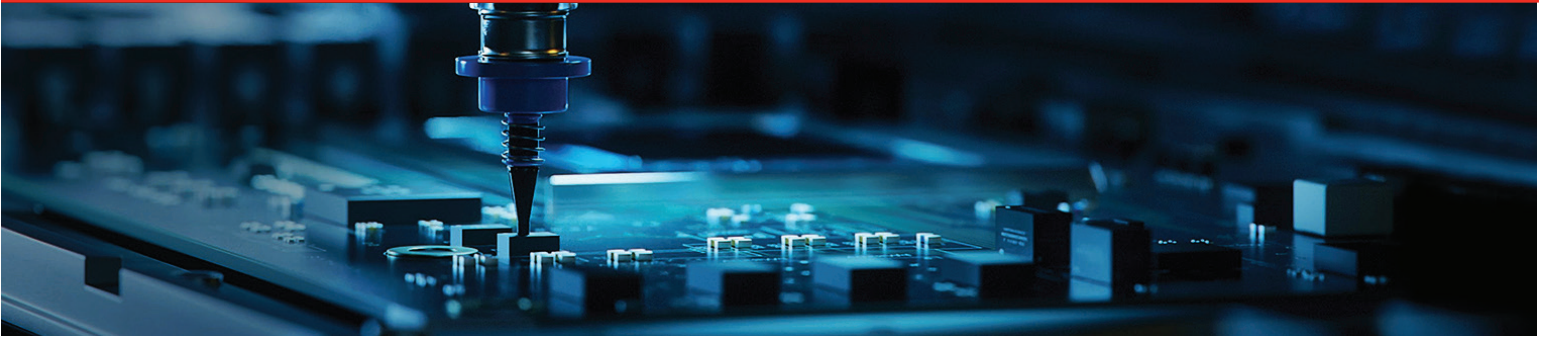


OPTO
Part of SPIE Photonics West

17-22 January 2026
The Moscone Center
San Francisco, California, USA

Submit abstracts by
9 July 2025



Emerging Digital Micromirror Device-based Systems and Applications XVIII (OE403)

Conference Chairs: **Benjamin L. Lee**, Texas Instruments Inc. (United States); **Alex Lyubarsky**, Texas Instruments Inc. (United States)

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The Digital Micromirror Device (DMD) was conceived at Texas Instruments in 1987, following a decade of work on analog deformable-mirror and cantilever-mirror devices. This particular optical MEMS or MOEMS device has been applied most famously to digital cinema projection systems, enterprise projectors and highly portable personal displays, all of which were enabled by DLP® technology. The DMD has been commercially available since 1996 leading to hundreds of products and innovative research projects spanning consumer, industrial, medical and automotive markets.

Building on the foundation of the DMD, a new phase-modulating MOEMS technology has been developed at Texas Instruments. The Phase-Light Modulator (PLM) is an array of micromirrors that are actuated vertically to discrete heights to create a programmable diffraction grating. Light incident on the PLM can be modulated through interference to steer and create holograms. The high speed and power handling PLM is enabling exciting new opportunities across many industries.

As was evident by this well-attended conference at Photonics West 2025, the DMD and PLM and associated evaluation modules are enabling many exciting new applications and equipment beyond traditional display systems. By bringing together scientists, technologists, and developers, the goal of this conference is to highlight new and interesting means of applying DLP technology to solve problems across various markets.

Technical areas of particular interest include, but are not limited to:

PROGRAMMABLE PATTERNING AND ADVANCED IMAGING SOLUTIONS

- 3D metrology, volumetric scanning, machine vision, and factory automation
- compressive sensing
- computational imaging
- spectroscopy and hyperspectral imaging
- security and surveillance (i.e. biometric scanning).

DISPLAY SOLUTIONS

- 3D displays (light-field, autostereoscopic, volumetric, multi-views, and holographic)
- augmented reality, virtual reality, and mixed reality
- automotive interior (head-up displays, interior displays, interior lighting)
- automotive exterior (headlight illumination, exterior displays, exterior lighting)
- intelligent lighting or displays.

MANUFACTURING SOLUTIONS

- additive manufacturing / 3D printing
- coding and marking
- direct imaging lithography
- industrial printers and exposure systems.

MEDICAL DEVICES

- biochemical visualization
- microscopy
- ophthalmology
- endoscopic imaging
- 3D bioprinting.

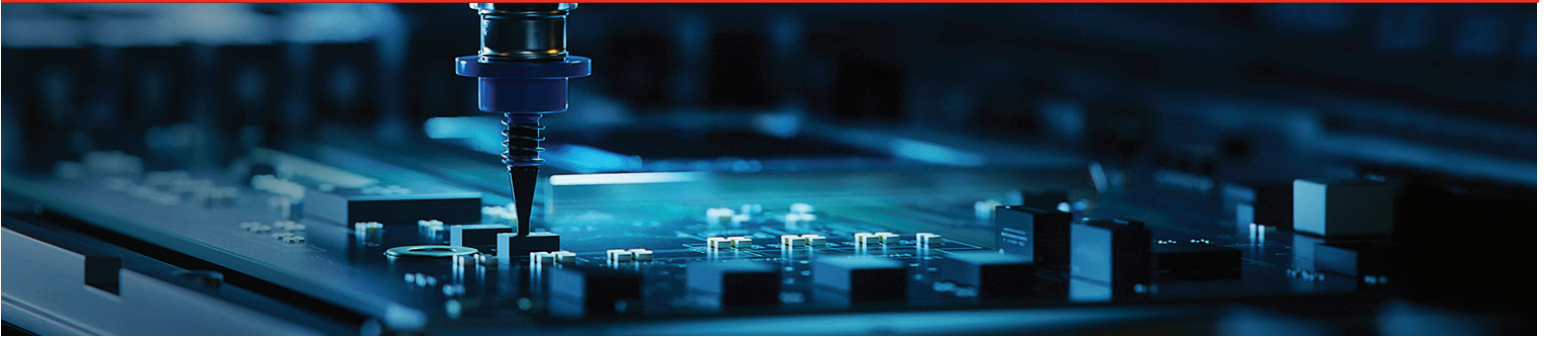
LIGHT MANIPULATION

- beam steering / wave-front shaping
- optical micromanipulation
- spectrally tunable light sources
- phase light modulator applications.

