Frontiers in Biological Detection: From Nanosensors to Systems XI
Sunday - Monday 3 - 4 February 2019

Conference Sessions At A Glance

1: Gratings and Interferometers
2: Photonic Crystals
3: Magnetics
4: Plasmonics
5: Advanced Sensing Methods I
6: Light, Sound, Heat
7: Photonics I
8: Photonics II
9: Advanced Sensing Methods II

Important Dates

Abstract Due: 25 July 2018
Author Notification: 1 October 2018
Manuscript Due Date: 11 January 2019

Conference Cosponsors

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SUNDAY 3 FEBRUARY

Session 1:
Gratings and Interferometers

Sunday 3 February 2019
9:00 AM - 10:20 AM

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

Diffraction-based sensing: from fundamental principles to biodiagnostics (Invited Paper)
Paper 10895-1

Author(s): M. Cynthia Goh, Richard Loo, Jane B. Goh, Richard A. McAloney, Univ. of Toronto (Canada)

https://spie.org/pwb/conferencedetails/biological-detection?print=2
10000-fold improvement in label-free (bio)sensing using nanostructured porous silicon interferometers
Paper 10895-2
Author(s): Stefano Mariani, Univ. di Pisa (Italy); Lucanos M. Strambini, Consiglio Nazionale delle Ricerche (Italy); Giuseppe Barillaro, Univ. di Pisa (Italy)
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Rapid diagnostic susceptibility testing of bacteria and fungi from clinical samples using silicon gratings *(Invited Paper)*
Paper 10895-3
Author(s): Ester Segal, Heidi Leonard, Technion-Israel Institute of Technology (Israel); Christopher Heuer, Technion-Israel Institute of Technology (Israel), Leibniz Univ. Hannover (Germany); Sarel Halachmi, Bnai Zion Medical Ctr. (Israel); Raul Colodner, Emek Medical Ctr. (Israel); Daniel Weizmann, Naama Massad-Ivanir, Technion-Israel Institute of Technology (Israel)
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Session 2:
Photonic Crystals

Sunday 3 February 2019
10:50 AM - 12:00 PM
Session Chair: Sharon M. Weiss, Vanderbilt Univ. (United States)

Bioinspired flexible 3D photonic quasi-crystal implants using inverse "coffee-stain effect" for remote intraocular pressure sensing
Paper 10895-4
Author(s): Radwanul H. Siddique, Lukas Liedtke, Hamza H. Raniwala, Caltech (United States); Hyuck Choo, Caltech (United States), Samsung Electronics Research Ctr. (Korea, Republic of)
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Towards an all-fiber system for detection and monitoring of ammonia
Paper 10895-17
Author(s): Abubakar I. Adamu, Manoj Kumar Dasa, Technical Univ. of Denmark (Denmark); Md. Selim Habib, Rodrigo Amezcua-Correa, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); Ole Bang, DTU Fotonik (Denmark), NKT Photonics A/S (Denmark); Christos Markos, DTU Fotonik (Denmark)
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Lunch Break 12:00 PM - 1:30 PM

Session 3:
Magnetics

Sunday 3 February 2019
1:30 PM - 3:00 PM
Session Chair: Amos Danielli, Bar-Ilan Univ. (Israel)

A portable optical diagnostic system for rapid malaria screening *(Invited Paper)*
Paper 10895-7
Author(s): Andrea M. Armani, Dongyu Chen, Samantha E. Mcbriney, Kristina Kaypgahian, Holly Huber, Hossein Ameri, The Univ. of Southern California (United States)
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Improving the sensitivity of fluorescence-based immunoassays by photobleaching the autofluorescence of magnetic beads
Paper 10895-8
Homogenous and highly sensitive detection of specific nucleic acid fragments in serum using a sandwich hybridization assay and a magnetic modulation biosensing system
Paper 10895-9
Author(s): Michael Margulis, Bar-Ilan Univ. (Israel); Saar Ashri, Meir Cohen, Bar Ilan Univ. (Israel); Amos Danielli, Bar-Ilan Univ. (Israel)

Identification of protein-protein interactions using a magnetic modulation biosensing system
Paper 10895-10
Author(s): Shira Roth, Bar-Ilan Univ. (Israel); Yitzhak Zander, Yehudit Michelson, Bar Ilan Univ. (Israel); Ehud Banin, Amos Danielli, Bar-Ilan Univ. (Israel)

Session 4:
Plasmonics

Sunday 3 February 2019
3:30 PM - 5:20 PM
Session Chair: Benjamin L. Miller, Univ. of Rochester Medical Ctr. (United States)

