CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
Matthew A. Nickell

Project Number
J0918

Project Title
The Leyden Jar

Abstract

Objectives/Goals
My project was to see if static electricity could be stored in a Leyden jar capacitor made out of common household materials, and if so, can the charge held inside the Leyden jar be measured.

Methods/Materials
An electrophorus was assembled using a disposable aluminum pie pan, a Styrofoam cup, and tape. A Leyden jar was then assembled using a small plastic jar with a lid, a hammer, a nail slightly longer than the jar, aluminum foil, and tap water. Then, for charging the electrophorus, I used an 11x14 acrylic sheet, wool cloth, and the electrophorus. For measuring the charge in the Leyden jar, I used a piece of aluminum sheet, a large, flat piece of Styrofoam, a plastic travel soap dish, scissors, insulated wire: 6# long, wire strippers, a metric ruler, and tape.

Results
What I found out was that if you charge the Leyden jar once, you don#t get a spark, which leaves you with an undeterminable voltage. If you charge the Leyden jar 5 times, you get a 3 mm spark, which is 9,000 volts. If you charge it 10 times, you get a 1 cm spark, which is 30,000 volts.

Conclusions/Discussion
My results support my hypothesis. I found out that static electricity can be stored in a Leyden jar capacitor made out of common household materials. Next time, I might make the Leyden jar a little bigger, so it could hold more charge. If I were to further investigate my experiment under a new question, it would be: #How much voltage does one charge cycle give the Leyden jar#.

Summary Statement
My project is to see if static electricity can be stored in a Leyden jar capacitor made out of common household materials.

Help Received
My father helped me assemble my experiment. My mother took me to the store to buy the materials for my experiment.