

Transmittance Liquid Crystal Spatial Light Modulator

Article Overview

Transmittance LC-SLMs are optical devices that modulate light in amplitude and phase while allowing high light transmission, enabling precise control of optical fields for advanced applications.

Overview

A transmittance liquid crystal spatial light modulator (LC-SLM) is a device that can dynamically control the intensity, phase, or polarization of light as it passes through the modulator, in a spatially varying manner . Unlike reflective SLMs, transmissive LC-SLMs allow light to pass through the liquid crystal layer, making them suitable for applications where direct transmission is required, such as pulse shaping and optical beam manipulation .

Key Characteristics

- **High Transmittance:** Modern transmissive LC-SLMs can achieve over 85% transmittance across a broad wavelength range, from ultraviolet (260 nm) to near-infrared (1100 nm), ensuring minimal light loss .
- **Phase Modulation:** These devices can precisely modulate the phase of transmitted light, which is critical for applications like chirp compensation in ultrashort pulses, enabling pulse durations to be shortened from hundreds of femtoseconds to tens of femtoseconds .
- **Pixel Resolution:** LC-SLMs are composed of arrays of individually addressable pixels...

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