

μTAS 2007 PARIS



# μTAS 2007

# ADVANCE

# 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

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





# Table of Contents

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Conference at a Glance .....	1
Invitation to Attend .....	3
Program Information .....	4
Conference Officials .....	4
General Information .....	5
Registration Information .....	6
Social Events .....	7
Travel Information .....	8
Hotel Accomodations .....	8
Contributors and Exhibitors .....	9
 <b>Technical Program:</b>	
Monday .....	10
Monday - Posters .....	11
Tuesday .....	20
Tuesday - Posters .....	21
Wednesday .....	30
Wednesday - Posters .....	31
Thursday .....	40

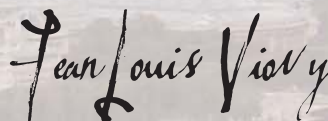


# Invitation to Attend

**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 scientist 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 micro-fabrication, microfluidics, and biomedicine; molecular motors and bearings; and single-molecule reactions. The contributed poster 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 hope to see you in Paris in October.



Jean-Louis Viovy

Chairman, μTAS 2007

# Technical Program Information

The technical program consists of six plenary sessions, two parallel oral sessions of contributed papers, and three poster sessions. The plenary sessions will be held on each day. There will be two parallel oral sessions each day. Three poster sessions will be held in the Foyer, from 14:15 to 17:00 on Monday and Tuesday and from 13:30 - 16:15 on Wednesday. Authors will be available for questions during these times. All poster papers are listed in this program on their day that they are on display.

## Plenary Speakers:

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

## 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*  
**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*  
**Klavs 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*  
**Klavs 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*



# General Information

## Conference Website

[www.microtas2007.org](http://www.microtas2007.org)

## Conference Location

All sessions will be held at the  
*Cité des Sciences et de l'Industrie.*

### Cité des Sciences et de l'Industrie

30, avenue Corentin-Cariou  
F-75930 Paris cedex 19  
FRANCE

## Passport & Visa

All foreign visitors desiring to enter France must have a valid passport. Participants from countries requiring visas should apply to the France Consular offices or diplomatic mission in their countries. For details, please consult your travel agent or the nearest France consulate. Conference Management can send you a letter of invitation to the Conference. Send a request by email to mail to: [info@microtas2007.org](mailto:info@microtas2007.org). No funds are available to assist with travel and registration fees cannot be waived.

## Climate

The weather in Paris in October is pleasant with the following temperatures:

Normal High: 15°C/59°F

Normal Low: 7°C/44°F

## Official Language

The official language of the Conference is English and will be used for all presentations and printed materials.

## Insurance

The organizer cannot accept liability for accidents, injuries and losses which might occur. Participants are encouraged to obtain travel insurance (medical, personal accident, and luggage) in their home country prior to departure.

## Currency Exchange

The unit of currency in Paris is the Euro (EUR) and it is acceptable at regular stores and restaurants. Euro notes and coins can therefore be used in any country belonging to the euro zone: France, Germany, Belgium, the Netherlands, Luxembourg, Austria, Finland, Ireland, Italy, Spain, Portugal and Greece. The exchange rate fluctuates daily. For current exchange rates, please visit [www.exchangerate.com](http://www.exchangerate.com).

## Traveller's Checks & Credit Cards

Credit cards, including MasterCard®, Diners Club®, Visa® and American Express®, and traveller's checks are accepted at most hotels, restaurants, department stores, and souvenir shops.

## Electricity

Electric current in France is 220 volts, 50 Hz. An adaptor must be used with appliances from the United States or elsewhere that operates on a different voltage.

## Conference Attire

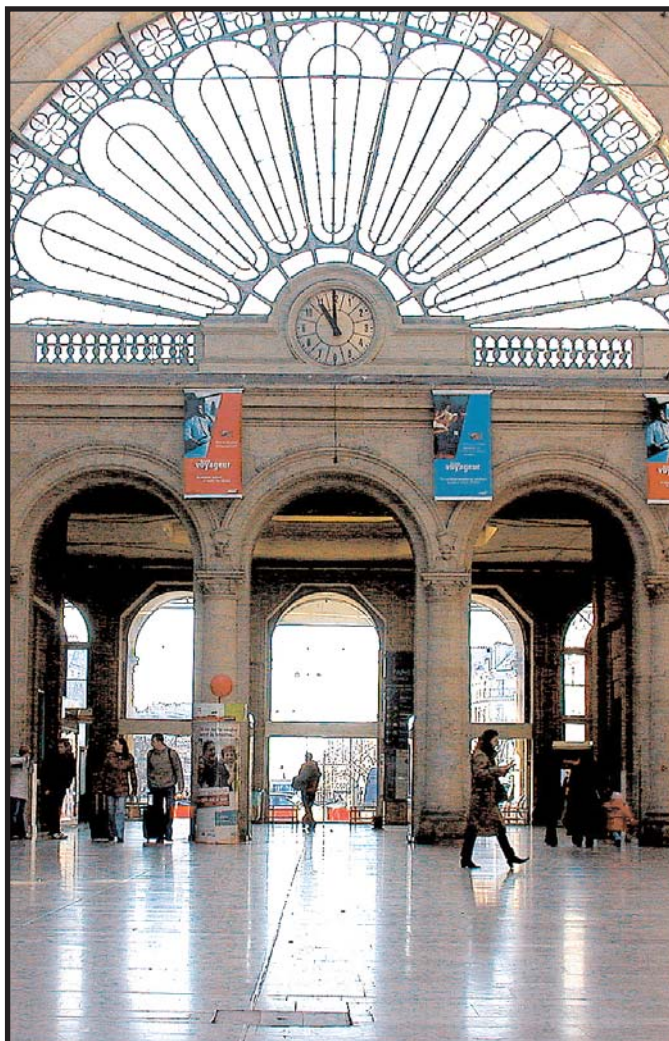
Attire during the duration of the Conference is business casual.

## Cellular Phones, Pagers & Watch Alarms

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

## Cameras and Video Tape Recording

Cameras and video tape recorders are strictly prohibited in the sessions, poster presentations and the exhibit area. Film or video will be confiscated.



# Registration Information

The Conference begins with registration at the Le Centre des Congrès de la Villette de la Cité de des Sciences et de l'Industrie on Sunday, October 7th from 16:00 – 19:00. An informal Wine and Cheese Welcome Reception will be held in conjunction with registration from 17:00 - 19:00. The official technical program will begin Monday morning at 8:15 and adjourns on Thursday, October 11th, at approximately 12:00.

## Registration Fees

	<b>Early Bird</b> On or Before 30 June 2007	<b>Advanced</b> From 1 July 2007 to 24 August 2007	<b>Standard</b> From 25 August 2007 to 24 September 2007	<b>On-Site</b> After 24 September 2007
<b>Participant</b>	€590.00	€700.00	€800.00	€875.00
<b>Student</b>	€495.00	€495.00	€550.00	€550.00

## Registration

Registration is an electronic process.

To register for the Conference please visit the website at [www.microtas2007.org](http://www.microtas2007.org). All attendees are encouraged to register in advance to avoid delays in registering at the Conference. If you are unable to register online, a registration form is provided for you at the back of this brochure.

Registration payment, in Euros only, is due upon submission of registration. The registration fee includes conference proceedings, welcome reception, breaks, and a 20% non-refundable cancellation fee. A €50.00 fee will be charged for all substitutions. A €5 fee will be assessed for lost or duplicate nametags. Pre-registration will close on 24 September 2007. After 24 September, all prospective attendees will need to register on-site at the On-Site rate.

## Cancellation Policy

A 20% non-refundable cancellation fee will be assessed to all cancellations on or before 24 September 2007. No refunds will be made after that date. Cancellation notice and refunds must be requested in writing.

## Technical Digest and CD-ROM

An extended abstract of each paper presented at the Conference will be published in a Technical Digest and on a CD-ROM, which will be distributed to participants at the Conference. One copy of the Technical Digest and the CD-ROM is included in the registration fee. Additional copies may be ordered at the time of registration, or purchased at the Conference. Purchase price of the Technical Digest will increase after the Conference. Be sure to order your additional copies in advance.

## Conference Management

All questions and requests should be directed to:

**Preferred Meeting Management, Inc.**

307 Laurel Street

San Diego, CA 92101-1630

Phone: 1-619-232-9499

Fax: 1-619-232-0799

E-mail: [info@microtas2007.org](mailto:info@microtas2007.org)





# 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 the Le Centre des Congrès de la Villette de la Cité de des Sciences et de l'Industrie.

## Conference Banquet

No Conference is complete without a banquet.  
Join us for a wonderful evening 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.

Please join us for a magnificent evening.  
Ticket .....€75.00





# Travel Information

## Hotel Accomodations

Paris hotels are forecast to **SELL OUT**. **DO NOT DELAY** in making your lodging reservation. The World Rugby Tournament will be in Paris during the Conference so sleeping rooms will be at a premium and will be going **FAST**. We strongly encourage you to reserve your sleeping room immediately. Please note that there is not a designated Conference hotel with a room block. You are responsible for securing your own sleeping room. For your convenience, we have put together a list of hotels and websites to assist you with selecting your hotel. Please visit the website at

<http://www.microtas2007.org/attendees/hotel.html>.

## Transportation

### Paris Charles de Gaulle Airport

Paris Charles de Gaulle Airport (CDG) is the largest airport serving Paris and the second busiest passenger airport in Europe after London Heathrow. Located 27 kilometers (17 miles) northeast of Paris, Charles de Gaulle Airport offers numerous transport links to the French capital city by road and rail. Some of the Passenger Airlines servicing Charles de Gaulle Airport can be found on the website at <http://www.microtas2007.org/attendees/transportation.html>. If you are unable to locate a specific airline, please contact your travel agent.

### Airport Transportation

Paris CDG Airport was one of the first airports in Europe to have an integrated train system serving it: the RER rapid TGV train service reaches central Paris in approximately 45 minutes, Disney World in ten minutes and Lille and Brussels in an hour. Regular RATP buses, taxis and limousines also operate from Paris CDG Airport, and road access from Paris is on the A1 via Porte de la Chapelle.

### Public Transportation

The Metro is the quick and easy way to travel around the city, as well as the best value. The Paris metro has around 300 stations, their entrances marked by a big yellow "M", and 16 lines, numbered from 1 to 14, 3 bis and 7 bis. Each line has a color, which you'll find on signs in the stations and on all the RATP maps. Connections between lines make your journey easy to plan. For an idea of your journey time, allow an average of 2 minutes per station and add 5 minutes for each connection.

Each line has two directions, indicated by the terminus station at each end (for example: Balard/Créteil). The different directions and connections are clearly displayed on blue and white signs on the platforms and in the tunnels. To be sure you're heading in the right direction, check that your destination is on the list of stations just before you go down onto the platform. Inside the trains, you'll find network maps and the detail of the line you're on along with all available connections to other parts of the network.

Maps of the public transport network, in all shapes and sizes, are available free of charge at the ticket offices, as well as at the all the information centres of the Paris Convention and Visitors Bureau. Large-scale maps are also displayed on the platforms and at the entrance to each station. You may download a map from the website at <http://www.microtas2007.org/attendees/transportation.html>

The metro operates every day including public holidays from 5.30am to 1am the following morning. Times of the first and last trains vary depending on the point along the line that you are departing from. Illuminated signs above the platform indicate the length of time until the next train arrives. Please note, trains are less frequent on Sundays and public holidays.

Fast and fully automated, the newest line 14, also known as Météor, offers a regular service throughout, Sundays and public holidays included. On this line, a verbal announcement indicates the name of each stop.

Single metro tickets cost €1.40 and a "carnet" of 10 tickets costs €10.50. Your lilac-colored ticket remains valid for 2 hours until you leave the metro by going through the exit barriers. If you then take a bus, you need to use another ticket. If you happen to have kept some old green or yellow tickets from an earlier trip, you can still use them.

### Taxi Service

A taxi ride into Paris from CDG can take between 40 minutes to 2 hours, costing between €34 (minimum) and €60 or more depending on the arrondissement (or neighborhood). The CDG airport's web site ([www.adp.fr](http://www.adp.fr)) estimates around €50 during daytime hours, plus a surcharge for evenings after 7 p.m., Sundays and/or holidays.

In addition to the metered fare, there is a supplement of about €1 for each piece of luggage, as well as €2.70 for a fourth passenger. Families traveling with infants should keep in mind that taxis will not have a child seat available.

When you phone for a taxi to return from Paris back to the airport, the meter starts running from the point where the taxi was dispatched - which could be anywhere in the city. Consequently, the fare showing on the meter may already be €7-10 by the time you board the vehicle at your hotel.

It is your responsibility to have the correct amount of money (in Euros) for the fare. The use of credit cards in Parisian taxis is rare, and personal checks are usually not accepted. It is also customary to tip the driver about 10% of the fare, if service was good and the cab is clean.

# Contributors & Exhibitors

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

## Sponsors



## Silver Support



## Bronze Support



## Media Support



## Exhibitors





# 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	<b>Plenary I</b>

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

### Session 1A1 Cell Handling and Screening 1

### Session 1B1 Detection 1 (Optical)

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. Song<sup>1</sup>, L.A.G. Lin<sup>1</sup>, A.Q. Liu<sup>1</sup>, C.S. Lim<sup>1</sup> and P.H. Yap<sup>2</sup>  
<sup>1</sup>Nanyang Technological University, SINGAPORE and  
<sup>2</sup>DSO 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. Lai<sup>1</sup>, S.-K. Hsiung<sup>1</sup>, C.-M. Chung<sup>1</sup>, Y.-Q. Chen<sup>2</sup>, A. Chiou<sup>2</sup> and G.-B. Lee<sup>1</sup>  
<sup>1</sup>National Cheng Kung University, TAIWAN and  
<sup>2</sup>National 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

### Session 1A2 Immunodetection

### Session 1B2 Microfluidic Components

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. Kawai<sup>1</sup>, M. Kanai<sup>1,2</sup> and S. Shoji<sup>1</sup>  
<sup>1</sup>Waseda University, JAPAN and <sup>2</sup>Shimadzu 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**

CELLULAR-SCALES HYDRODYNAMICS  
Howard A. Stone  
Harvard University, USA

14:15 - 16:30

**Poster Session 1**

**Microsystems for Life Sciences - Genomics & Proteomics**

**M1A**

ENHANCED SPATIAL RESOLUTION OF MALDI IMAGES USING SILICON MASKS

N. Verplanck<sup>1</sup>, M. Wisztorski<sup>2</sup>, J. Stauber<sup>2</sup>, J.C. Camart<sup>1</sup>, M. Salzet<sup>2</sup>, I. Fournier<sup>2</sup> and V. Thomy<sup>1</sup>  
<sup>1</sup>IEMN, FRANCE and <sup>2</sup>LNA, 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. Kralj<sup>1</sup>, A. Player<sup>2</sup>, D. Peterson<sup>2</sup>, S.P. Forry<sup>1</sup>, M.S. Munson<sup>1</sup>, E. Kawasaki<sup>2</sup> and L.E. Locascio<sup>1</sup>  
<sup>1</sup>National Institute of Standards and Technology, USA and <sup>2</sup>National Cancer Institute/National Institutes of Health (NIST), USA

**M4A**

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

A. Le Nel<sup>1,2</sup>, J. Krenkova<sup>3</sup>, K. Kleparnik<sup>3</sup>, C. Smadja<sup>2</sup>, M. Taverna<sup>2</sup>, J.-L. Viovy<sup>1</sup> and F. Foret<sup>3</sup>  
<sup>1</sup>Curie Institute, FRANCE, <sup>2</sup>Université Paris XI, FRANCE and <sup>3</sup>Institute of Analytical Chemistry-Brno, CZECH REPUBLIC

**M5A**

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

A. Tachihara<sup>1</sup>, K. Sato<sup>1</sup>, K. Sato<sup>1</sup>, Y. Tanaka<sup>2</sup>, J. Jarvius<sup>2</sup>, M. Nilsson<sup>2</sup> and T. Kitamori<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Uppsala University, SWEDEN

