SPIE. PLD & TFPA
SIOM
2019

International Conference on
Pacific Rim Laser Damage &
Thin Film Physics and Applications

May 19-22    Qingdao, China

Hosts
Society of Photo-Optical Instrumentation Engineers (SPIE)
Shanghai Institute of Optics and Fine Mechanics (SIOM)
Chinese Physical Society (CPS)
Shanghai Physical Society (SPS)
Opening Ceremony & Plenary Session
Monday 20 May  Location: Regency Ballroom, 3F
8:00 - 8:15  Opening Ceremony
Chair: Jiandao Shao, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

Plenary Session 1.  The 8th Pacific Rim Laser Damage: Optical Materials for High Power Lasers Symposium (PLD 2019)
Session Chair: Takahisa Jitsuno, Osaka Univ. (Japan)
08:15 Dielectric films near their optical breakdown threshold - viable elements for nonlinear optics? (Plenary), Wolfgang Rudolph (Luke Emmert), The Univ. of New Mexico, United States.  P24
09:00 Materials, Structure and Designs for femtosecond optics (Plenary), Marco Jupé, Laser Zentrum Hannover, Germany.  P25

09:45 – 10:15  Coffee Break & Group Photo

Plenary Session 2.  The 10th International Conference on Thin Film Physics and Applications (TFPA 2019)
Session Chair: Jiandao Shao, Shanghai Institute of Optics and Fine Mechanics, CAS (China)
10:15 Laser patterning in thin nanomaterials for nanophotonics (Plenary), Min Gu, Univ. of Shanghai for Science and Technology, China  P26
11:00 New design for highly durable infrared-reflective coatings (Plenary), Sam Zhang, Southwest Univ., China  P27
11:45 TBA (Plenary), Andrea C. Ferrari, Univ. of Cambridge, United Kingdom.  P28

12:30 – 13:40  Lunch Break
Topic Meeting 1: The 8th Pacific Rim Laser Damage: Optical Materials for High Power Lasers Symposium (PLD 2019)

Monday 20 May  Location: Regency Ballroom 1, 3F

PLD Session 1. ................................................................. Monday 13:40 to 15:40

High Laser Damage Resistant Coatings

Session Chairs: Jiandao Shao, Shanghai Institute of Optics and Fine Mechanics, CAS (China); Luke Emmert, The Univ. of New Mexico (United States);

13:40 Few cycle pulse damage of multi-layer thin film systems (Invited), Enam A. Chowdhury, The Ohio State Univ., United States. ................................................................. P29
14:10 Nanocomposite HfSi1-xO2 coatings for laser cavity applications (Invited), Zhanshan Wang, Tongji Univ., China. ................................................................. P30
14:40 Dramatical improvement of surface damage threshold in laser Ceramics (Invited), Takunori Taira, RIKEN / IMS, Japan. ................................................................. P31
15:10 Contrasted fatigue behavior of laser-induced damage mechanisms in single layer zirconia optical coating (PLDTFPA2019-2019-000018), Linas Smalakys, Laser Research Center, Lithuania. ................................................................. P32
15:25 Influence of substrate on the laser-induced damage of indium tin oxide film and polyimide film (PLDTFPA2019-2019-000032), Liping Peng, Shanghai Institute of Optics and Fine Mechanics, CAS; University of Chinese Academy of Sciences; Key Laboratory of Materials for High Power Laser, CAS, China. ................................................................. P32

15:40 – 16:00 Coffee Break

PLD Session 2. ................................................................. Monday 16:00 to 18:00

High Power Laser Damage, UV through IR (I)

Session Chairs: Takahisa Jitsuno, Osaka Univ. (Japan); Lili Hu Shanghai Institute of Optics and Fine Mechanics, CAS (China)

16:00 Laser-induced damage studies in ultrafast regimes for Ti:Sa PW class laser development (Invited), Marc Sentis, CNRS - Institut de Physique, France. ................................................................. P33
16:30 Compression after compressor approach (CafCA): threefold shortening of 200-TW laser pulses (Invited), Efim Khazanov, Institute of Applied Physics, Russian Academy of Sciences, Russia. ................................................................. P34
17:00 High speed detection of microscopic absorption defects that limit the laser damage threshold of an optical component (Invited), Zhouling Wu, ZC Optoelectronic Technologies, Ltd., China. ................................................................. P35
17:30 Investigations on single and multiple pulse femtosecond laser induced damages in multilayer high reflectors at different repetition rate (PLDTFPA2019-2019-000021), Hao Ma, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ................................................................. P36
17:45 Analysis of laser induced damage characteristics in KDP crystals by spectroscopic techniques under high-power laser excitation (PLDTFPA2019-2019-000002), Yao Wang, Shanghai Institute of Optics and Fine Mechanics, China. ................................................................. P36

18:30 – 20:00 Banquet
**Topic Meeting 1: The 8th Pacific Rim Laser Damage: Optical Materials for High Power Lasers Symposium (PLD 2019)**

**Tuesday 21 May  Location: Regency Ballroom 1, 3F**

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**PLD Session 3.**

High Power Laser Damage, UV through IR (II)

Session Chairs: **Marc Sentis**, CNRS - Institut de Physique (France); **Efim Khazanov**, Institute of Applied Physics, Russian Academy of Sciences (Russia)

08:20 Time-dependence of laser-induced absorption and LIDT of silica glasses in deep UV (*Invited*), Takahisa Jitsuno, Osaka Univ., Japan. ................................................................. P37

08:50 High power laser system and laser induced damage tests strategy at ELI-NP (*Invited*), Ioan Dancus, Horia Hulubei National Institute of Physics and Nuclear Engineering, Romania ............................................. P38

09:20 Femtosecond laser-induced pre-damage dynamics in optical coatings (*Invited*), Yuxin Leng, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ................................................................. P39


10:20 A patented homogenization process to optimize fused silica for laser application (Industry Talk), Max MAO, Heraeus (China) Investment Co., Ltd., China. ................................................................. P41

10:30 Introduction to some technologies on surface and bulk test regarding laser induced damage (Industry Talk), Honggang Gao, Beijing Opturn Company Co., Ltd, China. ................................................................. P41

10:05 – 11:30 Poster Session

11:30 – 13:20 Lunch Break

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**PLD Session 4.**

Characterization Techniques and Measurement Protocols (I)

Session Chairs: **Zhouling Wu**, ZC Optoelectronic Technologies, LTD. (China); **Hümbet Nasibli**, TÜBİTAK National Metrology Institute (Turkey)

13:20 Applications of stabilized lasers in metrology (*Invited*), Ramiz Hamid, TÜBİTAK National Metrology Institute, Turkey ................................................................. P42

13:50 Spectral light scattering characterization and laser damage testing of optical materials and coatings (*Invited*), Marcus Trost, Fraunhofer Institute Applied Optics and Precision Engineering IOF, Germany ................................................................. P43

