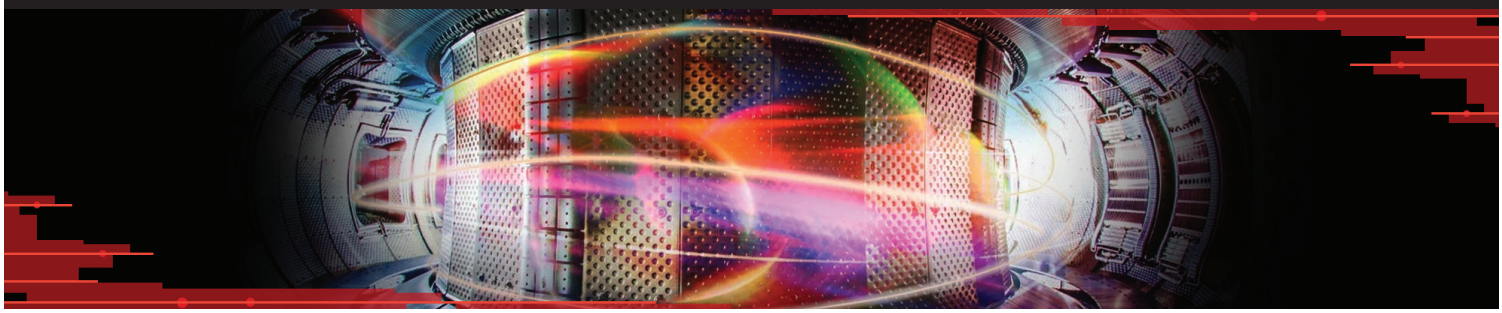
CALL FOR PAPERS

SPIE. LASER DAMAGE

17–20 September 2023
Dublin/Livermore, CA, United States

Submit abstracts by
3 May 2023



Laser-Induced Damage in Optical Materials 2023 (LD23)

Conference Chairs: **Christopher Wren Carr,** Lawrence Livermore National Lab. (United States); **Detlev Ristau,** Laser Zentrum Hannover e.V. (Germany); **Carmen S. Menoni,** Colorado State Univ. (United States); **MJ Soileau, Emeritus Chair,** CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); **Michael D. Thomas,** Spica Technologies, Inc. (United States)

Program Committee: **Jonathan W. Arenberg,** Northrop Grumman Aerospace Systems (United States); **Xinbin Cheng,** Tongji Univ. (China); **Enam A. Chowdhury,** The Ohio State Univ. (United States); **Stavros G. Demos,** Lab. for Laser Energetics (United States); **Eyal Feigenbaum,** Lawrence Livermore National Lab. (United States); **Ella S. Field,** Sandia National Labs. (United States); **Vitaly E. Gruzdev,** The Univ. of New Mexico (United States); **Lars O. Jensen,** TRUMPF SE + Co. KG (Germany); **Takahisa Jitsuno,** Osaka Univ. (Japan); **Marco Jupé,** Laser Zentrum Hannover e.V. (Germany); **Laurent Lamaignère,** CEA-Cesta (France); **Andrius Melninkaitis,** Vilnius Univ. (Lithuania); **Shinji Motokoshi,** Institute for Laser Technology (Japan); **Jean-Yves Natoli,** Institut Fresnel (France); **Raluca A. Negres,** Lawrence Livermore National Lab. (United States); **Jonathan Phillips,** STFC Rutherford Appleton Lab. (United Kingdom); **Wolfgang Rudolph,** The Univ. of New Mexico (United States); **Christopher J. Stolz,** Lawrence Livermore National Lab. (United States); **Meiping Zhu,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

MATERIALS AND MEASUREMENTS

Damage to the bulk of transparent optical media can occur in amorphous, polymeric, polycrystalline or crystalline materials. Characterization and measurements of damage threshold including methods of test procedures, data reduction, systems considerations, and international standards are reported. Also, characterization of basic materials properties, such as absorption, thermal conductivity, stress-optic coefficients, moduli and defects is in the focus of this section. With the emergence of nanostructured materials, the relationship between the propagating laser flux and engineered nanostructures becomes another topic of interest.

