

2016

LASER DAMAGE

XLVIII ANNUAL SYMPOSIUM ON OPTICAL
MATERIALS FOR HIGH-POWER LASERS

TECHNICAL
PROGRAM

WWW.SPIE.ORG/LD

Millennium Harvest House Hotel
Boulder, Colorado, USA

Conference
25-28 September 2016



SPIE. LASER DAMAGE

20**16**

25–28 September 2016

Millennium Harvest House Hotel
Boulder, Colorado, USA

Contents

Special Events	4–7
Contributing Sponsors	8
Technical Conference	9–27
General Information	28
Proceedings of SPIE	29
Index of Authors, Chairs, and Committee Members	31–36
SPIE Policies	37–40

Welcome

Welcome to the 48th Annual Laser Damage Symposium, also known as Symposium on Optical Materials for High Power Lasers, the leading forum for the exchange of information on the physics/technology of materials for high-power/high-energy lasers. The series of conference proceedings has grown to be a comprehensive source of information on optics for lasers and includes topics on laser-induced damage mechanisms, materials and thin film preparation, durability, properties modeling, testing, and component fabrication.

This symposium will start with a Sunday Evening Tutorial on Advanced Materials for High Laser-Damage Resistance. It will also host the Mini-Symposium on the Review of Large-Scale, High-Power Laser Facility Projects, and the Thin-Film Laser-Damage Competition.

Distinguished international researchers in the field of optics for high-power/high-energy lasers will present invited talks. We have planned 3.5 days of information, networking, and enjoyment.

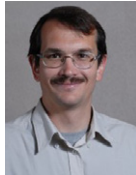
Take time to enjoy beautiful Boulder and its surroundings. We welcome you to Boulder!



CONFERENCE CHAIRS



Gregory J. Exarhos
Pacific Northwest
National Lab.
(USA)



Vitaly E. Gruzdev
Univ. of
Missouri-
Columbia (USA)



Joseph A. Menapace
Lawrence
Livermore
National Lab.
(USA)



Detlev Ristau
Laser Zentrum
Hannover e.V.
(Germany)



MJ Soileau
Univ. of Central
Florida (USA)

INTERNATIONAL PROGRAM COMMITTEE

Detlev Ristau, Laser Zentrum
Hannover e.V.(Germany)
(*Committee Chair*)

James E. Andrew, AWE plc
(United Kingdom)

Jonathan W. Arenberg, Northrop
Grumman Aerospace Systems
(USA)

Mireille Commandré, Institut
Fresnel (France)

Stavros G. Demos, Univ. of
Rochester (USA)

Leonid B. Glebov, CREOL, The
College of Optics and Photonics,
Univ. of Central Florida (USA)

Takahisa Jitsuno, Osaka Univ.
(Japan)

Klaus Mann, Laser-Lab. Göttingen
e.V. (Germany)

Carmen S. Menoni, Colorado State
Univ. (USA)

Masataka Murahara, Tokai Univ.
(Japan)

Jérôme Néauport, Commissariat
à l'Énergie Atomique (France)

Semyon Papernov, Univ. of
Rochester (USA)

Wolfgang Rudolph, The Univ. of
New Mexico (USA)

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

Michelle D. Shinn, Thomas
Jefferson National Accelerator
Facility (USA)

Christopher J. Stolz, Lawrence
Livermore National Lab. (USA)

FOUNDING ORGANIZERS

Arthur H. Guenther and
Alexander J. Glass

ORGANIZER

SPIE.

CO-SPONSORS

Laser Components GmbH

Spica Technologies, Inc.

ZC Optoelectronic
Technologies, Ltd.

COOPERATING ORGANIZATIONS

CREOL & FPCE, College of
Optics and Photonics,
Univ. of Central Florida

Laser Zentrum Hannover e.V.

Lawrence Livermore National
Lab.

Univ. of Missouri, Columbia

Pacific Northwest National
Lab.

Lab. for Laser Energetics,
Univ. of Rochester

Office of Naval Research

CONFERENCE SITE

The Millennium Harvest House
Boulder
1345 28th Street, Boulder,
CO 80302
www.millenniumhotels.com

QUESTIONS?

SPIE, PO Box 10,
Bellingham, WA 98227-0010 USA
www.spie.org/ld
help@spie.org
Tel: +1 360 676 3290
Fax: +1 360 647 1445

SPECIAL EVENTS

Sunday 25 September

TUTORIAL ON

Advanced Materials for High Laser-Damage Resistance

6:00 to 7:00 pm

Location: Grand Ballroom



Dr. Marco Jupé

Laser Zentrum Hannover (Germany)

This tutorial is focused on the interplay of three major topics of this symposium: optical materials, thin films for optical coatings, and fundamental mechanisms of ultrafast laser-material interactions. This tutorial will address the influence of fundamental material aspects on laser-induced damage. Thereby, the properties of different coating materials and the application of mixture and structuring as well as the laser stack design on the damage are discussed. The main objective is focused on the electronic aspects of laser induced damage.

Welcome and Social Mixer

7:00 to 8:30 pm

Location: Pavilion Gardens

Join your colleagues for light refreshments and mingling.

Guest tickets are available onsite for purchase, \$30.

Registration Material Pick-up will available until 8:30 pm.

Monday 26 September

Poster Overviews

10:10 to 10:40 am

Location: Grand Ballroom

Poster authors are asked to give a 2-minutes/2-viewgraph overview of their posters in the order that they appear in the poster sessions.



Poster Viewing and Refreshment Breaks

10:40 am to 11:40 am and 3:40 pm to 4:30 pm

Location: Century Room

Conference attendees are invited to attend the Poster Sessions to review poster papers and interact with the authors who will be at their posters during both sessions.

Please be sure to wear your registration badge.

SPECIAL EVENTS

Standardization Round-Table Discussion

1:20 to 2:15 pm • Location: Millennium Room

This workshop is dedicated to recent developments in the field of International Standardization for optics characterization. Especially ISO 21254, the International Standard for the measurement of Laser Induced Damage Thresholds, is presently subject of a major revision activity within the corresponding Working Group ISO TC 172/SC 9/WG 1 “Terminology and test methods for electro-optical systems.” There will be a brief introduction into the present state of the standard and some other standards of interest elaborated within ISO, followed by a discussion of what alterations will be necessary in the present version of ISO 21254 and how it can be adapted to the present needs in practice. Also, further requirements on standardization activities within the community will be considered. Duration about 1 hour.

Sign-up Sheet, and optional boxed lunches will be available for purchase onsite.

Open House and Reception

6:30 to 8:00 pm

Come, relax, and join your colleagues at Research Electro-Optics, Inc. for an enjoyable evening of refreshments and pleasant conversation.

SPONSORED BY:



Tuesday 27 September

Poster Overviews

10:00 to 10:30 am • Location: Grand Ballroom

Poster authors are asked to give a 2-minutes/2-viewgraph overview of their posters in the order that they appear in the poster sessions.

Poster Viewing and Refreshment Breaks

10:30 am to 11:30 am and 3:40 pm to 4:30 pm

Location: Century Room

Conference attendees are invited to attend the Poster Sessions and review poster papers and interact with the authors who will be at their posters during both sessions.

Please be sure to wear your registration badge.

Wine and Cheese Tasting Reception at NCAR

6:30 to 8:00 pm • Location: NCAR

1850 Table Mesa Dr., Boulder, CO

SPONSORED BY: **SPIE** and
the Conference Co-chairs of Laser Damage XLVIII

All attendees are invited to join us for an enjoyable evening of wine tasting, local brews, and a selection of cheese appetizers.

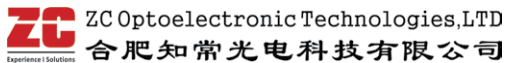
Guest tickets are available for purchase, \$30 (USD).

Available at registration desk.

FOOD AND DRINK SPONSORED BY :



SPIE thanks the following sponsors
for their generous support.



CONFERENCE 10014

Sunday–Wednesday 25–28 September 2016
Proceedings of SPIE Vol. 10014

Laser-Induced Damage in Optical Materials 2016

Conference Chairs: **Greg J. Exarhos**, Pacific Northwest National Lab. (USA); **Vitaly E. Gruzdev**, Univ. of Missouri (USA); **Joseph A. Menapace**, Lawrence Livermore National Lab. (USA); **Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany); **MJ Soileau**, Univ. of Central Florida (USA)

Program Committee: **Detlev Ristau**, Laser Zentrum Hannover e.V. (Committee Chair) (Germany); **James E. Andrew**, AWE plc (United Kingdom); **Jonathan W. Arenberg**, Northrop Grumman Aerospace Systems (USA); **Mireille Commandré**, Institut Fresnel (France); **Stavros G. Demos**, Univ. of Rochester (USA); **Leonid B. Glebov**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Takahisa Jitsuno**, Osaka Univ. (Japan); **Klaus Mann**, Laser-Lab. Göttingen e.V. (Germany); **Carmen S. Menoni**, Colorado State Univ. (USA); **Masataka Murahara**, Tokai Univ. (Japan); **Jérôme Néauport**, Commissariat à l'Énergie Atomique (France); **Semyon Papernov**, Univ. of Rochester (USA); **Wolfgang Rudolph**, The Univ. of New Mexico (USA); **Jianda Shao**, Shanghai Institute of Optics and Fine Mechanics (China); **Michelle D. Shinn**, Thomas Jefferson National Accelerator Facility (USA); **Christopher J. Stolz**, Lawrence Livermore National Lab. (USA)

CONFERENCE 10014

SUNDAY 25 SEPTEMBER

REGISTRATION MATERIAL PICK-UP

Room: Sunshine Room 5:30 pm to 8:30 pm

TUTORIAL

Room: Grand Ballroom 6:00 pm to 7:00 pm

Advanced Materials for High Laser-Damage Resistance

Workshop Chair: **Dr. Marco Jupé**, Laser Zentrum Hannover (Germany)

This tutorial is focused on the interplay of three major topics of this symposium: optical materials, thin films for optical coatings, and fundamental mechanisms of ultrafast laser-material interactions. This tutorial will address the influence of fundamental material aspects on laser-induced damage. Thereby, the properties of different coating materials and the application of mixture and structuring as well as the laser stack design on the damage are discussed. The main objective is focused on the electronic aspects of laser induced damage.

