What is DPP based photovoltaic material?

The DPP-based materials were gradually exploited by optical and electrical applications for the excellent fluorescent properties and good charge carrier mobility. In recent years, great interest has been focused on developing organic photovoltaic functional materialscontaining a DPP core and attractive efficiencies have been achieved.

What is diketopyrrolopyrrole (DPP)?

Diketopyrrolopyrrole (DPP) pigmentshave been widely used in inks,paints,and plastics since it was first developed back in the early 1970s. The DPP-based materials were gradually exploited by optical and electrical applications for the excellent fluorescent properties and good charge carrier mobility.

Are diketopyrrolopyrrole dyes suitable for PSCS?

Diketopyrrolopyrrole (DPP) dyes have several attractive properties: strong light absorption,good photochemical stability,facile synthetic modification,and high electron mobilities [18,19,20]. Therefore,some DPP-based materials have been recently developed as acceptors for PSCs.

Are DPP-based semiconductors better than OFET?

Over the past few years, DPP-based semiconductors have demonstrated remarkable improvements in the performance of both organic field-effect transistor (OFET) and organic photovoltaic (OPV) devices due to the favorable features of the DPP unit, such as excellent planarity and better electron-withdrawing ability.

Can organic photovoltaic functional materials be used in optoelectrical fields?

In recent years, great interest has been focused on developing organic photovoltaic functional materials containing a DPP core and attractive efficiencies have been achieved. This feature article describes the application of DPP-based materials, highlighting the applications in optoelectrical fields.

Is furan a substitute for diketopyrrolopyrrole and thienylenevinylene based?

Furan substituteddiketopyrrolopyrrole and thienylenevinylene based low band gap copolymer for high mobility

DIKETOPYRROLOPYRROLE DPP BASED MATERIALS FOR ORGANIC PHOTOVOLTAICS



organic thin film transistors J. Mater. Chem., 22 (2012), pp. 17284 - 17292



Configuration-dependent photovoltaic properties of diketopyrrolopyrrole (DPP) based Ir complexes for organic solar cells. Author links open overlay panel Xianwang Tao a, Zhichao Yao a, Aihua Zhou a, Limitations and perspectives on triplet-material-based organic photovoltaic devices. Adv. Mater., 31 (2019), Article 1900690. View in Scopus

This Progress Report summarizes the advances in the molecular design of high-mobility DPP-based polymers reported in the last few years, especially focusing on the molecularDesign of these polymers in respect of tuning the backbone and side chains. Since the report of the first diketopyrrolopyrrole (DPP)???based polymer semiconductor, such polymers ???

The diketopyrrolopyrrole (DPP) Bijleveld et al reported the application of a DPP-based polymer in photovoltaics for the first time and realized a PCE of over 4%. 61 This demonstrated the huge potential of DPP in OPVs. The strong electron-withdrawing ability of the DPP moiety produces a strong electronic push-pull effect in D-A molecules



After the first report in 2008, diketopyrrolopyrrole (DPP)-based small-molecule photovoltaic materials have been intensively explored. The power conversion efficiencies (PCEs) for the DPP-based small-molecule donors ???



Recent developments in the use of DPP-based materials for a wide range of electronic devices are summarized, focusing on OFET, OPV, and newly developed devices with a discussion of device performance in terms of molecular engineering. In recent times, fused aromatic diketopyrrolopyrrole (DPP)???based functional semiconductors have attracted ???



Semantic Scholar extracted view of "Diketopyrrolopyrrole (DPP)-Based Materials for Organic Photovoltaics" by S. Qu et al. -Based Materials for Organic Photovoltaics" by S. Qu et al. Skip to search form Skip to main content Skip to account menu. Semantic Scholar's Logo. Search 220,263,210 papers from all fields of science. Search.



In recent years, the electron-accepting diketopyrrolopyrrole (DPP) moiety has been receiving considerable attention for constructing donor???acceptor (D???A) type organic semiconductors for a variety of applications, particularly for organic thin film transistors (OTFTs) and organic photovoltaics (OPVs).Through association of the DPP unit with appropriate electron donating ???

In this article, we review the most successful DPP-based single molecules applied in emerging PV technologies to date. Thus, DPP single molecules applied in organic solar cells, dye-sensitized solar cells and perovskite solar cells are presented, together with their chemical structures, photovoltaic device performance and additional information.



The development of DPP-based photovoltaic small molecule performance is discussed in relation to structural modifications, such as the variations of donor-acceptor building blocks, alkyl substitutions, and the type of conjugated bridges, as well as end-capped groups. After the first report in 2008, diketopyrrolopyrrole (DPP)???based small???molecule photovoltaic materials have ???



A series of twelve Acceptor-??-Donor-??-Acceptor (A-??-D-??-A) topology-based donor molecules, where diketopyrrolopyrrole (DPP) as donor core unit is connected through furan which acts as conjugated ??-bridge (CB) to aromatic derivatives (Ar) as acceptor units, have been investigated by making substitutions in acceptor units by using density functional theory(DFT) ???

