

Frontiers in Biological Detection: From Nanosensors to Systems

Sunday - Monday 29 - 30 January 2017

Conference Sessions At A Glance

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1: Plasmonics and SERS
 2: Optofluidics
 Posters-Sunday
 3: Integrated Photonics and Resonators I
 4: Integrated Photonics and Resonators II
 5: Luminescence
 6: New Reagents, Techniques, and Diagnostics
 Nano/Biophotonics Plenary Session

Important Dates

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Abstract Due:
18 July 2016

Author Notification:
26 September 2016

Manuscript Due Date:
3 January 2017

Conference Committee

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[Benjamin L. Miller](#), Univ. of Rochester Medical Ctr. (United States)
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SUNDAY 29 JANUARY
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Session 1: Plasmonics and SERS

Sunday 29 January 2017
 1:30 PM - 3:20 PM
 Location: Room 3012 (West Level 3)

Session Chair: [Benjamin L. Miller](#), Univ. of Rochester Medical Ctr. (United States)


Re-thinking surface enhance Raman spectroscopy (SERS) sensors with a systems perspective *(Invited Paper)*

Paper 10081-1
 Time: 1:30 PM - 2:00 PM
 Author(s): [Ian M. White](#), Univ. of Maryland, College Park (United States)

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Au particle formation on the electron beam induced nanopore membrane for single molecule analysis

Paper 10081-2
 Time: 2:00 PM - 2:20 PM
 Author(s): [Seong Soo Choi](#), [Myoung Jin Park](#), [Chul Hee Han](#), [Sae-Joong Oh](#), Sun Moon Univ. (Korea, Republic of); [Sung-In Kim](#), National Nanofabrication Ctr. (Korea, Republic of); [Namkyoo Park](#), Seoul National Univ. (Korea, Republic of); [Doo-Jae Park](#), Hallym Univ. (Korea, Republic of); [Soo Bong Choi](#), Incheon National University (Korea, Republic of); [Yong-Sang Kim](#), Sungkyunkwan Univ. (Korea, Republic of)

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Therapeutic drug monitoring of flucytosine in serum using a SERS-active membrane system

Paper 10081-3
 Time: 2:20 PM - 2:40 PM
 Author(s): [Adam G. Berger](#), [Ian M. White](#), Univ. of Maryland, College Park (United States)

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Plasmonic nanoantenna array with single-chip integrated metal-organic framework for infrared absorption gas sensing

Paper 10081-4
 Time: 2:40 PM - 3:00 PM
 Author(s): [Xinyuan Chong](#), [Ki-Joong Kim](#), [Erwen Li](#), [Yujing Zhang](#), Oregon State Univ. (United States); [Paul R. Ohodnicki](#), National Energy Technology Lab. (United States); [Carnegie Mellon Univ.](#) (United States); [Chih-Hung Chang](#), [Alan X. Wang](#), Oregon State Univ. (United States)

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Surface enhanced Raman scattering in whispering gallery mode microresonators

Paper 10081-5

Time: 3:00 PM - 3:20 PM

Author(s): Steven H. Huang, Xuefeng Jiang, Washington Univ. in St. Louis (United States); Corey Janisch, Alexander S. Cocking, Zhiwen Liu, The Pennsylvania State Univ. (United States); Lan Yang, Washington Univ. in St. Louis (United States)

[Add To My Schedule](#) **Coffee Break 3:20 PM - 3:50 PM****Session 2:
Optofluidics**

Sunday 29 January 2017

3:50 PM - 5:10 PM


Location: Room 3012 (West Level 3)

Session Chair: [Sharon M. Weiss](#), Vanderbilt Univ. (United States)**Optofluidic reactors for reverse combustion photocatalytic production of hydrocarbons**

Paper 10081-6

Time: 3:50 PM - 4:10 PM


Author(s): Perry Schein, David Erickson, Cornell Univ. (United States)

[Add To My Schedule](#) **Evanescantly pumped optofluidic distributed feedback lasers with aqueous gain fluids**

Paper 10081-7

Time: 4:10 PM - 4:30 PM


Author(s): Markus Karl, Guy L. Whitworth, Marcel Schubert, Christof P. Dietrich, Ifor D. W. Samuel, Graham A. Turnbull, Malte C. Gather, Univ. of St. Andrews (United Kingdom)

[Add To My Schedule](#) **Optofluidic separation of nanoscale bioparticles with plasmonic nanolenses**

Paper 10081-8

Time: 4:30 PM - 4:50 PM


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

[Add To My Schedule](#) **Optofluidic lasers with surface gain**

Paper 10081-9

Time: 4:50 PM - 5:10 PM

Author(s): Han Zhang, Anirudh Balram, Desheng D. Meng, Yuze A. Sun, The Univ. of Texas at Arlington (United States)

[Add To My Schedule](#) **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>.

