

## Optical Sensing, Imaging, and Photon Counting: From X-Rays to THz

Wednesday - Thursday 22 - 23 August 2018

### Conference Sessions At A Glance

SHOW | HIDE

Nanoscience + Engineering Plenary Session  
Posters-Wednesday

- 1: THz Detection and Spectrometry
- 2: Photodetectors Based on 2D Materials
- 3: Semiconductor Nanowire Photodetectors
- 4: Avalanche Photodiodes and Single Photon Counters
- 5: Light Detection Integrated Systems

### Important Dates

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Abstract Due:  
7 February 2018

Author Notification:  
16 April 2018

Manuscript Due Date:  
25 July 2018

### Conference Committee

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#### Conference Chairs

[Oleg Mitrofanov](#), Univ. College London (United Kingdom)  
[Chee Hing Tan](#), The Univ. of Sheffield (United Kingdom)  
José Luis Pau Vizcaíno, Univ. Autónoma de Madrid (Spain)

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[Manieeh Razeghi](#), Northwestern Univ. (United States)

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[Arvind I. D'Souza](#), DRS Sensors & Targeting Systems, Inc. (United States)  
[Takeharu Goji Etoh](#), Ritsumeikan Univ. (Japan)  
Sergio Fernandez-Garrido, Paul-Drude-Institut für Festkörperelektronik (Germany)  
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Pengda Hong, Lehigh Univ. (United States)

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[Yong-Hang Zhang](#), Arizona State Univ. (United States)

MONDAY 20 AUGUST

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### Session Plen: Nanoscience + Engineering Plenary Session

Monday 20 August 2018  
8:30 AM - 12:00 PM  
Location: Conv. Ctr. Ballroom 20A

Session Chairs: **Halina Rubinsztein-Dunlop**, The Univ. of Queensland (Australia) and **Mark L. Brongersma**, Geballe Lab. for Advanced Materials (GLAM), Stanford Univ. (USA)


#### Plasmonic nanostructures for molecular sensing and actuation (Conference Presentation) (Plenary Presentation)

Paper 10722-500  
Time: 8:30 AM - 9:15 AM  
Author(s): Mikael Käll, Chalmers Univ. of Technology (Sweden)

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#### Rapidly time-variant metadevices for linear frequency conversion (Conference Presentation) (Plenary Presentation)

Paper 10719-500  
Time: 9:15 AM - 10:00 AM  
Author(s): Bumki Min, KAIST (Korea, Republic of)

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**Coffee Break 10:00 AM - 10:30 AM**


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**Structured light on the nanoscale (Conference Presentation) (Plenary Presentation)**

Paper 10730-500

Time: 10:30 AM - 11:15 AM


Author(s): Natalia M. Litchinitser, Univ. at Buffalo (United States)

[Add To My Schedule](#) **Wave control with "time materials" (Conference Presentation) (Plenary Presentation)**

Paper 10719-501

Time: 11:15 AM - 12:00 PM

Author(s): Mathias Fink, Institut Langevin Ondes et Images (France)

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**WEDNESDAY 22 AUGUST**[Show All Abstracts](#)

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**Session PWed:  
Posters-Wednesday**

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Wednesday 22 August 2018

5:30 PM - 7:30 PM

Location: Conv. Ctr. Room 20C

Conference attendees are invited to attend the poster session on Wednesday 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 at <http://spie.org/x30293.xml>.


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**Enhancement of InGaAs/InAlAs avalanche photodiodes response using gallium nanoparticles coating**

Paper 10729-16

Time: 5:30 PM - 7:30 PM


Author(s): Flavio Nucciarelli, Sergio Catalán Gómez, Univ. Autónoma de Madrid (Spain); Anthony Krier, Lancaster Univ. (United Kingdom); Chee Hing Tan, The Univ. of Sheffield (United Kingdom); Carlos Rivera, Wave and Particle Engineering Solutions, S.L. (Spain); José Luis Pau, Univ. Autónoma de Madrid (Spain)

[Add To My Schedule](#) **Investigation of phase stability of nearly degenerate parametric waves generated by crystal composite**

Paper 10729-18

Time: 5:30 PM - 7:30 PM

Author(s): Pengda Hong, LD Nuwave (United States); Eric Hong, Phase I (China); Yujie J. Ding, LD Nuwave (United States); Jiyuan Lin, Phase I (China); Wenbin Ye, Shenzhen Univ. (China)

[Add To My Schedule](#) **Experimental evaluation of MKIDs readout system at ECL****(Canceled)**

Paper 10729-19

Time: 5:30 PM - 7:30 PM


Author(s):

**Sensitivity enhanced biophotonic sensor utilizing sub-wavelength gratings**

Paper 10729-20

Time: 5:30 PM - 7:30 PM


Author(s): Mukesh Yadav, Jens Høvik, Dag Roar Hjelme, Astrid Aksnes, Norwegian Univ. of Science and Technology (Norway)

