Algal Fuel Cell

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Abstract

Algal Fuel Cells (AFC) are bioelectric devices that use photosynthetic organisms to turn light energy into electrical energy. The potential of a fully biotic AFC still remains an unexplored area of research. This led to the reanalyzes of the prospective use of plant based bioenergy. AFC consists of an anode and a cathode chamber connected by an external electric circuit and separated internally by a membrane in which the growth of algae was monitored and assessed. The major factors that influence the performance as well electrodes, separators, oxygen supplement, nutrients and its configurations are discussed. Further, recent advances examined by a number of researchers are interpreted. Similarly, combining this with environmental issues like wastewater treatment, degradation of toxic pollutants and desalination are also discussed. It can be concluded that greater focus on understanding the algal processes in AFC systems is required for the development of AFC applications.

Keywords: Algae; Algal Fuel Cell; Photosynthetic Electrode; Photo Bio-Reactor; Renewable Energy.

1. Introduction

Almost 80% of world energy consumption is from combustion of fossil fuels. The depletion of these fossil fuels necessitates the importance of renewable energy synchronization. Fossil fuels on combustion pollute the environment by emitting huge amount of CO_2 to atmosphere resulting in global climate change. The risks of over dependence on fossil fuels can be avoided by using renewable and carbon-neutral energy sources in a large amount. The concern and awareness of the harmful impact of mineral based fuels on environment