

Enzyme-based biological fuel cell is built

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Oxford University scientists have built an enzyme based biological fuel cell that takes oxygen and hydrogen from an atmosphere to power electrical devices.

The enzymes used are isolated from naturally occurring bacteria that have evolved to use hydrogen in their metabolic process. The unique features of the enzymes are that they are highly selective and tolerant of gases that poison traditional fuel cell catalysts, such as carbon monoxide and hydrogen sulphide.

Since the enzymes can be grown, they represent a cheap and renewable alternative to the expensive platinum based catalysts used by others in hydrogen fuel cells, the researchers said.

The device built by a team headed by chemistry Professor Fraser Armstrong has a fuel cell consisting of two electrodes coated with the enzymes. They are in a small glass tank containing normal air with a few percent of added hydrogen.

Since the catalysts are selective and tolerant the gases can be mixed avoiding the need for an expensive fuel separation membrane.

Armstrong says the development has broad applications as a robust fuel cell for many utility applications where cost is a major issue, clean fuel sources cannot be guaranteed, and instant power is required.

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