANALYTICAL MICRODEVICE FOR MONITORING THE EFFECT OF ANTI-PLATELET DRUGS	MINIATURIZATION OF INTEGRATED MICROFLUIDIC SYSTEMS	INVITED PRESENTATION ELECTROCHEMICAL NANOFUIDICS: THE MESOSCOPIC LIMIT
09:55 - 10:15			
DEFORMABILITY CYTOMETRY: HIGH-THROUGHPUT, CONTINUOUS MEASUREMENT OF CELL MECHANICAL PROPERTIES IN EXTENSIONAL FLOW	HIGH-THROUGHPUT CIRCULATING TUMOR CELLS (CTCs) ISOLATION USING INERTIAL FORCES	MICROSCALE CONTROLLED CONTINUOUS CELL CULTURE	CONCENTRATION DEPENDENCE OF STERN LAYER CAPACITANCES AND SURFACE EQUILIBRIUM CONSTANTS IN SILICA-BASED NANOFUIDIC CHANNELS
10:15 - 10:45	Break and Exhibit Inspection		
Session 3A2 Cell Analysis I	Session 3B2 Blood Analysis	Session 3C2 Microfluidic Circuits	Session 3D2 Nanobiotechnology
10:45 - 11:05			
INVITED PRESENTATION VISUALIZING VIRAL FUSION AT THE SINGLE-PARTICLE LEVEL IN MICROCHANNELS	QUANTIFICATION OF AMINO ACIDS IN BLOOD USING DIGITAL MICROFLUIDICS	PRESSURE MAPPING OF MICROFLUIDIC FLOWS WITH COLORIMETRIC PRESSURE SENSING PARTICLES	TRACKING OF SINGLE DNA AND PROTEIN MOLECULES UNDERGOING ENZYMATIC DEGRADATION IN FLUID

DAY 4 - 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	SPRINGERZAAL	BORGMANZAAL - A	BORGMANZAAL - B
Special Focus Session 4A1 Tissue Engineering	Special Focus Session 4B1 In-Line Analysis in Microreactors	Special Focus Session 4C1 Electrowetting-Driven Digital Microfluidics	Special Focus Session 4D1 Business with Microfluidics
09:00 - 09:30			
INVITED PRESENTATION COMPLEX TISSUE	INVITED PRESENTATION IN-LINE NMR ANALYSIS USING STRIPLINE BASED DETECTORS	INVITED PRESENTATION PARALLEL PROCESSING OF MULTIFUNCTIONAL, POINT-OF-CARE BIO-APPLICATIONS ON ELECTROWETTING CHIPS	09:00 - 09:10 / SESSION INTRODUCTION 09:10 - 09:30 / INVITED PRESENTATION THE JOURNEY OF AMIC
09:30 - 09:50			
MICROFLUIDIC EXPERIMENTAL PLATFORM USING MICRO-ROTATION FLOW FOR PRODUCING MULTIPLE SIZE-CONTROLLED THREE-DIMENSIONAL SPHEROIDS	AMPLIFICATION OF RNA IN GROWING AND DIVIDING MICRO-DROPLETS	AN INTEGRATED PLATFORM FOR LIGHT-INDUCED DIELECTROPHORESIS AND ELECTROWETTING	INVITED PRESENTATION A PREFILLED, READY-TO-USE, ELECTROPHORESIS-BASED LAB-ON-A-CHIP DEVICE FOR MONITORING IONS IN BLOOD AND URINE
09:50 - 10:10			
HIGH-THROUGHPUT SCREENING OF CELL-SURFACE TOPOGRAPHIC INTERACTIONS	EFFICIENT MICROWAVE HEATING AND DIELECTRIC CHARACTERIZATION OF MICROFLUIDIC SYSTEMS	FLUID FLOW AND MIXING WITHIN DROPS IN AC ELECTROWETTING	INVITED PRESENTATION VALUE CREATION BASED ON HIGH TECH
10:10 - 10:40	Break		

Program Tear-Outs

DAY 3 - Wednesday, 6 October 2010 (con't.)

Session 3A2 (con't.) Cell Analysis I	Session 3B2 (con't.) Blood Analysis	Session 3C2 (con't.) Microfluidic Circuits	Session 3D2 (con't.) Nanobiotechnology
11:05 - 11:25			
CANCER CELL ASSAYS BY USE OF IMMUNOCAPTURE, SUBCELLULAR IMAGING, AND PROGRAMMED CELL RELEASE IN GEDI MICRODEVICES	HIGH-THROUGHPUT BLOOD ANALYSIS ON A CHIP USING LENSLESS DIGITAL HOLOGRAPHY	FAST AND SIMPLE: RECONFIGURABLE ELEMENTS AND SOLUTIONS FOR CREATING AND DRIVING FLUIDIC NETWORKS	THE DISASSEMBLY OF A CORE-SATELLITE NANOASSEMBLED SUBSTRATE FOR COLORIMETRIC BIOMOLECULAR DETECTION
11:25 - 11:45			
MICROFLUIDIC DEVICE TO ENABLE FUNCTIONAL ASSAYS OF CIRCULATING TUMOR CELL BEHAVIOR AND HETEROGENEITY	BACK-TO-BACK INTEGRATED NANOWIRE BIOSENSOR WITH MICROFILTRATION DEVICE FOR APPLICATION TO THE CARDIAC BIOMARKER DETECTION FROM BLOOD SAMPLE	SPATIALLY RESOLVED PRESSURE AND FLOW METERING IN MICROFLUIDIC SYSTEMS USING POLYELECTROLYTE HYDROGELS	MASSIVELY PARALLEL, HIGH FORCE INTERROGATION OF SINGLE CELL MECHANICS VIA LOCALIZED MAGNETIC NANOPARTICLES

