

PROCEEDINGS OF SPIE

International Conference on Optical and Photonics Engineering (icOPEN 2016)

Prof. Anand Krishna Asundi

Editor

26–30 September 2016

Chengdu, China

Organized by

Optics and Photonics Society of Singapore (Singapore)

Co-organized by

Sichuan Institute of Electronics (China)

University of Electronic Science and Technology of China (China)

Nanjing University of Science and Technology (China)

Southwest Jiaotong University of China (China)

Sponsored by

International Association of Computer Science and Information Technology (Singapore)

Sichuan Institute of Electronics (China)

Published by

SPIE

Volume 10250

Proceedings of SPIE 0277-786X, V. 10250

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

International Conference on Optical and Photonics Engineering (icOPEN 2016), edited by Anand Krishna Asundi,
Proc. of SPIE Vol. 10250, 1025001 · © 2017 SPIE · CCC code: 0277-786X/17/\$18 · doi: 10.1117/12.2269802

Proc. of SPIE Vol. 10250 1025001-1

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *International Conference on Optical and Photonics Engineering (icOPEN 2016)*, edited by Anand Krishna Asundi, Proceedings of SPIE Vol. 10250 (SPIE, Bellingham, WA, 2017) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510610019

ISBN: 9781510610026 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2017, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/17/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

Paper Numbering: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

xi	<i>Authors</i>
xv	<i>Conference Committee</i>
xvii	<i>Introduction</i>

SESSION 1 GEOMETRICAL OPTICS

10250 02	Algorithms of wave reflective critical angle on interface [10250-38]
10250 03	Performance optimization of chirped fiber Bragg gratings by asymmetrical apodization [10250-23]
10250 04	EUV multilayer defects reconstruction based on the transport of intensity equation and partial least-square regression [10250-7]
10250 05	The review of the IR radiation characteristic of exhaust plume of the liquid rocket engine [10250-57]
10250 06	Distortion analysis of index matched anisotropic crystal lens with the ray tracing model [10250-46]
10250 07	Analysis of the scattering performance of human retinal tissue layers [10250-8]
10250 08	Characterization of surface defects of silicon substrates by the total scattering and absorption [10250-128]
10250 09	Numerical simulations of dual-waveguide trap with rough and tilted endfaces [10250-24]
10250 0A	Experimental research of dynamic stitching interferometry for large plano optics [10250-43]

SESSION 2 PHYSICAL OPTICS

10250 0B	Moving characteristics of hot spots on target plane in novel beam smoothing schemes [10250-66]
10250 0C	A heuristic model of aperture-averaged angle-of-arrival variance for a Gaussian wave propagation through anisotropic non-Kolmogorov turbulence [10250-61]
10250 0D	Monte Carlo model of light transport in multi-layered tubular organs [10250-55]
10250 0E	Supercontinuum generation in highly nonlinear low-dispersion photonic crystal fiber [10250-26]

- 10250 OF **Research of the polarization states in the liquid crystal spectropolarimetric system based Poincaré method** [10250-11]
- 10250 OG **Study on degradation of propagation delay time and low-frequency noise of high-speed optocoupler** [10250-138]

SESSION 3 OPTICAL SYSTEM DESIGN AND IMAGING TECHNOLOGY

- 10250 OH **Optical design and athermalization analysis of infrared dual band refractive-diffractive telephoto objective** [10250-48]
- 10250 OI **Fusion method of visible and infrared images based on calibration information and regional energy optimization** [10250-17]
- 10250 OJ **The influence of intensity correlation order on lensless ghost imaging** [10250-4]
- 10250 OK **An efficient shutter-less non-uniformity correction method for infrared focal plane arrays** [10250-10]
- 10250 OL **A finite adaptive neighborhood suppression algorithm based on singular value decomposition** [10250-30]
- 10250 OM **A spatial total variation model for correcting stripe nonuniformity in IR-FPA images** [10250-69]
- 10250 ON **Synchronous high speed multi-point velocity profile measurement by heterodyne interferometry** [10250-110]
- 10250 OO **Study on MMW radiation characteristics and imaging of aquatic plants for environmental application** [10250-42]
- 10250 OP **Experimental study on imaging of underwater microbubbles through supercavity layer** [10250-36]
- 10250 OQ **Investigation of skin structures based on infrared wave parameter indirect microscopic imaging** [10250-63]
- 10250 OR **Experimental study on defocus image in optical scanning holography** [10250-83]
- 10250 OS **Study of imaging fiber bundle coupling technique in IR system** [10250-102]
- 10250 OT **Measuring dispersed spot of positioning CMOS camera from star image quantitative interpretation based on a bivariate-error least squares curve fitting algorithm** [10250-68]
- 10250 OU **Determination of optic system technical indicators of star sensor** [10250-115]
- 10250 OV **CAE "FOCUS" for modelling and simulating electron optics systems: development and application** [10250-2]

