PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 10154

, "Front Matter: Volume 10154," Proc. SPIE 10154, Advanced Optical Design and Manufacturing Technology and Astronomical Telescopes and Instrumentation, 101542C (7 November 2016); doi: 10.1117/12.2264635

SPIE.

Event: International Symposium on Optoelectronic Technology and Application 2016, 2016, Beijing, China

PROCEEDINGS OF SPIE

Advanced Optical Design and Manufacturing Technology and Astronomical Telescopes and Instrumentation

**Min Xu
Ji Yang**
Editors

**9–11, May 2016
Beijing, China**

Organized by
Chinese Society for Optical Engineering (CSOE) (China)
Photoelectronic Technology Committee, Chinese Society of Astronautics (China)
Photo-electronic Industrialization Committee, CHIA (China)
Department of Cooperation and Coordination for Industry, Academe and Research, CHIA
(China)

Sponsored by
Chinese Society for Optical Engineering (CSOE) (China)
China High-tech Industrialization Association (CHIA) (China)

Published by
SPIE

Volume 10154

Proceedings of SPIE 0277-786X, V. 10154

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

Advanced Optical Design and Manufacturing Technology and Astronomical Telescopes and Instrumentation
edited Min Xu, Ji Yang, by Proc. of SPIE Vol. 10154, 101542C · © 2016 SPIE
CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2264635

Proc. of SPIE Vol. 10154 101542C-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 SPIEDigitalLibrary.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 *Advanced Optical Design and Manufacturing Technology and Astronomical Telescopes and Instrumentation*, edited by Min Xu, Ji Yang, Proceedings of SPIE Vol. 10154 (SPIE, Bellingham, WA, 2016) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510607668

ISBN: 9781510607675 (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 © 2016, 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/16/\$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 first 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

vii	<i>Authors</i>
ix	<i>Conference Committee</i>
xiii	<i>Introduction</i>

ADVANCED OPTICAL DESIGN AND MANUFACTURING

10154 01	Effect of feed velocity change on amount of material removal for free abrasive polishing with sub-aperture pad [10154-1]
10154 02	Optimal design of a space target acquisition optical system with small F-number [10154-5]
10154 03	An iterative algorithm for the position of time-varying phase screens in the atmospheric turbulence [10154-6]
10154 04	Analysis of stray radiation for infrared optical system [10154-7]
10154 05	Research of range-gated 3D imaging technology [10154-8]
10154 06	Ion beam figuring of $\Phi 520\text{mm}$ convex hyperbolic secondary mirror [10154-9]
10154 07	Study on surface roughness evolvement of Nd-doped phosphate glass after IBF [10154-11]
10154 08	Research on highly uniform laser illumination system [10154-13]
10154 09	Design, fabrication, and testing of duralumin zoom mirror with variable thickness [10154-14]
10154 0A	The modular design of large-aperture zoom system [10154-15]
10154 0B	Design and analysis of IFU for the 2.16-meter telescope and BFOSC [10154-16]
10154 0C	A chip of fiber optical trap [10154-19]
10154 0D	Study on the preparation of resist mask based on two-consecutive electron beam exposure [10154-20]
10154 0E	Study of cylindrical optical micro-structure technology used in infrared laser protection [10154-21]
10154 0F	Resonant properties of the encapsulated grating based on the guided-mode resonance effect [10154-22]
10154 0G	Research on the influence of the disturbance characteristics of the flywheel components on a high resolution optical satellite [10154-23]

