Alternative Energy: Harnessing the Power of Mud-based Microbial Fuel Cells

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Energy efficiency is a recurrent issue in today's society. Scientists and engineers are tirelessly seeking ways to reduce the use of nonrenewable fuels and replace them with things like solar-powered or hydro-powered energy. Recent research suggests that energy can be harnessed from microbes found in soil (Tender, 2013). Surprisingly, mud has various electricity-conducting microbes, and with the right equipment, one can harness said energy to fuel clocks or things requiring low energy. This study was conducted to investigate the electricity-conducting powers of mud and its possible ability to power complex technology. Each of three mud-powered fuel cell underwent a series of experiments testing the potential and finding the maximum power of each cell. Subsequently, each cell was gradually combined with 6 M of HCl to increase the voltage, which were then recorded at approximately 0.4V per cell (with variance). A technology such as a phone requires 5V to charge, so nine fuel cells were required to meet this standard. Using hardware components and circuit tools (breadboard, jumper wires, alligator cables, male-to-female USB cable, resistors, LED's, and a power supply), the fuel cells were connected in a series, essentially creating a multisystem, which was then used to provide the necessary 5V to power the phone. The results highlight the potential of energy derived from natural and alternative sources, and possible use in replacing the depleting energy sources and fossil fuels of today. Possible research would include implementing a system in which energy is harnessed from mud and waste in polluted waters such as the Indian Ganga River. If successful, this could be revolutionary in the field of energy.

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