

Microfluidics, BioMEMS, and Medical Microsystems XV

Saturday - Monday 28 - 30 January 2017

Conference Sessions At A Glance

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1: Manufacturing I
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 Posters-Sunday
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10: Medical Devices
 Panel Discussion: Prospects and Future of Microfluidics
 Best Student Paper Award

Important Dates

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Abstract Due:
 18 July 2016

 Author Notification:
 26 September 2016

 Manuscript Due Date:
 3 January 2017

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SATURDAY 28 JANUARY
[Show All Abstracts](#)

Session 1: Manufacturing I

Saturday 28 January 2017
 1:30 PM - 3:20 PM
 Location: Room 2000 (West Level 2)

 Session Chairs: [Bonnie L. Gray](#), Simon Fraser Univ. (Canada) ; [Holger Becker](#), microfluidic ChipShop GmbH (Germany)

Hybrid carbon nanotube-polymer scaffolds for cardiac tissue regeneration *(Invited Paper)*

Paper 10061-1

Time: 1:30 PM - 2:00 PM

Author(s): Samad Ahadian, Locke Davenport-Huyer, Nathaniel Smith, Milica Radisic, Univ. of Toronto (Canada)

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Fabrication of biomimetic fog-collecting surface micropatterns using femtosecond lasers

Paper 10061-2

Time: 2:00 PM - 2:20 PM

Author(s): Elisabeth Kostal, Sandra Stroj, Stephan Kasemann, FH Vorarlberg (Austria); Victor V. Matyilitsky, Spectra-Physics Rankweil (Austria); Matthias

Domke, FH Vorarlberg (Austria)

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Rapid structuring of proteins on filter paper using lithography

Paper 10061-3

Time: 2:20 PM - 2:40 PM

Author(s): Tobias M. Nargang, Frederik Kotz, Nico Keller, Dorothea Helmer, Bastian E. Rapp, Karlsruher Institut für Technologie (Germany)

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Graphene doped ZnO films for photoelectrowetting on microchannels

Paper 10061-4

Time: 2:40 PM - 3:00 PM

Author(s): Khaled M. Al-Arife, Abu Dhabi Univ. (United Arab Emirates); George K. Knopf, Western Univ. (Canada)


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Laser induced forward transfer technique for the immobilization of biomaterials in biosensors applications

Paper 10061-5

Time: 3:00 PM - 3:20 PM

Author(s): Symeon Papazoglou, Marianeza Chatzipetrou, Maria Massaouti, Ioanna Zergioti, National Technical Univ. of Athens (Greece)

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Coffee Break 3:20 PM - 3:50 PM

Session 2: Microfluidic Devices I

Saturday 28 January 2017

3:50 PM - 5:20 PM

Location: Room 2000 (West Level 2)

Session Chair: [Bonnie L. Gray](#), Simon Fraser Univ. (Canada)

Ion mobility spectrometry-based chemical detection systems for medicine, agriculture and security *(Invited Paper)*

(Canceled)

Paper 10061-6

Time: 3:50 PM - 4:20 PM

Author(s):

Investigation of the capillary flow through open surface microfluidic structures

Paper 10061-8

Time: 4:20 PM - 4:40 PM

Author(s): Ahmed Taher, IMEC (Belgium), KU Leuven (Belgium); Benjamin Jones, Paolo Fiorini, IMEC (Belgium); Liesbet Lagae, IMEC (Belgium), KU Leuven (Belgium)


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A 3D particle focusing device based on tightly curving 3D microchannels

Paper 10061-9

Time: 4:40 PM - 5:00 PM

Author(s): Petra Paiè, Francesca Bragheri, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Dino Di Carlo, Univ. of California, Los Angeles (United States); Roberto Osellame, CNR-Istituto di Fotonica e Nanotecnologie (Italy)


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AC electrothermal technique in microchannels

Paper 10061-10

Time: 5:00 PM - 5:20 PM

Author(s): Alinaghi Salari, Univ. of Calgary (Canada); Maryam Navi, Ryerson Univ. (Canada); Colin Dalton, Univ. of Calgary (Canada)

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Session HT: BiOS Hot Topics

Saturday 28 January 2017

7:00 PM - 9:00 PM

Location: Room 3009 (West Level 3)

