



Technical Program

The Executive Committee reserves the right to amend the program if necessary.

Sunday, October 26

09:00 - 16:30 **Full and Half-Day Workshops (San Antonio Marriott Rivercenter)**

Workshop 1 (Full Day)

MICROFABRICATION VIA 3D PRINTING

Michael Breadmore, *University of Tasmania, AUSTRALIA*

Rosanne Guijt, *University of Tasmania, AUSTRALIA*

Workshop 2 (Full Day)

PAPER-BASED MICROFLUIDICS

Charles S. Henry, *Colorado State University, USA*

Workshop 3 (Half-Day, Morning)

DIAGNOSTICS TECHNOLOGIES FOR POINT OF CARE AND RESOURCE LIMITED SETTINGS

Aydogan Ozcan, *University of California, Los Angeles, USA*

David Erickson, *Cornell University, USA*

Sandeep Kumar Vashist, *University of Freiburg - IMTEK, GERMANY*

Aman Russom, *KTH Royal Institute of Technology, SWEDEN*

Michelle Khine, *University of California, Irvine, USA*

Victor M. Ugaz, *Texas A&M University, USA*

Workshop 4 (Half-Day, Afternoon)

INERTIAL MICROFLUIDICS

Dino Di Carlo, *University of California, Los Angeles, USA*

Workshop 5 (Half-Day, Afternoon)

SIMULATING MICROFLUIDIC PHENOMENA WITH STAR-CCM+

Victor M. Ugaz, *Texas A&M University, USA*

Ravindra Aglave, *CD-adapco, USA*

17:00 - 19:00 **Conference Registration and Check-In (San Antonio Convention Center)**

17:00 - 19:00 **Welcome Reception (San Antonio Convention Center)**

Monday, October 27

07:00 - 18:30 **Registration**

08:15 - 08:30 **Opening Remarks**

08:30 - 09:15 **Plenary Presentation I**
PUTTING A NEW SPIN ON MICROFLUIDIC SYSTEMS FOR CLINICAL AND MOLECULAR DIAGNOSTICS
James P. Landers
University of Virginia, USA

09:15 - 10:00 **Plenary Presentation II**
MICROFLUIDIC PLATFORMS FOR WHOLE-ANIMAL SCREENING WITH *C. ELEGANS*
Adela Ben-Yakar
University of Texas, Austin, USA

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

Session 1A1- Organs on Chip I

10:30 - 10:50

A LUNG-ON-CHIP TO MEASURE OXYGEN AFFINITY OF SINGLE RED BLOOD CELLS

G. Di Caprio¹, D. Shaak¹, J.M. Higgins^{2,3}, and E. Schonbrun¹

¹Harvard University, USA, ²Massachusetts General Hospital, USA, and ³Harvard Medical School, USA

10:50 - 11:10

3D LIVER TISSUE RECONSTRUCTION USING STACKED MULTIPLE HYDROGEL BIOPAPERS OVERCOMING DIFFUSION LIMITATION

J. Son, C.Y. Bae, and J.-K. Park

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

11:10 - 11:30

FABRICATION OF HUMAN RESPIRATORY CONSTRUCT FOR *IN VITRO* DRUG DEVELOPMENT

J.-H. Huang, P. Nath, J.F. Harris, A. Arefin, and R. Iyer

Los Alamos National Laboratory, USA

11:30 - 11:50

MUSCLE ACTUATOR WITH TENDON-LIKE STRUCTURES

Y. Morimoto^{1,2}, H. Onoe^{1,2}, and S. Takeuchi^{1,2}

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

Session 1B1 - Centrifugal Microfluidics

10:30 - 10:50

CENTRIFUGO-PNEUMATIC HANDLING OF MICROPARTICLES WITHOUT EXTERNAL ACTUATION AS A NEW UNIT OPERATION FOR CENTRIFUGAL MICROFLUIDICS

Y. Zhao¹, F. Schwemmer², S. Zehnle¹, F. von Stetten^{1,2}, R. Zengerle^{1,2}, and N. Paust^{1,2}

¹*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY and*

²*University of Freiburg - IMTEK, GERMANY*

10:50 - 11:10

SENSITIVE BLU-RAY DETECTION OF CLUSTERED ROLLING CIRCLE PRODUCTS FOR MOLECULAR DIAGNOSTICS

A. Ahlford¹, M. Donolato², A. Mezger¹, P. Antunes², F.W. Østerberg², R. Burger², F. Bosco², M. Nilsson¹, and M.F. Hansen²

¹*Stockholm University, SWEDEN and* ²*Technical University of Denmark, DENMARK*

11:10 - 11:30

LAB ON A DISC FOR ALGAL OIL DETECTION

Y. Kim¹, S.-N. Jeong², D.-P. Kim², and Y.-K. Cho¹

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

²*Pohang University of Science and Technology (POSTECH), SOUTH KOREA*

11:30 - 11:50

FULLY INTEGRATED MOLECULAR DIAGNOSTICS OF PATHOGENIC MICROORGANISMS ON A DISC

T.-H. Kim, J. Park, and Y.-K. Cho

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

Session 1C1 - Microchip Electrophoresis

10:30 - 10:50

THE MARS ORGANIC ANALYZER: INSTRUMENTATION AND METHODS FOR DETECTING TRACE ORGANIC MOLECULES IN OUR SOLAR SYSTEM

J. Kim¹, A. Stockton², P. Willis², R. Lillis³, R. Amundson³, L. Beegle², A. Butterworth³, D. Curtis³, P. Ehrenfreund⁴, F. Grunthaner³, R. Hazen⁵, R. Kaiser⁶, M. Ludlam³, M. Mora², J. Scherer³, P. Turin³, K. Welten³, K. Williford², and R.A. Mathies³

¹*Texas Tech University, USA,* ²*California Institute of Technology, USA,* ³*University of California, Berkeley, USA,*

⁴*George Washington University, USA,* ⁵*George Mason University, USA, and* ⁶*University of Hawaii, USA*

10:50 - 11:10

NON-AQUEOUS MICROCHIP CAPILLARY ELECTROPHORESIS OF LONG-CHAIN ALIPHATIC AMINES IN TITAN SIMULANT MATERIAL AND FATTY ACIDS IN DEEP OCEAN SEDIMENTS

P.A. Willis¹, M.L. Cable¹, M.F. Mora¹, A.M. Stockton¹, K.P. Hand¹, S.M. Hörst², M.A. Tolbert², C. He³, and M.A. Smith³

¹*California Institute of Technology, USA,* ²*University of Colorado, USA, and* ³*University of Houston, USA*

11:10 - 11:30

DUAL-CHANNEL DUAL-ELECTRODE MICROCHIP ELECTROPHORESIS WITH ELECTROCHEMICAL DETECTION FOR VOLTAMMETRIC IDENTIFICATION OF CELLULAR NITROSATIVE AND OXIDATIVE STRESS MARKERS

S.M. Lunte¹, D.B. Gunasekara¹, P. Pichetsurnthorn¹, and D. Meneses dos Santos^{1,2}

¹*University of Kansas, USA and* ²*Federal University of Alagoas, BRAZIL*

11:30 - 11:50

FAST, SPECIFIC, AND EFFICIENT AFFINITY PURIFICATION OF TARGET DNA FROM WHOLE HUMAN BLOOD BY COMBINING ISOTACHOPHORESIS AND AFFINITY CHROMATOGRAPHY

V. Shkolnikov and J.G. Santiago

Stanford University, USA

11:50 - 13:30 **Lunch (on your own)**

Session 1A2 - Porous Microfluidics I

13:30 -13:55 **KEYNOTE PRESENTATION**

MULTIFUNCTIONAL PAPER MICROFLUIDIC DEVICES FOR ENVIRONMENTAL ANALYSIS

C.S. Henry^{1*}, Y. Kim², J. Mettakoonpitak¹, and T. Guerrero¹

¹Colorado State University, USA and ²Hanyang University, SOUTH KOREA

13:55 - 14:15

STRING MICROFLUIDICS

P. DeCorwin-Martin and D. Juncker

McGill University, CANADA

14:15 - 14:35

PAPER ELECTROCHEMICAL DEVICE FOR DETECTION OF DNA AND THROMBIN BY TARGET-INDUCED CONFORMATIONAL SWITCHING

J.C. Cunningham, N.J. Brenes, and R.M. Crooks

University of Texas, Austin, USA

Session 1B2 - Nanopores & Nanochannels

13:30 -13:55 **KEYNOTE PRESENTATION**

NANOPORE EMBEDDED REACTIONS FOR ENHANCED CHEMICAL TRANSFORMATIONS

L.P. Zaino, N.M. Contento, and P.W. Bohn*

University of Notre Dame, USA

13:55 - 14:15

WATER PERMEABLE NANOPOROUS MEMBRANE FOR IMPLANTABLE HEMODIALYSIS DEVICE

N. To¹, I. Sanada¹, H. Ito¹, S. Morita¹, Y. Nanno², and N. Miki¹

¹Keio University, JAPAN and ²Tokyo Medical University, JAPAN

14:15 - 14:35

ENHANCEMENT OF PROTON TRANSFER BY SURFACE SILANOL GROUPS IN EXTENDED NANOSPACE

K. Ikeda¹, Y. Kazoe¹, T. Tsukahara², K. Mawatari¹, and T. Kitamori¹

¹University of Tokyo, JAPAN and ²Tokyo Institute of Technology, JAPAN

Session 1C2 - Proteomics

13:30 -13:55 **KEYNOTE PRESENTATION**

TOWARDS PAPER-BASED POINT OF CARE AFFINITY PROTEOMICS

T. Chinnasamy¹, L.I. Segerink², M. Nystrand³, J. Gantelius¹, and H. Andersson Svahn^{1*}

¹KTH Royal Institute of Technology, SWEDEN, ²MESA+, University of Twente, THE NETHERLANDS, and

³Thermo Fisher Scientific, SWEDEN

13:55 - 14:15

TWO-DIMENSIONAL DIGITAL ELECTROPHORESIS OF PROTEINS USING MOSAIC HYDROGEL

T. Kanaoka, K. Matsuda, K. Sueyoshi, T. Endo, and H. Hisamoto

Osaka Prefecture University, JAPAN

14:15 - 14:35

SUB-CELLULAR WESTERN BLOTTING OF SINGLE CELLS

K.A. Yamauchi and A.E. Herr

University of California, Berkeley and University of California, San Francisco Joint Graduate Group, USA

14:00 - 15:30 **Exhibitor Live Labs 1**
Lab 1a - CorSolutions
Lab 1b - Aline, Inc.
Lab 1c - Dolomite Microfluidics

14:35 - 15:00 **Break: Exhibit and Poster Inspection**

Session 1A3 - Droplets: Characterization & Manipulation I

15:00 - 15:20
PRODUCTION OF NON-SPHERICAL PROTEIN MICROPARTICLES BY CONTROLLING DROPLET DISSOLUTION IN MICROFLUIDIC DEVICES
K. Takahashi, S. Sugaya, M. Yamada, and M. Seki
Chiba University, JAPAN

15:20 - 15:40
THE USE OF PICKERING EMULSION FOR MITIGATING DYE LEAKAGE IN DROPLET MICROFLUIDICS
M. Pan, L. Rosenfeld, M. Kim, and S.K.Y. Tang
Stanford University, USA

15:40 - 16:00
A PASSIVE AND PARALLEL METHOD FOR DROPLET COALESCENCE
J. Tullis, C.L. Park, and P. Abbyad
Santa Clara University, USA

Session 1B3 - Cell Mechanics

15:00 - 15:20
ARRAYED FORCE PHENOTYPING OF SINGLE-CELLS FOR HIGH-THROUGHPUT SCREENING AND ANALYSIS
I. Pushkarsky¹, P. Tseng¹, and D. Di Carlo^{1,2}
¹University of California, Los Angeles, USA and ²California NanoSystems Institute, USA

15:20 - 15:40
A MICROFLUIDIC SYSTEM ENABLING CONTINUOUS QUANTIFICATION OF SPECIFIC MEMBRANE CAPACITANCE AND INSTANTANEOUS YOUNG'S MODULUS OF SINGLE CELLS
Y. Zhao¹, D.Y. Chen¹, Y.N. Luo¹, F. Chen¹, X.T. Zhao², M. Jiang², W.T. Yue², R. Long³, J.B. Wang¹, and J. Chen¹
¹Chinese Academy of Sciences, CHINA, ²Capital Medical University, CHINA, and ³University of Alberta, CANADA

15:40 - 16:00
DEFORMABILITY BASED SEPARATION OF CIRCULATING TUMOR CELLS FROM PATIENTS WITH CASTRATE RESISTANT PROSTATE CANCER
S. Park¹, C. Jin¹, R. Ang¹, S. Duffy¹, H. Abdi², K. Chi³, P. Black², and H. Ma¹
¹University of British Columbia, CANADA, ²Vancouver Prostate Centre, CANADA, and ³BC Cancer Agency, CANADA

Session 1C3 - Engineered Surfaces

15:00 - 15:20
A BIOINSPIRED SURFACE COATING THAT PREVENTS THROMBOSIS AND BIOFOULING
D.C. Leslie^{1,2,3}, A. Waterhouse^{1,2,3}, J.B. Berthet^{1,2,3}, T.M. Valentin^{1,2}, A.L. Watters^{1,2}, A. Jain¹, P. Kim¹, B.D. Hatton¹, A. Nedder³, K. Donovan³, E.H. Super¹, C. Howell¹, C.P. Johnson¹, T.L. Vu¹, D. Bolgen¹, A. Hansen^{1,3}, M. Aizenberg¹, M. Super^{1,2,3}, J. Aizenberg¹, and D.E. Ingber^{1,2,3}
¹Harvard University, USA, ²Harvard Medical School, USA, and ³Boston Children's Hospital, USA

15:20 - 15:40
MICROENGINEERED HETEROGENEOUS SUBSTRATES FOR CELL CULTURE BY ELECTRO-MICROFLUIDICS
M.-Y. Chiang¹, Y.-W. Hsu¹, H.-Y. Hsieh², S.-Y. Chen¹, and S.-K. Fan²
¹National Chiao Tung University, TAIWAN and ²National Taiwan University, TAIWAN

15:40 - 16:00

NESTED HYDRODYNAMIC FLOW CONFINEMENT AND LIQUID RECIRCULATION: MICROSCALE PROBING AND PATTERNING OF BIOLOGICAL SURFACES

J. Autebert, J.F. Cors, A. Kashyap, R.D. Lovchik, E. Delamarche, and G.V. Kaigala

IBM Research GmbH, SWITZERLAND

16:00 - 18:00

Poster Session 1

Poster presentations are listed by topic category with their assigned number starting on page 19.

16:00 - 18:00

Exhibitor Industrial Stage 1

- SFC Fluidics
- CorSolutions
- Elveflow Microfluidic Innovation Center
- microfluidic ChipShop
- thinXXS Microtechnology AG
- Fluigent

17:30 - 18:30

Social Hour in Exhibit Hall

18:30

Adjourn for the Day

Tuesday, October 28

07:45 - 18:30 **Registration**

08:15 - 08:30 **Announcements**

08:30 - 09:15 **Analytical Chemistry Young Innovator Award and Presentation**

LARGE SCALE PHYSICAL PHENOTYPING OF CELLS

Dino Di Carlo

University of California, Los Angeles, USA

09:15 - 10:00 **Lab on a Chip and Corning Inc. – Pioneers in Miniaturization Prize and Presentation**

TINY TECHNOLOGIES FOR TISSUE MICROENVIRONMENTS

Sangeeta N. Bhatia

Massachusetts Institute of Technology, USA

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

Session 2A1 - Cancer Diagnostics

10:30 - 10:50

SYSTEMATIC RECONSTRUCTION OF APTAMER BINDING LANDSCAPES FOR RE-ENGINEERING AND MICROFLUIDIC CHIP INTEGRATION

S. Ketterer, D. Fuchs, and M. Meier

University of Freiburg - IMTEK, GERMANY

10:50 - 11:10

AN INTEGRATED MICROFLUIDIC SYSTEM FOR SCREENING OF APTAMERS SPECIFIC TO COLON CANCER CELLS AND STEM CELLS BY UTILIZING ON-CHIP CELL-SELEX

L.-Y. Hung, C.-H. Wang, Y.-J. Che, C.-Y. Fu, H.-Y. Chang, and G.-B. Lee

National Tsing Hua University, TAIWAN

11:10 - 11:30

EVALUATION OF HER2 EXPRESSION ON EXOSOMES SECRETED FROM HUMAN BREAST CANCER CELLS BY ON-CHIP IMMUNOELECTROPHORESIS TOWARD LESS-INVASIVE DIAGNOSIS

N. Hanamura, T. Akagi, and T. Ichiki

University of Tokyo, JAPAN

11:30 - 11:50

INTEGRATED MICROFLUIDIC PHENOTYPING OF TUMOR-DERIVED EXOSOMES

M. He¹, A.K. Godwin², and Y. Zeng³

¹Kansas State University, USA, ²University of Kansas Medical Center, USA, and ³University of Kansas, USA

Session 2B1 - Fabrication

10:30 - 10:50

PRESSURE SENSING IN MICROFLUIDIC ENVIRONMENTS WITH LOW-LEAKAGE MICROBALLOONS

N. Banerjee, Y. Xie, S.S. Pandey, and C.H. Mastrangelo

University of Utah, USA

10:50 - 11:10

MICRO-WRITING UNDER WATER DROPLET USING PHOTO-SWITCHABLE TITANIUM OXIDE ON NANOCELLULOSE COATED MICRO-HOODOOS

S. Hoshian¹, V. Jokinen¹, K. Hjort^{2,3}, R.H.A. Ras¹, and S. Franssila¹

¹Aalto University of Technology, FINLAND, ²VTT Technical Research Center of Finland, FINLAND, and

³Uppsala University, SWEDEN

11:10 - 11:30

3D NANO-FENCE FLUIDIC STRUCTURES BASED ON SIDEWALL SCALLOPS

P.C. Ma, K. Zhang, J.R. Fan, and W.G. Wu

Peking University, CHINA

11:30 - 11:50

DIRECT LITHOGRAPHY OF RUBBERY OSTEO POLYMER

J. Hansson¹, H. Yasuga¹, S. Basak^{1,2}, C.F. Carlborg¹, W. van der Wijngaart¹, and T. Haraldsson¹

¹*KTH Royal Institute of Technology, SWEDEN* and ²*Mercine Labs, SWEDEN*

Session 2C1 - DNA Processing & Analysis

10:30 - 10:50

ZnO NANOWIRE-ASSISTED HIGH-THROUGHPUT GENE TRANSFER INTO MICROALGAL CELLS

S. Bae, J.S. Choi, K.H. Kim, and T.S. Seo

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

10:50 - 11:10

HIGH THROUGHPUT MICROFLUIDIC SAMPLE PREPARATION FOR METAGENOMIC ANALYSIS

F. Yu, M.A. Horowitz, and S.R. Quake

Stanford University, USA

11:10 - 11:30

15 HOUR DNA MICROARRAYS IN 30 MINUTES WITH 8X HIGHER SENSITIVITY

C.M. Han¹, E. Katilius², and J.G. Santiago¹

¹*Stanford University, USA* and ²*SomaLogic Inc., USA*

11:30 - 11:50

A HIGH-THROUGHPUT OPTO-MECHANICAL RETRIEVAL METHOD OF SEQUENCE-VERIFIED CLONAL DNA FROM THE NGS PLATFORM

H. Lee¹, H. Kim², S. Kim¹, T. Ryu¹, and S.Kwon¹

¹*Seoul National University, SOUTH KOREA* and ²*Celemics, Inc., SOUTH KOREA*

10:30 - 12:00

Exhibitor Live Labs 2

Lab 2a - SFC Fluidics

Lab 2b - LabSmith

Lab 2c - Micronit Microfluidics BV

11:50 - 13:30

Lunch (on your own)

Session 2A2 - Low Cost Diagnostics

13:30 - 13:55 **KEYNOTE PRESENTATION**

INEXPENSIVE MOLECULAR DIAGNOSTICS FOR CANCER AND INFECTIOUS DISEASE

C.M. Klapperich

Boston University, USA

13:55 - 14:15

FULLY AUTOMATED AND PORTABLE PLATFORM FOR INTEGRATED EXTRACTION AND PRE-CONCENTRATION OF TOXINS AND POLLUTANTS FROM LIQUID SAMPLES

S. Heub^{1,2}, L. Barbe¹, S. Follonier¹, and P.S. Dittrich²,

¹*CSEM - Swiss Center for Electronics and Microtechnology, SWITZERLAND* and ²*ETH Zürich, SWITZERLAND*

14:15 - 14:35

PUMPLESS MAGNETOPHORETIC IMMUNOASSAY IN STATIC ENVIRONMENTS

Y. Jo and J.-K. Park

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

Session 2B2 - Organs on Chip II

13:30 - 13:55 **KEYNOTE PRESENTATION**
VASCULARIZATION STRATEGIES FOR ORGAN-ON-A-CHIP

H. Lee, M. Chung, and N.L. Jeon*
Seoul National University, SOUTH KOREA

13:55 - 14:15
BRAIN-ON-A-CHIP: AN *IN VITRO* MYELINATION MODEL

J. Park, S. Kim, J. Li, and A. Han
Texas A&M University, USA

14:15 - 14:35
CONSTRUCTION OF HEPATIC LOBULE-LIKE 3D TISSUES UTILIZING CELL EMBEDDING HYDROGEL MICROFIBERS

Y. Yajima, M. Yamada, and M. Seki
Chiba University, JAPAN

Session 2C2 - Desalination & Energy

13:30 - 13:55 **KEYNOTE PRESENTATION**
ELECTROCHEMICALLY MEDIATED DESALINATION

R. M. Crooks^{1*}, K.N. Knust¹, M.R. Stanley¹, F.J. Carrillo¹, D. Hlushkou², and U. Tallarek²
¹*University of Texas, Austin, USA* and ²*Philipps-Universität Marburg, GERMANY*

13:55 - 14:15
PURIFICATION OF ULTRA-HIGH SALINITY PRODUCED WATER BY MULTI-STAGE ION CONCENTRATION POLARIZATION

B. Kim¹, R. Kwak^{1,2}, H.J. Kwon³, V.S. Pham¹, S.E. Kooi¹, G. Lim³, and J. Han¹
¹*Massachusetts Institute of Technology, USA*, ²*Korea Institute of Science and Technology (KIST), SOUTH KOREA*, and ³*Pohang University of Science and Technology (POSTECH), SOUTH KOREA*

14:15 - 14:35
BALLISTIC KELVIN'S WATER DROPPER FOR ENERGY HARVESTING

Y. Xie¹, H.L. de Boer², A.J. Spenkels², A. van den Berg², and J.C.T. Eijkel²
¹*Northwestern Polytechnical University, CHINA* and ²*MESA+, University of Twente, THE NETHERLANDS*

14:00 - 15:30 **Exhibitor Live Labs 3**
Lab 3a - MicruX Technologies
Lab 3b - Cellix Ltd.

14:35 - 15:00 **Break: Exhibit and Poster Inspection**

Session 2A3 - Droplets: High Throughput Assays

15:00 - 15:20
CHROMATIN IMMUNOPRECIPITATION IN DROPLETS: TOWARD FAST AND CHEAP ANALYSES

B. Teste, J. Champ, I. Draskovic, A. Londono-Vallejo, S. Descroix, L. Malaquin, J.L. Viovy, and G. Mottet
Curie Institut, FRANCE

15:20 - 15:40
MICRO-DROPLET BASED DIRECTED EVOLUTION OUTPERFORMS CONVENTIONAL LABORATORY EVOLUTION

S.L. Sjoström¹, M. Huang², J. Nielsen^{1,2,3}, H.N. Joensson¹, and H. Andersson Svahn¹
¹*KTH Royal Institute of Technology, SWEDEN*, ²*Chalmers University of Technology, SWEDEN*, and ³*Technical University of Denmark, DENMARK*

15:40 - 16:00

DROPLET MICROFLUIDIC PLATFORM FOR GENE EXPRESSION STUDY DEDICATED TO DIAGNOSTIC APPLICATION

D. Ferraro¹, J. Champ¹, B. Teste¹, L. Malaquin¹, S. Descroix¹, P. de Cremoux², and J.-L. Viovy¹

¹*Institut Curie, FRANCE* and ²*APHP Hôpital St-Louis, FRANCE*

Session 2B3 - Multicellular Structures

15:00 - 15:20

MONITORING OF 3D MULTI-CELLULAR SPHEROIDS IN HANGING DROP NETWORKS THROUGH IN-SITU IMPEDANCE SPECTROSCOPY

O. Frey, Y. Schmid, and A. Hierlemann

ETH Zürich, SWITZERLAND

15:20 - 15:40

CHARACTERIZATION OF NANO-PHOTOSENSITIZER DELIVERY AND PHOTODYNAMIC EFFICACY USING MULTICELLULAR TUMOR SPHEROIDS (MCTS)

X. Lou, H.K. Yoon, Y.-C. Chen, R. Kopelman, and E. Yoon

University of Michigan, USA

15:40 - 16:00

MICROFLUIDIC PLATFORM TO EXAMINE TUMOR ANGIOGENESIS AND METASTASIS AT HIGH SPATIOTEMPORAL RESOLUTION

V.S. Shirure and S.C. George

Washington University, St. Louis, USA

Session 2C3 - Porous Microfluidics II

15:00 - 15:20

PAPER ANALYTICAL DEVICE FOR MEASURING TOXIC METALS IN AIR

D.M. Cate, J. Volekens, and C.S. Henry

Colorado State University, USA

15:20 - 15:40

HIGHLY TAILORABLE THIOL-ENE BASED EMULSION-TEMPLATED MONOLITHS

J.P. Lafleur and J.P. Kutter

University of Copenhagen, DENMARK

15:40 - 16:00

1,000-FOLD SAMPLE FOCUSING ON PAPER-BASED MICROFLUIDIC DEVICES

T. Rosenfeld and M. Bercovici

Technion-Israel Institute of Technology, ISRAEL

16:00 - 18:00 **Poster Session 2**

Poster presentations are listed by topic category with their assigned number starting on page 19.

16:00 - 18:00 **Exhibitor Industrial Stage 2**

- Little Things Factory
- Micronit Microfluidics BV
- Zygo Corporation
- OAI
- World Precision Instruments, Inc.
- Cellix Ltd.

17:30 - 18:30 **Social Hour in Exhibit Hall**

18:30 **Adjourn for the Day**

Wednesday, October 29

07:45 - 18:00 **Registration**

08:15 - 08:30 **Announcements**

08:30 - 09:15 **Plenary Presentation III**
ACOUSTOFLUIDICS: THEORY, SIMULATION, AND EXPERIMENT
Henrik Bruus
Technical University of Denmark, DENMARK

09:15 - 10:00 **Plenary Presentation IV**
SINGLE-MOLECULE SEQUENCING TECHNOLOGIES OF BIOMOLECULES VIA ELECTRIC CURRENTS
Masateru Taniguchi
Osaka University, JAPAN

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

Session 3A1 - Fluid Control

10:30 - 10:50
ARRAYABLE MICROFLUIDIC VALVES BASED ON RARE EARTH PERMANENTLY MAGNETIC POLYMER FOR USE IN MICROFLUIDIC FLOW SWITCHING
M. Rahbar, L. Shannon, and B.L. Gray
Simon Fraser University, CANADA

10:50 - 11:10
3D-PRINTED MICROVALVES AND MICROPUMPS
A.K. Au, N. Bhattacharjee, and A. Folch
University of Washington, USA

11:10 - 11:30
ON-DEMAND CONTROL OF MICROFLUIDIC FLOW VIA SOLENOID MICROVALVE SUCTION
Q. Zhang, P.R. Zhang, Y.T. Su, M.L. Yang, and B. Ma
Chinese Academy of Sciences, CHINA

11:30 - 11:50
DELAY VALVING IN CAPILLARY DRIVEN DEVICES BASED ON DISSOLVABLE THIN FILMS
G.A. Lenk, G. Stemme, and N. Roxhed
KTH Royal Institute of Technology, SWEDEN

Session 3B1 - Nanoparticles & Microparticles

10:30 - 10:50
REAL-TIME SUB-NANOSCALE TEM OBSERVATION OF GROWTH AND ASSEMBLY TRAJECTORIES OF GOLD NANOPARTICLES ON GRAPHENE
W.C. Lee¹, J. Park², K. Kim^{3,4}, A. Zettl³, D.A. Weitz², and S. Takeuchi¹
¹*University of Tokyo, JAPAN*, ²*Harvard University, USA*, ³*University of California, Berkeley, USA*, and ⁴*Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA*

10:50 - 11:10
DIGITAL MICROFLUIDIC METHOD FOR ANISOTROPIC DNA MODIFICATION OF GOLD NANOPARTICLES
A.H.C. Ng, E.A. Sykes, J.A. Lazarovits, W.C.W. Chan, and A.R. Wheeler
University of Toronto, CANADA

11:10 - 11:30

CONDENSATION AND SEPARATION OF MICRODROPLET CONTENTS BY NANODROPLET FORMATION

M. Fukuyama and A. Hibara

Tokyo Institute of Technology, JAPAN

11:30 - 11:50

A RANDOM-WALK BASED MODEL TO EXPLAIN ULTRASENSITIVE MAGNETIC BEAD-BASED IMMUNOASSAYS

M. Cornaglia, R. Trouillon, H.C. Tekin, T. Lehnert, and M.A.M. Gijs

École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

Session 3C1 – RNA Analysis

10:30 - 10:50

RAPID ON-CHIP LYSIS AND ULTRASENSITIVE ELECTROCHEMICAL DETECTION OF BACTERIA

J.D. Besant, J. Das, E.H. Sargent, and S.O. Kelley

University of Toronto, CANADA

10:50 - 11:10

A MILLISECOND MICRO-RNA EXTRACTION TECHNIQUE FOR NANOPORE-BASED NUCLEIC ACID SEQUENCING

Q. Wu¹, T. Yasui¹, S. Rahong¹, T. Yanagida², M. Kanai², N. Kaji¹, M. Tokeshi³, K. Nagashima², T. Kawai², and Y. Baba^{1,4}

¹*Nagoya University, JAPAN*, ²*Osaka University, JAPAN*, ³*Hokkaido University, JAPAN*, and

⁴*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

11:10 - 11:30

SINGLE CELL MiRNA DETECTION FOR HETEROGENOUS MiRNA REGULATION OF CANCER CELLS

Q. Pan¹, X.J. Xiao², S.G. Hong¹, M.P. Zhao², and L.P. Lee¹

¹*University of California, Berkeley, USA* and ²*Peking University, CHINA*

11:30 - 11:50

ULTRASENSITIVE AND MULTIPLEXED MICRORNA PROFILING IN OIL-ISOLATED HYDROGEL CHAMBERS

H. Lee, R.L. Srinivas, A. Gupta, and P.S. Doyle

Massachusetts Institute of Technology, USA

10:30 - 12:00 **Exhibitor Live Labs 4 - TBD**

11:50 - 13:30 **Lunch (on your own)**

Session 3A2 - Particle Sorting

13:30 - 13:55 **KEYNOTE PRESENTATION**

LABEL-FREE CYTOMETRY - NOVEL SORTING PARAMETERS AND OPPORTUNITIES

J.O. Tegenfeldt

Lund University, SWEDEN

13:55 - 14:15

INERTIAL MICROFLUIDICS FOR MULTIPLEXED AFFINITY SEPARATION OF PROTEINS AND CELLS

A. Sarkar¹, H.W. Hou², A. Mahan¹, J. Han², and G. Alter¹

¹*Ragon Institute of MGH, MIT and Harvard, USA* and ²*Massachusetts Institute of Technology, USA*

14:15 - 14:35

PHOTONIC PILLAR ARRAYS FOR PARTICLE SORTING

H.T. Zhao¹, Y.Z. Shi¹, S. Xiong¹, L.K. Chin¹, W.M. Zhu¹, Z.H. Yang², H.X. Zhang², and A.Q. Liu¹

¹*Nanyang Technological University, SINGAPORE* and ²*Peking University, CHINA*

Session 3B2 - Droplets & Emulsions

13:30 - 13:55 **KEYNOTE PRESENTATION**

USING DROPLET MICROFLUIDICS WITH MASS SPECTROMETRY AND ELECTROPHORESIS FOR HIGH-THROUGHPUT CHEMICAL ANALYSIS AND SENSING

R.T. Kennedy*, S. Sun, and E. Guetschow

University of Michigan, USA

13:55 - 14:15

PIPETTE-AND-PLAY: PARALLELIZED ULTRA-HIGH THROUGHPUT MICROFLUIDIC EMULSIFIER FOR QUANTITATIVE BIOCHEMICAL ASSAYS

J. Lim¹, O. Caen^{1,2}, J. Vrignon¹, M. Konrad¹, V. Taly², and J.C. Baret^{1,3}

¹Max-Planck Institute, GERMANY, ²Université Paris Sorbonne Cité, FRANCE, and ³Université de Bordeaux, FRANCE

14:15 - 14:35

PROGRAMMABLE DIGITAL DROPLET MICROFLUIDICS USING A MULTIBARREL CAPILLARY BUNDLE

R.R. Hood, T. Wyderko, and D.L. DeVoe

University of Maryland, College Park, USA

Session 3C2 - Single Cell Analysis

13:30 - 13:55 **KEYNOTE PRESENTATION**

NANOBIODEVICES FOR SINGLE DNA AND CELL ANALYSIS

N. Kaji^{1*} and Y. Baba^{1,2}

¹Nagoya University, JAPAN and ²National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

13:55 - 14:15

ANALYSIS OF FAST PROTEIN PHOSPHORYLATION KINETICS IN SINGLE CELLS ON A MICROFLUIDIC CHIP

M. Blazek, X. Wu, R. Zengerle, and M. Meier

University of Freiburg - IMTEK, GERMANY

14:15 - 14:35

A DROPLET-TO-DIGITAL MICROFLUIDIC (D2D) PLATFORM FOR SCREENING SINGLE CELLS

S.C.C. Shih^{1,2}, P.C. Gach^{1,2}, J. Sustarich^{1,2}, B.A. Simmons^{1,2}, P.D. Adams^{1,2}, S. Singh^{1,2}, and A.K. Singh^{1,2}

¹Sandia National Laboratories, USA and ²Joint Bioenergy Institute (JBEI), USA

14:00 - 15:30 **Exhibitor Live Labs 5 - TBD**

14:35 - 15:00 **Break: Exhibit and Poster Inspection**

Session 3A3 - Organisms on Chip

15:00 - 15:20

A MICROFLUIDIC CHIP FOR INVESTIGATING AUDITORY RESPONSES IN THE LARVAL-STAGE OF THE FRUIT FLY

R. Ghaemi¹, P. Rezaei^{1,2}, B. Iyengar^{1,3}, F. Rafiei Nejad¹, and P.R. Selvaganapathy¹

¹McMaster University, CANADA, ²York University, CANADA, and ³Qiptera Solutions Inc., CANADA

15:20 - 15:40

HIGH-THROUGHPUT CHEMOTAXIS ASSAY OF PLANT-PARASITIC NEMATODE TOWARD GREEN AGRICULTURE

H. Hida¹, M. Matsumura¹, I. Kannno¹, H. Nishiyama², S. Sawa², T. Higashiyama³, and H. Arata³

¹Kobe University, JAPAN, ²Kumamoto University, JAPAN, and ³Nagoya University, JAPAN

15:40 - 16:00

A HIGH-THROUGHPUT DROPLET MICROFLUIDICS-BASED SCREENING PLATFORM FOR QUANTITATIVE ANALYSIS OF ALGAL GROWTH AND OIL ACCUMULATION

H.S. Kim, A.R. Guzman, H.R. Thapa, T.P. Devarenne, and A. Han
Texas A&M University, USA

Session 3B3 - Physical Characterization of Particles

15:00 - 15:20

MULTIPLEXED FLUIDIC PLUNGER – A MECHANISM FOR PARALLELIZED MEASUREMENTS OF SINGLE RED BLOOD CELL DEFORMABILITY IN MALARIA PATHOGENESIS

M. Myrand-Lapierre, X. Deng, R.R. Ang, K. Matthews, S.P. Duffy, and H. Ma
University of British Columbia, CANADA

15:20 - 15:40

MONITORING INTERSTRAIN *CLOSTRIDIUM DIFFICILE* INTERACTIONS BY DIELECTROPHORETIC FINGERPRINTING

Y.-H. Su, C. Warren, R.L. Guerrant, and N. Swami
University of Virginia, USA

15:40 - 16:00

DENSITY-BASED PARTICLE FRACTIONATION

S.H. Holm, J.P. Beech, and J.O. Tegenfeldt
Lund University, SWEDEN

Session 3C3 - Acoustics

15:00 - 15:20

TUNABLE MICROFLUIDIC PUMP ENABLED BY ACOUSTICALLY OSCILLATED SHARP-EDGES

P.H. Huang, N. Nama, Z. Mao, Y. Xie, Y. Chen, and T.J. Huang
Pennsylvania State University, USA

15:20 - 15:40

INTEGRATED ACOUSTIC SAMPLE PREPARATION FOR RAPID SEPSIS DIAGNOSTICS

K. Petersson¹, M. Evander¹, P. Ohlsson¹, M. Soikkeli², T. Seppä², A. Lehmusvuori², E. Tuunainen², A. Spangar², U. Karhunen², S. Wittfooth², and T. Laurell¹
¹*Lund University, SWEDEN* and ²*University of Turku, FINLAND*

15:40 - 16:00

ULTRA HIGH ASPECT RATIO PDMS MICROPILLARS WITH SELF ALIGNED MICROSPHERES FOR BIOMIMETIC ACOUSTIC SENSING

J. Paek and J. Kim
Iowa State University, USA

16:00 - 18:00

Poster Session 3

Poster presentations are listed by topic category with their assigned number starting on page 19.

