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 Caprio[1], D. Shaak[1], J.M. Higgins[2,3], and E. Schonbrun[1]
[1]Harvard University, USA, [2]Massachusetts General Hospital, USA, and [3]Harvard 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]
[1]University of Tokyo, JAPAN and [2]Japan 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. Zhao[1], F. Schwemmer[2], S. Zehnle[1], F. von Stetten[1], R. Zengerle[1], and N. Paust[1]
[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. Ahlford[1], M. Donolato[2], A. Mezger[1], P. Antunes[2], F.W. Østerberg[2], R. Burger[2], F. Bosco[2], M. Nilsson[1], and M.F. Hansen[2]
[1]Stockholm University, SWEDEN and [2]Technical University of Denmark, DENMARK

11:10 - 11:30

LAB ON A DISC FOR ALGAL OIL DETECTION

Y. Kim[1], S.-N. Jeong[2], D.-P. Kim[2], and Y.-K. Cho[1]
[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. Kim[1], A. Stockton[2], P. Willis[2], R. Lillis[3], R. Amundson[3], L. Beegle[2], A. Butterworth[3], D. Curtis[3], P. Ehrenfreund[5], F. Grunthaner[3], R. Hazen[5], R. Kaiser[6], M. Ludlam[3], M. Mora[2], J. Scherer[3], P.Turin[3], K. Welten[3], K. Williford[2], and R.A. Mathies[3]
[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. Willis[1], M.L. Cable[1], M.F. Mora[1], A.M. Stockton[1], K.P. Hand[1], S.M. Hörst[2], M.A. Tolbert[2], C. He[3], and M.A. Smith[3]
[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. Lunte[1], D.B. Gunasekara[1], P. Pichetsurnthorn[1], 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 SPEAKER**
MULTIFUNCTIONAL PAPER MICROFLUIDIC DEVICES FOR ENVIRONMENTAL ANALYSIS
C.S. Henry[1]*, Y. Kim[2], J. Mettakoonpitak[1], and T. Guerrero[1]
[1]Colorado State University, USA and [2]Hanyang 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 SPEAKER**
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. To[1], I. Sanada[1], H. Ito[1], S. Morita[1], Y. Nanno[2], and N. Miki[1]
[1]Keio University, JAPAN and [2]Tokyo Medical University, JAPAN

14:15 - 14:35
ENHANCEMENT OF PROTON TRANSFER BY SURFACE SILANOL GROUPS IN EXTENDED NANOSPACE
K. Ikeda[1], Y. Kazoe[1], T. Tsukahara[2], K. Mawatari[1], and T. Kitamori[1]
[1]University of Tokyo, JAPAN and [2]Tokyo Institute of Technology, JAPAN

Session 1C2 - Proteomics

13:30 -13:55 **KEYNOTE SPEAKER**
TOWARDS PAPER-BASED POINT OF CARE AFFINITY PROTEOMICS
T. Chinnasamy[1], L.I. Segerink[2], M. Nystrand[3], J. Gantelius[1] and H. Andersson Svahn[1]*
[1]KTH Royal Institute of Technology, SWEDEN, [2]MESA+, University of Twente, THE NETHERLANDS, and [3]Thermo 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

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 FOR HIGH-THROUGHPUT SCREENING AND ANALYSIS
I. Pushkarsky[1], P. Tseng[1], and D. Di Carlo[1,2]
[1]University of California, Los Angeles, USA and [2]California 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. Zhao[1], D.Y. Chen[1], Y.N. Luo[1], F. Chen[1], X.T. Zhao[2], M. Jiang[2], W.T. Yue[2], R. Long[3], J.B. Wang[1], and J. Chen[1]
[1]Chinese Academy of Sciences, CHINA, [2]Capital Medical University, CHINA, and [3]University of Alberta, CANADA

15:40 - 16:00
DEFORMABILITY BASED SEPARATION OF CIRCULATING TUMOR CELLS FROM PATIENTS WITH CASTRATE RESISTANT PROSTATE CANCER
S. Park[1], C. Jin[1], R. Ang[1], S. Duffy[1], H. Abdi[2], K. Chi[3], P. Black[2], and H. Ma[1]
[1]University of British Columbia, CANADA, [2]Vancouver Prostate Centre, CANADA, and [3]BC 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. Jain[1], P. Kim[1], B.D. Hatton[1], A. Nedder[3], K. Donovan[3], E.H. Super[1], C. Howell[1], C.P. Johnson[1], T.L. Vu[1], D. Bolgen[1], A. Hansen[1,3], M. Aizenberg[1], M. Super[1,2,3], J. Aizenberg[1], and D.E. Inger[1,2,3]
[1]Harvard University, USA, [2]Harvard Medical School, USA, and [2]Boston Children's Hospital, USA

15:20 - 15:40
MICROENGINEERED HETEROGENEOUS SUBSTRATES FOR CELL CULTURE BY ELECTRO-MICROFLUIDICS
M.-Y. Chiang[1], Y.-W. Hsu[1], H.-Y. Hsieh[2], S.-Y. Chen[1], and S.-K. Fan[1]
[1]National Chiao Tung University, TAIWAN and [2]National Taiwan University, TAIWAN

15:40 - 16:00
NESTED HYDRODYNAMIC FLOW CONFINMENT 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 Laboratory - Zurich, 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**
- AIP Publishing
- CorSolutions
- Elveflow Microfluidic Innovation Center
- microfluidic ChipShop
- thinXXS Microtechnology AG
- SFC Fluidics

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**
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**

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. He[1], A.K. Godwin[2], and Y. Zeng[3]
[1]Kansas State University, USA, [2]University of Kansas Medical Cancer, USA, and [3]University 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. Hoshian[1], V. Jokinen[1], K. Hjort[2,3], R.H.A. Ras[1], and S. Franssila[1]
[1]Aalto University of Technology, FINLAND, [2]VTT Technical Research Center of Finland, FINLAND, and [3]Uppsala 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 OSTE+ POLYMER
J. Hansson[1], H. Yasuga[1], S. Basak[1,2], C.F. Carlborg[1], W. van der Wijngaart[1], and T. Haraldsson[1]
[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. Han[1], E. Katilius[2], and J.G. Santiago[1]
[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. Lee[1], H. Kim[2], S. Kim[1], T. Ryu[1], and S.Kwon[1]
[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 SPEAKER**
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. Barbe[1], S. Follonier[1], and P.S. Dittrich[2],
[1]CSEM, 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 SPEAKER**
STRATEGIES FOR VASCULARIZED ORGAN-ON-A-CHIP
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 SPEAKER**
ELECTROCHEMICALLY MEDIATED DESALINATION
R. M. Crooks[1]*, K.N. Knust[1], M.R. Stanley[1], F.J. Carrillo[1], D. Hlushkou[2], and U. Tallarek[2]
[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. Kim[1], R. Kwak[1,2], H.J. Kwon[3], V.S. Pham[1], S.E. Kooi[1], G. Lim[3], and J. Han[1]
[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. Xie[1], H.L. de Boer[2], A.J. Spenkels[2], A. van den Berg[2], and J.C.T. Eijkel[2]
[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.
Lab 3c - cetoni GmbH

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
DROPLET BASED DIRECTED EVOLUTION OF YEAST CELL FACTORIES DOUBLES PRODUCTION OF INDUSTRIAL ENZYMES
S.L. Sjostrom[1], M. Huang[2], J. Nielsen[1,2,3], H.N. Joensson[1], and H. Andersson Svahn[1]
[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. Ferraro[1], J. Champ[1], B. Teste[1], L. Malaquin[1], S. Descroix[1], P. de Cremoux[2], and J.-L. Viovy[1]
[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, Ann Arbor, 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. Volckens, 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. Auand, 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. Lee[1], J. Park[2], K. Kim[3,4], A. Zettl[3], D.A. Weitz[2], and S. Takeuchi[1]
[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 - miRNA

10:30 - 10:50
TBD

10:50 - 11:10
A MILLISECOND MICRO-RNA EXTRACTION TECHNIQUE FOR NANOPORE-BASED NUCLEIC ACID SEQUENCING
Q. Wu[1], T. Yasui[1], S. Rahong[1], T. Yanagida[2], M. Kanai[2], N. Kaji[1], M. Tokeshi[3], K. Nagashima[2], T. Kawai[2], 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. Pan[1], X.J. Xiao[2], S.G. Hong[1], M.P. Zhao[2], and L.P. Lee[1]
[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 SPEAKER**
LABEL-FREE CYTOMETRY - NOVEL SORTING PARAMETERS AND OPPORTUNITIES
J. Tegenfeldt
Lund University, SWEDEN

13:55 - 14:15
INERTIAL MICROFLUIDICS FOR MULTIPLEXED AFFINITY SEPARATION OF PROTEINS AND CELLS
A. Sarkar[1], H.W. Hou[2], A. Mahan[1], J. Han[2], and G. Alter[1]
[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. Zhao[1], Y.Z. Shi[1], S. Xiong[1], L.K. Chin[1], W.M. Zhu[1], Z.H. Yang[2], H.X. Zhang[2], and A.Q. Liu[1]
[1]Nanyang Technological University, SINGAPORE and [2]Peking University, CHINA

Session 3B2 - Droplets & Emulsions

13:30 - 13:55 **KEYNOTE SPEAKER**
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. Lim[1], O. Caen[1,2], J. Vrignon[1], M. Konrad[1], V. Taly[2], and J.C. Baret[1,3]
[1]Max-Planck Institute, GERMANY, [2]Université Paris Sorbonne Cité, FRANCE, and [3]Université 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 SPEAKER**
NANOBIODEVICES FOR SINGLE DNA AND CELL ANALYSIS
N. Kaji
Nagoya University, 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]
[1]Sandia National Laboratories, USA and [2]Joint 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. Ghaemi[1], P. Rezai[1,2], B. Iyengar[1,3], F. Rafiei Nejad[1], and P.R. Selvaganapathy[1]
[1]McMaster University, CANADA, [2]York University, CANADA, and [3]Qiptera Solutions Inc., CANADA

15:20 - 15:40
HIGH-THROUGHPUT CHEMOTAXIS ASSAY OF PLANT-PARASITIC NEMATODE TOWARD GREEN AGRICULTURE
H. Hida[1], M. Matsumura[1], I. Kannno[1], H. Nishiyama[2], S. Sawa[2], T. Higashiyama[3], and H. Arata[3]
[1]Kobe University, JAPAN, [2]Kumamoto University, JAPAN, and [3]Nagoya 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. Petersson[1], M. Evander[1], P. Ohlsson[1], M. Soikkeli[2], T. Seppä[2], A. Lehmusvuori[2], E. Tuunainen[2], A. Spangar[2], U. Karhunen[2], S. Wittfooth[2], and T. Laurell[1]
[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

19:00 - 23:00 **Conference Banquet at the 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. Shah[1], J. Fritz[1], M. Estes[2], F. Zenhausern[2], and P. Wilmes[1]
[1]University of Luxembourg, LUXEMBOURG and [2]University of Arizona, USA

08:50 - 09:10
MULTI-SPECIES CO-CULTURE PLATFORM FOR PHYSICAL SEGREGATION AND CHEMICAL COMMUNICATION
Z. Ge[1], P.R. Girguis[2], and C.R. Buie[1]
[1]Massachusetts Institute of Technology, USA and [2]Harvard University, USA

09:10 - 09:30
RAPID, SINGLE BACTERIAL DETECTION FROM BLOOD USING MICROENCAPSULATED SENSORS
D.-K. Kang, M.M. Ali, K. Zhang, S. Huang, M.A. Digman, E. Gratton, E.M. Peterson, and W. Zhao
University of California, Irvine, USA

Session 4B1 - Bacterial Bioreactors

08:30 - 08:50
MICROFABCRICATION 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. Han[1], O. Purcell[1], F. Farzadfard[1], K.S. Lee[2], T.K. Lu[1], and R.J. Ram[1]
[1]Massachusetts Institute of Technology, USA and [2]Pharyx Inc., USA

09:10 - 09:30
RAPID DRUG SUSCEPTIBILITY TEST OF MYCOBACTERIA TUBERCULOSIS BY SINGLE CELL TRACKING METHOD IN 3D AGAROSE MATRIX
J. Choi[1], J. Yoo[2], H. Kim[3], S. Ryoo[3], Y.-G. Jung[2], and S. Kwon[1]
[1]Seoul National University, SOUTH KOREA, [2]QuantaMatrix Inc., SOUTH KOREA, and [3]Korean Institute of Tuberculosis, SOUTH KOREA

Session 4C1 - Droplets: Shape

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. Su[1], J.L. Prieto[1], L. Wu[1], H.-W. Hou[1], M.P. Vera[2], D. Amador-Munoz[2], J.L.. Englert[2], B.D. Levy[2], R.M. Baron[2], J. Han[1], and J. Voldman[1]
[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. Wu[1], D.P. Amador-Munoz[3], M.P. Vera[3], B.D. Levy[3], R.M. Baron[3], and J. Han[1]
[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. Onoe[3], M. Yanagisawa[4], K. Fujiwara[3], H. Saito[5], 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
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 CONFINMENT OF NEURITES
T. Honegger[1,2], M. Thielen[1], and J. Voldman[1]
[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 - 18:0)

Cells, Organisms, and Organs on Chip

Bioinspired, Biomimetic & Biohybrid Devices

M.001a
BLOOD CELLS TRANSPORT DRIVEN BY SHEAR MICRO GRADIENTS
F. Tovar[1], M. Nasabi[1], V. Sivan[1], W. Nesbitt[2], and A. Mitchell[1]
[1]RMIT University, AUSTRALIA and [2]Bionics Institute, AUSTRALIA

T.002a
IN VIVO LIKE CIRCUMFERENTIAL ALIGNMENT OF VASCULAR SMOOTH MUSCLE CELLS
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 STRAIN
C.W. Chu[1], Y.L. Wang[1], T.Y. Lin[1], S.Y. Chu[1], and F.G. Tseng[1,2]
[1]National Tsing Hua University, TAIWAN and [2]Academia 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. Kojima[1], M. Horade[2], K. Kamiyama[1], Y. Mae[1], T. Fukuda[2], and T. Arai[1]
[1]Osaka University, JAPAN and [2]Meijo University, JAPAN

T.008a
PREPARATION AND ANALYSIS OF BACTERIA HYBRID CHAMBER CELLS
K.V. Tabata[1,2], R. Watababe[1,2], and H. Noji[1]
[1]University of Tokyo, JAPAN and [2]Japan 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. Vercruysse[1], C. Liu[1], A. Dusa[1], K. de Wijs[1], B. Majeed[1], T. Miyazaki[2], S. Peeters[2], and L. Lagae[1]
[1]IMEC, BELGIUM and [2]JSR Micro nv, BELGIUM

M.010a
A MICROFLUIDIC DEVICE FOR BLOOD SEPARATION AND CELL MORPHOLOGY ANALYSIS USING ACOUSTIC MICROSTREAMING AND HYDRODYNAMIC PRINCIPLES
V. Liu[1], M. Simon[2], M. Patel[2], and A. Lee[2]
[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 ANAYSIS 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
Well Aging Research Center, SAIT, SOUTH KOREA

T.014a
AN INTEGRATED, MULTI-PARAMETRIC MICROFLOW CYTOMETER ENABLED BY STANDING SURFACE ACOUSTIC WAVES (SSAW)
Y. Chen[1], S. Li[1], A.A. Nawaz[1], F. Guo[1], P.-H. Huang[1], L. Wang[2], and T.J. Huang[1]
[1]Pennsylvania State University, USA and [2]Ascent Bio-Nano Technologies Inc. State College, USA

W.015a
AN INTEGRATED MICROFLUIDIC PLATFORM FOR NEGATIVE SELECTION AND ENRICHMENT OF CIRCULATING TUMOR CELLS
W.-Y. Luo[1], K. Hsieh[1], C.-H. Tai[2], and G.-B. Lee[1]
[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. Ducrée
Dublin City University, IRELAND

T.017a
CELLPHONE-BASED MICROSCOPY WITH SAMPLING MICROFLUIDIC CHIP FOR CELL COUNTING
S.-S. Lin[1], C.-M. Lin[2], C.-Y. Chen[2], T.-C. Chiang[2], G.-S. Huang[1], and A.M. Wo[1]
[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. Zhu[1], W. Zhao[1], R. Cheng[1], T. Querec[2], E. Unger[2], and L. Mao[1]
[1]University of Georgia, USA and [2]Centers for Disease Control and Prevention (CDC), 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. Wang[1], P.J. Attayek[1,2], C.E. Sims[1], and N.L. Allbritton[1,2]
[1]University of North Carolina, USA and [2]North 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. Chang[1], T.J. Chen[1], and F.G. Tseng[2]
[1]National Tsing Hua University, TAIWAN and [2]Academia 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. Antfolk[3], M. Kobayashi[1,2], S. Kaneda[1,2], T. Laurell[3,4], and T. Fujii[1,2]
[1]University of Tokyo, JAPAN, [2]Japan Science and Technology Agency, JAPAN, [3]Lund University, SWEDEN, and [4]Dongguk 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. Park[1], K.G. Lee[2], S. Seok[1], B.G. Choi[3], M.-K. Lee[2], T.J. Park[4], S.J. Lee[2], and D.H. Kim[1]
[1]Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA, [2]National NanoFab Center, SOUTH KOREA, [3]Kangwon National University, SOUTH KOREA, and [4]Chung-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. Pereiro[1], J. Kucerova[2], L. Alexandre[1], B. Dupuy[3], Z. Bilkova[2], J.-L. Viovy[1], L. Malaquin[1], and S. Descroix[1]
[1]Institut Curie, FRANCE, [2]University of Pardubice, CZECH REPUBLIC, and [3]Institut 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[12,3], and A.M. Gue[1,3]
[1]Centre National de la Recherche Scientifique (CNRS), FRANCE, [2]PHARMADEV, FRANCE, and [3]University 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, Ann Arbor, 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. Yasukawa[1], Y. Yoshimura[1], M. Tomita[2], and F. Mizutani[1]
[1]University of Hyogo, JAPAN and [2]Mie University, JAPAN

W.032a
SCREENING CHIP FOR AUTOPHAGY OF FIBROBLAST IN TUMOR CELL ENVIRONMENT
J. Kim[1], H.E. Karakaş[2], C. Bathany[1], D. Gözüaçik[2], and Y.-K. Cho[1]
[1]Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA and [2]Sabanci 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. Attayek[1], Y. Wang[1], C.E. Sims[1], and N.L. Allbritton[1,2]
[1]University of North Carolina, USA and [2]North 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. Glynn[1], D. Kirby[1], C. Nwankire[1], D. Kinahan[1], C. Spillane[2], O. Shiels[2], J. O'Leary[2], and J. Ducrée[1]
[1]Dublin City University, IRELAND and [2]Trinity 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
National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