SUNDAY 29 JANUARY

[Show All Abstracts](#)

Session 3: Manufacturing II

Sunday 29 January 2017

9:00 AM - 10:00 AM

Location: Room 2000 (West Level 2)

Session Chair: Samad Ahadian, Univ. of Toronto (Canada)

Nanoscale patterning of biopolymers for controlled microfluidic behavior and drug release

Paper 10061-11

Time: 9:00 AM - 9:20 AM

Author(s): Akshit Peer, Iowa State Univ. of Science and Technology (United States), Ames Lab. (United States); Rabin Dhakal, Iowa State Univ. of Science and Technology (United States); Rana Biswas, Iowa State Univ. of Science and Technology (United States), Ames Lab. (United States); Jaeyoun Kim, Iowa State Univ. of Science and Technology (United States)


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3D printed molds for facile PDMS casting of microfluidic channels

Paper 10061-12

Time: 9:20 AM - 9:40 AM

Author(s): Phillip Nguyen, Francisco J. Tovar-Lopez, Kate Fox, Aman Mitchell, RMIT Univ. (Australia)

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Fast and cheap fabrication of molding tools for polymer replication

Paper 10061-14

Time: 9:40 AM - 10:00 AM

Author(s): Christiane Richter, Karlsruher Institut für Technologie (Germany); Nadine Kirschner, Karlsruhe Institute of Technology (Germany); Matthias Worgull, Bastian E. Rapp, Karlsruher Institut für Technologie (Germany)

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Coffee Break 10:00 AM - 10:30 AM

Session 4: Applications I

Sunday 29 January 2017

10:30 AM - 12:00 PM

Location: Room 2000 (West Level 2)


Session Chair: Jin Woo Choi, Wellman Ctr. for Photomedicine (United States)

3D printed disposable optics and lab-on-a-chip devices for chemical sensing with cell phones *(Invited Paper)*

Paper 10061-15

Time: 10:30 AM - 11:00 AM

Author(s): German Comina, Anke Suska, Daniel Filippini, Linköping Univ. (Sweden)

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Implementation of a protocol for assembling DNA in a Teflon tube

Paper 10061-16

Time: 11:00 AM - 11:20 AM

Author(s): Edmond Walsh, Alex Feuerborn, Peter Cook, Univ. of Oxford (United Kingdom)


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Microfluidic particle manipulation using high frequency surface acoustic waves

Paper 10061-17

Time: 11:20 AM - 11:40 AM

Author(s): Ye Ai, Singapore Univ. of Technology & Design (Singapore)


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Rapid prototyped Microfluidic PCR platform to detect mutations associated with multiple drug resistance tuberculosis (MDR-TB)

Paper 10061-18

Time: 11:40 AM - 12:00 PM

Author(s): Smrithi Ajit, Puneeth S B, Bharat Sesham, K.N. Mohan, Sanket Goel, Birla Institute of Technology and Science, Pilani (India)

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Lunch/Exhibition Break 12:00 PM - 1:30 PM

Session 5: Optofluidics I

Sunday 29 January 2017

1:30 PM - 3:00 PM

Location: Room 2000 (West Level 2)


Session Chair: Daniel Filippini, Linköping Univ. (Sweden)

System-level integration of active silicon photonic biosensors *(Invited Paper)*

Paper 10061-19

Time: 1:30 PM - 2:00 PM


Author(s): Loic Laplatine, Edison Luan, Carter Fang, Osama Al'Mrayat, Shayan Rezaie, Karen C. Cheung, The Univ. of British Columbia (Canada); Yonathan Dattner, Luxmox Technology Corp. (Canada); Lukas Chrostowski, The Univ. of British Columbia (Canada)

[Add To My Schedule](#) **Light field 3D endoscope based on electro-wetting lens array**

Paper 10061-20

Time: 2:00 PM - 2:20 PM


Author(s): Jin Su Lee, Gyu Suk Jung, Yong Hyub Won, KAIST (Korea, Republic of)

[Add To My Schedule](#) **Cylindrical liquid lens with tunable-focus**

Paper 10061-21

Time: 2:20 PM - 2:40 PM


Author(s): Huanchen Chen, Univ. of Alberta (Canada); Nima Tabatabaei, Alidad Amirfazli, York Univ. (Canada)

