

Pacific-rim Laser Damage '14

PLD'14

Organized by
SPIE

In cooperation with
Institute for Laser Technology
The laser society of Japan
Japan Laser Processing Society

Sponsored by
SPIE

Shanghai Institute of Optics and Fine Mechanics (SIOM)
Chinese Academy of Science
QUANTEL
Nikon Corporation
Okamoto Optical Works
Plymouth Grating laboratory

Welcome to PLD'14

Pacific-rim Laser damage (PLD) was initiated by Prof. Jianda Shao of Shanghai Institute of Optics and Fine Mechanics in China at 2009. This conference was held as a satellite meeting of SPIE Laser Damage Symposium at Boulder. The purpose of this meeting is to communicate with researchers in the field of laser damage and related phenomena especially in Pacific-rim area. Normally, PLD meeting was held biyearly at Shanghai in China, but due to special request of Prof. Shao, PLD meeting will be held in Japan as a part of OPIC conference.

Topics of the PLD'14

PLD'14 includes 7 sessions as follows.

1) Joint session; PLD/LIC1

This joint session is proposed by Prof. T. Taira, Conference Chair of LIC' 14, of Institute for Molecular Science, Japan, because the LIDT is an important factor for laser ignition devices. This session includes 5 talks on laser process and damage phenomena.

2) Plenary session; PLD2

This session includes Conference Co-Chairs (Prof. J. Shao and I), with a talk of revolutionary grating fabrication from Plymouth Grating Laboratory (D. Smith).

3) High Power Laser Damage; PLD3

This session includes 5 talks on high energy and high peak power laser systems.

4) Poster session; PLD4

Poster session includes 8 reports on LIDS, laser systems and optical materials.

5) Nonlinear crystals and laser; PLD5

This session includes reports on nonlinear crystal and laser amplifier.

6) High laser damage resistant coating; PLD6

Coating, material, and damage detection will be reported.

7) Defect, contamination, polishing and surface damage; PLD7

10 papers on fundamental research of this subject will be reported.

We expect 41 papers in PLD'14. We hope we will have useful discussions and mutual communications. Special contribution of SPIE, and SIOM should be mentioned. This conference is supported by Chinese Academy of Science as Japan-China Bilateral Forum. It is also a part of activities in Project for Creation of Research Platform and Sharing of Advanced Research Infrastructure promoted by Ministry of Education, Japanese Government.

CONFERENCE CHAIRS



Takahisa Jitsuno
(Inst. of Laser Engineering,
Osaka Univ., Japan)



Jianda Shao
(Shanghai Institute of Optics
and Fine Mechanics: SIOM,
China)



Wolfgang Rudolph
(Univ. of New Mexico, USA)

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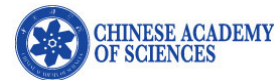
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Yukio Ogura (OPICON)

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OPIC2014 Events

Tuesday, April 22

(see OPIC2014 Plenary Special Sessions pp. -)

9:30-9:40

Opening Remarks of OPIC '14

Room 301&302

9:40-12:10

Keynote Lectures of OPIC '14

Room 301&302

13:30-15:10

Joint Plenary Sessions of OPIC '14

Session A

Room 301&302

Session B

Room 303

Pacific-rim Laser Damage '14

PLD'14

Tuesday, April 22

15:30-17:45 Joint Session PLD&LIC 1

Room 303

Chair: T. Jitsuno, ILE, Osaka Univ., 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

15:30 Institute of Laser Engineering, Osaka Univ., Japan

PLD&LIC1-1 (Invited) The microchip-laser based high
15:45 energy probe laser for the Thomson scattering
plasma diagnostics

R. Yasuhara

National Institute for Fusion Science, Japan

PLD&LIC1-2 (Invited) Giant micro-photonics: a key to
16:15 extending the horizons of laser peening

Y. Sano, Toshiba Co., Japan

PLD&LIC1-3 (Invited) High resistant multi-layer coating
16:45 for thin disk laser amplifier

Y. Ochi¹⁾, K. Nagashima¹⁾, H. Okada¹⁾,

M. Maruyama¹⁾, R. Tateno²⁾, Y. Furukawa²⁾, and

A. Sugiyama¹⁾

¹⁾ Japan Atomic Energy Agency, Japan,

²⁾ SHIMADZU Japan

PLD&LIC1-4 Influence of longitudinal mode beating on
17:15 laser-induced damage in fused silica