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

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. Loufakis[1], Z. Cao[2], S. Ma[2], D. Mittelman[1,3], and C. Lu[1,2]
[1]Virginia Polytechnic Institute and State University, USA, [2]Virginia Tech-Wake Forest University, USA, and [3]Virginia Bioinformatics Institute, USA

Cell-Culturing & Perfusion (2D & 3D)

T.040a
3-DIMENSIONAL *IN VITRO* NASAL MUCOSA MODELING ON A MICRO-FLUIDIC CHIP
K.H. Na[1], H.-W. Shin[2], and S. Chung[1]
[1]Korea University, SOUTH KOREA and [2]Seoul 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. Patra[1], C.-C. Peng[2], W.-H. Liao[2], C.-H. Lee[2], and Y.-C. Tung[2]
[1]National Yang-Ming University, TAIWAN and [2]Academia Sinica, TAIWAN

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. Mori[1], 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. Kim[1], J.R. Coppeta[1], S.E. Wheeler[3], A.M. Clark[3], A.R. Lever[1], M. Cirit[2], J. Yu[2], A.J. Spencer[1], F.L. Sinatra[1], R. Prantil-Baun[1], A. Wells[3], L.G. Griffith[2], and J.T. Borenstein[1]
[1]Charles Stark Draper Laboratory, USA, [2]Massachusetts Institute of Technology, USA, and [3]University of Pittsburgh, USA

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. Ozasa[1], J. Lee[2], S. Song[2], and M. Maeda[1]
[1]Institute of Physical and Chemical Research (RIKEN), JAPAN and [2]Hanyang University, SOUTH KOREA

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 WIDTH ON HUMAN UMBILICAL VEIN ENDOTHELIAL CELL (HUVEC) CULTURE IN MICROFLUIDIC CHANNELS
M. Grajewski[1], P.P.M.F.A. Mulder[1], G. Molema[2], and E. Verpoorte[1]
[1]University of Groningen, THE NETHERLANDS and [2]University Medical Center Groningen, THE NETHERLANDS

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. Schulz[1], T. Mayr[2], B. Ungerböck[2], C. Jungnickel[1], C. Gärtner[1], and H. Becker[1]
[1]microfluidic ChipShop GmbH, GERMANY and [2]Graz University of Technology, AUSTRIA

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
COMPARISION 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
V.N. Goral[1], S.H. Au[2], R.A. Faris[1], and P.K. Yuen[1]
[1]Corning Incorporated, USA and [2]Harvard Medical School, USA

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
Pennsylvania State University, USA

M.060a
MICROFLUIDIC CELL CULTURE SYSTEM FOR DYNAMIC CELL SIGNALING STUDY
T. Ohkubo[1,2], H. Kinoshita[1,2], T. Maekawa[1], H. Kimura[2,3], S. Kuroda[1,2], and T. Fujii[1,2]
[1]University of Tokyo, JAPAN, [2]Japan Science and Technology Agency (JST), JAPAN, and [3]Tokai University, JAPAN

T.061a
MICROFLUIDIC INTEGRATION WITH A MODULAR CELL-HYDROGEL SHEET FOR *IN VITRO* MULTIPLE SCREENING ASSAY
C.Y. Bae and J.-K. Park
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

W.062a
MICROFLUIDIC PERFUSION CULTURE FOR VASCULAR BIOLOGY
K. Sato, M. Sato, and M. Hirai
Japan Women's University, JAPAN

T.063a
MICROSTRUCTURED MULTI-WELL PLATE FOR THREE-DIMENTIONAL PACKED CELL SEEDING AND CULTURE
V.N. Goral[1], S.H. Au[2], R.A. Faris[1], and P.K. Yuen[1]
[1]Corning Incorporated, USA and [2]Harvard Medical School, USA

M.064a
MICROFLUIDIC PERFUSION CULTURE SYSTEM FOR OF ARTERY-LIKE TUBULAR TISSUES WITH PLCL SCAFFOLDS
Y. Yamagishi[1], T. Masuda[1], M. Ukiki[1], M. Matsusaki[2], M. Akashi[2], U. Yokoyama[3], and F. Arai[1]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and [3]Yokohama City University, JAPAN

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
University of British Columbia, CANADA

M.066a
ON-CHIP CULTURE OF OSTEOCYTES
C. Wei[1], D.Y. Chen[2], Y.C. Wei[1], L.D. You[2], J.B. Wang[1], and J. Chen[1]
[1]Chinese Academy of Sciences, CHINA and [2]University of Toronto, CANADA

T.067a
PINPOINT CHEMICAL STIMULATION CONTROL BY AN INTEGRATED MICROFLUIDIC PROBE FOR CELL-BASED ASSAYS
M. Horayama[1], T. Ohkubo[2], K. Arai[1], K. Kabayama[3], T. Fujii[2], and H. Kimura[1]
[1]Tokai University, JAPAN, [2]University of Tokyo, JAPAN, and [3]Osaka University, JAPAN

W.068a
PUMP-FREE MEMBRANE-CONTROLLED PERFUSION MICROFLUIDIC PLATFORM
V.N. Goral, E. Tran, and P.K. Yuen
Corning Incorporated, USA

M.069a
RECOGNITION AND DISTINCTION OF MCF-7 DOX AND MCF-7 WT CELLS USING IMPEDANCE SPECTROSCOPY
E. Jastrzebska[1], R. Meissner[2], Z. Brzozka[1], and P. Renaud[2]
[1]Warsaw University of Technology, POLAND and [2]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

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
T.N. Corso[1], C.K. Van Pelt[1], S. Rabbany[2], J.P. Morgan[3], and A.D. Stroock[3]
[1]CorSolutions, USA, [2]Hofstra University, USA, and [3]Cornell University, USA

M. 072a
SOLID TUMOR SPHEROID FORMATION BY TEMPERATURE-CONTROLLED HIGH VOLTAGE ULTRASOUND IN A MULTI-WELL MICRODEVICE
A.E. Christakou, M. Ohlin, B. Önfelt, and M. Wiklund
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. Lui, and Z.H. Fan
University of Florida, USA

W.074a
CLINICAL SIGNIFICANCE OF VIABLE-ENRICHED CIRCULATING TUMOR CELLS WITH A FLEXIBLE MICRO SPRING ARRAY
R. Harouaka[1], X. Liu[2], W. Khan[1], T. Khan[1], S. Rice[2], C. Belani[2], and S.-Y. Zheng[1,2]
[1]Pennsylvania State University, USA and [2]Penn State Hershey Cancer Institute, USA

M.075a
EFFECTS OF HEMODYNAMIC SHEAR STRESS ON CIRCULATING TUMOR CELLS
X. Liu, A. Fu, Y.H. How, and K.Q. Luo
Nanyang Technological University, SINGAPORE

T.076a
ENSEMBLE OF APTAMERS AND ANTIBODIES FOR MULTIVALENT CAPTURE OF CANCER CELLS
J. Zhang, W. Sheng, and Z.H. Fan
University of Florida, USA

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
Institut Curie, FRANCE

M.078a
HEMI-FUNCTIONALIZED SILICON FILTERS FOR SIMULTANEOUS CAPTURING AND TYPING OF CIRCULATING TUMOR CELLS
J.A. Hernández-Castro, A. Sanati Nezhad, K. Turner, and D. Juncker
McGill University, CANADA

T.079a
IMPROVED ACOUSTOPHORETIC CIRCULATING TUMOR CELL (CTC) SEPARATION FOR LOW TARGET CELL NUMBERS IN CLINICAL VOLUMES
A. Lenshof[1], C. Magnusson[1], P. Augustsson[1], B. Haflidadottir[1], H. Lilja[1,2,3,4], and T. Laurell[1,5]
[1]Lund University, SWEDEN, [2]Memorial Sloan-Kettering Cancer Center, USA, [3]University of Oxford, UK, [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. Thege[1], T.B. Lannin[1], T. Saha[2], K.K. Das[3], A.D. Rhim[2], and B.J. Kirby[1,4]
[1]Cornell University, USA, [2]University of Michigan School of Medicine, USA, [3]University of Pennsylvania, USA, and [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
Tokyo University of Science, JAPAN

T.082a
PATTERNED ARRAY OF MICROMAGNETS FOR CIRCULATING TUMOR CELLS DETECTION AND MOLECULAR ANALYSES
P. Chen[1], Y.Y. Huang[2], K. Hoshino[3], and X.J. Zhang[2]
[1]University of Texas, Austin, USA, [2]University of Connecticut, USA, and [3]Dartmouth College, USA

W.083a
RAPID SINGLE CELL ISOLATION AND ASPIRATION PLATFORM USING AIR-LIQUID INTERFACE
S. Woneui[1], T. Masuda[1], H. Nakanishi[2], and F. Arai[1]
[1]Nagoya University, JAPAN and [2]Aichi Cancer Center Research Institute, JAPAN

M.084a
SEPARATION OF CIRCULATING TUMOR CELLS FROM CASTRATE RESISTANT PROSTATE CANCER PATIENTS USING RESETTABLE CELL TRAPS
X. Qin[1], S. Park[1], S.P. Duffy[1], H. Abdi[2], K.N. Chi[3], P.C. Black[2], and H. Ma[1]
[1]University of British Columbia, CANADA, [2]Vancouver Prostate Centre, CANADA, and [3]BC Cancer Agency, CANADA

T.085a
SIZE-SELECTIVE CIRCULATING TUMOR CELL ISOLATION ON A DISC
A. Lee[1], J. Park[1], V. Sunkara[1], S. Y. Kim[2], and Y.-K. Cho[1]
[1]Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA and
[2]Pusan National University Hospital, SOUTH KOREA

W.086a
SURFACE ENHANCED RAMAN SPECTROSCOPY AND MICROFLUIDICS FOR RARE CANCER CELL IDENTIFICATION
M.R. Hoonejani[1], A. Pallaoro[1], G.B. Braun[2], M. Moskovits[1], and C.D. Meinhart[1]
[1]University of California, Santa Barbara, USA and [2]Sanford-Burnham Medical Research Institute, USA

M.087a
ULTRA-HIGH THROUGHPUT ISOLATION OF CIRCULATING TUMOR CELLS WITH MICROFLUIDIC VORTEX TECHNOLOGY
J. Che[1], M. Dhar[1], V. Yu[1], D.E. Go[1], E. Pao[1], M. Matsumoto[1], E.B. Garon[2], J.W. Goldman[2], R.P. Kulkarni[2], E. Sollier[3], and D. Di Carlo[1]
[1]University of California, Los Angeles, USA, [2]UCLA Medical Center, USA, and [3]Vortex Biosciences, USA

Integrative Biology, Systems Biology

T.088a
MICROFLUIDIC DEVICE FOR LONG-TERM FTIR SPECTROMICROSCOPY OF LIVE ADHERENT CELLS
K. Loutherback, L. Chen, and H.-Y. Holman
Lawrence Berkeley National Laboratory, USA

W.089a
QUANTITATIVE ANALYSIS OF CELL SIGNALING DYNAMICS USING MICROFLUIDICS
S.S. Lee[1], H. Sharifian[1], H.R. Ryu[2], J.W. Park[2], N.L. Jeon[2], and M. Peter[1]
[1]ETH Zürich, SWITZERLAND and [2]Seoul National University, SOUTH KOREA

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
University of California, Los Angeles, USA

M.093a
ENHANCING CELL MOTILITY USING GRATING MICROTOPOGRAPHIES
K. Kushiro and M. Takai
University of Tokyo, JAPAN

T.094
HIGH THROUGHPUT MIGRATION ASSAY OF MICROENVIRONMENTAL FACTORS OF METASTASIS
M.-E. Brett and D.K. Wood
University of Minnesota, USA

W.095a
IMMUNE CELL MIGRATION IN REAL TIME ON A CHIP
N. Gopalakrishnan, R. Hannam, and Ø. Halaas
Norwegian University of Science and Technology, NORWAY

M.096
LOCALIZED EXPRESSION OF HEAT SHOCK PROTEIN IN CELL POPULATION BY MICRO HEATER DEVICE
R. Ueno[1], F. Yesilköy[2], J. Brugger[2], A. Taniguchi[3], Y. Sakai[1], and B.J. Kim[1]
[1]University of Tokyo, JAPAN, [2] École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, and [3]National Institute for Materials Science (NIMS), JAPAN

T.097a
MEASURING MEMBRANE CHANNEL DYNAMICS IN MICROFLUIDICS: A FUTURE ALTERNATIVE TO PATCH CLAMPING?
F. Kurth[1], A. Franco-Obregón[2], M. Casarosa[1], S.K. Küster[1], K. Wuertz-Kozak[1], and P.S. Dittrich[1]
[1]ETH Zürich, SWITZERLAND and [2]National University of Singapore, SINGAPORE

W.098a
OXYGEN LANDSCAPE MICROFLUIDIC PLATFORM DEMONSTRATES CROSSTALK BETWEEN NORMOXIC AND HYPOXIC ENDOTHELIAL CELLS
M.L. Rexius, D.T. Eddington, and J. Rehman
University of Illinois, Chicago, USA

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, Ann Arbor, USA

T.100a
ORGANIZED CELL ENCAPSULATING BEAD ARRAY (OCEBA) FOR REAL-TIME MULTIPLEX DETECTION OF SECRETED MOLECULES
O.I. Berthuy[1], S. Muldur[2], P. Colpo[2], F. Rossi[2], L.J. Blum[1], and C.A. Marquette[1]
[1]University of Lyon, FRANCE and [2]European Commission, Joint Research Centre, ITALY

W.101a
PARALLELIZED LENSFREE CELL MIGRATION SCREENING
I. Ghorbel[1,2,3], F. Kermarrec[1,2,3], B. Sartor[1], X. Gidrol[1,2,3], and V. Haguet[1,2,3]
[1]CEA iRTSV, FRANCE, [2]INSERM, FRANCE, and [3]University Grenoble-Alpes, FRANCE

M.102a
SEPARATION OF CHEMOTACTIC BACTERIA ON SLIPCHIP
C. Shen[1,2] and W. Du[2]
[1]Renmin University of China, CHINA and [2]Chinese Academy of Sciences, CHINA

T.103a
SINGLE CELL ANALYSIS OF YEAST AGING USING MICROFLUIDIC DISSECTION
S.S. Lee[1], R. Dechant[1], I. Avalos Vizcarra[1], D.E.W. Huberts[2], L.P. Lee[3], M. Heinemann[2], and M. Peter[1]
[1]ETH Zürich, SWITZERLAND, [2]University of Groningen, THE NETHERLANDS, and [3]University of California, Berkeley, USA

Liposomes/ Vesicles

W.104a
ACOUSTIC ENRICHMENT OF MICROVESICLES IN PLASMA
M. Evander, O. Gidlöf, D. Erlinge, and T. Laurell
Lund University, SWEDEN

M.105a
BIOMIMETIC TEMPLATE-GUIDED FABRICATION OF TUBULAR LIPID MEMBRANES FOR ARTIFICIAL PRIMARY CILIA
M.C. Park[1], P. Sukumar[1], J.Y. Kang[1], S.K. Kim[1], A. Manz[2], and T.S. Kim[1]
[1]*Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and*
[2]*Korea Advanced Institute of Science and Technology (KAIST) - Europe, GERMANY*

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
University of Queensland, AUSTRALIA

W.107a
MICROFLUIDIC GENERATION OF NETWORKED DROPLET COLLECTIONS AND LIPID MEMBRANE CONSTRUCTS
Y. Elani, R.V. Law, and O. Ces
Imperial College London, UK

M.108a
EXOSOMAL MICRO-RNA ANALYSIS IN URINE OR SERUM USING NANOWIRE STRUCTURES
T. Yasui[1], S. Ito[1], T. Yanagida[2], Y. He[2], S. Rahong[1], M. Kanai[2], K. Nagashima[2], H. Yukawa[1], N. Kaji[1], T. Kawai[2], and Y. Baba[1,5]
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[3]*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

T.109a
EXOSOME-MIMETIC NANOVESICLE GENERATION SYSTEM
W. Jo, J. Yoon, J. Kim, D. Jeong, and J. Park
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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
University of Maryland, College Park, USA

M.111a
HIGHLY ORGANIZED ASSEMBLIES OF ARTIFICIAL VESICLES AS MODELS FOR NATURAL CELL AGGREGATES AND TISSUES
M. Hadorn and P.S. Dittrich
ETH Zürich, SWITZERLAND

T.112a
MICROFLUIDIC HYDRATION OF DRY LIPID PATTERNS FOR DEVELOPMENT OF EPITHELIAL CELL MODEL
H. Hamano[1], T. Tonooka[1], T. Osaki[2], and S. Takeuchi[1]
[1]*University of Tokyo, JAPAN and* [2]*Kanagawa Academy of Science and Technology, JAPAN*

W.113a
MICROFLUIDIC SYSTEM FOR HIGHLY SPECIFIC ISOLATION OF CIRCULATING EXTRACELLULAR VESICLES
K. Puttachat, T.S. Sim, S.Y. Chear, L.R. Chai, L.S. Kiang, and Z. Wang
*Agency for Science, Technology and Research (A*STAR), SINGAPORE*

M.114a
MULTIPLEXED MICROFLUIDIC PLATFORM FOR ELECTROPHYSIOLOGICAL MEASUREMENTS ON ION CHANNELS IN A FUNCTIONAL ENVIRONMENT
A.V. Prokofyev, V.C. Stimberg, J.G. Bomer, H. de Boer, A. van den Berg, and S. Le Gac
MESA+, University of Twente, THE NETHERLANDS

T.115a
ROBUSTNESS OF SUSPENDED BILAYER LIPID MEMBRANE FOR PORTABLE SENSOR APPLICATIONS
L.N.S. Zaleha[1,2], T. Osaki[1], R. Kawano[1], K. Kamiya[1], N. Miki[2], and S. Takeuchi[1,3]
[1]Kanagawa Academy of Science and Technology, JAPAN, [2]Keio University, JAPAN, and [3]University of Tokyo, JAPAN

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
L.C. Gerber[1], M. Slabodnick[2], W.F. Marshall[2], and S.K.Y. Tang[1]
[1]Stanford University, USA and [2]University of California, San Francisco, USA

T.118a
AN AUTOMATED MICROFLUIDIC PLATFORM FOR LONG-TERM HIGH-RESOLUTION IMAGING OF *C. ELEGANS*
M. Cornaglia, G. Krishnamani, L. Mouchiroud, M. Meurville, T. Lehnert, J. Auwerx, and M.A.M. Gijs
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

