

What are fiber-shaped solar cells?

Fiber-shaped solar cells are a type of low cost and flexible photoelectrodes fabricated using materials such as metal, optical fiber, and conductive fiber. They broke the limitations of traditional flexible solar cells in terms of shapes and materials.

Can flexible fiber-shaped solar cells be used as a power supply source?

The study exhibits the great potential to apply the FOSCs as the power supply source in the wearable electronic field. Flexible fiber-shaped solar cells (FSCs) can not only supply electrical power but also easy to be weaved into clothing and textiles, which makes them promising candidates for the energy supply of wearable electronic devices 1,2.

How efficient is a fiber-type solar cell?

Qiu LB, He SS, Yang JH, Jin F, Deng J, Sun H, Cheng XL, Guan GZ, Sun XM, Zhao HB, Peng HS. An all-solid-state fiber-type solar cell achieving 9.49% efficiency. J. Mater. Chem. A 2016; 4:10105. Xiang SW, Zhang NN, Fan X. From fiber to fabric: progress towards photovoltaic energy textile. Adv Fiber Mater 2021; 3:76.

Are fiber-shaped organic solar cells a good choice for wearable electronics?

Due to the unique advantages of the fiber-shaped organic solar cells (FOSCs), such as all-solid-state, ease of fabrication, and environmental friendliness, FOSCs are the strongest candidate among all types of FSCs for wearable electronics. However, the development of FOSCs is seriously lagging behind other types of FSCs.

What are flexible solar cells?

Flexible solar cells are lightweight, foldable, and have extensive applications. They have attracted much academic interest and industrial attention during the last decades due to these advantages.

How are fiber-type solar cells made?

During which, fiber-type devices were firstly assembled from fiber electrodes. The as-fabricated fiber device, as a whole, can be fed into the weaving machine as the weft or warp, and be woven together with cotton or other polymer wires to obtain the fabric-type solar cells.

Fiber-like solar cells Xing Fan¹, Dechun Zou², ... In 2008, a flexible dye-sensitized solar cell (DSSC) was invented by Zou et al.[1] via twisting two electrodes into one fiber-like device, as a breakthrough to the coaxial-type or planar-type device structure. The entire cell was a fine wire with diameters of ~200 nm.

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Flexible solar cells have a lot of market potential for application in photovoltaics integrated into buildings and wearable electronics because they are lightweight, shockproof and self-powered.

Perovskite solar cells in a fiber format have great potential for wearable electronics due to their excellent flexibility, efficient light harvesting, and potentially high power conversion efficiency (PCE). However, the fabrication of large-sized fiber perovskite solar cells (FPSCs) while maintaining high efficiency remains a major challenge because of the difficulty ...

Novel flexible fiber-type dye-sensitized solar cells (FF-DSSCs) with multi-working electrodes (MWFF-DSSCs) have been developed. In each MWFF-DSSC, all the components are assembled into a flexible ...

Coaxial fiber solar cells derived from the sandwich structure of planar devices are constructed by laying functional materials onto fiber optic substrates ... Integrating perovskite solar cells into a flexible fiber. *Angew. Chem. Int. Ed.*, 53 (39) (2014), pp. 10425-10428. Crossref Google Scholar [36]

Flexible fiber/wire-shaped solar cells are a kind of photovoltaic cell fabricated on wire-like substrates. Fiber-type devices, including inorganic, organic, dye-sensitized and perovskite solar cells, have made great progress ...

Flexible fiber/wire-shaped solar cells are a kind of photovoltaic cell fabricated on wire-like substrates. Fiber-type devices, including inorganic, organic, dye-sensitized and perovskite solar cells, have made great progress in recent years. In particular, the energy conversion efficiency of fiber dye-sensitized solar cells has increased from 9%. In this review, ...

Flexible fiber-shaped solar cells (FFSCs) The newly developed FFSCs have the active layers fabricated onto their cylindrical substrates. In order to advance the solar cells toward flexible and fibrous, the following methods have been applied: (1) making external light directly radiate on the active layer, (2) injecting light from the optical ...

An international team of engineers, physicists, and chemists have created the first fiber-optic solar cell. These fibers are thinner than human hair, flexible, and yet they produce electricity ...

This work presents flexible fiber shaped zinc bromide batteries and dye sensitized solar cells for efficient energy conversion and storage. The rechargeable FBs based on zinc bromide chemistry achieved a capacity up to 19 mA h mL⁻¹ ...

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