[Add To My Schedule](#) **An optofluidic approach for gold nanoprobe based-cancer theranostics**

Paper 10061-22

Time: 2:40 PM - 3:00 PM

Author(s): Nishtha Panwar, Peiyi Song, Chengbin Yang, Ken-Tye Yong, Swee Chuan Tjin, Nanyang Technological Univ. (Singapore)

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Coffee Break 3:00 PM - 3:30 PM

**Session 6:
Optofluidics II**

Sunday 29 January 2017

3:30 PM - 5:20 PM

Location: Room 2000 (West Level 2)


Session Chair: [Loic Laplatine](#), The Univ. of British Columbia (Canada)

A portable fluorescent sensing system using multiple LEDs *(Invited Paper)*

Paper 10061-23

Time: 3:30 PM - 4:00 PM

Author(s): Young-Ho Shin, Jonathan Z. Barnett, Maria T. Gutierrez-Wing, Louisiana State Univ. (United States); Kelly A. Rusch, North Dakota State Univ. (United States); Jin-Woo Choi, Louisiana State Univ. (United States)

[Add To My Schedule](#) **Design of portable, point-of-care microfluidic cytometry devices for medical diagnostics**
(Canceled)

Paper 10061-24

Time: 4:00 PM - 4:20 PM


Author(s):

Chemiluminescence generation and detection in a capillary-driven microfluidic chip

Paper 10061-25

Time: 4:20 PM - 4:40 PM


Author(s): Charlotte Ramon, Yuksel Temiz, Emmanuel Delamarche, IBM Research - Zürich (Switzerland)

[Add To My Schedule](#) **Multipath trapping dynamics of nanoparticles towards an integrated waveguide with a high index contrast**

Paper 10061-26

Time: 4:40 PM - 5:00 PM

Author(s): Hao Tian, Tianjin Univ. (China), Massachusetts Institute of Technology (United States); Lionel C. Kimerling, Jurgen Michel, Massachusetts Institute of Technology (United States); Guifang Li, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States), Tianjin Univ. (China); Lin Zhang, Tianjin Univ. (China), Massachusetts Institute of Technology (United States)

[Add To My Schedule](#) **Silicon-on-insulator based Microsystem design for efficient in-vivo diagnostic and treatment**
(Canceled)

Paper 10061-27

Time: 5:00 PM - 5:20 PM

Author(s):

**Session PSun:
Posters-Sunday**

Sunday 29 January 2017

5:30 PM - 7:30 PM

Location: Moscone West Levels 2 and 3


Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

Liquid-phase reduction synthesis of mono-dispersed gold nanoparticles on glass microfluidic device with flow rate control

Paper 10061-44

Time: 5:30 PM - 7:30 PM

Author(s): Yu Tanabe, Hiromasa Yagyu, Kanto Gakuin Univ. (Japan)

[Add To My Schedule](#) **Laser generated superhydrophobic rose leaf surfaces for high adhesion droplet arrays**

Paper 10061-45

Time: 5:30 PM - 7:30 PM


Author(s): Sandra Stroj, Matthias Domke, FH Vorarlberg (Austria); Victor V. Matylitsky, Spectra-Physics Rankweil (Austria); Volha Matylitskaya, Stephan Kasemann, FH Vorarlberg (Austria)

[Add To My Schedule](#) **High-sensitivity interpretation of lateral flow immunoassay results using lock-in thermography**

Paper 10061-46

Time: 5:30 PM - 7:30 PM

Author(s): Manu Pallapa, Ashkan Ojaghi, Nima Tabatabaei, Pouya Rezai, York Univ. (Canada)

[Add To My Schedule](#) **Numerical study of insulator-based dielectrophoresis method for circulating tumor cell separation**

Paper 10061-47

Time: 5:30 PM - 7:30 PM


Author(s): Mohammad Aghaamoo, Univ. of California, Irvine (United States); Arian Aghilinejad, Xiaolin Chen, Washington State Univ. Vancouver (United States)

[Add To My Schedule](#) **Numerical study of insulator-based dielectrophoresis method for circulating tumor cell separation**

Paper 10061-48

Time: 5:30 PM - 7:30 PM

Author(s): Mohammad Aghaamoo, Univ. of California Irvine (United States); Arian Aghilinejad, Xiaolin Chen, Washington State Univ. Vancouver (United States)

