

## Optogenetics and Optical Manipulation 2019

Saturday - Sunday 2 - 3 February 2019

### Conference Sessions At A Glance

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1: Functional Imaging I  
2: Functional Imaging II  
3: Advanced Stimulation I  
4: Advanced Stimulation II  
BIOS Hot Topics  
5: Optical Manipulation I  
6: Optical Manipulation II  
Keynote  
Neurotechnologies Plenary Session

### Important Dates

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Abstract Due:  
25 July 2018

Author Notification:  
1 October 2018

Manuscript Due Date:  
11 January 2019

### Conference Committee

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#### Conference Chairs

[Samarendra K. Mohanty](#), Nanoscope Technologies, LLC (United States)  
[E. Duco Jansen](#), Vanderbilt Univ. (United States)

#### Program Committee

Antoine Adamantidis, McGill Univ. (Canada)  
George J. Augustine, Duke-NUS Graduate Medical School (Singapore)  
Klaus B. Gerwert, Ruhr-Univ. Bochum (Germany)  
Xue Han, Boston Univ. (United States)  
[Elizabeth M. Hillman](#), Columbia Univ. (United States)

#### Program Committee continued...

Richard Kramer, Univ. of California, Berkeley (United States)  
Alfred L. Nuttall, Oregon Health & Science Univ. (United States)  
[Anna W. Roe](#), Zhejiang Univ. (China)  
[Ulrich T. Schwarz](#), Technische Univ. Chemnitz (Germany)  
[Shy Shoham](#), Technion-Israel Institute of Technology (Israel)  
[John P. Welsh](#), Univ. of Washington (United States)  
Rafael Yuste, Columbia Univ. (United States)

#### SATURDAY 2 FEBRUARY

[Show All Abstracts](#)

### Session 1: Functional Imaging I

Saturday 2 February 2019


8:30 AM - 10:00 AM

Session Chair: [Samarendra K. Mohanty](#), Nanoscope Technologies, LLC (United States)

#### A bimodal bioluminescent Ca<sup>2+</sup> indicator toward spatiotemporally-scalable imaging (*Invited Paper*)

Paper 10866-1


Author(s): Takeharu Nagai, Osaka Univ. (Japan); Israt Farhana, Osaka Univ. (United States); Kazushi Suzuki, Micron Technology, Inc. (Japan); Tomoki Matsuda, Osaka Univ. (Japan)

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#### INS-fMRI: a novel method for rapidly mapping brain networks in vivo

Paper 10866-2


Author(s): Anna W. Roe, Jianbao Wang, Augix G. Xu, Meizhen Qian, Xuemei Song, Xiaotong Zhang, Zhejiang Univ. (China)

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#### Optimized large-scale optogenetic interface for non-human primates

Paper 10866-3


Author(s): Jia Wen Chan, Will Ojemann, Stephen Phillips, Karam Khateeb, Azadeh Yazdan-Shahmorad, Univ. of Washington (United States)

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#### A nanophotonic platform for deep-brain simultaneous optogenetic stimulation and electrical recording in vivo

Paper 10866-4

Author(s): Aseema Mohanty, Columbia Univ. (United States); Qian Li, Cold Spring Harbor Lab. (United States); Samantha P. Roberts, Mohammad Amin Tadayon, Gaurang Bhatt, Euijae Shim, Xingchen Ji, Steven A. Miller, Columbia Univ. (United States); Adam Kepecs, Cold Spring Harbor Lab. (United States); Michal Lipson, Columbia Univ. (United States)

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## Session 2: Functional Imaging II

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Saturday 2 February 2019  
10:30 AM - 12:00 PM


Session Chair: [E. Duco Jansen](#), Vanderbilt Univ. (United States)

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### Light sheet theta microscopy for quantitative imaging of large cleared samples *(Invited Paper)*

Paper 10866-5


Author(s): Raju Tomer, Columbia Univ. (United States)

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### Quantifying tissue temperature change induced by infrared neural stimulation by 7T MR thermometry

Paper 10866-6


Author(s): Augix G. Xu, Anna W. Roe, Xiaotong Zhang, Wang Xi, Zhejiang Univ. (China)

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### Optogenetic control of cytokinesis shows that polarized trafficking governs the process