14:20 Measurement methods of damage growth threshold from the saturated damage site for picosecond laser damage (**PLDTFPA2019-2019-000045**), Mingying Sun, Shanghai Institute of Optics and Fine Mechanics, CAS, China; National Laboratory on High Power Laser and Physics, China. ................................................................. P44

14:35 Molecular dynamics simulation of the laser-induced ablation property on iron surface (**PLDTFPA2019-2019-000112**), Qingshun Bai, Harbin Institute of Technology, China. ................................................................. P44

14:50 A Method for Classification and Recognition of Crystal Surface Defects Based on Deep Learning (**PLDTFPA2019-2019-000139**), Daoming Wan, Research Center of Laser Fusion, CAEP, China ................................................................. P45

15:05 Study on absorption defects in fracture zone of laser-induced of fused silica (**PLDTFPA2019-2019-000075**), Chunyan Yan, University of Science and Technology Beijing, China. ................................................................. P45
15:20 – 15:40  Coffee Break

PLD Session 5. ................................................................. .Tuesday 15:40 to 18:10

Laser Ablation and Laser Machining

Session Chairs: Enam A. Chowdhury, The Ohio State Univ. (United States); Yuxin Leng, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

15:40 Laser ablation induced micro-damage: issues and applications in precision Engineering (Invited), Minghui Hong, National Univ. of Singapore, Singapore ................................................. P46
16:10 Micromachining of transparent materials by high repetition rate femtosecond pulses using two different approaches: direct ablation in water and laser-assisted chemical etching (Invited), Valdas Sirutkaitis Vilnius Univ., Lithuania. ................................................................. P47
16:40 Advances in femtosecond laser writing of nonlinear crystalline waveguides (Invited), Feng Chen, Shandong Univ., China ................................................................. P48
17:10 Polarization-insensitive selective chemical etching induced by picosecond laser irradiation in glass (PLDTFPA2019-2019-000073), Xiaolong Li, East China Normal University, China ................................................. P49
17:25 Study on surface roughness change of modified silicon carbide in ion beam polishing(PLDTFPA2019-2019-000076), Wenqing Li, Beijing Institute of Space Mechanics and Electricity, China ................................................. P49
17:40 Dry Removal of Sol-gel Anti-reflective SiO₂ film based on ion beam etching (PLDTFPA2019-2019-000102), Xiaolong Jiang, Research Center of Laser Fusion, CAEP, China ................................................. P50
17:55 Effect of pad polishing on the polishing induced subsurface damages distribution and laser induced damage performance of fused silica optics (PLDTFPA2019-2019-000103), Xiang He, Chengdu Fine Optical Engineering Research Center, China ................................................. P50
Topic Meeting 1: The 8th Pacific Rim Laser Damage: Optical Materials for High Power Lasers Symposium (PLD 2019)

Wednesday 22 May   Location: Regency Ballroom 1, 3F

PLD Session 6. .........................................................Wednesday 08:20 to 10:05
Nonlinear Laser Crystals
Session Chairs: Marco Jupé, Laser Zentrum Hannover (Germany); Dingyuan Tang, Nanyang Technological Univ. (Singapore)

08:20 Laser-induced damage of nonlinear crystals in ultrafast, high-repetition-rate, mid-infrared optical parametric amplifiers pumped at 1 µm (Invited), Mark Mero, Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Germany ......................................................... PS1
08:50 Research on the Langasite crystals with high damage threshold for the application in mid-infrared range (Invited), Haohai Yu, Shandong Univ., China. ........................................ PS2
09:20 Growth and characterization of ReCOB and langasite-type crystals for high peak power non-linear optical applications (PLDTFPA2019-2019-000036), Yanqing Zheng, Shanghai Institute of Ceramics, CAS, China. ..... PS3
09:35 Structures of retired components and KDP crystals irradiated by high fluence using synchrotron μ-XRF and μ-XRD (PLDTFPA2019-2019-000059), Xiangcao Li, University of Science and Technology Beijing, China. ...... PS3
09:50 The research progress of sub-nanosecond laser conditioning on DKDP crystal (PLDTFPA2019-2019-000065), Zhichao Liu, Fine Optics Engineering Research Center, China. ........................................ PS4
10:05 Optimizing the flow conditions of the horizontally oriented DKDP crystal by adding a stirring paddle (PLDTFPA2019-2019-000093), Duanyang Chen, Shanghai Institute of Optics and Fine Mechanics, CAS, China; University of Chinese Academy of Sciences, China. ........................................ PS4

10:20 – 10:40 Coffee Break

PLD Session 7. .........................................................Wednesday 10:40 to 12:10
Laser Ceramics
Session Chairs: Mark Mero, Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy (Germany); Ioan Dancus, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania)

10:40 Rare-earth doped sesquioxide laser ceramics for high power large energy laser applications (Invited), Dingyuan Tang, Nanyang Technological Univ., Singapore ........................................ PS5
11:10 Research progress of new optical ceramics for solid state lasers (Invited), Jiang Li, Shanghai Institute of Ceramics, CAS, China; University of Chinese Academy of Sciences, China. ........................................ PS6
11:40 Fabrication and properties of Yb:CaF₂ transparent ceramics from co-precipitated nano-powders (PLDTFPA2019-2019-000047), Jiabei Wei, Shanghai Institute of Ceramics, CAS, China; University of Chinese Academy of Sciences, China. ........................................ PS7
11:55 Fabrication, microstructure and optical properties of Yb:Y₅S₃Al₄O₁₄ transparent ceramics with different doping concentrations (PLDTFPA2019-2019-000048), Yagang Feng, Shanghai Institute of Ceramics, CAS, China; University of Chinese Academy of Sciences, China. ........................................ PS7

12:10 – 13:20 Coffee Break
PLD Session 8. Characterization Techniques and Measurement Protocols (II)

Session Chairs: Marcus Trost, Fraunhofer Institute Applied Optics and Precision Engineering IOF (Germany); Ramiz Hamid, TÜBİTAK National Metrology Institute (Turkey)

13:20 Laser-induced damage of high power systems: Phenomenology and mechanisms (Invited), Laurent Lamaignère, Commissariat à l’Energie Atomique et aux Energies Alternatives, France

13:50 Photothermal measurements of thin films: a roadmap and the metrological platform at UME (Invited), Hümbet Nasibli, TÜBİTAK National Metrology Institute, Turkey

14:20 Absolute absorption measurements: From bulk to coatings to optical fibers (Invited), Christian Mühlig, Leibniz Institute of Photonic Technology, Germany

14:50 Analysis of optical damage in the final optics assembly induced by transport mirror defects (PLDTFPA2019-2019-000040), Zhaoyang Jiao, Shanghai Institute of Optics and Fine Mechanics, CAS, China

15:05 Removal of particle contaminations on dielectric pulse-compressor gratings by laser cleaning and the effect on laser-damage threshold (PLDTFPA2019-2019-000063), Jingxuan Wang, Research Center of Laser Fusion, CAEP, China

