SPIE. STRUCTURED LIGHT

TECHNICAL PROGRAM

Structured Light 2018

# TECHNICAL PROGRAM

PART OF

OPTICS & PHOTONICS International Congress 2018

25–27 April 2018

Pacifico Yokohama
Yokohama, Japan

www.spie.org/TSL

# SPIE. STRUCTURED LIGHT

**25–27 April 2018**
Pacifico Yokohama
Yokohama, Japan

## OMC and BISC Abstract Summaries available online now!

Thank you for attending SPIE Structured Light 2018. The summary papers for OMC and BISC are published on the SPIE Digital Library.

Paid registrants to SPIE Structured Light can access the conference summary papers online.

### Accessing Summary Papers Online:

- Go to **http://spiedigitallibrary.org** and sign in. If you do not have an SPIE account, create one using the email address you used to register for the conference.
- Click the My Account link at the top of the page. You can access the papers via the My Conference Proceedings tab.

You can also access this content via your organization's SPIE Digital Library account.

FOR ASSISTANCE:

Email:
**SPIEDLsupport@spie.org**

Phone (North America):
**+1 888 902 0894**

Phone (Rest of World):
**+1 360 685 5580**

## ELEVATE YOUR RESEARCH WITH AN SPIE JOURNAL

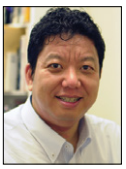
Two special journal sections will feature selected papers from SPIE Structured Light.

Submissions Due 1 July 2018

## TSL'18 CHAIRS

**Toyohiko Yatagai**
Utsunomiya Univ. (Japan)

**Takashige Omatsu**
Chiba Univ. (Japan)



**Osamu Matoba**
Kobe Univ. (Japan)

## INTERNATIONAL ORGANIZING COMMITTEE

**Kishan Dholakia**
Univ. of St. Andrews (United Kingdom)

**Halina Rubinsztein-Dunlop**
The Univ. of Queensland (Australia)

**Gert Von Bally**
Westfälische Wilhelms-Univ. Münster (Germany)

## OMC'18 INVITED SPEAKERS

**Kishan Dholakia**
Univ. of St. Andrews (United Kingdom)

**Jochen Fick**
Institut NÉEL (France)

**Johan Hofkens**
KU Leuven (Belgium)

**Hiroshi Masuhara**
National Chiao Tung Univ. (Taiwan)

**Juan Jose Saenz**
Univ. Autónoma de Madrid (Spain)

**Min-Kyo Seo**
KAIST (Korea, Republic of)

**Zouheir Sekkat**
MAScIR Optics & Photonics Center (Morocco)

**Pavel Zemanek**
The Czech Academy of Sciences (Czech Republic)
The Univ. of Tokyo (Japan)

## BISC '18 INVITED SPEAKERS

**Bi-Chang Chen**
Academia Sinica (Taiwan)

**Liangyi Chen**
Peking Univ. (China)

**Nanguang Chen**
National Univ. of Singapore (Singapore)

**Chia-Lung Hsieh**
Academia Sinica, (Taiwan)

**Akihiro Isomura**
Kyoto Univ. (Japan)

**Yuichi Kozawa**
Tohoku Univ. (Japan)

**Edmund Lam**
The Univ. of Hong Kong

**Hsiang-Chieh Lee**
National Taiwan University (Taiwan)

**Tomoya Nakamura**
Tokyo Institute of Technology/JST PRESTO (Japan)

**Xiangyu Quan**
Kobe Univ. (Japan)

**Joseph Rosen**
Ben-Gurion Univ. of the Negev (Israel)

**Shohei Saito**
Kyoto Univ. (Japan)

**Hiroaki Wake**
Kobe Univ. (Japan)

## SPIE SHORT COURSES

**TUESDAY 24 APRIL • 13:00 TO 17:00**

### Shaping Light, with applications in Advanced Microscopy and Optical Manipulation

24th (Tue) 13:00-17:00
SC1043 • COURSE LEVEL: Intermediate to Advanced
COURSE LENGTH: Half-day; 3.5 hours

*Courses priced separately.*
*See registration desk for pricing and registration.*

Shaping the transverse dimension of an optical field is an important topic in many areas. This course will cover: the basic Gaussian beam, the need for other beams such as: Hermite-Gaussian and Laguerre-Gaussian laser modes, Bessel beams, Airy beams, and other notable beams and how they may be generated. In addition, we will cover some approaches used for adaptive optics / wavefront correction, often termed complex photonics which aims to increase the depth penetration of optical fields. We will consider uses of Deformable Mirror Arrays, Spatial Light Modulators, Acousto-Optic Deflectors, etc. Applications include sub-diffraction imaging / super-resolution microscopy, OCT, optical manipulation, multi-photon microscopy, and light sheet imaging at a more intermediate/advanced level.

INTENDED AUDIENCE: This material is appropriate to researchers who are considering work in a wide variety of areas where wavefront correction or generation of novel beams is of interest.

INSTRUCTOR: **Kishan Dholakia** is the 2016 winner of the OSA R. W. Woods Prize, the 2017 winner of the Institute of Physics Thomas Young Medal and Prize, a Professor of Physics at the University of St. Andrews (Scotland) and Co-Chair of the Conference on Optical Trapping and Optical Micromanipulation at the SPIE Optics and Photonics Meeting. He is a Fellow of the Royal Society of Edinburgh, of OSA, and of SPIE.

### Precision Laser Micromanufacturing

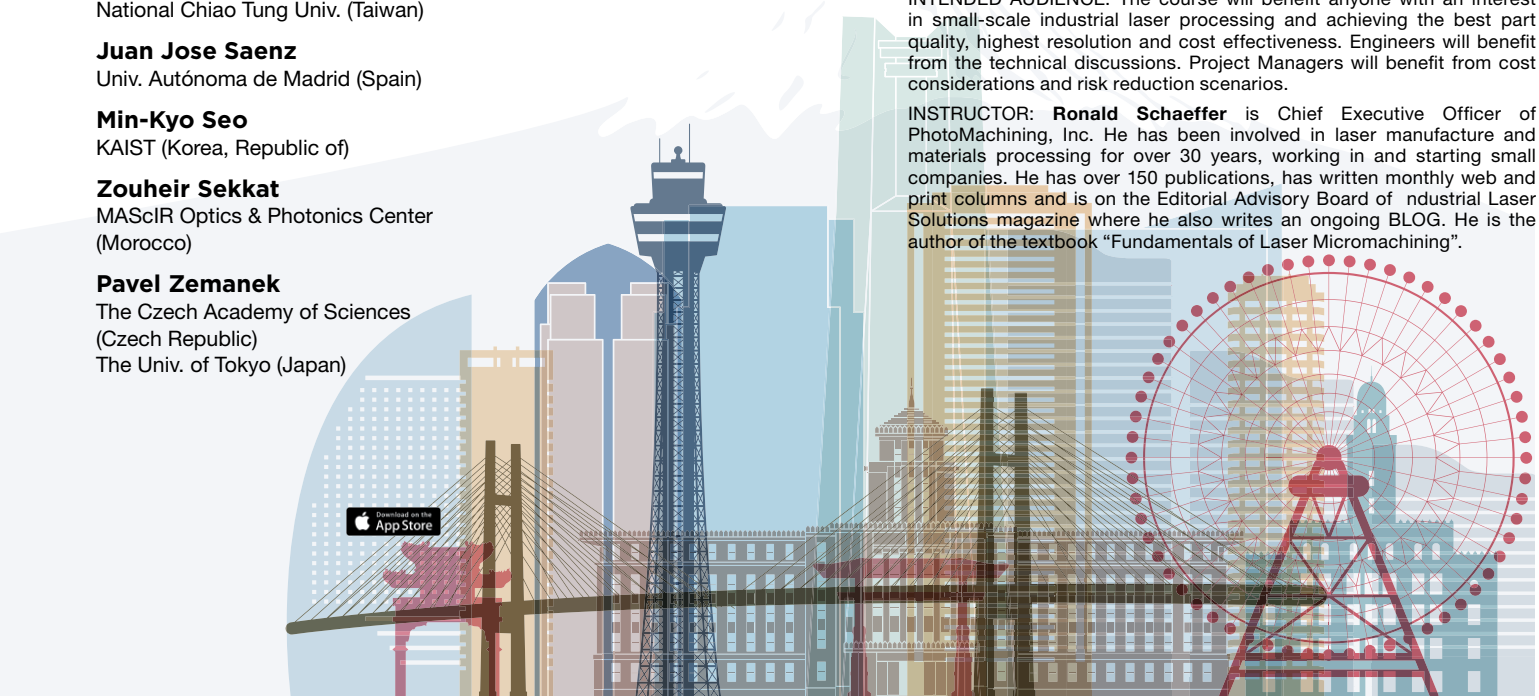
24th (Tue) 13:00-17:00
SC689 • COURSE LEVEL: Introductory
COURSE LENGTH: Half day (3.5 HOURS)

This course is a comprehensive look at laser technology as applied to precision micromanufacturing. A brief background discussion on laser history, technology and definition of important terms will be presented. Then, available laser sources will be compared and contrasted including $CO_2$, excimer, Nd:YAG, fiber and short pulse lasers. IR and UV material/photon interaction, basic optical components and system integration are also crucial to getting good processing results and these will all be examined in detail. Finally, real applications from the medical, microelectronics, aerospace and other fields will be presented.

This course has been greatly expanded to include detailed discussions on short pulse lasers (ps and fs) and their applications, both present and future. Also, MicroManufacturing includes technologies such as welding, joining and additive technologies. While the main emphasis of the course is still MicroMachining (material removal), additive technologies will be discussed also – especially 3D LAM (Laser Additive Manufacturing).

INTENDED AUDIENCE: The course will benefit anyone with an interest in small-scale industrial laser processing and achieving the best part quality, highest resolution and cost effectiveness. Engineers will benefit from the technical discussions. Project Managers will benefit from cost considerations and risk reduction scenarios.

INSTRUCTOR: **Ronald Schaeffer** is Chief Executive Officer of PhotoMachining, Inc. He has been involved in laser manufacture and materials processing for over 30 years, working in and starting small companies. He has over 150 publications, has written monthly web and print columns and is on the Editorial Advisory Board of ndustrial Laser Solutions magazine where he also writes an ongoing BLOG. He is the author of the textbook "Fundamentals of Laser Micromachining".




