

Pacific-rim Laser Damage '16

PLD'16

Wednesday, May 18

9:00-12:10 OPIC Plenary Session

Room 501+502

----- Lunch Break (12:10-13:30) -----

13:30-15:15 LIC+PLD+SLPC Joint Session 1 (PLD1) Room 301

Chair: K. Washio, Paradigm Laser Research, Japan

Opening T. Taira, Conference Chair of LIC' 14

Remarks of Institute for Molecular Science, Japan

Joint Session T. Jitsuno, Conference Chair of PLD' 14

13:30 Institute of Laser Engineering, Osaka

Univ., Japan

Y. Okamoto, Conference Chair of SLPC2016

Okayama Univ., Japan

Chair: K. Washio, Paradigm Laser Research, Japan

SLPC5j-1 (Invited) **Optimized design and performance**

13:45 **of laser ablation system for paint and coating**

removal for manufacturing and maintenance

of vehicles and airplanes

Y. Kwon

Powerlaser Photonics, UK

PLD1j-1 (Invited) **High performance interference**

14:15 **coatings for near infrared high energy lasers**

C. Menoni, D. Schiltz, D. Patel, B. Reagan

Colorado State Univ., USA

PLD1j-2 (Invited) **Modeling of laser induced damage**

14:45 **and usage at National Ignition Facility**

Z. M. Liao, M. Nostrand, J. Bude, T. Suratwala

Lawrence Livermore National Laboratory, USA

----- Break (15:15-15:45) -----

15:45-17:20 LIC+PLD+SLPC Joint Session 2 (PLD2) Room 301

Chair: TBD

SLPC6j-1 **Fiber delivery of ultrafast lasers**

15:45

E. Mottay

Amplitude Systemes, France

LICj-1 **The latest technology demand of the internal**

16:15 **processing type laser dicing technology**

N. Uchiyama

Hamamatsu Photonics K.K., Japan

LICj-2 **Micro-laser based material processing**

16:45

(tentative)

D. Barbier

Team Photonics Co., France

17:15 **Closing Remarks**

K. Washio, Paradigm Laser Research, Japan

18:00-20:00 OPIC Reception

Room 501+502

Thursday, May 19

9:00-10:30 PLD3: Plenary and coatings Room 413

Chair: T. Jitsuno, Osaka Univ., Japan

PLD3-1 (Plenary) **Coatings for high power laser**

9:00 **system in China**

J. Shao

Shanghai Inst. of Opt. Fine Mech., China

PLD3-2 **Laser-induced damage performance of**

9:30 **high-reflectance coatings with co-evaporated**

interfaces at 1064nm

H. Xing, J. Sun, Y. Chai, M. Zhu, J. Shao

PLD3-3

9:45

Shanghai Inst. of Opt. Fine Mech., China

Non-destructive investigations to highlight first stages of fatigue effect under multiple laser irradiations

J.Y. Natoli, F. R. Wagne, A. Beaudier, L.

Gallais, K. Lliopoulos

Institut Fresnel, France

PLD3-4

10:00

Substrate material dependence of the thin film stress and its control

H. Omatsu, M. Akimoto, T. Murakami, S.

Tujimoto, T. Yasasiro, R. Nakamura^a, T.

Kamimura

Osaka Institute of Technology, Japan

^aOsaka University, Japan

PLD3-5

10:15

Ion-assisted coating for large-scale Bimorph deformable mirror

T. Mikami, T. Okamoto, T. Jitsuno^a, S.

Motokoshi^b, V. Samarkin^c, A. Kudryashov^c, J.

Kawanaka^a, N. Miyanaga^a

Okamoto Optics Works, Inc., ^aOsaka Univ.

Japan, ^bJapan, Inst. for Laser Tech., Japan,

^cActive Optics NightN Ltd, Russia

----- Break (10:30-10:45) -----

10:45-12:00 PLD4: Nonlinear materials Room 413

Chair: J. Shao, SIOM, China

PLD4-1

10:45

(Invited) **Dielectric coatings as frequency converters - the Frequency Tripling Mirror (FTM)**

W. Rudolph, C. Rodriguez, L. A. Emmert, D.

Ristau^a, S. Günster^a, F. B. A. Aghbolagh, A. K.