15:20 – 15:40 Coffee Break

PLD Session 9. Optical Glasses and Fibers

Session Chairs: Valdas Sirutkaitis, Vilnius Univ. (Lithuania); Jiang Li, Shanghai Institute of Ceramics, CAS, China; University of Chinese Academy of Sciences, China

15:40 The mechanism of radiation-induced darkening in Yb3+ doped silica fibers (Invited), LiLi Hu, Shanghai Institute of Optics and Fine Mechanics, CAS, China

16:10 Multicomponent glasses and fibers (Invited), Shifeng Zhou, South China Univ. of Technology, China

16:40 An all solid soft glass microstructured fiber for coherent supercontinuum generation in sub-picosecond regime (Invited), Meisong Liao, Shanghai Institute of Optics and Fine Mechanics, CAS, China


17:25 Advanced process for improving laser damage threshold of fused silica optics (PLDTFPA2019-2019-0000126), Xin Ye, Research Center of Laser Fusion, CAEP, China

PLD Session 10. Characterization Techniques and Measurement Protocols (III)

Session Chair: Laurent Lamaignère, Commissariat à l’Energie Atomique et aux Energies Alternatives (France)

15:40 Fabrication and properties of Tb2Al5O12 magneto-optical ceramics for Faraday isolators (PLDTFPA2019-2019-000049), Xiaoying Li, Shanghai Institute of Ceramics, CAS, China

15:55 Design of transmission mirror online damage detection system based on wavefront coding technology (PLDTFPA2019-2019-000130), Fang Wang, Research Center of Laser Fusion, CAEP, China

16:10 Fabrication and laser operation of Yb:Lu2O3 transparent ceramics from co-precipitated nano-powders (PLDTFPA2019-2019-000050), Liu Ziyu, Shanghai Institute of Ceramics, CAS, China

16:25 Structural Defects in Ultra-low Laser Absorption Vitreous Silica (PLDTFPA2019-2019-000062), Yuancheng Sun, China Building Materials Academy, China
Research on the multiple-pulse laser damage performance of UV anti-reflection coatings for applications in aerospace Kesheng, Guo, Yanzhi Wang, Ruiyi Chen, Meiping Zhu, Kui Yi, Hongbo He, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics, China

Polarization dependence of propagation features modeling for optical micro/nano fiber in circularly bent shape Longjiang Zhao, Jin Cheng, 1.Qufu Normal University, China; 2.Beijing Information Science and Technology University, China

Design, Fabrication and Laser Damage Comparisons of Low-Dispersive Mirrors Ruiyi Chen, Yanzhi Wang, Kesheng Guo, Meiping Zhu, Kui Yi, Jianda Shao, 1.Laboratory of Thin Film Optics, Shanghai institute of Optics and Fine Mechanics; 2.Center of Materials Science and Optoelectronics Engineering, UCAS; 3.Key Laboratory of Material for High Power Laser, Shanghai institute of Optics and Fine Mechanics, China

Research on precision space linear rolling guide dynamics Penghui Cheng, Mengyuan Wu, Chuang Li, Xiaozhe Ma, 1.Xi’an Institute of Optics and Precision Mechanic, Chineses Academy of Sciences, China; 2.University of Chinese Academy of Sciences, China

Processing strategy of aspherical mirror with Modified silicon by using Magnetorheological Finishing Polishing Machines based on Robot Arm Longxiang Li, Jianwei Zhang, Chi Song, Xin Zhang, Xiaolin Yin, Donglin Xue, 1.Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, China; 2.University of California, Los Angeles, USA

Effect of acoustic wave field distribution on fused silica surface etched by HF with mega-sonic agitation Zhao Heng, Chengdu Fine Optical Engineering Research Center, China

A Focusing Mechanism Based on Flexible Hinges for Space Telescope Xiaozhe MA, Chuang Li, Penghui CHENG, Bin HU, 1.Xi’an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, China; 2.University of Chinese Academy of Sciences, China

Study on damage of polyimide target irradiated by 10.6um CO2 laser Jiacheng Wu, Anhui University of Chinese Medicine, China; State Key Laboratory of Pulsed Power Laser Technology, National University of Defense Technology, China
Study on damage of CaF$_2$ windows irradiated by 248nm ultraviolet excimer laser
Xi Wang, State Key Laboratory of Pulsed Power Laser Technology, National University of Defense Technology, China

Research on rapid repair methods of the surface damage of fused silica optical components
Yaofei Zhang, National University of Defense Technology, China

Pulsed lasers at 1.2 μm based on Ho$^{3+}$-doped ZBLAN fiber
Xuezong Yang$^{1,*}$, Zhang Lei$^{1}$, Zhu Xiusha$^{2}$, Feng Yan$^{1}$
1. Shanghai Institute of Optics and Fine Mechanics, CAS, China; 2. The University of Arizona, USA

Ablation characteristics of aluminum alloy and stainless steel induced by picosecond laser pulses
Wenfeng Liu$^{1,2}$, Mingying Sun$^{1,2,*}$, Yajing Guo$^{1,2}$, Zhaoyang Jiao$^{1,2}$, Rong Wu$^{1,2}$, Xue Pan$^{1,2}$
1. Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China; 2. National Laboratory on High Power Laser and Physics, University of Chinese Academy of Sciences, China

Study on thermal effect and thermal stress effect of multilayer thin films induced by pulsed laser
Qiankun Cao, Junhong Su, Xi’an Technological University, China

Identification of surface damage of fused silica optics based on neural network
XiaoDong-Zhang, Feng-Shi, Zhi Fan-Lin, College of Intelligent Science, National University of Defense Technology, China

Analysis of stray light reflected from multi-beam laser focusing surface
Anqi Jiang, State Key Laboratory of Modern Optical Instrumentation, Zhejiang University, China

Study on the Influence of Laser Output Parameters on the Damage Threshold of Thin Films
Rongrong Yan, Junhong Su, Lihong Yang, Institute of Photoelectric Engineering, Xi’an Technology University, China

Laser damage and damage performance caused by near-field of final optics assembles for high power laser system
Yajing Guo, Mingying Sun, Zhaoyang Jiao, Chong Liu, Xiuqing Jiang, Baoqiang Zhu, Jianqiang Zhu, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China

Laser Damage on Large Aperture Triple Frequency Crystal Optics in High Power Laser System
Xiuqing Jiang$^{1,*}$, Mingying Sun$^{1}$, Lailin Ji$^{2}$, Yajing Guo$^{1}$, Shunxing Tang$^{1}$, Chong Liu$^{1}$, Dong Liu$^{1}$, Baoqiang Zhu$^{1}$, Jianqiang Zhu$^{1}$
1. Shanghai Institute of Optics and Fine Mechanics, China; 2. Shanghai Institute of Laser Plasma, China
PLDTFPA2019-2019-000041
Thermal deformation evaluation of Al₂O₃ ceramic substrate based on radial basis function Linlin Wang, Shenyang Aerospace University, China