**www.spie.org/TSL**

# BISC18 DAILY CONFERENCE SCHEDULE

| WEDNESDAY • 25 April 2018 | |
|---|---|
| TIME | **CONFERENCE 10711**<br>LOCATION: 418<br>**Biomedical Imaging and Sensing Conference** |
| 13:15 to 13:30 | **OPENING REMARKS** |
| 13:30 to 15:00 | **JOINT SESSION 1: OMC AND BISC JOINT SESSION I**<br>Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan) |
| 15:00 to 15:30 | Coffee Break |
| 15:30 to 16:45 | **JOINT SESSION 2: OMC AND BISC JOINT SESSION II**<br>Session Chair: **Osamu Matoba,** Kobe Univ. (Japan) |
| **THURSDAY • 26 April 2018** | |
| MORNING SESSIONS | LOCATION: 419 |
| 9:30 to 9:45 | **OPENING REMARKS BY PROF. TOYOHIKO YATAGAI**<br>Session Chair: **Osamu Matoba,** Kobe Univ. (Japan) |
| 9:45 to 12:00 | **SESSION 1: ADVANCED OPTICAL MICROSCOPY**<br>Session Chair: **Nanguang Chen,** National Univ. of Singapore (Singapore) |
| 12:00 to 13:15 | Lunch Break |
| AFTERNOON SESSIONS | LOCATION: 419 |
| 13:15 to 15:00 | **SESSION 2: OPTICAL COHERENCE TOMOGRAPHY**<br>Session Chair: **Yuan Luo,** National Taiwan Univ. (Taiwan) |
| 15:00 to 15:30 | Coffee Break |
| 15:30 to 18:00 | **SESSION 3: OPTICAL IMAGING OF MULTIMODAL AND BIOMEDICAL INFORMATION**<br>Session Chair: **Tatsuki Tahara,** Kansai Univ. (Japan)\| |
| **FRIDAY • 27 April 2018** | |
| MORNING SESSIONS | LOCATION: 419 |
| 9:00 to 10:45 | **SESSION 4: MULTIMODAL IMAGING AND DEVICES**<br>Session Chair: **Yoshihisa Aizu,** Muroran Institute of Technology (Japan) |
| 10:45 to 11:15 | Coffee Break |
| 11:15 to 12:15 | **SESSION 5: DIGITAL HOLOGRAPHIC MICROSCOPY**<br>Session Chair: **Wataru Watanabe,** Ritsumeikan Univ. (Japan) |
| 12:15 to 13:00 | Lunch Break |
| AFTERNOON SESSIONS | LOCATION: 419 |
| 13:00 to 14:30 | **POSTERS SESSION** |
| 14:30 to 15:00 | Coffee Break |
| 15:00 to 16:45 | **SESSION 6: OPTICAL DIAGNOSIS AND TREATMENT**<br>Session Chair: **Joseph Rosen,** Ben-Gurion Univ. of the Negev (Israel) |

# OMC18 DAILY CONFERENCE SCHEDULE

| TIME | CONFERENCE 10712<br>LOCATION: 418<br>Optical Manipulation and Structured Materials Conference |
|---|---|
| **WEDNESDAY • 25 April 2018** | |
| 13:15 to 13:30 | **OPENING REMARKS** |
| 13:30 to 15:00 | **JOINT SESSION 1: OMC AND BISC JOINT SESSION I**<br>Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan) |
| 15:00 to 15:30 | Coffee Break |
| 15:30 to 16:45 | **JOINT SESSION 2: OMC AND BISC JOINT SESSION II**<br>Session Chair: **Osamu Matoba,** Kobe Univ. (Japan) |
| **THURSDAY • 26 April 2018** | |
| MORNING SESSIONS | LOCATION: 418 |
| 9:00 to 10:45 | **SESSION 1: OMC I**<br>Session Chair: **Keiji Sasaki,** Hokkaido Univ. (Japan) |
| 10:45 to 11:00 | Coffee Break |
| 11:00 to 12:15 | **SESSION 2: OMC II**<br>Session Chair: **Juan José Sáenz,** Univ. Autónoma de Madrid (Spain) |
| 12:15 to 13:30 | Lunch Break |
| AFTERNOON SESSIONS | LOCATION: 418 |
| 13:30 to 15:00 | **SESSION 3: OMC III**<br>Session Chair: **Min-Kyo Seo,** KAIST (Korea, Republic of) |
| 15:00 to 15:15 | Coffee Break |
| 15:15 to 16:15 | **SESSION 4: OMC IV**<br>Session Chair: **Pavel Zemánek,** Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic) |
| 16:15 to 16:30 | Coffee Break |
| 16:30 to 18:00 | **SESSION 5: OMC V**<br>Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan) |
| **FRIDAY • 27 April 2018** | |
| MORNING SESSIONS | LOCATION: 418 |
| 9:00 to 10:30 | **SESSION 6: OMC VI**<br>Session Chair: **Kishan Dholakia,** Univ. of St. Andrews (United Kingdom) |
| 10:30 to 11:00 | Coffee Break |
| 11:00 to 12:15 | **SESSION 7: OMC VII**<br>Session Chair: **Yoshihiko Arita,** Univ. of St. Andrews (United Kingdom) |
| 12:15 to 13:00 | Lunch Break |
| AFTERNOON SESSIONS | LOCATION: 418 |
| 13:00 to 14:00 | **POSTERS SESSION** |
| 14:00 to 15:30 | **SESSION 8: OMC VIII**<br>Session Chair: **Zouheir Sekkat,** Moroccan Foundation for Advanced Science, Innovation and Research (Morocco) |
| 15:30 to 15:45 | Coffee Break |
| 15:45 to 17:45 | **SESSION 9: OMC IX**<br>Session Chair: **Masaaki Ashida,** Osaka Univ. (Japan) |
| 17:45 to 17:55 | **CLOSING REMARKS AND BEST PAPER AWARD CEREMONY**<br>Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan) |

# CONFERENCE 10711

LOCATION: 418/419

Wednesday–Friday 25–27 April 2018 • Proceedings of SPIE Vol. 10711

# Biomedical Imaging and Sensing Conference

*Conference Chair:* **Toyohiko Yatagai,** Utsunomiya Univ. (Japan)

*Conference Co-Chairs:* **Yoshihisa Aizu,** Muroran Institute of Technology (Japan); **Osamu Matoba,** Kobe Univ. (Japan); **Yasuhiro Awatsuji,** Kyoto Institute of Technology (Japan); **Yuan Luo,** National Taiwan Univ. (Taiwan)

*Program Committee:* **Barry Cense,** Utsunomiya Univ. (Japan); **Wonshik Choi,** Korea Univ. (Korea, Republic of); **Shi-Wei Chu,** National Taiwan Univ. (Taiwan); **Katsumasa Fujita,** Osaka Univ. (Japan); **Yoshio Hayasaki,** Utsunomiya Univ. Ctr. for Optical Research & Education (Japan); **Masaki Hisaka,** Osaka Electro-Communication Univ. (Japan); **Wataru Inami,** Shizuoka Univ. (Japan); **Ichiro Ishimaru,** Kagawa Univ. (Japan); **Toshiaki Iwai,** Tokyo Univ. of Agriculture and Technology (Japan); **Xingde Li,** Johns Hopkins Univ. (United States); **Takashi Kakue,** Chiba Univ. (Japan); **Myung K. Kim,** Univ. of South Florida (United States); **Robert Magnusson,** The Univ. of Texas at Arlington (United States); **Yuji Matsuura,** Tohoku Univ. (Japan); **Izumi Nishidate,** Tokyo Univ. of Agriculture and Technology (Japan); **Goro Nishimura,** Hokkaido Univ. (Japan); **Yusuke Ogura,** Osaka Univ. (Japan); **Eiji Okada,** Keio Univ. (Japan); **Yukitoshi Otani,** Utsunomiya Univ. (Japan); **Yong-Keun Park,** KAIST (Korea, Republic of); **Xiangyu Quan,** Kobe Univ. (Japan); **Manabu Sato,** Yamagata Univ. (Japan); **Shunichi Sato,** National Defense Medical College (Japan); **Tatsuki Tahara,** Kansai Univ. (Japan); **Enrique Tajahuerce,** Univ. Jaume I (Spain); **Yosuke Tamada,** National Institute for Basic Biology (Japan); **Eriko Watanabe,** The Univ. of Electro-Communications (Japan); **Peng Xia,** AIST (Japan); **Yasui Takeshi,** The Univ. of Tokushima (Japan)

## WEDNESDAY 25 APRIL

### JOINT SESSION 1

**LOCATION: 418 . . . . . WED 13:30 TO 15:00**

### OMC and BISC Joint Session I

Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan)

13:30: **High temporal and spatial pattern stimulation to manipulate brain function** *(Invited Paper)*, Koichiro Haruwaka, Kobe Univ. of Graduate School of Medicine (Japan); Xiangyu Quan, Osamu Matoba, Kobe Univ. (Japan). . . . . [10711-104]

14:00: **Femtosecond laser trapping, assembling, and ejection dynamics of dielectric nanoparticles in solution** *(Invited Paper)*, Hiroshi Masuhara, Jim Jui-Kai Chen, National Chiao Tung Univ (Taiwan); Wei-Yi Chiang, National Chiao Tung Univ (Taiwan) and Katholieke Universiteit Leuven (Belgium); Anwar Usman, Universiti Brunei Darussalam (Brunei Darussalam); Teruki Sugiyama, National Chiao Tung Univ (Taiwan) and Nara Institute of Science and Technology (Japan); Johan Hofkens, Katholieke Universiteit Leuven (Belgium) . . . . [10712-69]

14:30: **Monitoring ruffling cells by lattice light-sheet microscopy** *(Invited Paper)*, Bi-Chang Chen, Wei-Chun Tang, Peilin Chen, Research Ctr. for Applied Sciences - Academia Sinica (Taiwan) . . . . . [10711-105]

Coffee Break. . . . . Wed 15:00 to 15:30

### JOINT SESSION 2

**LOCATION: 418 . . . . . WED 15:30 TO 16:45**

### OMC and BISC Joint Session II

Session Chair: **Osamu Matoba,** Kobe Univ. (Japan)

15:30: **Computational imaging and reconstruction in digital holographic microscopy** *(Invited Paper)*, Edmund Y.M. Lam, Univ of Hong Kong (Hong Kong, China) . . . . . [10711-80]

15:45: **Observation of immunostained microtubules using three-dimensional super-resolution microscope with two-color annular wave plate**, Yoshinori Iketaki, Olympus Corp (Japan); Bokor Nandor, Budapest University of Technology and Economics (Hungary); Daisuke Okada, Kitasato University School of Medicine (Japan); Hiroshi Kumagai, Kitasato University, School of Allied Health Sciences Physics (Japan) . . . . . [10712-70]