[Add To My Schedule](#) **MONDAY 30 JANUARY**[Show All Abstracts](#)**Session 7:
Microfluidic Devices II**

Monday 30 January 2017

9:00 AM - 10:00 AM

Location: Room 2000 (West Level 2)

Session Chair: Jian Zhou, Zhejiang Univ. (China)

Piezoelectric micromachined ultrasonic transducers and micropumps: from design to optomicrofluidic applications

Paper 10061-29

Time: 9:00 AM - 9:20 AM


Author(s): Shadi Khazaaleh, Numan Saeed, Raquel Flores, Inas Taha, Mateusz T. Madzik, Jaime Viegas, Masdar Institute of Science & Technology (United Arab Emirates)

[Add To My Schedule](#) **Optimized AC electrothermal micromixing design for biofluid systems**

Paper 10061-30

Time: 9:20 AM - 9:40 AM


Author(s): Alinaghi Salari, Univ. of Calgary (Canada); Maryam Navi, Ryerson Univ. (Canada); Colin Dalton, Univ. of Calgary (Canada)

[Add To My Schedule](#) **CFD study of microfluidic oscillator characteristics for flow-separation control**

Paper 10061-31

Time: 9:40 AM - 10:00 AM

Author(s): Tawfiq Chekifi, Univ. Tahri Mohammed Béchar (Algeria)

[Add To My Schedule](#) **Coffee Break 10:00 AM - 10:30 AM**

Session 8: Applications II

Monday 30 January 2017

10:30 AM - 12:00 PM

Location: Room 2000 (West Level 2)


Session Chair: [Polly Fordyce](#), Stanford Univ. (United States)

Mechano-optical plasmonic nanoantenna *(Invited Paper)*

Paper 10061-32

Time: 10:30 AM - 11:00 AM

Author(s): Somin Eunice Lee, Univ. of Michigan (United States)

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High efficiency isolation of cells in laminar flow microfluidic channels: breaking the mass transport limit

Paper 10061-33

Time: 11:00 AM - 11:20 AM

Author(s): Xiangchao Zhu, Evan Peterson, Ahmet A. Yanik, Univ. of California, Santa Cruz (United States)

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Microfluidic separation of particles from whole blood using shear induced diffusion

Paper 10061-34

Time: 11:20 AM - 11:40 AM

Author(s): Jian Zhou, Zhejiang Univ. (China), Univ. of Cincinnati (United States); Chunglong Tu, Yitao Liang, Bobo Huang, Zhejiang Univ. (China); Yifeng Fang, Xiao Liang, Zhejiang University (China); Ian Papautsky, Univ. of Cincinnati (United States); Xuesong Ye, Zhejiang Univ. (China), Univ. of Cincinnati (United States)


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Controllable gas in oil in water double emulsion formation in a non-planar microfluidic device

Paper 10061-35

Time: 11:40 AM - 12:00 PM

Author(s): Cong Huang, Hongbo Zhang, East China Univ. of Science and Technology (China); Katharina K. C. Koch, Fach Hochschule Lübeck (Germany); Ruixue Yin, East China Univ. of Science and Technology (China); Wenjun Zhang, Univ. of Saskatchewan (Canada), East China Univ. of Science and Technology (China)

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Lunch/Exhibition Break 12:00 PM - 1:30 PM

Session 9: Applications III

Monday 30 January 2017

1:30 PM - 3:00 PM

Location: Room 2000 (West Level 2)


Session Chair: Eunice Lee, Shanghai Optics Inc. (United States)

Multiplexed measurement of protein/peptide interactions using spectrally encoded beads *(Invited Paper)*

Paper 10061-36

Time: 1:30 PM - 2:00 PM

Author(s): Huy Q. Nguyen, Kara K. Brower, Scott Longwell, Jagoree Roy, Stanford Univ. (United States); Bjorn Harink, Brian Baxter, Joseph L. DeRisi, Univ. of California, San Francisco (United States); Martha Cyert, Stanford Univ. (United States); Kurt S. Thorn, Univ. of California, San Francisco (United States); Polly Fordyce, Stanford Univ. (United States)


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Microfluidic system for in-vitro hypoxia assays

