

MTAS2007 PARIS



— μ TAS 2007 — FINAL PROGRAM

Eleventh International Conference on Miniaturized
Systems for Chemistry and Life Sciences

**La Cité des Sciences et de l'Industrie
Le Centre des Congrès de la Villette**

Paris, France | 7 – 11 October 2007



Sponsored by
The Chemical and Biological Microsystems Society,
Curie Institut/CNRS, and Région Ile-de-France

institut  Curie  île de France

Program at a Glance

Sunday	16:00 - 19:00	Conference Registration and Check-In	
	17:00 - 19:00	Wine & Cheese Welcome Reception	
Monday	7:00	Registration	
	8:30 - 8:45	Opening Remarks	
	8:45 - 9:25	PLENARY I - Chad A. Mirkin, Northwestern University, USA	
	9:30 - 10:30	Session 1A1 Cell Handling & Screening 1	Session 1B1 Detection 1 (Optical)
	10:30 - 11:00	Break	
	11:00 - 12:00	Session 1A2 Immunodetection	Session 1B2 Microfluidic Components
	12:00 - 13:30	Lunch & Exhibit Inspection	
	13:30 - 14:10	PLENARY II - Howard A. Stone, Harvard University, USA	
	14:15 - 16:30	Poster Session	
	16:30 - 17:30	Session 1A3 Cell Handling and Screening 2	Session 1B3 Integrated Systems
Tuesday	8:30 - 9:10	PLENARY III - Gijts J.L. Wuite, Vrije University, THE NETHERLANDS	
	9:15 - 10:15	Session 2A1 Multiphase and Digital Microfluidic 1	Session 2B1 Nanobiotechnology
	10:15 - 10:45	Break	
	10:45 - 11:45	Session 2A2 Clinical Diagnostic 1	Session 2B2 On Chip Synthesis and Production
	11:45 - 13:30	Lunch & Exhibit Inspection	
	13:30 - 14:10	PLENARY IV - Tae Song Kim, Korea Institute of Science and Technology, KOREA	
	14:15 - 16:30	Poster Session	
	16:30 - 17:30	Session 2A3 Cell Characterization	Session 2B3 Detection 2
	19:30	Banquet at the Musée d'Orsay	
	Wednesday	8:30 - 9:10	PLENARY V - Simon Scheuring, Curie Institute, FRANCE
9:10 - 9:15		Announcement of MicroTAS 2008	
9:15 - 10:15		Session 3A1 Genomics and Proteomics	Session 3A1 Nanofluidics
10:15 - 10:45		Break	
10:45 - 11:45		Session 3A2 Multiphase and Digital Microfluidic 2	Session 3B2 Active Bio-Based Devices
11:45 - 13:30		Lunch & Exhibit Inspection	
13:30 - 14:10		PLENARY VI - Minoru Seki, Chiba University, JAPAN	
14:15 - 16:30		Poster Session	
16:30 - 17:30		Session 3A3 Cell Arrays	Session 3B3 Detection 3
Thursday		8:30 - 9:10	Poster Award Ceremony
	9:15 - 10:15	Session 4A1 Clinical Diagnostic 2	Session 4B1 Surface Modification and Characterization
	10:15 - 10:45	Break	
	10:45 - 11:45	Session 4A2 Dielectrophoretic Cell Handling and Sorting	Session 4B2 Acoustic Devices
	11:45	Conference Adjourns	



Table of Contents

Welcome from Chair	2
General Information	3
Social Events	4
Conference Officials	5
Contributors	6
Exhibitors	7
Exhibit Floorplan	12
Technical Program Information	13
Technical Program:	
Monday	14
Monday - Posters	15
Monday - Poster Floorplan	24
Tuesday	26
Tuesday - Posters	27
Tuesday - Poster Floorplan	36
Wednesday	38
Wednesday - Posters	39
Wednesday - Poster Floorplan	48
Thursday	50



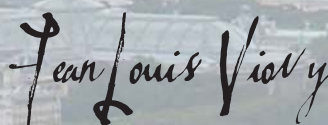
Logo design: AFM image:
© LPN-CNRS for C'Nano Ile de France (enanoidf@lpn.cnrs.fr)
Layout design: dna graphics (dnagraphics@valornet.com)

Welcome to Paris

μTAS 2007 continues to evolve as the leading Conference, bringing together microfluidics, micro- and nanotechnology, material science, chemistry biology, and medicine into interdisciplinary international forum for discussing research and applications in miniaturized systems for chemistry and life sciences. This year, the response from the scientific community has again been larger than ever before. The μTAS Steering Committee had the challenging task of selecting 601 papers from the 980+ abstracts submitted. In keeping with the tradition of μTAS, high standards were applied to the selection process requiring significant application data and results from state-of-the-art science and technology, so that participants would continue to experience the highest level of advancements in the field.

The three and half day technical program consists of six plenary sessions, two daily parallel oral sessions of 66 contributed papers, and three poster sessions of 531 papers. Plenary presentations by worldwide recognized scientists explore core and new application areas of μTAS, including miniaturized systems for drug delivery, tissue engineering; cell growth, and individual genes and proteins; new tools and opportunities in microfabrication, microfluidics, and biomedicine; molecular motors and bearings; and single-molecule reactions. The contributed poster sessions expand upon these and other μTAS themes in microfluidics, microfabrication, nanotechnology, integration, materials & surfaces, analysis & synthesis, and detection technologies for life science and chemistry. The program promises an exciting Conference with new scientific advances being disclosed and discussed in an open environment with ample opportunities for intense international networking across disciplines.

On behalf of the μTAS 2007 Steering and Program Committee we welcome you to Paris!



Jean-Louis Viovy

Chairman, μTAS 2007

General Information

Conference Location

All sessions will be held at the:

Cité des Sciences et des l'Industrie
Le Centre des Congrès
30, avenue Corentin-Cariou
Paris, FRANCE
Tel +33 (0) 1 4005 7700

Dialing Codes

France's International Country Code: +33

Paris' Local Area Codes: 6 and 1

Registration & Information Desk

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

October 7 Sunday 16:00-19:00
October 8 Monday 7:00-17:40
October 9 Tuesday 7:00-17:40
October 10 Wednesday 7:30-17:40
October 11 Thursday 7:30-12:00

Meeting Room Locations

Plenaries & Oral Session 1 . Gaston Berger Auditorium, Level S2
Oral Session 2 Louis Armand Hall, Level S3
Lunch Le Hublot

Lunches

To reduce long lines, we suggest that you first visit the posters and exhibits.

Name Badges

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

Technical Digest and CD-ROM Sets

One copy of the Technical Digest and CD-ROM set is included in your bag. Additional copies may be purchased at the Registration Desk. Purchase price of the Technical Digest set will increase after the Conference so be sure to order your additional copies in advance.

Additional Technical Digest Set - €125 (each)

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.

Evaluation

There is a Conference Evaluation Form in your packet. Your feedback is very important to the improvement and development of this Conference. Please return completed form to the Conference Registration Desk.

Wireless Internet Service

Wireless internet is available to purchase and use within the Centre des Congrès. Four rates are available: 20 minute - €5; 1 hour - €10; 24 hours - €30 ; 3 days - €80 (all rates are TTC, incl. VAT). You will need a credit card to access.

Within the Cité des Sciences in the Médiathèque East (behind the registration desk), free wireless is available for those who have their own computer, during the following days and times: Sunday - 12:00 - 16:45; Monday - Closed; Tuesday - Thursday - 12:00 - 19:45. For those that do not have their own computer, 24 computer stations, with free internet access, will be available for Conference attendees in Médiathèque West on the following days and times: Monday - 10:00 - 19:00; Tuesday - Thursday 10:00 12:00. Please limit your usage to 15 minutes.

Cameras and Video Tape Recorders

Cameras and video tape recorders are strictly prohibited in the sessions, poster presentations and the exhibit hall.

Smoking

All meeting rooms and seated functions are smoke free. Please adhere to the smoking policy of the Centre des Congrès.

Message and Job Market Board

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

Currency Exchange

The unit of currency in Paris is the Euro (EUR) and it is acceptable at regular stores and restaurants. The exchange rate fluctuates daily.

Traveler's Checks & Credit Cards

Credit cards, including MasterCard® and Visa® and traveler's checks are accepted at most hotels, restaurants, department stores, and souvenir shops.

Tipping Standards

In France, all prices shown include tax and service (the latter is around 15% of the total price). However, if the service has been particularly good, you may wish to leave a tip in order to show your appreciation. As a general rule, the amount is 5 to 10% of the total bill.

Shipping Service

If you need to ship or mail any packages, please check with your hotel concierge.

Social Events

Sunday Welcome Reception

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 Le Hublot of la Cité des Sciences et de l'Industrie.

Conference Banquet at the Musée d'Orsay

The history of the museum's building is quite unusual. Located in the centre of Paris on the banks of the Seine, opposite the Tuileries Gardens, the museum was installed in the former Orsay railway station, built for the Universal Exhibition of 1900. The building itself could be seen as the first "work of art" in the Musée d'Orsay, which displays collections of art from the period 1848 to 1914.

The national museum of the Musée d'Orsay opened to the public on 9 December 1986 to show the great diversity of artistic creation in the western world between 1848 and 1914. It was formed with the national collections coming mainly from three establishments:

- from the Louvre museum, for the works of artists born after 1820 or coming to the fore during the Second Republic;
- from the Musée du Jeu de Paume, which since 1947 had been devoted to Impressionism;
- and lastly from the National Museum of Modern Art, which, when it moved in 1976 to the Centre Georges Pompidou, only kept works of artists born after 1870.

But each artistic discipline represented in the Musée d'Orsay collections has its own history, which you can discover.

For those of you who bought a Banquet Ticket, please note that transportation is not included. Please refer to the map (section 7E) in your conference totebag for location.



Conference Officials

Conference Chair

Jean-Louis Viovy *Institut Curie, FRANCE*

Local Organizing Committee

Stephanie Descroix *Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE*

Laurent Malaquin *Institut Curie, FRANCE*

Patrick Tabeling *Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE*

Jean-Louis Viovy *Institut Curie, FRANCE*

Technical Program Committee

Christopher S. Chen *University of Pennsylvania, USA*

Zhao-Lun Fang *Zhejiang University & Northeastern University, CHINA*

Stephen C. Jacobson *Indiana University, USA*

Klavns F. Jensen *Massachusetts Institute of Technology, USA*

Tae Song Kim *Korean Institute of Science and Technology, KOREA*

Takehiko Kitamori *University of Tokyo, JAPAN*

Jörg P. Kutter *Danmarks Tekniske Universitet, DENMARK*

James Landers *University of Virginia, USA*

Thomas Laurell *Lunds Universitet, SWEDEN*

Laurie E. Locascio *National Institute of Standards and Technology (NIST), USA*

Andrew deMello *Imperial College London, UNITED KINGDOM*

Petra Schwille *Technical University Dresden, GERMANY*

Minoru Seki *Chiba University, JAPAN*

Manabu Tokeshi *Nagoya University, JAPAN*

Jean-Louis Viovy *Institut Curie, FRANCE*

Board of Directors, Chemical and Biological Microsystems Society

Yoshinobu Baba *Nagoya University, JAPAN*

Albert van den Berg *Universiteit Twente, THE NETHERLANDS*

D. Jed Harrison *University of Alberta, CANADA*

Klavns F. Jensen *Massachusetts Institute of Technology, USA*

Takehiko Kitamori *University of Tokyo, JAPAN*

Thomas Laurell *Lunds Universitet, SWEDEN*

Andreas Manz *Institute of Analytical Sciences, GERMANY*

M. Allen Northrup *MicroFluidic Systems Inc., USA*

J. Michael Ramsey *University of North Carolina at Chapel Hill, USA*

Shuichi Shoji *Waseda University, JAPAN*

Contributors

We gratefully acknowledge, at the time of printing, the contributions to the Conference from the following:

Sponsors

Chemical and Biological Microsystems Society



institut Curie
<http://www.curie.fr>



île de France
<http://www.iledefrance.fr>

Silver Support



Micronit Microfluidics BV
Colosseum 15
Enschede, 7521 PV THE
NETHERLANDS
phone: 31-53-850-6850
fax: 31-53-850-6851
www.micronit.com

Bronze Support



CHEMINAS
The Society for Chemistry and
Micro-Nano Systems (Japan)
c/o Kitamori Lab., The University of Tokyo
7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656
phone: +81-3-5841-7231
fax: +81-3-5841-6039
website: <http://www.chem.t.u-tokyo.ac.jp/appchem/labs/kitamori/CHEMINAS/>

Lab on a Chip

Lab on a Chip (Royal Society of Chemistry)
Thomas Graham House, Science Park,
Milton Road
Cambridge, CB4 0WF UK
phone: +44 (0) 1223 432293
fax: +44 (0) 1223 420247
www.rsc.org/loc



Allergy-Card
<http://www.ist-world.org>



NeuroTAS
<http://www.neurotas.eu>



JEOL (Europe) SAS
1, Allée de Giverny
Croissy-sur-Seine, 78290
FRANCE
phone: +33 1 30 15 37 37
fax: +33 1 30 15 37 17
www.jeol.com



Compagnie de Saint Gobain
Les Miroirs - 18 avenue d'Alsace
La Defense Cedex, 92096
FRANCE
phone: 33 (0)1 47 62 45 11
fax: 33 (0)1 47 62 30 12
www.saint-gobain.com



**LA SOCIETE
HYDROTECHNIQUE DE FRANCE**
25 rue des Favorites
75015 PARIS
Tel +33(0)1 42 50 91 03
Fax +33(0)1 42 50 59 83
shf@shf.asso.fr

Media Support



mst news
VDI/VDE Innovation + Technik GmbH
Steinplatz 1
Berlin, 10623 GERMANY
phone: +49-30-310-078-167
fax:
www.vdivde-it.de



YOLE DEVELOPPEMENT
45 rue Sainte Geneviève
Lyon, 69006 LYON
phone: +33-472-83-0180
fax: +33-472-83-0183
www.yole.fr

Exhibitors

Exhibit Hours

Monday, October 8	7:00-17:45	Wednesday, October 10	7:00-17:45
Tuesday, October 9	7:00-17:45	Thursday, October 11	7:00-12:00

Exhibitor

Booth

Biotray 2

46, Allée d'Italie
Lyon, 69364 FRANCE
phone: +33-0-4727-28851
fax: +33-0-4-7272-8963
www.biotray.fr

BioTray is a company specialized in the field of microtechnologies for Biological and Chemical applications. Chip miniaturization has become a strategic challenge for industrial competition and research. BioTray has developed innovative instrumentation for the production of microstructured surfaces.

Our flagship patented product, the MS10-100, is a technological breakthrough for the production of microstructured surfaces dedicated to process miniaturization such as Microfluidic Systems, Biochips, Biosensors, Lab-on-chips, MEMS etc...

BioTray can manufacture custom-made microstructured surfaces and lab-on-chips in different shapes and sizes on various supports. Our strong expertise and know-how covers the spectrum of micro-fluidic systems manufacture, from producing the microstructured surfaces to integrating micro-components for fluid delivery.

cetoni GmbH Automation and Microsystems 31

AM Wiesenting 6
Korbußen, D-07554 GERMANY
phone: 49-36602-338-12
fax: 49-36602-338-11
www.cetoni.de

Whether in lab automation, device technics, microfluidics, micro system technics or classical automation - you can find the know how of cetoni in many finished products. The manifold product spectrum is always expanding and contains e.g. precision syringe pump systems for pulsation free dosing of reaction solutions in microfluidic environment in the range of nano litres for screening applications and miniaturized systems.

The Dolomite Centre Ltd 29

Unit 1 Anglian Business Park, Orchard Road, Royston
Herts, SG8 5TW UK
phone: +44 (0)1763 242 555
fax: +44 (0)1763 246 125
www.dolomite-centre.com

The Dolomite Centre, the first Microfluidic Application Centre in the world, is focussed on working with clients to turn their concepts for microfluidic systems into reality. With our in-depth knowledge of chemistry and the life sciences, combined with our expertise in microfluidics and device fabrication, we can offer a complete service, from device design and fabrication through to full instrument development. If you would like to find out more about Dolomite's microfluidic device design, fabrication and instrument development capabilities, please visit us at booth #29.

Exhibitor

Booth

Epigem Limited 9

Malmo Court, Kirkleatham Business park
 Redcar, TS10 5SQ UK
 phone: +44-1642-496-300
 fax: +44-1642-496-301
 www.epigem.co.uk

Epigem will be exhibiting its full range of services from contract manufacture for instrument OEMs to product development services. These are supported by partnerships in hybrid microsystems integration (Integramplus), measurement, flow modelling / simulation and instrumentation. In 2006 Epigem won a UK government contract to provide microfluidics application development services. The Fluence Microfluidics Centre supplies microfluidic product and process application development, from proof of concept to manufacture, to clients ranging from University spin out companies to large companies introducing microfluidics into their product portfolios. Application areas supported span consumer and medical products to process intensification and polymer electronics.

Europractice 6

45 rue Sainte-Geneviève
 Lyon, 69006 FRANCE
 phone: +33-472-83-0180
 fax: +33-472-83-0183
 www.yole.fr

FLUIGENT 32

4 Avenue de l'Observatoire
 Paris, 75006 FRANCE
 phone: 33-1-5373-1551
 fax: 33-1-5373-1552
 www.fluigent.com

Innovative technologies for microfluidics and life science. Fluigent is a microfluidic company developing new tools for flow control in micro-channels and genetic testing in capillaries and chips. Fluigent employs state-of-the-art technologies in fluidic, electronics and polymer chemistry, in order to built new tools for your processes.

Institute of Microchemical Technology table top

212 East KSP, 3-2-1, Sakado, Takatsu
 Kawasaki, KANAGAWA 213-0012 JAPAN
 phone: 81-44-811-6521
 fax: 81-44-814-5545
 www.i-mt.co.jp

Journal of Micromechanics and Microengineering - IOP Publishing 20

Dirac House, Temple Back
 Bristol, BS1 6BE UK
 phone: +44 (0) 117 929 7481
 fax: +44 (0) 117 929 4318
 www.iop.org/journals/jmm

Journal of Micromechanics and Microengineering covers all aspects of microelectromechanical structures, devices and systems, as well as micro-mechanics and micromechatronics. The journal aims to highlight the link between fabrication technologies and their capacity to create novel devices.

Exhibitor

Booth

Lab on a Chip (Royal Society of Chemistry) 4

Thomas Graham House, Science Park, Milton Road
Cambridge, CB4 0WF UK
phone: +44 (0) 1223 432293
fax: +44 (0) 1223 420247
www.rsc.org/loc

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. An impact factor of 5.82 and an immediacy index of 1.11 confirm our position as a leader in this field. Lab on a Chip and Corning Inc. will be presenting the 'Pioneers in Miniaturisation' prize at this conference, and Lab on a Chip is also sponsoring the Widmer prize. To pick up your free copy of Lab on a Chip or other RSC Journals and information, do come and visit us at stand 4.

LabSmith 33 & 34

7665 Hawthorne Avenue
Livermore, CA 94550 USA
phone: 1-925-292-5161
fax: 1-925-454-9487
www.labsmith.com

LabSmith designs and manufactures electronics and components that further the art of microfluidics. Products to be featured at MicroTAS include our innovative 8-channel high-voltage sequencers, our breadboard-based microfluidic fluid routing products, and our synchronized video microscope.

LaVision GmbH 3

Anna-Vandenhoeck-Ring 19
Goettingen, D-37081 GERMANY
phone: +49 (0)551 9004-0
fax: +49 (0)551 9004-100
www.lavision.com

LaVision offers standard and dedicated customer designed Laser Imaging Systems for reactive and non-reactive flow field analysis and fluid mechanics applications, Intelligent Imaging Systems for non-destructive material testing, a range of high-performance cameras (CCDs and intensified CCDs) and smart optical sensor systems. The LaVision team has extensive professional experience in imaging spectroscopy and optical techniques such as Laser Induced Fluorescence (LIF), Rayleigh, Mie and Raman scattering, Particle Imaging Velocimetry (PIV), Spray Analysis, Ultrafast Time-Resolved Imaging and Optical Microscopy.

Little Things Factory GmbH 10

Ehrenbergstraße 1
Ilmenau, 98693 GERMANY
phone: +49 (0) 3677 679567
fax: +49 (0) 3677 465168
www.ltf-gmbh.de

The Little Things Factory GmbH deals with microsandblasting on glass, silicon and other brittle materials. Especially micro structured glass and silicon is used for the design of microreactors, which are made as standard tools or customers specific tools. Additional to the wired ready reactors, the Little Things Factory GmbH offers PCS's (Process Controlling System) for observing and operating the chemical reactions.

MEMStaff Inc. 8

209 Willow Avenue, Suite #1
Somerville, MA 02144 USA
phone: 866-863-8731
fax: 617-996-9265
www.memstaff.com

MEMStaff is a staffing company specializing in the MEMS, Microfluidics, Microsystem Technology (MST), or Micromachining fields. MEMStaff places highly qualified employees at companies looking to hire the best people. MEMStaff is built upon more than fifteen years of MEMS experience in a broad range of disciplines. This experience allows us to understand, in detail, the kind of job you're looking for and the kind of employee you need.

Exhibitor

Booth

MicroChem Corp. 7

1254 Chestnut Street
 Newton, MA 02464 USA
 phone: 1-925-485-3205
 fax: 1-925-846-8509
 www.microchem.com

MicroChem Corp (MCC) provides specialty electronic materials for niche and emerging lithographic processes. We focus on developing and manufacturing unique photosensitive materials, such as photoresists, and other ancillary products. MCC technology consists of proprietary and non-proprietary products requiring state-of-the-art technical expertise, high reproducibility, high product cleanliness, and specialty microfiltration.

microfluidic ChipShop GmbH 17

Carl-Zeiss-Promenade 10
 Jena, D-07745 GERMANY
 phone: 49-36-41-643121
 fax: 49-36-41-643142
 www.microfluidic-ChipShop.com

microfluidic ChipShop offers microfluidic systems as well as development and manufacturing services: From product development up to volume production - from simple microfluidic chips to complex lab-on-a-chip systems.

On display during microTAS will be examples of catalogue microfluidic chips including two complete systems - chip and instrument - from microfluidic ChipShop's ChipGenie® series. The three-temperature-zone PCR system avoids thermocycling and enables, with a range of different chip types, an ultrafast PCR. The ChipGenie® electrophoresis system is made for a fast and versatile detection of a wide range of analytes.

Micronit Microfluidics BV 18

Colosseum 15
 Enschede, 7521 PV THE NETHERLANDS
 phone: 31-53-850-6850
 fax: 31-53-850-6851
 www.micronit.com

Micronit Microfluidics develops and manufactures glass microfluidic devices (lab-on-a-chip). The combination of our micromachining capabilities and microfluidics expertise enables us to create functional devices for almost any application in life sciences or chemistry. Functionalities include microreactions, capillary electrophoresis, micromixing, cell trapping and flow restriction. During MicroTAS, Micronit will show its latest developments in lab-on-a-chip in booth #18. For more information, please visit www.micronit.com.

OAI 19

685 River Oaks Parkway
 San Jose, CA 95134 USA
 phone: 1-408-232-0600
 fax: 1-408-433-9904
 www.oainet.com

OAI is a leader for over 30 years in UV Exposure Systems for Microfluidics. Products include Stand- Alone UV Lightsources, Mask Aligners, UV Ozone surface Treatment systems, and Contact Liquid Polymer Process (CliPP). The CLIPP process can be used to build multi-layer microfluidic devices with each layer having unique bio- compatible regions. OAI maintains engineering and service offices worldwide.

Exhibitor**Booth****Photron (Europe) Ltd. 30**

The Barn, Bottom Road
 West Wycombe, Bucks, HP14 4BS UK
 phone: +44-1494-48-1011
 fax: +44-1494-48-7011
 www.photron.com

Photron will be showing at MicroTAS 2007 a new high speed imaging system specifically designed for low light microscopy applications such as Calcium Ion Imaging, FRAPB, Neurone Imaging and Micro P.I.V. The Focuscope SV200-i offers an image resolution of 512 x 512 pixels at frame rates up to 2,000fps. This sensor is fibre coupled to a Generation III image intensifier significantly boosting sensitivity in the visible range with peak response at 600nm. We will also be showing results obtained with our extremely light sensitive un-intensified systems such as the Fastcam-X 1024 PCI, Ultima APX-RS and Fastcam SA-1. The SA-1 offers megapixel resolution up to 5,400fps and a maximum frame rate in excess of 500,000fps. These systems have been used to study micro fluidic applications such as ink rheology, emulsion and mono dispersed bubble formation on a microscale at frame rates in excess of 40,000fps. If you would like to discuss your own application or see what we have to offer please do not hesitate to visit our stand in the exhibition.

Silex Microsystems 5

Box 595
 Järfälla , SE-175 26 SWEDEN
 phone: +46 (0)8 580 249 00
 fax: +46 (0)8 580 249 01
 www.silexmicrosystems.com

Silex is a highly advanced provider of foundry services in MEMS. Through technological innovation and operational excellence, Silex helps customers take full advantage of the MEMS technology in their products from development to volume production. Silex is one of the leading dedicated 150 mm wafer manufacturer that brings MEMS technology and capacity to device makers. Manufacturing is the cornerstone of Silex's growth strategy and Silex continues to expand the manufacturing capacity in response to future volume demands.

Takasago Electric, Inc. 15

66 Kakitsubata, Narumi-cho
 Midori-ku, Nagoya, 458-8522 JAPAN
 phone: +81-52-891-2301
 fax: +81-52-891-7386
 www.takasago-elec.co.jp/

Takasago Electric will be exhibiting a range of miniature valves, pumps and Film Manifolds suitable for the precise control of fluids. Started in 1959 as a solenoid manufacturer, Takasago is a leading solenoid valve manufacturer in Japan, having about 40 years of experience in the manufacture of chemically inert valves and having produced over 2,500 models.

Takasago's new FV series valve is just 4.2x4.2x23.1mm in size giving an internal volume of just 1.1 micro-liters, minimizing pumping volume, and actually making it the smallest inert-isolation-valve in the world. Combined fluid control solutions are available, incorporating valves and pumps mounted on the Film Manifold, a unique product in which fine channels are engraved in thin, light-weight, bendable layers.

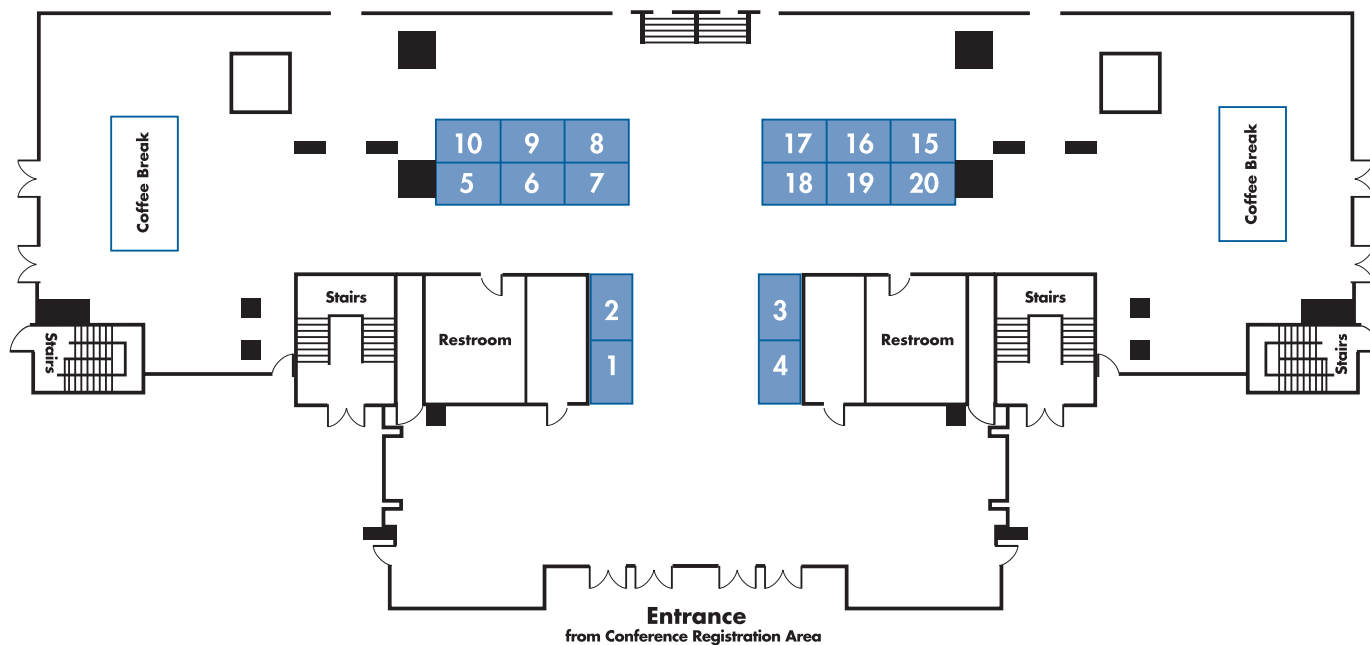
Our engineers will be on-site to discuss designs or the customization of products to support your individual fluid control needs.

Tronics Microsystems 1

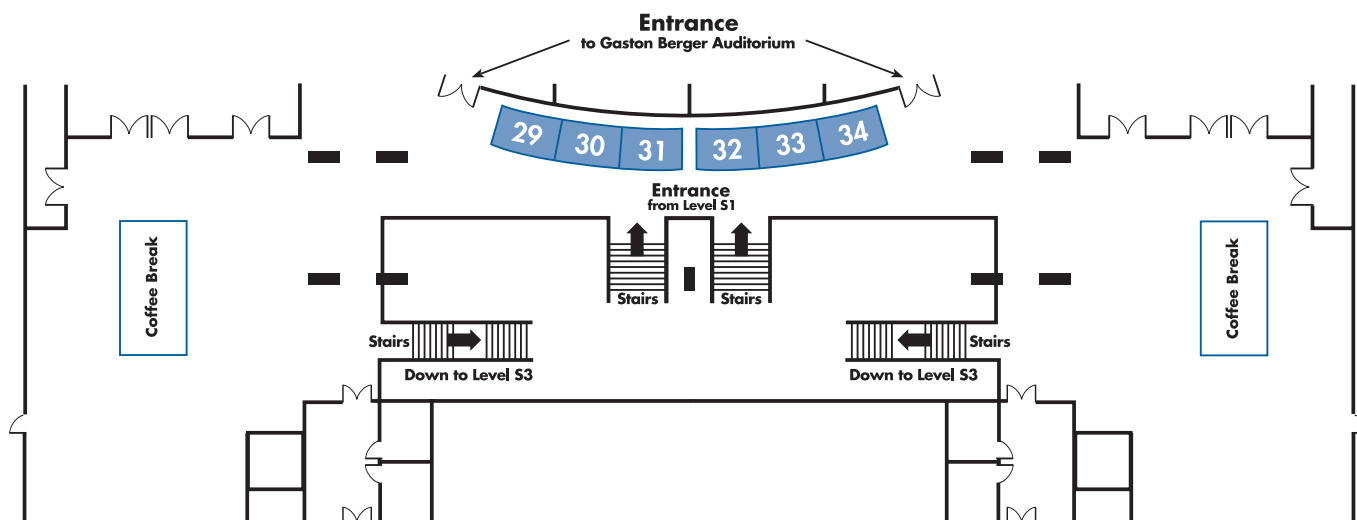
55 rue du Pré de l'Horme
 CROLLES, 38926 FRANCE
 phone: +33 (0)4 76 97 29 50
 fax: +33 (0)4 76 97 29 51
 www.tronics.eu

Tronics Microsystems is a high growth, profitable contract manufacturer of highly differentiated custom MEMS components and microsystems based on silicon and silicon/glass technologies. From foundry services to turn-key products development and manufacturing, Tronics collaborates with customers from concept to implementation to ensure the productization of their microfluidics, lab-on-chips concepts and ideas to finally deliver to its customers qualified, packaged and tested components.

LEVEL S1



LEVEL S2



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 two parallel oral sessions each day. All plenary sessions will be simulcasted in the Louis Armand Hall.

Plenary Speakers: (in order of presentation)

Chad A. Mirkin	<i>Northwestern University, USA</i>
Howard A. Stone	<i>Harvard University, USA</i>
Gijs J.L. Wuite	<i>Vrije University, THE NETHERLANDS</i>
Tae Song Kim	<i>Korea Institute of Science and Technology, KOREA</i>
Simon Scheuring	<i>Curie Institute, FRANCE</i>
Minoru Seki	<i>Chiba University, JAPAN</i>

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. A typical number is shown below:

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 = Gaston Berger Auditorium, Level S2
- B = Louis Armand Hall, Level S3

The third character (i.e., 1) shows which time of day the session is held:

- 1 = Morning
- 2 = Mid Morning
- 3 = Afternoon

Posters

Three poster sessions will be held in the foyer levels of the Centre des Congrès, from 14:15 to 16:30 Monday through 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 floorplans following each days' poster listing. A poster help desk will be located on each level during the poster sessions to assist you with navigating the poster area.