SESSION 4 PRINCIPLE AND DESIGN OF OPTICAL INSTRUMENTS

- 10250 0W **A 10 Gb/s partial response equalizer in 0.18 μ m CMOS using duobinary signaling** [10250-77]
- 10250 0X **Study on thermally control terahertz narrow bandpass filter** [10250-58]
- 10250 0Y **Noise figure of EDFA in the analog optical system** [10250-114]
- 10250 0Z **Tunable photonic crystal switch based on ring resonators with improved crosstalk and Q-factor** [10250-86]
- 10250 10 **Selection of F/number in lattice design for stitching interferometry of aspheric surface** [10250-45]
- 10250 11 **Adaptive cylindrical lens array for 2D/3D switchable display** [10250-130]
- 10250 12 **Effect of oil liquid viscosity on hysteresis in double-liquid variable-focus lens based on electrowetting** [10250-65]

SESSION 5 OPTICAL MEASUREMENT TECHNOLOGY AND APPLICATIONS

- 10250 13 **Study on deformation measurement of position and attitude based on the fold line videometrics** [10250-104]
- 10250 14 **Study on light scattering characterization for subsurface defect of optical element** [10250-136]
- 10250 15 **3D shape measurement system developed on mobile platform** [10250-39]
- 10250 16 **Practical considerations for high speed real-time 3D measurements by the fringe projection** [10250-99]
- 10250 17 **Multi-view phase unwrapping with composite fringe patterns** [10250-121]
- 10250 18 **On bit-depth of pattern in three-dimensional measurement system based on digital fringe projection** [10250-54]
- 10250 19 **Application of EMD in fringe analysis: new developments** [10250-28]
- 10250 1A **The importance of the boundary condition in the transport of intensity equation based phase measurement** [10250-95]
- 10250 1B **Measurement device for high-precision spectral transmittance of solar blind filter** [10250-12]
- 10250 1C **Flexible and accurate camera calibration using imperfect planar target** [10250-106]
- 10250 1D **Mental fatigue detection based on the functional near infrared spectroscopy** [10250-139]

- 10250 1E **Non-contact gas leakage detection of tank based on low-coherence optical fiber interferometer** [10250-76]
- 10250 1F **Research on optical measurement for additive manufacturing surfaces** [10250-15]
- 10250 1G **A laser ranging method based on grating diffraction** [10250-18]
- 10250 1H **Measurement of the light scattering of single and two particles captured with a microfluidic trap** [10250-33]

SESSION 6 MICROSCOPE STRUCTURE DESIGN AND MEASUREMENT

- 10250 1I **A positional misalignment correction method for Fourier ptychographic microscopy based on simulated annealing** [10250-22]
- 10250 1J **Three-dimensional measurement based on a Greenough-type stereomicroscope using phase-shifting projection** [10250-37]
- 10250 1K **Computational microscopy with programmable illumination and coded aperture** [10250-14]
- 10250 1L **Computational method for multi-modal microscopy based on transport of intensity equation** [10250-93]
- 10250 1M **Development and design of up-to-date laser scanning two-photon microscope using in neuroscience** [10250-132]
- 10250 1N **Influence of working distance on microscale strain measurement under laser scanning microscope from moiré fringes** [10250-27]
- 10250 1O **Surface quality inspection of laser gyro mirrors using digital holographic microscopy** [10250-123]