Oskouei

Univ of New Mexico, USA, ^aLaser Zentrum

Hannover, Germany

PLD4-2

11:15

Multilayer technology for terahertz pulse generation

Y. Ochi, K. Nagashima, M. Tsubouchi,

F. Yoshida, M. Maruyama

Japan Atomic Energy Agency, Japan

PLD4-3

11:30

Real-time analysis and mitigation of laser damage initiators on the surface of DKDP crystals

G. Hu, Y. Zhao, Y. Wang, D. Li, X. Liu, Z. Cao

Shanghai Inst. of Opt. Fine Mech., China

PLD4-4

11:45

Laser conditioning mechanism in improving damage performance of KDP

F. Wang

China Academy of Engineering Physics, China

----- Lunch Break (12:00-13:00) -----

13:00-15:15 PLD5: Short pulse phenomena Room 413

Chair: TBD

PLD5-1

13:00

(Invited) **Femtosecond laser-induced damage: lessons learned from time-resolved measurements**

A. Melninkaitis

Univ. Vilnius, Lithuania

PLD5-2

13:30

(Invited) **Ultrafast carrier dynamics related to fs lasers-induced damage in optical coatings**

J. Du, Z. Li, B. Xue^a, T. Kobayashi^a, F. Kong,

Y. Jin, Y. Zhao, Y. Leng, J. Shao

- Shanghai Inst. of Opt. Fine Mech., China
^aThe Univ. of Electro-Communications, Japan
PLD5-3 **In situ imaging and control of layer-by-layer femtosecond laser thinning of graphene**
14:00
 Y. Lu, D. Li, Y. Zhou, X. Huang, L. Jiang^a,
 J. F. Silvain^b
^aBeijing Institute of Technology, China,
^bInstitut de Chimie de la Matière Condensée de Bordeaux, France
- LPD5-4** **Confined Ablation on the SiO₂/Si Interface with Embedded Nanoparticles**
14:15
 Z. U. Rehman, L. T. Na, C. L. Tan^a,
 K. A. Janulewicz
 Gwangju Inst. of Science and Tech., Korea,
^aNorthwestern Univ., USA
- PLD5-5** **Interferometric analysis of optical breakdown dynamics in bulks of transparent dielectrics induced by sub-nanosecond laser pulse**
14:30
 V. H. Nguyen, N. T. Le, Z. U. Rehman, K. A. Janulewicz
 Gwangju Inst. of Science and Tech., Korea
- PLD5-6** **Plasma dynamics and phase transitions in optical breakdown of transparent dielectrics**
14:45
 K. A. Janulewicz, Z. U. Rehman, N. T. Le,
 V. H. Nguyen, K. A. Tran
 Gwangju Inst. of Science and Tech., Korea
- PLD5-7** **Spatial-temporal distortions and calibration of ultrashort pulses in complex optical systems**
15:00
 J. Liu, Z. Zheng, L. Zhu, S. Chang, A. Chen,
 S. Liu, F. Yuan, H. Zhang
 Zhejiang Univ., China

----- Break (15:15-15:45) -----

15:45-17:00 **PLD6: High power resistant coatings** Room 413
 Chair: S. Motokoshi, Institute for Laser Technology, Japan

