

Day 1 - Monday, October 26

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**FUTURE OF MANAGING CANCER PATIENTS: A QUEST TO FIND RARE CIRCULATING TUMOR CELLS**  
Mehmet Toner  
*Harvard Medical School, USA*

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**DROPLET-BASED SINGLE-CELL CULTURE COUPLED WITH SMARTPHONE FOR RAPID BACTERIA QUANTIFICATION**  
Yufei Shan, Lihui Ren, Xiaonan Cui, Jian Xu, and Bo Ma  
*Chinese Academy of Sciences, CHINA*

**FLUORESCENCE CHIP-SCALE MICROSCOPE FOR POINT OF CARE DETECTION AND ANALYSIS**  
Jinho Kim and Changhuei Yang  
*California Institute of Technology, USA*

**LAB-ON-A-DRONE DEPLOYMENT OF NUCLEIC ACID-BASED DIAGNOSTICS**  
Aashish Priye¹, Season Wong², and Victor M Ugaz²  
¹Texas A&M University, USA and ²AI Biosciences, Inc., USA

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Prithviraj Mukherjee, Xiao Wang, and Ian Papautsky  
*University of Cincinnati, USA*

**ISO-ACOUSTIC FOCUSING FOR SIZE-INSENSITIVE CELL SEPARATION BASED ON ACOUSTIC PROPERTIES**  
Per Augustsson¹,² and Joel Voldman¹  
¹Massachusetts Institute of Technology, USA and ²Lund University, SWEDEN

**TUNABLE, SHEATHLESS, AND THREE DIMENSIONAL SINGLE-STREAM CELL FOCUSING IN HIGH SPEED FLOWS**  
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*University of California, Los Angeles, USA*
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Iowa State University, USA

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¹Nanyang Technological University, SINGAPORE and
²Massachusetts Institute of Technology, USA

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KAIST, KOREA

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Diane Provencher¹, Anne-Marie Mes-Masson⁷, and Thomas Gervais¹,²
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²Université de Montréal Research Center, CANADA

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Nagoya University, JAPAN

BONE ANGIOGENESIS MODEL WITH HYDROXYAPATITE ON MICROFLUIDIC CHIP
Norhana Jusoh¹, Soojung Oh¹, Sudong Kim¹, Jangho Kim², and Noo Li Jeon¹
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²Chonnam National University, KOREA

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Karl Gilbert², Diane M. Boucher³, Amy B. Hall³, Shawn Hillier³, Taturo Udagawa³, David Newsome³,
Howard Li³, Brenda K. Eustace³, and George M. Whitesides²
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²Harvard University, USA, and
³Vertex Pharmaceuticals Boston, USA

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2CREST, Japan Science and Technology Agency, JAPAN

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4POSTECH, KOREA,
5Sogang University, KOREA, and
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2Japan Science and Technology Agency, JAPAN
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³Barcelona Centre for International Health Research, SPAIN,
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⁵Barcelona University, SPAIN

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Chinese Academy of Sciences, CHINA

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3 The University of Tokyo, JAPAN

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Peng Zhang1, Mei He2, and Yong Zeng1
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2 Kansas State University, USA

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2 Yonsei University College of Medicine, KOREA

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2 Academia Sinica, TAIWAN

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2 Korea Research Institute of Chemical Technology, KOREA

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Hisashi Shimizu1,2, Mariko Kumagai1, Emi Mori1, Kazuma Mawatari1,2, and Takehiko Kitamori1,2
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2 JST-CREST, JAPAN

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2 Yokohama National University, JAPAN
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2Chulalongkorn University, THAILAND, and
3Mahidol University, THAILAND

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²Chonnam National University Medical School, KOREA

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Korea Institute of Science and Technology, KOREA

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²Japan Science and Technology Agency, JAPAN

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²Joint BioEnergy Institute, USA

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²Stockholm University, SWEDEN

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²Osaka University, JAPAN

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2University of Connecticut Health, USA, and
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T.482g A MULTI-FUNCTIONAL MICROFLUIDIC PLATFORM INTEGRATED WITH DUAL CMOS POLYSILICON NANOWIRE SENSOR FOR SIMULTANEOUS HEMOGLOBIN AND GLYCATED HEMOGLOBIN DETCTION
Da-Han Kuan, I-Shun Wang, Chih-Ting Lin, and Nien-Tsu Huang
National Taiwan University, TAIWAN