**M6A**

TOWARD ON-CHIP ISOTHERMAL POLYMERASE CHAIN REACTION

A. Persat<sup>1</sup>, T. Morita<sup>2</sup> and J.G. Santiago<sup>1</sup>  
<sup>1</sup>Stanford University, USA and <sup>2</sup>Ebara 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

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**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  
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**M9A**

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

E. Maeda<sup>1</sup>, M. Kataoka<sup>2</sup>, Y. Shinohara<sup>1,2</sup>, N. Kaji<sup>3</sup>, M. Tokeshi<sup>3</sup> and Y. Baba<sup>2,3,4</sup>  
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**M10A**

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

I. Grabowska<sup>1</sup>, I. Wyzkiewicz<sup>2</sup>, M. Chudy<sup>1</sup>, A. Dybko<sup>1</sup> and Z. Brzózka<sup>1</sup>  
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**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. Martineau<sup>1</sup>, D.K. Boudreau<sup>1</sup>, L. Monfort<sup>1</sup>, F. Bégin<sup>1</sup>, M.-J. Fiola<sup>1</sup>, G. Stewart<sup>1</sup>, H. Morin<sup>1</sup>, A. Huletsky<sup>1</sup>, R. Peytavi<sup>1</sup>, M. Boissinot<sup>1</sup>, F.J. Picard<sup>1</sup>, J.V. Zoval<sup>2</sup>, H. Kido<sup>2</sup>, G. Jia<sup>2</sup>, M.J. Madou<sup>2</sup> and M.G. Bergeron<sup>1</sup>  
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**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. Lee<sup>1</sup>, K.S. Hwang<sup>2</sup>, H.-J. Yoon<sup>1</sup>, Y.-S. Lee<sup>1</sup> and T.S. Kim<sup>2</sup>  
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**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. Sodunke<sup>1</sup>, K.W. McBride<sup>2</sup>, M.J. Reginato<sup>1</sup> and H. Noh<sup>1</sup>  
<sup>1</sup>Drexel University, USA and <sup>2</sup>Texas 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<sup>1,2</sup>, M. Zimmermann<sup>1,2</sup>, P. Hunziker<sup>1</sup> and E. Delamarche<sup>2</sup>  
<sup>1</sup>University Hospital Basel, SWITZERLAND and  
<sup>2</sup>IBM 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 ENZYMATIC AMPLIFICATION IN DROPLETS - TOWARDS HIGH THROUGHPUT DETECTION OF LOW COPY NUMBER CELL SURFACE BIOMARKERS**

H.N. Joensson<sup>1</sup>, E.R. Brouzes<sup>2</sup>, M. Samuels<sup>3</sup>, M. Uhlén<sup>1</sup>, H. Andersson Svahn<sup>1</sup> and D.R. Link<sup>3</sup>  
<sup>1</sup>Royal Institute of Technology, SWEDEN, <sup>2</sup>Harvard Medical School, USA and  
<sup>3</sup>RainDance Technologies, USA

**M26A**

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

M. Murata<sup>1</sup>, N. Kaji<sup>1</sup>, M. Tokeshi<sup>1</sup> and Y. Baba<sup>1,2,3</sup>  
<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and <sup>3</sup>Japan 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. Nawarathna<sup>1</sup>, P. Kumaresan<sup>2</sup>, Y. Zhang<sup>3</sup>, B. Ferguson<sup>1</sup>, S.-H. Oh<sup>4</sup>, K.S. Lam<sup>2</sup> and H.T. Soh<sup>1</sup>  
<sup>1</sup>University of California, Santa Barbara, USA, <sup>2</sup>University of California, Davis, USA,  
<sup>3</sup>CytomX, LLC, USA and <sup>4</sup>University 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. Qiu<sup>1</sup>, R. Liao<sup>2</sup> and X. Zhang<sup>1</sup>  
<sup>1</sup>Boston University, USA and <sup>2</sup>Harvard Medical School, USA

**M31A**

**ENHANCED LOCOMOTION CAENORHABDITIS ELEGANS IN STRUCTURED MICROFLUIDIC ENVIRONMENTS**

H. Hwang<sup>1</sup>, S.-W. Nam<sup>1</sup>, F. Martinez<sup>2</sup>, R.H. Austin<sup>2</sup>, W.S. Ryu<sup>2</sup> and S. Park<sup>1</sup>  
<sup>1</sup>Ewha Woman's University, KOREA and <sup>2</sup>Princeton 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. Tanaka<sup>1</sup>, Y. Kikukawa<sup>1</sup>, K. Sato<sup>1</sup>, Y. Sugii<sup>2</sup> and T. Kitamori<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Kogakuin 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 ENZYMATIC 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<sup>1,2</sup>, C. Jeandey<sup>1</sup>, V. Haguët<sup>1</sup>, F. Chatelain<sup>1</sup> and G. Reyne<sup>2</sup>  
<sup>1</sup>Commissariat à l'Energie Atomique (CEA), FRANCE and  
<sup>2</sup>Laboratoire 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. Kotz<sup>1</sup>, A. Russom<sup>1</sup>, D. Irimia<sup>1</sup>, M.N. Mindrinos<sup>2</sup>, L.L. Moldawer<sup>3</sup>, R.G. Tompkins<sup>1</sup> and M. Toner<sup>1</sup>  
<sup>1</sup>Massachusetts General Hospital, Shriner's Hospital for Children and Harvard Medical School, USA, <sup>2</sup>Stanford Genome Technology Center, USA and  
<sup>3</sup>University of Florida College of Medicine, USA

**M40A**

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

L. Ye<sup>1</sup>, M. Zhang<sup>2</sup>, L.G. Alexopoulos<sup>2</sup>, P. Sorger<sup>2</sup> and K.F. Jensen<sup>1</sup>  
<sup>1</sup>Massachusetts Institute of Technology, USA and <sup>2</sup>Harvard Medical School, USA

**M41A**

**MICROFLUIDIC STICKERS FOR QUANTITATIVE STUDIES OF CULTURED CELLS**

M. Morel<sup>1</sup>, D. Bartolo<sup>2</sup>, M. Dahan<sup>1</sup> and V. Studer<sup>2</sup>  
<sup>1</sup>ENS, FRANCE and <sup>2</sup>Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE

**M42A**

**MICROFLUIDIC TOXICOLOGICAL PLATFORM FOR THE MONITORING OF EXTRACELLULAR IONIC ACTIVITIES**

S. Generelli<sup>1,2</sup>, F. Berthiaume<sup>3</sup>, M.L. Yarmush<sup>3</sup>, M. Jolicœur<sup>1</sup>, M. Koudelka-Hep<sup>2</sup> and O.T. Guenat<sup>1</sup>  
<sup>1</sup>Ecole Polytechnique de Montréal, CANADA,  
<sup>2</sup>University of Neuchâtel, SWITZERLAND and  
<sup>3</sup>Harvard Medical School, USA

**M43A****PERFUSED MULTIWELL TISSUE CULTURE PLATES FOR DRUG AND DISEASE MODEL DEVELOPMENT**

K. Domansky<sup>1</sup>, W. Inman<sup>1</sup>, M.H.M. Lim<sup>1,2</sup>, J. Serdy<sup>1</sup>, B. Owens<sup>1</sup>, S. Karackattu<sup>1</sup>, J.R. Llamas Vidales<sup>1</sup>, R. Littrel<sup>1</sup>, L. Vineyard<sup>1</sup> and L.G. Griffith<sup>1</sup>  
<sup>1</sup>Massachusetts Institute of Technology, USA and  
<sup>2</sup>University of Cambridge, UK

**M44A****GROWTH RATE AND STRESS-RESPONSE ANALYSES OF MICRO-CONTACT PRINTED BACTERIAL ARRAYS AND SINGLE BACTERIA IN MICROFLUIDIC CHAMBERS**

L. Robert<sup>1,2</sup>, L. Xu<sup>2</sup>, F. Taddei<sup>1</sup>, Y. Chen<sup>2</sup>, A. Lindner<sup>1</sup> and D. Baigl<sup>2</sup>  
<sup>1</sup>Inserm U571, FRANCE and <sup>2</sup>Ecole Normale Supérieure, FRANCE

**M45A****REAL TIME DETECTION OF CELL BINDING ON BIOCHIPS USING SPR IMAGING**

Y. Roupioz<sup>1</sup>, E. Suraniti<sup>2</sup>, R. Calemczuk<sup>2</sup>, T. Livache<sup>1</sup>, P. Marche<sup>2</sup> and M.-B. Villiers<sup>2</sup>  
<sup>1</sup>CNRS-CEA-UJF, FRANCE and <sup>2</sup>INSERM, 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. Nagai<sup>1</sup>, S. Furutani<sup>2</sup> and I. Kubo<sup>2</sup>  
<sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, and  
<sup>2</sup>Soka 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. Yu<sup>1</sup>, X. Zhang<sup>1</sup>, R. Chua<sup>2</sup>, P.H. Yap<sup>2</sup> and A.Q. Liu<sup>1</sup>  
<sup>1</sup>Nanyang Technological University, SINGAPORE and  
<sup>2</sup>DSO National Laboratories, SINGAPORE

**Microsystems for Life Sciences - Drug Discovery****M51A****MANUFACTURE OF DUAL-LAYER MICROBUBBLE LIPOSPHERES AS DRUG DELIVERY VEHICLES IN MICROFLUIDIC DEVICES**

K. Hettiarachchi<sup>1</sup>, E. Talu<sup>2</sup>, M.L. Longo<sup>2</sup>, P.A. Dayton<sup>2</sup> and A.P. Lee<sup>1</sup>  
<sup>1</sup>University of California, Irvine, USA, <sup>2</sup>University 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 - Others****M53A****CONTROLLING HIGHER-ORDER STRUCTURES OF GIANT GENOMIC DNA MOLECULES IN MICROFLUIDIC CHANNEL**

H. Oana<sup>1,2</sup>, M. Ohuchi<sup>1</sup> and M. Washizu<sup>1,2</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Japan 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 Gac<sup>1</sup>, A. van den Berg<sup>1</sup> and C.-D. Ohl<sup>1,2</sup>  
<sup>1</sup>University of Twente, THE NETHERLANDS and  
<sup>2</sup>Nanyang 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. Hirota<sup>1</sup>, A. Iles<sup>2</sup> and N. Pamme<sup>2</sup>  
<sup>1</sup>National Institute for Materials Science (NIMS), JAPAN and <sup>2</sup>University 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. Lee<sup>1</sup>, J.H. Lee<sup>2</sup>, K.H. Chung<sup>1</sup>, H.-B. Pyo<sup>1</sup>, M.Y. Jung<sup>1</sup> and H.C. Yoon<sup>2</sup>  
<sup>1</sup>ETRI, KOREA and <sup>2</sup>Ajou University, KOREA

**M5B****FREE-FLOW DIELECTROPHORESIS - A NUMERICAL STUDY**

G.O.F. Parikesit<sup>1</sup>, A.P. Markesteijn<sup>1</sup>, J. Westerweel<sup>1</sup>, I.T. Young<sup>1</sup> and Y. Garini<sup>1,2</sup>  
<sup>1</sup>Delft University of Technology, THE NETHERLANDS and <sup>2</sup>Bar-Ilan University, ISRAEL

**M6B****HIGH SPEED ORGANELLES SORTING MICROSYSTEM DRIVEN BY A SINGLE PRESSURE SOURCE**

T. Aoki<sup>1</sup>, Y. Shirasaki<sup>2</sup>, T. Arakawa<sup>1</sup>, H. Sugino<sup>3</sup>, T. Funatsu<sup>3</sup> and S. Shoji<sup>1</sup>  
<sup>1</sup>Waseda University, JAPAN, <sup>2</sup>Kazusa DNA Research Institute, JAPAN and  
<sup>3</sup>University 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-Torres<sup>1</sup>, T. Le Saux<sup>1</sup>, H. Berthoumieux<sup>1</sup>, A. Georges<sup>1</sup>, S. Fernandez<sup>1</sup>, J.-F. Allemand<sup>1</sup>, V. Croquette<sup>1</sup>, A. Lemarchand<sup>2</sup>, L. Jullien<sup>1</sup> and C. Gosse<sup>3</sup>

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<sup>3</sup>LPN-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. Höfmann, 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. Ha<sup>1</sup>, D.H. Yoon<sup>1</sup>, S.Y. Park<sup>1</sup>, Y.K. Bahk<sup>1</sup>, T. Arakawa<sup>2</sup>, S. Shoji<sup>2</sup> and J.S. Go<sup>1</sup>

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**M14B**

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

W. De Malsche<sup>1,2</sup>, H. Eghbali<sup>1</sup>, D. Clicq<sup>1</sup>, J. Vangelooen<sup>1</sup>, D. Tezcan<sup>3</sup>, P. De Moor<sup>3</sup>, V. Verdoold<sup>2</sup>, H. Gardeniers<sup>1</sup> and G. Desmet<sup>1</sup>

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<sup>3</sup>IMEC, 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

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**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. Grunthaner<sup>1</sup>, J.L. Bada<sup>2</sup>, A.M. Skelley<sup>3</sup>, R.A. Mathies<sup>3</sup>, R. Quinn<sup>4</sup>, A. Zent<sup>4</sup>, P. Willis<sup>4</sup>, X. Amashukeli<sup>1</sup>, A. Farrington<sup>1</sup>, A. Aubrey<sup>2</sup> and P. Ehrenfreund<sup>5</sup>

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Microsystems for Chemistry and Environment -  
Online Process Control

**M17B**

**A STRIPLINE BASED MICROFLUIDIC PROBE FOR NMR SPECTROSCOPY**

J. Bart<sup>1</sup>, J.W.G. Janssen<sup>2</sup>, P.J.M. van Bentum<sup>2</sup>, A.P.M. Kentgens<sup>2</sup> and J.G.E. Gardeniers<sup>1</sup>

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<sup>2</sup>Radboud 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. Cullen<sup>1</sup>, M.J. Fuchter<sup>1</sup>, R.C.R. Wootton<sup>2</sup>, A.G.M. Barrett<sup>1</sup> and A.J. de Mello<sup>1</sup>

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**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

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**M20B**

**MICROREACTOR FOR JANUS BEADS PRODUCTION USING MICROCHANNEL INTEGRATION TECHNIQUES**

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**M21B**

**SOLID CATALYZED HYDROGENATION IN A SI/GLASS MICROREACTOR USING SUPERCRITICAL CO<sub>2</sub> AS THE REACTION SOLVENT**

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

ETH Zurich, SWITZERLAND

Microsystems for Chemistry and Environment - Others

**M22B**

**OBSERVATION OF BIOFILM IN MICROCHANNEL WITH THERMAL LENS MICROSCOPY**

T.T.J. Rossteuscher<sup>1,2</sup>, A. Hibara<sup>1,3,4</sup>, K. Mawatari<sup>3</sup> and T. Kitamori<sup>1,3,4</sup>

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<sup>3</sup>Kanagawa Academy of Science and Technology, JAPAN and

<sup>4</sup>Japan 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. Leslie<sup>1</sup>, C.J. Easley<sup>2</sup>, J.P. Landers<sup>1</sup>, M. Utz<sup>1</sup> and M.R. Begley<sup>1</sup>  
<sup>1</sup>University of Virginia, USA and <sup>2</sup>Vanderbilt 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. Ducloux<sup>1</sup>, E. Galopin<sup>1</sup>, J.-C. Camart<sup>1</sup>, V. Thomy<sup>1</sup> and F. Zoueshtigh<sup>2</sup>  
<sup>1</sup>IEMN, FRANCE and <sup>2</sup>LML, 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. Ishida<sup>1</sup>, L. Davoust<sup>2</sup>, A. Glière<sup>1</sup>, J. Gratier<sup>1</sup> and N. Sarrut<sup>1</sup>  
<sup>1</sup>MINATEC, FRANCE and <sup>2</sup>LEGI, FRANCE