16:00 - 18:00

Exhibitor Industrial Stage 3

- CD-adpco
- SCIENION
- miniFAB

19:00 - 23:00

Conference Banquet Texas Style (Historic Sunset Station)

Thursday, October 30

08:00 - 12:45 **Registration**

Session 4A1 - Co-Culture Systems

08:30 - 08:50

HuMiX: A MICROFLUIDICS-BASED *IN VITRO* CO-CULTURE DEVICE FOR INVESTIGATING HOST-MICROBE MOLECULAR INTERACTIONS

P. Shah¹, J. Fritz¹, M. Estes², F. Zenhausern², and P. Wilmes¹

¹University of Luxembourg, LUXEMBOURG and ²University of Arizona, USA

08:50 - 09:10

MULTI-SPECIES CO-CULTURE PLATFORM FOR PHYSICAL SEGREGATION AND CHEMICAL COMMUNICATION

Z. Ge¹, P.R. Girguis², and C.R. Buie¹

¹Massachusetts Institute of Technology, USA and ²Harvard University, USA

09:10 - 09:30

RAPID, SINGLE BACTERIAL DETECTION FROM BLOOD USING MICROENCAPSULATED SENSORS

D.-K. Kang, M.M. Ali, K. Zhang, M.A. Digman, E. Gratton, E.M. Peterson, and W. Zhao

University of California, Irvine, USA

Session 4B1 - Bacterial Bioreactors

08:30 - 08:50

MICROFABRICATION OF BACTERIAL CELLULOSE BY INCUBATING BACTERIA WITHIN ULTRALOW-VOLUME CAVITIES SURROUNDED BY HYDROGELS

K. Higashi and N. Miki

Keio University, JAPAN

08:50 - 09:10

MICROFLUIDICS FOR CONTROL IN SYNTHETIC BIOLOGY

N. Han¹, O. Purcell¹, F. Farzadfard¹, K.S. Lee², T.K. Lu¹, and R.J. Ram¹

¹Massachusetts Institute of Technology, USA and ²Pharyx Inc., USA

09:10 - 09:30

RAPID DRUG SUSCEPTIBILITY TEST OF MYCOBACTERIA TUBERCULOSIS BY SINGLE CELL TRACKING METHOD IN 3D AGAROSE MATRIX

J. Choi¹, J. Yoo², H. Kim³, S. Ryoo³, Y.-G. Jung², and S. Kwon¹

¹Seoul National University, SOUTH KOREA, ²QuantaMatrix Inc., SOUTH KOREA, and

³Korean Institute of Tuberculosis, SOUTH KOREA

Session 4C1 - Droplets: Characterization & Manipulation II

08:30 - 08:50

LABEL-FREE DETECTION OF PROTEINS BY DROP SHAPE ANALYSIS

G.K. Kurup and A.S. Basu

Wayne State University, USA

08:50 - 09:10

BREAK-UP OF DROPLETS IN A CONCENTRATED EMULSION FLOWING THROUGH A NARROW CONSTRICTION

L. Rosenfeld, M. Kim, and S.K.Y. Tang

Stanford University, USA

09:10 - 09:30

HIGH-SENSITIVITY AND LINEARITY ELECTRICAL CONDUCTIVITY MEASUREMENT OF DROPLETS IN DIGITAL MICROFLUIDICS

X. Ma, S. Chen, C.-J. Kim, and R.M. van Dam
University of California, Los Angeles, USA

09:30 - 09:40 **Transition**

Session 4A2 - Blood Processing

09:40 - 10:00

MONITORING SEPSIS USING ELECTRICAL CELL PROFILING IN A MOUSE MODEL

H.-W. Su¹, J.L. Prieto¹, L. Wu¹, H.-W. Hou¹, M.P. Vera², D. Amador-Munoz², J.L. Englert², B.D. Levy², R.M. Baron², J. Han¹, and J. Voldman¹

¹*Massachusetts Institute of Technology, USA* and ²*Brigham and Women's Hospital, Harvard Medical School, USA*

10:00 - 10:20

STUDY OF A PHASEGUIDE-ASSISTED BLOOD SEPERATION MICROFLUIDIC DEVICE USING GAS PERMEABLE PDMS

L. Xu, H. Lee, and K.W. Oh

State University of New York, Buffalo, USA

10:20 - 10:40

MICROFLUIDIC BLOOD MARGINATION: A “CELL-BASED” BLOOD PURIFICATION PLATFORM FOR BROAD SPECTRUM IMMUNOMODULATION IN MURINE MODEL OF SEPSIS

H.W. Hou^{1,2}, L. Wu¹, D.P. Amador-Munoz³, M.P. Vera³, B.D. Levy³, R.M. Baron³, and J. Han¹

¹*Massachusetts Institute of Technology, USA*, ²*Nanyang Technological University, SINGAPORE*, and ³*Brigham and Women's Hospital, Harvard Medical School, USA*

Session 4B2 - Vesicles

09:40 - 10:00

THE RAPID SYNTHESIS OF CELL-SIZED LIPOSOMES BY CENTRIFUGE-BASED MICROFLUIDIC DEVICE

M. Morita^{1,2}, H. Onoe³, M. Yanagisawa⁴, K. Fujiwara³, H. Saito⁵, and M. Takinoue^{1,6}

¹*Tokyo Institute of Technology, JAPAN*, ²*Japan Society for the Promotion of Science (JSPS), JAPAN*, ³*Keio University, JAPAN*, ⁴*Tokyo University, JAPAN*, ⁵*Kyoto University, JAPAN*, and ⁶*Japan Science and Technology Agency (JST), JAPAN*

10:00 - 10:20

MICROFLUIDIC GENERATION OF ASYMMETRIC GIANT UNILAMELLAR VESICLES

K. Karamdad, N. Brooks, and O. Ces

Imperial College London, UK

10:20 - 10:40

TOWARDS UNDERSTANDING MECHANOTRANSDUCTION: SYMMETRIC AND ASYMMETRIC FLOW IN GIANT UNILAMELLAR VESICLES (GUVs)

B. Sebastian, T. Favero, and P.S. Dittrich

ETH Zürich, SWITZERLAND

Session 4C2 - Neuron Characterization

09:40 - 10:00

INTEGRATED MICRODEVICE FOR SINGLE-NEURON *IN VIVO* ELECTROPORATION

M.-D. Zhou, Y.-W. Mao, and S.-Y. Zheng

Pennsylvania State University, USA

10:00 - 10:20

THREE-DIMENSIONAL TOPOLOGICAL NEURAL NETWORKS BASED ON AC ELECTROKINETIC CONFINEMENT OF NEURITES

T. Honegger^{1,2}, M. Thielen¹, and J. Voldman¹

¹*Massachusetts Institute of Technology, USA* and ²*Centre National de la Recherche Scientifique (CNRS), FRANCE*

10:20 - 10:40

A MICROFLUIDIC PLATFORM FOR IN-LINE DOPAMINE UPTAKE MEASUREMENTS IN DOPAMINERGIC NEURONS

Y. Yu, M.H. Shamsi, D.L. Krastev, and A.R. Wheeler

University of Toronto, CANADA

10:40 - 11:15 **Break**

11:15 - 12:00 **Plenary Presentation V**

MICROFLUIDIC APPROACHES FOR MULTIPLEXED IMMUNOCHEMICAL ASSAYS

Je-Kyun Park

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

12:00 - 12:30 **CHEMINAS and Lab on a Chip - Poster Awards**
NIST and Lab on a Chip - Art in Science Award
Dolomite and Lab on a Chip - Video Award

12:30 - 12:45 **MicroTAS 2015 Announcement**

12:45 **Conference Adjourns**

Poster Presentations

M – Monday, October 27 (16:00 - 18:00) T – Tuesday, October 28 (16:00 - 18:00)

W – Wednesday, October 29 (16:00 - 18:00)

Cells, Organisms, and Organs on Chip

Bioinspired, Biomimetic & Biohybrid Devices

M.001a

MICROFLUIDICS DEVICES TO INVESTIGATE BLOOD CELL DYNAMICS DURING THROMBUS FORMATION DRIVEN BY SHEAR-GRADIENTS ON MICRO STENOSIS

F.J. Tovar-Lopez¹, T. Nguyen¹, M. Nasabi¹, V. Sivan¹, W. Nesbitt², and A. Mitchell¹

¹MIT University, AUSTRALIA and ²University of Melbourne, AUSTRALIA

T.002a

IN VIVO LIKE CIRCUMFERENTIAL ALIGNMENT OF VASCULAR SMOOTH MUSCLE CELLS IN THE CIRCULAR MICROCHANNEL

J.S. Choi, S. Bae, Y. Piao, and T.S. Seo

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

W.003a

INCREASED PROLIFERATION OF PRIMARY CHONDROCYTES ON CELL CHIP BY COMBINED EFFECTS OF NANOSTRUCTURE STIMULATION AND CYCLIC MECHANICAL TENSILE STRESS

C.W. Chu¹, Y.L. Wang¹, T.Y. Lin¹, S.Y. Chu¹, and F.G. Tseng^{1,2}

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

M.004a

MICROFLUIDIC CELL-SLICING CHIP WITH LOW-STRESS SILICON NITRIDE CANTILEVERS TO GENERATE NANOVESICLES

J. Yoon, W. Jo, H. Jeong, J. Kim, D. Jeong, and J. Park

Pohang University of Science and Technology (POSTECH), SOUTH KOREA

T.005a

MICROFLUIDIC ENCAPSULATION OF DROPLET ASSEMBLIES

J. Li and D. Barrow

Cardiff University, UK

W.006a

MICROFLUIDIC-BASED DEVICES FOR STUDYING EFFECTS OF HYDROSTATIC PRESSURES ON THE T-CELL MIGRATION AND T-CELL MEDIATED CYTOTOXICITY OF CANCER CELLS

P.-C. Wu, W.-Y. Wang, and P.-L. Kuo

National Taiwan University, TAIWAN

M.007a

MOVEMENT OF ASYMMETRIC SHAPE MICRO STRUCTURE ON BACTERIAL SHEET

M. Kojima¹, M. Horade², K. Kamiyama¹, Y. Mae¹, T. Fukuda², and T. Arai¹

¹Osaka University, JAPAN and ²Meijo University, JAPAN

T.008a

PREPARATION AND ANALYSIS OF BACTERIA HYBRID CHAMBER CELLS

K.V. Tabata^{1,2}, R. Watababe^{1,2}, and H. Noji¹

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

Cell Capture, Counting, & Sorting

W.009a

A HIGH-SPEED MINIATURIZED CELL SORTER WITH LENS-FREE IMAGING AND THERMAL BUBBLE BASED JET FLOW SORTING

D. Vercruyse¹, C. Liu¹, A. Dusa¹, K. de Wijs¹, B. Majeed¹, T. Miyazaki², S. Peeters², and L. Lagae¹

¹Imec, BELGIUM and ²JSR Micro nv, BELGIUM

M.010a**A MICROFLUIDIC DEVICE FOR BLOOD SEPARATION AND CELL MORPHOLOGY ANALYSIS USING ACOUSTIC MICROSTREAMING AND HYDRODYNAMIC PRINCIPLES**

V. Liu¹, M. Simon², M. Patel², and A. Lee²

¹*Flintridge Preparatory School, USA* and ²*University of California, Irvine, USA*

T.011a**ACOUSTIC SEPARATION OF BACTERIA FROM BLOOD CELLS AT HIGH CELL CONCENTRATIONS ENABLED BY ACOUSTIC IMPEDANCE MATCHED BUFFERS**

P. Ohlsson, K. Petersson, and T. Laurell

Lund University, SWEDEN

W.012a**ACOUSTOPHORETIC DROPLET SORTING SYSTEM FOR HIGH-THROUGHPUT ALGAL MUTANT LIBRARY SCREENING**

H. Wang, H.S. Kim, A.R. Guzman, S. Kim, T. Devarenne, and A. Han

Texas A&M University, USA

M.013a**AGING CELL-SIZE DEPENDENT LIPOFUSCIN ACCUMULATION ANALYSIS USING A NOVEL MICROFLUIDIC MICROFILTER WITH UNIFORM FLUIDIC PROFILE**

M.S. Kim, S. Jo, J.T. Park, H.T. Kang, Y.I. Kim, and S.C. Park

Samsung Advanced Institute of Technology (SAIT), SOUTH KOREA

T.014a**AN INTEGRATED, MULTI-PARAMETRIC MICROFLOW CYTOMETER ENABLED BY STANDING SURFACE ACOUSTIC WAVES (SSAW)**

Y. Chen¹, S. Li¹, A.A. Nawaz¹, F. Guo¹, P.-H. Huang¹, L. Wang², and T.J. Huang¹

¹*Pennsylvania State University, USA* and ²*Ascent Bio-Nano Technologies Inc., USA*

W.015a**AN INTEGRATED MICROFLUIDIC PLATFORM FOR NEGATIVE SELECTION AND ENRICHMENT OF CIRCULATING TUMOR CELLS**

W.-Y. Luo¹, K. Hsieh¹, C.-H. Tai², and G.-B. Lee¹

¹*National Tsing Hua University, TAIWAN* and ²*National Cheng Kung University, TAIWAN*

M.016a**CELL DEFORMABILITY CLASSIFICATION BY CENTRIFUGAL STOPPED-FLOW SEDIMENTATION THROUGH NARROW GAPS**

T. Glennon, C.E. Nwankire, M. Glynn, E. McNamara, and J. Ducreé

Dublin City University, IRELAND

T.017a**CELLPHONE-BASED MICROSCOPY WITH SAMPLING MICROFLUIDIC CHIP FOR CELL COUNTING**

S.-S. Lin¹, C.-M. Lin², C.-Y. Chen², T.-C. Chiang², G.-S. Huang¹, and A.M. Wo¹

¹*National Taiwan University, TAIWAN* and ²*Aidmics Biotechnology, TAIWAN*

W.018a**CONTINUOUS-FLOW AND LABEL-FREE FERROHYDRODYNAMIC SORTING OF MAMMALIAN CELLS IN BIOCOMPATIBLE FERROFLUIDS**

T. Zhu¹, W. Zhao¹, R. Cheng¹, T. Querec², E. Unger², and L. Mao¹

¹*University of Georgia, USA* and ²*Centers for Disease Control and Prevention, USA*

T.019a**DEVELOPMENT OF A MICROFLUIDIC-BASED ARRAY FOR LARGE SCALE ORDERING AND HIGH RESOLUTION IMAGING OF ISLETS**

M. Nourmohammadzadeh, J.E.M. Elias, Y. Xing, J. Oberholzer, and Y. Wang

University of Illinois, Chicago, USA

W.020a**DEVELOPMENT OF QUAD RAFT ARRAYS FOR DIRECTED GROWTH OF CLONAL COLONIES**

M. DiSalvo^{1,2}, Y. Wang¹, P.J. Attayek^{1,2}, C.E. Sims¹, and N.L. Allbritton^{1,2}

¹University of North Carolina, USA and ²North Carolina State University, USA

M.021a**HIGH-THROUGHPUT CELL SPREADING CHIP FOR RAPID SELECTION OF RARE CELLS FROM 50 MILLIONS OF BACKGROUND CELLS**

J.C. Chang¹, Y.T. Chen¹, T.J. Chen¹, and F.G. Tseng²

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

T.022a**INTEGRATION OF ACOUSTOPHORETIC CELL ENRICHMENT AND DIELECTROPHORETIC SINGLE CELL TRAPPING FOR HIGHLY EFFICIENT RARE-CELL ANALYSIS**

S.H. Kim^{1,2}, M. Antfolk³, M. Kobayashi^{1,2}, S. Kaneda^{1,2}, T. Laurell^{3,4}, and T. Fujii^{1,2}

¹University of Tokyo, JAPAN, ²Japan Science and Technology Agency, JAPAN, ³Lund University, SWEDEN, and

⁴Dongguk University, SOUTH KOREA

W.023a**LAB-ON-A-CHIP PLATFORM FOR HIGH-YIELD ELECTROFUSION IN DROPLETS**

R.M. Schoeman, P.M. ter Braak, J. Bomer, and A. van den Berg

MESA+, University of Twente, THE NETHERLANDS

M.024a**MICROBIAL SINGLE CELL ENCAPSULATION IN HYDROGEL THROUGH ENHANCED CELL DISPERSION BY MICROPILLAR**

K.J. Park¹, K.G. Lee², S. Seok¹, B.G. Choi³, M.-K. Lee², T.J. Park⁴, S.J. Lee², and D.H. Kim¹

¹Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA, ²National NanoFab Center, SOUTH KOREA,

³Kangwon National University, SOUTH KOREA, and ⁴Chung-Ang University, SOUTH KOREA

T.025a**MICROFLUIDIC DEVICE INTEGRATED WITH MICRO-VALVE / MICRO-WELL FOR EFFICIENT CELL DOCKING**

K. Song and C.-S. Lee

Chungnam National University, SOUTH KOREA

W.026a**MICROFLUIDIC ELECTROACTIVE POLYMER-ACTUATED CELL SORTING**

D.E. Huber, T. Haniff, W. Chu, R. Balog, and D.E. Cooper

SRI International, USA

M.027a**MICROFLUIDIC MAGNETIC FLUIDIZED BED FOR BACTERIA EXTRACTION, GROWTH AND DETECTION**

I. Pereiro¹, J. Kucerova², L. Alexandre¹, B. Dupuy³, Z. Bilkova², J.-L. Viovy¹, L. Malaquin¹, and S. Descroix¹

¹Institut Curie, FRANCE, ²University of Pardubice, CZECH REPUBLIC, and ³Institut Pasteur, FRANCE

T.028a**MULTILEVEL (3D) MICROFLUIDIC TECHNOLOGY FOR AN INNOVATIVE MAGNETIC CELL SEPARATION PLATFORM**

M. Fouet^{1,3}, S. Cargou^{1,3}, R. Courson^{1,3}, C. Blatche^{1,3}, A. Montrose^{2,3}, K. Reybier^{1,2,3}, and A.M. Gue^{1,3}

¹Centre National de la Recherche Scientifique (CNRS), FRANCE, ²PHARMADEV, FRANCE, and ³University de Toulouse, FRANCE

W.029a**OPTIMIZATION APPROACH FOR INERTIAL FOCUSING AND SEPARATION OF CELLS IN SPIRAL MICROCHANNELS**

T.H. Kim, H.J. Yoon, and S. Nagrath

University of Michigan, USA

M.030a**RAMAN ACTIVATED CELL SORTER BASED ON DIELECTROPHORETIC SINGLE-CELL TRAP AND RELEASE**

P.R. Zhang, L.H. Ren, X. Zhang, Y.F. Shan, and B. Ma

Chinese Academy of Sciences, CHINA

T.031a**RAPID FORMATION OF SINGLE-CELL PAIRS ON A MICROWELL ARRAY WITH DIELECTROPHORESIS**T. Yasukawa¹, Y. Yoshimura¹, M. Tomita², and F. Mizutani¹¹University of Hyogo, JAPAN and ²Mie University, JAPAN**W.032a****SCREENING CHIP FOR AUTOPHAGY OF FIBROBLAST IN TUMOR CELL ENVIRONMENT**J. Kim¹, H.E. Karakaş², C. Bathany¹, D. Gözüaçik², and Y.-K. Cho¹¹Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA and ²Sabancı University, TURKEY**M.033a****SHEET-LESS ACOUSTIC SEPARATION OF CELLS AND PARTICLES**

M. Antfolk, P. Augustsson, and T. Laurell

Lund University, SWEDEN

T.034a**SPLITTING AND TARGETED COLLECTION OF HUMAN INDUCED PLURIPOTENT STEM CELL COLONIES ENABLED BY MICRORAFT ARRAYS**P.J. Attayek¹, Y. Wang¹, C.E. Sims¹, and N.L. Allbritton^{1,2}¹University of North Carolina, USA and ²North Carolina State University, USA**W.035a****STAGING THE CLINICAL STATUS FROM BLOOD OF CANCER PATIENTS BY CHIP-BASED CELL ENUMERATION FOLLOWING TARGETTED REMOVAL OF NORMAL CELLS**M. Glynn¹, D. Kirby¹, C. Nwankire¹, D. Kinahan¹, C. Spillane², O. Shiels², J. O'Leary², and J. Ducreé¹¹Dublin City University, IRELAND and ²Trinity College Dublin, IRELAND**M.036a****SURGICAL MANIPULATION OF CULTURED CELL MONOLAYER USING PHOTO-ACID-GENERATING SUBSTRATE AND MICRO-PROJECTION SYSTEM**

K. Sumaru, K. Morishita, T. Takagi, T. Satoh, and T. Kanamori

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T.037a**TAPERED-SLIT MEMBRANE FILTER DEVICES FOR THE HIGH-THROUGHPUT VIABLE ISOLATION OF CIRCULATING TUMOR CELLS**

Y.-T. Kang, Il. Doh, and Y.-H. Cho

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W.038a**TOWARDS AN INTEGRATED MICROFLUIDIC SYSTEM FOR LABEL FREE ENUMERATION OF CD4⁺ T CELLS**

Q. Liu, A. Chernish, D.M. Haverstick, and J.P. Landers

University of Virginia, USA

M.039a**UNIDIRECTIONAL ELECTRICAL PULSES FOR CELL ALIGNMENT IN A CLOSED MICROFLUIDIC CHAMBER**D.N. Loufakis¹, Z. Cao², S. Ma², D. Mittelman^{1,3}, and C. Lu^{1,2}¹Virginia Polytechnic Institute and State University, USA, ²Virginia Tech-Wake Forest University, USA, and ³Virginia Bioinformatics Institute, USA**Cell-Culturing & Perfusion (2D & 3D)****T.040a****3-DIMENSIONAL *IN VITRO* NASAL MUCOSA MODELING ON A MICRO-FLUIDIC CHIP**K.H. Na¹, H.-W. Shin², and S. Chung¹¹Korea University, SOUTH KOREA and ²Seoul National University Hospital, SOUTH KOREA

W.041**3D PRINTING OF GELS WITH INTEGRATED VASCULAR CHANNELS FOR CELL CULTURE USING A MICROFLUIDIC PRINTHEAD**

R. Attalla and P.R. Selvaganapathy
McMaster University, CANADA

M.042a**A MICROFLUIDIC DEVICE FOR DRUG TESTING AND FLOW CYTOMETRIC ANALYSIS ON UNIFORM-SIZED SPHEROIDS**

B. Patra¹, C.-C. Peng², W.-H. Liao², C.-H. Lee², and Y.-C. Tung²
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T.043a**A MICROFLUIDIC DEVICE TO GENERATE HETEROGENEOUS SHEAR STRESS PATTERN WITH HIGH SHEAR CONTRAST IN PARALLEL COMPARTMENTS OF THE SAME CULTURING CHAMBER**

X. Zhang and Y. Zhao
Ohio State University, USA

W.044**AMINO ACID POLYMER BASED TUBE USED FOR VASCULAR-LIKE CHANNEL**

N. Mori¹, Y. Morimoto^{1,2}, and S. Takeuchi^{1,2}
¹*University of Tokyo, JAPAN* and ²*Japan Science and Technology Agency (JST), JAPAN*

M.045a**AUTOMATED REAGENT DELIVERY, MEDIA REPLENISHMENT, AND MEDIA SAMPLING PLATFORM FOR OPEN CELL CULTURE SYSTEMS**

T.V. Nguyen^{1,2}, E.S. Kim¹, J.R. Coppeta¹, S.E. Wheeler³, A.M. Clark³, A.R. Lever¹, M. Cirit², J. Yu², A.J. Spencer¹, F.L. Sinatra¹, R. Prantil-Baun¹, A. Wells³, L.G. Griffith², and J.T. Borenstein¹
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T.046a**CELL COATED EXTRACELLULAR MATRIX (ECM) MICROBEADS AND MORPHOLOGICAL ANALYSIS OF CELL-ECM INTERACTION**

J. Kim, J. Yoon, H.E. Jeong, and S. Chung
Korea University, SOUTH KOREA

W.047a**CELL MULTIPLICATION AND MOVEMENT ANALYSIS OF SWIMMING EUGLENA CONFINED IN A FLOW-ISOLATED MICRO-AQUARIUM**

K. Ozasa¹, J. Lee², S. Song², and M. Maeda¹
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M.048a**CHARACTERIZATION OF CELL BEHAVIOR ON PATTERNED PHOTODEGRADABLE HYDROGELS**

F. Yanagawa, S. Sugiura, T. Takagi, K. Sumaru, and T. Kanamori
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

T.049a**DESIGNING WELL-ORDERED NEURAL NETWORK ON A MICROELECTRODE ARRAY USING AGAROSE HYDROGEL**

S. Joo, J. Lim, and Y. Nam
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

W.050a**EFFECT OF CHANNEL WIDTH ON HUMAN UMBILICAL VEIN ENDOTHELIAL CELL (HUVEC) CULTURE IN MICROFLUIDIC CHANNELS**

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M.051a**ELECTRODEPOSITED ALGINATE HYDROGELS FOR FABRICATION OF CELL SHEETS**

K. Ino, F. Ozawa, H. Shiku, and T. Matsue

Tohoku University, JAPAN

T.052a**FABRICATION OF BIOMIMETIC 3D LIVER TISSUE USING PHOTODEGRADABLE HYDROGELS AND PERFUSION CULTURE IN A MICROFLUIDIC DEVICE**

F. Yanagawa, S. Sugiura, T. Takagi, K. Sumaru, and T. Kanamori

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

W.053a**FORMATION OF CELL MICROPATTERN BY NEWLY DEVELOPED HYDROGEL PROCESSING TECHNIQUE**

Y. Nakashima, Y. Hikichi, Y. Yamamoto, and Y. Nakanishi

Kumamoto University, JAPAN

M.054a**HYDROGEL FILM WITH SKELETAL MUSCLE CELL MICROPATTERNS TO DEVELOP THE SOFT FLUIDIC TUBE OF THE PERFUSION CULTURE SYSTEM**

K. Nagamine, K. Okamoto, T. Hirata, H. Kaji, M. Kanzaki, and M. Nishizawa

Tohoku University, JAPAN

T.055a**INTEGRATION OF OPTICAL SENSOR LAYERS FOR NON-INVASIVE ON-LINE OXYGEN MEASUREMENT IN MICROFLUIDIC CELL CULTURE CHIPS**

I. Schulz¹, T. Mayr², B. Ungerböck², C. Jungnickel¹, C. Gärtner¹, and H. Becker¹

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W.056a**IMPLANTABLE TISSUE REGENERATION SYSTEM USING ELECTRICAL STIMULATION**

J. Kim, T.H. Cho, S.E. Lee, H.J. Yang, K. Eom, I.S. Kim, S.J. Hwang, and S.J. Kim

Seoul National University, SOUTH KOREA

M.057a**COMPARISON OF DIFFERENT EXTRACELLULAR MATRIX IN MCF7 TUMOR SPHEROID FORMATION**

L.F. Yu, E. Cheng, C. Ni, and K.C. Cheung

University of British Columbia, CANADA

T.058a**METHODS FOR ADVANCED CELL CULTURE IN MICROWELLS UTILIZING AIR BUBBLES**

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W.059a**MICROFLUIDIC CELL CO-CULTURE USING STANDING SURFACE ACOUSTIC WAVE (SSAW)**

S. Li, F. Guo, Y. Chen, X. Ding, P. Li, C.E. Cameron, and T.J. Huang

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M.060a**MICROFLUIDIC CELL CULTURE SYSTEM FOR DYNAMIC CELL SIGNALING STUDY**

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T.061a**MICROFLUIDIC INTEGRATION WITH A MODULAR CELL-HYDROGEL SHEET FOR *IN VITRO* MULTIPLE SCREENING ASSAY**

C.Y. Bae and J.-K. Park

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W.062a**MICROFLUIDIC PERFUSION CULTURE FOR VASCULAR BIOLOGY**

K. Sato, M. Sato, and M. Hirai

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M.063a**MICROSTRUCTURED MULTI-WELL PLATE FOR THREE-DIMENSIONAL PACKED CELL SEEDING AND CULTURE**

V.N. Goral¹, S.H. Au², R.A. Faris¹, and P.K. Yuen¹

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T.064a**MICROFLUIDIC PERFUSION CULTURE SYSTEM FOR ARTERY-LIKE TUBULAR TISSUES WITH PLCL SCAFFOLDS**

Y. Yamagishi¹, T. Masuda¹, M. Ukiki¹, M. Matsusaki², M. Akashi², U. Yokoyama³, and F. Arai¹

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W.065a**MODULATED TWO-PHOTON IMAGING OF WHOLE SPHEROIDS FOR THREE-DIMENSIONAL CELL CULTURES**

S.M. Grist, E. Cheng, L.F. Yu, and K.C. Cheung

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M.066a**ON-CHIP CULTURE OF OSTEOCYTES**

