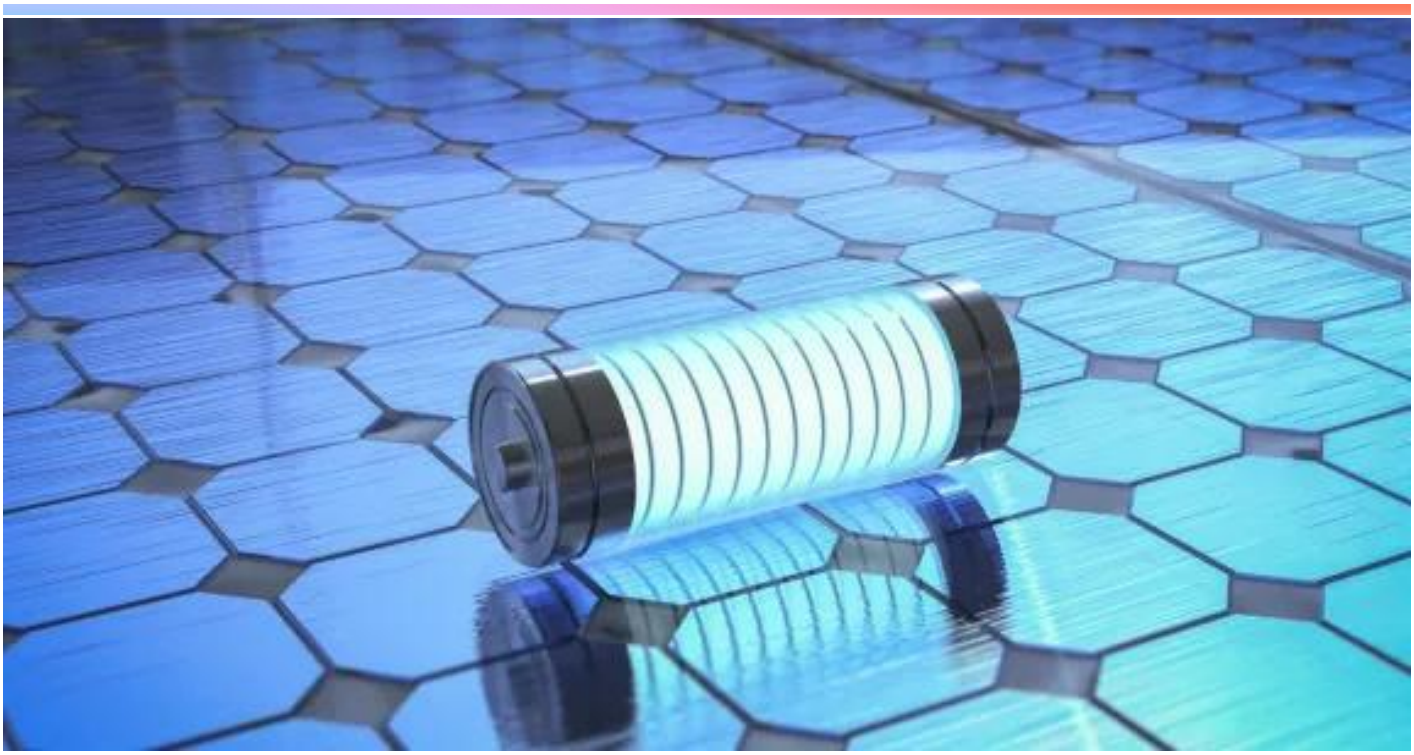


IoT powered by paper and enzymes

15 July 2024, 14:50

Pieter Jan Jordaens

Miniature batteries made sustainable

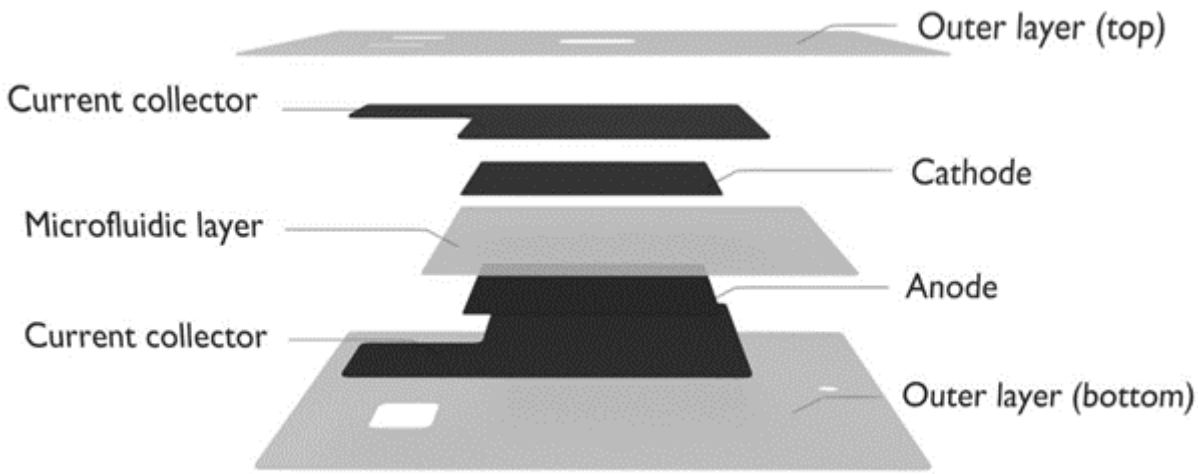
With a large portion of single-use batteries ending up in landfills or being incinerated, newly developed biofuel cells are an ecofriendly energy source and a flexible, sustainable and economically viable alternative to (miniature) batteries in a wide range of (IoT) applications, such as health care.

Data helps us make **evidence-based decisions with objective and reliable information** on a daily basis, but the systems to collect the data make use of batteries. As a consequence, billions of batteries are disposed of every year. Conventional batteries often contain toxic materials, metals, and dangerous electrolytes. A recent, revolutionary innovation is poised to address the challenges of single-use batteries.

Making electricity with paper and enzymes

Miniature batteries are complex, expensive and unecological to collect and recycle. BeFC (Bioenzymatic Fuel Cells) invented ecological biofuel cells that are paper-based, light-weight, ultra-

thin, and flexible. The biofuel cells are recyclable, environmentally friendly and economically viable. Inspired by implantable technologies, the core technology revolves around the use of biocatalysts to convert natural biofuels (glucose and oxygen) into electricity. The biofuel cells can even be activated with environmental or biological fluids, including sweat, blood and urine.



This organic energy solution that can be easily adapted to meet different needs of low-power electronic applications. The form factor can be adjusted to meet the technical specifications of different products. Thanks to this development, BeFC is able to offer data opportunities without the downsides of a conventional battery, based on its sustainable paper-based biofuel cell and ecofriendly microelectronics. For smart and connected devices for a wide range of applications, for industrial logistics to public health, BeFC's products and services facilitate the implementation of a digital interface using an active sensing platform, whilst simultaneously reducing costs and environmental impact..

