CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
35700

Project Title
Just Can't Resist!

Abstract

Objectives/Goals
My objective was to try and make graphite a pressure sensitive resistance, and then to study the parameters influencing it's resistance (width of the graphite, elasticity...). Working with a circuit using potential dividers, I used aluminum foil and graphite powder to make a pressure sensitive resistance. The goal of this experiment is to use graphite powder as a variable resistance in a potential divider circuit.

Methods/Materials
Materials: aluminum foil, graphite powder, small plastic container, breadboard, transistor, resistor (6 ohms), ohmmeter.
Method: I started by glueing the two strips of aluminum foil onto the bottom of the plastic container and onto the piece of plastic that would go into the container. I then filled the container with graphite until the width came to 2.6 cm. I attached a wire onto each strip of aluminum foil, and linked these to the bread board where I had my potential divider circuit using a transistor. The board was also linked to the batteries as well as a light bulb. To perform the different tests I would attach the ohmmeter to the graphite resistance, and would do tests measuring the resistance each time.

Results
First of all that graphite powder is a very elastic substance, and would therefore be reliable when used for a pressure sensitive resistance. Secondly when doing the graph of the resistance of graphite vs. its width there was an parabolic function present. It was also shown that the larger the width of the graphite the greater the resistance it had, and an exponential function was made apparent there. To conclude, the greater the weight of the masses, the lower the resistance. After analyzing these results they are promising and logical ones.

Conclusions/Discussion
An idea for this project would be to convenience daily life while leaving less of a carbon footprint. With this project these sensors could be installed underneath less busy roads, or sidewalks, and at night when people would walk or drive over them, street lamps would illuminate. Thus saving energy by only keeping them on when people are present.

Summary Statement
My project is a pressure sensitive graphite powder resistance used as a variable resistance in a potential divider circuit.

Help Received
I was given access to scientific materials (such as ohmmeters) available at my school.