SESSION 7 LASER THEORY AND NOVEL LASER

- 10250 1P **Performance of range gated reconstruction: a theoretical analysis** [10250-3]
- 10250 1Q **Individual tree shape modeling for canopy delineation from airborne LiDAR data** [10250-131]
- 10250 1R **In-depth analysis and discussions of water absorption-typed high power laser calorimeter** [10250-113]
- 10250 1S **The characteristic of reference beam laser Doppler signal of solid state surface** [10250-20]
- 10250 1T **The characteristic research of RF discharge in He-Ne laser** [10250-21]
- 10250 1U **Recent progress in making protein microarray through BioLP** [10250-90]

- 10250 1V **Adaptive depth imaging method based on photon counting LIDAR** [10250-78]
- 10250 1W **Recent progress on gas sensor based on quantum cascade lasers and hollow fiber waveguides** [10250-72]
- 10250 1X **Laser absorption spectroscopy based on a broadband external cavity quantum cascade laser** [10250-80]
- 10250 1Y **Research on virtual pinhole parameters optimization in laser differential confocal theta microscope** [10250-81]
- 10250 1Z **Design and implementation of a cloud based lithography illumination pupil processing application** [10250-91]
- 10250 20 **Quantum cascade laser based sensor for open path measurement of atmospheric trace gases** [10250-74]
- 10250 21 **Numerical simulation of waveform reconstruction based on the distribution feedback Bragg fiber laser** [10250-100]
- 10250 22 **Measurement of the absolute distance inside an all fiber DBR laser by self mixing technique** [10250-73]
- 10250 23 **Analysis of laser induced thermal damage influenced by micro defect** [10250-112]
- 10250 24 **Investigation of the properties of laser-induced cavitation bubble collapse and sound waves** [10250-88]
- 10250 25 **Based-on generalized neural network multi-wavelength conversion technique of laser and its influence study on target detection ranges** [10250-140]

SESSION 8 PRINCIPLE AND TECHNOLOGY OF SENSORS

- 10250 26 **Research on modeling and identification for GMA based on Bragg grating sensors** [10250-111]
- 10250 27 **Comparison of sensitivity between in-situ and ex-situ detections with nanoporous TiO₂ film based plasmon waveguide resonance sensor** [10250-108]
- 10250 28 **Detection of Benzo[a]pyrene in water using a wavelength-interrogated SPR sensor coated with Teflon AF2400 film** [10250-109]
- 10250 29 **Analyzing the impact of sensor characteristics on retrieval methods of solar-induced fluorescence** [10250-49]
- 10250 2A **Nanoporous gold film based SPR sensors for trace chemical detection** [10250-119]
- 10250 2B **Analysis on the misalignment errors between Hartmann-Shack sensor and 45-element deformable mirror** [10250-107]

- 10250 2C **Applications of two phase-height mapping algorithms for PMP in 3D reconstruction of the railway wheel tread** [10250-64]
- 10250 2D **Determination of water pH using absorption-based optical sensors: evaluation of different calculation methods** [10250-92]
- 10250 2E **Portable 3D scanning system based on an inertial sensor** [10250-134]

SESSION 9 OPTICAL COMMUNICATION AND APPLICATION OPTICS

- 10250 2F **Round-robin differential-phase-shift quantum key distribution in wavelength-multiplexed fiber channel** [10250-137]
- 10250 2G **Research on high power intra-channel crosstalk attack in optical networks** [10250-85]
- 10250 2H **Performance analysis of long wave infrared wireless optical communication based on DPIM** [10250-50]
- 10250 2I **Speckle-correlation-based ciphertext-only attack on the double random phase encoding scheme** [10250-51]
- 10250 2J **An improved estimation transmission method for Dark Channel Prior** [10250-32]
- 10250 2K **Optical application of electrowetting** [10250-56]
- 10250 2L **Infrared small target tracking by discriminative classification based on Gaussian mixture model in compressive sensing domain** [10250-40]
- 10250 2M **Research on scattering characteristics of the fog particles in different circumstances** [10250-34]
- 10250 2N **Experimental study on curing and tensile deformation in epoxy resin by fiber Bragg grating** [10250-84]

