Optimizing the Designs of Multi-Layer Microbial Fuel Cells

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The start date for the current project is August of 2017 and the end date is May 2018. The hypothesis for this project is if a Multi-Layer MFC or a MFC with other various amendments can be successfully designed and created then more voltage can be harnessed from one setup. In this project the expectation is to make MFCs a more attractive fuel source for consumers and energy production companies. Two pathways are being pursued and researched. The first is finding additives for the mixture that will either give them more energy to produce more electricity or allow them to produce for an extended period of time. Two examples of these are Biochar or Charcoal (carbon) which increases the conductivity of the soil and allows more microbes to make contact in turn producing more voltage, and Glucose which gives the microbes more energy to produce a higher voltage longer. The second pathway is adding more anodes. This means that instead of having the standard one anode, more anodes are added to the cell for increased contact with microbes and greater compiled voltage. In the project the main area of improvement in voltage output is the addition of carbon. The current data concludes that the amendment of carbon to the mixture will allow more voltage to be harnessed from one setup proving the hypothesis. The carbon amendment will be tuned to the best percentage along with the improvement of ease of use for the cells through more work and experimentation.

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