

Ultrafast Nonlinear Imaging and Spectroscopy VI

Sunday - Monday 19 - 20 August 2018

Conference Sessions At A Glance

SHOW | HIDE

1: Ultrafast Nanoscale Imaging and Spectroscopy I
 2: Ultrafast Nanoscale Imaging and Spectroscopy II
 3: Advanced Imaging Technologies I
 4: Advanced Imaging Technologies II
 Sunday Evening Plenary Session
 5: SFG/SHG
 6: Ultrafast Electron Imaging
 7: Ultrafast Laser Processing
 8: Ultrafast Sources and Applications
 9: Biological Applications
 Posters-Monday

Important Dates

SHOW | HIDE

Abstract Due:
7 February 2018

Author Notification:
16 April 2018

Manuscript Due Date:
25 July 2018

Conference Committee

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Conference Chairs

[Zhiwen Liu](#), The Pennsylvania State Univ. (United States)
[Demetri Psaltis](#), Ecole Polytechnique Fédérale de Lausanne (Switzerland)
[Kebin Shi](#), Peking Univ. (China)

Program Committee

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[Martin Centurion](#), Univ. of Nebraska-Lincoln (United States)
[Jason M. Eichenholz](#), Open Photonics, Inc. (United States)
[Kenan Gundogdu](#), North Carolina State Univ. (United States)

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[Michelle Y. Sander](#), Boston Univ. (United States)
 Jigang Wang, Iowa State Univ. of Science and Technology (United States)
[Yong Xu](#), Virginia Polytechnic Institute and State Univ. (United States)

SUNDAY 19 AUGUST

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Session 1: Ultrafast Nanoscale Imaging and Spectroscopy I

Sunday 19 August 2018

8:00 AM - 10:05 AM

Location: Conv. Ctr. Room 28A

Session Chair: [Kebin Shi](#), Peking Univ. (China)

Correlative structure-function imaging of energy transport in functional materials by stroboscopic interferometric scattering microscopy (*Invited Paper*)

Paper 10753-1

Time: 8:00 AM - 8:25 AM

Author(s): Milan Delor, Hannah Weaver, QinQin Yu, Naomi S. Ginsberg, Univ. of California, Berkeley (United States)


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Ultrafast microscopy of energy and charge transport (*Invited Paper*)

Paper 10753-2

Time: 8:25 AM - 8:50 AM

Author(s): Libai Huang, Purdue Univ. (United States)


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Coherent Raman scattering at interfaces (Conference Presentation) (*Invited Paper*)

Paper 10753-3

Time: 8:50 AM - 9:15 AM

Author(s): Eric O. Potma, John Kenison, Univ. of California, Irvine (United States)

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Ionization catastrophe in optically excited single layer semiconductors (Invited Paper)

Paper 10753-4

Time: 9:15 AM - 9:40 AM


Author(s): Kenan Gundogdu, North Carolina State Univ. (United States)

[Add To My Schedule](#) **Picosecond ultrasonics and transient thermoreflectance methods for characterization of grain boundary microstructure and thermal transport (Conference Presentation) (Invited Paper)**

Paper 10753-5

Time: 9:40 AM - 10:05 AM

Author(s): Marat Khafizov, The Ohio State Univ. (United States); David H. Hurley, Idaho National Lab. (United States)

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Coffee Break 10:05 AM - 10:35 AM

**Session 2:
Ultrafast Nanoscale Imaging and Spectroscopy II**

Sunday 19 August 2018

10:35 AM - 12:05 PM


Location: Conv. Ctr. Room 28A

Session Chair: [Kenan Gundogdu](#), North Carolina State Univ. (United States)**Ultrafast spectroscopic imaging probes of hybrid perovskite semiconductors (Conference Presentation) (Invited Paper)**

Paper 10753-6

Time: 10:35 AM - 11:00 AM


Author(s): Jigang Wang, Iowa State Univ. of Science and Technology (United States)