C. Wei¹, D.Y. Chen², Y.C. Wei¹, L.D. You², J.B. Wang¹, and J. Chen¹

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T.067a**PINPOINT CHEMICAL STIMULATION CONTROL BY AN INTEGRATED MICROFLUIDIC PROBE FOR CELL-BASED ASSAYS**

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¹Tokai University, JAPAN, ²University of Tokyo, JAPAN, and ³Osaka University, JAPAN

W.068a**PUMP-FREE MEMBRANE-CONTROLLED PERFUSION MICROFLUIDIC PLATFORM**

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M.069a**RECOGNITION AND DISTINCTION OF MCF-7 DOX AND MCF-7 WT CELLS USING IMPEDANCE SPECTROSCOPY**

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T.070a**RAPID LIQUID PATTERNING USING SURFACE TENSION**

M. Kang, W. Park, S. Na, S. Paik, H. Lee, J. Park, and N.L. Jeon

Seoul National University, SOUTH KOREA

W.071a**SOLUTIONS FOR MICROFLUIDICS: NOVEL INTERCONNECTS, PRECISION FLUID DELIVERY, AND ALTERNATIVES TO THE CLASSICAL INCUBATOR**

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M. 072a**SOLID TUMOR SPHEROID FORMATION BY TEMPERATURE-CONTROLLED HIGH VOLTAGE ULTRASOUND IN A MULTI-WELL MICRODEVICE**

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KTH Royal Institute of Technology, SWEDEN

Circulating Tumor Cells

T.073a

CAPTURE OF RARE CANCER CELLS IN MICROFLUIDIC DEVICES FOR TREATMENT MONITORING

J.I. Varillas, W. Sheng, T.J. George, C. Liu, and Z.H. Fan

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W.074a

CLINICAL SIGNIFICANCE OF VIABLE-ENRICHED CIRCULATING TUMOR CELLS WITH A FLEXIBLE MICRO SPRING ARRAY

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M.075a

EFFECTS OF HEMODYNAMIC SHEAR STRESS ON CIRCULATING TUMOR CELLS

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T.076a

ENSEMBLE OF APTAMERS AND ANTIBODIES FOR MULTIVALENT CAPTURE OF CANCER CELLS

J. Zhang, W. Sheng, and Z.H. Fan

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W.077a

EPHESIA: COMBINING MICROFLUIDICS AND PROXIMITY LIGATION ASSAY TO ANALYZE PROTEIN-PROTEIN INTERACTIONS IN SINGLE CIRCULATING TUMOR CELLS: AN NEW TOOL FOR PHARMACEUTICAL RESEARCH AND PERSONALIZED MEDICINE

E. Tulukcuoglu Guneri, C. Bureau, J. Champ, G. Mottet, K. Perez-Toralla, F.-C. Bidard, J.-Y. Pierga, L. Malaquin, J.-L. Viovy, and S. Descroix

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M.078a

HEMI-FUNCTIONALIZED SILICON FILTERS FOR SIMULTANEOUS CAPTURING AND TYPING OF CIRCULATING TUMOR CELLS

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T.079a

IMPROVED ACOUSTOPHORETIC CIRCULATING TUMOR CELL (CTC) SEPARATION FOR LOW TARGET CELL NUMBERS IN CLINICAL VOLUMES

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⁴*University of Tampere, FINLAND*, and ⁵*Dongguk University, SOUTH KOREA*

W.080a

MICROFLUIDIC CAPTURE OF CIRCULATING PANCREATIC CELLS FOR DETECTION OF BIOMARKERS FOR CARCINOGENESIS IN PATIENTS WITH PANCREATIC CYST LESIONS

F.I. Thege¹, T.B. Lannin¹, T. Saha², K.K. Das³, A.D. Rhim², and B.J. Kirby^{1,4}

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⁴*Weill Cornell Medical College, USA*

M.081a

MICROFLUIDIC DEVICE FOR CAPTURING CIRCULATING TUMOR CELLS: SEPARATION BY CELL SIZE AND RIGIDITY

T. Konishi, H. Okano, T. Suzuki, S. Ariyasu, T. Suzuki, R. Abe, S. Aoki, and M. Hayase

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T.082a

PATTERNED ARRAY OF MICROMAGNETS FOR CIRCULATING TUMOR CELLS DETECTION AND MOLECULAR ANALYSES

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W.083a**RAPID SINGLE CELL ISOLATION AND ASPIRATION PLATFORM USING AIR-LIQUID INTERFACE**

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M.084a**SEPARATION OF CIRCULATING TUMOR CELLS FROM CASTRATE RESISTANT PROSTATE CANCER PATIENTS USING RESETTABLE CELL TRAPS**

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T.085a**SIZE-SELECTIVE CIRCULATING TUMOR CELL ISOLATION ON A DISC**

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W.086a**SURFACE ENHANCED RAMAN SPECTROSCOPY AND MICROFLUIDICS FOR RARE CANCER CELL IDENTIFICATION**

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M.087a**ULTRA-HIGH THROUGHPUT ISOLATION OF CIRCULATING TUMOR CELLS WITH MICROFLUIDIC VORTEX TECHNOLOGY**

J. Che¹, M. Dhar¹, V. Yu¹, D.E. Go¹, E. Pao¹, M. Matsumoto¹, E.B. Garon², J.W. Goldman², R.P. Kulkarni², E. Sollier³, and D. Di Carlo¹

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Integrative Biology, Systems Biology**T.088a****MICROFLUIDIC DEVICE FOR LONG-TERM FTIR SPECTROMICROSCOPY OF LIVE ADHERENT CELLS**

K. Louthback, L. Chen, and H.-Y. Holman

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W.089a**QUANTITATIVE ANALYSIS OF CELL SIGNALING DYNAMICS USING MICROFLUIDICS**

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Inter- & Intracellular Signaling, Cell Migration**M.090a****A MICROFLUIDIC SYSTEM TO STUDY THE EFFECTS OF MECHANICALLY LOADED OSTEOCYTES ON OSTEOCLAST RECRUITMENT AND FORMATION**

K. Middleton and L. You

University of Toronto, CANADA

T.091a**CONTACT-DEPENDENT SIGNALING THROUGH MICROFABRICATED POROUS MEMBRANES**

M.Y. Kim, K.H. Spencer, and E.E. Hui

University of California, Irvine, USA

W.092a**DIGITAL MICROFLUIDIC PLATFORM FOR CELL SPHEROID-BASED MIGRATION/INVASION ASSAYS**

B.F. Bender, A.P. Aijian, and R.L. Garrell

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M.093a**ENHANCING CELL MOTILITY USING GRATING MICROTOPOGRAPHIES**

K. Kushiro and M. Takai

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T.094**HIGH THROUGHPUT MIGRATION ASSAY OF MICROENVIRONMENTAL FACTORS OF METASTASIS**

M.-E. Brett and D.K. Wood

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W.095a**IMMUNE CELL MIGRATION IN REAL TIME ON A CHIP**

N. Gopalakrishnan, R. Hannam, and Ø. Halaas

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M.096**LOCALIZED EXPRESSION OF HEAT SHOCK PROTEIN IN CELL POPULATION BY MICRO HEATER DEVICE**

R. Ueno¹, F. Yesilköy², J. Brugger², A. Taniguchi³, Y. Sakai¹, and B.J. Kim¹

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T.097a**MEASURING MEMBRANE CHANNEL DYNAMICS IN MICROFLUIDICS: A FUTURE ALTERNATIVE TO PATCH CLAMPING?**

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W.098a**OXYGEN LANDSCAPE MICROFLUIDIC PLATFORM DEMONSTRATES CROSSTALK BETWEEN NORMOXIC AND HYPOXIC ENDOTHELIAL CELLS**

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M.099a**ON-LINE DETECTION OF SECRETED METABOLITES FROM LIVING CELLS IN MULTIPLEXED MICROFLUIDIC CHIP**

C.E. Dugan, O.A. MacDougald, and R.T. Kennedy

University of Michigan, USA

T.100a**ORGANIZED CELL ENCAPSULATING BEAD ARRAY (OCEBA) FOR REAL-TIME MULTIPLEX DETECTION OF SECRETED MOLECULES**

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W.101a**PARALLELIZED LENSFREE CELL MIGRATION SCREENING**

I. Ghorbel^{1,2,3}, F. Kermarrec^{1,2,3}, B. Sartor¹, X. Gidrol^{1,2,3}, and V. Haguët^{1,2,3}

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M.102a**SEPARATION OF CHEMOTACTIC BACTERIA ON SLIPCHIP**

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T.103a**SINGLE CELL ANALYSIS OF YEAST AGING USING MICROFLUIDIC DISSECTION**

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Liposomes/ Vesicles

W.104a

ACOUSTIC ENRICHMENT OF MICROVESICLES IN PLASMA

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M.105a

BIOMIMETIC TEMPLATE-GUIDED FABRICATION OF TUBULAR LIPID MEMBRANES FOR ARTIFICIAL PRIMARY CILIA

M.C. Park¹, P. Sukumar¹, J.Y. Kang¹, S.K. Kim¹, A. Manz², and T.S. Kim¹

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T.106a

DETECTING EXOSOMES SPECIFICALLY: A MICROFLUIDIC APPROACH BASED ON ALTERNATING CURRENT ELECTROHYDRODYNAMIC INDUCED NANOSHEARING

M.J.A. Shiddiky, R. Vaidyanathan, M. Naghibosadat, S. Rauf, D. Korbie, L.G. Carrascosa, and M. Trau

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W.107a

MICROFLUIDIC GENERATION OF NETWORKED DROPLET COLLECTIONS AND LIPID MEMBRANE CONSTRUCTS

Y. Elani, R.V. Law, and O. Ces

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M.108a

EXOSOMAL MICRO-RNA ANALYSIS IN URINE OR SERUM USING NANOWIRE STRUCTURES

T. Yasui¹, S. Ito¹, T. Yanagida², Y. He², S. Rahong¹, M. Kanai², K. Nagashima², H. Yukawa¹, N. Kaji¹, T. Kawai², and Y. Baba^{1,3}

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T.109a

EXOSOME-MIMETIC NANOVESICLE GENERATION SYSTEM

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W.110a

HIGH THROUGHPUT PRODUCTION OF NANOSCALE LIPOSOMES USING EXTREME ASPECT RATIO HYDRODYNAMIC FLOW FOCUSING

R.R. Hood, E.L. Kendall, and D.L. DeVoe

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M.111a

HIGHLY ORGANIZED ASSEMBLIES OF ARTIFICIAL VESICLES AS MODELS FOR NATURAL CELL AGGREGATES AND TISSUES

M. Hadorn and P.S. Dittrich

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T.112a

MICROFLUIDIC HYDRATION OF DRY LIPID PATTERNS FOR DEVELOPMENT OF EPITHELIAL CELL MODEL

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W.113a

MICROFLUIDIC SYSTEM FOR HIGHLY SPECIFIC ISOLATION OF CIRCULATING EXTRACELLULAR VESICLES

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M.114a**MULTIPLEXED MICROFLUIDIC PLATFORM FOR ELECTROPHYSIOLOGICAL MEASUREMENTS ON ION CHANNELS IN A FUNCTIONAL ENVIRONMENT**

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MESA+, University of Twente, THE NETHERLANDS

T.115a**ROBUSTNESS OF SUSPENDED BILAYER LIPID MEMBRANE FOR PORTABLE SENSOR APPLICATIONS**

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Organisms on Chip (C. elegans, Zebrafish, Arabidopsis, etc.)**W.116a****FULLY AUTOMATED MICROFLUIDIC PLATFORM FOR LASER NANO-AXOTOMY IN C. ELEGANS**

S.K. Gokce, S.X. Guo, N. Ghorashian, W.N. Everett, T. Jarrell, A. Kottek, A.C. Bovik, and A. Ben-Yakar
University of Texas, Austin, USA

M.117a**A MICROFLUIDICS PLATFORM FOR WOUNDING AND REGENERATION STUDIES OF SINGLE CELLS**

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T.118a**AN AUTOMATED MICROFLUIDIC PLATFORM FOR LONG-TERM HIGH-RESOLUTION IMAGING OF C. ELEGANS**

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M.119a**AN AUTOMATED MULTIWELL-FORMAT MICROFLUIDIC MULTIPLEXER FOR FAST POPULATION DELIVERY OF C. ELEGANS WORMS**

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M.120a**DROPLET CHIP: A SCALABLE BIOPROCESSOR FOR LONG-TERM STUDY OF POST-EMBRYONIC DEVELOPMENT IN *Caenorhabditis elegans***

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W.121a**OPTOGENETIC MANIPULATION OF FREELY MOVING C. ELEGANS IN AN ELASTOMERIC ENVIRONMENT-MIMICKING AND FORCE-MEASURING CHIP**

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M.122a**MAGNETIC MANIPULATION OF BACTERIA IN MICROFLUIDICS**

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T.123a**TEMPORALLY PROGRAMMABLE CELL CULTURE ENVIRONMENT USING A MEMBRANE INTEGRATED MICROBIOREACTOR**

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W.124a**TOWARDS MULTI-ANGLE MICROSCOPY: FEP-PDMS HYBRID DEVICE FOR ENHANCED FLUORESCENCE IMAGING**

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Organs on Chip**M.125a****A HIGHLY EFFICIENT BUBBLE TRAP FOR CONTINUOUS REMOVAL OF GAS BUBBLES FROM MICROFLUIDIC DEVICES**

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T.126a**A HUMAN BLINKING 'EYE-ON-A-CHIP'**

J. Seo and D. Huh

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W.127a**A MICROFLUIDIC ARRAY OF CYCLICALLY STRETCHABLE LUNG AIR-BLOOD BARRIERS**

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M.128a**ADVANCES IN MIMICKING AND ANALYZING THE HEPATIC SINUSOID BY USING A NOVEL MODULAR BIOREACTOR**

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T.129a**CHARACTERIZATION OF RETINAL PIGMENT EPITHELIAL CELLS AND ENDOTHELIAL CELLS WITHIN A MICROFLUIDIC DEVICE TOWARDS A RETINA ON A CHIP**

H. Kaji, S. Ito, K. Nagamine, M. Nishizawa, N. Nagai, and T. Abe

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W.130a**DEVELOPMENT OF A MICROFLUIDIC CARDIOVASCULAR SYSTEM FOR EVALUATION OF RENAL CLEARANCE AND APPLICATION TO BIOASSAY**

Y. Sakuta, K. Tsunoda, and K. Sato

Gunma University, JAPAN

M.131a**ENGINEERING ANASTOMOSIS BETWEEN BIOLOGICAL PERFUSED VESSEL NETWORKS AND ENDOTHELIAL CELL-LINED MICROFLUIDIC CHANNELS**

X. Wang, D. Phan, S.C. George, C.C.W. Hughes, and A.P. Lee

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T.132a**ELECTRICAL STIMULATION FOR MATURATION OF iPS CELL-DERIVED CARDIOMYOCYTES IN A 3-D TISSUE MATRIX**

M.G. Simon, S. Lam, D.D. Tran, L.F. Alonzo, N. Flohn, S.C. George, and A.P. Lee

University of California, Irvine, USA

W.133a**LIVER-TUMOR MODEL BASED ON SPHEROIDS IN MICROFLUIDIC NETWORKS FOR PHARMACOKINETIC STUDIES**

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M.134a**MICROSTRAINER ARRAY FOR THE CAPTURE AND CULTURE OF COLONIC STEM-CELLS**

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T.135a**PRO-ADHESIVE EXTRACELLULAR MATRIX MIMIC FOR USE IN ORGAN-ON-A-CHIP**

A.M. Nicolini and J.-Y. Yoon

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W.136a**RAT AND HUMAN DORSAL ROOT GANGLION ELECTRICAL AND OPTICAL SIGNALING USING THE *IN VITRO* CHIP-BASED HUMAN INVESTIGATIONAL PLATFORM (ICHIP)**

E.V. Mukerjee¹, H.A. Enright¹, M.W. Mcnerney¹, F. Qian¹, S. Felix¹, A. Chang¹, N. Fischer¹, J. Osburn¹, S. Baker¹, E.K. Wheeler¹, K. Kulp¹, A. Ghetti², P. Miller², and S. Pannu¹

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M.137a**REAL-TIME GENE EXPRESSION TRACKING IN A 3D TUMOR WOUNDING MODEL USING GOLD NANOROD-MEDIATED PHOTOTHERMAL THERAPY**

Y. Xiao, R. Riahi, and P. Wong

University of Arizona, USA

T.138a**SELECTIVE CELL CULTURING STEP USING LAMINAR CO-FLOW TO ENHANCE CELL CULTURE IN SPLENON-ON-A-CHIP BIOMIMETIC PLATFORM**

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W.139a**VEIN-ON-A-CHIP: MICROFLUIDIC PLATFORM FOR FUNCTIONAL ASSESSMENT AND STAINING OF INTACT VEINS**

Z. Abdi Dezfooli, S.-S. Bolz, and A. Günther

University of Toronto, CANADA

Others**M.140a****A MICRODEVICE TO INVESTIGATE THE SYNERGISTIC EFFECT OF PASSIVE AND ACTIVE MECHANICAL STIMULATIONS ON CELL ALIGNMENT**

Q. Wang, K. Wei, and Y. Zhao

Ohio State University, USA

T.141a**AN ENHANCED SPATIAL CONTROL OF VIRAL GENE DELIVERY USING ENCODED MICROPARTICLES FOR MULTIPLEX CELL-BASED ASSAYS**

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W.142a**DIFFUSION OF NUTRITION IN THE MACROSCOPIC TISSUE**

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M.143a**INVESTIGATION OF OVIPOSITIONAL RESPONSES OF *DROSOPHILA MELANOGASTER* TO SURFACE MODIFICATION USING PDMS THROUGH-HOLE MEMBRANES**

J.C.K. Leung, R.W. Taylor-Kamall, A.J. Hilliker, and P. Rezai
York University, CANADA

T.144a**MICROFLUIDIC DEVICE IS EFFECTIVE FOR KEEPING ADHERED CELLS INTACT DURING CRYOPRESERVATION: TOWARD READY-TO-USE CELL ASSAY PLATFORMS**

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W.145a**PDMS MICRODEVICE ARRAYS FOR MEASURING THE FORCES EXERTED GROWING MULTICELLULAR TUMOR SPHEROIDS**

L. Aoun^{1,2}, S. Larnier^{1,2}, P. Weiss^{1,2,3}, A. Herbulot^{1,2,3}, B. Ducommun^{1,2,4}, V. Lobjois^{1,2}, and C. Vieu^{1,2}

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³*Université Paul Sabatier, FRANCE*, ⁴*Centre Hospitalier Universitaire de Toulouse, FRANCE*

M.146a**WHAT IS THE DIFFERENCE OF CELL DEFORMATION BETWEEN PUSH AND PULL?**

C.D. Tsai¹, S. Sakuma², F. Arai², and M. Kaneko¹

¹*Osaka University, JAPAN* and ²*Nagoya University, JAPAN*

Single Cell Analysis**T.147a****A DROPLET SORTING BASED SINGLE-CELL ISOLATION AND DISPENSING PLATFORM WITH A CHIP-TO-WORLD INTERFACE**

Q. Zhang, T.T. Wang, M.L. Yang, and B. Ma
Chinese Academy of Sciences, CHINA

W.148a**A MICROFLUIDIC ARRAY FOR PARALLELIZED SINGLE-CELL GENE EXPRESSION PROFILING**

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M.149a**ADAPTIVE RESPONSE OF HELA CELLS UNDER SHEAR STRESSES IN MICROCONFINEMENT THROUGH THE AUTOPHAGIC PATHWAY**

J. Das, A.K. Praveenkumar, B. Roy, S. Chakraborty, and T.K. Maiti
Indian Institute of Technology Kharagpur, INDIA

T.150a**AN OPTOFLUIDIC CHIP FOR STUDYING MECHANICAL DEFORMATION OF CELLS**

A.K. Pantazis, S. Papagerakis, P. Papagerakis, and N. Chronis
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W.151a**AUTOMATED HIGH-THROUGHPUT AND HIGH-RESOLUTION CELL DEFORMABILITY MAPPING SYSTEM**

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M.152a**BEAD-BASED MICROFLUIDIC RT-QPCR ANALYSIS OF SINGLE CANCER CELLS**

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T.153a**CYTOPLASMIC TRANSFER WITHOUT NUCLEI MIXING BETWEEN DENDRITIC CELLS AND TUMOR CELLS ACHIEVED BY ONE-TO-ONE ELECTROFUSION VIA MICRO-ORIFICES IN A MICROFLUIDIC DEVICE**Y. Itagaki¹, K.O. Okeyo¹, O. Kurosawa¹, H. Oana¹, M. Narita², H. Kotera³, and M. Washizu¹¹University of Tokyo, JAPAN, ²Niigata University, JAPAN, and ³Kyoto University, JAPAN**W.154a****DETECTION OF COUNTABLE NUMBER OF MOLECULES BY ENZYME-LINKED IMMUNOSORBENT ASSAY IN EXTENDED NANOCANNELS**

K. Shirai, R. Ohta, K. Mawatari, H. Shimizu, and T. Kitamori

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M.155a**DIRECT OBSERVATION OF MOLECULAR TRANSPORT BETWEEN TRIPLET CELLS VIA MEMBRANE PROTEINS USING A MICROFLUIDIC SYSTEM**K. Inoue^{1,3}, K. Kamiya^{1,4}, Y. Abe^{1,3}, T. Osaki^{1,2}, N. Miki³, and S. Takeuchi^{1,2}¹Kanagawa Academy of Science and Technology, JAPAN, ²University of Tokyo, JAPAN, ³Keio University, JAPAN, and ⁴Japan Science and Technology Agency (JST), JAPAN**T.156a****SEQUENTIAL PRECONCENTRATION BY NANOFUIDIC ELECTROSTATIC SIEVING FOR HIGH SENSITIVE ANALYSIS OF NEUROTRANSMITTERS RELEASED BY SINGLE CELLS**R.-G. Wu¹, Y.-T. Chen¹, P.-J. Wang¹, C.-S. Yang², and F.-G. Tseng³¹National Tsing Hua University, TAIWAN, ²National Health Research Institutes, TAIWAN, and ³Academia Sinica, TAIWAN**W.157a****HEMISPHERICAL PERFORATED MICROWELL FOR LONG-TERM ANALYSIS OF SINGLE MICROALGAE CELLS**

J.S. Choi, S. Bae, K.H. Kim, and T.S. Seo

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M.158a**SINGLE-CELL HIGH-THROUGHPUT LIVE IMAGING AND QUANTITATIVE MULTI-GENE TRANSCRIPTIONAL ANALYSIS**

L. Chingozha, C. Zhu, and H. Lu

Georgia Institute of Technology, USA

T.159a**HIGH-THROUGHPUT SINGLE-CELL SECRETION MEASUREMENT ON AN OPTICAL WAVEGUIDE CHIP**Y. Shirasaki¹, N. Suzuki¹, M. Yamagishi¹, A. Nakahara², S. Shoji², and O. Ohara¹¹Institute of Physical and Chemical Research (RIKEN), JAPAN and ²Waseda University, JAPAN**W.160a****MEASURING BACTERIAL ADAPTATION DYNAMICS AT SINGLE-CELL LEVEL USING A MICROFLUIDIC CHEMOSTAT AND TIME-LAPSE FLUORESCENCE MICROSCOPY**Z. Long¹, A. Olliver², E. Brambilla², B. Sclavi², M. Cosentino Lagomarsino³, and K.D. Dorfman¹¹University of Minnesota, USA, ²École Normale Supérieure (ENS), FRANCE, and ³Pierre and Marie CURIE University, FRANCE**M.161a****LOW ASPECT RATIO RESISTIVE PULSE SENSOR FOR SINGLE CELL ANALYSIS**

G. Goyal, R. Mulero, and M.J. Kim

Drexel University, USA

T.162a**MICROFLUIDIC DEVICE WITH AN INTEGRATED NANOCANNEL ARRAY TO MONITOR GROWTH AND AGING OF INDIVIDUAL BACTERIA**

J.D. Baker, D.T. Kysela, S.M. Madren, Y.V. Brun, and S.C. Jacobson

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W.163a**MICROFLUIDIC PAIRWISE INTERACTION ANALYSIS OF GLIOMA CANCER CELLS AND MODELING**J. Wang¹ and J. Heath²¹State University of New York, Albany, USA and ²California Institute of Technology, USA**M.164a****MICROFLUIDIC PLATFORM FOR SINGLE CELL PROTEASE ACTIVITY MEASUREMENT**

L. Wu and J. Han

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T.165a**MICROFLUIDIC SINGLE-CELL ANALYSIS PLATFORM FOR BIOTECHNOLOGICAL PROCESS DEVELOPMENT**

A. Grünberger, C. Probst, S. Helfrich, J. Frunzke, S. Noack, K. Nöh, W. Wiechert, and D. Kohlheyer

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W.166a**MICROFLUIDIC WESTERN BLOTTING OF RARE BREAST CANCER CELLS**E. Sinkala¹, E. Sollier², S.S. Jeffrey³, and A.E. Herr¹¹University of California, Berkeley, USA, ²Vortex Biosciences, USA, and ³Stanford University School of Medicine, USA**M.167a****MONITORING DIELECTRIC CHANGES IN CHINESE HAMSTER OVARY CELLS DURING INDUCTION OF APOPTOSIS BY OLIGOMYCIN USING A DIELECTROPHORETIC (DEP) CYTOMETER**

B. Saboktakin Rizi, K. Braasch, E. Salimi, K. Mohamad, S. Afshar Delkhah, T. Sandstorm, M. Butler, G.E. Bridges, and D.J. Thomson

University of Manitoba, CANADA

T.168a**NANOPOST ARRAYS REVEAL PLATELETS USE GLYCOPROTEIN Ib-IX-V COMPLEX TO SQUEEZE TIGHT ONTO VON WILLEBRAND FACTOR**S. Feghhi¹, A.D. Munday², W.W. Tooley¹, S. Rajsekar¹, J.A. Lopez^{1,2}, and N.J. Sniadecki¹¹University of Washington, USA and ²Puget Sound Blood Center, USA**W.169****NEURAL CIRCUIT ASSEMBLY USING MORPHOLOGICALLY CONTROLLED SINGLE NEURAL CELLS**

S. Yoshida and S. Takeuchi

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M.170a**ON-CHIP CELL MOTILITY ANALYSIS USING LENSFREE HOLOGRAPHIC MICROSCOPY**

I. Pushkarsky, Y. Lui, W. Weaver, T. Su, O. Mudanyali, A. Ozcan, and D. Di Carlo

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W.172a**OPTOELECTRONIC TWEEZERS FOR LONG-TERM SINGLE CELL CULTURE**

S.N. Pei, T. Dai, M. Wu, A. Fan, S. Li, and M.C. Wu

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M.173a**PHOTONIC PROFILING TOWARDS MONITORING ENDOTHELIAL CELL DYSFUNCTION AT SINGLE CELL LEVEL**

D. King, M. Glynn, R. Burger, D. Kurzbuch, S. Kearney, and J. Ducree

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T.174a**SIMPLE ONE-STEP PURIFICATION OF ALGINATE MICROCAPSULES CONTAINING A SINGLE LIVE CELL FROM OIL TO AQUEOUS PHASE**

D.-H. Lee, M.-R. Jang, and J.-K. Park

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W.175a**SINGLE CELL LEVEL SEQUENTIAL GLYCAN PROFILING ON THE MICROFLUIDIC LAB-IN-A-TRENCH PLATFORM**

D. King, T. O'Connell, C.K. Dixit, B. O'Connor, D. Walls, and J. Ducree

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M.176a**SINGLE CELL MEASUREMENTS ON THE BIOLOGICAL CLOCK BY MICROFLUIDICS**

Z. Deng, S. Arsenault, T. Zhu, R. Cheng, J. Griffith, J. Arnold, and L. Mao

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T.177a**SINGLE CELL METABOLIC PROFILING USING MULTIPLEXED, PHOTO-PATTERNED FLUORESCENCE SENSOR ARRAYS**

G. Song, K.C. Wang, B. Ueberroth, F. Lee, L. Zhang, F. Su, H. Zhu, Q. Mei, S.-H. Chao, L. Kelbauskas, Y. Tian, H. Wang, and D.R. Meldrum

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W.178a**SINGLE-CELL REAL-TIME RT-PCR USING MICROWELL ASSEMBLY**

J. Kim, J. Koh, O. Kim, D.Y. Oh, Y. Song, T. Park, and S. Kwon

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M.179a**TUMOR CELL CLASSIFICATION BASED ON INSTANTANEOUS YOUNG'S MODULUS USING CONSTRICTION CHANNEL BASED MICROFLUIDIC DEVICES**

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T.180a**USING MULTI-FREQUENCY ELECTRICAL IMPEDANCE SPECTROSCOPY TO MONITOR SINGLE BUDDING YEAST CELLS**

Z. Zhu, O. Frey, F. Franke, N. Haandbæk, and A. Hierlemann

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Stem Cells**W.181a****A MICROFLUIDICS PLATFORM FOR HUMAN TAU MUTATION NEURONS**

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M.182a**DISCS OF HUMAN INDUCED PLURIPOTENT STEM CELLS ON A PLASMA-PATTERNED POLYDIMETHYLSILOXANE SURFACE FOLLOWING SINGLE-STEP COATING WITH VITRONECTIN AND γ -GLOBULIN**

Y. Yamamoto¹, R. Yamada¹, K. Hattori², S. Tachikawa¹, M. Tagaya¹, T. Sasaki¹, D. Miyamoto³, K. Nakazawa³, S. Sugiura², T. Kanamori², and K. Ohnuma¹

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T.183a**SINGLE CELL TRAPPING, MONITORING AND RETRIEVING OF FUNCTIONAL NASAL EPITHELIAL CELLS FOR TOXICOLOGICAL/PHARMACOLOGICAL STUDIES**

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W.184a**STABLE AND LONG TERM CULTURE OF STEM CELLS UNDER SHEAR FLOW ON A MICROSTRUCTURED MESH SHEET EMBEDDED IN A FLUIDIC CHAMBER**

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M.185a**FEEDER-FREE 3D CULTURE SYSTEM TO EXPAND MOUSE INDUCED PLURIPOTENT STEM CELLS IN HYDROGEL CORE-SHELL MICROFIBER**

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Synthetic Biology**T.186a****INTEGRATION OF CELL-FREE PROTEIN-SYNTHESIS SYSTEM ON A GLASS MICROCHIP USING CONTINUOUS FLOW**

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W.187a**RAPID OPTIMIZATION OF BACTERIAL ELECTROPORATION CONDITIONS**

P.A. Garcia, Z. Ge, J.L. Moran, and C.R. Buie

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M.188a**SINGLE-CHANNEL CURRENT MEASUREMENT OF A CONNEXIN HEMICHANNEL EXPRESSED USING AN *IN VITRO* PROTEIN SYNTHESIS SYSTEM**

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Diagnostics, Theranostics, and Medical Research**Cancer Research****T.189b****BIOPHYSICAL MEASUREMENT OF LYMPHOCYTES FROM CHRONIC LYMPHOCYTIC LEUKEMIA (CLL) PATIENTS**

Y. Zheng, J. Wen, J. Nguyen, M.A. Cachia, C. Wang, and Y. Sun

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W.190b**DEVELOPMENT OF A DROPLET MICROFLUIDIC ASSAY FOR RADIOTHERAPY TREATMENT OF MULTICELLULAR SPHEROIDS**

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M.191b**MICROFLUIDIC IMPEDANCE SENSOR FOR TUMOR ASSOCIATED PROCOAGULANT ACTIVITY**

Y.-H. Dou, J. Lutz, L.A. Madden, E. Joly, I.M. Bell, S.J. Haswell, and J. Greenam

University of Hull, UK

T.192b**MICROFLUIDIC PLATFORM FOR DETECTING CIRCULATING LEUKEMIC CELLS: ANALYSIS OF MINIMUM RESIDUAL DISEASE IN ACUTE MYELOID LEUKEMIA AS A CASE EXAMPLE**

J.M. Jackson¹, S.V. Nair², M.A. Witek¹, M.L. Hupert¹, S.A. Hunsucker¹, Y. Fedoriw¹, P.M. Armistead¹, and S.A. Soper^{1,3}

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Clinical Chemistry**W.193b****A POLYMER LAB-ON-A-CHIP WITH MULTIPLE SAMPLE LOADING METHOD FOR HIGH SENSITIVE IMMUNOASSAYS**

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M.194b**DEVELOPMENT OF IMMUNO-WALL DEVICES AND A MOBILE FLUORESCENCE READER FOR ON-SITE SAMPLE-TO-ANSWER IMMUNOASSAY**

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T.195b**DISEASE DETECTION BY ULTRASENSITIVE QUANTIFICATION OF MICRODOSED SYNTHETIC URINARY BIOMARKERS**

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W.196b**FAST AND SIMULTANEOUS ANALYSIS OF PHENYLALANINE AND TYROSINE IN PLASMA USING PILLAR ARRAY COLUMNS WITH A GRADIENT ELUTION SYSTEM**

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M.197b**MULTIPLEXED IMMUNOASSAYS EMPLOYING MICROFLUIDIC DIGITAL MICROWELL ARRAYS**

