Low-cost organic solar cells

How can organic solar cells be industrialized?
Low cost and high performance are key elements for the industrialization of organic solar cells (OSCs). In view of this,developing highly-efficient organic photovoltaic molecules with simple chemical structureis one of the most effective countermeasures.

Can low-cost materials produce high power conversion efficiencies for organic solar cells?
Achieving high power conversion efficiencies (PCEs) from low-cost materials is essentialfor the commercialization of organic solar cells (OSCs). Herein,three A-DA?D-A-type pentacyclic fused-ring electron acceptors (FREAs) featuring low synthetic complexity,namely BT-F,BTA-C4-F,and BTA-C4-Cl,were develo

Can a simple chemical structure solve the cost issue of organic solar cells?
We apologise for any inconvenience this might cause and thank you for your patience. Developing organic photoactive materials with simple chemical structures is a promising strategyto solve the critical cost issue of organic solar cells (OSCs).

Are donor/acceptor materials suitable for the industrialization of organic solar cells?
Developing high-performance and low-cost donor/acceptor materials is crucialfor the industrialization of organic solar cells (OSCs). Therefore,a series of new donor and acceptor materials with simple structures and easy synthesis have been reported.

How do organic solar cells achieve power conversion efficiencies?
At present,most of state-of-the-art power conversion efficiencies (PCEs) of organic solar cells (OSCs) are achieved from the photoactive materials involving donor-acceptor (D-A) copolymer donors.

Can pyrazine-based polymer donors solve the cost issue of organic solar cells?
Developing organic photoactive materials with simple chemical structures is a promising strategy to solve the critical cost issue of organic solar cells (OSCs). Here, two pyrazine-based polymer donors with completely non-fused conjugated backbones, named PPz and PPz-T, are designed, synthesized and characterized for application in OSCs.

Low cost and high performance are key elements for the industrialization of organic solar cells (OSCs). In view of this, developing highly-efficient organic photovoltaic molecules with simple chemical structure is one ...

Here, we briefly introduce the recent advances of OSCs based on low-cost polymers including poly (3-hexylthiophene) (P3HT), PT ...

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Organic bulk heterojunction (BHJ) solar cells have attracted wide attention due to their advantages of lightweight, low cost, flexibility and compatibility with large-area printing fabrication 1,2 ...

Benefitting from low cost and simple synthesis, simple structured non-fused ring acceptors (NFRAs) and polymer donors are crucial for the application of organic solar cells (OSCs). Herein, two isomerized NFRAs, namely 4T-FClFCl and 4T-2F2Cl, are designed with end-group engineering, which modulates the electrostatic potential ...

Developing high-performance and low-cost donor/acceptor materials is crucial for the industrialization of organic solar cells (OSCs). Therefore, a series of new donor and acceptor materials with simple structures and easy synthesis have been reported. However, how to further achieve low-cost and high-perform Photofunctional Materials and ...

Hole-transporting layer (HTL) materials with sufficient hole collection ability, noncorrosive nature, and easy preparation are strongly desired for the field of organic solar cells (OSCs). The development of new materials and synthetic methods has been proved to be the essential approach to improve the HTL performances. Herein, a series of thiophene oligomers ...

In recent years, the development of non-fullerene acceptors (NFAs) has led to ...

Achieving high power conversion efficiencies (PCEs) from low-cost materials is essential for the commercialization of organic solar cells (OSCs). Herein, three A-DA?D-A-type pentacyclic fused-ring electron acceptors (FREAs) featuring low synthetic complexity, namely BT-F, BTA-C4-F, and BTA-C4-Cl, were develo

A series of tetrathiophene-based fully non-fused ring acceptors (4T-1, 4T-2, 4T-3, and 4T-4), which can be paired with the star donor polymer PBDB-T to fabricate highly efficient organic solar cells are developed. Tailoring the size of lateral chains can tune the solubility and packing mode of acceptor molecules in neat and blend films. It is ...

Low cost and high performance are key elements for the industrialization of organic solar cells (OSCs). In view of this, developing highly-efficient organic photovoltaic molecules with simple chemical structure is one of the most effective countermeasures. Herein, three simple-structure terpolymers PTQ12-5, PTQ12-10, and PTQ12-15 are designed ...

Low manufacturing costs and lightweight construction are crucial factors influencing the cost ...

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1 Introduction. Organic solar cells (OSCs) are considered one of the most promising photovoltaic technologies for carbon neutrality due to their low cost, solution processibility, flexibility, and lightweight.

Developing organic photoactive materials with simple chemical structures is a promising strategy to solve the critical cost issue of organic solar cells (OSCs). Here, two pyrazine-based polymer donors with completely non-fused conjugated backbones, named PPz and PPz-T, are designed, synthesized and character Photofunctional Materials and ...

An organic solar cell based on a newly designed and low-cost PTV polymer exhibits over 16% efficiency, demonstrating that the conjugated polymers that have

Achieving high power conversion efficiencies (PCEs) from low-cost materials is essential for the commercialization of organic solar cells (OSCs). Herein, three A-DA?D-A-type pentacyclic fused-ring electron acceptors ...

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