SESSION 10 IMAGE PROCESSING

- 10250 2O **A modified digital image correlation with enhanced speed and improved accuracy** [10250-44]
- 10250 2P **Optical encryption of gray image based on the computer generated hologram and logical modulation** [10250-13]
- 10250 2Q **Parallel computing for fast and accurate phase analysis of fringe pattern by two-dimensional phase shifting methods** [10250-25]
- 10250 2R **Colored adaptive compressed imaging using color space conversion** [10250-82]
- 10250 2S **The effect of linearity on tunable laser to the quality of synthetic aperture lidar's image** [10250-98]

- 10250 2T **The relative pose estimation of aircraft based on contour model** [10250-127]
- 10250 2U **Target location method based on homography and scene matching for micro-satellite images** [10250-59]
- 10250 2V **The infrared image closely spaced objects super resolution method based on sparse reconstruction under the noise environment** [10250-87]
- 10250 2W **An out-of-plane displacement measurement system based on hardware tracking** [10250-60]
- 10250 2X **Standard images for wake bubble processing method** [10250-62]
- 10250 2Y **Design of UAV high resolution image transmission system** [10250-67]
- 10250 2Z **Comparison of active, passive and adaptive phase error compensation methods using a universal phase error model** [10250-124]

SESSION 11 REMOTE SENSING AND MEASUREMENT TECHNIQUES

- 10250 30 **The application analysis of the multi-angle polarization technique for ocean color remote sensing** [10250-19]
- 10250 31 **Marine boundary layer NO₂ measurements by ship-borne MAX-DOAS during an offshore observation campaign, 2015** [10250-52]
- 10250 32 **Micro-vibration detection with heterodyne holography based on time-averaged method** [10250-96]
- 10250 33 **Research on 3D reconstruction measurement and parameter of cavitation bubble based on stereo vision** [10250-89]
- 10250 34 **Modeling of electronic power steering system for IKCO SAMAND vehicle and investigating on its performance via CARSIM software** [10250-141]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Ai, Xiaochuan, 24, 33
An, Wei, 05
Asundi, Anand, 16
Bai, Bing, 0I
Bochkov, Ilya, 0V
Bochkov, Victor, 0V
Bu, Fan, 0T
Cai, Zewei, 2E, 2Z
Cao, Fen, 2B
Cao, Jing, 24, 33
Cao, Runyu, 1O
Cao, Yong, 1D
Chang, Meng, 15
Chao, Zhou, 20
Chen, Chao, 31
Chen, Guoqing, 0S
Chen, He, 0H
Chen, Jiabi, 2K
Chen, Jinbiao, 18
Chen, Mei, 2S
Chen, Qian, 0L, 16, 17, 1A, 1I, 1J, 1K, 1L, 1V, 2R
Chen, Shangwu, 2B
Chen, Shengyi, 2U
Chen, Siying, 0H
Chen, Xiang-ning, 0F
Chen, Xinlin, 09
Chen, Yi, 0J
Chen, Zonghui, 0N, 32
Cheng, Fang, 1F
Cheng, Xiang-zheng, 0I
Cheng, Zhengdong, 0J
Chua, Sing Yee, 1P
Da, Feipeng, 19
Da, Jian, 17
Dai, Huidong, 2R
Dai, Jie, 1H
Dai, Lei, 09
Deng, Hao, 1W, 1X, 20, 21, 22
Deng, Huan, 1I
Ding, Junya, 1W, 1X, 20
Ding, Wenjuan, 29
Ding, Yu, 0Y
Ding, Zhongjun, 2D
Dong, Jianing, 0H
Doronin, Maxim, 1M
Dou, Jiantai, 04
Du, Libin, 31
Duan, Deng-Ping, 2O
Fan, Pengcheng, 2Y
Fan, Xiang, 0J
Fan, Zhenfang, 1T
Fang, Yuanyuan, 2G
Feng, Cheng, 1B
Feng, Shijie, 16
Feng, Ying, 1U
Feng, Zhenchao, 1V
Fu, Shao Wei, 1F
Fu, Sihua, 0U, 13
Fu, Tai, 2T
Gai, Shaoyan, 19
Gan, Shi-qi, 0F
Gao, Chao, 0C
Gao, Jin, 2R
Gao, Qiang, 2Y
Gao, Zhishan, 04, 07
Gong, Baoyu, 1H
Gong, Qiucheng, 1S
Gong, Xiaoqing, 28, 2A
Grachev, Evgeny, 0V
Gu, Guohua, 0L, 0M, 1V, 2R
Gu, Kang, 2H
Guo, Ning-bo, 0F
Guo, Ningqun, 1P
Guo, Pan, 0H
Gurov, Victor, 0V
Haghighi, Esmail, 34
Han, Ping, 26
Han, Xiang, 09
Hao, Bojuan, 0E
He, Mei, 12, 2K
He, Weiji, 1V, 2R
He, Wenqi, 2I
Hong, Jong-Young, 06
Hou, Pengcheng, 0B
Hou, Xueqin, 0N, 32
Hu, Linjiang, 0G
Hu, Qingsheng, 0W
Hu, Sicong, 0G
Hu, Wenxin, 2W
Hu, Yan, 17, 1J
Hu, Zhengliang, 0Y
Huang, Gaoming, 25
Huang, Huijie, 1Z
Huang, Jiaoying, 0G
Huang, Qian, 2C
Huang, Renshuai, 0X
Huang, Wei, 08
Huang, Xiyan, 0K