T.H. Linz, W.H. Henley, and J.M. Ramsey

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T.198b**PREPARATION OF HYDROGEL IMMOBILIZING FLUORESCENT SUBSTRATE ON A FLEXIBLE POLYMER SHEET AND ITS APPLICATION TO MASS-PRODUCIBLE AND SINGLE-STEP MULTI-SENSING DEVICE**

S. Odaka, K. Jigawa, S. Funano, T.G. Henares, K. Sueyoshi, T. Endo, and H. Hisamoto

Osaka Prefecture University, JAPAN

W.199b**QUANTUM DOT-BASED AUTOMATED EVALUATION AND MICROFLUIDIC SENSING OF MAJOR BIOMARKERS IN BREAST CANCER TISSUES**

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M.200b**REAL-TIME LABEL-FREE MONITORING *STAPHYLOCOCCUS AUREUS* ANTIBIOTIC SUSCEPTIBILITY USING SURFACE PLASMON RESONANCE IMAGING**

P.N. Abadian, N. Tandogan, J.J. Jamieson, and E.D. Goluch

Northeastern University, USA

T.201b**ULTRAFast AND SINGLE-STEP IMMUNOASSAY USING FUNCTIONAL GRAPHENE OXIDE FOR CAPILLARY-ASSEMBLED MICROCHIP**

A. Shirai, T.G. Henares, K. Sueyoshi, T. Endo, and H. Hisamoto
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Drug Development & Delivery**W.202b****MICROENCAPSULATION OF CURCUMIN- LOADED PLGA PARTICLES AND CONTROLLED RELEASE IN MYOBLAST CULTURE**

K.-H. Yang, I.-F. Yu, and J.-T. Yang
National Taiwan University, TAIWAN

M.203b**MICROFLUIDIC ELECTROPORATION FOR DELIVERY OF CELL-PENETRATING PEPTIDE CONJUGATES OF PEPTIDE NUCLEIC ACIDS (PNA) FOR ANTISENSE INHIBITION OF INTRACELLULAR BACTERIA**

S. Ma, B. Schroeder, C. Sun, D.N. Loufakis, Z. Cao, N. Sriranganathan, and C. Lu
Virginia Polytechnic Institute and State University, USA

T.204b**PEPTIDE-BASED LIGAND SCREENING SYSTEM FOR G PROTEIN-COUPLED RECEPTORS USING WATER-IN-OIL MICRODROPLETS**

T. Sakurai¹, R. Iizuka¹, R. Sekine², Y. Nakamura³, D.H. Yoon², T. Sekiguchi², J. Ishii³, A. Kondo³, S. Shoji², and T. Funatsu¹
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W.205b**REAL-TIME MULTIMODAL IMAGING OF NANOPARTICLE-CELL INTERACTIONS IN HIGH-THROUGHPUT MICROFLUIDICS**

C.A. Cunha-Matos, O.M. Millington, A.W. Wark, and M. Zagnoni
University of Strathclyde, UK

M.206b**STRUCTURED BIODEGRADABLE MICROPARTICLES PRODUCED USING GLASS MICROFLUIDIC FLOW FOCUSING DEVICES**

E.E. Ekanem and G.T. Vladislavljevic
Loughborough University, UK

Metabolomics/Metabonomics**T.207b****IN-SITU NMR METABOLOMICS OF MICROFLUIDIC CELL CULTURES**

M. Utz, G. Finch, C. Vallance, and A. Smith
University of Southampton, UK

Neurobiology/ Neuroscience**W.208b****A NEW LAB-ON-A-TUBE WITH DUAL CHANNELS (LOT-DC) TO MONITOR CEREBROSPINAL FLUID (CSF) AND DELIVERY DRUG FOR BRAIN**

Z. Wu¹, C. Li², N. Bhattacharjee², J. Hartings¹, and C. Ahn¹
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M.209b**EFFECTS OF SUB-10 μ m ELECTRODE SIZES ON EXTRACELLULAR RECORDING OF NEURONAL CELLS**

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T.210b**EXTRACELLULAR POTENTIAL MEASURING DEVICE WITH A SILICON NITRIDE DIAPHRAGM HAVING A MULTIELECTRODE ARRAY AND MICROHOLES**

T. Yasuda, K. Yonekawa, R. Omori, I. Kageyama, and K. Natsume
Kyushu Institute of Technology, JAPAN

W.211b**LARGE-SCALE RECORDING FROM AXONAL ARBORS OF SINGLE NEURONS WITH CMOS BASED HIGH-DENSITY MICROELECTRODE ARRAYS**

J. Müller¹, M. Ballini¹, P. Livi¹, Y. Chen¹, D.J. Bakkum¹, M. Radivojevic¹, U. Frey², A. Stettler¹, and A. Hierlemann¹
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M.212b**MICROFLUIDIC MODEL FOR MILD TRAUMATIC BRAIN INJURY**

Y.C. Yap, T.C. Dickson, A.E. King, M.C. Breadmore, and R.M. Guijt
University of Tasmania, AUSTRALIA

T.213b**NEURAL MATCHSTICKS FOR 3D NEURAL NETWORK ASSEMBLY**

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W.214b**ROBUST OIL-WATER INTERFACE FORMATION WITH MICRO-PILLAR STRUCTURE FOR STABLE MAGNETIC DROPLET IMMUNOASSAY OF OLIGOMERIC AMYLOID β**

J.A. Kim, M. Kim, and J.Y. Kang
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Nucleic Acid Analysis (Digital PCR, Next Generation Sequencing)**M.215b****A SINGLE-MOLECULE NANOFLUIDIC PLATFORM FOR THE PRECISE SIZING OF DNA FRAGMENTS**

M.A. Tycon, L.D. Menard, and J.M. Ramsey
University of North Carolina, USA

T.216b**A COMPACT DEVICE FOR DIGITAL DROPLET PCR**

R.S. Wiederkehr¹, B. Jones¹, B. Majeed¹, F. Colle¹, W.-C. Chen², T. Stakenborg¹, P. Fiorini¹, L. Lagae¹, K. Schmidt³, and L. Stuyver³
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W.217b**A UNIVERSAL PLATFORM FOR CHIP-BASED PCR INCLUDING REAL-TIME DETECTION**

H. Becker, N. Hlawatsch, C. Moche, and C. Gärtner
microfluidic ChipShop GmbH, GERMANY

M.218b**CENTRIFUGAL ISOTHERMAL AMPLIFICATION MICRODEVICE FOR RAPID, MULTIPLEX AND COLORIMETRIC FOOD POISONING BACTERIA DETECTION**

S.J. Oh, B.H. Park, J.H. Jung, and T.S. Seo
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

T.219b**DEEP-WELL MICROFLUIDICS FOR ARRAYED COLORIMETRIC LAMP ANALYSIS**

R.L. Martineau, S. Ci, J. Houkal, W. Gao, S.-H. Chao, and D.R. Meldrum
Arizona State University, USA

W.220b**DIFFUSION-BASED MICROFLUIDIC PCR FOR "ONE-POT" ANALYSIS OF CELLS**

S. Ma, D.N. Loufakis, Z. Cao, Y. Chang, L.E.K. Achenie, and C. Lu
Virginia Polytechnic Institute and State University, USA

M.221b**DIGITAL DROPLET PCR ON CHIP FOR QUANTITATIVE ASSESSMENT OF MICRORNAs**

Q. Cai¹, R.S. Wiederkehr¹, B. Jones¹, B. Majeed¹, F. Colle¹, L. Zhang¹, T. Stakenborg¹, P. Fiorini¹, L. Lagae¹, M. Tsukuda², T. Matsuno², and I. Yamashita²

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T.222b**DNA SEQUENCING IN DROPLETS**

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W.223b**FLOW-VALVE MICROFLUIDIC DEVICES FOR SIMPLE, DETECTORLESS AND LABEL-FREE QUANTITATION OF NUCLEIC ACIDS**

D. Chatterjee, F. Yeakley, and A.T. Woolley

Brigham Young University, USA

M.224b**DOUBLE-LAYER PDMS MICRODEVICE FOR PARALLEL CONTINUOUS-FLOW PCR EMPLOYING A SINGLE HEATER FOR TEMPERATURE CONTROL AND PLASTIC SYRINGE FOR SAMPLE ACTUATION**

K.T.L. Trinh, M.L. Ha, W. Wu, and N.Y. Lee

Gachon University, SOUTH KOREA

T.225b**HIGH DENSITY CUSTOM MICROARRAYS FORMED BY MICROCOMPARTMENT AMPLIFICATION ON GLASS SURFACE**

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³National Genomics Infrastructure, SWEDEN, and ⁴French Corrosion Institute, FRANCE

W.226b**KS-DETECT: A SOLAR-POWERED SMARTPHONE-BASED SYSTEM FOR DIAGNOSING KAPOSI'S SARCOMA IN RESOURCE-LIMITED SETTINGS**

A.L. Gardner¹, L. Jiang¹, Z. Lu¹, G. Akar², E. Cesarman², and D. Erickson¹

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M.227b**MICROCHIP-BASED IN-SITU PADLOCK/ROLLING CIRCLE AMPLIFICATION (MICRO-RCA) SYSTEM FOR SINGLE DNA COUNTING IN A CELL**

K. Sato¹, A. Kuroda¹, Y. Ishigaki¹, and M. Nilsson²

¹Japan Women's University, JAPAN and ²Stockholm University, SWEDEN

T.228b**MICROFLUIDIC DEVICE FOR CLINICAL OUTCOME PREDICTION OF SEVERE SEPSIS**

J. Yang, P.R. Selvaganapathy, D. Dwivedi, A. Fox-Robichaud, and P.C. Liaw

McMaster University, CANADA

W.229b**MICROFLUIDIC THERMALISATION FOR ULTRA-FAST QPCR**

T. Houssin^{1,2}, J. Cramer^{1,2}, R. Grojsman², L. Bellahsene², M. Leberre³, G. Velve-Casquillas², A. Plecis², and Y. Chen¹

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M.230b**MULTI-ANALYTE SINGLE MOLECULE DETECTION BY PARALLEL SINGLEPLEX REACTIONS IN A COMPACT ARRAY**

W.H. Henley and J.M. Ramsey

University of North Carolina, USA

T.231b**OPTICAL MAPPING OF SINGLE DNA MOLECULES IN NANOCHANNELS: A NOVEL METHOD FOR IDENTIFICATION AND CHARACTERIZATION OF ANTIBIOTICS RESISTANCE**

L.K. Nyberg¹, G. Emilsson¹, A. Nilsson², E. Lagerstedt², C. Noble², L. Svensson Stadler³, N. Karami³, F. Sjöberg³, E.R.B. Moore³, J. Fritzsche¹, E. Kristiansson¹, T. Ambjörnsson², and F. Westerlund¹

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W.232b**A VERSATILE PAPER / PDMS HYBRID MICROFLUIDIC BIOCHIP FOR LOW-COST GLOBAL INFECTIOUS DISEASES DIAGNOSIS**

M. Dou, D.C. Dominguez, and X.J. Li

University of Texas, El Paso, USA

M.233b**RAPID MOLECULAR DIAGNOSIS OF INFECTIVE ENDOCARDITIS: DEVELOPING μ REX Dx**

D.K. Harshman, R. Reyes, and J.-Y. Yoon

University of Arizona, USA

Others**T.234b****DEVELOPMENT OF AN INHALATION ANESTHETIC DEVICE FOR MOUSE PUPS EQUIPPED WITH BRAIN STEREOTAXIC FUNCTION**

S. Yoshida¹, Y. Morimoto^{1,2}, T. Tonooka^{1,2}, and S. Takeuchi^{1,2}

W.235b**FORMATION AND CHARACTERISTICS OF LAMINAR VORTICES IN MICROSCALE ENVIRONMENTS WITHIN AN OBSTRUCTED AND STENTED URETER: A COMPUTATIONAL STUDY**

D. Carugo¹, X. Zhang¹, M.J. Drake², and F. Clavica³

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M.236b**INTEGRATED ALLERGIC DIAGNOSTIC CHIP APPLIED WITH HUMAN BASOPHILS ACTIVATION**

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T.237b**LAB-ON-A-CHIP – BASED PORTABLE LABORATORIES IN SUITCASES FOR IDENTIFICATION OF BIOLOGICAL WEAPON PATHOGENS**

R. Walczak¹, W. Kubicki¹, P. Śniadek¹, W. Kosek¹, P. Knapkiewicz¹, A. Górecka-Drzazga¹, J. Dziuban¹, J. Kocik², M. Niemcewicz², A. Michalski², M. Kołodziej², T. Cieślak², A. Bielawska-Drózd², K. Lasoski², S. Dąbrowski³, A. Burkiewicz³, P. Kaupa⁴ and K. Kucharczyk⁴

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³A&A Biotechnology, POLAND, and ⁴Kucharczyk Electrophoretic Techniques, POLAND

M.238b**PARALLEL SPR-IMAGING OF CELL RESPONSES: PROOF-OF-CONCEPT OF CELL-BASED SPR ASSAY FOR TYPE I ALLERGY**

T. Obara¹, Y. Yanase², N. Kumazaki¹, T. Kawaguchi², and M. Hide²

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Personalized Medicine**T.239b****DIFFERENTIAL ANALYSIS OF LYSED WHOLE BLOOD VIA “MICROFLUIDIC DRIFTING” BASED FLOW CYTOMETRY CHIP**

A. Nawaz¹, R. Nissly¹, P. Li¹, Y. Shariff², L. Wang³, and T. Huang¹

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W.240b**RAPID ON-CHIP MOLECULAR PROFILING OF CIRCULATING EXOSOMES FOR EARLY DETECTION OF OVARIAN CANCER**

M. He¹, Z. Zhao¹, A.K. Godwin², and Y. Zeng³

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Pharmaceutical Analysis**M.241b****DRUG COCKTAIL SCREENING TOWARDS COMBINATION THERAPY**

D.A.L. Vickers and S.C. Hur

Rowland Institute at Harvard University, USA

T.242b**ON-CHIP ABSORBANCE SPECTROSCOPY FOR THE DETERMINATION OF OPTICAL CLARITY AND pH FOR THE QUALITY CONTROL TESTING OF [¹⁸F]FDG RADIOTRACER**

M.D. Tarn, A. Isu, S.J. Archibald, and N. Pamme

University of Hull, UK

Protein Analysis & Characterization (e.g., Proteomics)**W.243b****A HIGH SENSITIVE AND CROSS REACTION FREE ANTIBODY CENTRIC POROUS SILICON PSA/hK2 DUPLEX IMMUNOASSAY PLATFORM FOR IMPROVING DIAGNOSIS ACCURACY OF PROSTATE CANCER**

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M.244b**CRYSTAL HABIT MODIFICATION OF PROTEIN BY USING MICROFLUIDIC CHIP**

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T. 245b**DIGITAL ASSAY FOR MULTIPLEXED DETECTION OF PROTEIN BIOMARKERS**

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²University of California, Berkeley, USA, ²Stanford University, USA and ³Rutgers University, USA

W.246b**DIGITAL MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT MONOCLONAL ANTIBODIES SCREENING AND ISOTYPING ANALYSIS**

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M.247b**FLOW-THROUGH, VIRAL CO-INFECTION ASSAY FOR LOW RESOURCE SETTINGS**

M. Cretich, M. Torrisi, P. Gagni, L. Sola, and M. Chiari

Consiglio Nazionale delle Ricerche, ITALY

T.248b**INTEGRATED ACOUSTIC MICROMIXER COUPLED WITH LABEL FREE ANALYSIS TECHNIQUES (SPRI & SERS) FOR IMPROVING CANCER BIOMARKERS DETECTION**

R. Zeggari¹, J.F. Manceau¹, E.N. Aybeke², R. Yahiaoui¹, E. Lesniewska², and W. Boireau¹

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W.249b**MICROFLUIDIC GEL ARRAYS FOR THE STUDY OF ENZYMATIC ACTIVITY**

C. Sowash, C. Smith, J. Tullis, J. Kunkel, P. Asuri, and P. Abbyad

Santa Clara University, USA

M.250b**MICROFLUIDIC LECTIN BARCODE ARRAY FOR HIGH-THROUGHPUT GLYCOMIC PROFILING**

Y. Shang and Y. Zeng

*University of Kansas, USA***T.251b****RAPID CHARACTERIZATION OF PROTEIN CRYSTALLIZATION BY PARALLELIZED LENSFREE IMAGING**V. Haguet^{1,2,3}, M. Roewer⁴, U. Zander⁴, and J.A. Márquez⁴¹CEA iRTSV, FRANCE, ²INSERM, FRANCE, ³University Grenoble-Alpes, FRANCE and ⁴EMBL, FRANCE**W.252b****SURFACE CONTACT PATCH FOR SKIN RESIDUAL PROTEIN QUANTIFICATION**D.Y. Oh¹, K. Jung², S. Song¹, and S. Kwon¹¹Seoul National University, SOUTH KOREA and ²QuantaMatrix Inc., SOUTH KOREA**M.253b****ULTRAFAST PEPTIDE DECOMPOSITION BY SUPERHEATING**M.O. Altmeyer^{1,2}, P. Neužil^{1,3}, and A. Manz¹¹Korea Institute of Science and Technology (KIST) - Europe, GERMANY, ²University of Twente, GERMANY, and ³RCPTM at UPOL, CZECH REPUBLIC**Regenerative Medicine & Tissue Engineering****T.254b****A DEVICE ARRAY FOR 3D MECHANICAL STIMULATION OF CELLS**

H. Liu, J. Usprech, C. Simmons, and Y. Sun

*University of Toronto, CANADA***W.255b****A MULTIMODAL GOLD NANOROD-LOCKED NUCLEIC ACID APPROACH FOR PROBING INDIVIDUAL CELL GENE EXPRESSIONS IN LIVING TISSUES**S. Wang¹, R. Riahi², M. Long^{1,3}, D.D. Zhang¹, and P.K. Wong¹¹University of Arizona, USA, ²Massachusetts Institute of Technology, USA, and ³Third Military Medicine University, CHINA**M.256b****DEVELOPMENT OF THE OPTIMUM END-EFFECTOR FOR TWO-FINGERED MICRO-HANDS SYSTEM TO SUPPORT CELL MANIPULATION**

T. Kurata, M. Horade, M. Kojima, K. Kamiyama, Y. Mae, and T. Arai

*Osaka University, JAPAN***T.257b****FLEXIBLE MANIPULATION OF COLLAGEN BLOCKS FOR ASSEMBLING MICRO-SCALE TISSUE CONSTRUCTS**

X. Zhang, Z. Meng, J. Ma, and J. Qin

*Chinese Academy of Sciences, CHINA***W.258b****FORMATION OF NON-SPHERICAL HYDROGEL MICROSTRUCTURES USING NON-EQUILIBRIUM AQUEOUS TWO-PHASE SYSTEMS**

N. Nakajima, K. Yamakoshi, Y. Yajima, M. Yamada, and M. Seki

*Chiba University, JAPAN***M.259b****GENERATION OF EPITHELIAL CELL SHEETS WITH DEFINED CELL ORIENTATION USING MICROSTRUCTURED MESH SHEETS AS SUBSTRATES FOR CELL CULTURE**K.O. Okeyo¹, R. Yanaru¹, O. Kurosawa¹, H. Oana¹, H. Kotera², and M. Washizu¹¹University of Tokyo, JAPAN and ²Kyoto University, JAPAN**T.260b****GEOMETRICAL CUES MEDIATE THE INVASION OF ENDOTHELIAL CELLS IN COLLAGEN I HYDROGEL**

Y. Hosseini, S. Verbridge, and M. Agah

Virginia Polytechnic Institute and State University, USA

W.261b**INJECTABLE CRYOGELS FOR NEURAL TISSUE ENGINEERING APPLICATIONS**

A. Bédier¹, T. Braschler¹, O. Peric¹, G. Fantner¹, S. Mosser¹, P. Fraering¹, S. Benchérif², D.J. Mooney², and P. Renaud¹
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M.262b**MONOLITHIC DROPLET GENERATOR AND MICROARRAY FOR SCREENING ISLET BETA CELLS**

Z. Zhao, R. Liu, D. Hu, and J.F. Lo
University of Michigan, USA

T.263b**REELING-BASED CELL FIBER (CELL-F) ASSEMBLY FOR THE RAPID CONSTRUCTION OF HIERARCHICAL TISSUES**

S. Iwanaga^{1,2}, H. Onoe^{1,2}, T. Okitsu^{1,2}, and S. Takeuchi^{1,2}
¹*University of Tokyo, JAPAN* and ²*Japan Science and Technology Agency (JST), JAPAN*

Sample Preparation (Whole Blood, Saliva, Cells, Tissue, Food, etc.)**W.264b****A DIGITAL MICROFLUIDIC INTERFACE BETWEEN SOLID-PHASE MICROEXTRACTION (SPME) AND LIQUID CHROMATOGRAPHY**

K. Choi¹, E. Boyaci², J. Kim¹, J. Pawliszyn², and A.R. Wheeler¹
¹*University of Toronto, CANADA* and ²*University of Waterloo, CANADA*

M.265b**AUTOMATABLE ON-CHIP WHOLE BLOOD SAMPLE PREPARATION INCLUDING MICROBEAD-BASED PROTEIN AND NA TARGET EXTRACTIONS**

J.P. Guerrette, W.H. Henley, and J.M. Ramsey
University of North Carolina, USA

T.266b**CONCENTRATING URINARY BIOMARKERS BY COMPRESSIVE EVAPORATION ON A PAPER MICROFLUIDIC PLATFORM**

S.Y. Wong, M. Cabodi, and C. Klapperich
Boston University, USA

W.267b**CONTINUOUS-FLOW MICROFLUIDIC BLOOD CELL SORTING FOR UNPROCESSED WHOLE BLOOD USING SURFACE-MICROMACHINED MICROFILTRATION MEMBRANES**

X. Li, W. Chen, G. Liu, W. Lu, and J. Fu
University of Michigan, USA

M.268b**MICRONEEDLE BASED SAMPLING FOR BREAST CANCER TISSUES**

A. Hokkanen¹, I. Stuns¹, P. Schmid², A. Kokkonen¹, A. Steinecker², J. Budezies³, P. Heimala¹, and L. Hakalahti¹
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T.269b**ENABLING RELIABLE DETECTION OF LOW ABUNDANCE MALARIA PARASITES FROM BLOOD USING INERTIAL MICROFLUIDICS**

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W.270b**PCR-FREE BLOODBORNE PATHOGEN IDENTIFICATION AND DRUG RESISTANCE PROFILING FROM WHOLE BLOOD USING INERTIAL MICROFLUIDICS**

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M.271b**ON-CHIP ULTRASONIC SAMPLE PREPARATION FOR CELLULAR AND MOLECULAR DIAGNOSTICS**

I. Iranmanesh, H. Ramachandraiah, M. Ohlin, A. Russom, and M. Wiklund
KTH Royal Institute of Technology, SWEDEN

T.272b**POINT-OF-USE NUCLEIC ACID DIAGNOSTIC USING ISOTACHOPHORESIS AND LOOP-MEDIATED ISOTHERMAL AMPLIFICATION**

M.B. Borysiak, K.W. Kimura, and J.D. Posner
University of Washington, USA

W.273b**PRE-STORAGE AND RELEASE OF PURIFICATION REAGENTS FOR FULL "HANDS-OFF" INTEGRATION OF DNA/RNA ASSAYS ON THE LABDISK PLATFORM**

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M.274b**PREPARATION OF BIODEGRADABLE CHITOSAN ACETATE SHEET AND ITS APPLICATION TO MICRONEEDLE**

M. Suzuki, T. Sawa, T. Takahashi, and S. Aoyagi
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T.275b**PURIFICATION AND CONCENTRATION OF NUCLEIC ACIDS IN POROUS MEMBRANES FOR POINT-OF-CARE APPLICATIONS**

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W.276b**RAPID CONTINUOUS ELECTRICAL LYSIS OF BACTERIA ON STRUCTURED ELECTRODES PRESERVES RNA INTEGRITY**

M. Poudineh, R.M. Mohamadi, A. Sage, L. Mahmoudian, E.H. Sargent, and S.O. Kelley
University of Toronto, CANADA

M.277b**RED BLOOD CELL DEFORMABILITY CHECKER WITH WATER/PLASMA PRESSURE TRANSMITTER**

T. Monzawa¹, S. Sakuma², F. Arai², and M. Kaneko¹
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Fundamentals in Microfluidics and Nanofluidics**Acoustic Phenomena (Bulk & Surface Based)****T.278c****CONTINUOUSLY VARIABLE NODE POSITION IN A HIGH-THROUGHPUT ACOUSTOFLUIDIC DEVICE**

E.J. Fong^{1,2}, M. Bora¹, S.-Y. Jung³, A. Johnston¹, T. Notton⁴, L.S. Weinberger^{3,4}, and M. Shusteff¹
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W.279c**RAPID MIXING OF HIGH VISCOSITY FLUIDS VIA BUBBLE CAVITATION FROM MICROCHANNEL SIDEWALLS**

A. Ozcelik, D. Ahmed, N. Nama, and T.J. Huang
Pennsylvania State University, USA

M.280c**SAMPLE PREPARATION AND DETECTION OF PATHOGENS IN FOOD AND BLOOD BY ACOUSTOPHORESIS**

B. Ngamsom¹, M.J. Lopez-Martinez¹, J.C. Raymond², P. Broyer², P. Patel², and N. Pamme¹
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T.281c**SURFACE ACOUSTIC WAVES FOR CONCENTRATING SOLUTES UPON EVAPORATION OF SESSILE DROPLETS**

D. Mampallil, J. Reboud, R. Wilson, and J.M. Cooper
University of Glasgow, UK

Droplets & Multiphase Systems**W.282c****A SIMPLE THEORETICAL BASIS FOR DROPLET-INDUCED SURFACE FATIGUE**

R.C.R. Wootton, K. Elvira, and A.J. de Mello
ETH Zürich, SWITZERLAND

M.283c**AMPHIPHILIC MICROGELS FROM POLYMERISATION OF HYDROPHOBIC DROPLETS NOVEL MICROGELS FABRICATED ON-CHIP**

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T.284c**APPLICATIONS OF PLGA MICROCARRIERS PREPARED USING T-JUNCTION PASSIVE BREAKUP DEVICE**

C.M. Kim and G.M. Kim
Kyungpook National University, SOUTH KOREA

M.285c**CHIP-BASED CARBON PASTE ELECTRODES FOR ELECTROCHEMICAL DETECTION OF DROPLET-BASED MICROFLUIDICS**

A. Suea-Ngam, P. Rattanasart, O. Chailapakul, and M. Srisa-Art,
Chulalongkorn University, THAILAND

T.286c**DROPLET FAILURE MODES: CAUSES, UNDERLYING EFFECTS AND AMELIORATION STRATEGIES**

A. Debon, R.C.R. Wootton, and K.S. Elvira
ETH Zürich, SWITZERLAND

W.287c**DROPLET-BASED MICROFLUIDIC ARRAYS CREATING TUNABLE CONCENTRATION GRADIENTS FOR IMMUNOASSAY APPLICATIONS USING MAGNETIC PARTICLES**

H. Lee, L. Xu, and K.W. Oh
State University of New York, Buffalo, USA

M.288c**DROPLET-ON-DEMAND PLATFORM FOR BIOCHEMICAL SCREENING AND DRUG DISCOVERY**

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T.289c**DYNAMICS OF DROPLETS IN NETWORKS OF LONG MICROFLUIDIC CHANNELS**

O. Cybulski and P. Garstecki
Polish Academy of Sciences, POLAND

W.290c**HIGHLY EFFICIENT ELECTROCOALESCENCE-BASED DROPLET MERGING USING A 3D ELECTRODE**

A.R. Guzman, H.S. Kim, and A. Han
Texas A&M University, USA

M.291c**INVESTIGATING INTER-DROPLET MASS TRANSFER IN FLOW UTILIZING HIGH ACCURACY SYNCHRONIZATION**

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T.292c**LEIDENFROST LIQUID DROPS ON MINIATURIZED RATCHETS: THE INFLUENCE OF DROP IMPACT SPEED**J.T. Ok¹, D.S.-W. Park², and S. Park²¹Midwestern State University, USA and ²Louisiana State University, USA**W.293c****MICROFLUIDIC DROPLET ROBOT FOR NANOLITER-SCALE PROTEIN CRYSTALLIZATION AND SCREENING**

Y. Zhu, L. Zhu, and W. Fang

Zhejiang University, CHINA

M.294c**MINIMIZING GAS PHASE FOULING OF ELECTRODES USING CAPILLARITY IN SURFACE MICROSTRUCTURES**U. Wohlgenannt¹, D. Chugh¹, F.H. Kriel¹, E. Nicolau², C. Cabrera², C. Semprebon³, M. Brinkmann³, and C. Priest¹¹University of South Australia, AUSTRALIA, ²University of Puerto Rico, PUERTO RICO, and³Max Planck Institute for Dynamics and Self-Organization, GERMANY**T.295c****ON DEMAND ONE-STEP GENERATION OF FUNCTIONAL POLYMERIC MICROSPHERES IN DROPLET MICROFLUIDICS**

X. Yu, G. Cheng, M.-D. Zhou, and S.-Y. Zheng

Pennsylvania State University, USA

W.296c**ON-CHIP ASSEMBLY OF POLYELECTROLYTE CAPSULES ON MAGNETIC TEMPLATES**

A.Q. Al-Orabi, Z. Schofield, M.D. Tran, V.N. Paunov, and N. Pamme

Hull University, UK

M.297c**ON-CHIP GENERATION AND EXTRACTION OF HYDROGEL MICROPARTICLES USING RAILING MICROPOSTS**

M. Dagher, L. Que, and D. Juncker

McGill University, CANADA

T.298c**ON-CHIP PRODUCTION OF NANOMETER SIZED 'ULTRA FINE' BUBBLE POPULATIONS**S.A. Peyman¹, J. McLaughlan¹, G. Marston², S. Freear¹, P.L. Coletta², and S.D. Evans¹¹University of Leeds, UK and ²St. James Hospital, UK**W.299c****ON-DEMAND SERIAL DILUTION USING QUANTIZED NANO/PICOLITER-SCALE DROPLETS**

S. Jambovane, S.A. Prost, A.M. Sheen, J.K. Magnuson, and R.T. Kelly

Pacific Northwest National Laboratory, USA

M.300c**RAPID AND CONTINUOUS MAGNETIC SEPARATION IN DROPLET MICROFLUIDIC DEVICES**

H.H. Strey, E. Brouzes, R. Kimmerling, and T. Kruse

Stony Brook University, USA

T.301c**RAPID AND PRECISION MASS REPLICATION OF INERTIAL FUSION ENERGY TARGETS WITH MULTIPHASE MICROFLUIDICS**

J. Li and D. Barrow

Cardiff University, UK

W.302c**SELF-PROPELLED CHEMOTACTIC DROPLETS**

W. Francis, L. Florea, and D. Diamond

Dublin City University, IRELAND

M.303c**SENSITIVE FLUORESCENCE-ACTIVATED SORTING OF MICRODROPLETS CONTAINING SUBCELLULAR STRUCTURES BY THERMOREVERSIBLE GELATION POLYMER**

H. Okada¹, A. Iguchi², R. Iizuka¹, D.H. Yoon², T. Sekiguchi², S. Shoji², and T. Funatsu¹

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

T.304c**VISCOPHORESIS: MIGRATION AND SORTING OF DROPLETS IN A VISCOSITY GRADIENT**

G.K. Kurup and A.S. Basu

Wayne State University, USA

W.305c**SINGLE STEP MICROFLUIDIC PRODUCTION OF MICROBUBBLE ARCHITECTURES FOR HYDROPHOBIC DRUG DELIVERY**

A.H. Churchman, V. Mico, S.A. Peyman, and S.D. Evans

University of Leeds, UK

Electrokinetic Phenomena**M.306c****CAPACITIVE DEIONIZATION ON-CHIP; DESALINATION OF SMALL VOLUME SAMPLES**

S. Roelofs¹, M. van Rooijen¹, B. Kim², J. Han², A. van den berg¹, and M. Odijk¹

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T.307c**CONTINUOUS ELECTROEXTRACTION OF AMINO ACIDS USING POLY(ETHYLENE-GLYCOL)/CASEINATE AQUEOUS TWO PHASE SYSTEM**

C.D.M. Campos^{1,2}, P. Neuzil², J.A.F. da Silva², and A. Manz¹

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W.308c**DIELECTROPHORETIC ALIGNMENT AND SORTING OF MICROPARTICLES IN MICROCHANNEL FLOWS USING LADDER-TYPES ELECTRODES**

K. Kawano, K. Tatsumi, H. Shintani, and K. Nakabe

Kyoto University, JAPAN

M.309c**ELECTROOSMOTIC TRANSPORT IN NANOFUIDIC DEVICES**

D.G. Haywood, Z.D. Harms, and S.C. Jacobson

Indiana University, USA

T.310c**HIGH THROUGHPUT SINGLE CELL POSITIONING AND IMPEDANCE SPECTROSCOPY BY A MULTI-ELECTRODE TRANSISTOR DEVICE FOR RARE CELL DETECTION AND ANALYSIS**

C. Liu¹, J. Hoet², W. Van Roy¹, T. Piessens², and L. Lagae¹

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W.311c**NONLINEAR ELECTROKINETIC EFFECTS ON PARTICLE MOTION NEAR A MICROCHANNEL CONSTRICTION**

