



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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Project Title Fueling the Future: Beyond the Limits of Water?	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of this experiment is to investigate which metal and pH of water would be most suitable and effective for the electrolysis of water.</p> <p>Methods equipment to fully complete a breadboard, different types of metals, various levels of water (pH wise), phosphate buffer solution, multi meter. method: set up the breadboard, buffer solution and other parts of the electrolytic cell. After the control is established, change the pH of the water and the metals used for the electrodes. Record the data.</p> <p>Results For our experiment, the water with a PH level of 7 and the use of tin for the apparatus produced the most electricity consistently. These results might not seem significant, but this was the amount of voltage produced in only a 500 ml container. If we enlarge the ratio for 10 liters then the outcome would be 80 volts at least. If we did this experiment again we would have tested this experiment on larger amounts of water so that we could eventually be used to generate a car or even a house.</p> <p>Conclusions Hydrogen fuel is the new source of energy that will power the future. Clean, renewable, easily accessible and plentiful, hydrogen is ideal for technological advancement. In this experiment, hydrogen was sourced from the electrolysis of water, which is simple and reliable. My partner and I yielded hydrogen, which, if the process were to be done by professionals, would later be used as fuel. My partner and I also tested if the pH of the water being electrolytic would affect its electrolysis, and if using different types of metals used in the experiment would affect it also. For example, the experiment this one is based on called for nickel metal strips, but we tested tin, brass, copper and nickel. We reached our conclusion based on the voltage readout of each of the metals whilst going through electrolysis. The metal with the highest voltage was tin, proving our hypothesis that brass would have the highest voltage wrong. With this information, scientists can source materials much quicker and more efficiently.</p>	
Summary Statement Our project is about testing the components of an electrolytic cell; the water going through electrolysis and the electrodes.	
Help Received Steve Wait, a water scientist, helped us with our project when we needed help, and guided us a little bit.	