W.483g A HIGHLY PERFORMED NON-ENZYMATIC ELECTROCHEMICAL SENSOR USING HYBRID ELECTRODE DECORATED WITH GLUCOSE FUNCTIONALIZED REDUCED GRAPHENE OXIDE AND PALLADIUM NANOPARTICLES
Md. Faruk Hossain and Jae Yeong Park
Kwangwoo University, Korea

M.484g DEVELOPMENT OF MICROPERIODIC ARRAY-BASED ELECTROCHEMICAL SENSOR FOR QUANTITATIVE IMMUNOCROMATOGRAHY
Wataru Iwasaki, Ramachandra Rao Sathuluri, Osamu Niwa, and Masaya Miyazaki
National Institute of Advanced Industrial Science and Technology, JAPAN

T.485g RAPID DETECTION OF TOXIC ALCOHOLS USING ON-CHIP BIOSENSOR ARRAY IN EMERGENCY SETTINGS
Jungyoup Han, Aniruddha Puntambekar, and Chong H.Ahn
University of Cincinnati, USA

W.486g DESIGN OF A MICROFLUIDIC SYSTEM FOR MEASUREMENT OF OXYGEN CONSUMPTION BY TISSUE SLICES
Pieter E. Oomen, Maciej D. Skolimowski, Geny M.M. Groothuis, and Elisabeth Verpoorte
Universeeity of Groningen, THE NETHERLANDS
M.487g  IMPEDANCE BASED MICROPARTICLE COUNTER ON AN INTERDIGITATED ELECTRODE (IDE) SURFACE WITH SINGLE-BEAD SENSITIVITY
Leewoon Jang1, Seonho Jang1, Drago Sticker2, Peter Ertl2, and Jungkyu Jay Kim1
1Texas Tech University, USA and
2Austria Institute of Technology, AUSTRIA

T.488g  A WEARABLE CONTINUOUS GLUCOSE MORNITORING SYSTEM WITH ELECTROCHEMICAL SENSOR MODIFIED BY GRAPHENE
Zhihua Pu, Haixia Yu, Kexin Xu, and Dachao Li
Tianjin University, CHINA

W.489g  ION-STEP METHOD FOR SURFACE POTENTIAL SENSING OF SILICON NANOWIRES
Songyue Chen, Albert van den Berg, and Jan Eijkel
University of Twente, THE NETHERLANDS

M.490g  LOW-COST PORTABLE POLYMER-BASED MICRO ELECTROCHEMICAL SENSOR (PMES) SYSTEM FOR RAPID DETECTION OF THE CORDYCEPS SINENSIS
Shenhui Ma1, Kashif Riaz1, Anastasia Maslova1, Bo Gao1, Awadh AlSuhaimi1,2, Kelly Y.C. Lam1, Tina T.X. Dong1, Karl W.K. Tsim1, An Ping Zhang2, and Yi-Kuen Lee1
1Hong Kong University of Science and Technology, HONG KONG,
2Xi'an Jiao Tong University, CHINA, and
3Taibah University, SAUDI ARABIA

T.491g  FINGERPRINT LIBRARY OF VOLATILE ORGANIC COMPOUNDS BY MONOLAYER FUNCTIONALIZED FILM BULK ACOUSTIC RESONATOR ARRAYS
Ye Chang, Ning Tang, Wei Pang, Hao Zhang, Daihua Zhang, and Xuexin Duan
Tianjin University, CHINA

W.492g  AN ULTRASENSITIVE MICRO ION SELECTIVE ARRAYS FOR MULTIPLEX HEAVY METAL IONS DETECTION
Peng Li1, Rui You1, Gaoshan Jing1, and Tianhong Cui2
1Tsinghua University, CHINA and
2University of Minnesota, USA

M.493g  MICRO CATALYTIC METHANE SENSOR BASED ON INKJET PRINTING TECHNIQUE
Wenshuai Lu1, Gaoshan Jing1, Xiaomeng Bian1, and Tianhong Cui2
1Tsinghua University, CHINA and
2University of Minnesota, USA

T.494g  FABRICATION AND CHARACTERIZATION OF MICRO DISSOLVED OXYGEN SENSOR WITH AUTO-REPLACEABLE MEMBRANE
Hyun-jin Lee, Jae-Hyoung Park, and Seung-Ki Lee
Dankook University, KOREA