R. Diaz¹⁾, M. Chambonneau¹⁾, P. Grua¹⁾, J.-L.
Rullier¹⁾, J.-Y. Natoli²⁾ and L. Lamaignère¹⁾

¹⁾CEA CESTA, ²⁾ Aix Marseille Université,
France

PLD&LIC1-5 Suppression of Parasitic Green Light in
17:30 Optical Parametric Oscillator by Engineered
Quasi-Phase-Matching structures

H. Lim¹⁾, S. Kurimura¹⁾, N. Yu²⁾

¹⁾ National Institute for Materials Science

(NIMS), Japan, ²⁾ Advanced Photonics Research
Institute, GIST, Korea

18:00 OPIC Banquet

Room 501

Wednesday, April 23

9:00-10:30 PLD2: Plenary

Room 413

Chair: J. Bellum, Sandia National Laboratories, USA

PLD2-1 Recent progress in optical components for the
9:00 high power laser system in China

J. Shao¹⁾, Y. Dai²⁾, Q. Xu³⁾

¹⁾ SIOM, ²⁾ Shanghai Inst. Laser Plasma, China,

³⁾ Chengdu Fine Opt. Engin. Reser. Center, China

PLD2-2 Progresses in research on laser damage
9:30 mechanisms and contamination problem

T. Jitsuno

Osaka Univ., Japan

PLD2-3 Dffraction gratings for large aperture lasers

10:00

D. J. Smith

Plymouth Grating Laboratory, USA

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

10:45-12:45 PLD3: High Power Laser Damage

Room 413

Chair: J. Shao, SIOM, China

PLD3-1 (Invited) Long-wavelength intense laser
10:45 ionization inside dielectrics and
semiconductors

D. Grojo¹⁾, A. Mouskeftaras¹⁾, S. Leyder¹⁾,

A. Rode²⁾, R. Clady¹⁾, M. Sentis¹⁾, O. Uteza¹⁾

¹⁾Aix-Marseille University, France

²⁾ Laser Physics Centre, The Australian National
University, Australia

PLD3-2 Femtosecond laser induced damage of
11:15 dispersive mirrors

J. Zhang, Y. Xie, X. Cheng, Z. Wang

MOE, Tongji University, China

PLD3-3 Investigation of electric field formed in a
11:30 multilayer mirror under simultaneous
irradiation of two wavelengths

M. Sugiura¹⁾, K. Tamura¹⁾, M. Kobiyama²⁾, S.
Motokoshi³⁾ and T. Jitsuno⁴⁾

¹⁾Tokai optical Co. Ltd, ²⁾Tecwave Co. Ltd,

³⁾ Institute for Laser Technology, ⁴⁾ ILE Osaka
Univ., Japan

PLD3-4 Ultrafast UV laser induced dynamics in
11:45 dielectric coating materials before laser
damage

J. Du¹⁾, Z. Li²⁾, T. Kobayashi^{3,4)}, Y. Zhao²⁾,
Y. Leng¹⁾

^{1,2)}SIOM, China, ³⁾Univ. of Elect. Commun.,
Japan ⁴⁾JST/(CREST), Japan

PLD3-5 Laser induced damage in fused silica and
12:00 metal mirror for plasma application

R. Yasuhara

National Institute for Fusion Science, Japan

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

13:15-15:30 PLD4: Poster Session Exhibition Hall C

PLDp4-1 Contribution of the metrology of multiple
longitudinal modes to the study of laser
induced damage in fused silica

R. Diaz¹⁾, M. Chambonneau¹⁾, R. Courchinoux¹⁾,
J. Luce¹⁾, J.-Y. Natoli²⁾ and L. Lamaignère¹⁾

¹⁾CEA CESTA, ²⁾ Aix Marseille Univ., France

PLDp4-2 Temperature dependence of laser-induced
damage threshold by ultra-short IR laser
pulse

K. Mikami^{1,2)}, S. Motokoshi³⁾, T. Somekawa³⁾, T.
Jitsuno¹⁾, M. Fujita³⁾, and K. A. Tanaka²⁾

¹⁾ Osaka Univ., ²⁾ Grad. School of Engin., Osaka
Univ., ³⁾ Institute for Laser Technology, Japan

PLDp4-3 Laser removal for highly ion-implanted
novolak resist without occurring laser-induced
surface damage