[Add To My Schedule](#) **Brillouin interactions and spectroscopy in crystalline solids, gases, and superfluid He (Invited Paper)**

Paper 10753-7

Time: 11:00 AM - 11:25 AM


Author(s): William Renninger, Univ. of Rochester (United States); Ryan Behunin, Northern Arizona Univ. (United States); Prashanta Kharel, Peter Rakich, Yale Univ. (United States)

[Add To My Schedule](#) **Light-activated gigahertz ferroelectric domain dynamics (Conference Presentation) (Invited Paper)**

Paper 10753-8

Time: 11:25 AM - 11:50 AM

Author(s): Venkatraman Gopalan, The Pennsylvania State Univ. (United States); Hirofumi Akamatsu, Kyushu Univ. (Japan); Yakun Yuan, Vladimir Stoica, Gregory Stone, Tiannan Yang, Zijian Hong, Shiming Lei, The Pennsylvania State Univ. (United States); Yi Zhu, John Freeland, Argonne National Lab. (United States); Long-Qing Chen, The Pennsylvania State Univ. (United States); Haidan Wen, Argonne National Lab. (United States)

[Add To My Schedule](#) **Nano-femto characterization of nanomaterials and structures****(Canceled)**

Paper 10753-9

Time: 11:50 AM - 12:05 PM

Author(s):

Lunch Break 12:05 PM - 1:30 PM

**Session 3:
Advanced Imaging Technologies I**

Sunday 19 August 2018

1:30 PM - 3:15 PM

Location: Conv. Ctr. Room 28A

Session Chair: [William T. Murray](#), The Pennsylvania State Univ. (United States)**Reconfigurable particle assembly for optical applications (Conference Presentation)**

Paper 10753-10

Time: 1:30 PM - 1:45 PM


Author(s): Cheng-Yu Wang, Philip P. Donahue, Chenji Zhang, Jennifer R. Miller, The Pennsylvania State Univ. (United States); Nicholas Nye, Univ. of Central Florida (United States); Rong Tang, The Pennsylvania State Univ. (United States); Demetrios Christodoulides, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); Christine D. Keating, Zhiwen Liu, The Pennsylvania State Univ. (United States)

[Add To My Schedule](#) **Characterization of band shifting imaging probes under two-photon excitation (Conference Presentation)**

Paper 10753-11

Time: 1:45 PM - 2:00 PM


Author(s): Yizhu Chen, Jimin Kim, Dingbown Wang, Yimin Ding, Xingjie Ni, Jian Yang, Zhiwen Liu, The Pennsylvania State Univ. (United States)

[Add To My Schedule](#) **Deep image with non-degenerated two-photon excitation (Conference Presentation) (Invited Paper)**

Paper 10753-12

Time: 2:00 PM - 2:25 PM


Author(s): Mu-Han Yang, Sanaz Sadegh, Payam A. Saisan, Christopher G. L. Ferri, Anna Devor, Yeshaiah Fainman, Univ. of California, San Diego (United States)

[Add To My Schedule](#) **Tomographic imaging with harmonic holography in tissues of known refractive index distribution (Invited Paper)**

Paper 10753-13

Time: 2:25 PM - 2:50 PM


Author(s): Ye Pu, Ecole Polytechnique Federale de Lausanne (Switzerland); Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

[Add To My Schedule](#) **Ultrasensitive Raman spectroscopic imaging with Doppler Raman spectroscopy (Invited Paper)**

Paper 10753-15

Time: 2:50 PM - 3:15 PM

Author(s): Randy A. Bartels, Dave Smith, Keith Wernsing, Jeff Field, Colorado State Univ. (United States); Daniel Kane, Colorado State Univ. (United States), Mesa Photonics, LLC (United States)

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Coffee Break 3:15 PM - 3:45 PM

**Session 4:
Advanced Imaging Technologies II**

Sunday 19 August 2018

3:45 PM - 5:50 PM

Location: Conv. Ctr. Room 28A


Session Chair: [Ye Pu](#), Ecole Polytechnique Fédérale de Lausanne (Switzerland)