Q. Wang, N.N. Dingari, and C.R. Buie

Massachusetts Institute of Technology, USA

Magnetofluidics (Magnetic Particles & Related Phenomena)**M.312c****DEVELOPMENT OF A LAMINATED LASER-PRINTED MICRODEVICE FOR DYNAMIC-SOLID PHASE DNA EXTRACTION IN AN ROTATIONALLY-DRIVEN PLATFORM**

K.R. Jackson¹, J.C. Borba², M. Meija¹, B.L. Poe¹, E. Carrilho², D.M. Haverstick¹, and J.P. Landers¹

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T.313c**FREE-FLOW MAGNETOPHORESIS FOR MULTIPLEXED ISOLATION OF FOOD-BORNE PATHOGENS**

B. Ngamsom¹, M.J. Lopez-Martinez¹, M.M.N. Esfahani¹, J.C. Raymond², P. Broyer², P. Patel², and N. Pamme¹

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W.314c**REVERSIBLE IMUNOMAGNETIC CELL TRAPPING AND ANALYSIS ON AN ARRAY OF THIN-FILM PERMALLOY MICROFEATURES**

D. Kirby, É. Bailey, M. Glynn, C. Nwankaire, and J. Ducrée

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M.315c**MICROFLUIDIC GIANT MAGNETORESISTANCE DETECTION OF MAGNETIC PARTICLES IN FLOW**

J. Sheats¹, L.P. Maldonado-Camargo², C. Rinaldi², S. Sreevatsan¹, M.A. Torija³, and K.D. Dorfman¹

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Modeling/ Numerical Simulation**T.316c****COMPLETE ANALYTICAL MODEL OF MICROFLUIDIC DIPOLES AND QUADRUPOLES: APPLICATION TO BRUSH STROKE AND GRADIENT CONTROL WITH MICROFLUIDIC PROBES**

T. Gervais¹, M. Safavieh², M. Qasaimeh³, and D. Juncker⁴

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³New York University Abu Dhabi, UNITED ARAB EMIRATES, and ⁴McGill University, CANADA

W.317c**EFFECT OF ELECTRIC CONDUCTIVITY AND PERMITTIVITY OF LIQUIDS AND THE FREQUENCY OF THE APPLIED VOLTAGE ON DROPLET ACTUATION ON DIGITAL MICROFLUIDIC DEVICES**

W.M. Salman, M.S. Abdelsalam, M.F. El-Dosoky, and M. Abdelgawad

Assiut University, EGYPT

M.318c**HIGH THROUGHPUT NANOPARTICLE SORTING FOR SERIAL FEMTOSECOND CRYSTALLOGRAPHY**

B.G. Abdallah, M. Sawtelle, and A. Ros

Arizona State University, USA

T.319c**MEASUREMENT AND COMPUTATION OF LYMPHOCYTE DEFORMATION BY USING MICROCHANNEL FLOW AND THE COMPOUND DROP MODEL**

K. Tatsumi, K. Haizumi, K. Sugimoto, and K. Nakabe

Kyoto University, JAPAN

W.320c**MULTIPHYSICS SIMULATION OF ION CONCENTRATION POLARIZATION INDUCED BY NANOPOROUS MEMBRANES IN DUAL CHANNEL DEVICES**

M. Jia, M. Kim, and T. Kim

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

M.321c**MICRO-PARTICLE MIGRATION AND SEPARATION INDUCED BY COMPLEX FLOW PROFILES**

C.-Y. Wu and D. Di Carlo

University of California, Los Angeles, USA

W.322c**NUMERICAL AND EXPERIMENTAL INVESTIGATION OF ACOUSTIC STREAMING AROUND OSCILLATING SHARP EDGES IN MICROFLUIDICS**

N. Nama, P.-H. Huang, T.J. Huang, and F. Costanzo

Pennsylvania State University, USA

M.323c**SIMULATION OF COUPLED MICROPARTICLE MOTION AND FLUID FLOW IN MICROFLUIDIC DEVICES**

J. Shang, Z. Zhang, J. Zhu, J. Yang, and Q. Lin
Columbia University, USA

Nanofluidic Phenomena (Nanochannels and Nanopores)**T.324c****A NANOFUIDIC DIODE MEMBRANE FOR ELECTROPHORETIC CONTROLLED RELEASE OF CHARGED MOLECULES WITH LOW DIFFUSIVE LEAKAGE**

F. Wildhaber, S. Wu, T. Braschler, S. Varricchio, and P. Renaud
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W.325c**DEVELOPMENT OF A HIGH EFFICIENT PROTON CONDUCTOR MEDIA USING EXTENDED-NANO SPACE UNDER THE OUTER ELECTRIC FIELD**

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M.326c**ATTOMOLAR-LEVEL SENSING AT TIP OF FUNNEL NANOCHANNEL WITH FEW NANOPARTICLES STUCK**

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T.327c**ELUCIDATING TRANSPORT DYNAMICS OF SINGLE MOLECULES IN THERMOPLASTIC NANOCHANNELS**

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W.328c**FEMTOLITER CHROMATOGRAPHY USING EXTENDED NANOCHANNEL TOWARD MILLION PLATE NUMBERS: DESIGN METHOD AND ITS VERIFICATION**

K. Morikawa^{1,3}, H. Shimizu^{2,3}, Y. Liu^{2,3}, H.T.T. Le^{2,3}, A. Smirnova^{2,3}, K. Mawatari^{2,3}, and T. Kitamori^{2,3}
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M.329c**GEOMETRICAL CONTROL OF A SINGLE DNA MOLECULE TRANSLOCATION VELOCITY IN NANOPORE CHANNELS**

X. Sun¹, T. Yasui¹, S. Rahong¹, T. Yanagida², N. Kaji¹, M. Kanai², K. Nagashima², T. Kawai², and Y. Baba^{1,3}
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T.330c**INTEGRATED HEAT PIPE DEVICE USING ENHANCED CAPILLARY CONDENSATION AND HIGH LAPLACE PRESSURE IN EXTENDED NANOSPACE**

C. Wang^{1,2}, Y. Kazoe^{1,2}, K. Morikawa^{1,2}, H. Shimizu^{1,2}, K. Kasai¹, K. Mawatari^{1,2}, and T. Kitamori^{1,2}
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W.331c**IONIC STRENGTH EFFECTS ON PROTEIN TRAPPING IN THIN-FILM FABRICATED NANOCHANNELS**

S. Kumar, J.M. Stout, A.R. Hawkins, and A.T. Woolley
Brigham Young University, USA

M.332c**CLOG-FREE TRANSLOCATION OF LONG DNA IN NANOFUIDIC PILLAR ARRAYS AND 30 nm WIDE CHANNELS: A FABRICATION AND HYDRODYNAMIC STUDY**

C. Wang, R.L. Bruce, E.A. Duch, J.V. Patel, J.T. Smith, Y. Astier, E.G. Colgan, Q. Lin, and G.A. Stolovitzky
IBM TJ Watson Research Center, USA

T.333c**NANOCHANNEL CIRCUITS FOR RESISTIVE-PULSE SENSING WITH ENHANCED SIGNAL-TO-NOISE RATIOS AT HIGH APPLIED POTENTIALS**

A.R. Kneller, Z.D. Harms, D.G. Haywood, L. Selzer, A. Zlotnick, and S.C. Jacobson
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W.334c**NANOCONFINED CIRCULAR DNA**

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M.335c**NANOFLUIDIC DEVICES FOR TRACKING ASSEMBLY OF VIRUS CAPSIDS AND THEIR INTERMEDIATES**

Z.D. Harms, L. Selzer, A. Zlotnick, and S.C. Jacobson
Indiana University, USA

T.336c**USE OF SOLID-STATE NANOPORES TO DETECT DIFFERENT CONFORMATIONAL STATES OF TRANSFERRIN**

G. Goyal and M.J. Kim
Drexel University, USA

W.337c**NANOFLUIDIC-BASED SEPARATION OF RARE-EARTH METAL IONS**

T. Tsukahara
Tokyo Institute of Technology, JAPAN

Optofluidics**M.338c****ELECTROHYDRODYNAMIC (EHD)-BASED ACTIVE LENS FOR BIOMEDICAL IMAGING**

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T.339c**MICROSTRUCTURE FORMATION BY OPTOFLUIDIC MASKLESS LITHOGRAPHY USING FINE-TUNED GRAYSCALE**

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W.340c**MODULAR OPTOFLUIDIC SYSTEMS**

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M.341c**MODULATED DYNAMIC MASK FOR UNIFORM EXPOSURE IN MASKLESS PHOTOLITHOGRAPHY**

J.S. Yoon, S.H. Song, and W. Park
Kyung Hee University, SOUTH KOREA

T.342c**MULTIPLE PATH PHOTONIC LAB ON A CHIP FOR PARALLEL MICROLITER PROTEIN CONCENTRATION MEASUREMENTS**

I. Rodríguez-Ruiz, M. Conejero-Muriel, T.N. Ackermann, J.A. Gavira, and A. Llobera
Consejo Superior de Investigaciones Científicas (CSIC), SPAIN

W.343c**NOVEL DROPLET-BASED MICROFLUIDIC OPTICAL SENSOR FOR GOLD NANOPARTICLE DETECTION DOPAMINE**

H.-C. Lee and C.-H. Lin

National Sun Yat-sen University, TAIWAN

M.344c**OPTOELECTROFLUIDIC RAPID IMMUNOREACTION BASED ON OPTICALLY-INDUCED AC ELECTROOSMOSIS**

D. Han, H.J. Gi, and J.-K. Park

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T.345c**OPTOFLUIDIC FABRICATION OF COMPLEX 3D SHAPED PARTICLES VIA FLUID INERTIA**

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Others**W.346c****DIELECTROFLUIDICS FOR ELECTRONIC-BASED CHEMICAL AND PARTICLE ANALYSIS**

J.C. Booth¹, S. Egan², C. Little³, A. Padilla⁴, Y. Wang¹, and N.D. Orloff¹

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M.347c**ELECTRICALLY INDUCED BUBBLE CAPILLARY-PORATION**

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T.348c**EVAPORATION-COOLING-BASED MICROFLUIDIC TEMPERATURE CONTROL AND ICE GENERATION**

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W.349c**INERTIAL MICROFLUIDICS WITHIN NON-RECTANGULAR CROSS-SECTION MICROCHANNELS AND CONTROL OF ACCESSIBLE FOCUSING POSITION**

J.-A. Kim, J.-Y. Lee, S.M. Nam, W. Lee

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M.350c**USING FLUID VISCOELASTICITY TO EXPAND THE STRESS RANGES IN SINGLE-CELL MECHANOPHENOTYPING**

D. Kim, D. Gupta, Y. Azar, and D. Di Carlo

University of California, Los Angeles, USA

Integrated Microfluidic Platforms**Centrifugal Microfluidics****T.351d****BUOYANCY-DRIVEN CENTRIPETAL PUMPING FOR NESTED SAMPLE PREPARATION IN BIOASSAYS**

N.A. Kilcawley, D.J. Kinahan, C.E. Nwankire, M.T. Glynn, and J. Ducree

Dublin City University, IRELAND

W.352d**COMBINATION OF MULTIPLEX ISOTHERMAL AMPLIFICATION WITH AN IMMUNOCHROMATOGRAPHIC STRIP FOR SUBTYPING INFLUENZA A VIRUS**

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M.353d**CENTRIFUGE-BASED MICROFLUIDIC DEVICE FOR TRAPPING SINGLE CELLS IN A DROP**

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T.354d**DVD DISCS AS LOW-COST DIAGNOSTICS FOR GMO SCREENING**

S. Santiago-Felipe¹, M. Amasia², A. Russom², A. Maquieira¹, and L.A. Tortajada Genaro¹

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W.355d**FLUIDIC STRUCTURE FOR TEMPERATURE MEASUREMENT UNDER ROTATION IN CENTRIFUGAL MICROFLUIDICS**

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M.356d**IMAGING BASED AGGLUTINATION MEASUREMENT OF MAGNETIC MICRO-PARTICLES ON A LAB-ON-A-DISC PLATFORM**

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T.357d**IN SITU ISOTHERMAL ROLLING CIRCLE AMPLIFICATION (RCA) OF DNA AND BEAD BASED VISUALIZATION OF RCA PRODUCTS ON AN INTEGRATED LAB ON DVD PLATFORM FOR LOW COST MOLECULAR DIAGNOSTICS**

H. Ramachandriah, S. Zelenin, M. Amasia, and A. Russom

KTH Royal Institute of Technology, SWEDEN

W.358d**ISOLATION OF WHITE BLOOD CELLS USING PAPER-TRIGGERED DISSOLVABLE-FILM VALVES ON A CENTRIFUGAL PLATFORM**

D.J. Kinahan, N.A. Kilcawley, M.T. Glynn, D. Kirby, and J. Ducree

Dublin City University, IRELAND

M.359d**MULTIPLE HEMATOLOGICAL ANALYSES BASED ON MICRO BLOOD CENTRIFUGATION USING CENTRIFUGAL MICROFLUIDIC PLATFORM**

M. La, S.M. Park, and D.S. Kim

Pohang University of Science and Technology (POSTECH), SOUTH KOREA

T.360d**PASSIVE CONTINUOUS PARTICLE FOCUSING IN A MICROCHANNEL WITH SYMMETRIC SHARP CORNER STRUCTURES**

L.-L. Fan¹, L. Zhao¹, X.-K. He¹, H. Yu², Q.-Y. Wei¹, and J. Zhe²

¹Xi'an Jiaotong University, CHINA and ²University of Akron, USA

W.361d**PROTEIN QUANTITATION FROM WHOLE BLOOD ON POLYESTER-TONER LASER-PRINTED MICROFLUIDIC DISCS WITH CELL PHONE IMAGE ANALYSIS**

B.L. Thompson, Y. Ouyang, J. Li, S.T. Krauss, N. Shukla, B.G. Kessel, D.M. Haverstick, G.T. Garner, and J.P. Landers

University of Virginia, USA

M.362d**ROTATIONAL-PULSE ACTUATED DISSOLVABLE-FILM VALVES FOR AUTOMATED PURIFICATION OF TOTAL RNA FROM E. COLI**

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Digital Microfluidics on Surfaces

T.363d

A DIGITAL MICROFLUIDIC PLATFORM FOR HUMAN PLASMA PROTEIN DEPLETION

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W.364d

FLUORINATED SUPERHYDROPHOBIC SURFACES FOR DIGITAL MICROFLUIDIC DEVICES WITH ELECTROWETTING ON DIELECTRIC AND MAGNETIC ACTUATION

L. Mats, R. Young, A. Bramwell, J. Dupont, G. Liu, and R.D. Oleschuk

Queen's University, CANADA

M.365d

HYDRODYNAMIC DENSITY-BASED PARTICLE FOCUSING IN DIGITAL MICROFLUIDIC SYSTEMS

H. Rezaei Nejad, E. Samiei, A. Ahmadi, and M. Hoorfar

University of British Columbia, CANADA

T.366d

INTRA-DROPLET MAGNETIC BEAD MANIPULATION INTEGRATED ON A DIGITAL MICROFLUIDIC CHIP

L. CHEN, A. Madison, and R.B. Fair

Duke University, USA

W.367d

QUANTITATIVE, SURFACE HEATED, DROPLET POLYMERASE CHAIN REACTION FOR DETECTING PATHOGENS

S.V. Angus, S. Cho, D.K. Harshman, and J.-Y. Yoon

University of Arizona, USA

M.368d

MAGNETIC PARTICLE RETRIEVAL AND POSITIONING IN A MICROWELL ARRAY BY INTEGRATING OPTICAL TWEEZERS IN A DIGITAL MICROFLUIDIC PLATFORM

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T.369d

TOWARDS SYNTHETIC BIOLOGY IN A CHIP: AN INTEGRATED DIGITAL MICROFLUIDIC PLATFORM FOR TRANSFORMATION, CULTURE AND EXPRESSION

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Electrokinetic Microfluidics

W.370d

FLOW-DECOUPLED DIELECTROPHORESIS FOR SHEATHLESS 3D FOCUSING IN HIGH SPEED FLOWS

Y.-C. Kung, K.-W. Huang, and P.-Y. Chiou

University of California, Los Angeles, USA

M.371d

A MICROFLUIDIC-INTEGRATED BIOSENSING SOC FOR CARDIAC TROPONIN I DETECTION IN 0.35 μ M CMOS PROCESS

P.-W. Yen¹, S.-C. Lin¹, Y.-C. Huang¹, Y.-J. Huang¹, H.-H. Tsai², H.-H. Liao², S.-S. Lu¹, and C.-T. Lin¹

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T.372d

ELECTROKINETIC TRAPS FOR INTEGRATED BIOLOGICAL SAMPLE ANALYSIS

A.I. Shallan, R.M. Guijt, and M.C. Breadmore

University of Tasmania, AUSTRALIA

W.373

FLEXIBLE WATER TREATMENT BY ELECTROCOAGULATION (EC) AND ION CONCENTRATION POLARIZATION (ICP) HYBRID SYSTEM

S. Choi and J. Han

Massachusetts Institute of Technology, USA

M.374d

MULTIMODAL CHARACTERIZATION OF ENZYMATIC REACTION VELOCITIES USING A CONCENTRATION GRADIENT IN A NANOFUIDIC CHANNEL ARRAY

W.R.A. Wichert, S.P. Branagan, and P.W. Bohn

University of Notre Dame, USA

T.375d

NOVEL SPLIT FLOW CHIP FOR CAPILLARY ELECTROPHORESIS

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W.376d

QUANTITATIVE EVALUATION OF INSULATING PERFORMANCE ON SILICON NANOBIODEVICES FOR FULLY INTEGRATED NANOPORE SINGLE DNA SEQUENCING

M. Sano¹, T. Yasui¹, N. Kaji¹, M. Taniguchi², T. Kawai², and Y. Baba^{1,3}

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

Large Scale Integration (Massively Parallel and High Throughput Systems)

M.377d

A HIGH-THROUGHPUT ANTIBODY SCREENING PLATFORM TOWARD EMBRYOLOGY

H. Kimura¹, S. Senda¹, T. Yoshimura², Y. Sato³, T. Fujimori³, and T. Fujii²

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T.378d

CELL CULTURE ON DISPLAY: A MULTIPLEXED PLATFORM FOR PROBING THE EFFECT OF ILLUMINATION CONDITIONS ON THE GROWTH OF PHOTOSYNTHETIC MICROORGANISMS

P.J. Graham and D. Sinton

University of Toronto, CANADA

W.379d

CELL SQUEEZING-BASED SEQUENTIAL CAPTURE, PAIRING AND FUSION OF CELLS

B. Dura, Y. Liu, and J. Voldman

Massachusetts Institute of Technology, USA

M.380d

HIGH-THROUGHPUT INTEGRATED SINGLE-CELL TRANSCRIPTOMIC AND PROTEOMIC ANALYSIS

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¹University of Albany, The State University of New York, Albany, USA and ²California Institute of Technology, USA

T.381d

INTEGRATED MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT STUDY OF ELECTRICAL FIELD DIRECTED CELL MIGRATION

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¹University of California, Davis, USA and ²Zhejiang University, CHINA

W.382d

INTEGRATION OF LARGE-SCALE MICROFLUIDIC NETWORKS WITH MULTIPLEXED PROTEIN MICROARRAYS FOR A FUNCTIONAL HIGH THROUGHPUT SCREEN OF BACTERIAL ADHESION PATHOGENICITY LANDSCAPES

W.M. Weaver¹, M. Tsaturian¹, R. Damoiseaux^{1,2}, V. Milisavljevic¹, J.F. Miller^{1,2}, and D. Di Carlo^{1,2}

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M.383d**LARGE-SCALE ARRAY OF PICOLITRE REACTORS FOR DRUG SCREENING**

C.J. Huang, C.C. Hau, C.H. Wang, and J.T. Yang
National Taiwan University, TAIWAN

T.384d**LIQUID MICROARRAY FOR ENZYME INHIBITOR SCREENING**

Y. Jeong, Y. Song, D.Y. Oh, and S. Kwon
Seoul National University, SOUTH KOREA

W.385d**MICROFLUIDICS-ENABLED COMBINATORIAL PEPTIDE LIBRARY FOR HIGH THROUGHPUT SCREENING**

S. Zhao, Z. Bai, K. Lam, and T. Pan
University of California, Davis, USA

M.386d**OPSONIN-COATED HOLLOW FIBERS FOR PATHOGEN REMOVAL FROM FLOWING BLOOD**

T.F. Didar¹, A. Watters¹, D.C. Leslie¹, J.H. Kang¹, M. Cartwright¹, A. Graveline¹, A. Waterhouse¹, M. Super¹, and D.E. Ingber^{1,2}
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T.387d**PROGRAMMABLE MICROFLUIDIC DIGITAL LOGIC FOR THE AUTONOMOUS LAB ON A CHIP**

S. Ahrar, P.N. Duncan, and E.E. Hui
University of California, Irvine, USA

W.388d**THREE DIMENSIONAL FLASH FLOW MICROREACTOR FOR SCALE UP PRODUCTION OF MONODISPERSE PEG-PLGA NANOPARTICLES**

K.-I. Min, D.H. Ko, D.-and P. Kim
Pohang University of Science and Technology (POSTECH), SOUTH KOREA

M.389d**TUBINGLESS MICROFLUIDIC SYSTEM BASED HIGH THROUGHPUT DRUG SCREENING SYSTEM FOR COMBINATIONAL CHEMOTHERAPY**

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¹*Dankook University, SOUTH KOREA* and ²*Seoul National University, SOUTH KOREA*

Others**T.390d****A MICROFLUIDIC DEVICE FOR ISOLATION OF AFFINITY OLIGONUCLEOTIDES USING COMBINED ELECTROKINETIC AND HYDRODYNAMIC MANIPULATION**

T. Olsen¹, J. Zhu¹, J. Kim¹, R. Pei², M.N. Stojanovic¹, and Q. Lin¹
¹*Columbia University, USA* and ²*Chinese Academy of Sciences, CHINA*

W.391d**3D-PRINTED MICROFLUIDIC CIRCUIT BOARD FOR SAMPLE PROCESSOR**

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

M.392d**A MICROFLUIDIC SYSTEM WITH CHIP-INTEGRATED MICRO-SYRINGES AND ULTRASONIC HANDLING OF MAGNETIC BEADS**

H. Zirath¹, L. Brandhoff², A. Coll³, G. Schnetz⁴, A. Spittler⁵, H. Wiesinger-Mayr¹, M.J. Vellekoop², H. Redl³, and J.R. Peham¹
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T.393d**A SELF-LOADING, SELF-METERING AND SELF-MIXING MICROFLUIDIC REACTOR ARRAY FOR BIOCHEMICAL SCREENING**

G. Li, L. Wang, T. Tang, Q. Chen, L. Liao, and J. Zhao
Chinese Academy of Sciences, CHINA

W.394d**AN INTEGRATED MAGNETOFLUIDIC DEVICE ENABLING NOVEL ACTUATION FUNCTIONALITIES**

M. Fouet^{1,2}, R. Courson^{1,2}, S. Baster^{1,2}, and A.-M. Gué^{1,2}

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M.395d**AN INTEGRATED MICROFLUIDIC LAB-ON-A-CHIP PLATFORM AND ANALYZER FOR RAPID AND WIDE DYNAMIC RANGE DETECTION OF QUANTITATIVE β -hCG IN EMERGENCY MEDICINE**

J. Han¹, J. Kai¹, A. Puntambekar¹, S.H. Lee¹, and C.H. Ahn^{1,2}

¹Siloam Biosciences, USA and ²University of Cincinnati, USA

T.396d**CONTINUOUS-FLOW LOW-VOLTAGE MICROFLUIDIC ELECTROPORATION FOR GENE DELIVERY**

N. Bhattacharjee, L. Horowitz, and A. Folch
University of Washington, USA

W.397d**DIGITAL MICROFLUIDIC ELECTROPORATION SYSTEM FOR BIOENGINEERING AND BIOMEDICAL APPLICATIONS**

D.J. Im¹, S.-N. Jeong², B.S. Yoo², B.-L. Kim², I.S. Kang², and D.P. Kim²

¹Pukyong National University, SOUTH KOREA and ²Pohang University of Science and Technology (POSTECH), SOUTH KOREA

M.398d**LIVE SINGLE CELL ROTATION USING HYDRODYNAMIC MICROVORTEX FLOW AND OPTICAL TRAPPING**

R.M. Shetty, J.R. Myers, W.L. Teller, A. Shabilla, D. Smith, J. Houkal, J. Vela, S. Chao, R.H. Johnson, L. Kelbaskas, H. Wang, and D.R. Meldrum
Arizona State University, USA

W.399d**MICRO-BUBBLE RING GENERATION BY ELECTRICALLY-DRIVEN HIGH-SPEED BUBBLE STRIKE UNDER MICRO-FLUIDIC ENVIRONMENT**

S. Takasawa¹, Y. Fujiwara¹, T. Kobayashi¹, M. Ohmura¹, H. Kamegawa¹, and Y. Yamanishi^{1,2}

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M.400d**MEMBRANE-EMBEDDED DISPOSABLE MICROFLUIDIC CHIP FOR CARDIAC BIOMARKER SCREENING**

J. Lee¹, J. Kim², S. Song², and J. Kim¹

¹Texas Tech University, USA and ²Hanyang University, SOUTH KOREA

T.401d**RAPID AND DYNAMIC SIGNAL ENHANCEMENT OF BEAD-BASED BIOASSAYS USING A MULTI-FUNCTIONAL OPTOELECTRIC DEVICE**

K.C. Wang¹, F.T. Li¹, D.B. Shieh¹, K.C. Kim², and H.S. Chuang¹

¹National Cheng Kung University, TAIWAN and ²Pusan National University, SOUTH KOREA

W.402d**SHEATHLESS, HIGH-THROUGHPUT SINGLE-POSITION FOCUSING OF MICROPARTICLES IN A STRAIGHT MICROCHANNEL**

X. Wang and I. Papautsky
University of Cincinnati, USA

M.403d**SPATIAL MICROFLUIDIC GAS GRADIENT BY BALANCING DIFFUSION AND CONVECTION**

M. Zhou, Z. Li, Z. Zhao, D. Hu, R. Liu, and J.F. Lo

University of Michigan, USA

Platforms Based on Capillary Forces (Paper-Based Microfluidics, Lateral Flow Tests)

T.404d

A MICROFLUIDIC DOSIMETER USING RADIATION INDUCED CHARGE DISSIPATION IN AN ELECTRET-EMBEDDED MICROCHANNEL

C.K. Yoon, S.H. Song, and B. Ziaie

Purdue University, USA

W.405d

A SINGLE SHEET OF PAPER-BASED ANALYTICAL DEVICE FOR QUANTITATIVE AND MULTIPLE ASSAYS

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M.406d

LASER SURFACE-TREATED GLASS WITH WICKING CAPABILITY FOR MICROFLUIDICS

M. Ochoa, R. Rahimi, H. Jiang, and B. Ziaie

Purdue University, USA

T.407d

BIOMARKER CONCENTRATION AND DETECTION DIRECTLY ON PAPER

R.Y.T. Chiu, E. Jue, A.T. Yip, A.R. Berg, S.J. Wang, A.R. Kivnick, P.T. Nguyen, and D.T. Kamei

University of California, Los Angeles, USA

W.408d

POINT-OF-CARE BLOOD COAGULATION MONITORING USING LATERAL FLOW DEVICE

H. Li, D. Han, G.M. Pauletti, and A.J. Steckl

University of Cincinnati, USA

M.409d

COMBINATION OF MULTIPLEX ISOTHERMAL AMPLIFICATION WITH AN IMMUNOCHROMATOGRAPHIC STRIP FOR SUBTYPING INFLUENZA A VIRUS

J.H. Jung, S.J. Oh, B.H. Park, and T.S. Seo

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T.410d

USING PAPER-BASED MICROFLUIDICS AND LAB ON A CHIP TECHNOLOGIES FOR THE RAPID ANALYSIS OF TRINITRO AROMATIC EXPLOSIVES

L. Blanes, R.V. Taudte, C. Roux, and P. Doble

University of Technology, Sydney, AUSTRALIA

W.411d

FABRICATION AND CHARACTERIZATION OF MICROWIRE ELECTROCHEMICAL PAPER-BASED ANALYTICAL DEVICES WITH QUASI-STEADY FLOW

J.A. Adkins and C.S. Henry

Colorado State University, USA

M.412d

IMPROVING LIMIT OF DETECTION OF LATERAL FLOW ASSAYS USING ISOTACHOPHORESIS

B.Y. Moghadam, K.T. Connelly, and J.D. Posner

University of Washington, USA

T.413d

MINIMALLY INSTRUMENTED PAPER-BASED MOLECULAR DIAGNOSTIC FOR SEXUALLY TRANSMITTED INFECTIONS

J.C. Linnes and C.M. Klapperich

Boston University, USA

W.414d

MULTIPLEXED PROTEIN QUANTIFICATION USING SELF-ASSEMBLED ANTIBODY BEAD ARRAY FOR POINT-OF-CARE DIAGNOSTICS

D. Lee¹, H. Yeom¹, S. Bae¹, K. Jung², J. Jang¹, and S. Kwon¹

¹*Seoul National University, SOUTH KOREA* and ²*Quanta Matrix Corp., SOUTH KOREA*

M.415d**NANOPOROUS MEMBRANES ENABLE CONCENTRATION AND TRANSPORT IN FULLY WET PAPER-BASED ASSAYS**

M.M. Gong¹, P. Zhang¹, B.D. MacDonald², and D. Sinton¹

¹University of Toronto, CANADA and ²University of Ontario Institute of Technology, CANADA

T.416d**ORIGAMI-INSPIRED NONPLANAR THREE-DIMENSIONAL PAPER MICROFLUIDIC CIRCUITS**

B. Kalish and H. Tsutsui

University of California, Riverside, USA

W.417d**POROUS TITANIA THIN FILM MICROFLUIDIC DEVICES FOR MEDICAL DIAGNOSTICS**

Y.S. Joung and C.R. Buie

Massachusetts Institute of Technology, USA

M.418d**PORTABLE DIAGNOSTIC DEVICE FOR THE DETECTION OF BACILLUS IN ULTRA-LOW RESOURCE ENVIRONMENTS**

J.C. Harper¹, M. Finley¹, B. Carson¹, T.L. Edwards¹, G. Bachand¹, W. Arndt¹, and J. Lovchick²

¹Sandia National Laboratories, USA and ²University of New Mexico, USA

T.419d**PRESSURE-MODULATED FLOW CONTROL IN PAPER-BASED MICROFLUIDIC DEVICES**

J.H. Shin, J.H. Park, J.-K. Park

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

W.420d**RATIONAL SELECTION OF SUBSTRATES TO IMPROVE COLOR INTENSITY AND UNIFORMITY ON MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICES**

E. Evans¹, E.F.M. Gabriel², W.K.T. Coltro², and C.D. Garcia¹

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M.421d**SEPARATION AND CONCENTRATION OF PROTEINS BY ISOELECTRIC FOCUSING WITHOUT CARRIER AMPHOLYTES IN A NITROCELLULOSE MEMBRANE**

K. Abe, P. Kauffman, and P. Yager

University of Washington, USA

T.422d**STAMPING OF MICROFLUIDIC PAPER-BASED ANALYTICAL DEVICES WITH CHEMICALLY MODIFIED SURFACE FOR CLINICAL DIAGNOSTICS**

P.T. Garcia¹, T.M.G. Cardoso¹, C.D. Garcia², E. Carrilho³, and W.K.T. Coltro¹

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Segmented Flow and Droplet Based Microfluidics in Channels**W.423d****A DROPLET TRAPPING MICROFLUIDIC DEVICE FOR THE STUDY OF MASS-TRANSPORT ACROSS DROPLET INTERFACE BILAYERS**

P. Carreras, Y. Elani, R.V. Law, N. Brooks, J.M. Seddon, and O. Ces

Imperial College London, UK

M.424d**A MICROFLUIDIC PLATFORM FOR THE PRODUCTION OF MONODISPERSE ULTRALOW INTERFACIAL TENSION OIL DROPLETS IN WATER**

G. Bolognesi¹, A. Hargreaves², A.D. Ward³, A.K. Kirby², C.D. Bain², and O. Ces¹

¹Imperial College London, UK, ²Durham University, UK, and ³Science & Technology Facilities Council (STFC), UK

T.425d**CONTINUOUS FLOW DIGITAL LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) IN DROPLETS**T.D. Rane¹, L. Chen², H.C. Zec², and T.H. Wang²¹University of Southern California, USA and ²Johns Hopkins University, USA**W.426d****GENERATION AND APPLICATION OF COPOLYMER BASED POLYACRYLAMIDE MICROBEADS(CBPmB) USING MICROFLUIDIC PLATFORM**S.H. Lee¹, D.G. Lee², S.-H. Lee¹, Y.-H. Kim¹, O.C. Jeong², and J.-Y. Ahn¹¹Chungbuk National University, SOUTH KOREA and ²Inje University, SOUTH KOREA**M.427d****INTEGRATED MICROFLUIDIC PLATFORM FOR THE QUANTIFICATION OF RHEUMATOID FACTOR IN SUB-NANOLITER DROPLETS USING SIMPLE OPTICS**