Paper 10866-7


Author(s): Jean Castillo, Washington Univ. in St Louis (United States); N. Gautam, Washington Univ. in St. Louis (United States)

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### Imaging of neural activity in the peripheral nervous system

Paper 10866-8

Author(s): Matthew T. McPheeters, Junqi Zhuo, Gregory Coffee, Andrew M. Rollins, Stephen J. Lewis, Michael W. Jenkins, Case Western Reserve Univ. (United States)

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

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## Session 3: Advanced Stimulation I

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Saturday 2 February 2019  
1:30 PM - 3:00 PM


Session Chair: [Samarendra K. Mohanty](#), Nanoscope Technologies, LLC (United States)

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### Holographic optogenetic neural interfaces: from fundamentals to precise behavioral readout *(Invited Paper)*

Paper 10866-9


Author(s): Shy Shoham, NYU Langone Health (United States); Gilad Lerman, New York Univ. School of Medicine (United States); Jonathan V. Gill, New York Univ. (United States); Shani Rosen, Technion-Israel Institute of Technology (Israel); Dmitry Rinberg, New York Univ. (United States)

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### Structured organic LEDs for spatially targeted optogenetic activation and inhibition of neuronal activity

Paper 10866-10


Author(s): Caroline Murawski, Kurt-Schwabe-Institut für Mess- und Sensortechnik e.V. Meinsberg (Germany), Univ. of St Andrews (United Kingdom); Stefan R. Pulver, Malte C. Gather, Univ. of St. Andrews (United Kingdom)

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### Gold nanorod-mediated near-infrared stimulation of retinal ganglion neurons

Paper 10866-11


Author(s): Kyungsik Eom, Hafithe M. AlGhosain, Kristine Y. Ma, Gaia-Marie Gerbaka, Collin Polucha, Hyewon Kim, Vicki Colvin, Jonghwan Lee, Brown Univ. (United States)

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### Infrared block of Na<sup>+</sup> and Ca<sup>2+</sup> spikes in in crayfish neuromuscular junction

Paper 10866-12

Author(s): Xuedong Zhu, Jen-Wei Lin, Michelle Y. Sander, Boston Univ. (United States)

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## Session 4: Advanced Stimulation II

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Saturday 2 February 2019  
3:30 PM - 5:20 PM


Session Chair: [Anna W. Roe](#), Zhejiang Univ. (China)

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### Towards the optical cochlear implant: optogenetic stimulation of the auditory pathway *(Invited Paper)*

Paper 10866-13


Author(s): Tobias Moser, Daniel Keppeler, Georg-August-Univ. Göttingen (Germany)

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#### Comparing the efficacy and safety of infrared neural stimulation at 1450nm and 1875nm

Paper 10866-14


Author(s): Graham Throckmorton, Wilson R. Adams, Vanderbilt Univ. (United States), Biophotonics Ctr., Vanderbilt Univ. (United States); Zane Ricks, Vanderbilt Univ. (United States); Jonathan Cayce, Vanderbilt Univ. (United States), Biophotonics Ctr., Vanderbilt Univ. (United States); E. D. Jansen, Anita Mahadevan-Jansen, Vanderbilt Univ. (United States), Biophotonics Ctr., Vanderbilt Univ. (United States), Vanderbilt Univ. Medical Ctr. (United States)

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#### Spatially confined ultrasound neuromodulation via miniaturized fiber-optoacoustic converter

Paper 10866-15


Author(s): Ying Jiang, Lu Lan, Hua-an Tseng, Chen Yang, Hengye Man, Xue Han, Ji-Xin Cheng, Boston Univ. (United States)

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#### Spatially controllable light delivery for optogenetics

Paper 10866-16


Author(s): Alexander C. Thompson, Bionics Institute (Australia); Rachael Richardson, Bionics Institute (Australia), The Univ. of Melbourne (Australia); Ričardas Buividas, Optotech (Australia); James Fallon, Andrew Wise, Bionics Institute (Australia), The Univ. of Melbourne (Australia); Paul Stoddart, Swinburne Univ. of Technology (Australia)

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#### Flexible implantable optical waveguide arrays for optogenetic stimulation of brain with high spatiotemporal resolution

Paper 10866-17

Author(s): Jay W. Reddy, Maya Lassiter, Maysamreza Chamanzar, Carnegie Mellon Univ. (United States)