Breakthrough in bio sensing: immunodiagnostics using label free and non-specific binding less approach

Paper 10081-28

Time: 5:30 PM - 7:30 PM

Author(s): Divya Sharma, Shoolini Univ. (India); R.P. Dwivedi, Shoolini University (India), Shoolini University (India)

[Add To My Schedule](#) **MONDAY 30 JANUARY**[Show All Abstracts](#)**Session 3:
Integrated Photonics and Resonators I**

Monday 30 January 2017

8:20 AM - 9:50 AM

Location: Room 3012 (West Level 3)


Session Chair: [Amos Danielli](#), Bar-Ilan Univ. (Israel)

Exceptional points enhanced sensing in a whispering-gallery-mode resonator

Paper 10081-10

Time: 8:20 AM - 8:40 AM

Author(s): Weijian Chen, Lan Yang, Washington Univ. in St. Louis (United States)

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Ring resonator for biosensing via flow-through approach

Paper 10081-11

Time: 8:40 AM - 9:00 AM

Author(s): Romeo Bernini, Immacolata Angelica Grimaldi, Gianluca Persichetti, Genni Testa, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy)


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Resonant photonic structures in porous silicon for biosensing

Paper 10081-12

Time: 9:00 AM - 9:20 AM

Author(s): Sharon M. Weiss, Gilberto A. Rodriguez, Yiliang Zhao, Tengfei Cao, Vanderbilt Univ. (United States); Yasmin M. Graham, Vanderbilt Univ. (United States), Univ. of Maryland, Baltimore County (United States); Girija Gaur, Vanderbilt Univ. (United States)

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Whispering-gallery-mode resonators and their applications for nanoscale sensing and measurement (Invited Paper)

Paper 10081-13

Time: 9:20 AM - 9:50 AM

Author(s): Steven H. Huang, Weijian Chen, Bo Peng, Guangming Zhao, Huzeyfe Yilmaz, Xiangyi Xu, Xuefeng Jiang, Sahin Kaya Özdemir, Lan Yang, Washington Univ. in St. Louis (United States)

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Coffee Break 9:50 AM - 10:20 AM

Session 4: Integrated Photonics and Resonators II

Monday 30 January 2017

10:20 AM - 12:20 PM

Location: Room 3012 (West Level 3)

Session Chair: [Sharon M. Weiss](#), Vanderbilt Univ. (United States)

On-chip infrared sensors: redefining the benefits of scaling (Invited Paper)

Paper 10081-14

Time: 10:20 AM - 10:50 AM

Author(s): Derek Kita, Hongtao Lin, Tian Gu, Anuradha M. Agarwal, Massachusetts Institute of Technology (United States); Anupama Yadav, Kathleen A. Richardson, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); Igor Luzinov, Clemson Univ. (United States); Juejun Hu, Massachusetts Institute of Technology (United States)


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Enhanced surface sensitivity in microring resonator biosensor based on subwavelength grating waveguides

Paper 10081-15

Time: 10:50 AM - 11:10 AM

Author(s): Hai Yan, The Univ. of Texas at Austin (United States); Lijun Huang, The Univ. of Texas at Austin (United States), Beijing Univ. of Posts and Telecommunications (China); Xiaochuan Xu, Naimei Tang, Swapnajit Chakravarty, Omega Optics, Inc. (United States); Ray T. Chen, The Univ. of Texas at Austin (United States), Omega Optics, Inc. (United States)


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Nanoparticle trapping and characterization with open microcavities

Paper 10081-16

Time: 11:10 AM - 11:30 AM

Author(s): Aurelien Trichet, Philip R. Dolan, Dean James, Gareth M. Hughes, Claire Vallance, Jason M. Smith, Univ. of Oxford (United Kingdom)

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Towards a manufacturing ecosystem for integrated photonic sensors

Paper 10081-17

Time: 11:30 AM - 11:50 AM

Author(s): Benjamin L. Miller, Univ. of Rochester Medical Ctr. (United States)


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Reducing user error in dipstick urinalysis with a low-cost slipping manifold and mobile phone platform (Invited Paper)

Paper 10081-18

Time: 11:50 AM - 12:20 PM

Author(s): Gennifer T. Smith, Nicholas Dwork, Saara A. Khan, Matthew Millet, Kiran Magar, Stanford Univ. (United States); Mehdi Javanmard, Rutgers, The State Univ. of New Jersey (United States); Audrey K. Bowden, Stanford Univ. (United States)

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Lunch Break 12:20 PM - 1:30 PM