10154 OH	Research on the flywheel components' disturbance mechanism of a high resolution optical satellite [10154-24]
10154 OI	Short-focus and ultra-wide-angle lens design in wavefront coding [10154-25]
10154 OJ	Low-stress mounting configuration design for large aperture laser transport mirror [10154-26]
10154 OK	Matching characteristics of different buffer layers with VO₂ thin films [10154-28]
10154 OL	Design method of coaxial reflex hollow beam generator [10154-29]
10154 OM	Surface analysis and evaluation of progressive addition lens [10154-30]
10154 ON	Simulation based comparative analysis of photoresponse in front- and back-illuminated GaN P-I-N ultraviolet photodetectors [10154-31]
10154 OO	A telescope with augmented reality functions [10154-34]
10154 OP	An effective method to enhance working temperature range of lasers from dye-doped cholesteric liquid crystals [10154-35]
10154 OQ	Optical design for off-axis three-mirror two-channel imaging system with freeform surfaces [10154-36]
10154 OR	Design and research of moving objects dimension measurement system based on linear array CCD [10154-37]
10154 OS	Design of an ultra-short throw catadioptric projection lens with a freeform mirror [10154-38]
10154 OT	Rotational symmetric HMD with eye-tracking capability [10154-39]
10154 OU	High accuracy alignment of the RC system coupled with the relay lens [10154-41]
10154 OV	Design of visible/long-wave infrared dual-band imaging optical system [10154-42]
10154 OW	Experiments on terahertz 3D scanning microscopic imaging [10154-43]
10154 OX	Energy absorption of refractory absorber with periodic nanostructures [10154-44]
10154 OY	Full-field optical coherence tomography apply in sphere measurements [10154-47]
10154 OZ	A study on location-dependent metasurface device in terahertz range [10154-48]
10154 10	Polarization imaging enhancement for target vision through haze [10154-49]
10154 11	Design route and optical analysis of curved compound-eyes towards thermal reflow and hot embossing fabrication processes [10154-51]
10154 12	The design of wavefront coded imaging system [10154-53]
10154 13	A novel correlation imaging method using a periodic light source array [10154-56]

- 10154 14 **Performance analysis of adaptive fiber laser array propagating in atmosphere with correction of high order aberrations in sub-aperture** [10154-57]
- 10154 15 **Dynamic analysis of trapping and escaping in dual beam optical trap** [10154-58]
- 10154 16 **Design of a mid-wavelength infrared dual field of view zoom system** [10154-59]
- 10154 17 **The effect of TiO₂ phase on the surface plasmon resonance of silver thin film** [10154-60]
- 10154 18 **Tunable surface plasmon resonance frequency of Au-Ag bimetallic asymmetric structure thin films in the UV and IR region** [10154-61]
- 10154 19 **Opto-mechanical design of optical window for aero-optics effect simulation instruments** [10154-62]
- 10154 1A **Failure analysis and preventive measures of light-emitting diode** [10154-63]
- 10154 1B **Analysis method of beam pointing stability based on optical transmission matrix** [10154-65]
- 10154 1C **Resolution allocation and budget of the Lyman- α ultraviolet telescope** [10154-66]
- 10154 1D **High accuracy phase retrieval method research based on Shack-Hartmann wavefront sensor** [10154-67]
- 10154 1E **The new adaptive enhancement algorithm on the degraded color images** [10154-69]
- 10154 1F **Surface error modeling of mounted large optics in high power laser system** [10154-68]
- 10154 1G **Measurement and application of bidirectional reflectance distribution function** [10154-70]
- 10154 1H **Design of tracking and detecting lens system by diffractive optical method** [10154-71]
- 10154 1I **Research on the processing technology of medium-caliber aspheric lens in the optoelectronic integrated test system** [10154-72]
- 10154 1J **Effect of cutting temperature on hardness of SiC and diamond in the nano-cutting process of monocrystalline silicon** [10154-74]
- 10154 1K **The system analysis of light field information collection based on the light field imaging** [10154-75]
- 10154 1L **Optical design of f-theta lens for dual wavelength selective laser melting** [10154-76]
- 10154 1M **Computation of beam propagation in turbulent field** [10154-77]
- 10154 1N **Aberration and boresight error correction for conformal windows using tilted and decentered fixed correctors** [10154-78]
- 10154 1O **Study on fine annealing process of the large-aperture K9 glasses** [10154-79]
- 10154 1P **Piston phasing in segmented telescopes** [10154-80]