Janyani, Vijay, 0Z
 Ji, Ming, 2Y
 Jia, Xin, 1G
 Jiang, Guang-wen, 0U, 13
 Jiang, Jin, 1D
 Jiang, Wen-tao, 2Y
 Jiang, Yong, 2X
 Jiao, Lin 02
 Jiao, Xuejun, 1D
 Jin, Shilong, 09
 Kemao, Qian, 19
 Kitamura, Ryuta, 1N
 Lee, ByoungHo, 06
 Lee, ByoungHyO, 06
 Lee, Chang-Kun, 06
 Leong, Yong Shin, 1F
 Li, Bang-Jian, 2O
 Li, Bingpeng, 2F
 Li, Chaowei, 2R
 Li, Hui, 1J
 Li, Jicji, 1A, 1K, 1L
 Li, Jingsong, 1W, 1X, 20
 Li, Kui, 2M
 Li, Liangchao, 2J, 2M
 Li, Qinghong, 02
 Li, Qiufeng, 2N
 Li, Shengyong, 24, 33
 Li, Tengfei, 0B
 Li, Weili, 0X
 Li, Xianxin, 31
 Li, Xiaofeng, 0C
 Li, Xiaoge, 10
 Li, Xinxin, 1E
 Li, Xiujian, 1U
 Li, Yiming, 0C
 Li, Yong, 18
 Liang, Haodong, 0C
 Liang, Zhenyu, 0J
 Liao, Meihua, 2I
 Lin, Jie, 1V
 Lin, WuMei, 1G
 Ling, Fang, 0X
 Liu, Baohua, 2D
 Liu, Dekun, 1H
 Liu, Jian, 1B
 Liu, Jing, 0O
 Liu, Lihui, 2B
 Liu, Likun, 1Q
 Liu, Ningwu, 1W, 1X, 20
 Liu, Qiaojun, 31
 Liu, Quan, 26
 Liu, Rong-mei, 2N
 Liu, Xiaochun, 2U
 Liu, Xiaoli, 10, 2E, 2Z
 Liu, Xingjiong, 2R
 Liu, Xingtao, 31
 Liu, Xuefeng, 0Q
 Liu, Zhonghua, 25
 Long, Yin, 2B
 Lu, Daijiang, 2I
 Lu, Dan-feng, 27, 28, 2A
 Lu, Guangfeng, 1T
 Lu, Liang, 21, 22
 Luo, Hui, 1T
 Luo, Tao, 0P
 Lv, Yang, 1B
 Ma, Jun, 04
 Ma, Xinghua, 1Z
 Meng, Qinglong, 0X
 Meng, Xiangqian, 31
 Miao, Hong, 2W
 Miao, Maoke, 0C
 Mo, Ronghua, 2J
 Monica, Najjar, 0Z
 Ogihara, Shinji, 1N
 Pan, Feng, 0N, 1O, 32
 Pang, Lan, 2Y
 Peng, Junzheng, 10
 Peng, Runling, 12, 2K
 Peng, Xiang, 10, 2E, 2I, 2Z
 Popov, Alexander, 1M
 Qi, Te, 0A
 Qi, Zhi-mei, 27, 28, 2A
 Qian, Yunsheng, 1B
 Qin, Chuyue, 2C
 Qin, Shiyin, 2L
 Qin, Xiaodong, 0N, 32
 Qiu, Lirong, 1Y
 Qiu, Yuehong, 0T
 Qu, Junle, 31
 Radhouene, Massoudi, 0Z
 Rao, Xuejun, 2G
 Ren, Hui, 2P
 Ren, Kan, 0L
 Ren, Shuai, 2G
 Ri, Shien, 1N, 2Q
 Shao, Ming, 0I
 Sharbati, Ali, 34
 She, Yajun, 0P
 Shen, Shanshan, 1V
 Sheng, Weidong, 05
 Shi, Bingqing, 26
 Shi, Bowen, 15
 Song, Fei, 2L
 Song, Yansong, 0S
 Sui, Xiubao, 0K
 Sun, Aqian, 0R
 Sun, Jiancha, 1X
 Sun, Jiasong, 1I, 1K, 1L
 Sun, Juan, 1W, 1X, 20
 Sun, Li, 2I
 Sun, Xiangyi, 2T
 Takashita, Yosuke, 1N
 Tan, Ching Seong, 1P
 Tan, Xiaolin, 0U, 13
 Tang, Qijian, 2E, 2Z
 Tao, Jianjun, 2B
 Tao, Tianyang, 17, 1J
 Tao, Wei, 1C
 Tian, Ailing, 14