PLDTFPA2019-2019-000051
Radiation Pressure Induced Photoluminescence Enhancement of All-inorganic Perovskite CsPbBr₃ Quantum Dots Zhang Ying¹, Song Zongpeng¹, Wang Meng² 1.Shenzhen University, China; 2.Shenzhen Technology University, China

PLDTFPA2019-2019-000052
High power all-fiber laser with switchable pulsed and continuous operation modes Yinchao Zhang, Xunbao Rui, Pan Guo, He Chen, Siying Chen, Ting Li, Baowei Li, Beijing Institute of Technology, China

PLDTFPA2019-2019-000055
Assessment of high-purity quartz glass by laser induced fluorescence technique Yinchao Zhang, Ting Li, He Chen, Siying Chen, Pan Guo, Xunbao Rui, Baowei Li, Beijing Institute of Technology, China

PLDTFPA2019-2019-000056
Numerical investigation of growth model for laser-induced damage in optics under high power laser irradiation Li Sensen¹, Wu Fan², Liu Qianghu¹, Zhou Guanjun¹, Bi Xiangli¹, An Chaowei¹, Yan Xiusheng¹ 1.Science and Technology on Electro-Optical Information Security Control Laboratory, China; 2.Academy of Opto-Electronics, China Electronics Technology Group Corporation, China

PLDTFPA2019-2019-000057
Study on laser processing characteristics of fused silica glass Xiurong Du, Yuancheng Sun, China Building Materials Academy, China

PLDTFPA2019-2019-000058
A new method for air quality observation based on ultraviolet laser Li Ting, Rui Xunbao, Guo Pan, Zhang Yinchao, Chen He, Li Baowei, Chen Siying, Beijing Institute of Technology, China

PLDTFPA2019-2019-000061
Research on high precision combined processing technology of meter-level optical glass guideway Hanqiang Zhang¹,², Yifan Dai¹,², Ci Song¹,², Guipeng Tie¹,² 1.College of Intelligence Science, National University of Defense Technology, China; 2.Hunan Key Laboratory of Ultra-precision Machining Technology, China

PLDTFPA2019-2019-000064
Picosecond Laser Textured Stainless Steel Superhydrophobic Surface with Reduced Bacterial Adhesion Property Wenwen Liu, Wenzhou University, China

PLDTFPA2019-2019-000067
Role of Antireflective Surface Structures on Laser Induced Damage Threshold of Fused Silica Yuhang Zhao, Yunjie Mo, Ruihao Li, Shaoji Jiang, Sun Yat-Sen University, China

PLDTFPA2019-2019-000068
Observation of diverse passive harmonic mode-locking in an long-cavity all-normal-dispersion fiber laser Meng Cao, Chinhua Wang, Soochow University, China

PLDTFPA2019-2019-000069
The mechanism of solid-state single crystal growth method for planar waveguide laser materials Ge Zhang, Benxue Jiang, SIOM, CAS, China
Study on the variation of thin film optical constants with temperature at high temperature Xiaoyan Wang, Kui Yi, Guohang Hu, Yuanan Zhao, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China

Fast measurement technique for obtaining the low damage threshold defects in a large aperture fused silica glass Wang Shenghao1, Shao Jianda1,2, Li Lingqiao1, Liu Shijie1,2, Sui Zhan1, Wu Zhouling4,2, Chen Jian4,2, Huang Ming4,2 1.Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China; 2.Anhui Province Key Laboratory of Non-Destructive Evaluation, China; 3.Shanghai Institute of Laser Plasma, China Academy of Engineering Physics, China; 4.ZC Optoelectronic Technologies, China

Influences of pulse spatial density on femtosecond laser induced selective etching of fused silica Jia Qi, SIOM, China

Research on autonomous landing of UAV based on vision sequence image wenkai Suo, Army Engineering University Shijiazhuang Campus, China

Experimentation on Ablation of Polymer Plastics by CW Laser for High Voltage Transmission Lines feng gao, State grid shaanxi electric power research institute, China

2.0 μm spectroscopic properties and energy transfer mechanism in Tm3+/Ho3+ codoped germanate glass Dan Wang, Yanyan Guo, Tao Zheng, Jinglong Diao, Jingwen Lv, Changchun University of Science and Technology, China

Weak surface defects detection method for large aperture optical element based on microscopic scattering imaging Jian Zhang, Research Center of Laser Fusion, China Academy of Engineering Physics, China

Lightweight design of rectangular mirror supported in center using topology optimization Huang Tuo1,2, Chu Chang-bo1, Chen Rong-li1 1.Xi’an Institute of Optics and Precision Mechanics of CAS, China 2.University of Chinese Academy of Sciences, China

Local Structural and Dynamic Inhomogeneity of Solid Surface Revealed by Spectral Line Shape of Nonlinear Vibrational Probe Shun-Li Chen1, Wei Gan1, Hong-Fei Wang2 1.Harbin Institute of Technology (Shenzhen), China; 2.Fudan University, China

Preliminary Application Research of Regression Analysis in Camouflage Color Matching Liu Ge, Xu Hao, liu Heng, Army Engineering University, China

Temperature-insensitive frequency generation achieved by compensating thermally-induced phase mismatch Lv Jichao, Liu Xun, He Lei, Army Engineering University, China
Morphology evolution of phosphate glass in Ion Beam Figuring
Gang Zhou, Ye Tian, Feng Shi, Ci Song, Yaoyu Zhong, College of Intelligent Science, National University of Defense Technology, China

Investigation of the high repetition rate picosecond laser induced damage properties of dielectric reflective optical coatings
Zhang Mingxiao, Chengdu Fine Optical Engineering Research Center, China

3D Topography Measurement of Surface Defects on Large-aperture Optics with Transient Interferometry
Kaizao Ni1, Baoming Huang1,2, Shijie Liu1, Jianda Shao1, Zhouling Wu1,4, Jian Chen1,4, Ming Huang1,4. 1. Shanghai Institute of Optics and Fine Mechanics, China; 2. Shanghai University, China; 3. ZC Optoelectronic Technologies, Ltd., China; 4. Anhui Province Key Laboratory of Non-Destructive Evaluation, China

Ultrafast third-order nonlinear optical response of enzothiazole derivative doped Polymethyl methacrylate C18H15N3S
Jie Zong, Tianjin Jinhang Technical Physics Institute, China

Design and fabrication all-dielectric broadband reflection phase shifting mirror at near-infrared wavelengths for high intensity lasers
Liang Lv, Chengdu Fine Optical Engineering Research Center, China

Generation of high quality OAM beams by vortex volume gratings
Jingyin Zhao1,2,3, Yunxia Jin1,3*, He Dongbing1,3, Kong Fanyu1,7, Peng Chen1,2,3. 1. Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, China; 2. University of Chinese Academy of Sciences, China; 3. Key Laboratory of Materials for High Power Laser, Chinese Academy of Sciences, China

Laser damage characteristics of the YAG ceramics
Xiaofeng Liu, Zhao Yuanan, Li Dawei, Shao Jianda, Guohang Hu, Shanghai Institute of Optics and Fine Mechanics, China