- 10154 1Q **A correction method for the axial maladjustment of transmission-type optical system based on aberration theory** [10154-81]
- 10154 1R **On freeform configuration to control system aberrations** [10154-84]
- 10154 1S **Computations involved in IBF process and introduction of the software IBFCAM** [10154-85]
- 10154 1T **Design of single view-point catadioptric long infrared panoramic lens** [10154-89]
- 10154 1U **Tuning subwavelength-structured focus in the hyperbolic metamaterials** [10154-86]
- 10154 1V **Applications of photonic crystal in wavelength multiplex visualization** [10154-90]
- 10154 1W **Nodal aberration theory for wild-filed asymmetric optical systems** [10154-91]
- 10154 1X **Effects of vibration measurement error on remote sensing image restoration** [10154-92]
- 10154 1Y **Uniform pump scheme for a LD face-pumped Nd:YAG slab amplifier** [10154-96]
- 10154 1Z **Dispersion cancellation in optical measurement and its classical analogy** [10154-98]
- 10154 20 **Design of a novel hyper-spectral riflescope system** [10154-100]
- 10154 21 **Topology optimization design of space rectangular mirror** [10154-101]
- 10154 22 **Study on the measuring distance for blood glucose infrared spectral measuring by Monte Carlo simulation** [10154-102]
- 10154 23 **Study on methods of shape optimization and design of membrane mirror** [10154-103]
- 10154 24 **Actuators of 3-element unimorph deformable mirror** [10154-104]
- 10154 25 **Development and alignment for SiC mirror subsystem of a space-borne telescope** [10154-105]
- 10154 26 **Cryogenic performance of the space infrared optical payload** [10154-107]
- 10154 27 **Multi-channel photonic crystal filters with superposed structure** [10154-106]
- 10154 28 **Tri-band color transmission filter for white LED-based visible light communication** [10154-108]
- 10154 29 **Research progress of large optics in the TMT MOBIE** [10154-109]
- 10154 2A **Optical design study of the Wide Field Survey Telescope (WFST)** [10154-113]
- 10154 2B **Design and research on inverted focometer measured focal length of measuring system** [10154-110]

Authors

Numbers in the index correspond to the last two digits of the six-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.