Tian, Pingchuan, 2B
 Tian, Yujun, 14
 Trubitsyn, Andrey, 0V
 Tsuda, Hiroshi, 1N, 2Q
 Tu, Yanshuai, 18
 Wan, Xiumei, 27, 28, 2A
 Wang, Chenchen, 21, 22
 Wang, Chenxing, 19
 Wang, Chuanyun, 2L
 Wang, Chunhui, 14
 Wang, Chunyang, 14
 Wang, Dehui, 21, 22
 Wang, Hongliang, 2D
 Wang, Hui, 18
 Wang, Huili, 2X
 Wang, Huimin, 1H
 Wang, Jian, 0B
 Wang, Jianwei, 2X
 Wang, Jingang, 22
 Wang, Jingyu, 2G
 Wang, Jinyuan, 2H
 Wang, Jun, 2P
 Wang, Jun-da, 0F
 Wang, Kang, 2M
 Wang, Li, 28, 2A
 Wang, Miao, 0E
 Wang, Qinghua, 1N, 2Q
 Wang, Qiong-Hua, 11, 2P
 Wang, Quan-Bao, 2O
 Wang, Weijie, 0L
 Wang, Xiangfen, 0G
 Wang, Xiangxin, 2D
 Wang, Xiaoguang, 1E
 Wang, Xin, 1P
 Wang, Yan, 1B
 Wang, Yaxu, 2S
 Wang, Yun, 1Y
 Wang, Zeyong, 2C
 Wang, Zhangjun, 31
 Wei, Ji Feng, 1R
 Wei, Lian, 1U
 Wu, Hanyang, 05, 2V
 Wu, Ronghua, 24, 25, 33
 Wu, Shuang, 21
 Wu, Xin, 0A
 Wu, Zhoujie, 15
 Xia, Min, 0P, 1H
 Xiao, Guangzong, 09
 Xiao, Suzhi, 1C
 Xiao, Wen, 0N, 1O, 32
 Xiao, Xiao, 0P
 Xiong, Chen, 2W
 Xiong, Jichuan, 0Q
 Xu, Fenggang, 1D
 Xu, Qiang, 0E
 Xu, Zhiyong, 2H
 Yan, Guanwei, 2U
 Yan, Xingtao, 0S, 0T
 Yan, Yiyun, 2R
 Yang, Hanjun, 1D
 Yang, Jianfeng, 0S
 Yang, Jungang, 2V
 Yang, Kecheng, 1H
 Yang, Lizi, 1O, 29
 Yang, Rusong, 1U
 Yang, Yangyang, 0Y
 Yang, Yuanyuan, 05
 Yang, Zhongming, 04
 Yang, Zongyuan, 0P
 Yao, Dalei, 0T
 Ye, Haishui, 07
 Yin, Huan, 30
 Yin, Yongkai, 2Z
 Yin, Yu 03
 Yu, Benli, 1E
 Yu, Long, 1H
 Yu, Yingjie, 0A, 10
 Yu, Zhenhong, 03
 Yuan, Qun, 04, 07
 Yuan, Sheng, 0R
 Yue, Jianming, 0R
 Zamani, Mohammad, 34
 Zeng, Jian, 05, 2V
 Zeng, Zhi, 12
 Zhang, Bin, 0B, 0X
 Zhang, Bin, 1S
 Zhang, Fang, 1Z
 Zhang, Guangfeng, 0O
 Zhang, Hong-bo, 0I
 Zhang, Hongliang, 2U
 Zhang, Jialin, 1A, 1L
 Zhang, JianXue, 02
 Zhang, Jumei, 2G
 Zhang, Keli, 30
 Zhang, Kepeng, 08
 Zhang, Lei, 1W, 1X, 20
 Zhang, Lei, 0I
 Zhang, Long-Xia, 23
 Zhang, Ming, 2W
 Zhang, Ning, 0D
 Zhang, Peng, 0R
 Zhang, Qican, 15
 Zhang, Rong-Zhu, 23, 2S
 Zhang, Tao, 2J
 Zhang, Xin, 1T
 Zhang, Xingcheng, 2Y
 Zhang, Xingxin, 08
 Zhang, Yan, 2S
 Zhang, Yani, 0E
 Zhang, Yewei, 0M
 Zhang, Yi, 2B
 Zhang, Yinchao, 0H
 Zhang, Yinfa, 2G
 Zhang, Yingge, 14
 Zhang, Yongchao, 30
 Zhang, YongGang, 02
 Zhang, Youbao, 1Z
 Zhang, Yu, 2C
 Zhang, Yunyao, 0D
 Zhang, Yuzhen, 17, 1I, 1J