Li, Yuning, Sonar, Prashant, Murphy, Leanne, & Hong, Wei (2013) High mobility diketopyrrolopyrrole (DPP)-based organic semiconductor materials for organic thin film transistors and photovoltaics. Energy and Environmental Science, 6(6), pp. 1684-1710.



, Macromolecular rapid communications. In the search of new electron acceptor, n-type materials for organic solar cells that combine a strong absorption over a broad range with good electrical characteristics, the use of diketopyrrolopyrrole (DPP) derivatives with low reduction potentials is explored.



DPP. Since the first DPP-based materials application in OFETs were reported by B?rgi et al. with a hole mobility (? 1/4 h) of 0.1 cm 2 V ???1 s ???1 and electron mobility (? 1/4 e) of 0.09 cm 2 V ???1 s ???1 (Lukas et al., 2008), the DPP derivatives received more and more attention from chemists as one of the most promising building blocks in organic semiconductors.. Recently, Zhang's group



Bulk heterojunction organic photovoltaics (BHJ OPV) has emerged as a promising renewable energy technology due to its merits of low-cost, Diketopyrrolopyrrole (DPP)-based materials for organic photovoltaics. Chem Commun, 48 (2012), pp. 3039-3051. Crossref View in Scopus Google Scholar [42]



A series of three donor molecules (DPP-B, DPP-N and DPP-P) based on diketopyrrolopyrrole (DPP) sharing the similar backbone of D-??-A-??-D have been investigated. Small molecules and polymers are used as electron donating material in organic solar cells. Photovoltaic materials and devices based on polymers are attracting remarkable interest



tural engineering of DPP-based polymers on unipolar and ambipolar OFETs, and applications of the resulting OFETs in chemical sensors. 2. Synthesis and strategies for the molecular design of DPP-based polymers 2.1. Synthesis of DPP-based materials The first synthesis of a DPP chromophore unit was reported in

DPP can be categorized in the class of H-bonded organic pigments such as indigo, quinacridone, epindolidione, and so on. [5] Chemically, they belong to the family of pyrrolopyrrole derivatives with a donor-acceptor-donor (D-A-D) type architecture [[6], [7], [8]] and can be synthesized in a single step with good yield and with variable donor units (benzene, thiophene, ???



Compared to fullerene based electron acceptors, n-type organic semiconductors, so-called non-fullerene acceptors (NFAs), possess some distinct advantages, such as readily tuning of optical absorption and electronic energy levels, strong absorption in the visible region and good morphological stability for flexible electronic devices. The design and synthesis of ???

DIKETOPYRROLOPYRROLE DPP **SOLAR**° **BASED MATERIALS FOR ORGANIC PHOTOVOLTAICS**



Keywords: diketopyrrolopyrrole, organic photovoltaics, ??-conjugated polymers, ??-conjugated small molecules. A common feature of the DPP-based materials is their relatively high oxidation

In recent years, diketopyrrolopyrroles (DPPs) have become one of the extensively studied organic building blocks of oligomers and polymers having promising optoelectronic properties, especially in organic solar cells. There are a large number of reports on structural modification of DPP cores to improve their properties in devices. There is plenty of room left ???



A series of new acceptor-donor-acceptor type conjugated small molecules with alkylated tetrathienoacene as donor and diketopyrrolopyrrole as acceptor moieties has been synthesized and characterized for solution-processed organic thin film transistor and organic photovoltaic applications. To investigate the effect of elongated conjugation on this system, ???



Diketopyrrolopyrrole (DPP) and its derivatives have been widely studied in the past few years due to its intrinsic physical and chemical properties, such as strong electron-withdrawing, deep color, high charge carrier mobility, strong aggregation, good thermal-/photo-stability. In the 1970s, DPP was ???

Qu S, Tian H (2012) Diketopyrrolopyrrole (DPP)-based materials for organic photovoltaics. Chem Commun 48:3039???3051. CAS Google Scholar Lee J, Park HJ, Joo JM, Hwang D-H (2019) Synthesis and characterization of DPP-based conjugated polymers via Dehydrogenative direct Alkenylation Polycondensation. Macromol Res 27:115???118



A new organic pigment diketopyrrolopyrrole (DPP) Several reviews on DPP-based materials have emerged over the past couple of decades [6, 8, 13, [24], The well-established optoelectronic performance arising from tunable ??-stacking of DPP derivatives in organic photovoltaics has been exploited by Aytun et al.



In the last decade, the diketopyrrolopyrrole (DPP)-based molecular semiconductors received significant prominence for its ability to build ambient stable donor???acceptor type organic materials for numerous microelectronics applications, especially in organic thin-film transistors and photovoltaics. This research article demonstrates the charge transport properties of 3,6 ???



Diketopyrrolopyrrole (DPP) derivatives with thiophene capping rings are widely used as semiconductors in organic electronics. Their optoelectronic properties can be adjusted by adding different



Oligomers and polymers consisting of multiple thiophenes are widely used in organic electronics such as organic transistors and sensors because of their strong electron-donating ability. In this study, a solution to the problem of the poor solubility of polythiophene systems was developed. A novel ??-conjugated polymer material, PDPP-5Th, was synthesized ???