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

K. Osato<sup>1</sup>, M. Tokeshi<sup>1</sup>, N. Kaji<sup>1</sup>, Y. Omoto<sup>1</sup>, N. Suzuki<sup>1</sup>,  
 Y. Sakai<sup>1</sup>, E. Shamoto<sup>1</sup> and Y. Baba<sup>1,2,3</sup>  
<sup>1</sup>Nagoya University, JAPAN,  
<sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and  
<sup>3</sup>Japan 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. Tatum<sup>1</sup>, Y. Miwa<sup>1</sup>, Y. Matsunaga<sup>2</sup> and K. Nakabe<sup>1</sup>  
<sup>1</sup>Kyoto University, JAPAN and <sup>2</sup>Osaka 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. Selva<sup>1</sup>, O. François<sup>2</sup>, L. Rousseau<sup>3</sup>, P. Poulichet<sup>3</sup>, S. Desportes<sup>1</sup>,  
 J. Delaire<sup>1</sup>, D. Grenier<sup>1</sup> and M.-C. Jullien<sup>1</sup>  
<sup>1</sup>ENS Cachan, FRANCE, <sup>2</sup>Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI),  
 FRANCE and <sup>3</sup>Groupe 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. Kobayashi<sup>1</sup>, K. Uemura<sup>1</sup> and M. Nakajima<sup>1,2</sup>  
<sup>1</sup>National Food Research Institute, JAPAN and  
<sup>2</sup>University 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. Pfohl, 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. Castellan,  
 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<sup>1,2</sup>, P. Fischer<sup>2</sup>, E.J. Windhab<sup>2</sup> and J.J. Cooper-White<sup>1</sup>  
<sup>1</sup>University of Queensland, AUSTRALIA and <sup>2</sup>ETH, 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 - Others

**M30C**

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

H. Hwang<sup>1</sup>, Y. Oh<sup>1</sup>, J.-J. Kim<sup>1</sup>, Y.-J. Choi<sup>1</sup>, W. Choi<sup>1</sup>, J.-K. Park<sup>1</sup>, S.-H. Kim<sup>2</sup> and J. Jang<sup>2</sup>  
<sup>1</sup>Korea Advanced Institute of Science and Technology (KAIST), KOREA and <sup>2</sup>Kyung Hee University, KOREA

**M31C**

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

V. Jokinen<sup>1,2</sup> and S. Franssila<sup>2</sup>  
<sup>1</sup>University of Helsinki, FINLAND and <sup>2</sup>Helsinki University of Technology, FINLAND

**M32C**

**CONTROL OF THE PHASE BEHAVIOR OF AQUEOUS SOLUTIONS USING MICROFLUIDICS**

J.-U. Shim<sup>1</sup> and S. Fraden<sup>2</sup>  
<sup>1</sup>University of Cambridge, UK and <sup>2</sup>Brandeis University, USA

**M33C**

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

Y. Ukita<sup>1</sup>, T. Asano<sup>1</sup>, K. Fujiwara<sup>1</sup>, K. Matsui<sup>1</sup>, M. Takeo<sup>1</sup>, S. Negoro<sup>1</sup>, T. Kanie<sup>2</sup>, M. Katayama<sup>2</sup> and Y. Utsumi<sup>1</sup>  
<sup>1</sup>University of Hyogo, JAPAN and <sup>2</sup>Sumitomo Electric Industries, Ltd., JAPAN

Nanotechnology - Nanofluidics

**M1D**

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

D.E. Huber<sup>1</sup>, M.L. Markel<sup>1</sup>, S. Pennathur<sup>2</sup> and K.D. Patel<sup>1</sup>  
<sup>1</sup>Sandia National Laboratories, USA and <sup>2</sup>University 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. Vangelooen<sup>1</sup>, W. De Malsche<sup>1,2</sup>, K. Pappaert<sup>1</sup>, D. Clicq<sup>1</sup>, H. Gardeniers<sup>2</sup> and G. Desmet<sup>1</sup>  
<sup>1</sup>Vrije Universiteit, BELGIUM and <sup>2</sup>University 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. Krishnan<sup>1</sup>, I. Mönch<sup>2</sup> and P. Schwillie<sup>1</sup>  
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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. Lee<sup>1</sup>, G.H. Kwon<sup>2</sup>, S.J. Shin<sup>2</sup>, J.Y. Lee<sup>2</sup>, Y.D. Park<sup>2</sup>, B.G. Min<sup>1</sup> and S.H. Lee<sup>2</sup>  
<sup>1</sup>Seoul National University, KOREA and <sup>2</sup>Korea University, KOREA

**M9D**

**HIGHLY PARALLEL FABRICATION OF MICROFLUIDIC CHIPS FOR LONG DNA MOLECULE SEPARATION**

J. Shi<sup>1,2</sup>, A.P. Fang<sup>1</sup>, L. Malaquin<sup>1</sup>, J.L. Viovy<sup>3</sup>, A. Pépin<sup>1</sup>, D. Decanini<sup>1</sup> and Y. Chen<sup>1,2</sup>  
<sup>1</sup>CNRS, FRANCE, <sup>2</sup>ENS, FRANCE and <sup>3</sup>Institut Curie, FRANCE

**M10D**

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

M. Kumemura<sup>1</sup>, D. Collard<sup>1</sup>, C. Yamahata<sup>1</sup>, N. Sakaki<sup>1</sup>, G. Hashiguchi<sup>2</sup> and H. Fujita<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Kagawa 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. Park<sup>1</sup>, Z. Li<sup>2</sup>, A.P. Pisano<sup>1</sup> and R.S. Williams<sup>2</sup>  
<sup>1</sup>University of California, Berkeley, USA and <sup>2</sup>Hewlett-Packard Laboratories, USA

**M13D**

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

R. Watanabe<sup>1</sup>, H. Oana<sup>1,2</sup> and M. Washizu<sup>1,2</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Japan Science and Technology, JAPAN

**M14D**

**TRAPPING OF SINGLE DNA MOLECULES BY MEMS TWEEZERS WITH PULSED DIELECTROPHORESIS**

N. Sakaki<sup>1</sup>, M. Kumemura<sup>1</sup>, D. Collard<sup>1</sup>, G. Hashiguchi<sup>2</sup> and H. Fujita<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Kagawa University, JAPAN



Nanotechnology - Others

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. Ahn<sup>1</sup>, E.J. Kim<sup>1</sup>, D.H. Yang<sup>1</sup>, G.S. Lee<sup>1</sup> and J.-M. Kim<sup>2</sup>  
<sup>1</sup>*Korea University, KOREA* and <sup>2</sup>*Hanyang 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. Henares<sup>1</sup>, E. Maekawa<sup>1</sup>, F. Mizutani<sup>1</sup>, R. Sekizawa<sup>2</sup> and H. Hisamoto<sup>3</sup>  
<sup>1</sup>*University of Hyogo, JAPAN*, <sup>2</sup>*Metaboscreen Co. Ltd., JAPAN* and <sup>3</sup>*Osaka Prefecture University, JAPAN*

M4E

DIRECT POLYMERIZATION PATTERNING BASED ON EB LITHOGRAPHY FOR CONTROL OF CELL ADHESIVE ORIENTATION  
N. Idota<sup>1</sup>, T. Tsukahara<sup>1,2</sup>, A. Hibara<sup>1,2</sup>, T. Okano<sup>3</sup> and T. Kitamori<sup>1,2</sup>  
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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. Malic<sup>1</sup>, B. Cui<sup>2</sup>, T. Veres<sup>2</sup> and M. Tabrizian<sup>1</sup>  
<sup>1</sup>*McGill University, CANADA* and <sup>2</sup>*National Research Council (NRC), CANADA*

M9E

TOWARDS SELECTIVE OPTOCHEMICAL GAS SENSING BY LUMINESCENT MARINE DIATOMS  
A. Setaro<sup>1</sup>, S. Lettieri<sup>1</sup>, L. De Stefano<sup>2</sup> and P. Maddalena<sup>1</sup>  
<sup>1</sup>*Università di Napoli Federico II, ITALY* and <sup>2</sup>*Unità di Napoli, ITALY*

Materials - Others

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<sup>1,2</sup>, H. Shinohara<sup>1</sup>, Y. Iribe<sup>1</sup> and M. Suzuki<sup>1</sup>  
<sup>1</sup>*University of Toyama, JAPAN* and <sup>2</sup>*Toyama New Industry Organization, JAPAN*

M2F

DESIGN AND CHARACTERIZATION OF MACH-ZEHNDER INTERFEROMETRIC IMMUNOSENSORS OPERATING AT NEAR INFRARED  
J. Hong<sup>1</sup> and T.S. Kim<sup>2</sup>  
<sup>1</sup>*Imperial College London, UK* and <sup>2</sup>*Korea Institute of Science and Technology (KIST), KOREA*

M3F

DEVELOPMENT OF DIFFERENTIAL INTERFERENCE CONTRAST THERMAL LENS MICROSCOPE  
H. Shimizu<sup>1</sup>, K. Mawatari<sup>2</sup> and T. Kitamori<sup>1,2</sup>  
<sup>1</sup>*University of Tokyo, JAPAN* and <sup>2</sup>*Kanagawa Academy of Science and Technology, JAPAN*

M4F

IMMERSION REFRACTOMETRY ANALYSIS OF LIVING CELLS IN MICROFLUIDIC CELL CULTURE CHIP  
X. Zhang<sup>1</sup>, R. Chua<sup>2</sup>, P.H. Yap<sup>2</sup>, W.Z. Song<sup>1</sup> and A.Q. Liu<sup>1</sup>  
<sup>1</sup>*Nanyang Technological University, SINGAPORE* and <sup>2</sup>*DSO 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. Maruyama<sup>1</sup>, F. Arai<sup>2</sup> and T. Fukuda<sup>1</sup>  
<sup>1</sup>*Nagoya University, JAPAN* and <sup>2</sup>*Tohoku University, JAPAN*

M7F

OPTOFLUIDIC BLOOD CELL SORTING  
I.A. Andreev<sup>2</sup>, A.C. Riches<sup>2</sup>, T. Briscoe<sup>2</sup>, L. Paterson<sup>3</sup>, K. Dholakia<sup>2</sup> and M.P. MacDonald<sup>1</sup>  
<sup>1</sup>*University of Dundee, UK*, <sup>2</sup>*University of St. Andrews, UK* and <sup>3</sup>*Heriot Watt University, SCOTLAND*

M8F

REFRACTIVE INDEX DETECTOR FOR NANOCHANNEL USING ALTERNATIVE DIFFRACTION GRATING NANOCHANNEL  
K. Mawatari<sup>1</sup>, K. Oda<sup>2</sup>, A. Hibara<sup>2</sup> and T. Kitamori<sup>1,2</sup>  
<sup>1</sup>*Kanagawa Academy of Science and Technology, JAPAN* and <sup>2</sup>*University of Tokyo, JAPAN*

Detection Technologies - Electrochemical

M9F

AN ELECTROCHEMICAL SENSOR INTEGRATED ON FABRIC  
G. Marchand<sup>1</sup>, M.-L. Cosnier<sup>1</sup>, N. David<sup>1</sup>, C. Chabrol<sup>1</sup>, A. Bourgerette<sup>1</sup>, F. Vrillon<sup>1</sup>, T. Flaven<sup>1</sup>, I. Chartier<sup>2</sup>, J. Babelt<sup>2</sup> and N. Dunoyer<sup>2</sup>  
<sup>1</sup>*CEA LETI, Minatec, FRANCE* and <sup>2</sup>*LITEN, FRANCE*

**M10F**

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

E. Watanabe<sup>1</sup>, T. Hizawa<sup>1</sup>, S. Mimura<sup>2</sup>, T. Ishida<sup>3</sup>, H. Takao<sup>4,5</sup>, K. Sawada<sup>1,4,5</sup> and M. Ishida<sup>1,4,5</sup>

<sup>1</sup>Toyohashi University of Technology, JAPAN, <sup>2</sup>HORIBA, Ltd., JAPAN, <sup>3</sup>Orimacky, Ltd., JAPAN, <sup>4</sup>Toyohashi University of Technology, JAPAN and <sup>5</sup>Japan 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<sup>1,2</sup>, C. Li<sup>1</sup>, Y. Chae<sup>2</sup>, J. Kang<sup>2</sup> and C.H. Ahn<sup>1</sup>

<sup>1</sup>University of Cincinnati, USA and <sup>2</sup>Korea 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. Varmier<sup>1</sup>, T. Plénat<sup>1</sup>, L. Ghenim<sup>1</sup>, D. Fajolle<sup>2</sup>, V. Agache<sup>2</sup>,

F. Sauter<sup>2</sup>, F. Chatelain<sup>1</sup> and A. Fuchs<sup>1</sup>

<sup>1</sup>Commissariat à l'Energie Atomique (CEA), FRANCE and <sup>2</sup>CEA-LETI-Minatec, FRANCE

**M15F**

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

C. Küttel<sup>1</sup>, E. Nascimento<sup>2</sup>, N. Demierre<sup>1</sup>, T. Silva<sup>2</sup>,

T. Braschler<sup>1</sup>, A.G. Oliva<sup>2</sup> and P. Renaud<sup>1</sup>

<sup>1</sup>Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND and

<sup>2</sup>Universidade Nova de Lisboa, PORTUGAL

Detection Technologies - Others

**M16F**

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

M. Nordström<sup>1</sup>, D.A. Zauner<sup>1</sup>, M. Calleja<sup>2</sup>, J. Hübner<sup>1</sup> and A. Boisen<sup>1</sup>

<sup>1</sup>Technical University of Denmark, DENMARK and

<sup>2</sup>Institute 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. Gel<sup>1</sup>, O. Kurosawa<sup>2</sup>, H. Oana<sup>1</sup> and M. Washizu<sup>1</sup>

<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Advantec 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. Chen<sup>1</sup>, D.C. Rodger<sup>1,2</sup>, S. Saati<sup>3</sup>, J.C. Altamirano<sup>3</sup>, C.-H. Lin<sup>1</sup>, R. Agrawal<sup>2,3</sup>,

R. Varma<sup>2,3</sup>, M.S. Humayun<sup>2,3</sup> and Y.-C. Tai<sup>1</sup>

<sup>1</sup>California Institute of Technology, USA, <sup>2</sup>University of Southern California, USA and

<sup>3</sup>Doheny 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. Tijero<sup>1</sup>, L.J. Fernández<sup>1</sup>, J.M. Ruano-López<sup>1</sup>, K. Mayora<sup>1</sup>,

M.V. Rodríguez<sup>2</sup> and J. Elizalde<sup>1</sup>

<sup>1</sup>Ikerlan S. Coop., SPAIN and <sup>2</sup>University 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. Najmzadeh<sup>1</sup>, S. Haas<sup>2</sup> and P. Enoksson<sup>1</sup>

<sup>1</sup>Chalmers University of Technology, SWEDEN and <sup>2</sup>Imego AB, SWEDEN

**MEMS & NEMS Technologies - Acoustic Devices**

**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. Schönberg<sup>1</sup>, P. Ek<sup>2</sup>, J. Sjödal<sup>2</sup>, J. Roeraade<sup>2</sup> and C. Vieider<sup>1</sup>  
<sup>1</sup>Acreo AB, SWEDEN and <sup>2</sup>Royal 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. Hoel<sup>1</sup>, L. Mir<sup>2</sup>, B. Lepoufle<sup>1</sup> and M.-C. Jullien<sup>1</sup>  
<sup>1</sup>ENS Cachan, Antenne de Bretagne, FRANCE and <sup>2</sup>Institut Gustave Roussy, FRANCE

**M15G**

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

P.A. Willis<sup>1</sup>, B.D. Hunt<sup>1</sup>, V.E. White<sup>1</sup>, M. Ikeda<sup>1</sup>, M.-C. Lee<sup>1</sup>, M.J. Pelletier<sup>2</sup> and F.J. Grunthaler<sup>1</sup>  
<sup>1</sup>California Institute of Technology, USA and <sup>2</sup>Pfizer 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<sup>1,2</sup> and S. Konishi<sup>3</sup>  
<sup>1</sup>INJE University, KOREA, <sup>2</sup>MEMS/NANO Fabrication Center, KOREA and <sup>3</sup>Ritsumeikan University, JAPAN