16:00: **Optical trapping of quantum-dot conjugated AMPA-type receptors depended on initial assembling states**, Tatsunori Kishimoto, National Institute of Advanced Industrial Science and Technology (AIST) (Japan) and Kwansei Gakuin University (Japan); Yasuyo Maezawa, National Institute of Advanced Industrial Science and Technology (AIST) (Japan); Suguru N. Kudoh, Kwansei Gakuin University (Japan); Takahisa Taguchi, National Institute of Information and Communications Technology (NICT) (Japan); Chie Hosokawa, National Institute of Advanced Industrial Science and Technology (AIST) (Japan) and Kwansei Gakuin University (Japan) and Advanced Photonics and Biosensing Open Innovation Laboratory, AIST-Osaka University (Japan) . . . . . [10712-71]

16:15: **Enhanced collection efficiency of vesicles in a suspension by optical pressure using gold nanoparticles**, Takashi Kaneta, Mai Kuboi, Nobuyuki Takeyasu, Okayama University (Japan) . . . . . [10712-72]

16:30: **Rotational dynamics of bacteria in an optical tweezer**, Sharath Ananthamurthy, University of Hyderabad (India). . . . . [10712-73]

## THURSDAY 26 APRIL

### OPENING REMARKS BY PROF. TOYOHIKO YATAGAI

**LOCATION: 419 . . . . . 9:30 TO 9:45**

**NOTE ROOM CHANGE**

Session Chair: **Osamu Matoba,** Kobe Univ. (Japan)

### SESSION 1

**LOCATION: 419 . . . . . THU 9:45 TO 12:00**

### Advanced Optical Microscopy

Session Chair: **Nanguang Chen,** National Univ. of Singapore (Singapore)

9:45: **Coherent brightfield (COBRI) microscopy for ultrahigh-speed single particle tracking on lipid bilayer membranes** *(Invited Paper)*, Yi-Hung Liao, Chia-Lung Hsieh, Academia Sinica (Taiwan). . . . . [10711-1]

10:15: **Visualizing a beating zebrafish heart with improved line-scan microscopy** *(Invited Paper)*, Nanguang Chen, National Univ of Singapore (Singapore) . . . . . [10711-2]

Coffee Break. . . . . Thu 10:45 to 11:00

11:00: **Fast, long-term super-resolution imaging with Hessian structured illumination microscopy** *(Invited Paper)*, Liangyi Chen, Peking Univ. (China) . . . . . [10711-3]

11:30: **Multi-focal holographic slit confocal fluorescence microscopy**, Hung-Chun Wang, National Tsing Hua University / Department of Power Mechanical Engineering (Taiwan); Chou-Min Chia, National Taiwan University / Institute of Medical Device and Imaging (Taiwan); Yu-hsin Chia, National Taiwan Univ. (Taiwan); Yuan Luo, National Taiwan University / Institute of Medical Device and Imaging (Taiwan) . . . . . [10711-4]

11:45: **Lateral spatial resolution improvement in laser scanning fluorescence microscopy using a subdiffraction limit optical spot**, Takahiro Nishimura, Daiki Shinkawa, Yusuke Ogura, Osaka Univ (Japan); Yosuke Tamada, NIBB (Japan); Jun Tanida, Osaka Univ (Japan) . . . . . [10711-5]

Lunch Break . . . . . Thu 12:00 to 13:15

## SESSION 2

**LOCATION: 419 . . . . . THU 13:15 TO 15:00**

### Optical Coherence Tomography

Session Chair: **Yuan Luo,** National Taiwan Univ. (Taiwan)

13:15: **Endoscopic optical coherence tomography and angiography for gastroenterology applications** *(Invited Paper)*, Hsiang-Chieh Lee, Kaicheng Liang, Osman O. Ahsen, Zhao Wang, Massachusetts Institute of Technology (United States); Marisa Figueiredo, VA Boston Healthcare System (United States); Benjamin M. Potsaid, Massachusetts Institute of Technology (United States); Vijaysekhar Jayaraman, Praevium Research, Inc. (United States); Qin Huang, Hiroshi Mashimo, VA Boston Healthcare System (United States); James G. Fujimoto, Massachusetts Institute of Technology (United States) . . . . . [10711-6]

13:45: **Evaluation of photodamage with polarization-sensitive optical coherence tomography**, Trung Nguyen Hoang, Cheng Yu Lee, Meng-Tsan Tsai, Chang Gung University (Taiwan) . . . . . .[10711-7]

14:00: **A 2.8-mm beam diameter system for retinal imaging with OCT and adaptive optics**, Maddipatla Reddikumar, Joel Cervantes, Yukitoshi Otani, Barry Cense, Utsunomiya Univ (Japan) . . . . . [10711-8]

14:15: **Study on photothermolysis with multi-functional, high-resolution optical coherence tomography**, Tai-Ang Wang, Ming-Che Chan, National Chiao Tung University (Taiwan); Meng-Tsan Tsai, Chang Gung University (Taiwan) . . . . . [10711-9]

14:30: **Motion artifacts in endoscopic catheter-based images: simulation and motion correction method**, Elham Abouei, Univ of British Columbia (Canada); Anthony M. D. Lee, Hamid Pahlevaninezhad, Geoffrey Hohert, Michelle C Cua, Pierre Lane, Stephen Lam M.D., Calum MacAulayb, BC cancer research center (Canada) . . . . . .[10711-10]

14:45: **Assessment of micro-optical coherence tomography (μOCT) as an imaging tool for pancreatic disease diagnosis**, Chi Hu, Xiaojun Yu, Northwestern Polytechnical University (China); Qianshan Ding, School of Electrical and Electronic Engineering, Nanyang Technological University, 639798, Singapore (Singapore); Ganggang Mu, Yunchao Deng, Honggang Yu, Department of Gastroenterology, Remin Hospital of Wuhan University, Wuhan, 430060, China (China); Linbo Liu, School of Electrical and Electronic Engineering, Nanyang Technological University, 639798, Singapore (Singapore) . . . . [10711-11]

Coffee Break . . . . . Thu 15:00 to 15:30

## SESSION 3

**LOCATION: 419 . . . . . THU 15:30 TO 18:00**

### Optical Imaging of Multimodal and Biomedical Information

Session Chair: **Tatsuki Tahara,** Kansai Univ. (Japan)

15:30: **Spatial resolution enhancement in laser scanning microscopy using vector beams** *(Invited Paper)*, Yuichi Kozawa, Tohoku Univ (Japan) and JST, PRESTO (Japan); Shunichi Sato, Tohoku Univ (Japan) . . . . . .[10711-12]

16:00: **Computational imaging utilizing volume hologram** *(Invited Paper)*, Tomoya Nakamura, Masahiro Yamaguchi, Tokyo Institute of Technology (Japan) . . . . . .[10711-13]

16:30: **Multimodal digital holographic microscopy for simultaneous phase and fluorescence imaging** *(Invited Paper)*, Xiangyu Quan, Kobe Univ. (Japan); Osamu Matoba, Kobe Univ (Japan); Yasuhiro Awatsuji, Kyoto Inst. of Tech. (Japan) . . . . . .[10711-14]

17:00: **Fluorescent molecular force probes for rheology and mechanobiology** *(Invited Paper)*, Shohei Saito, Kyoto Univ. (Japan) . . .[10711-15]

17:30: **Illuminating gene expression dynamics by optogenetics** *(Invited Paper)*, Akihiro Isomura, Kyoto University (Japan) . . . . . .[10711-16]

# FRIDAY 27 APRIL

## SESSION 4

**LOCATION: 419 . . . . . FRI 9:00 TO 10:45**

### Multimodal Imaging and Devices

Session Chair: **Yoshihisa Aizu,** Muroran Institute of Technology (Japan)

9:00: **Non-scanning in-vivo three-dimensional hybrid structured illumination microscopy**, Ju-Hsuan Chien, National Taiwan University (Taiwan); Chen Yen Lin, Yuan Luo, National Taiwan Univ. (Taiwan) . . . . . .[10711-17]

9:15: **Shape based pharmacokinetic fluorescence optical tomography**, Omprakash Gottam, Naren Naik, Indian Institute of Technology Kanpur (India); Sanjay Gambhir, Sanjay Gandhi Postgraduate Institute of Medical Sciences (India) . . . . . .[10711-18]

9:30: **Fast spatial domain reconstruction for structured illumination microscopy**, Xing Zhou, Ming Lei, Dan Dan, Baoli Yao, Xi'an Institute of Optics and Precision Mechanics (China) . . . . . .[10711-19]

9:45: **Visible resonance Raman spectroscopy detect key molecular biomarker vibrations to characterize for human brain gliomas**, Yan Zhou M.D., Air Force General Hospital, PLA, No.30 Fuchenglu, Haidian District, Beijing, 100142, China. (China); Cheng-Hui Liu, Institute for Ultrafast Spectroscopy and Lasers (United States); Binlin Wu, Physics Department and CSCU Center for Nanotechnology, Southern Connecticut State University, 501 Cr (United States); Xinguang Yu M.D., The Department of Neurosurgery, PLA General Hospital, 28th Fuxing Road, Beijing, 100039, China. (China); Gangge Cheng M.D., Air Force General Hospital (China); Chunyuan Zhang, Institute for Ultrafast Spectroscopy and Lasers (United States); Hong Chen, 5Qian xuesen Laboratory of Space Technology, China Academy of Space Technology, No.104 YouyiLu, Haid (China); Shenglin Li, 5Qian xuesen Laboratory of Space Technology (China); Rui Zong M.D., The Department of Neurosurgery (China); Qijun Liang, Ce Zhang, Mingqian Zhang, Cuicui Lu, 5Qian xuesen Laboratory of Space Technology (China); Ke Zhu, Institute of Physics, Chinese Academy of Sciences (CAS), Beijing, 100190, China (China); Robert R Alfano, Institute for Ultrafast Spectroscopy and Lasers (United States) . . . . . [10711-20]

10:00: **Long-life plastic optical fiber probes for scanning near-field optical microscope**, Anton Smirnov, Ekaterina Rostova, Giovanni Dietler, Sergey Sekatskii, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[10711-21]

10:15: **Effect of speckle pattern illumination on holographic recording and reconstruction** , Vinu R. V., Darshika Singh, IIST (India); Pu Jixiong, Huaqiao University (China); Rakesh Kumar Singh, IIST (India). . . . . [10711-22]