Mass Spectrometric Detection

W.495g  MONOLITHIC INTEGRATED GLASS MICRONOZZLE EMITTERS ON SILICON FOR NANO- ELECTROSPRAY IONIZATION MASS SPECTROMETRY
Lian Duan, Yifan Liu, and Levent Yobas
Hong Kong University of Science and Technology, HONG KONG
M.496g **SILICON MICROPILLAR ELECTROSPRAY IONIZATION CHIP PLATFORM FOR BIOMOLECULAR ANALYSIS IN AQUEOUS PHASE** ................................................................................................................................. 1752
Saara Hirvonen¹, Katriina Lipponen², Ville Jokinen¹, Tiina Sikanen¹, Sami Franssila¹, Risto Kostiainen², and Tapio Kotiaho²
¹Aalto University, FINLAND and
²University of Helsinki, FINLAND

T.497g **ON-CHIP PROTEIN MASS SPECTROMETRY WITH THE PULSE-HEATING IONIZATION SOURCE AND THE MINIATURIZED ELECTROSTATIC ION LENS** .......................................................... 1755
Kiyotaka Sugiyama, Xi Luo, and Yuzuru Takamura
Japan Advanced Institute of Science and Technology, JAPAN

W.498g **FABRICATION OF THIOL-ENE BASED ELECTROPHORESIS CHIPS WITH FULLY INTEGRATED ELECTROSPRAY IONIZATION EMITTER BY REPLICATION** ...................................................................................... 1758
Sari Maria Tähkä¹, Ashkan Bonabi¹, Ville Jokinen², and Tiina Sikanen¹
¹University of Helsinki, FINLAND and
²Aalto University, FINLAND

**Micropumps, Valves, and Dispensers**

M.499g **INTEGRATING HYPER ELASTIC MEMBRANES IN MICROFLUIDIC DEVICES FOR FLUID STORAGE AND AUTONOMOUS DELIVERY** ................................................................................................................ 1761
Florian Pineda¹, Frédéric Bottausci¹, Laurent Malaquin², and Yves Fouillet¹
¹CEA, FRANCE and
²LAAS-CNRS, FRANCE

T.500g **LOW COST AND HIGHLY INTEGRATED MINIATURE MONOLITHIC LIQUID FLOW CONTROLLING SYSTEM IN POLYMER** ............................................................................................................. 1764
Jaione Etxebarria¹, Javier Berganzo¹, Javier Anduaga¹, Javier Besteiro¹, Monica Brivio², Han Gardeniers³, and Aitor Ezkerra¹
¹IK4-IKERLAN, SPAIN; ²MICRONIT MICROFLUIDICS B.V., THE NETHERLANDS; and ³Mesoscale Chemical Systems (MCS) MESA+ Institute for Nanotechnology, THE NETHERLANDS

W.501g **A PROGRAMMABLE ACOUSTOFLUIDIC PUMP POWERED BY OSCILLATING SHARP-EDGES** ........................................... 1767
Po-Hsun Huang, Nitesh Nama, Zhangming Mao, Peng Li, Yuliang Xie, and Tony Jun Huang
The Pennsylvania State University, USA

T.503g **A VALVE-LESS CAPILLARY SYSTEM: A NOVEL APPROACH FOR PASSIVE FLOW CONTROL ON CHIP** .......................................................... 1770
Ahmed Taher¹,², Benjamin Jones¹, Paolo Fiorini¹, and Liesbet Lagae¹,²
¹IMEC v.z.w., BELGIUM and ²KU Leuven, BELGIUM

W.504g **SELF-ORGANIZED 3D BRIDGING OF CARDIOMYOCYTES TOWARD CREATION OF ULTRA SMALL CELL-DRIVEN PUMPS INTEGRATED IN MICROSTRUCTURE** ................................................. 1773
Yo Tanaka¹, Tadahiro Yamashita¹, and Viola Vogel²
¹RIKEN, JAPAN and ²ETH Zurich, SWITZERLAND

M.505g **LOW-COST INTEGRATED SCREW-BASED MICROPUMPS FOR THERMOPLASTIC MICROFLUIDIC DEVICES** .......................................................... 1776
Omid David Rahmanian and Don L. DeVoe
University of Maryland, USA
Optical Detection

T.506g  AN ELECTRICALLY TUNABLE ASYMMETRICAL LIQUID LENS SYSTEM FOR OPTICAL 
COHERENT TOMOGRAPHY .................................................................................................................. 1779
Po-Wei Hu¹, Fan-Gang Tseng¹, Hsien-Lung Ho², and Rung-Ywan Tsai¹,³
¹National Tsing Hua University, TAIWAN,
²Industrial Technology Research Institute, TAIWAN, and
³Academia Sinica, TAIWAN