Rapid and multiplexed detection of Lyme disease using a grating coupled-fluorescent plasmonics (GC-FP) biosensor platform *(Invited Paper)*
Paper 10895-11
Author(s): Eunice Chou, SUNY Polytechnic Institute (United States); William Page, Ernest F. Guignon, Arturo Pilar, Ciencia, Inc. (United States); Yi-Pin Lin, Wadsworth Ctr. (United States); Nathaniel C. Cady, SUNY Polytechnic Institute (United States)

Dark mode plasmonic cavity biosensor
Paper 10895-12
Author(s): Mohammad Hosain Teimourpour, Cheng Li, Phuong-Diem Nguyen, Lei Chen, Euan McLeod, Judith Su, College of Optical Sciences, The Univ. of Arizona (United States)

SERS based spectro-diagnostics: towards the development of a label-free plasmonic immunoassay platform
Paper 10895-13
Author(s): Soumik Siddhanta, Johns Hopkins Univ. (United States); Zufang Huang, Fujian Normal Univ. (China); Ishan Barman, Johns Hopkins Univ. (United States)

Identification of body fluids using metal enhanced fluorescence substrate with glancing angle deposited Ag nanorods
Paper 10895-14
Author(s): Naseem Abbas, Xun Lu, Mohsin Ali Badshah, Won il Heo, Sung Jun Seo, Seok-Min Kim, Chung-Ang Univ. (Korea, Republic of)

Nanoplasmonic whisky ‘tasting’ using a bimetallic optical tongue
Paper 10895-15
Author(s): Justin R. Sperling, Gerard Macias, Steven L. Neale, Alasdair W. Clark, Univ. of Glasgow (United Kingdom)

Session PSun:
Posters-Sunday

Sunday 3 February 2019
5:30 PM - 7:00 PM
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.

**MONDAY 4 FEBRUARY**

**Session 5:**
**Advanced Sensing Methods I**

Monday 4 February 2019
8:00 AM - 9:10 AM

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

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**Metal-assisted chemical etching of silicon followed by ag nanoparticles deposition for SERS**
Paper 10895-32
Author(s): Arseni Klimenka, Belarusian State Univ. of Informatics and Radioelectronics (Belarus)

**Direct laser writing of optical biosensor based on photonic floquet topological insulator for protein-detection**
Paper 10895-33
Author(s): Abhishek Kottaram Amrithanath, Heming Wei, Sridhar Krishnaswamy, Northwestern Univ. (United States)

**Design of a real time optical fiber sensor to detect phosphates through of functionalized carbon nanoparticles**
Paper 10895-34
Author(s): Joshua E. Morales Salinas, Yesenia Y. Garcia Herrera, Beatriz Ortega Garcia, Oxana V. Kharissova, Univ. Autónoma de Nuevo León (Mexico); Alejandro Martínez-Rios, Centro de Investigaciones en Óptica, A.C. (Mexico); Francisco Montiel Peña, Romeo J. Selvas-Aguilar, Univ. Autónoma de Nuevo León (Mexico)

**Design and FDTD simulation of photonic crystal based sensor for biosensing applications**
Paper 10895-35
Author(s): Sello L. Manoto, Chemist Mabena, Rudzani Malabi, Saturnin Ombinda-Lemboumba, Patience Mthunzi-Kufa, CSIR National Laser Ctr. (South Africa)

**Nano cavity ring resonator based sensor for glucose concentration measurement using photonic crystal technology**
Paper 10895-36
Author(s): Mayur K. Chhipa, B.T.P. Madhav, K L Univ. (India)

**Bio-inspired visual sensing enhances imaging techniques using integrated electro-optical switchable filters**
Paper 10895-37
Author(s): Marquise Pullen, Adam K. Fontecchio, Drexel Univ. (United States)

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**Double emulsion optofluidic microlasers**
Paper 10895-16
Author(s): Han Zhang, Yuze Sun, Chen Zhang, The Univ. of Texas at Arlington (United States)

**Fluorescence imaging immuno-assay biosensors on biological photonic crystals**
Paper 10895-5
Author(s): Kenneth Squire, Paul LeDuff, Gregory L. Rorrer, Alan X. Wang, Oregon State Univ. (United States)
X-ray readout for implanted medical sensors *(Invited Paper)*  
Paper 10895-18  
Author(s): Jeffrey N. Anker, Md. Arifuzzaman, Paul W. Millhouse, Apeksha Rajamathrilage, Shayesteh Belahi-Beihabani, Nathan Carrington, John D. DesJardins, Jeremy Tzeng, Clemson Univ. (United States); Thomas B. Pace, Kyle Jeray, Univ. of South Carolina School of Medicine Greenville (United States); Caleb J. Behrend, OrthoArizona (United States)  
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**Session 6:**  
**Light, Sound, Heat**