WELCOME AND SOCIAL MIXER

Room: Pavilion Gardens 7:00 pm to 8:30 pm

Join your colleagues for light refreshments and mingling.

Guest tickets are available onsite for purchase: \$30.

Registration Material Pick-up will continue until 8:30 pm.

Download Technical Abstract Book at
www.spie.org/ld

MONDAY 26 SEPTEMBER

REGISTRATION MATERIAL PICK-UP

Room: Sunshine Room 7:30 am to 4:00 pm

POSTER PLACEMENT – MONDAY

Room: Century Room 7:50 am to 8:20 am

OPENING REMARKS AND AWARD PRESENTATIONS

Room: Grand Ballroom 8:20 am to 8:50 am

2015 Best Paper Award Winners

BEST ORAL PRESENTATION

What time-resolved measurements tell us about femtosecond laser damage? [9632-23]

Andrius Melninkaitis, Nerijus Šaulys, Linas Smalakys, Balys Momgaudis, Julius Vaicenavičius, Simona Barkauskaitė, Valdas Sirutkaitis, Vilnius Univ. (Lithuania); **Laurent Gallais**, Aix Marseille Univ., Institut Fresnel (France); **Stephane Guizard**, Ecole Polytechnique (France)

BEST POSTER PRESENTATION

Bulk damage and absorption in fused silica due to high-power laser applications [9632-65]

Frank Nurnberg, Bodo Kühn, Andreas Langner, Mark Altwein, Gerhard Schötz, Ralf Takke, Stephan Thomas, Jan, Vydra, Heraeus Quarzglas GmbH & Co. KG (Germany)

CONFERENCE 10014

SESSION 1

Room: Grand Ballroom Mon 8:50 am to 10:10 am

Surfaces, Mirrors, and Contamination I

Session Chairs: **MJ Soileau**, Univ. of Central Florida (USA);

Vitaly E. Gruzdev, Univ. of Missouri (USA)

8:50 am: **Laser-matter coupling mechanisms governing particulate-induced damage on optical surfaces** (*Keynote Presentation*), Manyalibo J. Matthews, Eyal Feigenbaum, Stavros G. Demos, Rajesh N. Raman, Roger Qiu, Nan Shen, Candace D. Harris, Raluca A. Negres, Mary A. Norton, David A. Cross, Christopher W. Carr, Jeffrey D. Bude, Alexander M. Rubenchik, Lawrence Livermore National Lab. (USA) [10014-1]

9:30 am: **Study of the laser damage growth in the short-pulse regime**, Martin Sozet, Jérôme Néauport, Eric A. G. Lavastre, Nadja Roquin, Commissariat à l'Énergie Atomique (France); Laurent Gallais, Institut Fresnel (France); Laurent Lamaignère, Commissariat à l'Énergie Atomique (France) [10014-2]

9:50 am: **Entry and exit facet laser damage of optical windows with random antireflective surface structures**, Gopal Sapkota, Jason R. Case, Matthew G. Potter, The Univ. of North Carolina at Charlotte (USA); Lynda E. Busse, L. Brandon Shaw, Jasbinder S. Sanghera, U.S. Naval Research Lab. (USA); Ishwar D. Aggarwal, Menelaos K. Poutous, The Univ. of North Carolina at Charlotte (USA) [10014-3]

MONDAY POSTER OVERVIEWS

Room: Grand Ballroom 10:10 am to 10:40 am

Poster authors are asked to give a 2-minutes/2-viewgraph overview of their posters in the order that they appear in the Monday poster sessions.

POSTER VIEWING AND REFRESHMENT BREAK—MONDAY AM

Room: Century Room 10:40 am to 11:40 am

Posters will be displayed for viewing during refreshment breaks on Monday from 10:40 am to 11:40 am and again from 3:40 pm to 4:30 pm.

LOCATION: GRAND BALLROOM AND CENTURY ROOM

MONDAY POSTER SESSION

Room: Century Room Mon 10:40 am to 11:40 am

Surfaces, Mirrors, and Contamination

In-situ laser-induced micro-damage monitoring using long-distance microscope, Joana C. Alves, European Space Agency (Netherlands); Markus Hippler, Helmut B. Schröder, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Alessandra Ciapponi, European Space Agency (Netherlands); Paul Allenspacher, Wolfgang Riede, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Clemens Heese, European Space Agency (Netherlands) [10014-51]

Characterization of the polishing-induced contamination of fused silica optics, Mathilde Pfiffer, Jean-Louis Longuet, Commissariat à l'Énergie Atomique (France); Christine Labrugère, Ctr. National de la Recherche Scientifique (France); Evelyne Fargin, Institut de Chimie de la Matière Condensée de Bordeaux (France); Bruno Bousquet, Ctr. Lasers Intenses et Applications (France); Marc Dussauze, Univ. Bordeaux 1 (France); Sebastien Lambert, Philippe Cormont, Jérôme Néauport, Commissariat à l'Énergie Atomique (France) [10014-52]

Laser removal of PVP without causing laser-induced surface damage, Kosuke Nuno, Takanobu Yamashiro, Singo Tuzimoto, Osaka Institute of Technology (Japan); Ryosuke Nakamura, Osaka Univ. (Japan); Seizi Takagi, Takashi Nishiyama, Hideo Horibe, Osaka City Univ. (Japan); Tomosumi Kamimura, Osaka Institute of Technology (Japan) [10014-53]

Damage behavior of Nd:glass of high-power disk amplifier medium in ICF Facility, Shaobo He, Univ. of Electric Science and Technology of China (China) and China Academy of Engineering Physics (China); Lin Chen, Xiaodong Yuan, Yuanbin Chen, Xiaofeng Cheng, Xudong Xie, Wenyi Wang, China Academy of Engineering Physics (China); Xiaotao Zu, Univ. of Electronic Science and Technology of China (China) . . . [10014-75]

Materials and Measurements

Characterization of laser-beam ablation profile on PMMA material as a function of practical and theoretical parameters, Luis Alberto V. Carvalho, Univ. de São Paulo (Brazil) and Wavetek Technologies Ltda. (Brazil) [10014-54]

Laser-induced bulk damage of silica glass at 355nm and 266nm, Reina Kashiwagi, Shunsuke Aramomi, Nikon Corp. (Japan) [10014-55]

Investigation of laser-induced ablation of ceramic materials for space-borne applications, Helmut B. Schröder, Markus Hippler, Paul Allenspacher, Wolfgang Riede, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Alessandra Ciapponi, Ana Baselga Mateo, Toncho Ivanov, Jorge Piris, Clemens Heese, Denny Wernham, European Space Research and Technology Ctr. (Netherlands); Joana C. Alves, European Space Agency (Netherlands) [10014-56]

CONFERENCE 10014

Investigation of the ageing effects exhibited by AR coatings exposed to UV-laser irradiation, Roelene Botha, NTB Interstaatliche Hochschule für Technik Buchs (Switzerland) and RhySearch (Switzerland); David Bischof, Bernhard Vetsch, Ueli Scherrer, Markus Michler, Andreas Ettemeyer, Carsten Ziolk, NTB Interstaatliche Hochschule für Technik Buchs (Switzerland) [10014-57]

Assessment of laser damage resistance in the sub-picosecond regime, Martin Sozet, Jérôme Néauport, Eric A. G. Lavastre, Nadja Roquin, Commissariat à l'Énergie Atomique (France); Laurent Gallais, Institut Fresnel (France); Laurent Lamaignère, Commissariat à l'Énergie Atomique (France) [10014-58]

Characterization of NLO crystal absorption for wavelengths 1ω to 4ω , Christian Muehlig, Simon Bublitz, Leibniz-Institut für Photonische Technologien e.V. (Germany) [10014-59]

Damage resistance of wide-bandgap nonlinear crystals for femtosecond mid-infrared spectrometer using chirped-pulse upconversion, Masaya Akimoto, Osaka Institute of Technology (Japan); Yoshizumi Inagaki, Hidefumi Hata, Osaka Institute of Technology (Japan) and Osaka Univ. (Japan); Hamada Norio, Ryosuke Nakamura, Osaka Univ. (Japan); Nobuhiro Umemura, Chitose Institute of Science and Technology (Japan); Masashi Yoshimura, Osaka Univ. (Japan); Tomosumi Kamimura, Osaka Institute of Technology (Japan) [10014-60]

An empirical investigation of the laser survivability curve: VII-summary, Jonathan W. Arenberg, Northrop Grumman Aerospace Systems (USA); Andrius Melninkaitis, Vilnius Univ. (Lithuania); Wolfgang Riede, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Alessandra Ciapponi, European Space Research and Technology Ctr. (Netherlands); Paul Allenspacher, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Jonathan H. Herringer, Arrow Thin Films, Inc. (USA); Denny Wernham, European Space Research and Technology Ctr. (Netherlands) . . [10014-61]

Laser remote heating in vacuum environment to study temperature dependence of optical properties for bulk and thin film materials, Marco Minissale, Regis Bisson, Aix-Marseille Univ. (France); Laurent Gallais, Institut Fresnel (France) [10014-62]

1064nm CW damage threshold of chalcogenide and ZnS materials, John E. McElhenny, Richard L. Tober, U.S. Army Research Lab. (USA) [10014-63]

LOCATION: CENTURY ROOM AND GRAND BALLROOM

SESSION 2

Room: Grand Ballroom Mon 11:40 am to 1:00 pm

Surfaces, Mirrors, and Contamination II

Session Chairs: **Carmen S. Menoni**, Colorado State Univ. (USA);
Semyon Papernov, Univ. of Rochester (USA)

11:40 am: **Effects of chemical etching on the surface quality and the laser-induced damage threshold of scratched fused silica optics**, Mathilde Pfiffer, Philippe Cormont, Sebastien Lambert, Commissariat à l'Énergie Atomique (France); Evelyne Fargin, Institut de Chimie de la Matière Condensée de Bordeaux (France); Bruno Bousquet, Ctr. Lasers Intenses et Applications (France); Marc Dussauze, Univ. Bordeaux 1 (France); Jérôme Néauport, Commissariat à l'Énergie Atomique (France) [10014-4]