Zhang, Zhen, 1D
Zhao, Chao, 0U, 13
Zhao, Feng, 29
Zhao, Hui, 1C
Zhao, Jun, 0Q
Zhao, Wei, 0I
Zhao, Weiqian, 1Y
Zhao, Wu-Xiang, 11
Zhao, Xiangye, 1Y
Zhao, Ya, 0E
Zhao, Yao, 0K
Zhen, Shenglai, 1E
Zheng, Chao, 0W
Zhou, Beibei, 1V
Zhou, Dingfu, 0R
Zhou, Jian, 1S
Zhou, Junfeng, 21, 22
Zhou, Lijuan, 0Q
Zhou, Luyan, 0O
Zhou, Quan, 1U
Zhou, Xin, 0R
Zhu, Bin, 0J
Zhu, Dan, 07
Zhu, Jing, 1Z
Zhu, Jingping, 0D
Zhu, Jun, 30
Zhu, Ke, 1Y
Zhu, Lujia, 2N
Zhu, Xiao-Bing, 23
Zhuo, Jun, 1G
Zuo, Chao, 16, 17, 1A, 1I, 1J, 1K, 1L

Conference Committee

Conference General Chair

Anand Krishna Asundi, Nanyang Technological University (Singapore)

Conference Co-chairs

Qian Kemao, Nanyang Technological University (Singapore)

Wei Pan, Southwest Jiaotong University (China)

Qi Qiu, University of Electronic Science and Technology of China
(China)

Qican Zhang, Sichuan University (China)

Honorary Chairs

Guo Fan Jin, Tsinghua University (China)

Xiaoping Wu, University of Science and Technology of China
(China)