Deep learning cellular tomography (Invited Paper)

Paper 10753-16

Time: 3:45 PM - 4:10 PM


Author(s): Bahram Jalali, Univ. of California, Los Angeles (United States)

[Add To My Schedule](#) **Mid-infrared photothermal spectroscopy with phase analysis (Invited Paper)**

Paper 10753-17

Time: 4:10 PM - 4:35 PM


Author(s): Panagis Samolis, Michelle Y. Sander, Boston Univ. (United States)

[Add To My Schedule](#) **Picosecond dynamics in hemes for mitochondrial functional contrast (Conference Presentation) (Invited Paper)**

Paper 10753-18

Time: 4:35 PM - 5:00 PM


Author(s): Erkang Wang, Adam J. Chicco, Randy A. Bartels, Randy A. Bartels, Jesse W. Wilson, Colorado State Univ. (United States)

[Add To My Schedule](#) **Compressed ultrafast photography and microscopy: Redefining the limit of passive ultrafast imaging (Conference Presentation) (Invited Paper)**

Paper 10753-19

Time: 5:00 PM - 5:25 PM


Author(s): Liang Gao, Univ. of Illinois (United States)

[Add To My Schedule](#) **Extending the performance of linear and nonlinear spatial frequency modulated imaging platforms (Conference Presentation) (Invited Paper)**

Paper 10753-20

Time: 5:25 PM - 5:50 PM

Author(s): Jeffrey A. Squier, Nathan Worts, Alyssa Allende Motz, Colorado School of Mines (United States); Jeff Field, Keith Wernsing, Patrick Stockton, Randy A. Bartels, Colorado State Univ. (United States)

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**Session Plen:
Sunday Evening Plenary Session**

Sunday 19 August 2018

6:00 PM - 7:05 PM

Location: Conv. Ctr. Ballroom 20A

6:00 to 6:05 pm: **Welcome and opening remarks**

6:05 to 6:35 pm: **Attosecond pulses generated in gases and solids**, Paul B. Corkum, Univ. of Ottawa and National Research Council of Canada (Canada)


6:35 to 7:05 pm: **Metasurface flat optics: unifying semiconductor manufacturing and lens making**, Federico Capasso, John A. Paulson School of Engineering and Applied Sciences, Harvard Univ. (United States)

Attosecond pulses generated in gases and solids (Conference Presentation) *(Plenary Presentation)*

Paper 10753-201

Time: 6:05 PM - 6:35 PM

Author(s): Paul B. Corkum, Univ. of Ottawa (Canada)

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Metasurface flat optics: Unifying semiconductor manufacturing and lens making (Conference Presentation) *(Plenary Presentation)*

Paper 10719-202

Time: 6:35 PM - 7:05 PM

Author(s): Federico Capasso, Harvard John A. Paulson School of Engineering and Applied Sciences (United States)

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MONDAY 20 AUGUST

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Session 5: SFG/SHG

Monday 20 August 2018

8:00 AM - 9:55 AM

Location: Conv. Ctr. Room 28A


Session Chair: Joshua Noble, The Pennsylvania State Univ. (United States)

Characterization of second-order nonlinear optical properties of two-dimensional transition metal dichalcogenides (Conference Presentation)

Paper 10753-21

Time: 8:00 AM - 8:15 AM

Author(s): William T. Murray, Ana Laura-Elias, Kazunori Fujisawa, The Pennsylvania State Univ. (United States); Michael Lucking, Rensselaer Polytechnic Institute (United States); Ethan Kahn, Yimin Ding, The Pennsylvania State Univ. (United States); Humberto Terrones, Rensselaer Polytechnic Institute (United States); Mauricio Terrones, Xingjie Ni, Zhiwen Liu, The Pennsylvania State Univ. (United States)