12:00 pm: **Laser-induced Hertzian fractures on the exit surface of silica glass deposited with metal microspheres**, Eyal Feigenbaum, Rajesh N. Raman, David A. Cross, Christopher W. Carr, Manyalibo J. Matthews, Lawrence Livermore National Lab. (USA) [10014-5]

12:20 pm: **Development of a laser damage growth mitigation process based on CO₂ laser scanning for the laser MegaJoule fused silica optics**, Thomas Doualle, Laurent Gallais, Serge Monneret, Institut Fresnel (France); Stéphane Bouillet, Antoine Bourgeade, Christel Ameil, Laurent Lamaignère, Philippe Cormont, Commissariat à l'Énergie Atomique (France) [10014-6]

12:40 pm: **Verification for robustness to laser-induced damage for the Aladin instrument on the ADM-Aeolus satellite**, Denny Wernham, European Space Research and Technology Ctr. (Netherlands); Wolfgang Riede, Paul Allenspacher, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Fabio Era, Alessandro D'Ottavi, Leonardo-Finmeccanica (Italy); Dominique Thibault, Airbus Defence and Space SAS (France). . . [10014-7]

Lunch Break Mon 1:00 pm to 2:20 pm

CONFERENCE 10014

SESSION 3

Room: Grand Ballroom Mon 2:20 pm to 3:40 pm

Thin Films I

Session Chairs: **Jérôme Néauport**, Commissariat à l'Énergie Atomique (France); **Christopher J. Stolz**, Lawrence Livermore National Lab. (USA)

2:20 pm: **Nanosecond laser-induced damage of high-reflection coatings: NUV through NIR** (*Keynote Presentation*), Zhanshan Wang, Jinlong Zhang, Pengfei He, Bin Ma, Hongfei Jiao, Xinbin Cheng, Tongji Univ. (China) [10014-8]

3:00 pm: **Improved manufacturability of high-laser damage threshold ion-beam deposited HfO₂/SiO₂ filters**, Sandeep Kohli, Ralf H. Erz, Jason M. George, Adrian Devasahayam, Veeco Instruments Inc. (USA) . [10014-9]

3:20 pm: **Laser-induced damage of F-SiO₂ protected fluoride based AR coating on a subsurface-damage-free CaF₂ at 193nm**, Jue Wang, Gerald P. Cox, Michael J. D'Lallo, Steven J. Vankerhove, Jean Francois Oudard, Corning Advanced Optics (USA) [10014-10]

POSTER VIEWING AND REFRESHMENT BREAK MONDAY PM

Room: Century Room 3:40 pm to 4:30 pm

Posters will be displayed for viewing during refreshment breaks on Monday from 10:40 am to 11:40 am and again from 3:40 pm to 4:30 pm.

LOCATION: GRAND BALLROOM

SESSION 4

Room: Grand Ballroom Mon 4:30 pm to 6:10 pm

Thin Films II

Session Chairs: **Joseph A. Menapace**, Lawrence Livermore National Lab. (USA); **Wolfgang Rudolph**, The Univ. of New Mexico (USA)

4:30 pm: **Corrosion-resistant AR coating of high-energy alkali laser components using refractory materials**, Zsolt Marton, Harish B. Bhandari, Radiation Monitoring Devices, Inc. (USA); Dennis Sigler, EMF Corp. (USA); Vivek V. Nagarkar, Radiation Monitoring Devices, Inc. (USA). . . . [10014-11]

4:50 pm: **Suppressing multilayer coatings defomation by substrate pit suture**, Yingjie Chai, Meiping Zhu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China). [10014-12]

5:10 pm: **Electronic quantization in dielectric nanolaminates**, Thomas Willemsen, Leibniz Univ. Hannover (Germany) and Laser Zentrum Hannover e.V. (Germany); Patrick Geerke, Marco Jupé, Laser Zentrum Hannover e.V. (Germany); Laurent Gallais, Institut Fresnel (France); Detlev Ristau, Leibniz Univ. Hannover (Germany) and Laser Zentrum Hannover e.V. (Germany) [10014-13]

5:30 pm: **Few-cycle pulse laser-induced damage of thin films in air and vacuum ambience**, Kyle R. P. Kafka, Noah Talisa, Drake R. Austin, Kevin Werner, The Ohio State Univ. (USA); Gabriel Tempea, Catalin Neacsu, Spectra-Physics (Austria); Enam A. Chowdhury, The Ohio State Univ. (USA) [10014-14]

5:50 pm: **Broadband low-dispersion femtosecond mirror thin film damage competition**, Raluca A. Negres, Christopher J. Stolz, Lawrence Livermore National Lab. (USA); Kyle R. P. Kafka, Enam A. Chowdhury, The Ohio State Univ. (USA); Matthew S. Kirchner, Kevin M. Shea, Meaghan Daly, Kapteyn-Murnane Labs., Inc. (USA). [10014-15]

CLOSING REMARKS

Room: Grand Ballroom 6:10 pm to 6:20 pm

Open House and Reception

MON 6:30 TO 8:00 PM

Come, relax, and join your colleagues at Research Electro-Optics REO for an enjoyable evening of refreshments and pleasant conversation. Invitation and Driving Instructions included in Registration Packet.

SPONSORED BY:



REO
precision optical solutions

CONFERENCE 10014

TUESDAY 27 SEPTEMBER

REGISTRATION MATERIAL PICK-UP

Room: Sunshine Room 7:30 am to 4:00 pm

POSTER PLACEMENT

Room: Century Room 7:50 am to 8:20 am

SESSION 5

Room: Grand Ballroom Tue 8:20 am to 10:00 am

Materials and Measurements I

Session Chairs: **Stavros G. Demos**, Univ. of Rochester (USA);
Detlev Ristau, Laser Zentrum Hannover e.V. (Germany)

8:20 am: **Metrology of fused silica** (*Keynote Presentation*),
Frank Nuernberg, Bodo Kuehn, Klaus Rollmann, Heraeus Quarzglas
GmbH & Co. KG (Germany) [10014-16]

9:00 am: **A double blind study of commercially available CaF₂ absorption, laser-induced damage threshold, and lifetimes at 193nm using an ArF excimer laser**, Jason Yager, Quantel USA (USA);
Christian Muehlig, Leibniz-Institut für Photonische Technologien e.V.
(Germany) [10014-17]

9:20 am: **Nanosecond laser-induced damage of transparent conducting ITO film at 1064nm**, Jae-Hyuck Yoo, John J. Adams, Marlon G. Menor,
Tammy Olson, Jonathan R. I. Lee, Amit Samanta, Jeffrey D. Bude, Selim Elhadj, Lawrence Livermore National Lab. (USA) [10014-18]

9:40 am: **Study of defects in bulk potassium dihydrogen phosphate by a three-dimensional laser scattering imaging technique**, Jian Chen,
Jingtao Dong, Liang Ma, Zhangyao Qian, Zhoulung Wu, ZC Optoelectronic
Technologies Ltd. (China); Yuanan Zhao, Shijie Liu, Jianda Shao, Shanghai
Institute of Optics and Fine Mechanics (China). [10014-19]

TUESDAY POSTER OVERVIEWS

Room: Grand Ballroom 10:00 am to 10:30 am

Poster authors are asked to give a 2-minutes/2-viewgraph overview of their posters in the order that they appear in the Tuesday poster sessions.

LOCATION: GRAND BALLROOM AND CENTURY ROOM

POSTER VIEWING AND REFRESHMENT BREAK TUESDAY AM

Room: Century Room 10:30 am to 11:30 am

Posters will be displayed for viewing during refreshment breaks on Tuesday from 10:30 am to 11:30 am and again from 3:40 pm to 4:30 pm.

POSTER SESSION

Room: Century Room Tue 10:30 am to 11:30 am

Fundamental Mechanisms

Influence of the size and concentration of precursor on laser damage performance in KDP crystal, Yueliang Wang, Shanghai Institute of Optics and Fine Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Yuanan Zhao, Guohang Hu, Meiping Zhu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China). [10014-64]

Laser-induced damage threshold characterization of high-bandgap dielectrics with few-cycle femtosecond laser pulses, Noah Talisa, Kyle R. P. Kafka, Kevin Werner, Hui Li, Allen Yi, Enam A. Chowdhury, The Ohio State Univ. (USA) [10014-65]

Initial kinetics of defect-initiated nanosecond-pulse laser damage and ablation, Yeji Xu, Luke A. Emmert, David H. Dunlap, The Univ. of New Mexico (USA); Travis Day, Dinesh Patel, Carmen S. Menoni, Colorado State Univ. (USA); Wolfgang Rudolph, The Univ. of New Mexico (USA) [10014-66]

Finite difference time-domain method for simulation of damage initiation in thin film coatings, Linas Smalakys, Balys Momgaudis, Robertas Grigutis, Andrius Melninkaitis, Vilnius Univ. (Lithuania) . [10014-67]

Fine investigations to highlight first stages of fatigue effect in silica, Alexandre Beaudier, Frank R. Wagner, Konstantinos Iliopoulos, Jean-Yves Natoli, Institut Fresnel (France) [10014-78]

Thin Films

Study of the picosecond laser damage in HfO₂/SiO₂-based thin-film coatings in vacuum, Alexei Kozlov, Semyon Papernov, James B. Oliver, Amy L. Rigatti, Brittany N. Taylor, Brian Charles, Christopher Smith, Univ. of Rochester (USA) [10014-68]