W.119a
AN AUTOMATED MULTIWELL-FORMAT MICROFLUIDIC MULTIPLEXER FOR FAST POPULATION DELIVERY OF C. ELEGANS WORMS
N. Ghorashian, S.K. Gökçe, S.X. Guo, W.N. Everett, and A. Ben-Yakar
University of Texas, Austin, USA

M.120a
DROPLET CHIP: A SCALABLE BIOPROCESSOR FOR LONG-TERM STUDY OF POST-EMBRYONIC DEVELOPMENT IN *Caenorhabditis elegans*
H. Wen, Y. Yu, G. Zhu, L. Jiang, and J. Qin
Chinese Academy of Sciences, CHINA

W.121a
OPTOGENETIC MANIPULATION OF FREELY MOVING *C. ELEGANS* IN AN ELASTOMERIC ENVIRONMENT-MIMICKING AND FORCE-MEASURING CHIP
Z. Qiu[1], L. Tu[1], X. Xue[1], T. Zhu[1], V. Nock[2], Y. Li[1], X. Liu[1], and W. Wang[1]
[1]Tsinghua University, CHINA and [2]University of Canterbury, NEW ZEALAND

M.122a
MAGNETIC MANIPULATION OF BACTERIA IN MICROFLUIDICS
M.P. Pichel[1], T.A.G. Hageman[1], M.O. Altmeyer[2], L. Abelmann[1], and A. Manz[1]
[1]Korea Institute of Science and Technology (KIST) - Europe, GERMANY and [2]University of Twente, THE NETHERLANDS

T.123a
TEMPORALLY PROGRAMMABLE CELL CULTURE ENVIRONMENT USING A MEMBRANE INTEGRATED MICROBIOREACTOR
J. Lee, D. Ha, M. Kim, and T. Kim
Ulasn National Institute of Science and Technology (UNIST), SOUTH KOREA

W.124a
TOWARDS MULTI-ANGLE MICROSCOPY: FEP-PDMS HYBRID DEVICE FOR ENHANCED FLUORESCENCE IMAGING
T.J. Levario[1], P. Insley[2], H. Hwang[1], S. Shaham[2], and H. Lu[1]
[1]Georgia Institute of Technology, USA and [2]Rockefeller University, USA

Organs on Chip

M.125a
A HIGHLY EFFICIENT BUBBLE TRAP FOR CONTINUOUS REMOVAL OF GAS BUBBLES FROM MICROFLUIDIC DEVICES
Y.S. Zhang[1,2], S. Chae[1,2], A. Polini[1,2], M.R. Dokmeci[1,2], and A. Khademhosseini[1,2,3]
[1]Brigham and Women's Hospital, Harvard Medical School, USA, [2]Harvard-MIT Division of Health Sciences and Technology, USA, and [3]Wyss Institute for Biologically Inspired Engineering, Harvard University, USA

T.126a
A HUMAN BLINKING 'EYE-ON-A-CHIP'
J. Seo and D. Huh
University of Pennsylvania, USA

W.127a
A MICROFLUIDIC ARRAY OF CYCLICALLY STRETCHABLE LUNG AIR-BLOOD BARRIERS
J.D. Stucki[1], A.O. Stucki[1], M. Felder[1], Y. Mermoud[1], T. Geiser[2], and O.T. Guenat[1]
[1]University of Bern, SWITZERLAND and [2]University Hospital of Bern, SWITZERLAND

M.128a
ADVANCES IN MIMICKING AND ANALYZING THE HEPATIC SINUSOID BY USING A NOVEL MODULAR BIOREACTOR
X. Illa[1], S. Vila[2,3], J. Yeste[1], C. Peralta[2,3], J. Gracia-Sancho[2,3], and R. Villa[1]
[1]Consejo Superior de Investigaciones Científicas (CSIC), SPAIN, [2]Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), SPAIN, and [3]Centro de Investigación Biomédica en Red en el Área temática de Enfermedades Hepáticas y Digestivas (CIBEREHD), SPAIN

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
Tohoku University, JAPAN

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
University of California, Irvine, USA

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
J.Y. Kim[1], D. Fluri[2], J. Kelm[2], A. Hierlemann[1], and O. Frey[1]
[1]ETH Zürich, SWITZERLAND and [2]InSphero, SWITZERLAND

M.134a
MICROSTRAINER ARRAY FOR THE CAPTURE AND CULTURE OF COLONIC STEM-CELLS
A.A. Ahmad[1,2], Y. Wang[1,2], C.E. Sims[1,2], and N.L. Allbritton[1,2]
[1]University of North Carolina, USA and [2]North Carolina State University, USA

T.135a
PRO-ADHESIVE EXTRACELLULAR MATRIX MIMIC FOR USE IN ORGAN-ON-A-CHIP
A.M. Nicolini and J.-Y. Yoon
University of Arizona, USA

W.136a
RAT AND HUMAN DORSAL ROOT GANGLION ELECTRICAL AND OPTICAL SIGNALING USING THE *IN VITRO* CHIP-BASED HUMAN INVESTIGATIONAL PLATFORM (ICHIP)
E.V. Mukerjee[1], H.A. Enright[1], M.W. Mcnerney[1], F. Qian[1], S. Felix[1], A. Chang[1], N. Fischer[1], J. Osburn[1], S. Baker[1], E.K. Wheeler[1], K. Kulp[1], A. Ghetti[2], P. Miller[2], and S. Pannu[1]
[1]Lawrence Livermore National Laboratory, USA and [2]AnaBios Corporation, USA

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
L.G. Rigat-Brugarolas[1,2], A. Elizalde[3], H.A. del Portillo[3,4], A. Homs-Corbera[1,2], and J. Samitier[1,2,5]
[1]Institute for Bioengineering of Catalonia (IBEC), SPAIN, [2]Centro de Investigación Biomédica en Red de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), SPAIN, [3]Barcelona Centre for International Health Research (CRESIB, Hospital Clínic - UB), SPAIN, [4]Institució Catalana de Recerca i Estudis Avançats (ICREA), SPAIN and [5]Barcelona University, SPAIN

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
S. Han[1], H.J. Bae[1], S. Kim[1], W. Park[2], and S. Kwon[1]
[1]Seoul National University, SOUTH KOREA and [2]Kyung Hee University, SOUTH KOREA

W.142a
DIFFUSION OF NUTRITION IN THE MACROSCOPIC TISSUES
K. Hirayama[1], H. Onoe[1,2], and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

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
E. Kondo[1,2], K. Wada[1], K. Hosokawa[1], and M. Maeda[1,2]
[1]Institute of Physical and Chemical Research (RIKEN), JAPAN and [2]University of Tokyo, JAPAN

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]
[1]Centre National de la Recherche Scientifique (CNRS), FRANCE, [2]University de Toulouse, FRANCE, [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. Tsai[1], S. Sakuma[2], F. Arai[2], and M. Kaneko[1]
[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
H. Sun[1,2], T. Olsen[1], J. Zhu[1], B. Ponnaiya[1], S. Amundson[1], D. Brenner[1], J. Tao[2], and Q. Lin[1]
[1]Columbia University, USA and [2]Harbin Institute of Technology, CHINA

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
[1]University of Michigan, Ann Arbor, USA

W.151a
AUTOMATED HIGH-THROUGHPUT AND HIGH-RESOLUTION CELL DEFORMABILITY MAPPING SYSTEM
S. Sakuma[1], F. Arai[1], and M. Kaneko[2]
[1]Nagoya University, JAPAN and [2]Osaka University, JAPAN

M.152a
BEAD-BASED MICROFLUIDIC RT-QPCR ANALYSIS OF SINGLE CANCER CELLS
H. Sun[1,2], T. Olsen[1], J. Zhu[1], B. Ponnaiya[1], S. Amundson[1], D. Brenner[1], J. Tao[2], and Q. Lin[1]
[1]Columbia University, USA and [2]Harbin Institute of Technology, CHINA

T.153a
CYTOPLAMIC TRANSFER WITHOUT NUCLEI MIXING BETWEEN DENDRITIC CELLS AND TUMOR CELLS ACHIEVED BY ONE-TO-ONE ELECTROFUSION VIA MICRO-ORIFICES IN A MICROFLUIDIC DEVICE
Y. Itagaki[1], K.O. Okeyo[1], O. Kurosawa[1], H. Oana[1], M. Narita[2], H. Kotera[3], and M. Washizu[1]
[1]University of Tokyo, JAPAN, [2]Niigata University, JAPAN, and [3]Kyoto University, JAPAN

W.154a
DETECTION OF COUNTABLE NUMBER OF MOLECULES BY ENZYME-LINKED IMMUNOSORBENT ASSAY IN EXTENDED NANOCHANNELS
K. Shirai, R. Ohta, K. Mawatari, H. Shimizu, and T. Kitamori
University of Tokyo, JAPAN

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. Miki[3], and S. Takeuchi[1,2]
[1]Kanagawa Academy of Science and Technology, JAPAN, [2]University of Tokyo, JAPAN, [3]Keio University, JAPAN, and [4]Japan Science and Technology Agency (JST), JAPAN

T.156a
SEQUENTIAL PRECONCENTRATION BY NANOFLUIDIC ELECTROSTATIC SIEVING FOR HIGH SENSITIVE ANALYSIS OF NEUROTRANSMITTERS RELEASED BY SINGLE CELLS
R.-G. Wu[1], Y.-T. Chen[1], P.-J. Wang[1], C.-S. Yang[2], and F.-G. Tseng[3]
[1]National Tsing Hua University, TAIWAN, [2]National Health Research Institutes, TAIWAN, and [3]Academia 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
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

M.158a
SINGLE CELL HIGH-THROUGHPUT LIVE IMAGING AND QUANTITATIVE MULTI-GENE TRANSCRIPTION ANALYSIS
L. Chingozha, C. Zhu, and H. Lu
Georgia Institute of Technology, USA

T.159a
HIGH-THROUGHPUT SINGLE-CELL SECRETION MESUREMENT ON AN OPTICAL WAVEGUDE CHIP
Y. Shirasaki[1], N. Suzuki[1], M. Yamagishi[1], A. Nakahara[2], S. Shoji[2], and O. Ohara[1]
[1]Institute of Physical and Chemical Research (RIKEN), JAPAN and [2]Waseda University, JAPAN

W.160a
MEASURING BACTERIAL ADAPTATION DYNAMICS AT SINGLE-CELL LEVEL USING A MICROFLUIDIC CHEMOSTAT AND TIME-LAPSE FLUORESCENCE MICROSCOPY
Z. Long[1], A. Olliver[2], E. Brambilla[2], B. Sclavi[2], M. Cosentino Lagomarsino[3], and K.D. Dorfman[1]
[1]University of Minnesota, USA, [2]École Normale Supérieure (ENS), FRANCE, and [3]University Pierre and Marie CURIE, 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 NANOCHANNEL 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
Indiana University, USA

W.163a
MICROFLUIDIC PAIRWISE INTERACTION ANALYSIS OF GLIOMA CANCER CELLS AND MODELING
J. Wang and J. Heath
State University of New York, Albany, USA

M.164a
MICROFLUIDIC PLATFORM FOR SINGLE CELL PROTEASE ACTIVITY MEASUREMENT
L. Wu[1] and J. Han[2]
[1]Massachusetts Institute of Technology, USA and [2]California Institute of Technology, USA

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
Forschungszentrum Jülich GmbH, GERMANY

W.166a
MICROFLUIDIC WESTERN BLOTTING OF RARE BREAST CANCER CELLS
E. Sinkala[1], E. Sollier[2], S.S. Jeffrey[3], and A.E. Herr[1]
[1]University of California, Berkeley, USA, [2]Vortex Biosciences, USA, and [3]Stanford 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. Mohhamad, 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. Feghhi[1], A.D. Munday[2], W.W. Tooley[1], S. Rajsekar[1], J.A. Lopez[1,2], and N.J. Sniadecki[1]
[1]University of Washington, USA and [2]Puget Sound Blood Center, USA

W.169
NEURAL CIRCUIT ASSEMBLY USING MORPHOLOGICALLY CONTROLLED SINGLE NEURAL CELLS
S. Yoshida and S. Takeuchi
University of Tokyo, JAPAN

M.170a
ON-CHIP CELL MOTILITY ANALYSIS USING LENSFREE HOLOGRAHIC MICROSCOPY
I. Pushkarsky, Y. Lui, W. Weaver, T. Su, O. Mudanyali, A. Ozcan, and D. Di Carlo
[1]University of California, Los Angeles, USA

T.171a
ON-CHIP LONG-TERM CULTIVATION AND PROTEOMIC ANALYSIS OF SINGLE YEAST CELLS
S. Stratz, K. Hasler, P.E. Verboket, and P.S. Dittrich
Swiss Federal Institute of Technology Zurich, SWITZERLAND

W.172a
OPTOELECTRONIC TWEEZERS FOR LONG-TERM SINGLE CELL CULTURE
S.N. Pei, T. Dai, A. Fan, M.C. Wu, and S. Li
University of California, Berkeley, USA

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
Dublin City University, IRELAND

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

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
Dublin City University, IRELAND

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
University of Georgia, USA

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
Arizona State University, USA

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
Seoul National University, SOUTH KOREA

M.179a
TUMOR CELL CLASSIFICATION BASED ON INSTANTANEOUS YOUNG'S MODULUS USING CONSTRICTION CHANNEL BASED MICROFLUIDIC DEVICES
Y. Luo[1], D. Chen[1], Y. Zhao[1], C. Wei[1], X. Zhao[2], W. Yue[2], R. Long[3], J. Wang[1], and J. Chen[1]
[1]Chinese Academy of Sciences, CHINA, [2]Capital Medical University, CHINA, and [3]University of Alberta, CANADA

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
ETH Zürich, SWITZERLAND

Stem Cells

W.181a
A MICROFLUIDICS PLATFORM FOR HUMAN TAU MUTATION NEURONS
E. Torrance[1], G. Robertson[1], S. Wray[2], J. Hardy[2], T. Bushell[1], and M. Zagnoni[1]
[1]University of Strathclyde, UK and [2]University College London, UK

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. Yamamoto[1], R. Yamada[1], K. Hattori[2], S. Tachikawa[1], M. Tagaya[1], T. Sasaki[1], D. Miyamoto[3], K. Nakazawa[3], S. Sugiura[2], T. Kanamori[2], and K. Ohnuma[1]
[1]Nagaoka University of Technology, JAPAN, [2]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, and [3]University of Kitakyushu, JAPAN

T.183a
SINGLE CELL TRAPPING, MONITORING AND RETRIEVING OF FUNCTIONAL NASAL EPITHELIAL CELLS FOR TOXICOLOGICAL/PHARMACOLOGICAL STUDIES
W. Wang[1], Y. Yan[2], H.M. Xia[1], C.W. Li[2], Y.Y. Li[2], D.Y. Wang[2], and Z.P. Wang[1]
[1]Singapore Institute of Manufacturing Technology, SINGAPORE and [2]National University of Singapore, SINGAPORE

W.184a
STABLE AND LONG TERM CULTURE OF STEM CELLS UNDER SHEAR FLOW ON A MICROSTRUCTURED MESH SHEET EMBEDDED IN A FLUIDIC CHAMBER
K.O. Okeyo[1], T. Isozaki[1], O. Kurosawa[1], H. Oana[1], H. Kotera[2], and M. Washizu[1]
[1]University of Tokyo, JAPAN and [2]Kyoto University, JAPAN

M.185a
FEEDER-FREE 3D CULTURE SYSTEM TO EXPAND MOUSE INDUCED PLURIPOTENT STEM CELLS IN HYDROGEL CORE-SHELL MICROFIBER
K. Ikeda[1,2], T. Okitsu[1,2], H. Onoe[1,2], A.Y. Hsiao[1,2], and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

Synthetic Biology

T.186a
INTEGRATION OF CELL-FREE PROTEIN-SYNTHESIS SYSTEM ON A GLASS MICROCHIP USING CONTINUOUS FLOW
Y. Tanaka and Y. Shimizu
[1]Institute of Physical and Chemical Research (RIKEN), JAPAN

W.187a
RAPID OPTIMIZATION OF BACTERIAL ELECTROPORATION CONDITIONS
P.A. Garcia, Z. Ge, J.L. Moran, and C.R. Buie
Massachusetts Institute of Technology, USA

M.188a
SINGLE-CHANNEL CURRENT MEASUREMENT OF A CONNEXIN HEMICHANNEL EXPRESSED USING AN *IN VITRO* PROTEIN SYNTHESIS SYSTEM
K. Kamiya[1,2], T. Osaki[1,3], R. Kawano[1], M. Akiyama[4], K. Akiyoshi[2,4], and S. Takeuchi[1,3]
[1]Kanagawa Academy of Science and Technology, JAPAN, [2]Japan Science and Technology Agency (JST), JAPAN, [3]University of Tokyo, JAPAN, and [4]Kyoto University, JAPAN

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
University of Toronto, CANADA

W.190b
DEVELOPMENT OF A DROPLET MICROFLUIDIC ASSAY FOR RADIOTHERAPY TREATMENT OF MULTICELLULAR SPHEROIDS
K. McMillan, M. Boyd, and M. Zagnoni
University of Strathclyde, UK

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. Greenamn
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. Jackson[1], S.V. Nair[2], M.A. Witek[1], M.L. Hupert[1], S.A. Hunsucker[1], Y. Fedoriw[1], P.M. Armistead[1], and S.A. Soper[1,3]
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[3]Ulsan National Institute of Science and Technology, SOUTH KOREA

Clinical Chemistry

W.193b
A POLYMER LAB-ON-A-CHIP WITH MULTIPLE SAMPLE LOADING METHOD FOR HIGH SENSITIVE IMMUNOASSAYS
A. Chakraborty[1], W. Jung[1], J. Han[2], and C.H. Ahn[1]
[1]University of Cincinnati, USA and [2]Siloam Biosciences, USA

M.194b
DEVELOPMENT OF IMMUNO-WALL DEVICES AND A MOBILE FLUORESCENCE READER FOR ON-SITE SAMPLE-TO-ANSWER IMMUNOASSAY
T. Kasama[1,2], Y. Hasegawa[2,3], H. Kondo[2,3], T. Ozawa[2,3], N. Kaji[1,2], M. Tokeshi[2,4], and Y. Baba[1,2,5]
[1]Nagoya University, JAPAN, [2]The knowledge hub of AICHI, JAPAN, [3]Hamamatsu Photonics K.K., JAPAN, [4]Hokkaido University, JAPAN, and [5]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

T.195b
DISEASE DETECTION BY ULTRASENSITIVE QUANTIFICATION OF MICRODOSED SYNTHETIC URINARY BIOMARKERS
A.D. Warren[1], S.T. Gaylord[2], K.C. Ngan[2], M. Dumont Milutinovic[2], G.A. Kwong[1], S.N. Bhatia[1], and D.R. Walt[2]
[1]Massachusetts Institute of Technology, USA and [2]Tufts University, USA