Paper 10061-37

Time: 2:00 PM - 2:20 PM

Author(s): Mathias Busek, Fraunhofer IWS Dresden (Germany); Stefan Grünzner, Fraunhofer IWS Dresden (Germany), TU Dresden (Germany); Tobias Steege, Florian Schmieder, Udo Klotzbach, Frank Sonntag, Fraunhofer IWS Dresden (Germany)


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Novel lab-on-a-chip platform for high throughput drug discovery with DNA-encoded chemical libraries

Paper 10061-38

Time: 2:20 PM - 2:40 PM

Author(s): Stefan Grünzner, Fraunhofer IWS Dresden (Germany), TU Dresden (Germany); Francesco V. Reddavid, TU Dresden (Germany); Christian Steinfeld, Udo Klotzbach, Mathias Busek, Frank Sonntag, Fraunhofer IWS Dresden (Germany); Yixin Zhang, TU Dresden (Germany)

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Thermally-assisted acoustophoresis as a new stiffness-based separation method

Paper 10061-39

Time: 2:40 PM - 3:00 PM

Author(s): Ata Dolatmoradi, Bilal El-Zahab, Florida International Univ. (United States)

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Coffee Break 3:00 PM - 3:30 PM

Session 10: Medical Devices

Monday 30 January 2017

3:30 PM - 5:00 PM

Location: Room 2000 (West Level 2)


Session Chairs: [Bonnie L. Gray](#), Simon Fraser Univ. (Canada) ; [Holger Becker](#), microfluidic ChipShop GmbH (Germany)

Integration of systems biology with organs-on-chips to humanize therapeutic development (*Invited Paper*)

Paper 10061-40

Time: 3:30 PM - 4:00 PM


Author(s): Collin Edington, Murat Cirit, Wen Li Kelly Chen, Massachusetts Institute of Technology (United States); Amanda M. Clark, Alan Wells, University of Pittsburgh (United States); David L. Trumper, Linda G. Griffith, Massachusetts Institute of Technology (United States)

[Add To My Schedule](#) **Novel 3-dimensional gold micro-electrodes allow high resolution neural network recording**

Paper 10061-41

Time: 4:00 PM - 4:20 PM


Author(s): Pierre J. J. Wijdenes, Ryden Armstrong, Cezar Gavrilovici, Univ. of Calgary (Canada); Jong M. Rho, Alberta Children's Hospital (Canada); Naweed I. Syed, Colin Dalton, Univ. of Calgary (Canada)

[Add To My Schedule](#) **Tumor-on-a-chip: a new ally against cancer**

Paper 10061-42

Time: 4:20 PM - 4:40 PM


Author(s): Karolina Papera Valente, Mohsen Akbari, Afzal Suleman, Univ. of Victoria (Canada)

[Add To My Schedule](#) **Microfluidic devices for stem-cell cultivation, differentiation and toxicity testing**

Paper 10061-43

Time: 4:40 PM - 5:00 PM

Author(s): Holger Becker, Thomas E. Hansen-Hagge, microfluidic ChipShop GmbH (Germany); Andreas Kurtz, Charité Universitätsmedizin Berlin (Germany); Ralf Mrowka, Universitätsklinikum Jena (Germany); Stefan Wölfl, Heidelberg Univ. (Germany); Claudia Gärtner, microfluidic ChipShop GmbH (Germany)

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Session PD: Panel Discussion: Prospects and Future of Microfluidics

Monday 30 January 2017

5:00 PM - 6:00 PM

Location: Room 2000 (West Level 2)

Moderator: **Holger Becker**, microfluidic ChipShop GmbH (Germany)

The commercialization of microfluidic devices and systems is rapidly progressing. However not all promising approaches have become an economic success and investor's payback often has not met initial expectations. The discussion will look upon experiences made in the product development and market introduction phase of microfluidics enabled devices and will present lessons learned from various perspectives, from device performance to commercial organization. It tries to identify trends and will present case studies from different applications.

Session AWD: Best Student Paper Award

Monday 30 January 2017

6:00 PM - 6:05 PM

Location: Room 2000 (West Level 2)

Best Student Paper Award

We are pleased to announce that a cash prize will be awarded to the best student paper in this conference. Qualifying papers and presentations will be evaluated by the awards committee and the winner will be notified at the end of or after the meeting.

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