W.507g  A FACILE METHOD TO FABRICATE NARROW CHANNEL FOR OPTICAL NANOFIBER SENSING .......... 1782
Lei Zhang¹ and Jinxia Mu²
¹Zhejiang University, CHINA and
²China Jiliang University, CHINA

M.508g  PORTABLE OPTICAL DEVICE FOR MICROFLUIDIC HEMATOCRIT LEVEL MONITORING .................. 1785
Dae-Sik Lee¹, Byoung Goo Jeon², Chunhwa Ihm³, Wan-Joong Kim¹, and Moon Youn Jung¹
¹Electronics and Telecommunications Research Institute (ETRI), KOREA
²KAIST, KOREA, and
³Eulji University, KOREA

T.509g  LABEL-FREE DETECTION OF EXTRACELLULAR VESICLES FOR CANCER DIAGNOSIS ......................... 1789
Taiga Ajiri¹, Takao Yasui², Akihiko Ishida¹, Hirofumi Tani¹, Yoshinobu Baba³, and Manabu Tokeshi¹,²
¹Hokkaido University, JAPAN and
²Nagoya University, JAPAN

W.510g  MULTI-FLUORESCENCE SENSOR PILLARS FOR SIMULTANEOUS CALCIUM AND PH 
AND TEMPERATURE SENSING IN CHIP .............................................................................................. 1792
Hengjun Liu¹, Hisataka Maruyama¹, Osamu Suzuki², and Fumihito Arai¹
¹Nagoya University, JAPAN and
²Tohoku University, JAPAN

M.511g  FABRICATION OF MACH-ZEHNDER WAVEGUIDE BASED THERMAL LENS DETECTION DEVICE 
FOR SENSITIVITY IMPROVEMENT ...................................................................................................... 1795
Hiroki Morita, Hisashi Shimizu, Kazuma Mawatari, and Takehiko Kitamori
The University of Tokyo, JAPAN

T.512g  YOCTOMOLE NON-LABELED PROTEIN DETECTION IN EXTENDED-NANO CHANNEL BY UV 
EXCITATION DIFFERENTIAL INTERFERENCE CONTRAST THERMAL LENS MICROSCOPY ............... 1798
Naoya Miyawaki, Hisashi Shimizu, Kazuma Mawatari, and Takehiko Kitamori
The University of Tokyo, JAPAN

W.513g  NANOPLASMONIC PAPER FOR SEPARATION AND ULTRASENSITIVE DETECTION OF SMALL 
MOLECULES ........................................................................................................................................... 1801
Hyukjin Jung, Moonseong Park, Minhee Kang, and Ki-Hun Jeong
KAIST, KOREA

M.514g  NEAR-INFRARED PLASMONIC ABSORPTION OF THREE-DIMENSION DISK/HOLE CAVITY 
NANOANTENNA FOR HIGH-PERFORMANCE BIOSENSING ....................................................................... 1804
Jiaorong Fan¹, Zhongyuan Li², Hui Yang², Pengcheng Ma¹, and Wengang Wu¹
¹Peking University, CHINA and
²Beijing Institute of Aeronautical Systems Engineering, CHINA
W.525g BACKGROUND-FREE OPTICAL DETECTION WITH ALTERNATIVE COMB ELECTRODE .......................... 1837
Kotohiro Furukawa¹, Mao Fukuyama¹², and Akihide Hibara¹
¹Tokyo Institute of Technology, JAPAN and
²Kyoto Institute of Technology, JAPAN

M.526g INTEGRATION OF SMARTPHONE-BASED ILLUMINATION SENSOR WITH IMMUNOBLOTTING
TECHNIQUE FOR URINARY TYPE II COLLAGEN (UCTX-II) BIOSENSOR ........................................... 1840
Yoo Min Park, Ka Ram Kim, Yong Duk Han, Cunqiang Zhang, and Hyun C. Yoon
Ajou University, KOREA

T.527g FAST DETECTION OF SINGLE NANOPARTICLES IN A MICROFLUIDIC CHANNEL BY
A MICROLENS ARRAY IN COMBINATION WITH CONVENTIONAL OPTICAL MICROSCOPE ............... 1843
Hui Yang, Matteo Cornaglia, and Martin A. M. Gijs
École Polytechnique Fédérale de Lausanne, SWITZERLAND

Others

W.528g ELECTROLYTE/SINGLE CRYSTAL -GA2O3 JUNCTION DIODE SENSOR - ITS ELECTRICAL
CHARACTERIZATION AND APPLICATION IN PICOMOLAR LEVEL miRNA DETECTION ......................... 1846
Tanzilur Rahman, Takekazu Masui, and Takanori Ichiki
¹The University of Tokyo, JAPAN and
²Koha Co., Ltd., JAPAN