T. Kiriya¹⁾, Y. Kuroki¹⁾, Y. Kasajima¹⁾,

H. Kuramae¹⁾, T. Kamimura¹⁾, and H. Horibe²⁾

¹⁾ Osaka Institute of Technology, ²⁾ Osaka City
University, Japan,

LPDp4-4 Ablation rate dependence on incident angle and polarization for copper irradiated by femtosecond laser pulses

Y. Miyasaka*, M. Hashida, T. Nishii, S. Inoue, and S. Sakabe

Kyoto University, Japan

PLDp4-5 High-efficiency cavity-dumped micro-chip Yb:YAG laser

M. Nishio, A. Maruko, M. Inoue, M. Takama, S. Matsubara, H. Okunishi, K. Kato, K. Kyomoto, T. Yoshida, and S. Kawato

University of Fukui, Japan

PLDp4-6 Thin-rod Yb:YAG regenerative laser amplifier

A. Maruko, M. Nishio, M. Tanaka, M. Takama, S. Matsubara, H. Okunishi, K. Kato, K. Kyomoto, T. Yoshida, and S. Kawato

University of Fukui, Japan

PLDp4-7 Relation between crystal structure and laser damage of Calcium Fluoride

E. Nakahata, M. Azumi

Nikon Corporation, Japan

PLDp4-8 Temperature Dependence of Laser-Induced Damage Thresholds in Dielectric Crystals

T. Sugita¹⁾, K. Mikami²⁾, M. Azumi¹⁾, T. Jituno²⁾

¹⁾Nikon Corporation, ²⁾ ILE Osaka Univ., Japan

----- Break (15:30-15:45) -----

15:45-17:15 PLD5: Nonlinear Crystals and Lasers Room 413

Chair: S. Motokoshi, Institute for Laser Technology, Japan

PLD5-1 (Invited) Laser induced bulk damage of KDP crystals prepared by rapid growth

15:45

Y. Zhao¹⁾, Y. Wang¹⁾, G. Hu¹⁾, J. Shao¹⁾, J. Chang¹⁾, X. Liu¹⁾, D. Li¹⁾, Y. Yao²⁾, X. Lin²⁾, G. Zheng²⁾

¹⁾SIOM, ²⁾ Fujian Institute of Research on the Structure of Matter, China

PLD5-2 Laser induced defect decrement in DKDP crystals varied with photon energy

16:15

Y. Wang^{1,2)}, Y. Zhao¹⁾, M. Zhu¹⁾, G. Hu¹⁾, L. Yang¹⁾, D. Li¹⁾, X. Liu¹⁾, and Q. Xiao¹⁾

¹⁾ SIOM, ²⁾ University of Chinese Academy of Sciences, Beijing, China

PLD5-3 Pulsed laser-induced damage behavior in KH₂PO₄/KD₂PO₄ frequency conversion crystals

16:30

C. Li^{1,2)}, B. Feng²⁾, Q. Zhu²⁾, X. Wei²⁾, W. Zheng²⁾, X. Ju¹⁾

¹⁾University of Science and Technology Beijing, ²⁾Research Center of Laser Fusion, Mianyang, China

PLD-5-4 Nonlinear optical frequency conversion for lasers in space

16:45

A. Potreck^{1,2)}, H. Schröder¹⁾, M. Lammers¹⁾, A. Santangelo²⁾, C. Tenzer²⁾, G. Tzeremes³⁾, W. Riede¹⁾

¹⁾Institute of Technical Physics, German Aerospace Center, ²⁾University of Tübingen, Germany,

³⁾ European Space Agency, Netherlands

PLD5-5 150-mm-diameter Nd:glass rod amplifier

17:00

A. Shaykin, A. Fokin, A. Soloviev, A. Kuzmin, I. Shaykin, K. Burdonov, E. Khazanov

Institute of Applied Physica, Russia

Thursday, April 24

9:00-10:15 PLD6: High Laser Damage Resistant Coating

Room 413

Chair: K. Yoshida, Okamoto Optical Works, Japan

PLD6-1 An effective design method for trapezoidal pulse compression metal multilayer dielectric gratings

9:00

H. Guan^{1,2)}, Y. Jin¹⁾, J. Wu¹⁾, F. Kong¹⁾, K. Yi¹⁾, and J. Shao¹⁾

¹⁾SIOM, ²⁾ Graduate School of Chinese Academy of Sciences, Beijing, China

PLD6-2 Femtosecond laser-induced damage threshold of electron-beam deposited materials for broadband high-reflective coatings on large optics

