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Office of Technology Management
The Pennsylvania State University
113 Technology Center, University Park, PA 16802
814.865.6277 phone: 814.865.3591 fax

Non-Confidential Description - PSU No. 3179a
"Microbial Fuel Cells"

Keywords:
microbial fuel cell, anodophilic bacteria, electricity, hydrogen gas

Links:
Inventor Research Website
US Patent 8,277,984

Inventors:
Bruce Logan

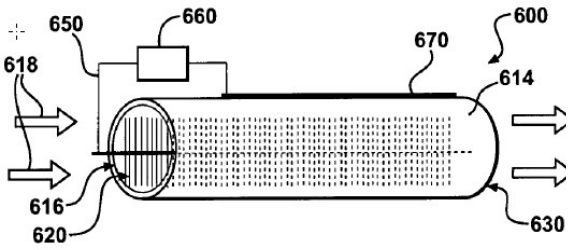

Fig 1: Tubular cathode encasing a brush electrode and an electrically conductive connector

Background

Microbial fuel cells that utilize bacteria as catalysts can be used to make electricity. When modified by removing oxygen and adding a small additional voltage, they can be used to produce hydrogen in a process known as bioelectrochemically assisted microbial reactor. However, electrode configurations for microbial fuel cells often limit power production and figure prominently in space constraints associated with fuel cells. This current technology describes newly discovered devices to optimize the performance of these systems.

Invention Description

The invention relates to microbial fuel cell design improvements for producing electricity or hydrogen from biodegradable organic matter using bacteria as a catalyst. A cathode is utilized in which the membrane forms a tubular shape, while the anode is substantially non-toxic to anodophilic bacteria. The resulting devices provide scalable electrode assembly configurations for microbial fuel cells. The reactor can be operated as a method of wastewater treatment, or can be used as a method for renewable energy production.

Advantages / Applications

- Utilized in the production of electricity or hydrogen gas
- Membrane of cathode forms a tubular shape
- Electrode is non-toxic to anodophilic bacteria
- Provides a scalable electrode assembly configuration for microbial fuel cells

Contact: **Bradley A. Swope**
Sr. Technology Licensing Officer
The Pennsylvania State University

Phone: (814) 863-5987
Fax: (814) 865-3591
E-mail: bradswope@psu.edu