

Outlook bright for hydrogen biofuel cell

October 24 2005

British scientists say simple, cost-effective hydrogen biofuel cells could be developed from electrodes coated with a bacterial enzyme to oxidize hydrogen.

Traditional hydrogen fuel cells generate energy through chemical reactions involving oxygen and hydrogen, often using precious metals as catalysts for the reactions.

Now University of Oxford scientists say they've developed fuel cells using catalysts from biological organisms, or enzymes.

The researchers note most microbes utilizing hydrogen live in oxygen-poor environments, and their enzymes cannot tolerate oxygen. Carbon monoxide is harmful to the enzymes and conventional fuel cells.

Using a bacterial enzyme somewhat tolerant to oxygen, Fraser Armstrong and colleagues tested its catalytic activity in the presence of oxygen and carbon monoxide. The scientists created a simple fuel cell using that enzyme as a catalyst, and the resulting biofuel cell produced electricity, even without a membrane to separate hydrogen and oxygen and in the presence of high levels of carbon monoxide.

The results suggest the potential of developing simple hydrogen biofuel cells unaffected by carbon monoxide and able to run on highly contaminated hydrogen.

The research appears in the online early edition of the Proceedings of

the National Academy of Sciences.

Copyright 2005 by United Press International

Citation: Outlook bright for hydrogen biofuel cell (2005, October 24) retrieved 19 April 2024 from <https://phys.org/news/2005-10-outlook-bright-hydrogen-biofuel-cell.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.