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## BIOS Hot Topics

Saturday 2 February 2019

7:00 PM - 9:00 PM

**SUNDAY 3 FEBRUARY**

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## Session 5: Optical Manipulation I

Sunday 3 February 2019

8:30 AM - 10:00 AM

Session Chair: [Shy Shoham](#), NYU Langone Health (United States)

#### Polysynaptic electrical synaptic modifiability in the mouse inferior olive assayed with optical probing of electrical coupling (*Invited Paper*)

Paper 10866-18


Author(s): John P. Welsh, Univ. of Washington (United States)

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#### Optogenetic investigation of in vitro human iPSC-derived neuronal networks

Paper 10866-19


Author(s): Felix Schmieder, TU Dresden (Germany); Rouhollah Habibey, DFG-Ctr. for Regenerative Therapies Dresden, TU Dresden (Germany); Lars Büttner, Jürgen W. Czarske, TU Dresden (Germany); Volker Busskamp, DFG-Ctr. for Regenerative Therapies Dresden, TU Dresden (Germany)

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#### Comparing infrared neuromodulation (IRN) with isotonic glucose solution for selective inhibition of small-diameter axons

Paper 10866-20


Author(s): Junqi Zhuo, Matthew T. McPheeters, Elizabeth M. Jackson, Sachin S. Shankar, Case Western Reserve Univ. (United States); Mohit Ganguly, E. D. Jansen, Vanderbilt Univ. (United States); Hillel J. Chiel, Michael W. Jenkins, Case Western Reserve Univ. (United States)

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#### Ultrafast laser assisted spatially targeted in-vivo gene delivery into retina

Paper 10866-21

Author(s): Subrata Batabyal, Weldon W. Wright, Samarendra K. Mohanty, Nanoscope Technologies, LLC (United States)

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## Session 6: Optical Manipulation II

Sunday 3 February 2019


10:30 AM - 12:20 PM

Session Chair: [E. Duco Jansen](#), Vanderbilt Univ. (United States)

**INS-fMRI reveals functional connections of amygdalar subnuclei in the Macaque monkey** *(Invited Paper)*


Paper 10866-22

Author(s): Anna W. Roe, Augix G. Xu, Jianbao Wang, Xuemei Song, Zhejiang Univ. (China); Katalin Gothard, The Univ. of Arizona (United States); Yun Yun Rui, Zhejiang Univ. (China)

[Add To My Schedule](#) **Cardiac recovery after pacing as an indicator of cardiac health in Drosophila**


Paper 10866-23

Author(s): Jing Men, Lehigh Univ. (United States); Airong Li, Massachusetts General Hospital, Harvard Medical School (United States); Jason Jerwick, Lehigh Univ. (United States); Jixu Yu, Rudolph Tanzi, Massachusetts General Hospital, Harvard Medical School (United States); Chao Zhou, Lehigh Univ. (United States)

[Add To My Schedule](#) **Importance of potassium channels during infrared inhibition in Aplysia californica**


Paper 10866-24

Author(s): Mohit Ganguly, Jeremy B. Ford, Vanderbilt Univ. (United States); Junqi Zhuo, Matthew T. McPheeters, Michael W. Jenkins, Hillel J. Chiel, Case Western Reserve Univ. (United States); E. D. Jansen, Vanderbilt Univ. (United States)

[Add To My Schedule](#) **NS-Corona: an infrared laser stimulation and ablation platform**


Paper 10866-25

Author(s): Subrata Batabyal, Ben Puig, Samarendra K. Mohanty, Nanoscope Technologies, LLC (United States)

[Add To My Schedule](#) **Optogenetic control of vascular permeability in an organ-on-a-chip model**

Paper 10866-26

Author(s): Sharon Fleischer, Kelsey M. Kennedy, Jinho Kim, Gordana Vunjak-Novakovic, Columbia Univ. (United States)

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**Lunch/Exhibition Break 12:20 PM - 1:30 PM**

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**Keynote**

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Sunday 3 February 2019

1:30 PM - 2:20 PM

**Wireless optoelectronics for neuromodulation and detection of neural activity** *(Keynote Presentation)*

Paper 10866-27

Author(s): John A. Rogers, Northwestern Univ. (United States)

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**Neurotechnologies Plenary Session**

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Sunday 3 February 2019

3:30 PM - 5:30 PM

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