**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<sup>1,2</sup>, F. Destro<sup>3</sup>, D. Manassis<sup>1</sup>, D. Gazzola<sup>2</sup>, E. Jung<sup>1</sup>, L. Böttcher<sup>1</sup>, M. Borgatti<sup>3</sup>, T. Braun<sup>1</sup>, J. Bauer<sup>1</sup>, R. Gavioli<sup>3</sup>, R. Gambari<sup>3</sup>, A. Ostmann<sup>1</sup> and R. Guerrieri<sup>2</sup>

<sup>1</sup>Fraunhofer Institute for Reliability and Microintegration (IZM), GERMANY, <sup>2</sup>Bologna University, ITALY and <sup>3</sup>Ferrara 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. Haapala<sup>1</sup>, J. Pöl<sup>1</sup>, T. Kauppila<sup>1</sup>, L. Luosujärvi<sup>1</sup>, V. Saarela<sup>2</sup>, S. Franssila<sup>2</sup>, R.A. Ketola<sup>1,2</sup>, T. Kotiaho<sup>3</sup> and R. Kostianen<sup>1</sup>

<sup>1</sup>University of Helsinki, FINLAND and <sup>2</sup>Helsinki University of Technology, FINLAND

**MEMS & NEMS Technologies - Others**

**M22G**

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

I.K. Lao<sup>1</sup>, C. Lee<sup>1,2</sup> and H. Feng<sup>1</sup>  
<sup>1</sup>Institute of Microelectronics, SINGAPORE and <sup>2</sup>National University of Singapore, SINGAPORE

**Session 1A3**

Cell Handling and Screening 2

**Session 1B3**

Integrated Systems

16:30 - 16:50

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

A.-E. Saliba<sup>1</sup>, E. Psichari<sup>1</sup>, L. Saïas<sup>1</sup>, N. Minc<sup>1</sup>, V. Studer<sup>2</sup> and J.-L. Viovy<sup>1</sup>  
<sup>1</sup>Institut Curie, FRANCE and <sup>2</sup>Ecole 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. Agirregabiria<sup>1</sup>, D. Verdoy<sup>2</sup>, G. Olabarria<sup>2</sup>, J. Berganzo<sup>1</sup>, J. Berganza<sup>2</sup>, L.J. Fernandez<sup>1</sup>, M. Pascual de Zulueta<sup>2</sup>, K. Mayora<sup>1</sup>, P. Aldamiz-Echevarria<sup>2</sup>, and J.M. Ruano-López<sup>1</sup>  
<sup>1</sup>Ikerlan S. Coop., SPAIN and <sup>2</sup>Gaiker-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. Nakayama<sup>1</sup>, K. Tabata<sup>2</sup>, H. Noji<sup>2</sup> and R. Yokokawa<sup>1,3</sup>  
<sup>1</sup>Ritsumeikan University, JAPAN, <sup>2</sup>Osaka University, JAPAN and <sup>3</sup>Japan 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



Tuesday, October 9, 2007

8:30 - 9:10

Plenary III

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

Session 2A1  
Multiphase and Digital Microfluidic 1

Session 2B1  
Nanobiotechnology

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. Franzke 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<sup>1,2,3</sup>, M. Nonogi<sup>1</sup> and T. Kitamori<sup>1,2,3</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>Kanagawa Academy of Science and Technology (KAIST), JAPAN and <sup>3</sup>Japan 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

Session 2A2  
Clinical Diagnostic 1

Session 2B2  
On Chip Synthesis and Production

10:45 - 11:05

MICROFLUIDIC CHIP FOR RELATIVE QUANTIFICATION OF mRNAs BY MLPA  
T. Roeser<sup>1</sup>, K.S. Drese<sup>1</sup>, X. Fuetterer<sup>1</sup>, A. Nygren<sup>2</sup>, M. Weniger<sup>1</sup> and M. Ritzl<sup>1</sup>  
<sup>1</sup>Institut fuer Mikrotechnik Mainz GmbH, GERMANY, and <sup>2</sup>MRC-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. Uozumi<sup>1</sup>, Y.M.A. Yamada<sup>1</sup>, T. Beppu<sup>1</sup>, N. Fukuyama<sup>1</sup>, M. Ueno<sup>2</sup> and T. Kitamori<sup>2</sup>  
<sup>1</sup>Japan Science and Technology Agency (JST), JAPAN and <sup>2</sup>University of Tokyo, JAPAN

11:25 - 11:45

MULTIFUNCTIONAL BARCODED PARTICLES FOR HIGH-THROUGHPUT MOLECULAR SCREENING  
D.C. Pregibon<sup>1</sup>, M. Toner<sup>2</sup> and P.S. Doyle<sup>1</sup>  
<sup>1</sup>Massachusetts Institute of Technology, USA and <sup>2</sup>Massachusetts 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

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. Slovakova<sup>1</sup>, B. Jankovicova<sup>1</sup>, S. Rosnerova<sup>1</sup>, L. Korecka<sup>1</sup>, N. Minc<sup>2</sup>, J.-L. Viovy<sup>2</sup>, L. Hernychova<sup>3</sup>, M. Hubalek<sup>3</sup> and Z. Bilkova<sup>1</sup>  
<sup>1</sup>University of Pardubice, CZECH REPUBLIC, <sup>2</sup>Institute Curie, FRANCE and <sup>3</sup>University of Defense, Hradec Kralove, CZECH REPUBLIC

**T3A****ELECTROWETTING ON NANOFILAMENT SILICON FOR MATRIX-FREE LASER DESORPTION/IONIZATION MASS SPECTROMETRY**

C.W. Tsao<sup>1</sup>, P. Kumar<sup>1</sup>, J. Liu<sup>1</sup>, C.F. Kung<sup>1,2</sup>, C.C. Chang<sup>2</sup> and D.L. DeVoe<sup>1</sup>  
<sup>1</sup>University of Maryland, USA and <sup>2</sup>Academia 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. Zhang<sup>1</sup>, J. Zhou<sup>1</sup>, Z.R. Xu<sup>2</sup>, J. Song<sup>1</sup>, J. Dai<sup>3</sup>, J. Fang<sup>1</sup> and Z.L. Fang<sup>2</sup>  
<sup>1</sup>China Medical University, CHINA, <sup>2</sup>Northeastern University, CHINA and <sup>3</sup>Shenyang Jianzhu University, CHINA

**T6A****VERSATILE ACRYLAMIDE-BASED MICROCHAMBERS FOR SINGLE MOLECULAR BIOLOGICAL ASSAYS AND ANALYSIS**

L. Lam<sup>1</sup>, S. Sakakihara<sup>1</sup>, K. Ishizuka<sup>1</sup>, S. Takeuchi<sup>2</sup> and H. Noji<sup>1</sup>  
<sup>1</sup>Osaka University, JAPAN and <sup>2</sup>University 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. Ikami<sup>1</sup>, M. Tokeshi<sup>1</sup>, N. Kajiji<sup>1</sup> and Y. Baba<sup>1,2,3</sup>  
<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and <sup>3</sup>Japan 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<sup>1,2</sup>, E. Roy<sup>2</sup>, M. Tabrizian<sup>1</sup> and T. Veres<sup>2</sup>  
<sup>1</sup>McGill University, CANADA and <sup>2</sup>Industrial Materials Institute, CANADA

**T11A****MULTI-ARRAY FLOW-FOCUSING DEVICES TO ACCELERATE PRODUCTION OF MICROBUBBLES FOR CONTRAST-ENHANCED ULTRASOUND IMAGING**

K. Hettiarachchi<sup>1</sup>, E. Talu<sup>2</sup>, M.L. Longo<sup>2</sup>, P.A. Dayton<sup>2</sup> and A.P. Lee<sup>1</sup>  
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**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<sup>1,2</sup>, M.M. Mielnik<sup>3</sup>, E. Hovig<sup>4</sup>, F. Karlsen<sup>1</sup>, L. Furuberg<sup>3</sup> and R. Sirevåg<sup>2</sup>  
<sup>1</sup>NorChip AS, NORWAY, <sup>2</sup>University of Oslo, NORWAY, <sup>3</sup>SINTEF, NORWAY, and <sup>4</sup>The 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<sup>1,2</sup>, H. Suzuki<sup>1</sup> and S. Takeuchi<sup>1,3</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>ENS Cachan, FRANCE and <sup>3</sup>Japan Science and Technology, JAPAN

**T17A****RAPID HIGH-THROUGHPUT MICROARRAY ANALYSIS - A SHEAR-DRIVEN APPROACH**

K. Pappaert<sup>1</sup>, F. Detobel<sup>1</sup>, P. Van Hummelen<sup>2</sup> and G. Desmet<sup>1</sup>  
<sup>1</sup>Vrije Universiteit, BELGIUM and <sup>2</sup>VIB 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<sup>1,2</sup>, J.A. Dziuban<sup>1,2</sup>, J. Koszur<sup>1</sup>, A. Wolff<sup>3</sup>, D.D. Bang<sup>3</sup> and M. Bu<sup>3</sup>  
<sup>1</sup>Institute of Electron Technology, POLAND, <sup>2</sup>Wroclaw University of Technology, POLAND and <sup>3</sup>Danish Technical University, DENMARK

**T21A****DIAGNOSIS-ON-A-CHIP: A MICROFLUIDIC PLATFORM FOR CELL CULTURE AND VIRUS ASSAYS**

X. Zhang<sup>1</sup>, R. Chua<sup>2</sup>, P.H. Yap<sup>2</sup> and A.Q. Liu<sup>1</sup>  
<sup>1</sup>Nanyang Technological University, SINGAPORE and <sup>2</sup>DSO 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. Kang<sup>1</sup>, Y.C. Kim<sup>1,2</sup> and J.-K. Park<sup>1</sup>  
<sup>1</sup>Korea Advanced Institute of Science and Technology (KAIST), KOREA and  
<sup>2</sup>Korea 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. Kwon<sup>1</sup>, K.H. Lee<sup>2</sup>, E.-J. Lee<sup>1</sup> and S.-H. Lee<sup>1</sup>  
<sup>1</sup>Korea University, KOREA and <sup>2</sup>Seoul National University, KOREA

**T28A**

CULTIVATION OF DIELECTROPHORETICALLY TRAPPED SINGLE CELLS UNDER OPTIMAL ENVIRONMENTAL CONDITIONS  
H. Kortmann<sup>1</sup>, L.M. Blank<sup>1,2</sup> and A. Schmid<sup>1,2</sup>  
<sup>1</sup>Institute for Analytical Sciences (ISAS), GERMANY and  
<sup>2</sup>University 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. Medoro<sup>1</sup>, E. Brighenti<sup>1</sup>, A. Fittipaldi<sup>1</sup>, G. Tresca<sup>1</sup>, S. Gianni<sup>1</sup>, G. Perozziello<sup>1</sup>, M. Timken<sup>2</sup>, M. Buoncristiani<sup>2</sup> and N. Manaresi<sup>1</sup>  
<sup>1</sup>Silicon Biosystems S.p.A., ITALY and <sup>2</sup>Department of Justice DNA Lab, USA

**T31A**

ELECTROPHORESIS-ASSISTED ELECTROPORATION FOR EFFICIENT INTRACELLULAR SINGLE-CELL DELIVERY  
C. Ionescu-Zanetti<sup>1</sup>, A. Blatz<sup>1</sup> and M. Khine<sup>2</sup>  
<sup>1</sup>Fluxion Biosciences, USA and <sup>2</sup>University of California, Merced, USA

**T32A**

FIBROBLAST AND CANCER CELL BEHAVIORS IN THREE-DIMENSIONAL SILICON MICROSTRUCTURES  
M. Nikkhhah<sup>1</sup>, J.S. Strobl<sup>2</sup> and M. Agah<sup>1</sup>  
<sup>1</sup>Virginia Polytechnic Institute and State University, USA and  
<sup>2</sup>Edward Via Virginia College of Osteopathic Medicine, USA

**T33A**

GUIDING OF NEURITE OUTGROWTH BY TOPOGRAPHICAL MICROSTRUCTURES AND MICROSIEVES  
T. Lehnert<sup>1</sup>, M. Wiesli<sup>2</sup>, S. Weigel<sup>2</sup>, O. Agabi<sup>2,3</sup>, M. Gijs<sup>1</sup> and A. Bruinink<sup>2</sup>  
<sup>1</sup>Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND,  
<sup>2</sup>EMPA, SWITZERLAND and <sup>3</sup>Neuronics AG, SWITZERLAND

**T34A**

HYDRODYNAMIC MICROSYSTEMS FOR NON-DILUTED BLOOD FRAGMENTATION  
E. Sollier<sup>1</sup>, H. Rostaing<sup>1</sup>, Y. Fouillet<sup>1</sup>, J.L. Achard<sup>2</sup> and P. Pouteau<sup>1</sup>  
<sup>1</sup>CEA-LETI Minatec, FRANCE and <sup>2</sup>INPG-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. Nagai<sup>1</sup>, M. Kumemura<sup>1</sup>, N. Sakaki<sup>1</sup>, H. Asai<sup>2</sup> and H. Fujita<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Waseda 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. Iino<sup>1</sup>, K. Nishino<sup>1</sup>, M. Nakata<sup>1</sup>, E. Nikaido<sup>1</sup>, Y. Matsumoto<sup>1</sup>, S. Sakakihara<sup>1</sup>, S. Takeuchi<sup>2</sup>, A. Yamaguchi<sup>1</sup> and H. Noji<sup>1</sup>  
<sup>1</sup>Osaka University, JAPAN and <sup>2</sup>University 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<sup>1,2</sup>, T. Oda<sup>3</sup>, Y. Aoyagi<sup>3</sup>, M. Satake<sup>4</sup>, N. Ohkohchi<sup>3</sup> and M. Nakajima<sup>1,3</sup>  
<sup>1</sup>National Food Research Institute, JAPAN, <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, <sup>3</sup>University of Tsukuba, JAPAN and <sup>4</sup>National Cancer Center, JAPAN

**T49A**

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

C.M. Hwang<sup>1,2</sup>, K. Sun<sup>1,2</sup> and S.H. Lee<sup>1,2</sup>  
<sup>1</sup>Korea Artificial Organ Center, KOREA and <sup>2</sup>Korea 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. Kuramoto<sup>1</sup>, N. Kaji<sup>3</sup>, K. Kogure<sup>6</sup>, M. Tokeshi<sup>3</sup>, Y. Shinohara<sup>2</sup>, H. Harashima<sup>6</sup> and Y. Baba<sup>3,4,5</sup>  
<sup>1</sup>Kanazawa University, JAPAN, <sup>2</sup>University of Tokushima, JAPAN, <sup>3</sup>Nagoya University, JAPAN, <sup>4</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, <sup>5</sup>Japan Science and Technology Agency (JST) JAPAN and <sup>6</sup>Hokkaido 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 - Others**

**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. Nagata<sup>1</sup>, Y. Yoshida<sup>1</sup>, T. Ishido<sup>1</sup>, Y. Baba<sup>1,2</sup>, M. Ishikawa<sup>1</sup> and K. Hirano<sup>1,3</sup>  
<sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, <sup>2</sup>Nagoya University, JAPAN and <sup>3</sup>Japan 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. Münchow<sup>1</sup>, S. Hardt<sup>2</sup>, J.P. Kutter<sup>3</sup> and K.S. Drese<sup>1</sup>  
<sup>1</sup>Institut für Mikrotechnik Mainz GmbH, GERMANY, <sup>2</sup>Leibniz Universität Hannover, GERMANY and <sup>3</sup>Technical 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-Duarte<sup>1</sup>, H.A. Rouabah<sup>2</sup>, N.G. Green<sup>2</sup>, M. Madou<sup>1</sup> and H. Morgan<sup>2</sup>  
<sup>1</sup>University of California, Irvine, USA and <sup>2</sup>University 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<sup>1,2</sup>, S. Descroix<sup>1</sup>, H. Sénéchal<sup>1</sup>, Y. Chen<sup>2</sup>, M.C. Hennion<sup>1</sup> and G. Peltre<sup>1</sup>  
<sup>1</sup>Commissariat à l'Énergie Atomique (CEA), FRANCE and <sup>2</sup>ENS, FRANCE

