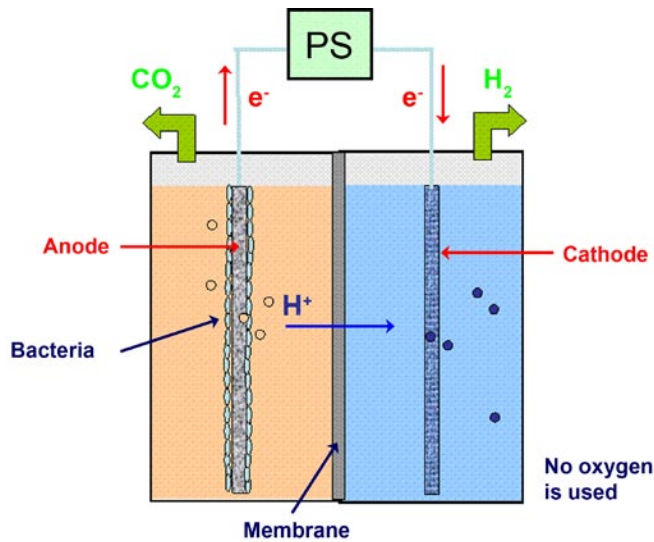


BEAMR: H₂ from biomass

www.engr.psu.edu/ce/ENVE/logan.htm

BioElectrochemically Assisted Microbial Reactor (BEAMR)



The BEAMR reactor uses only >0.2 V needed (vs 1.8- 2 V for water electrolysis).

Any biodegradable material can be used, including glucose, acetate, proteins, starch and cellulose.

Original proof of concept:

Liu, Grot and Logan, *Environ. Sci. Technol.* (2005)

Professor Bruce Logan

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Production from Renewables

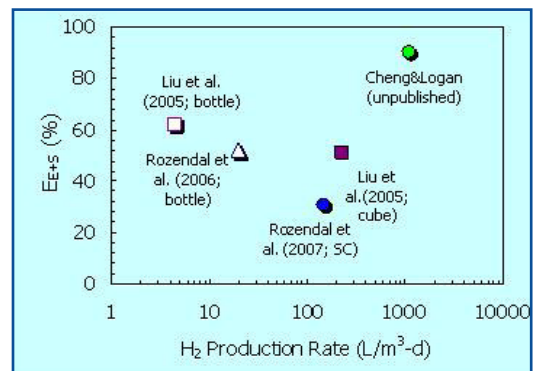
Hydrogen and electricity production using microbial fuel cell-based technologies.

Bruce Logan and John M. Regan
Hydrogen Energy Center
The Pennsylvania State University

Hydrogen recovery:

Acetate: > 95% (3.8 mol/mol) achieved

Glucose: > 90% (11 mol/mol) expected



Energy recovery from acetate:

- 5x the energy in electricity used recovered as H₂ (heat of combustion)
- >85% based on energy in electricity + acetate, at a rate of 1 m³-H₂/m³-reactor volume/d (100 A/m³)

Above results:

Cheng and Logan (unpublished)

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