Research on the interaction of 46.9nm laser with large bandgap dielectrics
Cui Huaiyu1,2, Zhao Yongpeng1, Muhammad Usman Khan1. 1. National Key Laboratory of Science and Technology on Tunable Laser, Harbin Institute of Technology, China; 2. Research Center for Space Optics Engineering, Harbin Institute of Technology, China

Study on CO2 laser smoothing of the grinding surface on fused silica
Zhigang Yuan, Research Center of Laser Fusion, China

Mitigation of laser induced damage on dielectric mirrors in a robust way
Li Zhou1, Youen Jiang1, Simin Zhang1,2, Hui Wei1, Wei Fan1, Xuechun Li1. 1. Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China; 2. University of Chinese Academy of Sciences, China

Equivalent explosion simulation model for studying the laser-induced damage process of KDP crystal
Sheng Fei Wang, Xiang Yang Lei, Jian Wang, Zhang Jian Feng, Xu Qiao, Research Center of Laser Fusion, China Academy of Engineering Physics, China
Light modulation of radial crack and parabolic crack with contaminant in fused silica Zhi Chen\textsuperscript{1,2}, Huapan Xiao\textsuperscript{1,3}, Hairong Wang\textsuperscript{1,2}, Yu Na\textsuperscript{1,2}, Rongguang Liang\textsuperscript{3} 1.State Key Laboratory for Manufacturing Systems Engineering, Xi’an Jiaotong University, China; 2.School of Mechanical Engineering, Xi’an Jiaotong University, China; 3.College of Optical Sciences, University of Arizona, Tucson, Arizona, USA

Removal of Defect Bound Excitons in Aged Monolayer WS\textsubscript{2} by Laser Processing Yuxiang Tang, Yizhen Sui, Tian Jiang, National University of Defense Technology, China

Simulation of heat distribution and thermal damage patterns of pulse laser for uterus using finite element analysis Yongping Lin\textsuperscript{1}, Yehui Chen\textsuperscript{2} 1.Xiamen University of Technology, China; 2.Anhui Xinhua University, China

Optics subsurface defects nondestructively detected by fluorescence image technique Hongjie Liu, Research Center of Laser Fusion, China Academy of Engineering Physics, China

Low weight KW-class direct diode laser Xu Dan, BWT, China

Designing of Converging Stray Light Focal Spot Absorber in High Power Laser System Tian-ran Zheng, Wang Fang, De-en Wang, Xi-bo Sun, Hong-jie Liu, Liang-ming Chen, Dong-xia Hu, Laser Fusion Research Center, China Academy of Engineering Physics, China

The time-resolved investigation of nanosecond laser-induced damage in fused silica Zhen Cao, Hongbo He, Guohang Hu, Yuanan Zhao, Xiangyu Zhu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics, China

Analysis of Morphology and Magnetic Properties of Ultrashort Pulse Laser Scribing Oriented Silicon Steel Zongwang Chen, Wenzhou university, China

Heat accumulation during CO\textsubscript{2} laser figuring of fused silica Chaoyang Wei, Shanghai Institute of Optics and Fine Mechanics, CAS, China

Research Status and Analysis of Fifth-harmonic-generation for \textasciitilde1\textmu m Yuanyuan Fan, Institute of microelectronics, CAS, China; 2.The State Key Laboratory of Applied Optics, China

High speed detection of defects at 100-nanometer scale for large aperture ultraviolet optics Lin Zhang, Research Center of Laser Fusion, CAEP, China

The study on damage threshold of CCD’s black and white screen Wang Yanbin, Chen Qianrong, Zhou Xuanfeng, Li Hua, Ren Guangsen and Zhu Rongzhen, Luoyang Electronic Equipment Test Center of China, China
Thermodynamic analysis of laser damage in HR coatings induced by nano-defects

Cheng Li\textsuperscript{1,2,3}, Yuan’an Zhao\textsuperscript{1,2,3,5}, Yun Cui\textsuperscript{1,3}, Xiaocong Peng\textsuperscript{1,2,3}, Chong Shan\textsuperscript{1,4}, Meiping Zhu\textsuperscript{1,3}, Jianguo Wang\textsuperscript{1,3}, Jianda Shao\textsuperscript{1,3,6}

1. Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, Shanghai 201800, China; 2. Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing 100049, China; 3. Key Laboratory of Materials for High Power Laser, Chinese Academy of Sciences, Shanghai 201800, China; 4. Changchun University of Science and Technology; Changchun 130022, China; 5. Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences
Topic Meeting 2: The 10th International Conference on Thin Film Physics and Applications (TFPA 2019)

Monday 20 May  Location: Regency Ballroom 2, 3F

TFPA Session 1. ................................................................. Monday 13:40 to 15:40
Thin Film Materials (I)

Session Chairs: Sam Zhang, Southwest Univ. (China), Aimin Chang, Xinjiang Technical Institute of Physics and Chemistry, CAS (China)

13:40 Interfacial solar vapor generations: materials, structures and applications (Invited), Jia Zhu, Nanjing Univ., China. ................................................................. P99
14:20 Nonlinear optical studies of 2D nanostructures in organic suspensions and polymer composites for high-power laser applications (Invited), Ivan Kislyakov, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ................................................................. P100
14:50 Influence of interlayer on surface scattering of non-modified silicon carbide (PLDTFPA2019-2019-0000077), Yunli Bai, Beijing Institute of Space Mechanics & Electricity, China. ................................................................. P101
15:25 Surface affected optical nonlinearities and carrier recombination in 2D non-layered PtS (PLDTFPA2019-2019-0000212), Jiawei Huang, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ................................................................. P101

15:40 – 16:00 Coffee Break

TFPA Session 2. ................................................................. Monday 16:00 to 17:30
Technology of Thin Films (I)

Session Chairs: Qing (Chin) Peng, The Univ. of Alabama (United States), Rong Chen, Huazhong Univ. of Science and Technology (China)

16:00 Precise and Smooth Optical Surfaces by IBF (Invited), Steffen Gurtler, Buhler Leybold Optics, Germany. ................................................................. P103
16:30 Some Kinds of Optical Thin Films by Ion Beam Sputtering Deposition and Band-pass Filters in Near Infrared Wavelength of 1.0~2.5 μm (Invited), Dingquan Liu, Shanghai Institute of Technical Physics, CAS, China. ................................................................. P104
17:00 Advances in IBS processes and achievements in broad-band optical monitoring (PLDTFPA2019-2019-0000134), Kai Starke, Cutting Edge Coatings GmbH, Germany. ................................................................. P105
17:15 Thickness dependence of Cr-doped VO2 thin films deposition by reactive pulsed magnetron sputtering (PLDTFPA2019-2019-0000089), Huan Guan, College of Physics and Optoelectronic Engineering, China. ................................................................. P105

18:30 – 20:00 Banquet
Topic Meeting 2: The 10th International Conference on Thin Film Physics and Applications (TFPA 2019)