**T13B**

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

S. Tuomikoski<sup>1</sup>, T. Sikanen<sup>2</sup>, R.A. Ketola<sup>2</sup>, R. Kostianen<sup>2</sup>, T. Kotiaho<sup>2</sup> and S. Franssila<sup>1</sup>  
<sup>1</sup>Helsinki University of Technology, FINLAND and <sup>2</sup>University of Helsinki, FINLAND

**T14B**

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

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<sup>1</sup>University of Michigan, USA and <sup>2</sup>Sandia National Laboratories, USA

**T15B**

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

D. Kuroda<sup>1</sup>, N. Kaji<sup>1</sup>, M. Tokeshi<sup>1</sup> and Y. Baba<sup>1,2,3</sup>  
<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and <sup>3</sup>Japan 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. Fukuba<sup>1</sup>, A. Miyaji<sup>2</sup>, N. Fukuzawa<sup>1</sup>, C. Provin<sup>1</sup>, T. Yamamoto<sup>1</sup>,  
L. Glutz<sup>3</sup>, T. Okamoto<sup>1</sup> and T. Fujii<sup>1</sup>

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<sup>3</sup>Ecole Polytechnique Federale de Lausanne (EPFL), SWITZERLAND

**T17B**

MICRO PARTICLE SAMPLING ON MICRO-FABRICATED  
PERFORATED FILTER MEMBRANES

Y. Zhao<sup>1</sup>, S.K. Chung<sup>1</sup>, U.-C. Yi<sup>2</sup> and S.K. Cho<sup>1</sup>

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Microsystems for Chemistry and Environment -  
Online Process Control

**T18B**

MICROFLUIDIC REACTION OPTIMISATION USING INTELLIGENT FEEDBACK

C. Rowlands<sup>1</sup>, R. Winkle<sup>2</sup>, R. Wootton<sup>1</sup> and A. de Mello<sup>2</sup>

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

**T19B**

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

E. Um<sup>1</sup>, D.-S. Lee<sup>2</sup>, H.-B. Pyo<sup>2</sup> and J.-K. Park<sup>1</sup>

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<sup>2</sup>Electronics and Telecommunications Research Institute (ETRI), KOREA

**T20B**

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

R. Yamahara<sup>1</sup>, H. Nakanishi<sup>1</sup>, K. Sakamoto<sup>1</sup>, H. Saiki<sup>1</sup>,

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**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. Won<sup>1</sup>, J.M. Cha<sup>1</sup>, S.H. Yoon<sup>1</sup>, E.H. Jeong<sup>1</sup>,

T. Arakawa<sup>2</sup>, S. Shoji<sup>2</sup>, K.C. Kim<sup>1</sup> and J.S. Go<sup>1</sup>

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Microsystems for Chemistry and Environment - Others

**T23B**

MICROFABRICATION OF SELF-OSCILLATING GELS FOR  
GEOMETRICAL CHEMICAL REACTOR NETWORKS

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**T24B**

THE PERFORMANCES OF AN ENZYME-BASED MICROFLUIDIC BIOFUEL  
CELLS USING VITAMIN K<sub>3</sub>-MEDIATED GLUCOSE OXIDATION

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

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Microfluidics - Fluid Mechanics & Modeling

**T1C**

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

A. Aota<sup>1</sup>, A. Hibara<sup>1,2,3</sup>, Y. Sugii<sup>4</sup> and T. Kitamori<sup>1,2,3</sup>

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**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. Henares<sup>1</sup>, F. Mizutani<sup>1</sup>, R. Sekizawa<sup>2</sup> and H. Hisamoto<sup>3</sup>

<sup>1</sup>University of Hyogo, JAPAN, <sup>2</sup>Metaboscreen Co. Ltd., JAPAN and

<sup>3</sup>Osaka 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. Leclerc<sup>1</sup>, Y. Lefebvre<sup>1</sup>, J. Walter<sup>1</sup>, F. Edwards-Lévy<sup>2</sup> and D. Barthès-Biesel<sup>1</sup>

<sup>1</sup>CNRS-UMR, FRANCE and <sup>2</sup>CNRS-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 NANOCANNELS:  
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. Chun<sup>1</sup>, H.C. Kim<sup>2</sup> and T.D. Chung<sup>2</sup>

<sup>1</sup>University of North Carolina, Chapel Hill, USA and

<sup>2</sup>Seoul National University, KOREA

**T10C**

CENTRIFUGAL MICRODEVICE FOR CONTINUOUS  
AND SIZE-DEPENDENT SEPARATION OF PARTICLES

S. Sunahiro<sup>1</sup>, M. Yamada<sup>2</sup>, M. Yasuda<sup>1</sup> and M. Seki<sup>1,3</sup>

<sup>1</sup>Osaka Prefecture University, JAPAN,

<sup>2</sup>Tokyo Women's Medical University, JAPAN and

<sup>3</sup>Chiba University, JAPAN

### T11C

#### CHAOTIC MIXING IN A HELE-SHAW CELL, WITH APPLICATION TO DNA CHIP HYBRIDIZATION

F. Raynal<sup>1</sup>, A. Beuf<sup>1</sup>, F. Plaza<sup>1</sup>, P. Carrière<sup>1</sup>, M. Cabrera<sup>1</sup>, J.-P. Cloarec<sup>1</sup>, V. Dugas<sup>1,2</sup>, E. Fradier<sup>1</sup> and E. Souteyrand<sup>1,2</sup>  
<sup>1</sup>Université de Lyon, FRANCE and <sup>2</sup>Rosatech, 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. Cha<sup>1</sup>, D.S. Kim<sup>2</sup> and T.H. Kwon<sup>1</sup>  
<sup>1</sup>Pohang University of Science and Technology, KOREA and  
<sup>2</sup>Chung-Ang University, KOREA

### T14C

#### ELECTROKINETIC MIXERS BASED ON STIMULI-RESPONDING SURFACES

G. Paumier<sup>1</sup>, J. Sudor<sup>1,2</sup>, E. Collé<sup>1</sup>, B. Marty<sup>1</sup>, A. Bancaud<sup>1</sup>, T. Camps<sup>1</sup> and A.-M. Gué<sup>1</sup>  
<sup>1</sup>University of Toulouse, FRANCE and <sup>2</sup>CEA/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. Sasaki<sup>1</sup>, T. Kitamori<sup>1,2,3</sup> and H.-B. Kim<sup>1,2,3</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>Kanagawa Academy of Science and Technology, JAPAN and  
<sup>3</sup>Japan 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. Jeandey<sup>1</sup>, H. Chetouani<sup>1,2</sup>, V. Haguët<sup>1</sup>, F. Chatelain<sup>1</sup> and G. Reyne<sup>2</sup>  
<sup>1</sup>Commissariat à l'Energie Atomique (CEA), FRANCE and  
<sup>2</sup>Laboratoire de Génie Electrique de Grenoble, FRANCE

### T19C

#### DROP STIRRING FLOW UNDER EWOD AND EHD ACTUATION: A NEW STEP TOWARDS BIOLOGICAL SAMPLE PREPARATION

L. Davoust<sup>1</sup>, Y. Fouillet<sup>2</sup> and Y. Ishida<sup>2</sup>  
<sup>1</sup>CNRS, LEGI, FRANCE and <sup>2</sup>CEA-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<sup>1,2</sup>, E. Surenjav<sup>1</sup>, S. Herminghaus<sup>1</sup> and R. Seemann<sup>1</sup>  
<sup>1</sup>Max-Planck-Institute for Dynamics and Self-Organization, GERMANY and  
<sup>2</sup>University 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. Iwano, K. Matsumoto and I. Shimoyama  
University of Tokyo, JAPAN

### T23C

#### EXTERNALLY ACTUATED MAGNETIC FLOW REGULATOR FOR DISPOSABLE DRUG INFUSERS

M. Duch<sup>1</sup>, J. Casals-Terré<sup>2</sup>, J.A. Plaza<sup>1</sup>, J. Esteve<sup>1</sup>, R. Pérez-Castillejos<sup>1</sup>, E. Vallès<sup>3</sup> and E. Gómez<sup>3</sup>  
<sup>1</sup>Centro Nacional Microelectronica, SPAIN,  
<sup>2</sup>Technical University of Catalonia, SPAIN and  
<sup>3</sup>University of Barcelona, SPAIN

### T24C

#### FAST AND HIGH RESOLUTION TRANSPORT OF MAGNETIC CARRIERS FOR MAGNETICALLY ASSISTED LAB ON A CHIP

Q. Ramadan<sup>1</sup>, J.E. Widjara<sup>2</sup>, T.K. Cheong<sup>1</sup>, W.Y. Fung<sup>2</sup>, B. Subramanian<sup>1</sup>, L. Ebin<sup>1</sup>, C. Yu<sup>1</sup> and P. Daniel<sup>2</sup>  
<sup>1</sup>Institute of Microelectroics, SINGAPORE and  
<sup>2</sup>Nanyang 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<sup>1,2</sup>, P. Fischer<sup>2</sup>, E.J. Windhab<sup>2</sup> and J.J. Cooper-White<sup>1</sup>  
<sup>1</sup>University of Queensland, AUSTRALIA and  
<sup>2</sup>ETH 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<sup>1,2</sup> and K.F. Jensen<sup>3</sup>  
<sup>1</sup>National University of Singapore, SINGAPORE  
<sup>2</sup>Singapore-MIT Alliance and  
<sup>3</sup>Massachusetts 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. Kikutani<sup>1</sup>, H. Ikeda<sup>1</sup>, M. Harada<sup>2</sup>, Y. Ikeda<sup>2</sup>, M. Tokeshi<sup>3</sup> and T. Kitamori<sup>4</sup>  
<sup>1</sup>Kanagawa Academy of Science and Technology, JAPAN,  
<sup>2</sup>Tokyo Institute of Technology, JAPAN,  
<sup>3</sup>Nagoya University, JAPAN and <sup>4</sup>University of Tokyo, JAPAN

## Microfluidics – Others

### T30C

#### A NOVEL LiNbO<sub>3</sub> 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. Amin<sup>1</sup>, M. Thottethodi<sup>1</sup>, T.N. Vijaykumar<sup>1</sup>, S. Wereley<sup>1</sup> and S.C. Jacobson<sup>2</sup>  
<sup>1</sup>Purdue University, USA and <sup>2</sup>Indiana 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<sup>1,2</sup>, K. Masu<sup>1</sup> and Y. Horiike<sup>2</sup>  
<sup>1</sup>*Tokyo Institute of Technology, JAPAN* and  
<sup>2</sup>*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. Sköld, 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. Tanaka<sup>1</sup>, H. Johansson<sup>1</sup>, C. Larsson<sup>1</sup>, J. Jarvius<sup>1</sup>, T. Kitamori<sup>2</sup> and M. Nilsson<sup>1</sup>  
<sup>1</sup>*Uppsala University, SWEDEN* and <sup>2</sup>*University of Tokyo, JAPAN*

**T10D**

DNA NANOFILTRATION AT HIGH ELECTRIC FIELDS

N. Laachi<sup>1</sup>, C. Declat<sup>2</sup>, C. Matson<sup>3</sup> and K.D. Dorfman<sup>1</sup>  
<sup>1</sup>*University of Minnesota, USA*, <sup>2</sup>*University of Puerto Rico, Mayagüez, PUERTO RICO* and  
<sup>3</sup>*Mississippi State University, USA*

**T11D**

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

K. Terao<sup>1</sup>, H. Oana<sup>2</sup> and M. Washizu<sup>2</sup>  
<sup>1</sup>*Kyoto University, JAPAN* and <sup>2</sup>*University of Tokyo, JAPAN*

**T12D**

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

H. Murahara<sup>1</sup>, N. Kaji<sup>1</sup>, M. Tokeshi<sup>1</sup> and Y. Baba<sup>1,2,3</sup>  
<sup>1</sup>*Nagoya University, JAPAN*, <sup>2</sup>*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN* and  
<sup>3</sup>*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<sup>1,2</sup>, E. Meyhofer<sup>2</sup> and K. Kurabayashi<sup>2</sup>  
<sup>1</sup>*National Taiwan University, TAIWAN* and <sup>2</sup>*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. Chansin<sup>1</sup>, R. Mulero<sup>2</sup>, J. Hong<sup>1</sup>, M.J. Kim<sup>2</sup>, A.J. deMello<sup>1</sup> and J.B. Edel<sup>1</sup>  
*Imperial College London, UK* and <sup>2</sup>*Drexel University, USA*

Nanotechnology - Others

**T17D**

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

T. Tsukahara<sup>1,2</sup>, A. Hibara<sup>1,3</sup> and T. Kitamori<sup>1,2,3</sup>  
<sup>1</sup>*University of Tokyo, JAPAN*, <sup>2</sup>*Japan Science and Technology Agency (JST), JAPAN* and  
<sup>3</sup>*Kanagawa Academy of Science and Technology, JAPAN*

Materials - Innovative Chip Materials

**T1E**

MOLDED NANOWELL ELECTRODES FOR SITE-SELECTIVE SINGLE LIPOSOME ARRAYS

P. Kim<sup>1</sup>, B.K. Lee<sup>2</sup>, H.Y. Lee<sup>2</sup>, T. Kawai<sup>2</sup> and K.Y. Suh<sup>1</sup>  
<sup>1</sup>*Seoul National University, KOREA* and <sup>2</sup>*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<sup>1,2</sup>, C.H. Lee<sup>2</sup> and J.Y. Kang<sup>1</sup>  
<sup>1</sup>Korea Institute of Science Technology, KOREA and <sup>2</sup>Yonsei University, KOREA

**Materials - Nanostructured Materials**

**T8E**

**SUPERHYDROPHOBIC SURFACES: FROM IRREVERSIBLE TO REVERSIBLE ELECTROWETTING**

N. Verplanck<sup>1</sup>, Y. Coffinier<sup>2</sup>, K. Madjour<sup>1</sup>, J.C. Camart<sup>1</sup>, R. Blossy<sup>2</sup>, R. Boukherroub<sup>2</sup> and V. Thomy<sup>1</sup>  
<sup>1</sup>IEMN, FRANCE and <sup>2</sup>IRL, 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-Yoav<sup>1</sup>, S. Yorish<sup>1</sup>, T. Elad<sup>2</sup>, S. Vernick<sup>1</sup>, S. Belkin<sup>2</sup> and Y. Shacham-Diamand<sup>1</sup>  
<sup>1</sup>Tel-Aviv University, ISRAEL and <sup>2</sup>Hebrew University of Jerusalem, ISRAEL

**T2F**

**DEVELOPMENT OF PORTABLE SURFACE PLASMON RESONANCE SENSOR WITH MULTI DETECTION POINTS**

H. Nakajima<sup>1</sup>, A. Hemmi<sup>2</sup>, K. Furui<sup>1</sup>, N. Soh<sup>1</sup>, K. Nakano<sup>1</sup>, Y. Asano<sup>3</sup>, K. Uchiyama<sup>3</sup>, N. Kaneki<sup>4</sup> and T. Imato<sup>1</sup>  
<sup>1</sup>Kyushu University, JAPAN, <sup>2</sup>Mebius Advanced Technology Ltd., JAPAN, <sup>3</sup>Tokyo Metropolitan University, JAPAN and <sup>4</sup>Muroran 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. Yu<sup>1</sup>, P.H. Yap<sup>2</sup> and A.Q. Liu<sup>1</sup>  
<sup>1</sup>Nanyang Technological University, SINGAPORE and <sup>2</sup>DSO 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. Darwish<sup>1</sup>, E. Baldrich<sup>2</sup>, E.J. Del Campo<sup>2</sup>, M. Moreno<sup>1</sup>, F.X. Muñoz<sup>2</sup>, R. Mas<sup>2</sup> and J. Samitier<sup>1</sup>  
<sup>1</sup>Universitat de Barcelona, SPAIN and <sup>2</sup>CNM-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. Anhoj, 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. Rousseau<sup>1</sup>, V. Perrais<sup>1</sup>, G. Charvet<sup>2</sup>, R. Guillemaud<sup>2</sup>, G. Lissorgues<sup>1</sup>, P. Meyrand<sup>3</sup> and B. Yvert<sup>3</sup>  
<sup>1</sup>Groupe ESIEE, FRANCE, <sup>2</sup>CEA-LETI, FRANCE and <sup>3</sup>CNIC-UMR, FRANCE