Monday 4 February 2019  
9:10 AM - 10:30 AM  
Session Chair: **Amos Danielli**, Bar-Ilan Univ. (Israel)

Speckle based sensing of chemicals by an acoustic excitation in aqueous solutions *(Invited Paper)*  
Paper 10895-19  
Author(s): Hadar Genish, ContinUse Biometrics Ltd. (Israel); Nisan Ozana, Zeev Zalevsky, Bar-Ilan Univ. (Israel)  
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Monitoring of ammonia in aqueous environment using a supercontinuum-based photoacoustic sensing system  
Paper 10895-20  
Author(s): Manoj Kumar Dasa, Abubakar I. Adamu, Jakob Janting, Kyei Kwarkye, Ole Bang, Christos Markos, Technical Univ. of Denmark (Denmark)  
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High-throughput droplet-based microfluidic optical calorimeter *(Invited Paper)*  
Paper 10895-21  
Author(s): Michael I. Recht, Jacob Chamoun, Ashish Pattekar, Joerg Martini, PARC, A Xerox Co. (United States)  
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**Session 7:**  
**Photonics I**

Monday 4 February 2019  
11:00 AM - 12:10 PM  
Session Chair: **Benjamin L. Miller**, Univ. of Rochester Medical Ctr. (United States)

Explore whispering-gallery Resonators for a versatile sensor platform *(Invited Paper)*  
Paper 10895-22  
Author(s): Lan Yang, Washington Univ. in St. Louis (United States)  
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Packaged microbubble resonators as a robust field sensing device  
Paper 10895-23  
Author(s): Abraham Qavi, Jie Liao, Royce Dong, Lan Yang, Washington Univ. in St. Louis (United States)  
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Pedestaled subwavelength grating metamaterial waveguide for sensitivity enhancement  
Paper 10895-24  
Author(s): Ching-Wen Chang, The Univ. of Texas at Austin (United States), National Sun Yat-sen Univ. (Taiwan); Xiaochuan Xu, Swapnajit Chakravarty, The Univ. of Texas at Austin (United States), Omega Optics, Inc. (United States); Hui-Chun Huang, Quark Yungsung Chen, Li-Wei Tu, National Sun Yat-sen Univ. (Taiwan); Ray T. Chen, The Univ. of Texas at Austin (United States), Omega Optics, Inc. (United States)  
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Lunch Break 12:10 PM - 1:40 PM
Session 8:
Photonics II

Monday 4 February 2019
1:40 PM - 3:20 PM

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

A multiplexed platform for point of care diagnostics based on optical waveguide technology (Invited Paper)
PAPER 10895-25
Author(s): Christopher Myatt, MBio Diagnostics, Inc. (United States)
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Development of silicon nitride photonic microring resonator arrays as a biosensing platform for multiplex detection of biologically relevant protein targets
PAPER 10895-26
Author(s): Michael Bryan, Benjamin L. Miller, Univ. of Rochester Medical Ctr. (United States)
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Cost-effective optical biosensing using integrated photonics
PAPER 10895-27
Author(s): Daniel Steiner, Michael Bryan, Benjamin L. Miller, Univ. of Rochester Medical Ctr. (United States)
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Long-range surface plasmon waveguide biosensors for disease detection (Invited Paper)
PAPER 10895-28
Author(s): Oleksiy Krupin, Univ. of Ottawa (Canada); Wei Ru Wong, Univ. of Malaya (Malaysia); Pierre Berini, Univ. of Ottawa (Canada)
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Session 9:
Advanced Sensing Methods II

Monday 4 February 2019
3:50 PM - 5:00 PM

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

Sperm cell detection and characterization using interferometric phase microscopy (Invited Paper)
PAPER 10895-29
Author(s): Natan Tzvi Shaked, Itay Barnea, Mattan Levi, Michal Balberg, Lidor Karako, Tel Aviv Univ. (Israel)
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A fast and reproducible ELISA laser platform for highly-sensitive IL-6 analysis
PAPER 10895-30
Author(s): Xiaotian Tan, Qishu Chen, Yu-Cheng Chen, Xiaojin Wu, Xudong Fan, Univ. of Michigan (United States)
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Quantitative single-molecule pull down for probing endogenous protein complex stoichiometry
PAPER 10895-31
Author(s): Benjamin Croop, Kyu Young Han, Univ. of Central Florida (United States)
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