# Contents

## Authors

## Conference Committee

## Introduction

---

**FIFTH INTERNATIONAL SYMPOSIUM ON LASER INTERACTION WITH MATTER**

11046 02  Multispecies combustion diagnostics using tunable diode laser absorption spectroscopy  
[11046-1]

11046 03  Quantitative research on component failure by using Monte-Carlo method  [11046-41]

11046 04  Laser-induced plasma in a single droplet  [11046-52]

11046 05  SBS suppression in high brightness, all-fiberized and linearly polarized amplifiers by rectangular spectrum  [11046-53]

11046 06  Diode-pumped passively Q-switched mode-locking Tm:LLF laser with graphene oxide saturable absorber  [11046-56]

11046 07  Mid-infrared upconversion imaging pumped by sub-nanosecond micro-cavity laser  [11046-59]

11046 08  Modeling and optimization of actively Q-switched 2.8 μm Er3+-doped ZBLAN fiber laser  [11046-68]

11046 09  Experimental investigation of heat dissipation of Fe:ZnSe crystal  [11046-69]

11046 0A  CO concentration measurements using tunable diode laser absorption spectroscopy behind the shock waves in Martian atmosphere  [11046-87]

11046 0B  The absorption characteristic of titanium alloys irradiated by quasi-continuous-wave laser  [11046-92]

11046 0C  The enhancement of the InGaAs solar cells by the thermoelectric generation technology under the continuous laser exposure  [11046-103]

11046 0D  Conical ring beam achieved via degenerated optical parametric generation in tightly focused quasi-phase matching conditions  [11046-108]

11046 0E  Experimental study on the influence of backward ASE on SBS process in single-frequency amplifier  [11046-111]
Al target temperature characteristics by laser ablation and its plume expansion [11046-123]

Theoretical study on the evolution of ASE from the seed to the amplifier with different central wavelength and spectrum [11046-130]

Damage detection of CFRP laminates by using ultrasonic Lamb wave with a sparse array [11046-146]

Positron generation via ultra-intense laser pulses colliding in a cylinder filled with near-critical-density plasmas [11046-11]

Effect of 1070nm laser uniformity on temperature distribution and performance of In0.3Ga0.7As solar panel [11046-32]

LD pumped YAG/Nd:YAG/Cr4+:YAG burst mode laser [11046-35]

2D HTV image processing in the complex combustion field [11046-47]

Structured laser illumination planar imaging method for filtering stray light applied to temperature sensitive paints measurement [11046-57]

Characteristics of W52 mode-locked Yb-doped fiber laser [11046-85]

The aging properties of dichroic films used in laser ignition systems [11046-93]

Time-reversal damage imaging based on laser ultrasonic guide waves with temporal filter method [11046-119]

Dynamics character of swirling flame investigated by OH and CH2O planar laser-induced fluorescence [11046-133]

Study of OH radicals’ spontaneous radiation of counterflow diffusion flame under non-equilibrium plasma [11046-18]

Analytical solution of steady temperature field distribution in cylindrical medium irradiated by laser [11046-55]

EMC design of high power TEA CO2 laser [11046-67]

Effect of ply scheme on ablation characteristics of carbon fiber composites under CW laser irradiation [11046-73]

Influence of spectral linewidth and wavelength selection of laser display [11046-88]

Characterization of graphite produced by laser irradiated glass fiber reinforced epoxy resin [11046-96]