N. Martin, A. Doria, and A.P. Lee

University of California, Irvine, USA

T.428d**MAGNETIC MICROPARTICLE BASED DNA EXTRACTION IN A DROPLET MICROFLUIDIC CHIP**B. Verbruggen¹, F. Ceysens¹, K. Leirs¹, M. Cornaglia², M.A.M. Gijss², T. Kokalj^{1,3}, R. Puers¹, and J. Lammertyn¹¹KU Leuven, BELGIUM, ²École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, and ³IMT, SLOVENIA**W.429d****MICROFRACTIONATION OF GASES SEPARATED BY GAS CHROMATOGRAPHY**

G.K. Kurup and A.S. Basu

Wayne State University, USA

M.430d**ON-CHIP STORAGE OF DROPLETS IN PARYLENE-AF4 COATED PDMS CHANNELS**M. Akhtar^{1,2}, S. van den Driesche^{1,2}, and M.J. Vellekoop^{1,2}¹University of Bremen, GERMANY and ²Microsystems Center Bremen (MCB), GERMANY**T.431d****ON-DEMAND REGIME TRANSITIONING FOR PRODUCTION OF SIZE CONTROLLED DROPLETS USING SURFACE ACOUSTIC WAVES**

J.C. Brenker, D.J. Collins, A. Neild, and T. Alan

Monash University, AUSTRALIA

W.432d**RETOOLING DROPLET MICROFLUIDICS FOR THE GENOMIC ANALYSIS OF A LOW NUMBER OF SINGLE-CELLS**

E. Brouzes, A. Carniol, T. Bakowski, and H. Strey

Stony Brook University, USA

M.433d**SINGLE POINT DETECTION METHOD FOR SURFACE CHARACTERIZATION OF CHANNELS IN MICROFLUIDIC CHIPS**E.R. Castro¹, M.D. Tarn^{1,3}, P. Ginterová^{1,2}, P. Neužil^{1,2}, and A. Manz¹¹Korea Institute of Science and Technology (KIST) - Europe, GERMANY, ²Palacky University, CZECH REPUBLIC, and³University of Hull, UK**T.434d****SURFACE ACOUSTIC WAVE BASED DROPLET MERGING ON DEMAND**

M. Sesen, T. Alan, and A. Neild

Monash University, AUSTRALIA

W.435d**SWITCHABLE WATER (SW): MICROFLUIDIC INVESTIGATION OF CO₂-MEDIATED LIQUID-LIQUID PHASE SEPARATION**G. Lestari¹, M. Abolhasani¹, D. Bennett¹, P. Chase², A. Günther¹, and E. Kumacheva¹¹University of Toronto, CANADA and ²Switchable Solutions Inc., CANADA

M.436d

VISUALIZATION OF MANIPULATION FORCE FIELD FOR MICROFLUIDIC DROPLET BY PHOTOTHERMAL INTERFACIAL FLOW

M. Muto and M. Motosuke

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T.437d

WHOLE GENOME AMPLIFICATION OF BACTERIAL CELLS IN PICOLITER DROPLETS USING A MULTI-STEP MICROFLUIDIC DROPLET PROCESSOR

M. Rhee^{1,2}, R.J. Meagher¹, S. Yilmaz^{1,2}, Y.K. Light¹, and A.K. Singh^{1,2}

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Micro- and Nanoengineering

Bonding, Sealing & Interfacing Technologies

W.438e

AN EXPERIMENTAL VALIDATION OF THE PRESSURE CAPACITY OF A MODULAR GASKETLESS MICROFLUIDIC INTERCONNECT

C.R. Brown¹, T. Park^{1,2}, P.-C. Chen^{1,3}, B.-H. You^{1,4}, D.S. Park¹, S.A. Soper⁵, and M.C. Murphy¹

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M.439e

CARTRIDGE-BASED EMBEDDED MICROFLUIDIC INTERFACE FOR HIGH DENSITY PDMS TO SOLID STATE BIOSENSOR CONNECTION

D.J.B. Bechstein and S.X. Wang

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T.440e

ONE-STEP INJECTION MOLDING OF OSTE+ MICROFLUIDIC DEVICES WITH SCREW THREADED PORTS

X. Zhou, T. Haraldsson, and W. van der Wijngaart

KTH Royal Institute of Technology, SWEDEN

W.441e

ONE-STEP PLASTIC SURFACE MODIFICATION FOR IRREVERSIBLE SEALING WITH PDMS ELASTOMER AT ROOM TEMPERATURE

M.L. Ha, J. Wu, and N.Y. Lee

Gachon University, SOUTH KOREA

Microscale Fabrication, Patterning, and Integration

M.442e

2-D ELECTROKINETIC NANO-MANIPULATION FOR AQUEOUS SOLUTION BY USING A SIMPLE SCANNING ELECTRON BEAM

H. Miyazako, K. Mabuchi, and T. Hoshino

University of Tokyo, JAPAN

T.443e

3D PRINTED MICROFLUIDIC DEVICES FOR OXYGEN CONTROL IN CELL CULTURE

M.D. Brennan and D.T. Eddington

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W.444e

A FEW MICROMETER SIZED GLASS FILTER FABRICATED BY PLASMA ETCHING ON AN ULTRA THIN GLASS SHEET

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M.445e**ADDITIVE MANUFACTURING BASED ON INJECTION MOLDING FOR THREE DIMENSIONAL MICROFLUIDICS**

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T.446e**ARBITRARILY SHAPED POROUS MICROPARTICLES WITH AN IMMISCIBLE A SOLUTION FOR CARRIERS OF BACTERIA**

K. Kim and W. Park
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W.447e**BISTABLE, TUBULAR PHASE CHANGE ACTUATORS FOR A LARGE SCALE MICROFLUIDIC MEMBRANE ACTUATOR PLATFORM**

E. Wilhelm, T. Schwarz, G. Jaworek, A. Voigt, C. Neumann, and B.E. Rapp
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M.448e**CUSTOM MICROPATTERNING OF HYDROGELS IN CLOSED MICROFLUIDIC PLATFORMS FABRICATED BY CAPILLARY PINNING**

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T.449e**DEVELOPMENT OF A MICROFLUIDIC GAS GENERATOR FROM AN EFFICIENT FILM-BASED MICROFABRICATION METHOD**

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W.450e**DEVELOPMENT OF PLASTIC MICROWELL ARRAYS FOR IMPROVED REPLICATION FIDELITY**

J.M. Perry, W.H. Henley, and J.M. Ramsey
University of North Carolina, USA

M.451e**DIGITAL COUNTING OF BACTERIA BY USING A MICROFLUIDIC CHIP WITH BUILT-IN ELECTRODES**

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T.452e**DEVELOPMENT OF THE MICROSYSTEM FOR SPECTROPHOTOMETRIC ANALYSIS OF CELLS SUPERNATANT**

E. Jastrzebska, K. Grabczewski, K. Zukowski, and Z. Brzozka
Warsaw University of Technology, POLAND

W.453e**DISPOSABLE ¹H NMR DETECTORS FOR FOOD QUALITY MONITORING: APPLICATION TO BUTTER AND CITRUS JUICE DISCRIMINATION**

V. Badilita, S.S. Adhikari, N. MacKinnon, U. Wallrabe, and J.G. Korvink
University of Freiburg - IMTEK, GERMANY

M.454e**DRY INTEGRATION STRATEGIES OF ROLLED-UP NANOSTRUCTURES BY A COMBINATION OF LASER AND MEMS TECHNOLOGIES**

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T.455e**FABRICATION OF 3D MICRO FRACTAL STRUCTURES FOR A LIQUID CHROMATOGRAPHY DEVICE**

M. Nakamura, T. Naito, T. Kubo, and K. Otsuka
Kyoto University, JAPAN

W.456e**FABRICATION OF A MICROFLUIDIC CELL MADE OF THIOL-ENE FOR MICROARRAY APPLICATIONS**

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³University of Copenhagen, DENMARK

M.457e**FABRICATION OF MICROFLUIDIC VIAS BY MECHANICAL COMPRESSION AND CONTROLLED PEELING**

B.C. Rasera, T.K. Jain, and R. Karnik

Massachusetts Institute of Technology, USA

T.458e**FAST AND VERSATILE FABRICATION OF PMMA MICROCHIP ELECTROPHORETIC DEVICES BY LASER ENGRAVING**

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W.459e**FLUORESCENCE IMAGING AS AN INSPECTION TOOL OF MICROFLUIDIC STRUCTURES FABRICATED WITH LOW TEMPERATURE CO-FIRED CERAMICS TECHNOLOGY**

P. Couceiro and J. Alonso-Chamarro

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M.460e**HIGH-THROUGHPUT SYNTHESIS OF ENCODED HYDROGEL PARTICLES FOR BIOSENSING USING CONTACT FLOW LITHOGRAPHY**

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W.461e**HYDROGEL MICRO-PATTERN ON NANOPOROUS MEMBRANE FOR MANIPULATION OF CELL-CELL INTERACTION**

S.J. Kan¹, Y.K. Lee², and K.H. Lee²

Kangwon National University, SOUTH KOREA

M.462e**LENS ARRAY BY ELECTROSTATIC PATTERNING OF DIELECTRIC MICROSPHERES IN A PARYLENE-C WELL TEMPLATE**

H. Yang, M. Cornaglia, and M.A.M. Gijs

École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

T.463e**“LIQUID POLYSTYRENE”: A PHOTOCURABLE LIQUID POLYSTYRENE PREPOLYMER AS NEW MATERIAL FOR MICROFLUIDIC PROTOTYPING**

T.M. Nargang, L. Brockmann, P. Nikolov, D. Schild, D. Helmer, N. Keller, M. Dirschka, A. Kolew, M. Worgull, S. Giselbrecht, C. Neumann, and B.E. Rapp

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W.464e**METHOD FOR CONTROLLING WATER EVAPORATION IN PDMS-BASED MICROFLUIDIC DEVICES**

H.C. Zec, C.J. Glover, W. Hsieh, L. Liu, C.O. Keefe, and T.H. Wang

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M.465e**MODULE-BASED MICROFLUIDIC DEVICES USING 3D PRINTERS**

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T.466e

MULTI-CHAMBER AND MULTI-LAYER THIOL-ENE MICROCHIP FOR CELL CULTURE

H.Y. Tan¹, M. Hemmingsen¹, J.P. Lafleur², R.V. Søndergaard¹, J.P. Kutter², M. Dufva¹, and T.L. Andresen¹

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W.467e

ON-CHIP HIGH-THROUGHPUT MANIPULATION OF PARTICLES IN A DIELECTROPHORESIS-ASSISTED HYDROPHORETIC FOCUSER

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M.468e

PLUG-AND-PLAY MICROVALVE AND MICROPUMP FOR RAPID INTEGRATION WITH MICROFLUIDIC CHIPS

S.A.M. Shaegh¹, Z.F. Wang¹, S.H. Ng¹, R.G. Wu¹, H.T. Nguyen², C.Z. Chan¹, A.G.G. Toh¹, and Z.P. Wang¹

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T.469e

POLYURETHANE NEGATIVE MOLD FOR EFFICIENT MICROPOST FABRICATION

N. Taparia, R.F. Aaron, III, S.N. Tavakoli, A. Karchin, and N.J. Sniadecki

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W.470e

POP SLIDE PATTERNING: A SIMPLE, FAST AND PLASMA-FREE METHOD OF FABRICATING PDMS MICROSTRUCTURES ON GLASS

R. Ramji, N.T. Khan, and K. Miller Jensen

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M.471e

POROUS MICROWELLS FOR GEOMETRY-SELECTIVE, LARGE-SCALE PARTICLE ARRAY

J.J. Kim¹, K.W. Bong², R.L. Srinivas¹, D. Irimia², and P.S. Doyle¹

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T.472e

RAPID FABRICATION AND MODIFICATION OF 2.5D MICROCHIP THROUGH TAPE, AND ITS APPLICATION FOR CHANNEL-HEIGHT INFLUENCED PROGRAMMABLE AUTONOMOUS FLOW

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W.473e

RAPID FABRICATION METHOD FOR PLASTIC MICROFLUIDIC DEVICES WITH EMBEDDED MICROELECTRODES AND ITS APPLICATION TO ELECTROPORATION AND CELL LYSIS ON CHIP

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M.474e

SIMPLE, LITHOGRAPHY-FREE FABRICATION OF EMBEDDED MULTI-SCALE SURFACE FEATURES VIA CRYSTALLOGRAPHIC IMPRINTING

D. Han and V.M. Ugaz

Texas A&M University, USA

T.475e

SIZING AND SORTING OF SINGLE DNA MOLECULES BY MICROFLUIDIC MOLECULAR COMBINING DEVICE

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W.476e

TEFLON MICROFABRICATION USING PDMS STENCIL MASK

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⁴Niigata University, JAPAN

M.477e

THREE-DIMENSIONAL AND BEVEL-ANGLED ULTRAHIGH-ASPECTRATIO MICRONEEDLE FOR PAINLESS BLOOD EXTRACTION AND INJECTION

D.-S. Lee¹, C.Y. Lee², H. Jung², and M.Y. Jung¹

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T.478e

UV-LIGHT STRUCTURED SILANIZATION FOR SELECTIVE BONDING AND FABRICATION OF PAPER-BASED MICROFLUIDIC CHANNELS

E. Wilhelm, C. Neumann, K. Sachsenheimer, K. Länge, and B.E. Rapp

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W.479e

TUNABLE MICROLENS USING THIN FILM PARYLENE MICROFLUIDICS

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Molecular Systems & Nanochemistry

M.480e

DNA/RNA COMPUTING WITH BIOLOGICAL NANOPORE IN DROPLETS SYSTEM: AND OPERATION USING RNA POLYMERIZATION

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T.481e

FORMATION OF OPTICALLY-OBSERVABLE LIPID BILAYER MEMBRANE BY SLIDING CHAMBERS ON A FLUIDIC CHANNEL

F. Tomoike, T. Tonooka, and S. Takeuchi

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W.482e

MICROMOTORS-BASED MULTIPLEXED AND LAB-ON-A-CHIP PROTEIN DETECTION

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Nanobiotechnology

M.483e

DEVELOPMENT OF A SINGLE-MOLECULE ELECTRICAL NUCLEOTIDE IDENTIFICATION METHOD TOWARD A CELL TRANSCRIPTOME ANALYSIS

T. Ohshiro, M. Tsutsui, K. Yokota, T. Kawai, and M. Taniguchi

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T.484e

ENZYME-IMMOBILIZED MICROWELL ARRAY FOR ON-CHIP DIRECTED EVOLUTION OF ENZYMES

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W.485e

FABRICATION OF BIO-MIMETIC EXTENDED NANOSPACE AND INVESTIGATION OF THE UNIQUE LIQUID PROPERTY: pH SHIFT

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M.486e

HIGH THROUGHPUT FORMATION OF SUB-MILLION LIPID MEMBRANE ARRAYS WITH AN ASYMMETRIC LIPID COMPOSITION

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T.487e

HIGH-THROUGHPUT SINGLE MOLECULE DETECTION USING A NANOPHOTONIC/MICROFLUIDIC HYBRID CHIP

Y. Zhao, D. Chen, S.J. Benkovic, and T.J. Huang
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M.488e

MICROFLUIDIC VALVE TECHNOLOGY PRODUCES MICROCHANNEL ARRAY TO EVALUATE KINESIN-DRIVEN MOLECULAR TRANSPORT

K. Fujimoto, H. Shintaku, H. Kotera, and R. Yokokawa
Kyoto University, JAPAN

T.489e

RIBOSOME DISPLAY MICROARRAY USING μ -INTAGLIO PRINTING AND PHOTO-CROSSLINKING WITHOUT REMOVAL OF STOP CODONS FROM DNA

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W.490e

SELECTIVE INTRACELLULAR LABELING USING MICROFLUIDIC ELECTROPORATION-DELIVERED QUANTUM DOTS

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M.491e

ULTRASENSITIVE LABEL-FREE BIOMOLECULAR SENSING ON DISK-SHAPED NANOPOROUS GOLD NANOPARTICLES IN MICROFLUIDICS

M. Li, J. Qi, J. Zeng, F. Zhao, U. Strych, R.C. Willson, and W.-C. Shih
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T.492e

USING NANOFUIDIC CHANNELS TO PROBE THE DYNAMICS OF RAD51-FILAMENTS

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Nanoscale Assembly

W.493e

ENHANCED POLYPLEX SYNTHESIS AND DELIVERY BY HYBRID-FIELD MICROFLUIDICS

F. Ren, S. Huang, K.K. Rajagopalan, Y. Zu, and S. Wang
Louisiana Tech University, USA

Nanoscale Fabrication, Patterning, and Integration

M.494e

2 MIN-INCUBATION AND 6 PM-SENSITIVITY MICROFLUIDIC FLUORESCENCE IMMUNOASSAY – A NOVEL METHOD FOR FURTHER SIGNIFICANT ENHANCEMENT USING LOCAL ELECTRICAL FIELD ON NANOPLASMONIC SIGNAL AMPLIFICATION SURFACE

R. Peng, L. Zhou, Q. Zhang, W. Ding, and S.Y. Chou
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T.495e

CMOS-INTEGRATED HIGH-DENSITY ARRAYS OF CARBON NANOTUBE SENSORS

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W.496e**CONTROLLED SHRINKING OF NANOPORES IN SINGLE LAYER GRAPHENE USING ELECTRON BEAM IRRADIATION**

G. Goyal, A. Darvish, and M.J. Kim

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M.497e**DESIGN, SYNTHESIS AND CHARACTERIZATION OF A THIOLATED TEMPERATURE-RESPONSIVE POLYMER FOR SMART NANOFLUIDIC CONTROL**

M. Shinomiya, A. Harada, and Y. Xu

Osaka Prefecture University, JAPAN

T.498e**EVAPORATION-DRIVEN NANOMACHINING TO FABRICATE NANOPORES IN SiO₂**

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

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W.499e**FLOW-GUIDED MANUFACTURING OF NANOWIRE-BASED SENSING SYSTEM**

J. Chen, Y. Zu, K.K. Rajagopalan, and S. Wang

Louisiana Tech University, USA

M.500e**HIERARCHICALLY-STRUCTURED SUSPENDED TiO₂ NANOFIBERS AS A pH SENSOR**

W.S. Lee, Y.-S. Park, and Y.-K. Cho

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

T.501e**HIGH THROUGHPUT FABRICATION OF TITANIUM NANOPILLARS BY MASKLESS PLASMA ETCHING**

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W.502e**IN-SITU FABRICATION OF Ag@ZnO NANOCOMPLEX IN MICROFLUIDICS TO PROBE SURFACE-ENHANCED RAMAN SCATTERING (SERS) FINGERPRINTS OF SINGLE LIVING CELLS**

Y. Xie, S. Yang, and T.J. Huang

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M.503e**IN-SITU FABRICATION OF FREE-STANDING NANOFIBER MEMBRANE IN A MICROFLUIDIC DEVICE**

S.M. Park, M. La, K.D. Seo, W. Kim, J. Lee, and D.S. Kim

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T.504e**SIMPLE FABRICATION AND PATTERN TRANSFER OF ANODIZED ALUMINUM OXIDE MEMBRANES FOR NANOIMPRINTING TEMPLATES**

X. Wang¹, B.C. Barry¹, S.W. Anderson², and X. Zhang¹

¹Boston University, USA and ²Boston University Medical Center, USA

W.505e**SIZE SELECTIVE NANOPARTICLE CONFINEMENT IN 2D NANOVOID ARRAY IN AQUEOUS SOLUTION**

A. Panday¹, L. Chen¹, O.K. Jong², and L.J. Guo¹

¹University of Michigan, USA and ²Samsung Advanced Institute of Technology (SAIT), SOUTH KOREA

Novel, Smart, and Responsive Materials**M.506e****STRETCH-TUNING METAMATERIALS USING LIQUID METAL AND HIGHLY STRETCHABLE POLYMER**

P. Liu, S. Yang, Q. Wang, H. Jiang, J. Song, and L. Dong

Iowa State University, USA

T.507e**BIOCOMPATIBLE, REVERSIBLE PHOTO-ACTUATED HYDROGELS, OPERATIVE IN NEUTRAL ENVIRONMENTS, FOR MICRO-VALVE APPLICATIONS IN MICROFLUIDIC DEVICES**A. Dunne¹, W. Francis¹, L. Florea¹, F. Benito-Lopez², and D. Diamond¹¹Dublin City University, IRELAND and ²CIC microGUNE, SPAIN**W.508e****ELASTICITY TUNABLE HYBRID HYDROGELS USING PHOTOCLEAVABLE CROSSLINKER**F. Yanagawa¹, T. Mizutani², S. Sugiura¹, T. Takagi¹, K. Sumaru¹, and T. Kanamori¹¹National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and ²Hokkaido University, JAPAN**M.509e****FABRICATION OF HIERARCHICAL AND MULTIFUNCTIONAL GRAPHENE NANOSTRUCTURES FOR CAPTURE OF PHOSPHOPEPTIDES**

G. Cheng, X. Yu, M.D. Zhou, and S.Y. Zheng

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T.510e**HIGHLY STRETCHABLE CELL-LADEN HYDROGEL MICROFIBER**F. Ozawa^{1,2}, H. Onoe^{1,2}, and S. Takeuchi^{1,2}¹University of Tokyo, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN**W.511e****MICROCHANNEL-ASSISTED PREPARATION OF POLYION COMPLEX VESICLES AND REAL-TIME OBSERVATION OF THEIR DYNAMIC RESPONSES TO EXTERNAL ELECTRIC FIELDS**D. Sueyoshi¹, A. Kishimura², H. Oana¹, Y. Anraku¹, M. Takai¹, M. Washizu¹, and K. Kataoka¹¹University of Tokyo, JAPAN and ²Kyushu University, JAPAN**M.512e****MICROFLUIDIC PRODUCTION OF FIBROUS SCAFFOLDS COMPOSED OF ECM PROTEINS FOR 3D CELL CULTIVATION**

A. Hori, Y. Hirai, Y. Yajima, Y. Kitagawa, M. Yamada, and M. Seki

Chiba University, JAPAN

T.513e**MICROFLUIDIC SOLUTION SPINNING OF CATALYTIC MICROFIBERS FOR SELF-HEALING MATERIAL**R.J. Lemmens¹ and D.D. Meng²¹Michigan Technological University, USA and ²University of Texas, Arlington, USA**W.514e****QUANTITATIVE PHOTO-BINDING AND SENSING OF DIVALENT METAL IONS USING PHOTO-RESPONSIVE POLYMERIC BRUSHES IN MICRO-CAPILLARIES**L. Florea¹, G. Mc Guirk¹, F. Benito-Lopez², and D. Diamond¹¹Dublin City University, IRELAND and ²CIC microGUNE, SPAIN**M.515e****ONE-STEP PREDICTIVE FORMATION OF HETEROGENEOUS SOFT MATERIAL TUBES**

H. Chen, M. Jeronimo, Z. Barikbin, and A. Günther

University of Toronto, CANADA

T.516e**THERMOPLASTIC SOFT LITHOGRAPHY**

E.L. Kendall, M.S. Wiederoder, A. Wilson, and D.L. DeVoe

University of Maryland, College Park, USA

Surface Modification**W.517e****FACILE CONSTRUCTION OF MICROFLUIDIC DIGESTION SYSTEM FOR RAPID PROTEOLYSIS**

G. Cheng, X. Yu, and S.Y. Zheng

Pennsylvania State University, USA

M.518e

HIGH-PERFORMANCE AND INEXPENSIVE ULTRA-SLIPPERY PDMS AS THE NOVEL PLANAR MICROFLUIDIC PLATFORM

Y. Luo^{1,2}, S. Ling¹, J. Ma², and T. Wu¹

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T.519e

NOVEL ELECTROCHEMICAL BIOSENSOR SURFACE MODIFICATION METHOD BASED ON PHOTBLEACHING

L. Pires, N. Braunegger, G. Davidson, C. Neumann, and B.E. Rapp

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W.520e

SAMs VAPOR DEPOSITION: A READY TO USE FUNCTIONALIZATION TECHNOLOGY FOR MONITORING WETTABILITY PROPERTIES IN MICROFLUIDIC DEVICES

R. Courson^{1,2}, M. Fouet^{1,2}, P. Joseph^{1,2}, F. Mesnilgrete^{1,2}, V. Conédeéra^{1,2}, and A.M. Gué^{1,2}

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MicroTAS for Other Applications

Environmental Analysis

M.521f

ATP SENSING IN DEEP-SEA ENVIRONMENTS USING CONTINUOUS FLOW MICROFLUIDIC DEVICE

T. Fukuba¹, T. Noguchi¹, K. Okamura², M. Kyo¹, S. Nishida³, T. Miwa¹, and T. Fujii³

¹Japan Agency for Marine-Earth Science and Technology, JAPAN, ²Kochi University, JAPAN, and ³University of Tokyo, JAPAN

T.522f

CONTINUOUS ONLINE NANOPARTICLE SIZING AND CHARACTERIZATION

F. Meng and V.M. Ugaz

Texas A&M University, USA

W.523f

MICROFLUIDIC CAPILLARY ELECTROPHORESIS SYSTEM FOR ORGANOCHLORIDE DETECTION AND SPECIATION

E.C. Jensen¹, J. Lee², H. Mehrabani¹, H. Jiao¹, and J. Kim²

¹HJ Science Technology, USA and ²Texas Tech University, USA

M.524f

MULTIPARAMETRIC COC-BASED ANALYTICAL MICROSYSTEM FOR POTENTIOMETRIC DETERMINATION OF NITRATE, CHLORIDE AND POTASSIUM IONS IN WATER RECYCLING PROCESSES IN MANNED SPACECRAFTS

A. Calvo-López, M. Puyol, and J. Alonso-Chamarro

Universitat Autònoma de Barcelona, SPAIN

T.525f

SIMPLE RT-QPCR CHIP FOR SINGLE MARINE DIATOM CELLS

X. Shi, W. Gao, S.-H. Chao, and D.R. Meldrum

Arizona State University, USA

W.526f

SUB-MICROFLUIDIC DEVICES TO OPTIMIZE REMOVAL OF PATHOGENS FROM DRINKING WATER USING SAND FILTRATION

N. Tandogan, Y.A. Zhu, K.T. Wan, and E.D. Goluch

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Food & Nutrition

M.527f

EIGHT-CHAMBER MICROFLUIDIC DEVICE WITH INTEGRATED LOOP MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) FOR MULTIPLE DETECTION OF *Campylobacter spp* FROM PIG AT SLAUGHTER

T.L. Quyen, S. Yi, W.H. Chin, T.Q. Hung, S. Jardenbæk, A. Wolff, and D.D. Bang
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Fuel Cells

T.528f

EFFECT OF PHYSICAL PROPERTIES OF CARBON NANOTUBE ANODES ON MICROFLUIDIC MICROBIAL FUEL CELL ARRAY

C. Erbay, X. Pu, W. Choi, M. Choi, H. Hou, P. Figueiredo, C. Yu, and A. Han
Texas A&M University, USA

W.529f

MICROSCALE MICROBIAL FUEL CELL USING 3D BIOANODE WITH ELECTROSPUN CONDUCTIVE NANOFIBERS AND MICROPILLARS

H. Jiang, P. Liu, X. Qiao, L.J. Halverson, and L. Dong
Iowa State University, USA

Other Energy/ Power Devices

M.530f

DEVELOPMENT OF A NANOSTRUCTURED PHOTOANODE MATERIAL FOR EFFICIENT WATER SPLITTING TOWARDS FABRICATION OF A MICRO-FUEL GENERATION DEVICE

Y. Pihosh^{1,2}, J. Uemura¹, K. Mawatari^{1,2}, and T. Kitamori^{1,2}
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T.531f

HIGH-THROUGHPUT TRANSESTERIFICATION WITH SOYBEAN OIL AND METHANOL BY MICRO-SCALE AND MINI-SCALE DROPLET-BASED MICROSYSTEMS

C.-H. Cheng, K.-H. Chen, and J.-T. Yang
National Taiwan University, TAIWAN

Others

W.532f

2D PLANAR PDMS MICRODEVICE ATTACHED ONTO A CURVED POLYCARBONATE SUPPORT FOR ON-CHIP CONTINUOUS-FLOW PCR EMPLOYING A SINGLE HEATER

K.T.L. Trinh, M.L. Ha, W. Wu, and N.Y. Lee
Gachon University, SOUTH KOREA

M.533f

A CONCENTRATION GRADIENT NIB AS NOVEL TOOL FOR ANTIBIOTIC SUSCEPTIBILITY TESTING

Y.R. Yun¹, Y.G. Jung³, S.H. Song¹, S. Kwon^{2,3}, and W. Park¹
¹*Kyung Hee University, SOUTH KOREA*, ²*Seoul National University, SOUTH KOREA*, and ³*Quanta Matrix Inc., SOUTH KOREA*,

T.534f

RAPID AND SENSITIVE MEASUREMENT OF GLYCATED HEMOGLOBIN FOR DIABETES MONITORING BY USING A TWO-APTAMER ASSAY ON AN INTEGRATED MICROFLUIDIC SYSTEM

J. Li¹, K.-W. Chang¹, C.-H. Yang², S.-C. Shiesh², and G.-B. Lee¹
¹*National Tsing Hua University, TAIWAN* and ²*National Cheng Kung University, TAIWAN*

W.535f

MICROFLUIDIC TUNABLE CAPACITOR ARRAY FOR MAGNETIC RESONANCE IMAGING (MRI)

C. Koo and A. Han

Texas A&M University, USA

Sensors and Actuators, Detection Technologies

Biosensors

M.536g

1000-FOLD ACCELERATION OF SURFACE BIOSENSORS USING ISOTACHOPHORESIS

M. Karsenty, S. Rubin, T. Rosenfeld, and M. Bercovici

Israel Institute of Technology, ISRAEL

T.537g

A BIOBARCODE ASSAY INCORPORATED MICRODEVICE FOR HIGHLY SENSITIVE AND MULTIPLEX BIOLOGICAL AGENT DETECTION

M. Cho, S. Chung, Y.T. Kim, J.H. Jung, and T.S. Seo

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

W.538g

A HIGH-THROUGHPUT IMPEDANCE SPECTROSCOPY PLATFORM FOR CHARACTERIZING CONCENTRATION OF CELLS WITHIN MICRODROPLETS

N.M. Sobahi, H.S. Kim, and A. Han

Texas A&M University, USA

M.539g

A LOW-COST OPTICAL TRANSDUCING SYSTEM BY REASSEMBLING COMMON ELECTRONICS COMPONENTS FOR THE VERSATILE BIOSENSING APPLICATION

Y.D. Han, Y.M. Park, and H.C. Yoon

Ajou University, SOUTH KOREA

T.540g

A MULTILAYERED PDMS BASED MICROTAS FOR HIGH-SENSITIVITY INSULIN DETECTION

B. Srinivasan¹, Y. Ping², and S. Tung¹

¹University of Arkansas, USA and ²Shenyang Institute of Automation, CHINA

W.541g

A MULTIPLEX DEVICE BASED ON TUNABLE NANOSHEAR FORCES FOR HIGHLY SPECIFIC DETECTION OF MULTIPLE PROTEIN BIOMARKERS

R. Vaidyanathan, L.M. van Leeuwen, S. Rauf, M.J.A. Shiddiky, and M. Trau

University of Queensland, AUSTRALIA

M.542g

A NOVEL MICRO-CANTILEVER BIOSENSOR WITH DROPLET-SEALED STRUCTURE FOR STABLE DETECTION OF TARGET PROTEINS

Z. Zhang¹, T. Akai¹, M. Sohgawa², K. Takada¹, K. Yamashita¹, and M. Noda¹

¹Kyoto Institute of Technology, JAPAN and ²Niigata University, JAPAN

T.543g

A NOVEL NANOFLUIDIC DIODE BASED ON AN ASYMMETRIC NANOSLIT ARRAY FOR LABEL-FREE PROTEIN DETECTION

Y. Liu and L. Yobas

Hong Kong University of Science and Technology, HONG KONG

W.544g

A TRANSDUCER-FREE GLYCATED HEMOGLOBIN BIOSENSOR BASED ON A BORONATE-FUNCTIONALIZED HYDROGEL/MEMBRANE COMPOSITE

Y.M. Park, Y.D. Han, Y.H. Jang, and H.C. Yoon

Ajou University, SOUTH KOREA

M.545g**AN ENHANCED *PSEUDOMONAS AERUGINOSA* BIOFILM TREATMENT USING AN INTEGRATED MICROSYSTEM**

Y.W. Kim, M.T. Meyer, S. Subramanian, W.E. Bentley, and R. Ghodssi

University of Maryland, College Park, USA

T.546g**AN ENZYME-FREE DIGITAL BIOSENSOR FOR DETECTION OF REACTIVE OXYGEN SPECIES**

K. Aran, J. Paredes, J. Yau, S. Srinivasan, N. Murthy, and D. Liepmann

University of California, Berkeley, USA

W.547g**AN INTERFEROMETRIC INTEGRATED MICROSYSTEM FOR THE LABEL FREE DETECTION OF INTERLEUKINS**

M. Anastasopoulou¹, A. Malainou¹, A. Salapatas¹, N. Chronis², S. Papagerakis², G. Jobst³, I. Raptis¹, and K. Misiakos¹

¹National Center for Scientific Research Demokritos, GREECE, ²University of Michigan, USA, and