- PLD6-1** **(Invited) Developments of high damage threshold meter-scale optical components for multi-PW lasers**
15:45
 A. Hervy, L. Gallais^a, G. Chériaux,
 D. Mouricaud, S. Djidel, A. Fréneaux,
 J. P. Chambaret^b, C. Leblanc^b, M. Somekh^b,
 F. Mathieu^b, N. Bonod^a, A. Cotel^c,
 F. Desserouer^c, O. Utéza^d, R. Clady^d, M. Sentis^d
 REOSC, France, ^aInstitut Fresnel, France,
^bLaboratoire d'Utilisation des Lasers Intenses, Ecole Polytechnique, France, ^cHORIBA Jobin Yvon S.A.S., France, ^dAix Marseille Université, CNRS, LP3 UMR 7341, France
- PLD6-2** **Study on the laser induced damage of low dispersion mirrors**
16:15
 J. Zhang, B. Ma, X. Cheng, Z. Wang
 Tongji Univ., China
- PLD6-3** **The Investigation of laser induced damage threshold of multilayer mirrors under the simultaneous irradiation of two wavelengths**
16:30
 M. Sugiura, K. Tamura, M. Kobiyama^a,
 S. Motokoshi^b, T. Jitsuno^c
 Tokai Optical Co., LTD., ^aTecwave Co., Ltd, ^bInst. Laser Tech., ^cOsaka Univ., Japan
- PLD-6-4** **The damage characteristics of the high -reflection coatings irradiated from the**
16:45

active gain medium
 X. Liu
 Shanghai Inst. of Opt. Fine Mech., China

Friday, May 20

- 9:00-10:15** **PLD7: Poster session** Exhibition Hall A
- PLDp7-1** **Improvement of resist stripping efficiency without causing laser-induced surface damage**
 K. Nuno, Y. Kuroki, S. Takagi^a, T. Yamashiro, S. Tuzimoto, R. Nakamura^b, T. Nishiyama^a, T. Kamimura, H. Horibe^a
 Osaka Institute of Technology, Japan, ^aOsaka City Univ., Japan, ^bOsaka Univ., Japan
- PLDp7-2** **Laser beam holographic patterning for thin film epitaxial growth monitoring with rheed for using as mev laser compound nuclear cavity material**
 M. M. Anwar
 Asiatic Society of Bangladesh, Bangladesh
- PLDp7-3** **Effect of Laser Beam Parameters on Melt Mobilization and LIBS Analysis of a Special Aluminum Alloy Containing Zeolite**
 O. M. Khalil, A. Nakimana^a
 Cairo Univ., Egypt, ^aChangchun Univ., China
- PLDp7-4** **Ultrashort pulse laser slicing of semiconductor crystal**
 E. Kim, Y. Shimotsuma, M. Sakakura, K. Miura
 Kyoto Univ., Japan
- PLDp7-5** **Synthesis of fluorescent nanocarbons by femtosecond laser induced plasma in liquid**
 N. Agatsuma, Y. Fujimatsu, Y. Shimotsuma, M. Sakakura, K. Miura
 Kyoto Univ., Japan
- PLDp7-6** **Mitigation of BSG damage caused by upstream flaw in the final optics assembly**
 Z. Jiao, M. Sun, D. Zhao, J. Zhu
 Shanghai Inst. of Opt. Fine Mech., China
- PLDp7-7** **Design and fabrication of random antireflective nanostructures on fused silica in the ultraviolet**
 W. Zhang, J. Zhao, H. Wang, F. Tu, X. Liu, M. Zhu
 Shanghai Inst. of Opt. Fine Mech., China
- PLDp7-8** **Damage analysis of CMOS electro-optical imaging system by a continuous wave laser**
 S. Yoon, K. Y. Jhang, W. S. Shin^a
 Hanyang Univ., Korea, ^aAgency for Defense Development, Korea
- PLDp7-9** **Study on the data matching of Ground-based Radar and laser point cloud**
 Z. Qiu, C. Wang
 Hohai Univ, China
- Break (10:15-10:30) -----
- 10:30-12:15** **PLD8: Material Damage** Room 413
 Chair: TBD
- PLD8-1** **(Invited) Laser damage measurement of thick silica plates using a new laser injection scheme**
10:30
 D. Penninckx, R. Diaz, O. Bonville, R. Courchinoux,

L. Lamaignère, J. Luce
Commissariat à l'Énergie Atomique, France
Macquarie Univ., Australia

PLD8-2
11:00 (Invited) Nanosecond laser damage of optical multimode fibers

J. Krueger, BAM, Berlin, Germany

PLD8-3
11:30 (Invited) Adaptive Laser Beam Forming for Laser Shock Micro-Forming for 3D MEMS Devices Fabrication

