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Patent Search

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Abstract:

The proposed invention is an integrated bio battery and hydrogen generation system that uses microbial fuel cells (MFCs) and electrolysis cells (ECs) to treat wastewater produce hydrogen gas and electricity. The MFC generates electricity from wastewater, while the EC generates hydrogen gas from water. The system is sustainable, efficient, and cost-effective, with potential applications in industries such as wastewater treatment, renewable energy production, and sustainable agriculture. The system can be scaled up or down depending on the application and has the potential to revolutionize the way we produce energy and treat wastewater, making our society more sustainable and environmentally friendly. The proposed invention offers a reliable source of electricity and hydrogen gas without relying on external sources of energy and does not contribute to climate change.

Complete Specification

Description:The present invention relates to the field of sustainable energy production, and more specifically to an integrated bio battery and hydrogen generation system. The system utilizes biological processes to produce electricity and hydrogen gas from organic waste, providing a sustainable and efficient source of energy. The invention has potential applications in various fields, including renewable energy, waste management, and environmental sustainability.

Background of the invention:

The world is facing significant challenges related to energy production, such as the depletion of fossil fuels, environmental pollution, and climate change. In recent years there has been a growing interest in developing sustainable and renewable sources of energy to meet the increasing demand for energy while reducing the negative impact on the environment. One promising approach is to utilize biological processes to produce electricity and hydrogen gas from organic waste.

Biological systems, such as microbial fuel cells (MFCs) and microbial electrolysis cells (MECs), are capable of converting organic matter into electricity and hydrogen gas, respectively. MFCs use bacteria to oxidize organic matter and transfer electrons to an electrode, generating electricity. On the other hand, MECs use bacteria to reduce protons to hydrogen gas at the cathode.

While MFCs and MECs have been extensively studied as separate systems, there has been limited research on integrating them into a single system to improve overall efficiency and sustainability. The proposed invention aims to address this gap by developing an integrated bio battery and hydrogen generation system.

The system utilizes organic waste as a substrate for both the MFC and MEC. The organic matter is first converted into electricity in the MFC, and then the effluent from the MFC is used as a substrate for the MEC to generate hydrogen gas. The hydrogen gas can be used as a clean and sustainable fuel for various applications, such as fuel cells and transportation.

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