W.196b
FAST AND SIMULTANEOUS ANALYSIS OF PHENYLALANINE AND TYROSINE IN PLASMA USING PILLAR ARRAY COLUMNS WITH A GRADIENT ELUTION SYSTEM
M. Isokawa[1], Y. Song[1], K. Takatsuki[2], T. Sekiguchi[2], J. Mizuno[2], T. Funatsu[1], S. Shoji[2], and M. Tsunoda[1]
[1]University of Tokyo, JAPAN and [2]Waseda University, JAPAN

M.197b
MULTIPLEXED IMMUNOASSAYS EMPLOYING MICROFLUIDIC DIGITAL MICROWELL ARRAYS
T.H. Linz, W.H. Henley, and J.M. Ramsey
University of North Carolina, USA

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
S. Kwon[1], C.H. Cho[1], E.S. Lee[2], and J.-K. Park[1]
[1]Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and [2]National Cancer Center, SOUTH KOREA

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
Osaka Prefecture University, JAPAN

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. Sakurai[1], R. Iizuka[1], R. Sekine[2], Y. Nakamura[3], D.H. Yoon[2], T. Sekiguchi[2], J. Ishii[3], A. Kondo[3], S. Shoji[2], and T. Funatsu[1]
[1]University of Tokyo, JAPAN, [2]Waseda University, JAPAN, and [3]Kobe University, JAPAN

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 FOCUSSING DEVICES
E.E. Ekanem and G.T. Vladisavljevic
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. Wu[1], C. Li[2], N. Bhattacharjee[2], J. Hartings[1], and C. Ahn[1]
[1]University of Cincinnati, USA and [2]Feinstein Institute of Medical Research, USA

M.209b
EFFECTS OF SUB-10μm ELECTRODE SIZES ON EXTRACELLULAR RECORDING OF NEURONAL CELLS
V. Viswam[1], D. Jäckel[1], I. Jones[1], M. Ballini[1], J. Muller[1], A. Stettler[1], U. Frey[2], F. Franke[1], and A. Hierlemann[1]
[1]ETH Zürich, SWITZERLAND and [2]Institute of Physical and Chemical Research (RIKEN), JAPAN

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. Müller[1], M. Ballini[1], P. Livi[1], Y. Chen[1], D.J. Bakkum[1], M. Radivojevic[1], U. Frey[2], A. Stettler[1], and A. Hierlemann[1]
[1]ETH Zürich, SWITZERLAND and [2]Institute of Physical and Chemical Research (RIKEN), JAPAN

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
M. Kato-Negishi[1,2], H. Onoe[1,2], A. Sato[1,2], and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [1]Japan Science and Technology Agency (JST), JAPAN

W.214b
ROBUST OIL-WATER INTERFACE FORMATION WITH MICRO-PILLAR STRUCTURE FOR STABLE MAGNETIC DROPLET IMMUNOASSAY OF OLIGOMERIC AMYLOID ß
J.A. Kim, M. Kim, and J.Y. Kang
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

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. Wiederkehr[1], B. Jones[1], B. Majeed[1], F. Colle[1], W.-C. Chen[2], T. Stakenborg[1], P. Fiorini[1], L. Lagae[1], K. Schmidt[3], and L. Stuyver[3]
[1]IMEC, BELGIUM, [2]Johns Hopkins University, USA, and [3]Janssen Diagnostics, BELGIUM

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. Cai[1], R.S. Wiederkehr[1], B. Jones[1], B. Majeed[1], F. Colle[1], L. Zhang[1], T. Stakenborg[1], P. Fiorini[1], L. Lagae[1], M. Tsukuda[2], T. Matsuno[2], and I. Yamashita[2]
[1]IMEC, BELGIUM and [2]Panasonic, JAPAN

T.222b
DNA SEQUENCING IN DROPLETS
A.V. Almeida, P. Neuzil, and A. Manz
Korea Institute of Science and Technology (KIST) - Europe, GERMANY

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
S. Zelenin[1], M. Käller[2], A. Nazarov[3], H. Brismar[1], and A. Russom[1]
[1]KTH Royal Institute of Technology, SWEDEN, [2]Science for Life Laboratory, SWEDEN, and [3]French Corrosion Institute, FRANCE

W.226b
KS-DETECT: A SOLAR-POWERED SMARTPHONE-BASED SYSTEM FOR DIAGNOSING KAPOSI'S SARCOMA IN RESOURCE-LIMITED SETTINGS
A.L. Gardner[1], L. Jiang[1], Z. Lu[1], G. Akar[2], E. Cesarman[2], and D. Erickson[1]
[1]Cornell University, USA and [2]Weill Cornell Medical College, USA

M.227b
MICROCHIP-BASED IN-SITU PADLOCK/ROLLING CIRCLE AMPLIFICATION (MICRO-RCA) SYSTEM FOR SINGLE DNA COUNTING IN A CELL
K. Sato[1], A. Kuroda[1], Y. Ishigaki[1], and M. Nilsson[2]
[1]Japan Women's University, JAPAN and [2]Stockholm 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. Grojsman[2], L. Bellahsene[2], M. Leberre[3], G. Velve-Casquillas[2], A. Plecis[2], and Y. Chen[1]
[1]École Normale Supérieure (ENS), FRANCE, [2]Elvesys, FRANCE, and [3]Institut Curie, FRANCE

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. Nyberg[1], G. Emilsson[1], A. Nilsson[2], E. Lagerstedt[2], C. Noble[2], L. Svensson Stadler[3], N. Karami[3], F. Sjöberg[3], E.R.B. Moore[3], J. Fritzsche[1], E. Kristiansson[1], T. Ambjörnsson[2], and F. Westerlund[1]
[1]Chalmers University of Technology, SWEDEN, [2]Lund University, SWEDEN, and [3]Göteborg University, SWEDEN

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 µREX 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. Yoshida[1], Y. Morimoto[1,2], T. Tonooka[1,2], and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

W.235b
FORMATION AND CHARACTERISTICS OF LAMINAR VORTICES IN MICROSCALE ENVIRONMENTS WITHIN AN OBSTRUCTED AND STENTED URETER: A COMPUTATIONAL STUDY
D. Carugo[1], X. Zhang[1], M.J. Drake[2], and F. Clavica[3]
[1]University of Southampton, UK, [2]Southmead Hospital, UK, and [3]University of Bern, SWITZERLAND

M.236b
INTEGRATED ALLERGIC DIAGNOSTIC CHIP APPLIED WITH HUMAN BASOPHILS ACTIVATION
K. Sakamoto[1], Y. Yanase[2], M. Hide[2], and R. Miyake[3]
[1]Kushu Institute of Technology, JAPAN, [2]Hiroshima University, JAPAN, and [3]University of Tokyo, JAPAN

T.237b
LAB-ON-A-CHIP – BASED PORTABLE LABORATORIES IN SUITCASES FOR IDENTIFICATION OF BIOLOGICAL WEAPON PATHOGENS
R. Walczak[1], W. Kubicki[1], P. Śniadek[1], W. Kosek[1], P. Knapkiewicz[1], A. Górecka-Drzazga[1], J. Dziuban[1], J. Kocik[2], M. Niemcewicz[2], A. Michalski[2], M. Kołodziej[2], T. Cieślik[2], A. Bielawska-Drózd[2], K. Lasoski[2], S. Dąbrowski[3], A. Burkiewicz[3], P. Kaupa[4] and K. Kucharczyk[4]
*[1]*Wrocław University of Technology, POLAND, *[2]*Military Institute of Hygiene and Epidemiology, POLAND, *[3]*A&A Biotechnology, POLAND, and *[4]*Kucharczyk Electrophoretic Techniques, POLAND

M.238b
PARALLEL SPR-IMAGING OF CELL RESPONSES: PROOF-OF-CONCEPT OF CELL-BASED SPR ASSAY FOR TYPE I ALLERGY
T. Obara[1], Y. Yanase[2], N. Kumazaki[1], T. Kawaguchi[2], and M. Hide[2]
[1]Hitachi High-Technologies Corporation, JAPAN and [2]Hiroshima University, JAPAN

Personalized Medicine

T.239b
DIFFERENTIAL ANALYSIS OF LYSED WHOLE BLOOD VIA "MICROFLUIDIC DRIFTING" BASED FLOW CYTOMETRY CHIP
A. Nawaz[1], R. Nissly[1], P. Li[1], Y. Shariff[2], L. Wang[3], and T. Huang[1]
[1]Pennsylvania State University, USA, [2]Taibah University, SAUDI ARABIA, and [3]Ascent BioNano Ltd., USA

W.240b
RAPID ON-CHIP MOLECULAR PROFILING OF CIRCULATING EXOSOMES FOR EARLY DETECTION OF OVARIAN CANCER
M. He[1], Z. Zhao[1], A.K. Godwin[2], and Y. Zeng[3]
[1]Kansas State University, USA, [2]KU Medical Center and KU Cancer Center, USA, and [3]University of Kansas, USA

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 [^{18}F]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
S.W. Lee[1], K. Hosokawa[1], S. Kim[2], T. Laurell[3], and M. Maeda[1]
[1]Institute of Physical and Chemical Research (RIKEN), JAPAN, [2]Dongguk University, SOUTH KOREA, and [3]Lund University, SWEDEN

M.244b
CRYSTAL HABIT MODIFICATION OF PROTEIN BY USING MICROFLUIDIC CHIP
M. Maeki[1,2,3], A.S. Pawate[4], K. Watanabe[5], M. Tokeshi[2], P.J.A. Kenis[4], and M. Miyazaki[1,3]
[1]Kyushu University, JAPAN, [2]Hokkaido University, JAPAN, [3]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, [4]University of Illinois, USA, and [5]Saga University, JAPAN

T.245b
DIGITAL ASSAY FOR MULTIPLEXED DETECTION OF PROTEIN BIOMARKERS
S. Emaminejad[1,2], J. Mok[2], M. Mindrinos[2], R.W. Davis[2], and M. Javanmard[3]
[2]University of California, Berkeley, USA, [2]Stanford University, USA and [3]Rutgers University, USA

W.246b
DIGITAL MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT MONOCLONAL ANTIBODIES SCREENING AND ISOTYPING ANALYSIS
J.-L. He[1], H.-Y. Lu[1], Y.-H. Lai[1], J.-T. He[2], and S.-K. Fan[1]
[1]National Taiwan University, TAIWAN and [2]Chiayi Chang Gung Memorial Hospital, TAIWAN

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. Zeggari[1], J.F. Manceau[1], E.N. Aybeke[2], R. Yahiaoui[1], E. Lesniewska[2], and W. Boireau[1]
[1]Université de Franche Comté, FRANCE and [2]Université de Bourgogne, FRANCE

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. Roewer[4], U. Zander[4], and J.A. Márquez[4]
[1]CEA iRTSV, FRANCE, [2]INSERM, FRANCE, [3]University Grenoble-Alpes, FRANCE and [4]EMBL, FRANCE

W.252b
SURFACE CONTACT PATCH FOR SKIN RESIDUAL PROTEIN QUANTIFICATION
D.Y. Oh[1], K. Jung[2], S. Song[1], and S. Kwon[1]
[1]Seoul National University, SOUTH KOREA and [2]QuantaMatrix Inc., SOUTH KOREA

M.253b
ULTRAFAST PEPTIDE DECOMPOSITION BY SUPERHEATING
M.O. Altmeyer[1,2], P. Neužil[1,3], and A. Manz[1]
[1]Korea Institute of Science and Technology (KIST) - Europe, GERMANY, [2]University of Twente, GERMANY, and [3]RCPTM 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. Wang[1], R. Riahi[2], M. Long[1,3], D.D. Zhang[1], and P.K. Wong[1]
[1]University of Arizona, USA, [2]Massachusetts Institute of Technology, USA, and [3]Third 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. Okeyo[1], R. Yanaru[1], O. Kurosawa[1], H. Oana[1], H. Kotera[2], and M. Washizu[1]
[1]University of Tokyo, JAPAN and [2]Kyoto 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. Béduer[1], T. Braschler[1], O. Peric[1], G. Fantner[1], S. Mosser[1], P. Fraering[1], S. Benchérif[2], D.J. Mooney[2], and P. Renaud[1]
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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, Dearborn, 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. Choi[1], E. Boyaci[2], J. Kim[1], J. Pawliszyn[2], and A.R. Wheeler[1]
[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 EVAPORATIONON 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, Ann Arbor, USA

M.268b
MICRONEEDLE BASED SAMPLING FOR BREAST CANCER TISSUES
A. Hokkanen[1], I. Stuns[1], P. Schmid[2], A. Kokkonen[1], A. Steinecker[2], J. Budczies[3], P. Heimala[1], and L. Hakalahti[1]
[1]VTT Technical Research Centre of Finland, FINLAND, [2]CSEM, SWITZERLAND, and [3]Charité - Universitätsmedizin Berlin, GERMANY

T.269b
ENABLING RELIABLE DETECTION OF LOW ABUNDANCE MALARIA PARASITES FROM BLOOD USING INERTIAL MICROFLUIDICS
M. Ebrahimi Warkiani[1], A.K.P. Tay[1], B.L. Khoo[2], X. Xiaofeng[2], C.T. Lim[2], and J. Han[3]
[1]Singapore-MIT Alliance for Research and Technology (SMART), SINGAPORE, [2]National University of Singapore, SINGAPORE, and [3]Massachusetts Institute of Technology, USA

W.270b
PCR-FREE BLOODBORNE PATHOGEN IDENTIFICATION AND DRUG RESISTANCE PROFILING FROM WHOLE BLOOD USING INERTIAL MICROFLUIDICS
H.W. Hou[1], R.P. Bhattacharyya[2,3], D.T. Hung[2,3,4], and J. Han[1]
[1]Massachusetts Institute of Technology, USA, [2]The Broad Institute, USA, [3]Massachusetts General Hospital, USA, and [4]Harvard Medical School, USA

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
M. Rombach[1], S. Hin[1], O. Strohmeier[1], F. von Stetten[1], R. Zengerle[1,2], and D. Mark[1]
[1]*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY and*
[2]*University of Freiburg - IMTEK, GERMANY*

M.274b
PREPARATION OF BIODEGRADABLE CHITOSAN ACETATE SHEET AND ITS APPLICATION TO MICRONEEDLE
M. Suzuki, T. Sawa, Y. Terada, T. Takahashi, and S. Aoyagi
Kansai University, JAPAN

T.275b
PURIFICATION AND CONCENTRATION OF NUCLEIC ACIDS IN POROUS MEMBRANES FOR POINT-OF-CARE APPLICATIONS
S.A. Byrnes[1], J. Bishop[1], L. Lafleur[1], J. Buser[1], B. Li[2], C. Olsen[2], B. Lutz[1], and P. Yager[1]
[1]*University of Washington, USA and* [2]*GE Global Research Center, USA*

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. Monzawa[1], S. Sakuma[2], F. Arai[2], and M. Kaneko[1]
[1]*Osaka University, JAPAN and* [2]*Nagoya University, JAPAN*

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. Bora[1], S.-Y. Jung[3], A. Johnston[1], T. Notton[4], L.S. Weinberger[3,4], and M. Shusteff[1]
[1]*Lawrence Livermore National Laboratory, USA,* [2]*Boston University, USA,* [3]*The Gladstone Institutes, USA, and*
[4]*University of California, San Francisco, USA*

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. Ngamsom[1], M.J. Lopez-Martinez[1], J.C. Raymond[2], P. Broyer[2], P. Patel[2], and N. Pamme[1]
[1]*University of Hull, UK and* [2]*bioMerieux, FRANCE*

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
B. Lu[1], M.D. Tarn[1], N. Pamme[1], and T.K. Georgiou[2]
[1]University of Hull, UK and [2]Imperial College London, UK

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. Rattanarat, 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
L.D. van Vliet [1], F. Gielen[1], A. Sinha[2], B.T. Koprowski[3], J.B. Edel[4], X. Niu[5], A.J. deMello[3], and F. Hollfelder[1]
[1]University of Cambridge, UK, [2]The Dolomite Centre, UK, [3]ETH Zürich, SWITZERLAND, [4]Imperial College London, UK, and [5]University of Southampton, UK

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
O.J. Dressler[1], T. Yang[1], S. Chang[2], R.C.R. Wootton[1], and A.J. deMello[1]
[1]ETH Zürich, SWITZERLAND and [2]Chungbuk National University, SOUTH KOREA

T.292c
LEIDENFROST LIQUID DROPS ON MINIATURIZED RATCHETS: THE INFLUENCE OF DROP IMPACT SPEED
J.T. Ok[1], D.S.-W. Park[2], and S. Park[2]
[1]Midwestern State University, USA and [2]Louisiana 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. Wohlgenannt[1], D. Chugh[1], F.H. Kriel[1], E. Nicolau[2], C. Cabrera[2], C. Semprebon[3], M. Brinkmann[3], and C. Priest[1]
[1]University of South Australia, AUSTRALIA, [2]University of Puerto Rico, PUERTO RICO, and
[3]Max 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. Peyman[1], J. McLaughlan[1], G. Marston[2], S. Freear[1], P.L. Coletta[2], and S.D. Evans[1]
[1]University of Leeds, UK and [2]St. 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 IONIC LIQUID DROPLETS
W. Francis, L. Florea, and D. Diamond
Dublin City University, IRELAND

M.303c
SENSITIVE FLUORESCENCE-ACTIVATED SORTING OF MICRODROPLETS CONTAINING SUBCELLUAR STRUCTURES BY THERMOREVERSIBLE GELATION POLYMER
H. Okada[1], A. Iguchi[2], R. Iizuka[1], D.H. Yoon[2], T. Sekiguchi[2], S. Shoji[2], and T. Funatsu[1]
[1]University of Tokyo, JAPAN and [2]Waseda 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. Roelofs[1], M. van Rooijen[1], B. Kim[2], J. Han[2], A. van den berg[1], and M. Odijk[1]
[1]Mesa+, University of Twente, THE NETHERLANDS and [2]Massachusetts Institute of Technology, USA

T.307c
CONTINUOUS ELECTROEXTRACTION OF AMINO ACIDS USING POLY(ETHYLENE-GLYCOL)/CASEINATE AQUEOUS TWO PHASE SYSTEM
C.D.M. Campos[1,2], P. Neuzil1[2], J.A.F. da Silva[2], and A. Manz[1]
[1]Korea Institute of Science and Technology (KIST) - Europe, GERMANY and [2]State University of Campinas, BRAZIL

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 NANOFLUIDIC 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. Liu[1], J. Hoet[2], W. Van Roy[1], T. Piessens[2], and L. Lagae[1]
[1]IMEC, BELGIUM and [2]ICsense, BELGIUM