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 on the left-hand side, before the title. A typical number is shown below:

Typical Poster number: M-1-A

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

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

The second character (i.e., 1) is the poster board position on the floorplan.

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

- A = Microsystems for Life Sciences
- B = Microsystems for Chemistry and Environment
- C = Microfluidics
- D = Nanotechnology
- E = Materials
- F = Detection Technologies
- G = MEMS & NEMS Technology

Technical Program

Sunday, October 7, 2007

16:00 - 19:00	Registration
17:00 - 19:00	Wine and Cheese Welcome Reception

Monday, October 8, 2007

8:30 - 8:45 | Opening Remarks

8:45 - 9:25

Plenary I - CHAIR: J.M. Ramsey, University of North Carolina at Chapel Hill

NANOTECHNOLOGICAL APPROACHES TO AMPLIFICATION IN BIOLOGICAL AND CHEMICAL DETECTION SYSTEMS
Chad A. Mirkin
Northwestern University, USA

Gaston Berger Auditorium, Level S2

Session 1A1

Cell Handling and Screening 1

SESSION CHAIR: J.M. Ramsey, University of North Carolina at Chapel Hill

Louis Armand Hall, Level S3

Session 1B1

Detection 1 (Optical)

SESSION CHAIR: J.P. Kutter, Danmarks Tekniske Universitet

9:30 - 9:50

HIGH-THROUGHPUT DNA MICROFRACTIONATOR USING SELF-PATTERNED LARGE-SCALE CRYSTALLINE NANOARRAYS
 Y. Zeng and D.J. Harrison
University of Alberta, CANADA

OPTOFLUIDIC SPECTROMETER FOR MICROCHIP FLOW CYTOMETRY
 W.Z. Song¹, L.A.G. Lin¹, A.Q. Liu¹, C.S. Lim¹ and P.H. Yap²
¹Nanyang Technological University, SINGAPORE and
²DSO National Laboratories, SINGAPORE

9:50- 10:10

A CELL DELIVERY AND FIXING SYSTEM UTILIZING MICRO-PUMPS/VALVES AND NEGATIVE-DEP DEVICES FOR ON-CHIP DUAL-BEAM OPTICAL TRAP APPLICATIONS
 C.-W. Lai¹, S.-K. Hsiung¹, C.-M. Chung¹, Y.-Q. Chen², A. Chiou² and G.-B. Lee¹
¹National Cheng Kung University, TAIWAN and
²National Yang-Ming University, TAIWAN

A COMPLETE ON-CHIP HIGH RESOLUTION MICROSCOPE SYSTEM BASED ON THE OPTOFLUIDIC MICROSCOPY METHOD
 X. Cui, X. Heng, L. Lee and C. Yang
California Institute of Technology, USA

10:10 - 10:30

DIELECTROPHORETICALLY SWITCHABLE MICROFLUIDIC WEIR STRUCTURES FOR EXCLUSION-BASED SINGLE-CELL MANIPULATION
 B.M. Taff, S.P. Desai and J. Voldman
Massachusetts Institute of Technology, USA

A MONOLITHIC EVANESCENT EXCITATION (EE)-BASED BIOCHIP FOR HIGHLY-SENSITIVE AND REAL-TIME FLUORESCENT DETECTION
 D.V. Dao, N.C.H. Le, R. Yokokawa, J. Wells and S. Sugiyama
Ritsumeikan University, JAPAN

10:30 - 11:00 | Break

Gaston Berger Auditorium, Level S2

Session 1A2

Immunodetection

SESSION CHAIR: M. Tokeshi, Nagoya University

Louis Armand Hall, Level S3

Session 1B2

Microfluidic Components

SESSION CHAIR: T. Laurell, Lunds Universitet

11:00 - 11:20

DIRECT DETECTION OF BIOMOLECULAR INTERACTIONS WITH BIOACTIVATED NANOPORES
 A.H. Talasaz, R.M. Aliabadi, B. Gharizadeh, S. Shokralla, M. Ronaghi, F. Pease and R.W. Davis
Stanford University, USA

MICROFLUIDIC PWM GENERATION OF CHEMICAL SIGNALS
 F. Azizi, L. Chen and C.H. Mastrangelo
Case Western Reserve University, USA

11:20 - 11:40

ULTRA-SENSITIVE MAGNETIC IMMUNOSENSING PLATFORM BASED ON THE COMBINED MANIPULATION AND DETECTION OF MAGNETIC PARTICLES
 G. Reekmans, C. Liu, R. De Palma, R. Wirix-Speetjens, W. Laureyn and L. Lagae
Interuniversity Microelectronics Center (IMEC), BELGIUM

EFFICIENT ADDRESSABLE FLUID CONTROL SYSTEM USING PNEUMATIC VALVE ARRAY
 K. Kawai¹, M. Kanai^{1,2} and S. Shoji¹
¹Waseda University, JAPAN and ²Shimadzu Corporation, JAPAN

11:40 - 12:00

ULTRASENSITIVE IMMUNOASSAY ON A POWER-FREE MICROCHIP WITH LAMINAR FLOW-ASSISTED SIGNAL AMPLIFICATION
 K. Hosokawa, M. Omata and M. Maeda
RIKEN, JAPAN

CHARACTERIZATION OF FLOW REVERSAL IN ANODICALLY BONDED GLASS-BASED AC ELECTROKINETIC MICROPUMPS
 M.M. Gregersen, L.H. Olesen, A. Brask, M.F. Hansen and H. Bruus,
Technical University of Denmark, DENMARK

12:00 - 13:30

Lunch

13:30 - 14:10

Plenary II - CHAIR: A. van den Berg, Universiteit Twente

CELLULAR-SCALES HYDRODYNAMICS

Howard A. Stone

Harvard University, US

14:15 - 16:30

Poster Session 1

Microsystems for Life Sciences - Genomics & Proteomics

M1A

ENHANCED SPATIAL RESOLUTION OF MALDI IMAGES USING SILICON MASKS

N. Verplanck¹, M. Wisztorski², J. Stauber², J.C. Camart¹, M. Salzet², I. Fournier² and V. Thomy¹

¹IEMN, FRANCE and ²LNA, FRANCE

M2A

INTEGRATION OF MONOLITHIC VALVES INTO MICROFLUIDIC DEVICE FOR PROTEOMIC ANALYSIS

Q. Lu, J.-B. Bao and D.J. Harrison

University of Alberta, CANADA

M3A

NON-PCR LINEAR AMPLIFICATION OF mRNA TOWARD SINGLE CELL WHOLE TRANSCRIPTOME ANALYSES

J.G. Kralj¹, A. Player², D. Peterson², S.P. Forry¹, M.S. Munson¹, E. Kawasaki² and L.E. Locascio¹

¹National Institute of Standards and Technology (NIST), USA and

²National Cancer Institute/National Institutes of Health, USA

M4A

ON-CHIP TRYPTIC DIGEST WITH DIRECT-COUPLING TO USING ESI/MS MAGNETIC NANOPARTICLES

A. Le Nel^{1,2}, J. Krenkova³, K. Kleparnik³, C. Smadja², M. Taverna², J.-L. Viovy¹ and F. Foret³

¹Curie Institute, FRANCE, ²Université Paris XI, FRANCE and

³Institute of Analytical Chemistry-Brno, CZECH REPUBLIC

M5A

SINGLE DNA MOLECULE DETECTION BY ON-BEAD ROLLING CIRCLE AMPLIFICATION IN A MICROCHIP

A. Tachihara¹, K. Sato¹, K. Sato¹, Y. Tanaka², J. Jarvius², M. Nilsson² and T. Kitamori¹

¹University of Tokyo, JAPAN and ²Uppsala University, SWEDEN

M6A

TOWARD ON-CHIP ISOTHERMAL POLYMERASE CHAIN REACTION

A. Persat¹, T. Morita² and J.G. Santiago¹

¹Stanford University, USA and ²Ebara Research Co., LTD., JAPAN

Microsystems for Life Sciences - Clinical Diagnostics

M7A

A SIMPLE AND EFFICIENT METHOD FOR ON-CHIP STORAGE OF REAGENTS: TOWARDS LAB-ON-A-CHIP SYSTEMS FOR POINT-OF-CARE DNA DIAGNOSTICS

M. Brivio¹, Y. Li¹, A. Ahlford², B.G. Kjeldsen¹, J.L. Reimers¹, M. Bu¹, A.-C. Syvänen², D.D. Bang¹, and A. Wolff¹

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

M8A

AN IMMUNOASSAY USING SILVER NANOPARTICLE, SILVER ENHANCEMENT AND A FLATBED SCANNER

K.-S. Huang, W.-T. Chen, I.-L. Wang, H.-P. Lin, T.C. Chang, and Y.-C. Lin

National Cheng Kung University, TAIWAN

M9A

DETERMINATION OF TOTAL AND PANCREATIC AMYLASE ACTIVITIES IN HUMAN BLOOD BY USE OF MICROCHIP ELECTROPHORESIS

E. Maeda¹, M. Kataoka², Y. Shinohara^{1,2}, N. Kaji³, M. Tokeshi³ and Y. Baba^{2,3,4}

¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN,

³Nagoya University, JAPAN and ⁴Japan Science and Technology Agency (JST), JAPAN

M10A

HYBRID CERAMIC/PDMS MICROLAB WITH TWO INDEPENDENT DETECTION SYSTEMS FOR ON-LINE DIALYSIS' PARAMETERS MONITORING

I. Grabowska¹, I. Wyzkiewicz², M. Chudy¹, A. Dybko¹ and Z. Brzózka¹

¹Warsaw University of Technology, POLAND and

²Institute of Electronic Materials and Technology, POLAND

M11A

LABEL-FREE OPTICAL DETECTION OF DNA BY REVERSIBLE ELECTRIC FIELD CONFINEMENT IN FREE SOLUTION

F.A. Shaikh and V.M. Ugaz

Texas A&M University, USA

M12A

MICROFLUIDIC COMPACT DISC PLATFORMS FOR RAPID AND SENSITIVE

DETECTION AND IDENTIFICATION OF CANDIDA YEASTS FROM BLOOD

I. Martineau¹, D.K. Boudreau¹, L. Monfort¹, F. Bégin¹, M.-J. Fiola¹, G. Stewart¹,

H. Morin¹, A. Huletsky¹, R. Peytavi¹, M. Boissinot¹, F.J. Picard¹, J.V. Zoval²,

H. Kido², G. Jia², M.J. Madou² and M.G. Bergeron¹

¹Université Laval, CANADA and ²University of California, Irvine, USA

M13A

MICROFLUIDICS FOR CLINICAL DIAGNOSTICS: DNA PURIFICATION FROM LARGE-VOLUME BLOOD SAMPLES USING A MICRO-TWO-DIMENSIONAL SOLID PHASE EXTRACTION SYSTEM

J. Wen, T.M. Hartberger, J.P. Ferrance and J.P. Landers

University of Virginia, USA

M14A

PDMS-BASED MICROLITER VISCOMETER FOR BLOOD PLASMA AND OTHER NEWTONIAN FLUIDS

Z. Han, X. Tang and B. Zheng

Chinese University of Hong Kong, HONG KONG

M15A

SENSITIVITY ENHANCEMENT OF THE NANOMECHANICAL DYNAMIC CANTILEVER BY TWO TYPES OF SANDWICH IMMUNOASSAYS BASED ON POLYCLONAL ANTIBODY AND POLYCLONAL ANTIBODY CONJUGATED SILICA NANOPARTICLES: FEMTOMOLAR PSA DETECTION AS MODEL STUDY

S.-M. Lee¹, K.S. Hwang², H.-J. Yoon¹, Y.-S. Lee¹ and T.S. Kim²

¹Seoul National University, KOREA and

²Korea Institute of Science and Technology (KIST), KOREA

Microsystems for Life Sciences - Microarrays

M16A

GOLD SURFACE-BASED GLYCOARRAYS: A GENERIC PLATFORM FOR HIGH THROUGH-PUT INTERROGATION OF CARBOHYDRATE-PROTEIN INTERACTIONS

Z.-L. Zhi, A.K. Powell and J.E. Turnbull

University of Liverpool, UK

M17A

MICROPATTERNED MATRIGEL FOR THREE-DIMENSIONAL EPITHELIAL CULTURES

T.R. Sodunke¹, K.W. McBride², M.J. Reginato¹ and H. Noh¹

¹Drexel University, USA and ²Texas Tech University, USA

M18A

PROTEIN PATTERNING THROUGH SELECTIVE FLUOROCARBON PLASMA-INDUCED DEPOSITION ON SILICON

P. Bayiati, A. Tserepi, P.S. Petrou, S.E. Kakabakos, E. Matrozos and E. Gogolides

NCSR "Demokritos", GREECE

Microsystems for Life Sciences -
Point of Care and Hand Held Devices

M19A

A HANDHELD MICROFLUIDIC PHOTOMETER BASED ON LIQUID-CORE WAVEGUIDE ABSORBANCE DETECTION

J.-Z. Pan and Q. Fang
Zhejiang University, CHINA

M20A

CLINICAL MOLECULAR DIAGNOSTICS USING AN INTEGRATED MICROCHIP WITHIN A FULLY PORTABLE PLATFORM

G.V. Kaigala, V.H. Hoang, A. Stickel, D. Manage, L.M. Pilarski and C.J. Backhouse
University of Alberta, CANADA

M21A

FULLY AUTONOMOUS MICROFLUIDIC CAPILLARY SYSTEMS FOR FAST AND SENSITIVE SURFACE IMMUNOASSAYS

J. Ziegler^{1,2}, M. Zimmermann^{1,2}, P. Hunziker¹ and E. Delamarche²
¹University Hospital Basel, SWITZERLAND and
²IBM Research GmbH, SWITZERLAND

M22A

HIGH REYNOLDS NUMBER MICROFLUIDICS FOR DRUG DELIVERY

J.C. Stachowiak, T.H. Li, D.L. Richmond, A.P. Liu, S.H. Parekh and D.A. Fletcher
University of California, Berkeley, USA

M23A

IMMUNOASSAY UTILIZING MAGNETIC BEADS FOR RAPID VIRUS DETECTION IN THE MICROFLUIDIC FLOW CYTOMETER SYSTEM

S.-Y. Yang, K.-Y. Lien, K.-J. Huang, H.-Y. Lei and G.-B. Lee
National Cheng Kung University, TAIWAN

M24A

MICROWAVE-MEDIATED MICROCHIP THERMOCYCLING: PATHWAY TO AN INEXPENSIVE, HANDHELD REAL-TIME PCR INSTRUMENT

D.J. Marchiarullo, A. Sklavounos, N.S. Barker and J.P. Landers
University of Virginia, USA

Microsystems for Life Sciences - Cell Handling & Analysis

M25A

BIOMARKER DETECTION BY ENZYMIC AMPLIFICATION IN DROPLETS - TOWARDS HIGH THROUGHPUT DETECTION OF LOW COPY NUMBER CELL SURFACE BIOMARKERS

H.N. Joensson¹, E.R. Brouzes², M. Samuels³, M. Uhlén¹, H. Andersson Svahn¹ and D.R. Link³
¹Royal Institute of Technology, SWEDEN, ²Harvard Medical School, USA and
³RainDance Technologies, USA

M26A

CELL SORTING OF LIVE AND DEAD CELLS BY LASER RADIATION PRESSURE AND SHEATH FLOW IN MICROCHANNEL

M. Murata¹, N. Kaji¹, M. Tokeshi¹ and Y. Baba^{1,2,3}
¹Nagoya University, JAPAN, ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and ³Japan Science and Technology Agency (JST), JAPAN

M27A

CELL TRAPPING VIA COUNTER-ROTATING MICRO-VORTICES

C.-M. Lin, Y.-S. Lai, H.-P. Liu and A.M. Wo
National Taiwan University, TAIWAN

M28A

CONTINUOUS MAGNETOPHORETIC ENRICHMENT OF RARE TUMOR CELLS

D. Nawarathna¹, P. Kumaresan², Y. Zhang³, B. Ferguson¹, S.-H. Oh⁴, K.S. Lam² and H.T. Soh¹
¹University of California, Santa Barbara, USA, ²University of California, Davis, USA,
³CytomX, LLC, USA and ⁴University of Minnesota, USA

M29A

CONTINUOUS SEPARATION OF CELLS IN A MICROFLUIDIC DEVICE USING LATERAL DIELECTROPHORESIS

N. Demierre, T. Braschler, R. Muller and P. Renaud
Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

M30A

EIS-ASSISTED IMPEDANCE ASSAY FOR IN SITU MONITORING CARDIOMYOCYTE APOPTOSIS

Y. Qiu¹, R. Liao² and X. Zhang¹
¹Boston University, USA and ²Harvard Medical School, USA

M31A

ENHANCED LOCOMOTION CAENORHABDITIS ELEGANS IN STRUCTURED MICROFLUIDIC ENVIRONMENTS

H. Hwang¹, S.-W. Nam¹, F. Martinez², R.H. Austin², W.S. Ryu² and S. Park¹
¹Ewha Woman's University, KOREA and ²Princeton University, USA

M32A

ESTIMATION OF MECHANICAL ROLE OF INTRACELLULAR STRUCTURES IN SMOOTH MUSCLE CELLS BY USING TRACTION FORCE MEASUREMENTS

T. Ohashi, S. Nakamura, N. Sakamoto and M. Sato
Tohoku University, JAPAN

M33A

GLASS MICROCHIP-BASED BIOASSAY SYSTEM USING HUMAN ARTERIAL ENDOTHELIAL CELLS

Y. Tanaka¹, Y. Kikukawa¹, K. Sato¹, Y. Sugii² and T. Kitamori¹
¹University of Tokyo, JAPAN and ²Kogakuin University, JAPAN

M34A

HEAT-POLISHING INTEGRATED GLASS PATCH CAPILLARIES FOR ENHANCED GIGASEALS

W.-L. Ong, L.-W. Luo, A. Ajay, N. Ranganathan, K.C. Tang and L. Yobas
Institute of Microelectronics, SINGAPORE

M35A

HIGH-THROUGHPUT ENZYMIC ASSAYS OF WHOLE CELLS ENCAPSULATED IN MICRODROPLETS

L.F. Olguin, A. Huebner, D. Bratton, G. Whyte, W. Huck, C. Abell and F. Hollfelder
University of Cambridge, UK

M36A

HIGH-THROUGHPUT µFLUIDIC CELLULAR ASSAYS

J. Warrick, K. Regehr, M. Domenech, I. Meyvantsson, C. Wagner, C. Alexander and D.J. Beebe
University of Wisconsin, USA

M37A

MAGNETOPHORETIC TRAPPING OF MICROPARTICLES

H. Chetouani^{1,2}, C. Jeandey¹, V. Haguët¹, F. Chatelain¹ and G. Reyne²
¹Commissariat à l'Energie Atomique (CEA), FRANCE and
²Laboratoire de Génie Electrique de Grenoble, FRANCE

M38A

MICROFLUIDIC BIOCHIP FOR THE ELECTROCHEMICAL CELL ACTIVITY ANALYSIS

N. Pereira Rodrigues, H. Kimura, Y. Sakai and T. Fujii
University of Tokyo, JAPAN

M39A

MICROFLUIDIC CASSETTE FOR RAPID ISOLATION AND PROCESSING OF LEUKOCYTE SUBPOPULATIONS FROM WHOLE BLOOD

K.T. Kotz¹, A. Russom¹, D. Irimia¹, M.N. Mindrinos², L.L. Moldawer³, R.G. Tompkins¹ and M. Toner¹
¹Massachusetts General Hospital, Shriner's Hospital for Children and Harvard Medical School, USA, ²Stanford Genome Technology Center, USA and
³University of Florida College of Medicine, USA

M40A

MICROFLUIDIC DEVICES FOR STUDYING THE RESPONSE OF ADHERENT CELLS UNDER SHORT TIME STIMULI TREATMENT

L. Ye¹, M. Zhang², L.G. Alexopoulos², P. Sorger² and K.F. Jensen¹
¹Massachusetts Institute of Technology, USA and ²Harvard Medical School, USA

M41A

MICROFLUIDIC STICKERS FOR QUANTITATIVE STUDIES OF CULTURED CELLS

M. Morel¹, D. Bartolo², M. Dahan¹ and V. Studer²
¹ENS, FRANCE and ²Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

M42A

MICROFLUIDIC TOXICOLOGICAL PLATFORM FOR THE MONITORING OF EXTRACELLULAR IONIC ACTIVITIES

S. Generelli^{1,2}, F. Berthiaume³, M.L. Yarmush³, M. Jolicœur¹, M. Koudelka-Hep² and O.T. Guenat¹
¹Ecole Polytechnique de Montréal, CANADA,
²University of Neuchâtel, SWITZERLAND and
³Harvard Medical School, USA

M43A

PERFUSED MULTIWELL TISSUE CULTURE PLATES FOR DRUG AND DISEASE MODEL DEVELOPMENT

K. Domansky¹, W. Inman¹, M.H.M. Lim^{1,2}, J. Serdy¹, B. Owens¹, S. Karackattu¹, J.R. Llamas Vidales¹, R. Littrel¹, L. Vineyard¹ and L.G. Griffith¹
¹Massachusetts Institute of Technology, USA and
²University of Cambridge, UK

M44A

GROWTH RATE AND STRESS-RESPONSE ANALYSES OF MICRO-CONTACT PRINTED BACTERIAL ARRAYS AND SINGLE BACTERIA IN MICROFLUIDIC CHAMBERS

L. Robert^{1,2}, L. Xu², F. Taddei¹, Y. Chen², A. Lindner¹ and D. Baigl²
¹Inserm U571, FRANCE and ²Ecole Normale Supérieure, FRANCE

M45A

REAL TIME DETECTION OF CELL BINDING ON BIOCHIPS USING SPR IMAGING

Y. Roupioz¹, E. Suraniti², R. Calemczuk², T. Livache¹, P. Marche² and M.-B. Villiers²
¹CNRS-CEA-UJF, FRANCE and ²INSERM, FRANCE

M46A

SINGLE CELL ANALYSIS BY NATIVE UV LASER INDUCED FLUORESCENCE DETECTION IN A PDMS MICROFLUIDIC CHIP

D. Greif, D. Anselmetti and A. Ros
Bielefeld University, GERMANY

M47A

SINGLE CELL ISOLATIONS BY TAMDEM MICROCHAMBERS ON A CENTRIFUGAL FLOW DEVICE

H. Nagai¹, S. Furutani² and I. Kubo²
¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, and
²Soka University, JAPAN

Microsystems for Life Sciences - Tissue Engineering

M48A

AN INTEGRATED MICROFLUIDIC SYSTEM FOR LONG-TERM CULTURE AND CONTINUOUS MONITORING OF INTESTINAL CELLS

H. Kimura, T. Yamamoto, Y. Sakai and T. Fujii
University of Tokyo, JAPAN

M49A

MICROPATTERNED HYDROGEL TISSUE SCAFFOLDS WITH CONTROLLED ELECTROKINETIC PROPERTIES FOR INVESTIGATION OF CHONDROCYTE MECHANOTRANSDUCTION

A.D. Rouillard, T. Tsui, L.J. Bonassar and B.J. Kirby
Cornell University, USA

M50A

PERIODIC PRESSURE PULSE GENERATOR IN CELL CULTURE CHIP

Y.F. Yu¹, X. Zhang¹, R. Chua², P.H. Yap² and A.Q. Liu¹
¹Nanyang Technological University, SINGAPORE and
²DSO National Laboratories, SINGAPORE

Microsystems for Life Sciences - Drug Discovery

M51A

MANUFACTURE OF DUAL-LAYER MICROBUBBLE LIPOSPHERES AS DRUG DELIVERY VEHICLES IN MICROFLUIDIC DEVICES

K. Hettiarachchi¹, E. Talu², M.L. Longo², P.A. Dayton² and A.P. Lee¹
¹University of California, Irvine, USA, ²University of California, Davis, USA

M52A

MICROFLUIDIC ELECTROPORATIVE DELIVERY OF SMALL MOLECULES AND GENES INTO CELLS USING A COMMON DC POWER SUPPLY

H.-Y. Wang and C. Lu
Purdue University, USA

Microsystems for Life Sciences

M53A

CONTROLLING HIGHER-ORDER STRUCTURES OF GIANT GENOMIC DNA MOLECULES IN MICROFLUIDIC CHANNEL

H. Oana^{1,2}, M. Ohuchi¹ and M. Washizu^{1,2}
¹University of Tokyo, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

M54A

MICROFLUIDIC GENE SYNTHESIS

D.S. Kong, P.A. Carr, L. Chen, K. Chang, S. Zhang and J.M. Jacobson
Massachusetts Institute of Technology, USA

M55A

MICROFLUIDIC GRADIENT GENERATOR FOR STEM CELL DIFFERENTIATION

T.M. Keenan, K. Feyereisen, C.N. Svendsen and D.J. Beebe
University of Wisconsin, USA

M56A

SONOPORATION OF SUSPENSION CELLS IN A MICROFLUIDIC FORMAT BY USE OF A SINGLE CAVITATION BUBBLE

S. Le Gac¹, A. van den Berg¹ and C.-D. Ohl^{1,2}
¹University of Twente, THE NETHERLANDS and
²Nanyang Technical University, SINGAPORE

Microsystems for Chemistry and Environment - Separation Science

M1B

CONTINUOUS AND SELECTIVE SEPARATION TECHNIQUE OF SUSPENDED PARTICLES BY UTILIZING ACOUSTIC RADIATION AND ELECTROSTATIC FORCES

Y. Sato, H. Ishida and K. Hishida
Keio University, JAPAN

M2B

CONTINUOUS FLOW SORTING OF POLYMER MICROPARTICLES BY DIAMAGNETIC REPULSION

N. Hirota¹, A. Iles² and N. Pamme²
¹National Institute for Materials Science (NIMS), JAPAN and ²University of Hull, UK

M3B

CONTINUOUS SEPARATION OF WHITE BLOOD CELLS BY HYDROPHORETIC FILTRATION

S. Choi and J.-K. Park
Korea Advanced Institute of Science and Technology (KAIST), KOREA

M4B

CONTROLLED PATTERNINGS OF THE TARGET PROTEINS BASED ON THE STRUCTURAL TRANSITION OF A HEAT-SENSITIVE POLYMER

D.-S. Lee¹, J.H. Lee², K.H. Chung¹, H.-B. Pyo¹, M.Y. Jung¹ and H.C. Yoon²
¹ETRI, KOREA and ²Ajou University, KOREA

M5B

FREE-FLOW DIELECTROPHORESIS - A NUMERICAL STUDY

G.O.F. Parikesit¹, A.P. Markestijn¹, J. Westerweel¹, I.T. Young¹ and Y. Garini^{1,2}
¹Delft University of Technology, THE NETHERLANDS and ²Bar-Ilan University, ISRAEL

M6B

HIGH SPEED ORGANELLES SORTING MICROSYSTEM DRIVEN BY A SINGLE PRESSURE SOURCE

T. Aoki¹, Y. Shirasaki², T. Arakawa¹, H. Sugino³, T. Funatsu³ and S. Shoji¹
¹Waseda University, JAPAN, ²Kazusa DNA Research Institute, JAPAN and
³University of Tokyo, JAPAN

M7B

INDIRECT DETECTION AND SEPARATION OF NON-FLUORESCENT ANALYTES USING FLUORESCENT ISOTACHOPHORETIC SPACERS

T. Khurana and J.G. Santiago
Stanford University, USA

M8B

MICROFLUIDIC TEMPERATURE GRADIENT FOCUSING FOR IN SITU CHIRAL AMINO ACIDS ANALYSIS ON MARS

G. Danger and D. Ross

National Institute of Standards and Technology (NIST), USA

M9B

ON-CHIP CONTINUOUS CELL SEPARATOR USING POSITIVE AND NEGATIVE DIELECTROPHORESIS

J. Avian, S. Kostner and M.J. Vellekoop

Vienna University of Technology, AUSTRIA

M10B

POINT MUTATION DETECTION BY ON-CHIP DIFFUSION COEFFICIENT MEASUREMENT

A. Estévez-Torres¹, T. Le Saux¹, H. Berthoumieux¹, A. Georges¹, S. Fernandez¹, J.-F. Allemand¹, V. Croquette¹, A. Lemarchand², L. Jullien¹ and C. Gosse³

¹Ecole Normale Supérieure, FRANCE, ²Université Paris 6, FRANCE and

³LPN-CNRS, FRANCE

M11B

SEMI-PACKED MICRO GAS CHROMATOGRAPHY COLUMNS

S.A. Ali, M.A. Zareian-Jahromi, M. Ashraf-Khorassani, L.T. Taylor and M. Agah

Virginia Polytechnic Institute and State University, USA

M12B

SEPARATION AND POLARIZABILITY OF DNA BY DIELECTROPHORESIS

J. Regtmeier, H. Höfemann, R. Eichhorn, D. Anselmetti and A. Ros

Bielefeld University, GERMANY

M13B

SIZE-SELECTIVE SEPARATION OF GLASS BEADS USING THE SECONDARY FLOW IN A CURVED MICROCHANNEL

J.B. Ha¹, D.H. Yoon¹, S.Y. Park¹, Y.K. Bahk¹, T. Arakawa², S. Shoji² and J.S. Go¹

¹Pusan National University, KOREA and ²Waseda University, JAPAN

M14B

USE OF MICRO- AND NANO-FABRICATED ORDERED PILLAR ARRAYS FOR PRESSURE-DRIVEN REVERSED PHASE LIQUID CHROMATOGRAPHY SEPARATIONS

W. De Malsche^{1,2}, H. Eghbali¹, D. Clicq¹, J. Vangelooen¹, D. Tezcan³, P. De Moor³, V. Verdoold², H. Gardeniers¹ and G. Desmet¹

¹Vrije Universiteit Brussel, BELGIUM, ²Twente University, THE NETHERLANDS and

³IMEC, BELGIUM

Microsystems for Chemistry and Environment -
Environmental Analysis

M15B

ENVIRONMENTALLY-FRIENDLY DISPOSABLE HEAVY METAL ION SENSORS USING PLANAR BISMUTH MICROELECTRODES FOR IN SITU ENVIRONMENTAL MONITORING

Z. Zou, A. Jang, P.-M. Wu, J. Do, J. Han, P.L. Bishop and C.H. Ahn

University of Cincinnati, USA

M16B

THE UREY INSTRUMENT: AN INTEGRATED END-TO-END IN SITU ANALYTICAL SYSTEM DESIGNED FOR THE ULTRA-SENSITIVE CHEMICAL DETECTION OF EXTANT OR EXTINCT LIFE ON MARS

F.J. Grunthaner¹, J.L. Bada², A.M. Skelley³, R.A. Mathies³, R. Quinn⁴, A. Zent⁴, P. Willis¹, X. Amashukeli¹, A. Farrington¹, A. Aubrey² and P. Ehrenfreund⁵

¹California Institute of Technology, USA,

²University of California, San Diego, USA,

³University of California, Berkeley, USA,

⁴NASA Ames Research Center, USA and

⁵Leiden Institute of Chemistry, THE NETHERLANDS

Microsystems for Chemistry and Environment -
Online Process Control

M17B

A STRIPLINE BASED MICROFLUIDIC PROBE FOR NMR SPECTROSCOPY

J. Bart¹, J.W.G. Janssen², P.J.M. van Bentum², A.P.M. Kentgens² and J.G.E. Gardeniers¹

¹University of Twente, THE NETHERLANDS and

²Radboud University, THE NETHERLANDS

Microsystems for Chemistry and Environment -
On-Chip Synthesis and Production

M18B

A TRI-PHASE CATALYTIC MICROFLUIDIC REACTOR FOR THE GENERATION OF SINGLET OXYGEN USING A NOVEL IMMOBILISED SECO-PORPHYRAZINE CATALYST