10:30: **Isotropic quantitative differential phase contrast microscopic imaging**, Yu-Zi Lin, Department of Mechanical Engineering, National Taiwan University (Taiwan); Hsi-Hsun Chen, Department of Electrical Engineering and Graduate Institute of Photonics and Optoelectronics,NTU (Taiwan); Kuang-Yuh Huang, Department of Mechanical Engineering, National Taiwan University (Taiwan); Yuan Luoc, Institute of Medical Device and Imaging, National Taiwan University (Taiwan) . . . . . [10711-56]

Coffee Break . . . . . Fri 10:45 to 11:15

## SESSION 5

**LOCATION: 419 . . . . . FRI 11:15 TO 12:15**

### Digital Holographic Microscopy

Session Chair: **Wataru Watanabe,** Ritsumeikan Univ. (Japan)

11:15: **Incoherent digital holography for biomedical imaging** *(Invited Paper)*, Joseph Rosen, Ben-Gurion Univ of the Negev (Israel) . . . . . .[10711-23]

11:45: **Investigations of wavelength resolution and adoptable phase shifts in phase-shifting color digital holography with 2pi ambiguity and wavelength-multiplexed images**, Tatsuki Tahara, Kansai Univ (Japan) and PRESTO, Japan Science and Technology Agency (Japan); Shotaro Maruo, Takuya Gotohda, Kansai Univ (Japan); Reo Otani, SIGMAKOKI CO. LTD. (Japan); Yasuhiko Arai, Kansai Univ (Japan); Yasuhiro Takaki, Tokyo University of Agriculture and Technology (Japan) . . . . . .[10711-24]

12:00: **Single-shot incoherent digital holography using parallel phase-shifting radial shearing interferometry**, Syogo Mochida, Masato Shinomura, Tatsuya Hirakawa, Takahito Fukuda, Department of Electronics, Graduate School of Science and Technology, Kyoto Institute of Technology (Japan); Yasuhiro Awatsuji, Faculty of Electrical and Electronics, Kyoto Institute of Technology (Japan); Kenzo Nishio, Advanced Technology Center, Kyoto Institute of Technology (Japan); Osamu Matoba, Department of Systems Science, Graduate School of System Informatics, Kobe University (Japan) . . . . . [10711-25]

Lunch Break . . . . . Fri 12:15 to 13:00

# CONFERENCE 10711

## POSTERS

**LOCATION: EXHIBIT HALL A . . . . . .13:00 TO 14:30**

**Non-invasive glucose monitoring based on optical coherence tomophraphy**, Tseng-Lin Chen, National Cheng Kung Univ. (Taiwan); Yu-Lung Lo, Quoc-Hung Phan, National Cheng Kung Univ (Taiwan). . . [10711-33]

**Monitoring protein-related degeneration of *Drosophila*** eyes with optical coherence tomography, Chia-Heng Wu, Chang Gung Univ (Taiwan); Min-Tsan Su, National Taiwan Normal Univ. (Taiwan); Meng-Tsan Tsai, Department of Electrical Engineering, Chang Gung University (Taiwan) . . . . . [10711-34]

**Parallel phase-shifting radial shearing interferometry and its numerical verification**, Syogo Mochida, Masato Shinomura, Tatsuya Hirakawa, Takahito Fukuda, Department of Electronics, Graduate School of Science and Technology, Kyoto Institute of Technology (Japan); Yasuhiro Awatsuji, Faculty of Electrical and Electronics, Kyoto Institute of Technology (Japan); Kenzo Nishio, Advanced Technology Center, Kyoto Institute of Technology (Japan); Osamu Matoba, Department of Systems Science, Graduate School of System Informatics, Kobe University (Japan). . . . . [10711-35]

**Motion-picture phase imaging by an integrated optical system of a parallel phase-shifting digital holographic microscope**, Kazuki Shimizu, Takahito Fukuda, Tatsuya Hirakawa, Department of Electronics, Graduate School of Science and Technology, Kyoto Institute of Technology (Japan); Peng Xia, National Institute of Advanced Industrial Science and Technology (Japan); Yasuhiro Awatsuji, Kyoto Institute of Technology, Faculty of Electrical Engineering and Electronics (Japan); Kenzo Nishio, Advanced Technology Center, Kyoto Institute of Technology (Japan); Osamu Matoba, Department of Systems Science, Graduate School of System Informatics, Kobe University (Japan). . . . . [10711-36]

**Digital holographic microscopy using speckle illuminations and two-wavelength method**, Hideki Funamizu, Yusei Onodera, Muroran Institute of Technology (Japan); Jun Uozumi, Faculty of Engineering, Hokkai-Gakuen University (Japan); Yoshihisa Aizu, Muroran Institute of Technology (Japan). . . . . [10711-37]

**Tomographic phase imaging of RBCs in blood coagulation structures using digital holographic microscopy**, Hideki Funamizu, Ryoji Goto, Yoshihisa Aizu, Muroran Institute of Technology (Japan) . . . . . [10711-38]

**Reconstruction of complex amplitude by lensless phase-shift digital holography through an opaque glass plate**, Akinori Igarashi, Ritsumeikan University (Japan); Hidenobu Arimoto, AIST (Japan); Wataru Watanabe, Ritsumeikan University (Japan) . . . . . [10711-39]

**Digital holographic size measurement of Daphnia pulex**, Kota Sunayama, Utsunomiya University (Japan); Hitoshi Miyakawa, Yoshio Hayasaki, Utsunomiya Univ. (Japan) . . . . . [10711-40]

**Incoherent holographic imaging of subsurface structures with volume holographic gratings**, Yu-Hsin Chia, Institute of Medical Device and Imaging, National Taiwan University (Taiwan); Hung-Chun Wang, Department of Power Mechanical Engineering, National Tsing Hua University (Taiwan); Yuan Luo, Institute of Medical Device and Imaging, National Taiwan University (Taiwan). . . . . .[10711-41]

**In vivo time-series monitoring of dermal collagen fiber during skin burn healing using second-harmonic-generation microscopy**, Eiji Hase, Tokushima Univ. (Japan); Ryosuke Tanaka, Shu-ichiro Fukushima, Osaka University (Japan); Takeshi Yasui, Tokushima University (Japan) and Osaka University (Japan). . . . . [10711-42]

**In vivo visualization of dermal collagen fibers in human skin using a photonic-crystal-fiber-coupled, hand-held second-harmonic-generation microscope**, Yuki Ogura, Kosuke Atsuta, Eiji Hase, Takeo Minamikawa, Takeshi Yasui, Tokushima Univ. (Japan) . . . . . [10711-43]

**Analysis of collagen fiber orientation in biological tissues using polarization-resolved second-harmonic-generation microscopy**, Takuya Sakaue, Tokushima Univ (Japan); Eiji Hase, Tokushima Univ (Japan) and SPring-8(JASRI) (Japan); Takeo Minamikawa, Takeshi Yasui, Tokushima Univ (Japan). . . . . [10711-44]

**In situ monitoring of incised wound healing in animal model using second-harmonic-generation and third-harmonic-generation microscopy**, Shu-ichiro Fukushima, Yuji Tanaka, Osaka University (Japan); Eiji Hase, Tokushima Univ. (Japan) and JASRI/SPring-8 (Japan); Kazuma Takeichi, Tokushima Univ. (Japan); Takeshi Yasui, Tokushima University (Japan) and Osaka University (Japan) . . . . . [10711-45]

**Resonance Raman and fluorescence spectroscopy to evaluate increased brain kynurenine pathway activity in samples from patients with Alzheimer's**, Laura A. Sordillo, Lin Zhang, Lingyan Shi, Vidyasagar Sriramoju, Peter Sordillo, Robert Alfano, City College of New York (United States) [10711-46]

**Development of dual-wavelength microscopic laser speckle contrast imaging system**, Cheng-Yu Lee, Meng-Tsan Tsai, Chang Gung Univ (Taiwan). . . . . [10711-47]

**Polarization-resolved second-harmonic-generation imaging of dermal collagen fiber in pre-wrinkled skin of ultraviolet-B-exposed mouse** , Shu-ichiro Fukushima, Makoto Yonetsu, Osaka University (Japan); Eiji Hase, Tokushima Univ. (Japan) and JASRI/SPring-8 (Japan); Takeshi Yasui, Tokushima Univ. (Japan) and Osaka University (Japan) . . . . . [10711-48]

**Effects of nitric oxide on cortical hemodynamic responses in the rat brain exposed to a shock wave**, Masaki Inaba, Tokyo University of Agriculture and Technology (Japan); Shunichi Sato, National Defense Medical College Research Institute (Japan); Izumi Nishidate, Tokyo University of Agriculture and Technology (Japan). . . . . [10711-49]

**Partial optical path length in the scalp in subject-specific head models for multi-distance probe configuration of near infrared spectroscopy**, Taku Yanagisawa, Department of Electronics and Electrical Engineering, Keio University (Japan); Hiroshi Kawaguchi, National Institute of Advanced Industrial Science and Technology (Japan); Takayuki Obata, National Institute of Radiological Sciences (Japan); Eiji Okada, Department of Electronics and Electrical Engineering,Keio University (Japan) . . . . . [10711-50]

**Measurement of head phantom by functional near infrared imaging using multi-distance probe configuration**, Koki Hayabusa, Eiji Okada, Department of Electronics and Electrical Engineering,Keio University (Japan) . . . . . .[10711-51]

**Diffuse light reflectometry for measuring scattering and absorption coefficients of a biological tissue**, MAEDA Daiki, Toshiaki Iwai, Mitaro Namiki, 東京農工大学 (Japan) . . . . . [10711-52]

**Adjoint based Hessian evaluation for $SP_N$ modeled optical tomography**, Nishigandha Patil, Naren Naik, Indian Institute of Technology Kanpur (India). . . . . [10711-53]

**Three-dimensional beam focusing control for lensless vascular endoscopes using local wavefront control**, Masaki Hisaka, Osaka Electro-Communication Univ (Japan) . . . . . [10711-54]

**Application of scan-less two-dimensional confocal microscopy achieved by a combination of confocal slit with wavelength/space conversion**, Eiji Hase, Takeo Minamikawa, Shuji Miyamoto, Tokushima Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Yasuhiro Mizutani, Osaka Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Tetsuo Iwata, Tokushima Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Hirotsugu Yamamoto, Utsunomiya Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Takeshi Yasui, Tokushima Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan) [10711-55]

**Multi-focal imaging system by using a programmable spatial light modulator**, Chen Yen Lin, Ju Hsuan Chieh, Yuan Luo, National Taiwan Univ (Taiwan). . . . . [10711-57]