CONFERENCE 10014

- Improved LIDT values for dielectric dispersive compensating mirrors applying ternary composites**, Thomas Willemsen, Leibniz Univ. Hannover (Germany) and Laser Zentrum Hannover e.V. (Germany); Sebastian Schlichting, Mark Gyamfi, Marco Jupé, Henrik Ehlers, Laser Zentrum Hannover e.V. (Germany); Uwe Morgner, Leibniz Univ. Hannover (Germany); Detlev Ristau, Laser Zentrum Hannover e.V. (Germany) and Leibniz Univ. Hannover (Germany) [10014-69]
- Preparation of the free-standing silica aerogel thin films and film gratings**, Bin Zhou, Ai Du, Tongji Univ. (China) [10014-70]
- ALD Al₂O₃ coating properties for high-power laser**, Hao Liu, Leibniz Univ. Hannover (Germany); Lars O. Jensen, Laser Zentrum Hannover e.V. (Germany); Jürgen Becker, Leibniz Univ. Hannover (Germany); Ping Ma, Chengdu Fine Optical Engineering Research Ctr. (China); Detlev Ristau, Leibniz Univ. Hannover (Germany) and Laser Zentrum Hannover e.V. (Germany) [10014-71]
- What are the impacts of the planarization process on thin film properties?**, Travis Day, Hanchen Wang, Brendan A. Reagan, Jorge J. Rocca, Carmen S. Menoni, Colorado State Univ. (USA); Christopher J. Stolz, Lawrence Livermore National Lab. (USA); Paul B. Mirkarimi, James A. Folta, John D. Roehling, Lawrence Livermore National Lab. (USA) and Colorado State Univ. (USA); Ashot S. Markosyan, Stanford Univ. (USA); Roger Route, Stanford Univ. (USA) and Colorado State Univ. (USA); Martin M. Fejer, Stanford Univ. (USA) [10014-72]
- Optimization of electric field distribution for improved optical resistance in chirped mirror**, Simas Melnikas, Simonas Kičas, Ctr. for Physical Sciences and Technology (Lithuania); Linas Smalakys, Gintare Batavičiute, Andrius Melninkaitis, Vilnius Univ. (Lithuania) [10014-73]
- A study of metal-dielectric mirrors technology with regard to the laser-induced-damage-threshold**, Václav Škoda, CRYTUR spol s.r.o. (Czech Republic); Jan Vanda, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [10014-74]
- Use of Al₂O₃ layers for higher laser damage threshold at 22.5° incidence, S polarization of a 527 nm/1054 nm dichroic coating**, John C. Bellum, Ella S. Field, Damon E. Kletecka, Patrick K. Rambo, Sandia National Labs. (USA) [10014-89]

LOCATION: CENTURY ROOM AND GRAND BALLROOM

SESSION 6

Room: Grand Ballroom Tue 11:30 am to 12:50 pm

Materials and Measurements II

Session Chairs: **Carmen S. Menoni**, Colorado State Univ. (USA);
Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China)

11:30 am: **Optical absorption spectroscopy with a nano-Kelvin calorimeter**, Behshad Roshanzadeh, S.T.P. Boyd, Wolfgang Rudolph, The Univ. of New Mexico (USA) [10014-20]

11:50 am: **Spatially resolved measurement of the residual reflectance at the interface between neodymium laser glass and edge cladding glass for large aperture applications**, Jian Chen, Jingtao Dong, Zhouling Wu, ZC Optoelectronic Technologies Ltd. (China); Lili Hu, Wei Chen, Lei Wen, Junjiang Hu, Tao Meng, Shanghai Institute of Optics and Fine Mechanics (China) [10014-21]

12:10 pm: **Preparing for 3 PW at the Centre for Advanced Laser Applications (CALA) in Munich: Laser damage of optics in vacuum under the microscope**, Christian Kreuzer, Jörg Schreiber, Andreas Welzmueller, Ludwig-Maximilians-Univ. München (Germany) . . . [10014-22]

12:30 pm: **Laser conditioning mechanism revealed by defect and absorption variation in the bulk and at the surface of KDP/DKDP crystals**, Guohang Hu, Yuanan Zhao, Dawei Li, Xiaofeng Liu, Meiping Zhu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China) [10014-23]

Lunch Break Tue 12:50 pm to 2:20 pm

SESSION 7

Room: Grand Ballroom Tue 2:20 pm to 3:40 pm

Materials and Measurements III

Session Chairs: **MJ Soileau**, Univ. of Central Florida (USA);
Wolfgang Rudolph, The Univ. of New Mexico (USA)

2:20 pm: **Periodic Review of ISO 21254: U.S. National Committee Proposal for Revision**, Jonathan W. Arenberg, Northrop Grumman Aerospace Systems (USA); Donna J. Howland, Northrop Grumman Corp. (USA); C. Wren Carr, Lawrence Livermore National Lab. (USA); Michael D. Thomas, Spica Technologies, Inc. (USA); John C. Bellum, Sandia National Labs. (USA); Trey Turner, Research Electro-Optics, Inc. (USA) . . [10014-24]

CONFERENCE 10014

2:40 pm: **Comparison of different LIDT testing protocols for PW and multi-PW class high-reflectivity coatings**, Michal Durák, Daniel Kramer, Praveen K. Velpula, Alexander R. Meadows, Josef Cupal, Bedrich Rus, The Czech Academy of Sciences (Czech Republic) [10014-25]

3:00 pm: **Accurate measurement of the onset laser damage threshold**, Jonathan W. Arenberg, Northrop Grumman Aerospace Systems (USA) [10014-26]

3:20 pm: **Laser scattering imaging of surface and sub-surface defects for large-aperture optics**, Jingtao Dong, Jian Chen, Zhangyao Qian, Zhouling Wu, ZC Optoelectronic Technologies Ltd. (China); Shijie Liu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China) [10014-27]

POSTER VIEWING AND REFRESHMENT BREAK TUESDAY PM

Room: Century Room 3:40 pm to 4:30 pm

Posters will be displayed for viewing during refreshment breaks on Tuesday from 10:00 am to 10:30 am and again from 3:40 pm to 4:30 pm.

SESSION 8

Room: Grand Ballroom Tue 4:30 pm to 5:50 pm

Materials and Measurements IV

Session Chairs: **Jonathan W. Arenberg**, Northrop Grumman Aerospace Systems (USA); **Joseph A. Menapace**, Lawrence Livermore National Lab. (USA)

4:30 pm: **Laser-induced damage in three-dimensional photonic crystals**, Lei Pan, Dayong Zhang, Yueye Lu, Hongbo Xu, Yao Li, Harbin Institute of Technology (China) [10014-28]

4:50 pm: **Plume dynamics from UV pulsed ablation of Al and Ti**, William Bauer, Glen P. Perram, Air Force Institute of Technology (USA) . [10014-29]

5:10 pm: **Laser-induced damage threshold of optical fibers at ns pulses**, Jan Vanda, Mihai-George Muresan, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Matej Sebek, Vojtech Bilek, Czech Technical Univ. in Prague (Czech Republic) [10014-30]

LOCATION: CENTURY ROOM AND GRAND BALLROOM

5:30 pm: **Laser damage creates backdoors in quantum cryptography**, Shihan Sajeed, Poompong Chaiwongkhot, Univ. of Waterloo (Canada); Mathieu Gagné, Ecole Polytechnique de Montréal (Canada); Jean-Philippe Bourgoin, Univ. of Waterloo (Canada) and Ecole Polytechnique de Montréal (Canada); Carter Minshull, Univ. of Waterloo (Canada); Matthieu Legré, id Quantique SA (Switzerland); Thomas D. Jennewein, Univ. of Waterloo (Canada); Raman Kashyap, Ecole Polytechnique de Montréal (Canada); Vadim V. Makarov, Univ. of Waterloo (Canada) [10014-31]

CLOSING REMARKS

Room: Grand Ballroom 5:50 pm to 6:00 pm

Wine and Cheese Tasting Reception

TUE 6:30 TO 8:00 PM

SPONSORED BY

SPIE and the Conference Co-chairs of Laser Damage XLVIII

Reception at NCAR—National Center for Atmospheric Research

1850 Table Mesa Dr., Boulder, CO

All attendees are invited to join us for an enjoyable evening of wine tasting, local brews, and a selection of cheese appetizers.

Guest tickets are available onsite for purchase, \$30.

FOOD AND DRINK SPONSORED BY



ArrowThin Films
Providing solutions, hitting your targets



CONFERENCE 10014

WEDNESDAY 28 SEPTEMBER

REGISTRATION MATERIAL PICK-UP

Room: Sunshine Room 7:30 am to 3:00 pm

SESSION 9

Room: Grand Ballroom Wed 8:00 am to 10:00 am

Mini-Symposium: Review of Large-Scale, High-Power Laser Facility Projects I

Session Chairs: **Christopher J. Stolz**, Lawrence Livermore National Lab. (USA); **Stefan H. Borneis**, GSI (Germany)

8:00 am: **ELI-beamlines and its ultrahigh intensity beam transport system** (*Plenary Presentation*), Stefan H. Borneis, Institute of Physics of the ASCR, v.v.i. (Czech Republic), Gesellschaft für Schwerionenforschung GmbH (Germany); Jean-Baptiste Accary, Lukáš Brabec, Martin Bucka, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Steve Calderon, Pegasus Design, Inc. (United States); Diego de Luis, Institute of Physics of the ASCR, v.v.i. (Czech Republic); David Eimerl, EIMEX Software and Consulting (United States); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Dieter Heiland, Baudynamik Heiland & Mistler GmbH (Germany); Jana Hejduková, Roman Hvězda, Danila KhiKhlukha, Pavel Korouš, Daniel Kramer, Tomáš Laštovička, Martin Laub, Tadzio Levato, Daniele Margarone, Michael J. Morrissey, Donald A. Peyrot, Ladislav Pust, Bedrich Rus, Jan Rídky, Martin Sokol, Ladislav Stanke, Anita Thakur, Jiří Vaculík, Stefan Weber, Roberto Ziano, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [10014-32]

8:30 am: **Laser performance of the SG-III Laser Facility** (*Plenary Presentation*), Wanguo Zheng, China Academy of Engineering Physics (China) and Shanghai Jiao Tong Univ. (China); Xiaofeng Wei, China Academy of Engineering Physics (China); Qihua Zhu, China Academy of Engineering Physics (China) and Shanghai Jiao Tong Univ. (China); Feng Jing, China Academy of Engineering Physics (China); Dongxia Hu, Jingqin Su, China Academy of Engineering Physics (China) and Shanghai Jiao Tong Univ. (China); Kuixing Zheng, Xiaodong Yuan, Hai Zhou, Wanjun Dai, Fang Wang, Wei Zhou, Dangpeng Xu, Xudong Xie, Bin Feng, Zhi-tao Peng, Liangfu Guo, Yuanbin Chen, Xiong-jun Zhang, Donghui Lin, Zhao Dang, Lanqin Liu, Yong Xiang, China Academy of Engineering Physics (China); Xuewei Deng, China Academy of Engineering Physics (China) and Shanghai Jiao Tong Univ. (China) [10014-33]