C. Cullen¹, M.J. Fuchter¹, R.C.R. Wootton², A.G.M. Barrett¹ and A.J. de Mello¹

¹Imperial College London, UK and ²University of Cambridge, UK

M19B

INFLUENCE OF PRESSURE ON DIELS-ALDER REACTIONS PERFORMED IN GLASS MICROREACTORS

F. Benito-López, R.M. Tiggelaar, A.J. Kettelarij, R.J.M. Egberink, J.G.E. Gardeniers,

D.N. Reinhoudt and W. Verboom

University of Twente, THE NETHERLANDS

M20B

MICROREACTOR FOR JANUS BEADS PRODUCTION USING MICROCHANNEL INTEGRATION TECHNIQUES

T. Torii¹, T. Takahashi², Y. Takizawa² and T. Nisisako³

¹University of Tokyo, JAPAN, ²Soken Chemical & Engineering Co., Ltd., JAPAN and

³Tokyo Institute of Technology, JAPAN

M21B

SOLID CATALYZED HYDROGENATION IN A SI/GLASS MICROREACTOR USING SUPERCRITICAL CO₂ AS THE REACTION SOLVENT

F. Trachsel, B. Tidona and Ph. Rudolf von Rohr

ETH Zurich, SWITZERLAND

Microsystems for Chemistry and Environment

M22B

OBSERVATION OF BIOFILM IN MICROCHANNEL WITH THERMAL LENS MICROSCOPY

T.T.J. Rossteuscher^{1,2}, A. Hibara^{1,3,4}, K. Mawatari³ and T. Kitamori^{1,3,4}

¹University of Tokyo, JAPAN, ²Technische Universität München, GERMANY,

³Kanagawa Academy of Science and Technology, JAPAN and

⁴Japan Science and Technology Agency (JST), JAPAN

Microfluidics - Fluid Mechanics & Modeling

M1C

A PARTICULE IMAGE ANEMOMETRY TECHNIQUE FOR A NON INVASIVE, QUICK DETERMINATION OF AVERAGE FLOW RATES IN MICROCHANNELS

A. Plecis, L. Malaquin and Y. Chen

LPN-CNRS, FRANCE

M2C

CHAOTIC MIXING INDUCED BY A MAGNETIC CHAIN IN A ROTATING MAGNETIC FIELD

T.G. Kang, M.A. Hulsen, P.D. Anderson, J.M.J. den Toonder and H.E.H. Meijer

Eindhoven University of Technology, THE NETHERLANDS

M3C**COMPUTATIONAL SIMULATION OF DROPLET JETTING OF PIEZOELECTRIC DRIVEN INKJET HEAD WITH INK COMPRESSIBILITY**

J.H. Park, W.C. Sim, Y.J. Kim, P.J. Kang, C.S. Park, Y.S. Yoo and J.W. Jeong
Samsung Electro-Mechanics, KOREA

M4C**ELECTROLYTE DEPENDENCE OF AC ELECTRO-OSMOSIS**

M.Z. Bazant, J.P. Urbanski, J.A. Levitan, K. Subramanian,
M.S. Kilic, A. Jones and T. Thorsen
Massachusetts Institute of Technology, USA

M5C**THE MECHANICS OF FREQUENCY-SPECIFIC MICROFLUIDIC NETWORKS**

D.C. Leslie¹, C.J. Easley², J.P. Landers¹, M. Utz¹ and M.R. Begley¹
¹University of Virginia, USA and ²Vanderbilt Medical Center, USA

M6C**NONLINEAR PHENOMENA IN INDUCED-CHARGE-ELECTROOSMOSIS:****A NUMERICAL AND EXPERIMENTAL INVESTIGATION**

G. Soni, T.M. Squires and C.D. Meinhart
University of California, Santa Barbara, USA

M7C**SURFACE ACOUSTIC WAVE μSTREAMING TO ENHANCE BIOSENSING IN A DROPLET-BASED μTAS PLATFORM**

O. Ducloux¹, E. Galopin¹, J.-C. Camart¹, V. Thomy¹ and F. Zoueshtigh²
¹IEMN, FRANCE and ²LML, FRANCE

M8C**THEORETICAL AND EXPERIMENTAL INVESTIGATION OF THE VALVELESS MICROPUMP WITH A LEAKAGE BARRIER**

I.-H. Hwang, B.-P. Moon, S.-M. Shin and J.-H. Lee
Gwangju Institute of Science and Technology (GIST), KOREA

Microfluidics - Aliquoting, Mixing & Pumping**M9C****A NEW MICROPUMPING PRINCIPLE BY ACOUSTICALLY EXCITED OSCILLATING BUBBLE**

K. Ryu, S.K. Chung and S.K. Cho
University of Pittsburgh, USA

M10C**AC ELECTROKINETIC ENHANCEMENT FOR BIOSENSORS**

M. Sigurdson, H. Feldman and C. Meinhart
University of California, Santa Barbara, USA

M11C**EWOD STABILIZATION OF TWO LIQUID STREAMS ALONG A MICROCHANNEL AND EHD-INDUCED ENHANCEMENT OF INTERFACIAL MASS TRANSFER**

Y. Ishida¹, L. Davoust², A. Glière¹, J. Gratier¹ and N. Sarrut¹
¹MINATEC, FRANCE and ²LEGI, FRANCE

M12C**MICROMIXER BASED ON BAKER'S TRANSFORMATION**

K. Osato¹, M. Tokeshi¹, N. Kaji¹, Y. Omoto¹, N. Suzuki¹,
Y. Sakai¹, E. Shamoto¹ and Y. Baba^{1,2,3}
¹Nagoya University, JAPAN,
²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and
³Japan Science and Technology Agency (JST), JAPAN

M13C**MICROPUMP AND MICROMIXER BASED ON ELECTRICALLY INDUCED BUOYANCY**

S. Hirahara, T. Tsuruta, Y. Matsumoto, N. Miki and H. Minamitani
Keio University, JAPAN

M14C**NUMERICAL STUDY ON FLOW AND HEAT TRANSFER CHARACTERISTICS OF PERISTALTIC PUMP**

K. Tatsumi¹, Y. Miwa¹, Y. Matsunaga² and K. Nakabe¹
¹Kyoto University, JAPAN and ²Osaka Prefecture University, JAPAN

M15C**PARTICLE TRANSPORT AND MIXING IN MICRODEVICES WITH RIDGES**

L.M. Barrett, G.J. Fiechtner and A.K. Singh
Sandia National Laboratories, USA

M16C**SLUG MIXING BY ACOUSTIC STREAMING IN LAB-CHIPS**

F. Schönfeld, J. Pinzón and M. Weniger
Institut für Mikrotechnik GmbH, GERMANY

M17C**THERMAL ACTUATION FOR A CROSS-CHANNEL MICROMIXER**

B. Selva¹, O. François², L. Rousseau³, P. Poulichet³, S. Desportes¹,
J. Delaire¹, D. Grenier¹ and M.-C. Jullien¹
¹ENS Cachan, FRANCE, ²Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI),
FRANCE and ³Groupe ESIEE, FRANCE

Microfluidics - Multi-Phase and Digital Microfluidics**M18C****3D DROPLET ACTUATION IN DIGITAL MICROFLUIDICS DEVICES: TOWARDS INTEGRATION WITH MASS SPECTROMETRY**

S.L.S. Freire, M. Abdelgawad, H. Yang and A. Wheeler
University of Toronto, CANADA

M19C**FABRICATION AND CHARACTERIZATION OF MAGNETIC ALGINATE BEAD CARRIER FOR MULTIPLE SORTING OF CELLS OR MULTIPLEXED IMMUNOASSAY**

K. Lee, C. Kim, J.R. Lee, J.H. Kim, J.Y. Kang and T.S. Kim
Korea Institute of Science and Technology, KOREA

M20C**GENERATION OF MONODISPERSE NONSPHERICAL DROPLETS VIA MICROCHANNEL ARRAYS WITH A STEP**

I. Kobayashi¹, K. Uemura¹ and M. Nakajima^{1,2}
¹National Food Research Institute, JAPAN and
²University of Tsukuba, JAPAN

M21C**GIANT DEFORMATIONS AND TIP-STREAMING FROM SHEARED DROPS**

S. Molesin and C.N. Baroud
Ecole Polytechnique, FRANCE

M22C**MANIPULATION OF MONODISPERSE GEL EMULSIONS IN MICROCHANNELS**

E. Surenjav, H. Evans, T. Pföhl, C. Priest, S. Herminghaus and R. Seemann
Max-Planck-Institute for Dynamics and Self Organization, GERMANY

M23C**OPTICAL FORCING OF MICRODROPS: FLOWS AND TEMPERATURE FIELD CHARACTERIZATION**

M.L. Cordero, E. Verneuil and C.N. Baroud
Ecole Polytechnique, FRANCE

M24C**POLYMER MICROSPHERE MASS PRODUCTION USING 128-CHANNEL DIGITAL FLUIDIC CHIP**

A.T.-H. Hsieh, J.-H. Pan, P.G. Pinasco, J.S. Fisher, L.-H. Hung
and A.P. Lee
University of California, Irvine, USA

M25C**SIOC AS A HYDROPHOBIC LAYER FOR ELECTROWETTING ON DIELECTRIC APPLICATIONS**

J. Thery, M. Borella, S. Le Vot, D. Jary, F. Rivera, G. Castellán,
A.G. Brachet, M. Plissonnier and Y. Fouillet
CEA-Liten-Minatec, FRANCE

M26C**SURFACE INDUCED DROPLET FUSION IN MICROFLUIDIC DEVICES**

L.M. Fidalgo, C. Abell and W.T.S. Huck
University of Cambridge, UK

M27C**THERMALLY TRIGGERED MODULATION OF FLOW CHANNEL GEOMETRY AND LAYOUT**

V. Bazargan and B. Stoeber
University of British Columbia, CANADA

M28C

UNIFORM DROPLET GENERATION IN SURFACTANTS/POLYMER/OIL SYSTEMS USING MACRO TO MICRO SCALED CO-FLOW CHANNELS

M.R. Duxenneuner^{1,2}, P. Fischer², E.J. Windhab² and J.J. Cooper-White¹
¹University of Queensland, AUSTRALIA and ²ETH, Zurich, SWITZERLAND

M29C

USING MICROFLUIDIC TECHNOLOGY TO PRODUCE DOUBLE EMULSIONS

N. Pannacci, T. Lockhart, J. Mortreux, P. Tabeling and H. Willaime
Ecole Supérieure de Physique et de Chimie Industrielles, ESPCI, FRANCE

Microfluidics

M30C

ADSORPTION-FREE MICROPARTICLE MANIPULATION USING 3D OPTOELECTRONIC TWEEZERS COMPOSED OF DOUBLE PHOTOCONDUCTIVE LAYERS

H. Hwang¹, Y. Oh¹, J.-J. Kim¹, Y.-J. Choi¹, W. Choi¹, J.-K. Park¹, S.-H. Kim² and J. Jang²
¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and ²Kyung Hee University, KOREA

M31C

CONDITIONS FOR CAPILLARY FILLING IN MICROFABRICATED CHANNELS WITH HYDROPHILIC AND HYDROPHOBIC WALLS

V. Jokinen^{1,2} and S. Franssila²
¹University of Helsinki, FINLAND and ²Helsinki University of Technology, FINLAND

M32C

CONTROL OF THE PHASE BEHAVIOR OF AQUEOUS SOLUTIONS USING MICROFLUIDICS

J.-U. Shim¹ and S. Fraden²
¹University of Cambridge, UK and ²Brandeis University, USA

M33C

VERTICAL MICROREACTOR WITH FLUID FILTERS CHARACTERIZED BY 3D-CAPILLARY-BUNDLE FOR HIGH-THROUGHPUT IMMUNOASSAY

Y. Ukita¹, T. Asano¹, K. Fujiwara¹, K. Matsui¹, M. Takeo¹, S. Negoro¹, T. Kanie², M. Katayama² and Y. Utsumi¹
¹University of Hyogo, JAPAN and ²Sumitomo Electric Industries, Ltd., JAPAN

Nanotechnology - Nanofluidics

M1D

COUPLED FREE-SOLUTION SEPARATION AND ON-CHIP HYBRIDIZATION OF OLIGONUCLEOTIDES IN A NANOFUIDIC DEVICE

D.E. Huber¹, M.L. Markel¹, S. Pennathur² and K.D. Patel¹
¹Sandia National Laboratories, USA and ²University of California, Santa Barbara, USA

M2D

ELECTROKINETIC AND ATOMIC FORCE MICROSCOPY CHARACTERIZATION OF INTERFACIAL VAPOR VOID PHENOMENA IN HYDROPHOBIC MICROFLUIDIC DEVICES

V. Tandon, A.N. Sharma, S.K. Bhagavatula and B.J. Kirby
Cornell University, USA

M3D

HIGH SPEED SHEAR-DRIVEN FLOWS THROUGH MICRO-STRUCTURED 1D-NANO CHANNELS

J. Vangelooen¹, W. De Malsche^{1,2}, K. Pappaert¹, D. Clicq¹, H. Gardeniers² and G. Desmet¹
¹Vrije Universiteit, BELGIUM and ²University of Twente, THE NETHERLANDS

M4D

IONIC CURRENTS IN METAL-GATED NANOCHANNELS AND CARBON NANOTUBES

C. Meyer, M. Zuiddam, V. Merani, S. Lemay and C. Dekker
Delft University of Technology, THE NETHERLANDS

M5D

MESOSCOPIC CONCENTRATION FLUCTUATIONS IN A NANOFUIDIC DEVICE

M.A.G. Zevenbergen, B.L. Wolfrum and S.G. Lemay
Delft University of Technology, THE NETHERLANDS

M6D

SPONTANEOUS STRETCHING OF DNA IN A TWO-DIMENSIONAL NANOSLIT

M. Krishnan¹, I. Mönch² and P. Schwille¹
¹Technische Universität Dresden, GERMANY and ²Leibniz Institute for Solid State and Materials Research, GERMANY

Nanotechnology - Nanoengineering

M7D

SUB-100NM LITHOGRAPHY WITH NANOSPHERES ARRAYED IN A TEMPLATE

S. Jung and J. Lee
Seoul National University, KOREA

Nanotechnology - Nanobiotechnology

M8D

ARGON AND ACRYLIC ACID PLASMA TREATED ELECTROSPUN NANOFIBER SCAFFOLD

K.H. Lee¹, G.H. Kwon², S.J. Shin², J.Y. Lee², Y.D. Park², B.G. Min¹ and S.H. Lee²
¹Seoul National University, KOREA and ²Korea University, KOREA

M9D

HIGHLY PARALLEL FABRICATION OF MICROFLUIDIC CHIPS FOR LONG DNA MOLECULE SEPARATION

J. Shi^{1,2}, A.P. Fang¹, L. Malaquin¹, J.L. Viovy³, A. Pépin¹, D. Decanini¹ and Y. Chen^{1,2}
¹CNRS, FRANCE, ²ENS, FRANCE and ³Institut Curie, FRANCE

M10D

ISOLATION OF DNA MOLECULE IN MICROCHANNEL AND SINGLE MOLECULE TRAPPING BETWEEN MICROELECTRODES

M. Kumemura¹, D. Collard¹, C. Yamahata¹, N. Sakaki¹, G. Hashiguchi² and H. Fujita¹
¹University of Tokyo, JAPAN and ²Kagawa University, JAPAN

M11D

LOCALIZED GENE REGULATION BY A REMOTE OPTICAL SWITCH

E.S. Lee, G.L. Liu and L.P. Lee
University of California, Berkeley, USA

M12D

SILICON NANOWIRE ARRAY AS A BIOCHEMICAL SENSOR / NANO-HEATER FOR POTENTIAL APPLICATIONS IN CELLULAR PROTEIN DETECTION

I. Park¹, Z. Li², A.P. Pisano¹ and R.S. Williams²
¹University of California, Berkeley, USA and ²Hewlett-Packard Laboratories, USA

M13D

SINGLE-MOLECULE LIGATION OF DNA AS A UNIT OPERATION FOR MOLECULAR SURGERY

R. Watanabe¹, H. Oana^{1,2} and M. Washizu^{1,2}
¹University of Tokyo, JAPAN and ²Japan Science and Technology, JAPAN

M14D

TRAPPING OF SINGLE DNA MOLECULES BY MEMS TWEEZERS WITH PULSED DIELECTROPHORESIS

N. Sakaki¹, M. Kumemura¹, D. Collard¹, G. Hashiguchi² and H. Fujita¹
¹University of Tokyo, JAPAN and ²Kagawa University, JAPAN

Nanotechnology

M15D

NANOCHANNEL CHROMATOGRAPHY - SEPARATIONS BASED ON THE UNEVEN DISTRIBUTIONS OF SPECIES IN NANOCHANNELS

S. Liu, J. Kang, S. Wang and J. Lu
Texas Tech University, USA

Materials - Innovative Chip Materials

M1E

CONJUGATED FLUORESCENT NANOSOMES FOR A NOVEL LABEL-FREE MICROARRAY CHIPS FOR DNA ANALYSES

D.J. Ahn¹, E.J. Kim¹, D.H. Yang¹, G.S. Lee¹ and J.-M. Kim²
¹Korea University, KOREA and ²Hanyang University, KOREA

Materials - Surface Modification and Characterization

M2E

CHARGED PHOSPHOLIPID POLYMER SURFACES WITH HIGH CELL ADHESION RESISTANCE FOR CELL CHIP

Y. Xu, T. Konno, M. Takai and K. Ishihara
University of Tokyo, JAPAN

M3E

DEVELOPMENT OF ENZYME-RELEASE CAPILLARY FOR CAPILLARY-ASSEMBLED MICROCHIP TOWARDS MULTIPLE METABOLITE SENSING

T.G. Henares¹, E. Maekawa¹, F. Mizutani¹, R. Sekizawa² and H. Hisamoto³
¹University of Hyogo, JAPAN, ²Metaboscreen Co. Ltd., JAPAN and ³Osaka Prefecture University, JAPAN

M4E

DIRECT POLYMERIZATION PATTERNING BASED ON EB LITHOGRAPHY FOR CONTROL OF CELL ADHESIVE ORIENTATION

N. Idota¹, T. Tsukahara^{1,2}, A. Hibara^{1,2}, T. Okano³ and T. Kitamori^{1,2}
¹Japan Science and Technology Agency (JST), JAPAN, ²University of Tokyo, JAPAN and ³Tokyo Women's Medical University, JAPAN

M5E

FEATURES OF THERMORESPONSIVE POLYMERS GRAFTED ONTO HYDROPHILIC AND HYDROPHOBIC SURFACES AND APPLICATION OF THE SURFACES FOR RAPID RECOVERY OF THE CELL SHEET

Y. Akiyama, M. Yamato, A. Kikuchi and T. Okano
Tokyo Women's Medical University, JAPAN

M6E

NONBIOFOULING SURFACES AND MICROPATTERNED BIORECOGNITION LAYER ON POLYMERIC MATERIALS FOR HIGHLY SENSITIVE MICROARRAY BIOSENSORS

J. Sibarani, T. Konno, M. Takai and K. Ishihara
University of Tokyo, JAPAN

M7E

PHOSPHOLIPID POLYMER SURFACE SHOWING THEIR BIOCOMPATIBILITY RAPIDLY FROM DRY TO WATER ENVIRONMENT FOR MICROFLUIDIC DEVICES

K. Futamura, M. Takai and K. Ishihara
University of Tokyo, JAPAN

Materials - Nanostructured Materials

M8E

NANOSTRUCTURE ENHANCED SURFACE PLASMON RESONANCE IMAGING DETECTION OF DNA HYBRIDIZATION

L. Malic¹, B. Cui², T. Veres² and M. Tabrizian¹
¹McGill University, CANADA and ²National Research Council (NRC), CANADA

M9E

TOWARDS SELECTIVE OPTOCHEMICAL GAS SENSING BY LUMINESCENT MARINE DIATOMS

A. Setaro¹, S. Lettieri¹, L. De Stefano² and P. Maddalena¹
¹Università di Napoli Federico II, ITALY and ²Unità di Napoli, ITALY

Materials

M10E

A PHOTOPATTERNABLE SILICONE FOR BIOMEMS APPLICATIONS

S.P. Desai, B.M. Taff and J. Voldman
Massachusetts Institute of Technology, USA

Detection Technologies - Optical

M1F

APPLICATION OF HIGH RESOLUTION 2D-SPR IMAGER TO LIVING CELL-BASED ALLERGEN SENSING

M. Horii^{1,2}, H. Shinohara¹, Y. Iribe¹ and M. Suzuki¹
¹University of Toyama, JAPAN and ²Toyama New Industry Organization, JAPAN

M2F

DESIGN AND CHARACTERIZATION OF MACH-ZEHNDER INTERFEROMETRIC IMMUNOSENSORS OPERATING AT NEAR INFRARED

J. Hong¹ and T.S. Kim²
¹Imperial College London, UK and ²Korea Institute of Science and Technology (KIST), KOREA

M3F

DEVELOPMENT OF DIFFERENTIAL INTERFERENCE CONTRAST THERMAL LENS MICROSCOPE

H. Shimizu¹, K. Mawatari² and T. Kitamori^{1,2}
¹University of Tokyo, JAPAN and ²Kanagawa Academy of Science and Technology, JAPAN

M4F

IMMERSION REFRACTOMETRY ANALYSIS OF LIVING CELLS IN MICROFLUIDIC CELL CULTURE CHIP

X. Zhang¹, R. Chua², P.H. Yap², W.Z. Song¹ and A.Q. Liu¹
¹Nanyang Technological University, SINGAPORE and ²DSO National Laboratories, SINGAPORE

M5F

ION-SELECTIVE NANOPLASMONIC OPTICAL SENSOR

T. Kang, Y. Choi, D. Choi, E. Lee and L.P. Lee
University of California, Berkeley, USA

M6F

ON-CHIP pH AND TEMPERATURE SENSING WITH GEL-TOOL MANIPULATED BY OPTICAL TWEEZERS

H. Maruyama¹, F. Arai² and T. Fukuda¹
¹Nagoya University, JAPAN and ²Tohoku University, JAPAN

M7F

OPTOFLUIDIC BLOOD CELL SORTING

I.A. Andreev², A.C. Riches², T. Briscoe², L. Paterson³, K. Dholakia² and M.P. MacDonald¹
¹University of Dundee, UK, ²University of St. Andrews, UK and ³Heriot Watt University, SCOTLAND

M8F

REFRACTIVE INDEX DETECTOR FOR NANOCHANNEL USING ALTERNATIVE DIFFRACTION GRATING NANOCHANNEL

K. Mawatari¹, K. Oda², A. Hibara² and T. Kitamori^{1,2}
¹Kanagawa Academy of Science and Technology, JAPAN and ²University of Tokyo, JAPAN

Detection Technologies - Electrochemical

M9F

AN ELECTROCHEMICAL SENSOR INTEGRATED ON FABRIC

G. Marchand¹, M.-L. Cosnier¹, N. David¹, C. Chabrol¹, A. Bourgerette¹, F. Vrillon¹, T. Flaven¹, I. Chartier², J. Bablet² and N. Dunoyer²
¹CEA LETI, Minatec, FRANCE and ²LITEN, FRANCE

M10F

LOW-NOISE OPERATION OF CHARGE-TRANSFER-TYPE pH SENSOR USING CHARGE ACCUMULATION TECHNIQUE

E. Watanabe¹, T. Hizawa¹, S. Mimura², T. Ishida³, H. Takao^{4,5}, K. Sawada^{1,4,5} and M. Ishida^{1,4,5}

¹Toyohashi University of Technology, JAPAN, ²HORIBA, Ltd., JAPAN, ³Orimacky, Ltd., JAPAN, ⁴Toyohashi University of Technology, JAPAN and ⁵Japan Science and Technology Agency (JST), JAPAN

M11F

A FULLY INTEGRATED AND DISPOSABLE POLYMER BIOSENSOR USING MICRO DIAPHRAGM STRUCTURE OF PIEZO-COPOLYMER (PVDF-TRFE)

S. Lee^{1,2}, C. Li¹, Y. Chae², J. Kang² and C.H. Ahn¹

¹University of Cincinnati, USA and ²Korea Institute of Science and Technology (KIST), KOREA

M12F

DIFFERENTIAL IMPEDANCE SPECTROSCOPY WITH AN ARRAY OF FIELD-EFFECT TRANSISTORS AS NOVEL BIOSENSOR CONCEPT

S. Ingebrandt, Y. Han, G. Wrobel, S. Eick, S. Schäfer and A. Offenhäuser
Forschungszentrum Jülich, GERMANY

M13F

DUAL FREQUENCY RESONANCE IMPEDANCE SPECTROSCOPY FLOW CYTOMETRY FOR BLOOD AND TUMOR CELLS

S. Zheng and Y.-C. Tai

California Institute of Technology, USA

M14F

ELECTRICAL DETECTION OF ION CHANNEL ACTIVITY IN AN ARRAY OF SUSPENDED LIPID BILAYERS

A. Varnier¹, T. Plénat¹, L. Ghenim¹, D. Fajolle², V. Agache², F. Sauter², F. Chatelain¹ and A. Fuchs¹

¹Commissariat à l'Energie Atomique (CEA), FRANCE and ²CEA-LETT-Minatec, FRANCE

M15F

IMPEDANCE SPECTROSCOPY ON A MICROFABRICATED FLOW CYTOMETER: LABEL-FREE DETECTION OF BABESIA BOVIS PARASITES IN BOVINE RED BLOOD CELLS

C. Küttel¹, E. Nascimento², N. Demierre¹, T. Silva², T. Braschler¹, A.G. Oliva² and P. Renaud¹

¹Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and ²Universidade Nova de Lisboa, PORTUGAL

Detection Technologies

M16F

CANTILEVER-BASED SENSOR WITH INTEGRATED OPTICAL READ-OUT USING SINGLE MODE WAVEGUIDES

M. Nordström¹, D.A. Zauner¹, M. Calleja², J. Hübner¹ and A. Boisen¹

¹Technical University of Denmark, DENMARK and

²Institute of Microelectronics of Madrid, SPAIN

M17F

DEVELOPMENT OF NOVEL CELL ANALYTICAL SYSTEM BASED ON HIGH SENSITIVE QCM SENSOR

E. Watarai, M. Takai and K. Ishihara

University of Tokyo, JAPAN

M18F

MICROFLUIDIC IMMUNOCHIP BASED ON ELECTRICAL DETECTION SYSTEM FOR CANCER BIOMARKER

J.-H. Maeng, Y.-J. Ko, Y. Ahn, S.-H. Lee, N.-G. Cho and S.Y. Hwang

Hanyang University, KOREA

M19F

SUPRAMOLECULAR CHEMISTRY IN AN NMR-CHIP

M.V. Gómez, D.N. Reinhoudt and A.H. Velders

University of Twente, THE NETHERLANDS

MEMS & NEMS Technologies -
Micro and Nano-Machining

M1G

A PHOTOLITHOGRAPHY-BASED SILICON NANOWIRE FABRICATION USING UNDERCUT ETCHING OF (110) SILICON WAFER FOR BIOSENSOR APPLICATIONS

S.-S. Yun, S.-K. Yoo, S. Yang and J.-H. Lee

Gwangju Institute of Science and Technology (GIST), KOREA

M2G

FABRICATION AND OPERATION OF A MICRO ORIFICE ARRAY CHIP WITH HIGH ELECTROPORATION EFFICIENCY

M. Gel¹, O. Kurosawa², H. Oana¹ and M. Washizu¹

¹University of Tokyo, JAPAN and ²Advantec Co., JAPAN

M3G

FAST ETCHING OF SACRIFICIAL GALVANIC COUPLED METALS FOR NANOCANNEL FABRICATION: EXPERIMENTS AND THEORY

W. Sparreboom, J.C.T. Eijkel and A. van den Berg

University of Twente, THE NETHERLANDS

M4G

IMPLEMENTATION OF MICROFABRICATED SUTURE-LESS FLEXIBLE PARYLENE TISSUE ANCHORS ON MINIMALLY INVASIVE BIOMEDICAL IMPLANTS

P.-J. Chen¹, D.C. Rodger^{1,2}, S. Saati³, J.C. Altamirano³, C.-H. Lin¹, R. Agrawal^{2,3}, R. Varma^{2,3}, M.S. Humayun^{2,3} and Y.-C. Tai¹

¹California Institute of Technology, USA, ²University of Southern California, USA and

³Doheny Eye Institute, USA

M5G

INVESTIGATION OF INTERSTRUCTURAL COLLAPSE OF PDMS MICROSTRUCTURES

Y. Zhao

Ohio State University, USA

M6G

MAGNETIC MICROVALVE WITH BIOCOMPATIBLE SURFACES USING ELECTROCHEMICAL DEPOSITION AND PASSIVATION

M. Tijero¹, L.J. Fernández¹, J.M. Ruano-López¹, K. Mayora¹, M.V. Rodríguez² and J. Elizalde¹

¹Ikerlan S. Coop., SPAIN and ²University of Basque Country, SPAIN

M7G

RELIABLE BATCH MANUFACTURING OF MINIATURIZED VERTICAL VIAS IN SOFT POLYMER REPLICA MOLDING

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

Royal Institute of Technology, SWEDEN

MEMS & NEMS Technologies - Microfluidic Components

M8G

A LATERALLY OPERATING LIQUID ASPIRATION AND DISPENSING UNIT BASED ON AN EXPANDING PDMS COMPOSITE

B. Samel, N. Sandström, P. Griss and G. Stemme

Royal Institute of Technology, SWEDEN

M9G

A PARTICLE CLASSIFICATION CHIP FOR BOTH AIRBORNE AND LIQUID-SUSPENDED BIOLOGICAL PARTICLES

Y.-H. Kim, S.-C. Park, D.-H. Park, I.-H. Jung, J. Hwang and Y.-J. Kim

Yonsei University, KOREA

M10G

A STRAIGHT SILICON TUBE AS A MICROFLUIDIC DENSITY SENSOR

M. Najmzadeh¹, S. Haas² and P. Enoksson¹

¹Chalmers University of Technology, SWEDEN and ²Imago AB, SWEDEN

M11G

CONTINUOUSLY MICROFLUIDIC CENTRIFUGATION IN SEQUENTIALLY CONNECTED SEMICIRCULAR MICROCHANNELS FOR MICROMETER-SIZED PARTICLE ENRICHMENT

D. Xu, W. Wang, Y. Jin and Z. Li
Peking University, CHINA

M12G

ELECTROSPRAY IONIZATION FROM A SILICON EMITTER WITH AN ADJUSTABLE GAP

T. Schönberg¹, P. Ek², J. Sjödal², J. Roeraade² and C. Vieider¹
¹Acreo AB, SWEDEN and ²Royal Institute of Technology, SWEDEN

M13G

HIGH THROUGHPUT CONTROLLED BACTERIAL TRANSPORT USING GEOMETRICAL FLUIDIC MICROCHANNELS OR 3D MICROFIBERS STRUCTURES

S. Martel and M. Mohammadi
École Polytechnique de Montréal, CANADA

M14G

MICROFLUIDIC DISTRIBUTION SYSTEM FOR HOMOGENEOUS INJECTION THROUGH A NEEDLE MATRIX

A. Hoel¹, L. Mir², B. Lepioufle¹ and M.-C. Jullien¹
¹ENS Cachan, Antenne de Bretagne, FRANCE and ²Institut Gustave Roussy, FRANCE

M15G

MONOLITHIC TEFLON MEMBRANE VALVES AND PUMPS FOR HARSH CHEMICAL AND LOW-TEMPERATURE USE

P.A. Willis¹, B.D. Hunt¹, V.E. White¹, M. Ikeda¹, M.-C. Lee¹, M.J. Pelletier² and F.J. Grunthaler¹
¹California Institute of Technology, USA and ²Pfizer Global Research & Development, USA

M16G

ON-CHIP MICROFLUIDIC GRADIENT GENERATION FOR NANOFLOW LIQUID CHROMATOGRAPHY

R. Brennen, H. Yin and K. Killeen
Agilent Technologies, USA

M17G

PERISTALTIC MICRO PUMP ACTUATED BY SINGLE INPUT SIGNAL

O.C. Jeong^{1,2} and S. Konishi³
¹INJE University, KOREA, ²MEMS/NANO Fabrication Center, KOREA and ³Ritsumeikan University, JAPAN

MEMS & NEMS Technologies - Acoustic Devices

M18G

PARTICLE POSITIONING IN MICROCHANNELS USING ULTRASONIC STANDING WAVES REINFORCED WITH RADIATED NEAR AND FAR FIELD PRESSURE WAVES

S.K. Ravula, D.W. Branch, J. Sigman, C. Arrington, P.G. Clem and I. Brener
Sandia National Laboratories, USA

MEMS & NEMS Technologies - Hybrid Devices, Packaging, Components Interfacing

M19G

ALUMINIUM PRINTED CIRCUIT BOARD TECHNOLOGY FOR BIOMEDICAL MICRO-DEVICES

B. Iafelice^{1,2}, F. Destro³, D. Manassis¹, D. Gazzola², E. Jung¹, L. Böttcher¹, M. Borgatti³, T. Braun¹, J. Bauer¹, R. Gavioli³, R. Gambari³, A. Ostmann¹ and R. Guerrieri²
¹Fraunhofer Institute for Reliability and Microintegration (IZM), GERMANY, ²Bologna University, ITALY and ³Ferrara University, ITALY

M20G

ENERGY SCAVENGING FROM TRANSPIRATION: ELECTROSTATIC POWER GENERATION USING EVAPORATION-INDUCED BUBBLE MOTION

R.T. Borno, J.D. Steinmeyer and M.M. Maharbiz
University of Michigan, USA

M21G

MICROFABRICATED NEBULIZER CHIPS FOR ATMOSPHERIC PRESSURE PHOTOIONIZATION-MASS SPECTROMETRY

M. Haapala¹, J. Pöhl¹, T. Kauppila¹, L. Luosujärvi¹, V. Saarela², S. Franssila², R.A. Ketola^{1,2}, T. Kotiaho³ and R. Kostianen¹
¹University of Helsinki, FINLAND and ²Helsinki University of Technology, FINLAND

MEMS & NEMS Technologies

M22G

MANIPULATIONS OF BIO-MOLECULES INSIDE DISCRETE DROPLETS WITH DROPLET CONTROLS BY OPTICAL IMAGING

I.K. Lao¹, C. Lee^{1,2} and H. Feng¹
¹Institute of Microelectronics, SINGAPORE and ²National University of Singapore, SINGAPORE

Gaston Berger Auditorium, Level S2

Session 1A3

Cell Handling and Screening 2

SESSION CHAIR: Y. Baba, Nagoya University

Louis Armand Hall, Level S3

Session 1B3

Integrated Systems

SESSION CHAIR: M.A. Northrup, MicroFluidic Systems Inc.

