Fish gills for low-cost electro-catalysts – BIO FUEL CELL

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Scientists at the Institute of Nano Science and Technology, Mohali, have recently come up with an efficient, low-cost electro-catalyst from fish gills that can help develop environmentally friendly energy conversion devices. This bio-inspired carbon nanostructure can help overcome the bottleneck in the realization of several renewable energy conversion and storage technologies such as fuel cell, biofuel cell, and metal?air battery. It could be utilized as next-generation nonprecious carbon-based electrocatalyst for energy conversion and storage applications.

A microbial fuel cell (MFC) is a bio-electrochemical system that drives an electric current by using bacteria and a high-energy oxidant such as $O_2$, mimicking bacterial interactions found in nature. MFCs can be grouped into two general categories: mediated and unmediated. The first MFCs, demonstrated in the early 20th century, used a mediator: a chemical that transfers electrons from the bacteria in the cell to the anode. Unmediated MFCs emerged in the 1970s; in this type of MFC the bacteria typically have electrochemically active redox proteins such as cytochrome on their outer membrane that can transfer electrons directly to the anode. In the 21st century MFCs have started to find commercial use in wastewater treatment.

A biofuel cell uses living organisms to produce electricity. It may refer to:

- **Microbial fuel cell**, a bio-electrochemical system that drives a current by using bacteria and mimicking bacterial interactions found in nature
- **Enzymatic biofuel cell**, a type of fuel cell that uses enzymes rather than precious metals as a catalyst to oxidize its fuel