Applied in health care

BeFC’s mission is to solve some of the most pressing challenges faced by health organisations. These include providing clinicians with real-time feedback on patient health, improving the patient experience, patient identification, data encryption and the transfer of vital information between different internal healthcare departments to help prevent misinformation. Furthermore, these data-driven products could significantly help streamline healthcare processes as well as mitigate the impact of environmental waste and improve sustainability footprints

Thanks to its biofuel cells, BeFC can offer an innovative solution for monitoring patients in hospitals that is non-invasive, comfortable, and environmentally-friendly, thereby radically improving the patient experience. Its connected wearable solution provides real-time feedback on a patient’s health, monitoring vital signs such as skin temperature and heart rate.

The solution stands out from other technologies in the healthcare market, because it is powered by the environmentally-friendly, paper-based biofuel cell, that is both safe and sustainable, especially when compared with traditional lithium coin-cell batteries. The unique design makes it a viable, low-cost, single-use solution for patient monitoring.

This ecofriendly biofuel cell is a great example of how innovation can create opportunities, leading towards a more sustainable future. Sirris is specialised in different areas, such as energy storage, sustainable and environmentally-friendly solutions

Interested in one of these expertises, or maybe you could use some help on a product idea?

Contact us

Source BEFC

Authors



Pieter Jan Jordaens