LOCATION: GRAND BALLROOM

9:00 am: **Overview of the LMJ: PETAL project** (*Plenary Presentation*), Jérôme Néauport, Commissariat à l'Énergie Atomique (France) . [10014-34]

9:30 am: **Challenges for robust laser systems of ELI-Beamlines** (*Plenary Presentation*), Daniel Kramer, Bedrich Rus, Pavel Bakule, Jonathan T. Green, Roman Antipenkov, Jiri Thoma, Jack A. Naylon, Pavel Trojek, Stepan Vyhlička, Michal P. Košelja, Michal Durák, Praveen K. Velpula, Martin Fibrich, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [10014-35]

Refreshment Break Wed 10:00 am to 10:30 am

SESSION 10

Room: Grand Ballroom Wed 10:30 am to 12:30 pm

Mini-Symposium: Review of Large-Scale, High-Power Laser Facility Projects II

Session Chairs: **Christopher J. Stolz**, Lawrence Livermore National Lab. (USA); **Stefan H. Borneis**, GSI (Germany)

10:30 am: **Sandia's Z-Backlighter Laser Facility** (*Plenary Presentation*), Patrick K. Rambo, Jens Schwarz, Marius Schollmeier, Matthias Geissel, Ian C. Smith, Mark W. Kimmel, Christopher S. Speas, Jonathon E. Shores, John C. Bellum, Ella S. Field, Damon E. Kletecka, John L. Porter, Sandia National Labs. (USA) [10014-36]

11:00 am: **Overview of large-scale laser at ILE/Osaka University and future plan** (*Plenary Presentation*), Junji Kawanaka, Osaka Univ. (Japan) [10014-37]

11:30 am: **Overview of the Orion Laser Facility: update on performance, experimental schedule, and laser operations** (*Plenary Presentation*), Rory Penman, Mark Girling, David Egan, Stephen P. Elsmere, Ewan J. Harvey, David Ianto Hillier, Dianne Hussey, AWE plc (United Kingdom); Stefan J. F. Parker, Paul A. Treadwell, David N. Winter, Nicholas W. Hopps, AWE plc (United Kingdom) [10014-38]

12:00 pm: **Making a precision measurement at metawatt circulation power levels** (*Plenary Presentation*), Stefan Ballmer, Massachusetts Institute of Technology (USA), LOGO Science Collaboration (USA) [10014-77]

Lunch Break Wed 12:30 pm to 1:40 pm

CONFERENCE 10014

SESSION 11

Room: Grand Ballroom Wed 1:40 pm to 4:00 pm

Fundamental Mechanisms I

Session Chairs: **Vitaly E. Gruzdev**, Univ. of Missouri (USA);
Meiping Zhu, Shanghai Institute of Optics and Fine Mechanics (China)

1:40 pm: **Investigation of mechanisms leading to laser damage morphology** (*Keynote Presentation*), Laurent Lemaignère, Maxime Chambonneau, Romain Diaz, Pierre Grua, Roger Courchinoux, Commissariat à l'Énergie Atomique (France); Jean-Yves Natoli, Institut Fresnel (France); Jean-Luc Rullier, Commissariat à l'Énergie Atomique (France) [10014-39]

2:20 pm: **Morphology and mechanisms of picosecond ablation of metal films on fused silica substrates**, Isaac L. Bass, Lawrence Livermore National Lab. (USA) [10014-40]

2:40 pm: **First principles simulation of void and crater formation using the particle-in-cell method**, Alex Russell, Douglass W. Schumacher, Kyle R. P. Kafka, Enam A. Chowdhury, The Ohio State Univ. (USA) . . [10014-41]

3:00 pm: **Electrostatic effects following irradiation of fused silica surfaces with nanosecond laser pulses**, Stavros G. Demos, Univ. of Rochester (USA); Christopher W. Carr, David A. Cross, Lawrence Livermore National Lab. (USA) [10014-42]

3:20 pm: **Time-resolved microscopy studies of laser damage dynamics at 0.5-1ps, 1030nm**, Laurent Gallais, Alexandre Ollé, Serge Monneret, Institut Fresnel (France); Martin Sozet, Commissariat à l'Énergie Atomique (France) and Institut Fresnel (France); Jérôme Néauport, Laurent Lemaignère, Commissariat à l'Énergie Atomique (France) [10014-43]

3:40 pm: **The effect of ns laser conditioning on the fs laser-induced damage in optical films**, Juan Du, Zehan Li, Shanghai Institute of Optics and Fine Mechanics (China); Bing Xue, Takayoshi Kobayashi, The Univ. of Electro-Communications (Japan); Yuanan Zhao, Yuxin Leng, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China) [10014-44]

Refreshment Break Wed 4:00 pm to 4:30 pm

SESSION 12

Room: Grand Ballroom Wed 4:30 pm to 6:30 pm

Fundamental Mechanisms II

Session Chairs: **Jonathan W. Arenberg**,
Northrop Grumman Aerospace Systems (USA); **Jérôme Néauport**,
Commissariat à l'Énergie Atomique (France)

4:30 pm: **Effect of deuterated levels and impurities on laser-induced damage in DKDP crystals**, Baoan Liu, Xin Ju, Univ. of Science and Technology Beijing (China); Xun Sun, Shandong Univ. (China) . . [10014-45]

4:50 pm: **First-principles calculations for initial electronic excitations in dielectrics induced by intense femtosecond laser pulses**, Shunsuke A. Sato, Kazuhiro Yabana, Univ. of Tsukuba (Japan); Yasushi Shinohara, The Univ. of Tokyo (Japan); Tomohito Otobe, National Institutes for Quantum and Radiological Science and Technology (Japan); Kyung-Min Lee, Max-Planck-Institut für Struktur und Dynamik der Materie (Germany); George F. Bertsch, Univ. of Washington (USA) [10014-46]

5:10 pm: **Dual wavelength laser damage mechanisms in the ultrashort pulse regime**, Mark Gyamfi, Marion Costella, Thomas Willemsen, Laser Zentrum Hannover e.V. (Germany); Peter Jürgens, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Mathias Mende, LASEROPTIK GmbH (Germany); Lars O. Jensen, Detlev Ristau, Laser Zentrum Hannover e.V. (Germany) [10014-47]

5:30 pm: **Ultrafast polychromatic ionization of dielectric solids**, Peter Jürgens, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Marco Jupé, Mark Gyamfi, Detlev Ristau, Laser Zentrum Hannover e.V. (Germany) [10014-48]

5:50 pm: **Influence of multiple energy bands on the photoionization of non-metal crystals**, Vitaly E. Gruzdev, Univ. of Missouri (USA); Drake R. Austin, Enam A. Chowdhury, The Ohio State Univ. (USA) [10014-49]

6:10 pm: **Simulation of heating by optical absorption in nanoparticle dispersions**, Benjamin C. Olbricht, U.S. Army Research Lab. (USA) [10014-50]

CLOSING REMARKS

Room: Grand Ballroom 6:30 pm to 6:45 pm

GENERAL INFORMATION

Onsite Registration and Badge Pick-up Hours

Location: Millennium Harvest House, Sunshine Room

Sunday 25 September	5:30 pm to 8:30 pm
Monday 26 September	7:30 am to 4:00 pm
Tuesday 27 September	7:30 am to 4:00 pm
Wednesday 28 September	7:30 am to 3:00 pm

Urgent Message Line

SPIE has an urgent message line available during the conference 360.676.3290. SPIE staff will receive the message and do their best to make sure the attendee receives the information as quickly as possible.

Speaker Check-In

Location: Grand Ballroom

Conference rooms will have a computer workstation, projector, screen, lapel microphone, and laser pointer. Authors must arrive before the conference begins in the morning, at a coffee break, or at lunch break prior to their scheduled presentation to upload their presentation to the workstation in the meeting room.

Poster Setup Instructions

Poster authors can set up their posters from 7:50 am to 8:20 am on the day they are scheduled. If you do not have your poster set up by 10:00 am, you will be considered a no show and your manuscript will not be published. Authors are to be at their posters during that days' poster session to discuss their work with the attendees.

MONDAY: Posters will be displayed for viewing during refreshment breaks from 10:30 am to 11:30 am and again from 3:40 pm to 4:30 pm.

TUESDAY: Posters will be displayed for viewing during refreshment breaks from 10:30 am to 11:30 am and again from 3:40 pm to 4:30 pm.

It is your responsibility to remove your poster and all materials as soon as the second poster session of that day is over. Posters and all materials remaining will be considered unwanted and will be discarded.

On the day of your poster sessions, poster authors are asked to give a 2-minute/2-viewgraph overview of their posters in the order they appear in the program.

Car Rental

Hertz Car Rental has been selected as the official car rental agency for this event. To reserve a car, identify yourself as 2016 SPIE Laser Damage Symposium attendee using the Hertz Meeting Code CV# 029B0021. Discount rates apply for roundtrip rentals up to one week prior through one week after the conference dates. Note: When booking from International Hertz locations, the CV # must be entered with the letters CV before the number, i.e. CV029B0021.

Book Online at www.hertz.com

PROCEEDINGS

Full paid registration includes online Proceedings of SPIE.

Available as part of registration:

Conference Proceedings Volume—online access to a single conference proceedings volume via the SPIE Digital Library. Available as papers are published.

Paid Conference Attendees: You may purchase additional print conference proceedings volume for \$100 each.

ACCESSING ONLINE PROCEEDINGS

To access your proceedings:

- Go to <http://spiedigitallibrary.org> and sign in. If you do not have an SPIE account, create one using the email address you used to register for the conference.

ONLINE PROCEEDINGS

SPIE Laser Damage 2016

Included Volume: 10014

- Click the My Account link at the top of the page, where you'll find the My Conference Proceedings tab.