Weiguo Liu, Xi'an Technological University (China)

Yu Su Xian, Sichuan University (China)

International Advisory Boards

Huimin Xie, Tsinghua University (China)

Dario Ambrosini, Università degli Studi dell'Aquila (Italy)

Manuel Costa, Universidade do Minho (Portugal)

John McBride, University of Southampton (United Kingdom)

Yu-Lung Lo, National Cheng Kung University (Taiwan, China)

Sarun Sumriddetchkajorn, NECTEC (Thailand)

Chunyu Zhao, Arizona Optical Metrology LLC (United States)

Xiang Peng, Shenzhen University (China)

Ralf Bergmann, BIAS - Bremer Institut für angewandte Strahltechnik
GmbH (Germany)

Ingrid Dewolf, IMEC (Belgium)

Wei Gao, Tohoku University (Japan)

Theodore V. Vorburger, National Institute of Standards and
Technology (United States)

Fengzhou Fang, Tianjin University (China)

Seung-Woo Kim, KAIST (Korea, Republic of)

Xin Zhou, Sichuan University (China)

Fernando Mendoza Santoyo, CIO (Mexico)

Lianxiang Yang, Oakland University (United States)

James Wyant, Optical Sciences Center, The University of Arizona
(United States)
Yingjie Yu, Shanghai University (China)
Hillar Aben, IOC (Estonia)
Malgorzata Kujawinska, Warsaw University of Technology (Poland)
Pramod Rastogi, Ecole Polytechnique Fédérale de Lausanne
(Switzerland)
Peter De Groot, Zygo (United States)
Leslie L. Deck, Zygo (United States)
David Payne, University of Southampton (United Kingdom)
Yukitoshi Otani, Utsonomiya University (Japan)
Zhenyu Jiang, South China University of Technology (China)
Yongjian Wan, Institute of Optics and Electronics, Chinese Academy
of Sciences (China)
Percival F. Almoró, University of the Philippines (Philippines)
Chao Zuo, Nanjing University of Science and Technology (China)
Qian Chen, Nanjing University of Science and Technology (China)
Henri Uranus, Universitas Pelita Harapan (Indonesia)
Ching Seong Tan, Multimedia University (Malaysia)
Qinghua Wang, National Institute of Advanced Industrial Science
and Technology (Japan)
Yu Fu, Nanyang Technological University (Singapore)

Introduction

The International Conference on Optical and Photonics Engineering (icOPEN) is the flagship event of the Optics and Photonics Society of Singapore. Since its inception in 2011, the conference has grown in leaps and bounds, so much so that this year, the conference has changed from a biannual event to annual event. The odd year event will still be held in Singapore alongside the MTA exhibition, which in 2017 has an Optics and Photonics Innovation Hub segment.

The conference during even years will be organized in different cities of China, starting this year with first of the series held in Chengdu, Sichuan. The co-operating organization, IACSIT Chengdu Office, which is based in Chengdu will manage this event and will be supported by technical experts from China and the region. In the inaugural event, the OPSS primarily took the lead in training the counterparts at IACSIT and local universities with technical and logistics matters.

The icOPEN 2016 was immediately successful with 140 participants from over seven countries presenting 5 keynote lectures, 13 plenary lectures, 4 invited lectures, and 56 poster papers. In addition, a student poster conference was organized and the students were asked to make a short presentation. There were four categories: Optical Metrology, Laser Technology, Image Processing and others. In each category, there were about 12 presentations and the four best papers were recognized. An overall winner was also selected along with two runner's up with each receiving cash awards. I would like to thank the mentors of the SPIE chapters, Prof. Zhang Qican (Sichuan Chapter) and Prof. Zuo Chao (Nanjing University of Science and Technology) for organizing this event.

Overall, the conference was a great success and thanks go to all the plenary and invited speakers, the conference professional organizers, Chengdu Young Education Consultation Pte, Ltd., Sichuan Institute of Electronics, China, University of Electronic Science and Technology of China, Nanjing University of Science and Technology, China, Southwest Jiaotong University of China, and all the participants. We hope to see you at future icOPEN events in Singapore and China.

Anand Krishna Asundi