[Add To My Schedule](#) **Study of avalanche statistics in very low noise AlGaAsSb APDs using a multi-channel analyzer**

Paper 10729-21

Time: 5:30 PM - 7:30 PM

Author(s): Lucas L. G. Pinel, Chee Hing Tan, Jo Shien Ng, The Univ. of Sheffield (United Kingdom)

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**THURSDAY 23 AUGUST**[Show All Abstracts](#)

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**Session 1:  
THz Detection and Spectrometry**

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Thursday 23 August 2018

8:00 AM - 10:00 AM

Location: Conv. Ctr. Room 28A


Session Chairs: [Chee Hing Tan](#), The Univ. of Sheffield (United Kingdom) ; José Luis Pau Vizcaíno, Univ. Autónoma de Madrid (Spain)

**Quantum dot THz detectors and its applications for imaging** *(Invited Paper)*

Paper 10729-1

Time: 8:00 AM - 8:30 AM


Author(s): Kenji Ikushima, Tokyo Univ. of Agriculture and Technology (Japan)

[Add To My Schedule](#) **Fast and sensitive terahertz detection at room temperature by GaAs doubly clamped MEMS beam resonators** *(Invited Paper)*

Paper 10729-2

Time: 8:30 AM - 9:00 AM


Author(s): Kazuhiko Hirakawa, Ya Zhang, Naomi Nagai, Suguru Hosono, The Univ. of Tokyo (Japan)

[Add To My Schedule](#) **High-sensitivity broadband terahertz spectrometry through plasmonic photomixing** *(Invited Paper)*

Paper 10729-3

Time: 9:00 AM - 9:30 AM


Author(s): Mona Jarrahi, Univ. of California, Los Angeles (United States)

[Add To My Schedule](#) **Selective-area nanowire photodetectors: from near to mid-wavelength infrared** *(Invited Paper)*

Paper 10729-24

Time: 9:30 AM - 10:00 AM

Author(s): Diana L. Huffaker, Cardiff Univ. (United Kingdom), Univ. of California, Los Angeles (United States); Dingkun Ren, Univ. of California, Los Angeles (United States); Khalifa M. Azizur-Rahman, Cardiff Univ. (United Kingdom); Hyunseok Kim, Univ. of California, Los Angeles (United States)

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**Coffee Break 10:00 AM - 10:30 AM**

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**Session 2:  
Photodetectors Based on 2D Materials**

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Thursday 23 August 2018

10:30 AM - 11:40 AM

Location: Conv. Ctr. Room 28A


Session Chair: José Luis Pau Vizcaíno, Univ. Autónoma de Madrid (Spain)

**Nanostructured epitaxial graphene for ultra-broadband optoelectronic detectors** *(Invited Paper)*

Paper 10729-4

Time: 10:30 AM - 11:00 AM


Author(s): Abdel El Fatimy, Luke St. Marie, Georgetown Univ. (United States); Anindya Nath, Byoung Don Kong, Anthony K. Boyd, Rachael L. Myers-Ward, Kevin M. Daniels, U.S. Naval Research Lab. (United States); M. Mehdi Jadidi, Thomas E. Murphy, Univ. of Maryland, College Park (United States); D. Kurt Gaskill, U.S. Naval Research Lab. (United States); Paola Barbara, Georgetown Univ. (United States)

[Add To My Schedule](#) **Graphene-based photodetector at room temperature**

Paper 10729-5

Time: 11:00 AM - 11:20 AM

Author(s): V. Xuan Ho, Yizhou Wang, Virginia Polytechnic Institute and State Univ. (United States); Michael Cooney, NASA Langley Research Ctr. (United States); Vinh Q. Nguyen, Virginia Polytechnic Institute and State Univ. (United States)

[Add To My Schedule](#) **Biaxial strain to tune the optoelectronic behaviour of 2D photodetectors**

Paper 10729-6

Time: 11:20 AM - 11:40 AM

Author(s): Patricia Gant, IMDEA Nanociencia (Spain), Instituto de Ciencia de Materiales de Madrid (Spain); Riccardo Frisenda, Peng Huang, David Perez de Lara, IMDEA Nanociencia (Spain); Andres Castellanos-Gomez, Instituto de Ciencia de Materiales de Madrid (Spain)

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**Session 3:  
Semiconductor Nanowire Photodetectors**

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Thursday 23 August 2018

11:40 AM - 12:30 PM

Location: Conv. Ctr. Room 28A


Session Chair: José Luis Pau Vizcaíno, Univ. Autónoma de Madrid (Spain)

**Engineering semiconductor nanowires for photodetection: from visible to terahertz** *(Invited Paper)*

Paper 10729-7

Time: 11:40 AM - 12:10 PM

Author(s): Hannah J. Joyce, Jack A. Alexander-Webber, Univ. of Cambridge (United Kingdom); Kun Peng, Michael B. Johnston, Univ. of Oxford (United Kingdom); Patrick Parkinson, The Univ. of Manchester (United Kingdom); Hoe Tan, Chennupati Jagadish, The Australian National Univ. (Australia)


