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Hongwen Ren, David W. Fox, Benjamin Wu, and Shin-Tson Wu, "Liquid crystal lens with large focal length tunability and low operating voltage," Opt. Express 15, 11328-11335 (2007) Export Citation BibTex

OSA+ Liquid crystal lens with large focal length –

We demonstrate a tunable-focus lens using a spherical glass shell and a homogeneous liquid crystal (LC) cell. The inner surface of the glass shell and the bottom surface of the LC cell are coated with indium tin oxide (ITO) electrodes while the LC layer is sandwiched between the spherical and flat ITO electrodes. When a voltage is applied to the electrodes, a centro-symmetric gradient ...

OSA+ Adaptive liquid crystal lens with large focal length –

The Society for Information Display Technical Digests consist of short papers and poster session content from SID's annual symposium, Display Week.

Research on Large Aperture Liquid Crystal Lens – Huang –

We demonstrate a tunable-focus lens using a spherical glass shell and a homogeneous liquid crystal (LC) cell. The inner surface of the glass shell and the bottom surface of the LC cell are coated with indium tin oxide (ITO) electrodes while the LC

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

Plenoptic cameras have received a wide range of research interest because it can record the 4D plenoptic function or radiance including the radiation power and ray direction.

Large aperture liquid crystal lens array using a –

The inherent advantages of liquid-crystal lenses, including tunability, mean such lenses may have a significant impact on the design of future optical systems. LIWEI LI, LEI SHI, DOUG BRYANT, TONY VAN HEUGTEN, DWIGHT DUSTON, and PHILIP J. BOS

LIQUID CRYSTAL LENSES: Liquid crystals promise compact –

A New Lens on the World: Revolutionizing Optics by Combining Nanostructured Metasurfaces With Liquid Crystal Technology TOPICS: Case Western Reserve University Materials Science Nanotechnology Optics

A New Lens on the World: Revolutionizing Optics by –

A large aperture tunable lens based on liquid crystals, which is considered for near-to-eye applications, is designed, built, and characterized.

(PDF) Design of a large aperture tunable refractive –

Deep Optics is developing Omnicofocals, the first ever dynamic focal eyeglasses. The eyeglasses are equipped with our cutting-edge technology sensors that detect the viewing distance and control the lens so that it adjusts its optical power automatically and effortlessly.

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A fast response and large electrically tunable focusing –

27, H. Ren, D. W. Fox, B. Wu, and S. T. Wu, (Liquid crystal lens with large focal length tunability and low operating voltage, Opt. Express 15(18), 11328|11335 (2007). 1. Introduction A liquid crystal (LC) lens was first introduced by Sato in 1979 [1]. The lenses shaped like a

A new low-voltage driven GRIN liquid crystal lens with –

Liquid crystal (LC) lenses which are active optical elements with electrically tunable focal lengths have many applications, such as three-dimensional displays, imaging systems, micro- scopes, zoom systems and optical tweezers [1-9]. The features of the low power consumption and the thin thickness of LC lenses are promising for portable devices.

A Review of Electrically Tunable Focusing Liquid Crystal –

We use a liquid crystal (LC) lens to create a foveated imaging system which contains a camera module as a main lens, an LC lens as a foveated device, and an image sensor. ... which makes them complex in structure and large in volume [8,9]. Liquid crystal (LC) device has been proposed to simplify the system. They are more flexible in use than ...

Foveated imaging using a liquid crystal lens – ScienceDirect

The liquid crystal lens is driven by a frequency of the voltages different in positive and negative lens states to obtain its largest optical power in each state. An obvious increase in focus range is realised.

Driving method for liquid crystal lens to increase focus range

In this paper, we develop a method to prepare a liquid crystal (LC) lens using photoalignment technology. It's fabricated by utilizing variable pretilt angles of a photoalignment layer. By irradiating a Gaussian profile laser beam on a photoalignment layer, variable angles from 1° to 89° are formed.

Low-Voltage Driving Tunable Liquid Crystal Lens using –

Tunable liquid crystal (LC) lenses (TLCLs),, have been shown to be very promising candidates for mobile imaging, and endoscopy,, applications. Those demonstrations were covering optical clear apertures (CA) ranging from 0.5 mm to 2 mm.

Liquid crystal lens with optimized wavefront across the –

ABSTRACTLarge-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. With an embedded narrow floating ring electrode (FRE), the lens power and addressing voltage of the LALC lens could be effectively increased and decreased ...

Influence of floating ring electrodes on large aperture –

The simplest adaptive contact lens uses a nematic liquid crystal contained within an electrically active cavity with a varying thickness d to form a meniscus lens, as shown in Figure 1. 4, 5 The refractive index of the lens substrate is matched to the ordinary index of the liquid crystal so that there is no lensing effect for the vertical state.

Polarisation-independent liquid crystal lenses and contact –

To achieve smooth varifocal, we address the full stack of liquid crystal lenses, with each additional pair doubling the number of focal planes. In the example above, six liquid crystal lenses are driven to sweep through 64 focal planes, and you can see the focal depth smoothly changing at the right as we cycle through different sets of lens states.

Half-Dome Updates-FRL-Explores More Comfortable, Compact –

The liquid crystal lens would then be inserted, restoring clear vision. The lens could also have application in tackling cataracts - the clouding of natural lenses - which affect many people in later life and which can seriously affect vision. A common treatment is to remove and replace the natural lens.