³Jobst Technologies GmbH, GERMANY

M.548g**ATTOLITER-SIZED ARRAYED LIPID BILAYER CHAMBER SYSTEM FOR HIGHER SENSITIVE TRANSPORTER ASSAY**

N. Soga¹, R. Watanabe^{1,2}, T. Yamanaka¹, and H. Noji¹

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

T.549g**BIFUNCTIONAL NANO LYCURGUS CUP ARRAY PLASMONIC SENSOR FOR COLORIMETERIC AND SURFACE ENHANCED RAMAN SPECTROSCOPY**

T.-W. Chang, A. Hsiao, and G.L. Liu

University of Illinois, Urbana-Champaign, USA

W.550g**CANCER CELL ADHESION MEASUREMENT ON THE COLLAGEN LAYER IN MULTIPLE SHEAR STRESS LEVELS**

M.-J. Kim, I. Doh, and Y.-H. Cho

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

M.551g**CMOS-BASED IMPLANTABLE GLUCOSE SENSOR USING GLUCOSE-RESPONSIVE FLUORESCENT HYDROGEL**

T. Tokuda¹, M. Takahashi², K. Masuda¹, T. Kawamura¹, Y. Ohta¹, M. Motoyama¹, T. Noda¹, K. Sasagawa¹, T. Okitsu³, S. Takeuchi³, and J. Ohta¹

¹Nara Institute of Science and Technology, JAPAN, ²BEANS Laboratory, JAPAN, and ³University of Tokyo, JAPAN

T.552g**DEVELOPMENT OF AN INTEGRATED NANOFUIDIC DEVICE FOR THE DETECTION OF SEQUENCE VARIATIONS IN dsDNA**

F.I. Uba¹, K.M.W. Ratnayake², J. Wu², Y.K. Cho³, H.J. Shin³, and S.A. Soper^{1,2,3}

¹University of North Carolina, USA, ²Louisiana State University, USA, and

³Ulsan National Institute of Science and Technology, SOUTH KOREA

W.553g**ULTRASENSITIVE ELECTRICAL DETECTION OF HEPATITIS B VIRUS USING SILICON NANOWIRE SENSOR**

A. Gao, N. Lu, P. Dai, T. Li, and Y. Wang

Chinese Academy of Sciences, CHINA

M.554g**DNA-TO-GO: A PORTABLE SMARTPHONE-ENABLED PCR ASSAY PLATFORM**

A. Priye and V.M. Ugaz

Texas A&M University, USA

T.555g**ELECTROPORATION DELIVERED PROTEIN BIOSENSORS FOR STUDY OF MOLECULAR ACTIVITY ON MICROFLUIDIC PLATFORM**

C. Sun¹, M. Ouyang², Z. Cao¹, S. Ma¹, Y. Wang², and C. Lu¹

¹Virginia Polytechnic Institute and State University, USA and ²University of California, San Diego, USA

W.556g**EXOSOMAL MEMBRANE PROTEIN DETECTION BY NANOWIRE DEVICE**

Y. Konakade¹, T. Yasui¹, T. Yanagida², N. Kaji¹, Y. He², M. Kanai², K. Nagashima², H. Yukawa¹, T. Kawai², and Y. Baba^{1,3}
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³National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

M.557g**EXTRACTION OF SIGNAL FROM NOISE: IMPEDANCE CYTOMETRY USING MULTI-ELECTRODE SENSING**

S. Emaminejad^{1,2,3}, S. Talebi^{1,2,3}, R.W. Davis^{2,3}, and M. Javanmard^{1,2,3}
¹Stanford University, USA, ²Stanford Genome Technology Center, USA, and ³Stanford School of Medicine, USA

W.558g**FROM CHIP-IN-A-LAB TO LAB-ON-A-CHIP**

C.D.M. Campos^{1,4}, C.C. Wong⁴, J.W.S. Bo³, J. Reboud^{3,5}, A. Manz¹, and P. Neuzil^{1,2,3}
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³Institute of Microelectronics, SINGAPORE, ⁴Universidade Estadual de Campinas, BRAZIL, and ⁵University of Glasgow, UK

W.559g**FUNCTIONALIZED COLLOIDAL SELF-ASSEMBLED PARTICLES IN MICROCHIP FOR IMMUNO-AFFINITY CHROMATOGRAPHY**

L. Zhang¹, A.B. Jemere², and D.J. Harrison^{1,2}
¹University of Alberta, CANADA and ²National Research Council (NRC), CANADA

M.560g**CMOS-COMPATIBLE PHOTONIC CRYSTAL CHIP FOR PROTEIN DETECTION**

F. Liang and Q. Quan
Harvard University, USA

T.561g**HIGH SENSITIVE DETECTION OF BIOMOLECULE BY SYNTHESIZED PEPTIDE BIOPROBE ON-CHIP BASED PROGRAMMABLE BIOSENSOR**

L. Ngashangva¹, R. Bhardwaj¹, Y. Ukita², Y. Takamura¹, and M. Biyani¹,
¹Japan Advanced Institute of Science and Technology (JAIST), JAPAN and ²University of Yamanashi, JAPAN

W.562g**HIGHLY SENSITIVE MEMS BIOSENSORS FOR THE DETECTION OF HUMAN PAPILLOMA VIRUS BY USING MAGNETIC FORCE**

H.H. Kim, H.J. Jeon, H.K. Cho, J.H. Cheong, and J.S. Go
Pusan National University, SOUTH KOREA

M.563g**HYDROGEL BASED 2D-PHOTONIC CRYSTAL INCLUDING ACRYLIC ACID FOR BIOSENSING APPLICATION**

Y. Matsumoto, T. Araki, T. Endo, K. Sueyoshi, and H. Hisamoto
Osaka Prefecture University, JAPAN

T.564g**INTEGRATED MICRO-IMPACTION CARTRIDGE COVERED WITH MICROPOROUS LIGHT-BLOCKING FILM FOR LOW-CONCENTRATION AIRBORNE VIRUS DETECTION**

K. Takenaka¹, S. Togashi¹, R. Miyake², T. Sakaguchi³, and M. Hide³
¹Hitachi, Ltd, JAPAN, ²University of Tokyo, JAPAN, and ³Hiroshima University, JAPAN

W.565g**LAB-ON-BLU-RAY: LOW-COST ANALYTE DETECTION ON A DISK**

M. Donolato¹, P. Antunes¹, R. Burger¹, F. Bosco¹, M. Olsson¹, J. Yang², C.-H. Chen³, Q. Lin², E.T. Hwu³, A. Boisen¹, and M.F. Hansen¹
¹Danmarks Tekniske Universitet (DTU), DENMARK, ²Columbia University, USA, and ³Academia Sinica, TAIWAN

M.566g**LABEL-FREE BIOSENSING PLATFORM WITH LOW-VOLTAGE ELECTROLYTE-GATED TRANSISTORS**

S.P. White, K.D. Dorfman, and C.D. Frisbie
University of Minnesota, USA

T.567g**MICROCANTILEVER BASED LOC SYSTEM FOR COAGULATION MEASUREMENTS**O. Cakmak¹, E. Ermek², N. Kilinc², I. Baris¹, I.H. Kavakli¹, G.G. Yaralioglu³, and H. Urey¹¹Koç University, TURKEY, ²Gebze Institute of Technology, TURKEY, and ³Özyegin University, TURKEY**W.568g****MICROFLUIDIC CHIPS WITH INTEGRATED AMORPHOUS SILICON SENSORS FOR POINT-OF-CARE TESTING**

F. Costantini, A. Nascetti, G. Petrucci, C. Sberna, C. Manetti, D. Caputo, and G. de Cesare

*Sapienza University of Rome, ITALY***M.569g****MICROFLUIDIC IMPEDIMETRIC SYSTEM FOR THE AUTOMATIC READOUT OF LOW-DENSITY MICROARRAYS**

M. Díaz-González, J.P. Salvador, D. Bonilla, M.P. Marco, A. Baldi, and C. Fernández-Sánchez

*Consejo Superior de Investigaciones Científicas (CSIC), SPAIN***T.570g****PROGRAMMABLE BIO-NANO-CHIP SYSTEM: AN ULTRA-FLEXIBLE PLATFORM FOR BIOSCIENCE AND CLINICAL MEASUREMENTS**G.W. Simmons¹, M.P. McRae¹, B. Shadfan¹, J. Wong¹, N. Christodoulides¹, P.W.M.v. Ruijven², J.P. Hayes², R. Mehalso², and J.T. McDevitt¹¹Rice University, USA and ²MiniFAB Pty Ltd, AUSTRALIA**W.571g****NONAMPEROMETRIC CMOS SENSING OF INTESTINAL ACTION POTENTIALS**

Y. Cao, N. Rakhilin, X. Shen, and E.C. Kan

*Cornell University, USA***M.572g****NOVEL MICROFLUIDIC BIOSENSOR FOR ONLINE MONITORING OF BIOFILM FORMATION BY EIS AND AMPEROMETRY**

J. Bruchmann, K. Sachsenheimer, T. Schwartz, and B.E. Rapp

*Karlsruhe Institute of Technology (KIT), GERMANY***T.573g****NOVEL QUANTITATIVE MARCO BIOMOLECULE ANALYSIS BASED ON A MICRO COULTER COUNTER**

Y. Han, H. Wu, F. Liu, G. Cheng, and J. Zhe

*University of Akron, USA***W.574g****ON CHIP AUTOMATIC PLASMA FLOW CONTROL FOR PERSONAL COAGULATION ACTIVITY ASSAY**

S. Inoue, K. Hayashi, Y. Iwasaki, N. Matsuura, M. Seyama, and H. Koizumi

*Nippon Telegraph and Telephone Corporation, JAPAN***M.575g****ON-CHIP HbA_{1c} DETECTION UTILIZING A COMPACT SURFACE PLASMON GRATING SENSOR INTEGRATED ON A MICROFLUIDIC SYSTEM**K.-W. Chang¹, H.-T. Chou¹, C.-H. Yang², S.-C. Shiesh², M.-C. Lee¹, and G.-B. Lee¹¹National Tsing Hua University, TAIWAN and ²National Cheng Kung University, TAIWAN**T.576g****PLASMONIC FIBER TIP PROBE BIOSENSOR**

Q. Quan, W. Hong, F. Liang, D. Schaak, and M. Loncar

*Harvard University, USA***W.577g****PHOTOLUMINESCENT GRAPHENE OXIDE QUANTUM DOTS FOR HEAVY METAL ION DETECTION COMBINED WITH A MICROFLUIDIC SAMPLE PRETREATMENT**

M. Park, H.D. Ha, D.J. Han, Y.H. Kim, and T.S. Seo

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

M.578g**POCT-ORIENTED REAL-TIME PCR DEVICE DRIVEN BY AUTONOMOUS MICROFLUIDICS**

H. Tachibana¹, M. Saito¹, S. Shibuya², T. Nakatani², K. Tsuji², K. Yamanaka¹, and E. Tamiya¹
¹Osaka University, JAPAN and ²Panasonic Corporation, JAPAN

T.579g**128-CHANNEL FLEXIBLE MEA WITH DRUG DELIVERY CHANNELS FOR *IN VIVO* NERVE STIMULATION AND RECORDING**

S.E. Lee¹, J.H. Byun¹, J. Jeong¹, J.H. Kim¹, S.-H. Ahn¹, J.H. Park¹, K.S. Min¹, S.B. Jun², N.L. Jeon¹, and S.J. Kim¹
¹Seoul National University, SOUTH KOREA and ²Ewha Womans University, SOUTH KOREA

W.580g**NEUROCHEMICAL IN VIVO MONITORING WITH A POLYMER-BASED MICROSENSOR PLATFORM**

A. Weltin, J. Kieninger, A.-K. Gellner, B. Fritsch, and G.A. Urban
University of Freiburg, GERMANY

M.581g**RAPID DETECTION OF TUBERCULOSIS USING DROPLET BASED MICROFLUIDICS**

L. Rosenfeld, F. Lyu, Y. Cheng, J. Rao, and S.K.Y. Tang
Stanford University, USA

T.582g**REAL-TIME AGGLUTINATION WITHIN A MICRODROPLET IN A THREE PHASE FLUIDIC WELL FOR DETECTION OF BIOMARKERS**

S. Sivashankar¹, D. Castro¹, and I.G. Foulds²
¹King Abdullah University of Science and Technology (KAUST), SAUDI ARABIA and ²University of British Columbia, CANADA

W.583g**SELECTIVE DETECTION OF DNA WITH DIFFERENT LENGTH USING MICROBEADS-BASED DIELECTROPHORESIS AND IMPEDANCE MEASUREMENT**

M. Nakano, H. Kasahara, Z. Ding, and J. Suehiro
Kyushu University, JAPAN

M.584g**THREE DIMENSIONAL PASSIVATED-ELECTRODE INSULATOR-BASED DIELECTROPHORESIS (3D π DEP)**

D. Nakidde, P. Zellner, M.M. Alemi, and M. Agah
Virginia Polytechnic Institute and State University, USA

T.585g**WATERBORNE PATHOGEN DETECTION USING A SMART PHONE BASED FLUORESCENT MICROSCOPE**

H. Ceylan Koydemir, Z. Gorocs, E. McLeod, D. Tseng, and A. Ozcan
University of California, Los Angeles, USA

Chemical & Electrochemical Sensors**W.586g****AN OPTOFLUIDIC DIFFUSIVITY PROBE FOR REAL-TIME CHEMICAL REACTION MONITORING**

H.T. Zhao¹, Y. Yang², L.K. Chin¹, W.M. Zhu¹, Z.H. Yang³, H.X. Zhang³, and A.Q. Liu¹
¹Nanyang Technological University, SINGAPORE, ²Wuhan University, CHINA, and ³Peking University, CHINA

M.587g**ASSEMBLY OF AG-NANOPARTICLE CLUSTERS FOR SURFACE ENHANCED RAMAN SPECTROSCOPY IN DROPLETS**

C. Andreou, M. Moskovits, and C.D. Meinhart
University of California, Santa Barbara, USA

T.588g**DEVELOPMENT OF PROGRAMMABLE BIOSENSOR BASED ON THE ELECTROCHEMICAL DETECTION OF METAL ION**

R. Bhardwaj¹, L. Ngashangva¹, Y. Ukita², M. Biyani¹, and Y. Takamura¹
¹Japan Advanced Institute of Science and Technology (JAIST), JAPAN and ²University of Yamanashi, JAPAN

W.589g**ELECTROCHEMICAL MONITORING OF *PSEUDOMONAS AERUGINOSA* BIOFILMS IN MICROFLUIDIC CHANNELS**

T.A. Webster, H.J. Sismaet, and E.D. Goluch
Northeastern University, USA

M.590g**ELECTROCHEMICAL NANOFLUIDIC ASSAYS IN THE ABSENCE OF REFERENCE ELECTRODE**

S. Sarkar, K. Mathwig, S. Kang, A.F. Nieuwenhuis, and S.G. Lemay
MESA+, University of Twente, THE NETHERLANDS

T.591g**EXTEND THE SIZE OF BIOLOGICAL NANOPORE USING MGAININ AND PERFORIN PORES**

H. Watanabe and R. Kawano
Tokyo University of Agriculture and Technology, JAPAN

W.592g**FULLY INTEGRATED OXYGEN SENSOR WITH FOUR LAYER PRINTED CIRCUIT ELECTRONICS ON PAPER**

P. Mostafalu¹, M. R.Dokmeci², B. Ziaie³, A. Khademhosseini², and S. Sonkusale¹
¹Tufts University, USA, ²Brigham and Women's Hospital, Harvard Medical School, USA, and ³Purdue University, USA

M.593g**HIGH PERFORMANCE ISFET-BASED PH SENSOR UTILIZING LOW-COST INDUSTRIAL-GRADE TOUCH PANEL FILM AS THE GATE STRUCTURE**

S.-J. Wu¹, Y.-C. Wu^{1,2}, and C.-H. Lin¹
¹National Sun Yat-sen University, TAIWAN and ²Metal Industries Research & Development Centre, TAIWAN

T.594g**HIGH-DENSITY ELECTRODE ARRAYS FOR SPATIOTEMPORAL IMAGING OF TISSUE SLICES AND OTHER CHEMICAL SYSTEMS**

J.B. Wydallis, R.M. Feeny, T. Chen, S. Tobet, and C.S. Henry
Colorado State University, USA

W.595g**IMPEDANCE SPECTROSCOPY MICROFLUIDIC MULTICHANNEL SENSOR PLATFORM FOR LIQUID ANALYSIS**

M.-P. Schmidt¹, A. Oseev¹, C. Engel², A. Brose¹, and S. Hirsch³
¹Otto-von-Guericke-University Magdeburg, GERMANY, ²TEPROSA GmbH, GERMANY, and ³University of Applied Sciences Brandenburg, GERMANY

M.596g**IMPEDANCE-BASED DETECTION OF NANOPARTICLE AGGREGATION IN PICOLITER DROPLETS**

M.G. Simon, T. Vu, and A.P. Lee
University of California, Irvine, USA

T.597g**INTEGRATED MICROFLUIDIC SENSORS FOR AMPEROMETRIC DETECTION OF INFLUENZA VIRUS USING AN APTAMER-ANTIBODY ASSAY**

Y.T. Tseng, K. Hsieh, and G.B. Lee
National Tsing Hua University, TAIWAN

W.598g**A LOW COST PORTABLE MICROFLUIDIC ELECTROCHEMICAL SENSOR FOR DETECTION OF ARSENIC IN DRINKING WATER**

B. Mall¹, K. Sachsenheimer¹, C. Neumann¹, J. Stölting², and B.E. Rapp¹
¹Karlsruhe Institute of Technology (KIT), GERMANY and ²University of Applied Sciences Karlsruhe, GERMANY

M.599g**IONIC ELECTRODES FOR CAPACITIVELY COUPLED CONTACTLESS CONDUCTIVITY DETECTION ON ELECTROPHORESIS MICROCHIPS**

G.F. Duarte, Jr.¹, J.A.F. Silva², K.J.M. Francisco³, C.L. do Lago³, E. Carrilho³, and W.K.T. Coltro¹
¹Universidade Federal de Goiás, BRAZIL, ²Universidade Estadual de Campinas, BRAZIL, and ³Universidade de São Paulo, BRAZIL

T.600g**LSI-BASED AMPEROMETRIC CHIP DEVICE WITH 400 SENSORS FOR DETECTION OF ALKALINE PHOSPHATASE AND RESPIRATION ACTIVITIES OF EMBRYONIC STEM CELLS**

Y. Kanno¹, K. Ino¹, K.Y. Inoue¹, A. Suda², R. Kunikata², M. Matsudaira¹, H. Shiku¹, and T. Matsue¹

¹Tohoku University, JAPAN and ²Japan Aviation Electronics Ind., JAPAN

W.601g**MICROCHIP FREE-FLOW ISOELECTRIC FOCUSING USING A PHOTOLITHOGRAPHICALLY INTEGRATED NIR FLUORESCENT pH SENSOR LAYER**

C. Herzog¹, A. Peretzki¹, D. Aigner², T. Mayr², and S. Nagl¹

¹Universität Leipzig, GERMANY and ²Technische Universität Graz, AUSTRIA

M.602g**MICROFABRICATED PLATFORM FOR INTEGRATING PHOTOSYNTHETIC BIOMEMBRANE AND *IN-SITU* MONITORING VIA IMPEDANCE SPECTROSCOPY**

X. Ren, X. Yang, J.G. Zhou, and M. Noh

Drexel University, USA

T.603g**MICROPORE CHANNEL-BASED SIMULTANEOUS ELECTRICAL AND OPTICAL SENSING FROM SINGLE BIOMOLECULES, SINGLE EXOSOMES TO SINGLE CELLS**

H. Yasaki¹, T. Yasui¹, S. Rahong¹, T. Yanagida², N. Kaji¹, M. Kanai², K. Nagashima², T. Kawai², and Y. Baba^{2,3}

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

W.604g**NEAR FIELD ELECTROPRINTED HYDROGEL ARRAYS FOR ELECTROCHEMICAL SENSING**

C.J. Wright, S.T. Beirne, R.A. Gorkin III, and G.G. Wallace

University of Wollongong, AUSTRALIA

M.605g**PERFORMANCE EVALUATION AND FABRICATION OF CNT BASED MICROPRECONCENTRATOR FOR TRACE LEVEL VOC GAS DETECTION**

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T.606g**PFS PHOTONIC CRYSTALS FOR OPTICAL AND ELECTROCHEMICAL GLUCOSE SENSING**

L. Folkertsma, K. Zhang, M.A. Hempenius, J.G. Vancso, A. van den Berg, and M. Odijk

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W.607g**pH AND TEMPERATURE SENSORS MOUNTED INTO GIANT LIPID VESICLES FOR AN ENVIRONMENTALLY RESPONSIVE PLATFORM**

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M.608g**PRINTING CONDUCTIVE POLYMER NANOWIRE NETWORK AND ITS APPLICATION IN CHEMICAL SENSING**

E. Song, R.P. Tortorich, T.H. da Costa, and J.-W. Choi

Louisiana State University, USA

T.609g**ULTRASENSITIVE AND LABEL-FREE DETECTION OF CYFRA21-1 USING CMOS-COMPATIBLE SILICON NANOWIRE BIOSENSORS**

N.A. Lu, A. Gao, P. Dai, H. Mao, Y. Wang, and T. Li

Chinese Academy of Sciences, CHINA

M.610g**VOLTAMMETRIC ELECTROCHEMICAL DETECTION OF CONCENTRATION CHANGES IN A MICROFLUIDIC CHIP IS DELAYED IN COMPARISON TO AMPEROMETRY**

R. Trouillon and M.A.M. Gijs

*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND***T.611g****WEARABLE CHEMICAL SENSING – OPTIMIZING PLATFORMS AND SENSITIVITY FOR REAL-TIME SWEAT ANALYSIS**

J. Deignan, L. Florea, S. Coyle, and D. Diamond

*Dublin City University, IRELAND***Mass Spectrometric Detection****W.612g****A 3D-PRINTED MINIATURIZED ION SOURCE FOR MASS SPECTROMETRY BASED ON PAPER SPRAY IONIZATION WITH INTEGRATED, PASSIVE FLUID CONTROL**G.I.J. Salentijn^{1,2}, H.P. Permentier¹, and E. Verpoorte¹¹University of Groningen, THE NETHERLANDS and ²TI-COAST, THE NETHERLANDS**M.613g****APTAMER/ISET-MS: A NEW AFFINITY BASED MALDI-MS METHOD FOR IMPROVED DETECTION OF BIOMARKERS**S.J. Lee¹, B. Adler¹, S. Ekström¹, M. Rezelj¹, Á. Végvári¹, J.-W. Park¹, J. Malm¹, and T. Laurell^{1,2}¹Lund University, SWEDEN and ²Dongguk University, SOUTH KOREA**T.614g****DEVELOPMENT OF MINIATURIZED IONIZATION SOURCE FOR PROTEIN MASS SPECTROMETRY ON A CHIP**K. Sugiyama¹, H. Harako¹, Y. Ukita², and Y. Takamura¹¹Japan Advanced Institute of Technology (JST), JAPAN and ²University of Yamanashi, JAPAN**W.615g****PAPER DIGITAL MICROFLUIDICS AND PAPER SPRAY IONIZATION MASS SPECTROMETRY**

C. Dixon, A.E. Kirby, R. Fobel, and A.R. Wheeler

*University of Toronto, CANADA***Micropumps, Valves, and Dispensers****M.616g****A BALLOON ACTUATOR WITH A LEAKY VALVE FOR THE GENERATION OF CONSTANT FLOW RATE**

Y. Mukouyama, Y. Morimoto, S. Habasaki, T. Okitsu, and S. Takeuchi

*University of Tokyo, JAPAN***T.617g****A BISTABLE MICROFLUIDIC PHASE CHANGE ACTUATOR AND OPTIMIZATION OF ITS RESPONSE TIMES**

C. Neumann, E. Wilhelm, A. Voigt, and B.E. Rapp

*Karlsruhe Institute of Technology, GERMANY***W.618g****A HYBRID PDMS/PAPER PASSIVE PUMP FOR SLOW-RELEASE/DELIVERY OF DRUGS IN CHRONIC DERMAL WOUNDS**R. Rahimi¹, M. Ochoa¹, J. Zhou¹, A. Tamayol², M.R. Dokmeci², A. Khademhosseini², A. Ghaemmaghami³, and B. Ziaie¹¹Purdue University, USA, ²Harvard-MIT Health Sciences and Technology, USA, and ³University of Nottingham, UK

T.619g**AN EASY-TO-INTEGRATE AND DISPOSABLE MICROPUMP FOR MANUFACTURING MICROFLUIDIC LAB-ON-A-CHIP**

J. Han¹, J. Kai¹, A. Puntambekar¹, S.H. Lee¹, and C.H. Ahn^{1,2}

¹*Siloam Biosciences, Inc., USA* and ²*University of Cincinnati, USA*

W.620g**AN ON-BOARD MICROFLUIDIC PUMP DRIVEN BY MAGNETIC STIR BARS**

K. Wei, Y. Zuo, N.W. Domicone, A. Wang, M.S. Rudy, and Y. Zhao

Ohio State University, USA

M.621g**CAPILLARY FORCE-ENHANCED IN SITU MOLDING FOR FABRICATING PNEUMATIC ELASTOMER MICROVALVES EMBEDDED IN PLASTIC-BASED MICROFLUIDIC DEVICE**

S. Terane, M. Kobayashi, T. Akagi, and T. Ichiki

University of Tokyo, JAPAN

T.622g**CAPILLARY MICROFLUIDIC CHIP WITH INTEGRATED PUMP AND VALVE ACTUATOR**

A. Große^{1,2}, S. Geidel¹, T. Enderlein², S. Gross³, A. Morschhauser¹, J. Nestler², J. Edelmann³, T. Otto^{1,2}, and T. Gessner^{1,2}

¹*Fraunhofer Institute for Electronic Nano Systems (ENAS), GERMANY*, ²*Technische Universität Chemnitz, GERMANY*, and

³*Fraunhofer Institute for Machine Tools and Forming Technology (IWU), GERMANY*

W.623g**GEOMETRICALLY PROGRAMMABLE BIDIRECTIONAL PUMP USING ROTATING MAGNETIC MICROSPHERES**

W.T.E. van den Beld, N.L. Cadena, E.L. de Weerd, L. Abelmann, J.G. Bomer, A. van den Berg, and J.C.T. Eijkel

MESA+, University of Twente, THE NETHERLANDS

M.624g**GETTING STARTED WITH OPEN-HARDWARE: DEVELOPMENT AND CONTROL OF MICROFLUIDIC DEVICES**

E.T. Da Costa^{1,2}, M.F. Mora³, P.A. Willis³, C.L. Do Lago², H. Jiao⁴, and C.D. Garcia¹

¹*University of Texas, San Antonio, USA*, ²*Universidade de São Paulo, BRAZIL*, ³*California Institute of Technology, USA*, and

⁴*HJ Science & Technology, USA*

T.625g**HIGH POWER MINIATURE PUMP FOR MICRONEEDLE BASED ON THREE-STAGE SUCTION USING CAPILLARY FLOW, ELECTRO-OSMOTIC FLOW, AND SUPER ABSORBENT POLYMER**

M. Suzuki, Y. Terada, T. Takahashi, and S. Aoyagi

Kansai University, JAPAN

W.626g**LOW-CONSUMPTION MULTIPLE-ACTUATION WAX MICROVALVE**

M. Díaz-González, E. Alvarez-Conde, C. Fernández-Sánchez, and A. Baldi

Consejo Superior de Investigaciones Científicas (CSIC), SPAIN

M.627g**MONOLITHIC, LOW-POWER MICROPUMP TOWARDS INTEGRATED MICROFLUIDIC SYSTEMS**

A. Michaelian, C. Truong, and U. Kim

Santa Clara University, USA

T.628g**MULTI-SORTING SYSTEM BASED ON DISTANTLY PLACED ON-CHIP GEL-ACTUATORS**

K. Ito¹, S. Sakuma¹, Y. Yokoyama², and F. Arai¹

¹*Nagoya University, JAPAN* and ²*Toyama Industrial Technology Center, JAPAN*

Optical Detection

W.629g

AN OPTICAL FIBRE-BASED UV/VIS ABSORBANCE AND FLUORESCENCE DETECTION SYSTEM FOR DIGITAL MICROFLUIDICS

J.M. Mudrik, K. Choi, and A.R. Wheeler
University of Toronto, CANADA

M.630g

BENCH TOP OPTICAL DETECTION OF CLOT CONTRACTILITY FOR DIAGNOSTICS

N. Taparia, L.H. Ting, A.O. Smith, and N.J. Sniadecki
University of Washington, USA

T.631g

ARRAY OF HIGHLY SENSITIVE SUPERCRITICAL ANGLE FLUORESCENCE MICRO-OPTIC STRUCTURES IN A DISPOSABLE LAB-ON-A-CHIP FOR MULTIPLEXED DETECTION

T.Q. Hung¹, S. Yi¹, C.E. Poulsen¹, T.L. Quyen¹, W.H. Chin¹, D.D. Bang¹, L.B. Nielsen², B. Overby², M. Heller², and A. Wolff¹
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W.632g

DARK-FIELD SMARTPHONE MICROSCOPE WITH NANOSCALE RESOLUTION FOR MOLECULAR DIAGNOSTICS

B.N. Kim, J.A. Diaz, S.G. Hong, S.H. Lee, and L.P. Lee
University of California, Berkeley, USA

M.633g

DETECTION OF ZEPTOMOLE NONLABELED PROTEIN IN EXTENDED-NANO CHANNEL USING UV EXCITATION DIFFERENTIAL INTERFERENCE CONTRAST THERMAL LENS MICROSCOPE (DIC-TLM)

H. Shimizu^{1,2}, Y. Asano^{1,2}, K. Mawatari^{1,2}, and T. Kitamori^{1,2}
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T.634g

DEVELOPMENT OF 10¹ NM SCALE LOCAL OPTICAL ILLUMINATION METHOD IN EXTENDED-NANO SPACE BY INTEGRATED NANOSLIT NEAR-FIELD PROBE

R. Ohta, K. Mawatari, Y. Kazoe, Y. Pihosh, and T. Kitamori
University of Tokyo, JAPAN

W.635g

DROPLET-BASED PDMS LENSES FOR IMPROVED FLUORESCENCE DETECTION SENSITIVITY IN MICROCHIP ELECTROPHORESIS

M.-E. Nordberg, S. Cito, and T. Sikanen
University of Helsinki, FINLAND

M.636g

EMBEDDED THIN-FILM MIRRORS FOR IMPROVED OPTICAL DETECTION SENSITIVITY IN MICROCHIP ELECTROPHORESIS

A. Bonabi¹, S. Tähkä¹, V. Jokinen², and T. Sikanen¹
¹*University of Helsinki, FINLAND and* ²*Aalto University, FINLAND*

T.637g

ENHANCED OPTICAL DETECTION IN POROUS MICROFLUIDIC SENSORS BY REFRACTIVE INDEX MATCHING

M.S. Wiederoder, L. Peterken, A.X. Lu, S.R. Raghavan, and D.L. DeVoe
University of Maryland, College Park, USA

W.638g

WITHDRAWN

M.639g**HARMONIC PLASMON RESONANCE IN MICRO/NANOSCALE CAVITIES OF GOLD-ZnO STRUCTURES AND ITS SERS APPLICATIONS**

J. Fan, W. Wu, Y. Tang, and Y. Mao

Peking University, CHINA

T.640g**LCD-CCD SYNCHRONIZATION DETECTION FOR FLUORESCENCE POLARIZATION IMMUNOASSAY**

O. Wakao¹, Y. Fujii², A. Ishida¹, H. Tani¹, A. Hibara³, and M. Tokeshi¹

¹*Hokkaido University, JAPAN*, ²*University of Tokyo, JAPAN*, and ³*Tokyo Institute of Technology, JAPAN*

W.641g**NOVEL NON-LABEL THERMAL LENS DETECTION OF UV-ABSORBING PROTEIN WITH VISIBLE EXCITATION BY USING OPTICAL NEAR-FIELD EFFECT**

T.H.H. Le, K. Mawatari, H. Shimizu, T. Yatsui, T. Kawazoe, M. Naruse, M. Ohtsu, and T. Kitamori

University of Tokyo, JAPAN

M.642g**OPTICAL NITRITE SENSOR AND URINE-ACTIVATED ELECTROCHEMICAL POWER SOURCE ON PAPER THROUGH LASER-ASSISTED PATTERNING AND LAMINATION**

W. Yu, T. Tan, R. Rahimi, B. Jung, and B. Ziaie

Purdue University, USA

T.643g**OPTICAL WAVEGUIDE INTEGRATED WITH A COUPLING PRISM AND MICROLENSES**

D.S. Park¹, B. Young², B.H. You³, V. Singh¹, S.A. Soper², A. Baird⁴, and M.C. Murphy¹

¹*Louisiana State University, USA*, ²*University of North Carolina, USA*, ³*Texas State University, San Marcos, USA*, and