Numerical simulation of dazzling effects on CCD induced by a 532nm pulsed laser [11046-102]
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>11046 0Y</td>
<td>Simulation and analysis of distortion correction of super-continuum wavefront based on SPGD algorithm</td>
<td>[11046-104]</td>
</tr>
<tr>
<td>11046 0Z</td>
<td>Laser amplification by four-wave mixing in plasmas</td>
<td>[11046-113]</td>
</tr>
<tr>
<td>11046 10</td>
<td>2.8kW bidirectional side-pumped fiber amplifiers</td>
<td>[11046-125]</td>
</tr>
<tr>
<td>11046 11</td>
<td>Mid-infrared optical parametric oscillator pumped by dual-wavelength fiber laser based on SRS effect</td>
<td>[11046-128]</td>
</tr>
<tr>
<td>11046 12</td>
<td>Study on hydrodynamic effects in longitudinal forced convection for high power laser amplifier</td>
<td>[11046-134]</td>
</tr>
<tr>
<td>11046 13</td>
<td>Wakefield contraction and high-quality electron bunch generation in transverse nonuniform plasmas driven by intense laser pulses</td>
<td>[11046-138]</td>
</tr>
<tr>
<td>11046 14</td>
<td>Passively Q-switched operation of Tm, Ho:YAP laser with a MoS$_2$/WS$_2$ saturable absorber mirror</td>
<td>[11046-145]</td>
</tr>
<tr>
<td>11046 15</td>
<td>Linear to radial polarization optical convertor with larger diameter and high damage threshold fabricated by single point diamond turning</td>
<td>[11046-19]</td>
</tr>
<tr>
<td>11046 16</td>
<td>Shape dependence of nonlinear optical activities of tungsten oxide nanostructures</td>
<td>[11046-23]</td>
</tr>
<tr>
<td>11046 17</td>
<td>Studies on the operating characteristics of anisotropic acousto-optic device with multi-transducers</td>
<td>[11046-29]</td>
</tr>
<tr>
<td>11046 18</td>
<td>Analysis of laser-induced surface profile variation in silicon glass based on particle swarm optimization algorithm</td>
<td>[11046-50]</td>
</tr>
<tr>
<td>11046 19</td>
<td>Electroluminescence enhancement in GainP/GaAs/Ge tandem solar cells induced by laser</td>
<td>[11046-70]</td>
</tr>
<tr>
<td>11046 1A</td>
<td>Comparison of inversion methods of complex refractive index for rough surface objects by polarization measurement</td>
<td>[11046-80]</td>
</tr>
<tr>
<td>11046 1B</td>
<td>Simultaneous temperature, H$_2$O concentration and pressure measurement in a scramjet combustor with combined operation mode using wavelength modulation spectroscopy</td>
<td>[11046-86]</td>
</tr>
<tr>
<td>11046 1C</td>
<td>Broadband programmable radio frequency signal generation based on ultrafast optical pulse shaping</td>
<td>[11046-91]</td>
</tr>
<tr>
<td>11046 1D</td>
<td>K-shell spectra of a laser-produced carbon plasma</td>
<td>[11046-114]</td>
</tr>
<tr>
<td>11046 1E</td>
<td>Impulse coupling characteristics of GAP, PTFE and aluminum with laser ablation</td>
<td>[11046-131]</td>
</tr>
<tr>
<td>11046 1F</td>
<td>Scaling laws of optical components during laser induced thermal damage process</td>
<td>[11046-136]</td>
</tr>
<tr>
<td>11046 1G</td>
<td>Evaluation of pressurized shell damage induced by high energy laser irradiation</td>
<td>[11046-9]</td>
</tr>
</tbody>
</table>
A real-time measuring system for temperature and components of the detonation field [11046-15]

Study on system status evaluation method [11046-39]

A non-linear temperature calibration equation for filter selection in 2D LiF thermometry approach [11046-44]

Pyrolysis gas diffusion model in kevlar/nomex honeycomb structure on laser irradiating [11046-49]

Numerical study of molten pool dynamics and thus bur formation in laser drilling of metals [11046-60]

A method of mechanical properties temperature dependence test by two-sided laser irradiation heating [11046-72]

Supercontinuum generation in a random fiber laser structure [11046-75]

Progress on pulse-shaped laser driven ramp compression study [11046-83]

Numerical simulation of three laser-induced in-phase bubbles [11046-89]

Study on the influence of ultrafast laser power on the entrance morphology of vessel microfluidic chips [11046-105]

MOPA-structure, SESAM-based mode-locked Er3+-doped ZBLAN fiber laser at 2.78 μm [11046-110]

Diode-end-pumped actively Q-switched YVO4 Raman laser at 2291nm [11046-116]

Numerical simulation of tensile deformation and failure of aluminium alloys exposed to laser heating [11046-126]

Study on the influence of Fs-laser power on the entrance morphology of vessel microfluidic chips [11046-4]

Development of laser humidity sensor based on tunable diode laser absorption spectroscopy [11046-13]