**Underwater image enhancement algorithm based on granular computing**, Yingjuan Xie, Xinnan Fan, Haiyan Xu, Zhuo Zhang, Junfeng Chen, Hohai University (China) . . . . . [10711-58]

**An edge detection method based artificial bee colony for underwater dam crack image**, zhuo zhang, Xinnan Fan II, Yingjuan Xie III, Haiyan Xu IV, hohai university (China) . . . . . [10711-59]

**Practical image quality evaluation for whole slide imaging scanner**, Md Shakhawat Hossain, Toyama Nakamura, Tokyo Institute of Technology (Japan); Fumikazu Kimura, Shinshu University (Japan); Yukako Yagi, Memorial Sloan Kettering Cancer Center (United States); Masahiro Yamaguchi, Tokyo Institute of Technology (Japan) . . . . . [10711-60]

**Speckle reconstruction based on oversampling smoothness algorithm**, hui chen, yesheng gao, xingzhao liu, Shanghai Jiao Tong University (China). . . . . .[10711-61]

**Speckle reconstruction method based on machine learning**, hui chen, Yesheng Gao, Xingzhao Liu, Shanghai Jiao Tong University (China). . . [10711-62]

**Fractality of biospeckle pattern observed in blood coagulation process**, Naomichi Yokoi, National Institute of Technology, Asahikawa College (Japan); Yoshihisa Aizu, Muroran Institute of Technology (Japan); Jun Uozumi, Hokkai-Gakuen University (Japan) . . . . . [10711-63]

**Computational ghost imaging by using complementary illumination patterns**, Bo-Bing Luo, Kun-Chi Tsai, Jung-Ping Liu, Feng Chia University (Taiwan). . . . . [10711-64]

**Preliminary study on x-ray phase-contrast imaging with tilted-grid**, Myung-Joon Kwack, Sooyeul Lee, Yoonseon Song, Seung-hoon Chae, Byung gyu Chae, ETRI (Korea, Republic of) . . . . . [10711-65]

**Implementation of a Raspberry-Pi-based LED array microscope for multi-contrast images**, Ryoji Maruyama, Tomoki Shimada, Ryota Yokoe, Ritsumeikan University (Japan); Hidenobu Arimoto, AIST (Japan); Wataru Watanabe, Ritsumeikan University (Japan). . . . . [10711-67]

**Image acquisition with smartphone-based LED array microscope**, Kazuko Koda, Shu Uenoyama, Ryo Sugimoto, Ryoji Maruyama, Ritsumeikan University (Japan); Hidenobu Arimoto, AIST (Japan); Wataru Watanabe, Ritsumeikan University (Japan) . . . . . [10711-68]

**Scan-less, line-filed, confocal phase imaging with dual-comb microscopy**, Eiji Hase, Takeo Minamikawa, Shuji Miyamoto, Tokushima Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Yasuhiro Mizutani, Osaka Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Tetsuo Iwata, Tokushima Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Hirotsugu Yamamoto, Utsunomiya Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan); Takeshi Yasui, Tokushima Univ. (Japan) and JST, ERATO MINOSHIMA Intelligent Optical Synthesizer (IOS) (Japan) [10711-69]

**Visual search efficiency depending on spatial layout of stimuli in volumetric image**, Tatjana Pladere, Vita Konosonoka, Karola Panke, Gunta Krumina, Univ of Latvia (Latvia) . . . . . .[10711-70]

**Real-time detection of 192Ir gamma-ray source positon using organic scintillator array sensor in HDR brachytherapy**, Young Beom Song, Bongsoo Lee, Sang Hun Shin, Hyun Young Shin, Jae Hyung Park, Hyungi Byun, Si Won Song, Ji Ye Kim, Chung-Ang University (Korea, Republic of) . .[10711-71]

**Electron beam addressable potentiometric sensor for ion distribution imaging with high resolution**, Wataru Inami, Kiyohisa Nii, Satoru Shibano, Yoshimasa Kawata, Shizuoka Univ (Japan). . . . . .[10711-72]

**Design of add-on optics for optimization of cot endoscope camera for epiduroscopic surgery**, Khanh Phuong Tran, Sukhan Lee, Intelligent Systems Research Institute (Korea, Republic of) . . . . . .[10711-73]

**Disturbance location algorithm of the single-core fiber optic sensor based on frequency domain**, Haiyan Xu, Lijuan Zhao, Yingjuan Xie, Zhuo Zhang, Xuewu Zhang, Hohai Univ (China) . . . . . .[10711-74]

**Design optimization of a single-mode microring resonator for label-free detection of biomarkers within a tunable spectral range of 2 nm**, Prabodh Panindre, New York University (United States); N.S. Susan Mousavi, Brain Engineering Research Center, Institute for Research in Fundamental Sciences (IPM) (Iran, Islamic Republic of); Sunil Kumar, New York University Abu Dhabi (United Arab Emirates). . . . . .[10711-75]

**Low dose of narrow-band ultraviolet B lamp for improving vitamin D synthesis with minimum skin damage**, Yu-Hsuan Lin, Instrument Technology Research Center, National Applied Research Laboratories. (Taiwan); Yi-Wen Chiu, Ming-Yen Lin, Siao-Ping Tsai, Feng-Xuan Jian, Division of Nephrology, Department of Internal Medicine, Kaohsiung Medical University Hospital. (Taiwan); Shang-Jyh Hwang, Kaohsiung Medical Univ. Hospital (Taiwan); Kuo-Cheng Huang, Instrument Technology Research Center, National Applied Research Laboratories. (Taiwan) . . . . . .[10711-76]

**Characterization and photostability study for CdTe quantum dots (QDs) with different sizes using laser induced fluorescence.**, Souad Elfeky D.D.S., Ahmed El-Hussein Mohamed Kamel ElNewishy, National Institute of Laser Enhanced Science (Egypt) . . . . . .[10711-77]

**Edge contrast enhancement at multiple planes using forked shaped defocus grating**, Sunil Vyas, Chen Yen Lin, Yuan Luo, National Taiwan Univ (Taiwan) . . . . . .[10711-78]

**Orthogonal functional system for finite Fresnel transform**, Tomohiro Aoyagi, Kouichi Ohtsubo M.D., 0 Toyo University (Japan) . . . . . .[10711-79]

**Nanoscale three-dimensional imaging of biological tissue with X-ray holographic tomography**, Alexandra Pacureanu, Julio da Silva, Yang Yang, Sylvain Bohic, Peter Cloetens, European Synchrotron Radiation Facility (France) . . . . . .[10711-81]

Coffee Break. . . . . .Fri 14:30 to 15:00

## SESSION 6

**LOCATION: 419 . . . . . FRI 15:00 TO 16:45**

### Optical Diagnosis and Treatment

Session Chair: **Joseph Rosen,** Ben-Gurion Univ. of the Negev (Israel)

15:00: **Quantitative evaluation of healing degree in injured tendons based on orientation analysis of collagen fibers by using Fourier-transform second-harmonic-generation microscopy and its relationship to mechanical property**, Eiji Hase, Japan Sychrotron Radiation Reasearch Institute (Japan); Takeo Minamikawa, Katsuya Sato, Daisuke Yonekura, Tokushima Univ. (Japan); Mitsuhiko Takahashi, Tokushima Pref. Cent. Hosp. (Japan); Takeshi Yasui, Tokushima Univ. (Japan) . . . . . [10711-26]

15:15: **Noninvasive estimation of light scattering and hemoglobin concentration in mice cutaneous carcinogenesis through multispectral imaging**, Wares Md. Abdul, Naoki Tobita, Izumi Nishidate, Tokyo Univ of Agriculture and Technology (Japan); Satoko Kawauchi, Shunichi Sato, National Defense Medical College Research Institute (Japan) . . . . . [10711-27]

15:30: **Characterization of cancer metastasis in model mice by multiphoton microscopy and Raman Spectroscopy**, Yusuke Oshima, Shigehiro Koga, Hiromi Yamamoto, Yuji Watanabe, Ehime Univ (Japan) . . . . . .[10711-28]

15:45: **Glucose sensing in the presence of scattering particles using decomposition of partial Mueller matrix**, Pradipta Mukherjee, Nathan Hagen, Yukitoshi Otani, Utsunomiya Univ (Japan). . . . . [10711-29]

16:00: **Quantitative in situ time-series evaluation of osteoblastic collagen synthesis under cyclic strain using second-harmonic-generation microscopy**, Katsuya Sato, Oki Matsubara, Tokushima University (Japan); Eiji Hase, Japan synchrotron radiation research institute (Japan); Takeo Minamikawa, Takeshi Yasui, Tokushima University (Japan) . . . . [10711-30]

16:15: **Fluid dynamic modeling and comparison of the intraocular pressure changes in eyes with SMILE and LASIK**, Kuo-Jen Wang, Wai W Wang, Cheliang Tsai, Crystalvue Medical Corp (Taiwan); I-Jong Wang, National Taiwan University Hospital (Taiwan). . . . . .[10711-31]

16:30: **Enhanced therapeutic effect of an antitumor agent on malignant glioma in rats by photomechanical wave-based transvascular drug delivery**, Yumiko Koshi, Tokyo University of Agriculture and Technology (Japan); Yasuyuki Tsunoi, Arata Tomiyama, Satoko Kawauchi, Kentaro Mori, National Defense Medical College (Japan); Shunichi Sato, National Defense Medical College Research Institute (Japan); Izumi Nishidate, Tokyo University of Agriculture and Technology (Japan) . . . . . [10711-32]

## CONFERENCE 10712

LOCATION: 418

Wednesday–Friday 25–27 April 2018 • Proceedings of SPIE Vol. 10712

# Optical Manipulation and Structured Materials Conference

*Conference Chair:* **Takashige Omatsu,** Chiba Univ. (Japan)

*Conference Co-Chairs:* **Hajime Ishihara,** Osaka Prefecture Univ. (Japan); **Keiji Sasaki,** Hokkaido Univ. (Japan)

*Program Committee:* **Ryuji Morita,** Hokkaido Univ. (Japan); **Yasuyuki Tsuboi,** Osaka City Univ. (Japan); **Masaaki Ashida,** Osaka Univ. (Japan); **Satoshi Ashihara,** The Univ. of Tokyo (Japan); **Yung-Fu Chen,** National Chiao Tung Univ. (Taiwan); **Kei Murakoshi,** Hokkaido Univ. (Japan); **Hiromi Okamoto,** Institute for Molecular Science (Japan); **Seigo Ohno,** Tohoku Univ. (Japan); **Ichiro Shoji,** Chuo Univ. (Japan); **Síle Nic Chormaic,** Okinawa Institute of Science and Technology Graduate Univ. (Japan); **Yasuhiro Sugawara,** Osaka Univ. (Japan)