⁴*SUNY Downstate Medical Center, USA*

W.644g**OPTOFLUIDIC HIGH-THROUGHPUT DETECTION OF FLUORESCENT DROPS AND SUB-ATTOMOLAR ENZYME CONCENTRATIONS**

M. Kim¹, S. Pang², C. Han², C. Yang², and S.K.Y. Tang¹

¹*Stanford University, USA* and ²*California Institute of Technology, USA*

M.645g**PLASMON ASSISTED SYNTHESIS OF HIGHLY FLUORESCING SILVER QUANTUM CLUSTER / POLYMER COMPOSITES FOR BIOCHEMICAL SENSING**

S. Bernard¹, J.P. Kutter², and K.B. Mogensen¹

¹*Technical University of Denmark, DENMARK* and ²*University of Copenhagen, DENMARK*

T.646g**POLYMER BASED PHOTONIC CRYSTAL CAVITY FOR HIGHLY SENSITIVE OPTICAL DETECTION**

K. Maeno, S. Aki, T. Endo, K. Sueyoshi, and H. Hisamoto

Osaka Prefecture University, JAPAN

W.647g**POLYMER/TiO₂ HYBRID TWO-DIMENSIONAL PHOTONIC CRYSTAL FOR ENHANCED FLUORESCENCE DETECTION**

S. Aki, T. Endo, K. Sueyoshi, and H. Hisamoto

Osaka Prefecture University, JAPAN

M.648g**REAL-TIME MONITORING OF MELTING CURVES ON DNA MICROARRAYS IN A LAB-ON-FOIL SYSTEM USING SILICON PHOTOMULTIPLIER DETECTORS**

A. Ohlander¹, Th. Ganka², T. Binder³, F. Wiest³, A. Russom⁴, and K. Bock^{1,5}

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²*Universität der Bundeswehr, GERMANY*, ³*Ketek GmbH, GERMANY*, ⁴*KTH Royal Institute of Technology, SWEDEN*, and

⁵*Technical University of Berlin, GERMANY*

T.649g**SINGLE NANOBEADS DETECTION BY SCANNING LASER SPOT FOR IMMUNOSENSING**K. Tsujita¹, Y. Hasegawa¹, M. Ono¹, M. Itonaga¹, Y. Kabe², S. Sakamoto³, and H. Handa⁴¹*JVCKENWOOD Corporation, JAPAN*, ²*Keio University, JAPAN*, ³*Tokyo Institute of Technology, JAPAN*, and⁴*Tokyo Medical University, JAPAN***W.650g****SINGLE-MOLECULE ENZYME ASSAY WITH A LENSLESS FLOUORESTCENT IMAGING DEVICE**K. Sasagawa^{1,4}, S.-H. Kim^{2,4}, L. Yamauchi^{2,4}, K. Kitaguchi¹, H. Takehara¹, T. Noda^{1,4}, T. Tokuda^{1,4}, R. Iino^{3,4}, H. Noji^{2,4}, and J. Ohta^{1,4}¹*Nara Institute of Science and Technology, JAPAN*, ²*University of Tokyo, JAPAN*, ³*National Institutes of Natural Sciences, JAPAN*, and ⁴*Japan Science and Technology Agency (JST), JAPAN***M.651g****TETHERED PARTICLE MOTION (TPM) CHARACTERIZES BINDING TYPES FOR LAB-ON-A-CHIP BIOSENSING**

E.W.A. Visser, L.J. van IJzendoorn, and M.W.J. Prins

*Eindhoven University of Technology, THE NETHERLANDS***T.652g****THERMAL LENS DETECTION DEVICE USING MACH-ZEHNDER INTERFEROMETER WAVEGUIDE**H. Morita¹, H. Shimizu¹, M. Sakakura², Y. Shimotsuma², K. Miura², K. Hirao², K. Mawatari¹, and T. Kitamori¹¹*University of Tokyo, JAPAN* and ²*Kyoto University, JAPAN***W.653g****VIRUS INFECTIVITY DETECTION BY EFFECTIVE REFRACTIVE INDEX USING OPTOFLUIDIC IMAGING**P.Y. Liu¹, L.K. Chin², W. Ser², T.C. Ayi³, P.H. Yap³, T. Bourouina¹, and Y. Leprince-Wang¹¹*Université Paris-Est, FRANCE*, ²*Nanyang Technological University, SINGAPORE*, and ³*DSO National Laboratories, SINGAPORE***Others****M.654g****A LARGE-AREA HEMISPHERICAL PERFORATED MICROARRAY FOR BEAD BASED APTAMER SCREENING**

J.S. Choi, S. Bae, K.H. Kim, and T.S. Seo

*Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA***T.655g****A POLYMER-BASED MEMS ISOTHERMAL TITRATION CALORIMETER**

Y. Jia, Z. Zhang, B. Wang, and Q. Lin

*Columbia University, USA***W.656g****FACILE FABRICATION OF CALCIUM FLUORIDE IR-TRANSPARENT MICROFLUIDIC DEVICES**

B.J. Lehmkuhl, S.D. Noblitt, A.T. Krummel, and C.S. Henry

*Colorado State University, USA***M.657g****MICROFLUIDIC NMR STRIPLINE CHIP WITH HIGHER MECHANICAL STABILITY AND ENHANCED SENSITIVITY**H. Zhang¹, K.C.H. Tijssen², R.M. Tiggelaar¹, J.W.G. Janssen², P.J.M. Van Bentum², A.P.M. Kentgens², and J.G.E. Gardeniers¹¹*MESA+, University of Twente, THE NETHERLANDS* and ²*University Nijmegen, THE NETHERLANDS***Physical Sensors****W.658g****AN EMBEDDED MICROCHANNEL IN A MEMS PLATE RESONATOR FOR ULTRASENSITIVE MASS SENSING IN LIQUID**

C. Hadji, C. Berthet, M. Cochet, F. Baléras, B. Icardand, and V. Agache

CEA/LETI, FRANCE

M.659g**DEVELOPMENT OF A POLYMER BASED FORCE AMPLIFIED CAPACITIVE TYPE IMUNOSENSOR**

A. Chatterjee, T.K. Maiti, and T.K. Bhattacharyya
Indian Institute Of Technology Kharagpur, INDIA

T.660g**HIGHLY ACCURATE THIN-FILM FLEXIBLE MICROSENSOR FOR CONTINUOUS AND QUANTITATIVE MEASUREMENT OF CEREBRAL BLOOD FLOW**

C. Li¹, P. Wu¹, Z. Wu², N. Mehan¹, N. Bhattacharjee², J. Hartings², C. Ahn², and R. Narayan¹
¹*Feinstein Institute for Medical Research, USA and* ²*Universtiy of Cincinnati, USA*

W.661g**ONE DIMENSIONAL MODEL OF THERMORESISTIVE MICRO CALORIMETRIC FLOW SENSORS FOR GASES AND LIQUIDS CONSIDERING PRANDTL NUMBER EFFECT**

W. Xu¹, K. Song¹, S. Ma¹, Y. Chiu², and Y.-K. Lee¹
¹*Hong Kong University of Science and Technology, HONG KONG and* ²*National Chiao Tung University, TAIWAN*

Visualization & Imaging Technologies**M.662g****A MULTILAYER PDMS MICROCHANNEL ARRAY TO ANALYZE PERIPHERAL NERVE REGENERATION**

E. Ibarra, B. Kim, B. Garza, R. Luna, and Y. Choi
University of Texas, Pan American, USA

T.663g**DEVELOPMENT OF A SIMPLE, ROBUST AND REAL-TIME IMAGE PROCESSING ALGORITHM FOR TRACKING AND ANALYZING CELLS AND DROPLETS INSIDE MICROCHANNELS**

A.M. Esmael, A.B. Sharkawy, T. ElMelegy, and M. Abdelgawad
Assiut University, EGYPT

W.664g**DUAL-VIEW FLOW CHANNEL VISUALIZATION**

A. Hibara¹, Y. Kazama², E.T. Carlen^{3,4}, and A. van den Berg⁴
¹*Tokyo Institute of Technology, JAPAN,* ²*Univerisity of Tokyo, JAPAN,* ³*University of Tsukuba, JAPAN, and* ⁴*MESA+, University of Twente, THE NETHERLANDS*

M.665g**MICRO BIOIMPEDANCE TOMOGRAPHY FOR CONTINUOUS MONITORING OF CELLULAR PROCESSES**

R.A. Scott¹, J. Palmisano², G. Justin³, and M. Nasir⁴
¹*University of Illinois, Urbana-Champaign, USA,* ²*Naval Research Laboratory, USA,* ³*WPC Technologies, USA, and* ⁴*Lawrence Technological University, USA,*

T.666g**MICROFLUIDIC STRETCHING OF DNA WITH FLUORESCENT GOLD NANOPARTICLE FOR OPTICAL/ELECTRON MICROSCOPIC IMAGING OF A SINGLE DNA METHYLATION**

D. Takeshita¹, D. Onoshima², Y. Hiroshi², T. Yasui^{1,2}, N. Kaji^{1,2}, and Y. Baba^{1,2}
¹*Nagoya University, JAPAN and* ²*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

W.667g**REAL-TIME EVALUATION OF EFFECTIVENESS OF ANTIMICROBIAL COATINGS WITH SURFACE PLASMON RESONANCE IMAGING**

P.N. Abadian, C.P. Kelley, and E.D. Goluch
Northeastern University, USA

M.668g**SIMULTANEOUS MEASUREMENT OF 3D INTERFACIAL GEOMETRY AND INTERNAL FLOW STRUCTURE OF MICRO DROPLET USING DIGITAL HOLOGRAPHIC MICROSCOPY**

M. Oishi¹, T. Matsuo², H. Kinoshita¹, T. Fujii¹, and M. Oshima¹
¹*University of Tokyo, JAPAN and* ²*Ushio Inc., JAPAN*

T.669g**SIMULTANEOUS CONFOCAL AND ELECTROPHYSIOLOGICAL ASSESSMENT OF MEMBRANE PROPERTIES AND ION CHANNEL ACTIVITY IN A MICROFLUIDIC FORMAT – A POWERFUL COMBINATION FOR DRUG DEVELOPMENT**

V.C. Stimberg, A.V. Prokofyev, H.L. de Boer, A. van den Berg, and S. Le Gac
MESA+, University of Twente, THE NETHERLANDS

W.670g**STUDIES ON BIOLOGICAL ACTIVITY OF QDS IN VERSATILE MICROFLUIDIC SYSTEM**

I. Grabowska-Jadach, M. Haczyk, L. Kowalska, M. Drozd, and M. Pietrzak
Warsaw University of Technology, POLAND

Separations and Reactions**Chemical Synthesis****M.671h****MICROREACTORS FOR CLICK CHEMISTRY-BASED SYNTHESIS OF MOLECULAR IMAGING PROBES**

J.W. Whittenberg¹, H. Li², H. Zhou², J. Koziol¹, A.V. Desai¹, D.E. Reichert², and P.J.A. Kenis¹
¹*University of Illinois, Urbana-Champaign, USA* and ²*Washington University School of Medicine, USA*

Chromatographic Separations**T.672h****DESIGN OF A MICROFLUIDIC CHIP FOR SPATIAL THREE DIMENSIONAL LIQUID CHROMATOGRAPHY SEPARATIONS**

B. Wouters¹, P. Schoenmakers², and S. Eeltink¹
¹*Vrije Universiteit Brussel, BELGIUM* and ²*Universiteit van Amsterdam, THE NETHERLANDS*

W.673h**DNA ISOCRATIC CHROMATOGRAPHY IN VAPOR PHASE FUNCTIONALIZED SILICON MICROPILLAR ARRAY CHIPS**

L. Zhang¹, P. Fiorini¹, B. Majeed¹, L. Lagae¹, and W. De Malsche²
¹*IMEC, BELGIUM* and ²*Vrije Universiteit Brussel, BELGIUM*

M.674h**HIGH EFFICIENT FEMTOLITER REVERSED PHASE CHROMATOGRAPHY IN EXTENDED-NANOSPACE FOR AMINO ACIDS ANALYSIS**

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

T.675h**LABEL-FREE INLINE HPLC DETECTOR USING A DROP GENERATOR**

R. Kebriaei and A.S. Basu
Wayne State University, USA

W.676h**MICROFLUIDIC MODULES FOR ISOLATION OF RECOMBINANT CYTOKINE FROM BACTERIAL LYSATES**

L.J. Millet, S.T. Retterer, and M.J. Doktycz
Oak Ridge National Lab, USA

M.677h**SILICON BASED MICRO-PRECONCENTRATORS FOR PORTABLE GAS ANALYSIS SYSTEMS**

B. Bourlon¹, F. Ricoul¹, S. Beghi¹, A. Bellemin-Comte¹, N. David¹, T. Bordy¹, B. Icard¹, A. Salette², M. Petitjean², R. Barattin², V. Gouttenoire², and P. Puget²
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Electrophoretic Separations

T.678h

CHARACTERIZATION OF NATIVE THIOL-ENE SURFACE CHEMISTRY FOR MICROCHIP ELECTROPHORESIS AND FLUORESCENCE DETECTION

S.M. Tähhä¹, M.E. Nordberg¹, A. Bonabi¹, V.P. Jokinen², and T.M. Sikanen¹

¹University of Helsinki, FINLAND and ²Aalto University, FINLAND

W.679h

COLLOIDAL SELF ASSEMBLED NANOPARTICLES SIEVES WITH ORTHOSILICATE CROSS LINKING FOR PROTEIN SEPARATION IN MICROCHIPS AND RETARDATION COEFFICIENT FOR ON CHIP PROTEIN SIZING

M. Azim¹, A.B. Jemere², and D.J. Harrison^{1,2}

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T.680h

ENZYME-DOPED POLYESTER THREAD COATED WITH PVC MEMBRANE FOR BLOOD UREA, NITROGEN, AND GLUCOSE DETECTION IN HUMAN WHOLE BLOOD

Y.-A. Yang and C.-H. Lin

National Sun Yat-sen University, TAIWAN

M.681h

CONFORMATION-SELECTIVE ENRICHMENT OF APTAMER-BOUND NEUROPEPTIDES BY DIELECTROPHORESIS

B.J. Sanghavi¹, W. Varhue¹, A. Rohani¹, J.L. Chavez², C.F. Chou³, and N.S. Swami¹

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T.682h

EVALUATION OF THE STACKED FUNCTIONAL HYDROGELS TOWARDS MICROFLUIDIC WESTERN BLOTTING BASED ON MULTI-DEMENSIONAL DIGITAL ELECTROPHORESIS USING CAPILLARY-ASSEMBLED MICROCHIP

K. Marsuda, T. Kanaoka, K. Sueyoshi, T. Endo, and H. Hisamoto

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W.683h

FLUIDIC SCANNING OUTPUT FOR A FREE-FLOW ISOTACHOPHORESIS IN A GLASS CHIP

J. Park, P. Neuzil, and A. Manz

KIST Europe GmbH, GERMANY

M.684h

HIGH SPEED SIZE BASED PROTEINS SEPARATION ON STABILIZED COLLOIDAL SELF ASSEMBLED (CSA) NANOPARTICLE ARRAYS

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T.685h

IMPROVED PRECISION USING INTERNAL STANDARDS IN DISPOSABLE POINT-OF-CARE CAPILLARY ELECTROPHORESIS DEVICES

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W.686h

INTEGRATED PORTABLE MICROFLUIDIC ELECTROPHORESIS SYSTEM WITH ELECTROCHEMICAL DETECTION FOR FAST ANALYSIS OF ALIMENTARY OILS

A. Fernández-la-Villa, D.F. Pozo-Ayuso, and M. Castaño-Álvarez

Micrux Technologies, SPAIN

M.687h

MICROCHIP CE-ESI-MS FOR THE SEPARATION OF BIOLOGICAL SAMPLES

E. Redman, N. Batz, J.S. Mellors, and J.M. Ramsey

University of North Carolina, USA

T.688h**NONAQUEOUS MICROCHIP ELECTROPHORESIS DEVICE COUPLED WITH MASS SPECTROMETRY FOR LABEL-FREE DETECTION OF LIPID BIOMARKERS**

E.R. Foster and P.W. Bohn
University of Notre Dame, USA

W.689h**ONE-STEP PROTEIN ANALYSIS USING SLANTED NANOFILTER ARRAY**

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M.690h**PALM TOP FULLY-INTEGRATED CAPILLARY ELECTROPHORESIS ANALYZER**

J.-Z. Pan, P. Fang, X.-X. Fang, Q. Li, Y.-Q. Chen, and Q. Fang
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T.691h**RAPID AND HIGHLY SENSITIVE ELECTROPHORETIC IMMUNOASSAY DEVICE BASED ON THE ON-LINE CONCENTRATION OF ENZYME-LABELED ANTIBODY USING HYDROGEL IMMOBILIZING FLUORESCENT SUBSTRATE**

S. Miyamoto, K. Sueyoshi, T. Endo, and H. Hisamoto
Osaka Prefecture University, JAPAN

W.692h**STRUCTURAL IDENTIFICATION OF SERUM N-GLYCANS ASSOCIATED WITH CANCER PROGRESSION**

C.M. Snyder, I. Mitra, W.R. Alley Jr., M.V. Novotny, and S.C. Jacobson
Indiana University, USA

M.693h**TEMPERATURE-CONTROLLED SEPARATIONS FOR IMPROVING THE SENSITIVITY OF MULTI-COLOR MICROFLUIDIC IMMUNOASSAYS**

N. Mukhitov, L. Yi, A.M. Schrell, X. Wang, R. Dhumpa, and M.G. Roper
Florida State University, USA

T.694h**ULTRAFAST SEPARATION OF SMALL BIOMOLECULES BY THREE-DIMENSIONAL NANOWIRE STRUCTURE**

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Microreactors & Micromixers**W.695h****HIGH-THROUGHPUT CENTRIFUGAL MICROFLUIDIC PROCESSOR FOR MULTIPLEX NANOCRYSTAL SYNTHESIS**

B.H. Park, D. Kim, J.H. Jung, S.J. Oh, G. Choi, D.C. Lee, and T.S. Seo
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

M.696h**ON-CHIP MICRO ICE-DROPLET BULLET COLLIDER FOR MECHANOCHEMISTRY**

Y. Kazoe, T. Matsuno, K. Mawatari, and T. Kitamori
University of Tokyo, JAPAN

Others**T.697h****SEPARATING AND EXTRACTING HELA CELLS FROM HUMAN WHOLE BLOOD VIA NEGATIVE MAGNETOPHORESIS AND LAMINAR FLOW IN FERROFLUIDS**

W. Zhao¹, T. Zhu¹, R. Cheng¹, T. Querec², E. Unger², and L. Mao¹

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Particle Separations

W.698h

A MICROFLUIDIC SYSTEM FOR HIGH THROUGHPUT CONTINUOUS SEPARATION OF NANOPARTICLES

T.O. Tasci, C.J. Lambert, H.J. Sant, E. Manangon, D.P. Fernandez, W.P. Johnson, and B.K. Gale

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M.699h

A LOW-ASPECT-RATIO, ROLL-TO-ROLL HOT EMBOSSED INERTIAL MICROFLUIDIC SORTER

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T.700h

CONTINUOUS ACOUSTIC SEPARATION OF BLOOD COMPONENTS IN PLASTIC MICROFLUIDIC DEVICES

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Charles Stark Draper Laboratory, USA

W.701h

A NEW MICROFLUIDIC DEVICE FOR COMPLETE, CONTINUOUS SEPARATION OF MICROPARTICLES

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M.702h

CONTINUOUS ACOUSTIC SORTING OF E. COLI AND G. LAMBLIA IN DRINKING WATER

Y. Xia¹, L. Lei¹, J.B. Zhang¹, P. Ohlsson², T. Laurell², Z.H. Yang³, H.X. Zhang³, and A.Q. Liu¹

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T.703h

DEVELOPMENT OF CONTINUOUS CELL LYSIS AND SEPARATION DEVICE USING REPULSIVE FORCE GENERATED BY ION CONCENTRATION POLARIZATION

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W.704h

EFFECTS OF DENSITY DIFFERENCE BETWEEN PARTICLES AND FLUID ON INERTIAL FOCUSING POSITIONS IN TRANSIENT MICRO-FLOWS

M.H. Winer, A. Ahmadi, and K.C. Cheung

University of British Columbia, CANADA

M.705h

HIGH CONSTRICTION RATIO CONTINUOUS INSULATOR BASED DIELECTROPHORETIC PARTICLE SORTING

Q. Wang and C.R. Buie

Massachusetts Institute of Technology, USA

T.706h

INSULATOR-BASED DIELECTROPHORETIC BEHAVIOR OF β -GALACTOSIDASE UNDER DC AND LOW FREQUENCY AC CONDITIONS

A. Nakano, F. Camacho-Alanis, and A. Ros

Arizona State University, USA

W.707h

LABEL-FREE FRACTIONATION OF TUMOR- DERIVED EXTRACELLULAR VESICLES FROM HUMAN BLOOD USING DETERMINISTIC LATERAL DISPLACEMENT EFFECT

A.J. Laki¹, L. Botzheim¹, K. Ivan¹, T. Szabó², V. Tamási², E.J. Buzás², and P. Civera³

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M.708h

NEXT-GENERATION MICROFILTER: LARGE SCALE, CONTINUOUS MAMMALIAN CELL RETENTION FOR PERFUSION BIOREACTORS

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T.709h**SEPARATING PARTICLES OF DIFFERENT MAGNETIC PROPERTIES BY INTEGRATING POSITIVE AND NEGATIVE MAGNETOPHORESIS**

T. Zhu, R. Cheng, and L. Mao

University of Georgia, USA

W.710h**STUDY ON CENTRIFUGAL FORCE BASED PARTICLE TRAPPING IN MICRO CHAMBER AT LOWER REYNOLDS NUMBER**

B. Sharma¹, M. Biyani¹, Y. Ukita², and Y. Takamura¹

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M.711h**USE OF SECONDARY DEAN VORTICES IN SPIRAL MICROCHANNELS FOR CELL SEPARATIONS**

N. Nivedita and I. Papautsky

University of Cincinnati, USA

Particle Synthesis**T.712h****DROPLET MICROFLUIDIC PLATFORM FOR AUTOMATED ASSEMBLY OF MULTIFUNCTIONAL NANOSTRUCTURES**

D. Ferraro¹, Y. Lin², B. Teste¹, D. Talbot², L. Malaquin¹, S. Descroix¹, and A. Abou-Hassan²

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W.713h**ELASTIC WIRE-FRAME MICROPARTICLES OF CROSS-LINKED BOVINE SERUM ALBUMIN**

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M.714h**MAGNETIC FIELD-ASSISTED FABRICATION AND MANIPULATION OF NON-SPHERICAL POLYMER PARTICLES IN FERROFLUID-BASED DROPLET MICROFLUIDICS**

T. Zhu, G. Sheppard, J. Locklin, and L. Mao

University of Georgia, USA

T.715h**MICROFLUIDIC HYDROGEL PARTICLE PRODUCTION AND FLOW-ASSISTED ASSEMBLY FOR CONSTRUCTING COMPOSITE SCAFFOLD MATERIALS**

K. Krutkramelis and J. Oakey

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W.716h**SOFTWARE-BASED DESIGN AND FABRICATION OF COMPLEX 3D SHAPED MICROPARTICLES**

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Late News**M.717i****3D TUMOUR SPHEROID AND A MAMMARY DUCT CULTURE MODEL IN A CNC-MILLED PLASTIC MICROFLUIDIC SYSTEM**

T. Madu, R. Lausch, and E.W.K. Young

University of Toronto, CANADA

T.718i**A NOVEL AC ELECTROTHERMAL MICROPUMP CONSISTING OF TWO OPPOSING PARALLEL COPLANAR ASYMMETRIC MICROELECTRODE ARRAYS**

A. Salari and C. Dalton

University of Calgary, CANADA

W.719i**A NOVEL MICROFLUIDIC ASSAY FOR IN VITRO MODELING OF LEUKOCYTE-ENDOTHELIUM INTERACTIONS**

F. Soroush¹, G. Lamberti¹, B. Prabhakarapandian², C. Garson², A. Smith², K. Pant², B. Wang³, and M.F. Kiani¹

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M.720i**A ROBUST MICROFLUIDIC PLATFORM FOR FABRICATION OF METER-LONG HYDROGEL MICROFIBERS**

M. Akbari^{1,2}, L. Serex^{1,2}, E. Lesha^{1,2}, A. Tamayol^{1,2}, S. Shin^{1,2}, Y.S. Zhang^{1,2}, F. Tarlan^{1,2}, K. Futamura^{1,2}, and A. Khademhosseini^{1,2}

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T.721i**ACOUSTOPHORESIS FOR LABEL-FREE SEPARATION AND CONCENTRATION OF CANCER CELLS**

M. Antfolk¹, P. Augustsson^{1,2}, C. Magnusson¹, H. Lilja^{1,3}, and T. Laurell¹

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W.722i**AN INERTIAL MICROFLUIDIC DEVICE FOR RAPID PURIFICATION OF NATIVE CHROMOSOMES**

M. Hockin, H.J. Sant, M. Capecchi, and B.K. Gale

University of Utah, USA

M.723i**ANTIBODY FUNCTIONALIZED MICROPATTERNED HYDROGELS**

P. Fischer¹, M. Tibbitt², J.C. Gatlin¹, A. Kloxin³, K. Anseth⁴, and J. Oakey¹

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⁴University of Colorado, USA

T.724i**AUTOMATED ANALYSIS OF COLLAGEN REORGANIZATION OVER TIME IN THREE-DIMENSIONAL CELL CULTURES**

E. Cheng, C. Song, L. Yu, and K.C. Cheung

University of British Columbia, CANADA

W.725i**BIOSPLEEN DEVICE FOR EXTRACORPOREAL SEPSIS THERAPY**

J.H. Kang, M. Super, C.W. Yung, R.M. Cooper, K. Domansky, A.R. Graveline, T. Mammoto, J.B. Berthet, H. Tobin, M.J. Cartwright, A.L. Watters, M. Rottman, A. Waterhouse, A. Mammoto, N. Gamini, M.J. Rodas, A. Kole, A. Jiang, T. M. Valentin, A. Diaz, and D.E. Ingber

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M.726i**COLOURED PDMS MICROPILLAR ARRAYS FOR DROSOPHILA LARVA FORCE MEASUREMENT**

S.M. Khare¹, V. Venkataraman¹, and S.P. Koushika²

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T.727i**COMBINING HOMOGENEOUS PROXIMITY ASSAYS WITH A CUSTOM NANOLITER ROTARY MIXER FOR CONTINUOUS SAMPLING AND DETECTION OF PROTEINS AT ATTOMOLE LEVELS**

J.T. Negou, X. Li, J. Kim, and C.J. Easley

Auburn University, USA

W.728i**DEVELOPMENT OF A FLEXIBLE MICROFLUIDIC CHIP CONTAINING ELECTROWETTING VALVES AND MANUFACTURED USING UV NANOIMPRINT LITHOGRAPHY**

J. Chen, Y. Zhou, F. He, V.M. Rotello, J.J. Watkins, K.R. Carter, and S.R. Nugen

University of Massachusetts, USA

M.729i**DEVELOPMENT OF A THREE-DIMENSIONAL BRAIN-ON-A-CHIP WITH AN INTERSTITIAL LEVEL OF FLOW AND ITS APPLICATION AS AN *IN VITRO* MODEL OF ALZHEIMER'S DISEASE**

J.S. Park¹, B.K. Lee¹, G.S. Jeong¹, C.J. Lee^{1,2}, and S.H. Lee¹

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T.730i**DEVELOPMENT OF MICRO-HEATER ARRAY DEVICE WITH REGIONAL SELECTIVE HEATING FOR BIOCHEMICAL APPLICATIONS**

M. Horade, M. Kojima, K. Kamiyama, Y. Mae, and T. Arai

Osaka University, JAPAN

W.731i**FULLY INTEGRATED PCR DETECTION OF PATHOGENS FOR FAST DIAGNOSIS OF NEONATAL SEPSIS ON LABDISK**

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M.732i**GECKOADHESIVES FOR MICROFLUIDICS: A STRONG AND RELIABLE REVERSIBLE BONDING TECHNIQUE**

A. Wasay and D. Sameoto

University of Alberta, CANADA

T.733i**HYDROGEL BASED DERMAL PATCH WITH INTEGRATED FLEXIBLE ELECTRONICS FOR ON DEMAND DRUG DELIVERY**

S. Bagherifard^{1,2}, A. Tamayol¹, M. Comotto¹, P. Mostafalu³, M. Akbari¹, N. Annabi¹, M. Ghaderi¹, S. Sonkusale³, M. Guagliano², M.R. Dokmeci¹, and A. Khademhosseini¹

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W.734i***IN SITU* MICROFLUIDIC PARTITION WITH SEMI-PERMEABLE MEMBRANES FOR STATIC GRADIENT GENERATION**

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M.735i**INKJET PRINTED MULTIMETAL MICROELECTRODES ON PDMS FOR FUNCTIONALIZED MICROFLUIDIC SYSTEMS**

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M.736i**TOWARD EPIGENETIC MAPPING OF HUMAN CHROMOSOMES IN NANOCHANNEL ARRAYS**

Y. Michaeli, T. Gabrieli, and Y. Ebenstein

Tel Aviv University, ISRAEL

W.737i**LABEL-FREE ENRICHMENT OF CANCER CELLS USING NEGATIVE SELECTION (DEPLETION) OF WBCs WITH ELASTOMERIC NEGATIVE ACOUSTIC CONTRAST PARTICLES AND ACOUSTOPHORESIS**

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M.738i**LABEL-FREE AND NON-CONTACT PLATELET ANALYSIS PLATFORM**

E. Persson, C. Johannesson, D. Erlinge, and M. Evander

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T.739i**MICRODROPLET BREAKUP USING AN OSCILLATING FLEXIBLE MEMBRANE**

M.R. Azad and A. Salari

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W.740i**MICROFLUIDIC SYSTEM FOR CAPTURE AND RELEASE OF LISTERIA MONOCYTOGENES USING FUNCTIONALIZED CORE-SHELL MAGNETIC NANOPARTICLES**

L. Malic¹, X. Zhang¹, D. Brassard¹, L. Clime¹, J. Daoud¹, A. Boutin¹, C. Luebbert², V. Barrere², S. Bidawid², N. Corneau², J. Farber², and T. Veres^{1,3}

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M.741i**MULTIPLEX FLUORESCENT ENCODING OF PICOLITER DROPLETS USING DYNAMICALLY-ACTUATED SINGLE-LAYER VALVES**

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T.742i**MULTIPLEXED PROTEASE ACTIVITY ASSAY AND INHIBITOR ANALYSIS USING PICO-INJECTOR ARRAY**

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W.743i**NANOMECHANICAL IR SPECTROSCOPY FOR THE FAST ANALYSIS OF PICOGRAM SAMPLES OF ENGINEERED NANOMATERIALS**

A.J. Andersen, P.K. Ek, T.L. Andresen, S. Yamada, A. Boisen, and S. Schmid

Technical University of Denmark, DENMARK

M.744i**NUCLEMETER: A YARDSTICK FOR QUANTIFYING NUCLEIC ACIDS UNDERGOING ENZYMIC AMPLIFICATION**

C. Liu, M.G. Mauk, and H.H. Bau

University of Pennsylvania, USA

T.745i**PHOTO/CHEMOTAXIS-BASED HIGH-THROUGHPUT SCREENING STRATEGY IN MICROFLUIDICS TO IMPROVE PHOTOSYNTHETIC EFFICIENCY OF MICROALGAE**

H.S. Kwak, J.Y.H. Kim, Y.J. Sung, and S.J. Sim

Korea University, SOUTH KOREA

W.746i**PLATFORM FOR *IN-VITRO* PHOTO-PATTERNING OF WHOLE ANIMAL *C. ELEGANS* ASSAYS AND BEHAVIOR CONTROL**

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M.747i**PNEUMATIC MICROVALVE FOR ELECTROKINETIC SAMPLE PRECONCENTRATION AND CAPILLARY ELECTROPHORESIS INJECTION**

Y. Cong, S.J. Rausch, T. Geng, S. Jambovane, and R.T. Kelly

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T.748i**PRODUCTION OF 3-10 μ M MICROBUBBLES SUITED FOR ULTRASONIC IMAGING BY 2.5D NANOFUIDIC DEVICES**

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W.749i

RAPID DRUG DELIVERY TO *IN VITRO* NEURONAL CULTURES

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M.750i

SINGLE-MOLECULE ASSAY FOR TAU PROTEIN USING DIGITAL ELISA SYSTEM

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T.751i

SMARTPHONE BASED PAPER-PLASTIC MICROFLUIDIC CHEMILUMINESCENCE SENSOR SYSTEM FOR H₂O₂ DETECTION

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W.752i

SPERM CELL SEPARATION USING A SPIRAL CHANNEL

J. Son, R. Samuel, K. Murphy, H. Sant, M. Hockin, B.K. Gale, J.M. Hotaling, and D.T. Carrell
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M.753i

RECONFIGURABLE CAPILLARY CONNECTION FOR DIGITAL MICROFLUIDIC

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T.754i

STUDY OF PRECURSOR CONCENTRATION EFFECT ON CDS NANOPARTICLE SIZE ON A CHIP

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W.755i

THREE-DIMENSIONAL TUMOR MODEL ON MICRO-CONCAVE ARRAYED WELLS FOR SCREENING OF ANTICANCER DRUG-LOADED NANOPARTICLES

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