OTHER

- NIR and UV applications
- optical telecommunications
- optical computing / neural networking.

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JOINT SESSION WITH BIOS BO500 AND OE403

Biomedical Imaging and Cell Manipulation using a Digital Micromirror Device or MEMS Array

This special joint session is in conjunction with BiOS conference BO500: Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues. The utilization of the DMD and other Optical MEMS arrays to manipulate light has numerous medical applications ranging from cancer detection to operating room aids to the manipulation of individual cells.

Papers are solicited that address the uses of a DMD and other Optical MEMS arrays with:

- 3D medical visualization
- confocal microscopes
- cytometers
- hyperspectral imaging
- image-guided intervention
- microscopy
- optoelectronic tweezers
- ophthalmology
- organs on a chip
- oxygenation measurements
- phototherapy
- selectable wavelength light sources
- spectroscopy (including mobile spectroscopy)
- structured light or 3D imaging
- tissue illumination.

JOINT SESSION WITH OE401 AND OE403

Advanced Fabrication using a Digital Micromirror Device or MEMS Array

Active research in the fields of advanced fabrication and MEMS Arrays, such as the digital micromirror device, have shown application and promise for implementing lithography and other forms of high precision printing. The purpose of this joint session is to explore the relationships between MEMS technology and fabrication as they relate to:

- 3D printing
- additive manufacturing
- lithography.

JOINT SESSION WITH OE702 AND OE403

AR/VR Displays using DMDs or other SLM Devices

AR/VR is an exciting area of development. Much progress hinges on the capabilities of light modulators. The purpose of this joint session is to explore and demonstrate the capabilities of different light modulators.

BEST PAPER AWARDS

We are pleased to announce that cash prizes, sponsored by Texas Instruments DLP Products, ViALUX GmbH, and EKB Technologies Ltd., will be awarded to the best paper and best student paper in Emerging DMD-Based Systems and Applications. Qualifying papers will be evaluated by the awards committee. Manuscripts will be judged based on scientific merit, impact, and clarity. The winners will be announced during the conference and the presenting authors will be awarded a cash prize.

To be eligible for the Best Paper Award, you must:

- be listed as the speaker on an accepted paper within this conference
- have conducted the majority of the work to be presented
- submit your manuscript online by the deadline
- present your paper as scheduled.

To be eligible for the Best Student Paper Award, you must:

- be a student without a doctoral degree (undergraduate, graduate, or PhD student)
- submit your abstract online, select "Yes" when asked if you are a full-time student, and select yourself as the speaker
- when submitting your abstract, under TOPIC selection, choose "Consider for Best Student Paper Award"
- be listed as the speaker on an accepted paper within this conference
- have conducted the majority of the work to be presented
- submit your manuscript online by the deadline
- present your paper as scheduled.

Nominations

All submitted papers will be eligible for the awards if they meet the above criteria.

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Present your research at SPIE Photonics West

Follow the instructions below to develop a successful abstract for submission to a conference and review policies for publication in the Proceedings of SPIE in the SPIE Digital Library. Submissions subject to chair approval.

Important dates

Abstracts due	9 July 2025
Registration opens	October 2025
Authors notified and program posts online	29 September 2025
Submission system opens for manuscripts and poster PDFs*	17 November 2025
Poster PDFs due for spie.org preview and publication	22 December 2025
Manuscripts due	29 December 2025
Advance upload deadline for oral presentation slides**	15 January 2026

*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

- » Presentation title
- » Author(s) information
- » Speaker biography (1000-character max including spaces)
- » Abstract for technical review (200-300 words; text only)
- » Summary of abstract for display in the program (50-150 words; text only)
- » Keywords used in search for your paper (optional)
- » Check the individual conference call for papers for additional requirements (i.e., special abstract requirements or instructions for award competitions)

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/OE403
- » You may submit more than one abstract, but submit each abstract only once
- » Submit by clicking the "Submit an Abstract" button on that 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
- » If your submission is related to an application track below, indicate the appropriate track when prompted during the submission process

Application track

Listed below are the application tracks available for this meeting. An application track is a grouping of presentations on a topic of interest across all conferences. During submission of the abstract, the submitting author should select an application track if it is relevant to their research.

- » **AI/ML:** Papers that highlight the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems across multiple sectors, technologies, and applications
- » **Sustainability:** Papers that highlight the use of optics and photonics for renewable energy, natural resource management, sustainable manufacturing, and greenhouse gas mitigation in support of the UN Sustainable Development Goals
- » **Brain function:** Papers that highlight the development of innovative optics and photonics technologies that increase our understanding of brain physiology and function
- » **3D printing:** Papers that highlight the innovative use of optics and photonics in multidisciplinary applications for multidimensional manufacturing
- » **Photonic chips:** Papers that highlight advances in materials, design, fabrication, integration, testing and packaging of photonic components at the chip level

Contact information

QUESTIONS?

Contact the coordinator listed in your spie.org account.

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