## WEDNESDAY 25 APRIL

### OPENING REMARKS

**LOCATION: 418 . . . . . 13:15 TO 13:30**

Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan)

### OMC AND BISC JOINT SESSION I

**LOCATION: 418 . . . . . 13:30 TO 15:00**

Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan)

13:30: **High temporal and spatial pattern stimulation to manipulate brain function** *(Invited Paper)*, Koichiro Haruwaka, Kobe Univ. of Graduate School of Medicine (Japan); Xiangyu Quan, Osamu Matoba, Kobe Univ. (Japan) . [10711-104]

14:00: **Femtosecond laser trapping, assembling, and ejection dynamics of dielectric nanoparticles in solution** *(Invited Paper)*, Hiroshi Masuhara, Jim Jui-Kai Chen, National Chiao Tung Univ (Taiwan); Wei-Yi Chiang, National Chiao Tung Univ (Taiwan) and Katholieke Universiteit Leuven (Belgium); Anwar Usman, Universiti Brunei Darussalam (Brunei Darussalam); Teruki Sugiyama, National Chiao Tung Univ (Taiwan) and Nara Institute of Science and Technology (Japan); Johan Hofkens, Katholieke Universiteit Leuven (Belgium) . . . . . [10712-69]

14:30: **Monitoring ruffling cells by lattice light-sheet microscopy** *(Invited Paper)*, Bi-Chang Chen, Wei-Chun Tang, Peilin Chen, Research Ctr. for Applied Sciences - Academia Sinica (Taiwan) . . . . . [10711-105]

Coffee Break . . . . . Wed 15:00 to 15:30

### OMC AND BISC JOINT SESSION II

**LOCATION: 418 . . . . . 15:30 TO 16:45**

Session Chair: **Osamu Matoba,** Kobe Univ. (Japan)

15:30: **Computational imaging and reconstruction in digital holographic microscopy** *(Invited Paper)*, Edmund Y.M. Lam, Univ of Hong Kong (Hong Kong, China) . . . . . [10711-80]

15:45: **Observation of immunostained microtubules using three-dimensional super-resolution microscope with two-color annular wave plate**, Yoshinori Iketaki, Olympus Corp (Japan); Bokor Nandor, Budapest University of Technology and Economics (Hungary); Daisuke Okada, Kitasato University School of Medicine (Japan); Hiroshi Kumagai, Kitasato University, School of Allied Health Sciences Physics (Japan) . . . . . [10712-70]

16:00: **Optical trapping of quantum-dot conjugated AMPA-type receptors depended on initial assembling states**, Tatsunori Kishimoto, National Institute of Advanced Industrial Science and Technology (AIST) (Japan) and Kwansei Gakuin University (Japan); Yasuyo Maezawa, National Institute of Advanced Industrial Science and Technology (AIST) (Japan); Suguru N. Kudoh, Kwansei Gakuin University (Japan); Takahisa Taguchi, National Institute of Information and Communications Technology (NICT) (Japan); Chie Hosokawa, National Institute of Advanced Industrial Science and Technology (AIST) (Japan) and Kwansei Gakuin University (Japan) and Advanced Photonics and Biosensing Open Innovation Laboratory, AIST-Osaka University (Japan) . . . . . [10712-71]

16:15: **Enhanced collection efficiency of vesicles in a suspension by optical pressure using gold nanoparticles**, Takashi Kaneta, Mai Kuboi, Nobuyuki Takeyasu, Okayama University (Japan) . . . . . [10712-72]

16:30: **Rotational dynamics of bacteria in an optical tweezer**, Sharath Ananthamurthy, University of Hyderabad (India) . . . . . [10712-73]

## THURSDAY 26 APRIL

### SESSION 1

**LOCATION: 418 . . . . . THU 9:00 TO 10:45**

#### OMC I

Session Chair: **Keiji Sasaki,** Hokkaido Univ. (Japan)

9:00: **Optical fiber nano-tweezers, a complementary approach for micro- and nanoparticle trapping** *(Invited Paper)*, Jochen Fick, Institut NÉEL (France) . . . . . [10712-1]

9:30: **Seeing is believing: single molecule microscopy, a powerful tool from nanoparticle investigations to microbiome analysis.** *(Invited Paper)*, Johan Hofkens, KU Leuven (Belgium) . . . . . [10712-2]

10:00: **Optical trapping of gold and semiconductor nanoparticles at oil-water interfaces with a focused near-infrared laser beam**, Tatsuya Shoji, Shota Naka, Osaka City Univ (Japan); Seiya Koyama, Tatsuya Kameyama, Tsukasa Torimoto, Nagoya Univ. (Japan); Yasuyuki Tsuboi, Osaka City Univ (Japan). . . . . [10712-3]

10:15: **Nanoparticle manipulation using a tapered fiber**, Hideki Fujiwara, Kyosuke Yamauchi, Keiji Sasaki, Hokkaido Univ (Japan) . . . . . [10712-4]

10:30: **Simultaneous optical trapping and imaging in axial plane**, Ming Lei, Yansheng Liang, Xi'an Institute of Optics and Precision Mechanics, (China) . . . . . [10712-5]

Coffee Break . . . . . Thu 10:45 to 11:00

### SESSION 2

**LOCATION: 418 . . . . . THU 11:00 TO 12:15**

#### OMC II

Session Chair: **Juan José Sáenz,** Univ. Autónoma de Madrid (Spain)

11:00: **The dynamics of trapped, rotating microparticles in vacuum** *(Invited Paper)*, Kishan Dholakia, Univ. of St. Andrews (United Kingdom) . . . . . [10712-6]

11:30: **Hydrodynamic micro-manipulation using optically actuated flow control**, Une Butaite, University of Glasgow (United Kingdom); Dave Phillips, University of Exeter (United Kingdom); Jonathan Taylor, Graham Gibson, University of Glasgow (United Kingdom). . . . . [10712-7]

11:45: **Remote plasmonic optical trapping on silver nanowire induced by nonlinear wave-mixing effects**, Shuichi Toyouchi, Katholieke Universiteit Leuven (Belgium) . . . . . [10712-8]

12:00: **Manipulation of nanoparticles with tailored optical focal field**, Guanghao Rui, Bing Gu, Yiping Cui, Southeast University (China) . . . . . [10712-9]

Lunch Break . . . . . Thu 12:15 to 13:30

## SESSION 3

**LOCATION: 418 . . . . . THU 13:30 TO 15:00**

### OMC III

Session Chair: **Min-Kyo Seo,** KAIST (Korea, Republic of)

13:30: **Movement of matter by light-fueled molecular machines: theory and experiments** *(Invited Paper)*, Zouheir Sekkat, MAScIR (Morocco) . . . . .[10712-10]

14:00: **Optical vortex induced chiral mass-transport of azo-polymer through two photon absorption**, Keigo Masuda, Shogo Nakano, Yoshinori Kinezuka, Mitsuki Ichijo, Ryo Shinozaki, Graduate School of Advanced Integration Science, Chiba University (Japan); Katsuhiko Miyamoto, Takashige Omatsu, Graduate School of Advanced Integration Science, Chiba University (Japan) and Molecular Chirality Research Center, Chiba University (Japan) . . . . . .[10712-11]

14:30: **Thermophoresis-assisted optical trapping of pyrene-labeled hydrophilic polymer chains**, Kenta Ushiro, Tatsuya Shoji, Taka-Aki Asoh, Osaka City University (Japan); Fumiya Kato, Kei Murakoshi, Hokkaido University (Japan); Yasuyuki Tsuboi, Osaka City University (Japan) . . . . . .[10712-12]

14:45: **Sub-millimeter helical fiber created by Bessel vortex beam illumination**, Junhyung Lee, Graduate School of Science and Engineering, Chiba University (Japan); Yoshihiko Arita, Molecular Chirality Research Center, Chiba University (Japan) and SUPA, School of Physics & Astronomy, University of St Andrews (United Kingdom); Reimon Matsuo, Graduate School of Science and Engineering, Chiba University (Japan); Shunsuke Toyoshima, Graduate School of Science and Engineering (Japan); Katsuhiko Miyamoto, Graduate School of Science and Engineering (Japan) and Molecular Chirality Research Center (Japan); Kishan Dholakia, SUPA (United Kingdom) and Graduate School of Science and Engineering (Japan); Takashige Omatsu, Graduate School of Science and Engineering (Japan) and Molecular Chirality Research Center (Japan). . . . . .[10712-13]

Coffee Break. . . . . Thu 15:00 to 15:15

## SESSION 4

**LOCATION: 418 . . . . . THU 15:15 TO 16:15**

### OMC IV

Session Chair: **Pavel Zemánek,**
Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic)

15:15: **Property of magnetic trapping of superconducting sub-micron particles**, Jun Naoi, Yuta Takahashi, Masato Takamune, Yoshinari Nakamura, University of Toyama (Japan); Mitsutaka Kumakura, University of Fukui (Japan); Masaaki Ashida, Osaka University (Japan); Fusakazu Matsushima, Yoshiki Moriwaki, University of Toyama (Japan) . . . . . .[10712-14]

15:30: **Laser-induced metal particle migration in glass**, Hirofumi Hidai, Arata Sawafuji, Souta Matsusaka, Akira Chiba, Noboru Morita , Chiba Univ (Japan). . . . . .[10712-15]

15:45: **Au nanoparticles fabricated by optical vortex ablation**, Nakamura Yuri, Chiba univ (Japan); Ryosuke Nakamura, Chisa Koriyama, Chiba Univ. (Japan); Katsuhiko Miyamoto, Chiba Univ. Molecular Chirality Research Center (Japan); Tsukasa Torimoto, Nagoya University (Japan); Yasuyuki Tsuboi, Osaka City University (Japan); Takashige Omatsu, Chiba Univ. Molecular Chirality Research Center (Japan). . . . . .[10712-16]

16:00: **Fabrication of cadmium selenide quantum dots with laser ablation in superfluid helium**, Yosuke Minowa, tatsuro suzuki, kenji setoura, syoji ito, hiroshi miyasaka, masaaki ashida, Osaka Univ (Japan) . . . . . .[10712-17]

Coffee Break. . . . . Thu 16:15 to 16:30

## SESSION 5

**LOCATION: 418 . . . . . THU 16:30 TO 18:00**

### OMC V

Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan)