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. Jackson[1], J.C. Borba[2], B.L. Poe[1], M. Meija[1], B.L. Poe[1], E. Carrilho[2], D.M. Haverstick[1], and J.P. Landers[1]
[1]University of Virginia, USA and [2]Universidade de São Paulo, BRAZIL

T.313c
FREE-FLOW MAGNETOPHORESIS FOR MULTIPLEXED ISOLATION OF FOOD-BORNE PATHOGENS
B. Ngamsom[1], M.J. Lopez-Martinez[1], M.M.N. Esfahani[1], J.C. Raymond[2], P. Broyer[2], P. Patel[2], and N. Pamme[1]
[1]University of Hull, UK and [2]bioMerieux, FRANCE

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
Dublin City University, IRELAND

M.315c
MICROFLUIDIC GIANT MAGNETORESISTANCE DETECTION OF MAGNETIC PARTICLES IN FLOW
J. Sheats[1], L.P. Maldonado-Camargo[2], C. Rinaldi[2], S. Sreevatsan[1], M.A. Torija[3], and K.D. Dorfman[1]
[1]University of Minnesota, USA, [2]University of Florida, USA, and [3]NVE Corporation, USA

Modeling/ Numerical Simulation

T.316c
COMPLETE ANALYTICAL MODEL OF MICROFLUIDIC DIPOLES AND QUADRUPOLES: APPLICATION TO BRUSH STROKE AND GRADIENT CONTROL WITH MICROFLUIDIC PROBES
T. Gervais[1], M. Safavieh[2], M. Qasaimeh[3], and D. Juncker[4]
[1]École Polytechnique de Montréal, CANADA, [2]Institut National de la Recherche Scientifique, CANADA, [3]New York University Abu Dhabi, UNITED ARAB EMIRATES, and [4]McGill 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
Ulasn 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 NANOFLUIDIC 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
Y. Pihosh[1,2], N. Kabeta[2], K. Mawatari[1,2], Y. Kazoe[1,2], K. Kitamura[3], O. Tabata[4], T. Tsuchiya[4], and T. Kitamori[1,2]
[1]University of Tokyo, JAPAN, [2]Japan Science and Technology Agency (JST), JAPAN, [3]Optoelectronic Materials Group, JAPAN, and [4]Kyoto University, JAPAN

M.326c
ATTOMOLAR-LEVEL SENSING AT TIP OF FUNNEL NANOCHANNEL WITH FEW NANOPARTICLES STUCK
J. Huang[1], H. Du[1], L. Shao[1], R. Zhang[1], and W. Wang[1,2]
[1]Peking University, CHINA and [2]National Key Laboratory of Science and Technology, CHINA

T.327c
ELUCIDATING TRANSPORT DYNAMICS OF SINGLE MOLECULES IN THERMOPLASTIC NANOCHANNELS
C. O'Neil[1], F. Uba[1], S. Pullagurla[2], K. Ratnayake[2], S.-H. Shim[3], Y. Cho[3], and S.A. Soper[1,3]
[1]University of North Carolina, USA, [2]Louisiana State University, USA, and
[3]Ulsan National Institute of Science & Technology (UNIST), SOUTH KOREA

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]
[1]Tokyo Institute of Technology, JAPAN, [2]University of Tokyo, JAPAN, and [3]Japan Science and Technology Agency (JST), JAPAN

M.329c
GEOMETRICAL CONTROL OF A SINGLE DNA MOLECULE TRANSLOCATION VELOCITY IN NANOPORE CHANNELS
X. Sun[1], T. Yasui[1], S. Rahong[1], T. Yanagida[2], N. Kaji[1], M. Kanai[2], K. Nagashima[2], T. Kawai[2], and Y. Baba[1,3]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and
[3]National Institute of Advanced Industrial Science and Technology (AIST)

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. Kasai[1], K. Mawatari[1,2], and T. Kitamori[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

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 NANOFLUIDIC 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
Indiana University, USA

W.334c
NANOCONFINED CIRCULAR DNA
M. Alizadehheidari[1], E. Werner[2], C. Noble[3], L.K. Nyberg[1], J. Fritzsche[1], F. Persson[4],B. Mehlig[2], J.O. Tegenfeldt[3], T. Ambjörnsson[3], and F. Westerlund[1]
[1]Chalmers University of Technology, SWEDEN, [2]Gothenburg University, SWEDEN, and [3]Lund University, SWEDEN, and [4]Uppsala University, SWEDEN

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
W. Kim and D.S. Kim
Pohang University of Science and Technology (POSTECH), SOUTH KOREA

T.339c
MICROSTRUCTURE FORMATION BY OPTOFLUIDIC MASKLESS LITHOGRAPHY USING FINE-TUNED GRAYSCALE
S.H. Song[1], K. Kim[1], J. Yun[1], S. Han[2], S. Kwon[2], and W. Park[1]
[1]Kyung Hee University, SOUTH KOREA and [2]Seoul National University, SOUTH KOREA

W.340c
MODULAR OPTOFLUIDIC SYSTEMS
T.N. Ackermann[1], E. Álvarez-Conde[1], J. Vila-Planas[1], P. Müller[2], T. Lorenz[3], A. Dietzel[3], H. Zappe[2], X. Muñoz-Berbel[1], and A. Llobera[1]
[1]Consejo Superior de Investigaciones Científicas (CSIC), SPAIN, [2]University of Freiburg - IMTEK, GERMANY, and [3]Technische Universität Braunschweig, GERMANY

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. Rodriguez-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 ELECTROOSMSIS
D. Han, H.J. Gi, and J.-K. Park
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

T.345c
OPTOFLUIDIC FABRICATION OF COMPLEX 3D SHAPED PARTICLES VIA FLUID INERTIA
K.S. Paulsen[1], C.-Y. Wu[2], D. Di Carlo[2], and A.J. Chung[1]
[1]Rensselaer Polytechnic Institute (RPI), USA and [2]University of California, Los Angeles, USA

Others

W.346c
DIELECTROFLUIDICS FOR ELECTRONIC-BASED CHEMICAL AND PARTICLE ANALYSIS
J.C. Booth[1], S. Egan[2], C. Little[3], A. Padilla[4], Y. Wang[1], and N.D. Orloff[1]
[1]National Institute of Standards and Technology, USA, [2]Middlebury College, USA, [3]University of Colorado, USA, and [4]Universitat Politecnica de Catalunya, SPAIN

M.347c
ELECTRICALLY INDUCED BUBBLE CAPILLARY-PORATION
K. Takahashi[1], W. Kawaguchi[1], Y. Hamano[1], S. Hosoda[1], Y. Arakawa[1], and Y. Yamanishi[1,2]
[1]Shibaura Institute of Technology, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

T.348c
EVAPORATION-COOLING-BASED MICROFLUIDIC TEMPERATURE CONTROL AND ICE GENERATION
J. Song[1], M. Chung[2], and D. Kim[1]
[1]Myongji University, SOUTH KOREA and [2]Hongik University, SOUTH KOREA

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

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 IMMUNOCHROMATOGRPHIC STRIP FOR SUBTYPING INFLUENZA A VIRUS
J.H. Jung, S.J. Oh, B.H. Park, and T.S. Seo
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

M.353d
CENTRIFUGE-BASED MICROFLUIDIC DEVICE FOR TRAPPING SINGLE CELLS IN A DROP
H. Hasegawa[1], S. Yoshida[1], Y. Morimoto[1,2], and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

T.354d
DVD DISCS AS LOW-COST DIAGNOSTICS FOR GMO SCREENING
S. Santiago-Felipe[1], M. Amasia[2], A. Russom[2], A. Maquieira[1], and L.A. Tortajada Genaro[1]
[1]Universidad Politécnica de Valencia, SPAIN and [2]KTH Royal Institute of Technology, SWEDEN

W.355d
FLUIDIC STRUCTURE FOR TEMPERATURE MEASUREMENT UNDER ROTATION IN CENTRIFUGAL MICROFLUIDICS
M. Keller[1], C. Nuese[2], P. Papireddy Vinayaka[2], R. Zengerle[1,2], and F. von Stetten[1]
[1]Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY and
[2]University of Freiburg, GERMANY

M.356d
IMAGING BASED AGGLUTINATION MEASUREMENT OF MAGNETIC MICRO-PARTICLES ON A LAB-ON-A-DISC PLATFORM
P. Wantiya[1], R. Burger[2], T.S. Alstrøm[2], M. Donolato[2], M.F. Miniotis[1], M.F. Hansen[2], A.G. Wingren[1], and A. Boisen[2]
[1]Malmö Hoögskola, SWEDEN and [2]Technical University of Denmark, DENMARK

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. Ramachandraiah, 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. Fan[1], L. Zhao[1], X.-K. He[1], H. Yu[2], Q.-Y. Wei[1], and J. Zhe[2]
[1]Xi'an Jiaotong University, CHINA and [2]University 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
D.J. Kinahan[1], E. Clancy[2], N.A. Kilcawley[1], N. Dimov[1,3], T. Smith[2], and J. Ducree[1]
[1]Dublin City University, IRELAND, [2]National University of Ireland, Galway, IRELAND, and [3]University College, London, UK

Digital Microfluidics on Surfaces

T.363d
A DIGITAL MICROFLUIDIC PLATFORM FOR HUMAN PLASMA PROTEIN DEPLETION
N. Mei[1], B. Seale[2], A. Ng[2], A.R. Wheeler[2], and R. Oleschuk[1]
[1]Queen's University, CANADA and [2]University of Toronto, CANADA

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
D. Decrop[1], T. Brans[2], T. Kokalj[1], F. Beunis[2], and J. Lammertyn[1]
[1]KU Leuven, BELGIUM and [2]Universiteit Gent, BELGIUM

T.369d
TOWARDS SYNTHETIC BIOLOGY IN A CHIP: AN INTEGRATED DIGITAL MICROFLUIDIC PLATFORM FOR TRANSFORMATION, CULTURE AND EXPRESSION
P.C. Gach[1,2], S.C.C. Shih[1,2], J. Sustarich[1,2], N.J. Hillson[2], P.D. Adams[2], and A.K. Singh[1,2]
[1]Joint BioEnergy Institute, USA and [2]Sandia National Laboratories, USA

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 0.35µM CMOS PROCESS
P.-W. Yen[1], S.-C. Lin[1], Y.-C. Huang[1], Y.-J. Huang[1], H.-H. Tsai[2], H.-H. Liao[2], S.-S. Lu[1], and C.-T. Lin[1]
[1]National Taiwan University, TAIWAN and [2]National Chip Implementation Center, TAIWAN

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 NANOFLUIDIC CHANNEL ARRAY
W.R.A. Wichert, S.P. Branagan, and P.W. Bohn
University of Notre Dame, USA

T.375
NOVEL SPLIT FLOW CHIP FOR CAPILLARY ELECTROPHORESIS
S.J. Lee[1,2], E. Castro[2], P. Neuzil[2], and A. Manz[1,2]
[1]University of Saarland, GERMANY and [2]Korea Institute of Science and Technology (KIST) - Europe, GERMANY

W.376d
QUANTITATIVE EVALUATION OF INSULATING PERFORMANCE ON SILICON NANOBIODEVICES FOR FULLY INTEGRATED NANOPORE SINGLE DNA SEQUENCING
M. Sano[1], T. Yasui[1], N. Kaji[1], M. Taniguchi[2], T. Kawai[2], and Y. Baba[1,3]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and
[3]National 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. Kimura[1], S. Senda[1], T. Yoshimura[2], Y. Sato[3], T. Fujimori[3], and T. Fujii[2]
[1]Tokai University, JAPAN, [2]University of Tokyo, JAPAN, and [3]National Institute for Basic Biology, JAPAN

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
J. Wang[1] and J. Heath[2]
[1]State University of New York, Albany, USA and [2]California Institute of Technology, USA

T.381d
INTEGRATED MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT STUDY OF ELECTRICAL FIELD DIRECTED CELL MIGRATION
S. Zhao[1], K. Zhu[1], Y. Zhang[2], Z. Zhu[1], Z. Xu[2], M. Zhao[1], and T. Pan[1]
[1]University of California, Davis, USA and [2]Zhejiang University, CHINA

W.382d
INTEGRATION OF LARGE-SCALE MICROFLUIDIC NETWORKS WITH MUTLIPLEXED PROTEIN MICROARRAYS FOR A FUNCTIONAL HIGH THROUGHPUT SCREEN OF BACTERIAL ADHESION PATHOGENICITY LANDSCAPES
W.M. Weaver[1], M. Tsaturian[1], R. Damoiseaux[1,2], V. Milisavljevic[1], J.F. Miller[1,2], and D. Di Carlo[1,2]
[1]University of California, Los Angeles, USA and [2]California NanoSystems Institute, USA

M.383d
LARGE-SCALE ARRAY OF PICOLITRE REACTORS FOR DRUG SCREENGING
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.385
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. Didar[1], A. Watters[1], D.C. Leslie[1], J.H. Kang[1], M. Cartwright[1], A. Graveline[1], A. Waterhouse[1], M. Super[1], and D.E. Ingber[1,2]
[1]Harvard University, USA and [2]Harvard Medical School and Boston Children's Hospital, USA

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
D. An[1], E. Lee[2], and J. Kim[1]
[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. Olsen[1], J. Zhu[1], J. Kim[1], R. Pei[2], M.N. Stojanovic[1], and Q. Lin[1]
[1]Columbia University, USA and [2]Chinese Academy of Sciences, CHINA

W.391d
3D-PRINTED MICROFLUIDIC CIRCUIT BOARD FOR SAMPLE PROCESSOR
W.P. Bula[1,2], K. Aritome[1,2], and R. Miyake[1,2]
[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. Zirath[1], L. Brandhoff[2], A. Coll[3], G. Schnetz[4], A. Spittler[5], H. Wiesinger-Mayr[1], M.J. Vellekoop[2], H. Redl[3], and J.R. Peham[1]
[1]Austrian Institute of Technology, AUSTRIA, [2]University of Bremen, GERMANY, [3]Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, AUSTRIA, [4]Biegler GmbH, AUSTRIA, and [5]Medical University of Vienna, AUSTRIA

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

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. Han[1], J. Kai[1], A. Puntambekar[1], S.H. Lee[1], and C.H. Ahn[1,2]
[1]Siloam Biosciences, USA and [2]University 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. Im[1], S.-N. Jeong[2], B.S. Yoo[2], B.-L. Kim[2], I.S. Kang[2], and D.P. Kim[2]
[1]Pukyong National University, SOUTH KOREA and [2]Pohang 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. Kelbauskas, 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-FLUDIC ENVIRONMENT
S. Takasawa[1], Y. Fujiwara[1], T. Kobayashi[1], M. Oomura[1], H. Kamegawa[1], and Y. Yamanishi[1,2]
[1]Shibaura of Institute Technology, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

M.400d
MEMBRANE-EMBEDDED DISPOSABLE MICROFLUIDIC CHIP FOR CARDIAC BIOMARKER SCREENING
J. Lee[1], J. Kim[2], S. Song[2], and J. Kim[1]
[1]Texas Tech University, USA and [2]Hanyang University, SOUTH KOREA

T.401d
RAPID AND DYNAMIC SIGNAL ENHANCEMENT OF BEAD-BASED BIOASSAYS USING A MULTI-FUNCTIONAL OPTOELECTRIC DEVICE
K.C. Wang[1], F.T. Li[1], D.B. Shieh[1], K.C. Kim[2], and H.S. Chuang[1]
[1]National Cheng Kung University, TAIWAN and [2]Pusan 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, Dearborn, 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.405
A SINGLE SHEET OF PAPER-BASED ANALYTICAL DEVICE FOR QUANTITAVIE AND MULTIPLE ASSAYS
S.-G. Jeong[1], S.-H. Lee[2], and C.-S. Lee[1]
[1]Chungnam National University, SOUTH KOREA and [2]Korea Institute of Industrial Technology, SOUTH KOREA

M.406d
LASER SURFACE-TREATED GLASS WITH WICKING CAPABILITY FOR MICROFLUIDICS
M. Ochoa, R. Rahimi, H. Jiang, and B. Ziaie
Purdue University, USA

T.407
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.409
COMBINATION OF MULTIPLEX ISOTHERMAL AMPLIFICATION WITH IMMUNOCHROMATOGRAPHIC STRIP FOR SUBTYPING INFLUENZA A VIRUS
J.H. Jung, S.J. Oh, B.H. Park, and T.S. Seo
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

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. Lee[1], H. Yeom[1], S. Bae[1], K. Jung[2], J. Jang[1], and S. Kwon[1]
[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. Gong[1], P. Zhang[1], B.D. MacDonald[2], and D. Sinton[1]
[1]University of Toronto, CANADA and [2]University 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 ANTHRACIS IN ULTRA-LOW RESOURCE ENVIRONMENTS
J.C. Harper[1], M. Finley[1], B. Carson[1], T.L. Edwards[1], G. Bachand[1], W. Arndt[1], and J. Lovchick[2]
[1]Sandia National Laboratories, USA and [2]University 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. Evans[1], E.F.M. Gabriel[2], W.K.T. Coltro[2], and C.D. Garcia[1]
[1]University of Texas, San Antonio, USA and [2]Universidade Federal de Goiás, BRAZIL

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. Garcia[1], T.M.G. Cardoso[1], C.D. Garcia[2], E. Carrilho[3], and W.K.T. Coltro[1]
[1]Federal University of Goias, BRAZIL, [2]University of Texas, San Antonio, USA, and [3]Universidade de São Paulo, BRAZIL

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. Bolognesi[1], A. Hargreaves[2], A.D. Ward[3], A.K. Kirby[2], C.D. Bain[2], and O. Ces[1]
[1]Imperial College London, UK, [2]Durham University, UK, and [3]Science & Technology Facilities Council (STFC), UK

T.425d
CONTINUOUS FLOW DIGITAL LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) IN DROPLETS
T.D. Rane[1], L. Chen[2], H.C. Zec[2], and T.H. Wang[2]
[1]University of Southern California, USA and [2]Johns Hopkins University, USA

W.426d
GENERATION AND APPLICATION OF COPOLYMER BASED POLYACRYLAMIDE MICROBEADS(CBPmB) USING MICROFLUIDIC PLATFORM
S.H. Lee[1], D.G. Lee[2], S.-H. Lee[1], Y.-H. Kim[1], O.C. Jeong[2], and J.-Y. Ahn[1]
[1]Chungbuk National University, SOUTH KOREA and [2]Inje 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. Verbruggen[1], F. Ceyssens[1], K. Leirs[1], M. Cornaglia[2], M.A.M. Gijs[2], T. Kokalj[1,3], R. Puers[1], and J. Lammertyn[1]
[1]KU Leuven, BELGIUM, [2]École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, and [3]IMT, 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]
[1]University of Bremen, GERMANY and [2]Microsystems 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. Castro[1], M.D. Tarn[1,3], P. Ginterová[1,2], P. Neužil[1,2], and A. Manz[1]
[1]Korea Institute of Science and Technology (KIST) - Europe, GERMANY, [2]Palacky University, CZECH REPUBLIC, and [3]University 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 CO_2-MEDIATED LIQUID-LIQUID PHASE SEPARATION
G. Lestari[1], M. Abolhasani[1], D. Bennett[1], P. Chase[2], A. Günther[1], and E. Kumacheva[1]
[1]University of Toronto, CANADA and [2]Switchable Solutions Inc., CANADA