Tuesday 21 May  Location: Regency Ballroom 2, 3F

TFPA Session 3. ................................................................. Tuesday 08:20 to 10:05

Physics of Thin Films (I)

Session Chair: Vladimir Pervak, Ludwig Maximilians Univ. (Germany)

08:20 Nanogap engineering for enhanced transmission of wire grid polarizers in the infrared wavelength (Invited), Chang Kwon Hwangbo, Inha Univ., South Korea. ................................................................. P106

08:50 Study of the high efficiency of photon-to-heat conversion in the wavelength region of 250-1200 nm based on a thermoelectric Bi2Te3 film structure (Invited), Liangyao Chen, Fudan Univ., China. ................. P107

09:20 Defects induced the tunability of nonlinear optical property in transparent conductive thin films (Invited), Ruijin Hong, University of Shanghai for Science and Technology, China. ................................. P108

09:50 Optical loss of GaAs/AlGaAs crystalline coatings (PLDTFPA2019-2019-0000029), Jinlong Zhang Tongji University, China. ................................................................. P109

10:05 – 11:30 Poster Session
11:30 – 13:20 Lunch Break

TFPA Session 4. ................................................................. Tuesday 13:20 to 15:20

Technology of Thin Films (II)

Session Chairs: Min Gu, Univ. of Shanghai for Science and Technology (China), Maria Luisa Grilli, ENEA Casaccia Research Centre (Italy)

13:20 What happens when vapors meet halide perovskites? (Invited), Qing (Chin) Peng, The Univ. of Alabama, United States. ................................................................. P110

13:50 The development of atomic layer deposition stabilization approaches for quantum dots flexible displays (Invited), Rong Chen, Huazhong Univ. of Science and Technology, China. ................................................................. P111

14:20 Influence of process parameters on properties of SiO2, HfO2, Al2O3 monolayers by plasma-enhanced atomic layer deposition (PLDTFPA2019-2019-0000006), Chaoyi Yin, Shanghai Institute of Optics and Fine Mechanics, CAS, China, University of Chinese Academy of Sciences, China. ................................................................. P112

14:35 Preparation of silica thin film by hot pressing process for passive radiative cooling (PLDTFPA2019-2019-0000054), Dengwu Liu, Wuhan University of Technology, China. ................................................................. P112

14:50 Preparation of Nb2O5 thin films with high laser damage resistance and exploration of laser damage mechanism (PLDTFPA2019-2019-0000090), Wenzhe Cai, China University of Mining and Technology, China. ................................................................. P113

15:05 Enhanced nonlinear optical performances in monolayer MoS2 and WS2 by defect repairing (PLDTFPA2019-2019-0000118), Xuran Dai, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ................................................................. P113

15:20 – 15:40 Coffee Break
TFPA Session 5. ................................................................. Tuesday 15:40 to 17:55

Thin Film Materials (II)

Session Chairs: Ivan Kislyakov, Shanghai Institute of Optics and Fine Mechanics, CAS (China), Xiujian Zhao, Wuhan Univ. of Technology (China)

15:40 Characteristics of radio frequency sputtered In-free transparent conductors (Invited), Maria Luisa Grilli, ENEA Casaccia Research Centre, Italy. .......................................................... P114

16:10 The preparation of Mn-Co-Ni-O thin films for NTC thermistor application (Invited), Aimin Chang, Xinjiang Technical Institute of Physics and Chemistry, CAS, China. ........................................... P115

16:40 Optical properties of fishnet metamaterial embedded in dielectric medium or coatings (PLDTFPA2019-2019-0000142), Guohang Hu, Shanghai Institute of Optics and Fine Mechanics, CAS, China. .......................... P116

16:55 Comparison of room temperature and in-situ high temperature laser induced damage of sol-gel Ta₂O₅ films with different dual additives (PLDTFPA2019-2019-0000066), Pu Zhang, China University of Mining and Technology, China. .......................................................... P116

17:10 Investigation on tuning of WS₂/SiC band gap with an external electric field (PLDTFPA2019-2019-0000085), Yuke Ma, Shan Dong University, China. .......................................................... P117

17:25 Enhance anti-water ability of high transmittance film in mid-infrared band (PLDTFPA2019-2019-0000117), Gong Zhang, Changchun University of Science and Technology, China. ................................. P117

17:40 Performance of a spectral beam combining grating with YAG substrate (PLDTFPA2019-2019-0000001), Jiao Xu, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ........................................... P118

Topic Meeting 2: The 10th International Conference on Thin Film Physics and Applications (TFPA 2019)

Wednesday 22 May  Location: Regency Ballroom 2, 3F

TFPA Session 6. ................................................. Wednesday 08:20 to 10:20

Application of Thin Films (I)

Session Chairs: Shigeng Song, Univ. of the West of Scotland (United Kingdom), Liangyao Chen, Fudan Univ. (China)

08:20 Prospects for further progress in challenging thin film applications (Invited), Alexander V. Tikhonravov, M.V. Lomonosov Moscow State Univ., Russia. ......................................................... P119
08:50 Surface Protection Technology for Aerospace Materials (Invited), Pengfei Ju, Shanghai Aerospace Equipment Manufacturer, China. ................................................................. P120
09:20 Thin Films based Fluorescent solar concentrator (Invited), Xiujian Zhao, Wuhan Univ. of Technology, China. ..................................................................................... P121
09:50 Efficient broadband light absorption enhancement in InP/ZnO core-shell nanocone arrays for photovoltaic application (PLDTFPA2019-2019-0000083), Zongyi Zhang, Tongji University, China. .......... P122
10:05 An effective method of fabricating high performance material for above ambient radiative cooling (PLDTFPA2019-2019-0000098), Mengyu Gao, Fudan University, China, Qinghai University, China. .......... P122

10:20 – 10:40 Coffee Break

TFPA Session 7. ................................................. Wednesday 10:40 to 12:10

Physics of Thin Films (II)

Session Chair: Chang Kwon Hwangbo, Inha Univ. (South Korea)

10:40 Efficient and stable Sb$_2$Se$_3$ thin film solar cells (Invited), Ping Fan, Shenzhen Univ., China. ............ P123
11:10 Energy flow difference structure design based on micro hemisphere structure (PLDTFPA2019-2019-0000060), Kailiang Shi, WuHan University of Technology, China. ......................................................... P124
11:25 Influence of annealing on the structure, optical properties and residual stress of Ta$_2$O$_5$/SiO$_2$ multilayer reflective coatings (PLDTFPA2019-2019-0000104), Baojian Liu, Shanghai Institute of Technical Physics, CAS, China. ................................................................. P124
11:55 Positive and negative properties of GeSbTe photoresists (PLDTFPA2019-2019-0000149), Guodong Chen, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ......................................................... P125

11:55 – 13:20 Lunch Break
TFPA Session 8. .................................................................Wednesday 13:20 to 15:20

Application of Thin Films (II)