K. Chen,
Pittsburgh Univ. USA

PLD8-4
12:00 A PHD filter for tracking mid-course group targets via space-based laser

H. Yu, W. An, W. Sheng, X. Wang
National Univ. of Defense Technology, China

----- Lunch Break (12:15-13:15) -----

13:15-15:15 **PLD9: Defect, Contamination(1)** Room 413
Chair: TBD

PLD9-1
13:15 (Invited) Refractive index change mechanisms in different glasses induced by femtosecond laser irradiation

A. Fürbach, S. Gross, D. J. Little, A. A. Martiarena, A. A. Martiarena, M. Ams, P. Dekker, M. J. Withford
Macquarie Univ., Australia

PLD9-2
13:45 Research on nondestructive evaluation of fused silica UV damage performance

H. Liu, F. Wang, X. Jiang
China Academy of Engineering Physics, China

PLD9-3
14:00 Laser-induced damage thresholds by double pulses with interval time

S. Motokoshi, Y. Takemura^a, T. Jitsuno^b, M. Yoshida^a, J. Kawanaka^b
Institute for Laser Technology, Japan, ^aKinki Univ., Japan, ^bOsaka Univ., Japan

PLD9-4
14:15 Enhanced internal reflection microscopy for sub-surface damage inspection

L. Xu, K. Ni^a, R. H. Zhu, S. Liu^a
Nanjing university of science and technology, China

PLD9-5
14:30 Interferometric analysis of optical breakdown dynamics in bulks of transparent dielectrics induced by sub-nanosecond laser pulse

V. H. Nguyen, N. T. Le, Z. U. Rehman,
K. A. Janulewicz
Gwangju Institute of Science and Technology, Korea

PLD9-6
14:45 Laser damage mechanisms of different-sized substrate pits in high-reflective mirrors

Y. Chai^{a,b}, M. Zhu^a, K. Yi^a, H. Xing^{a,b}, J. Sun^a,
J. Shao^a

^aShanghai Inst. of Opt. Fine Mech., China,
^bGraduate School of Chinese Academy of Sciences, Beijing, China

PLD9-7
15:00 Multi-modality laser scanning microscopy at 355nm for defect characterization of optical materials

J. Chen, B. Li, J. Dong, Z. Wu
ZC Optoelectronic Technologies Ltd., China

----- Break (15:15-15:45) -----

15:45-17:00 **PLD10: Defect, Contamination(2)** Room 413

Chair: TBD

PLD10-1
15:45 Effectiveness of substrate ion cleaning to improve the laser damage threshold of HfO₂/SiO₂ optical coatings for 527 nm and 1054 nm

E. S. Field, J. C. Bellum, D. E. Kletecka
Sandia National Labs., USA

PLD10-2
16:00 LIC and LID considerations in the design and implementation of the MEMS laser pointing mechanism for the EUSO UV laser altimeter

E. Bozzo, T. Burch^a, A. Ciapponi^b, C. Heese^b,
A. Hoogerwerf, N. Lan^b, A. Neronov, V. Revol^a
ISDC Data Ctr. for Astrophysics, Switzerland
^aCtr. Suisse d'Electronique et de
Microtechnique SA, Switzerland
^bEuropean Space Research and Technology
Ctr., Netherlands

PLD10-3
16:15 Source of contamination in damage-test sample and vacuum chamber

T. Jitsuno, H. Murakami, S. Motokoshi^a, T.
Mikami^b, T. Kawasaki, J. Kawanaka, N.
Miyana
Osaka Univ., ^aInstit. Laser Tech., ^bOkamoto
Optical Works

PLD10-4
16:30 How much laser Interferometry effective in the detection of Gravitational waves Used in LIGO at India and Elsewhere

U. P. Verma
Patna Science College, India

Closing Remarks Room 413

16:45 T. Jitsuno Steering Committee Co-Chair,
ILE Osaka Univ., Japan

16:50 J. Shao Organizing Committee Chair,
SIOM Shanghai, China