M.436d
VISUALIZATION OF MANIPULATION FORCE FIELD FOR MICROFLUIDIC DROPLET BY PHOTOTHERMAL INTERFACIAL FLOW
M. Muto and M. Motosuke
Tokyo University of Science, JAPAN

T.437d
WHOLE GENOME AMPLIFICATION OF BACTERIAL CELLS IN PICOLITER DROPLETS USING A MULTI-STEP MICROFLUIDIC DROPLET PROCESSOR
M. Rhee[1,2], R.J. Meagher[1], S. Yilmaz[1,2], Y.K. Light[1], and A.K. Singh[1,2]
[1]Sandia National Laboratories, USA and [2]Joint BioEnergy Institute, USA

Micro- and Nanoengineering

Bonding, Sealing & Interfacing Technologies

W.438e
AN EXPERIMENTAL VALIDATION OF THE PRESSURE CAPACITY OF A MODULAR GASKETLESS MICROFLUDIC INTERCONNECT
C.R. Brown[1] T. Park[1,2], P.-C. Chen[1,3], B.-H. You[1,4], D.S. Park[1], S.A. Soper[5], and M.C. Murphy[1]
[1]Louisiana State University, USA, [2]Kyungnam University, SOUTH KOREA, [3]National University of Science and Technology, TAIWAN, [4]Texas State University, San Marcos, USA, and [5]University of North Carolina, Chapel Hill, USA

M.439
CARTRIDGE-BASED EMBEDDED MICROFLUIDIC INTERFACE FOR HIGH DENSITY PDMS TO SOLID STATE BIOSENSOR CONNECTION
D.J.B. Bechstein and S.X. Wang
Stanford University, USA

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
University of Illinois, Chicago, USA

W.444e
A FEW MICROMETER SIZED GLASS FILTER FABRICATED BY PLASMA ETCHING ON AN ULTRA THIN GLASS SHEET
Y. Tanaka
Institute of Physical and Chemical Research (RIKEN), JAPAN

M.445e
ADDITIVE MANUFACTURING BASED ON INJECTION MOLDING FOR THREE DIMENSIONAL MICROFLUIDICS
T. Naito[1], M. Nakamura[1], T. Kubo[1], T. Yasui[2], N. Kaji[2], Y. Baba[2], and K. Otsuka[1]
[1]Kyoto University, JAPAN and [2]Nagoya University, JAPAN

T.446e
ARBITRARILY SHAPED POROUS MICROPARTICLES WITH IMMISCIBLE A SOLUTION FOR CARRIERS OF BACTERIA
K. Kim and W. Park
Kyung Hee University, SOUTH KOREA

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
Karlsruhe Institute of Technology (KIT), GERMANY

M.448e
CUSTOM MICROPATTERNING OF HYDROGELS IN CLOSED MICROFLUIDIC PLATFORMS FABRICATED BY CAPILLARY PINNING
B. Gumuscu, A. van den Berg, and J.C.T. Eijkel
MESA+, University of Twente, THE NETHERLANDS

T.449e
DEVELOPMENT OF A MICROFLUIDIC GAS GENERATOR FROM AN EFFICIENT FILM-BASED MICROFABRICATION METHOD
Y. Cao[1], J. Bontrager-Singer[1], M.R. Zamani Farahani[1], D.D. Meng[2], W.H. Yu[1], and L. Zhu[1]
[1]Indiana University-Purdue University, Indianapolis, USA and [2]University of Texas, Arlington, USA

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 ELECTRODE
H.-Y. Ha[1], Y.-S. Park[1], D.-K. Park[1], F.I. Uba[1,2], S.A. Soper[1,2], and Y.-K. Cho[1]
[1]Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA and [2]University of North Carolina, USA

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 ^{1}H 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
C. Helke[1], T. Enderlein[1], S.M. Harazim[2], S. Geidel[3], J. Nestler[1], T. Otto[3], O.G. Schmidt[2], and T. Gessner[3]
[1]Technische Universität Chemnitz, GERMANY, [2]IFW Dresden, GERMANY, and [3]Fraunhofer ENAS, GERMANY

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
L. Sola[1], P. Gagni[1], T.G. Jensen[2], C. Zilio[1], M. Cretich[1], J.P. Kutter[3], and M. Chiari[1]
[1]Consiglio Nazionale delle Ricerche, ITALY, [2]Technical University of Denmark, DENMARK, and [3]University 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
C.D. Garcia[1], E.F. Moreira Gabriel[2], and W.K.T. Coltro[2]
[1]University of Texas, San Antonio, USA and [2]Universidade Federal de Goiás, BRAZIL

W.459e
FLUORESCENCE IMAGING AS AN INSPECTION TOOL OF MICROFLUDIC STRUCTURES FABRICATED WITH LOW TEMPERARTURE CO-FIRED CERAMICS TECHNOLOGY
P. Couceiro and J. Alonso-Chamarro
Universidad Autonoma de Barcelona, SPAIN

M.460e
HIGH-THROUGHPUT SYNTHESIS OF ENCODED HYDROGEL PARTICLES FOR BIOSENSING USING CONTACT FLOW LITHOGRAPHY
G.C. Le Goff[1,2], J. Lee[2], A. Gupta[2], W.A. Hill[1], and P.S. Doyle[2]
[1]Novartis Institutes for Biomedical Chemistry, USA and [2]Massachusetts Institute of Technology, USA

W.461e
HYDROGEL MICRO-PATTERN ON NANOPOROUS MEMBRANE FOR MANIPULATION OF CELL-CELL INTERACTION
S.J. Kan[1], Y.K. Lee[2], and K.H. Lee[2]
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
Karlsruhe Institute of Technology (KIT), GERMANY

W.464e
METHOD FOR CONTROLLING WATER EVAPORATION IN PDMS-BASED MICROFLUIDIC DEVICES
H.C. Zec, C.J. Glover, W. Hsieh, L. Liu, C. Keefe, and T.H. Wang
Johns Hopkins University, USA

M.465e
MODULE-BASED MICROFLUIDIC DEVICES USING 3D PRINTERS
K.G. Lee[1], K.J. Park[2], S. Seok[2], S. Shin[1], D.H. Kim[2], J.Y. Park[3], S.J. Lee[1], and T.J. Lee[1]
[1]Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA, [2]National Nanofab Center, SOUTH KOREA, and [3]National Fisheries Research and Development Institute, SOUTH KOREA

T.466e
MULTI-CHAMBER AND MULTI-LAYER THIOL-ENE MICROCHIP FOR CELL CULTURE
H.Y. Tan[1], M. Hemmingsen[1], J.P. Lafleur[2], R.V. Søndergaard[1], J.P. Kutter[2], M. Dufva[1], and T.L. Andresen[1]
[1]Technical University of Denmark, DENMARK and [2]University of Copenhagen, DENMARK

W.467e
ON-CHIP HIGH-THROUGHPUT MANIPULATION OF PARTICLES IN A DIELECTROPHORESIS-ASSISTED HYDROPHORETIC FOCUSER
S. Yan[1], J. Zhang[1], M. Li[1], G. Alici[1], H. Du[1], Y. Zhu[2,3], and W. Li[1]
[1]University of Wollongong, AUSTRALIA, [2]CSIRO, AUSTRALIA, and [3]Melbourne Centre for Nanofabrication, AUSTRALIA

M.468e
PLUG-AND-PLAY MICROVALVE AND MICROPUMP FOR RAPID INTEGRATION WITH MICROFLUIDIC CHIPS
S.A.M. Shaegh[1], Z.F. Wang[1], S.H. Ng[1], R.G. Wu[1], H.T. Nguyen[2], C.Z. Chen[1], A.G.G. Toh[1], and Z.P. Wang[1]
*[1]Agency for Science, Technology and Research (A*STAR), SINGAPORE and [2]Nanyang Technological University, SINGAPORE*

T.469e
POLYURETHANE NEGATIVE MOLD FOR EFFICIENT MICROPOST FABRICATION
N. Taparia, R.F. Aaron, III, S.N. Tavakoli, A. Karchin, and N.J. Sniadecki
University of Washington, USA

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
Yale University, USA

M.471
POROUS MICROWELLS FOR GEOMETRY-SELECTIVE, LARGE-SCALE PARTICLE ARRAY
J.J. Kim[1], K.W. Bong[2], R.L. Sriniva[1], D. Irimia[2], and P.S. Doyle[1]
[1]Massachusetts Institute of Technology, USA and [2]Massachusetts General Hospital, USA

T.472e
RAPID FABRICATION AND MODIFICATION OF 2.5D MICROCHIP THROUGH TAPE, AND ITS APPLICATION FOR CHANNEL-HEIGHT INFLUENCED PROGRAMMABLE AUTONOMOUS FLOW
W. Wu[1,2] and A. Manz[1]
[1]University of Saarland, GERMANY and [2]KIST Europe GmbH, GERMANY

W.473e
RAPID FABRICATION METHOD FOR PLASTIC MICROFLUIDIC DEVICES WITH EMBEDDED MICROELECTRODES AND ITS APPLICATION TO ELECTROPORATION AND CELL LYSIS ON CHIP
J. Paredes[1,2], M. Chooljian[3], K.D. Fink[3], and D. Liepmann[3,4]
[1]University of Navarra, SPAIN, [2]CIC microGUNE, SPAIN, [3]University of California, Berkeley and University of California, San Francisco Graduate Program, USA, and [4]University of California, Berkeley, USA

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 COMBING DEVICE
D. Onoshima[1], N. Kawakita[1], D. Takeshita[1], H. Yukawa[1], and Y. Baba[1,2]
[1]Nagoya University, JAPAN and [2]National Institute of Advanced Industrial Science and Technology (AIST)

W.476e
TEFLON MICROFABRICATION USING PDMS STENCIL MASK
H. Shimada[1], H. Nabesawa[2], T. Hitobo[3], T. Abe[4], and M. Seki[1]
[1]Chiba University, JAPAN, [2]Toyama Industrial Technology Center, JAPAN, [3]Tateyama Machine Co. Ltd., JAPAN, and [4]Niigata University, JAPAN

M.477e
THREE-DIMENSINAL AND BEVEL-ANGLED ULTRAHIGH-ASPECT-RATIO MICRONEEDLE FOR
D.-S. Lee[1], C.Y. Lee[2], H. Jung[2], and M.Y. Jung[1]
[1]Electronics and Telecommunications Research Institute (ETRI), SOUTH KOREA and [2]Yonsei University, SOUTH KOREA

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
Karlsruhe Institute of Technology (KIT), GERMANY

W.479e
TUNABLE MICROLENS USING THIN FILM PARYLENE MICROFLUIDICS
J. Kim, J.B. You, S.P. Im, and W. Lee
Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA

Molecular Systems & Nanochemistry

M.480e
DNA/RNA COMPUTING WITH BIOLOGICAL NANOPORE IN DROPLETS SYSTEM: AND OPERATION USING RNA POLYMERIZATION
M. Ohara[1], M. Takinoue[2], and R. Kawano[1]
[1]Tokyo University of Agriculture and Technology, JAPAN and [2]Tokyo Institute of Technology, JAPAN

T.481e
FORMATION OF OPTICALLY-OBSERVABLE LIPID BILAYER MEMBRANE BY SLIDING CHAMBERS ON A FLUIDIC CHANNEL
F. Tomoike, T. Tonooka, and S. Takeuchi
University of Tokyo, JAPAN

W.482e
MICROMOTORS-BASED MULTIPLEXED AND LAB-ON-A-CHIP PROTEIN DETECTION
D. Vilela[1,2], J. Orozco[1], M. García[1,2], A. Escarpa[2], and J. Wang[1]
[1]University of California, San Diego, USA and [2]University of Alcala, SPAIN

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
Osaka Univeristy, JAPAN

T.484e
ENZYME-IMMOBILIZED MICROWELL ARRAY FOR ON-CHIP DIRECTED EVOLUTION OF ENZYMES
S. Ueno[1,2], T. Hirai[1], A. Tamada[1], M. Biyani[1,2], R. Iizuka[1,2], T. Funatsu[1,2], and T. Ichiki[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

W.485e
FABRICATION OF BIO-MIMETIC EXTENDED NANOSPACE AND INVESTIGATION OF THE UNIQUE LIQUID PROPERTY: pH SHIFT
N. Miyawaki, K. Mawatari, Y. Kazoe, and T. Kitamori
University of Tokyo, JAPAN

M.486e
HIGH THROUGHPUT FORMATION OF SUB-MILLION LIPID MEMBRANE ARRAYS WITH AN ASYMMETRIC LIPID COMPOSITION
R. Watanabe[1,2], N. Soga[1], T. Yamanaka[1], and H. Noji[1]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

T.487e
HIGH-THROUGHPUT SINGLE MOLECULE DETECTION USING A NANOPHOTONIC/MICROFLUIDIC HRBRID CHIP
Y. Zhao and T.J. Huang
Pennsylvania State University, USA

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
S. Raj Kumal[1], R. Kobayashi[1], S. Ueno[1,2], and T. Ichiki[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

W.490e
SELECTIVE INTRACELLULAR LABELING USING MICROFLUIDIC ELECTROPORATION-DELIVERED QUANTUM DOTS
C. Sun[1], Z. Cao[1], T. Geng[2], and C. Lu[1]
[1]Virginia Polytechnic Institute and State University, USA and [2]University of California, Berkeley, USA

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
University of Houston, USA

T.492e
USING NANOFLUIDIC CHANNELS TO PROBE THE DYNAMICS OF RAD51-FILAMENTS
L.H. Fornander[1], M. Alizadehheidari[2], E. Werner[2], A. Çekir[2], J. Fritzsche[1], J. Arraya[3], P. Nevin[3], P. Beuning[3], B. Mehlig[2], M. Modesti[4], K. Frykholm[1], F. Persson[5], and F. Westerlund[1]
[1]Chalmers University of Technology, SWEDEN, [2]Gothenburg University, SWEDEN, [3]Northeastern University, USA, [4]Universite Aix-Marseille, FRANCE, and [5]Uppsala University, SWEDEN

Nanoscale Assembly

W.493e
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
Princeton University, USA

T.495e
CMOS-INTEGRATED HIGH-DENSITY ARRAYS OF CARBON NANOTUBE SENSORS
F. Seichepine[1], J. Rothe[2], A. Dudina[1,2], A. Hierlemann[2], and U. Frey[1,2]
[1]Institute of Physical and Chemical Research (RIKEN), JAPAN and [2]ETH Zürich, SWITZERLAND

W.496e
CONTROLLED SHRINKING OF NANOPORES IN SINGLE LAYER GRAPHENE USING ELECTRON BEAM IRRADIATION
G. Goyal, A. Darvish, and M.J. Kim
Drexel University, USA

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 SIO_2
L.J. de Vreede, A. van den Berg, and J.C.T. Eijkel
MESA+, University of Twente, THE NETHERLANDS

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 TIO_2 NANOFIBERS AS A pH SENSOR
W.S. Lee, Y.-S. Park, and Y.-K. Cho
Ulasn National Institute of Science and Technology (UNIST), SOUTH KOREA

T.501e
HIGH THROUGHPUT FABRICATION OF TITANIUM NANOPILLARS BY MASKLESS PLASMA ETCHING
N.N. Li[1,2], N.L. Zhu[1], Y.F. Zhang[1], Y.H. Sun[1], and J. Chen[1]
[1]Peking University, USA and [2]Chinese Academy of Sciences, CHINA

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
Pennsylvania State University, USA

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

T.504e
SIMPLE FABRICATION AND PATTERN TRANSFER OF ANODIZED ALUMINUM OXIDE MEMBRANES FOR NANOIMPRINTING TEMPLATES
X. Wang[1], B.C. Barry[1], S.W. Anderson[2], and X. Zhang[1]
[1]Boston University, USA and [2]Boston University Medical Center, USA

W.505e
SIZE SELECTIVE NANOPARTICLE CONFINEMENT IN 2D NANOVOID ARRAY IN AQUEOUS SOLUTION
A. Panday[1], L. Chen[1], O.K. Jong[2], and L.J. Guo[1]
[1]University of Michigan, Ann Arbor, USA and [2]Samsung 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. Dunne[1], W. Francis[1], L. Florea[1], F. Benito-Lopez[2], and D. Diamond[1]
[1]Dublin City University, IRELAND and [2]microGUNE, SPAIN

W.508e
ELASTICITY TUNABLE HYBRID HYDROGELS USING PHOTOCLEAVABLE CROSSLINKER
F. Yanagawa[1], T. Mizutani[2], S. Sugiura[1], T. Takagi[1], K. Sumaru[1], and T. Kanamori[1]
[1]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and [2]Hokkaido University, JAPAN

M.509e
FABRICATION OF HIERARCHICAL AND MULTIFUNCATIONAL GRAPHENE NANOSTRUCTURES FOR CAPTURE OF PHOSHPHOPEPTIDES
G. Cheng, X. Yu, M.D. Zhou, and S.Y. Zheng
Pennsylvania State University, USA

T.510e
HIGHLY STRETCHABLE CELL-LADEN HYDROGEL MICROFIBER
F. Ozawa[1,2], H. Onoe[1,2], and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [2]Japan 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. Sueyoshi[1], A. Kishimura[2], H. Oana[1], Y. Anraku[1], M. Takai[1], M. Washizu[1], and K. Kataoka[1]
[1]University of Tokyo, JAPAN and [2]Kyushu 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. Lemmens[1] and D.D. Meng[2]
[1]Michigan Technological University, USA and [2]University of Texas, Arlington, USA

W.514e
QUANTITATIVE PHOTO-BINDING AND SENSING OF DIVALENT METAL IONS USING PHOTO-RESPONSIVE POLYMERIC BRUSHES IN MICRO-CAPILLARIES
L. Florea[1], G. Mc Guirk[1], F. Benito-Lopez[2], and D. Diamond[1]
[1]Dublin City University, IRELAND and [2]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 MICROFLUDIC 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. Ling[1], J. Ma[2], and T. Wu[1]
[1]Chinese Academy of Sciences, CHINA and [2]Xidian University