Bai, Yonglin, 0R	Hao, Chenyang, 1K
Bu, Ting, 0Z	Hao, Qun, 1W
Cai, Xingmin, 0K	He, Hongbo, 29
Cao, Hongzhong, 1L	He, Jianguo, 1Y
Cao, Mingxuan, 0P	He, Wei, 1E
Cen, Zhaofeng, 12, 1B, 1M	He, Wen-jun, 0L
Che, Yongli, 0P	He, Xiaoying, 01
Chen, H. L., 1R	Hong, Ruijin, 17, 18
Chen, Kejian, 0Z	Hou, Qichao, 0O
Chen, Pingxing, 1Z	Hu, Hao, 07
Chen, Yang, 1W	Hu, Huizhu, 0C, 15
Chen, Yanzhong, 1Y	Huang, Fu-yu, 1Q
Chen, Yu-dan, 1Q	Huang, Pingxian, 1B
Cheng, Dewen, 0O, 0Q, 0S, 0T	Huang, Ying, 0V
Cheng, Jingquan, 2A	Huang, Yuanqing, 0I
Cheng, Xuemin, 1W	Huang, YunHan, 20
Dai, Haitao, 0P	Ji, Jialin, 18
Dai, Yifan, 1S	Jia, Dan, 1Y
Di, Si, 1I	Jia, Wen-Wu, 10
Ding, Jiaoteng, 09	Jiang, Bo, 1C
Ding, Q. X., 1R	Jiang, Junlun, 1P
Dong, Dengfeng, 19	Jiang, Kai, 02, 0A, 16, 1C
Dong, Lian-he, 0D	Jiang, Lun, 1T
Du, Guojun, 0U	Jiang, Wenwen, 0F
Du, Jianxiang, 04	Jiang, Yang, 1H
Du, Shaojun, 1D, 24	Jin, Jian, 1I
Duan, Jing, 02, 0A, 16, 1C	Jing, Ming, 17
Duan, Xuanming, 1L	Kang, Yuchen, 0X
Duan, Zhentao, 1Z	Kong, Lin, 0G
Fan, Ping, 0K	Lai, Jianjun, 0V
Fan, Youchen, 05	Lan, Shun, 12
Fan, Zhongwei, 1Y	Lei, Chenglong, 0Q
Feng, Liang-jie, 25	Lei, Fanpu, 0R
Feng, Lianhua, 1L	Leng, Yan-bing, 0D, 0E
Fu, Tianyang, 24	Li, Ang, 06
Fu, Yue-gang, 0L, 20	Li, Bin, 10
Gao, Shaobo, 1Z	Li, Dan, 0M
Gao, Wenlan, 29	Li, Feng, 14
Gao, Yang, 0S	Li, Furen, 07
Ge, Xiaojia, 0C	Li, Gang, 0A, 16
Geng, Chao, 14	Li, Jie, 10
Gong, Jie, 09	Li, Juncheng, 0Y
Gu, Huarong, 28	Li, Junlang, 0F
Guan, Tianrui, 0K	Li, Lin, 0G, 0H, 1G
Guo, C. J., 1R	Li, Qi, 0W
Guo, Guangyan, 1Y	Li, Shengyi, 1S
Guo, Jin, 0N	Li, Weiwei, 0Y
Han, Su, 23	Li, Wenhua, 1K
Han, Xuecai, 2B	Li, Wenqiang, 15