SURFACES, MIRRORS, AND CONTAMINATION

Optical surfaces often limit the power handling capability of an optic due to intrinsic and extrinsic flaws and defects. Proper surface preparation, subsurface damage control, roughness and scattering reduction, environmental degradation and aging prevention, and contamination control can improve the performance of mirrors, diffraction gratings, substrates for multilayer coatings, and other surfaces. The keynote speaker for this session will be Adriaan van Zwol, ASML, (Netherlands).

THIN FILMS

Because of the tremendous range of applications of optical multilayers for modifying the performance of optical measurements, and because thin films are generally the weakest part of optical systems, research into more damage-resistant thin films is a vibrant area. In addition to damage thresholds, researchers are interested in advanced film-deposition technology, contamination, film structure, film design, and film response to various environmental attacks and aging.

FUNDAMENTAL MECHANISMS

Topics range from the basics of photon-matter interaction to nonlinear propagation. Emphasis is on nonlinear behavior; for example, multiphoton effects, nonlinear refractive index, and self-focusing. This area also includes modeling, such as thermal behavior of defect-initiated damage and the interplay between elements in an optical train that affect performance and hence damage.

MINI-SYMPOSIUM I: MIXED MATERIALS/NANO-LAMINATES

During the last years, tremendous progresses have been achieved with new coating concepts including designs with gradual interfaces, mixed materials, and nanolaminates. The mini will be dedicated to recent research activities in this field.

Chaired by: **Marco Jupé,** Laser Zentrum Hannover e.V. (Germany).

MINI-SYMPOSIUM II: ICF CHALLENGES AND ENABLING TECHNOLOGIES

In recognition of the historic achievement of fusion and this year's conference location proximal to LLNL a second mini-symposium focusing on key elements which enabled fusion including the NIF Laser, Target Fabrication, Optics Recycling Loop, and Laser-induced damage.

Invited Speakers:

Jean-Michel Di Nicola, Lawrence Livermore National Lab. (USA)

Tayyab Suratwala, Lawrence Livermore National Lab. (USA)

Salmaan Baxamusa, Lawrence Livermore National Lab. (USA)

Christopher Carr, Lawrence Livermore National Lab. (USA)

NATIONAL IGNITION FACILITY TOURS

Tours of the NIF will be available to conference participants subject to site access approval. Interested parties should apply for site access approval: https://forms.office.com/r/HivNpw4sTg

If you have technical issues with the form, contact larac@spie.org

Applications for site approval should be submitted as soon as possible, but no later than **May 15**.

Round trip transportation from the conference venue and Lawrence Livermore National Lab and lunch can be arranged by purchasing a ticket supplied by SPIE. (Participation in NIF tours does not require purchase of lunch and transportation ticket.)

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BROADBAND, 920-NM MIRROR THIN FILM DAMAGE COMPETITION

Coordinated by: **Raluca Negres,** Lawrence Livermore National Lab. (USA)

A double-blind laser damage competition will be held to determine the current laser damage resistance of broadband, near-IR multilayer mirrors designed for ultra-short, pulsed laser operation. Damage testing will be executed at multiple wavelengths within the designed bandwidth of the optics to inform the spectral pulse shape dependence of the overall damage performance. The results will be shared at SPIE Laser Damage 2023. The mirrors must meet the following requirements:

- Reflectance > 99.5% desired at 830–-1010 nm
- GDD < ±50 fs^2 target
- 45 degrees incidence angle; "S'' polarization or "P", vendor specified
- Damage test wavelengths: 860 nm, 920 nm, 960 nm (S or P, depending on optics specifications)
- Pulse length 25 ± 5 fs; Repetition rate 5 Hz
- Environment: Vacuum (10^{-5} torr), 23 ±; 2 degrees C
- No wavefront or stress requirement
- No surface quality requirement

The coatings shall be deposited on glass substrates provided by the coating supplier. The dimensions of the substrate shall be 50 mm (± 1 mm) in diameter and at least 3 mm thick.

Samples must be received by **May 15, 2023** (earlier preferred, no late submissions will be accepted) to the following address:

Raluca Negres, L-470
Lawrence Livermore National Laboratory
7000 East Avenue
Livermore, CA 94550

Each sample will be assigned a unique label to maintain anonymity. The origin of the samples will not be released to the damage testing service or disclosed at the Laser Damage Symposium. A summary of the results will be published in the conference proceedings. Coating suppliers will be informed of the measured results for their samples and relative ranking within the overall population of samples. To minimize the number of damage tests, no more than two different samples can be submitted from each coating supplier.