M.529g ON-CHIP DETECTION OF RADIOACTIVITY VIA SILICON-BASED SENSORS FOR
THE QUALITY CONTROL TESTING OF RADIOPHARMACEUTICALS .................................................. 1849
Matthew P. Taggart¹, Mark D. Tarn², Mohammad M. N. Esfahani², Stephen J. Archibald², Tom Deakin¹³,
Nicole Pamme², and Lee F. Thompson¹
¹University of Sheffield, UK,
²University of Hull, UK, and
³LabLogic Systems Ltd., UK

T.530g ELECTROOSMOTIC PUMP BASED ON SEPARATION MEDIA FOR MINIATURIZED LC DEVICE .......... 1852
Toyohiro Naito¹, Akihiro Kunisawa¹, Shunta Futagami¹, Takuya Kubo¹, and Koji Otsuka¹
¹Kyoto University, JAPAN and
²Vrije Universiteit Brussel, BELGIUM

Physical Sensors

W.531g DIRECTED MAGNETIC MICRO-BALLOONS FOR IN-FLOW SENSING ........................................ 1855
Niladri Banerjee, Shashank Shekhar Pandey, and Carlos H Mastrangelo
University of Utah, USA

M.532g SCANNING ION CONDUCTANCE MICROSCOPY WITH SIMULTANEOUS FORCE RECORDING .......... 1858
Livie Dorwling-Carter, Dario Ossola, János Vörös, and Tomaso Zambelli
ETH Zurich, SWITZERLAND

T.533g A MICROCALORIMETRIC PLATFORM FOR STUDYING THE HEAT PRODUCED BY CHEMICAL
REACTIONS IN MICROLITRE VOLUMES ..................................................................................... 1861
Rima Padovani, Thomas Lehner, and Martinus Gijs
École Polytechnique Fédérale de Lausanne, SWITZERLAND
ELECTROFLUIDIC PRESSURE SENSOR-EMBEDDED MICROFLUIDIC DEVICE FOR IN-PLANE CELL ELASTICITY MEASUREMENT
Chien-Han Lin, Yu-An Chen, and Yi-Chung Tung
Academia Sinica, TAIWAN

MICROFLUIDIC CALORIMETER FOR ABSOLUTE DOSIMETRY
Jonghyun Kim and Wonhee Lee
KAIST, KOREA

PARALLELIZED SYSTEM FOR BIOPOLYMER DEGRADATION STUDIES THROUGH AUTOMATED MICRORESONATOR MEASUREMENT IN LIQUID FLOW
Andrea Casci Ceccacci¹, Lidia Morelli¹, Fillippo Giacomo Bosco¹, Robert Burger¹, Ching-Hsiu Chen², En-Te Hwu, and Anja Boisen¹
¹Technical University of Denmark, DENMARK and
²Academia Sinica, TAIWAN

A NOVEL FLEXIBLE MICROSENSOR FOR REAL-TIME QUANTIFICATION OF BRAIN EDEMA
Zhizhen Wu¹, Chong H. Ahn¹, and Chunyan Li²
¹University of Cincinnati, USA and
²Feinstein Institute for Medical Research, USA

NORMAL FORCE CHANGE DISTRIBUTIONS ON THE CONTACT AREA DURING THE RESONANT VIBRATIONS OF A SESSILE DROPLET UNDER WHITE NOISE EXCITATION
Nguyen Thanh-Vinh, Kiyoshi Matsumoto, and Isao Shimoyama
The University of Tokyo, JAPAN

ON-CHIP MICRO MANOMETER
Chia-Hung Dylan Tsai, and Makoto Kaneko
Osaka University, JAPAN

SILICON NANO TWEEZERS COMBINED TO A MICROFLUIDIC DEVICE FOR MONITORING THE MECHANICAL EFFECTS OF METAL CATIONS ON DNA
Yannick Tauran¹,², Mehmet C. Tarhan¹,², Nicolas Lafitte³, Laurent Jalabert², Beomjoon Kim², Hiroyuki Fujita², Anthony W. Coleman¹,², and Dominique Collard²
¹University of Lyon, FRANCE and
²The University of Tokyo, JAPAN

MASS AND SIZE CHARACTERIZATION OF PARTICLES IN SOLUTION BY MASS CORRELATION SPECTROSCOPY
Mario M. Modena and Thomas P. Burg
Max Planck Institute for Biophysical Chemistry, GERMANY