Numerical simulations of thermal lens effect in K9 glass induced by millisecond laser irradiation [11046-16]

Optical fiber coupling of high-energy density pulsed lasers for laser ignition [11046-46]

Optimization of erbium-doped fiber length based on variable gain coefficient in femtosecond pulse amplification system [11046-90]

Design of optical attenuator for high energy laser beam measurement system [11046-107]
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Experimental study of target depolarization characteristics based on BRDF</td>
<td>11046-118</td>
</tr>
<tr>
<td>21</td>
<td>Measurement and analysis of reflectivity accuracy of hyperspectral reflectometer</td>
<td>11046-129</td>
</tr>
<tr>
<td>22</td>
<td>The measurement metric for power in the bucket</td>
<td>11046-141</td>
</tr>
<tr>
<td>23</td>
<td>Nonlinear energy deposition of femtosecond laser filamentation in the laser-induced snowfall formation</td>
<td>11046-37</td>
</tr>
<tr>
<td>24</td>
<td>Laser ablation characteristics of liquid energetic polymers with micro flow feed system</td>
<td>11046-64</td>
</tr>
<tr>
<td>25</td>
<td>1kHz, 532nm top-hat intensity profile high peak power picosecond laser amplification system</td>
<td>11046-101</td>
</tr>
<tr>
<td>26</td>
<td>Temperature-dependent absorptivity evolution of gray epoxy painted iron under CW laser irradiation</td>
<td>11046-137</td>
</tr>
<tr>
<td>27</td>
<td>Emission spectroscopy characterization of plasma flow in inductively coupled plasma spheroidization</td>
<td>11046-2</td>
</tr>
<tr>
<td>28</td>
<td>Piecewise linear calibration of the spectral responsivity of FTIR based on the high temperature blackbody</td>
<td>11046-30</td>
</tr>
<tr>
<td>29</td>
<td>Irradiation effect on Ag-dispersed amorphous silicon thin films by femtosecond laser</td>
<td>11046-79</td>
</tr>
<tr>
<td>2A</td>
<td>Room temperature Fe\textsuperscript{2+}:ZnSe laser pumped by non-chain pulsed HF laser</td>
<td>11046-97</td>
</tr>
<tr>
<td>2B</td>
<td>Study on stimulated Raman scattering in fiber amplifier employing tapered Yb\textsuperscript{3+} doped fiber</td>
<td>11046-122</td>
</tr>
<tr>
<td>2C</td>
<td>Study on cross-sections between the fine-structure levels of atomic rubidium</td>
<td>11046-148</td>
</tr>
<tr>
<td>2D</td>
<td>High-stable Er-doped all-fiber pulse laser based on free standing black phosphorus</td>
<td>11046-151</td>
</tr>
<tr>
<td>2F</td>
<td>500 Hz, 8 mJ Nd:YAG regenerative amplifier for laser-induced plasma</td>
<td>11046-25</td>
</tr>
<tr>
<td>2G</td>
<td>Investigations of mode instability in large-mode-area fiber amplifier pumped by 915/976nm LD sources</td>
<td>11046-31</td>
</tr>
<tr>
<td>2H</td>
<td>Construction of beam quality factor prediction model based on support vector machine</td>
<td>11046-62</td>
</tr>
<tr>
<td>2I</td>
<td>Research on ultrasonic damage imaging based on inverse scattering model in frequency domain</td>
<td>11046-71</td>
</tr>
<tr>
<td>2J</td>
<td>Laser polarization characteristics from phase-shifted grating inscribed by polarized ultraviolet argon laser</td>
<td>11046-82</td>
</tr>
<tr>
<td>11046 2K</td>
<td>Visualization of supersonic ethylene jet flames in a hot coflow by OH-PLIF</td>
<td>[11046-94]</td>
</tr>
<tr>
<td>11046 2L</td>
<td>Absolute optical frequency measurement of stabilized lasers using an Er-doped fiber femtosecond laser comb</td>
<td>[11046-109]</td>
</tr>
<tr>
<td>11046 2M</td>
<td>Design of laser collimating and focusing system under small working distance</td>
<td>[11046-124]</td>
</tr>
<tr>
<td>11046 2N</td>
<td>Safe criterions for front-surface digs in fused silica optics</td>
<td>[11046-144]</td>
</tr>
<tr>
<td>11046 2O</td>
<td>Modal decomposition for optical fibers based on the Wigner representation of modal field</td>
<td>[11046-20]</td>
</tr>
<tr>
<td>11046 2P</td>
<td>The influence of beam energy profile on the flight behavior of a laser-driven flyer</td>
<td>[11046-33]</td>
</tr>
<tr>
<td>11046 2Q</td>
<td>Influence factors of thermal damage of solar cells irradiated by CW laser</td>
<td>[11046-66]</td>
</tr>
<tr>
<td>11046 2R</td>
<td>Performance jump characteristics of CCD image sensor under laser irradiation</td>
<td>[11046-84]</td>
</tr>
<tr>
<td>11046 2S</td>
<td>Analytic error model of beam profile evaluation for detector array method</td>
<td>[11046-95]</td>
</tr>
<tr>
<td>11046 2T</td>
<td>Microchannels on aluminosilicate glass fabricated by selective laser etching</td>
<td>[11046-115]</td>
</tr>
<tr>
<td>11046 2U</td>
<td>Laser ablation properties of glass fiber reinforced epoxy composite under obliquely impinging air jet</td>
<td>[11046-127]</td>
</tr>
<tr>
<td>11046 2V</td>
<td>3D measurements of swirling flame heat release rate based on CH chemiluminescence</td>
<td>[11046-139]</td>
</tr>
<tr>
<td>11046 2W</td>
<td>Beam optimization for tomographic absorption spectroscopy with given probe locations</td>
<td>[11046-147]</td>
</tr>
<tr>
<td>11046 2X</td>
<td>Interaction of pulsed laser plasma with normal shock in a shock tube</td>
<td>[11046-21]</td>
</tr>
<tr>
<td>11046 2Y</td>
<td>Laser beam filamentation and filamentation instability in ultrarelativistic laser-plasma interaction: influence of relativistic effect and plasma nonuniformity</td>
<td>[11046-28]</td>
</tr>
<tr>
<td>11046 2Z</td>
<td>Numerical simulation of thermal and mechanical damage in CCD detector induced by laser</td>
<td>[11046-43]</td>
</tr>
<tr>
<td>11046 30</td>
<td>Theoretical simulation of laser-supported absorption wave velocity induced by millisecond pulsed laser on aluminum alloy</td>
<td>[11046-61]</td>
</tr>
<tr>
<td>11046 31</td>
<td>High efficient terahertz generation from cryogenic gallium phosphide based on collinear difference frequency</td>
<td>[11046-76]</td>
</tr>
<tr>
<td>11046 32</td>
<td>Efficient phase-locking of a tiled fiber array of 37 fiber lasers using SPGD</td>
<td>[11046-135]</td>
</tr>
<tr>
<td>11046 33</td>
<td>Diode laser absorption tomography for swirl flames application</td>
<td>[11046-140]</td>
</tr>
</tbody>
</table>
Research on laser damage to typical reconnaissance UAV [11046-149]

