Biocombustion Cells with Photosynthesizing Microorganisms

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In our world energy has become an unexpandable resource, yet the majority is produced through non-renewable sources. In this paper, we studied the possibility of using combustion cells that employ a biological component, photosynthesizing microorganisms. For this we realized a qualitative analysis by employing three prototypes each differing in size, quantity of the biological component, and by varying certain characteristics of the electrodes (size, shape, material). Through another series of experiments, we were able to determine the power generated by a prototype. In addition, we tested the possible diode effect of the cell for a small voltage and analyzed the collected data following the experiments. The final step of the project was finding a way to optimize the amount of energy a combustion cell can produce. We began by analyzing one of the prototypes, and drawing a series of conclusions regarding which factors influenced the power generated (for example: the size of the electrodes and the internal resistance of the combustion cell). From this we began modelling design for a new combustion cell in accordance to our observations.

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