Session 5: Luminescence

Monday 30 January 2017

1:30 PM - 3:00 PM

Location: Room 3012 (West Level 3)


Session Chair: [Benjamin L. Miller](#), Univ. of Rochester Medical Ctr. (United States)

X-ray excited luminescent chemical imaging (XELCI) for non-invasive imaging of implant infections *(Invited Paper)*

Paper 10081-19

Time: 1:30 PM - 2:00 PM

Author(s): Unaiza Uzair, Donald W. Benza, Yash S. Raval, Tzuen-Rong J. Tzeng, Clemson Univ. (United States); Caleb J. Behrend, Virginia Tech Carilion School of Medicine (United States); Jeffrey Anker, Clemson Univ. (United States), COMSET (United States)


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Order of magnitude classification of bacterial solutions

Paper 10081-20

Time: 2:00 PM - 2:20 PM

Author(s): Rachel Guo, Cushla McGoverin, Simon Swift, Frédérique Vanholsbeeck, The Univ. of Auckland (New Zealand)

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SYTO 9 staining of bacteria

Paper 10081-21

Time: 2:20 PM - 2:40 PM

Author(s): Cushla McGoverin, The Univ. of Auckland (New Zealand); Scott Choi, Craig Tuffnell, Veritide Ltd. (New Zealand); Julia Robertson, Simon Swift, Frédérique Vanholsbeeck, The Univ. of Auckland (New Zealand)

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Measuring micron-scale displacements through tissue using luminescent spectral rulers for monitoring bone healing

Paper 10081-22

Time: 2:40 PM - 3:00 PM

Author(s): Jeffrey Anker, Clemson Univ. (United States), SC BioCRAFT (United States), COMSET (United States); Melissa M. Rogalski, Donald W. Benza, Hunter L. Pelham, Fathima S. Ameer, John D. DesJardins, Clemson Univ. (United States); Caleb J. Behrend, Virginia Tech Carilion School of Medicine (United States)

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Coffee Break 3:00 PM - 3:30 PM

Session 6: New Reagents, Techniques, and Diagnostics

Monday 30 January 2017

3:30 PM - 5:20 PM

Location: Room 3012 (West Level 3)


Session Chair: [Amos Danielli](#), Bar-Ilan Univ. (Israel)

Peptide-based antibody alternatives for biological sensing in austere environments *(Invited Paper)*

Paper 10081-23

Time: 3:30 PM - 4:00 PM

Author(s): Matthew B. Coppock, Deborah A. Sarkes, Margaret M. Hurley, Dimitra N. Stratis-Cullum, U.S. Army Research Lab. (United States)


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Development of terahertz otoscope for diagnosing otitis media

Paper 10081-24

Time: 4:00 PM - 4:20 PM

Author(s): Tae-In Jeon, Korea Maritime and Ocean Univ. (Korea, Republic of); Young Bin Ji, Yonsei Univ. College of Medicine (Korea, Republic of); Hyeon Sang Bark, Korea Maritime and Ocean Univ. (Korea, Republic of); Sam Kyu Noh, Korea Research Institute of Standards and Science (Korea, Republic of); Seung Jae Oh, Yonsei Univ. College of Medicine (Korea, Republic of)


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Accurate live and dead bacterial cell enumeration using flow cytometry

Paper 10081-25

Time: 4:20 PM - 4:40 PM

Author(s): Fang Ou, Cushla McGoverin, Simon Swift, Frédérique Vanholsbeeck, The Univ. of Auckland (New Zealand)


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Light assisted drying (LAD) for protein stabilization: optimization of laser processing parameters

Paper 10081-26

Time: 4:40 PM - 5:00 PM

Author(s): Madison A. Young, Andrew T. Antczak, Gloria D. Elliott, Susan R. Trammell, The Univ. of North Carolina at Charlotte (United States)


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High-throughput screening based on label-free detection of small molecule microarray

Paper 10081-27

Time: 5:00 PM - 5:20 PM

Author(s): Chenggang Zhu, Yiyang Fei, Fudan Univ. (China); Xiangdong Zhu, UC Davis (United States)

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TUESDAY 31 JANUARY

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Session Plen: Nano/Biophotonics Plenary Session

Tuesday 31 January 2017

10:30 AM - 11:30 AM

Location: Room 3002 (West Level 3)

Welcome and Introduction

Dan Nicolau, McGill Univ. (Canada)

Porous silicon nanoparticles as self-reporting drug delivery vehicles (*Plenary Presentation*)

Paper 10077-500

Time: 10:30 AM - 11:30 AM

Author(s): Michael J. Sailor, Univ. of California, San Diego (United States)

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