Laser-induced periodic surface structure in silicon wafer irradiated by continuous laser [11046-77]

Research on responsivity of Si-based p-i-n quadrant photodiode detector interact with millisecond pulsed laser [11046-152]
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 five 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.

An, Guofei, 2C
Andreev, Yury, 31
Bao, Hengzhu, 04, 1P
Biao, Xuan, 17
Cal, He, 2C
Cao, Jianqiu, 10
Chang, Hao, 0F, 2M
Chang, Hongdong, 32
Chen, Baomin, 17
Chen, Chen, 06
Chen, Deying, 0K
Chen, Fei, 09, 0T, 2A
Chen, Heng, 10
Chen, Jian, 11, 1F
Chen, Jinbao, 10
Chen, Tanjian, 1N
Chen, Bing, 16
Chen, Meng, 25
Chen, Minjun, 1F
Chen, Shaorong, 15
Chen, Shaochu, 1H, 22
Chen, Shizhe, 1V
Chen, Shuang, 1J, 2K
Chen, Wenhe, 16
Chen, Yanzhong, 12
Chen, Zhihua, 20
Cheng, Kun, 22
Cheng, Xi, 11
Chu, Junhao, 31
Cui, Da-pu, 0R
Deng, Bin, 15
Deng, Suhui, 13
Ding, Wenyu, 1Q, 1U
Ding, Yongkun, 1O
Dong, Tianhao, 0V
Dong, Wei, 28
Dong, Zhong, 06
Dong, Zikai, 0N
Dou, Feng-cheng, 18, 19, 2Q, 2R
Du, Chenlin, 15, 2T
Du, Taijiao, 2O
Duan, Shou, 15
Duanmu, Qing-duo, 28
Fan, Lunwen, 12
Fan, Wei, 2N
Fang, Bo-long, 0L
Feng, Gong, 1Z
Feng, Gaoqiu, 18
Feng, Guo-bing, 18, 19, 2Q