16:30 - 16:50

FERROFLUID PATTERN FOR GUIDING MAGNETIC BEADS SELF-ORGANISATION: APPLICATION TO AFFINITY CELL SEPARATION AND ON CHIP CELL CULTURE

A.-E. Saliba¹, E. Psichari¹, L. Saia¹, N. Minc¹, V. Studer² and J.-L. Viovy¹
¹Institut Curie, FRANCE and ²Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

CONCENTRATION, LYSIS AND REAL-TIME PCR ON A SU-8 LAB ON A CHIP FOR RAPID DETECTION OF *Salmonella spp.* IN FAECES

M. Agirregabiria¹, D. Verdoy², G. Olabarria², J. Berganzo¹, J. Berganza², L.J. Fernandez¹, M. Pascual de Zulueta², K. Mayora¹, P. Aldamiz-Echevarria², and J.M. Ruano-López¹
¹Ikerlan S. Coop., SPAIN and ²Gaiker-IK4, SPAIN

16:50 - 17:10

HIGH-THROUGHPUT, CONTINUOUS-FLOW, DIELECTROPHORETIC SCREENING OF *MYCOBACTERIUM SMEGMATIS* IN COHERENTLY PATTERNED, POLYMERIC MICRO-CHANNELS

B.G. Hawkins, A.E. Smith and B.J. Kirby
Cornell University, USA

ON-CHIP SINGLE MOLECULE ASSAY DEVICE INTEGRATING CELL LYSIS AND PROTEIN EXTRACTION-PURIFICATION-ASSAY COMPONENTS FOR GENETICALLY ENGINEERED PROTEINS

T. Nakayama¹, K. Tabata², H. Noji² and R. Yokokawa^{1,3}
¹Ritsumeikan University, JAPAN, ²Osaka University, JAPAN and ³Japan Science and Technology Agency (JST), JAPAN

17:10 - 17:30

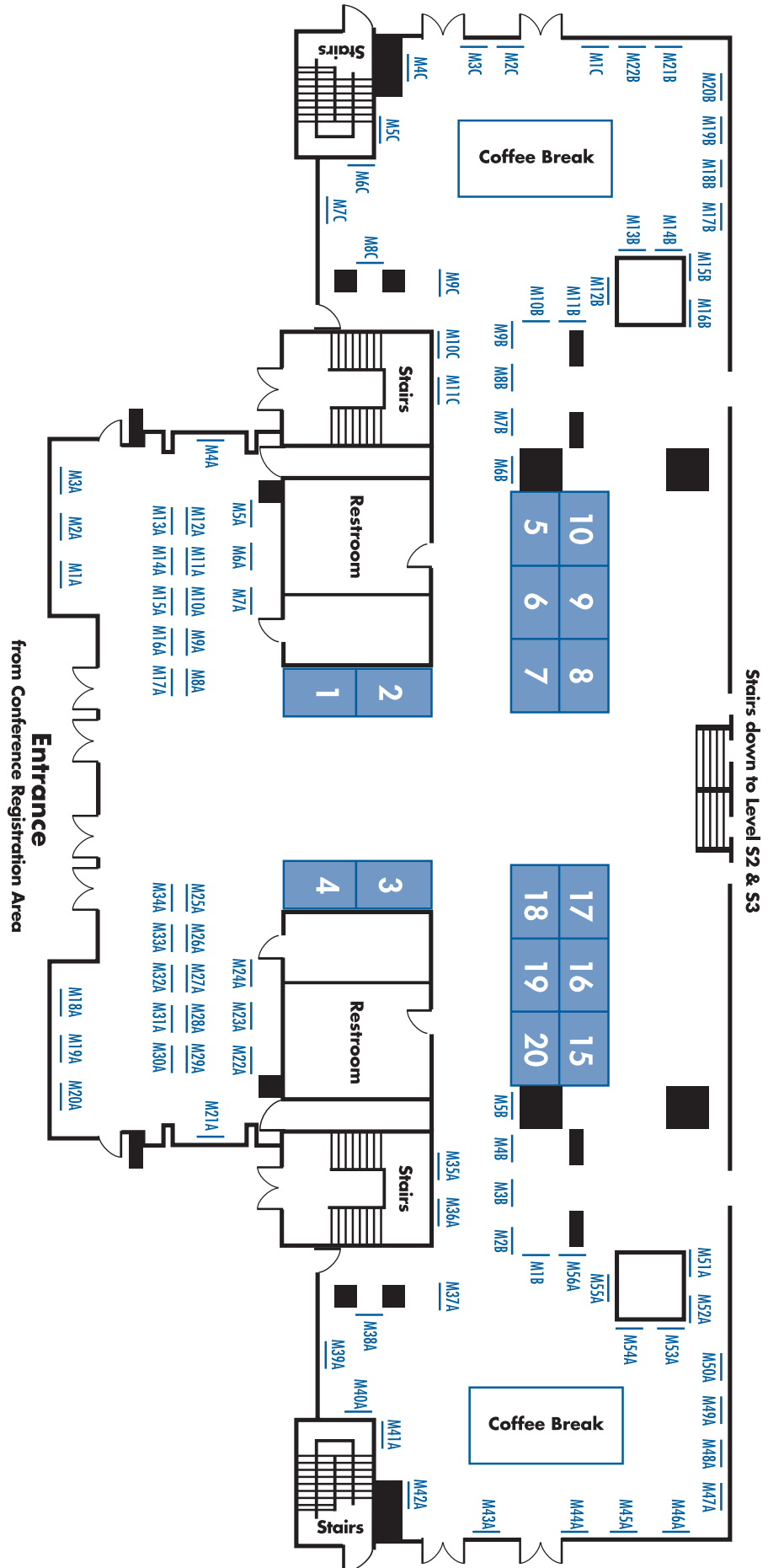
STUDYING REPROGRAMMING OF SOMATIC CELLS VIA FUSION WITH EMBRYONIC STEM CELLS: A MASSIVELY PARALLEL DEVICE FOR CELL FUSION

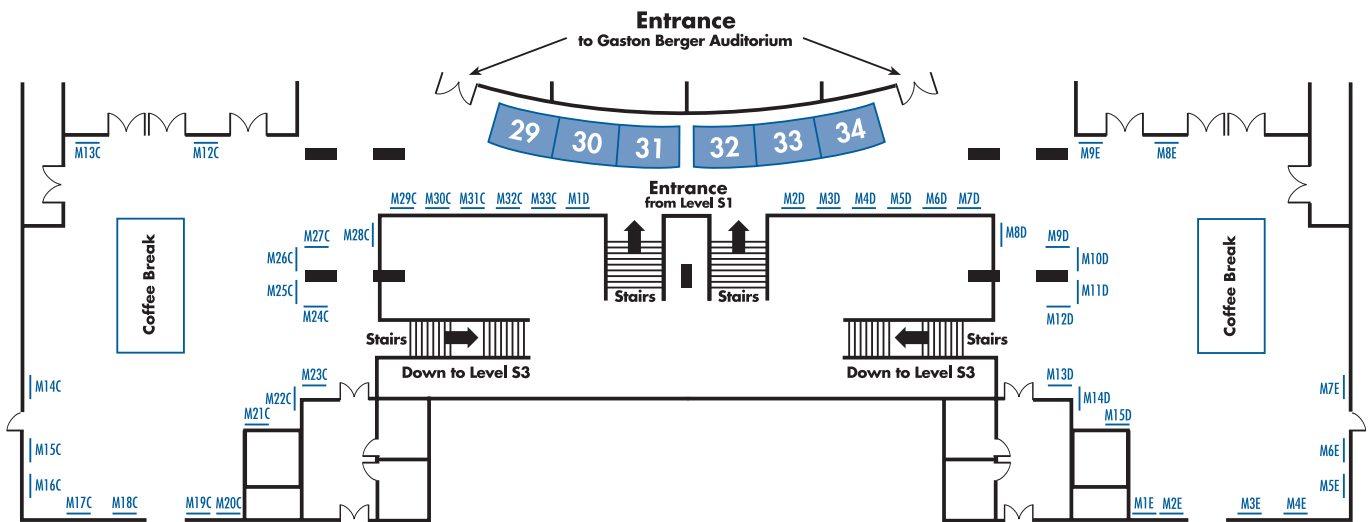
A.M. Skelley, O. Kirak, R. Jaenisch and J. Voldman
Massachusetts Institute of Technology, USA

MICROFLUIDIC CHIPS FOR MEMBRANE PROTEIN CRYSTALLIZATION

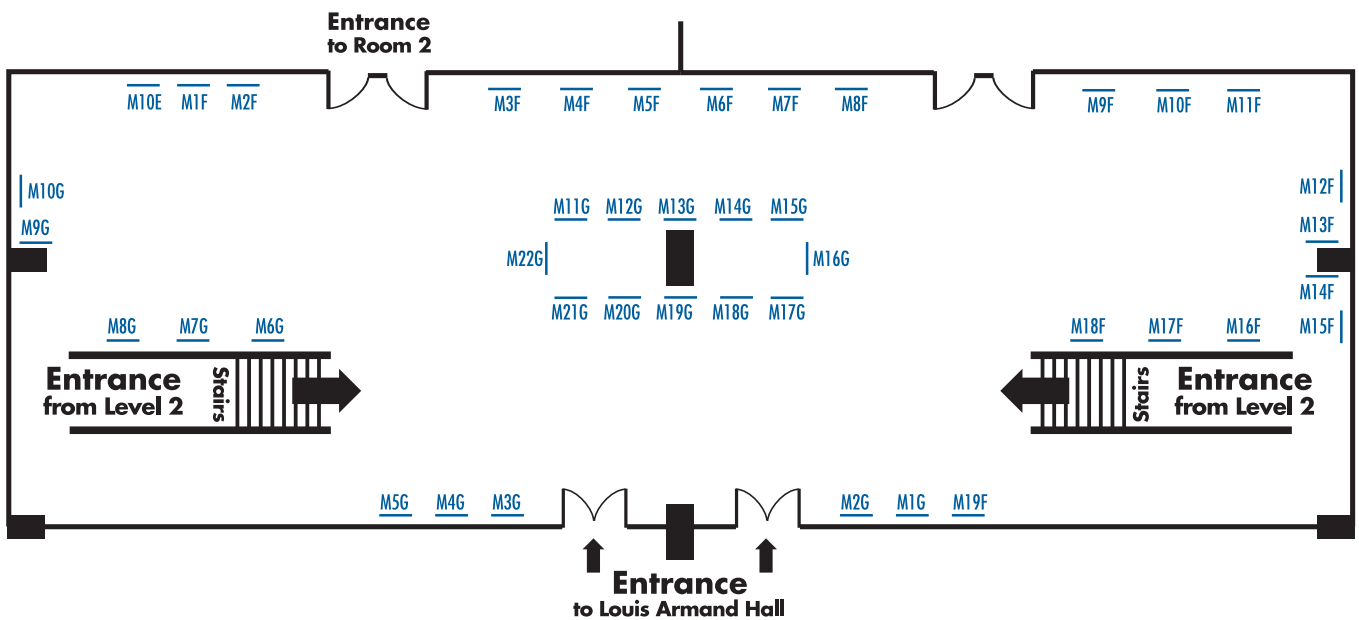
P.J.A. Kenis, J.D. Tice, S.L. Perry, G.W. Roberts and S. Talreja
University of Illinois, USA

LEVEL S1





LEVEL S2



LEVEL S3

Tuesday, October 9, 2007

8:30 - 9:10

Plenary III - CHAIR: J.Landers, University of Virginia

A SINGULAR VIEW OF DNA TRANSACTIONS
Gijs J.L. Wuite
Vrije Universiteit, THE NETHERLANDS

Gaston Berger Auditorium, Level S2

Session 2A1

Multiphase and Digital Microfluidic 1
SESSION CHAIR: J.Landers, University of Virginia

Louis Armand Hall, Level S3

Session 2B1

Nanobiotechnology
SESSION CHAIR: P. Schwillie, Technical University Dresden

9:15 - 9:35

FORMATION OF ARRAYED PLANAR LIPID MEMBRANES BY THE ACCUMULATION OF UNIFORM AQUEOUS PLUGS IN A PSEUDO-POROUS MICROCHANNEL
T. Baba, T. Hatsuzawa and T. Nisisako
Tokyo Institute of Technology, JAPAN

MICROFLUIDIC ORGANIZATION OF LIPID TUBULE BIOREACTORS
J. West, U. Marggraf, A. Manz, J. Franke and P.S. Dittrich
Institute for Analytical Sciences (ISAS), GERMANY

9:35 - 9:55

SINGLE CELL ENCAPSULATION AND SORTING IN MICRODROPLETS USING PASSIVE HYDRODYNAMIC EFFECTS
M. Chabert and J.-L. Viovy
Institut Curie, FRANCE

HIGHLY SENSITIVE MEASUREMENT OF PNA-DNA HYBRIDIZATION USING OXIDE-FREE SILICON NANOWIRE SENSORS
G.-J. Zhang, A. Agarwal, K.D. Buddharaju, N. Singh and Z. Gao
Institute of Microelectronics, SINGAPORE

9:55 - 10:15

MICROCHIP TITRATION BY UTILIZING LAPLACE VALVE
A. Hibara^{1,2,3}, M. Nonogi¹ and T. Kitamori^{1,2,3}
¹University of Tokyo, JAPAN, ²Kanagawa Academy of Science and Technology (KAIST), JAPAN and ³Japan Science and Technology Agency (JST), JAPAN

PROBING CYTOSKELETON DYNAMICS WITH MULTI-DIRECTIONAL TOPOGRAPHICAL GUIDANCE
J. Mai, C. Sun, S. Li and X. Zhang
University of California, Berkeley, USA

10:15 - 10:45

Break

Gaston Berger Auditorium, Level S2

Session 2A2

Clinical Diagnostic 1
SESSION CHAIR: A.-M. Gué, LAAS-CNRS

Louis Armand Hall, Level S3

Session 2B2

On Chip Synthesis and Production
SESSION CHAIR: A. de Mello, Imperial College London

10:45 - 11:05

MICROFLUIDIC CHIP FOR RELATIVE QUANTIFICATION OF mRNAs BY MLPA
T. Roeser¹, K.S. Drese¹, X. Fuetterer¹, A. Nygren², M. Weniger¹ and M. Ritzki¹
¹Institut fuer Mikrotechnik Mainz GmbH, GERMANY, and
²MRC-Holland b.v., THE NETHERLANDS

BIOLOGICALLY INSPIRED MICROFLUIDIC SPINNING OF SILK FIBERS
D.N. Breslauer, S.J. Muller and L.P. Lee
University of California, Berkeley, USA

11:05 - 11:25

BIOPHYSICAL FLOW CYTOMETRY FOR HEMATOLOGIC DISEASES
M.J. Rosenbluth, W.A. Lam and D.A. Fletcher
University of California, Berkeley, USA

INSTANTANEOUS CARBON-CARBON BOND FORMATION USING A MICROCHANNEL REACTOR WITH A CATALYTIC MEMBRANE
Y. Uozumi¹, Y.M.A. Yamada¹, T. Beppu¹, N. Fukuyama¹, M. Ueno² and T. Kitamori²
¹Japan Science and Technology Agency (JST), JAPAN and ²University of Tokyo, JAPAN

11:25 - 11:45

MULTIFUNCTIONAL BARCODED PARTICLES FOR HIGH-THROUGHPUT MOLECULAR SCREENING
D.C. Pregibon¹, M. Toner² and P.S. Doyle¹
¹Massachusetts Institute of Technology, USA and
²Massachusetts General Hospital, Harvard Medical School, USA

MANUFACTURING OF MICROPARTICLES WITH CONFIGURABLE SHAPE AND SEQUENCE ANISOTROPY BY FLUIDIC PROCESSING
K.E. Sung, S.A. Vanapalli, D. Mukhija, H.A. McKay, J.M. Millunchick, M.J. Solomon and M.A. Burns
University of Michigan, USA

11:45 - 13:30

Lunch

13:30 - 14:10

Plenary IV - CHAIR: T. Laurell, Lunds Universiteit

ACTUATING LAYER-EMBEDDED MICROcantilever FOR HIGHLY SENSITIVE BIOMOLECULE DETECTION
K.S. Hwang, S.K. Kim and Tae Song Kim
Korea Institute of Science and Technology (KIST), KOREA

14:15 - 16:30

Poster Session 2

Microsystems for Life Sciences - Genomics & Proteomics**T1A****A PARYLENE BASED DOUBLE-CHANNEL MICRO-ELECTROPHORESIS SYSTEM FOR RAPID MUTATION DETECTION**S. Sukas, A.E. Erson, C. Sert and H. Kulah
*Middle East Technical University, TURKEY***T2A****CHIP-BASED MAGNETIC BIOAFFINITY TECHNIQUE ADAPTED FOR QUALITATIVE ANALYSIS OF FOOD ALLERGENS**M. Slovackova¹, B. Jankovicova¹, S. Rosnerova¹, L. Korecka¹, N. Minc², J.-L. Viovy², L. Hernychova³, M. Hubalek³ and Z. Bilkova¹
¹University of Pardubice, CZECH REPUBLIC, ²Institute Curie, FRANCE and ³University of Defense, Hradec Kralove, CZECH REPUBLIC**T3A****ELECTROWETTING ON NANOFILAMENT SILICON FOR MATRIX-FREE LASER DESORPTION/IONIZATION MASS SPECTROMETRY**C.W. Tsao¹, P. Kumar¹, J. Liu¹, C.F. Kung^{1,2}, C.C. Chang² and D.L. DeVoe¹
¹University of Maryland, USA and ²Academia Sinica, TAIWAN**T4A****EVALUATION OF MICROFLUIDIC DNA EXTRACTION SYSTEM USING A NANOPOROUS ALUMINUM OXIDE MEMBRANE**J. Kim and B.K. Gale
*University of Utah, USA***T5A****SLANTWISE RADIATIVE HEATING SYSTEM FOR TEMPERATURE GRADIENT CE DETECTION OF DNA MUTATION ON A MICROFLUIDIC CHIP**H.D. Zhang¹, J. Zhou¹, Z.R. Xu², J. Song¹, J. Dai³, J. Fang¹ and Z.L. Fang²
¹China Medical University, CHINA, ²Northeastern University, CHINA and ³Shenyang Jianzhu University, CHINA**T6A****VERSATILE ACRYLAMIDE-BASED MICROCHAMBERS FOR SINGLE MOLECULAR BIOLOGICAL ASSAYS AND ANALYSIS**L. Lam¹, S. Sakakihara¹, K. Ishizuka¹, S. Takeuchi² and H. Noji¹
¹Osaka University, JAPAN and ²University of Tokyo, JAPAN**Microsystems for Life Sciences - Clinical Diagnostics****T7A****A MICROFLUIDIC AFFINITY APTASENSOR**T.H. Nguyen, R. Pei, M. Stojanovic, D. Landry and Q. Lin
*Columbia University, USA***T8A****A NEW ON-CHIP PLATFORM FOR RAPID AND EASY-TO-USE IMMUNOASSAY**M. Ikami¹, M. Tokeshi¹, N. Kaji¹ and Y. Baba^{1,2,3}
¹Nagoya University, JAPAN, ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and ³Japan Science and Technology Agency (JST), JAPAN**T9A****BIOMEMS FOR OSTEOPROTEGERIN DETECTION WITH GOLD NANOPARTICLES**K. Singh, H.H. Kim and K.C. Kim
*Pusan National University, KOREA***T10A****MICROFLUIDIC ELISA USING MAGNETIC BEADS AND PRESSURE VALVES TO REDUCE ASSAY NOISE**M. Herrmann^{1,2}, E. Roy², M. Tabrizian¹ and T. Veres²
¹McGill University, CANADA and ²Industrial Materials Institute, CANADA**T11A****MULTI-ARRAY FLOW-FOCUSING DEVICES TO ACCELERATE PRODUCTION OF MICROBUBBLES FOR CONTRAST-ENHANCED ULTRASOUND IMAGING**K. Hettiarachchi¹, E. Talu², M.L. Longo², P.A. Dayton² and A.P. Lee¹
¹University of California, Irvine, USA and ²University of California, Davis, USA**T12A****PROGRESS TOWARD A FLOW-THROUGH MEMBRANE**ELISA IN A MICROFLUIDIC FORMAT
P. Spicar-Mihalic, D.Y. Stevens and P. Yager
*University of Washington, USA***T13A****RAPID DETECTION OF KINASE TRANSLOCATION AT THE SINGLE CELL LEVEL ON A MICROFLUIDIC CHIP**J. Wang, N. Bao, L.L. Paris, H.-Y. Wang, R.L. Geahlen and C. Lu
*Purdue University, USA***T14A****STORAGE AND REACTIVATION OF ENZYMES IN A DISPOSABLE, SELF-CONTAINED LAB-ON-A-CHIP SYSTEM**A. Gulliksen^{1,2}, M.M. Mielnik³, E. Hovig⁴, F. Karlsen¹, L. Furuberg³ and R. Sirevåg²
¹NorChip AS, NORWAY, ²University of Oslo, NORWAY, ³SINTEF, NORWAY, and ⁴The Norwegian Radiumhospital, NORWAY**Microsystems for Life Sciences - Microarrays****T15A****COMBINED LAB-ON-A-CHIP AND MICROARRAY APPROACH FOR BIOMOLECULAR INTERACTION SENSING USING SURFACE PLASMON RESONANCE IMAGING**G. Krishnamoorthy, J.B. Beusink, E.T. Carlen, S. Schlautmann, H.L. de Boer, A. van den Berg and R.B.M. Schasfoort
*University of Twente, THE NETHERLANDS***T16A****HIGHLY PARALLELIZED LIPIDIC BILAYERS ARRAY FOR ION CHANNEL RECORDING**B. Le Pioufle^{1,2}, H. Suzuki¹ and S. Takeuchi^{1,3}
¹University of Tokyo, JAPAN, ²ENS Cachan, FRANCE and ³Japan Science and Technology, JAPAN**T17A****RAPID HIGH-THROUGHPUT MICROARRAY ANALYSIS - A SHEAR-DRIVEN APPROACH**K. Pappaert¹, F. Detobel¹, P. Van Hummelen² and G. Desmet¹
¹Vrije Universiteit, BELGIUM and ²VIB MicroArray Facility, BELGIUM**Microsystems for Life Sciences - Point of Care and Hand Held Devices****T18A****A DISPOSABLE MAGNETIC PLANAR PERISTALTIC PUMP FOR SELF-CONTAINED LAB-ON-A-CHIP (LOC) CARTRIDGE**L. Yobas, L.F. Cheow, K.C. Tang and C.Y. Teo
*Institute of Microelectronics, SINGAPORE***T19A****BIOMAGNETIC BEAD BASED MICROFLUIDIC DEVICE FOR RAPID NAKED EYE FIELD DIAGNOSTICS OF CATTLE PNEUMONIA**J. Gantelius, C. Hamsten, A. Persson, M. Uhlen and H. Andersson-Svahn
*Royal Institute of Technology, SWEDEN***T20A****CCD CAMERA-BASED OPTICAL READOUT SYSTEM FOR RT-PCR DNA ANALYZER: TOWARD RAPID AND CHEAP DETECTION OF PATHOGENS IN FOOD AND CLINICAL SAMPLES IN NANOGRAMS PER MILLILITER CONCENTRATION OF DNA**R. Walczak^{1,2}, J.A. Dziuban^{1,2}, J. Koszur¹, A. Wolff³, D.D. Bang³ and M. Bu³
¹Institute of Electron Technology, POLAND, ²Wroclaw University of Technology, POLAND and ³Danish Technical University, DENMARK**T21A****DIAGNOSIS-ON-A-CHIP: A MICROFLUIDIC PLATFORM FOR CELL CULTURE AND VIRUS ASSAYS**X. Zhang¹, R. Chua², P.H. Yap² and A.Q. Liu¹
¹Nanyang Technological University, SINGAPORE and ²DSO National Laboratories, SINGAPORE**T22A****ON-CHIP HIGH-SENSITIVITY FLUORESCENCE DETECTION SYSTEM USING CROSS-POLARIZATION AND ORGANIC THIN FILM DEVICES FOR A DISPOSABLE LAB-ON-A-CHIP**A. Banerjee, A. Pais, D. Klotzkin and I. Papautsky
University of Cincinnati, USA

Microsystems for Life Sciences - Cell Handling & Analysis

T23A

A NEW METHOD FOR CELL CO-CULTURE USING MICRO-MOLDING IN CAPILLARIES TECHNOLOGY: STUDY OF CELL TRANSMIGRATION
Y.-C. Huang, Y.-H. Huang, K.-S. Huang, L.-W. Wu and Y.-C. Lin
National Cheng Kung University, TAIWAN

T24A

ANALYSIS OF PRESSURE-DRIVEN AIR BUBBLE ELIMINATION FOR A LARGE-AREA MICROFLUIDIC CELL CULTIVATING DEVICE
J.H. Kang¹, Y.C. Kim^{1,2} and J.-K. Park¹
¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and
²Korea Institute of Machinery & Materials (KIMM), KOREA

T25A

BLOOD PLASMA EXTRACTION FROM A MINUTE AMOUNT OF BLOOD USING DIELECTROPHORESIS
Y. Nakashima and T. Yasuda
Kyushu Institute of Technology, JAPAN

T26A

LONG-TERM CYTOTOXIC DRUG ASSAY VIA SINGLE-CELL MICROFLUIDIC ARRAY
L.Y. Wu, D. Di Carlo and L.P. Lee
University of California, Berkeley, USA

T27A

CELL CHIP TO MONITOR THE INFLUENCE OF ELECTRIC FIELD ON THE HUMAN MESENCHYMAL STEM CELLS
G.-H. Kwon¹, K.H. Lee², E.-J. Lee¹ and S.-H. Lee¹
¹Korea University, KOREA and ²Seoul National University, KOREA

T28A

CULTIVATION OF DIELECTROPHORETICALLY TRAPPED SINGLE CELLS UNDER OPTIMAL ENVIRONMENTAL CONDITIONS
H. Kortmann¹, L.M. Blank^{1,2} and A. Schmid^{1,2}
¹Institute for Analytical Sciences (ISAS), GERMANY and
²University of Dortmund, GERMANY

T29A

DEVELOPMENT OF NANOSTRUCTURES FOR CELL ADHESION SURFACE AND BIOLOGICAL ANALYSES OF HUMAN CELLS CULTURED ON THE SURFACE
Y. Sakamoto, K. Sato, T. Tsukahara, T. Kitamori, I. Matsumoto, K. Abe and E. Yoshimura
University of Tokyo, JAPAN

T30A

DIELECTROPHORETIC SEPARATION OF HUMAN SPERMATOZOA FROM EPITHELIAL CELLS
G. Medoro¹, E. Brighenti¹, A. Fittipaldi¹, G. Tresca¹, S. Gianni¹, G. Perozziello¹, M. Timken², M. Buoncristiani² and N. Manaresi¹
¹Silicon Biosystems S.p.A., ITALY and ²Department of Justice DNA Lab, USA

T31A

ELECTROPHORESIS-ASSISTED ELECTROPORATION FOR EFFICIENT INTRACELLULAR SINGLE-CELL DELIVERY
C. Ionescu-Zanetti¹, A. Blatz² and M. Khine²
¹Fluxion Biosciences, USA and ²University of California, Merced, USA

T32A

FIBROBLAST AND CANCER CELL BEHAVIORS IN THREE-DIMENSIONAL SILICON MICROSTRUCTURES
M. Nikkha¹, J.S. Strobl² and M. Agah¹
¹Virginia Polytechnic Institute and State University, USA and
²Edward Via Virginia College of Osteopathic Medicine, USA

T33A

GUIDING OF NEURITE OUTGROWTH BY TOPOGRAPHICAL MICROSTRUCTURES AND MICROSIEVES
T. Lehnert¹, M. Wiesli², S. Weigel², O. Agabi^{2,3}, M. Gijs¹ and A. Bruinink²
¹Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND,
²EMPA, SWITZERLAND and ³Neuronics AG, SWITZERLAND

T34A

HYDRODYNAMIC MICROSYSTEMS FOR NON-DILUTED BLOOD FRAGMENTATION
E. Sollier¹, H. Rostaing¹, Y. Fouillet¹, J.L. Achard² and P. Pouteau¹
¹CEA-LETI Mimatec, FRANCE and ²INPG-LEGI, FRANCE

T35A

MICROFLUIDIC CELL ANALYSIS PLATFORM: CELL CULTURE AND ELECTROCHEMICAL LYSIS
J.T. Nevill, R. Cooper, M. Dueck, D. Di Carlo and L.P. Lee
University of California, Berkeley, USA

T36A

LOW COST CYTOMETER BASED ON A DVD PICKUP HEAD
S. Kostner and M.J. Vellekoop
Vienna University of Technology, AUSTRIA

T37A

MICROFABRICATED CONSTRAINTS FOR STUDYING FUNGI FORCE PRODUCTION
N. Minc and F. Chang
Columbia University, USA

T38A

MICROFLUIDIC TENSILE LOADING SYSTEM FOR MEASUREMENT OF MECHANICAL PROPERTIES OF VORTICELLA
M. Nagai¹, M. Kumemura¹, N. Sakaki¹, H. Asai² and H. Fujita¹
¹University of Tokyo, JAPAN and ²Waseda University, JAPAN

T39A

MICROREACTOR MODEL FOR BIOFILM-ASSOCIATED INFECTION OF MEDICAL IMPLANTS
J.-H. Lee, H. Wang, M. Libera and W.Y. Lee
Stevens Institute of Technology, USA

T40A

PARALLEL MICROPIPETTE ASPIRATOR ARRAYS FOR HIGH-THROUGHPUT MECHANICAL CHARACTERIZATION OF BIOLOGICAL CELLS
C. Moraes, J. Tong, X.Y. Liu, C.A. Simmons and Y. Sun
University of Toronto, CANADA

T41A

PRESSURE-DRIVEN MICROVALVE ARRAY FOR CONTROLLING CHEMICAL RELEASE TO CULTURED CELLS
T. Yasuda, T. Yamami and H. Yano
Kyushu Institute of Technology, JAPAN

T42A

RAPID DETECTION OF DRUG EFFLUX FROM SINGLE BACTERIAL CELL ENCLOSED IN FEMTOLITER CHAMBER ARRAY
R. Iino¹, K. Nishino¹, M. Nakata¹, E. Nikaido¹, Y. Matsumoto¹, S. Sakakihara¹, S. Takeuchi², A. Yamaguchi¹ and H. Noji¹
¹Osaka University, JAPAN and ²University of Tokyo, JAPAN

T43A

SKELETAL MYOBLAST PROLIFERATION AND FUSION REGULATED BY MICROELECTRODE ARRAYS
Y. Zhao
Ohio State University, USA

T44A

STUDYING CELL CHEMOTAXIS USING A MICROFLUIDIC CONCENTRATION-GRADIENT GENERATOR
A. Thupil, M.-M. Poo and L.L. Sohn
University of California, Berkeley, USA

