



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Seth G. McFarland	Project Number J0523
Project Title Solar Electrolysis for Hydrogen Production	
Abstract Objectives/Goals To determine if I could successfully produce hydrogen gas from water using solar electrolysis and what variable increases the production of hydrogen during electrolysis. Methods/Materials I built an electrolyser with copper plates as electrodes. I timed each test for 5 minutes and collected the hydrogen and oxygen in two inverted graduated cylinders. I then measured the hydrogen. I tested variables of the concentration of electrolyte, temperature and voltage. To decrease voltage I covered the solar panel with aluminum foil. Results I found the lowest voltage tests (5 volts) always produced an amount of hydrogen so small I could not measure it. The next voltage tests (10 volts) produced 0.5 ml of hydrogen at the coldest temperature with the highest two electrolyte concentration. No hydrogen was produced at the middle temperature, while 0.5 milliliter was produced at the highest temperature with the highest two electrolyte concentrations. The 15 volt tests produced from 1 milliliter of hydrogen at the coldest and lowest electrolyte concentration test to 2 milliliters on the warmest and highest electrolyte concentration test. Conclusions/Discussion I have concluded that the warmer the water, the stronger the electrolyte concentration and the higher the voltage, the more hydrogen will be produced. Voltage seems to be the most important factor in my tests.	
Summary Statement To find how to produce the greatest quantity of hydrogen with solar electrolysis for a clean fuel source.	
Help Received none	