In addition to the sample, the coating supplier MUST also supply the following information:

- Coating materials and number of layers
- Reflectance or transmission spectral scan (prefer in an electronic format) in 750 - 1100 nm range. Spectral scans may be emailed to negres2@llnl.gov
- A brief description of the deposition method (e-beam, IAD, IBS, plasma assist, etc.)
- Substrate material and cleaning method
- Manufacturing differences for multi-sample submissions, if applicable

Failure to provide the required information will result in disqualification of the sample. Optical or scanning electron microscopy may be used to image damage sites. Reflectance measurements may also occur. No other characterization tools will be used on the samples to protect any proprietary features of the samples.

Testing will be performed by the Laboratory for Laser Energetics, University of Rochester

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Present your research at SPIE Laser Damage

Below are abstract submission instructions, the accompanying submission agreement, conference presentation guidelines, and guidelines for publishing in the Proceedings of SPIE on the SPIE Digital Library. Submissions subject to chair approval.

SPIE. LASER DAMAGE

ABSTRACT SUBMISSION GUIDELINES

Important dates

Abstracts due	3 May 2023
National Ignition Facility (NIF) Tours - Application Due	15 May 2023
Laser Damage Competition - Samples Due	15 May 2023
Registration opens	20 June 2023
Authors notified and program posts online	26 June 2023
Submission system opens for manuscripts and poster PDFs*	17 July 2023
Poster PDFs due for spie.org preview and publication	23 Aug. 2023
Advance upload deadline for oral presentation slides**	15 Sept. 2023
Manuscripts due	11 Oct. 2023

**Contact author or speaker must register prior to uploading.*

***After this date slides must be uploaded onsite at Speaker Check-In*

What you will need to submit

- Title
- Author(s) information
- 250-word abstract for technical review
- 100-word summary for the program
- Keywords used in search for your paper (optional)

Note: Only original material should be submitted. Commercial papers, papers with no new research/development content, and papers with proprietary restrictions will not be accepted for presentation.

How to submit your abstract

- Visit the conference page: **www.spie.org/ld23call**
- You may submit more than one abstract but submit each abstract only once
- Click the "Submit An Abstract" button on the conference page
- Sign in to your SPIE account or create an account if you do not already have one
- Follow the steps in the submission wizard until the submission process is completed

Submission agreement

All presenting authors, including keynote, invited, oral, and poster presenters, agree to the following conditions by submitting an abstract:

- Register and pay the author registration fee
- Oral presenters: recording and publication of your onsite presentation (slides synched with voice) for publication in the Proceedings of SPIE in the SPIE Digital Library
- Poster presenters: submit a poster PDF by the advertised due dates for publication in the Proceedings of SPIE in the SPIE Digital Library; poster PDFs may also be published and viewable in the spie.org program during and immediately after the event
- Submit a manuscript by the advertised due date for publication in the Proceedings of SPIE in the SPIE Digital Library
- Obtain funding for registration fees, travel, and accommodations
- Ensure that all clearances, including government and company clearance, have been obtained to present and publish. If you are a DoD contractor in the USA, allow at least 60 days for clearance
- Attend the meeting
- Present at the scheduled time

Review and program placement

- To ensure a high-quality conference, all submissions will be assessed by the conference chair/editor for technical merit and suitability of content
- Conference chairs/editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations
- Final placement in an oral or poster session is subject to chair discretion

Publication of Proceedings in the SPIE Digital Library

Increase your professional visibility and publish in the world's largest collection of optics and photonics research. Your peers access approximately 18 million papers, presentations, and posters from the SPIE Digital Library each year.

- Only manuscripts, presentations, and posters presented at the conference and received according to publication guidelines and due dates will be published in the Proceedings of SPIE in the SPIE Digital Library
- Manuscripts, presentations, and posters will be officially published after the event in the SPIE Digital Library
- Conference chairs/editors may require revision before approving publication and reserve the right to reject for publication any manuscript or presentation that does not meet acceptable standards for a scientific publication
- Conference chair/editor decision to accept or reject a manuscript, presentation, or poster for publication is final
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- More publication information available on the **SPIEDigitalLibrary.org**

Contact information

For questions about your presentation, submitting an abstract post-deadline, or the meeting, contact your Conference Program Coordinator.

SPIE.