**T12F**

**EXAMINING CYTOTOXIC EFFECTS ON SINGLE CELLS USING AN IMPEDANCE SPECTROSCOPIC PLATFORM**

D. Malleo<sup>1</sup>, J.T. Nevill<sup>2</sup>, D. Di Carlo<sup>2</sup>, L.P. Lee<sup>2</sup> and H. Morgan<sup>1</sup>  
<sup>1</sup>University of Southampton, UK and <sup>2</sup>University of California, Berkeley, USA

**T13F**

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

T. Sun<sup>1</sup>, D. Holmes<sup>1</sup>, S. Gawad<sup>2</sup>, N.G. Green<sup>1</sup> and H. Morgan<sup>1</sup>  
<sup>1</sup>University of Southampton, UK and <sup>2</sup>Ecole 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 - Others**

**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. Kurooka<sup>1</sup>, K. Deguchi<sup>1</sup> and N. Miki<sup>1,2</sup>  
<sup>1</sup>Keio University, JAPAN and <sup>2</sup>Kanagawa Academy of Science and Technology, JAPAN

**T18F**

**SUSPENDED MICROCHANNEL RESONATORS WITH INTEGRATED ELECTRONIC READOUT FOR BIOMOLECULAR AND SINGLE CELL ANALYSIS**

R. Chunara<sup>1</sup>, T.P. Burg<sup>2</sup>, K. Payer<sup>2</sup>, P. Dextras<sup>2</sup> and S.R. Manalis<sup>2</sup>  
<sup>1</sup>Harvard - MIT Division of Health Sciences and Technology, USA and  
<sup>2</sup>Massachusetts 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

**MEMS & NEMS Technologies - Micro and Nano-Machining**

**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. Begolo<sup>1</sup>, T. Carofiglio<sup>1</sup>, G. Mistura<sup>1</sup> and M. Natali<sup>2</sup>  
<sup>1</sup>Università di Padova, ITALY and <sup>2</sup>ICIS-CNR, ITALY

**T4G**

**FABRICATION OF HIGH ASPECT RATIO STRUCTURES IN MICROFLUIDIC CHANNEL USING OPTOFLUIDIC MASKLESS LITHOGRAPHY**

S.E. Chung<sup>1</sup>, W. Park<sup>1</sup>, H. Park<sup>1</sup>, K. Yu<sup>2</sup>, N. Park<sup>1</sup> and S. Kwon<sup>1</sup>  
<sup>1</sup>Seoul National University, KOREA and  
<sup>2</sup>Korea 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. Tian<sup>1</sup>, Y. Zhao<sup>1</sup>, S. Thutupalli<sup>2</sup>, A. Phukan<sup>2</sup>, C. Keimel<sup>1</sup>, O. Boomhower<sup>1</sup>, M. Burrell<sup>1</sup> and L. Zhu<sup>1</sup>  
<sup>1</sup>GE Global Research Center, USA and <sup>2</sup>John 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<sup>1,2</sup>, F. Bos<sup>1,2</sup>, D.J. Broer<sup>1,2</sup>, M. Gillies<sup>1</sup>, J. de Goede<sup>1</sup>, T. Mol<sup>1</sup>, M. Reijme<sup>1</sup>, W. Talen<sup>1</sup>, H. Wilderbeek<sup>1</sup>, V. Khatavkar<sup>2</sup> and P. Anderson<sup>2</sup>  
<sup>1</sup>Philips Research Laboratories, THE NETHERLANDS and  
<sup>2</sup>Eindhoven University of Technology, THE NETHERLANDS

**T14G**

**SOFT MICROFLOW SENSORS**

R. Attia<sup>1</sup>, D. Pregibon<sup>2</sup>, P. Doyle<sup>2</sup>, J.L. Viovy<sup>1</sup> and D. Bartolo<sup>3</sup>  
<sup>1</sup>Institut Curie, FRANCE, <sup>2</sup>Massachusetts Institute of Technology, USA and <sup>3</sup>ESPC, 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. Utsumi<sup>1</sup>, T. Ikeda<sup>2</sup>, M. Minamitani<sup>2</sup> and K. Suwa<sup>2</sup>  
<sup>1</sup>University of Hyogo, JAPAN and <sup>2</sup>Fujipream Ltd., JAPAN

**MEMS & NEMS Technologies - Integration Strategies**

**T20G**

**ON-CHIP ANTIOXIDANT CAPACITY SCREENING USING INTEGRATED LOW-COST ORGANIC PHOTODIODES**

X. Wang<sup>1</sup>, M. Amatatongchai<sup>1,2</sup>, D. Nacapricha<sup>3</sup>, O. Hofmann<sup>1</sup>, J.C. deMello<sup>1</sup>, A.J. deMello<sup>1</sup> and D.D.C. Bradley<sup>1</sup>  
<sup>1</sup>Imperial College London, UK, <sup>2</sup>Ubonrajathane University, THAILAND and  
<sup>3</sup>Mahidol University, THAILAND

**MEMS & NEMS Technologies - Others**

**T21G**

**AN INTEGRATED CALORIMETRIC BIOSENSOR AND ITS CHARACTERIZATION**

S.-I. Yoon<sup>1</sup>, M.-H. Lim<sup>2</sup>, J.-S. Shin<sup>2</sup> and Y.-J. Kim<sup>1</sup>  
<sup>1</sup>Yonsei University, KOREA and <sup>2</sup>Yonsei University College of Medicine, KOREA



**Session 2A3**  
Cell Characterization**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<sup>1,2</sup>, L. Dauphinot<sup>1</sup>, T. Vitalis<sup>1</sup>, V. Studer<sup>1</sup>, Y. Chen<sup>2</sup>,  
J. Rossier<sup>1</sup> and M.-C. Potier<sup>1</sup><sup>1</sup>Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE and <sup>2</sup>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. Carbonaro<sup>1</sup>, L. Godley<sup>2</sup> and L.L. Sohn<sup>1</sup><sup>1</sup>University of California, Berkeley, USA and <sup>2</sup>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. Nagata<sup>1</sup>, Y. Yoshida<sup>1</sup>, T. Ishido<sup>1</sup>, H. Nagai<sup>1</sup>, Y. Tanaka<sup>1</sup>, S. Wakida<sup>1</sup>,  
Y. Baba<sup>1,2</sup>, M. Ishikawa<sup>1</sup> and K. Hirano<sup>1,3</sup><sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN,<sup>2</sup>Nagoya University, JAPAN and <sup>3</sup>Japan Science and Technology Agency (IST), 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

19:00 | Optional Conference Banquet at the Musée d'Orsay (ticket required)

Wednesday, October 10, 2007

8:30 - 9:10	<b>Plenary V</b>
	2-CHAMBER ATOMIC FORCE MICROSCOPE: TOWARDS A STRUCTURE/FUNCTION ANALYSIS OF MEMBRANE PROTEINS <b>Simon Scheuring</b> <i>Institute Curie, FRANCE</i>
9:10 - 9:15	Announcement of the μTAS 2008 Conference

Session 3A1 Genomics and Proteomics	Session 3B1 Nanofluidics
9:15 - 9:35	
<b>MICROFLUIDIC SCREENING OF APTAMER LIBRARIES</b> X. Lou <sup>1</sup> , L. Viel <sup>1</sup> , J. Qian <sup>1</sup> , E.T. Lagally <sup>1</sup> , J.B. H-Tok <sup>2</sup> , T.M. Tarasow <sup>2</sup> , A.J. Heeger <sup>1</sup> and H.T. Soh <sup>1</sup> <sup>1</sup> University of California, Santa Barbara, USA and <sup>2</sup> Lawrence Livermore National Laboratory, USA	<b>DNA MOVEMENT IN SUB-20 NM NANOSLITS</b> G. Salieb-Beugelaar <sup>1</sup> , J. Teapal <sup>1</sup> , J. van Nieuwkasteel <sup>1</sup> , D. Wijnperlé <sup>1</sup> , J.O. Tegenfeldt <sup>2</sup> , J.C.T. Eijkel <sup>1</sup> and A. van den Berg <sup>1</sup> <sup>1</sup> University of Twente, THE NETHERLANDS and <sup>2</sup> Lund University, SWEDEN
9:35 - 9:55	
<b>INTEGRATED AFFINITY CAPTURE, PURIFICATION AND CAPILLARY ELECTROPHORESIS MICRODEVICE FOR QUANTITATIVE DOUBLE- STRANDED DNA ANALYSIS</b> N.M. Toriello, C.N. Liu, N. Thaitrong and R.A. Mathies <i>University of California, Berkeley, USA</i>	<b>NOVEL DEVICE FOR ELECTROPHORETIC FOCUSING AND SEPARATION AT A MICROCHANNEL-NANOCHANNEL INTERFACE</b> T.A. Zangle, A. Mani and J.G. Santiago <i>Stanford University, USA</i>
9:55 - 10:15	
<b>HIGH-THROUGHPUT PROTEOMIC SAMPLE PRECONCENTRATION IN PDMS MICROFLUIDIC CHIP USING SURFACE-PATTERNED ION-SELECTIVE MEMBRANE</b> J.H. Lee, Y.-A. Song, S.J. Kim and J. Han <i>Massachusetts Institute of Technology, USA</i>	<b>DNA SEPARATION BY SQUARE PATTERNED NANOPILLAR CHIPS</b> T. Yasui <sup>1</sup> , N. Kaji <sup>1</sup> , R. Ogawa <sup>2</sup> , S. Hashioka <sup>2</sup> , M. Tokeshi <sup>1</sup> , Y. Horiike <sup>2</sup> and Y. Baba <sup>1,3,4</sup> <sup>1</sup> Nagoya University, JAPAN, <sup>2</sup> National Institute for Materials Science, JAPAN, <sup>3</sup> National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and <sup>4</sup> Japan Science and Technology Agency (JST), JAPAN

10:15 - 10:45 | Break

Session 3A2 Multiphase and Digital Microfluidic 2	Session 3B2 Active Bio-Based Devices
10:45 - 11:05	
<b>MICROFLUIDIC TOOLS FOR INVESTIGATING KINETICS AND THERMODYNAMICS OF CRYSTALLIZATION PROCESSES</b> P. Laval, J. Leng, M. Joanicot and J.-B. Salmon <i>CNRS-Rhodia-Bordeaux 1, FRANCE</i>	<b>AUTOMATED AND INTEGRATED MICRO SYSTEM FOR HIGH RESOLUTION IMAGING AND HIGH-THROUGHPUT SORTING OF C. ELEGANS</b> K. Chung, M. Crane and H. Lu <i>Georgia Institute of Technology, USA</i>
11:05 - 11:25	
<b>PHASE SEPARATION OF SEGMENTED FLOW BY THE PHOTOCATALYTIC WETTABILITY PATTERNING AND TUNING OF MICROCHANNEL SURFACE</b> G. Takei <sup>1</sup> , A. Aota <sup>1</sup> , A. Hibara <sup>1,2,3</sup> , T. Kitamori <sup>1,2,3</sup> and H.-B. Kim <sup>1,2,3</sup> <sup>1</sup> University of Tokyo, JAPAN, <sup>2</sup> Kanagawa Academy of Science and Technology, JAPAN and <sup>3</sup> Japan Science and Technology Agency (JST), JAPAN	<b>EUKARYOTIC FLAGELLA AS MOTILE TOOLS FOR MICROFLUIDIC DEVICES</b> H. Nakamura <sup>1</sup> , K. Kuribayashi <sup>1</sup> , H. Onoe <sup>1</sup> and S. Takeuchi <sup>1,2</sup> <sup>1</sup> The University of Tokyo, JAPAN and <sup>2</sup> Japan Science and Technology Agency (JST), JAPAN
11:25 - 11:45	
<b>SYNCHRONIZATION IN MICROFLUIDIC CIRCUITS</b> M. Prakash and N. Gershenfeld <i>Massachusetts Institute of Technology, USA</i>	<b>ELECTROACTIVE MICROFLUIDIC DEVICES FOR CONTROL OF INSECT CYBORG NEUROMUSCLAR SYSTEMS</b> A. Chung, D. Kim, L. Chen, R. Akhmechet, B. Cordovez and D. Erickson <i>Cornell University, USA</i>

11:45 - 13:30 | Lunch

13:30 - 14:10	<b>Plenary VI</b>
	CONTINUOUS PARTICLE CLASSIFICATION IN MICROFLUIDIC SYSTEMS <b>Minoru Seki</b> <i>Chiba University, JAPAN</i>
14:15 - 16:30	<b>Poster Session 3</b>

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

S. Haeberle<sup>1</sup>, S. Pausch<sup>1</sup>, R. Burger<sup>1</sup>, S. Lutz<sup>1</sup>, F. von Stetten<sup>1,2</sup>, R. Zengerle<sup>1,2</sup> and J. Duerée<sup>1</sup>  
<sup>1</sup>HSG-IMIT, GERMANY and <sup>2</sup>University 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. Arata<sup>1</sup>, F. Gillot<sup>2</sup> and H. Fujita<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>LIMMS-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. Vulto<sup>1</sup>, C. Klaunick<sup>1</sup>, M. Weidmann<sup>2</sup>, P. Zahn<sup>1</sup>, G. Dame<sup>1</sup> and G.A. Urban<sup>1</sup>  
<sup>1</sup>Ludwigs-Universität Freiburg, GERMANY and <sup>2</sup>University 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. Riegger<sup>1</sup>, J. Steigert<sup>1</sup>, S. Lutz<sup>1</sup>, W. Streule<sup>1</sup>, R. Zengerle<sup>1,2</sup> and J. Duerée<sup>1</sup>  
<sup>1</sup>University of Freiburg, GERMANY and <sup>2</sup>HSG-IMIT, GERMANY

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

F. Ike<sup>1</sup>, A. Kajita<sup>1</sup>, H. Aoki<sup>2</sup>, H. Kase<sup>2</sup>, T. Nagamune<sup>3</sup>, S. Morikawa<sup>4</sup>, A. Yoshiki<sup>1</sup>, Y. Obata<sup>1</sup> and Y. Yamagata<sup>1</sup>  
<sup>1</sup>RIKEN, JAPAN, <sup>2</sup>Fuence Co. Ltd., JAPAN, <sup>3</sup>University of Tokyo, JAPAN and <sup>4</sup>National Institute of Infectious Diseases, JAPAN

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

S.-R. Lee<sup>1</sup>, K. Sawada<sup>1,2</sup>, H. Takao<sup>1,2</sup> and M. Ishida<sup>1,2</sup>  
<sup>1</sup>Toyohashi University of Technology, JAPAN and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN

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

H. Yun<sup>1</sup>, J.K. Min<sup>1</sup>, W.G. Lee<sup>1</sup>, H. Bang<sup>1</sup>, J. Park<sup>2</sup>, C. Chung<sup>2</sup>, J.K. Chang<sup>2</sup> and D.-C. Han<sup>1</sup>  
<sup>1</sup>Seoul National University, KOREA and <sup>2</sup>NanoTek, Inc., KOREA

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

K.S. Yang<sup>1</sup>, H.J. Kim<sup>2</sup>, J.K. Ahn<sup>2</sup> and D.H. Kim<sup>1</sup>  
<sup>1</sup>Korea Advanced Institute of Science and Technology (KAIST), KOREA and <sup>2</sup>Chungnam 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<sup>1,2</sup>, S.-M. Lee<sup>1</sup>, B.H. Cha<sup>1</sup>, S.K. Kim<sup>1</sup>, J.H. Park<sup>2</sup> and T.S. Kim<sup>1</sup>  
<sup>1</sup>Korea Institute of Science and Technology (KIST), KOREA and <sup>2</sup>Korea 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. Suzuki<sup>1</sup> and S. Takeuchi<sup>1,2</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN

