Organic light-emitting cells

Organic light-emitting diodes (OLEDs) and light-emitting electrochemical cells (LECs) exhibit different operational modes that render them attractive for complementary applications, but their ...

The discovery of organic light-emitting electrochemical cells (OLECs) has opened new directions for organic light-emitting devices based on luminescent conjugated polymers. However, such systems face two major problems: slow turn ...

An overview of the organic emitters of deep-red light-emitting electrochemical cells (LECs), which are classified into three types: polymers, metal complexes, and organic luminous molecules. ... Abstract Light-emitting electrochemical cells (LECs) are kind of easily fabricated and low-cost light-emitting devices that can efficiently convert ...

Tsukuba, Japan--Light-emitting electrochemical cells (LECs) are a type of organic light-emitting devices. Compared to organic light-emitting diodes (OLEDs), LECs exhibit a simpler structure, greater flexibility, and can be manufactured at lower ...

To date, organic light-emitting diodes are the only type of organic device (using small molecules) successfully being commercialized on a mass scale, in televisions screens and smartphone displays ...

In this section, the recent progress in OLED device architectures, organic fluorescent and phosphorescent materials, roll-off characteristics of external quantum efficiency (i ext) of OLEDs, white OLEDs, and solution processing is introduced.2.2.1 Progress of Device Structures. In OLEDs, excitons can be formed by the recombination of holes and electrons.

The simplest configuration of an organic light-emitting diode (OLED) consists of an organic semiconductor layer sandwiched between two electrodes, the anode and the cathode.

Highly efficient organic light-emitting diodes and light-emitting electrochemical cells employing multiresonant thermally activated delayed fluorescent emitters with bulky donor or acceptor peripheral groups Jingxiang Wang1 Hassan Hafeez2 Shi Tang3 1 3 Ifor D2 1

The light-emitting electrochemical cell (LEC) is a thin-film and area-emitting device that recently has been integrated into, or deposited onto, a broad range of surfaces, including plastic 1,2,3 ...

Light-emitting electrochemical cells (LECs) offer a compelling alternative to explore in the realm of large-scale device designs, in addition to the extensively examined organic light-emitting diodes (OLEDs). What sets OLECs apart from OLEDs is their utilization of ionic components within the core light-emitting layer.

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In this study, we successfully synthesized two organic materials capable of emitting UV light. These materials feature fluorene-phenanthrene segments and were ...

Schiff bases and their complexes with transition metals have been extensively explored in the pursuit of their applications in various areas including nonlinear optics, molecular/metal ion sensing, dye-sensitized solar cells, molecular magnetism and photoluminescence (PL). 33,34,35,36 This group of organic compounds was reported by Hugo ...

Article Narrow electroluminescence linewidths for reduced nonradiative recombination in organic solar cells and near-infrared light-emitting diodes Quan Liu,1,2,* Sander Smeets,1,2 Sigurd Mertens,1,2 Yuxin Xia,1,2 Andrea Valencia,1,2 Jan D"Haen,1,2 Wouter Maes,1,2 and Koen Vandewal1,2,3,*

Light-emitting electrochemical cells (LECs) are kind of easily fabricated and low-cost light-emitting devices that can efficiently convert electric power to light energy. Compared with blue and green LECs, the performance of deep-red LECs is limited by the high non ...

Our resulting active-matrix-driven organic light-emitting electrochemical cell array can be readily bent, twisted and stretched without affecting its device performance.

The applications of conductive polymers for organic light emitting diodes (OLEDs), organic field effect transistors (OFETs), and organic photovoltaics (OPVs) are explained thoroughly. The architecture of organic polymer solar cells including single layer, bilayer planar heterojunction, and bulk heterojunction (BHJ) are described.

Barrier-free (Ohmic) contacts are a key requirement for efficient organic optoelectronic devices, such as organic light-emitting diodes, solar cells, and field-effect transistors. Here, we propose ...

Since the discovery of the first light-emitting electrochemical cells (LECs) by Heeger et al. in 1995 [], research into LECs has been pursued intensively because of their potential applications, in among other things, flat panel displays, and lighting technologies [].LECs offer unique opportunities to replace today"s state-of-the-art energy-saving lamps with devices ...

The design of intrinsically stretchable interconnects and transparent conductive electrodes that meet the requirements of high stretchability, high conductivity, and high transmittance poses a formidable ...

Transparent and Semi-transparent Organic solar cells and Layered Lead Halide Perovskite Nanoplates Light-Emitting Diodes Yuelin Peng Under the supervision of Professor Irena Knezevic At the University of

Organic light-emitting cells

Wisconsin-Madison ABSTRACT Organic semiconductor devices have gained rapid advancement over the past decades.

Charge injection and transport interlayers play a crucial role in many classes of optoelectronics, including organic and perovskite ones. Here, we demonstrate the beneficial role of carbon nanodots, both pristine and nitrogen-functionalized, as electron transport materials in organic light emitting diodes (OLEDs) and organic solar cells (OSCs). Pristine (referred to as C ...

The simplest configuration of an organic light-emitting diode (OLED) consists of an organic semiconductor layer sandwiched between two electrodes, the anode and the cathode. The anode is selected ...

Recent advances in organic light-emitting diodes: toward smart lighting and displays Shi-Jie Zou+ a, Yang Shen+ a, Feng-Ming Xie+ a, Jing-De Chen a, Yan-Qing Li * ab and Jian-Xin Tang * ac a Jiangsu Key Laboratory for Carbon-Based Functional Materials & Devices, Institute of Functional Nano & Soft Materials (FUNSOM), Soochow University, Suzhou, 215123, Jiangsu, P. R. China.

As a new next-generation light-emitting device, light-emitting electrochemical cells (LECs) have been developed with the same organic light-emitting materials used in OLEDs. ...

The development of luminescent materials has allowed us to gain enormous knowledge that has undoubtedly promoted high-tech innovations, such as organic light ...

The minimization of nonradiative recombination losses is essential to transcend the efficiency of state-of-the-art organic solar cells (OSCs) and near-infrared (NIR) organic light-emitting diodes (OLEDs). Indeed, reduced nonradiative processes will result in high electroluminescence (EL), external quantum efficiency (EQEEL), and low nonradiative voltage ...

Currently, organic light-emitting diodes (OLEDs) have reached the stage of commercialization, and there has been an intense drive to use them in various applications from small- and medium-sized mobile devices to illumination ...

According to the working principle of the device, the research of organic electroluminescent materials and devices primarily includes the following several directions: active layer materials (the three primary color light-emitting materials, red, green, and blue, including fluorescent materials and phosphorescent materials), compatible materials for device ...

Organic light-emitting diodes (OLEDs) are based on electroluminescence in organic materials, whose discovery can be traced back to the 1950s when light emission was observed by applying high voltage to thin films of acridine orange and quinacrine (Bernanose et al. 1953) 1963, Pope et al. observed bright blue electroluminescence in single crystal ...

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The recombination of holes and electrons can produce light, in a process referred to as electroluminescence. Electroluminescence in organic materials was first discovered in 1953 using a cellulose ...

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