You can also access this content via your organization's SPIE Digital Library account.

For assistance, contact SPIE:

Email: SPIEDLsupport@spie.org

Phone (North America): +1 888 902 0894

Phone (Rest of World): +1 360 685 55

PRINTED PROCEEDINGS

You can purchase printed proceedings for an additional fee. Printed proceedings will be available 8-10 weeks after the conference. Shipping is additional and tax may apply.

VOL#	TITLE (EDITOR)	PRICE
10014	Laser Damage 2016 <i>(Gregory J. Exarhos, Vitaly E. Gruzdev, Joseph A. Menapace, Detlev Ristau, MJ Soileau)</i>	\$100

*40 Years of Proceedings from the Laser
Damage Symposium on DVD (1969-2008)*



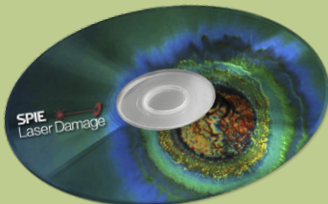
**Laser-Induced
Damage in
Optical Materials**

DVD containing the complete Proceedings for the specified years in fully searchable PDF format, supplemented by a browsable Table of Contents containing links to the full-text articles.

Purchase from available stock at the Symposium.
Pre-order DVDs by contacting:

Dr. Joseph A. Menapace
menapace1@lidl.gov

Or purchase onsite at the Registration Desk.



PRICE:
\$50.00
payable during
pickup or delivery

INDEX OF AUTHORS, CHAIRS, AND COMMITTEE MEMBERS

A

Accary, Jean-Baptiste [10014-32] S9
Adams, John J. [10014-18] S5
Aggarwal, Ishwar D. [10014-3] S1
Akimoto, Masaya [10014-60] SPS2
Allenspacher, Paul [10014-51] SPS1,
[10014-56] SPS2, [10014-61] SPS2,
[10014-7] S2
Alves, Joana C. [10014-51] SPS1, [10014-
56] SPS2
Ameil, Christel [10014-6] S2
Andrew, James E. 10014 Program
Committee
Antipenkov, Roman [10014-35] S9
Aramomi, Shunsuke [10014-55] SPS2
Arenberg, Jonathan W. 10014 Program
Committee, 10014 S12 Session Chair,
10014 S8 Session Chair, [10014-24] S7,
[10014-26] S7, [10014-61] SPS2
Austin, Drake R. [10014-14] S4, [10014-
49] S12

B

Bakule, Pavel [10014-35] S9
Ballmer, Stefan [10014-77] SPS4
Baselga Mateo, Ana [10014-56] SPS2
Bass, Isaac L. [10014-40] S11
Bataficiute, Gintare [10014-73] SPS4
Bauer, William [10014-29] S8
Beaudier, Alexandre [10014-78] SPS3
Becker, Jürgen [10014-71] SPS4
Bellum, John C. [10014-24] S7, [10014-
36] S10
Bertsch, George F. [10014-46] S12
Bhandari, Harish B. [10014-11] S4
Bilek, Vojtech [10014-30] S8
Bischof, David [10014-57] SPS2
Bisson, Regis [10014-62] SPS2
Borneis, Stefan H. 10014 S10 Session
Chair, 10014 S9 Session Chair, [10014-
32] S9
Botha, Roelene [10014-57] SPS2
Bouillet, Stéphane [10014-6] S2
Bourgeade, Antoine [10014-6] S2
Bourgoin, Jean-Philippe [10014-31] S8
Bousquet, Bruno [10014-4] S2, [10014-
52] SPS1
Boyd, S.T.P. [10014-20] S6

Brabec, Lukáš [10014-32] S9
Bublitz, Simon [10014-59] SPS2
Bucka, Martin [10014-32] S9
Bude, Jeffrey D. [10014-1] S1, [10014-18]
S5
Busse, Lynda E. [10014-3] S1

C

Calderon, Steve [10014-32] S9
Carr, Christopher Wren [10014-1] S1,
[10014-24] S7, [10014-42] S11, [10014-
5] S2
Carvalho, Luis Alberto V. [10014-54]
SPS2
Case, Jason R. [10014-3] S1
Chai, Yingjie [10014-12] S4
Chaiwongkhot, Poompong [10014-31] S8
Chambonneau, Maxime [10014-39] S11
Charles, Brian [10014-68] SPS4
Chen, Jian [10014-19] S5, [10014-21] S6,
[10014-27] S7
Chen, Lin [10014-75] SPS1
Chen, Wei [10014-21] S6
Chen, Yuanbin [10014-33] S9, [10014-75]
SPS1
Cheng, Xiaofeng [10014-75] SPS1
Cheng, Xinbin [10014-8] S3
Chowdhury, Enam A. [10014-14] S4,
[10014-15] S4, [10014-41] S11, [10014-
49] S12, [10014-65] SPS3
Ciapponi, Alessandra [10014-51] SPS1,
[10014-56] SPS2, [10014-61] SPS2
Commandré, Mireille 10014 Program
Committee
Cormont, Philippe [10014-4] S2, [10014-
52] SPS1, [10014-6] S2
Costella, Marion [10014-47] S12
Courchinoux, Roger [10014-39] S11
Cox, Gerald P. [10014-10] S3
Cross, David A. [10014-1] S1, [10014-42]
S11, [10014-5] S2
Cupal, Josef [10014-25] S7

D

Dai, Wanjun [10014-33] S9
Daly, Meaghan [10014-15] S4
Dang, Zhao [10014-33] S9
Day, Travis [10014-66] SPS3

INDEX OF AUTHORS, CHAIRS, AND COMMITTEE MEMBERS

Day, Travis [10014-72] SPS4
de Luis, Diego [10014-32] S9
Demos, Stavros G. 10014 Program
Committee, 10014 S5 Session Chair,
[10014-1] S1, [10014-42] S11
Deng, Xuwei [10014-33] S9
Devasahayam, Adrian [10014-9] S3
Diaz, Romain [10014-39] S11
D'Lallo, Michael J. [10014-10] S3
Dong, Jingtao [10014-19] S5, [10014-21]
S6, [10014-27] S7
D'Ottavi, Alessandro [10014-7] S2
Doualle, Thomas [10014-6] S2
Du, Ai [10014-70] SPS4
Du, Juan [10014-44] S11
Dunlap, David H. [10014-66] SPS3
Durák, Michal [10014-25] S7, [10014-35]
S9
Dussauze, Marc [10014-4] S2, [10014-52]
SPS1

E

Egan, David [10014-38] S10
Ehlers, Henrik [10014-69] SPS4
Eimerl, David [10014-32] S9
Elhadj, Selim [10014-18] S5
Elsmere, Stephen P. [10014-38] S10
Emmert, Luke A. [10014-66] SPS3
Era, Fabio [10014-7] S2
Erz, Ralf H. [10014-9] S3
Ettemeyer, Andreas [10014-57] SPS2
Exarhos, Greg J. 10014 Conference Chair

F

Fargin, Evelyne [10014-4] S2, [10014-52]
SPS1
Feigenbaum, Eyal [10014-1] S1, [10014-5]
S2
Fejer, Martin M. [10014-72] SPS4
Feng, Bin [10014-33] S9
Fibrich, Martin [10014-35] S9
Field, Ella S. [10014-36] S10
Folta, James A. [10014-72] SPS4

G

Gagné, Mathieu [10014-31] S8

Gallais, Laurent [10014-13] S4, [10014-2]
S1, [10014-43] S11, [10014-58] SPS2,
[10014-6] S2, [10014-62] SPS2
Geerke, Patrick [10014-13] S4
Geissel, Matthias [10014-36] S10
George, Jason M. [10014-9] S3
Girling, Mark [10014-38] S10
Glebov, Leonid B. 10014 Program
Committee
Green, Jonathan T. [10014-35] S9
Grigutis, Robertas [10014-67] SPS3
Grua, Pierre [10014-39] S11
Gruzdev, Vitaly E. 10014 Conference
Chair, 10014 S1 Session Chair, 10014 S11
Session Chair, [10014-49] S12
Guo, Liangfu [10014-33] S9
Gyamfi, Mark [10014-47] S12, [10014-48]
S12, [10014-69] SPS4

H

Harris, Candace D. [10014-1] S1
Harvey, Ewan J. [10014-38] S10
Hata, Hidefumi [10014-60] SPS2
He, Pengfei [10014-8] S3
He, Shaobo [10014-75] SPS1
Heese, Clemens [10014-51] SPS1, [10014-
56] SPS2
Heiland, Dieter [10014-32] S9
Hejdukova, Jana [10014-32] S9
Herringer, Jonathan H. [10014-61] SPS2
Hillier, David Ianto [10014-38] S10
Hippler, Markus [10014-51] SPS1, [10014-
56] SPS2
Hopps, Nicholas W. [10014-38] S10
Horibe, Hideo [10014-53] SPS1
Howland, Donna J. [10014-24] S7
Hu, Dongxia [10014-33] S9
Hu, Guohang [10014-23] S6, [10014-64]
SPS3
Hu, Junjiang [10014-21] S6
Hu, Lili [10014-21] S6
Hussey, Dianne [10014-38] S10
Hvezda, Roman [10014-32] S9

I

Iliopoulos, Konstantinos [10014-78] SPS3
Inagaki, Yoshizumi [10014-60] SPS2
Ivanov, Toncho [10014-56] SPS2

J

Jennewein, Thomas D. [10014-31] S8
 Jensen, Lars [10014-47] S12, [10014-71] SPS4
 Jiao, Hongfei [10014-8] S3
 Jing, Feng [10014-33] S9
Jitsuno, Takahisa 10014 Program Committee
 Ju, Xin [10014-45] S12
 Jupé, Marco [10014-13] S4, [10014-48] S12, [10014-69] SPS4
 Jürgens, Peter [10014-47] S12, [10014-48] S12