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

L.C. Hsiung<sup>1</sup>, C.L. Chiu<sup>1</sup>, C.H. Yang<sup>1</sup>, A.M. Wo<sup>1</sup>, H. Lee<sup>1</sup>, D.S. Jong<sup>1</sup>, C.H. Chiu<sup>1</sup>, J.Y. Cheng<sup>2</sup>, M.C. Ho<sup>3</sup>, C.Y. Hsu<sup>1</sup> and M.C. Hsu<sup>1</sup>  
<sup>1</sup>National Taiwan University, TAIWAN, <sup>2</sup>Academia Sinica, TAIWAN and <sup>3</sup>National 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. Ju<sup>1</sup>, Y. Yamagata<sup>2</sup>, T. Higuchi<sup>1</sup>, K. Inoue<sup>3</sup> and H. Ohmori<sup>2</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>RIKEN, JAPAN and <sup>3</sup>Fuence 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. Frey<sup>1</sup>, F.H. Falke<sup>2</sup>, P.D. van der Wal<sup>1</sup>, N.F. de Rooij<sup>1</sup> and M. Koudelka-Hep<sup>1</sup>  
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**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. Akagi<sup>1</sup>, K. Yamamoto<sup>2</sup>, T. Yotsuya<sup>3</sup>, A. Ishida<sup>4</sup>, T. Mori<sup>5</sup>, H. Kawata<sup>3</sup>, Y. Hirai<sup>3</sup> and M. Seki<sup>3,6</sup>

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**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. Nagakura<sup>1</sup>, K. Nukada<sup>2</sup>, A. Yamada<sup>2</sup>, M. Ikeuchi<sup>3</sup> and K. Ikuta<sup>3</sup>

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**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  
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**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. Mulder<sup>1</sup>, S. Koster<sup>1</sup>, G. Molema<sup>2</sup> and E. Verpoorte<sup>1</sup>

<sup>1</sup>*University of Groningen, THE NETHERLANDS* and <sup>2</sup>*University Medical Center Groningen, THE NETHERLANDS*

**W36A**

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

J.M. Meacham<sup>1</sup>, V. Zarnitsyn<sup>2</sup>, M. Varady<sup>2</sup>, J. Atencia<sup>1</sup>, L. Locascio<sup>1</sup>, F.L. Degertekin<sup>2</sup> and A.G. Fedorov<sup>2</sup>

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**W37A**

**HIGH THROUGHPUT AND HIGH EFFICIENCY ELECTROPORATION CHIP WITH POLYELECTROLYTE CURRENT PATHS**

J.H. Kim<sup>1,2</sup>, Z.H. Kim<sup>2</sup>, T.S. Kim<sup>1</sup> and S.K. Kim<sup>1</sup>

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**W38A**

**MECHANICAL CELL LYSIS USING PDMS MEMBRANE DEFLECTION IN A MICROFLUIDIC DEVICE**

Y.C. Kim<sup>1,2</sup>, W. Choi<sup>1</sup>, Y.W. Hwang<sup>2</sup>, S.-J. Park<sup>2</sup> and J.-K. Park<sup>1</sup>

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**W39A**

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

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

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**W40A**

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

L.K. Chin<sup>1</sup>, A.Q. Liu<sup>1</sup>, C.S. Lim<sup>1</sup> and P.H. Yap<sup>2</sup>

<sup>1</sup>*Nanyang Technological University, SINGAPORE* and <sup>2</sup>*DSO National Laboratories, SINGAPORE*

**W41A**

**NANOFILTER FOR EFFICIENT BACTERIA TRAPPING AND DETECTION**

L. Zhu<sup>1,2</sup>, X.L. Peh<sup>1</sup>, C.Y. Teo<sup>1</sup>, H.M. Ji<sup>1</sup>, H.H. Feng<sup>1</sup> and W.-T. Liu<sup>1</sup>

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**W42A**

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

L.A.G. Lin<sup>1</sup>, Y.F. Yu<sup>1</sup>, A.Q. Liu<sup>1</sup> and P.H. Yap<sup>2</sup>

<sup>1</sup>*Nanyang Technological University, SINGAPORE* and <sup>2</sup>*DSO National Laboratories, SINGAPORE*

**W43A**

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

M.D.C. Lopez-Garcia<sup>1</sup>, R.L. Monson<sup>1</sup>, K. Haubert<sup>2</sup> and D.J. Beebe<sup>1</sup>

<sup>1</sup>*University of Wisconsin, USA* and <sup>2</sup>*Vitae LLC, USA*

**W44A**

**PARALLEL BIOPARTICLE SORTING WITH TGP SOLUTION IN 3-DIMENSIONAL MICROFLOW SYSTEM**

H. Sugino<sup>1</sup>, Y. Nara<sup>2</sup>, Y. Shirasaki<sup>2</sup>, T. Arakawa<sup>2</sup>, S. Shoji<sup>2</sup> and T. Funatsu<sup>1</sup>

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**W45A**

**RAPID AND SIMPLE UV-DIRECTED MICROPATTERNING OF PROTEINS**

M. Théry<sup>1</sup>, A. Azioune<sup>2</sup>, J. Fink<sup>2</sup>, R. Dupont<sup>1</sup>, M. Piel<sup>2</sup> and F. Chatelain<sup>1</sup>

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**W46A**

**CA<sup>2+</sup> 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<sup>1,2</sup>, W. Laureyn<sup>1</sup> and L. Lagae<sup>1</sup><sup>1</sup>Interuniversity Microelectronics Center (IMEC), BELGIUM and<sup>2</sup>Katholieke 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. Tsuda<sup>1</sup>, M. Gel<sup>1</sup>, H. Oana<sup>1,2</sup>, B. Techaumnat<sup>3</sup>, H. Kotera<sup>2,4</sup> and M. Washizu<sup>1,2</sup><sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN<sup>3</sup>Chulalongkorn University, THAILAND, and <sup>4</sup>Kyoto University, JAPAN**Microsystems for Life Sciences - Tissue Engineering****W50A****NANOPOROUS TITANIA FILMS FOR THE PROMOTION OF STEM CELL PROLIFERATION**A. Iles<sup>1</sup>, H. Hosseinkhani<sup>2</sup>, M. Hosseinkhani<sup>3</sup> and H. Lindstrom<sup>2</sup><sup>1</sup>University of Hull, UK, <sup>2</sup>National Institute of Materials Science, JAPAN and<sup>3</sup>Kyoto 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. Schober<sup>1</sup>, M. Gebinoga<sup>1</sup>, A. Albrecht<sup>1</sup>, T. Lübeck<sup>1</sup>, T. Henkel<sup>2</sup>,P. Hoffmann<sup>2</sup>, U. Klenz<sup>2</sup>, G. Schlingloff<sup>4</sup>, Th. Frank<sup>3</sup> and A. Groß<sup>1</sup><sup>1</sup>Technische Universität Ilmenau, GERMANY, <sup>2</sup>Institute of Physical HighTechnology GERMANY, <sup>3</sup>Little Things Factory, GERMANY and<sup>4</sup>Nanomics Technologies GmbH, GERMANY**Microsystems for Life Sciences - Others****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. Ishido<sup>1</sup>, H. Nagata<sup>1</sup>, Y. Tanaka<sup>1</sup>, M. Ishikawa<sup>1</sup> and K. Hirano<sup>1,2</sup><sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and<sup>2</sup>Japan 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<sup>1,4</sup>, L. Mahmoudian<sup>1</sup>, N. Kaji<sup>1</sup>, M. Tokeshi<sup>1</sup> and Y. Baba<sup>1,2,3</sup><sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>National Institute of Advanced Industrial Science andTechnology (AIST), JAPAN, <sup>3</sup>Japan Science and Technology Agency (JST), JAPAN and<sup>4</sup>Nagoya 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. Kitagawa<sup>1</sup>, T. Suzuki<sup>2</sup>, H. Shinohara<sup>2</sup>, J. Mizuno<sup>2</sup>, S. Shoji<sup>2</sup> and K. Otsuka<sup>1</sup><sup>1</sup>Kyoto University, JAPAN and <sup>2</sup>Waseda 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. Detobel<sup>1</sup>, V. Fekete<sup>1</sup>, W. De Malsche<sup>2</sup>, H. Gardeniers<sup>2</sup> and G. Desmet<sup>1</sup><sup>1</sup>Vrije Universiteit, BELGIUM and <sup>2</sup>University 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. Takamura<sup>1</sup>, W. Nagasaka<sup>1</sup>, K. Ueno<sup>1</sup>, Y. Tomizawa<sup>1</sup> and E. Tamiya<sup>1,2</sup><sup>1</sup>Japan Advance Institute Science Technology (JAIST), JAPAN and<sup>2</sup>Osaka University, JAPAN**W11B****NOVEL ONLINE CONCENTRATION OF DNA TO SHORTEN MICROCHANNEL LENGTH USING HETEROGENEOUS BUFFER COMBINATIONS ON MICROCHIP ELECTROPHORESIS**H. Nagata<sup>1</sup>, Y. Yoshida<sup>1</sup>, T. Ishido<sup>1</sup>, M. Ishikawa<sup>1</sup> and K. Hirano<sup>1,2</sup><sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and<sup>2</sup>Japan Science and Technology Agency (JST), JAPAN**W12B****ON-CHIP LIQUID CHROMATOGRAPHY - ATMOSPHERIC PRESSURE IONIZATION - MASS SPECTROMETRY**V. Saarela<sup>1</sup>, M. Haapala<sup>2</sup>, J. Pölö<sup>2</sup>, N. Kalkkinen<sup>2</sup>, M. Hukka<sup>2</sup>, K. Kolari<sup>3</sup>,R.A. Ketola<sup>2</sup>, R. Kostianen<sup>2</sup>, T. Kotiaho<sup>2</sup> and S. Franssila<sup>1</sup><sup>1</sup>Helsinki University of Technology, FINLAND,<sup>2</sup>University of Helsinki, FINLAND and<sup>3</sup>VTT Technical Research Center, FINLAND

**W13B**

**PARTICLE SEPARATION VIA ADJUSTABLE VELOCITY PROFILE GENERATED BY EOF AND PRESSURE DRIVEN FLOW**

Y.F. Yu<sup>1</sup>, P.H. Yap<sup>2</sup> and A.Q. Liu<sup>1</sup>

<sup>1</sup>Nanyang Technological University, SINGAPORE and

<sup>2</sup>DSO 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. Uchiyama<sup>1</sup>, M. Sasaki<sup>1</sup>, Y. Kihira<sup>1</sup>, K. Kuriyama<sup>1</sup>,

Y. Kikutani<sup>2</sup>, K. Mawatari<sup>2</sup> and T. Kitamori<sup>3</sup>

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<sup>2</sup>Kanagawa Academy of Science and Technology, JAPAN and

<sup>3</sup>University 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. Matsushita<sup>1</sup>, A. Murata<sup>2</sup>, T. Murata<sup>3</sup>, H. Tanibata<sup>4</sup>, T. Suzuki<sup>1</sup> and T. Ichimura<sup>1</sup>

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<sup>3</sup>Mitsui Zosen Plant Engineering, Inc., JAPAN and

<sup>4</sup>Mitsui 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 - Others**

**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. Leslie<sup>1</sup>, C.J. Easley<sup>2</sup>, J.P. Landers<sup>1</sup>, M. Utz<sup>1</sup> and M.R. Begley<sup>1</sup>

<sup>1</sup>University of Virginia, USA and <sup>2</sup>Vanderbilt University, USA

**W7C**

**VALVES FOR AUTONOMOUS MICROFLUIDIC CAPILLARY SYSTEMS**

M. Zimmermann<sup>1,2</sup>, P. Hunziker<sup>1</sup> and E. Delamarche<sup>2</sup>

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<sup>2</sup>IBM 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. Suzuki<sup>1</sup>, I. Kanno<sup>1</sup>, J. Ogawa<sup>1</sup>, K. Kanda<sup>2</sup> and H. Kotera<sup>1</sup>

<sup>1</sup>Kyoto University, JAPAN and

<sup>2</sup>Advanced 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. Nestler<sup>1</sup>, A. Morschhauer<sup>1</sup>, K. Hiller<sup>1</sup>, S. Bigot<sup>2</sup>, J. Auerswald<sup>3</sup>, J. Gavillet<sup>4</sup>, T. Otto<sup>5</sup> and T. Gessner<sup>1,5</sup><sup>1</sup>Chemnitz University of Technology, GERMANY, <sup>2</sup>Cardiff University, UK, <sup>3</sup>CSEM Alpnach, SWITZERLAND, <sup>4</sup>CEA Liten, FRANCE and <sup>5</sup>Fraunhofer 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. Mielnik<sup>1</sup>, J. Voitel<sup>1</sup>, L.A. Solli<sup>2</sup> and L. Furuberg<sup>1</sup><sup>1</sup>SINTEF, NORWAY and <sup>2</sup>Norchip AS, NORWAY**W15C****TOWARDS A COMPREHENSIVE CENTRIFUGAL PROCESS INTEGRATION BY ROTATIONALLY INDUCED LYOPHILIZATE DISSOLUTION AND CELL LYSIS**S. Lutz<sup>1</sup>, P. Lang<sup>1</sup>, B. Faltin<sup>2</sup>, S. Haerberle<sup>1</sup>, F. von Stetten<sup>2</sup>, R. Zengerle<sup>1,2</sup> and J. Duerce<sup>1</sup><sup>1</sup>HSG-IMIT, GERMANY and <sup>2</sup>University 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 Vroey<sup>1</sup>, D. Grenier<sup>2</sup> and M.-C. Jullien<sup>2</sup><sup>1</sup>Université Catholique de Louvain, BELGIUM and<sup>2</sup>Université 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<sup>1,2</sup>, W.-L. Ong<sup>1</sup>, L. Yobas<sup>1</sup> and D. Trau<sup>2</sup><sup>1</sup>Institute of Microelectronics, SINGAPORE and<sup>2</sup>National 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. Chokkalingam<sup>1</sup>, C. Priest<sup>1</sup>, M. Krämer<sup>2</sup>, W.F. Maier<sup>2</sup>, S. Herminghaus<sup>1</sup> and R. Seemann<sup>1</sup><sup>1</sup>Max Planck Institute for Dynamics and Self-Organization, GERMANY and<sup>2</sup>Saarland 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. Kobayashi<sup>1</sup>, G.T. Vladislavjevic<sup>2</sup>, K. Uemura<sup>1</sup> and M. Nakajima<sup>1,3</sup><sup>1</sup>National Food Research Institute, JAPAN and<sup>2</sup>Loughborough University, UK and <sup>3</sup>University 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. Franzke 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. Nguyen<sup>1</sup>, T.-H. Ting<sup>1</sup>, Y.-F. Yap<sup>1</sup>, T.-N. Wong<sup>1</sup>, J.C.-K. Chai<sup>1</sup>,W.-L. Ong<sup>2</sup>, J. Zhou<sup>1,2</sup>, S.-H. Tan<sup>1,2</sup> and L. Yobas<sup>2</sup><sup>1</sup>Nanyang Technological University, SINGAPORE and<sup>2</sup>Institute of Microelectronics, SINGAPORE**Microfluidics - Others****W31C****DYNAMICS MEASUREMENT OF STRUCTURAL CHANGE OF HELICAL POLYMER USING THERMAL LENS MICROSCOPY AND MICROFLUIDIC TECHNIQUE**K. Osato<sup>1</sup>, M. Tokeshi<sup>1,2</sup>, N. Kaji<sup>1</sup>, R. Anraku<sup>3</sup>, T. Asai<sup>3</sup>, A. Hattori<sup>3</sup>,K. Mawatari<sup>2</sup>, T. Kitamori<sup>2,4</sup>, E. Yashima<sup>1</sup> and Y. Baba<sup>1,5,6</sup><sup>1</sup>Nagoya University, JAPAN,<sup>2</sup>Kanagawa Academy of Science and Technology, JAPAN,<sup>3</sup>Nippon Sheet Glass Co. Ltd., JAPAN, <sup>4</sup>University of Tokyo, JAPAN,<sup>5</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and<sup>6</sup>Japan Science and Technology Agency (JST), JAPAN**W32C****GUIDED SELF-ASSEMBLY OF MICROLATCHES USING RAILED MICROFLUIDICS AND OPTOFLUIDIC MASKLESS LITHOGRAPHY**B. Kim<sup>1</sup>, S.E. Chung<sup>1</sup>, H. Park<sup>1</sup>, W. Park<sup>1</sup>, K. Yu<sup>2</sup>, and S. Kwon<sup>1</sup><sup>1</sup>Seoul National University, KOREA and<sup>2</sup>Korea Electrical Engineering and Science Research Institute, KOREA**W33C****MULTIPLE CORE-SHEATH LIQUID TRANSFER USING MATRIX ARRANGEMENT OF 3D SHEATH FLOWS**H. Sato<sup>1,2</sup>, Y. Sasamoto<sup>1</sup>, T. Sekiguchi<sup>1</sup>, T. Homma<sup>1</sup> and S. Shoji<sup>1</sup><sup>1</sup>Waseda University, JAPAN and<sup>2</sup>Research Fellow of the Japan Society for the Promotion of Science, JAPAN

