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Liquid crystal lens with large focal length tunability and ...

Finally, the cell is filled with a liquid crystal material with a large birefringence such as $\Delta n = 0.27$. A flex connector, bonded on the nickel lines with one side, supplies the externally generated voltage profile to the cell. Modeling of the desired voltage profile

Researchers develop liquid-crystal-based compound lenses ...

Much like the common replacement of lenses in human cataract operations, Mistry believes that his new liquid crystal models would be implanted in the same way to rejuvenate the ability of the eye ...

Adaptive liquid crystal lens with large focal length ...

Liquid crystal lens with large focal length tunability and low operating voltage Hongwen Ren, David W. Fox, Benjamin Wu, and Shin-Tson Wu *Opt. Express* 15 (18) 11328-11335 (2007) An electrically tunable-focusing liquid crystal lens with a low voltage and simple electrodes

Implantable LCD eye lenses may make glasses obsolete

Large-aperture liquid crystal (LALC) lens with hole-patterned electrodes possesses small lens power and high addressing voltage because of the thick dielectric layer inserted between the hole-patterned electrode and LC layer.

Ultrathin, polarization-independent, and focus-tunable ...

liquid crystal lenses of any size. [DOI: 10.1143/JJAP.41.L571] KEYWORDS: liquid crystal, lens, variable focal length, phase retardation A liquid crystal (LC) lens with a variable focal length was realized by one of the authors (S.S.).1) The lens was fabri-cated by putting an LC into a lens-shaped cell prepared us-

A New Dual-Frequency Liquid Crystal Lens with Ring-and-Pie ...

Herein, we report an ultrathin ($\sim 266 \mu\text{m}$), polarization-independent, and focus-tunable liquid crystal (LC) diffractive lens with a large area (a diameter of 20 mm), a low weight (1.5 g), and a low operating voltage ($< 2.1 \text{ V}$). The lens was implemented using a nematic LC as an active layer and birefringent thin films as substrates.

Optical Properties of Liquid Crystal Lens of Any Size

A novel liquid crystal microlens array with tunable multifocal capability, high optical power and fill-factor is proposed and experimentally demonstrated. A specific hole pattern design produces a ...

Liquid crystal lens with large focal length tunability and ...

Liquid crystal lens with large focal length tunability and low operating voltage Hongwen Ren, David W. Fox, Benjamin Wu, and Shin-Tson Wu College of Optics and Photonics, University of Central Florida, Orlando, Florida 32816

(PDF) Design of a large aperture tunable refractive ...

With these liquid crystal lenses so easy to make, the experiment to test their properties was also relatively simple. Finding a suitable compound lens under a microscope, the researchers put a ...

DeepOptics

A variable-focus lens is made with one or two liquid-crystal layers and a glass lens. The lens has an aperture near that of the glass lens, and its focal length is electrically changeable from ...

Liquid crystal lens with large focal length tunability and ...

Adaptive liquid crystal lens with large focal length tunability Hongwen Ren and Shin-Tson Wu College of Optics and Photonics, University of Central Florida, Orlando, Florida 32816 swu@mail.ucf.edu Abstract: We demonstrate a tunable-focus lens using a spherical glass shell and a homogeneous liquid crystal (LC) cell.

Design and Simulation of Electronically Controlled Liquid ...

Recent advances in liquid-crystal-polymer materials and alignment technology allowed us to produce the desired modulation patterns at high spatial frequencies and with high optical quality: see Figure 2. Therefore, to make a lens or any other optical component, we can simply spin or spray a droplet of a polymerizable liquid crystal on a flat ...

OSA | Adaptive liquid crystal lens with large focal length ...

Our proprietary Liquid Crystal lens is large enough to cover the entire field of view of the eyeglasses and has the ability to electronically change its focal power. This allows for a clear view of both near and far objects without compromising the field of view.

Tunable liquid crystal multifocal microlens array ...

The aperture of traditional liquid crystal lens is usually only several hundred microns, which greatly limits its application. If the aperture of the liquid crystal lens can be enlarged, the liquid crystal lens will be more widely used.

Liquid Crystal Lens With Large

We demonstrate a tunable focus liquid crystal (LC) lens by sandwiching a homogeneous LC layer between a planar electrode and a curved electrode. The curved electrode which is made of conductive polymer has parabolic shape with a large apex distance. Such design dramatically reduces the phase loss which leads to a short focal length (~15 cm).

Superlens in the skies: liquid-crystal-polymer technology ...

Electrically switchable liquid crystal Fresnel lens using UV-modified alignment film Shie-Chang Jeng,¹ Shug-June Hwang,^{2,} Jing-Shyang Horng,² and Kuo-Ren Lin² 1. Institute of Imaging and Biomedical Photonics, National Chiao Tung University, Tainan 711, Taiwan*

(PDF) Adaptive liquid crystal lens with large focal length ...

We demonstrate a tunable focus liquid crystal (LC) lens by sandwiching a homogeneous LC layer between a planar electrode and a curved electrode. The curved electrode which is made of conductive...

Influence of floating-ring-electrode on large-aperture ...

A new liquid crystal lens design is proposed to improve the recovery time with a ring-and-pie electrode pattern through a suitable driving scheme and using dual-frequency liquid crystals (DFLC) MLC-2048. Compared with the conventional single hole-type liquid crystal lens, this new structure of the ...

(PDF) Adaptive liquid crystal lens with large focal length ...

Adaptive liquid crystal lens with large focal length tunability Hongwen Ren and Shin-Tson Wu College of Optics and Photonics, University of Central Florida, Orlando, Florida 32816 swu@mail.ucf.edu Abstract: We demonstrate a tunable-focus lens using a spherical glass shell and a homogeneous liquid crystal (LC) cell. The inner surface of the glass

LIQUID CRYSTAL LENSES: Liquid crystals promise compact ...

A large aperture tunable lens based on liquid crystals, which is considered for near-to-eye applications, is designed, built, and characterized. Large liquid crystal lenses with high quality are...

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