K

Kafka, Kyle R. P. [10014-14] S4, [10014-15] S4, [10014-41] S11, [10014-65] SPS3
 Kamimura, Tomosumi [10014-53] SPS1, [10014-60] SPS2
 Kashiwagi, Reina [10014-55] SPS2
Kashyap, Raman [10014-31] S8
 Kawanaka, Junji [10014-37] S10
 KhiKhlukha, Daniila [10014-32] S9
 Kicas, Simonas [10014-73] SPS4
 Kimmel, Mark W. [10014-36] S10
 Kirchner, Matthew S. [10014-15] S4
 Kletecka, Damon E. [10014-36] S10
 Kobayashi, Takayoshi [10014-44] S11
 Kohli, Sandeep [10014-9] S3
 Korn, Georg [10014-32] S9
 Korous, Pavel [10014-32] S9
 Košelja, Michael P. [10014-35] S9
 Kozlov, Alexei A. [10014-68] SPS4
 Kramer, Daniel [10014-25] S7, [10014-32] S9, [10014-35] S9
 Kreuzer, Christian [10014-22] S6
 Kuehn, Bodo [10014-16] S5

L

Labrugère, Christine [10014-52] SPS1
 Lamaignère, Laurent [10014-2] S1, [10014-39] S11, [10014-43] S11, [10014-58] SPS2, [10014-6] S2
 Lambert, Sebastian [10014-4] S2, [10014-52] SPS1
 Lastovicka, Tomas [10014-32] S9
 Laub, Martin [10014-32] S9

Lavastre, Eric A. G. [10014-2] S1, [10014-58] SPS2
 Lee, Jonathan R. I. [10014-18] S5
 Lee, Kyung-Min [10014-46] S12
 Legré, Matthieu [10014-31] S8
 Leng, Yuxin [10014-44] S11
 Levato, Tadzio [10014-32] S9
 Li, Dawei [10014-23] S6
 Li, Hui [10014-65] SPS3
 Li, Yao [10014-28] S8
 Li, Zehan [10014-44] S11
 Lin, Donghui [10014-33] S9
 Liu, Baoan [10014-45] S12
 Liu, Hao [10014-71] SPS4
 Liu, Lanqin [10014-33] S9
 Liu, Shijie [10014-19] S5, [10014-27] S7
 Liu, Xiaofeng [10014-23] S6
 Longuet, Jean-Louis [10014-52] SPS1
 Lu, Yueye [10014-28] S8

M

Ma, Bin [10014-8] S3
 Ma, Liang [10014-19] S5
 Ma, Ping [10014-71] SPS4
 Makarov, Vadim V. [10014-31] S8
 Mann, Klaus 10014 Program Committee
 Margarone, Daniele [10014-32] S9
 Markosyan, Ashot S. [10014-72] SPS4
Marton, Zsolt [10014-11] S4
 Matthews, Manyalibo J. [10014-1] S1, [10014-5] S2
 McElhenny, John E. [10014-63] SPS2
 McLoughlin, James J. [10014-38] S10
 Meadows, Alexander R. [10014-25] S7
Melnikas, Simas [10014-73] SPS4
 Melninkaitis, Andrius [10014-61] SPS2, [10014-67] SPS3, [10014-73] SPS4
 Menapace, Joseph A. 10014 Conference Chair, 10014 S4 Session Chair, 10014 S8 Session Chair
 Mende, Mathias [10014-47] S12
 Meng, Tao [10014-21] S6
Menoni, Carmen S. 10014 Program Committee, 10014 S2 Session Chair, 10014 S6 Session Chair, [10014-66] SPS3, [10014-72] SPS4
 Menor, Marlon G. [10014-18] S5
 Michler, Markus [10014-57] SPS2
 Minissale, Marco [10014-62] SPS2

INDEX OF AUTHORS, CHAIRS, AND COMMITTEE MEMBERS

Minshull, Carter [10014-31] S8
Mirkarimi, Paul B. [10014-72] SPS4
Momgaudis, Ballys [10014-67] SPS3
Monneret, Serge [10014-43] S11, [10014-6] S2
Morgner, Uwe [10014-69] SPS4
Morrissey, Michael J. [10014-32] S9
Muehlig, Christian [10014-17] S5, [10014-59] SPS2
Murahara, Masataka 10014 Program Committee
Muresan, Mihai-George [10014-30] S8

N

Nagarkar, Vivek V. [10014-11] S4
Nakamura, Ryosuke [10014-53] SPS1, [10014-60] SPS2
Natoli, Jean-Yves [10014-39] S11, [10014-78] SPS3
Naylon, Jack Alexander [10014-35] S9
Neacsu, Catalin [10014-14] S4
Néauport, Jérôme 10014 Program Committee, 10014 S12 Session Chair, 10014 S3 Session Chair, [10014-2] S1, [10014-34] S9, [10014-4] S2, [10014-43] S11, [10014-52] SPS1, [10014-58] SPS2
Negres, Raluca A. [10014-1] S1, [10014-15] S4
Nishiyama, Takashi [10014-53] SPS1
Norio, Hamada [10014-60] SPS2
Norton, Mary A. [10014-1] S1
Nuernberg, Frank [10014-16] S5
Nuno, Kosuke [10014-53] SPS1

O

Olbricht, Benjamin C. [10014-50] S12
Oliver, James B. [10014-68] SPS4
Ollé, Alexandre [10014-43] S11
Olson, Tammy [10014-18] S5
Otobe, Tomohito [10014-46] S12
Oudard, Jean Francois [10014-10] S3

P

Pan, Lei [10014-28] S8
Papernov, Semyon 10014 Program Committee, 10014 S2 Session Chair, [10014-68] SPS4
Parker, Stefan J. F. [10014-38] S10

Patel, Dinesh [10014-66] SPS3
Peng, Zhi-tao [10014-33] S9
Penman, Rory [10014-38] S10
Perram, Glen P. [10014-29] S8
Peyrot, Donald A. [10014-32] S9
Pffiffer, Mathilde [10014-4] S2, [10014-52] SPS1
Piris, Jorge [10014-56] SPS2
Porter, John L. [10014-36] S10
Potter, Matthew [10014-3] S1
Poutous, Menelaos K. [10014-3] S1
Pust, Ladislav [10014-32] S9

Q

Qian, Zhangyao [10014-19] S5, [10014-27] S7
Qiu, Roger [10014-1] S1

R

Raman, Rajesh N. [10014-1] S1, [10014-5] S2
Rambo, Patrick K. [10014-36] S10
Reagan, Brendan A. [10014-72] SPS4
Ridky, Jan [10014-32] S9
Riede, Wolfgang [10014-5] SPS1, [10014-56] SPS2, [10014-61] SPS2, [10014-7] S2
Rigatti, Amy L. [10014-68] SPS4
Ristau, Detlev 10014 Conference Chair, 10014 Program Committee, 10014 S5 Session Chair, [10014-13] S4, [10014-47] S12, [10014-48] S12, [10014-69] SPS4, [10014-71] SPS4
Rocca, Jorge J. [10014-72] SPS4
Roehling, John D. [10014-72] SPS4
Rollmann, Klaus [10014-16] S5
Roquin, Nadja [10014-2] S1, [10014-58] SPS2
Roshanzadeh, Behshad [10014-20] S6
Route, Roger [10014-72] SPS4
Rubenchik, Alexander M. [10014-1] S1
Rudolph, Wolfgang 10014 Program Committee, 10014 S4 Session Chair, 10014 S7 Session Chair, [10014-20] S6, [10014-66] SPS3
Rullier, Jean-Luc [10014-39] S11
Rus, Bedrich [10014-25] S7, [10014-32] S9, [10014-35] S9
Russell, Alex [10014-41] S11

S

Sajeed, Shihan [10014-31] S8
Samanta, Amit [10014-18] S5
Sanghera, Jasbinder S. [10014-3] S1
Sapkota, Gopal [10014-3] S1
Sato, Shunsuke A. [10014-46] S12
Scherrer, Ueli [10014-57] SPS2
Schlichting, Sebastian [10014-69] SPS4
Schollmeier, Marius [10014-36] S10
Schreiber, Jörg [10014-22] S6
Schröder, Helmut B. [10014-51] SPS1,
[10014-56] SPS2
Schumacher, Douglass W. [10014-41] S11
Schwarz, Jens [10014-36] S10
Sebek, Matej [10014-30] S8
Shao, Jianda 10014 Program Committee,
10014 S6 Session Chair, [10014-12] S4,
[10014-19] S5, [10014-23] S6, [10014-
27] S7, [10014-44] S11, [10014-64]
SPS3
Shaw, L. Brandon [10014-3] S1
Shea, Kevin M. [10014-15] S4
Shen, Nan [10014-1] S1
Shinn, Michelle D. 10014 Program
Committee
Shinohara, Yasushi [10014-46] S12
Shores, Jonathon E. [10014-36] S10
Sigler, Dennis [10014-11] S4
Václav Škoda [10014-74] SPS4
Smalakys, Linas [10014-67] SPS3,
[10014-73] SPS4
Smith, Chris [10014-68] SPS4
Smith, Ian C. [10014-36] S10
Soileau, MJ 10014 Conference Chair,
10014 S1 Session Chair, 10014 S7
Session Chair
Sokol, Martin [10014-32] S9
Sozet, Martin [10014-2] S1, [10014-43]
S11, [10014-58] SPS2
Speas, Christopher S. [10014-36] S10
Stanke, Ladislav [10014-32] S9
Stolz, Christopher J. 10014 Program
Committee, 10014 S10 Session Chair,
10014 S3 Session Chair, 10014 S9
Session Chair, [10014-15] S4, [10014-
72] SPS4
Su, Jingqin [10014-33] S9
Sun, Xun [10014-45] S12

T

Takagi, Seizi [10014-53] SPS1
Talisa, Noah [10014-14] S4, [10014-65]
SPS3
Taylor, Brittany N. [10014-68] SPS4
Tempea, Gabriel [10014-14] S4
Thakur, Anita [10014-32] S9
Thibault, Dominique [10014-7] S2
Thoma, Jiri [10014-35] S9
Thomas, Michael D. [10014-24] S7
Tober, Richard L. [10014-63] SPS2
Torrie, Calum I. [10014-76] S10
Treadwell, Paul A. [10014-38] S10
Trojek, Pavel [10014-35] S9
Turner, Trey [10014-24] S7
Tuzimoto, Singo [10014-53] SPS1