HOW TO GET YOUR 3D MICROPARTICLE POSITION: A GENERAL AND SIMPLE APPROACH
Rune Barnkob, Christian J. Kähler, and Massimiliano Rossi
Bundeswehr University Munich, GERMANY

MICROFLUIDIC TEMPERATURE IMAGING BASED ON FLUORESCENT ANISOTROPY
Takuya Aida, Yuki Kameya, and Masahiro Motosuke
Tokyo University of Science, JAPAN
M.544g SIMULTANEOUS MULTIPOINT MEASUREMENT OF NUCLEATION AND DISSOLUTION ........................................ 1894
Aoi Akiyama¹, Mao Fukuyama¹², and Akihide Hibara¹
¹Tokyo Institute of Technology, JAPAN and
²Kyoto Institute of Technology, JAPAN

T.545g DENSITY-CONTROLLED NANOPHOTONIC GRATING - HIGH UNIFORMITY ILLUMINATION
FOR ON-CHIP HOLOGRAPHIC IMAGING ................................................................. 1897
Dries Vercruysse, Vignesh Mukund, Roelof Jansen, Richard Stahl, Xavier Rottenberg, and Liesbet Lagae
IMEC vzw, BELGIUM

W.546g PHOTOPOLYMER MICROFLUIDIC DEVICES FOR INFRARED SPECTRAL
MICROSCOPY OF LIVE CELLS ................................................................. 1900
Giovanni Birarda¹, Andrea Ravasio², Mona Suryana², Sivakumar Maniam², Hoi-Ying Homan¹,
and Gianluca Grenci³
¹Lawrence Berkeley National Laboratory, USA and
²National University of Singapore, SINGAPORE

Separations, Reactions, and Other MicroTAS Applications
Chemical & Particle Synthesis

M.547h CONTROLLED AND LOCALIZED AU-TTF MICRO- AND NANOWIRES FORMATION
BY DIFFUSION OF PRECURSORS THROUGH PDMS ........................................ 1903
Mario Lenz, Bernhard Sebastian, and Petra Stephanie Dittrich
ETH Zurich, SWITZERLAND

T.548h SYNTHESIS OF PH-SENSITIVE MICROPARTICLES USING FLOW LITHOGRAPHY FOR
MULTI-MODULATED DRUG DELIVERY ................................................................. 1906
Hyeon Ung Kim¹, Min Suk Shim², and Ki Wan Bong¹
¹Korea University, KOREA and
²Incheon National University, KOREA

W.549h CRYSTALLIZATION OF PROTEINS BY EMULSIFICATION-INDUCED CONCENTRATION IN
MICRODROPLETS .................................................................................. 1909
Mao Fukuyama¹, Aoi Akiyama², Makoto Harada², Tetsuo Okada², and Akihide Hibara²
¹Kyoto Institute of Technology, JAPAN and
²Tokyo Institute of Technology, JAPAN

M.550h SYNTHESIS OF 3-D GRAPHENE MICRO-STRUCTURE BY A MICROFLUIDIC DROPLET CHIP .......... 1912
Jin Gook Bae, Minsu Park, Dong Ju Han, Sunwoong Bae, Hyun Young Heo, and Tae Seok Seo
KAIST, KOREA

T.551h MOLECULARLY IMPRINTED POLYMER BEADS FABRICATED BY EMULSION DROPLET
METHODS FOR ON-CHIP SOLID PHASE EXTRACTION COLUMNS ................... 1915
Chung Shih Cheng, You Shih Hong, Hong Chien Chong, and Liou Tong Miin
National Tsing Hua University, TAIWAN

W.552h GENERATION OF 3D MICROPARTICLES IN MICROCHANNELS WITH NON-RECTANGULAR
CROSS-SECTIONS .................................................................................. 1918
Sung Min Nam¹, Kibeom Kim², Ji Seob Bae¹, Wook Park², and Wonhee Lee¹
¹KAIST, KOREA and
²Kyung Hee University, KOREA
M.553h COLD FIELD EMISSION IN MICROREACTORS TO PERFORM CHEMICAL REACTIONS ........................................... 1921
Mattia Morassutto, Stefan Schlautmann, Roald Tiggelaar, and Han Gardeniers
University of Twente, THE NETHERLANDS

T.554h PRODUCTION OF CARBON NANOTUBE MICROPARTICLES USING MICROFLUIDIC DROPLETS IN A NON-EQUILIBRIUM STATE ........................................................................................................... 1924
Sakurako Tomii, Masahiro Mizuno, Masumi Yamada, Yasuhiro Yamada, Masahito Kushida, and Minoru Seki
Chiba University, JAPAN