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 - P. Schwille, University of Dresden, GERMANY
MICROFLUIDIC TOOLS FOR SYNTHETIC BIOLOGY

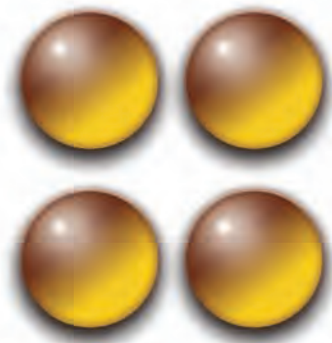
14:00 - 16:00

Poster Session 3
Refreshments will be served at 15:30

Session 3A3 Cell Analysis II	Session 3B3 Assays for Trauma & Disease	Session 3C3 Advanced Fluid Handling	Session 3D3 Nanobiotechnology Separation
16:00 - 16:20			
HIGH-DENSITY ARRAY OF SINGLE CELL TRAPS FOR HIGH-THROUGHPUT IMAGING OF CALCIUM DYNAMICS IN RESPONSE TO OXIDATIVE STRESS	BURN INJURY INHIBITS NEUTROPHIL CHEMOTAXIS IN MICROFLUIDIC DEVICES	DROPS ON RAILS	SIMULTANEOUS CONCENTRATION AND SEPARATION OF PROTEINS IN NANOCHANNELS
16:20 - 16:40			
SEPARATION AND DETECTION OF RARE CELLS VIA MULTISTAGE MAGNETIC GRADIENT IN A MICROFLUIDIC DISK	REAL TIME ELECTROCHEMICAL DNA QUANTIFICATION IN A COC LAB ON A CHIP: TOWARDS LOW-COST DIAGNOSIS OF NOSOCOMIAL INFECTIONS	BIOLOGICALLY INSPIRED BIDIRECTIONAL FLUIDIC DIODE	NANOSLINKY: DNA ENTROPYPHORESIS DOWN A NANOFUIDIC STAIRCASE
16:40 - 17:00			
SICKLING RED BLOOD CELLS IN DROPLET ARRAYS	ASSESSING THE TRAUMATIC BRAIN INJURY MARKERS S100 AND C-REACTIVE PROTEIN IN HUMAN CEREBROSPINAL FLUID VIA MICROFLUIDIC IMMUNOSUBTRACTION	ON-CHIP POROUS POLYMER MONOLITHS FOR SOLID PHASE EXTRACTION USING DIGITAL MICROFLUIDICS	ORDER AND DISORDER IN NANOPOROUS MEDIA CONTROLS DNA SEPARATION EFFICIENCY
18:30 - 22:00			
Conference Banquet at Martinikerk (Martin's Church)			

DAY 4 - Thursday, 7 October 2010 (con't.)

Session 4A2 Tissue Models and Analysis	Session 4B2 Chemistry at "Small Scale"	Session 4C2 Cell Encapsulation in Droplets	Session 4D2 Microfluidics Pure and Simple
10:40 - 11:00			
MICROFLUIDIC INTERFACE DEVICES FOR IN VIVO ANALYSIS OF NEURAL CELLS USING 2-PHOTON LASER SCANNING MICROSCOPY	USING STRUCTURED MICROFLOWS TO SYNTHESIZE FUNCTIONAL PARTICLES	A PULSE LASER-DRIVEN MICROFLUIDIC DEVICE FOR ULTRA-FAST DROPLET GENERATION ON DEMAND AND SINGLE-CELLS ENCAPSULATION	PHONONIC CRYSTAL METAMATERIALS FOR FREQUENCY TUNABLE MICROFLUIDIC FUNCTIONS USING SURFACE ACOUSTIC WAVES
11:00 - 11:20			
PERFUSION-BASED MICROFLUIDIC DEVICE FOR THREE-DIMENSIONAL DYNAMIC PRIMARY HUMAN HEPATOCYTE CELL CULTURE IN THE ABSENCE OF BIOLOGICAL OR SYNTHETIC MATRICES OR COAGULANTS	SONOCHEMICAL MICROREACTOR WITH MICROBUBBLES CREATED ON MICROMACHINED SURFACES	MICROFLUIDIC DEVICE FOR SINGLE-CELL ENCAPSULATION BY RANDOM BREAKUP AND SORTING OF MICRO-DROPLETS	DYNAMIC PICO-LITER BUBBLE MANIPULATION VIA TIOPC-BASED LIGHT-INDUCED DIELECTROPHORESIS
11:20 - 11:40			
FINE REGULATION OF POLARITY IN A HEPATOCYTE CULTURE UTILIZING OXYGEN-PERMEABLE MEMBRANES AND MICROPATTERNED COLLAGEN GEL	CHAOTICALLY ACCELERATED BIOCHEMISTRY IN MICROSCALE CONVECTIVE FLOWS	HIGH EFFICIENCY CELL ENCAPSULATION UTILIZING NOVEL ON-DEMAND DROPLET GENERATION SCHEME AND IMPEDANCE-BASED DETECTION	
11:40			
Conference Adjourns			



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