

The Development History of Spatial Light Modulators



Overview

Over the past two decades a large variety of electronically and optically addressed devices for impressing information onto one- and two- dimensional optical wavefronts have been proposed. 1–16 These spatial light modulators (SLM's) were initially developed for such applications. The SPIE Digital Library offers a comprehensive collection of research articles, conference papers, and technical documents focused on spatial light modulators (SLMs), reflecting the breadth and depth of this rapidly evolving technology. The content covers various types of SLMs, including liquid. Liquid crystals are birefringent, so applying a voltage to the cell changes the effective refractive index seen by the incident wave, and thus the phase retardation of the reflected wave. In particular, liquid-crystal spatial light modulator (LC-SLM) technologies have been. Manipulation of light at the nanoscale is cornerstone for the realization of miniaturized optical devices with enhanced efficiencies. 2022 The Japan Society of Applied Physics 1. Introduction philosophy of our company. To this end, we have conducted research on optics and photonics to acquire new knowledge for 10 to 20 years from now, such as.



Article Content

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Spatial Light Modulators

Manipulation of light at the nanoscale is cornerstone for the realization of miniaturized optical devices with enhanced efficiencies. In this regard, the emerging technology of flat optics allows controlling the ...

Apr 03, 2026

Enhancing spatiotemporal light modulators | Nature Photonics

Spatial light modulator technology is a mature field that has been in active development since the 1960s.

Jul 02, 2026

Research activity on spatial light modulators at Hamamatsu

By continuing the research on spatial light modulators and related areas, we gained much new knowledge. There are endless things that we do not know or understand in the world, so ...

May 25, 2026

Spatial light modulator

OverviewElectrically-addressed spatial light modulator (EASLM)Optically-addressed spatial light modulator (OASLM)Application in ultrafast pulse measuring and shapingExternal links

A spatial light modulator (SLM) is a device that can control the intensity, phase, or polarization of light in a spatially varying manner. A simple example is an overhead projector transparency. Usually when the term SLM is used, it means that the transparency can be controlled by a computer. SLMs are primarily marketed for image projection, displays devices, and maskless lithography. SLMs are also used in optical computing and holographic optical tweezers.

Oct 30, 2025

Spatial light modulator

In the 1980s, large SLMs were placed on overhead projectors to project computer monitor contents to the screen. Since then, more modern projectors have been developed where the SLM is built inside ...

Feb 07, 2026

Spatial light modulators

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Oct 19, 2025

SPATIAL LIGHT MODULATORS

Spatial Light Modulators (SLMs) are quasi-planar devices, allowing for the modulation of the amplitude, phase and polarization, or a combination of these parameters of an incident light beam according to ...

Apr 05, 2026

A review of liquid crystal spatial light modulators: devices and ...

Spatial light modulators, as dynamic flat-panel optical devices, have witnessed rapid development over the past two decades, concomitant with the advancements in micro- and opto-electronic integration ...

Mar 13, 2026

spatial light modulator

A spatial light modulator (SLM) is a pixellated liquid crystal device that can individually control the phase value of each pixel. It imposes spatially varying modulation onto an incident beam, allowing for the ...

May 10, 2026

A Review of Spatial Light Modulators

With continued SLM development, powerful general parallel optical computers and information processors can be seen on the horizon, probably targeted toward applications from such areas as ...

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For more information, pricing, or custom solutions, please contact us:

Website: <https://ntmmgroup.co.za>

Email: sales@ntmmgroup.co.za

Phone: +27 82 471 2596

Address: Unit 7, Optic Park, 24 High-Tech Lane, Century City, Cape Town,
7441, South Africa

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