Feng, Jingcheng, 11
Gao, C. Tai, 23
Gao, Lou, 1P
Gao, Qing, 0G
Gao, Yanqing, 31
Gao, Yuan, 0D, 1X, 2P
Ge, Weng, 12
Gong, Yanjun, 2H, 35
Gu, Chun, 0V
Guan, Qi, 2O
Guo, Anran, 29
Guo, Chuan, 07, 0D
Guo, Jian, 2J
Guo, Jin, 0T
Guo, Jihong, 0T
Guo, Heyan, 30
Han, Jibao, 1Y, 2L
Han, Juhong, 2C
Han, Kai, 11, 1F
He, Bing, 0E
He, Jianguo, 12, 20
He, Xuan, 1R
He, Xubao, 05
He, Yang, 09, 2A
He, Zongbo, 03, 1L
Hong, Yanli, 1E, 2W
Hou, Jing, 1N, 1R
Hu, Zhiyun, 0L
Hu, Weihong, 07, 1L
Huang, Chao, 1D
Huang, Dongdong, 16
Huang, Jingguo, 31
Huang, Li, 16
Huang, Xijun, 0S
Huang, Yanhua, 1A
Huang, Zhihe, 10
Huang, Zhiming, 31
Ilyas, Nasir, 29
Jelani, Mohan, 1T
Ji, Xiangbo, 0C, 1X
Jia, Hui, 15
Jian, Lijing, 03, 1L
Jiang, Hongchuan, 2P
Jiang, Lingfeng, 2T
Jiang, Shaosen, 1Q
Jiang, Tian, 1C
Jiang, Youen, 2N
Jin, Guangyong, 30, 36
Jin, Xiaoxi, 2D
Ju, J. Jing, 23
Kang, Guojian, 02, 2V, 33
Lai, Wenchang, 05
Lei, Renfang, 29
Leng, Kun, 2H
Li, Bo, 2T
Li, Can, 15
Li, Dachuan, 0A
Li, Dongyang, 29
Li, Dun, 0Y
Li, Enhui, 11
Li, Fei, 0A, 2V, 33
Li, Gaofang, 31
Li, Guangji, 0C, 0J
Li, Guohua, 0L, 0M
Li, Hao, 12
Li, Jin, 1L
Li, Jingyi, 30
Li, Jing-Yin, 0L
Li, Ke, 06
Li, Kexuan, 0N
Li, Lan, 0R, 2X
Li, Lijun, 14
Li, Manlei, 0F, 1E, 24
Li, Pingxue, 2F
Li, Qian, 2X
Li, Qirui, 0E
Li, Shuyi, 1Y
Li, Tianliang, 11
Li, Wei, 16, 29
Li, Xiaoxuan, 0U, 11
Li, Xin, 21
Li, Xuoding, 0K
Li, Xuechun, 2N
Li, Xuewen, 0E
Li, Yang, 31
Li, Yong, 00, 1X
Li, Yunpeng, 18, 19, 2Q, 2R
Li, Yunze, 11
Li, Zewen, 0X, 1T, 35
Li, Zhengjiang, 2J
Li, Zhimin, 28
Liang, Dezhi, 2T
Li, Jing, 15
Lin, Xin, 0A, 33
Lin, Xinwei, 18
Lin, Wei-Jun, 06
Lu, Bings, 2K
Lu, Enchao, 21
Lu, Hao, 12, 1F, 2F
Lu, Hongxu, 36
Lu, Jian-Xun, 0I
Lu, Lei, 07, 0D, 23
Lu, Liang, 0S
Lu, Mingping, 13
Lu, Shixuan, 1V
Lu, Wei, 1L
Lu, Weiping, 1K, 2U
Lu, Xiaoxu, 2C
Lu, Yanpeng, 1D, 1O
Wu, Yang, 12
Lou, Zhaokai, 1F
Lu, Jian, 04, 0C, 0J, 1L, 1P, 1W, 35
Lu, Shang, 25
Luan, Kunpeng, 0B
Luo, Can, 0X
Luo, Xuexue, 2G
Luo, Ying, 0H, 0P
Lv, Sijil, 25
Lv, Yuwei, 0W, 1M, 26
Ma, Pengfei, 05
Ma, Yanling, 05, 32
Ma, Yan-Yun, 0I
Ma, Zhifang, 0W, 1K, 1M, 2U
Meng, Daren, 05
Meng, Fanjiang, 0T
Meng, Jingjing, 20
Meng, Xiangliang, 2Z
Mo, Zeqiang, 12, 20
Mu, Jinhe, 1J, 2K
Nan, Pengyu, 0U
Ni, Jiazheng, 2J
Ni, Xiaowu, 04, 0U, 1T, 1W
Ning, Yu, 0Y
Ou, Dongbin, 02, 27
Ouyang, Xiaoping, 1D
Pan, Qikun, 09, 2A
Pan, Yunsheng, 1W
Pan, Zhongyong, 10
Pang, Zhaoxiang, 17
Peng, Gangding, 2J
Peng, Guo-Fang, 1G
Peng, Hongpan, 25
Peng, Qin-Jun, 08
Pu, Dongsheng, 34
Qi, Haifeng, 2J
Qi, Xinhu, 1J, 2K
Qi, Yunfeng, 0E
Qian, Hang, 1D, 1O
Qin, Fei, 2K
Qin, Weizhi, 0O, 1X, 2P
Quan, Zhao, 0E
Rao, Wei, 18, 2W
Ren, Xikui, 15
Shao, Chunlei, 0T
Shao, F., Q., 0Z
Shao, Jun, 0L, 0M
Shao, Zhengzheng, 15
Shen, Hui, 0E
Shen, Huifang, 17
Shen, Yanlong, 08
Shen, Zhonghua, 04, 0U, 0X, 1T
Shi, Chen, 0G, 2B
Shi, Dele, 0S
Shi, Yu-bin, 18, 19, 2Q, 2R
Si, Jinhai, 08, 0M
Si, Lei, 32
Song, Juan, 1Q, 1U
Song, Junling, 18, 2W
Song, M. Y., 26
Conference Committee