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### III-nitride nanowire photodetectors

Paper 10729-8

Time: 12:10 PM - 12:30 PM

Author(s): Akhil Ajay, Maria Spies, CEA-INAC (France); Jonas Lähnemann, Paul-Drude-Institut für Festkörperelektronik (Germany); Jakub Polaczynski, Martien den-Hertog, Institut NÉEL, CNRS (France); Eva Monroy, CEA-INAC (France)

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## Exhibition/Lunch Break 12:30 PM - 1:50 PM

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## Session 4: Avalanche Photodiodes and Single Photon Counters

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Thursday 23 August 2018

1:50 PM - 3:40 PM

Location: Conv. Ctr. Room 28A

Session Chair: [Chee Hing Tan](#), The Univ. of Sheffield (United Kingdom)

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### Large-format image sensors based on custom Geiger-mode avalanche photodiode arrays *(Invited Paper)*

Paper 10729-9

Time: 1:50 PM - 2:20 PM

Author(s): Brian F. Aull, Erik K. Duerr, Jonathan P. Frechette, Alexander McIntosh, Daniel R. Schuette, Vyshi Suntharalingam, Richard D. Younger, MIT Lincoln Lab. (United States)


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### InGaAsP/InP Geiger-mode APD-based LIDAR *(Invited Paper)*

Paper 10729-10

Time: 2:20 PM - 2:50 PM

Author(s): Xudong Jiang, Argo AI, LLC (United States); Samuel Wilton, Igor Kudryashov, Mark A. Itzler, Mark Entwistle, Jack Kotelnikov, Alexei Katsnelson, Brian Piccione, Mark Owens, Krys Slomkowski, Argo AI (United States)


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### Analysis of negative differential conductance in a GaN/AlN multi-quantum-well avalanche photodiode

Paper 10729-11

Time: 2:50 PM - 3:10 PM

Author(s): Wangping Wang, Microsystem & Terahertz Research Ctr. (China), China Academy of Engineering Physics (China); Lai Wang, Tsinghua Univ. (China); Mo Li, Qian Li, Jianbin Kang, Microsystem & Terahertz Research Ctr. (China); Yi Luo, Tsinghua Univ. (China); Jian Zhang, Microsystem & Terahertz Research Ctr. (China)


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### Quantum light manipulation: a path towards efficient pure room-temperature single photon sources *(Invited Paper)*

Paper 10729-12

Time: 3:10 PM - 3:40 PM

Author(s): Hamza Abudayyeh, Boaz Lubotzky, The Hebrew Univ. of Jerusalem (Israel); Somak Majumder, Jennifer A. Hollingsworth, Los Alamos National Lab. (United States); Ronen Rapaport, The Hebrew Univ. of Jerusalem (Israel)

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## Coffee Break 3:40 PM - 4:00 PM

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## Session 5: Light Detection Integrated Systems

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Thursday 23 August 2018

4:00 PM - 5:40 PM

Location: Conv. Ctr. Room 28A

Session Chair: Hannah J. Joyce, Univ. of Cambridge (United Kingdom)


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### Al<sub>0.85</sub>Ga<sub>0.15</sub>As<sub>0.56</sub>Sb<sub>0.44</sub> avalanche photodiodes with high immunity to temperature fluctuation

Paper 10729-22

Time: 4:00 PM - 4:20 PM

Author(s): Salman Abdullah, S. Zhang, Jo Shien Ng, Chee Hing Tan, The Univ. of Sheffield (United Kingdom)


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### On-chip and remote sensing with quantum cascade laser and detector systems *(Invited Paper)*

Paper 10729-13

Time: 4:20 PM - 4:50 PM

Author(s): Gottfried Strasser, Benedikt Schwarz, Borislav Hinkov, Rolf Szedlak, Hermann Detz, Aaron M. Andrews, Werner Schrenk, Technische Univ. Wien (Austria)


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**Liquid crystal based tunable PIN-photodiodes for detection around 1.55- $\mu\text{m}$**  *(Invited Paper)*

Paper 10729-14

Time: 4:50 PM - 5:20 PM

Author(s): Christophe Levallois, Cyril Paranthoën, Institut National des Sciences Appliquées de Rennes (France); Benjamin Boisnard, Thierry Camps, Benattou Sadani, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); Salvatore Pes, Institut FOTON, CNRS (France); Sophie Bouchoule, Ctr. de Nanosciences et de Nanotechnologies, CNRS (France); Laurent Dupont, IMT Atlantique Bretagne-Pays de la Loire (France); Jean-Baptiste Doucet, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); Mehdi Alouini, Institut FOTON, CNRS (France); Veronique Bardinal, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France)

[Add To My Schedule](#) **Multi-color anti-reflection coating with silicon micro-lens photodiode for image sensor**

Paper 10729-15

Time: 5:20 PM - 5:40 PM

Author(s): Han Li, Stan Micinski, Nirav Dharia, Ulrich Boettiger, ON Semiconductor (United States)

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