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Phase-sensitive nonlinear optical microscopy imaging of two-dimensional materials (Invited Paper)

Paper 10753-22

Time: 8:15 AM - 8:40 AM

Author(s): Yunan Gao, Peking Univ. (China); Aaron J. Goodman, Pin-Chun Shen, Jing Kong, William A. Tisdale, Massachusetts Institute of Technology (United States)

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Interpretation of the vibrational sum frequency spectroscopy (Conference Presentation) *(Invited Paper)*

Paper 10753-23

Time: 8:40 AM - 9:05 AM

Author(s): Zhou Lu, Institute of Chemistry (China)

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Mechanism of electric power generation from ionic droplet motion on polymer supported graphene (Conference Presentation) *(Invited Paper)*

Paper 10753-24

Time: 9:05 AM - 9:30 AM

Author(s): Chuanshan Tian, Fudan Univ. (China)


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Giant second harmonic generation with metasurfaces (Invited Paper)

Paper 10753-25

Time: 9:30 AM - 9:55 AM

Author(s): Xingjie Ni, Xi Chen, Xuexue Guo, Yimin Ding, Zhiwen Liu, The Pennsylvania State Univ. (United States)

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Coffee Break 9:55 AM - 10:25 AM

Session 6: Ultrafast Electron Imaging

Monday 20 August 2018

10:25 AM - 11:40 AM

Location: Conv. Ctr. Room 28A


Session Chair: [Chuanshan Tian](#), Fudan Univ. (China)

Attomicroscopy: attosecond electron microscopy (Invited Paper)

Paper 10753-26

Time: 10:25 AM - 10:50 AM

Author(s): Mohammed Hassan, The Univ. of Arizona (United States)


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High-coherence relativistic electron probes for ultrafast structural dynamics (Invited Paper)

Paper 10753-27

Time: 10:50 AM - 11:15 AM

Author(s): Fu-Hao Ji, Andrew Minor, Lawrence Berkeley National Lab. (United States); Daniel B. Durham, Univ. of California, Berkeley (United States); Pietro Musumeci, Univ. of California Los Angeles (United States); Fabrizio Riminucci, Lawrence Berkeley National Lab. (United States); Xiaojun Wang, Martin Centurion, Univ. of Nebraska-Lincoln (United States); Daniel Slaughter, Lawrence Berkeley National Lab. (United States); B. Griffin, Univ. of Nevada (United States); Daniele Filippetto, Lawrence Berkeley National Lab. (United States)


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Imaging the ultrafast photoinduced ring opening of 1,3-cyclohexadiene with MeV ultrafast electron diffraction (Conference Presentation) (Invited Paper)

Paper 10753-28

Time: 11:15 AM - 11:40 AM

Author(s): Thomas Wolf, Jie Yang, SLAC National Accelerator Lab. (United States); David Sanchez, SLAC National Accelerator Lab. (United States), Stanford Univ. (United States); João P. F. Nunes, Univ. of York (United Kingdom); Robert M. Parrish, SLAC National Accelerator Lab. (United States), Stanford Univ. (United States); Xiaozhe Shen, SLAC National Accelerator Lab. (United States); Martin Centurion, Univ. of Nebraska-Lincoln (United States); Ryan Coffee, James P. Cryan, SLAC National Accelerator Lab. (United States); Markus Gühr, SLAC National Accelerator Lab. (United States), Univ. Potsdam (Germany); Kareem Hegazy, SLAC National Accelerator Lab. (United States); Adam Kirrander, The Univ. of Edinburgh (United Kingdom); Renkai K. Li, SLAC National Accelerator Lab. (United States); Jennifer Ruddock, Brown Univ. (United States); Theodore Vecchione, Stephen P. Weathersby, SLAC National Accelerator Lab. (United States); Peter M. Weber, Brown Univ. (United States); Kyle Wilkin, Univ. of Nebraska-Lincoln (United States); Haiwang Yong, Brown Univ. (United States); Quiang Zheng, SLAC National Accelerator Lab. (United States); Todd J. Martinez, SLAC National Accelerator Lab. (United States), Stanford Univ. (United States); Xijie Wang, Michael P. Minitti, SLAC National Accelerator Lab. (United States)