Session Chairs: Alexander V. Tikhonravov, M.V. Lomonosov Moscow State Univ. (Russia), Dingquan Liu, Shanghai Institute of Technical Physics, CAS (China)

13:20 Linear variable bandpass filter and its applications (Invited), Shigeng Song, Univ. of the West of Scotland, United Kingdom. ................................................................. P126
13:50 Dispersive mirror – a key component for femtosecond laser (Invited), Vladimir Pervak, Ludwig Maximilians University, Germany. ................................................................. P127
14:20 Design of dual-band-pass optical filter with one wide pass band and small pass band distance (PLDTFPA2019-2019-0000159), Yuan Cai, Shanghai Institute of Technical Physics, CAS, China. ....................... P128
14:35 Design and fabrication of superior depolarized beam splitter applied in laser beam combining technology (PLDTFPA2019-2019-0000030), Xinshang Niu, Tongji University, China. ................................................................. P128
14:50 Wide-incident angle and low polarization aberration edge filter (PLDTFPA2019-2019-0000115), Shikun He, Beijing Institute of Space Mechanics & Electricity, China. ................................................................. P129
15:05 Subwavelength periodic nanostructures fabricated on metal, dielectric and metal-dielectric coatings by femtosecond laser (PLDTFPA2019-2019-0000144), Kaixin Zhang, Shanghai Institute of Optics and Fine Mechanics, CAS, China. ................................................................. P129

15:20 – 15:40 Coffee Break
**Title**: The 10th International Conference on Thin Film Physics and Applications (TFPA 2019)

**Date and Time**: 10:05 to 11:30, Tuesday 21 May
**Location**: Terrace, 3F

**Poster Session**

- **Effect of Temperature on Optical Properties of CeO$_x$ Film Being Irradiated By Co$_{60}$ Prepared by RF Magnetron Sputtering**
  Wang Hui, Fu Bo, Xiang Zaikui, China Building Material Academy, China

- **Mechanical properties of 1064nm high-reflective coatings with co-evaporated interfaces**
  Nuo Xu$^{1,2,3}$, Meiping Zhu$^2$, Tingting Zeng$^{1,2,3}$, Chaoyi Yin$^{1,2,3}$, Yuanan Zhao$^1$, Kui Yi$^1$, Jianda Shao$^2$
  1. Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, CAS, China; 2. Key Laboratory of Materials for High Power Laser, Shanghai Institute of Optics and Fine Mechanics, CAS, China; 3. Center of Materials Science and Optoelectronics Engineering, UCAS, China

- **Effect of MgF$_2$ deposition temperature on Al mirrors in vacuum ultraviolet**
  Fengli Wang$^1$, Shuangying Li$^1$, Zhuangzhuang Zhang$^1$, Zhanshan Wang$^1$, Hongjun Zhou$^1$, Tonglin Huo$^2$
  1. School of Physics Science and Engineering, Tongji University, China; 2. NSRL, University of Science and Technology of China, China

- **Experimental observation and numerical analysis for dynamical output in free-running multi-longitudinal mode erbium doped fiber ring laser**
  Tang Kai, Xiao Yanping, Academy of Military Science, China

- **Improvement on Fluorescent Properties of Photonic Crystals Filled by Quantum Dots Based on Multi-layer Films**
  Qingfei Meng, Lu Huang, Weimin Shi, Yunbin Zhu, Linjun Wang, Shanghai University, China

- **Preparation and physical properties of germanium thin films**
  Meng Guo$^{1,2}$, Hongbo He$^3$, Kui Yi$^1$, Shuying Shao$^1$, Jianda Shao$^1$
  1. Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, China; 2. University of Chinese Academy of Sciences, China

- **Study on Preparation Process and Shielding effectiveness of Graphene Films**
  Jianle Zhao, Junhong Su, Kai Shi, Xi’an Technological University, China

- **All-optical control of light functionality in WS$_2$-coated microfiber knot resonator with high sensitivity**
  Xiaoli Wang, Heyuan Guan, Guowei Chen, Zijian Zhang, Hanguang Li, Mengjiang Jiang, Yuwei Lang, Wenguo Zhu, Jianhui Yu, Huihui Lu, Wentao Qiu, Jiangli Dong, Yunhan Luo, JUN Zhang, Zhe Chen, Jinan University, China

- **Research on the Time and Mechanism of Laser-Induced Air Plasmas Ignition**
  Wang Guixia, Su Junhong, Xi’an Technological University, China
Optical property of perovskite/c-silicon tandem solar cell with Ag grating back reflectors Yawei Kuang, Changshu Institute of Technology, China

Comparison of Mechanical Properties Evolution of Polyimide Films in Space Radiation Environment Xiao Li1, Shijie Liu2, Zicai Shen3 1.School of Science, Beijing Technology and Business University, China; 2.Shanghai Institute of Optical Precision Machinery, Chinese Academy of Sciences, China; 3.Beijing Institute of Spacecraft Environment Engineering, China

Broadband chirped volume Bragg grating for one-hundred-femtosecond pulse compression Huifang Dai1,2,3, Yunxia Jin1,3, Peng Chen1,2,3, Xu Jiao1,2,3, Yibin Zhang1,3, Kong Fanyu1,3, He Dongbing1,4 1.Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, China; 2.Center of Materials Science and Optoelectronics Engineering, UCAS, China; 3.Key Laboratory of Materials for High Power Laser, Chinese Academy of Sciences, China; 4.High Power Laser Unit Technology Center, Shanghai Institute of Optics and Fine Mechanics, China

Broadband Polarization Beam Splitter Based on Subwavelength Grating in Terahertz Zhang yelan, Cheng yuyang, Zhang kun, Li caiyu, Kong weijin, Qingdao University, China

Annealing effects on the optical and structural properties of Y2O3 thin films deposited by thermal evaporation technique Shida Li1,2, Huasong Liu2, Yungang Jiang1,2, Meiping Zhu1,2, Peng Shang1,2, Lishuan Wang1,2, Yiqin Ji1,2 1.Tianjin Key Laboratory of Optical Thin Film, China; 2.Joint Laboratory of optoelectronic materials and intelligent surface structures, China; 3.Shanghai Institute of Optics and Fine Mechanics, China

Stress evolution with volume ratio of Ta2O5 in Ta2O5-SiO2 monolayer film Pengfei Kong1,2, Yunti Pu1, Ping Ma1, Jiliang Zhu2 1.Fine Optical Engineering Research Center, China; 2.College of Materials Science and Engineering, Sichuan University, China

Effects of different oxygen flow rates on refractive index and absorption characteristics of Ta2O5 film Chenghui Jiang, Lishuan Wang, Tianjin Key Laboratory of Optical Thin Film, Tianjin Jinhang Technical Physics Institute, China

Effect of heat treatment on properties of TiO2 thin films deposited by ion-beam sputtering Yugang Jiang, Tianjin Jinhang Technical Physics Institute, China

Study on the full spectral dispersion mode of Al2O3 thin films with different oxygen flow rates deposited by ion-beam sputtering Jiahuan He, Chen Dan, Tianjin Jinhang Technical Physics Institute, China