16:30: **Bottle beam generation from a frequency-doubled Nd:$YVO_4$ laser with a tightly end-pumping geometry**, Jung-Chen Tung, yuanyuan Ma, Chiba University (Japan); Yung-Fu Chen, National Chiao Tung University (Taiwan); Katsuhiko Miyamoto, Takashige Omatsu, Chiba University (Japan) . . . .[10712-18]

16:45: **Evaluation of Laguerre-Gaussian beam generated with integrable phase-modulating surface-emitting lasers**, Yu Takiguchi, Kazuyoshi Hirose, Takahiro Sugiyama, So Uenoyama, Yoshiro Nomoto, Yoshitaka Kurosaka, Hamamatsu Photonics KK (Japan) . . . . . .[10712-19]

17:00: **Analytical representation for structured light generated by astigmatic transformation of Hermite-Gaussian beams**, Yen-Hui Hsieh, Pi-Hui Tuan, Jung-Chen Tung, Kuan-Wei Su, Hsing-Chih Liang, Yung-Fu Chen, NCTU (Taiwan) . . . . . [10712-20]

17:15: **Parameter optimization for observation of high-dimensional effect in orbital angular momentum entanglement**, Yoko Miyamoto, Univ of Electro-Communications (Japan) . . . . . .[10712-21]

17:30: **Generation of high-energy geometric structured beams by off-axis pumped Nd:YAG/Cr4+:YAG lasers with degenerate resonators**, Pi-Hui Tuan, Yen-Hui Hsieh, National Chiao Tung University (Taiwan); Hsin-Chih Liang, Institute of Optoelectronic Science, National Taiwan Ocean University (Taiwan); Kuan-Wei Su, Yung-Fu Chen, National Chiao Tung University (Taiwan) [10712-22]

17:45: **Shrinking optical vortex to the nanoscale**, Jingbo Sun, Univ. at Buffalo (United States); Keigo Masuda, Chiba Univ. (Japan); Tianboyu Xu, Univ. at Buffalo (United States); Katsuhiko Miyamoto, Takashige Omatsu, Chiba Univ. (Japan); Natalia M. Litchinitser, Univ. at Buffalo (United States) . . . . . .[10712-74]

# FRIDAY 27 APRIL

## SESSION 6

**LOCATION: 418 . . . . . FRI 9:00 TO 10:30**

### OMC VI

Session Chair: **Kishan Dholakia,** Univ. of St. Andrews (United Kingdom)

9:00: **Light induced "mock gravity" interactions at the nanoscale** *(Invited Paper)*, Juan José Sáenz, Univ. Autónoma de Madrid (Spain) . . . . . [10712-23]

9:30: **Nano-particle manipulation using a plasmonic multimer nano-structure**, Shutaro Ishida, Kota Sudo, Keiji Sasaki, Hokkaido Univ (Japan). . . . . [10712-24]

9:45: **Graphene nanoridges as a directional plasmon launcher**, Sanpon Vantasin, The University of Tokyo, Institute of Industrial Science (Japan); Yoshito Y Tanaka, The University of Tokyo, Institute of Industrial Science (Japan) and Japan Science and Technology Agency, PRESTO (Japan); Tsutomu Shimura, The University of Tokyo, Institute of Industrial Science (Japan). . . . . [10712-25]

10:00: **High-density assembly of micro-dispersoids by laser-induced bubble and fluid flow**, Yasuyuki Yamamoto, Shiho Tokonami, Takuya Iida, Osaka Prefecture University (Japan) . . . . . [10712-26]

10:15: **Motion of optically bound particles in tractor beam**, Jana Damková, Lukáš Chvátal, Jan Ježek, Jindřich Oulehla, Oto Brzobohatý, Pavel Zemánek, ISI of the CAS vvi (Czech Republic) . . . . . [10712-27]

Coffee Break. . . . . Fri 10:30 to 11:00

## SESSION 7

**LOCATION: 418 . . . . . FRI 11:00 TO 12:15**

### OMC VII

Session Chair: **Yoshihiko Arita,** Univ. of St. Andrews (United Kingdom)

11:00: **Underdamped and overdamped dynamics of objects in nonlinear optical potentials** *(Invited Paper)*, Pavel Zemánek, Stephen Simpson, Martin Siler, Petr Jakl, Jana Damkova, Vojtech Svak, Institute of Scientific Instruments of the ASCRvvi (Czech Republic); Alejandro Arzola, Instituto de Física, Universidad Nacional Autónoma de México (Mexico); Karen Volke-Sepulveda, Instituto de Física (Mexico); Radim Filip, Department of Optics, Palacky University (Czech Republic) . . . . . [10712-28]

11:30: **The temperature of an optically trapped, rotating upconverting-microparticle**, Yoshihiko Arita, Univ. of St. Andrews (United Kingdom) [10712-29]

11:45: **Optical properties of nano-hole array with randomly designed surface**, Mamoru Tamura, Shiho Tokonami, Takuya Iida, Osaka prefecture university (Japan) . . . . . [10712-30]

12:00: **Nonlinear self-action of Bloch surface waves governed by gradient optical forces**, Daniil A. Shilkin, Lomonosov Moscow State University (Russian Federation) and Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University (Russian Federation); Evgeny V. Lyubin, Andrey A. Fedyanin, Lomonosov Moscow State University (Russian Federation). [10712-31]

Lunch Break . . . . . Fri 12:15 to 13:00

# CONFERENCE 10712

## POSTERS

**LOCATION: EXHIBIT HALL A . . . . . .13:00 TO 14:00**

**Polarization control based on graphene hyperbolic metamaterials**, Tao Wang, Huazhong University of Science and Technology (China); Le Cheng, Huazhong Univ of Science and Technology (China) . . . . . [10712-45]

**Theoretical and experimental investigations of photonic jet array from rectangle phase diffraction grating**, Cheng-Yang Liu, Tzu-Ping Yen, Tamkang Univ (Taiwan); Oleg V. Minin, Igor V. Minin, Siberian State University of Geosystem and Technologies (Russian Federation). . . . . [10712-46]

**Dispersion of quantum dots into gases toward their optical manipulation**, Mitsutaka Kumakura, Asuka Kinan, Takeshi Moriyasu, Univ of Fukui (Japan). . . . . [10712-47]

**Multiplexed volume holographic gratings for simultaneous generation of Airy and Dual Airy beams**, Sunil Vyas, Yu-Hsin Chia, Yuan Luo, National Taiwan Univ (Taiwan). . . . . [10712-48]

**Thermal analysis for ion beam processing of the unimorph deformable mirror**, Zhanbin Fan, Chaoliang Guan, Guipeng Tie, Shanyong Chen, National University of Defense Technology (China). . . . . [10712-49]

**Thermal analysis for ion beam processing of the unimorph deformable mirror**, Fan Zhanbin, Chaoliang Guan, Guipeng Tie, Shanyong Chen, National University of Defense Technology (China). . . . . [10712-50]

**Preparation of low-toxic Zn-Ag-In-Te quantum dots with tunable near-IR emission toward optical applications**, Tatsuya Kameyama, Kouta Sugiura, Yujiro Ishigami, Takahisa Yamamoto, Nagoya Univ. (Japan); Susumu Kuwabata, Osaka Univ. (Japan); Tomoki Okuhata, Naoto Tamai, Kwansei Gakuin Univ. (Japan); Tsukasa Torimoto, Nagoya Univ. (Japan). . . . . [10712-51]

**Trapping and manipulation of individual cells in the crowd**, Qian Zhao, the University of Scirnce and Technology of China (China) . . . . . [10712-53]

**Dynamic shaping of orbital-angular-momentum beams with an optimized Lee method**, Xinyao Hu, the University of Science and Technology of China (China). . . . . [10712-54]

**Proposed selective optical transport of nanoparticles using counter-propagating beams**, Takudo Wada, Hajime Ishihara, Osaka Prefecture University (Japan). . . . . [10712-55]

**Optical forces on a nonlinear optical Rayleigh particle induced by high-repetition-rate femtosecond laser pulses**, Bing Gu, Liping Gong, Guanghao Rui, Yiping Cui, Southeast Univ (China); Zhuqing Zhu, Nanjing Normal University (China); Qiwen Zhan, University of Dayton (United States). . . . . [10712-56]

**Metalens for structure light**, Mu Ku Chen, Department of Physics, National Taiwan University (Taiwan); Cheng Hung Chu, Research Center for Applied Sciences, Academia Sinica (Taiwan); Bo Han Chen, Hsin Yu Kuo, Yu Han Chen, Ren Jie Lin, Department of physics, National Taiwan University (Taiwan); Tsung Lin Chung, Jia-Wern Chen, Yi-Teng Huang, Department of physics, National Taiwan University (Taiwan); Din Ping K Tsai, Research Center for Applied Sciences, Academia Sinica (Taiwan) and Department of physics, National Taiwan University (Taiwan) . . . . . [10712-57]

**Active polarization control of optical fields localized on gold nano-rectangles**, Shun Hashiyada, Tetsuya Narushima, Hiromi Okamoto, Institute for Molecular Science (Japan). . . . . [10712-58]

**Optical manipulation of nonlinear vibration of graphene mechanical resonator**, Taichi Inoue, Yuki Anno, Yuki Imakita, Kuniharu Takei, Takayuki Arie, Seiji Akita, Osaka Prefecture University (Japan). . . . . [10712-59]

**Optical manipulation of vibration amplitude of electrostatically actuated cantilevered MoS2**, Daiki Yoshikawa, Yuga Miyamoto, Kuniharu Takei, Takayuki Arie, Seiji Akita, Osaka Prefecture University (Japan). . . . . [10712-60]

**Hyper-entanglement preservation in quantum optical circuits**, Vladimir V. Nikulin, Binghamton Univ (United States) . . . . . [10712-61]

**Novel non-plasmonic optical trapping: nano-structured semiconductor assisted (NASSCA) optical tweezers**, Yuki Uenobo, Tatsuya Shoji, Ayaka Mototsuji, Sawa Komoto, Tatsuya Nagai, Yasuyuki Tsuboi, Osaka City University (Japan); Juodkazis Saulius , Linklater Denver, Swinburne University of Technology (Australia) . . . . . [10712-62]

**Raman microspectroscopic study on an optically formed poly(N-isopropylacrylamide) rich microparticle: molecular weight dependence of a polymer concentration in the particle**, Kayo Fujiwara, Tatsuya Shoji, Mitsuhiro Matsumoto, Taka-Aki Asoh, Takashi Nishiyama, Hideo Horibe, Yasuyuki Tsuboi, Osaka City University (Japan) . . . . . [10712-63]

