



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Joshua B. Groeniger	Project Number 22734
Project Title Invasion of the Fuel Cells	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my experiment is to determine if a fuel cell really works as a "battery" storing energy and is it environmentally safe.</p> <p>Methods/Materials Obtained a fuel cell and assembled a solar powered car assembly with working motor. Charged the fuel cell with solar energy converting water into hydrogen and oxygen gases storing them in tanks while running the motor. Cut off solar energy and ran motor on energy stored in the fuel cell and gases. Ran control with alkaline batteries of similar voltage. Timed both experiments and compared their efficiencies.</p> <p>Results By products of fuel cell are heat and water. If heat is harnessed, fuel cell is 100% efficient and reversible because water is converted back and forth.</p> <p>Conclusions/Discussion My conclusion is that the fuel cell is very efficient and will become the way of the future.</p>	
Summary Statement My project determines if fuel cells are a safe renewable energy alternative to fossil fuels.	
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