

Metasurface, Metalens, and Metalens Array with Controllable Angular Field-of-View

Tech ID: 33802 / UC Case 2021-677-0

ABSTRACT

Researchers at the University of California, Davis have developed an optical lens module that uses a metalens or a metalens array having a controllable angular field-of-view.

FULL DESCRIPTION

The technology uses a metalens or a metalens array to achieve high quality large field-of-view imaging with a compact device. Each metalens or metalens array uses a 2D array of meta-units where each meta-unit includes a nanostructure and a portion of a substrate that supports the nanostructure. Each meta-unit is configured with an angular-dependent transmission or reflection intensity that decreases with an increasing incident angle of an illumination. The metalens passes an incident light having an incident angle less than a cutoff angle and rejects an incident light having an incident angle greater than the cutoff angle. The metalens can be used as a base unit for constructing many different metasurfaces designed to achieve various 2D or 3D imaging goals.

APPLICATIONS

- Miniaturized imaging devices
- Light-field cameras
- Compact cameras
- Endoscopy
- Biomedical imaging
- Consumer electronics
- Surveillance

FEATURES/BENEFITS

- Design flexibility
- Angle-dependent transmission or reflection intensity
- Extended depth of view for light field imaging
- ▶ Solves the trade-off between in-focus imaging resolution and the depth of view
- Addresses signal ambiguities in single lens design

PATENT STATUS

Country	Туре	Number	Dated	Case
Patent Cooperation	Reference for National	WO	01/12/2023	2021-
Treaty	Filings	2023/283348		677

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INVENTORS

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OTHER INFORMATION

KEYWORDS metalens, compact and large field of view imaging, light field imaging, photonic device

CATEGORIZED AS

Optics and

Photonics

► All Optics and

- Photonics
- Imaging
 - ► 3D/Immersive
 - Medical
 - Other
- Medical
 - ▶ Imaging

Nanotechnology

- ► Materials
- ▶ Other

► Tools and Devices

Patent Pending

Sensors &

Instrumentation

Scientific/Research

RELATED CASES

2021-677-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

► Fetal Oximetry Measurement via Maternal Transabdominal Spectroscopy

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