Nanotechnology - Nanofluidics

W1D

A NANOFUIDIC-BASED ENZYMATIC REACTION ON A CHIP

T. Tsukahara<sup>1,2</sup>, E. Tamaki<sup>1</sup>, A. Hibara<sup>1,3</sup> and T. Kitamori<sup>1,2,3</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN and  
<sup>3</sup>Kanagawa 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. Reisner<sup>1,2</sup>, J.P. Beech<sup>1</sup>, N.B. Larsen<sup>2</sup>, H. Flyvbjerg<sup>2</sup>,  
 A. Kristensen<sup>2</sup> and J.O. Tegenfeldt<sup>1</sup>  
<sup>1</sup>Lund University, SWEDEN and  
<sup>2</sup>Technical 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. Talasaz<sup>1</sup>, T.A. Zangle<sup>1</sup>, C. Tropini<sup>2</sup>, R. Dick<sup>1</sup>, F. Pease<sup>1</sup>,  
 R.W. Davis<sup>1</sup> and J.G. Santiago<sup>1</sup>  
<sup>1</sup>Stanford University, USA and <sup>2</sup>University 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. Lee<sup>1</sup>, H. Kinoshita<sup>1</sup>, T. Yamamoto<sup>1</sup>, H. Noji<sup>2</sup> and T. Fujii<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Osaka University, JAPAN

W12D

NANO ELISA SYSTEM FOR HIGHLY EFFICIENT AND SENSITIVE MOLECULAR RECOGNITION

K. Mawatari<sup>1</sup>, R. Kojima<sup>2</sup>, B. Renberg<sup>2</sup> and T. Kitamori<sup>1,2</sup>  
<sup>1</sup>Kanagawa Academy of Science and Technology, JAPAN and  
<sup>2</sup>University 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 Berre<sup>1</sup>, A. Yamada<sup>2</sup>, Y. Chen<sup>1</sup> and D. Baigl<sup>1</sup>  
<sup>1</sup>Ecole Normale Supérieure, FRANCE and <sup>2</sup>Kyoto 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. Onoshima<sup>1</sup>, N. Kaji<sup>1</sup>, M. Tokeshi<sup>1</sup> and Y. Baba<sup>1,2,3</sup>  
<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and  
<sup>3</sup>Japan 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. Ishida<sup>1</sup>, Y. Kazoe<sup>2</sup>, Y. Sato<sup>2</sup> and N. Miki<sup>2</sup>  
<sup>1</sup>Ricoh, JAPAN and <sup>2</sup>Keio 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. Chung<sup>1</sup>, U.-C. Yi<sup>2</sup> and S.K. Cho<sup>1</sup>  
<sup>1</sup>University of Pittsburgh, USA and <sup>2</sup>Core MicroSolutions Inc., USA

W5E

SLIDING BEHAVIOR OF WATER DROPLETS SANDWICHED BETWEEN HYDROPHOBIC SURFACES

S. Suzuki<sup>1,2</sup>, A. Nakajima<sup>1,2</sup>, M. Sakai<sup>2</sup>, A. Hashimoto<sup>2</sup>,  
 N. Yoshida<sup>2,3</sup>, Y. Kameshima<sup>1,2</sup> and K. Okada<sup>1</sup>  
<sup>1</sup>Tokyo Institute of Technology, JAPAN,  
<sup>2</sup>Kanagawa Academy of Science and Technology, JAPAN and  
<sup>3</sup>University 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. Schondelmaier 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. Verdoold<sup>1</sup>, W. De Malsche<sup>1,2</sup>, G. Desmet<sup>2</sup> and J.G.E. Gardeniers<sup>1</sup>  
<sup>1</sup>*University of Twente, THE NETHERLANDS* and  
<sup>2</sup>*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. Pyo<sup>1</sup>, M.Y. Jung<sup>1</sup>, S.H. Park<sup>1</sup>, Y.-B. Shin<sup>2</sup> and B.H. Jung<sup>2</sup>  
<sup>1</sup>*Electronics and Telecommunications Research Institute (ETRI), KOREA* and  
<sup>2</sup>*Korea Research Institute of Bioscience and Biotechnology (KRIBB), KOREA*

W4F

**MICROFLUIDIC ARRAY TO STUDY PROTEASE ACTIVITY**

D.A. Raorane<sup>1</sup>, F. Chen<sup>2</sup> and A. Majumdar<sup>1</sup>  
<sup>1</sup>*University of California, Berkeley, USA* and  
<sup>2</sup>*Lawrence Berkeley National Laboratory, USA*

W5F

**MULTI-TOTAL INTERNAL REFLECTION IN POLYDIMETHYLSILOXANE MICROFLUIDICS FOR ENHANCED ABSORBANCE DETECTION**

J.S. Kee<sup>1,2</sup>, D.P. Poenar<sup>2</sup> and L. Yobas<sup>1</sup>  
<sup>1</sup>*Institute of Microelectronics, SINGAPORE* and  
<sup>2</sup>*Nanyang Technological University, SINGAPORE*

W6F

**NIR MICRO SPECTROMETRY OF CHEMICALLY AGGRESSIVE FLUIDS**

S. Bargiel<sup>1</sup>, J. Dziuban<sup>1</sup>, R. Walczak<sup>1</sup>, P. Knapkiewicz<sup>1</sup>, L. Nieradko<sup>2</sup>, A. Grzegorska<sup>1</sup> and B. Latecki<sup>3</sup>  
<sup>1</sup>*Wroclaw University of Technology, POLAND*, <sup>2</sup>*University of Franche-Comté, FRANCE* and  
<sup>3</sup>*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. Galopin<sup>1</sup>, M. Beaugeois<sup>2</sup>, F. Lapiere<sup>1</sup>, M. Bouzaoui<sup>2</sup>, J.C. Camart<sup>1</sup>, V. Thomy<sup>1</sup> and B. Pinchemel<sup>2</sup>  
<sup>1</sup>*IEMN, FRANCE* and <sup>2</sup>*Interdisciplinary Research Institute (IRI), FRANCE*

Detection Technologies - Electrochemical

W9F

**A BIOSENSOR BASED ON INTERDIGITATED ELECTRODES AND MICROSCOPIC MANIPULATION OF MAGNETIC PARTICLES**

Z. Peng<sup>1</sup>, P. Hesketh<sup>1</sup>, W.R. Heinemann<sup>2</sup> and K. Kellar<sup>3</sup>  
<sup>1</sup>*Georgia Institute of Technology, USA*, <sup>2</sup>*University of Cincinnati, USA* and  
<sup>3</sup>*Center for Disease Control and Prevention, USA*

W10F

**ADAPTIVE NANOWIRES FOR SWITCHABLE MICROFLUIDIC DEVICES**

E. Piccin<sup>1</sup>, R. Laocharoensuk<sup>2</sup>, J. Burdick<sup>2</sup>, E. Carrilho<sup>1</sup> and J. Wang<sup>2</sup>  
<sup>1</sup>*University of São Paulo, BRAZIL* and <sup>2</sup>*Arizona State University, USA*

W11F

**RAPID, SEQUENCE SPECIFIC, REUSABLE ELECTRONIC DNA SENSOR IN MICROFLUIDIC DEVICES**

E. Pavlovic<sup>1</sup>, R.Y. Lai<sup>1</sup>, B. Ferguson<sup>1</sup>, J.S. Swensen<sup>1</sup>, T.-T. Wu<sup>2</sup>, R. Sun<sup>2</sup>, A.J. Heeger<sup>1</sup>, K.W. Plaxco<sup>1</sup> and H.T. Soh<sup>1</sup>  
<sup>1</sup>*University of California, Santa Barbara, USA* and  
<sup>2</sup>*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 - Others

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. Choudhury<sup>1</sup>, P.J. Hesketh<sup>1</sup>, Z. Hu<sup>1,2</sup> and T.G. Thundat<sup>2</sup>  
<sup>1</sup>*Georgia Institute of Technology, USA* and <sup>2</sup>*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. Hosogi<sup>1</sup>, G. Hashiguchi<sup>1</sup>, K. Ayano<sup>1</sup> and H. Fujita<sup>2</sup>  
<sup>1</sup>*Kagawa University, JAPAN* and <sup>2</sup>*University 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<sup>1,2</sup> and H. Inoue<sup>1</sup>  
<sup>1</sup>*Yokohama National University, JAPAN* and <sup>2</sup>*Japan 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. Ng<sup>1</sup>, Z.F. Wang<sup>1</sup> and N.F. de Rooij<sup>2</sup>  
<sup>1</sup>*Singapore Institute of Manufacturing Technology, SINGAPORE* and <sup>2</sup>*University 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<sup>1,2</sup>, K.S. Lee<sup>1</sup>, K.S. Shin<sup>1</sup>, J.H. Kim<sup>1</sup>, K.J. Lee<sup>2</sup>, J.Y. Kang<sup>1</sup>, S. Kim<sup>3</sup> and T.S. Kim<sup>1</sup>  
<sup>1</sup>*Korea Institute of Science and Technology (KIST), KOREA*, <sup>2</sup>*Korea University, KOREA* and <sup>3</sup>*Kyungwon University, KOREA*

W15G

TRANSPORTATION PERFORMANCES OF MICROMACHINED LINEAR BROWNIAN MOTORS  
E. Altintas<sup>1</sup>, E. Sarajlic<sup>1</sup>, K.F. Böhringer<sup>2</sup> and H. Fujita<sup>1</sup>  
<sup>1</sup>*University of Tokyo, JAPAN* and <sup>2</sup>*University 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 - Others

W18G

DEMONSTRATION OF A TELEMETRIC SYSTEM USING GASTRIC-FLUID-UTILIZING MICRO BATTERY  
H. Jimbo and N. Miki  
*Keio University, JAPAN*



Session 3A3  
Cell Arrays

Session 3B3  
Detection 3

16:30 - 16:50

STUDY OF CELL-CELL COMMUNICATION USING OPTICALLY ASSEMBLED 3D LIVING CELL MICROARRAYS

W. Timp<sup>1</sup>, U. Mirsaidov<sup>2</sup>, K.A. Timp<sup>2</sup>, M. Mir<sup>2</sup>, G. Timp<sup>2</sup> and P. Matsudaira<sup>1</sup>  
<sup>1</sup>Massachusetts Institute of Technology, USA and  
<sup>2</sup>University 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<sup>1,2</sup>, H. Yamamoto<sup>1</sup>, M. Ohoka<sup>3</sup>, I. Kanno<sup>1</sup>, M. Washizu<sup>2,4</sup> and H. Kotera<sup>1,2</sup>  
<sup>1</sup>Kyoto University, JAPAN, <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN, <sup>3</sup>Advanced Software Technology and Mechatronics Research Institute in Kyoto, JAPAN and  
<sup>4</sup>University of Tokyo, JAPAN

A RAILED MICROFLUIDIC CHANNEL FOR MANIPULATION OF FINNED MICROTRAINS

S.E. Chung<sup>1</sup>, H. Park<sup>1</sup>, W. Park<sup>1</sup>, B. Kim<sup>1</sup>, K. Yu<sup>2</sup> and S. Kwon<sup>1</sup>  
<sup>1</sup>Seoul National University, KOREA and  
<sup>2</sup>Korea Electrical Engineering and Science Research Institute, KOREA

17:10 - 17:30

ASYMMETRIC CELL DIVISION INDUCED BY MICROENVIRONMENT GEOMETRY

M. Thery<sup>1,2</sup>, A. Jimenez-Dalmaroni<sup>3</sup>, V. Racine<sup>1</sup>, M. Bornens<sup>1</sup> and F. Julicher<sup>3</sup>  
<sup>1</sup>Institut Curie, FRANCE, <sup>2</sup>Commissariat à l'Energie Atomique (CEA), FRANCE and  
<sup>3</sup>Max Plank Institute, GERMANY

METAMATERIALS FOR HYDRODYNAMICS: REFRACTION, FOCUSING AND BEAM STEERING FOR PARTICLES AND CELLS

K.J. Morton<sup>1</sup>, O.K. Tsui<sup>2</sup>, J.C. Sturm<sup>1</sup>, R.H. Austin<sup>1</sup> and S.Y. Chou<sup>1</sup>  
<sup>1</sup>Princeton University, USA and <sup>2</sup>Boston University, USA

17:30 p.m. | Adjourn for the day

Thursday, October 11, 2007

**Session 4A1**  
Clinical Diagnostic 2

**Session 4B1**  
Surface Modification and Characterization

9:15 - 9:35

**A FULLY INTEGRATED MICROFLUIDIC GENETIC ANALYSIS DEVICE FOR THE DETECTION OF BLOOD CANCERS**  
L.A. Legendre<sup>1</sup>, D.C. Leslie<sup>1</sup>, C.J. Morris<sup>1</sup>, A. Barron<sup>2</sup>, R. McClure<sup>3</sup> and J.P. Landers<sup>1</sup>  
<sup>1</sup>University of Virginia, USA, <sup>2</sup>Northwestern University, USA and <sup>3</sup>Mayo Clinic, USA

**PHOTO-PATTERNED MULTI-ENZYMATIC MICROREACTORS**  
T.B. Stachowiak<sup>1,2</sup>, T.C. Logan<sup>1</sup>, D.S. Clark<sup>1</sup>, F. Svec<sup>2</sup> and J.M.J Fréchet<sup>1,2</sup>  
<sup>1</sup>University of California, Berkeley, USA and  
<sup>2</sup>Lawrence 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. Yamamoto<sup>1</sup>, M. Yamada<sup>2</sup>, S. Fukushima<sup>3</sup>, M. Yasuda<sup>1</sup> and M. Seki<sup>1,3</sup>  
<sup>1</sup>Osaka Prefecture University, JAPAN, <sup>2</sup>Tokyo Women's Medical University, JAPAN and  
<sup>3</sup>Chiba 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. Kwon<sup>1</sup>, J. Choi<sup>1</sup>, N. Patankar<sup>2</sup> and J. Lee<sup>1</sup>  
<sup>1</sup>Seoul National University, KOREA and <sup>2</sup>Northwestern University, USA

10:15 a.m. - 10:45 a.m.

Break

**Session 4A2**  
Dielectrophoretic Cell Handling and Sorting

**Session 4B2**  
Acoustic Devices

10:45 - 11:05

**IN VITRO FERTILIZATION AND DEVELOPMENTS OF HEALTHY OOCYTES BY A DIELECTROPHORETIC SEPARATION CHIP**  
W. Choi<sup>1</sup>, J.-S. Kim<sup>2</sup>, D.-H. Lee<sup>1</sup>, D.-B. Koo<sup>2</sup>, K.-K. Lee<sup>2</sup> and J.-K. Park<sup>1</sup>  
<sup>1</sup>Korea Advanced Institute of Science and Technology (KAIST), KOREA and  
<sup>2</sup>Korea 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



# $\mu$ TAS 2007

Eleventh International Conference on Miniaturized  
Systems for Chemistry and Life Sciences