Development of a Novel Catalyst for the More Efficient Conversion of CO2 in H2O to Sustainably Produce Hydrocarbons as an Alternative Form of Energy

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The goal of this project is to address two main issues, climate change and the growing demand for energy. As we all know, the biggest reason why we have increased levels of CO2 emissions in our atmosphere is because we are heavily reliant on fossil fuels as sources of energy. Although many argue that converting to renewable energy sources is a way that we can solve all of our environmental issues, it does not address how we are to lessen the concentration of CO2 in our atmosphere, and it also doesn't address how it will impact our economies and infrastructure in the near future. My proposed solution is to create an artificial photosynthesis system, where we take out the excess CO2 from out atmosphere, reduce it in H2O, and convert it into a hydrocarbon fuel source. This way we do not have to change any of our existing infrastructure, our economies will not be adversely impacted, and we have a renewable source of energy that we can rely on for future generations. The only issue with this reaction is that it is inefficient and not suitable for commercial use, so the goal for this project is to design a catalyst that is capable of making this process more efficient. This project was split into two phases, the experimentation and prototype development phases. Two prototypes were developed and tested using theoretical simulation software such as DWSIM and the result was a prototype catalyst that exhibited 90% efficiency and 60% selectivity towards the production of ethanol.

Awards Won:

Fourth Award of $500