T45A

TOWARDS MULTI DIMENSIONAL CHEMICAL MANIPULATION OF LIVING CELLS: CHEMOTAXIS ANALYSIS OF SOCIAL AMOEBAE
C.A. Schumann, P.S. Dittrich, J. Franzke and A. Manz
Institute for Analytical Sciences (ISAS), GERMANY

T46A

USING IONIC LIQUID IN PL-SEGMENTED SAMPLING/FLUORESCENT LABELING/CE-LIF ANALYSIS ON A CHIP FOR SINGLE CELL ANALYSIS
M. Li, Y. Huang and J.H. Hahn
Pohang University of Science and Technology, KOREA

Microsystems for Life Sciences - Tissue Engineering

T47A

A MICRO-WELL PERFUSION BIOREACTOR FOR HUMAN EMBRYONIC STEM CELL CULTURE
N. Korin, A. Bransky, U. Dinnar and S. Levenberg
Technion, ISRAEL

T48A**ENCAPSULATION OF LIVING CELLS INTO ALGINATE GEL MICROTUBE BY MICROFABRICATED NOZZLE ARRAY**

S. Sugiura^{1,2}, T. Oda³, Y. Aoyagi³, M. Satake⁴, N. Ohkohchi³ and M. Nakajima^{1,3}
¹National Food Research Institute, JAPAN, ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, ³University of Tsukuba, JAPAN and ⁴National Cancer Center, JAPAN

T49A**MICROFLUIDIC DEVICE BASED BIODEGRADABLE MICROFIBER SCAFFOLD FABRICATION FOR TISSUE ENGINEERING APPLICATION**

C.M. Hwang^{1,2}, K. Sun^{1,2} and S.H. Lee^{1,2}
¹Korea Artificial Organ Center, KOREA and ²Korea University Medical Center, KOREA

Microsystems for Life Sciences - Drug Discovery**T50A****A MORE EXCELLENT CONSTRUCTION METHOD OF A MULTI FUNCTIONAL ENVELOPE-TYPE NANO DEVICE ON MICRODEVICE FOR GENE THERAPY**

H. Kuramoto¹, N. Kaji³, K. Kogure⁶, M. Tokeshi³, Y. Shinohara², H. Harashima⁶ and Y. Baba^{3,4,5}
¹Kanazawa University, JAPAN, ²University of Tokushima, JAPAN, ³Nagoya University, JAPAN, ⁴National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, ⁵Japan Science and Technology Agency (JST), JAPAN and ⁶Hokkaido University, JAPAN

T51A**ENZYME ASSEMBLY AND CATALYTIC ACTIVITY IN A REUSABLE BIOMEMS PLATFORM FOR METABOLIC ENGINEERING**

X. Luo, A.T. Lewandowski, G.F. Payne, R. Ghodssi, W.E. Bentley and G.W. Rubloff
 University of Maryland, USA

Microsystems for Life Sciences**T52A****HYBRID MICROPATTERNS OF CELLS AND CONDUCTING POLYMERS**

M. Nishizawa, T. Kamiya, S. Sekine, T. Kawashima, H. Kaji and T. Abe
 Tohoku University, JAPAN

T53A**NOVEL HIGH-SENSITIVE DETECTION TECHNIQUE OF MONOSACCHARIDES OF GLYCOPROTEINS USING HETEROGENEOUS BUFFER ON MICROCHIP ELECTROPHORESIS**

H. Nagata¹, Y. Yoshida¹, T. Ishido¹, Y. Baba^{1,2}, M. Ishikawa¹ and K. Hirano^{1,3}
¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, ²Nagoya University, JAPAN and ³Japan Science and Technology Agency (JST), JAPAN

T54A**PROGRAMMABLE MAGNETIC CELL SORTER FOR DIFFERENT SIZE USING LOCAL MAGNETIC FIELDS GENERATED BY CONTROLLING CURRENT UNDER EXTERNAL FIELD**

J. Chung, H.-K. Lee, Y.-J. Kim and E. Yoon
 University of Minnesota, USA

T55A**TRANSLOCATION OF THE RIBOSOME IN TEMPERATURE-CONTROLLED MICROFLUIDIC CHANNELS**

B. Wang, J. Fei, R.L. Gonzalez and Q. Lin
 Columbia University, USA

Microsystems for Chemistry and Environment - Separation Science**T1B****AN INTEGRATED PROTEIN ANALYSIS CHIP: ON-CHIP COMBINATION OF IMMUNOAFFINITY CHROMATOGRAPHY AND ISOELECTRIC FOCUSING**

K. Shimura and T. Kitamori
 University of Tokyo, JAPAN

T2B**ASYMMETRIC INERTIAL MIGRATION IN CURVILINEAR LAMINAR FLOWS FOR MICRO-SEPARATION**

J. Seo, M.H. Lean and A. Kole
 Palo Alto Research Center, USA

T3B**CONFINEMENT EFFECT ON THE STRUCTURE OF POLYMER MONOLITHS PHOTOPATTERNED WITHIN MICROCHANNELS**

M. He, Y. Zeng and D.J. Harrison
 University of Alberta, CANADA

T4B**CONTINUOUS SEPARATION OF PROTEINS AND CELLS BY TWO-PHASE ELECTROPHORESIS IN MICROCHANNELS**

G. Münchow¹, S. Hardt², J.P. Kutter³ and K.S. Drese¹
¹Institut für Mikrotechnik Mainz GmbH, GERMANY, ²Leibniz Universität Hannover, GERMANY and ³Technical University of Denmark, DENMARK

T5B**CONTINUOUS-FLOW PI-BASED SORTING OF PROTEINS AND PEPTIDES FOR ISOLATION OF BASIC PI RANGE MOLECULES**

Y.-A. Song, C. Celio and J. Han
 Massachusetts Institute of Technology, USA

T6B**DEVELOPMENT OF A NOVEL 5 WAY-CROSS MICROCHIP DEVICE FOR EFFECTIVE ON-LINE SAMPLE PRECONCENTRATIONS TOWARD HIGH PERFORMANCE ELECTROPHORETIC ANALYSIS**

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

T7B**FABRICATION AND CHARACTERIZATION OF MULTILAYER POLYMER MICROFLUIDIC SYSTEMS WITH CROSSOVER CHANNELS**

H.V. Fuentes, M.G. Larsen and A.T. Woolley
 Brigham Young University, USA

T8B**FABRICATION OF POLYMERIC MICROSTRUCTURES TO CAPTURE CHROMOSOMES ON MONOLAYER OF ANTIBODIES**

P.J. Shah, J.M. Lange, C.H. Clausen, M. Dimaki, L.B. Jensen, M.H. Jakobsen, O. Geschke and W. Svendsen
 Technical University of Denmark, DENMARK

T9B**FIELD AMPLIFIED CONTINUOUS SAMPLE INJECTION (FACSI): A NEW METHOD FOR RAPID ANALYTE PRECONCENTRATION IN MICROFLUIDIC APPLICATIONS**

M.S. Munson, J.G. Shackman, G. Danger and D. Ross
 National Institute of Standards and Technology (NIST), USA

T10B**HIGHER EFFICIENCY AND THROUGHPUT IN PARTICLE SEPARATION WITH 3D C-MEMS DIELECTROPHORESIS**

R. Martinez-Duarte¹, H.A. Rouabah², N.G. Green², M. Madou¹ and H. Morgan²
¹University of California, Irvine, USA and ²University of Southampton, UK

T11B**INTEGRATING INDEPENDENT SILICA MONOLITH ELECTROOSMOTIC PUMPS FOR REAGENT DELIVERY AND SAMPLE PRECONCENTRATION IN A μTAS DEVICE**

F.-Q. Nie, B. Paull and M. Macka
 Dublin City University, IRELAND

T12B**MICROFABRICATED PLATFORM WITH MICROPILLARS FOR ELECTROPHORETIC SEPARATIONS**

V. Dauriac^{1,2}, S. Descroix¹, H. Sénéchal¹, Y. Chen², M.C. Hennion¹ and G. Peltre¹
¹Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and ²ENS, FRANCE

T13B**MONOLITHICALLY INTEGRATED ELECTROPHORESIS MICROCHIP WITH ELECTROSPRAY IONIZATION MASS SPECTROMETRIC DETECTION**

S. Tuomikoski¹, T. Sikanen², R.A. Ketola², R. Kostianen², T. Kotiaho² and S. Franssila¹
¹Helsinki University of Technology, FINLAND and ²University of Helsinki, FINLAND

T14B**pH GRADIENTS IMMOBILIZED ON-CHIP FOR RAPID ISOELECTRIC FOCUSING**

G.J. Sommer¹, A.K. Singh² and A.V. Hatch²
¹University of Michigan, USA and ²Sandia National Laboratories, USA

T15B**VISCOSITY-TUNABLE POLYMER FOR MICROCHIP ELECTROPHORESIS OF DNA**

D. Kuroda¹, N. Kaji¹, M. Tokeshi¹ and Y. Baba^{1,2,3}
¹Nagoya University, JAPAN, ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and ³Japan Science and Technology Agency (JST), JAPAN

Microsystems for Chemistry and Environment -
Environmental Analysis

T16B

DEVELOPMENT OF INTEGRATED *IN SITU* ANALYZERS (IISA)
FOR OCEANOGRAPHY APPLICATIONS

T. Fukuba¹, A. Miyaji², N. Fukuzawa¹, C. Provin¹, T. Yamamoto¹,
L. Glutz³, T. Okamoto¹ and T. Fujii¹

¹University of Tokyo, JAPAN, ²Tokyo Institute of Technology, JAPAN and
³Ecole Polytechnique Federale de Lausanne (EPFL), SWITZERLAND

T17B

MICRO PARTICLE SAMPLING ON MICRO-FABRICATED
PERFORATED FILTER MEMBRANES

Y. Zhao¹, S.K. Chung¹, U.-C. Yi² and S.K. Cho¹

¹University of Pittsburgh, USA and ²Core MicroSolutions Inc., USA

Microsystems for Chemistry and Environment -
Online Process Control

T18B

MICROFLUIDIC REACTION OPTIMISATION USING INTELLIGENT FEEDBACK

C. Rowlands¹, R. Winkle², R. Wootton¹ and A. de Mello²

¹Cambridge University, UK and ²Imperial College London, UK

Microsystems for Chemistry and Environment -
On-Chip Synthesis and Production

T19B

CONTINUOUS GENERATION OF PROTEIN CONTAINING HYDROGEL
BEADS USING MICROFLUIDIC DROPLET-MERGING CHANNEL

E. Um¹, D.-S. Lee², H.-B. Pyo² and J.-K. Park¹

¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and
²Electronics and Telecommunications Research Institute (ETRI), KOREA

T20B

ELECTROCHEMICAL MICRO-FLOW-CELL FOR RAPID AND
EFFICIENT CONCENTRATION OF [¹⁸F]FLUORIDE TO
APROTIC SOLVENT FROM [¹⁸O] WATER

R. Yamahara¹, H. Nakanishi¹, K. Sakamoto¹, H. Saiki¹,
E. Ozeki¹ and R. Iwata²

¹Shimadzu Corporation, JAPAN and ²Tohoku University, JAPAN

T21B

IN-SITU MICROFLUIDIC SYNTHESIS OF MATERIALS FOR NONLINEAR OPTICAL
DEVICES: CONTROL OF ATOMIC VAPOR POPULATIONS IN MICROCHANNEL
WAVEGUIDES

V. Tandon, S. Ghosh, A.R. Bhagwat, C.K. Renshaw,
S. Goh, A.L. Gaeta and B.J. Kirby

Cornell University, USA

T22B

SIZE CONTROL OF NANO-PORES ON MICROCAPSULE
FOR CONTROLLED RELEASE

D.G. Won¹, J.M. Cha¹, S.H. Yoon¹, E.H. Jeong¹,
T. Arakawa², S. Shoji², K.C. Kim¹ and J.S. Go¹

¹Pusan National University, KOREA and ²Waseda University, JAPAN

Microsystems for Chemistry and Environment

T23B

MICROFABRICATION OF SELF-OSCILLATING GELS FOR
GEOMETRICAL CHEMICAL REACTOR NETWORKS

M. Ueda

RIKEN, JAPAN

T24B

THE PERFORMANCES OF AN ENZYME-BASED MICROFLUIDIC BIOFUEL
CELLS USING VITAMIN K₃-MEDIATED GLUCOSE OXIDATION

M. Togo, A. Takamura, T. Asai, H. Kaji, T. Abe and M. Nishizawa

Tohoku University, JAPAN

Microfluidics - Fluid Mechanics & Modeling

T1C

RELATIONSHIP BETWEEN FLOWS AND SHAPES OF THE LIQUID-LIQUID
INTERFACE IN MICRO COUNTER-CURRENT FLOWS

A. Aota¹, A. Hibara^{1,2,3}, Y. Sugii⁴ and T. Kitamori^{1,2,3}

¹Kanagawa Academy of Science and Technology, JAPAN,

²University of Tokyo, JAPAN, ³Japan Science and Technology Agency (JST), JAPAN and

⁴Kogakuin University, JAPAN

T2C

“DROP-AND-SIP” FLUID HANDLING TECHNIQUE FOR REAGENT-RELEASE
CAPILLARY-BASED CAPILLARY-ASSEMBLED MICROCHIP (CAS-CHIP):
MULTIPLE CELL LYSATE SAMPLE DELIVERY AND
CASPASE-ACTIVITY SENSING

T.G. Henares¹, F. Mizutani¹, R. Sekizawa² and H. Hisamoto³

¹University of Hyogo, JAPAN, ²Metaboscreen Co. Ltd., JAPAN and

³Osaka Prefecture University, JAPAN

T3C

ELECTROSTATIC PARTICLE-PARTICLE INTERACTIONS
IN OPTOELECTRONIC TWEEZERS

H. Hwang, J.-J. Kim, Y. Oh, Y.-J. Choi and J.-K. Park

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

T4C

FLOW OF ARTIFICIAL MICROCAPSULES IN MICROCHANNELS:
A METHOD FOR MEASURING MEMBRANE ELASTIC PROPERTIES

E. Leclerc¹, Y. Lefebvre¹, J. Walter¹, F. Edwards-Lévy² and D. Barthès-Biesel¹

¹CNRS-UMR, FRANCE and ²CNRS-FRE, FRANCE

T5C

MAGNETICALLY MODIFIED PDMS DEVICES FOR
ACTIVE MICROFLUIDIC CONTROL

Y. Yamanishi, Y.-C. Lin and F. Arai

Tohoku University, JAPAN

T6C

MODELING ELECTROKINETIC TRANSPORT IN NANOCHANNELS:
CLASSICAL POISSON-BOLTZMANN APPROACH MAY NOT BE SO BAD AFTER ALL

R.H. Nilson and S.K. Griffiths

Sandia National Laboratories, USA

T7C

STRUCTURE OF ELECTROOSMOTIC MICROCHANNEL FLOW
AFFECTED BY NONUNIFORM WALL ZETA-POTENTIAL

Y. Kazoe, N. Miki and Y. Sato

Keio University, JAPAN

Microfluidics - Aliquoting, Mixing & Pumping

T8C

A MICROFLUIDIC AUTOSAMPLER WITH TRUE TEFLON VALVES:
DESIGN AND APPLICATION TO SUSPENDED MICROCHANNEL
RESONATOR MASS SENSORS

W.H. Grover, Y.-C. Weng and S.R. Manalis

Massachusetts Institute of Technology, USA

T9C

ACTIVE MICROMIXER BASED ON ION DEPLETION
AND ENRICHMENT THROUGH POLYELECTROLYTIC FILTERS

H. Chun¹, H.C. Kim² and T.D. Chung²

¹University of North Carolina, Chapel Hill, USA and

²Seoul National University, KOREA

T10C

CENTRIFUGAL MICRODEVICE FOR CONTINUOUS
AND SIZE-DEPENDENT SEPARATION OF PARTICLES

S. Sunahiro¹, M. Yamada², M. Yasuda¹ and M. Seki^{1,3}

¹Osaka Prefecture University, JAPAN,

²Tokyo Women's Medical University, JAPAN and

³Chiba University, JAPAN

T11C**CHAOTIC MIXING IN A HELE-SHAW CELL, WITH APPLICATION TO DNA CHIP HYBRIDIZATION**F. Raynal¹, A. Beuf¹, F. Plaza¹, P. Carrière¹, M. Cabrera¹, J.-P. Cloarec¹, V. Dugas^{1,2}, E. Fradier¹ and E. Souteyrand^{1,2}¹Université de Lyon, FRANCE and ²Rosatech, FRANCE**T12C****CHARACTERIZATION OF THREE-DIMENSIONAL SERPENTINE MICROMIXERS: EFFECTS OF ROTATION, LAMINATION AND CHAOTIC ADVECTION**

J.M. Park and T.H. Kwon

Pohang University of Science and Technology, KOREA

T13C**DEVELOPMENT OF PORTABLE POROUS PDMS PUMP FOR MICROFLUIDIC LAB-ON-A-CHIP**K.J. Cha¹, D.S. Kim² and T.H. Kwon¹¹Pohang University of Science and Technology, KOREA and²Chung-Ang University, KOREA**T14C****ELECTROKINETIC MIXERS BASED ON STIMULI-RESPONDING SURFACES**G. Paumier¹, J. Sudor^{1,2}, E. Collé¹, B. Marty¹, A. Bancaud¹, T. Camps¹ and A.-M. Gué¹¹University of Toulouse, FRANCE and ²CEA/Léti, FRANCE**T15C****OSCILLATING MOBILE BUBBLES FOR MICROFLUIDIC MIXING ENHANCEMENT**

S.K. Chung and S.K. Cho

University of Pittsburgh, USA

T16C**RAPID MIXING BY AC ELECTROTHERMAL FLOW**N. Sasaki¹, T. Kitamori^{1,2,3} and H.-B. Kim^{1,2,3}¹University of Tokyo, JAPAN, ²Kanagawa Academy of Science and Technology, JAPAN and³Japan Science and Technology Agency (JST), JAPAN**Microfluidics - Multi-Phase and Digital Microfluidics****T17C****AN ON-CHIP CONTINUOUS-FLOW SEQUENTIAL TILING MICROMIXER**

Y. Xie, Y. Wang, F. Azizi, L. Chen and C.H. Mastrangelo

Case Western Reserve University, USA

T18C**DIAMAGNETIC LEVITATION BASED DIGITAL MICROFLUIDICS**C. Jeandey¹, H. Chetouani^{1,2}, V. Hagué¹, F. Chatelain¹ and G. Reyne²¹Commissariat à l'Energie Atomique (CEA), FRANCE and²Laboratoire de Génie Electrique de Grenoble, FRANCE**T19C****DROP STIRRING FLOW UNDER EWOD AND EHD ACTUATION: A NEW STEP TOWARDS BIOLOGICAL SAMPLE PREPARATION**L. Davoust¹, Y. Fouillet² and Y. Ishida²¹CNRS, LEGI, FRANCE and ²CEA-LETI-Minatec, FRANCE**T20C****DROPLET GENERATION IN HEAD-ON DEVICES**

L. Shui, J.C.T. Eijkel and A. van den Berg

University of Twente, THE NETHERLANDS

T21C**DROPLET-BASED MICROFLUIDICS AT HIGH DISPERSED-PHASE VOLUME FRACTIONS**C. Priest^{1,2}, E. Surenjav¹, S. Herminghaus¹ and R. Seemann¹¹Max-Planck-Institute for Dynamics and Self-Organization, GERMANY and²University of South Australia, AUSTRALIA**T22C****EXPERIMENTAL ANALYSIS OF LIPOSOME WATER TWO PHASE FLOW IN MICRO CHANNEL FOR LOCALIZING REACTION SYSTEM USING LIPOSOME**

Y. Ichikawa, T. Kan, H. Onoe, E. Iwase, K. Matsumoto and I. Shimoyama

University of Tokyo, JAPAN

T23C**EXTERNALLY ACTUATED MAGNETIC FLOW REGULATOR FOR DISPOSABLE DRUG INFUSERS**M. Duch¹, J. Casals-Terré², J.A. Plaza¹, J. Esteve¹, R. Pérez-Castillejos¹, E. Vallès³ and E. Gómez³¹Centro Nacional Microelectronica, SPAIN,²Technical University of Catalonia, SPAIN and³University of Barcelona, SPAIN**T24C****FAST AND HIGH RESOLUTION TRANSPORT OF MAGNETIC CARRIERS FOR MAGNETICALLY ASSISTED LAB ON A CHIP**Q. Ramadan¹, J.E. Widjara², T.K. Cheong¹, W.Y. Fung², B. Subramanian¹, L. Ebin¹, C. Yu¹ and P. Daniel²¹Institute of Microelectronics, SINGAPORE and²Nanyang Technological University, SINGAPORE**T25C****FLEXIBLE CAPILLARY-BASED SEQUENTIAL INTRODUCTION FOR MULTIPHASE DROPLET MICROFLUIDIC SYSTEMS**

W.-B. Du, L. Dong and Q. Fang

Zhejiang University, CHINA

T26C**FLOW VISUALIZATION OF POLYMER/WATER/SURFACTANT DROPLETS IN OIL USING COFLOW AND FLOW-FOCUSING CHANNELS WITH μPIV TECHNIQUE**M.R. Duxenneuner^{1,2}, P. Fischer², E.J. Windhab² and J.J. Cooper-White¹¹University of Queensland, AUSTRALIA and²ETH Zürich, SWITZERLAND**T27C****MICROFABRICATED DROPLET GENERATOR FOR SINGLE MOLECULE PCR IN TUNABLE, MONODISPERSE EMULSIONS**

P. Kumaresan, C.J. Yang, R.G. Blazej and R.A. Mathies

University of California, Berkeley, USA

T28C**OSCILLATORY BUBBLING IN A MICROFLUIDIC T-JUNCTION**S.A. Khan^{1,2} and K.F. Jensen³¹National University of Singapore, SINGAPORE²Singapore-MIT Alliance and³Massachusetts Institute of Technology, USA**T29C****TEMPERATURE DEPENDENT PHASE BEHAVIOR OF N-CYCLOHEXYL-2-PYRROLIDONE/WATER SYSTEM IN A MICROCHANNEL AND PHASE SEPARATION USING VISCOSITY DIFFERENCE**Y. Kikutani¹, H. Ikeda¹, M. Harada², Y. Ikeda²,M. Tokeshi³ and T. Kitamori⁴¹Kanagawa Academy of Science and Technology, JAPAN,²Tokyo Institute of Technology, JAPAN,³Nagoya University, JAPAN and ⁴University of Tokyo, JAPAN**Microfluidics****T30C****A NOVEL LiNbO₃ SURFACE ACOUSTIC WAVE PUMP ONTO MICRO CHANNEL WALL**

T. Sano, M. Sato, H. Kuwano and S. Nagasawa

Tohoku University, JAPAN

T31C**FABRICATION OF ALGINATE FIBER USING MICROFLUIDIC DEVICE AND CELL ENCAPSULATION**

S.J. Shin, K.H. Lee, J.Y. Lee and S.H. Lee

Korea University, KOREA

T32C**GAS PARTIAL PRESSURES CONTROLLED BETWEEN MICROCHANNELS**

S.P. Forry, J.G. Kralj and L.E. Locascio

National Institute of Standards and Technology (NIST), USA

T33C**AQUACORE: A GENERAL-PURPOSE ARCHITECTURE FOR PROGRAMMABLE MICROFLUIDICS**A.M. Amin¹, M. Thottethodi¹, T.N. Vijaykumar¹, S. Wereley¹and S.C. Jacobson²¹Purdue University, USA and ²Indiana University, USA

Nanotechnology - Nanofluidics

T1D

RETENTION, PLATE HEIGHT AND RESOLUTION FOR CHARGED SPECIES TRANSPORT AND SEPARATION IN NANO-SCALE CHANNELS

S.K. Griffiths and R.H. Nilson
Sandia National Laboratories, USA

T2D

DNA DIAGNOSIS CHIP INTEGRATING PRE-TREATMENT DEVICE AND NANO-GAP-ARRAY FOR INFECTIOUS DISEASE

S. Hashioka^{1,2}, K. Masu¹ and Y. Horiike²
¹*Tokyo Institute of Technology, JAPAN* and
²*National Institute for Materials Science, JAPAN*

T3D

FEMTO-LITER TRANSPORT IN 3D NANOCHANNELS MACHINED BY FEMTOSECOND LASER PULSES

S. Lee and A.J. Hunt
University of Michigan, USA

T4D

IONIC RECTIFYING EFFECT IN BIPOLAR NANOCHANNELS

L.-J. Cheng and L.J. Guo
University of Michigan, USA

T5D

NANOFLUIDIC CHANNELS IN SU-8 WITH INTEGRATED FLOOR AND CEILING ELECTRODES

K.P. Nichols, J. Eijkel and H. Gardeniers
University of Twente, THE NETHERLANDS

T6D

NANOFLUIDICS IN HOLLOW NANOWIRES

N. Sködl, T. Hernán, J.B. Wagner, W. Seifert, L. Samuelson and J.O. Tegenfeldt
Lund University, SWEDEN

T7D

PARTICLE IMAGE ANALYSIS: A NEW TOOL FOR THE EXPLORATION OF NANOFLUIDIC FLOWS

C.I. Bouzigues and P. Tabeling
Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

Nanotechnology - Nanoengineering

T8D

MODELING THE ELECTROKINETICS OF NANOPARTICLES FOR CONTROLLED ASSEMBLY

M.D. Vahey, R.J. Barsotti, R. Wartena, Y.-M. Chiang, F. Stellacci and J. Voldman
Massachusetts Institute of Technology, USA

Nanotechnology - Nanobiotechnology

T9D

DNA DAMAGE ANALYSIS IN MICROFLUIDIC CHIPS

Y. Tanaka¹, H. Johansson¹, C. Larsson¹, J. Jarvius¹, T. Kitamori² and M. Nilsson¹
¹*Uppsala University, SWEDEN* and ²*University of Tokyo, JAPAN*

T10D

DNA NANOFILTRATION AT HIGH ELECTRIC FIELDS

N. Laachi¹, C. Declat², C. Matson³ and K.D. Dorfman¹
¹*University of Minnesota, USA*, ²*University of Puerto Rico, Mayagüez, PUERTO RICO* and
³*Mississippi State University, USA*

T11D

ISOLATION OF SINGLE CHROMOSOMAL DNA MOLECULE UNDER MICROSCOPE USING OPTICALLY-DRIVEN MICRO-BOBBINS

K. Terao¹, H. Oana² and M. Washizu²
¹*Kyoto University, JAPAN* and ²*University of Tokyo, JAPAN*

T12D

MOLECULAR CROWDING EFFECT ON ENZYMATIC REACTION IN A FL-MICROCHAMBER TO MIMIC CROWDED INTRACELLULAR ENVIRONMENT

H. Murahara¹, N. Kaji¹, M. Tokeshi¹ and Y. Baba^{1,2,3}
¹*Nagoya University, JAPAN*, ²*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN* and
³*Japan Science and Technology Agency (JST), JAPAN*

T13D

NANOFLUIDIC PRECONCENTRATION OF BIOMOLECULE ANALYTES USING MICROTUBULES

T. Kim and E. Meyhofer
University of Michigan, USA

T14D

REAL-TIME, LABEL-FREE PLASMONIC BIOSENSING USING PERIODIC NANO HOLE ARRAYS

A. Lesuffleur, A. McFarland, H. Im, N.C. Lindquist, C.L. Haynes and S.-H. Oh
University of Minnesota, USA

T15D

STATISTICAL MODELS FOR BIOMOLECULAR SHUTTLES GLIDING IN MICROFABRICATED OPEN CHANNELS

C.-T. Lin^{1,2}, E. Meyhofer² and K. Kurabayashi²
¹*National Taiwan University, TAIWAN* and ²*University of Michigan, USA*

T16D

TOWARDS ULTRA-FAST PARALLEL DNA ANALYSIS: SUB-WAVELENGTH METALLIC NANOPORE ARRAYS FOR HIGH-THROUGHPUT SINGLE MOLECULE SPECTROSCOPY

G.A.T. Chansin¹, R. Mulero², J. Hong¹, M.J. Kim², A.J. deMello¹ and J.B. Edel¹
¹*Imperial College London, UK* and ²*Drexel University, USA*

Nanotechnology

T17D

NMR RELAXATION STUDIES ON THE PROTON TRANSFER DYNAMICS OF WATER CONFINED IN EXTENDED-NANO SPACES ON A CHIP

T. Tsukahara^{1,2}, A. Hibara^{1,3} and T. Kitamori^{1,2,3}
¹*University of Tokyo, JAPAN*, ²*Japan Science and Technology Agency (JST), JAPAN* and
³*Kanagawa Academy of Science and Technology, JAPAN*

Materials - Innovative Chip Materials

T1E

MOLDED NANOWELL ELECTRODES FOR SITE-SELECTIVE SINGLE LIPOSOME ARRAYS

P. Kim¹, B.K. Lee², H.Y. Lee², T. Kawai² and K.Y. Suh¹
¹*Seoul National University, KOREA* and ²*Osaka University, JAPAN*

Materials - Surface Modification and Characterization

T2E

BIOMOLECULE IMMOBILIZATION ON AU SURFACES WITHIN A SEALED PDMS MICROSYSTEM

A. Tovar and A.P. Lee
University of California, Irvine, USA

T3E

NOVEL METHOD FOR CHEMICAL MODIFICATION AND PATTERNING OF THE SU-8 PHOTORESIST

G. Blagoi, S. Keller, A. Boisen and M.H. Jakobsen
Technical University of Denmark, DENMARK

T4E

SELECTIVE SURFACE MODIFICATION FOR MICROARRAY ANALYSIS BY PHOTOCHEMICAL GRAFTING OF BIOCOMPATIBLE PHOSPHOLIPID POLYMER

M. Takai, T. Goda and K. Ishihara
University of Tokyo, JAPAN

T5E

SURFACE DERIVATIZATION OF POLY(DIMETHYLSILOXANE) BY CHEMISORPTION OF FUNCTIONAL COPOLYMERS

M. Chiari, M. Cretich, F. Damin, G. Di Carlo and C. Oldani
ICRM - C.N.R., ITALY

T6E

SURFACE MODIFICATION OF PDMS BY UV LIGHT IRRADIATION

S. Kano, S. Matsumoto, T. Sato and N. Ichikawa
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

T7E

THE EFFECT OF THE CONCENTRATION ON OIL DROPLET IN HYDROPHOBIC RECOVERY PDMS MICROCHANNEL

S.K. Chae^{1,2}, C.H. Lee² and J.Y. Kang¹
¹Korea Institute of Science Technology, KOREA and ²Yonsei University, KOREA

Materials - Nanostructured Materials

T8E

SUPERHYDROPHOBIC SURFACES: FROM IRREVERSIBLE TO REVERSIBLE ELECTROWETTING

N. Verplanck¹, Y. Coffinier², K. Madjour¹, J.C. Camart¹, R. Blossy², R. Boukherroub² and V. Thomy¹
¹IEMN, FRANCE and ²IRI, FRANCE

T9E

ULTRAHYDROPHOBIC PROPERTIES OF POROUS SILICON FOR SURFACE BASED BIOANALYSIS

A. Ressine, P. Augustsson, G. Marko-Varga and T. Laurell
Lund University, SWEDEN

Detection Technologies - Optical

T1F

A NOVEL MICRO-FLUIDIC WHOLE CELL BIOSENSOR FOR WATER TOXICITY ANALYSIS USING BIOLUMINESCENCE DETECTION

H. Ben-Yoav¹, S. Yorish¹, T. Elad², S. Vernick¹, S. Belkin² and Y. Shacham-Diamand¹
¹Tel-Aviv University, ISRAEL and ²Hebrew University of Jerusalem, ISRAEL

T2F

DEVELOPMENT OF PORTABLE SURFACE PLASMON RESONANCE SENSOR WITH MULTI DETECTION POINTS

H. Nakajima¹, A. Hemmi², K. Furui¹, N. Soh¹, K. Nakano¹, Y. Asano³, K. Uchiyama³, N. Kaneki⁴ and T. Imato¹
¹Kyushu University, JAPAN, ²Mebius Advanced Technology Ltd., JAPAN, ³Tokyo Metropolitan University, JAPAN and ⁴Muroran Institute of Technology, JAPAN

T3F

INTEGRATED MICRORING-WAVEGUIDE RESONATOR BIOSENSOR ARRAYS

I. Brener, J.B. Wright, K. Westlake, D.W. Branch, K.M. Taylor, M.J. Shaw and G.A. Vawter
Sandia National Laboratories, USA