Li, Wenqing, 06
 Li, Xiang, 22
 Li, Xiaotong, 12, 1B, 1M
 Li, Xinyang, 14
 Li, Xupeng, 21
 Li, Yang, 04, 0U
 Li, Yufeng, 1E
 Li, Yuntao, 1J
 Li, Zhenggang, 15
 Li, Zhiying, 0M
 Liang, Ming, 2A
 Liao, Fei, 1G
 Liao, Zhibo, 04
 Liu, Bao-Lei, 13
 Liu, Bei, 21
 Liu, Biao, 10
 Liu, Dan, 1I
 Liu, Fangfang, 0T
 Liu, H., 1R
 Liu, Kai, 02, 0A, 16, 1C
 Liu, Meiyang, 09
 Liu, Mingdong, 26
 Liu, Ping, 1Z
 Liu, Shijie, 29
 Liu, Shun-rui, 0E
 Liu, Wei, 2A
 Liu, Weitao, 1Z
 Liu, Xiaoxuan, 1J
 Liu, Yi, 0K
 Liu, Yi Bin, 1O
 Liu, Zhuang, 1T
 Lou, Zheng, 2A
 Lu, Changwen, 1G
 Lu, Qi, 29
 Lv, Maoqiang, 1J
 Lv, Weizhong, 0K
 Lv, Yang, 1D
 Ma, Haotong, 1D
 Ma, Ping, 1O
 Mao, Shan, 1N
 Mao, Shao-juan, 1Q
 Meng, Xiaohui, 06
 Ming, Xing, 19
 Mu, Shengbo, 04, 0U
 Ning, Yu, 1D, 24
 Pan, Jin, 1U
 Pan, Rong, 1U
 Peng, Runwu, 1U
 Qi, Bo, 1H
 Qian, Yuan, 2A
 Qin, Xiaonan, 0K
 Qiu Fu Min, 1O
 Qiu, Qi, 14
 Qu, Yanjun, 21
 Quan, Xusong, 0J
 Ren, Ge, 1H
 Ren, Guo-rui, 25
 Sang, Tian, 0F
 Shan, Qiu-sha, 02, 0A, 16, 1C
 Shao, Jianda, 29
 Shao, Wenyi, 03
 She, Wen-Ji, 02
 Shen, Le, 09
 Shen, Yu, 0C, 15
 Sheng, Shipeng, 0B
 Shi, Qian, 1V, 27
 Shi, Wei, 0Y
 Song, Man, 0N
 Song, Xiaoxian, 0P
 Su, Heming, 0C, 15
 Sun, Baoyun, 1P
 Sun, Xuan, 1X
 Sun, Yan-jun, 0D, 0E
 Tan, Fanjiao, 23, 26
 Tan, Luyang, 0H
 Tan, Qiaofeng, 28
 Tang, Zhixiang, 1U
 Tang, Zi-li, 10
 Tao, Chunxian, 17, 18
 Tie, Guipeng, 07
 Tong, Yilin, 2B
 Wan, Songlin, 01
 Wang, Chao, 1T
 Wang, Chuanchuan, 1B
 Wang, Dawei, 23, 26
 Wang, Dong, 0G, 0H
 Wang, Gang, 1O
 Wang, Guo-ming, 19
 Wang, Guosheng, 0N
 Wang, Haipeng, 26
 Wang, Hairen, 2A
 Wang, Hui, 0J, 1F
 Wang, Jiachun, 1J
 Wang, Jia-ke, 0L
 Wang, Jianguo, 0Y, 29
 Wang, Jianlong, 0P
 Wang, Jingyu, 0Y
 Wang, Jun, 0N
 Wang, Li, 0D, 0E
 Wang, Qiwei, 0O, 0T
 Wang, Qixia, 28
 Wang, Rui, 0F
 Wang, Wei, 1I, 21, 25
 Wang, Xiangdong, 04
 Wang, Yanhong, 0X
 Wang, Ye, 1K
 Wang, Yonggang, 06
 Wang, Yongtian, 0O, 0Q, 0S, 0T
 Wang, Zhi-ning, 0E
 Wei, Xin, 0U
 Wei, Zhang, 1X
 Wei, Zhaoyang, 29
 Wu, Bo-qi, 0E
 Wu, Hai-Ying, 10
 Wu, Haoran, 0N
 Wu, Jingzhi, 0X
 Wu, Ling-An, 13
 Xian, Hao, 03
 Xie, Feng, 0N
 Xie, Lei, 1O

Xie, Xiaopeng, 09
 Xie, Xuhui, 07, 1S
 Xiong, Feibing, 0I
 Xiong, Zhao, 1F
 Xu, Chen, 0Q, 0S
 Xu, Chun-mei, 1Q
 Xu, Jia, 0L
 Xu, Jing, 0G
 Xu, Liang, 09
 Xu, Longbo, 29
 Xu, Min, 0I
 Xu, Xiping, 1L
 Xu, Xueke, 29
 Xue, Rongkun, 1E
 Yan, Ding Yao, 1O
 Yan, Pei-pei, 02, 0A, 16, 1C
 Yang, Haitao, 05
 Yang, Ji, 2A
 Yang, Kai, 0K
 Yang, Shuhan, 0X
 Yang, Yao, 1M
 Yang, Zhao-Hua, 13
 Yang, Zhong-Shu, 1A
 Yao, Chao, 0J
 Yao, Dazhi, 2A
 Yao, Jianquan, 0P
 Yi, Yuanyuan, 0N
 Yin, Jian-ling, 1Q
 Yu, Xin-ying, 1I
 Yuan, Xiaodong, 1F
 Zeng, Wenhua, 1D
 Zhang, Ai-Xin, 13
 Zhang, Dawei, 17, 18
 Zhang, Dongping, 0K
 Zhang, Guizhong, 0P
 Zhang, Hui, 1O
 Zhang, Jiyan, 0I
 Zhang, Lei, 0C
 Zhang, Lei, 1V, 27
 Zhang, Lingzhi, 0V
 Zhang, Li-zhong, 1T
 Zhang, Ning, 1L
 Zhang, P., 1R
 Zhang, Qingchun, 0U
 Zhang, San-Xi, 10
 Zhang, Tingcheng, 04
 Zhang, Wei, 26
 Zhang, Weili, 29
 Zhang, Xiangchao, 0I
 Zhang, Yan, 19
 Zhang, Yating, 0P
 Zhang, Zheng, 0J
 Zhao, Chunzhu, 1N
 Zhao, Haibin, 2A
 Zhao, Hongli, 05
 Zhao, Hui, 09
 Zhao, Hui-fu, 08
 Zhao, Tianzhuo, 1Y
 Zhao, Weirui, 1P
 Zhao, Yi-xuan, 0E