T.519e
NOVEL ELECTROCHEMICAL BIOSENSOR SURFACE MODIFICATION METHOD BASED ON PHOTOBLEACHING
L. Pires, N. Braunegger, G. Davidson, C. Neumann, and B.E. Rapp
Karlsruhe Institute of Technology (KIT), GERMANY

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. Mesnilgrente[1,2], V. Conédeéra[1,2], and A.M. Gué[1,2]
[1]Centre National de la Recherche Scientifique (CNRS), FRANCE and [2]University de Toulouse, FRANCE

MicroTAS for Other Applications

Environmental Analysis

M.521f
ATP SENSING IN DEEP-SEA ENVIRONMENTS USING CONTINUOUS FLOW MICROFLUIDIC DEVICE
T. Fukuba[1], T. Noguchi[1], K. Okamura[2], M. Kyo[1], S. Nishida[3], T. Miwa[1], and T. Fujii[3]
[1]Japan Agency for Marine-Earth Science and Technology, JAPAN, [2]Kochi University, JAPAN, and [3]University 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. Jensen[1], J. Lee[2], H. Mehrabani[1], H. Jiao[1], and J. Kim[2]
[1]HJ Science Technology, USA and [2]Texas 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
Northeastern University, USA

Food & Nutrition

M.527f
EIGHT-CHAMBER MICROFLUIDIC DEVICE WITH INTEGRATED LOOP MEDIATED ISOTHERNMAL 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
Danmarks Tekniske Universitet (DTU), DENMARK

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. Uemura[1], K. Mawatari[1,2], and T. Kitamori[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

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. Yun[1], Y.G. Jung[3], S.H. Song[1], S. Kwon[2,3], and W. Park[1]
[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. Li[1], K.-W. Chang[1], C.-H. Yang[2], S.-C. Shiesh[2], and G.-B. Lee[1]
[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. Srinivasan[1], Y. Ping[2], and S. Tung[1]
[1]University of Arkansas, USA and [2]Shenyang 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. Zhang[1], T. Akai[1], M. Sohgawa[2], K. Takada[1], K. Yamashita[1], and M. Noda[1]
[1]Kyoto Institute of Technology, JAPAN and [2]Niigata 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 *PSEDOMONAS 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. Anastasopoulou[1], A. Malainou[1], A. Salapatas[1], N. Chronis[2], S. Papagerakis[2], G. Jobst[3], I. Raptis[1], and K. Misiakos[1]
[1]National Center for Scientific Research Demokritos, GREECE, [2]University of Michigan, USA, and
[3]Jobst Technologies GmbH, GERMANY

M.548g
ATTOLITER-SIZED ARRAYED LIPID BILAYER CHAMBER SYSTEM FOR HIGHER SENSITIVE TRANSPORTER ASSAY
N. Soga[1], R. Watanabe[1,2], T. Yamanaka[1], and H. Noji[1]
[1]University of Tokyo, JAPAN and [2]Japan 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. Tokuda[1], M. Takahashi[2], K. Masuda[1], T. Kawamura[1], Y. Ohta[1], M. Motoyama[1], T. Noda[1], K. Sasagawa[1], T. Okitsu[3], S. Takeuchi[3], and J. Ohta[1]
[1]Nara Institute of Science and Technology, JAPAN, [2]BEANS Laboratory, JAPAN, and [3]The University of Tokyo, JAPAN

T.552g
DEVELOPMENT OF AN INTEGRATED NANOFLUIDIC DEVICE FOR THE DETECTION OF SEQUENCE VARIATIONS IN dsDNA
F.I. Uba[1], K.M.W. Ratnayake[2], J. Wu[2], Y.K. Cho[3], H.J. Shin[3], and S.A. Soper[1]
[1]University of North Carolina, USA, [2]Louisiana State University, USA, and
[3]Ulsan 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. Sun[1], M. Ouyang[2], Z. Cao[1], S. Ma[1], Y. Wang[2], and C. Lu[1]
[1]Virginia Polytechnic Institute and State University, USA and [2]University of California, San Diego, USA

W.556g
EXOSOMAL MEMBRANE PROTEIN DETECTION BY NANOWIRE DEVICE
Y. Konakade[1], T. Yasui[1], T. Yanagida[2], N. Kaji[1], Y. He[2], M. Kanai[2], K. Nagashima[2], H. Yukawa[1], T. Kawai[2], and Y. Baba[1,3]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and
[3]National 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]
[1]Stanford University, USA, [2]Stanford Genome Technology Center, USA, and [3]Stanford School of Medicine, USA

T.558g
FROM CHIP-IN-A-LAB TO LAB-ON-A-CHIP
C. Campos[1], C. Wong[2], J. Bo[2], J. Reboud[3], A. Manz[1], and P. Neuzil[1]
[1]Korea Institute of Science and Technology (KIST) - Europe, GERMANY, [2]Institute of Microelectronics, SINGAPORE, and
[3]University of Glasgow, UK

W.559g
FUNCTIONALIZED COLLOIDAL SELF-ASSEMBLED PARTICLES IN MICROCHIP FOR IMMUNO-AFFINITY CHROMATOGRAPHY
L. Zhang[1], A.B. Members[2], and D.J. Harrison[1,2]
[1]University of Alberta, CANADA and [2]National Institute for Nanotechnology-National Research, CANADA

M.560g
CMOS-COMPATIBLE PHOTONIC CRYSTICAL CHIP FOR PROTEIN DETECTION
F. Liang, N. Clarke, and Q. Quan
Harvard University, USA

T.561g
HIGH SENSITIVE DETECTION OF BIOMOLECULE BY SYNTHESISED PEPTIDE BIOPROBE ON-CHIP BASED PROGRAMMABLE BIOSENSOR
L. Ngashangva[1], R. Bhardwaj[1], Y. Ukita[2], Y. Takamura[1], and M. Biyani[1],
[1]Japan Advanced Institute of Science and Technology (JAIST), JAPAN and [2]University 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. Takenaka[1], S. Togashi[1], R. Miyake[2], T. Sakaguchi[3], and M. Hide[3]
[1]Hitachi, Ltd, JAPAN, [2]University of Tokyo, JAPAN, and [3]Hiroshima University, JAPAN

W.565g
LAB-ON-BLU-RAY: LOW-COST ANALYTE DETECTION ON A DISK
M. Donolato[1], P. Antunes[1], R. Burger[1], F. Bosco[1], M. Olsson[1], J. Yang[2], C.-H. Chen[3], Q. Lin[2], E.T. Hwu[3], A. Boisen[1],
and M.F. Hansen[1]
[1]Danmarks Tekníske Unívérsítet (DTU), DENMARK, [2]Columbia University, USA, and [3]Academia 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. Cakmak[1], E. Ermek[2], N. Kilinc[2], I. Baris[1], I.H. Kavakli[1], G.G. Yaralioglu[3], and H. Urey[1]
[1]Koç University, TURKEY, [2]Gebze Institute of Technology, TURKEY, and [3]Özyegin 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. Simmons[1], M. McRae[1], N. Christodoulides[1], J. Hayes[2], R. Mehalso[2], P.V. Ruijven[2], and J.T. McDevitt[1]
[1]Rice University, USA and [2]MiniFAB 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 UTLIZING A COMPACT SURFACE PLASMON GRATING SENSOR INTEGRATED ON A MICROFLUIDIC SYSTEM
K.-W. Chang[1], H.-T. Chou[1], C.-H. Yang[2], S.-C. Shiesh[2], M.-C. Lee[1], and G.-B. Lee[1]
[1]National Tsing Hua University, TAIWAN and [2]National Cheng Kung University, TAIWAN

T.576g
OPTICAL NANOSENSOR PROBES FOR SINGLE CELL DIAGNOSTICS
Q. Quan
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. Tachibana[1], M. Saito[1], S. Shibuya[2], T. Nakatani[2], K. Tsuji[2], K. Yamanaka[1], and E. Tamiya[1]
[1]Osaka University, JAPAN and [2]Panasonic Corporation, JAPAN

T.579g
128-CHANNEL FLEXIBLE MEA WITH DRUG DELIVERY CHANNELS FOR *IN VIVO* NERVE STIMULATION AND RECORDING
S.E. Lee[1], J.H. Byun[1], J. Jeong[1], J.H. Kim[1], S.-H. Ahn[1], J.H. Park[1], K.S. Min[1], S.B. Jun[2], N.L. Jeon[1], and S.J. Kim[1]
[1]Seoul National University, SOUTH KOREA and [2]Ewha 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. Sivashankar[1], D. Castro[1], and I.G. Foulds[2]
[1]King Abdullah University of Science and Technology (KAUST), SAUDI ARABIA and [2]University 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 πDEP)
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. Zhao[1], Y. Yang[2], L.K. Chin[1], W.M. Zhu[1], Z.H. Yang[3], H.X. Zhang[3], and A.Q. Liu[1]
[1]Nanyang Technological University, SINGAPORE, [2]Wuhan University, CHINA, and [3]Peking 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. Bhardwaj[1], L. Ngashangva[1], Y. Ukita[2], M. Biyani[1], and Y. Takamura[1]
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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. Mostafalu[1], M. R.Dokmeci[2], B. Ziaie[3], A. Khademhosseini[2], and S. Sonkusale[1]
[1]Tufts University, USA, [2]Brigham and Women's Hospital, Harvard Medical School, USA, and [3]Purdue University, USA

M.593g
HIGH PERFORMANCE ISFET-BASED PH SENSOR UTILIZING LOW-COST INDUSTRIAL-GRADE TOUCH PANEL FILM AS THE GATE STRUCTURE
S.-J. Wu[1], Y.-C. Wu[1,2], and C.-H. Lin[1]
[1]National Sun Yat-sen University, TAIWAN and [2]Metal 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. Schmidt[1], A. Oseev[1], C. Engel[2], A. Brose[1], and S. Hirsch[3]
[1]Otto-von-Guericke-University Magdeburg, GERMANY, [2]TEPROSA GmbH, GERMANY, and [3]University 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
LOW COST PORTABLE MICROFLUIDIC ELECTROCHEMICAL SENSOR FOR DETECTION OF ARSENIC IN DRINKING WATER
B. Mall[1], K. Sachsenheimer[1], C. Neumann[1], J. Stölting[2], and B.E. Rapp[1]
[1]Karlsruhe Institute of Technology (KIT), GERMANY and [2]University of Applied Sciences Karlsruhe, GERMANY

M.599g
IONIC ELECTRODES FOR CAPACITIVELY COUPLED CONTACTLESS CONDUCTIVITY DETECTION ON ELECTROPHORESIS MICROCHIPS
G.F.D. Junior[1], K.J.M. Francisco[2], C.L. do Lago[2], E. Carrilho[2], W.K.T. Coltro[1], and J.A.F. Silva[3]
[1]Universidade Federal de Goias, BRAZIL, [2]Universidade de Sao Paulo, BRAZIL, and [3]Universidade Estadual de Campinas, BRAZIL

T.600g
LSI-BASED AMPEROMETRIC CHIP DEVICE WITH 400 SENSORS FOR DETECTION OF ALKALINE PHOSPHATASE AND RESPIRATION ACTIVITIES OF EMBRYONIC STEM CELLS
Y. Kanno[1], K. Ino[1], K.Y. Inoue[1], A. Suda[2], R. Kunikata[2], M. Matsudaira[1], H. Shiku[1], and T. Matsue[1]
[1]Tohoku University, JAPAN and [2]Japan Aviation Electronics Ind., JAPAN

W.601g
MICROCHIP FREE-FLOW ISOELECTRIC FOCUSING USING A PHOTOLITHOGRAPHICALLY INTEGRATED NIR FLUORESCENT pH SENSOR LAYER
C. Herzog[1], A. Peretzki[1], D. Aigner[2], T. Mayr[2], and S. Nagl[1]
[1]Universität Leipzig, GERMANY and [2]Technische 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. Yasaki[1], T. Yasui[1], S. Rahong[1], T. Yanagida[2], N. Kaji[1], M. Kanai[2], K. Nagashima[2], T. Kawai[2], and Y. Baba[2,3]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and
[3]National 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
K. Oyama[1], N. Kakita[1], H. Miyashita[1], S. Kishida[1], J.-O. Lee[2], and S.-S. Lee[1]
[1]Tottori University, JAPAN and [2]Korea Research Institute of Chemical Technology, SOUTH KOREA

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
MESA+, University of Twente, THE NETHERLANDS

W.607g
pH AND TEMPERATURE SENSORS MOUNTED INTO GIANT LIPID VESICLES FOR AN ENVIRONMENTALLY RESPONSIVE PLATFORM
T. Osaki[1,2], K. Kamiya[1,3], and S. Takeuchi[1,2]
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[3]Japan Science and Technology Agency (JST), JAPAN

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

W.610g
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

M.611g
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.612g
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.613g
A 3D-PRINTED MINIATURIZED ION SOURCE FOR MASS SPECTROMETRY BASED ON PAPER SPRAY IONIZATION WITH INTEGRATED, PASSIVE FLUID CONTROL
G.IJ. Salentijn[1,2], H.P. Permentier[1], and E. Verpoorte[1]
[1]University of Groningen, THE NETHERLANDS and [2]TI-COAST, THE NETHERLANDS

M.614g
APTAMER/ISET-MS: A NEW AFFINITY BASED MALDI-MS METHOD FOR IMPROVED DETECTION OF BIOMARKERS
S.J. Lee[1], B. Adler[1], S. Ekström[1], M. Rezeli[1], Á. Végvári[1], J.-W. Park[1], J. Malm[1], and T. Laurell[1,2]
[1]Lund University, SWEDEN and [2]Dongguk University, SOUTH KOREA

T.615g
DEVELOPMENT OF MINIATURIZED IONIZATION SOURCE FOR PROTEIN MASS SPECTROMETRY ON A CHIP
K. Sugiyama[1], H. Harako[1], Y. Ukita[2], and Y. Takamura[1]
[1]Japan Advanced Institute of Technology (JST), JAPAN and [2]University of Yamanashi, JAPAN

W.616g
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.617g
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.618g
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.619g
A HYBRID PDMS/PAPER PASSIVE PUMP FOR SLOW-RELEASE/DELIVERY OF DRUGS IN CHRONIC DERMAL WOUNDS
R. Rahimi[1], M. Ochoa[1], J. Zhou[1], A. Tamayol[2], M.R. Dokmeci[2], A. Khademhosseini[2], A. Ghaemmaghami[3], and B. Ziaie[1]
[1]Purdue University, USA, [2]Harvard-MIT Health Sciences and Technology, USA, and [3]University of Nottingham, UK

T.620g
AN EASY-TO-INTEGRATE AND DISPOSABLE MICROPUMP FOR MANUFACTURING MICROFLUIDIC LAB-ON-A-CHIP
J. Han[1], J. Kai[1], A. Puntambekar[1], S.H. Lee[1], and C.H. Ahn[1,2]
[1]Siloam Biosciences, USA and [2]University of Cincinnati, USA

W.621g
AN ON-BOARD MICEROFLUIDIC 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.622g
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.623g
CAPILLARY MICROFLUIDIC CHIP WITH INTEGRATED PUMP AND VALVE ACTUATOR
A. Große[1,2], S. Geidel[1], T. Enderlein[2], S. Gross[3], A. Morschhauser[1], J. Nestler[2], J. Edelmann[3], T. Otto[1,2], and T. Gessner[1,2]
[1]Fraunhofer Institute for Electronic Nano Systems (ENAS), GERMANY, [2]Technische Universitaet Chemnitz, GERMANY, and [3]Fraunhofer Institute for Machine Tools and Forming Technology (IWU), GERMANY

W.624g
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.625g
GETTING STARTED WITH OPEN-HARDWARE: DEVELOPMENT AND CONTROL OF MICROFLUIDIC DEVICES
E.T. Da Costa[1,2], M.F. Mora[3], P.A. Willis[3], C.L. Do Lago[2], H. Jiao[4], and C.D. Garcia[1]
[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.626g
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.627g
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.628g
MONOLITHIC, LOW-POWER MICROPUMP TOWARDS INTEGRATED MICROFLUIDIC SYSTEMS
A. Michaelian, C. Truong, and U. Kim
Santa Clara University, USA

T.629g
MULTI-SORTING SYSTEM BASED ON DISTANTLY PLACED ON-CHIP GEL-ACTUATORS
K. Ito[1], S. Sakuma[1], Y. Yokoyama[2], and F. Arai[1]
[1]Nagoya University, JAPAN and [2]Toyama Industrial Technology Center, JAPAN

Optical Detection

W.630g
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.631g
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.632g
ARRAY OF HIGHLY SENSITIVE SUPERCRITICAL ANGLE FLUORESCENCE MICRO-OPTIC STRUCTURES IN A DISPOSABLE LAB-ON-A-CHIP FOR MULTIPLEXED DETECTION
T.W. Hung[1], S. Yi[1], C.E. Poulsen[1], T.L. Quyen[1], W.H. Chin[1], D. Bang[1], L.B. Nielsen[2], B. Overby[2], M. Heller[2], and A. Wolff[1]
[1]Technical University of Denmark, DENMARK and [2]Scandinavian Micro Biodevices, DENMARK

W.633g
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.634g
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]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

T.635g
DEVELOPMENT OF 10^1 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.636g
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.637g
EMBEDDED THIN-FILM MIRRORS FOR IMPROVED OPTICAL DETECTION SENSITIVITY IN MICROCHIP ELECTROPHORESIS
A. Bonabi[1], S. Tähkä[1], V. Jokinen[2], and T. Sikanen[1]
[1]University of Helsinki, FINLAND and [2]Aalto University, FINLAND

T.638g
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.639g
FLUORESCENCE ANISOTROPY FROM INDIVIDUAL NANOLITRE DROPLETS ENABLES QUANTITATIVE AFFINITY DETERMINATION
F. Gielen[1], M. Butz[1], E.J. Rees[1], M. Erdelyi[2], J.B. Edel[3], C.F. Kaminski[1], and F. Hollfelder[1]
[1]University of Cambridge, UK, [2]University of Szeged, HUNGARY, and [3]Imperial College London, UK

M.640g
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.641g
LCD-CCD SYNCHRONIZATION DETECTION FOR FLUORESCENCE POLARIZATION IMMUNOASSAY
O. Wakao[1], Y. Fujii[2], A. Ishida[1], H. Tani[1], A. Hibara[3], and M. Tokeshi[1]
[1]Hokkaido University, JAPAN, [2]University of Tokyo, JAPAN, and [3]Tokyo Institute of Technology, JAPAN