VO2 films with low transition temperature prepared by reactive pulsed magnetron sputtering with Ni-Cr co-doping Qicong He, Dongping Zhang, Ying Huang, Yu Yang, huan Guan, Jingcheng Jin, Ping Fan, College of Physics and Optoelectronic Engineering, China
Large-range wavelength tunable filter based on dielectric grating  
Caiyu Li, Kun Zhang, Weijin Kong, Qingdao University, China

Two-Photon Absorption towards Pulse Modulation in Mechanically Exfoliated and CVD Monolayer Cased MoS$_2$ Structures  
Yafeng Xie$^{1,2}$, Saifeng Zhang$^1$, Xiaoyan Zhang$^1$, Ningning Dong$^1$, Ivan Kislyakov$^1$, Jun Wang$^1$  
$^1$SIOM, CAS, China; $^2$University of Chinese Academy of Sciences, China

Defining of the point evaporation source and the surface evaporation source in the thermal evaporation vacuum coating  
Xiao Yang$^{1,2}$, Lishuan Wang$^{1,2}$, Dongbai Xue$^2$, Yiqin Ji$^2$, Huasong Liu$^2$  
$^1$Harbin Institute of Technology, China; $^2$Tianjin Jinhang Technical Physics Institute, China

Wear-Resistant AR Films for Chalcogenide Glasses  
Jian Leng, Yiqin Ji, Huasong Liu, Luchen Yuan, Kewen Zhuang, Dandan Liu, Tianjin Jinhang Institute of Technical Physics, China

Oblique incidence reflectance of resonators based on suspended two-dimensional membranes  
Wenjing Mao, Chen Yang, Heng Lu, Fengnan Chen, Jun Lu, Joel Moser, ying Yan, Lin Wan, Soochow University, China

Transparent Oxide Based Thin Film Transistors for Flexible Sensors  
Yuanjie Li, Wenci Sun, Jie Wang, Xi’an Jiaotong University, China

Design of linear polarizer in 3-13μm broad infrared region with multilayer nanostructures  
Jie Xia, Zhihao Yuan, Chinhua Wang, Soochow University, China

Efficient method for determination of laser conditions adopted in laser-induced micro-lithology based on laser polymerization size analysis  
Yuchen Shao, Shanghai Institute of Optics and Fine Mechanic, Chinese Academy of Science, China

The thickness and the degree of order of the ultrafast laser deposited carbon film  
Han Wu, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China

Green vegetables derived simultaneously carbon dots as sensitizer and carbon particles as counter electrode for dye-sensitized solar cells  
Ping Huang$^{1,2}$, Shunjian Xu$^1$, Meng Zhang$^1$, Wei Zhong$^2$, Zonghu Xiao$^2$, Yongping Luo$^2$  
$^1$Nanchang University, China; $^2$Xinyu University, China

Design and Fabrication of Antireflective Microstructure Surfaces on Lithium Triborate  
Yong Sun, Shanghai Institute of Optics and Fine Mechanics, China
Effects of annealing parameters on the thermochromic properties of VO₂ films prepared by magnetron sputtering  
Maodong Zhu¹, Hu Wang¹, Hongji Qi¹, Dongping Zhang². ¹Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China; ²Shenzhen University, China

Optimization of morphology and electrochemical characteristics of nickel film by sputtering pressure  
Yongping Luo, Xinyu University, China

Evolution of absorbed water molecules in e-beam HfO₂, SiO₂ coatings  
Tingting Zeng¹,²,³, Meiping Zhu¹,²,⁴*, Chaoyi Yin⁵,²,⁴, Nuo Xu¹,²,⁴, Yanzhi Wang¹,², Yuanan Zhao¹,², Kui Yi¹,², Jianda Shao¹,²,⁴ ¹Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, China; ²Key Laboratory of Materials for High Power Laser, Shanghai Institute of Optics and Fine Mechanics, China; ³Center of Materials Science and Optoelectronics Engineering, UCAS, China; ⁴Center of Materials Science and Optoelectronics Engineering, UCAS, Beijing, China; ⁵Laboratory of Thin Film Optics, Shanghai Institute of Optics and Fine Mechanics, China; ⁶CAS Center for Excellence in Ultra-intense Laser Science, China

Measuring Residual Reflectivity Uniformity of Large Aperture Optics by Laser Photometry  
Gao Bo, Laser Fusion Research Center, China Academy of Engineering Physics, China

Thermal Matching Design and Preparation of 2.66 μm~2.89 μm Infrared Band-pass Filter Based on Silicon  
Xiaoxi Tian¹,²,², Shengming Xiong¹, Kepeng Zhang¹,², Wanjun Ai¹,², Yinhua Zhang¹,² ¹Institute of Optics and Electronics, Chinese Academy of Sciences, China; ²University of Chinese Academy of Science, China

Properties of Nb₂O₅ thin films fabricated by dual ion assisted deposition  
Wanjun Ai¹,²*, Shengming Xiong¹, Xiaoxi Tian¹,², Yinhua Zhang¹,² ¹Institute of Optics and Electronics, Chinese Academy of Sciences, China; ²University of Chinese Academy of Science, China

Influence of interfacial correlation properties on light scattering in optical thin films  
Kepeng Zhang, Xiaoxi Tian, Wei Huang, Yinhua Zhang, Institute of Optics and Electronics, Chinese Academy of Science, China

Continuum model for overhanging morphologies and the application in the GALD growth  
Yunjie Mo, He Yingyou, Shaoji Jiang, Sun Yat-Sen University, China

Structure, Properties and Stability Studies of CsPb₁Br₃ₓ in All-inorganic Perovskite Solar Cells  
Wei Zhong, Jiangxi Key Laboratory of Advanced Materials and Applications for Solar Cells, China

Wave propagation control in three-layered slab waveguide with periodic structures  
Aysha Bibi, Harbin Engineering University, China
Correlation between the structure and laser damage properties of ion assisted HfO₂ thin films
Feng Pan, Fine Optical Engineering Research Centre, China

Influence and correction of infrared polarizer on FTIR polarization spectroscopy measurements
Xiaofeng Ma, Shanghai Institute of Physical Technology, Chinese Academy of Sciences, China

Electrical property of OSR second surface mirror in space radiation environments
Zicai Shen¹, Xiaofeng Ma²
1. Beijing Institute of Spacecraft Environment Engineering, China; 2. Shanghai Institute of Technical Physics, CAS, China

Photoelectric Properties of Transparent Conductive Metal Mesh Films Based on Crack Template and Its Application in Perovskite Solar Cells
Zonghu Xiao, Jiangxi Key Laboratory of Advanced Materials and Applications for Solar Cells, Xinyu University, China

Study of Reflection Phase Shift’s Effect on the optical performance of a tunable Fabry–Perot Filter for hyperspectral imaging application
Rui Cong, Shanghai Institute of Technical Physics, CAS, China