W.555h PREPARATION OF PLGA POROUS MICROCARREER BASED ON MICROFLUIDIC DEVICE .............................. 1927
Chul Min Kim, Asad Ullah, and Gyu Man Kim
Kyungpook National University, KOREA

M.556h MICROFLUIDIC SYNTHESIS OF CO3O4@ZIF-9 CORE-SHELL CATALYSTS FOR PRODUCTION OF HYDROCARBONS BY FISCHER-TROPSCH PROCESS ................................................................. 1930
Ki Won Gyak, Guan-Young Jeong, and Dong-Pyo Kim
POSTECH, KOREA

Chromatographic Separations

T.557h SHORT PATH FAST FLOW HYDRODYNAMIC CHROMATOGRAPHY FOR SMALL AND LARGE MOLECULES ............................................................................................................................ 1933
Yuzuru Iwasaki1, Nobuaki Matsuura2, Suzuyo Inoue1, Katsuyoshi Hayashi1, Michiko Seyama2, and Hiroshi Koizumi1
1NTT Device Technology Laboratories, JAPAN and
2NTT Device Innovation Center, JAPAN

W.558h ON-CHIP INTEGRATION OF SOLID-PHASE-EXTRACTION AND SILICON PILLAR ARRAYS FOR HIGH EFFICIENT LIQUID CHROMATOGRAPHY ........................................................................... 1936
Kanki Nakanishi1, Kailing Shih1, Takahiro Kanamori2, Dong Hyun Yoon1, Takashi Funatsu2, Makoto Tsunoda2, Tetsushi Sekiguchi1, and Shuichi Shoji1
1Waseda University, JAPAN and
2The University of Tokyo, JAPAN

M.559h MONOLITHIC COLUMN-ON-A-CHIP FOR ULTRA-FAST GAS CHROMATOGRAPHY ........................................... 1939
Joachim Fleury, Didier Thiebaut, and Jerome Vial
ESPCI Paris Tech-CNRS-PSL Research University, FRANCE

T.560h EVALUATION OF COLUMN PERFORMANCE OF MICROFABRICATED 3D STRUCTURES FOR LC SEPARATIONS .................................................................................................................. 1942
Makoto Nakamura, Toyohiro Naito, Takuya Kubo, and Koji Otsuka
Kyoto University, JAPAN

W.561h ELECTROCHROMATOGRAPHIC SEPARATION OF PROTEINS IN POLYMAR COATED SILICA NANOPARTICLES Packaged MICROCHANNLES ................................................................................. 1945
Narges Shaabani1, Abebaw Jemere2, and Jed Harrison1,2
1University of Alberta, CANADA and
2National Institute for Nanotechnology-National Research Council, CANADA
M.562h DEVELOPMENT OF GRADIENT LIQUID CHROMATOGRAPHY SYSTEM USING EXTENDED-NANO CHANNEL
Hisashi Shimizu1,2, Kento Sakoya1, Adelina Smirnova1,2, Kazuma Mawatari1,2, and Takehiko Kitamori1,2
1The University of Tokyo, JAPAN and
2JST-CREST, JAPAN

T.563h HIGH EFFICIENT FEMTOLITER REVERSED PHASE CHROMATOGRAPHY IN A 10 MM EXTENDED-NANOCHANNEL FOR AMINO ACIDS ANALYSIS
Adelina Smirnova, Hisashi Shimizu, Kazuma Mawatari, and Takehiko Kitamori
The University of Tokyo, JAPAN

Electrophoretic Separations

W.564h ONLINE CONNECTION OF FREE-FLOW ISOTACHOPHORESIS CHIP TO AN ELECTROSPRAY IONIZATION MASS-SPECTROMETER
Jukyung Park1, Andreas Manz1,2, and Rosanne Guijt1
1KIST Europe GmbH, GERMANY and
2University of Tasmania, AUSTRALIA

M.565h A DEVICE FOR SEPARATING DNA AND RNA IN 250 CELLS IN PREPARATION FOR NEXT GENERATION SEQUENCING
Gordon D. Hoople1,2, Andrew Richards2, Kun Zhang2, and Albert P. Pisano2
1University of California, Berkeley, USA and
2University of California, San Diego, USA

T.566h MICROFLUIDIC ISOTACHOPHORETIC FLUORESCENCE IN SITU HYBRIDISATION OF BACTERIA CELLS
Sui Ching Phung1, Yi Heng Nai2, Mirek Macka1, Rosanne Guijt1, Shane M. Powell1, and Michael C. Breadmore1
1University of Tasmania, AUSTRALIA and
2Deakin University, AUSTRALIA