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Lunch Break 11:40 AM - 1:00 PM

Session 7: Ultrafast Laser Processing

Monday 20 August 2018

1:00 PM - 2:15 PM

Location: Conv. Ctr. Room 28A

Session Chair: [Michelle Y. Sander](#), Boston Univ. (United States)

Femtosecond laser three-dimensional exposure of silica substrate in the non-ablative regime: From laser-induced modifications to applications (Conference Presentation) (Invited Paper)

Paper 10753-29

Time: 1:00 PM - 1:25 PM

Author(s): Yves Bellouard, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

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Two-photon ablation through multi-mode fiber probes (Invited Paper)

Paper 10753-30

Time: 1:25 PM - 1:50 PM

Author(s): Demetri Psaltis, Christophe Moser, Eirini Kakkava, Ecole Polytechnique Fédérale de Lausanne (Switzerland)


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3D printing with multimode fibers (Conference Presentation) (Invited Paper)

Paper 10753-31

Time: 1:50 PM - 2:15 PM

Author(s): Christophe Moser, Paul Delrot, Damien Loterie, Georgia Konstantinou, Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

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Session 8: Ultrafast Sources and Applications



Monday 20 August 2018

2:15 PM - 3:30 PM

Location: Conv. Ctr. Room 28A


Session Chair: [Brandon J.N. Long](#), North Carolina State Univ. (United States)

Generation of few-cycle laser pulses from the nonlinear fiber system (Conference Presentation) (Invited Paper)

Paper 10753-32

Time: 2:15 PM - 2:40 PM


Author(s): Minglie Hu, Tianjin Univ. (China)

[Add To My Schedule](#) **Subwavelength resolution THz imaging by femtosecond laser filament (Conference Presentation) (Invited Paper)**

Paper 10753-33

Time: 2:40 PM - 3:05 PM


Author(s): Weiwei Liu, Nankai Univ. (China); Jiayu Zhao, Nankai Univ. (China), Univ. of Shanghai for Science and Technology (China)

[Add To My Schedule](#) **Precision surface metrology and phase imaging based on femtosecond microwave photonics (Conference Presentation) (Invited Paper)**

Paper 10753-34

Time: 3:05 PM - 3:30 PM

Author(s): Kebin Shi, Peking Univ. (China)

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Coffee Break 3:30 PM - 4:00 PM

**Session 9:
Biological Applications**

Monday 20 August 2018

4:00 PM - 5:30 PM

Location: Conv. Ctr. Room 28A

Session Chair: [Zhiwen Liu](#), The Pennsylvania State Univ. (United States)**Resonance Raman imagery of semi-fossilized soft tissues (Invited Paper)**

Paper 10753-35

Time: 4:00 PM - 4:25 PM

Author(s): Brandon Long, Wenxia Zheng, Mary Schweitzer, Hans D. Hallen, North Carolina State Univ. (United States)

[Add To My Schedule](#) **Energy transfer efficiency in hetero-FRET at the single-molecule level using fluorescence correlation spectroscopy: A molecular brightness concept (Invited Paper)**

Paper 10753-36

Time: 4:25 PM - 4:50 PM

Author(s): Hong Bok Lee, Anh Cong, Erin D. Sheets, Ahmed A. Heikal, Univ. of Minnesota Duluth (United States)

[Add To My Schedule](#) **Critical setup parameter for ultrafast whitelight coherent antistokes raman scattering spectroscopy of living plankton in sea water (Invited Paper)**

Paper 10753-37

Time: 4:50 PM - 5:15 PM


Author(s): Alex Risos, Neil G. R. Broderick, David E. Williams, M. Cather Simpson, The Univ. of Auckland (New Zealand)

[Add To My Schedule](#) **Low cost laser induced breakdown spectroscopy technique for detection of microorganisms**

Paper 10753-38

Time: 5:15 PM - 5:30 PM

Author(s): Vivek Sivakumar, Sujatha Narayanan Unni, Indian Institute of Technology Madras (India); Nilesh J. Vasa, IIT Madras (India)

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**Session PMon:
Posters-Monday**

Monday 20 August 2018

5:30 PM - 7:30 PM

Location: Conv. Ctr. Room 20C


Conference attendees are invited to 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/OPPPosterGuidelines>.