Zheng, Li Li, 1O
 Zheng, Xianzhong, 2A
 Zhi, Xiyang, 1X
 Zhong, Aihua, 0K
 Zhou, Jianwei, 1H
 Zhou, Jianyu, 0F
 Zhou, Lin, 07, 1S
 Zhou, L. W., 1R
 Zhou, Sitong, 0G, 0H
 Zhou, Wei-hu, 19
 Zhou, Yi, 0W
 Zhou, You, 29
 Zhu, Bingli, 0R
 Zhu, Qi-fan, 0L

Conference Committee

Conference Chairs

Jane Jiang, University of Huddersfield (UK)
Min Xu, Fudan University (China)
Jian Bai, Zhejiang University (China)
Ji Yang, Purple Mountain Observatory, Chinese Academy of Sciences (China)
Suijian Xue, National Astronomical Observatories of the Chinese Academy of Sciences (China)

Committee Title

Yongtian Wang, Beijing Institute of Technology (China)
Alois Herkommer, Universität of Stuttgart (Germany)
Yvan Stockman, Centre Spatial Liege (Belgium)
Yiping Wang, National Astronomical Observatories of the Chinese Academy of Sciences (China)
Zhong Liu, Chinese Astronomical Society (China)

Program Committee

Tingwen Xing, The Institute of Optics and Electronics, CAS (China)
Qiao Xu, China Academy of Engineering Physics (China)
Jiawang Yan, Keio University (Japan)
Zhixia Shen, National Astronomical Observatories of the Chinese Academy of Sciences (China)

Introduction

We had the great honor of organizing the International Symposium on Advanced Optical Design and Manufacturing Technologies and International Symposium on Astronomical Telescope and Instrumentation. It was truly a great pleasure for us to greet more than 1000 participants from many different countries attending the symposiums. We firmly believe the symposium will become an important international event in the field of optical technology.

The International Symposium on Advanced Optical Design and Manufacturing Technologies and International Symposium on Astronomical Telescope and Instrumentation are sponsored by Chinese Society for Optical Engineering and China High-tech Industrialization Association (CHIA), organized by Chinese Society for Optical Engineering (CSOE), Photoelectronic Technology Committee, Chinese Society of Astronautics, Photo-electronic Industrialization Committee, CHIA, Department of Cooperation and Coordination for Industry, Academe and Research, CHIA.

The purpose of the symposiums is to provide a forum for the participants to report and review the innovative ideas and up-to-date progress and developments, discuss the novel approaches to application in the optical field. It is sincerely hoped that the research and development in optical field will be promoted, and the international cooperation sharing the common interest will be enhanced.

On behalf of other co-chairmen, and the Organization Committee of the conference, we would like to heartily thank for our sponsors and cooperation organizers for all they have done for the symposiums. Thanks also to all the authors for their contributions to the Proceedings, to all of the participants and friends for their interest and efforts in helping us to make the symposiums possible, to the Program Committee for their effective work and valuable advice, especially the Secretariat and the SPIE staff for their tireless efforts and outstanding service in preparing and publishing the proceedings.

Min Xu
Ji Yang