

High-Resolution Liquid Crystal Spatial Light Modulators for Electronic Holography

Realizing wide viewing-zone angles For electronic-holography 3D displays

Overview

- Electronic holography for displaying three-dimensional (3D) information is required for entertainment, industrial design, measurement, and head-up display for automobiles.
- 3D information is displayed by reconstructing an image through a spatial light modulator (SLM). **Conventional SLM cannot narrow the pixel pitch** because **the electric field leaks out to adjacent pixels, resulting in a narrow viewing-zone angles**.
- Therefore, the invention introduces a liquid crystal driving system in a **lateral electric field by a continuous potential difference** and fine **ground electrodes** into the SLM.
- As a result, the electric field leakage is reduced, **the pixel pitch of less than 1 μm is achieved** for the first time.
- Using the pixel pitch of $1\mu\text{m}$, it is possible to **achieve practical viewing-zone angles of 30°** . The invention is expected to enlarge electronic holography application field.

Product Application

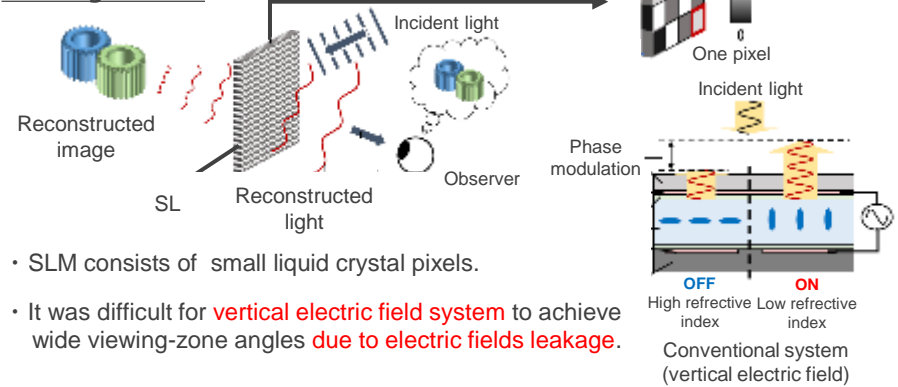
- SLM for electronic holography

IP Data

IP number : Not published
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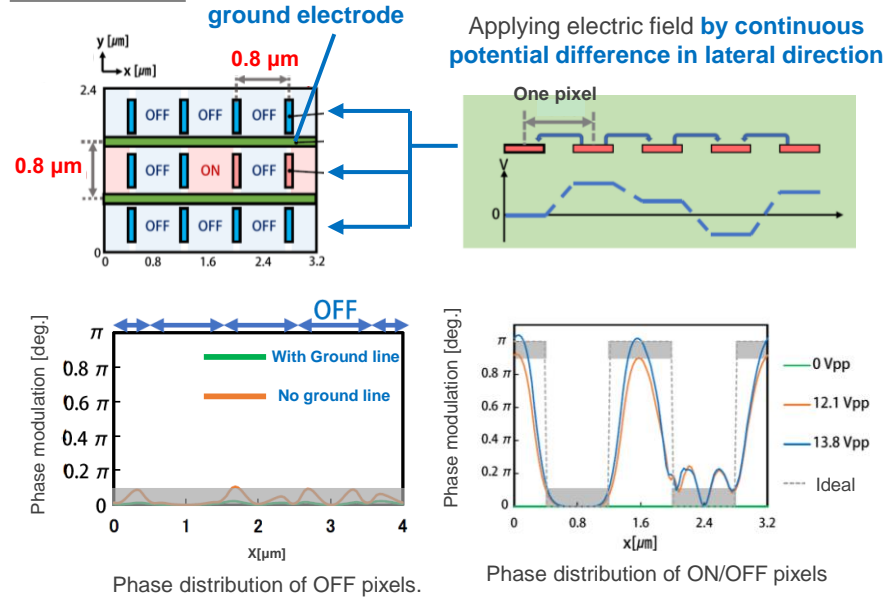
Features·Outstandings

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- SLM consists of small liquid crystal pixels.
- It was difficult for **vertical electric field system** to achieve wide viewing-zone angles **due to electric fields leakage**.

< Invention >



Independent driving was possible with pixel pitch of $0.8\mu\text{m}$ according to liquid crystal alignment simulation.

=> Expect to wide viewing-zone angle of electronic holography!

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