9:15

A. Hervy^{1,2,3)}, L. Gallais²⁾, G. Chériaux³⁾, D. Mouricaud¹⁾

¹⁾REOSC, ²⁾Institut Fresnel, ³⁾Laboratoire d'Optique Appliquée, France

PLD6-3 Rapid detection and radiation calibration of laser-induced damage on optical components

9:30

L. Liang, Y. Jiang, X. Li

SIOM, China

PLD6-4 Discrimination between statistic pseudo fatigue and real modification in optical materials induced by multiple irradiations

9:45

J.-Y. Natoli, F. Wagner, C. Gouldief
Aix Marseille Université, CNRS, France

PLD6-5 Polygon-binaryzation modeling of laser damage morphologies on dielectric coating to describe their wavefront properties

10:00

Y. Zheng*, Z. Liu, P. Ma, F. Pan
Chengdu Fine Optical Engineering Research Center, China

----- Break (10:15-10:30) -----

10:30-15:15 PLD7: Defects, Contamination, Polishing and Surface Damage Room 413

Chair: T. Kamimura, Osaka Institute of Technology, Japan

PLD7-1 Laser-induced surface damage measurements with large beams: From initiation to growth

10:30

L. Lamaignère, A. Bourgeade, R. Courchinoux
T. Donval, G. Dupuy, A. Roques
CEA CESTA, France

PLD7-2 The impact of different cleaning processes on the laser damage threshold of antireflection coatings for Z-backlighter optics at Sandia National Laboratories

10:45

Ella Field, John Bellum, Damon Kletecka
Sandia National Laboratories, USA

PLD7-3 PLD6-8 Damage morphology change condition and thermal accumulation effect on dielectric coatings at 1064nm

11:00

Z. Liu, Y. Zheng, J. Luo, S. Chen, Z. Zhang and P. Ma

Fine Optical Engineering Research Centre, Chengdu, China

PLD7-4 (Invited) Optical component requirement for ultra-short and ultra-intense lasers

11:15

J. Zou
Ecole Polytechnique, France

PLD7-5 (Invited) Three-dimensional micro / nano
11:45 fabrication by integration of additive and
subtractive laser direct writing processes
W. Xiong¹, Y. S. Zhou¹, L. J. Jiang¹, J.-F.
Silvain^{1,2}, L. Jiang³, Y. F. Lu¹,
¹ University of Nebraska-Lincoln, USA
² Université Bordeaux, France
³ Beijing Institute of Technology, China

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

Chair: Y. Zhao, SIOM, China

PLD7-6 (Invited) Challenge in realizing ultraflat
13:15 surfaces using a dressed photon
Takashi Yatsui

University of Tokyo and ALCA, JST, Japan

PLD7-7 Surface Structure of Fused Silica Revealed by
13:45 Thermal Annealing

Yang Jun^{1,2}, Yi Kui¹, Yang Minghong¹, Hu
Guohang¹, Shao Jianda¹

¹SIOM, ² University of Chinese Academy of
Sciences, Beijing, China

PLD7-8 Evolution simulation of the polishing pad
14:00 figure in continuous polishing

H. Shan^{1,2}, X. Xu¹, H. He¹, S. Liu¹, C. Wei¹,
K. Yi¹, J. Shao¹

¹SIOM, ² University of Chinese Academy of
Sciences, Beijing, China

PLD7-9 Research of scratch visibility in (subsurface)
14:15 damage detection based on total internal
reflection microscopy

H. Cui^{1,2}, S. Liu¹, Y. Zhao¹, J. Liu^{1,2}, J. He^{1,2}

¹SIOM, ² University of Chinese Academy of
Sciences, Beijing, China

PLD7-10 Haze in artificially grown single crystal CaF₂
14:30 M. Azumi

Nikon Corporation, Japan

PLD7-11 (Invited) Construction of database on damage
14:45 thresholds for optical coatings

S. Motokoshi¹, K. Mikami², K. Kato²,
K. Kishida¹

¹Institute for Laser Technology, ²ILE Osaka
Univ.

15:15-15:25 Closing Room 413

Closing Remarks

15:15 T. Jitsuno Steering Committee Co-Chair,
ILE Osaka Univ., Japan

15:20 J. Shao Organizing Committee Chair,
SIOM Shanghai, China