T4F

MICRO-DROPLET INTERFEROMETRY FOR LOCAL PRESSURE MONITORING IN MICROFLUIDIC CHIPS

Y.F. Yu¹, P.H. Yap² and A.Q. Liu¹
¹Nanyang Technological University, SINGAPORE and ²DSO National Laboratories, SINGAPORE

T5F

MONITORING MIXING DYNAMICS CONFINED WITHIN AQUEOUS MICRODROPLETS WITH 5 μs RESOLUTION

M. Srisa-Art, A.J. deMello and J.B. Edel
Imperial College London, UK

T6F

OPTICAL GRATING COUPLER BIOCHEMICAL SENSORS WITH ON-CHIP REFERENCE

N. Darwish¹, E. Baldrich², E.J. Del Campo², M. Moreno¹, F.X. Muñoz², R. Mas² and J. Samitier¹
¹Universitat de Barcelona, SPAIN and ²CNM-CSIC, SPAIN

T7F

OPTICAL MULTIPLEXING OF MULTIPLE FLUORESCENCE SENSORS FOR COMPACT LAB-ON-A-CHIP SYSTEMS

K.S. Lee, H.L.T. Lee and R.J. Ram
Massachusetts Institute of Technology, USA

T8F

SURFACE ENHANCED RAMAN SPECTROSCOPY ON CHIP

J. Hubner, T.A. Anhøj, S. Pedersen, D.A. Zauner, A.M. Jorgensen, G. Blagoi and O. Hansen
Technical University of Denmark, DENMARK

Detection Technologies - Electrochemical

T9F

DEVELOPMENT OF A CEREBROVASCULAR MIMIC USING ON-CHIP VALVES, HYDRODYNAMIC FOCUSING, AND INTEGRATED MICROELECTRODES

R.S. Martin, M.W. Li, M.K. Hulvey, L.C. Mecker and M.J. Moehlenbrock
Saint Louis University, USA

T10F

NOVEL DUAL-CHANNEL AMPEROMETRIC IN-CHANNEL DETECTION IN MICROCHIP CAPILLARY ELECTROPHORESIS

C. Chen and J.H. Hahn
Pohang University of Science and Technology, KOREA

Detection Technologies - Direct Electrical Detection and Impedance

T11F

NEW HIGH DENSITY 3D MEAS ASSOCIATED WITH AN INTEGRATED ELECTRONICS SYSTEM (BioMEA™)

L. Rousseau¹, V. Perrais¹, G. Charvet², R. Guillemaud², G. Lissorgues¹, P. Meyrand³ and B. Yvert³
¹Groupe ESIEE, FRANCE, ²CEA-LETI, FRANCE and ³CNIC-UMR, FRANCE

T12F

EXAMINING CYTOTOXIC EFFECTS ON SINGLE CELLS USING AN IMPEDANCE SPECTROSCOPIC PLATFORM

D. Malleo¹, J.T. Nevill², D. Di Carlo², L.P. Lee² and H. Morgan¹
¹University of Southampton, UK and ²University of California, Berkeley, USA

T13F

HIGH SPEED MULTI-FREQUENCY IMPEDANCE ANALYSIS OF SINGLE BIOLOGICAL PARTICLE USING MAXIMUM LENGTH SEQUENCES

T. Sun¹, D. Holmes¹, S. Gawad², N.G. Green¹ and H. Morgan¹
¹University of Southampton, UK and ²Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T14F

PHYSARUM POLYCEPHALUM ON A CHIP

F.D. Revilla, K.-P. Zauner and H. Morgan
University of Southampton, UK

T15F

DETECTION OF BACTERIAL CELLS BASED ON MICRO-CHANNEL GATING

M. Javanmard, A.H. Talasaz, M. Nemat-Gorgani, F. Pease, M. Ronaghi and R.W. Davis
Stanford University, USA

Detection Technologies

T16F

MEASUREMENT OF BINDING FORCE BETWEEN A RECEPTOR-COATED PIEZORESISTIVE CANTILEVER AND A LIGAND-COATED SURFACE FOR PROTEIN CONCENTRATION SENSOR

K. Kuwana, K. Matsumoto and I. Shimoyama
University of Tokyo, JAPAN

T17F

SITE-SELECTIVE DEPOSITION OF SILVER NANO PARTICLES FOR SURFACE ENHANCED RAMAN SCATTERING

K. Kurooka¹, K. Deguchi¹ and N. Miki^{1,2}
¹Keio University, JAPAN and ²Kanagawa Academy of Science and Technology, JAPAN

T18F

SUSPENDED MICROCHANNEL RESONATORS WITH INTEGRATED ELECTRONIC READOUT FOR BIOMOLECULAR AND SINGLE CELL ANALYSIS
R. Chunara¹, T.P. Burg², K. Payer², P. Dextras² and S.R. Manalis²
¹Harvard - MIT Division of Health Sciences and Technology, USA and
²Massachusetts Institute of Technology, USA

T19F

VESICLE LIBRARIES - TOOLS FOR DIELECTROPHORESIS METROLOGY
S.P. Desai, M.D. Vahey and J. Voldman
Massachusetts Institute of Technology, USA

T1G

BIOLOGICAL MEASUREMENTS OF C. ELEGANS TOUCH SENSITIVITY WITH MICROFABRICATED FORCE SENSORS
J.C. Doll, N. Harjee, N. Klejwa, R. Kwon, S.M. Coulthard, M.B. Goodman and B.L. Pruitt
Stanford University, USA

T2G

FABRICATION AND PHYSICS OF HOURGLASS-SHAPED MICROAPERTURE BY LASER DRILLING TECHNIQUE
C.-Y. Chen, K.-T. Liu, D.-S. Jong and A.M. Wo
National Taiwan University, TAIWAN

T3G

FABRICATION OF A MICROFLUIDIC BEAD ARRAY SENSOR BY PHOTOPOLYMERIZATION AND LAMINATION
S. Begolo¹, T. Carofiglio¹, G. Mistura¹ and M. Natali²
¹Università di Padova, ITALY and ²ICIS-CNR, ITALY

T4G

FABRICATION OF HIGH ASPECT RATIO STRUCTURES IN MICROFLUIDIC CHANNEL USING OPTOFLUIDIC MASKLESS LITHOGRAPHY
S.E. Chung¹, W. Park¹, H. Park¹, K. Yu², N. Park¹ and S. Kwon¹
¹Seoul National University, KOREA and
²Korea Electrical Engineering and Science Research Institute, KOREA

T5G

NOVEL BONDING TECHNIQUE USING HYDROPHILIC SU-8
Y.-T. Chen and D. Lee
National Cheng Kung University, TAIWAN

T6G

ULTRA-THIN AND CONDUCTIVE MEMBRANES FOR NANOMECHANICAL TRANSDUCERS
T.J. Kang, M. Cha, J. Shin, Y.H. Kim and J. Lee
Seoul National University, KOREA

MEMS & NEMS Technologies - Microfluidic Components

T7G

A HIGH-PERFORMANCE BONDING TECHNIQUE FOR HOMOGENEOUS POLYMERIC MICROFLUIDIC DEVICES
S.H. Ng, R.T. Tjeung and Z.F. Wang
Singapore Institute of Manufacturing Technology, SINGAPORE

T8G

A MICROFLUIDIC DEVICE FOR PRECISE PIPETTING
C.-W. Huang, S.-B. Huang and G.-B. Lee
National Cheng Kung University, TAIWAN

T9G

A MICROFLUIDIC SWITCHBOARD
H.J. Sant, T. Ho and B. Gale
University of Utah, USA

T10G

FABRICATION OF SUSPENDED ELECTROOSMOTIC MICROCHANNELS FROM SACRIFICIAL POLYMER FIBERS
S.M. Berry, T.J. Roussel, S.D. Cambron, R.W. Cohn and R.S. Keynton
University of Louisville, USA

T11G

MICROFLUIDIC DISK SAMPLER FOR BIOLOGICAL DETECTION
W.-C. Tian¹, Y. Zhao¹, S. Thutupalli², A. Phukan², C. Keimel¹, O. Boomhower¹, M. Burrell¹ and L. Zhu¹
¹GE Global Research Center, USA and ²John F. Welch Technology Center, INDIA

T12G

MONOLITHIC MULTILEVEL MICROFLUIDIC NETWORKS WITH INTEGRATED MEMBRANE: APPLICATIONS FOR ON-CHIP CELL CO-CULTURE AND FABRICATION OF BIOMIMETIC CULTURE CHAMBER
M.C. Liu and Y.C. Tai
California Institute of Technology, USA

T13G

NATURE-INSPIRED ACTIVE MICRO-FLUIDIC MIXING USING ARTIFICIAL CILIA
J.M.J. den Toonder^{1,2}, F. Bos^{1,2}, D.J. Broer^{1,2}, M. Gillies¹, J. de Goede¹, T. Mol¹, M. Reijme¹, W. Talen¹, H. Wilderbeek¹, V. Khatavkar² and P. Anderson²
¹Philips Research Laboratories, THE NETHERLANDS and
²Eindhoven University of Technology, THE NETHERLANDS

T14G

SOFT MICROFLOW SENSORS
R. Attia¹, D. Pregibon², P. Doyle², J.L. Viovy¹ and D. Bartolo³
¹Institut Curie, FRANCE, ²Massachusetts Institute of Technology, USA and ³ESPC, FRANCE

T15G

STARTUBE: A NOVEL TUBE DESIGN FOR BUBBLE TOLERANT INTERCONNECTION IN FLUIDIC SYSTEMS
T. Metz, W. Streule, R. Zengerle and P. Koltay
University of Freiburg, GERMANY

T16G

STICK AND FLOW: FAST SIMPLE PROTOTYPING METHOD FOR PERFORMANCE MICROFLUIDIC DEVICE
D. Bartolo, G. Degré, P. Nghe and V. Studer
Ecole Supérieure de Physique et de Chimie Industrielles, FRANCE

MEMS & NEMS Technologies - Hybrid Devices, Packaging, Components Interfacing

T17G

ACTIVE POLYMERIC MICRONEEDLE ARRAY DRIVEN BY THERMOPNEUMATIC ACTUATOR FOR MICROFLUIDIC INTERFACE
J.-Y. An, S.-S. Yun, I.-H. Hwang, S.-K. Yoo, M.-G. Kim, S. Yang and J.-H. Lee
Gwangju Institute of Science and Technology, KOREA

T18G

FABRICATION OF 3D MICROCHANNELS ON CYLINDRICAL SURFACES BY SINGLE MOLD PROCESS
S. Matsumoto and N. Ichikawa
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

T19G

STACKED STRUCTURE OF PMMA MICROCHANNELS FOR DNA SEPARATION FABRICATED BY DEEP X-RAY LITHOGRAPHY AND FUSION BONDING
Y. Utsumi¹, T. Ikeda², M. Minamitani² and K. Suwa²
¹University of Hyogo, JAPAN and ²Fujipream Ltd., JAPAN

MEMS & NEMS Technologies - Integration Strategies

T20G

ON-CHIP ANTIOXIDANT CAPACITY SCREENING USING INTEGRATED LOW-COST ORGANIC PHOTODIODES
X. Wang¹, M. Amatongchai^{1,2}, D. Nacapricha³, O. Hofmann¹, J.C. deMello¹, A.J. deMello¹ and D.D.C. Bradley¹
¹Imperial College London, UK, ²Ubonrajathane University, THAILAND and
³Mahidol University, THAILAND

MEMS & NEMS Technologies

T21G

AN INTEGRATED CALORIMETRIC BIOSENSOR AND ITS CHARACTERIZATION
S.-I. Yoon¹, M.-H. Lim², J.-S. Shin² and Y.-J. Kim¹
¹Yonsei University, KOREA and ²Yonsei University College of Medicine, KOREA

Gaston Berger Auditorium, Level S2**Louis Armand Hall, Level S3****Session 2A3**

Cell Characterization

SESSION CHAIR: M. Seki, *Chiba University***Session 2B3**

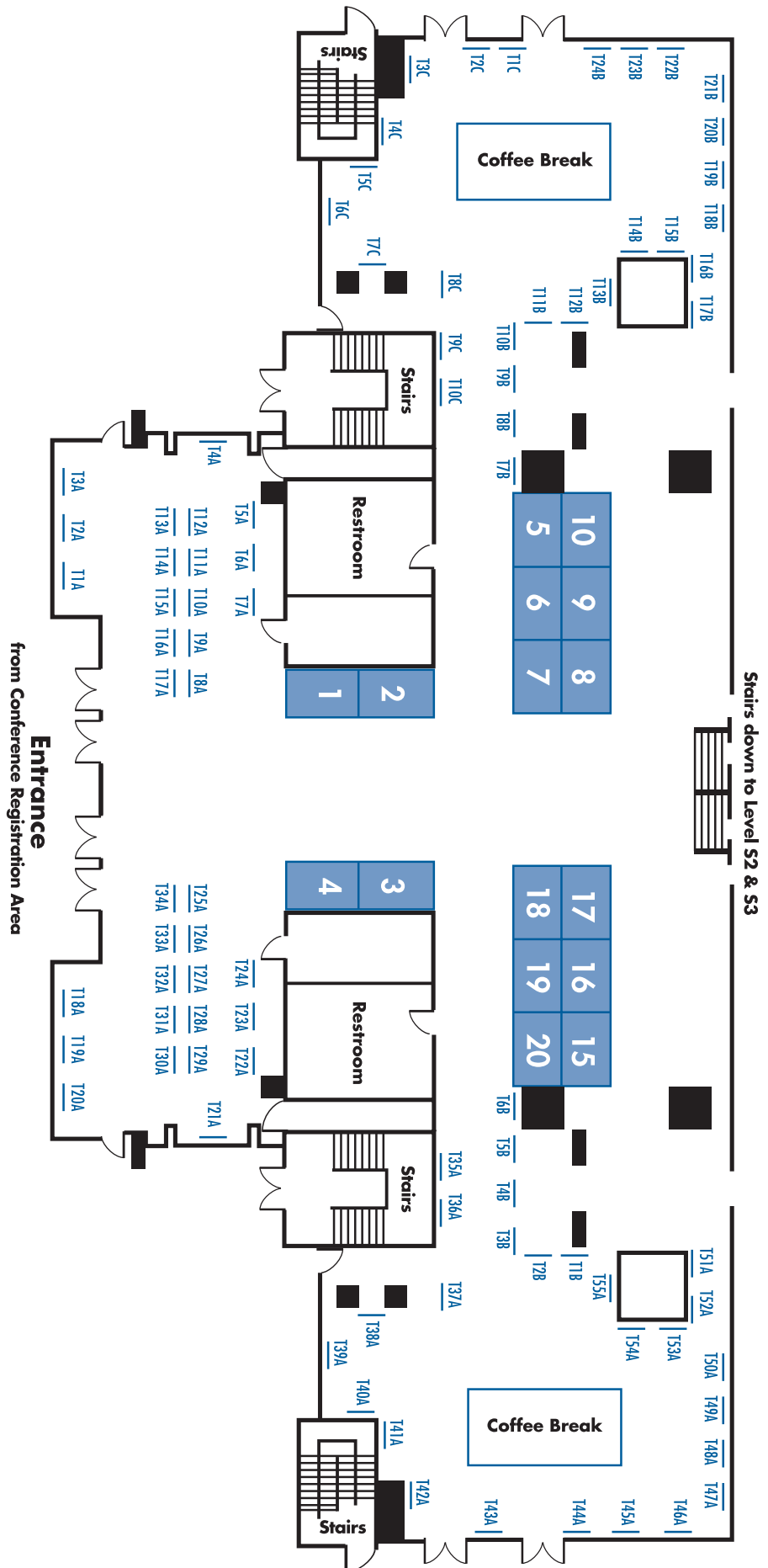
Detection 2

16:30 - 16:50**INTEGRATING WHOLE TRANSCRIPTOME ASSAYS ON A LAB-ON-A-CHIP:****A KEY APPROACH TOWARDS SINGLE CELL GENE PROFILING**N. Bontoux^{1,2}, L. Dauphinot¹, T. Vitalis¹, V. Studer¹, Y. Chen²,J. Rossier¹ and M.-C. Potier¹¹*Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE* and ²*CNRS, FRANCE***PARTICLE-SHADOW TRACKING – COMBINING MAGNETIC PARTICLE MANIPULATION WITH *IN-SITU* OPTICAL DETECTION IN A CMOS MICROSYSTEM**U. Lehmann, M. Sergio, S. Pietrocola, C. Niclass, E. Charbon and M.A.M. Gijs
*Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND***16:50 - 17:10****CELL CHARACTERIZATION USING PROTEIN-FUNCTIONALIZED PORES**A. Carbonaro¹, L. Godley² and L.L. Sohn¹¹*University of California, Berkeley, USA* and ²*University of Chicago, USA***ELECTROKINETIC SERS SIGNAL AMPLIFICATION FOR LABEL-FREE BIOMOLECULAR DETECTION**H. Cho, Y. Long, B. Lee and L.P. Lee
*University of California, Berkeley, USA***17:10 - 17:30****MULTI-CELL SORTING ON MICRO FLUIDIC CHIPS USING OPTICAL GRADIENT FORCE**H. Nagata¹, Y. Yoshida¹, T. Ishido¹, H. Nagai¹, Y. Tanaka¹, S. Wakida¹,Y. Baba^{1,2}, M. Ishikawa¹ and K. Hirano^{1,3}¹*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN,*²*Nagoya University, JAPAN* and ³*Japan Science and Technology Agency (JST), JAPAN***INORGANIC AND ORGANIC ANALYSIS BY A MICRO MASS SPECTROMETER**E. Wapelhorst, J.-P. Hauschild and J. Müller
Hamburg University of Technology, GERMANY

17:30 | Adjourn for the day

19:30 | Optional Conference Banquet at the Musée d'Orsay (*ticket required*)

LEVEL S1



Wednesday, October 10, 2007

8:30 - 9:10

Plenary V - CHAIR: J. Harrison, *University of Alberta*

2-CHAMBER ATOMIC FORCE MICROSCOPE: TOWARDS A STRUCTURE/FUNCTION ANALYSIS OF MEMBRANE PROTEINS
Simon Scheuring
Institute Curie, FRANCE

9:10 - 9:15

Announcement of the µTAS 2008 Conference

Gaston Berger Auditorium, Level S2

Louis Armand Hall, Level S3

Session 3A1

Genomics and Proteomics

SESSION CHAIR: J. Harrison, *University of Alberta*

Session 3B1

Nanofluidics

SESSION CHAIR: P. Tabeling, *ESPCI*

9:15 - 9:35

MICROFLUIDIC SCREENING OF APTAMER LIBRARIES

X. Lou¹, L. Viel¹, J. Qian¹, E.T. Lagally¹, J.B. H-Tok²,

T.M. Tarasow², A.J. Heeger¹ and H.T. Soh¹

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

²*Lawrence Livermore National Laboratory, USA*

DNA MOVEMENT IN SUB-20 NM NANOSLITS

G. Salieb-Beugelaar¹, J. Teapal¹, J. van Nieuwkasteel¹, D. Wijnperle¹,

J.O. Tegenfeldt², J.C.T. Eijkel¹ and A. van den Berg¹

¹*University of Twente, THE NETHERLANDS* and ²*Lund University, SWEDEN*

9:35 - 9:55

INTEGRATED AFFINITY CAPTURE, PURIFICATION AND CAPILLARY ELECTROPHORESIS MICRODEVICE FOR QUANTITATIVE DOUBLE-STRANDED DNA ANALYSIS

N.M. Toriello, C.N. Liu, N. Thaitrong and R.A. Mathies

University of California, Berkeley, USA

NOVEL DEVICE FOR ELECTROPHORETIC FOCUSING AND SEPARATION AT A MICROCHANNEL-NANOCHANNEL INTERFACE

T.A. Zangle, A. Mani and J.G. Santiago

Stanford University, USA

9:55 - 10:15

HIGH-THROUGHPUT PROTEOMIC SAMPLE PRECONCENTRATION IN PDMS MICROFLUIDIC CHIP USING SURFACE-PATTERNED ION-SELECTIVE MEMBRANE

J.H. Lee, Y.-A. Song, S.J. Kim and J. Han

Massachusetts Institute of Technology, USA

DNA SEPARATION BY SQUARE PATTERNED NANOPILLAR CHIPS

T. Yasui¹, N. Kaji¹, R. Ogawa², S. Hashioka², M. Tokeshi¹,

Y. Horiike² and Y. Baba^{1,3,4}

¹*Nagoya University, JAPAN*, ²*National Institute for Materials Science, JAPAN*,

³*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN* and

⁴*Japan Science and Technology Agency (JST), JAPAN*

10:15 - 10:45

Break

Gaston Berger Auditorium, Level S2

Louis Armand Hall, Level S3

Session 3A2

Multiphase and Digital Microfluidic 2

SESSION CHAIR: M. Joanicot, *Laboratory of Future Bordeaux*

Session 3B2

Active Bio-Based Devices

SESSION CHAIR: S.C. Jacobson, *Indiana University*

10:45 - 11:05

MICROFLUIDIC TOOLS FOR INVESTIGATING KINETICS AND THERMODYNAMICS OF CRYSTALLIZATION PROCESSES

P. Laval, J. Leng, M. Joanicot and J.-B. Salmon

CNRS-Rhodia-Bordeaux 1, FRANCE

AUTOMATED AND INTEGRATED MICRO SYSTEM FOR HIGH RESOLUTION IMAGING AND HIGH-THROUGHPUT SORTING OF C. ELEGANS

K. Chung, M. Crane and H. Lu

Georgia Institute of Technology, USA

11:05 - 11:25

PHASE SEPARATION OF SEGMENTED FLOW BY THE PHOTOCATALYTIC WETTABILITY PATTERNING AND TUNING OF MICROCHANNEL SURFACE

G. Takei¹, A. Aota¹, A. Hibara^{1,2,3}, T. Kitamori^{1,2,3} and H.-B. Kim^{1,2,3}

¹*University of Tokyo, JAPAN*, ²*Kanagawa Academy of Science and Technology, JAPAN* and

³*Japan Science and Technology Agency (JST), JAPAN*

EUKARYOTIC FLAGELLA AS MOTILE TOOLS FOR MICROFLUIDIC DEVICES

H. Nakamura¹, K. Kuribayashi¹, H. Onoe¹ and S. Takeuchi^{1,2}

¹*University of Tokyo, JAPAN* and

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

11:25 - 11:45

SYNCHRONIZATION IN MICROFLUIDIC CIRCUITS

M. Prakash and N. Gershenfeld

Massachusetts Institute of Technology, USA

ELECTROACTIVE MICROFLUIDIC DEVICES FOR CONTROL OF INSECT CYBORG NEUROMUSCLAR SYSTEMS

A. Chung, D. Kim, L. Chen, R. Akhmechet, B. Cordovez and D. Erickson

Cornell University, USA

11:45 - 13:30

Lunch

13:30 - 14:10

Plenary VI - CHAIR: A. Manz, *Institute of Analytical Sciences*

CONTINUOUS PARTICLE CLASSIFICATION IN MICROFLUIDIC SYSTEMS

Minoru Seki

Chiba University, JAPAN

14:15 - 16:30

Poster Session 3

Microsystems for Life Sciences - Genomics & Proteomics**W1A****AUTOMATION OF NUCLEIC ACID EXTRACTION BY A CORIOLIS-FORCE ACTUATED DROPLET ROUTER**

S. Haebler¹, S. Pausch¹, R. Burger¹, S. Lutz¹, F. von Stetten^{1,2}, R. Zengerle^{1,2} and J. Duce¹
¹HSG-IMIT, GERMANY and ²University of Freiburg, GERMANY

W2A**MICROCHIP-BASED SOLID-PHASE EXTRACTION AND ENZYMATIC DIGESTION ON POROUS POLYMER MONOLITH FOR DIRECT ELECTROSPRAY MASS SPECTROMETRY**

Y. Hua, Z. Wang and D.J. Harrison
 University of Alberta, CANADA

W3A**FAST AND HIGH EFFICIENT MICROFLUIDIC PCR BY MICROWAVE DIELECTRIC HEATING**

P.-A. Auroux, D.R. Reyes, J.J. Shah and M. Gaitan
 National Institute of Standards and Technology (NIST), USA

W4A**MILI-SECONDS ANALYSIS OF GREEN FLUORESCENT PROTEIN GFP IN FL CONTAINER HEATED BY MICRO FABRICATED THERMAL DEVICE**

H.F. Arata¹, F. Gillot² and H. Fujita¹
¹University of Tokyo, JAPAN and ²LIMMS-CNRS/IIS, FRANCE

W5A**PROTEOMICS-ON-A-CHIP FOR BIOMARKER DISCOVERY**

R.B.M. Schasfoort, D. Kohlheyer, S. Schlautmann, J. Eijkel and A. van den Berg
 University of Twente, THE NETHERLANDS

W6A**RNA EXTRACTION ON A CHIP BY COMBINED THERMO-ELECTRIC LYSIS AND ELECTROPHORETIC PURIFICATION**

P. Vulto¹, C. Klaunick¹, M. Weidmann², P. Zahn¹, G. Dame¹ and G.A. Urban¹
¹Ludwigs-Universität Freiburg, GERMANY and ²University of Göttingen, GERMANY

Microsystems for Life Sciences - Clinical Diagnostics**W7A****AUTOMATED HEMATOCRIT MEASUREMENT AND PATIENT DATA LABELING BY A COMMERCIAL DVD-WRITER WITH A LOW-COST OPTICAL ADD-ON**

L. Riegger¹, J. Steigert¹, S. Lutz¹, W. Streule¹, R. Zengerle^{1,2} and J. Duce¹
¹University of Freiburg, GERMANY and ²HSG-IMIT, GERMANY

W8A**DETECTION OF EMERGING ZONOTIC INFECTION IN MICE BY HIGH SENSITIVE MULTIPLEXED MICROFLUIDIC IMMUNOASSAY SYSTEM**

F. Ike¹, A. Kajita¹, H. Aoki², H. Kase², T. Nagamune³, S. Morikawa⁴,
 A. Yoshiki¹, Y. Obata¹ and Y. Yamagata¹
¹RIKEN, JAPAN, ²Fuence Co. Ltd., JAPAN, ³University of Tokyo, JAPAN and
⁴National Institute of Infectious Diseases, JAPAN

W9A**HIGH PERFORMANCE PENICILLIN SENSOR USING CHARGE TRANSFER TECHNIQUE**

S.-R. Lee¹, K. Sawada^{1,2}, H. Takao^{1,2} and M. Ishida^{1,2}
¹Toyohashi University of Technology, JAPAN and
²Japan Science and Technology Agency (JST), JAPAN

W10A**MICROCHIP FLOWCYTOMETER USING FLUORESCENT SILICA NANOPARTICLES FOR HIV SCREENING**

H. Yun¹, J.K. Min¹, W.G. Lee¹, H. Bang¹, J. Park²,
 C. Chung², J.K. Chang² and D.-C. Han¹
¹Seoul National University, KOREA and ²NanoenTek, Inc., KOREA

W11A**MICROFLUIDIC ELISA SYSTEM FOR THE DIAGNOSIS OF HEPATITIS B USING MICROWELLS MADE OF ANODIC ALUMINUM OXIDE**

K.S. Yang¹, H.J. Kim², J.K. Ahn² and D.H. Kim¹
¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and
²Chungnam National University, KOREA

W12A**MULTIPLEXED ANALYSIS USING NANO-BAR CODES**

H. Morgan, S. Banu, S.W. Birtwell, G.R. Broder, G.S. Galitonov,
 D.C. Neylon, R.T. Ranasinghe, J.K. She, N. Zheludev and P.L. Roach
 University of Southampton, UK

W13A**NONSPECIFIC ADSORPTION MINIMIZED NANOMECHANICAL IMMUNOASSAY FOR APPLICATION TO ASSAY USING THE REAL SAMPLE**

K.S. Hwang^{1,2}, S.-M. Lee¹, B.H. Cha¹, S.K. Kim¹, J.H. Park² and T.S. Kim¹
¹Korea Institute of Science and Technology (KIST), KOREA and ²Korea University, KOREA

W14A**PARALLEL MULTI-REAGENT STREAMS FOR A BIOASSAY ON SINGLE MAGNETIC PARTICLES IN CONTINUOUS FLOW**

S. Peyman, A. Iles and N. Pamme
 University of Hull, UK

W15A**RELIABLE CONTINUOUS-FLOW PCR FROM POLYMERASE KITS AND ON-CHIP CELL EXTRACTED DNA**

H. Becker, R. Klemm and C. Gärtner
 microfluidic ChipShop GmbH, GERMANY

Microsystems for Life Sciences - Microarrays**W16A****3D MICROFLUIDIC CHIP FOR MEMBRANE PROTEIN ANALYSIS**

H. Suzuki¹ and S. Takeuchi^{1,2}
¹University of Tokyo, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

W17A**CELLULAR STUDIES VIA DIELECTROPHORESIS-BASED CELLULAR MICROARRAY CHIP**

L.C. Hsiung¹, C.L. Chiu¹, C.H. Yang¹, A.M. Wo¹, H. Lee¹, D.S. Jong¹,
 C.H. Chiu¹, J.Y. Cheng², M.C. Ho³, C.Y. Hsu¹ and M.C. Hsu¹
¹National Taiwan University, TAIWAN, ²Academia Sinica, TAIWAN and
³National Taiwan University Hospital, TAIWAN

W18A**HIGH-THROUGHPUT MICROFLUIDIC MICROARRAY HYBRIDIZATIONS CARRIED OUT IN SPIRAL CHANNELS ON A COMPACT DISC**

H. Chen, P.C.H. Li, H.-Z. Yu, M. Parameswaran and N. Yoganathan
 Simon Fraser University, CANADA

W19A**MICRO XEROGRAPHY USING SURFACE ACOUSTIC WAVE ATOMIZER AND ELECTROSTATIC DEPOSITION**

J. Ju¹, Y. Yamagata², T. Higuchi¹, K. Inoue³ and H. Ohmori²
¹University of Tokyo, JAPAN, ²RIKEN, JAPAN and ³Fuence Co., Ltd., JAPAN

Microsystems for Life Sciences - Point of Care and Hand Held Devices**W20A****MICROFLUIDIC STAND-ALONE DEVICE FOR THE CALIBRATION OF BRAIN-IMPLANTABLE BIOSENSOR MICROPROBES**

O. Frey¹, F.H. Falke², P.D. van der Wal¹, N.F. de Rooij¹ and M. Koudelka-Hep¹
¹University of Neuchâtel, SWITZERLAND and ²University of Twente, THE NETHERLANDS

W21A**NANOSTRUCTURED PHOSPHOLIPID BIOINTERFACE FOR IMMUNOASSAY MICROCHIP INTEGRATED WITH PLASMA SEPARATION MEMBRANE**

K. Nishizawa, T. Konno, M. Takai and K. Ishihara
 University of Tokyo, JAPAN

W22A**NATURAL CONVECTION DRIVEN HANDHELD PCR SYSTEM USING A DISPOSABLE POLYMER CHIP**

K.H. Chung, Y.H. Choi, C.H. Jun, D. Lee, H.B. Pyo, M.Y. Jung and S.H. Park
 Electronics and Telecommunications Research Institute (ETRI), KOREA

W23A

POLYMER-BASED THERAPEUTIC DRUG MONITORING CHIP WITH PERIODIC GOLDNANO-STRUCTURE FOR LOCALIZED SURFACE PLASMON RESONANCE SENSING

Y. Akagi¹, K. Yamamoto², T. Yotsuya³, A. Ishida⁴, T. Mori⁵, H. Kawata³, Y. Hirai³ and M. Seki^{3,6}

¹Sekisui Chemical Co., JAPAN, ²Sekisui Integrated Research Co., JAPAN, ³Osaka Prefecture University, JAPAN, ⁴Kyoto Prefecture University, JAPAN, ⁵Nara Medical University, JAPAN and ⁶Chiba University, JAPAN

W24A

RAPID PEN-SIDE DIAGNOSTICS USING IMMUNOELECTROPHORETIC ASSAYS

D.S. Reichmuth, S. Wang, D.J. Throckmorton, W. Einfeld and A.K. Singh
Sandia National Laboratories, USA

W25A

THE STUDY OF OSMOTIC VALVE FOR THE INSULIN THERAPY OF DIABETES

T. Nagakura¹, K. Nukada², A. Yamada², M. Ikeuchi³ and K. Ikuta³

¹Osaka Electro-Communication University, JAPAN, ²Okayama University, JAPAN and ³Nagoya University, JAPAN