In vivo NIR Raman and autofluorescence spectroscopies of skin neoplasms

Paper 10753-39

Time: 5:30 PM - 7:30 PM

Author(s): Yulia A. Khristoforova, Ivan A. Bratchenko, Oleg O. Myakinin, Dmitry N. Artyemyev, Samara Univ. (Russian Federation); Alexandr A. Moryatov, Oleg I. Kaganov, Sergey V. Kozlov, Samara State Medical Univ. (Russian Federation), Samara Regional Clinical Oncological Hospital (Russian Federation); Andrey E. Orlov, Samara Regional Clinical Hospital Oncology Ctr. (Russian Federation); Valery P. Zakharov, Samara Univ. (Russian Federation)


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Raman spectral features of human body fluids from the patients with malignant tumors

Paper 10753-41

Time: 5:30 PM - 7:30 PM

Author(s): Lyudmila A. Shamina, Ivan A. Bratchenko, Dmitry N. Artemyev, Oleg O. Myakinin, Yulia A. Khristoforova, Samara Univ. (Russian Federation); Alexander A. Moryatov, Oleg I. Kaganov, Samara State Medical Univ. (Russian Federation); Andrey E. Orlov, Samara Regional Clinical Hospital Oncology Ctr. (Russian Federation); Sergey V. Kozlov, Samara State Medical Univ. (Russian Federation); Valery P. Zakharov, Samara Univ. (Russian Federation)


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Experimental study of kerr effect and nonlinear absorption of Multi Walled Carbon Nanotubes

Paper 10753-42

Time: 5:30 PM - 7:30 PM

Author(s): Rodrigo Acuña Herrera, Sebastian Vergara Palacio, Univ. Nacional de Colombia Sede Medellín (Colombia); Cesar Isaza Merino, Institución Univ. Pascual Bravo (Colombia)


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Towards skin cancer screening with non-invasive optical device

Paper 10753-43

Time: 5:30 PM - 7:30 PM

Author(s): Marta Lange, Emilija Vija Plorina, Rita Veilande, Univ. of Latvia (Latvia); Aleksandrs Derjabo, Oncology Ctr. of Latvia, SIA Riga Eastern Clinical Univ. Hospital (Latvia); Ilona Kuzmina, Janis Spigulis, Univ. of Latvia (Latvia)


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Temporal focusing multiphoton excitation fluorescence microscopy using the different wavelength excitation for biological samples

Paper 10753-44

Time: 5:30 PM - 7:30 PM

Author(s): Fan-Ching Chien, Gerald Abrigo, Pei-Hsuan Chen, National Central Univ. (Taiwan); Chi-Hsiang Lien, National United Univ. (Taiwan)

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Initial results of the next generation microshutter devices development for visible/UV spectroscopy

Paper 10753-45

Time: 5:30 PM - 7:30 PM

Author(s): Alexander S. Kutyrev, Univ. of Maryland, College Park (United States); Samuel H. Moseley, Matthew A. Greenhouse, Mary J. Li, NASA Goddard Space Flight Ctr. (United States); Lance H. Oh, SGT Inc. (United States); Daniel P. Kelly, NASA Goddard Space Flight Ctr. (United States); Nicholas P. Costen, SGT Inc. (United States); George Manos, NASA Goddard Space Flight Ctr. (United States); Tony B. Hull, The Univ. of New Mexico (United States)

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