W.567h NANOFLUIDIC TRAP FOR DNA EXTRACTION FROM BIOLOGICAL SAMPLES
Aliaa Shallan, Rosanne Guijt, and Michael Breadmore
University of Tasmania, AUSTRALIA

M.568h RAPID IDENTIFICATION OF PATHOGENICITY OF AVIAN INFLUENZA VIRUS UTILIZING PORTABLE CGE-SSCP LAB-IN-A-SUITCASE INSTRUMENT
Wojciech Kubicki1, Rafal Walczak1, Beata Pajak2, Krzysztof Kucharczyk2, and Jan Dziuban1
1Wroclaw University of Technology, POLAND and
2BioVectis, POLAND

T.569h WALL-LESS STATIONARY PH BOUNDARY FOR STACKING PROTEINS ON A GLASS MICROCHIP
Hong Heng See1,2, Rosanne M. Guijt1, and Michael C. Breadmore1
1University of Tasmania, AUSTRALIA and
2University Teknologi Malaysia, MALAYSIA

W.570h IMPROVING SEPARATION PERFORMANCE OF MICROCHIP ELECTROCHROMATOGRAPHY USING PLURONIC F-127
Karolina Petkovic-Duran1, Huaying Chen1, Tony Swallow1, Geoff Stevens, Yonggang Zhu1,3
1CSIRO Manufacturing Flagship, AUSTRALIA,
2The University of Melbourne, AUSTRALIA, and
3Melbourne Centre for Nanofabrication, AUSTRALIA
M.571h DEVELOPMENT OF SEPARATION METHOD USING PRESSURE-DRIVEN FLOW ASSISTED MINIATURIZING FREE-FLOW ELECTROPHORESIS
Hyungkook Jeon, Youngkyu Kim, and Geunbae Lim
POSTECH, KOREA

T.572h HIGHLY STABILIZED COLLOIDAL SELF ASSEMBLED NANOPARTICLE BED IN MICRO-CHANNELS FOR HIGH PERFORMANCE SIZE BASED PROTEIN SEPARATION
Mohammad Alaul Azim¹, Abebaw B Jemere², and D Jed Harrison¹,²
¹University of Alberta, CANADA and
²National Institute for Nanotechnology-NRC, CANADA

W.573h BATTERY-POWERED NONAQUEOUS MICROCHIP ELECTROPHORESIS SYSTEM FOR RAPID ANALYSIS OF TAMOXIFEN AND ITS METABOLITES IN HUMAN PLASMA
Hong Heng See¹,², Lee Yien Thang², and Oliver Woodhouse³
¹University of Tasmania, AUSTRALIA and
²University Teknologi Malaysia, MALAYSIA
³eDAQ Pty Ltd., AUSTRALIA

M.574h IMPROVED QUANTIFICATION FOR POINT-OF-CARE CAPILLARY ELECTROPHORESIS BY ADDING AN INTERNAL STANDARD TO THE BACKGROUND ELECTROLYTE
Allison C.E. Bidulock, Albert van den Berg, and Jan C.T. Eijkel
University of Twente, THE NETHERLANDS

T.575h HIGHLY SENSITIVE ENZYME ACTIVITY ASSAY MICRO DEVICE BASED ON ISOELECTRIC FOCUSING USING BIFUNCTIONAL FLUORESCENT SUBSTRATES AND REAGENT-RELEASE HYDROGELS
Kasumi Sugawara, Kenji Sueyoshi, Tatsuro Endo, and Hideaki Hisamoto
Osaka Prefecture University, JAPAN

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W.576h A FUNCTIONALIZED POLYDIMETHYL SILOXANE CHIP FOR SOLVENT-FREE, TEMPERATURE ACTUATED SOLID PHASE EXTRACTION
Sarah Heub¹,², Xueying Mao¹, Laurent Barbe¹, Daniel Caminada¹, and Petra S. Dittrich²
¹Centre Suisse d'Electronique et Microtechnique, SWITZERLAND and
²ETH Zurich, SWITZERLAND

M.577h PHASE SEPARATION METHOD FOR AQUEOUS SAMPLES CONTAINING UNKNOWN RATIO OF ORGANIC PHASES
Akihide Hibara¹,², Kohei Miyazaki³, Tatsuhiro Fukuba³, and Teruo Fujii³
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²The University of Tokyo, JAPAN

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