Honorary Chairs

Yijun Zhao, National University of Defense Technology (China)
Yuri S. Kivshar, Australian National University (Australia)

Symposium Co-chairs

Zejin Liu, Chinese Academy of Engineering (China)
Jin Guo, State Key Laboratory of Laser Interaction with Matter (China)
Yongfeng Lu, The University of Nebraska-Lincoln (United States)
Vladimir Falko, The University of Manchester (United Kingdom)

Conference Review Committee

Kai Han, National University of Defense Technology (China)
Yan Yin, National University of Defense Technology (China)
Jiajian Zhu, National University of Defense Technology (China)
Tian Jiang, National University of Defense Technology (China)
Fei Chen, Changchun Institute of Optics, Fine Mechanics and Physics (China)
Guanghua Cheng, Xi'an Institute of Optics and Precision Mechanics, CAS (China)
Zhaochen Cheng, Beijing University of Technology (China)
Yue Yang, Chinese Laser Press (China)
Introduction

The Fifth International Symposium on Laser Interaction with Matter (LIMIS 2018) was held 11–13 November 2018 in Changsha, a famous historical city of China. The symposium focused on the most recent and advanced issues concerning laser-matter interactions; including laser irradiation effect and mechanism, laser plasma physics, laser spectrum technology and applications, high power lasers, nonlinear optics, and laser processing and machining, etc. There were plenary presentations by well-known experts, oral sessions, and poster sessions.

Yijun Zhao