Microsystems for Life Sciences - Cell Handling & Analysis

W26A

A MICROFLUIDIC CHIP FOR VISUALIZATION OF SINGLE MOLECULE INTERACTIONS IN SITU

H. Johansson, M. Jarvius, Y. Tanaka, M. Nilsson, J. Jarvius and U. Landegren
Uppsala University, SWEDEN

W27A

A MICROFLUIDIC CHIP STUDYING THE EFFECT OF SOLUBLE FACTORS ASSOCIATED WITH THE MODES OF MEDIUM SUPPLY AND PERFORMING CELL ASSAYS

Z.T.F. Yu, K. Kamei, C.J. Shu, C.G. Radu, O.N. Witte and H.-R. Tseng
University of California, Los Angeles, USA

W28A

A NOVEL MULTIFUNCTIONAL PROCESSOR FOR BIO-PARTICLES

C.-T. Kuo and C.-H. Liu
National Tsing Hua University, TAIWAN

W29A

MONITORING PROTEIN PHOSPHORYLATION DURING IMMUNE SIGNALING USING INTEGRATED MICROFLUIDIC FLOW CYTOMETRY

N. Srivastava, J.S. Brennan, S.S. Branda, A.K. Singh and A.E. Herr
Sandia National Laboratories, USA

W30A

ARRANGEMENT OF CELLS WITHIN SEMI-CLOSED SPACE WITH MICROELECTRODE-BASED TECHNIQUE

M. Hashimoto, S. Sekine, T. Kawashima, H. Kaji and M. Nishizawa
Tohoku University, JAPAN

W31A

CELL CULTURE MICROCHAMBER ARRAY WITH INDEPENDENT PERFUSION CHANNEL FOR PARALLEL DRUG TOXICITY ASSAY

S. Sugiura, J. Edahiro, K. Kikuchi, K. Sumaru and T. Kanamori
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

W32A

CHEMOTAXIS-DRIVEN SEPARATION OF MOTILE SPERM BY LONGITUDINAL CHEMICAL CONCENTRATION GRADIENT IN MICROCHIP

Y.-J. Ko, B.-C. Lee, J.-H. Maeng, S.-Y. Hwang and Y. Ahn
Hanyang University, KOREA

W33A

DIELECTROPHORETIC CELL MANIPULATION ENABLED BY PARASITIC TRAP CANCELLATION

M. Urdaneta and E. Smela
University of Maryland, USA

W34A

ON-CHIP EVALUATION OF EFFECT OF DRUG-INDUCED APOPTOSIS ON ELECTROPHORESIS MOBILITY OF HEK CELLS

T. Akagi and T. Ichiki
University of Tokyo, JAPAN

W35A

ENDOTHELIAL CELL PHENOTYPE ON GELATIN MICROPATTERNS COMPARED TO THAT IN MICROCHANNELS

P.P.M.F.A. Mulder¹, S. Koster¹, G. Molema² and E. Verpoorte¹

¹University of Groningen, THE NETHERLANDS and ²University Medical Center Groningen, THE NETHERLANDS

W36A

FABRICATION OF A DISPOSABLE ELECTROSONIC MICROARRAY IN THIOLENE AND PERFORMANCE CHARACTERIZATION FOR BIOMOLECULE DELIVERY

J.M. Meacham¹, V. Zarnitsyn², M. Varady², J. Atencia¹, L. Locascio¹, F.L. Degertekin² and A.G. Fedorov²

¹National Institute of Standards and Technology (NIST), USA and ²Georgia Institute of Technology, USA

W37A

HIGH THROUGHPUT AND HIGH EFFICIENCY ELECTROPORATION CHIP WITH POLYELECTROLYTE CURRENT PATHS

J.H. Kim^{1,2}, Z.H. Kim², T.S. Kim¹ and S.K. Kim¹

¹Korea Institute of Science and Technology (KIST), KOREA and ²Korea University, KOREA

W38A

MECHANICAL CELL LYSIS USING PDMS MEMBRANE DEFLECTION IN A MICROFLUIDIC DEVICE

Y.C. Kim^{1,2}, W. Choi¹, Y.W. Hwang², S.-J. Park² and J.-K. Park¹

¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and ²Korea Institute of Machinery & Materials (KIMM), KOREA

W39A

STIMULATION OF MAMMALIAN CELLS USING MICRO-BEAD IMPACT IN MICRO-BIOREACTOR

T.-J. Kim, S.-J. Kim and H.-I. Jung

Yonsei University, KOREA

W40A

MULTIPHASE FLOW MANIPULATION FOR CONTINUOUS REFRACTIVE INDEX ANALYSIS OF SINGLE LIVING CELL

L.K. Chin¹, A.Q. Liu¹, C.S. Lim¹ and P.H. Yap²

¹Nanyang Technological University, SINGAPORE and ²DSO National Laboratories, SINGAPORE

W41A

NANOFILTER FOR EFFICIENT BACTERIA TRAPPING AND DETECTION

L. Zhu^{1,2}, X.L. Peh¹, C.Y. Teo¹, H.M. Ji¹, H.H. Feng¹ and W.-T. Liu¹

¹Institute of Microelectronics, SINGAPORE and ²National Institutes of Health, USA

W42A

NON-CONTACT MEASUREMENT OF YOUNG'S MODULUS OF SINGLE LIVING CELL USING HYDROSTATIC PRESSURE IN A MICROCHAMBER

L.A.G. Lin¹, Y.F. Yu¹, A.Q. Liu¹ and P.H. Yap²

¹Nanyang Technological University, SINGAPORE and ²DSO National Laboratories, SINGAPORE

W43A

OBSERVATIONS OF SPERM CELL BEHAVIOR IN A MICROFLUIDIC IN-VITRO FERTILIZATION DEVICE

M.D.C. Lopez-Garcia¹, R.L. Monson¹, K. Haubert² and D.J. Beebe¹

¹University of Wisconsin, USA and ²Vitae LLC, USA

W44A

PARALLEL BIOPARTICLE SORTING WITH TGP SOLUTION IN 3-DIMENSIONAL MICROFLOW SYSTEM

H. Sugino¹, Y. Nara², Y. Shirasaki², T. Arakawa², S. Shoji² and T. Funatsu¹

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

W45A

RAPID AND SIMPLE UV-DIRECTED MICROPATTERNING OF PROTEINS

M. Théry¹, A. Azioune², J. Fink², R. Dupont¹, M. Piel² and F. Chatelain¹

¹Commissariat à l'Energie Atomique (CEA), FRANCE and ²Institut Curie, FRANCE

W46A

CA²⁺ SIGNAL IS CONTROLLED BY RECEPTOR-MEDIATED ACTIVATION OF G-PROTEINS PATHWAY IN TETRAHYMENA PYRIFORMIS DURING CHEMOTAXIS

S.-W. Nam and S. Park

Ewha Woman's University, KOREA

W47A

SIMULTANEOUS MANIPULATION AND DETECTION OF SINGLE CELLS USING MAGNETIC SENSORS

C. Liu^{1,2}, W. Laureyn¹ and L. Lagae¹

¹Interuniversity Microelectronics Center (IMEC), BELGIUM and

²Katholieke Universiteit Leuven, BELGIUM

W48A

STUDY OF ATP-RELEASE FROM ACOUSTICALLY LEVITATED ERYTHROCYTES

M. Evander, K. Mileros, C. Högberg, D. Erlinge, M. Almqvist, T. Laurell and J. Nilsson

Lund University, SWEDEN

W49A

VERY HIGH YIELD ELECTRO CELL-FUSION BASED ON FIELD CONSTRICTION AT A MICROORIFICE

K. Tsuda¹, M. Gel¹, H. Oana^{1,2}, B. Techaumnat³, H. Kotera^{2,4} and M. Washizu^{1,2}

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

³Chulalongkorn University, THAILAND and ⁴Kyoto University, JAPAN

Microsystems for Life Sciences - Tissue Engineering

W50A

NANOPOROUS TITANIA FILMS FOR THE PROMOTION OF STEM CELL PROLIFERATION

A. Iles¹, H. Hosseinkhani², M. Hosseinkhani³ and H. Lindstrom²

¹University of Hull, UK, ²National Institute of Materials Science, JAPAN and

³Kyoto University Hospital, JAPAN

W51A

THE UTILITY OF INTERSTITIAL, MICROFLUIDIC PERFUSION IN EXTENDED CULTURING OF THICK ORGANOTYPIC BRAIN SLICES

J. Vukasinovic, K. Rambani, S.M. Potter and A. Glezer

Georgia Institute of Technology, USA

Microsystems for Life Sciences - Drug Discovery

W52A

DEVELOPMENT OF A MICRO TOTAL BIOASSAY SYSTEM FOR ANTICANCER AGENT; ASSAY OF INTESTINAL ABSORPTION, HEPATIC METABOLISM, AND ANTICANCER ACTIVITY

K. Sato, Y. Asano and E. Yoshimura

University of Tokyo, JAPAN

W53A

SYN & SORT - A CHIP BASED TOOL FOR COMBINATORIAL SYNTHESIS AND BIOLOGICAL SCREENING

A. Schober¹, M. Gebinoga¹, A. Albrecht¹, T. Lübeck¹, T. Henkel²,

P. Hoffmann², U. Klenz², G. Schlingloff¹, Th. Frank³ and A. Groß¹

¹Technische Universität Ilmenau, GERMANY, ²Institute of Physical High

Technology GERMANY, ³Little Things Factory, GERMANY and

⁴Nanomics Technologies GmbH, GERMANY

Microsystems for Life Sciences

W54A

A MICROFLUIDIC BIOSENSOR INTEGRATING SELF-ASSEMBLED PEPTIDE MONOLAYERS FOR THE DETECTION OF BOTULINUM NEUROTOXIN

M.L. Frisk, W.H. Tepp, E.A. Johnson and D.J. Beebe

University of Wisconsin, Madison, USA

W55A

A MICROFLUIDIC DISPENSING SYSTEM FOR SCREENING PROTEIN CRYSTALLIZATION CONDITIONS

X. Zhou and B. Zheng

Chinese University of Hong Kong, HONG KONG

W56A

MICROFLUIDIC INTERFACES FOR LOCALIZED RELEASE OF NO INTO DEVELOPING RAT DORSAL ROOT GANGLIA

G. Lavella, P. Padmanabhan, B. Wu, M.E. Meyerhoff and M.M. Maharbiz

University of Michigan, USA

W57A

SINGLE MOLECULE ANALYSIS OF CONDENSED DNA: MEASUREMENT OF CONDENSATION SPEED AND SINGLE MOLECULE SIZE USING LASER TRAPPING

T. Ishido¹, H. Nagata¹, Y. Tanaka¹, M. Ishikawa¹ and K. Hirano^{1,2}

¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and

²Japan Science and Technology Agency (JST), JAPAN

Microsystems for Chemistry and Environment - Separation Science

W1B

800 FOLD SIGNAL ENHANCEMENTS BY TRANSIENT ISOTACHOPHORESIS FOR IMMUNOASSAY OF HSA ON STANDARD CROSS CHANNEL MICROCHIPS

M.R. Mohamadi^{1,4}, L. Mahmoudian¹, N. Kaji¹, M. Tokeshi¹ and Y. Baba^{1,2,3}

¹Nagoya University, JAPAN, ²National Institute of Advanced Industrial Science and

Technology (AIST), JAPAN, ³Japan Science and Technology Agency (JST), JAPAN and

⁴Nagoya University Venture Business Laboratory, JAPAN

W2B

APPLICATION OF CYCLOOLEFIN POLYMER CHIP DIRECTLY INTEGRATED WITH AN ELECTRONANOSPRAY TIP TO ELECTROPHORETIC SEPARATION AND MASS SPECTROMETRIC DETECTION

F. Kitagawa¹, T. Suzuki², H. Shinohara², J. Mizuno², S. Shoji² and K. Otsuka¹

¹Kyoto University, JAPAN and ²Waseda University, JAPAN

W3B

DESIGN AND OPTIMIZATION OF FRACTION COLLECTOR FOR CAPILLARY ELECTROPHORESIS

D.R. Zalewski, S. Schlautmann, R.B.M. Schasfoort and H.J.G.E. Gardeniers

University of Twente, THE NETHERLANDS

W4B

ELECTROKINETIC BIO-MOLECULES PRECONCENTRATION AND SEPARATION BY MWCNTs FILTER IN NANOFUIDIC CHANNEL

R.-G. Wu, Y.-S. Wu, C.-S. Yang and F.G. Tseng

National Tsing Hua University, TAIWAN

W5B

FAST SHEAR-DRIVEN OLIGONUCLEOTIDE SEPARATION IN 1D-NANOCANNELS

F. Detobel¹, V. Fekete¹, W. De Malsche², H. Gardeniers² and G. Desmet¹

¹Vrije Universiteit, BELGIUM and ²University of Twente, THE NETHERLANDS

W6B

IMPROVED ULTRASONIC MICRO ARRAY SEPARATION USING FAR FIELD ULTRASONIC EXCITATION

A. Nilsson, T. Jansson and T. Laurell

Lund University, SWEDEN

W7B

INTEGRATED POSITIVE AND NEGATIVE CELL SEPARATION ON AN ON-CHIP MAGNETIC CELL SORTING SYSTEM

M. Estes, J. Do and C. Ahn

University of Cincinnati, USA

W8B

ISOELECTRIC FOCUSING IN A MICRO CHAMBER ARRAY

R. Ishibashi, T. Kitamori and K. Shimura

University of Tokyo, JAPAN

W9B

MICROFLUIDIC ZONE REFINING FOR SAMPLE CONCENTRATION

R.P. Welle and B.S. Hardy

Aerospace Corporation, USA

W10B

MODE TRANSITION & ITS MECHANISM OF RNA/DNA TRAP BY ELECTRIC AND HYDRAULIC FORCE FIELD IN MICROFLUIDIC TAPER SHAPE CHANNEL

Y. Takamura¹, W. Nagasaka¹, K. Ueno¹, Y. Tomizawa¹ and E. Tamiya^{1,2}

¹Japan Advance Institute Science Technology (JAIST), JAPAN and

²Osaka University, JAPAN

W11B

NOVEL ONLINE CONCENTRATION OF DNA TO SHORTEN MICROCHANNEL LENGTH USING HETEROGENEOUS BUFFER COMBINATIONS ON MICROCHIP ELECTROPHORESIS

H. Nagata¹, Y. Yoshida¹, T. Ishido¹, M. Ishikawa¹ and K. Hirano^{1,2}

¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and

²Japan Science and Technology Agency (JST), JAPAN

W12B

ON-CHIP LIQUID CHROMATOGRAPHY - ATMOSPHERIC PRESSURE IONIZATION - MASS SPECTROMETRY

V. Saarela¹, M. Haapala², J. Pöl², N. Kalkkinen², M. Hukka², K. Kolari³,

R.A. Ketola², R. Kostianen², T. Kotiaho² and S. Franssila¹

¹Helsinki University of Technology, FINLAND,

²University of Helsinki, FINLAND and

³VTT Technical Research Center, FINLAND

W13B

PARTICLE SEPARATION VIA ADJUSTABLE VELOCITY PROFILE GENERATED BY EOF AND PRESSURE DRIVEN FLOW

Y.F. Yu¹, P.H. Yap² and A.Q. Liu¹

¹Nanyang Technological University, SINGAPORE and

²DSO National Laboratories, SINGAPORE

W14B

A MINIATURE CENTRIFUGAL CHROMATOGRAPHIC DEVICE FOR THE PRE-CONCENTRATION AND DETERMINATION OF LEAD IN AQUEOUS SAMPLES

J.P. Lafleur and E.D. Salin

McGill University, CANADA

W15B

SPECTRAL SEPARATIONS OF CHEMICAL SIGNALS WITH FOURIER MICROFLUIDICS

Y. Xie, Y. Wang, L. Chen and C.H. Mastrangelo

Case Western Reserve University, USA

W16B

TWO-DIMENSIONAL PROTEIN SEPARATION IN A PLASTIC DEVICE WITH A MICROVALVE ARRAY

Z.H. Fan, C. Das and J. Zhang

University of Florida, USA

Microsystems for Chemistry and Environment - Environmental Analysis

W17B

ULTRA-TRACE GAS ANALYSIS SYSTEM OF AMMONIA IN CLEANROOM

K. Uchiyama¹, M. Sasaki¹, Y. Kihira¹, K. Kuriyama¹,

Y. Kikutani², K. Mawatari² and T. Kitamori³

¹Institute of Microchemical Technology, JAPAN,

²Kanagawa Academy of Science and Technology, JAPAN and

³University of Tokyo, JAPAN

Microsystems for Chemistry and Environment - On-Chip Synthesis and Production

W18B

BIOPOLYMER COATED PARTICLE FORMATION UTILISING A MICROFLUIDIC DEVICE AND MULTIPHASE FLOW

E. Rondeau and J. Cooper-White

University of Queensland, AUSTRALIA

W19B

FABRICATION OF NOVEL INORGANIC POLYMER DERIVED MICROCHANNELS FOR MICROREACTOR APPLICATIONS

T.-H. Yoon, L.-Y. Hong, S.-H. Park, K.-I. Min, S.-J. Park and D.-P. Kim

Chungnam National University, KOREA

W20B

PRODUCTION OF DOUBLE EMULSIONS ON ONE CHIP BY MODIFYING SURFACE PROPERTIES

S. Tamaki, S. Wada, H. Tsuchiya, M.I. Al-Haq and T. Torii

University of Tokyo, JAPAN

W21B

PHOTOSYNTHESIS OF HIGH-VALUE ADDED COMPOUNDS IN A MICROREACTION SYSTEM

Y. Matsushita¹, A. Murata², T. Murata³, H. Tanibata⁴, T. Suzuki¹ and T. Ichimura¹

¹Tokyo Institute of Technology, JAPAN, ²Dainippon Screen MFG., Co., Ltd., JAPAN,

³Mitsui Zosen Plant Engineering, Inc., JAPAN and

⁴Mitsui Engineering & Shipbuilding Co. Ltd., JAPAN

W22B

SPATIALLY RESOLVED MICROFLUIDIC SOLVENT ETCHING OF BICOMPONENT EXTRUSION NANOFIBERS

S. Lok, J.P. Hinestroza and B.J. Kirby

Cornell University, USA

Microsystems for Chemistry and Environment

W23B

FUEL AND MEDIA FLEXIBLE AIR-BREATHING LAMINAR FLOW FUEL CELLS

R.S. Jayashree, W.-P. Zhou, M. Mitchell, S.K. Yoon and P.J.A. Kenis

University of Illinois, USA

W24B

MICROREACTORS FOR REACTION KINETICS MONITORING ON A CHIP - FROM SINGLE LINE TO MULTICHANNEL QUENCH-FLOW DEVICE

W.P. Bula, D.N. Reinhoudt, W. Verboom and H.J.G.E. Gardeniers

University of Twente, THE NETHERLANDS

Microfluidics - Fluid Mechanics & Modeling

W1C

A NOVEL COAXIAL SHEATH FLOW DEVICE FOR SAMPLE FOCUSING

G. Hairer, G.S. Parr, P. Svasek, A. Jachimowicz and M.J. Vellekoop

Vienna University of Technology, AUSTRIA

W2C

ELECTROMECHANICAL ANALYSIS OF AC ELECTROWETTING OF A DROPLET

J.S. Hong, S.H. Ko, K.H. Kang and I.S. Kang

Pohang University of Science and Technology, SOUTH KOREA

W3C

MICROFLUIDIC CHARACTERIZATION OF SURFACTANT SOLUTIONS

G. Degré and P. Nghe

Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

W4C

MOTION OF PARTICLES UNDER NON-UNIFORM AC FIELDS IN A MICROCHANNEL: ANALYSIS OF THE CONTRIBUTION OF AC ELECTROKINETIC FORCES

J.J. Capurro, J. Oh and H. Noh

Drexel University, USA

W5C

SHEATHLESS PARTICLE FOCUSING BASED ON HYDROPHORESIS AND ITS APPLICATION TO BLOOD PLASMA SEPARATION

S. Choi and J.-K. Park

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

W6C

THE MECHANICS OF DEFORMABLE FLUIDIC DIODES: IMPLICATIONS FOR DESIGN AND PERFORMANCE

D. Leslie¹, C.J. Easley², J.P. Landers¹, M. Utz¹ and M.R. Begley¹

¹University of Virginia, USA and ²Vanderbilt University, USA

W7C

VALVES FOR AUTONOMOUS MICROFLUIDIC CAPILLARY SYSTEMS

M. Zimmermann^{1,2}, P. Hunziker¹ and E. Delamarche²

¹University Hospital Basel, SWITZERLAND and

²IBM Research GmbH, SWITZERLAND

W8C

WORM-LIKE SURFACTANT SOLUTIONS, FLOW INDUCED GELATION AND EFFECTIVE SLIP IN MICROCHANNELS

L.E. Rodd and J.J. Cooper-White

University of Queensland, AUSTRALIA

Microfluidics - Aliquoting, Mixing & Pumping

W9C

A PIEZOELECTRIC ACTIVE MICROCHANNEL FOR FLUID TRANSPORT IN μTAS

T. Suzuki¹, I. Kanno¹, J. Ogawa¹, K. Kanda² and H. Kotera¹

¹Kyoto University, JAPAN and

²Advanced Software Technology and Mechatronics Research Institute, JAPAN

W10C**DISPOSABLE DIFFUSER-VALVE MICROPUMP EXTERNALLY ACTUATED BY PRECISION LINEAR MOTOR**

W. Rhie and T. Higuchi
University of Tokyo, JAPAN

W11C**ELECTROCHEMICAL MICROFLUIDIC PUMPS BASED ON SUPER ABSORBING POLYMERS**

J. Nestler¹, A. Morschhauer¹, K. Hiller¹, S. Bigot², J. Auerswald³, J. Gavillet⁴, T. Otto⁵ and T. Gessner^{1,5}

¹Chemnitz University of Technology, GERMANY, ²Cardiff University, UK, ³CSEM Alpnach, SWITZERLAND, ⁴CEA Liten, FRANCE and ⁵Fraunhofer IZM, GERMANY

W12C**MICRO OPTICAL STIRRER FOR MIXING IN MICROCHANNEL FLOW**

T. Moriya and Y. Sato
Keio University, JAPAN

W13C**PATTERNING OF BACTERIAL CELLS USING ELECTRO-HYDRODYNAMIC PRINTING**

J.-H. Kim, S.-J. Kim, H.-S. Kim, J.-S. Park and H.-I. Jung
Yonsei University, KOREA

W14C**SAMPLE METERING AND PARALLEL LIQUID PLUG ACTUATION FOR MULTIPLE BIOCHEMICAL ASSAYS**

M.M. Mielnik¹, J. Voitel¹, L.A. Solli² and L. Furuberg¹

¹SINTEF, NORWAY and ²Norchip AS, NORWAY

W15C**TOWARDS A COMPREHENSIVE CENTRIFUGAL PROCESS INTEGRATION BY ROTATIONALLY INDUCED LYOPHILIZATE DISSOLUTION AND CELL LYSIS**

S. Lutz¹, P. Lang¹, B. Faltin², S. Haeberle¹, F. von Stetten², R. Zengerle^{1,2} and J. Duerée¹

¹HSG-IMT, GERMANY and ²University of Freiburg, GERMANY

W16C**ULTRASONIC MIXING IN POLYMER MICROFLUIDICS**

M. Bengtsson, M. Brivio and A. Wolff
Technical University of Denmark, DENMARK

W17C**USING ASYMMETRIC VOLTAGE SOURCES IN ELECTRO-HYDRODYNAMIC MICROMIXERS**

L. De Vroey¹, D. Grenier² and M.-C. Jullien²

¹Université Catholique de Louvain, BELGIUM and

²Université Européenne de Bretagne, FRANCE

Microfluidics - Multi-Phase and Digital Microfluidics**W18C****A MICROFLUIDIC PLATFORM FOR IMPLEMENTING MOLECULAR LOGIC GATE WITH FLORESENT CHEMOSENSORS**

S. Kou, S.-W. Nam, J. Yoon and S. Park
Ewha Woman's University, KOREA

W19C**CONTINUOUS-FLOW LAYER-BY-LAYER ENCAPSULATION WITH POLYELECTROLYTES THROUGH A MICROFLUIDIC DEVICE**

K.-Q. Peng^{1,2}, W.-L. Ong¹, L. Yobas¹ and D. Trau²

¹Institute of Microelectronics, SINGAPORE and

²National University of Singapore, SINGAPORE

W20C**DESIGN PARAMETERS FOR A 1XN MICRODROPLET SWITCH**

J.S. Fisher, T.S. Kuo, J. Poulos and A.P. Lee
University of California, Irvine, USA

W21C**DISCRETE MICROFLUIDICS: PRODUCTION OF SILICA PARTICLES WITH EMULSIONS**

V. Chokkalingam¹, C. Priest¹, M. Krämer², W.F. Maier², S. Herminghaus¹ and R. Seemann¹

¹Max Planck Institute for Dynamics and Self-Organization, GERMANY and

²Saarland University, GERMANY

W22C**ELECTROHYDRODYNAMICALLY CONTROLLED GENERATION OF A SINGLE OR MULTIPLE DROPS IN THE MICROFLOW OF AQUEOUS TWO-PHASE SYSTEM**

Y.H. Choi, Y.S. Song and D.H. Kim

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

W23C**HIGH-PERFORMANCE PRODUCTION OF MONODISPERSE EMULSIONS USING MICROFABRICATED ASYMMETRIC THROUGH-HOLE ARRAY**

I. Kobayashi¹, G.T. Vladislavjevic², K. Uemura¹ and M. Nakajima^{1,3}

¹National Food Research Institute, JAPAN and

²Loughborough University, UK and ³University of Tsukuba, JAPAN

W24C**HIGH THROUGHPUT DROPLET-BASED DNA ASSAYS USING FLUORESCENCE RESONANCE ENERGY TRANSFER**

M. Srisa-Art, E.C. Dyson, A.J. deMello and J.B. Edel

Imperial College London, UK

W25C**LIQUID-LIQUID-PHASE ELECTROSPRAY IN MICROCHANNELS**

S. Koster, V. de Bot and E. Verpoorte

University of Groningen, THE NETHERLANDS

W26C**MICROFLUIDIC LOGIC GATES AND TIMERS**

M.W. Toepke, V.V. Abhyankar, J.W. Warrick and D.J. Beebe

University of Wisconsin, USA

W27C**MICROFLUIDIC QUANTITATIVE EXTRACTION IN DROPLETS**

P. Mary, V. Studer and P. Tabeling

Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

W28C**PIXELATION OF PLANAR BIOCHEMICAL SAMPLES: A NOVEL CONCEPT FOR MICROFLUIDIC IMAGING**

K. Tachikawa, P.S. Dittrich, J. Franke and A. Manz

Institute for Analytical Sciences (ISAS), GERMANY

W29C**PROGRAMMABLE FLOW-THROUGH REAL-TIME PCR USING DIGITAL MICROFLUIDICS**

P.Y. Paik, D.J. Allen, A.E. Eckhardt, V.K. Pamula and M.G. Pollack

Advanced Liquid Logic Inc., USA

W30C**THERMAL CONTROL OF DROPLET SIZE IN MICROCHANNELS**

N.-T. Nguyen¹, T.-H. Ting¹, Y.-F. Yap¹, T.-N. Wong¹, J.C.-K. Chai¹,

W.-L. Ong², J. Zhou^{1,2}, S.-H. Tan^{1,2} and L. Yobas²

¹Nanyang Technological University, SINGAPORE and

²Institute of Microelectronics, SINGAPORE

Microfluidics**W31C****DYNAMICS MEASUREMENT OF STRUCTURAL CHANGE OF HELICAL POLYMER USING THERMAL LENS MICROSCOPY AND MICROFLUIDIC TECHNIQUE**

K. Osato¹, M. Tokeshi^{1,2}, N. Kaji¹, R. Anraku³, T. Asai³, A. Hattori³,

K. Mawatari², T. Kitamori^{2,4}, E. Yashima¹ and Y. Baba^{1,5,6}

¹Nagoya University, JAPAN,

²Kanagawa Academy of Science and Technology, JAPAN,

³Nippon Sheet Glass Co. Ltd., JAPAN, ⁴University of Tokyo, JAPAN,

⁵National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and

⁶Japan Science and Technology Agency (JST), JAPAN

W32C**GUIDED SELF-ASSEMBLY OF MICROLATCHES USING RAILED MICROFLUIDICS AND OPTOFLUIDIC MASKLESS LITHOGRAPHY**

B. Kim¹, S.E. Chung¹, H. Park¹, W. Park¹, K. Yu², and S. Kwon¹

¹Seoul National University, KOREA and

²Korea Electrical Engineering and Science Research Institute, KOREA

W33C**MULTIPLE CORE-SHEATH LIQUID TRANSFER USING MATRIX ARRANGEMENT OF 3D SHEATH FLOWS**

H. Sato^{1,2}, Y. Sasamoto¹, T. Sekiguchi¹, T. Homma¹ and S. Shoji¹

¹Waseda University, JAPAN and

²Research Fellow of the Japan Society for the Promotion of Science, JAPAN

Nanotechnology - Nanofluidics

W1D

A NANOFUIDIC-BASED ENZYMATIC REACTION ON A CHIP

T. Tsukahara^{1,2}, E. Tamaki¹, A. Hibara^{1,3} and T. Kitamori^{1,2,3}
¹University of Tokyo, JAPAN, ²Japan Science and Technology Agency (JST), JAPAN and
³Kanagawa Academy of Science and Technology, JAPAN

W2D

ASYMMETRIC IONIC CONDUCTANCE IN NANOCANNELS

L.-J. Cheng and L.J. Guo
 University of Michigan, USA

W3D

DIRECT VISUALIZATION OF DNA IN NANOCANNELS

W.W. Reiser^{1,2}, J.P. Beech¹, N.B. Larsen², H. Flyvbjerg²,
 A. Kristensen² and J.O. Tegenfeldt¹
¹Lund University, SWEDEN and
²Technical University of Denmark, DENMARK

W4D

ELECTRO-PRECONCENTRATION OF BIOMOLECULES IN NANOFUIDICS: CONCENTRATION GRADIENT FOCUSING AT LOW AND HIGH IONIC STRENGTHS

A. Plecis, P. Svarnas and Y. Chen
 LPN-CNRS, FRANCE

W5D

NANOFUIDIC SIEVES FOR DNA SEPARATION USING COLLOIDAL CRYSTAL TECHNOLOGY

L.S.L. Cheung, K.P. Gerhardt, M.J. Wirth and Y. Zohar
 University of Arizona, USA

W6D

NANOPORE DEVICES FOR AC ELECTROKINETIC TRAPPING

M.L. Kovarik and S.C. Jacobson
 Indiana University, USA

W7D

REAL-TIME CONTROL OF NANOPORE WALL POTENTIAL FOR SINGLE-MOLECULE ANALYSES

A.H. Talasaz¹, T.A. Zangle¹, C. Tropini², R. Dick¹, F. Pease¹,
 R.W. Davis¹ and J.G. Santiago¹
¹Stanford University, USA and ²University of British Columbia, CANADA

Nanotechnology - Nanoengineering

W8D

IRON-OXIDE EMBEDDED SOLID LIPID NANO-VESICLES FOR MAGNETICALLY CONTROLLED DRUG DELIVERY

M.-H. Hsu and Y.-C. Su
 National Tsing Hua University, TAIWAN

Nanotechnology - Nanobiotechnology

W9D

FABRICATION OF MULTI-LAYERED CARBON NANOTUBE FILMS FOR LABEL-FREE DETECTION OF DNA HYBRIDIZATION

Y.-K. Baek, D.-H. Jung, S.-Y. Lee, Y.-K. Choi and H.-T. Jung
 Korea Advanced Institute of Science and Technology (KAIST), KOREA

W10D

FABRICATION OF PDMS-BASED NANOCANNELS FOR ENZYMATIC PROCESSING AND DETECTION OF BIOMOLECULES

O. Harnack, I. Hospach and A. Yasuda
 Sony Deutschland GmbH, GERMANY

W11D

HYDRODYNAMIC FORCE CONTROL OF LAMINAR FLOW AS A NANO PROBING TOOL TO EVALUATE TORQUE OF SINGLE MOTOR PROTEIN

S.W. Lee¹, H. Kinoshita¹, T. Yamamoto¹, H. Noji² and T. Fujii¹
¹University of Tokyo, JAPAN and ²Osaka University, JAPAN

W12D

NANO ELISA SYSTEM FOR HIGHLY EFFICIENT AND SENSITIVE MOLECULAR RECOGNITION

K. Mawatari¹, R. Kojima², B. Renberg² and T. Kitamori^{1,2}
¹Kanagawa Academy of Science and Technology, JAPAN and
²University of Tokyo, JAPAN

W13D

PLASMON RESONANCE ENERGY TRANSFER SPECTROSCOPY (PRET)