U

Umemura, Nobuhiro [10014-60] SPS2

V

Vaculik, Jiri [10014-32] S9
Vanda, Jan [10014-30] S8, [10014-74]
SPS4
Vankerkhove, Steven J. [10014-10] S3
Velpula, Praveen K. [10014-25] S7,
[10014-35] S9
Vetsch, Bernhard [10014-57] SPS2
Vyhlička, Stepan [10014-35] S9

W

Wagner, Frank R. [10014-78] SPS3
Wang, Fang [10014-33] S9
Wang, Hanchen [10014-72] SPS4
Wang, Jue [10014-10] S3
Wang, Wenyi [10014-75] SPS1
Wang, Yueliang [10014-64] SPS3
Wang, Zhanshan [10014-8] S3
Weber, Stefan A. [10014-32] S9
Wei, Xiaofeng [10014-33] S9
Welzmueller, Andreas [10014-22] S6
Wen, Lei [10014-21] S6
Werner, Kevin [10014-14] S4, [10014-65]
SPS3
Wernham, Denny [10014-56] SPS2,
[10014-61] SPS2, [10014-7] S2

INDEX OF AUTHORS, CHAIRS, AND COMMITTEE MEMBERS

Willemsen, Thomas [10014-13] S4,
[10014-47] S12, [10014-48] S12,
[10014-69] SPS4
Winter, David N. [10014-38] S10
Wu, Zhouling [10014-19] S5, [10014-21]
S6, [10014-27] S7

X

Xiang, Yong [10014-33] S9
Xie, Xudong [10014-33] S9, [10014-75]
SPS1
Xu, Dangpeng [10014-33] S9
Xu, Hongbo [10014-28] S8
Xu, Yejia [10014-66] SPS3
Xue, Bing [10014-44] S11

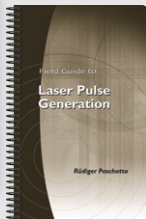
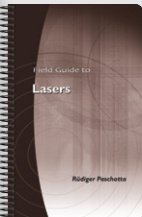
Y

Yabana, Kazuhiro [10014-46] S12
Yager, Jason [10014-17] S5
Yamashiro, Takanobu [10014-53] SPS1
Yi, Allen [10014-65] SPS3
Yoo, Jae-Hyuck [10014-18] S5
Yoshimura, Masashi [10014-60] SPS2
Yuan, Xiaodong [10014-33] S9, [10014-
75] SPS1

Z

Zhang, Dayong [10014-28] S8
Zhang, Jinlong [10014-8] S3
Zhang, Xiong-jun [10014-33] S9
Zhao, Yuanan [10014-19] S5, [10014-23]
S6, [10014-44] S11, [10014-64] SPS3
Zheng, Kuixing [10014-33] S9
Zheng, Wanguo [10014-33] S9
Zhou, Bin [10014-70] SPS4
Zhou, Hai [10014-33] S9
Zhou, Wei [10014-33] S9
Zhu, Meiping 10014 S11 Session Chair,
[10014-12] S4, [10014-23] S6, [10014-
64] SPS3
Zhu, Qihua [10014-33] S9
Ziano, Roberto [10014-32] S9
Ziolek, Carsten [10014-57] SPS2
Zu, Xiaotao [10014-75] SPS1

BROWSE THESE BOOKS AND MORE



Visit spie.org/books

ACCEPTANCE OF POLICIES AND REGISTRATION CONDITIONS

The following Policies and Conditions apply to all SPIE Events. As a condition of registration, you will be required to acknowledge and accept the SPIE Registration Policies and Conditions contained herein.

Granting Attendee Registration and Admission

SPIE, or their officially designated event management, in their sole discretion, reserves the right to accept or decline an individual's registration for an event. Further, SPIE, or event management, reserves the right to prohibit entry or remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, who in their sole opinion are not, or whose conduct is not, in keeping with the character and purpose of the event. Without limiting the foregoing, SPIE and event management reserve the right to remove or refuse entry to any attendee, exhibitor, representative, or vendor who has registered or gained access under false pretenses, provided false information, or for any other reason whatsoever that they deem is cause under the circumstances.

SPIE Safe Meeting and Misconduct Policy

SPIE is a professional, not-for-profit society committed to providing valuable and safe conference and exhibition experiences. SPIE is dedicated to equal opportunity and treatment for all its members, meeting attendees, staff, and contractors. Attendees are expected to be respectful to other attendees, SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be addressed promptly and seriously. Consequences up to and including expulsion from the event as appropriate will be implemented immediately.

The SPIE anti-harassment policy can be found at <http://spie.org/policy>.

Reporting of Unethical or Inappropriate Behavior

SPIE is an organization with strong values of responsibility and integrity. Our Harassment Policy, Ethics Statement, and Code of Professional Conduct contain general guidelines for behavior and for conducting business with the highest standards of ethics.

Onsite at a SPIE meeting, contact any SPIE Staff member with concerns or questions for thorough follow-up. If you feel in immediate danger, please dial 911 for police intervention.

SPIE has established a confidential reporting system for staff and all meetings participants to raise concerns about possible unethical or inappropriate behavior within our community. Complaints may be filed by phone at +1-888-818-6898 or at www.SPIE.ethicspoint.com and, if preferred, may be made anonymously.

SPIE POLICIES

Identification

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials.

Individuals are not allowed to pick up badges for attendees other than themselves. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

Capture and Use of a Person's Image

By registering for an SPIE event, I grant full permission to SPIE to capture, store, use, and/or reproduce my image or likeness by any audio and/or visual recording technique (including electronic/digital photographs or videos), and create derivative works of these images and recordings in any SPIE media now known or later developed, for any legitimate SPIE marketing or promotional purpose.

By registering for an SPIE event, I waive any right to inspect or approve the use of the images or recordings or of any written copy. I also waive any right to royalties or other compensation arising from or related to the use of the images, recordings, or materials. By registering, I release, defend, indemnify and hold harmless SPIE from and against any claims, damages or liability arising from or related to the use of the images, recordings or materials, including but not limited to claims of defamation, invasion of privacy, or rights of publicity or copyright infringement, or any misuse, distortion, blurring, alteration, optical illusion or use in composite form that may occur or be produced in taking, processing, reduction or production of the finished product, its publication or distribution.

Payment Method

Registrants for paid elements of the event, who do not provide a method of payment, will not be able to complete their registration. Individuals with incomplete registrations will not be able to attend the conference until payment has been made. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks and wire transfers. Onsite registrations can also pay with Cash.

Authors/Coauthors

By submitting an abstract, you agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the author registration rate, attend the meeting, and make the presentation as scheduled.
- A manuscript (minimum 6 pages, maximum 20 pages) for any accepted oral, invited, keynote, or poster presentation will be submitted for publication in the *Proceedings of SPIE* in the SPIE Digital Library. Some SPIE events have other requirements that the author is made aware of at the time of submission.

-
- Only papers presented at the conference and received according to publication guidelines and timelines will be published in the *Proceedings of SPIE* in the SPIE Digital Library (or via the requirements of that event).

Audio, Video, Digital Recording Policy

Conferences, courses, and poster sessions: For copyright reasons, recordings of any kind are prohibited without prior written consent of the presenter or instructor. Attendees may not capture or use the materials presented in any meeting/course room or in course notes on display without written permission. Consent forms are available at Speaker Check-In. Individuals not complying with this policy will be asked to leave a given session and/or asked to surrender their recording media.

Your registration signifies your agreement to be photographed or videotaped by SPIE in the course of normal business. Such photos and video may be used in SPIE marketing materials or other SPIE promotional items.

Laser Pointer Safety Information/Policy

SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers.

Use of a personal laser pointer represents user's acceptance of liability for use of a non-SPIE-supplied laser pointer. If you choose to use your own laser pointer, it must be tested to ensure <5 mW power output. Laser pointers in Class II and IIIa (<5mW) are eye safe if power output is correct, but output must be verified because manufacturer labeling may not match actual output. Come to Speaker Check-In and test your laser pointer on our power meter. You are required to sign a waiver releasing SPIE of any liability for use of potentially non-safe, personal laser pointers. Misuse of any laser pointer can lead to eye damage.

Access to Technical and Networking Events

Persons under the age of 18 including babies, carried or in strollers, and toddlers are not allowed in technical or networking events. Anyone 18 or older must register as an attendee. All technical and networking events require a valid conference badge for admission.

Unauthorized Solicitation Policy

Unauthorized solicitation in the Exhibition Hall is prohibited. Any non-exhibiting manufacturer or supplier observed to be distributing information or soliciting business in the aisles, or in another company's booth, will be asked to leave immediately.

SPIE POLICIES

Unsecured Items Policy

Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. SPIE is not responsible for items left unattended.

Wireless Internet Service Policy

At SPIE events where wireless is included with your registration, SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

Excessive usage (e.g., streaming video, gaming, multiple devices) reduces bandwidth and increases cost for all attendees. No routers may be attached to the network. Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation. SPIE is not responsible for computer viruses or other computer damage.

Mobile Phones and Related Devices Policy

Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

Smoking

For the health and consideration of all attendees, smoking, including e-cigarettes, is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking and e-cigarettes in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

Hold Harmless

Attendee agrees to release and hold harmless SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

Event Cancellation

If for some unforeseen reason SPIE should have to cancel the event, registration fees processed will be refunded to registrants. Registrants will be responsible for cancellation of travel arrangements or housing reservations and the applicable fees.

SPIE. DIGITAL LIBRARY



The world's largest collection of optics and photonics applied research

More than 450,000 interdisciplinary academic & research papers from around the world.

SPIDigitalLibrary.org

Powered by photonics



SPIE. LASER
DAMAGE

CONNECTING MINDS.
ADVANCING LIGHT.

2017

LASER DAMAGE

XLIX ANNUAL SYMPOSIUM ON OPTICAL
MATERIALS FOR HIGH-POWER LASERS

Mark Your Calendar

www.spie.org/LD

Venue to be determined
Boulder, Colorado, USA

Conference
24–27 September 2017