**Temperature at the focal point of optical trapping beam: evaluation using fluorescence correlation spectroscopy**, Kenji Setoura, Syoji Ito, Keisuke Fujita, Hiroshi Miyasaka, Osaka Univ (Japan) . . . . . [10712-64]

**Optofluidics driven by photothermal effects of single gold nanoparticles**, Kenji Setoura, Syoji Ito, Hiroshi Miyasaka, Osaka University (Japan) . . [10712-65]

**In-situ observation of molecules in the strong coupling states**, Kei Murakoshi, Fumiya Kato, Hiro Minamimoto, Hokkaido Univ (Japan) [10712-66]

**In-situ SERS observation of selective molecule optical trapping**, Nobuaki Oyamada, Hiro Minamimoto, Kei Murakoshi, Hokkaido Univ (Japan). . . . . [10712-67]

**Optical control of orientation of nanosheet in colloidal state**, Yasutaka Suzuki, Makoto Tominaga, Takashi Nagashita, Yamaguchi University (Japan); Toshiaki Iwai, Tokyo University of Agriculture and Technology (Japan); Teruyuki Nakato, Kyushu Institute of Technology (Japan); Jun Kawamata, Yamaguchi University (Japan) . . . . . [10712-68]

## SESSION 8

**LOCATION: 418 . . . . . FRI 14:00 TO 15:30**

### OMC VIII

Session Chair: **Zouheir Sekkat,** Moroccan Foundation for Advanced Science, Innovation and Research (Morocco)

14:00: **Resonant light scattering properties of a single wavelength-scale nanorod structure** *(Invited Paper)*, Donghyeong Kim, Ho-Seok Ee, Jinhyung Kim, Min-Kyo Seo, KAIST (Korea, Republic of). . . . . [10712-32]

14:30: **Circular polarization dissymmetry of two-photon-induced photoluminescence from chiral plasmonic nanostructured metasurfaces**, Khai Quang Le, Hiromi Okamoto, Institute for molecular science (Japan). . . . . [10712-33]

14:45: **Formation of optical vortices with all-glass nanostructured gradient index masks**, Krzysztof Switkowski, Science Program, Texas A&M University at Qatar (Qatar) and Warsaw University of Technology, Warsaw (Poland); Alicja Anuszkiewicz, Adam Filipkowski, Dariusz Pysz, Ryszard Stepien, Department of Glass/Institute of Electronic Materials Technology (Poland); Wieslaw Krolikowski, Science Program, Texas A&M University at Qatar (Qatar) and Laser Physics Centre, Research School of Physics and Engineering, Australian National University (Australia); Ryszard Buczynski, Department of Glass/Institute of Electronic Materials Technology (Poland) and Faculty of Physics, University of Warsaw (Poland) . . . . . [10712-34]

15:00: **Development of nanostructured gradient index microlenses for mid infrared applications**, Ryszard Buczyński, Institute of Electronic Materials Technology (Poland) and University of Warsaw (Poland); Alicja Anuszkiewicz, Institute of Electronic Materials Technology (Poland); Paulina Stafiej, Jolanta Lisowska, Institute of Electronic Materials Technology (Poland) and University of Warsaw (Poland); Adam Filipkowski, Dariusz Pysz, Jaroslaw Cimek, Marek Trippenbach, Rafal Kasztelanic, Institute of Electronic Materials Technology (Poland). . . . . [10712-35]

15:15: **Optical properties of nanostructured gradient index vortex masks**, Alicja Anuszkiewicz, Institute of Electronic Materials Technology (Poland); Jolanta Lisowska, Institute of Electronic Materials Technology (Poland) and University of Warsaw (Poland); Adam Filipkowski, Rafal Kasztelanic, Institute of Electronic Materials Technology (Poland); Krzysztof Switkowski, Warsaw University of Technology (Poland) and Texas A&M University at Qatar (Qatar); Dariusz Pysz, Jaroslaw Cimek, Institute of Electronic Materials Technology (Poland); Marek Trippenbach, University of Warsaw (Poland); Wieslaw Królikowski, Laser Physics Centre, Research School of Physics and Engineering, Australian National University (Australia) and Texas A&M University at Qatar (Qatar); Ryszard Buczyński, Institute of Electronic Materials Technology (Poland) and University of Warsaw (Poland). . . . . [10712-36]

Coffee Break. . . . . .Fri 15:30 to 15:45

## SESSION 9

**LOCATION: 418 . . . . . FRI 15:45 TO 17:45**

### OMC IX

Session Chair: **Masaaki Ashida,** Osaka Univ. (Japan)

15:45: **Photoinduced force microscopy imaging using heterodyne-FM technique**, Junsuke Yamanishi, Masaaki Tsujii, Yoshitaka Naitoh, Yanjun Li, Yasuhiro Sugawara, Osaka University (Japan) . . . . . [10712-37]

16:00: **Magnetic spin modulation by optical vortex-induced spin-spin interaction**, Yutaro Goto, Nobuhiko Yokoshi, Osaka Prefecture University (Japan); Hajime Ishihara, Osaka Prefecture University (Japan) and Osaka University (Japan) . . . . . [10712-38]

16:15: **Adaptive optical system for laser beam shaping**, Julia V. Sheldakova, Active Optics Night N Ltd (Russian Federation) . . . . . [10712-39]

16:30: **Electrochemical control of ultra-small gap distance at metal nanodimer creating highly localized plasmonic field** , Kei Murakoshi, Xiaowei Li, Hiro Minamimoto, Shunpei Oikawa, Hokkaido Univ (Japan) [10712-40]

16:45: **Numerical study on dynamical behavior of nanoparticles in optical vortex**, Ryo Nagura, Tempei Tsujimura, Satoyuki Kawano, Osaka University (Japan). . . . . .[10712-41]

17:00: **Sensitivity enhancement of surface plasmon resonance imaging sensor with structural parameter optimization based on polarization contrast modulation**, Yi Sun, Ya Gao, Tingting Yang, Xu Ma, Xiaoping Wang, Zhejiang University (China) . . . . . [10712-42]

17:15: **Energy, linear momentum, and angular momentum exchange between an electromagnetic wave-packet and a small particle**, Masud Mansuripur, College of Optical Sciences Univ of Arizona (United States) . . . . . [10712-43]

17:30: **Exploiting scattering for single-shot measurement of the orbital angular momentum spectrum of light fields**, Lei Gong, University of Science and Technology of China (China) . . . . . [10712-52]

## CLOSING REMARKS AND BEST PAPER AWARD CEREMONY

**LOCATION: 418 . . . . . 5:45 TO 5:55**

Session Chair: **Takashige Omatsu,** Chiba Univ. (Japan)

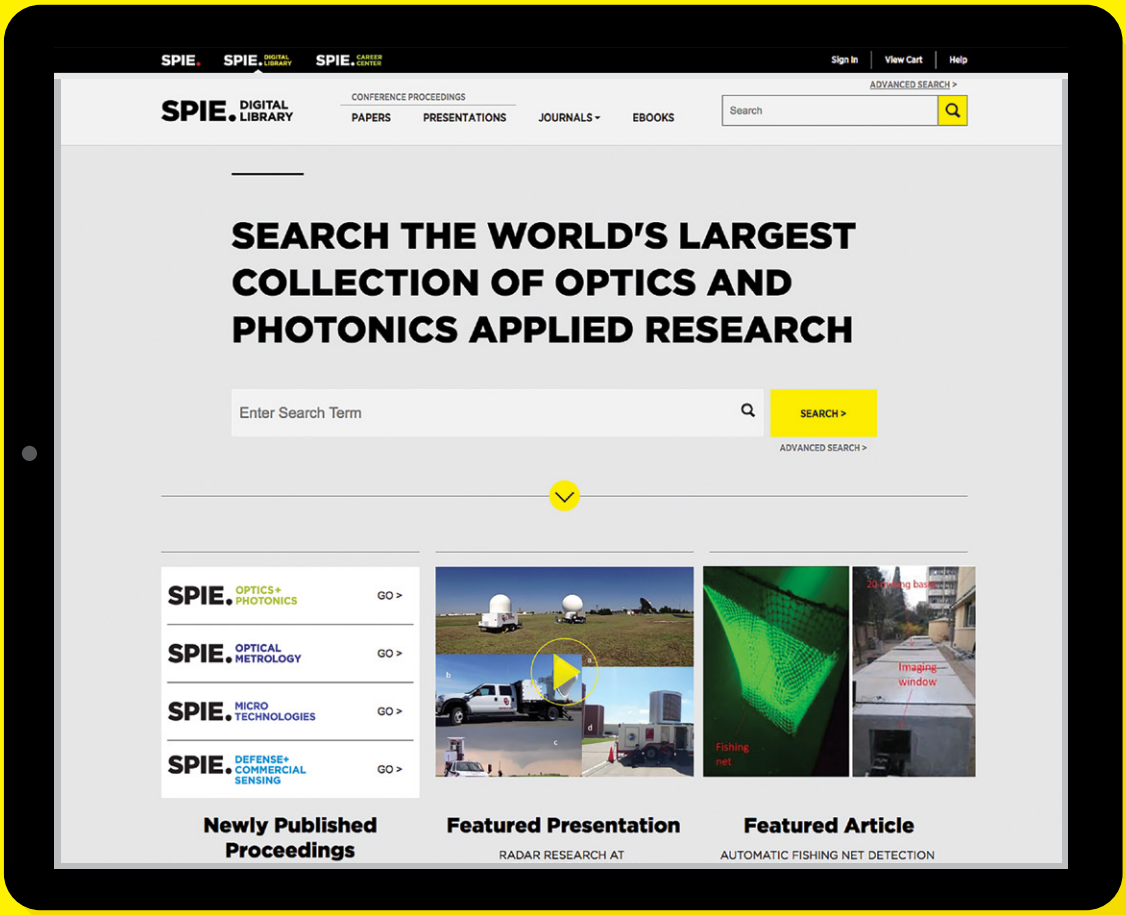
# INDEX OF AUTHORS, CHAIRS, AND COMMITTEE MEMBERS

**Bold = SPIE Member**

# INDEX OF AUTHORS, CHAIRS, AND COMMITTEE MEMBERS

**Bold = SPIE Member**

# SPIE. DIGITAL LIBRARY




- Enhanced usability
- Improved search functionality
- Expanded proprietary taxonomy
- Full-text HTML proceedings and eBooks
- Presentation recording videos from SPIE conferences
- Mobile-friendly design

**spiedl.org**