Y. Choi, T. Kang, G.L. Liu, Y. Long and L.P. Lee
 University of California, Berkeley, USA

W14D

PREPARATION OF CELL-SIZED LIPOSOMES ON SILICON: CONTROLLING LIPOSOME SIZE BY SURFACE MICRO-ENGINEERING

M. Le Berre¹, A. Yamada², Y. Chen¹ and D. Baigl¹
¹Ecole Normale Supérieure, FRANCE and ²Kyoto University, JAPAN

W15D

SIGNAL-GUIDED SEQUENTIAL ASSEMBLY OF NANO-BIO-COMPONENTS IN A COMPLETELY PACKAGED MICROFLUIDIC ENVIRONMENT

X. Luo, A.T. Lewandowski, H. Yi, G.F. Payne, R. Ghodssi,
 W.E. Bentley and G.W. Rubloff
 University of Maryland, USA

W16D

SINGLE DNA/PROTEIN INTERACTION ANALYSIS USING QUANTUM DOT CONJUGATES AND MICROFLUIDIC SYSTEMS

D. Onoshima¹, N. Kaji¹, M. Tokeshi¹ and Y. Baba^{1,2,3}
¹Nagoya University, JAPAN, ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and
³Japan Science and Technology Agency (JST), JAPAN

W17D

STRETCHING DNA IN SINGLE, EXTRA-LONG (1.5 cm) NANOFUIDIC CHANNELS FABRICATED USING A NOVEL NANOIMPRINT MOLD

X. Liang, K.J. Morton, R.H. Austin and S.Y. Chou
 Princeton University, USA

Materials - Innovative Chip Materials

W1E

WATER-VAPOR PERMEABILITY CONTROL OF PDMS BY DISPERSION OF COLLAGEN POWDER

M. Ishida¹, Y. Kazoe², Y. Sato² and N. Miki²
¹Ricoh, JAPAN and ²Keio University, JAPAN

Materials - Surface Modification and Characterization

W2E

AN EFFICIENT SURFACE MODIFICATION FOR SELECTIVE CONTROL OF CELL ATTACHMENT USING PHOTOCHEMICAL REACTION

K. Jang, K. Sato, T. Konno, K. Ishihara and T. Kitamori
 University of Tokyo, JAPAN

W3E

LOCAL SILICA COATING OF POLY (DIMETHYLSILOXANE) MICROCHANNELS

J. Park, M. Shin and J.H. Hahn
 Pohang University of Science and Technology, KOREA

W4E

MICRO POST-STRUCTURED SURFACES FOR BUBBLE DETACHMENT

S.K. Chung¹, U.-C. Yi² and S.K. Cho¹
¹University of Pittsburgh, USA and ²Core MicroSolutions Inc., USA

W5E

SLIDING BEHAVIOR OF WATER DROPLETS SANDWICHED BETWEEN HYDROPHOBIC SURFACES

S. Suzuki^{1,2}, A. Nakajima^{1,2}, M. Sakai², A. Hashimoto²,
 N. Yoshida^{2,3}, Y. Kameshima^{1,2} and K. Okada¹
¹Tokyo Institute of Technology, JAPAN,
²Kanagawa Academy of Science and Technology, JAPAN and
³University of Tokyo, JAPAN

W6E

SURFACE MODIFICATION WITHIN ENCLOSED POLYMER AND GLASS MICROFLUIDIC CHANNELS

S. Prakash, T.M. Long, J.S. Moore and M.A. Shannon
University of Illinois, Urbana-Champaign, USA

W7E

ULTRA HYDROPHOBIC AND NANO POROUS PLANT LIKE SURFACES FABRICATED BY UV REVERSE SIDE EXPOSURE

O. Mertsch, A.D. Walter, I. Rudolph, D. Schöndelmaier and B. Loechel
Anwenderzentrum für Mikrotechnik, GERMANY

Materials - Nanostructured Materials

W8E

FABRICATION OF MICROCHANNELS WITH POROUS SILICON PILLARS FOR ON-CHIP LIQUID CHROMATOGRAPHY AND MICROREACTORS

V. Verdoold¹, W. De Malsche^{1,2}, G. Desmet² and J.G.E. Gardeniers¹
¹*University of Twente, THE NETHERLANDS* and
²*Free University of Brussels, BELGIUM*

Detection Technologies - Optical

W1F

A DIFFRACTION MOIRE BASED MICRO DOUBLE LAYERED CHIP FOR CELLULAR MECHANICS STUDY

X. Zheng and X. Zhang
Boston University, USA

W2F

CAPILLARY-BASED MICROFLUIDIC FLOW INJECTION ANALYSIS BASED ON HIGH SENSITIVE LIQUID CORE WAVEGUIDE ABSORBANCE DETECTION

L. Dong, W.-B. Du and Q. Fang
Zhejiang University, CHINA

W3F

CHARACTERIZATION OF LIGHT COUPLER-INTEGRATED PLASTIC SURFACE PLASMON RESONANCE SENSOR AND SYSTEM IN AQUEOUS AMBIENT

H.-B. Pyo¹, M.Y. Jung¹, S.H. Park¹, Y.-B. Shin² and B.H. Jung²
¹*Electronics and Telecommunications Research Institute (ETRI), KOREA* and
²*Korea Research Institute of Bioscience and Biotechnology (KRIBB), KOREA*

W4F

MICROFLUIDIC ARRAY TO STUDY PROTEASE ACTIVITY

D.A. Raorane¹, F. Chen² and A. Majumdar¹
¹*University of California, Berkeley, USA* and
²*Lawrence Berkeley National Laboratory, USA*

W5F

MULTI-TOTAL INTERNAL REFLECTION IN POLYDIMETHYLSILOXANE MICROFLUIDICS FOR ENHANCED ABSORBANCE DETECTION

J.S. Kee^{1,2}, D.P. Poenar² and L. Yobas¹
¹*Institute of Microelectronics, SINGAPORE* and
²*Nanyang Technological University, SINGAPORE*

W6F

NIR MICRO SPECTROMETRY OF CHEMICALLY AGGRESSIVE FLUIDS

S. Bargiel¹, J. Dziuban¹, R. Walczak¹, P. Knapkiewicz¹, L. Nieradko², A. Grzegorska¹ and B. Latecki³
¹*Wroclaw University of Technology, POLAND*, ²*University of Franche-Comté, FRANCE* and
³*Institute of Electron Technology, POLAND*

W7F

SIMULTANEOUS MEASUREMENTS OF NEAR-WALL VELOCITY AND WALL ZETA-POTENTIAL BY EVANESCENT WAVE ILLUMINATION

S. Miyakawa, Y. Kazoe and Y. Sato
Keio University, JAPAN

W8F

SPR BIOSENSING COUPLED TO A DIGITAL MICROFLUIDIC SURFACE ACOUSTIC WAVE SYSTEM

E. Galopin¹, M. Beaugeois², F. Lapiere¹, M. Bouzaoui², J.C. Camart¹, V. Thomy¹ and B. Pinchemel²
¹*IEMN, FRANCE* and ²*Interdisciplinary Research Institute (IRI), FRANCE*

Detection Technologies - Electrochemical

W9F

A BIOSENSOR BASED ON INTERDIGITATED ELECTRODES AND MICROSCOPIC MANIPULATION OF MAGNETIC PARTICLES

Z. Peng¹, P. Hesketh¹, W.R. Heinemann² and K. Kellar³
¹*Georgia Institute of Technology, USA*, ²*University of Cincinnati, USA* and
³*Center for Disease Control and Prevention, USA*

W10F

ADAPTIVE NANOWIRES FOR SWITCHABLE MICROFLUIDIC DEVICES

E. Piccin¹, R. Laocharoensuk², J. Burdick², E. Carrilho¹ and J. Wang²
¹*University of São Paulo, BRAZIL* and ²*Arizona State University, USA*

W11F

RAPID, SEQUENCE SPECIFIC, REUSABLE ELECTRONIC DNA SENSOR IN MICROFLUIDIC DEVICES

E. Pavlovic¹, R.Y. Lai¹, B. Ferguson¹, J.S. Swensen¹, T.-T. Wu², R. Sun², A.J. Heeger¹, K.W. Plaxco¹ and H.T. Soh¹
¹*University of California, Santa Barbara, USA* and
²*University of California, Los Angeles, USA*

Detection Technologies - Direct Electrical Detection and Impedance

W12F

FABRICATION OF SENSITIVE ELECTRONIC SENSOR FOR LABEL-FREE DETECTION OF PROTEIN-PROTEIN INTERACTIONS

A. Cohen, A. Doron, M. Horesh, D. Ullien, M. Beraha, U. Virobnik and I. Levy
Intel Electronics, ISRAEL

W13F

IMPEDANCE BASED FLOW-THROUGH BIOSENSOR FOR PARTICLE/CELL DETECTION

K.S.L. Narasimhan, A.R.A. Rahman and S. Bhansali
University of South Florida, USA

W14F

MICROWAVE COMPOSITIONAL ANALYSIS OF SOLVENT MATRICES IN MICROCAPILLARY MANIFOLD SYSTEMS

R. Göritz, A. Masood, O. Castell, D.A. Barrow, C. Allender and A. Porch
Cardiff University, UK

W15F

TECHNIQUE FOR MEASURING THE DIELECTRIC CONSTANT OF LIQUIDS AND GASES WITHOUT THE USE OF CALIBRATION STANDARDS

H. Ma, J.H. Lang and A.H. Slocum
Massachusetts Institute of Technology, USA

W16F

TOWARD BACTERIA DETECTION ON CHIP: A BIOSENSOR BASED ON MAGNETOTACTIC BACTERIA AND IMPEDANCE SPECTROSCOPY

Z. Lu, R. Denomme, S. Bah and S. Martel
Ecole Polytechnique de Montreal, CANADA

Detection Technologies

W17F

LOW POWER IGNITION OF MICROPLASMA FOR VOLATILE ORGANIC COMPOUNDS DETECTION

D.C. Shin, K.W. Jo, M.G. Kim, S. Yang and J.H. Lee
Gwangju Institute of Science and Technology (GIST), KOREA

W18F

MICROFLUIDIC THERMAL BIOSENSOR FOR BIOCHEMICAL REACTION

B.S. Kwak, B.S. Kim, J.S. Park, H.H. Cho and H.I. Jung
Yonsei University, KOREA

W19F

SINGLE AND DOUBLE-SIDED SENSING WITH PIEZORESISTIVE MICROcantilevers

A. Choudhury¹, P.J. Hesketh¹, Z. Hu^{1,2} and T.G. Thundat²
¹*Georgia Institute of Technology, USA* and ²*Oak Ridge National Laboratory, USA*

MEMS & NEMS Technologies - Micro and Nano-Machining

W1G

DEVELOPMENT OF THE MODIFIED LIQUID-CRYSTAL-DISPLAY PROJECTOR DEVICE FOR FABRICATION OF SURFACE MICROPATTERNS AND MICROFLUIDIC CHANNELS

J. Kobayashi, K. Itoga, Y. Tsuda, M. Yamato, A. Kikuchi and T. Okano
Tokyo Women's Medical University, JAPAN

W2G

IN-BLOCK BONDING-LESS 3D MICROCHANNEL NETWORK FABRICATION IN PDMS

M. Juchniewicz, O. Adamowicz, M. Chudy, A. Dybko and Z. Brzózka
Warsaw University of Technology, POLAND

W3G

MECHANICAL MEASUREMENT OF DNA MOLECULE COMBINED WITH THE DNA TWEZEERS AND A WEDGE TYPE CANTILEVER

M. Hosogi¹, G. Hashiguchi¹, K. Ayano¹ and H. Fujita²
¹Kagawa University, JAPAN and ²University of Tokyo, JAPAN

W4G

PDMS MICROLENS ARRAY FABRICATION USING WATER DROPLETS

S.-H. Chao, R. Carlson and D. Meldrum
University of Washington, USA

W5G

SU-8 BASED MICRONEEDLE FOR DRUG DELIVERY IN NANOMEDICINE APPLICATIONS WITH INTEGRATED ELECTRODES

L.J. Fernández, M. Tijero, R. Vilares, J. Berganzo, K. Mayora and F.J. Blanco
Ikerlan S. Coop., SPAIN

MEMS & NEMS Technologies - Microfluidic Components

W6G

A MICROFABRICATED NANOPIPETTOR BASED ON ELECTROOSMOSIS

S. Liu, C.K. Byun and Q. Pu
Texas Tech University, USA

W7G

A MULTILAYER SU-8 PROCESS FOR HIGH-DENSITY, STACKED MICROFLUIDIC SYSTEMS

C.A. Mousoulis and D.P. Papageorgiou
Northeastern University, USA

W8G

AN OPTICALLY DRIVEN MICROPUMP USING A SPINNING DISK ROTOR

S. Maruo^{1,2} and H. Inoue¹
¹Yokohama National University, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN

W9G

ELECTRICALLY-ACTUATED PDMS MICROVALVES AND PUMPS FOR VLSI MICROFLUIDICS

M.-P. Chang, T. Bansal and M.M. Maharbiz
University of Michigan, USA

W10G

HIGH-FORCE LIQUID-GAP ELECTROSTATIC HYDRAULIC MICRO ACTUATORS

H. Kim, S. Lee and K. Najafi
University of Michigan, USA

W11G

LARGE PANEL HOT ROLLER EMBOSsing FOR POLYMERIC MICROFLUIDIC DEVICES

S.H. Ng¹, Z.F. Wang¹ and N.F. de Rooij²
¹Singapore Institute of Manufacturing Technology, SINGAPORE and ²University of Neuchâtel, SWITZERLAND

W12G

LOW POWER AND LOW COST TEMPERATURE AND FLUID CONTROL IN PDMS MICROFLUIDIC DEVICES

R. Carlson and D. Meldrum
University of Washington, USA

W13G

MICROFABRICATED IMPINGING JET MIXER FOR NANO PIGMENT PARTICLES

T. Ezaki, S. Yasuda, T. Teshima, M. Majima and T. Yagi
Canon Inc., JAPAN

W14G

SERIAL DILUTION CHIPS FOR ARBITRARY CONCENTRATION PROFILE AND APPLICATION TO CYTOTOXICITY TEST

C. Kim^{1,2}, K.S. Lee¹, K.S. Shin¹, J.H. Kim¹, K.J. Lee², J.Y. Kang¹, S. Kim³ and T.S. Kim¹
¹Korea Institute of Science and Technology (KIST), KOREA, ²Korea University, KOREA and ³Kyungwon University, KOREA

W15G

TRANSPORTATION PERFORMANCES OF MICROMACHINED LINEAR BROWNIAN MOTORS

E. Altintas¹, E. Sarajlic¹, K.F. Böhringer² and H. Fujita¹
¹University of Tokyo, JAPAN and ²University of Washington, USA

MEMS & NEMS Technologies - Hybrid Devices, Packaging, Components Interfacing

W16G

CMOS OPTICAL POLARIZATION ANALYZER CHIP FOR MICROCHAMBER AND MICROFLUIDIC SYSTEM

T. Tokuda, S. Sato, K. Kagawa, M. Nunoshita and J. Ohta
Nara Institute of Science and Technology, JAPAN

W17G

IMPROVED WAFER-SCALE FABRICATION OF ALIGNED PDMS-GLASS MICROCHIPS WITH INTEGRATED ELECTRODES

J. Li, S. Le Gac and A. van den Berg
University of Twente, THE NETHERLANDS

MEMS & NEMS Technologies

W18G

DEMONSTRATION OF A TELEMETRIC SYSTEM USING GASTRIC-FLUID-UTILIZING MICRO BATTERY

H. Jimbo and N. Miki
Keio University, JAPAN

Gaston Berger Auditorium, Level S2

Session 3A3
Cell Arrays

SESSION CHAIR: L.E. Locascio, National Institute of Standards and Technology (NIST)

Louis Armand Hall, Level S3

Session 3B3
Detection 3

SESSION CHAIR: T.S. Kim, Korean Institute of Science and Technology

16:30 - 16:50

STUDY OF CELL-CELL COMMUNICATION USING OPTICALLY ASSEMBLED 3D LIVING CELL MICROARRAYS
W. Timp¹, U. Mirsaidov², K.A. Timp², M. Mir², G. Timp² and P. Matsudaira¹
¹Massachusetts Institute of Technology, USA and
²University of Illinois at Urbana-Champaign, USA

FLOATING ELECTRODE OPTOELECTRONIC TWEEZERS (FEOET): A NOVEL MECHANISM ENABLING OPTICAL MANIPULATION OF OIL IMMERSSED AQUEOUS DROPLET
S. Park, C. Pan, T.-H. Wu, S. Kalim, M. Teitell and E.P.Y. Chiou
University of California, Los Angeles, USA

16:50 - 17:10

A LOW-DAMAGE CELL TRAPPING ARRAY FABRICATED BY SINGLE-MASK MULTIDIRECTIONAL PHOTOLITHOGRAPHY WITH EQUIVALENT CIRCUIT ANALYSIS
T. Suzuki^{1,2}, H. Yamamoto¹, M. Ohoka³, I. Kanno¹, M. Washizu^{2,4} and H. Kotera^{1,2}
¹Kyoto University, JAPAN, ²Japan Science and Technology Agency (JST), JAPAN, ³Advanced Software Technology and Mechatronics Research Institute in Kyoto, JAPAN and
⁴University of Tokyo, JAPAN

A RAILED MICROFLUIDIC CHANNEL FOR MANIPULATION OF FINNED MICROTRAINS
S.E. Chung¹, H. Park¹, W. Park¹, B. Kim¹, K. Yu² and S. Kwon¹
¹Seoul National University, KOREA and
²Korea Electrical Engineering and Science Research Institute, KOREA

17:10 - 17:30

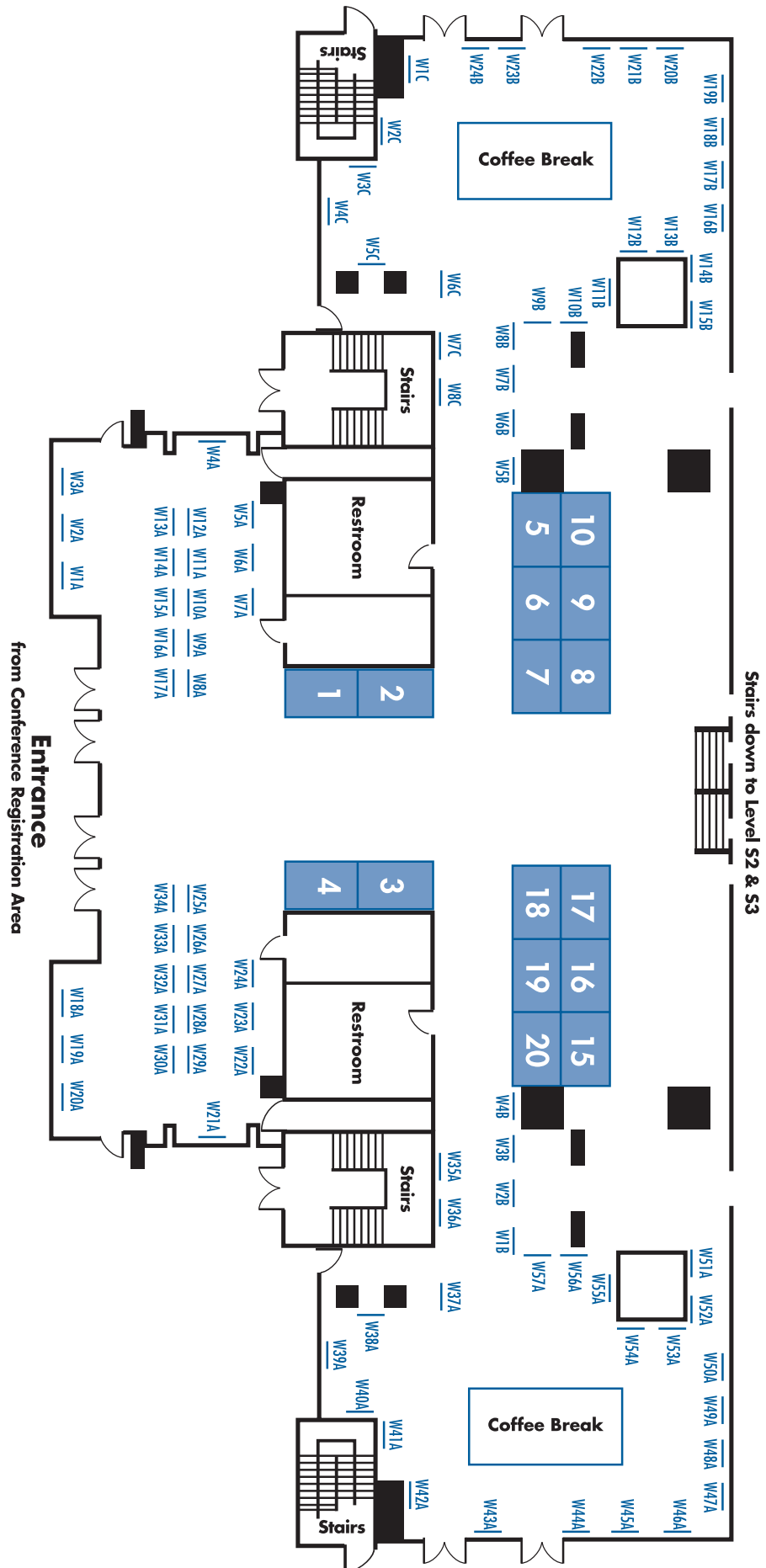
ASYMMETRIC CELL DIVISION INDUCED BY MICROENVIRONMENT GEOMETRY
M. Thery^{1,2}, A. Jimenez-Dalmaroni³, V. Racine¹, M. Bornens¹ and F. Julicher³
¹Institut Curie, FRANCE, ²Commissariat à l'Energie Atomique (CEA), FRANCE and
³Max Plank Institute, GERMANY

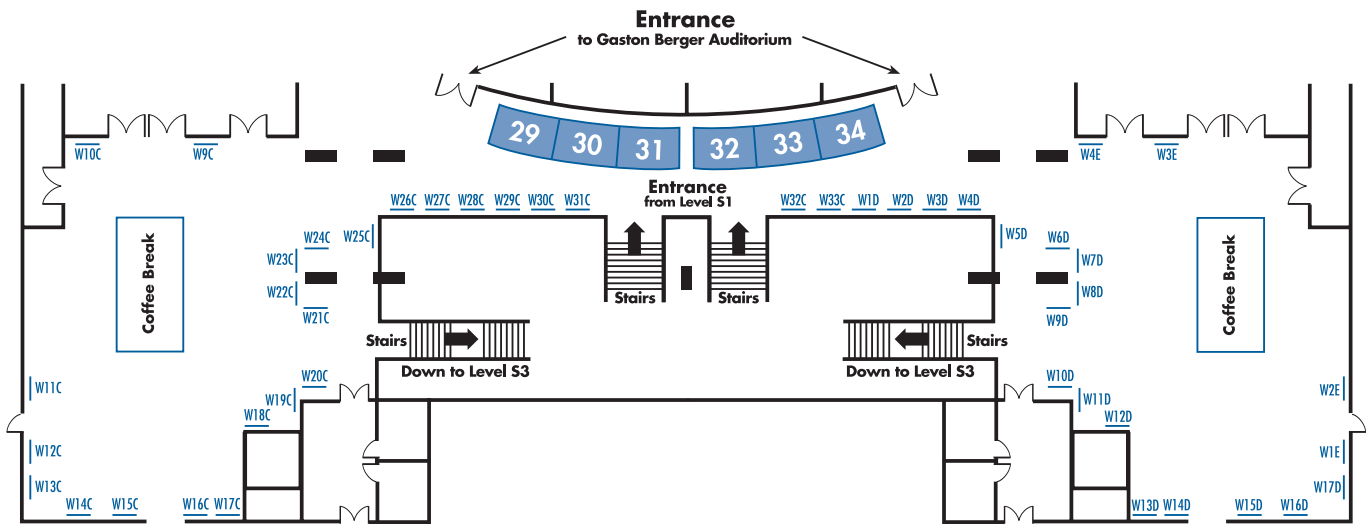
METAMATERIALS FOR HYDRODYNAMICS: REFRACTION, FOCUSING AND BEAM STEERING FOR PARTICLES AND CELLS
K.J. Morton¹, O.K. Tsui², J.C. Sturm¹, R.H. Austin¹ and S.Y. Chou¹
¹Princeton University, USA and ²Boston University, USA

17:30 p.m. | Adjourn for the day

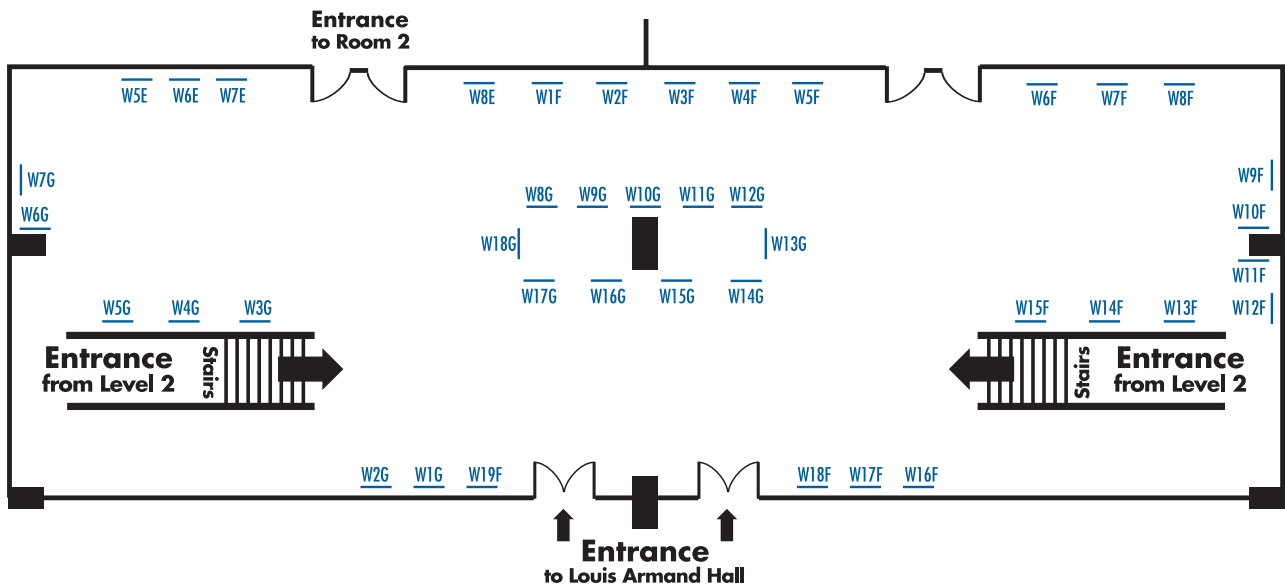


LEVEL S1





LEVEL S2



LEVEL S3

Thursday, October 11, 2007

8:30 - 9:10

Poster Award Ceremony

CHAIR: T. Kitamori, *University of Tokyo*

Monday, Tuesday and Wednesday Poster Awards sponsored by Society for Chemistry and Micro-Nano Systems (CHEMINAS/JAPAN)

Widmer Poster Award sponsored by Royal Society of Chemistry

Gaston Berger Auditorium, Level S2

Session 4A1

Clinical Diagnostic 2

SESSION CHAIR: T. Kitamori, *University of Tokyo*

Louis Armand Hall, Level S3

Session 4B1

Surface Modification and Characterization

SESSION CHAIR: S. Decroix, *ESPCI*

9:15 - 9:35

A FULLY INTEGRATED MICROFLUIDIC GENETIC ANALYSIS DEVICE FOR THE DETECTION OF BLOOD CANCERS

L.A. Legendre¹, D.C. Leslie¹, C.J. Morris¹, A. Barron², R. McClure³ and J.P. Landers¹
¹University of Virginia, USA, ²Northwestern University, USA and ³Mayo Clinic, USA

PHOTO-PATTERNED MULTI-ENZYMATIC MICROREACTORS

T.B. Stachowiak^{1,2}, T.C. Logan¹, D.S. Clark¹, F. Svec² and J.M.J Fréchet^{1,2}
¹University of California, Berkeley, USA and
²Lawrence Berkeley National Laboratory, USA

9:35 - 9:55

HYPERSPECTRAL AND SPATIAL MULTIPLEXING OF ULTRASENSITIVE IMMUNOASSAYS FOR DETECTING TOXIN EXPOSURE

A.V. Hatch, R.J. Meagher, D.S. Reichmuth, A.E. Herr, M.B. Sinclair, D.M. Haaland and A.K. Singh
Sandia National Laboratories, USA

SINGLE PARTICLE TRAPPING AND MELTING FOR FUNCTIONAL AND HIGH-RESOLUTION MODIFICATION OF PDMS MICROCHANNELS

M. Yamamoto¹, M. Yamada², S. Fukushima³, M. Yasuda¹ and M. Seki^{1,3}
¹Osaka Prefecture University, JAPAN, ²Tokyo Women's Medical University, JAPAN and
³Chiba University, JAPAN

9:55 - 10:15

NANOFLUIDIC PRECONCENTRATION DEVICE FOR SENSITIVE AND WIDE DYNAMIC RANGE IMMUNO-SENSING

Y.-C. Wang, V.H. Liu and J. Han
Massachusetts Institute of Technology, USA

EXTREME WATER-REPELLANT SURFACE ENABLED BY NANO-MICRO INTEGRATED TEXTURE

Y. Kwon¹, J. Choi¹, N. Patankar² and J. Lee¹
¹Seoul National University, KOREA and ²Northwestern University, USA

10:15 a.m. - 10:45 a.m.

Break

Gaston Berger Auditorium, Level S2

Session 4A2

Dielectrophoretic Cell Handling and Sorting

SESSION CHAIR: S. Shoji, *Waseda University*

Louis Armand Hall, Level S3

Session 4B2

Acoustic Devices

SESSION CHAIR: D. Collard, *University of Tokyo*

10:45 - 11:05

IN VITRO FERTILIZATION AND DEVELOPMENTS OF HEALTHY OOCYTES BY A DIELECTROPHORETIC SEPARATION CHIP

W. Choi¹, J.-S. Kim², D.-H. Lee¹, D.-B. Koo², K.-K. Lee² and J.-K. Park¹
¹Korea Advanced Institute of Science and Technology (KAIST), KOREA and
²Korea Research Institute of Bioscience and Biotechnology (KRIBB), KOREA

GENTLE RETENTION OF CELLS IN A FOCUSING ULTRASONIC RESONATOR INTEGRATED IN A CHIP-BASED PERFUSION SYSTEM FOR CELL CHARACTERIZATION AND ON-CHIP CULTIVATION

J. Hultström Svennebring, O. Manneberg and M. Wiklund
Royal Institute of Technology, SWEDEN

11:05 - 11:25

IMPEDANCE SPECTROSCOPY FOR LABEL-FREE DIFFERENTIAL LEUKOCYTE COUNTS

D. Holmes, J. Cakebread, J. Holloway, D. Davis and H. Morgan
University of Southampton, UK

ON CHIP AFFINITY SELECTION OF ANTIBODIES USING ULTRASONIC STANDING WAVES

P. Augustsson, J. Persson, M. Ohlin and T. Laurell
Lund University, SWEDEN

11:25 - 11:45

SIMULTANEOUS SORTING OF MULTIPLE BACTERIAL STRAINS USING DIELECTROPHORESIS

U. Kim, J. Qian, P.H. Bessette, P.S. Daugherty and H.T. Soh
University of California, Santa Barbara, USA

FLUORESCENT ACTIVATED CELL SORTER USING ULTRASOUND STANDING WAVES IN MICRO CHANNELS

C. Grenvall, M. Carlsson, P. Augustsson, F. Petersson and T. Laurell
Lund University, SWEDEN

11:45 a.m.

Conference adjourns

RSC Publishing at μ TAS 2007

Come and visit us at Booth #4

Lab on a Chip, the number 1 journal for the UTAS community at the micro- and nano- scale;

- hosts Chips and Tips
- sponsors the Widmer Prize
- supports the Pioneers in Miniaturisation Prize with Corning Inc
- supports the community through sponsorship of students and support given to a variety of relevant conferences
- Impact Factor = 5.821

Lab on a Chip welcomes your fundamental studies at the micro- and nano- scale.



02080709



The Analyst, the journal of choice for publishing urgent new work of the highest quality in analytical, bioanalytical and detection science;

- highest immediacy index of any general analytical chemistry journal (0.925)
- Impact Factor = 3.198

For more information and a friendly chat come and speak to us at Booth #4



μ TAS 2007

Eleventh International Conference on Miniaturized
Systems for Chemistry and Life Sciences