W.642g
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.643g
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.644g
OPTICAL WAVEGUIDE INTEGRATED WITH A COUPLING PRISM AND MICROLENSES
D.S. Park[1], B. Young[2], B.H. You[3], V. Singh[1], S.A. Soper[2], A. Baird[4], and M.C. Murphy[1]
[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.645g
OPTOFLUIDIC HIGH-THROUGHPUT DETECTION OF FLUORESCENT DROPS AND SUB-ATTOMOLAR ENZYME CONCENTRATIONS
M. Kim[1], S. Pang[2], C. Han[2], C. Yang[2], and S.K.Y. Tang[1]
[1]Stanford University, USA and [2]California Institute of Technology, USA

M.646g
PLASMON ASSISTED SYNTHESIS OF HIGHLY FLUORESCING SILVER QUANTUM CLUSTER / POLYMER COMPOSITES FOR BIOCHEMICAL SENSING
S. Bernard[1], J.P. Kutter[2], and K.B. Mogensen[1]
[1]Technical University of Denmark, DENMARK and [2]University of Copenhagen, DENMARK

T.647g
POLYMER BASED PHOTONIC CRYSTAL CAVITY FOR HIGHLY SENSTIVE OPTICAL DETECTION
K. Maeno, S. Aki, T. Endo, K. Sueyoshi, and H. Hisamoto
Osaka Prefecture University, JAPAN

W.648g
POLYMER/TiO_2 HYBRID TWO-DIMENSIONAL PHOTONIC CRYSTAL FOR ENHANCED FLUORESCENCE DETECTION
S. Aki, T. Endo, K. Sueyoshi, and H. Hisamoto
Osaka Prefecture University, JAPAN

M.649g
REAL-TIME MONITORING OF MELTING CURVES ON DNA MICROARRAYS IN A LAB-ON-FOIL SYSTEM USING SILICON PHOTOMULTIPLIER DETECTORS
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T.650g
SINGLE NANOBEADS DETECTION BY SCANNING LASER SPOT FOR IMMUNOSENSING
K. Tsujita[1], Y. Hasegawa[1], M. Ono[1], M. Itonaga[1], Y. Kabe[2], S. Sakamoto[3], and H. Handa[4]
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W.651g
SINGLE-MOLECULE ENZYME ASSAY WITH A LENSLESS FLOUORESTCENT IMAGING DEVICE
K. Sasagawa[1,4], S.-H. Kim[2,4], L. Yamauchi[2,4], K. Kitaguchi[1], H. Takehara[1], 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.652g
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.653g
THERMAL LENS DETECTION DEVICE USING MACH-ZEHNDER INTERFEROMETER WAVEGUIDE
H. Morita[1], H. Shimizu[1], M. Sakakura[2], Y. Shimotsuma[2], K. Miura[2], K. Hirao[2], K. Mawatari[1], and T. Kitamori[1]
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W.654g
VIRUS INFECTIVITY DETECTION BASED ON EFFECTIVE REFRACTIVE INDEX USING OPTOFLUIDIC IMAGING
P.Y. Liu[1], L.K. Chin[2], W. Ser[2], T.C. Ayi[3], P.H. Yap[3], T. Bourouina[1], and Y. Leprince-Wang[1]
[1]Université Paris-Est, FRANCE, [2]Nanyang Technological University, SINGAPORE, and [3]DSO National Laboratories, SINGAPORE

Others

M.655g
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.656g
A POLYMER-BASED MEMS ISOTHERMAL TITRATION CALORIMETER
Y. Jia, Z. Zhang, B. Wang, and Q. Lin
Columbia University, USA

W.657g
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.658g
MICROFLUIDIC NMR STRIPLINE CHIP WITH HIGHER MECHANICAL STABILITY AND ENHANCED SENSITIVITY
H. Zhang[1], K.C.H. Tijssen[2], R.M. Tiggelaar[1], J.W.G. Janssen[2], P.J.M. Van Bentum[2], A.P.M. Kentgens[2], and J.G.E. Gardeniers[1]
[1]MESA+, University of Twente, THE NETHERLANDS and [2]University Nijmegen, THE NETHERLANDS

Physical Sensors

W.659g
AN EMBEDDED MICROCHANNEL IN A MEMS PLATE RESONATOR FOR ULTRASENSITIVE MASS SENSING IN LIQUID
C. Hadji, C. Berthet, M. Cochet, F. Baléras, B. Icardand V. Agache
CEA/LETI, FRANCE

M.660g
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.661g
HIGHLY ACCURATE THIN-FILM FLEXIBLE MICROSENSOR FOR CONTINUOUS AND QUANTITATIVE MEASUREMENT OF CEREBRAL BLOOD FLOW
C. Li[1], P. Wu[1], Z. Wu[2], N. Mehan[1], N. Bhattacharjee[2], C. Ahn[2], J. Hartings[2], and R. Narayan[1]
[1]Feinstein Institute for Medical Research, USA and [2]Universtiy of Cincinnati, USA

W.662g
ONE DIMENSIONAL MODEL OF THERMORESISTIVE MICRO CALORIMETRIC FLOW SENSORS FOR GASES AND LIQUIDS CONSIDERING PRANDTL NUMBER EFFECT
W. Xu[1], K. Song[1], S. Ma[1], Y. Chiu[2], and Y.-K. Lee[1]
[1]Hong Kong University of Science and Technology, HONG KONG and [2]National Chiao Tung University, TAIWAN

Visualization & Imaging Technologies

M.663g
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.664g
DEVELOPMENT OF A SIMPLE, ROBUST AND REAL-TIME IMAGE PROCESSING ALGORITHM FOR TRACKING AND ANALYZING CELLS AND DROPLETS INSIDE MICROCHANNELS
A.M. Esmaeel, A.B. Sharkawy, T. ElMelegy, and M. Abdelgawad
Assiut University, EGYPT

W.665g
DUAL-VIEW FLOW CHANNEL VISUALIZATION
A. Hibara[1], Y. Kazama[2], E.T. Carlen[3,4], and A. van den Berg[4]
[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.666g
MICRO BIOIMPEDANCE TOMOGRAPHY FOR CONTINUOUS MONITORING OF CELLULAR PROCESSES
R.A. Scott[1], J. Palmisano[2], G. Justin[3], and M. Nasir[4]
[1]University of Illinois, Urbana-Champaign, USA, [2]Naval Research Laboratory, USA, [3]WPC Technologies, USA, and [4]Lawrence Technological University, USA,

T.667g
MICROFLUIDIC STRETCHING OF DNA WITH FLUORESCENT GOLD NANOPARTICLE FOR OPTICAL/ELECTRON MICROSCOPIC IMAGING OF A SINGLE DNA METHYLATION
D. Takeshita[1], D. Onoshima[2], Y. Hiroshi[2], T. Yasui[1,2], N. Kaji[1,2], and Y. Baba[1,2]
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W.668g
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.669g
SIMULTANEOUS MEASUREMENT OF 3D INTERFACIAL GEOMETRY AND INTERNAL FLOW STRUCTURE OF MICRO DROPLET USING DIGITAL HOLOGRAPHIC MICROSCOPY
M. Oishi[1], T. Matsuo[2], H. Kinoshita[1], T. Fujii[1], and M. Oshima[1]
[1]University of Tokyo, JAPAN and [2]Ushio Inc., JAPAN

T.670g
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.671g
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.672h
MICROREACTORS FOR CLICK CHEMISTRY-BASED SYNTHESIS OF MOLECULAR IMAGING PROBES
J.W. Whittenberg[1], H. Li[2], H. Zhou[2], J. Koziol[1], A.V. Desai[1], D.E. Reichert[2], and P.J.A. Kenis[1]
[1]University of Illinois, Urbana-Champaign, USA and [2]Washington University, St. Louis, USA

Chromatographic Separations

T.673h
DESIGN OF A MICROFLUIDIC CHIP FOR SPATIAL THREE DIMENSIONAL LIQUID CHROMATOGRAPHY SEPARATIONS
B. Wouters[1], P. Schoenmakers[2], and S. Eeltink[1]
[1]Vrije Universiteit Brussel, BELGIUM and [2]Universiteit van Amsterdam, THE NETHERLANDS

W.674h
DNA ISOCRATIC CHROMATOGRAPHY IN VAPOR PHASE FUNCTIONALIZED SILICON MICROPILLAR ARRAY CHIPS
L. Zhang[1], P. Fiorini[1], B. Majeed[1], L. Lagae[1], and W. De Malsche[2]
[1]IMEC, BELGIUM and [2]Vrije Universiteit Brussel, BELGIUM

M.675h
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.676h
LABEL-FREE HPLC DETECTOR USING A DROP GENERATOR
R. Kebriaei and A.S. Basu
Wayne State University, USA

W.677h
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.678h
SILICON BASED MICRO-PRECONCENTRATORS FOR PORTABLE GAS ANALYSIS
B. Bourlon[1], F. Ricoul[1], S. Beghi[1], A. Bellemin-Comte[1], N. David[1], T. Bordy[1], B. Icard[1], A. Salette[2], M. Petitjean[2], R. Barattin[2], V. Gouttenoire[2], and P. Puget[2]
[1]CEA, FRANCE and [2]Apix Technology, FRANCE

Electrophoretic Separations

T.679h
CHARACTERIZATION OF NATIVE THIOL-ENE SURFACE CHEMISTRY FOR MICROCHIP ELECTROPHORESIS AND FLUORESCENCE DETECTION
S.M. Tähkä[1], M.E. Nordberg[1], A. Bonabi[1], V.P. Jokinen[2], and T.M. Sikanen[1]
[1]University of Helsinki, FINLAND and [2]Aalto University, FINLAND

W.680h
COLLOIDAL SELF ASSEMBLED NANOPARTICLES SIEVES WITH ORTHOSILICATE CROSS LINKING FOR PROTEIN SEPARATION IN MICROCHIPS AND RETARDATION COEFFICIENT FOR ON CHIP PROTEIN SIZING
M. Azim[1], A.B. Jemere[2], and D.J. Harrison[1,2]
[1]University of Alberta, CANADA and [2]National Institute of Nanotechnology (NRC), CANADA

T.681h
ENZYME-DOPED POLYESTER THREAD COATED WITH PVC MEMBRANE FOR BLOOD UREA, NITROGEN, AND GLUSCOSE DETECTION IN HUMAN WHOLE BLOOD
Y.-A. Yang and C.-H. Lin
National Sun Yat-sen University, TAIWAN

M.682h
CONFORMATION-SELECTIVE ENRICHMENT OF APTAMER-BOUND NEUROPEPTIDES BY DIELECTROPHORESIS
B.J. Sanghavi[1], W. Varhue[1], A. Rohani[1], J.L. Chavez[2], C.F. Chou[3], and N.S. Swami[1]
[1]University of Virginia, USA, [2]Air Force Research Laboratory, USA, and [3]Academia Sinica, TAIWAN

T.683h
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
Osaka Prefecture University, JAPAN

W.684h
FLUIDIC SCANNING OUTPUT FOR A FREE-FLOW ISOTACHOPHORESIS IN A GLASS CHIP
J. Park, P. Neuzil, and A. Manz
KIST Europe GmbH, GERMANY

M.685h
HIGH SPEED SIZE BASED PROTEINS SEPARATION ON STABILIZED COLLOIDAL SELF ASSEMBLED (CSA) NANOPARTICLE ARRAYS
N. Shaabani[1], A. Jemere[2], and D. Harrison[1]
[1]University of Alberta, CANADA and [2]National Institute for Nanotechnology-National Research, CANADA

T.686
IMPROVED PRECISION USING INTERNAL STANDARDS IN DISPOSABLE POINT-OF-CARE CAPILLARY ELECTROPHORESIS DEVICES
A.C.E. Bidulock, A. van den Berg, and J.C.T. Eijkel
MESA+, University of Twente, THE NETHERLANDS

W.687h
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.688h
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.689h
NONAQUEOUS MICROCHIP ELECTROPHORESIS DEVICE COUPLED WITH MASS SPECTROMETRY FOR LABEL-FREE DETECTION AND CHARACTERIZATION OF LIPID BIOMARKERS
E.R. Foster and P.W. Bohn
University of Notre Dame, USA

W.690h
ONE-STEP PROTEIN ANALYSIS USING SLANTED NANOFILTER ARRAY
S.H. Ko and J. Han
Massachusetts Institute of Technology, USA

M.691h
PALMTOP FULLY-INTEGRATED HIGH-SPEED CAPILLARY ELECTROPHORESIS ANALYZER
J.-Z. Pan, P. Fang, X.-X. Fang, Q. Li, Y.-Q. Chen, and Q. Fang
Zhejiang University, CHINA

T.692h
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.693h
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.694h
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.695h
ULTRAFAST SEPARATION OF SMALL BIOMOLECULES BY THREE-DIMENSIONAL NANOWIRE STRUCTURE
S. Rahong[1], T. Yasui[1], T. Yanagida[2], M. Kanai[2], K. Nagashima[2], N. Kaji[1], T. Kawai[2], and Y. Baba[1,3]
[1]Nagoya University, JAPAN, [2]Osaka University, JAPAN, and
[3]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

Microreactors & Micromixers

W.696h
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.697h
ON-CHIP MICRO ICE-DROPLET BULLET COLLIDER FOR MECHANOCHEMISTRY
Y. Kazoe, T. Matsuno, K. Mawatari, and T. Kitamori
University of Tokyo, JAPAN

Others

T.698h
SEPARATING AND EXTRACTING HELA CELLS FROM HUMAN WHOLE BLOOD VIA NEGATIVE MAGNETOPHORESIS AND LAMINAR FLOW IN FERROFLUIDS
W. Zhao[1], T. Zhu[1], R. Cheng[1], T. Querec[2], E. Unger[2], and L. Mao[1]
[1]University of Georgia, USA and [2]Centers for Disease Control and Prevention (CDC), USA

Particle Separations

W.699h
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
University of Utah, USA

M.700h
A LOW-ASPECT-RATIO, ROLL-TO-ROLL HOT EMBOSSED INERTIAL MICROFLUIDIC SORTER
X. Wang[1], C. Liedert[2], R. Liedert[2], and I. Papautsky[1]
[1]University of Cincinnati, USA and [2]VTT Technical Research Centre of Finland, FINLAND

T.701h
CONTINUOUS ACOUSTIC SEPARATION OF BLOOD COMPONENTS IN PLASTIC MICROFLUIDIC DEVICES
C.A. Palmiotti, H.-C.S. Sun, and J. Fiering
Draper Laboratory, USA

W.702h
A NEW MICROFLUIDIC DEVICE FOR COMPLETE, CONTINUOUS SEPARATION OF MICROPARTICLES
L.-L. Fan[1], X.-K. He[1], Y. Han[2], L. Du[2], L. Zhao[1], and J. Zhe[2]
[1]Xi'an Jiaotong University, CHINA and [2]University of Akron, USA

M.703h
CONTINUOUS ACOUSTIC SORTING OF E. COLI AND G. LAMBLIA IN DRINKING WATER
Y. Xia[1], L. Lei[1], J.B. Zhang[1], P. Ohlsson[2], T. Laurell[2], Z.H. Yang[3], H.X. Zhang[3], and A.Q. Liu[1]
[1]Nanyang Technological University, SINGAPORE, [2]Lund University, SWEDEN, and [3]Peking University, CHINA

T.704h
DEVELOPMENT OF CONTINUOUS CELL LYSIS AND SEPARATION DEVICE USING REPULSIVE FORCE GENERATED BY ION CONCENTRATION POLARIZATION
H. Jeon and G. Lim
Pohang University of Science and Technology (POSTECH), SOUTH KOREA

W.705h
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.706h
HIGH CONSTRICTION RATIO CONTINUOUS INSULATOR BASED DIELECTROPHORETIC PARTICLE SORTING
Q. Wang and C.R. Buie
Massachusetts Institute of Technology, USA

T.707h
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.708
LABEL-FREE FRACTIONATION OF TUMOR- DERIVED EXTRACELLULAR VESICLES FROM HUMAN BLOOD USING DETERMINISTIC LATERAL DISPLACEMENT EFFECT
A.J. Laki[1], L. Botzheim[1], K. Ivan[1], T. Szabó[2], V. Tamaási[2], E.J. Buzás[2], and P. Civera[3]
[1]Pázmány Peter Catholic University, HUNGARY, [2]Semmelweis University, HUNGARY, and [3]Polytechnic University of Turin, ITALY

M.709h
NEXT-GENERATION MICROFILTER: LARGE SCALE, CONTINUOUS MAMMALIAN CELL RETENTION FOR PERFUSION BIOREACTORS
M. Ebrahimi Warkiani[1], A.K.P. Tay[1], G. Guan[1], and J. Han[2]
[1]Singapore-MIT Alliance for Research and Technology (SMART), SINGAPORE and [2]Massachusetts Institute of Technology, USA

T.710h
SEPARATING PARTICLES OF DIFFERENT MAGNETIC PROPERTIES BY INTEGRATING POSITIVE AND NEGATIVE MAGNETOPHORESIS
T. Zhu, R. Cheng, and L. Mao
University of Georgia, USA

W.711h
STUDY ON CENTRIFUGAL FORCE BASED PARTICLE TRAPPING IN MICRO CHAMBER AT LOWER REYNOLDS NUMBER
B. Sharma[1], M. Biyani[1], Y. Ukita[2], and Y. Takamura[1]
[1]Japan Advanced Institute of Science and Technology, JAPAN and [2]University of Yamanashi, JAPAN

M.712h
USE OF SECONDARY DEAN VORTICES IN SPIRAL MICROCHANNELS FOR CELL SEPARATIONS
N. Nivedita and I. Papautsky
University of Cincinnati, USA

Particle Synthesis

T.713h
DROPLET MICROFLUIDIC PLATFORM FOR AUTOMATED ASSEMBLY OF MULTIFUNCTIONAL NANOSTRUCTURES
D. Ferraro[1], Y. Lin[2], B. Teste[1], D. Talbot[2], L. Malaquin[1], S. Descroix[1], and A. Abou-Hassan[2]
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W.714h
ELASTIC WIRE-FRAME MICROPARTICLES OF CROSS-LINKED BOVINE SERUM ALBUMIN
D. Serien[1] and S. Takeuchi[1,2]
[1]University of Tokyo, JAPAN and [2]Japan Science and Technology Agency (JST), JAPAN

M.715h
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.716h
MICROFLUIDIC HYDROGEL PARTICLE PRODUCTION AND FLOW-ASSISTED ASSEMBLY FOR CONSTRUCTING COMPOSITE SCAFFOLD MATERIALS
K. Krutkramelis and J. Oakey
University of Wyoming, USA

W.717h
SOFTWARE-BASED DESIGN AND FABRICATION OF COMPLEX 3D SHAPED MICROPARTICLES
C.-Y. Wu[1], K. Owsley[1], A.J. Chung[2], and D. Di Carlo[1]
[1]University of California, Los Angeles, USA and [2]Rensselaer Polytechnic Institute (RPI), USA